STORMWATER POLLUTION PREVENTION PLAN

FOR

BRITAIN WOODS

NYS Route 207 / Little Britain Road

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

PREPARED BY

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

71 Clinton Street
Montgomery, NY 12549

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1.0 INTRODUCTION

Engineering & Surveying Properties, PC (EP) prepared this report summarizing the impact of the proposed development of the property, known as Britain Woods, will have on downstream properties and receiving waters.

1.1 PURPOSE

The purpose of the Stormwater Pollution Prevention Plan (SWPPP) is to:

a. Maintain existing drainage patterns as much as possible and continue the conveyance of upland watershed runoff;

b. Mitigate increases in stormwater runoff resulting from the proposed development without adversely affecting downstream conditions;

c. Mitigate potential stormwater impacts and prevent soil erosion and sedimentation resulting from stormwater runoff.

1.2 SCOPE

The scope of the SWPPP for Britain Woods described herein is as follows:

a) Describe and estimate existing stormwater runoff conditions;

b) Describe and estimate proposed stormwater runoff conditions;

c) Describe and evaluate stormwater management facilities planned as part of the proposed development.

2.0 PROJECT DESCRIPTION

The Britain Woods project site is 47.95± acres in size and is located off NYS Route 207 also known as Little Britain Road in the Town of Newburgh and City of Newburgh in Orange County, New York. Local tax maps identify the Site as Town of Newburgh tax lots 97-1-32.1, 32.2, 32.3, 40.1 and City of Newburgh tax lots 41-1-2 & 3. A site location map is included as Figure 1 in Appendix 1.

There are a total of 11 multi-family residential buildings, a clubhouse, a pool equipment storage/dog wash/restroom structure, and a gazebo proposed on-site. Primary access to the Site will be from a main driveway located in the western portion of the Site from Little Britain Road (NYS Route 207). A secondary access will be provided on the east side of the Site. From the main driveway all buildings will be accessible via a roundabout. Multiple stormwater management facilities will be constructed within the project to mitigate any stormwater runoff quality and quantity increases. The proposed project site is bound by NYS Route 207 to the south, a commercial property to the east, multi-family residences to the North and a single-family residence to the west.

The project site is an irregularly shaped area of land. The existing site cover consists of mostly high canopy forest and foundation remains.

3.0 TOPOGRAPHY AND SOILS

The existing topography in the Britain Woods project area varies across the site, ranging from approximately 198 feet above mean sea level (AMSL) to 324 feet AMSL. Most of the slopes (±62%) on the project site are gently sloped (0%-15%), and moderate sloped areas (15%-25%) consist of approximately 25% of the site. The area of significant slope The Project Site contains eight different soil groups according to the Soil Survey of Orange County, New York. The on-site soil groups include various series complexes including Alden silt loam (Ab), (Ca), (ErA & ErB), (Ptb & PtC), (RMC) and (SXC) soils. These soils are considered to be a part of the “B”, “C” & “D” hydrologic soils group. A soil map is included in Appendix 2.

4.0 METHODOLOGY

The methodology utilized for this analysis is based upon the U.S.D.A. Soil Conservation Service’s Technical Release No. 20 and Technical Release No. 55, as utilized by the software entitled Hydrology Studio.

Hydrology Studio is a Microsoft Windows based program for analyzing the hydrology and hydraulics of stormwater runoff. It utilizes the latest techniques to predict the stormwater flows from any given storm event.

Hydrology Studio has the capability of computing hydrographs (representing discharge rates characteristic of specific watershed conditions, precipitation, and geologic factors), combining hydrographs, and routing flows through pipes, streams and ponds. A drainage model can consist of four different components - subareas, combinations, reaches and reservoirs.

A subarea consists of a relatively homogeneous area of land, which produces a volume and rate of runoff unique to that watershed. A subarea combination is the hydrologic addition of two subareas in order to determine the peak runoff at a design point. A reach is a channelized conveyance structure which routes the runoff from one point to another. A reservoir consists of a natural or man-made impoundment which temporarily stores stormwater runoff and that empties in a manner determined by various hydraulic structures located at its outlet.

This Stormwater Pollution Prevention Plan was based upon the New York State Stormwater Management Design Manual published by the New York State Department of Environmental Conservation (NYSDEC). Criteria set forth by this manual, requires analysis and determination of the required Water Quality Volume (WQv), to provide extended detention of the 1-year storm event for Stream Channel Protection (Cpv), to control the peak discharge of the 10-year storm event also known as Overbank Flood Protection Criteria (Qp), and to control the peak discharge and safely pass the 100-year storm event otherwise known as Extreme Flood Control Criteria (Qf).

The Stormwater Pollution Prevention Plan was developed by utilizing the "five-step" process for Stormwater Site Planning and Practice Selection. The five steps consists of site planning, determination of the water quality treatment volume, runoff reduction volumes applied through the use of "green technologies", application of standard stormwater management practices (SMP's) for remaining water quality volumes, and application of volume and peak rate control methods as required. Each of the five "steps" is further discussed in detail within this report.

5.0 ARCHEOLOGY

On-site archaeological significance is being addressed during the SEQR process in coordination with New York State Parks, Recreation and for maximum build-out application. A copy of their determination will be provided in Appendix 15.

6.0 STORMWATER MANAGEMENT PLANNING

6.1 INITIAL SITE PLANNING

Development of the proposed site plan within the "site planning" process was an iterative process with different conceptual layouts developed for the project site. During the planning process with the applicant, the current proposed plan was developed after careful consideration of many planning techniques and environmental impacts. The proposed site plan was devised to protect and preserve natural features, maintain natural drainage patterns, and avoid to the greatest extent practical, the disturbance of erodible soils. The site plan with proposed watershed boundaries can be seen as Figure 3 in Appendix 1.

The hydrologic and hydraulic analysis was performed by delineating the tributary watershed to the design point and then dividing these tributary areas into relatively homogeneous subareas. The separation of the watershed into subareas was dictated by watershed conditions, methods of collection, conveyance and points of discharge. Watershed characteristics for each subarea were then assessed from topographical maps, soil surveys, site investigations and land use maps.

6.1.1 EXISTING CONDITIONS

The existing watershed within the site and areas contributory to the site's discharge location were found to consist of three (3) distinct drainage areas with three (3) distinct design points. A design point represents the point at which stormwater, generated within a watershed, will exit the project site via either sheet flow along a linear boundary or as a point discharge. Figure 2 in Appendix 1 identifies the watershed areas and the corresponding design points. The characteristics of the existing subarea of this watershed is detailed within Table 1 below.

The sub-area was delineated and a contributory area, a curve number (CN) and time of concentration (Tc) was determined for the sub-area. Calculations for the CN's and Tc's are included in Appendices 3 and 4, respectively. It should be noted that the total contributory area includes off-site areas and excludes on site areas not affected by the proposed development and therefore, the total drainage area size will differ from the project lot area.

Existing Drainage Area A (EX-A1)

Existing drainage area A1 is comprised of hydrological soil groups B, C & D soils. Existing drainage area A1 consists of approximately ±22.902 acres of both off-site and on-site areas. The drainage area consists of ±20.444 acres of woods, ±0.599 acres of lawn, and ±1.859 acres of impervious.

Runoff from this drainage area travels overland via sheet flow and shallow concentrated flow to the on-site wetland where it is detained. In larger flow events, runoff from this area will overflow the bank of the wetland and travel towards Harrison Pond approximately 100 feet northeast of the site and ends at Design Point A (DP-A). Times of concentration for this drainage area is 26.40 minutes.

Existing Drainage Area A (EX-A2)

Existing drainage area A2 is comprised of hydrological soil groups B, C & D soils. Existing drainage area A2 consists of approximately ±12.024 acres of both off-site and on-site areas. The drainage area consists of ±11.391 acres of woods, ±0.480 acres of lawn, and ±0.153 acres of impervious.

Runoff from this drainage area travels overland via sheet flow and shallow concentrated flow and travel towards Harrison Pond approximately 100 feet northeast of the site and ends at Design Point A (DP-A). Times of concentration for this drainage area is 19.80 minutes.

Existing Drainage Area B (EX-B)

Existing drainage area B is comprised of hydrological soil groups B, C & D soils. Existing drainage area B consists of approximately ±7.465 acres of both off-site and on-site areas. The drainage area consists of ±7.465 acres of woods, ±0.000 acres of lawn, and ±0.000 acres of impervious.

Runoff from this drainage area travels overland via sheet flow and shallow concentrated flow to the north towards Stony Brook Condominiums and ultimately into the Quassaic Creek and ends at Design Point B (DP-B). Times of concentration for this drainage area is 18.60 minutes.

Existing Drainage Area C (EX-C)

Existing drainage area C is comprised of hydrological soil groups B, C & D soils. Existing drainage area C consists of approximately ±23.004 acres of both off-site and on-site areas. The drainage area consists of ±17.343 acres of woods, ±5.448 acres of lawn, and ±0.213 acres of impervious.

Runoff from this drainage area travels overland via sheet flow and shallow concentrated flow to the southwest towards an on-site culvert and ends at Design Point C (DP-C). Times of concentration for this drainage area is 27.00 minutes.

TABLE 1: EXISTING DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
EX-A1	22.902	61	26.40
EX-A2	12.024	59	19.80
EX-B	7.465	61	18.60
EX-C	23.004	70	27.00
TOTAL:	65.395		

The watershed responses to the 1-, 10-, 25- and 100-year 24-hour storm events were computed and evaluated at the design point. The peak rates of runoff at each design point are presented in Table 8. Stormwater computations are attached at the end of this report in Appendices 7, 8 and 9.

6.1.2 PROPOSED CONDITIONS

For this analysis, the existing watershed was broken down into a post-development network consisting of four (9) subareas and two (2) stormwater facilities. The subareas under the proposed development are identified in Figure 3 in Appendix 1. The characteristics of each proposed subarea are detailed in Table 2 below. It should be noted that the total contributory area may include off-site areas where appropriate and therefore, the total drainage area size may differ from the project development area.

Proposed Drainage Area A1-A (PR-A1-A)

Proposed drainage area A1-A is comprised of hydrological soil group B & D soils. Proposed drainage area A1-A consists of approximately ±4.762 acres of on-site areas. The drainage area consists of ±0.000 acres of woods, ±2.492 acres of lawn, and ±2.270 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to bio-retention area A1-A. Times of concentration for this drainage area is 21.60 minutes.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area A1-B (PR-A1-B)

Proposed drainage area A1-B is comprised of hydrological soil group B & D soils. Proposed drainage area A1-B consists of approximately ±2.605 acres of on-site areas. The drainage area consists of ±0.008 acres of woods, ±0.941 acres of lawn, and ±1.656 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to forebay A1-B. Times of concentration for this drainage area is 13.20 minutes.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area A1-C (PR-A1-C)

Proposed drainage area A1-C is comprised of hydrological soil group B & D soils. Proposed drainage area A1-C consists of approximately ±0.492 acres of on-site areas. The drainage area consists of ±0.000 acres of woods, ±0.492 acres of lawn, and ±0.000 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to detention basin A1. Times of concentration for this drainage area is 2.40 minutes but a minimum of 6 minutes is utilized for calculations.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area A2-A (PR-A2-A)

Proposed drainage area A2-A is comprised of hydrological soil group B & D soils. Proposed drainage area A2-A consists of approximately ±14.147 acres of on-site and off-site areas. The drainage area consists of ±8.924 acres of woods, ±3.082 acres of lawn, and ±2.143 acres of impervious.

Runoff from this drainage area travels overland via sheet flow and shallow concentrated flow to the on-site wetland where it is detained. In larger flow events, runoff from this area will overflow the bank of the wetland and travel towards Harrison Pond approximately 100 feet northeast of the site and ends at Design Point A (DP-A). Times of concentration for this drainage area is 23.40 minutes.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area A2-B (PR-A2-B)

Proposed drainage area A2-B is comprised of hydrological soil group B, C & D soils. Proposed drainage area A2-B consists of approximately ±10.887 acres of on-site areas. The drainage area consists of ±9.298 acres of woods, ±1.303 acres of lawn, and ±0.286 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and ends at Design Point A. Times of concentration for this drainage area is 19.80 minutes.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area B1 (PR-B1)

Proposed drainage area B1 is comprised of hydrological soil group B & D soils. Proposed drainage area B1 consists of approximately ±1.134 acres of on-site & off-site areas. The drainage area consists of ±0.655 acres of woods, ±0.479 acres of lawn, and ±0.000 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to detention basin B1. Times of concentration for this drainage area is 14.40 minutes.

Runoff from this drainage area discharges to Design Point A (DP-A).

Proposed Drainage Area B2 (PR-B2)

Proposed drainage area B2 is comprised of hydrological soil group B & D soils. Proposed drainage area B2 consists of approximately ±2.335 acres of on-site areas. The drainage area consists of ±2.216 acres of woods, ±0.119 acres of lawn, and ±0.000 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and ends at Design Point B. Times of concentration for this drainage area is 16.20 minutes.

Runoff from this drainage area discharges to Design Point B (DP-B).

Proposed Drainage Area C1-A (PR-C1-A)

Proposed drainage area C1-A is comprised of hydrological soil group B & D soils. Proposed drainage area C1-A consists of approximately ±4.929 acres of on-site areas. The drainage area consists of ±0.081 acres of woods, ±1.390 acres of lawn, and ±3.458 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to bio-retention basin C1-A. Times of concentration for this drainage area is 20.40 minutes.

Runoff from this drainage area discharges to Design Point C (DP-C).

Proposed Drainage Area C1-B (PR-C1-B)

Proposed drainage area C1-B is comprised of hydrological soil group B soils. Proposed drainage area C1-B consists of approximately ±6.154 acres of on-site areas. The drainage area consists of ±0.010 acres of woods, ±2.385 acres of lawn, and ±3.759 acres of impervious.

Runoff from this drainage are travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to forebay C1-B. Times of concentration for this drainage area is 17.40 minutes.

Runoff from this drainage area discharges to Design Point C (DP-C).

Proposed Drainage Area C1-C (PR-C1-C)

Proposed drainage area C1-C is comprised of hydrological soil group B & D soils. Proposed drainage area C1-C consists of approximately ±16.837 acres of on-site and off-site areas. The drainage area consists of ±8.493 acres of woods, ±8.300 acres of lawn, and ±0.044 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and then into the proposed drainage system which runs to detention basin C1. Times of concentration for this drainage area is 23.40 minutes.

Runoff from this drainage area discharges to Design Point C (DP-C).

Proposed Drainage Area C2 (PR-C2)

Proposed drainage area C2 is comprised of hydrological soil group B & D soils. Proposed drainage area C2 consists of approximately ±1.115 acres of on-site and off-site areas. The drainage area consists of ±0.739 acres of woods, ±0.207 acres of lawn, and ±0.169 acres of impervious.

Runoff from this drainage area travels overland via sheet flow, shallow concentrated flow and ends at Design Point C. Times of concentration for this drainage area is 16.80 minutes.

Runoff from this drainage area discharges to Design Point C (DP-C).

TABLE 2: PROPOSED DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
PR-A1-A	4.762	80	21.60
PR-A1-B	2.605	87	13.20
PR-A1-C	0.492	63	16.20
PR-A2-A	14.147	68	23.40
PR-A2-B	10.887	59	19.80
PR-B1	1.134	76	14.40
PR-B2	2.335	62	16.20
PR-C1-A	4.929	89	20.40
PR-C1-B	6.154	84	17.40
PR-C1-C	16.837	73	23.40
PR-C2	1.115	75	16.80
TOTAL:	65.393		

*Utilize 6-minute Tc minimum

6.2 WATER QUALITY VOLUME

The second step of the stormwater site planning process is determination of the required water quality treatment volume (WQ_v). WQ_v is calculated using the 90% Rule as defined by NYSDEC Stormwater Management Design Manual. The 90% Rule is defined as:

$$WQ_v = [(P)(R_v)(A)] / 12$$

Where: P is the 90% Rainfall Event Number
R_v is equal to 0.05 + 0.009*I
I is the Impervious Cover in percent
A is the subarea total acreage

The WQ_v was calculated for the design point for which the proposed project will create new impervious coverage. The results of the WQ_v calculations are included in Table 3 below.

TABLE 3: REQUIRED WATER QUALITY VOLUMES

AREA	WQ_v (Ac-ft)
SITE	1.594

6.3 RUNOFF REDUCTION VOLUME

Step three of the stormwater site planning process is the incorporation of "green infrastructure technologies" and standard SMP's with runoff reduction volume (RR_v) capacity. The intended result of RR_v, is to treat 100% of the WQ_v and replicate pre-development hydrology, however if unattainable, provide the minimum RR_v required and provide additional treatment for the remaining WQ_v. Each of the following green technologies and standard SMP's with RR_v capacity were analyzed for implementation along with an explanation of how they are used or unable to be used on this project. The location of the green technologies used can be seen in Figure 4.

Green Technologies

- Conservation of Natural Areas
  - The proposed site is to be fully developed apart from an area of existing wetlands. Therefore, this practice may not be utilized to provide RR_v for the corresponding tributary area.
- Sheet flow to Riparian Buffers / Filter Areas
  - As previously stated this site is proposed to be fully developed and therefore riparian buffers do not exist within the project site.
- Vegetated Open Swales
  - Due to limitations in the size and slope of the site and the use of sub-surface stormwater conveyance, swales are not practicable.
- Tree Planting / Tree Box
  - The site design proposes a landscaping plan. However, the landscaping will be utilized for aesthetic purposes only and will not be designed to incorporate stormwater quality treatment.
- Disconnection of Rooftop runoff
  - Due to a lack of filter strips or grassed areas uphill of the stormwater conveyance paths, the rooftop runoff from the proposed building will be directed to catch basins.
- Stream Daylighting

  - There are no culverted/piped streams on-site therefore this technology is not applicable to this project.
- Rain Gardens
  - Due to the fact that most of the tributary drainage areas consist of areas greater than 1,000 sq.ft., rain gardens could not be utilized as a green technology on this project.
- Green Roof
  - As all the areas of the proposed development, including all new rooftop areas, have been accounted for in other green technologies, the implementation of this practice is not proposed.
- Stormwater Planters
  - Stormwater planters are suitable for small runoff areas such as rooftops or plaza and courtyards. Stormwater planters work very well within urban redevelopment projects with appropriate soils. However, this project is utilizing other technologies for treatment of rooftop runoff; therefore, the green technology of stormwater planters was not implemented.
- Rain Tanks/Cistern
  - Rain Tanks and cisterns are well-suited to treat rooftop runoff, however as previously stated, rooftop runoff is directed towards the proposed drainage system.
- Porous Pavement
  - Porous pavement was not considered as paved areas were already treated under a different runoff reduction practice.
- Soil Restoration
  - Soil restoration measures must be applied to all areas of disturbance that will be re-established as non-impervious cover to recover the original properties and porosity of the soil to the greatest extent practical. Soil restoration techniques and requirements are discussed further in Section 5.6 of this report.

<u>Standard SMP's with RR_v Capacity</u>

- Infiltration Practice
    - Infiltration practices are not being considered due to soil composition and poor infiltration rates on site.
- Bio-Retention
    - The use of two (2) bio-retention facilities are proposed on site to provide RRv capacity.
- Dry Swale (Open Channel Practice)
    - Dry swales were not utilized for this project as all areas of proposed development have been accounted in other green technologies.

The RR_v for each of the green technologies used has been calculated for the point of analysis. The total RR_v was calculated and compared to the WQ_v for the design point. The minimum RR_v is based upon the hydrological soil group (HSG) classification within the watershed and is assigned a Specific Reduction Factor (*S*). The reduction factors for each HSG are shown below in Table 4.

*TABLE 4: SPECIFIC REDUCTION FACTOR (S)**

HSG	*S*
A	0.55
B	0.40
C	0.30
D	0.20

* Watersheds with multiple HSG's utilize a weighted average

$RR_{v\ MIN}$ was calculated for each watershed in accordance with the following formula:

$$RR_{v\ MIN} = [(P)(0.95)(S)(I)] / 12$$

The total calculated RR_v provided is compared to the $RR_{v\ MIN}$ to ensure that the green technologies proposed provide the minimum reduction of the WQ_v as required. The $RR_{v\ MIN}$ and the total RR_v provided along with the revised WQ_v are shown below in Table 5. The revised WQ_v is calculated using the 90% rule as noted in Section 5.2 above, however, the contributory area and impervious area are reduced through the application of green technologies that have been utilized. The calculations for the required and adjusted water quality volumes along with the runoff reduction volumes calculations are shown in Appendix 5.

TABLE 5: RUNOFF REDUCTION VOLUMES & REVISED WQV

DESIGN POINT	$RR_{v\ MIN}$	Total RR_v (Provided)	Revised WQ_v
SITE	0.424	0.438	0.936

6.4 APPLICATION OF STANDARD SMP'S FOR THE REVISED WQV

The RR_v does reduce the required WQ_v treatment; however, it does not completely eliminate the need to provide treatment through standard stormwater management practices. Continuing with the stormwater site planning process, step four is to ensure treatment for the remaining WQ_v is provided. The WQ_v provided in each of the standard stormwater management practices throughout the project is provided in Table 6 below.

TABLE 6: WQV PROVIDED IN STANDARD SMP'S

DESIGN POINT	RRv Provided (ac-ft)	WQv Provided (ac-ft)
Forebay A1-A	0.000	0.265
Bio-Retention Basin A1-A	0.178	0.306
Forebay A1-B	0.000	0.199
Forebay B1-A	0.000	0.638
Bio-Retention Basin B1-A	0.260	0.464
Forebay B1-B	0.000	0.953
TOTAL	0.438	2.825

6.5 VOLUME AND PEAK RATE CONTROL

The fifth and final step of the stormwater site planning process is to apply volume and peak rate control as necessary through the use of standard stormwater management practices. In preparing the SWPPP, it was determined that on-site stormwater facility (detention basins) will be necessary to mitigate the potential increase in peak stormwater runoff rates from the proposed site improvements.

The on-site stormwater management facilities have been designed as Detention Basins (A1 & C1) which are proposed to mitigate any increase in peak runoff from the site improvements tributary to them.

6.5.1 CHANNEL PROTECTION VOLUME

The required volume control consists of Channel Protection Volume (Cp_v) which is designed to protect downstream channels from erosion. The Cp_v is achieved through providing extended detention of the 1-year storm event for a period of 24 hours. Ponds that do not meet the 24-hour extended detention period will utilize the minimum 3" orifice as required by the regulations. The Cp_v detention time is shown in Table 7 below and the calculated results are shown in Appendix 11.

TABLE 7: CPV EXTENDED DETENTION TIMES

FACILITY	Cp_v ED Time (hrs)
Det. Basin A1	30.78
Det. Basin B1	1.12*
Det. Basin C1	30.04

** FACILITY HAS AN EXTENDED DETENTION TIME LESS THAN 24 HOURS AND WILL UTILIZE A MINIMUM 3" ORIFICE AS REQUIRED.*

6.5.2 PEAK RATE CONTROL

The peak discharge rate is controlled utilizing the storage volume available in the stormwater pond and controlling discharge through an overflow weir. The watershed responses to the 1-, 10-, 25- and 100-year - 24-hour storm events were computed and evaluated at the aforementioned design point. The peak rates of runoff realized at the design points are presented in Table 8. Stormwater computations are attached at the end of this report.

The total peak runoff rates at the design point for the existing condition as well as the final proposed condition have been calculated and shown below in Table 8. The peak runoff rates have been reduced in the proposed conditions during the 1-, 10-, 25- and 100-year design storms for all drainage areas on site.

TABLE 8: SUMMARY OF RESULTS AT THE DESIGN POINTS

Criteria		Design Point A	Design Point B	Design Point C
1 – YEAR (Cpv)	Existing (cfs)	0.58	0.54	6.20
	Proposed (cfs)	0.59	0.48	0.82
	Reduction (cfs)	-0.01	-0.06	-5.38
	Reduction (%)	+1.72%	-11.11%	-86.77%
10 – YEAR (Qp)	Existing (cfs)	8.08	3.69	26.48
	Proposed (cfs)	7.39	3.38	18.91
	Reduction (cfs)	-0.69	-0.31	-7.57
	Reduction (%)	-8.54%	-8.40%	-28.59%
25 – YEAR	Existing (cfs)	23.33	10.42	40.10
	Proposed (cfs)	21.79	6.71	35.51
	Reduction (cfs)	-0.54	-3.71	-4.59
	Reduction (%)	-2.42%	-35.60%	-11.45%
100 – YEAR (Qf)	Existing (cfs)	72.00	20.20	68.57
	Proposed (cfs)	58.18	11.99	48.50
	Reduction (cfs)	-13.82	-8.21	-20.07
	Reduction (%)	-19.19%	-40.64%	-29.27%

Since the runoff rates have been proven to decrease in the post-development condition or are within 5% of the pre-developed condition, there will be no adverse impact to the downstream receiving waters. Therefore, the SWPPP designed for the Britain Woods project site will accomplish the intent of its design.

6.6 SOIL RESTORATION

Soil restoration is intended to recover the original properties and porosity of the soil to the greatest extent practicable. Soil restoration measures shall be applied to any disturbed area within the project prior to establishment of permanent vegetation and installation of landscaping. Any proposed impervious areas do not require soil restoration measures. Soil restoration measures such as tilling allows for compacted soil to gather oxygen and create temporary and even permanent air voids and when combined with the incorporation of organic material, greatly improves the soils characteristics to temporarily store water and subsequent runoff reduction through infiltration and evapotranspiration.

Various soil disturbance activities related to construction of land development within various soil types and the associated minimum required soil restoration techniques are shown in Table 9.

TABLE 9: SOIL RESTORATION REQUIREMENTS

Type of Soil Disturbance	Soil Restoration Requirement		Comments / Examples
No Soil Disturbance	Restoration not permitted		Preservation of Natural Features
Minimal Soil Disturbance	Restoration not required		Clearing and Grubbing
Areas where topsoil is stripped only – NO change in grade.	HSG A & B	HSG C & D	Protect Areas from any ongoing construction activities.
	Apply 6” of topsoil	Aerate* and apply 6” of topsoil	
Areas of cut or fill	HSG A & B	HSG C & D	
	Aerate* and apply 6” of topsoil	Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5’-25’ around buildings, but not within the 5’ perimeter around the foundation walls)	Apply full Soil Restoration** (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration Practices are applied.	Restoration not required, but maybe applied to enhance the reduction specified for appropriate practices		Keep construction equipment from crossings these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area.
Redevelopment projects	Soil restoration is required on redevelopment projects in areas where existing impervious area will be		

	converted to pervious area	

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per "Deep Ripping and De-compaction Guidelines", NYSDEC 2008

7.0 EROSION AND SEDIMENT CONTROL MEASURES

Soil erosion and sediment control measures have been detailed on the plans and outlined herein. The following are general measures that should be implemented:

a. Damage to surface waters resulting from erosion and sedimentation shall be minimized by stabilizing disturbed areas and by removing sediment from construction site discharges.

b. Site preparation activities shall be planned to minimize the area and duration of soil disturbance. The plans approved for construction shall contain a detailed "Erosion Control Plan" which depicts the limits of grading along with the required earth cut and fill locations (including stockpile locations if necessary). In addition, any additional site-specific erosion control measures required are shown on the approved plans for construction. The following additional requirements shall be met upon receipt of such waiver:

   - The required site inspections by the qualified inspector shall occur one (1) time every seven (7) days.
   - In areas where disturbance has temporarily or permanently ceased, stabilization shall be implemented within seven (7) days from the ceasing of soil disturbance activity.

c. Permanent traffic corridors shall be established, and "routes of convenience" shall be avoided. Off-site sediment tracking shall be minimized through regularly scheduled sweeping and good housekeeping of construction vehicles.

d. A qualified professional shall inspect and log the erosion and sediment control measures once every seven days once earth disturbance has commenced and continue until the site has achieved final stabilization in accordance with the requirements. During times of possible inactivity (i.e. winter months), upon the site being temporarily stabilized, the professional shall perform inspections monthly. The professional shall make recommendations to the operator on how to maintain the integrity and function of all temporary erosion control measures throughout the duration of the development process. Any deficiencies in the measures shall be corrected as soon as possible by the operator.

e. An up-to-date Construction Site Log Book which includes this SWPPP for Britain Woods shall be maintained on site at all times during construction. The Construction Site Log Book shall also include the items found in the most recent version of the New York Standards and Specifications for Erosion and Sediment Control.

In particular, the following measures will be implemented:

a. Pre-Construction Installation: Prior to any disturbance on site, silt fence shall be installed in accordance with the approved plans in the area of the first phase. Prior to commencement of any subsequent phase, silt fence shall be installed in the proper phase in accordance with the approved plans. Siltation barriers shall be maintained in good condition and reinforced, extended, repaired or replaced as necessary.

b. In no case shall erodible materials be stockpiled within 25 feet of any ditch, stream or other surface water body.

c. Permanent vegetative cover: Immediately following the completion of construction activity in any portion of the site, permanent vegetation shall be established on all exposed soils by properly seeding at a coverage rate as noted on the approved plans and covered with straw. Water shall be applied to newly seeded areas as needed until grass cover is well established.

d. Washouts shall be immediately repaired, reseeded and protected from further erosion. All accumulated sediment shall be removed and contained in appropriate spoil areas. To effectively control wind erosion, water shall be applied to all exposed soils as necessary.

8.0 LONG TERM MAINTENANCE OF WATER QUALITY FEATURES

Upon completion of the project, the stormwater facilities shall be owned and maintained by the property owner. The property owner shall be responsible for ensuring that the facilities operate and function as designed through proper maintenance as follows.

a. Regular inspection and maintenance of the proposed facilities are required to ensure their long-term water quality and quantity reduction functions.

b. All stormwater facilities and roadways with associated infrastructure are proposed to be located within lands to be owned by the property owner.

c. All side slopes within the stormwater facilities are a minimum of 3:1, to allow for maintenance.

d. Catch Basins:

   i. Basins shall be inspected for accumulated sediment and trash every 6 months.

   ii. Accumulated sediment and trash shall be removed from basins annually, or at more frequent intervals, if needed.

e. Forebay & Detention Pond

   i. The grass within the pond should be mowed at least 3 times per growing season, limiting the grass to a height of no more than 12 inches.

   ii. Sediment removal should be done at least every five years.

f. Bio-Retention Facility

   i. Sediment removal in the forebay shall occur every five to six years or after 50% of total forebay capacity has been lost.

   ii. The grass embankments should be mowed at least 3 times per growing season, limiting the grass to a height of no more than 12”.

   iii. Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner.

9.0 SUMMARY OF FINDINGS AND CONCLUSIONS

Based on the analysis of the pre-development and post-development stormwater conditions, and the implementation of stormwater quality and sediment and erosion control measures, the potential stormwater impacts of the Britain Woods project will be mitigated to the greatest extent practical.

a. Prevent increases in flooding and flood damage through the reduction of the rate of runoff from all areas.

b. Reduce the erosion potential from the development through the reduction of the rate of runoff from the project site and through the implementation of the soil and erosion control measures outlined on the project plans and as highlighted herein.

c. Decreases non-point source pollution and water quality degradation through the use of “green technologies”.

d. Those portions of the site which do not direct runoff into a stormwater management practice, will sheet flow through proposed lawn areas and through existing vegetative cover prior to discharging from the site.

e. All criteria set forth in the New York State Stormwater Management Design Manual have been met.

f. Post-development peak discharge rates will be reduced below pre-development peak discharge rates, or their impacts minimized.

g. Sediment and erosion control measures are designed to minimize erosion loss and downstream sediment deposits.

APPENDIX 1

FIGURES

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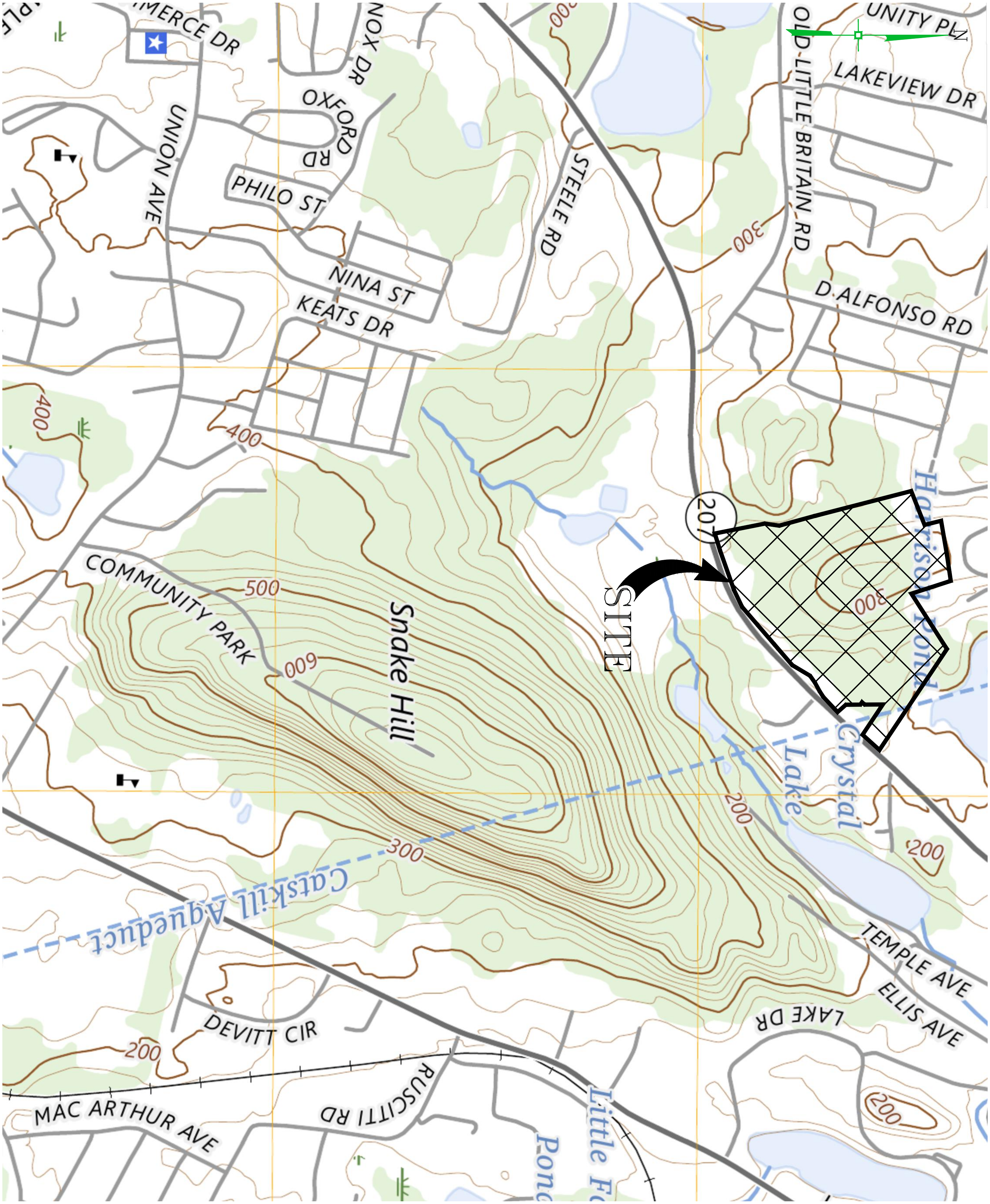

LOCATION MAP	BRITAIN WOODS NEW YORK STATE ROUTE 207 T/ & C/ OF NEWBURGH ORANGE COUNTY, NEW YORK	DATE: 02/06/26 SCALE: 1" = 1,000'	JOB # 1146.01 SHEET # F-1	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs	MONTGOMERY OFFICE 71 CLINTON STREET MONTGOMERY, NY 12549 Ph: (845) 457-7727 WWW.EP-PC.COM

Drawing Name: Z:\1146.01 – Britain Woods\SWM\SWM – new.dwg Date Printed: Feb 06, 2026, 10:54am

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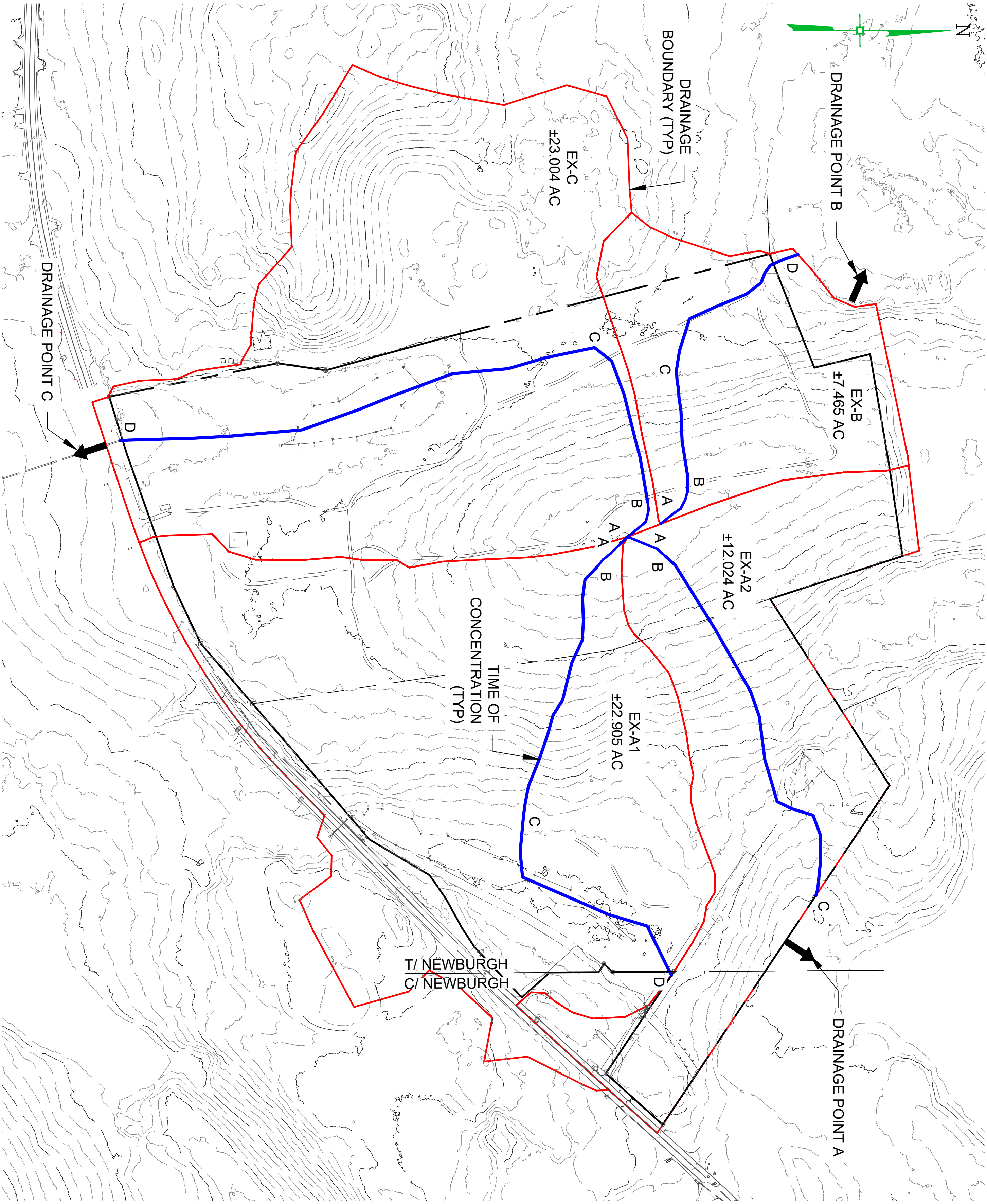

EXISTING DRAINAGE AREAS	BRITAIN WOODS NEW YORK STATE ROUTE 207 T/ & C/ OF NEWBURGH ORANGE COUNTY, NEW YORK	DATE: 02/06/26	JOB # 1146.01	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs	MONTGOMERY OFFICE 71 CLINTON STREET MONTGOMERY, NY 12549 Ph: (845) 457-7727 WWW.EP-PC.COM
		SCALE: 1" = 300'	SHEET # F-3.2C		

Drawing Name: Z:\1146.01 - Britain Woods\SWM\SWM - new.dwg   Date Printed: Feb 09, 2026, 3:45pm

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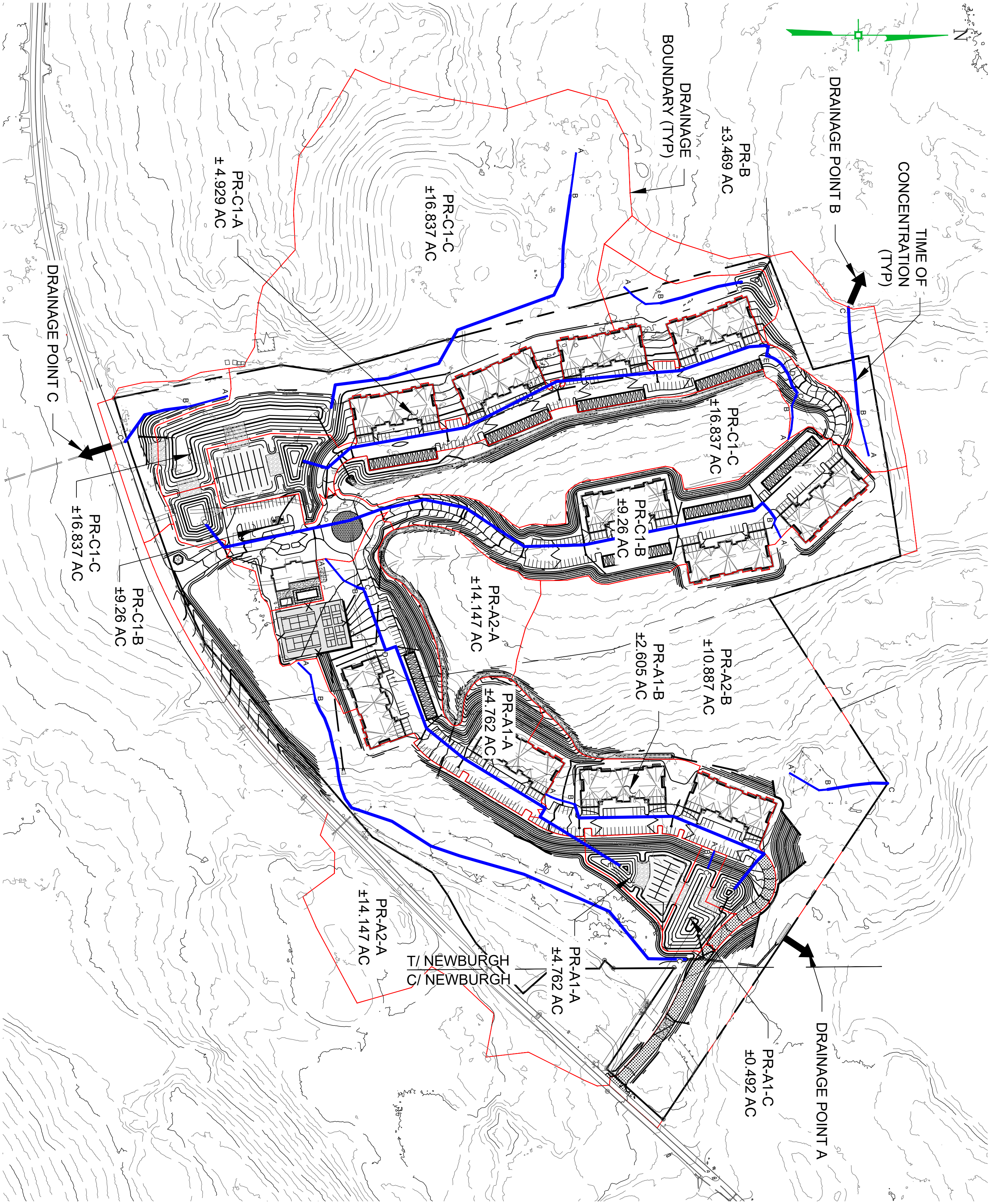

PROPOSED DRAINAGE AREAS	BRITAIN WOODS NEW YORK STATE ROUTE 207 T/ & C/ OF NEWBURGH ORANGE COUNTY, NEW YORK	DATE: 02/06/26 SCALE: 1" = 300'	JOB # 1146.01 SHEET # F-3.2D	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs

MONTGOMERY OFFICE
71 CLINTON STREET
MONTGOMERY, NY 12549
Ph: (845) 457-7727
WWW.EP-PC.COM

Drawing Name: Z:\1146.01 – Britain Woods\SWM\SWM – new.dwg Date Printed: Feb 09, 2026, 3:47pm

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Appendix 2

Soils Map and

Classifications

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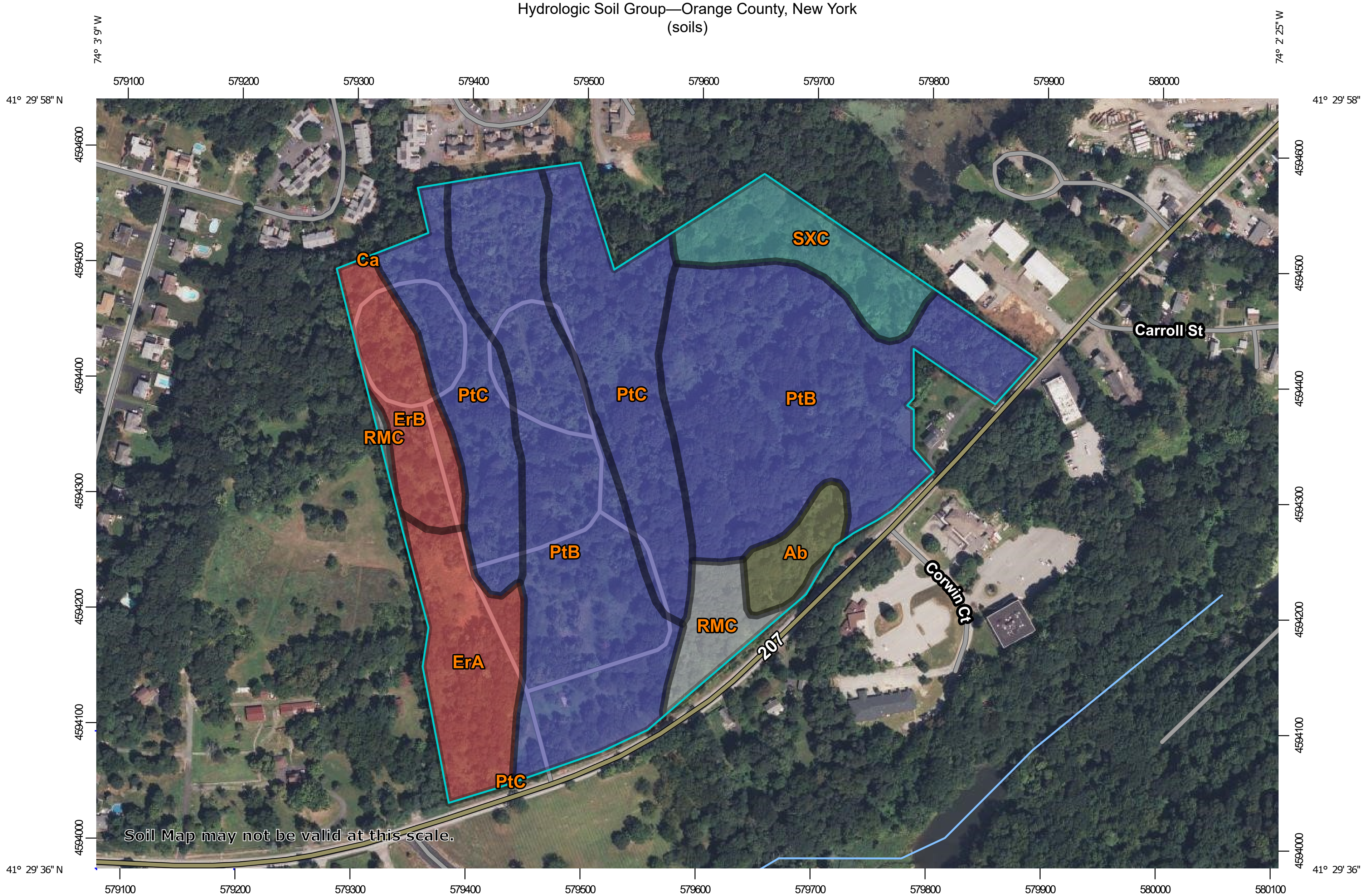
Hydrologic Soil Group—Orange County, New York
(soils)



Map Scale: 1:4,700 if printed on A landscape (11" x 8.5") sheet.

N

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, New York
Survey Area Data: Version 22, Aug 29, 2021

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

Date(s) aerial images were photographed: Aug 13, 2021—Aug 15, 2021

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ab	Alden silt loam	C/D	1.3	2.7%
Ca	Canandaigua silt loam	B/D	0.0	0.0%
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	D	4.1	8.5%
ErB	Erie gravelly silt loam, 3 to 8 percent slopes	D	3.0	6.3%
PtB	Pittsfield gravelly loam, 3 to 8 percent slopes	B	24.1	50.2%
PtC	Pittsfield gravelly loam, 8 to 15 percent slopes	B	10.6	22.0%
RMC	Rock outcrop-Farmington complex, rolling		1.7	3.6%
SXC	Swartswood and Mardin soils, sloping, very stony	C	3.2	6.6%
Totals for Area of Interest			**48.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX 3

CURVE NUMBER

CALCULATIONS

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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	09/01/23	02/09/26	1	15

PROJECT TITLE		LOCATION
Britian Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY	APPROVED BY	REF DRAWING(S)
ZS	**RW**	**DWG LAST REV. 02/09/2026**

1. Runoff curve number (CN) Existing Proposed Subarea: **EX-A1**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	1.859	184.04
B	Grass - Good Condition	61	0.599	36.54
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	16.539	909.65
C	Woods - Good Condition	70	0.047	3.29
D	Woods - Good Condition	77	3.858	297.07
		TOTAL =	22.90	1430.581

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{1430.581}{22.902}$$

CN (weighted) = 62.465 Use CN= **62**

2. Runoff

S = 6.13

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**2**	**15**

PROJECT TITLE
Britian Woods

LOCATION
Town of Newburgh / City of Newburgh

CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

1. Runoff curve number (CN)

Existing Proposed Subarea: **EX-A2**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.153	15.15
B	Grass - Good Condition	61	0.416	25.38
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.064	5.12
B	Woods - Good Condition	55	8.977	493.74
C	Woods - Good Condition	70	2.414	168.98
D	Woods - Good Condition	77	0.000	
		TOTAL =	12.02	708.358

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{708.358}{12.024}$$

CN (weighted) = 58.912 Use CN= **59**

2. Runoff

S = 6.95

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**3**	**15**

PROJECT TITLE
Britian Woods

LOCATION
Town of Newburgh / City of Newburgh

CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

1. Runoff curve number (CN) Existing Proposed Subarea: **EX-B**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.000	
B	Grass - Good Condition	61	0.000	
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	5.357	294.64
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	2.108	162.32
		TOTAL =	7.47	456.951

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{456.951}{7.465}$

CN (weighted) = 61.212 Use CN= **61**

2. Runoff

S = 6.39

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**4**	**15**

PROJECT TITLE		LOCATION
Britian Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

1. Runoff curve number (CN) — Existing / Proposed — Subarea: **EX-C**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.213	21.09
B	Grass - Good Condition	61	0.000	
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	5.448	435.84
B	Woods - Good Condition	55	8.041	442.26
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	9.302	716.25
		TOTAL =	23.00	1615.436

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{1615.436}{23.004}$$

CN (weighted) = 70.224   Use CN= **70**

2. Runoff

S = 4.29

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **5**	OF **15**
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing **[Proposed]** Subarea: **PR-A1-A**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	2.270	224.73
B	Grass - Good Condition	61	2.345	143.05
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.147	11.76
B	Woods - Good Condition	55	0.000	
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.000	
		TOTAL =	4.76	379.535

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{379.535}{4.762}$$

CN (weighted) = 79.701 Use CN= **80**

2. Runoff S = 2.50

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **6**	OF **15**
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing **Proposed** Subarea: **PR-A1-B**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	1.656	163.94
B	Grass - Good Condition	61	0.660	40.26
C	Grass - Good Condition	74	0.281	20.79
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	0.008	0.44
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.000	
		TOTAL =	2.61	225.438

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{225.438}{2.605}$$

CN (weighted) = 86.540 Use CN= **87**

2. Runoff S = 1.49

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**7**	**15**

PROJECT TITLE
Britian Woods

LOCATION
Town of Newburgh / City of Newburgh

CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

1. Runoff curve number (CN) — Existing | Proposed — Subarea: **PR-A1-C**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.000	
B	Grass - Good Condition	61	0.416	25.38
C	Grass - Good Condition	74	0.076	5.62
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	0.000	
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.000	
		TOTAL =	0.49	31

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{31}{0.492}$$

CN (weighted) = 63.008 Use CN= **63**

2. Runoff

S = 5.87

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **8**	OF **15**
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing **[Proposed]** Subarea: **PR-A2-A**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	2.143	212.16
B	Grass - Good Condition	61	2.239	136.58
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.843	67.44
B	Woods - Good Condition	55	6.404	352.22
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	2.520	194.04
		TOTAL =	14.15	962.436

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{962.436}{14.149}$$

CN (weighted) = 68.021 Use CN= **68**

2. Runoff S = 4.71

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**9**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

1. Runoff curve number (CN) Existing Proposed Subarea: **PR-A2-B**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.286	28.31
B	Grass - Good Condition	61	1.037	63.26
C	Grass - Good Condition	74	0.266	19.68
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	7.628	419.54
C	Woods - Good Condition	70	1.670	116.90
D	Woods - Good Condition	77	0.000	
		TOTAL =	10.89	647.695

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{647.695}{10.887}$

CN (weighted) = 59.493 Use CN= **59**

2. Runoff S = 6.95

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

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ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. 1146.01	DATE 09/01/23	REVISED 02/09/26	SHEET 10	OF 15
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing **[Proposed]** Subarea: **PR-B1**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.000	
B	Grass - Good Condition	61	0.116	7.08
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.363	29.04
B	Woods - Good Condition	55	0.005	0.28
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.650	50.05
		TOTAL =	1.13	86.441

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{86.441}{1.134}$$

CN (weighted) = 76.227 Use CN= **76**

2. Runoff S = 3.16

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**11**	**15**

PROJECT TITLE
Britian Woods

LOCATION
Town of Newburgh / City of Newburgh

CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

1. Runoff curve number (CN) Existing **Proposed** Subarea: **PR-B2**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.000	
B	Grass - Good Condition	61	0.079	4.82
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.040	3.20
B	Woods - Good Condition	55	1.520	83.60
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.696	53.59
		TOTAL =	2.34	145.211

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{145.211}{2.335}$$

CN (weighted) = 62.189 Use CN= **62**

2. Runoff

S = 6.13

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **12**	OF **15**
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing **Proposed** Subarea: **PR-C1-A**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	3.458	342.34
B	Grass - Good Condition	61	1.016	61.98
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.374	29.92
B	Woods - Good Condition	55	0.081	4.46
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.000	
		TOTAL =	4.93	438.693

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{438.693}{4.929}$$

CN (weighted) = 89.002 Use CN= **89**

2. Runoff S = 1.24

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

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CURVE NUMBER (CN) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

1. Runoff curve number (CN) Existing **Proposed** Subarea: **PR-C1-B**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	3.759	372.14
B	Grass - Good Condition	61	2.385	145.49
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.000	
B	Woods - Good Condition	55	0.010	0.55
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.000	
		TOTAL =	6.15	518.176

CN (weighted) = total product / total area = 518.176 / 6.154

CN (weighted) = 84.201 Use CN= **84**

2. Runoff S = 1.90

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

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CURVE NUMBER (CN) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

1. Runoff curve number (CN) Existing $\boxed{\text{Proposed}}$ Subarea: **PR-C1-C**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.044	4.36
B	Grass - Good Condition	61	1.265	77.17
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	7.035	562.80
B	Woods - Good Condition	55	2.893	159.12
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	5.600	431.20
		TOTAL =	16.84	1234.636

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{1234.636}{16.837}$$

CN (weighted) = 73.329 Use CN= **73**

2. Runoff

S = 3.70

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs	CURVE NUMBER (CN) WORKSHEET				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **15**	OF **15**
PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

1. Runoff curve number (CN) Existing $\boxed{\text{Proposed}}$ Subarea: **PR-C2**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious	99	0.169	16.73
B	Grass - Good Condition	61	0.070	4.27
C	Grass - Good Condition	74	0.000	
D	Grass - Good Condition	80	0.137	10.96
B	Woods - Good Condition	55	0.222	12.21
C	Woods - Good Condition	70	0.000	
D	Woods - Good Condition	77	0.517	39.81
		TOTAL =	1.12	83.98

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{83.98}{1.115}$$

CN (weighted) = 75.318 Use CN= **75**

2. Runoff

S = 3.33

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

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APPENDIX 4

TIME OF CONCENTRATION

CALCULATIONS

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**1**	**15**

PROJECT TITLE **Britian Woods**		LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing Proposed Area: **EX-A1**

1. Sheet Flow

		Segment ID				
		A-B				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L ≤ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.020				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.343				0.343

2. Shallow Concentrated Flow

		Segment ID				
		B-C	**C-D**			
Surface description (paved or unpaved)		Unpaved	Unpaved			
Flow length, L	ft	606.2	577.9			
Watercourse slope, s	ft/ft	0.148	0.020			
Average velocity, V (figure 3-1)	ft/s	6.206	2.282			
$T_t = \frac{L}{3600\,V}$	hr	0.027	0.070			0.097

3. Channel Flow

		Segment ID				
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.44

min = 26.40

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TIME OF CONCENTRATION (Tc) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing   Proposed   Area: **EX-A2**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L ≤ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.030				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.291				0.291

2. Shallow Concentrated Flow

	Unit					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	905.9				
Watercourse slope, s	ft/ft	0.143				
Average velocity, V (figure 3-1)	ft/s	6.101				
$T_t = \frac{L}{3600\,V}$	hr	0.041				0.041

3. Channel Flow

	Unit					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr = 0.33**

min = 19.80

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TIME OF CONCENTRATION (Tc) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
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Existing Proposed Area: **EX-B**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.036				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.271				0.271

2. Shallow Concentrated Flow

	Unit					
Segment ID		**B-C**	**C-D**			
Surface description (paved or unpaved)		Unpaved	Unpaved			
Flow length, L	ft	283.1	420.7			
Watercourse slope, s	ft/ft	0.143	0.057			
Average velocity, V (figure 3-1)	ft/s	6.102	3.846			
$T_t = \frac{L}{3600\,V}$	hr	0.013	0.030			0.043

3. Channel Flow

	Unit					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr = 0.31**

min = 18.60

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TIME OF CONCENTRATION (Tc) WORKSHEET

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PROJECT TITLE **Britian Woods**		LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing Proposed Area: **EX-C**

1. Sheet Flow

Segment ID	Units	**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.030				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.290				0.290

2. Shallow Concentrated Flow

Segment ID	Units	**B-C**	**C-D**			
Surface description (paved or unpaved)		Unpaved	Unpaved			
Flow length, L	ft	386.2	1,121.1			
Watercourse slope, s	ft/ft	0.120	0.018			
Average velocity, V (figure 3-1)	ft/s	5.594	2.171			
$T_t = \frac{L}{3600\,V}$	hr	0.019	0.143			0.163

3. Channel Flow

Segment ID	Units					
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.45

min = 27.00

TIME OF CONCENTRATION (Tc) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-A1-A**

1. Sheet Flow

	Units					
Segment ID		**A-B**				
Surface Description (table 3-1)		Grass: D				
Manning's roughness coeff., 'n' (table 3-1)		0.24				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.017				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.242				0.242

2. Shallow Concentrated Flow

	Units					
Segment ID		**B-C**	**C-D**			
Surface description (paved or unpaved)		Unpaved	Paved			
Flow length, L	ft	16.3	151.6			
Watercourse slope, s	ft/ft	0.124	0.080			
Average velocity, V (figure 3-1)	ft/s	5.682	5.745			
$T_t = \frac{L}{3600\,V}$	hr	0.001	0.007			0.008

3. Channel Flow

	Units					
Segment ID		**D-E**				
Cross sectional flow area, a	ft^2	1.23				
Wetted perimeter, p_w	ft	3.93				
Hydraulic radius, $r = a/p_w$	ft	0.31				
Channel slope, s	ft/ft	0.010				
Manning's roughness coefficient, n		0.035				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s	1.960				
Flow Length, L	ft	774.9				
$T_t = \frac{L}{3600\,V}$	hr	0.110				0.110

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.36

min = 21.60

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TIME OF CONCENTRATION (Tc) WORKSHEET

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PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing | **Proposed** | Area: **PR-A1-B**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Grass: D				
Manning's roughness coeff., 'n' (table 3-1)		0.24				
Flow length, L (total L ≤ 300 ft)	ft	72				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.040				
$T_t = \dfrac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.133				0.133

2. Shallow Concentrated Flow

	Unit					
Segment ID						
Surface description (paved or unpaved)						
Flow length, L	ft					
Watercourse slope, s	ft/ft					
Average velocity, V (figure 3-1)	ft/s					
$T_t = \dfrac{L}{3600\,V}$	hr					0.000

3. Channel Flow

	Unit					
Segment ID		**B-C**				
Cross sectional flow area, a	ft^2	1.23				
Wetted perimeter, p_w	ft	3.93				
Hydraulic radius, $r = a/p_w$	ft	0.31				
Channel slope, s	ft/ft	0.010				
Manning's roughness coefficient, n		0.035				
$V = \dfrac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s	1.960				
Flow Length, L	ft	587.0				
$T_t = \dfrac{L}{3600\,V}$	hr	0.083				0.083

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr = 0.22**

min = 13.20

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

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1146.01	09/01/23	02/09/26	7	15

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-A1-C**

1. Sheet Flow

	Units					
Segment ID		**A-B**	**B-C**			
Surface Description (table 3-1)		Grass: D	Grass: D			
Manning's roughness coeff., 'n' (table 3-1)		0.24	0.24			
Flow length, L (total L $\leq$ 300 ft)	ft	5	36			
Two-year 24-hour rainfall, P_2	in	3.50	3.50			
Land Slope, s	ft/ft	0.050	0.500			
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.014	0.028			0.042

2. Shallow Concentrated Flow

	Units					
Segment ID						
Surface description (paved or unpaved)						
Flow length, L	ft					
Watercourse slope, s	ft/ft					
Average velocity, V (figure 3-1)	ft/s					
$T_t = \frac{L}{3600\,V}$	hr					0.000

3. Channel Flow

	Units					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr =** **0.04**

min = **2.40**

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	TIME OF CONCENTRATION (Tc) WORKSHEET				
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PROJECT TITLE **Britian Woods**		LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-A2-A**

1. Sheet Flow

	Units					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.030				
$T_t = \dfrac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.291				0.291

2. Shallow Concentrated Flow

	Units					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	1,131.6				
Watercourse slope, s	ft/ft	0.038				
Average velocity, V (figure 3-1)	ft/s	3.145				
$T_t = \dfrac{L}{3600\,V}$	hr	0.100				0.100

3. Channel Flow

	Units					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \dfrac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \dfrac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.39

min = 23.40

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**9**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **[Proposed]** Area: **PR-A2-B**

1. Sheet Flow

	Units					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.023				
$T_t = \dfrac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.324				0.324

2. Shallow Concentrated Flow

	Units					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	140.3				
Watercourse slope, s	ft/ft	0.121				
Average velocity, V (figure 3-1)	ft/s	5.607				
$T_t = \dfrac{L}{3600\,V}$	hr	0.007				0.007

3. Channel Flow

	Units					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \dfrac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \dfrac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.33

min = 19.80

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**10**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-B1**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.059				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.222				0.222

2. Shallow Concentrated Flow

	Unit					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	193.9				
Watercourse slope, s	ft/ft	0.030				
Average velocity, V (figure 3-1)	ft/s	2.795				
$T_t = \frac{L}{3600\,V}$	hr	0.019				0.019

3. Channel Flow

	Unit					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr =** **0.24**

min = **14.40**

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	09/01/23	02/09/26	11	15

PROJECT TITLE	LOCATION
Britian Woods	**Town of Newburgh / City of Newburgh**

CALCULATED BY	APPROVED BY	REF DRAWING(S)
ZS	**RW**	**DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-B2**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.040				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.259				0.259

2. Shallow Concentrated Flow

	Unit					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Paved				
Flow length, L	ft	249.6				
Watercourse slope, s	ft/ft	0.208				
Average velocity, V (figure 3-1)	ft/s	9.277				
$T_t = \frac{L}{3600\,V}$	hr	0.007				0.007

3. Channel Flow

	Unit					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr = 0.27**

min = 16.20

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**12**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-C1-A**

1. Sheet Flow

	Unit					
Segment ID		**A-B**	**B-C**			
Surface Description (table 3-1)		Woods: L	Grass: D			
Manning's roughness coeff., 'n' (table 3-1)		0.40	0.24			
Flow length, L (total L ≤ 300 ft)	ft	79	21			
Two-year 24-hour rainfall, P_2	in	3.50	3.50			
Land Slope, s	ft/ft	0.093	0.500			
$T_t = \dfrac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.153	0.018			0.171

2. Shallow Concentrated Flow

	Unit					
Segment ID		**C-D**	**D-E**			
Surface description (paved or unpaved)		Unpaved	Paved			
Flow length, L	ft	57.2	73.1			
Watercourse slope, s	ft/ft	0.166	0.066			
Average velocity, V (figure 3-1)	ft/s	6.574	5.204			
$T_t = \dfrac{L}{3600\,V}$	hr	0.002	0.004			0.006

3. Channel Flow

	Unit					
Segment ID		**E-F**				
Cross sectional flow area, a	ft^2	1.23				
Wetted perimeter, p_w	ft	3.93				
Hydraulic radius, $r = a/p_w$	ft	0.31				
Channel slope, s	ft/ft	0.010				
Manning's roughness coefficient, n		0.035				
$V = \dfrac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s	1.960				
Flow Length, L	ft	1,162.9				
$T_t = \dfrac{L}{3600\,V}$	hr	0.165				0.165

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.34

min = 20.40

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**13**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **[Proposed]** Area: **PR-C1-B**

1. Sheet Flow

	Unit					
Segment ID		**A-B**				
Surface Description (table 3-1)		Grass: D				
Manning's roughness coeff., 'n' (table 3-1)		0.24				
Flow length, L (total L $\leq$ 300 ft)	ft	48				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.010				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.167				0.167

2. Shallow Concentrated Flow

	Unit					
Segment ID						
Surface description (paved or unpaved)						
Flow length, L	ft					
Watercourse slope, s	ft/ft					
Average velocity, V (figure 3-1)	ft/s					
$T_t = \frac{L}{3600\,V}$	hr					0.000

3. Channel Flow

	Unit					
Segment ID		**D-E**				
Cross sectional flow area, a	ft^2	1.23				
Wetted perimeter, p_w	ft	3.93				
Hydraulic radius, $r = a/p_w$	ft	0.31				
Channel slope, s	ft/ft	0.028				
Manning's roughness coefficient, n		0.035				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s	3.298				
Flow Length, L	ft	1,446.5				
$T_t = \frac{L}{3600\,V}$	hr	0.122				0.122

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.29

min = 17.40

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**14**	**15**

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **[Proposed]** Area: **PR-C1-C**

1. Sheet Flow

	Unit	Segment ID A-B				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.029				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.295				0.295

2. Shallow Concentrated Flow

	Unit	Segment ID B-C				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	863.1				
Watercourse slope, s	ft/ft	0.025				
Average velocity, V (figure 3-1)	ft/s	2.569				
$T_t = \frac{L}{3600\,V}$	hr	0.093				0.093

3. Channel Flow

	Unit	Segment ID				
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.39

min = 23.40

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	09/01/23	02/09/26	15	15

PROJECT TITLE **Britian Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Existing **Proposed** Area: **PR-C2**

1. Sheet Flow

	Units					
Segment ID		**A-B**				
Surface Description (table 3-1)		Woods: L				
Manning's roughness coeff., 'n' (table 3-1)		0.40				
Flow length, L (total L $\leq$ 300 ft)	ft	100				
Two-year 24-hour rainfall, P_2	in	3.50				
Land Slope, s	ft/ft	0.036				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr	0.271				0.271

2. Shallow Concentrated Flow

	Units					
Segment ID		**B-C**				
Surface description (paved or unpaved)		Unpaved				
Flow length, L	ft	174.9				
Watercourse slope, s	ft/ft	0.053				
Average velocity, V (figure 3-1)	ft/s	3.703				
$T_t = \frac{L}{3600\,V}$	hr	0.013				0.013

3. Channel Flow

	Units					
Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\,V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.28

min = 16.80

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Appendix 5

Water Quality Volume Calculations & Runoff Reduction Volume Calculations

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

WATER QUALITY VOLUME (WQ_v) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
103.0301	**09/01/23**	**01/13/26**	**1**	**2**

PROJECT TITLE **Britain Woods**	LOCATION **Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**
Stormwater Management Design Point Designation **SITE**	

$$WQ_v = (P * R_v * A) / (12)$$

Drainage Area	90% Rainfall Event # (P)	Total Drainage Area (**A**)	Total Impervious Area (**I**)	R_v (0.05 + 0.009*I%)	WQ_v Required (Ac-ft)	WQv Required (ft^3)
SITE	1.40	65.40	11.55	0.209	1.594	69,434.6

HSG	Area (Ac.)	%	S
A	0.00	0%	0.55
B	41.55	64%	0.40
C	2.46	4%	0.30
D	21.39	33%	0.20

Minimum RRv = (P * 0.95 * S * I) / (12)

P =	1.40	
S =	0.33	
I =	11.55	
$RR_{v\ MIN}$	**0.424**	Ac-ft

Green Technology	Implemented ? Yes	Implemented ? No	Drainage Area Reduction	Contributing Drainage Area Reduction	Total Drainage Area Reduction	Total Impervious Area Reduction
Area Reduction Practices						
Conservation of Natural Areas	☐	☑	-	-	-	-
Sheet Flow to Riparian Buffers or Filter Strips	☐	☑	-	-	-	-
Tree Planting / Tree Box	☐	☑	-	-	-	-
		Subtotals			0.00	0.00

	P	A	I	R_v	WQ_v	$RR_{v\ AREA}$
Revised WQ_v after Area Deductions	1.40	65.40	11.55	0.209	1.594	**0.000**

Disconnection of Rooftop Runoff — Impervious Area Reduction: 0.00 Acres

	P	A	I	R_v	WQ_v	$RR_{v\ IMP}$
Revised WQ_v after Impervious Disconnect	1.40	65.40	11.55	0.209	1.594	**0.000**

Source Control WQ_v Treatment Practices	Yes	No	WQ_v	$RR_{v\ SC}$*	(A) Reduction	(I) Reduction
Vegetated Open Swales	☐	☑	-	-	-	-
Rain Garden	☐	☑	-	-	-	-
Green Roof	☐	☑	-	-	-	-
Stormwater Planters	☐	☑	-	-	-	-
Rain Tanks / Cisterns	☐	☑	-	-	-	-
Porous Pavement	☐	☑	-	-	-	-
Standard SMP's with RRv Capacity						
Infiltration	☐	☑	-	-	-	-
Bio-Retention	☑	☐	0.658	0.438	9.69	5.73
Dry Swale (Open Channel)	☐	☑	-	-	-	-
		Subtotals	0.658	**0.438**	9.69	5.73

Is The Total RR_v ($RR_{v\ AREA}$ + $RR_{v\ IMP}$ + $RR_{v\ SC}$)	**0.438**	$\geq RR_{v\ MIN}$?	**0.424**	YES

	P	A	I	R_v	WQ_v (Ac-ft)	WQ_v (ft^3)
WQ_v Required by Standard Practices	1.40	55.71	5.82	0.144	0.936	40,793.0

** For Source Control (if used) RRv calculations see attached Green Technology RRv Calculation Sheets*

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET				
	WO. NO.	DATE	REVISED	SHEET	OF
	103.0301	**09/01/23**	**1/13/2026**	**2**	**2**

PROJECT TITLE		LOCATION
Britain Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY	APPROVED BY	Stormwater Management Design Point Designation
ZS	**RW**	**SITE**

BIO-RETENTION

Requirement Checks	Yes	No	Notes:
Runoff enters as sheet flow or through a dissipator	☐	☑	Plunge pool forebay provided for pretreatment
Pretreatment provided	☑	☐	
Design Complies with Required Elements of Practice	☑	☐	
Infiltration designed to exfiltrate through bottom of practice only?	☐	☑	Underdrains are provided for filtration bioretention.

Drainage Area (Ac.)	9.691	
Impervious Area (Ac.)	5.728	
Rainfall Event # (P)	1.40	
Rv	0.582	
$WQv_{REQ'D}$	0.658	
A_f (ft^2)	19,878.0	Surface area of filter bed
d_t (ft)	2.5	depth of filter bed
k (ft/day)	1.0	coefficient of permability of filter media
h_f (ft)	0.50	average height of water above filter bed
t_f (days)	2.00	design filter bed drain time
V_f (ft^3)	47,707.2	Design volume of filter (WQ_v Provided)
$V_f > WQv_{REQ'D}$	YES	
HSG Soil Classification	D	

RRv Reduction Allowance

Infiltration Bioretention F-4	100%
Filtration Bioretention F-5	40%*

*For practices with underdrains that require sizing the surface area of the filter bed using Darcy's Law,the designer can elect to oversize the surface area of the filter bed to provide additional storage volume and receive additional RRv credit up to 100% of the WQv required.

RRv 0.438

WQv Req.= 28661.21 WQv Prov. = 47,707.20

Increase Factor = 28,058.40/26016.79 = 1.665

Revised RRv Allowance = 1.665 * 40% = 66.58%

APPENDIX 6

HYDROGRAPH SUMMARIES &

DIAGRAMS

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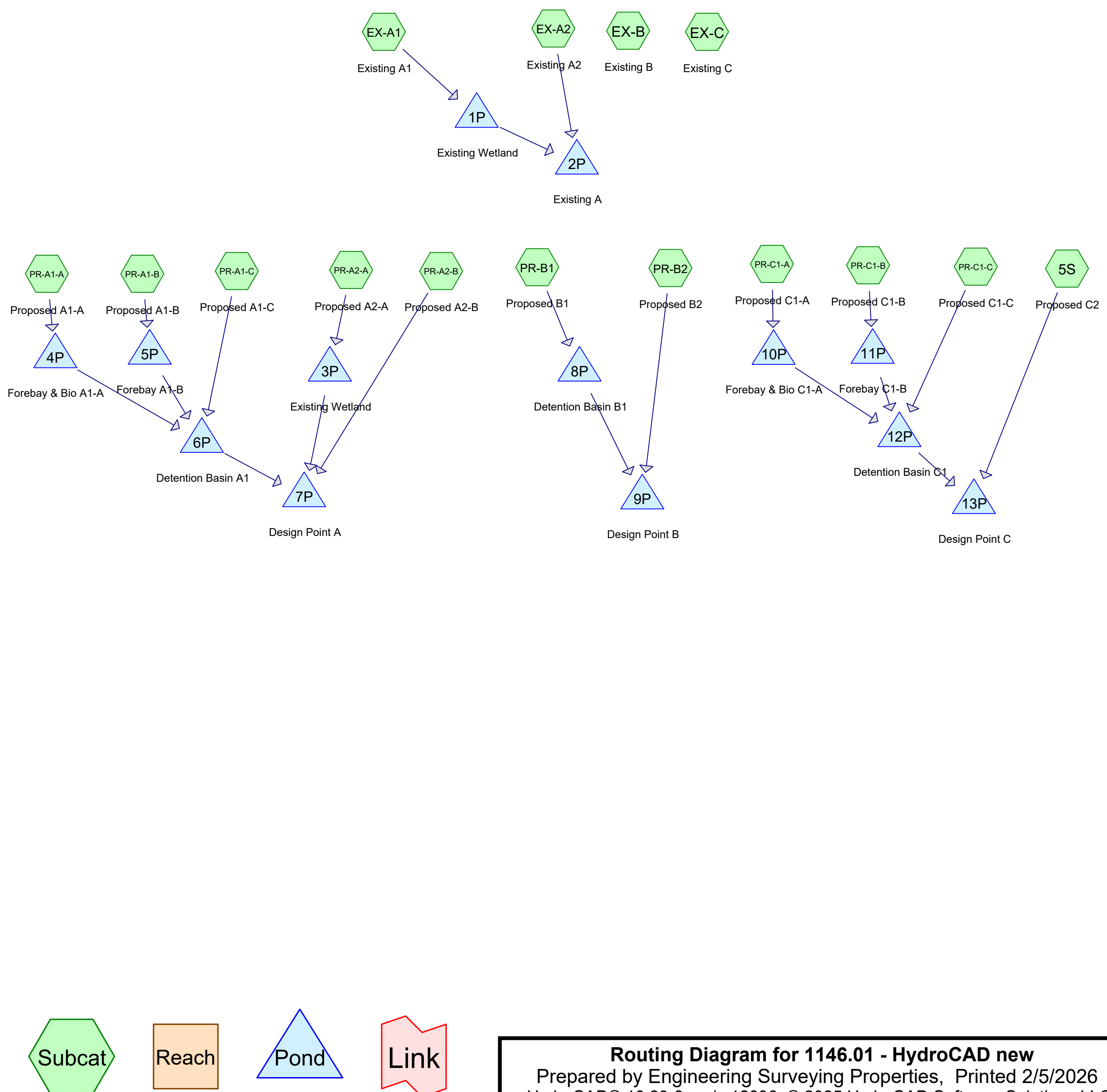

Routing Diagram for 1146.01 - HydroCAD new
Prepared by Engineering Surveying Properties, Printed 2/5/2026
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Events for Subcatchment EX-A1: Existing A1

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	1.88	0.480	0.25
10-yr	4.70	16.89	2.399	1.26
25-yr	5.91	28.63	3.873	2.03
100-yr	**8.38**	**54.66**	**7.354**	**3.85**

Events for Subcatchment EX-A2: Existing A2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.58	0.180	0.18
10-yr	4.70	8.08	1.070	1.07
25-yr	5.91	14.62	1.785	1.78
100-yr	**8.38**	**29.41**	**3.512**	**3.51**

Events for Subcatchment EX-B: Existing B

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.54	0.141	0.23
10-yr	4.70	6.03	0.742	1.19
25-yr	5.91	10.42	1.210	1.95
100-yr	**8.38**	**20.20**	**2.325**	**3.74**

Events for Subcatchment EX-C: Existing C

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	6.20	0.966	0.50
10-yr	4.70	26.48	3.483	1.82
25-yr	5.91	40.10	5.241	2.73
100-yr	**8.38**	**68.57**	**9.187**	**4.79**

Events for Subcatchment PR-A1-A: Proposed A1-A

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	3.23	0.359	0.91
10-yr	4.70	8.92	1.010	2.55
25-yr	5.91	12.36	1.428	3.60
100-yr	**8.38**	**19.12**	**2.327**	**5.86**

Events for Subcatchment PR-A1-B: Proposed A1-B

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	3.49	0.288	1.33
10-yr	4.70	7.63	0.692	3.19
25-yr	5.91	9.99	0.939	4.32
100-yr	**8.38**	**14.41**	**1.455**	**6.70**

Events for Subcatchment PR-A1-C: Proposed A1-C

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.07	0.011	0.28
10-yr	4.70	0.73	0.054	1.32
25-yr	5.91	1.20	0.087	2.11
100-yr	**8.38**	**2.20**	**0.163**	**3.97**

Events for Subcatchment PR-A2-A: Proposed A2-A

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	3.20	0.510	0.43
10-yr	4.70	15.84	1.968	1.67
25-yr	5.91	24.48	3.009	2.55
100-yr	**8.38**	**42.76**	**5.372**	**4.56**

Events for Subcatchment PR-A2-B: Proposed A2-B

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.53	0.163	0.18
10-yr	4.70	7.32	0.969	1.07
25-yr	5.91	13.24	1.616	1.78
100-yr	**8.38**	**26.63**	**3.180**	**3.51**

Events for Subcatchment PR-B1: Proposed B1

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.75	0.071	0.76
10-yr	4.70	2.29	0.216	2.29
25-yr	5.91	3.24	0.312	3.30
100-yr	**8.38**	**5.13**	**0.520**	**5.50**

Events for Subcatchment PR-B2: Proposed B2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.21	0.049	0.25
10-yr	4.70	2.15	0.245	1.26
25-yr	5.91	3.65	0.395	2.03
100-yr	**8.38**	**6.93**	**0.750**	**3.85**

Events for Subcatchment PR-C1-A: Proposed C1-A

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	5.90	0.603	1.47
10-yr	4.70	12.46	1.390	3.38
25-yr	5.91	16.17	1.864	4.54
100-yr	**8.38**	**23.18**	**2.851**	**6.94**

Events for Subcatchment PR-C1-B: Proposed C1-B

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	6.42	0.612	1.19
10-yr	4.70	15.00	1.537	3.00
25-yr	5.91	19.95	2.109	4.11
100-yr	**8.38**	**29.41**	**3.313**	**6.46**

Events for Subcatchment PR-C1-C: Proposed C1-C

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	6.71	0.873	0.62
10-yr	4.70	23.88	2.873	2.05
25-yr	5.91	34.96	4.229	3.01
100-yr	**8.38**	**57.56**	**7.223**	**5.15**

Events for Subcatchment 5S: Proposed C2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.60	0.63	0.066	0.71
10-yr	4.70	2.01	0.205	2.21
25-yr	5.91	2.88	0.298	3.21
100-yr	**8.38**	**4.62**	**0.500**	**5.39**

Events for Pond 1P: Existing Wetland

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	1.88	0.00	224.85	28,370
10-yr	16.89	2.93	225.55	57,892
25-yr	28.63	16.02	225.65	63,519
100-yr	**54.66**	**50.04**	**225.83**	**73,694**

Events for Pond 2P: Existing A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	0.58	0.58	**0.00**	**0.000**
10-yr	8.08	8.08	0.00	0.000
25-yr	22.33	22.33	0.00	0.000
100-yr	**72.00**	**72.00**	0.00	0.000

Events for Pond 3P: Existing Wetland

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	3.20	0.00	224.89	29,652
10-yr	15.84	4.66	225.22	42,136
25-yr	24.48	10.81	225.44	52,307
100-yr	**42.76**	**19.00**	**226.00**	**84,869**

Events for Pond 4P: Forebay & Bio A1-A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	3.23	0.14	228.51	30,019
10-yr	8.92	6.21	228.63	31,764
25-yr	12.36	11.62	228.70	32,761
100-yr	**19.12**	**16.45**	**228.94**	**36,486**

Events for Pond 5P: Forebay A1-B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	3.49	3.45	228.59	11,920
10-yr	7.63	7.57	228.65	12,131
25-yr	9.99	9.93	228.68	12,233
100-yr	**14.41**	**14.34**	**228.92**	**13,117**

Events for Pond 6P: Detention Basin A1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	3.51	0.07	225.03	11,989
10-yr	9.60	1.05	228.41	39,743
25-yr	18.54	5.80	228.58	41,757
100-yr	**30.51**	**21.12**	**228.92**	**45,957**

Events for Pond 7P: Design Point A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	0.59	0.59	**0.00**	**0.000**
10-yr	7.39	7.39	0.00	0.000
25-yr	21.79	21.79	0.00	0.000
100-yr	**58.18**	**58.18**	0.00	0.000

Events for Pond 8P: Detention Basin B1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	0.75	0.27	264.95	675
10-yr	2.29	1.55	266.09	2,077
25-yr	3.24	3.07	266.15	2,187
100-yr	**5.13**	**5.09**	**266.22**	**2,308**

Events for Pond 9P: Design Point B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	0.48	0.48	**0.00**	**0.000**
10-yr	3.38	3.38	0.00	0.000
25-yr	6.71	6.71	0.00	0.000
100-yr	**11.99**	**11.99**	0.00	0.000

Events for Pond 10P: Forebay & Bio C1-A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	5.90	0.25	265.52	51,237
10-yr	12.46	8.51	265.66	54,551
25-yr	16.17	14.61	265.73	56,166
100-yr	**23.18**	**21.98**	**265.97**	**62,104**

Events for Pond 11P: Forebay C1-B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	6.42	6.24	264.88	42,494
10-yr	15.00	14.77	264.98	43,373
25-yr	19.95	19.73	265.03	43,800
100-yr	**29.41**	**29.18**	**265.97**	**52,727**

Events for Pond 12P: Detention Basin C1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	12.62	0.43	261.93	56,312
10-yr	42.20	18.40	263.53	97,064
25-yr	67.66	34.36	264.16	115,858
100-yr	**106.73**	**46.95**	**265.97**	**179,909**

Events for Pond 13P: Design Point C

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1-yr	0.82	0.82	**0.00**	**0.000**
10-yr	18.91	18.91	0.00	0.000
25-yr	35.51	35.51	0.00	0.000
100-yr	**48.50**	**48.50**	0.00	0.000

APPENDIX 7

1-YEAR DESIGN STORM

HYDROGRAPHS

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 5
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment5S: Proposed C2 Runoff Area=1.115 ac 15.16% Impervious Runoff Depth=0.71"
Tc=16.8 min CN=75 Runoff=0.63 cfs 0.066 af

SubcatchmentEX-A1: Existing A1 Runoff Area=22.902 ac 8.12% Impervious Runoff Depth=0.25"
Tc=26.4 min CN=62 Runoff=1.88 cfs 0.480 af

SubcatchmentEX-A2: Existing A2 Runoff Area=12.024 ac 1.27% Impervious Runoff Depth=0.18"
Tc=19.8 min CN=59 Runoff=0.58 cfs 0.180 af

SubcatchmentEX-B: Existing B Runoff Area=7.465 ac 0.00% Impervious Runoff Depth=0.23"
Tc=18.6 min CN=61 Runoff=0.54 cfs 0.141 af

SubcatchmentEX-C: Existing C Runoff Area=23.004 ac 0.93% Impervious Runoff Depth=0.50"
Tc=27.0 min CN=70 Runoff=6.20 cfs 0.966 af

SubcatchmentPR-A1-A: Proposed A1-A Runoff Area=4.762 ac 47.67% Impervious Runoff Depth=0.91"
Tc=21.6 min CN=79 Runoff=3.23 cfs 0.359 af

SubcatchmentPR-A1-B: Proposed A1-B Runoff Area=2.605 ac 63.57% Impervious Runoff Depth=1.33"
Tc=13.2 min CN=86 Runoff=3.49 cfs 0.288 af

SubcatchmentPR-A1-C: Proposed A1-C Runoff Area=0.492 ac 0.00% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=63 Runoff=0.07 cfs 0.011 af

SubcatchmentPR-A2-A: Proposed A2-A Runoff Area=14.149 ac 15.15% Impervious Runoff Depth=0.43"
Tc=23.4 min CN=68 Runoff=3.20 cfs 0.510 af

SubcatchmentPR-A2-B: Proposed A2-B Runoff Area=10.887 ac 2.63% Impervious Runoff Depth=0.18"
Tc=19.8 min CN=59 Runoff=0.53 cfs 0.163 af

SubcatchmentPR-B1: Proposed B1 Runoff Area=1.134 ac 0.00% Impervious Runoff Depth=0.76"
Tc=14.4 min CN=76 Runoff=0.75 cfs 0.071 af

SubcatchmentPR-B2: Proposed B2 Runoff Area=2.335 ac 0.00% Impervious Runoff Depth=0.25"
Tc=16.2 min CN=62 Runoff=0.21 cfs 0.049 af

SubcatchmentPR-C1-A: Proposed C1-A Runoff Area=4.929 ac 70.16% Impervious Runoff Depth=1.47"
Tc=20.4 min CN=88 Runoff=5.90 cfs 0.603 af

SubcatchmentPR-C1-B: Proposed C1-B Runoff Area=6.154 ac 61.08% Impervious Runoff Depth=1.19"
Tc=17.4 min CN=84 Runoff=6.42 cfs 0.612 af

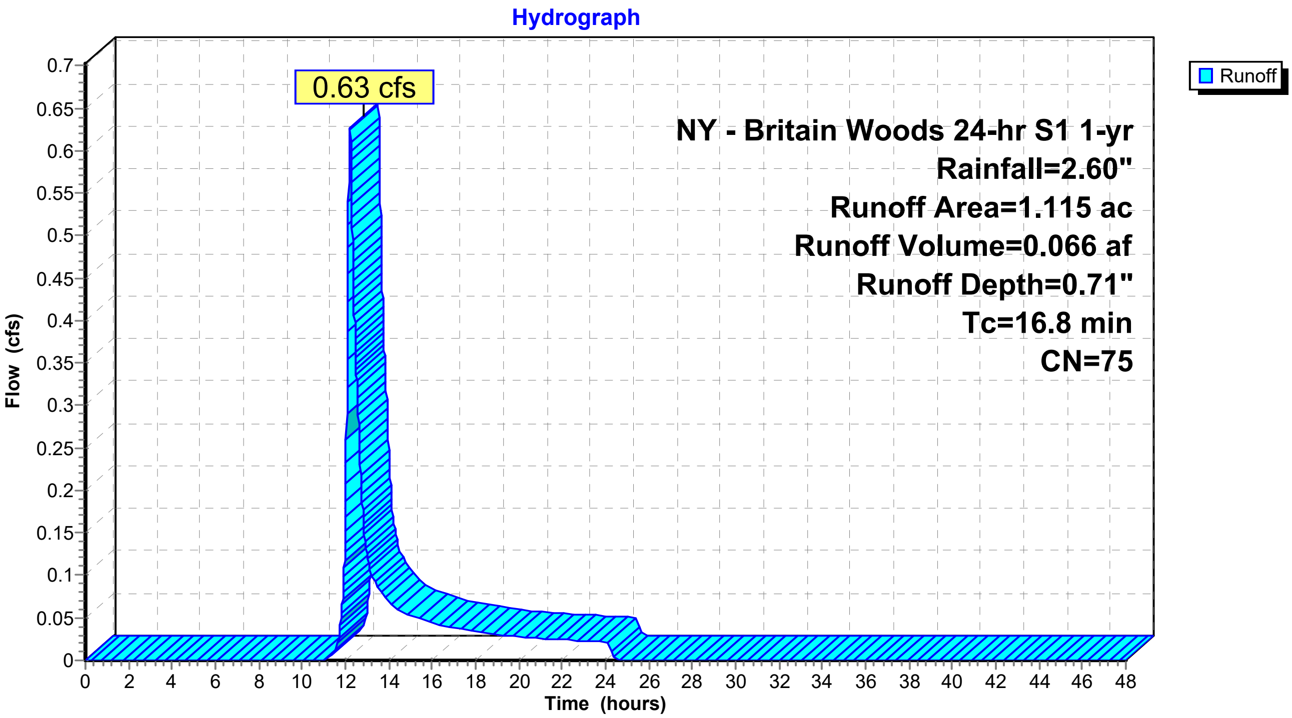
SubcatchmentPR-C1-C: Proposed C1-C Runoff Area=16.837 ac 0.26% Impervious Runoff Depth=0.62"
Tc=23.4 min CN=73 Runoff=6.71 cfs 0.873 af

Pond 1P: Existing Wetland Peak Elev=224.85' Storage=28,370 cf Inflow=1.88 cfs 0.480 af
Outflow=0.00 cfs 0.000 af

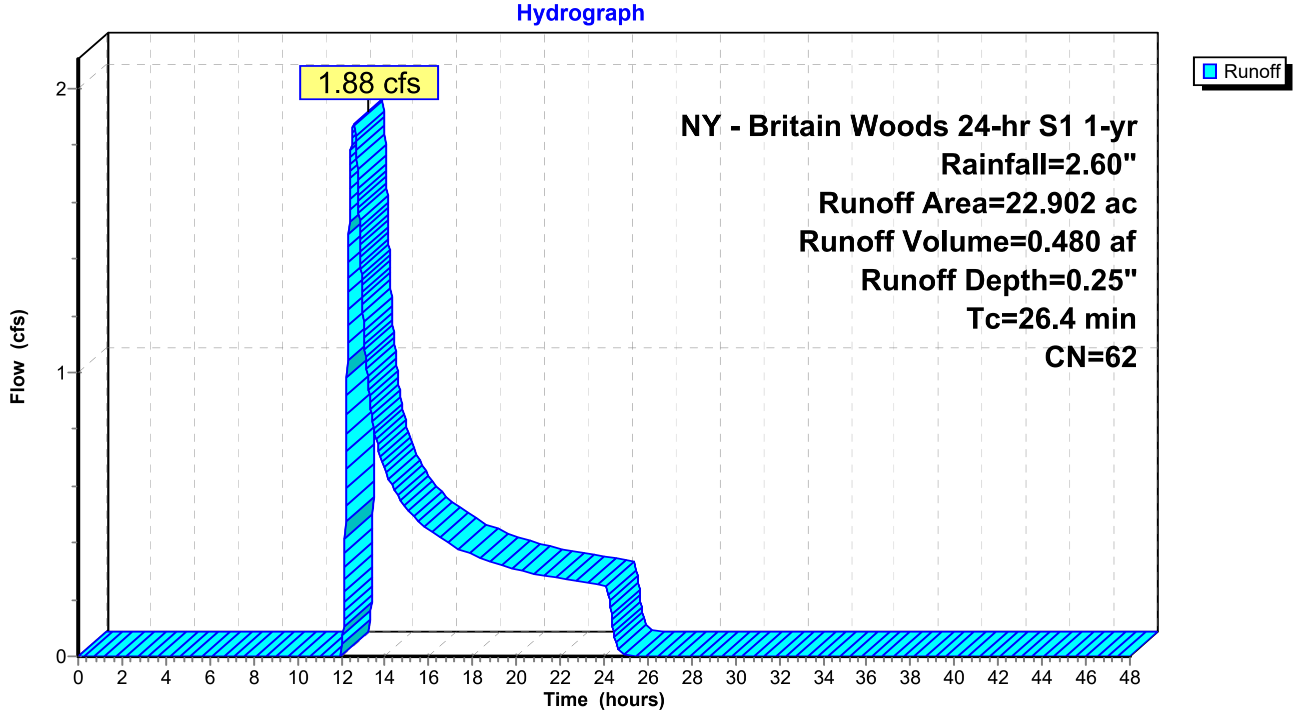
Pond 2P: Existing A		Inflow=0.58 cfs 0.180 af Primary=0.58 cfs 0.180 af
Pond 3P: Existing Wetland	Peak Elev=224.89' Storage=29,652 cf	Inflow=3.20 cfs 0.510 af Outflow=0.00 cfs 0.000 af
Pond 4P: Forebay & Bio A1-A	Peak Elev=228.51' Storage=30,019 cf	Inflow=3.23 cfs 0.359 af Outflow=0.14 cfs 0.054 af
Pond 5P: Forebay A1-B	Peak Elev=228.59' Storage=11,920 cf	Inflow=3.49 cfs 0.288 af Outflow=3.45 cfs 0.288 af
Pond 6P: Detention Basin A1	Peak Elev=225.03' Storage=11,989 cf	Inflow=3.51 cfs 0.353 af Outflow=0.07 cfs 0.205 af
Pond 7P: Design Point A		Inflow=0.59 cfs 0.367 af Primary=0.59 cfs 0.367 af
Pond 8P: Detention Basin B1	Peak Elev=264.95' Storage=675 cf	Inflow=0.75 cfs 0.071 af Outflow=0.27 cfs 0.071 af
Pond 9P: Design Point B		Inflow=0.48 cfs 0.120 af Primary=0.48 cfs 0.120 af
Pond 10P: Forebay & Bio C1-A	Peak Elev=265.52' Storage=51,237 cf	Inflow=5.90 cfs 0.603 af Outflow=0.25 cfs 0.128 af
Pond 11P: Forebay C1-B	Peak Elev=264.88' Storage=42,494 cf	Inflow=6.42 cfs 0.612 af Outflow=6.24 cfs 0.612 af
Pond 12P: Detention Basin C1	Peak Elev=261.93' Storage=56,312 cf	Inflow=12.62 cfs 1.614 af Outflow=0.43 cfs 1.128 af
Pond 13P: Design Point C		Inflow=0.82 cfs 1.194 af Primary=0.82 cfs 1.194 af

Total Runoff Area = 130.794 ac Runoff Volume = 5.373 af Average Runoff Depth = 0.49"
87.76% Pervious = 114.784 ac 12.24% Impervious = 16.010 ac

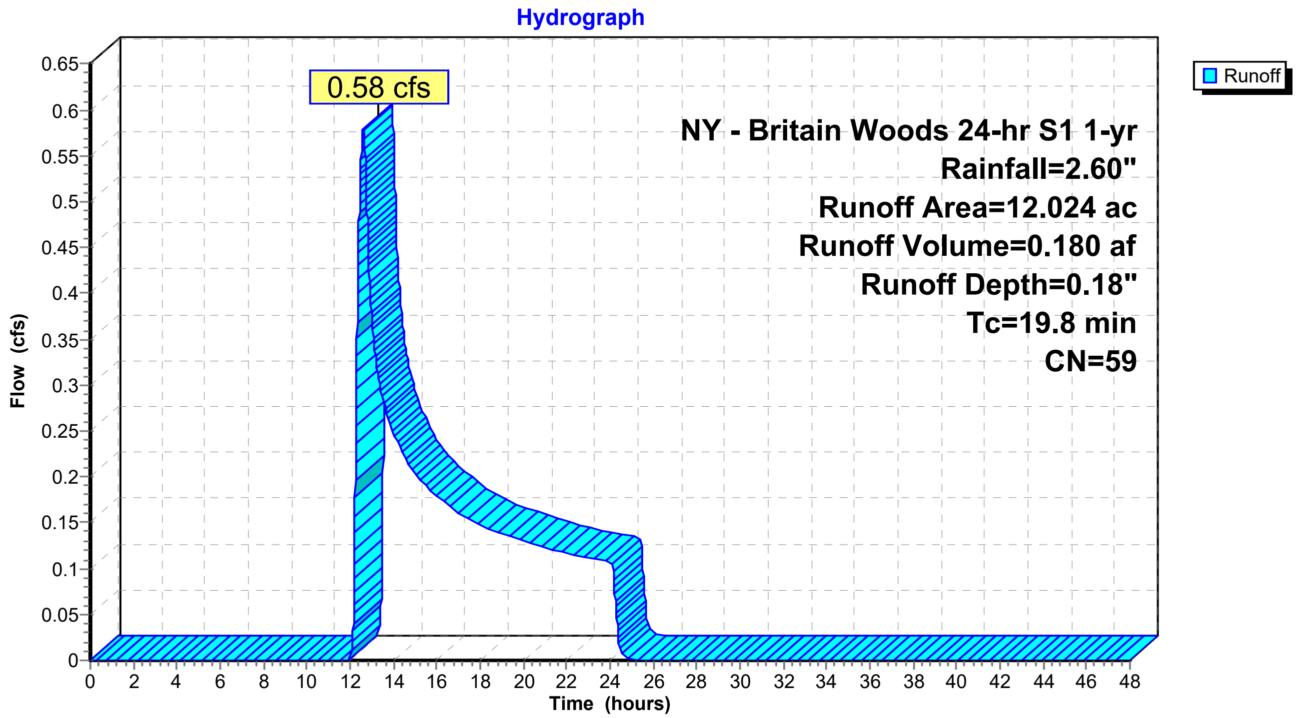
Subcatchment 5S: Proposed C2



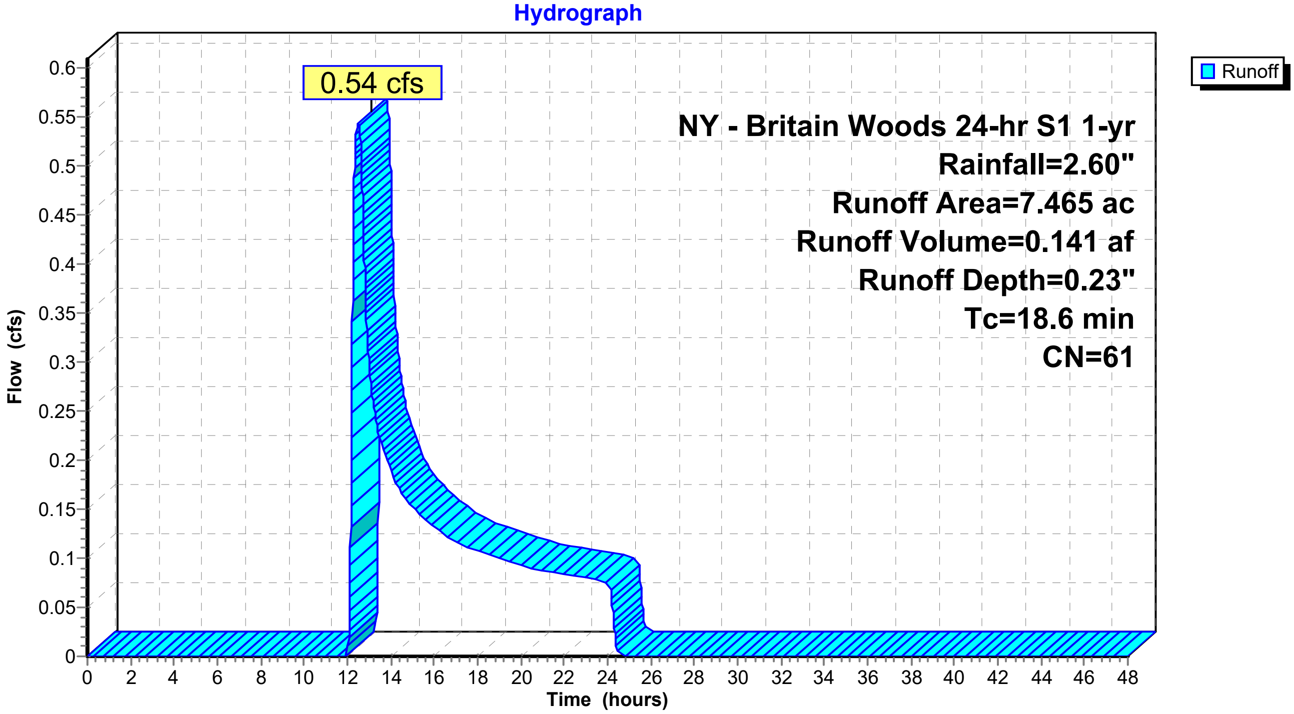
Subcatchment EX-A1: Existing A1



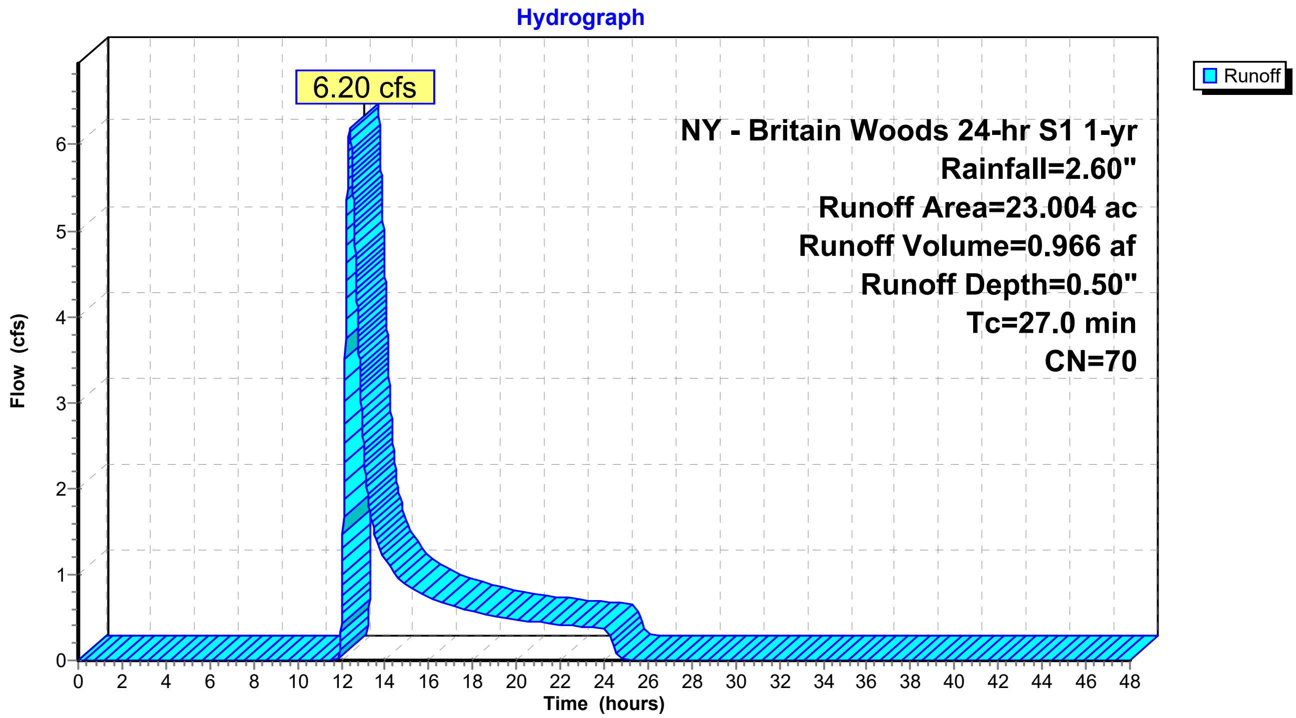
Subcatchment EX-A2: Existing A2



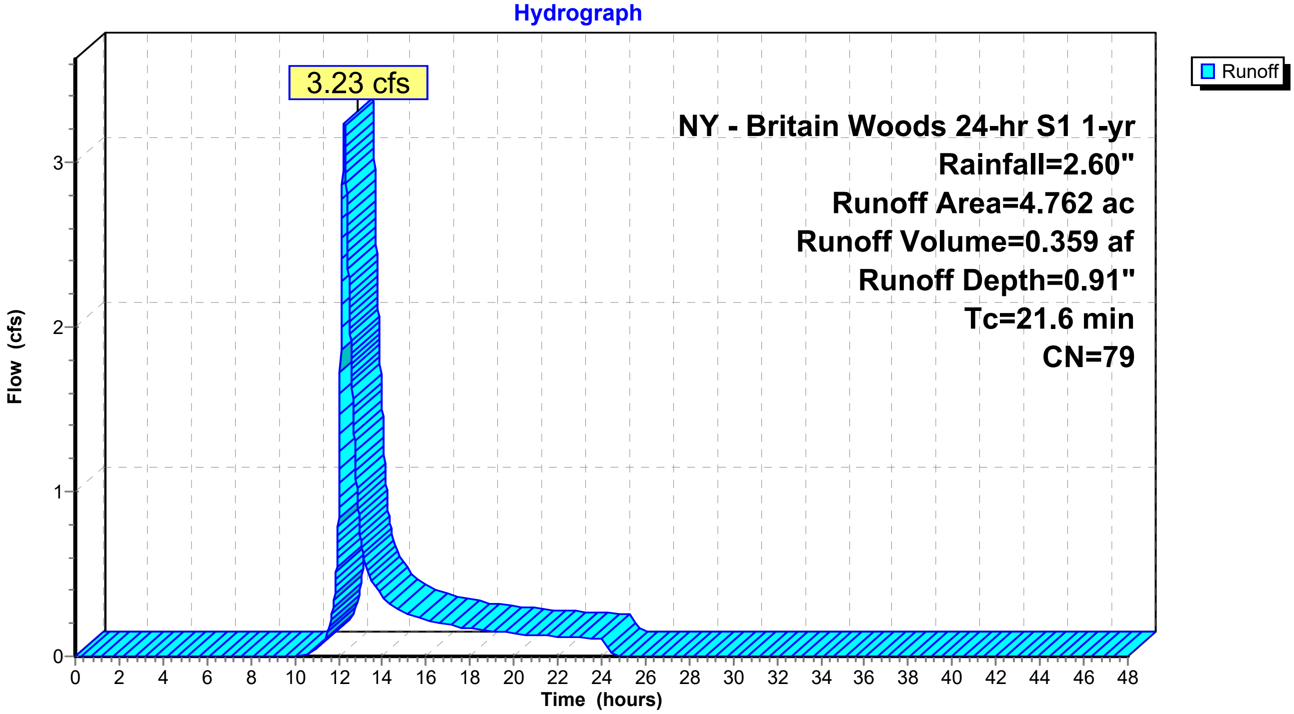
Subcatchment EX-B: Existing B



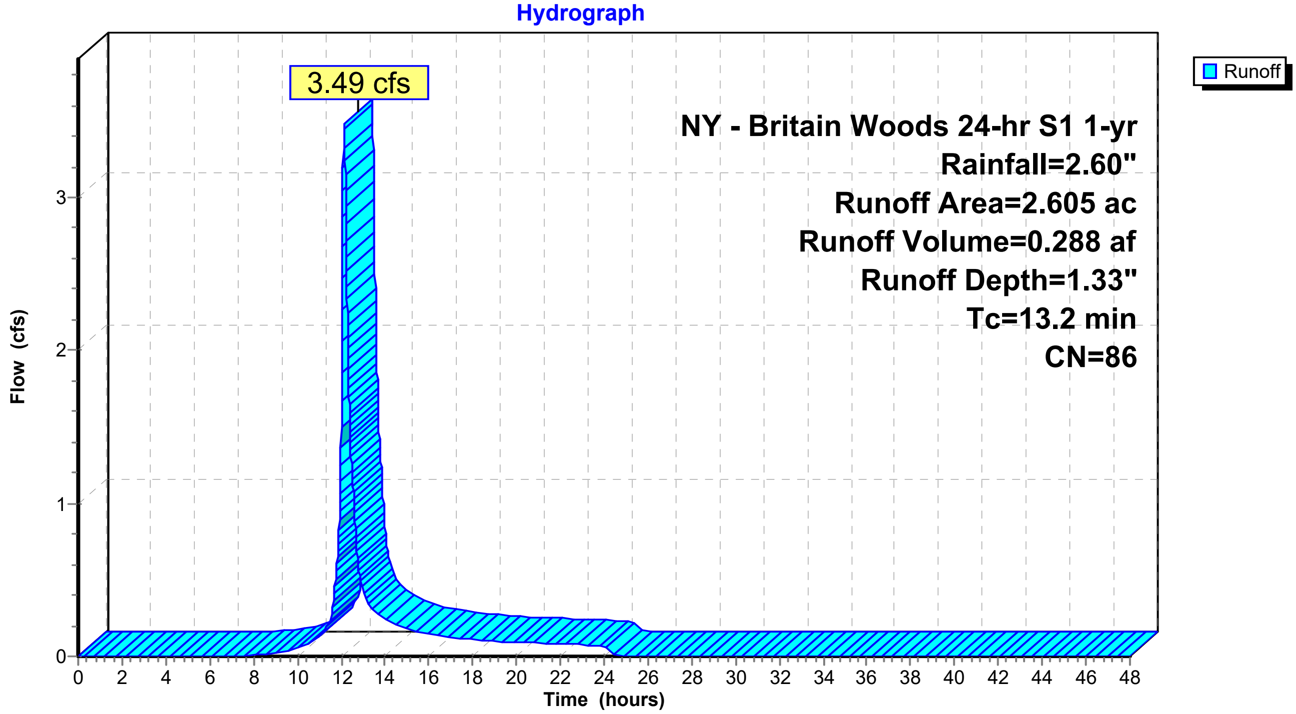
Subcatchment EX-C: Existing C



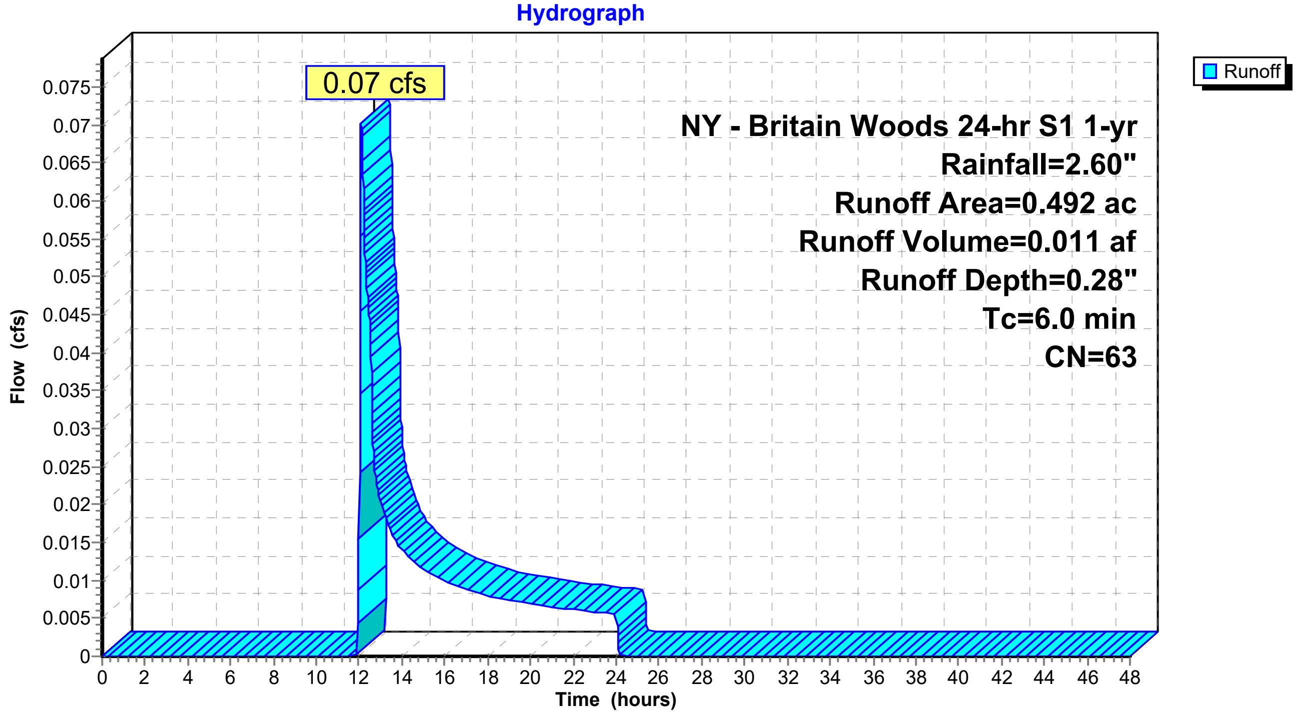
Subcatchment PR-A1-A: Proposed A1-A



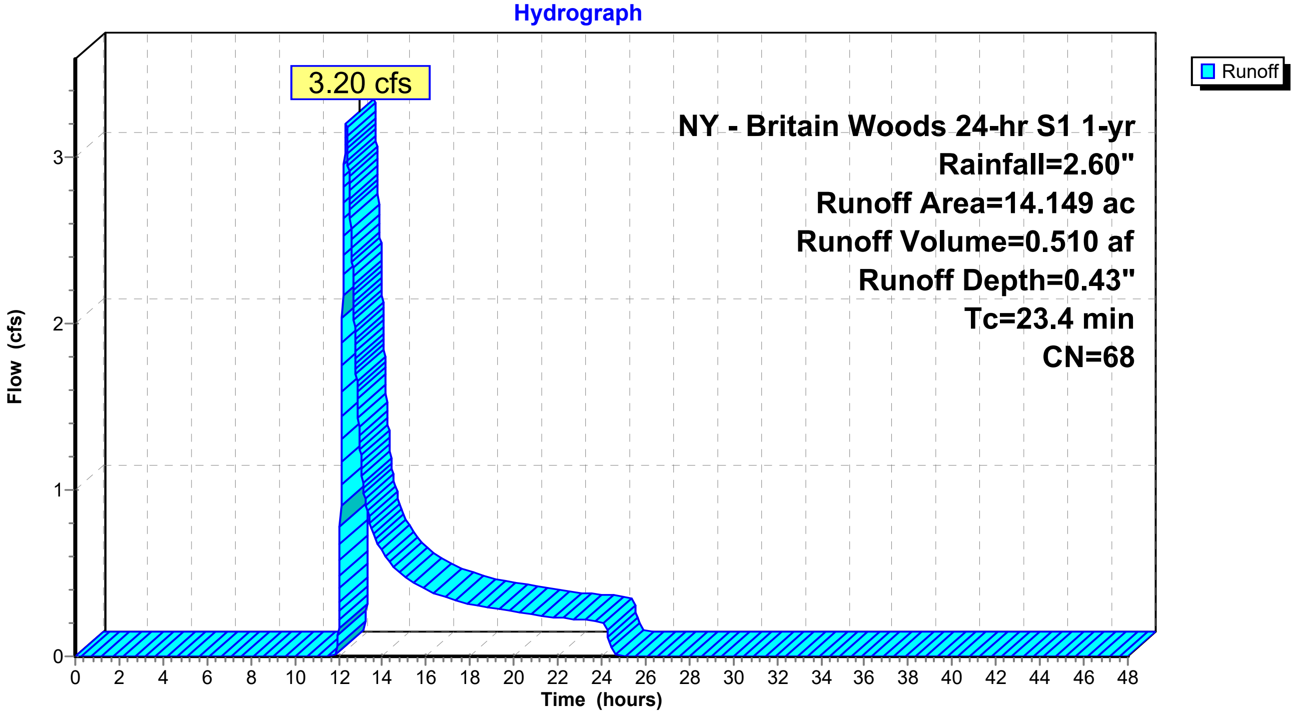
Subcatchment PR-A1-B: Proposed A1-B



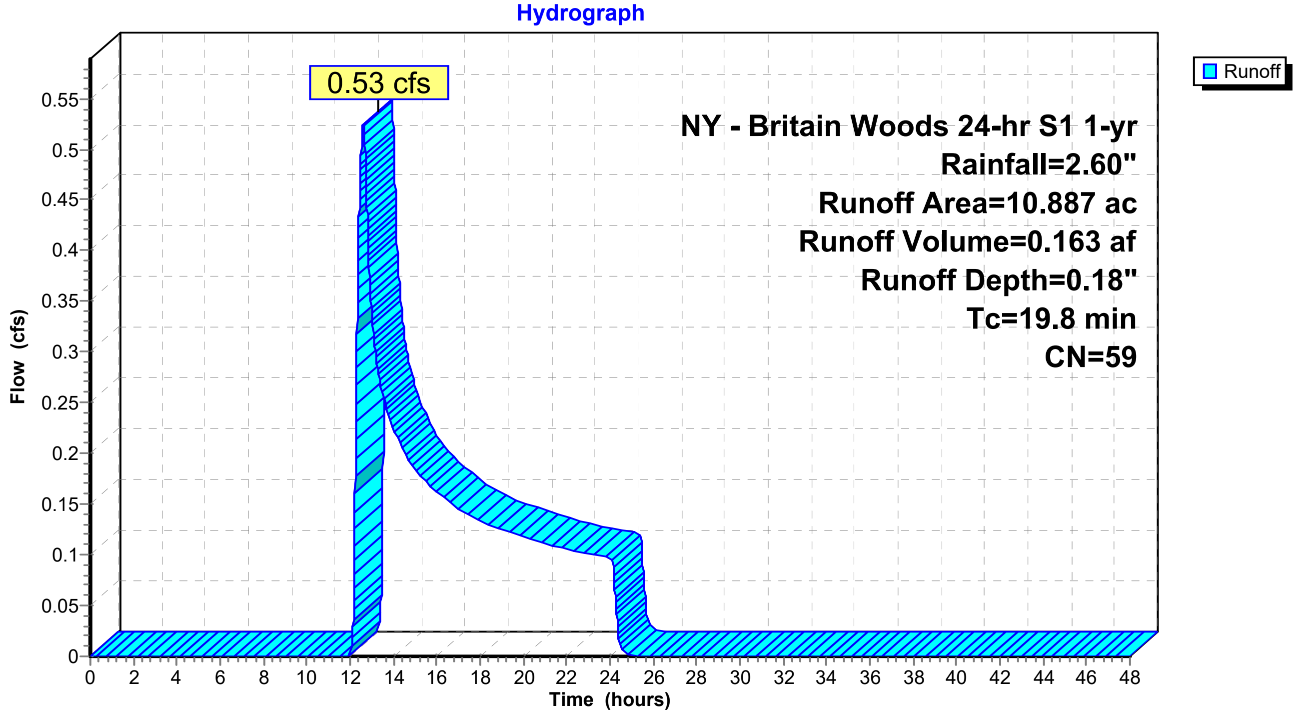
Subcatchment PR-A1-C: Proposed A1-C



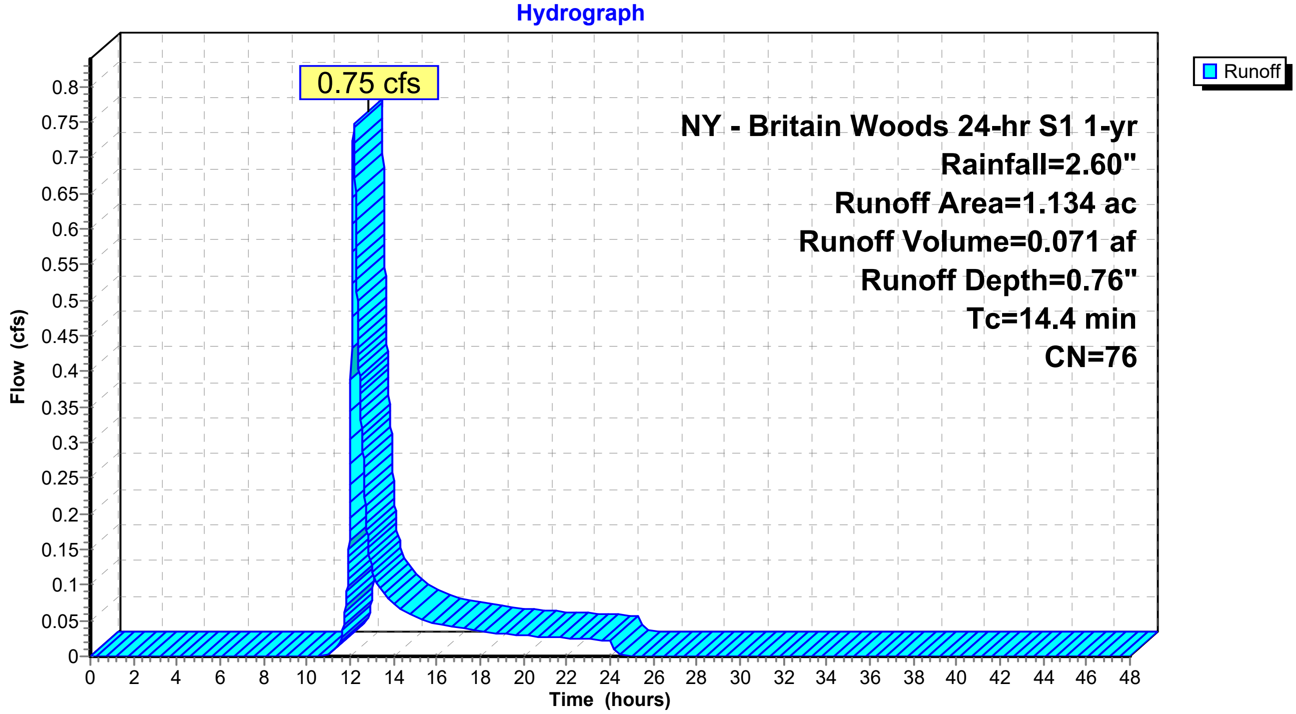
Subcatchment PR-A2-A: Proposed A2-A



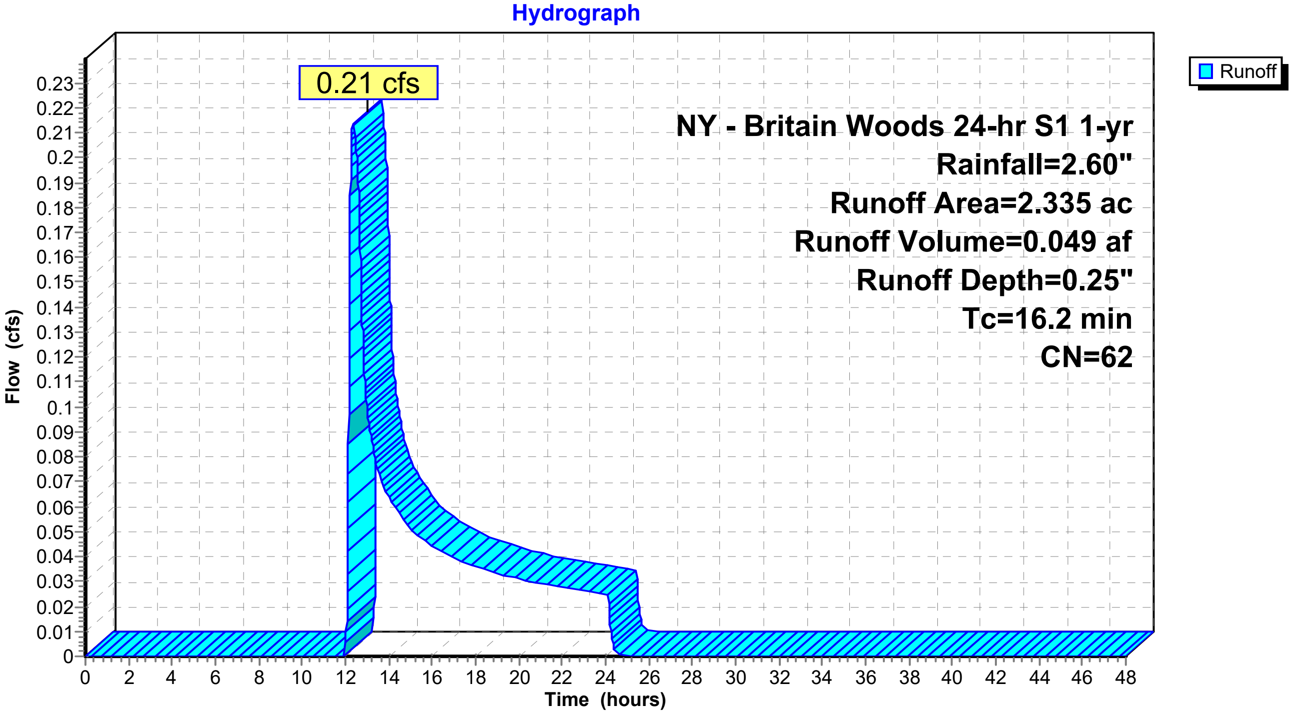
Subcatchment PR-A2-B: Proposed A2-B



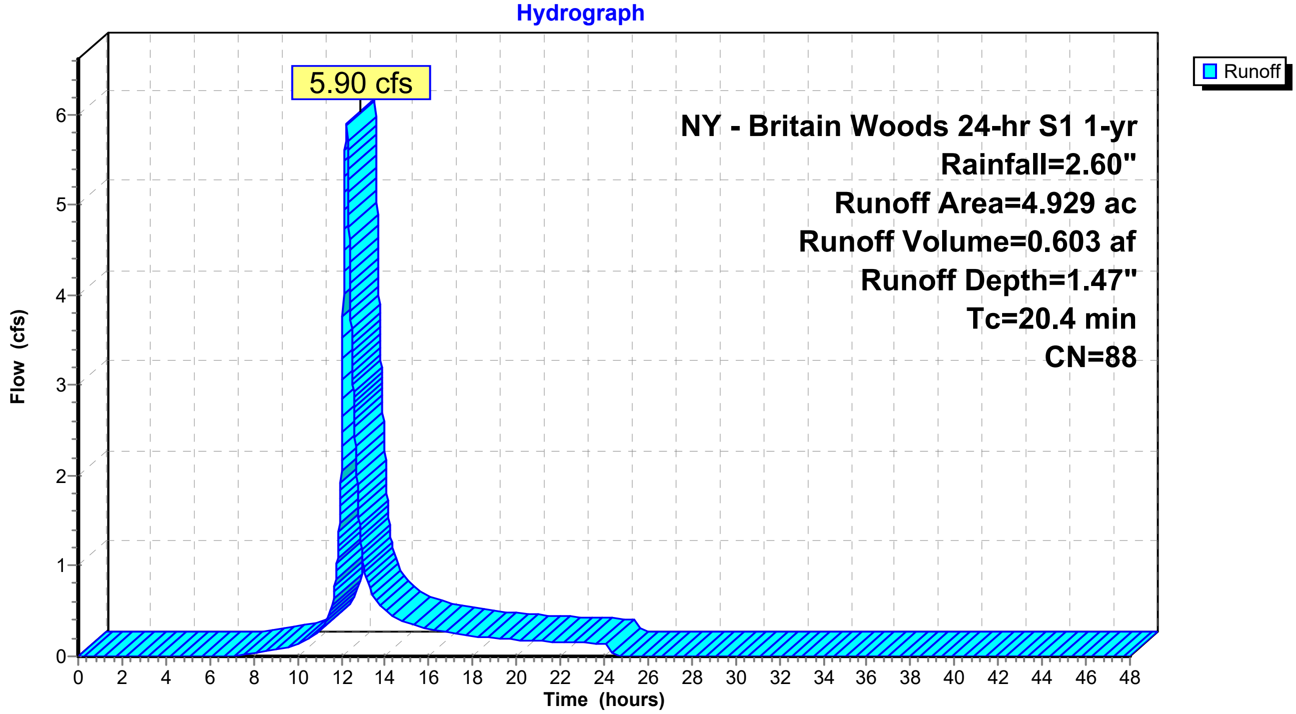
Subcatchment PR-B1: Proposed B1



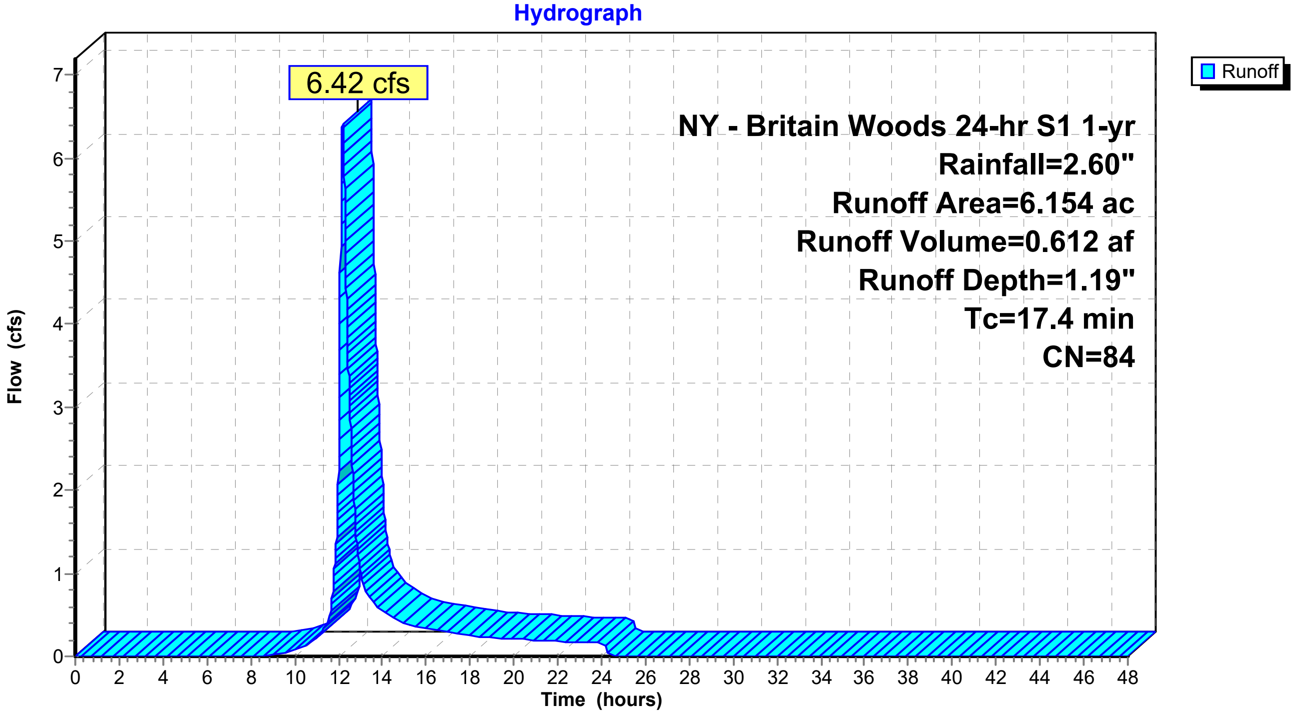
Subcatchment PR-B2: Proposed B2



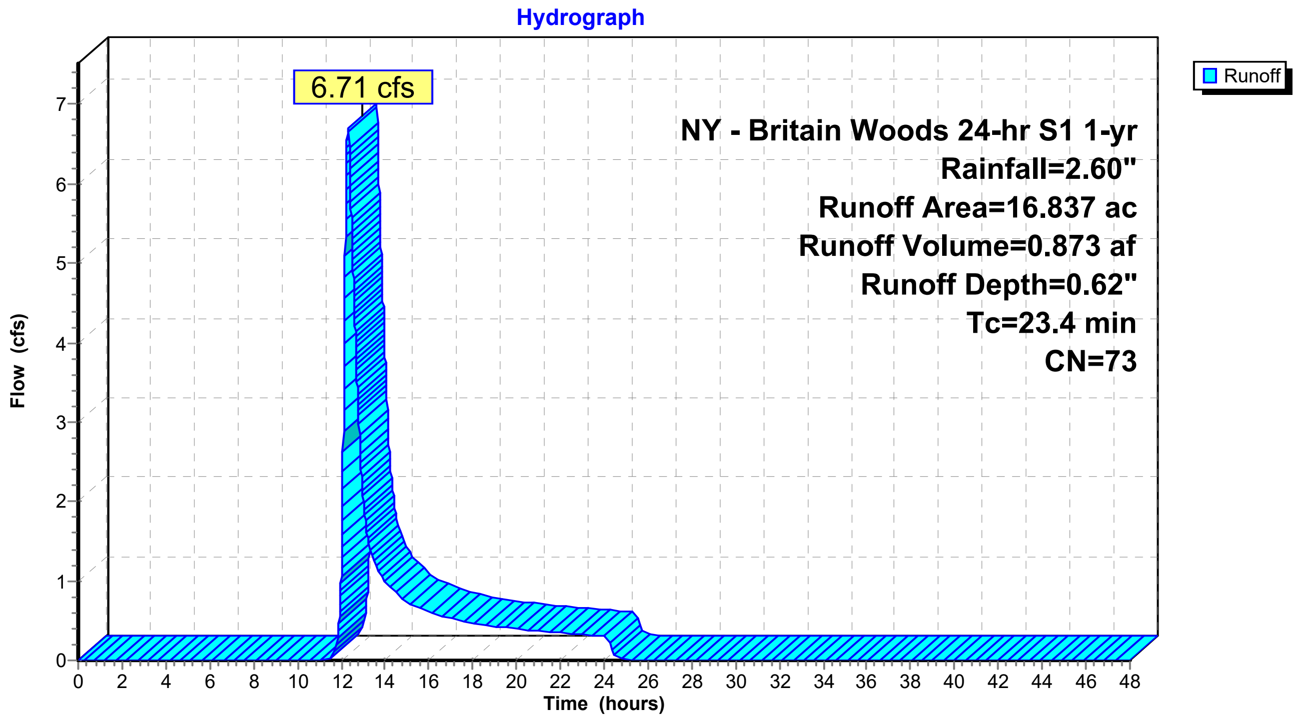
Subcatchment PR-C1-A: Proposed C1-A



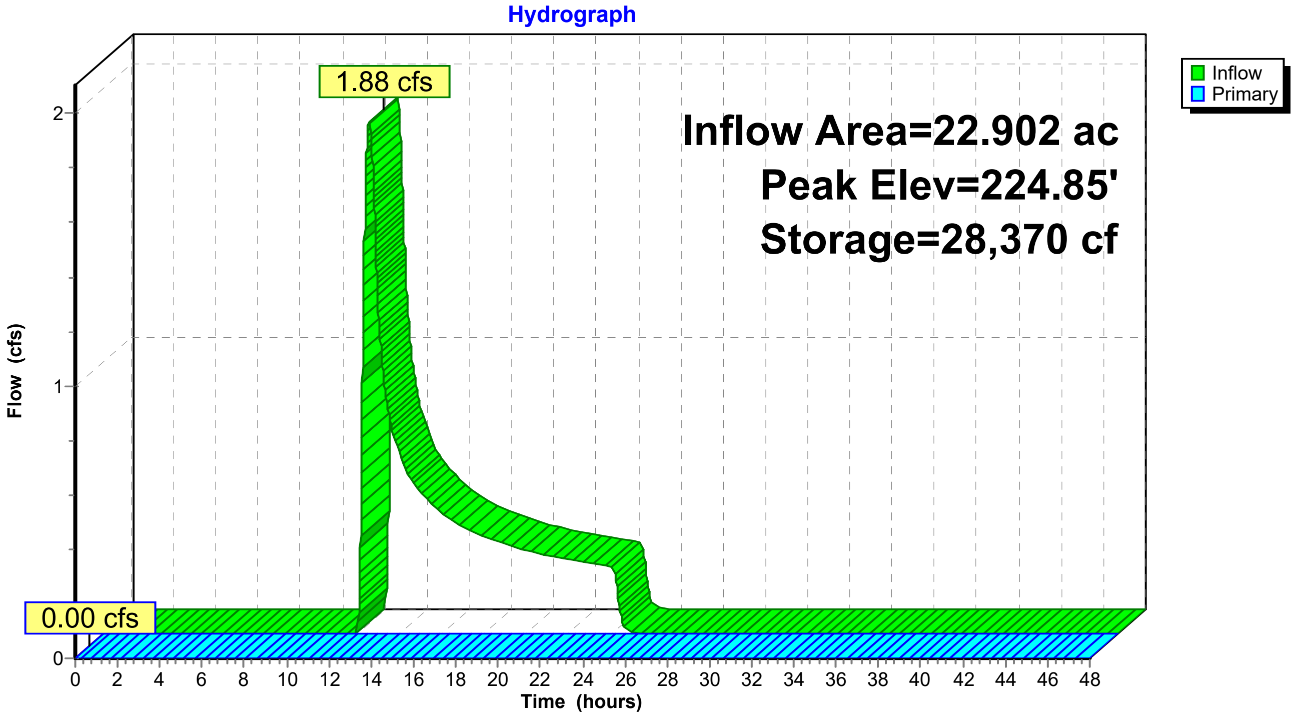
Subcatchment PR-C1-B: Proposed C1-B



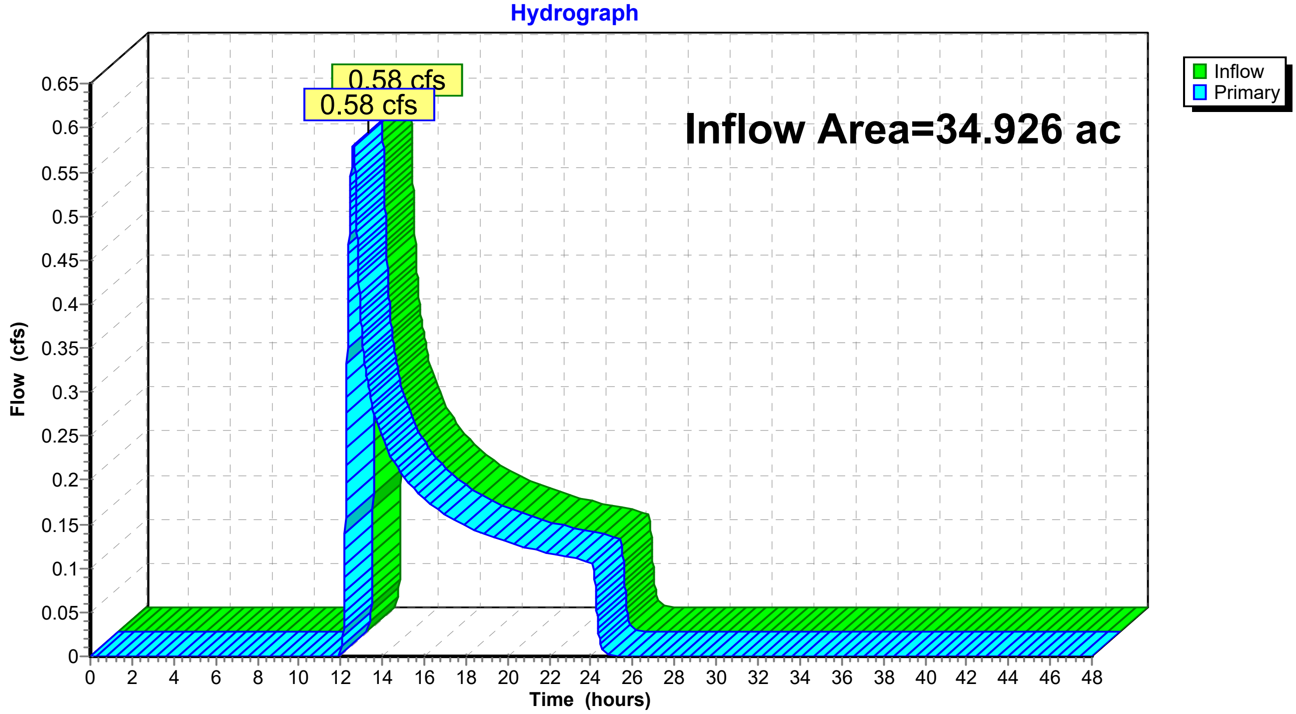
Subcatchment PR-C1-C: Proposed C1-C



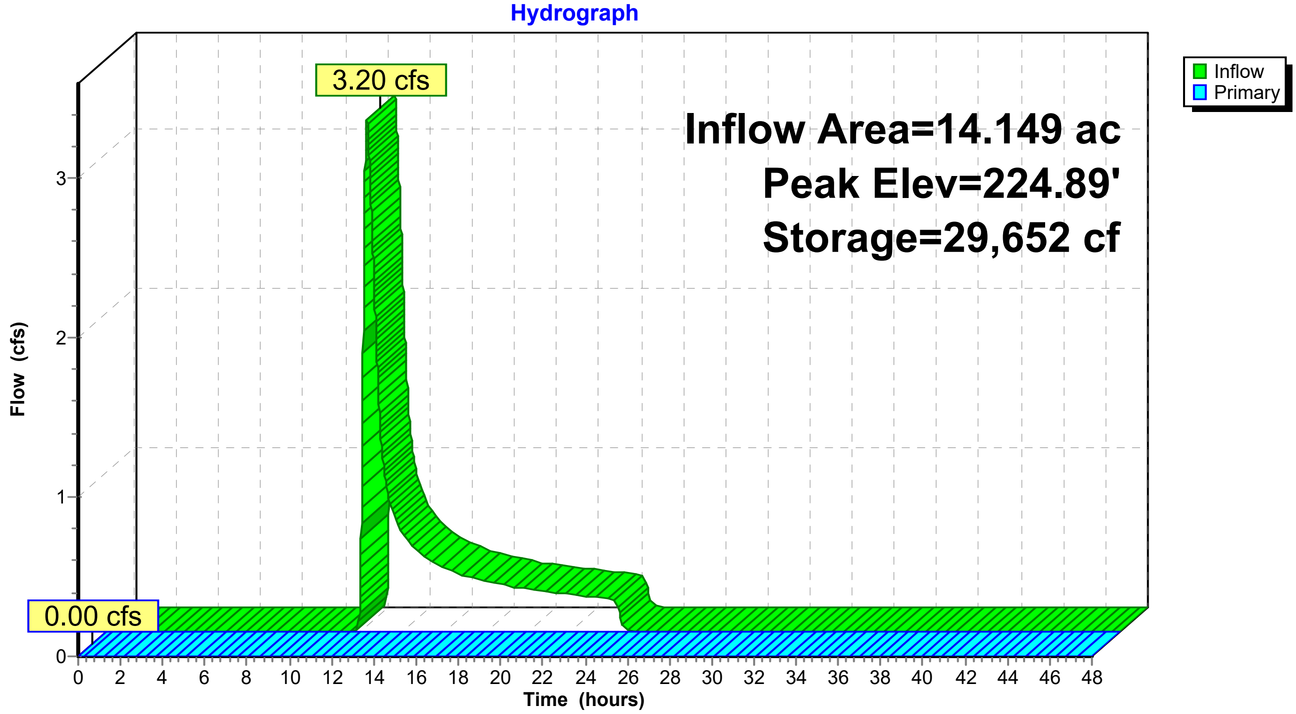
Pond 1P: Existing Wetland



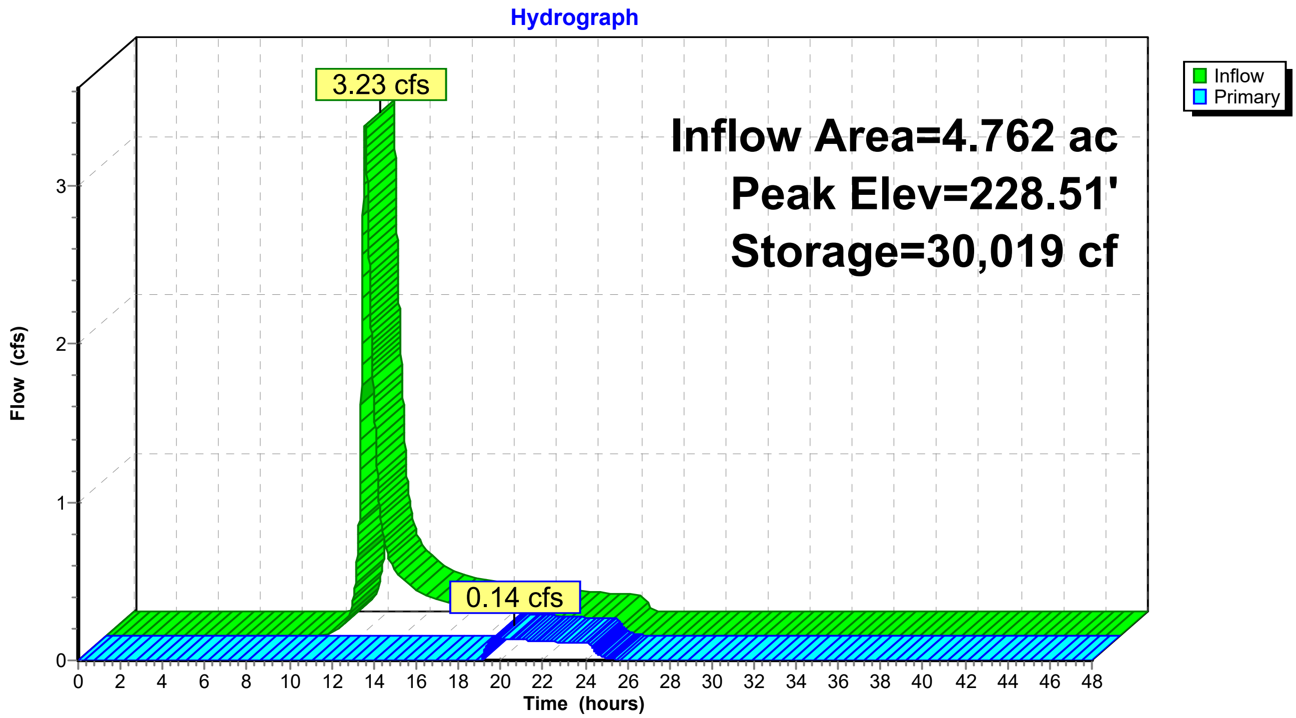
Pond 2P: Existing A



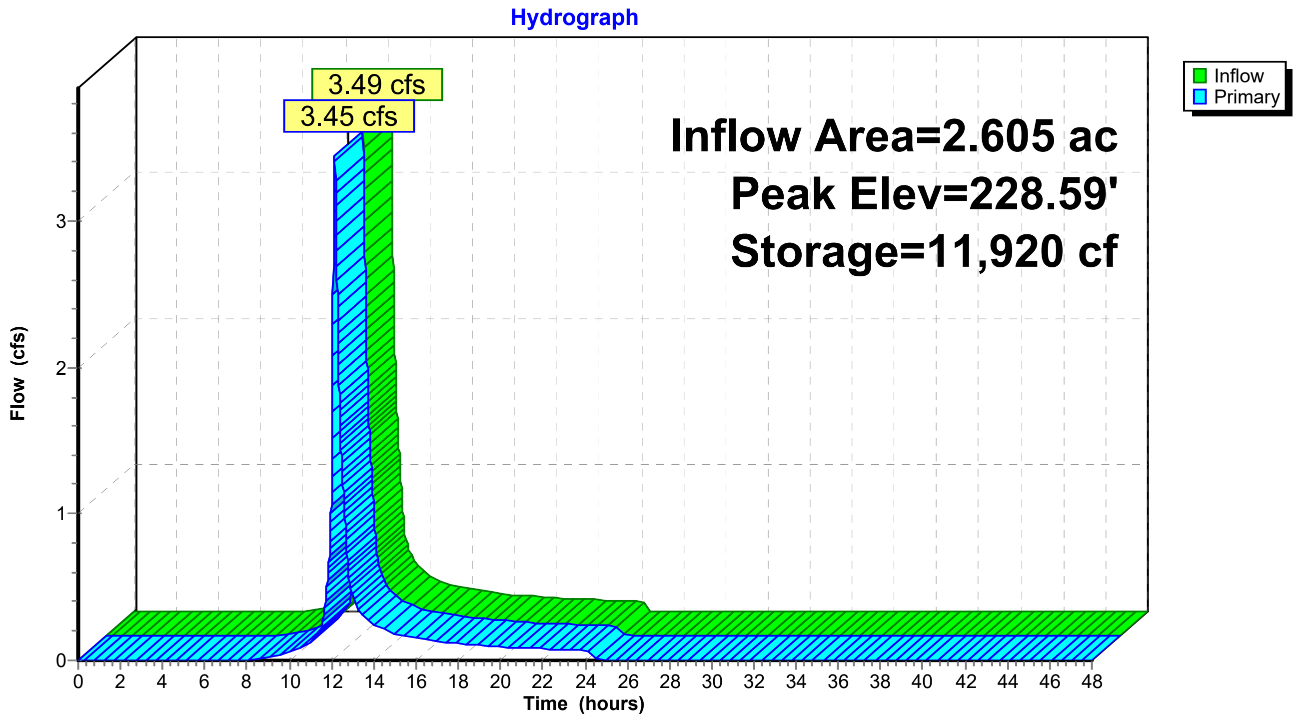
Pond 3P: Existing Wetland



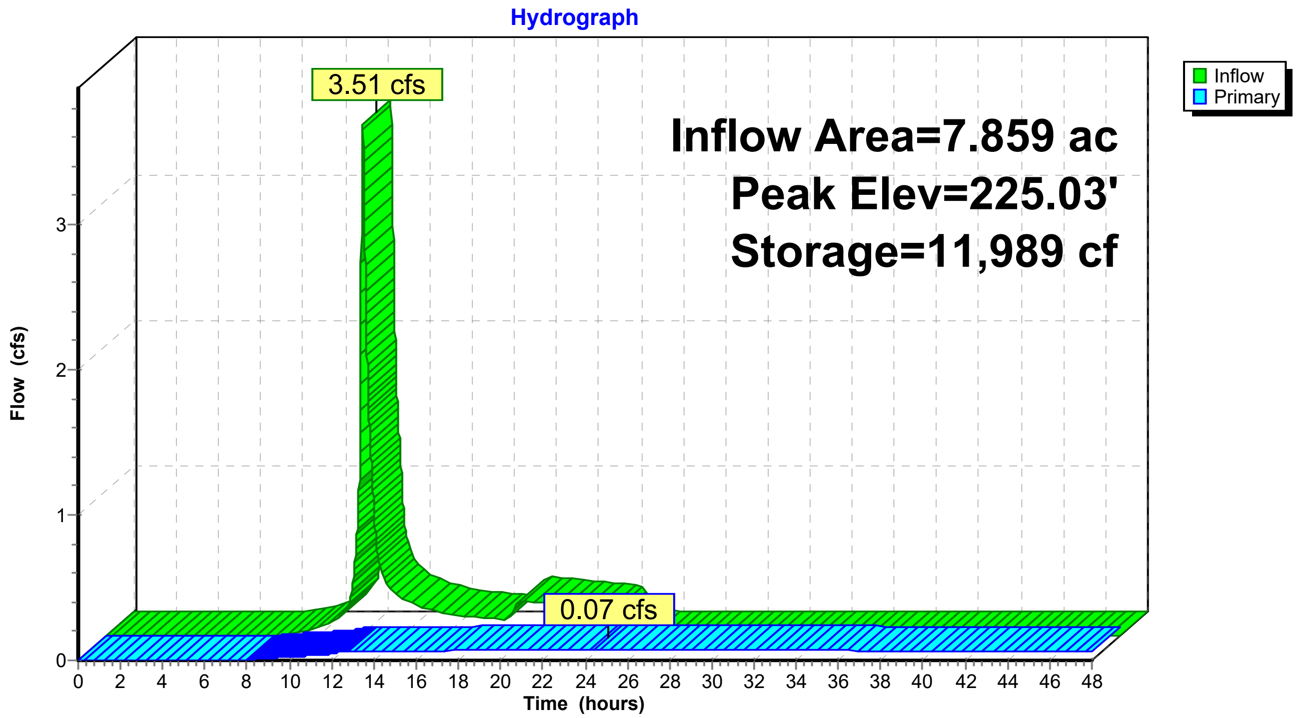
Pond 4P: Forebay & Bio A1-A



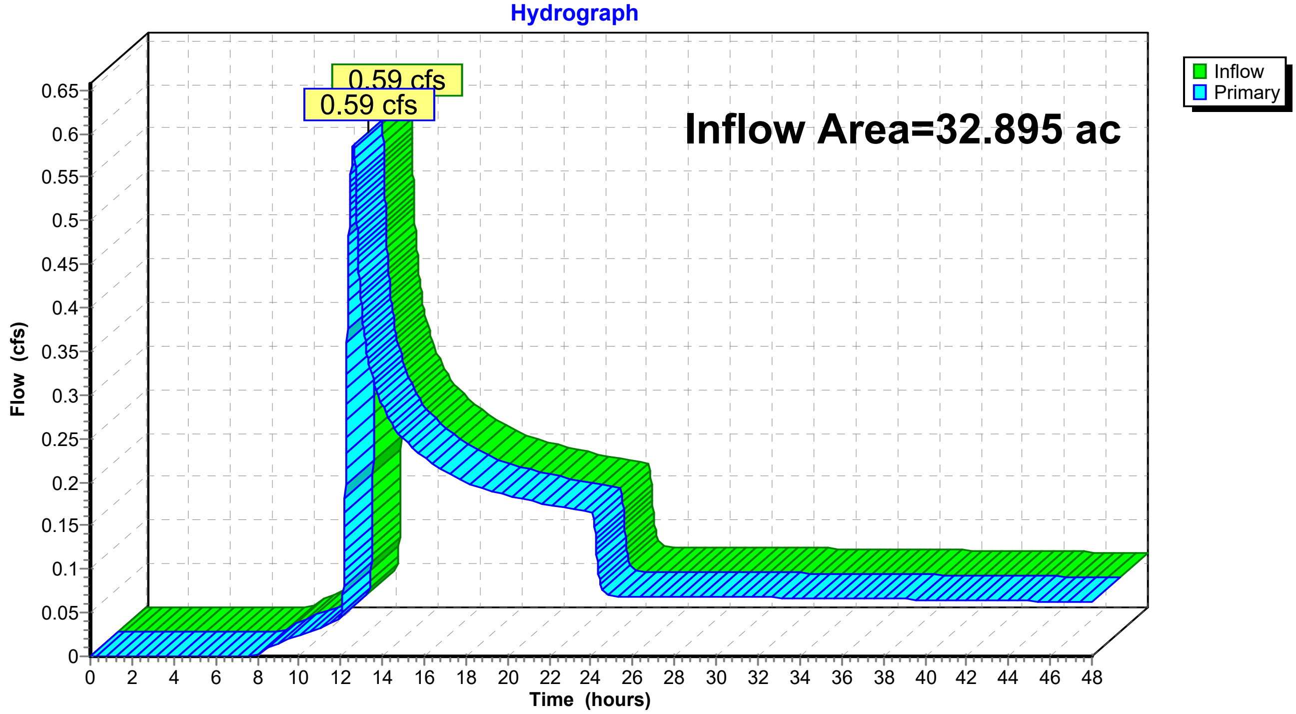
Pond 5P: Forebay A1-B



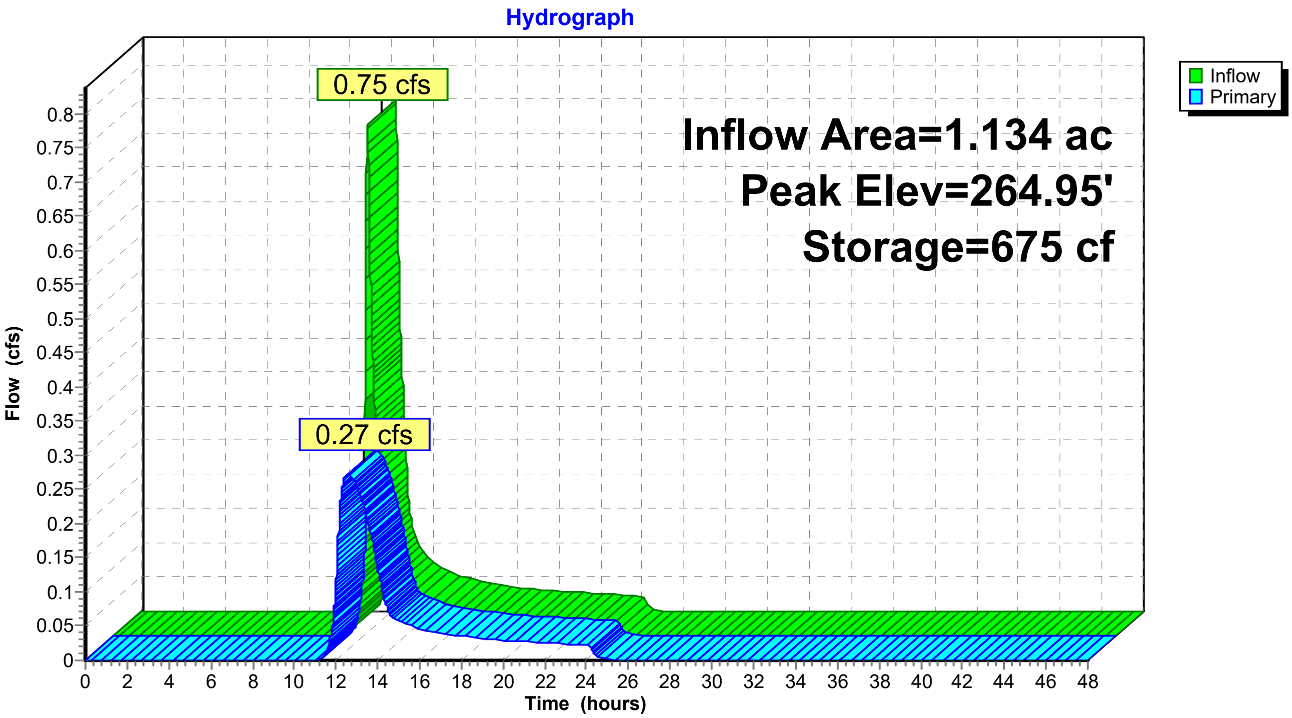
Pond 6P: Detention Basin A1



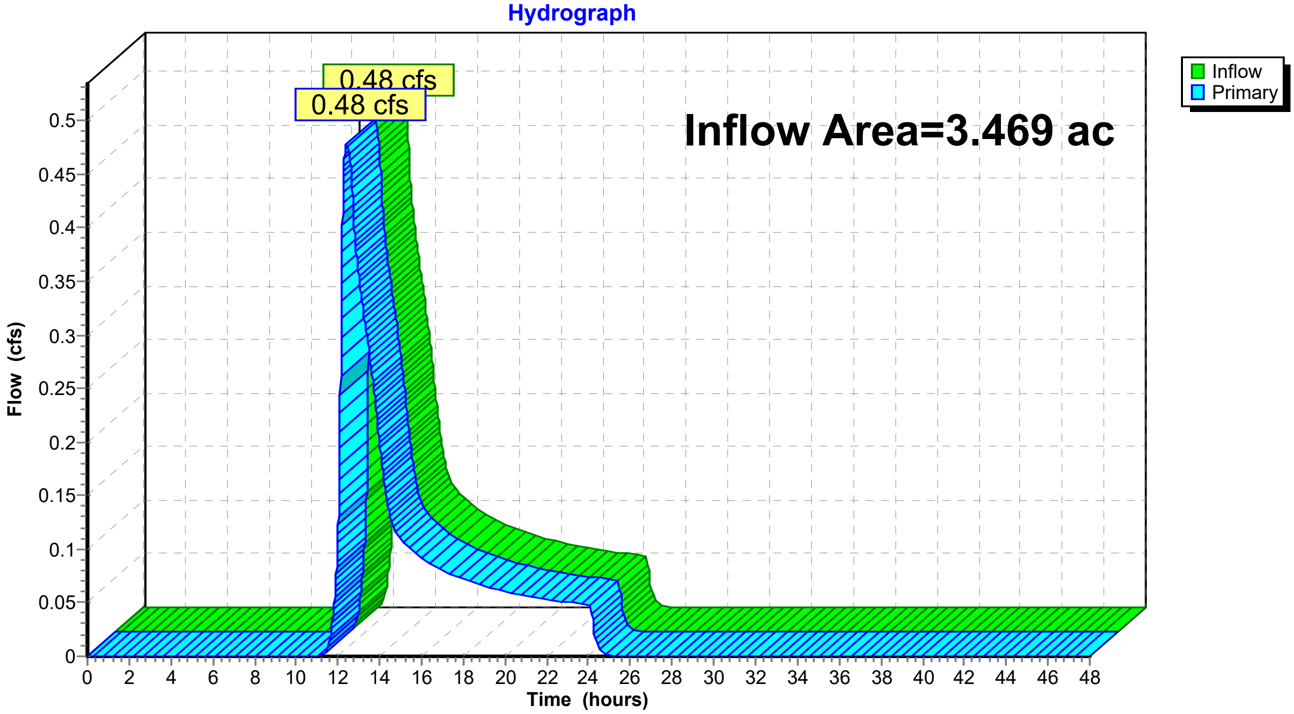
Pond 7P: Design Point A



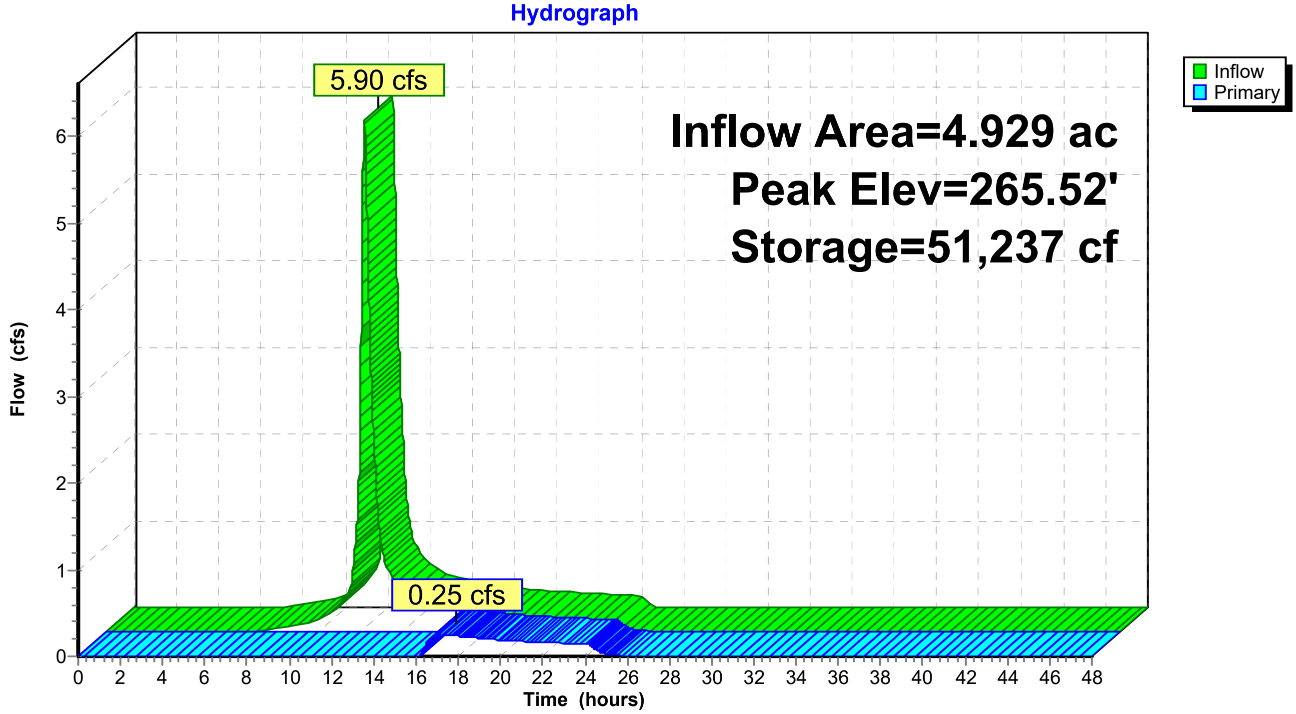
Pond 8P: Detention Basin B1



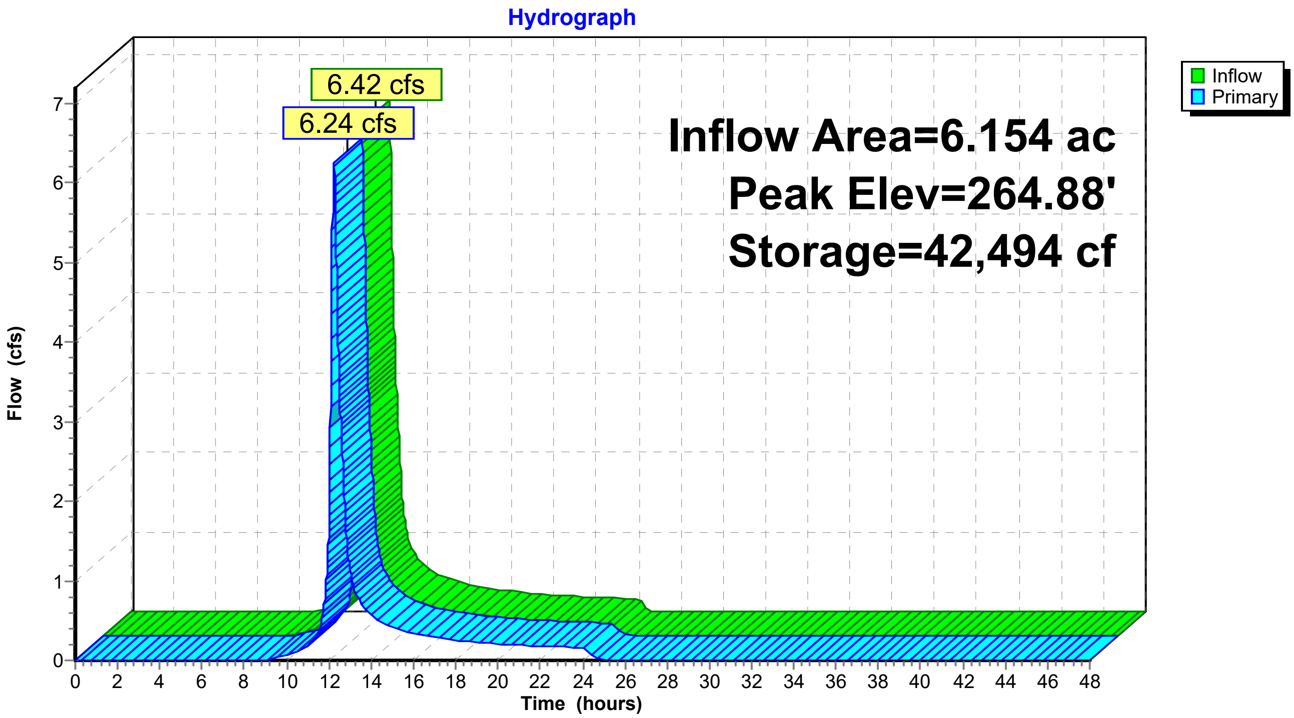
Pond 9P: Design Point B



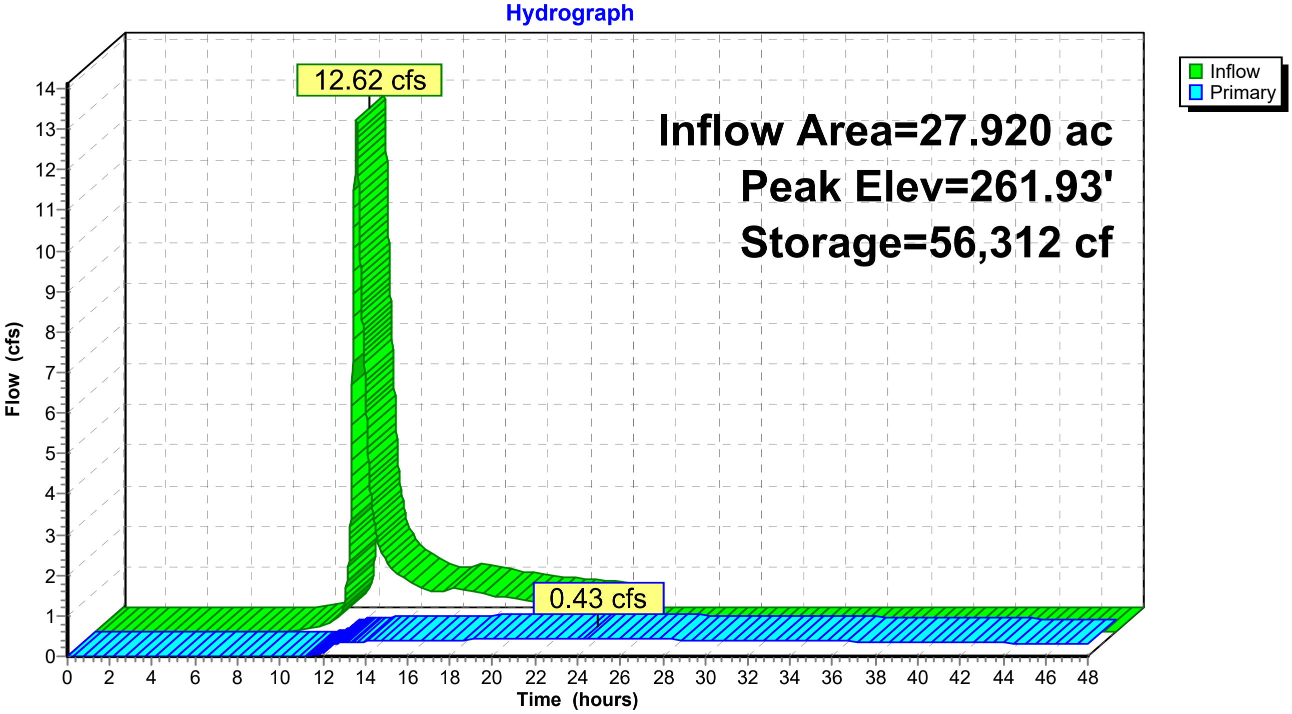
Pond 10P: Forebay & Bio C1-A



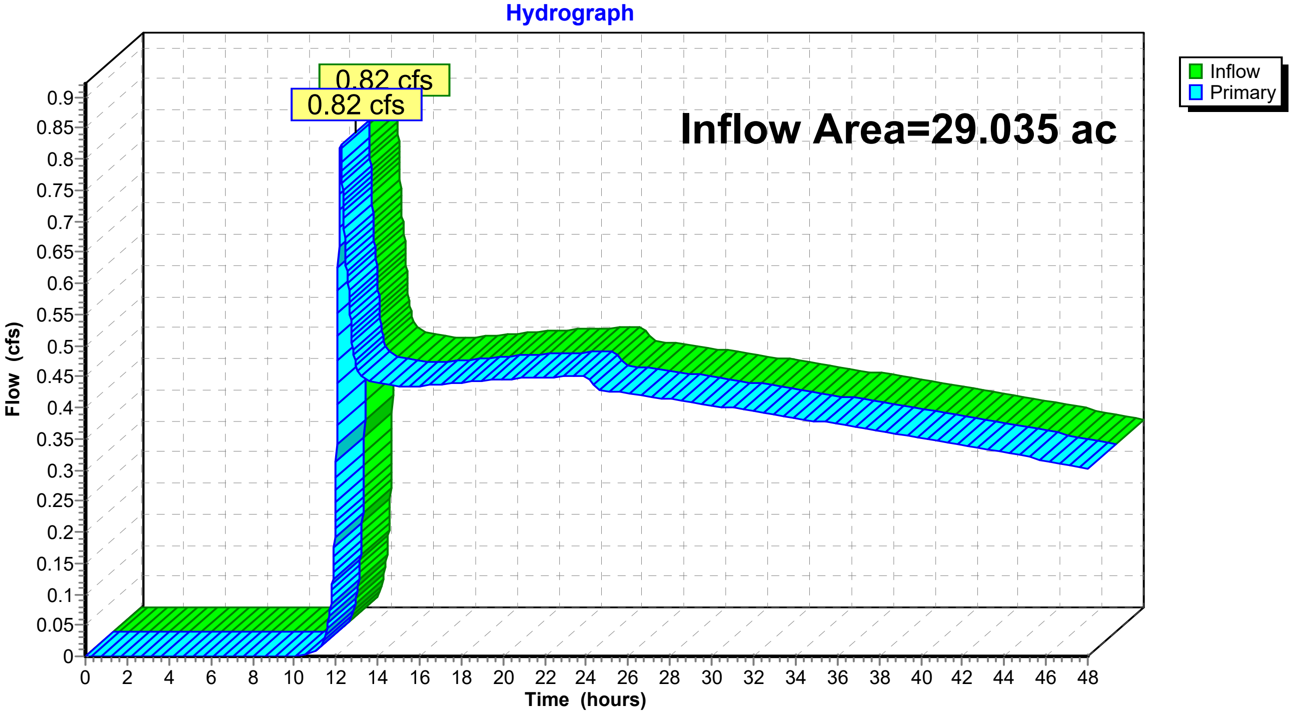
Pond 11P: Forebay C1-B



Pond 12P: Detention Basin C1



Pond 13P: Design Point C



APPENDIX 8

10-YEAR DESIGN STORM

HYDROGRAPHS

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 5
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 5S: Proposed C2 Runoff Area=1.115 ac 15.16% Impervious Runoff Depth=2.21"
Tc=16.8 min CN=75 Runoff=2.01 cfs 0.205 af

Subcatchment EX-A1: Existing A1 Runoff Area=22.902 ac 8.12% Impervious Runoff Depth=1.26"
Tc=26.4 min CN=62 Runoff=16.89 cfs 2.399 af

Subcatchment EX-A2: Existing A2 Runoff Area=12.024 ac 1.27% Impervious Runoff Depth=1.07"
Tc=19.8 min CN=59 Runoff=8.08 cfs 1.070 af

Subcatchment EX-B: Existing B Runoff Area=7.465 ac 0.00% Impervious Runoff Depth=1.19"
Tc=18.6 min CN=61 Runoff=6.03 cfs 0.742 af

Subcatchment EX-C: Existing C Runoff Area=23.004 ac 0.93% Impervious Runoff Depth=1.82"
Tc=27.0 min CN=70 Runoff=26.48 cfs 3.483 af

Subcatchment PR-A1-A: Proposed A1-A Runoff Area=4.762 ac 47.67% Impervious Runoff Depth=2.55"
Tc=21.6 min CN=79 Runoff=8.92 cfs 1.010 af

Subcatchment PR-A1-B: Proposed A1-B Runoff Area=2.605 ac 63.57% Impervious Runoff Depth=3.19"
Tc=13.2 min CN=86 Runoff=7.63 cfs 0.692 af

Subcatchment PR-A1-C: Proposed A1-C Runoff Area=0.492 ac 0.00% Impervious Runoff Depth=1.32"
Tc=6.0 min CN=63 Runoff=0.73 cfs 0.054 af

Subcatchment PR-A2-A: Proposed A2-A Runoff Area=14.149 ac 15.15% Impervious Runoff Depth=1.67"
Tc=23.4 min CN=68 Runoff=15.84 cfs 1.968 af

Subcatchment PR-A2-B: Proposed A2-B Runoff Area=10.887 ac 2.63% Impervious Runoff Depth=1.07"
Tc=19.8 min CN=59 Runoff=7.32 cfs 0.969 af

Subcatchment PR-B1: Proposed B1 Runoff Area=1.134 ac 0.00% Impervious Runoff Depth=2.29"
Tc=14.4 min CN=76 Runoff=2.29 cfs 0.216 af

Subcatchment PR-B2: Proposed B2 Runoff Area=2.335 ac 0.00% Impervious Runoff Depth=1.26"
Tc=16.2 min CN=62 Runoff=2.15 cfs 0.245 af

Subcatchment PR-C1-A: Proposed C1-A Runoff Area=4.929 ac 70.16% Impervious Runoff Depth=3.38"
Tc=20.4 min CN=88 Runoff=12.46 cfs 1.390 af

Subcatchment PR-C1-B: Proposed C1-B Runoff Area=6.154 ac 61.08% Impervious Runoff Depth=3.00"
Tc=17.4 min CN=84 Runoff=15.00 cfs 1.537 af

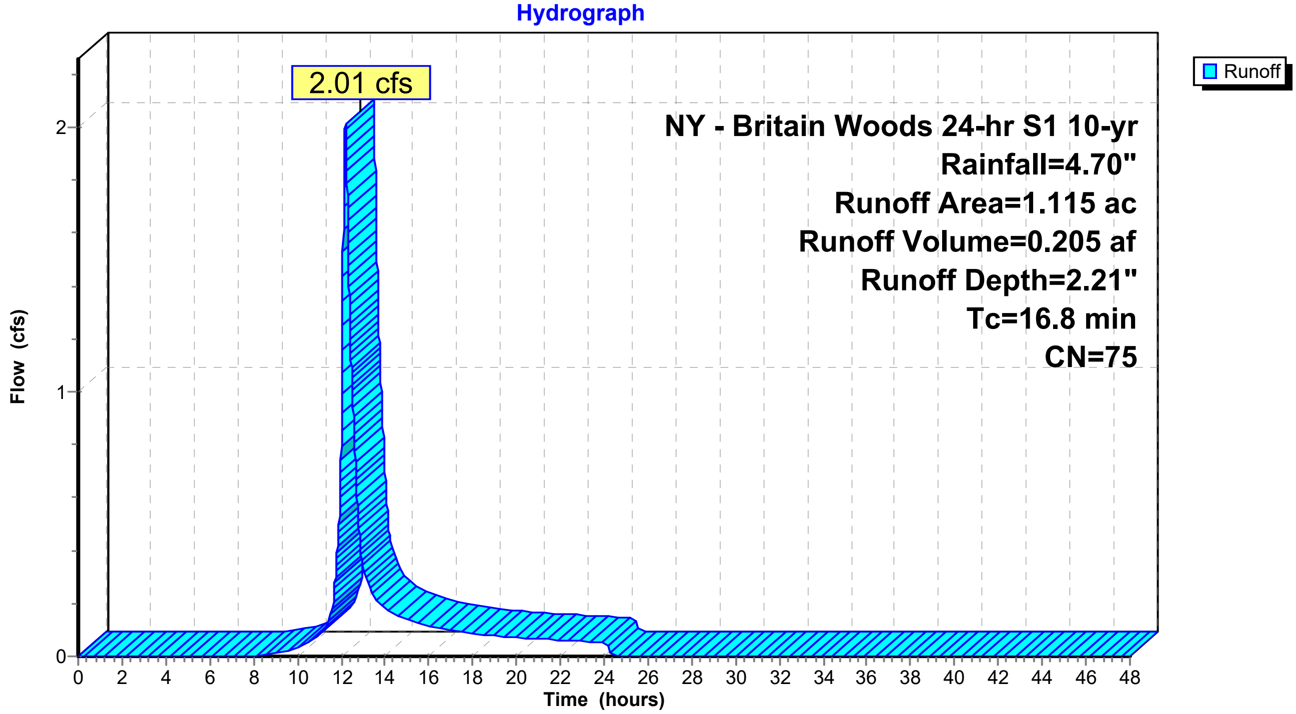
Subcatchment PR-C1-C: Proposed C1-C Runoff Area=16.837 ac 0.26% Impervious Runoff Depth=2.05"
Tc=23.4 min CN=73 Runoff=23.88 cfs 2.873 af

Pond 1P: Existing Wetland Peak Elev=225.55' Storage=57,892 cf Inflow=16.89 cfs 2.399 af
Outflow=2.93 cfs 1.299 af

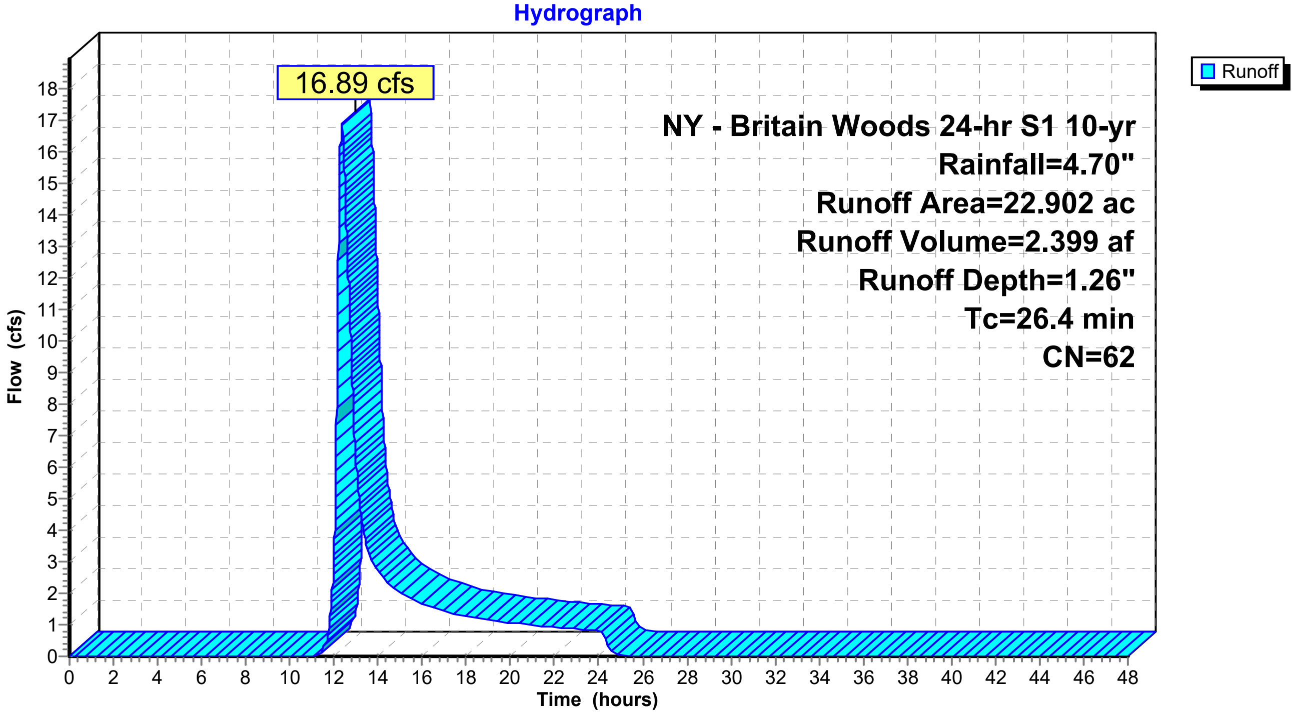
Pond 2P: Existing A		Inflow=8.08 cfs 2.370 af Primary=8.08 cfs 2.370 af
Pond 3P: Existing Wetland	Peak Elev=225.22' Storage=42,136 cf	Inflow=15.84 cfs 1.968 af Outflow=4.66 cfs 1.369 af
Pond 4P: Forebay & Bio A1-A	Peak Elev=228.63' Storage=31,764 cf	Inflow=8.92 cfs 1.010 af Outflow=6.21 cfs 0.705 af
Pond 5P: Forebay A1-B	Peak Elev=228.65' Storage=12,131 cf	Inflow=7.63 cfs 0.692 af Outflow=7.57 cfs 0.692 af
Pond 6P: Detention Basin A1	Peak Elev=228.41' Storage=39,743 cf	Inflow=9.60 cfs 1.451 af Outflow=1.05 cfs 0.714 af
Pond 7P: Design Point A		Inflow=7.39 cfs 3.053 af Primary=7.39 cfs 3.053 af
Pond 8P: Detention Basin B1	Peak Elev=266.09' Storage=2,077 cf	Inflow=2.29 cfs 0.216 af Outflow=1.55 cfs 0.216 af
Pond 9P: Design Point B		Inflow=3.38 cfs 0.461 af Primary=3.38 cfs 0.461 af
Pond 10P: Forebay & Bio C1-A	Peak Elev=265.66' Storage=54,551 cf	Inflow=12.46 cfs 1.390 af Outflow=8.51 cfs 0.916 af
Pond 11P: Forebay C1-B	Peak Elev=264.98' Storage=43,373 cf	Inflow=15.00 cfs 1.537 af Outflow=14.77 cfs 1.537 af
Pond 12P: Detention Basin C1	Peak Elev=263.53' Storage=97,064 cf	Inflow=42.20 cfs 5.326 af Outflow=18.40 cfs 4.368 af
Pond 13P: Design Point C		Inflow=18.91 cfs 4.573 af Primary=18.91 cfs 4.573 af

Total Runoff Area = 130.794 ac Runoff Volume = 18.854 af Average Runoff Depth = 1.73"
87.76% Pervious = 114.784 ac 12.24% Impervious = 16.010 ac

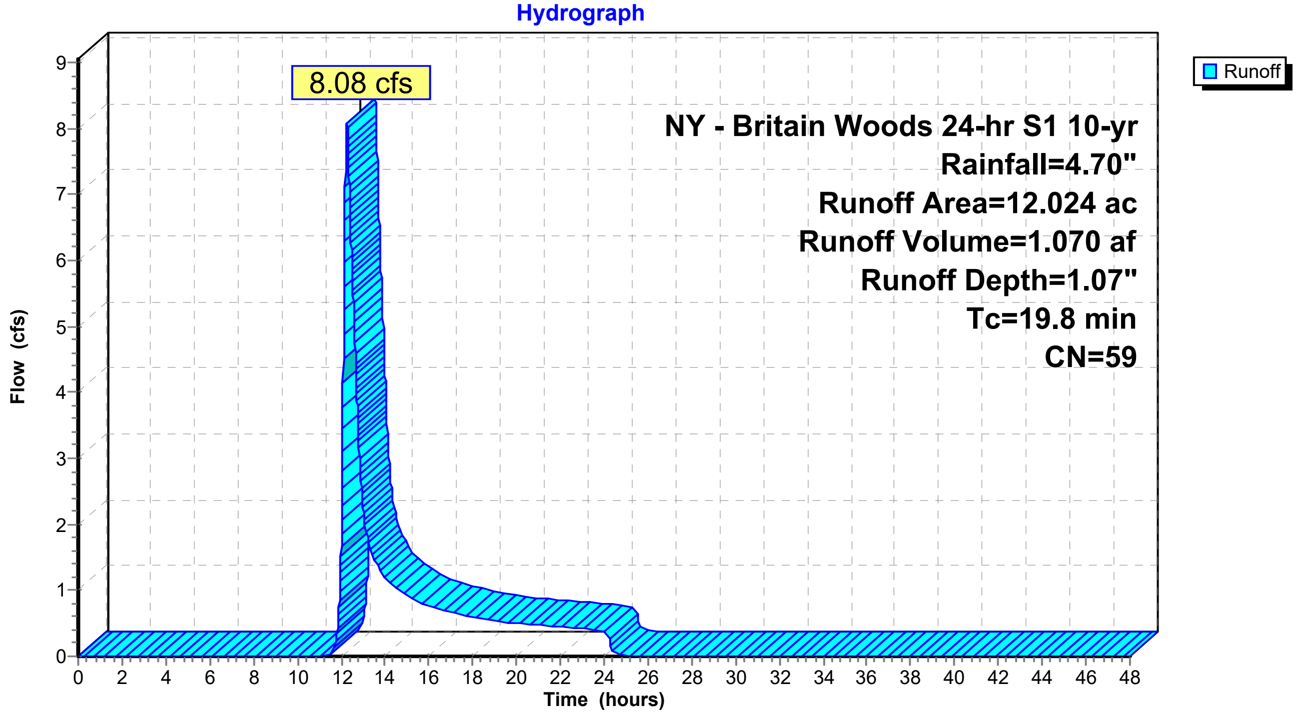
Subcatchment 5S: Proposed C2



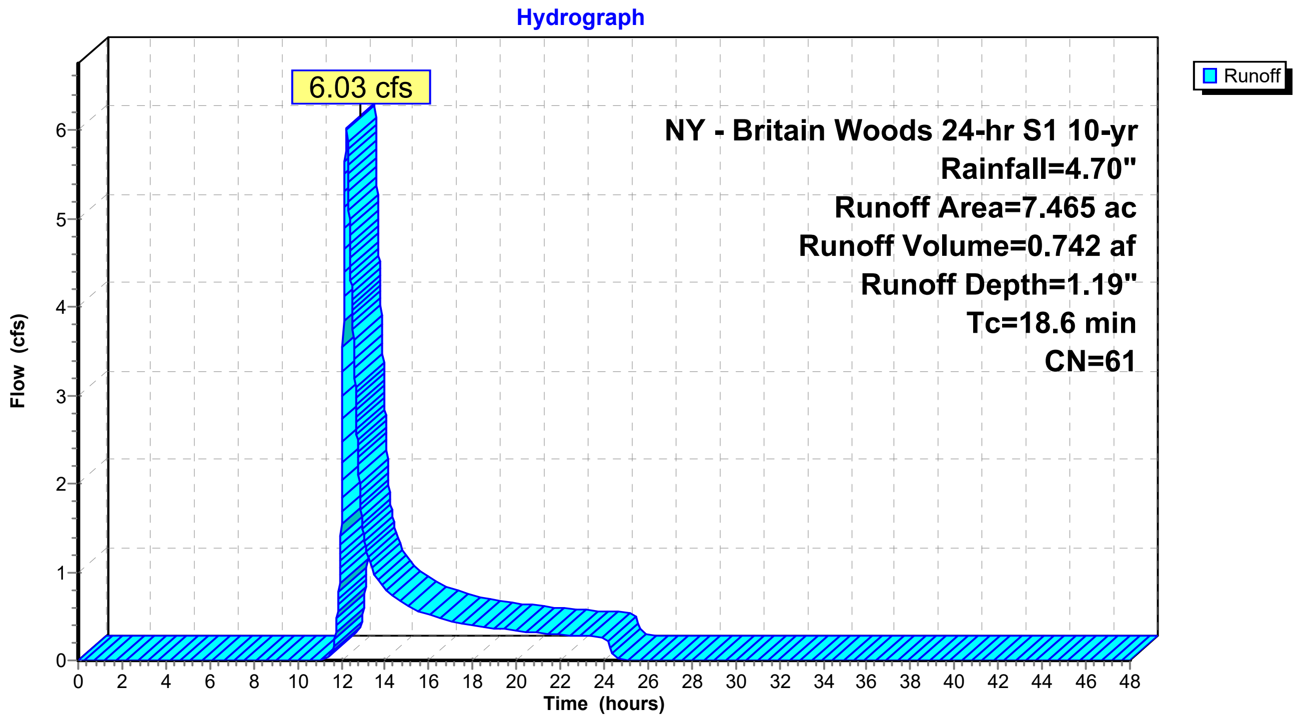
Subcatchment EX-A1: Existing A1



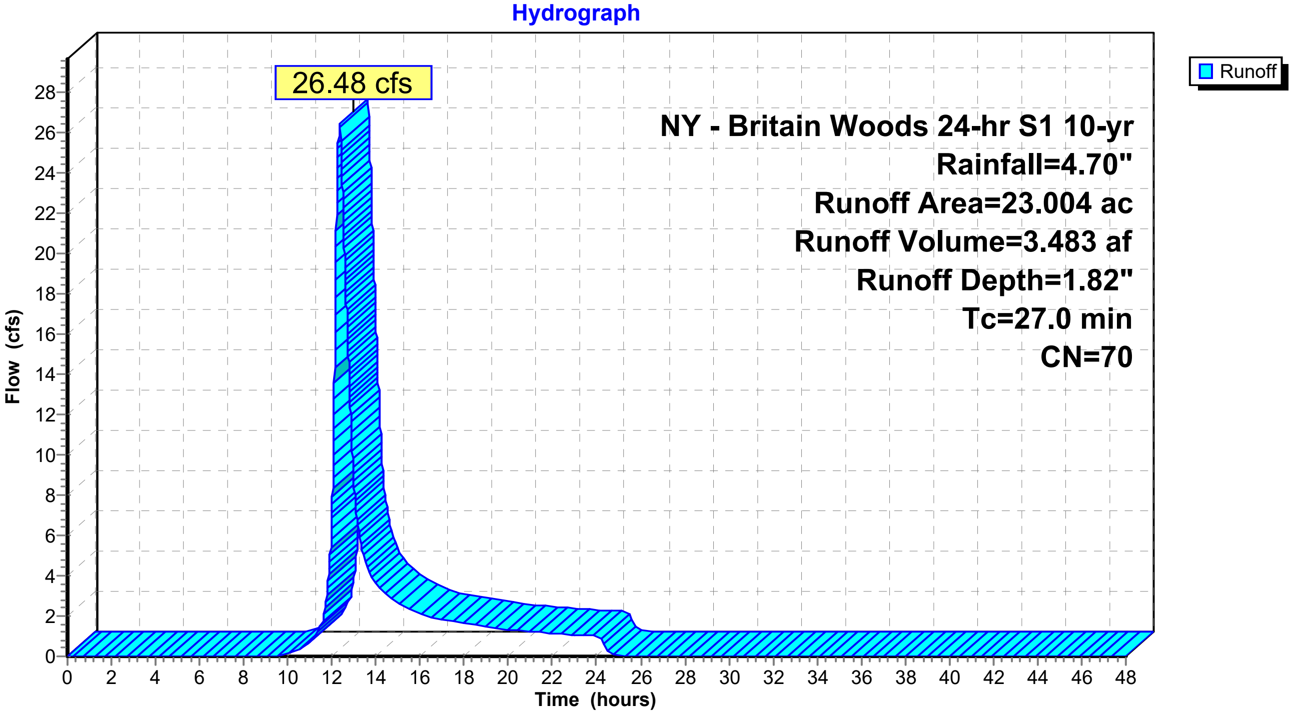
Subcatchment EX-A2: Existing A2



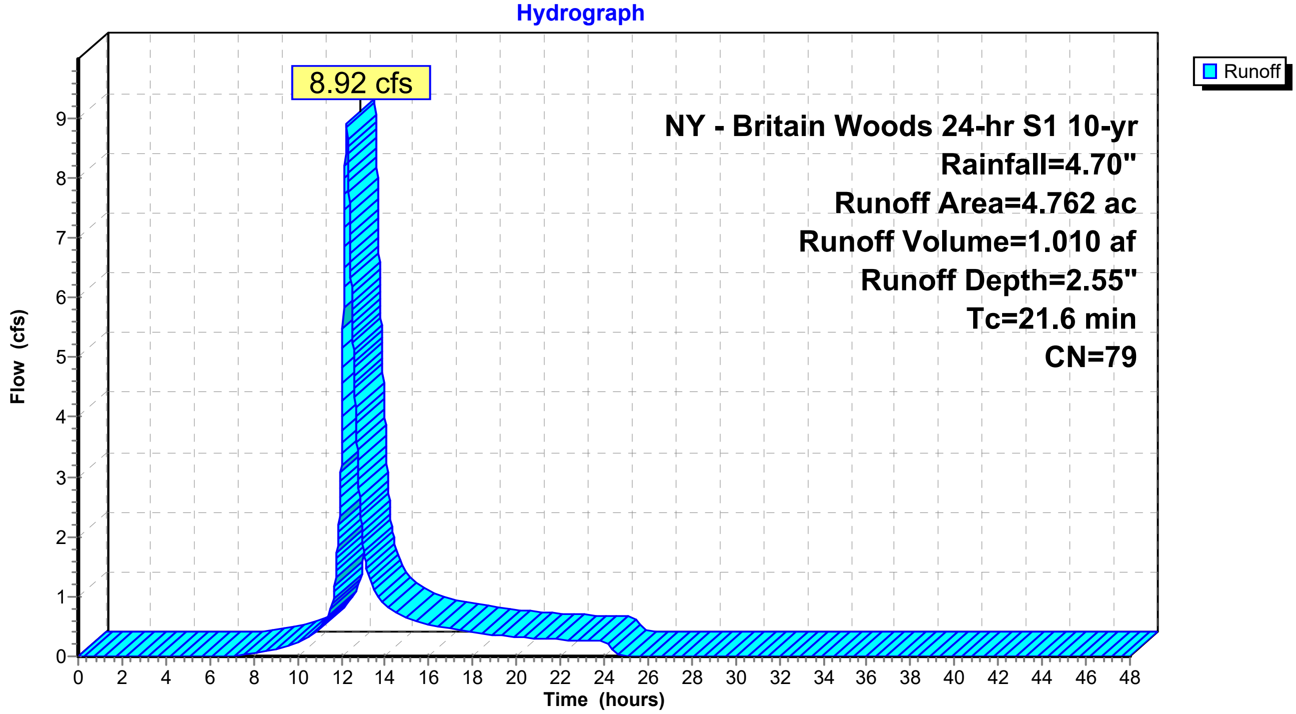
Subcatchment EX-B: Existing B



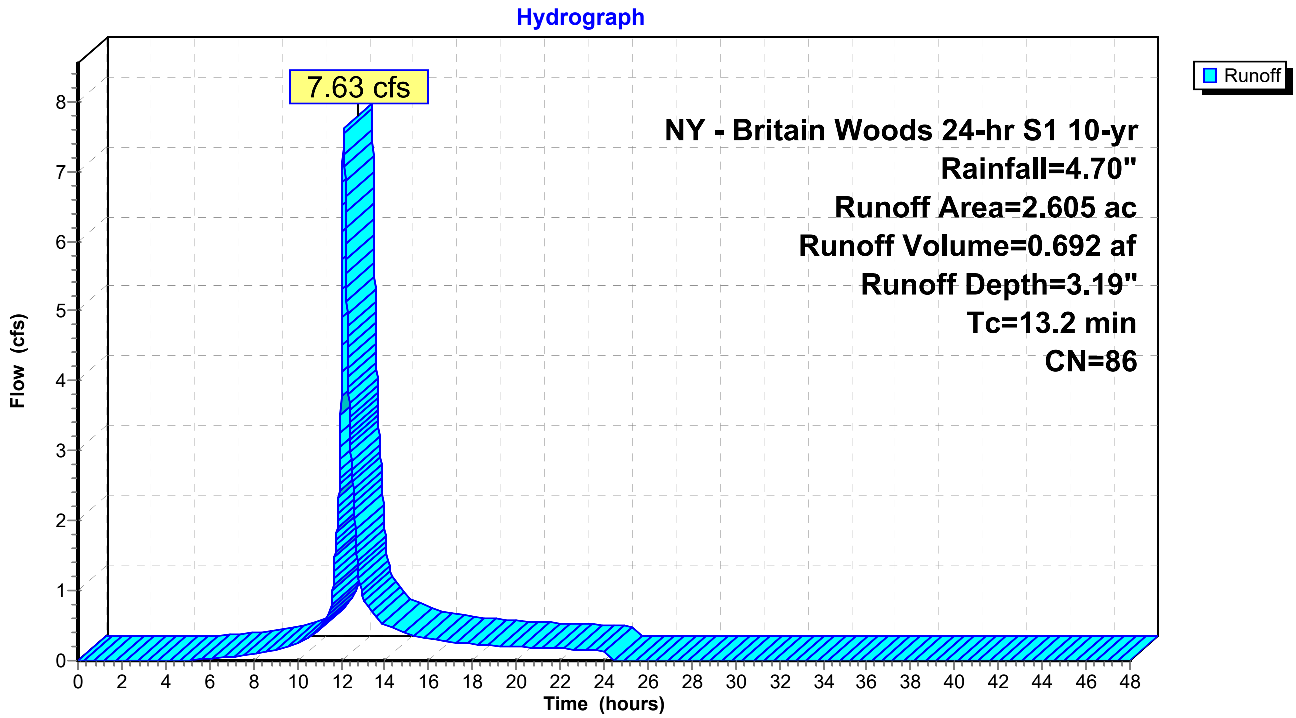
Subcatchment EX-C: Existing C



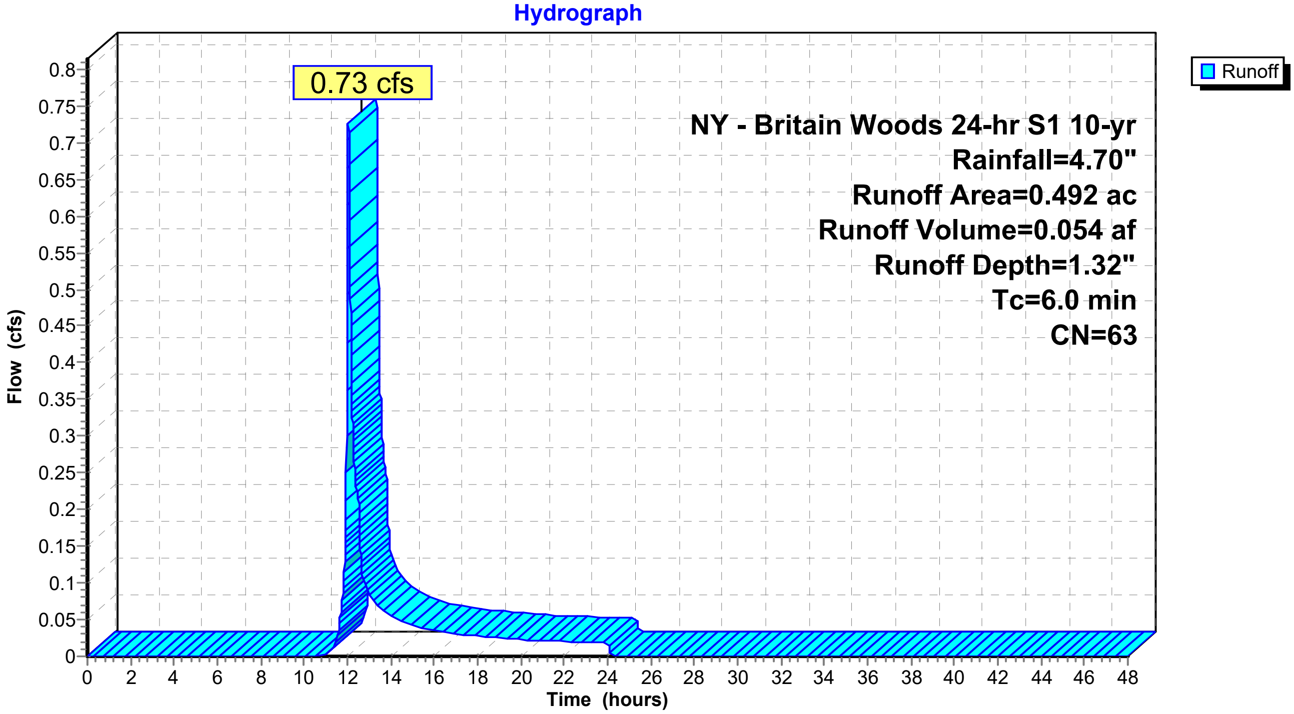
Subcatchment PR-A1-A: Proposed A1-A



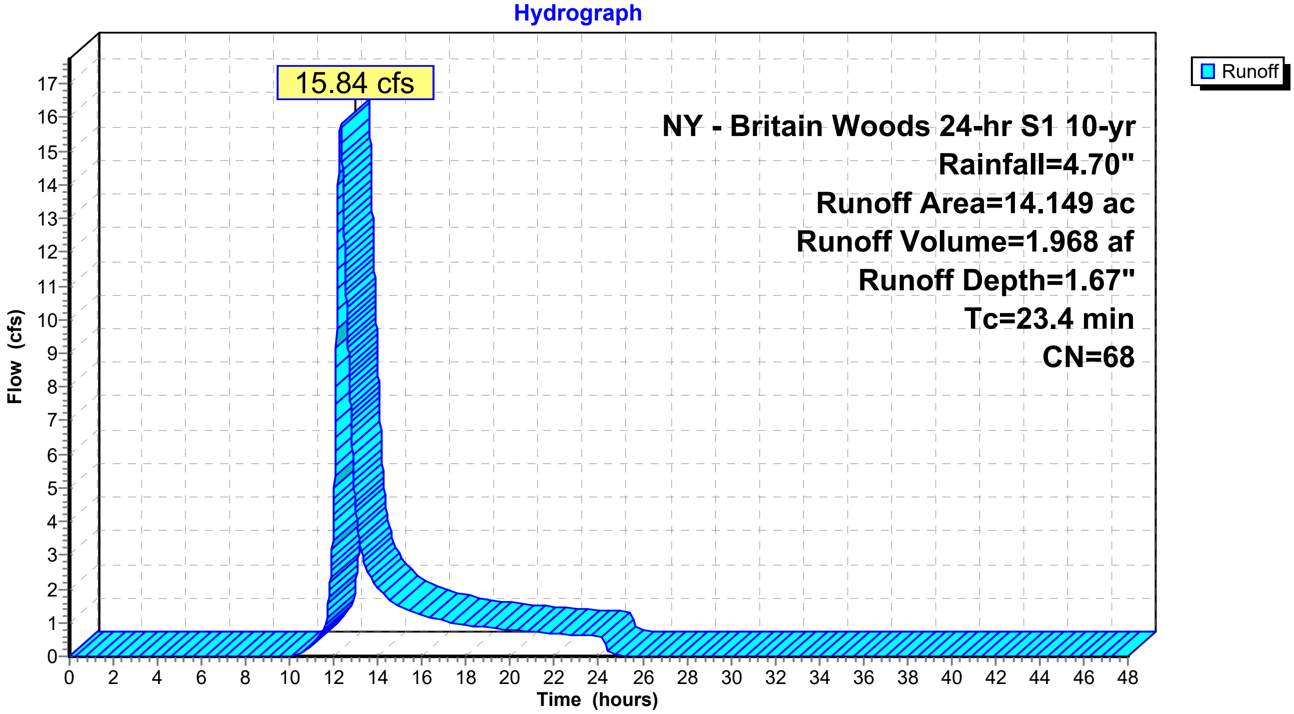
Subcatchment PR-A1-B: Proposed A1-B



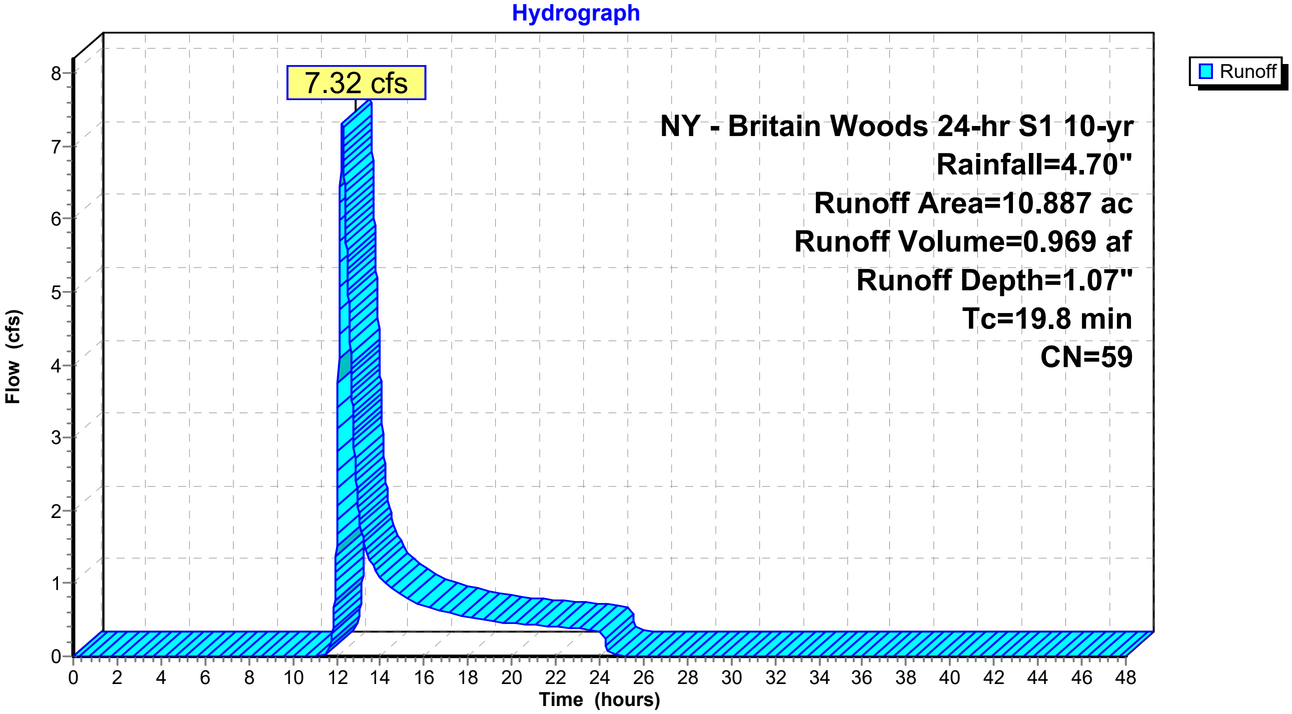
Subcatchment PR-A1-C: Proposed A1-C



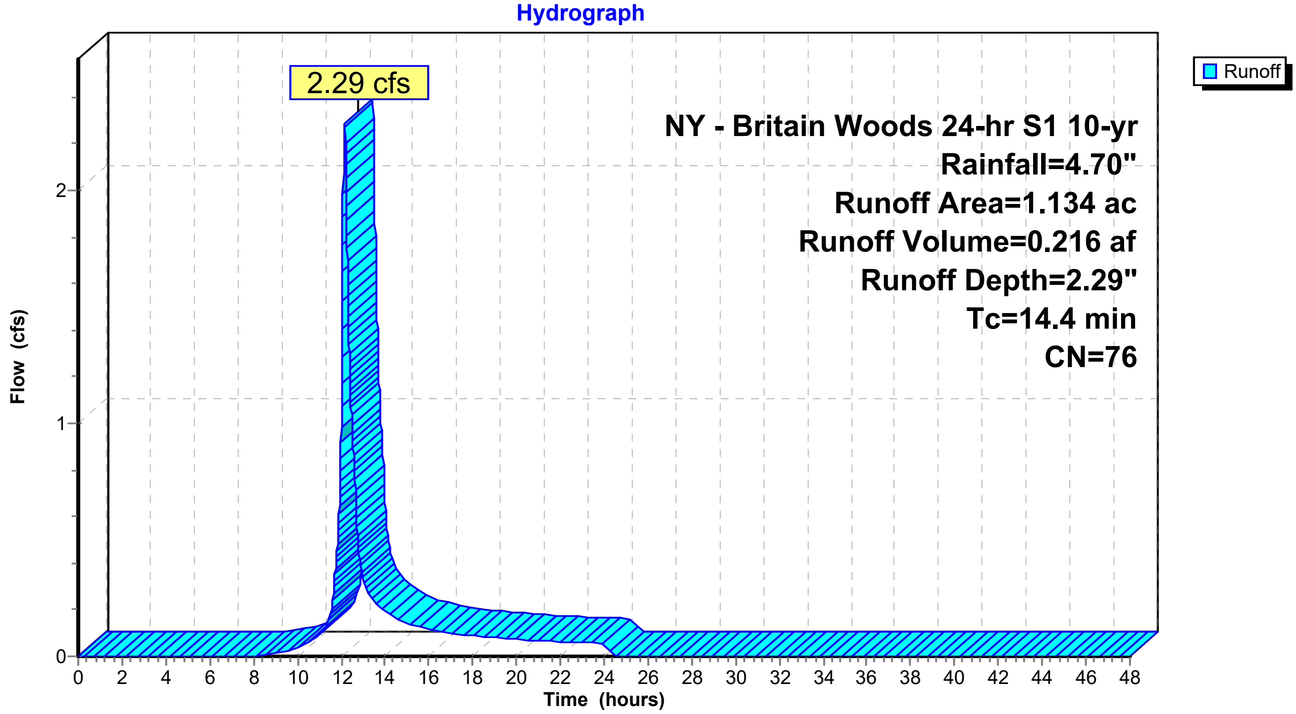
Subcatchment PR-A2-A: Proposed A2-A



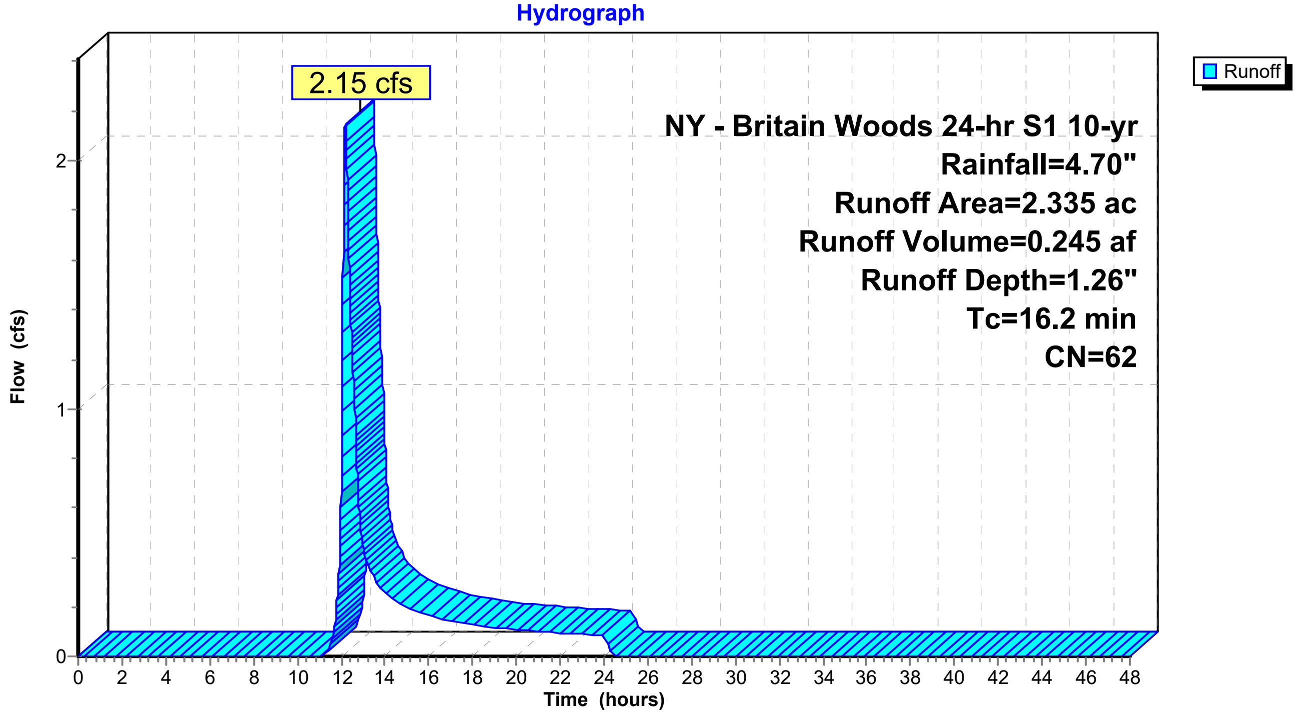
Subcatchment PR-A2-B: Proposed A2-B



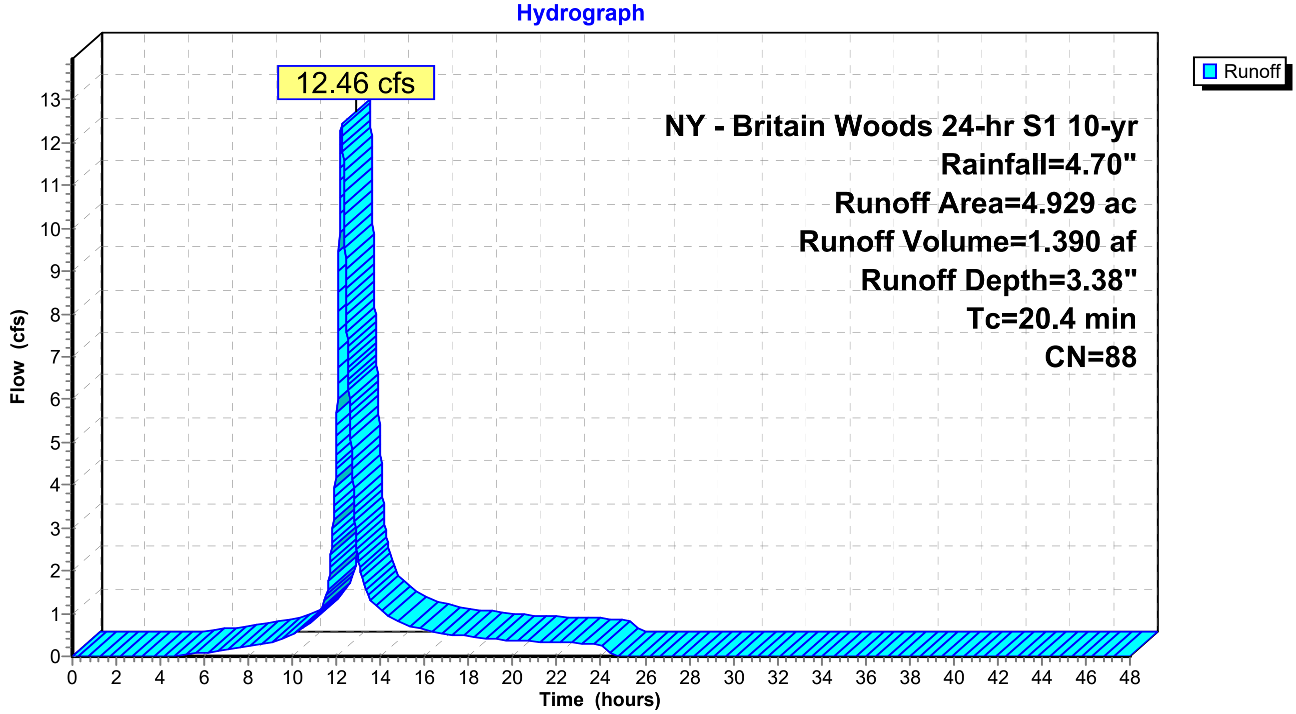
Subcatchment PR-B1: Proposed B1



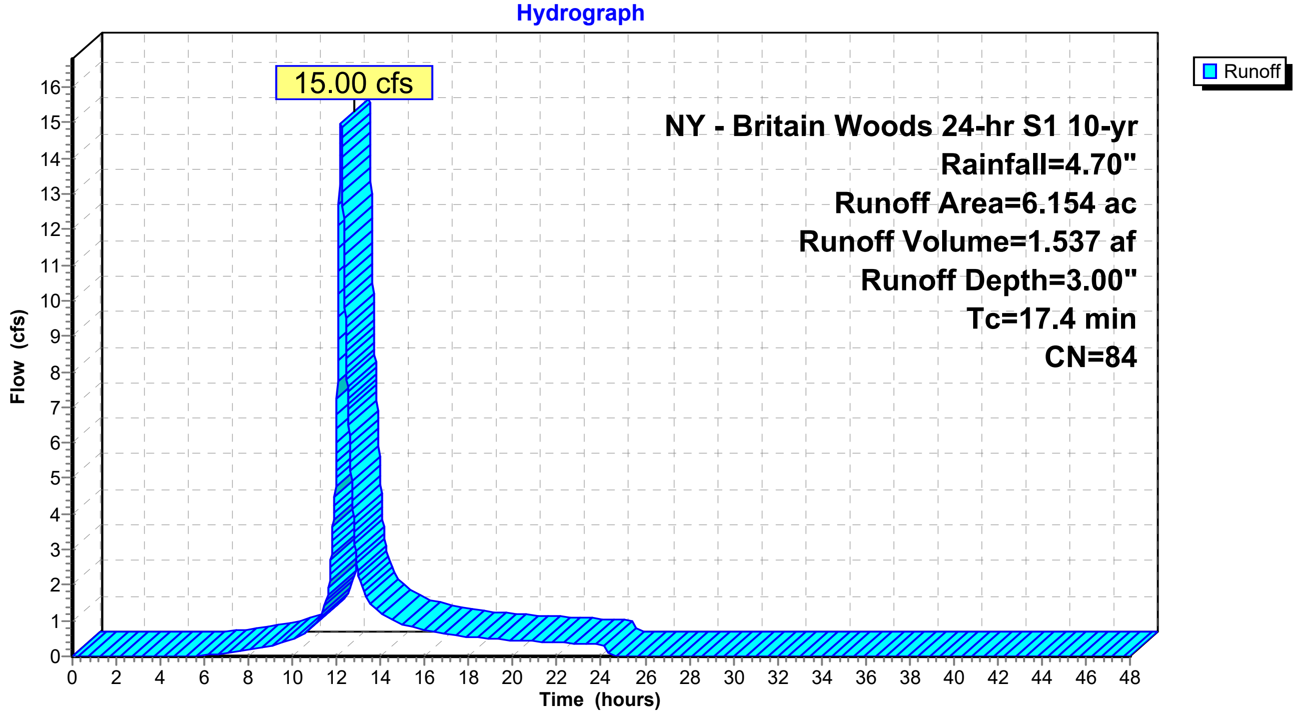
Subcatchment PR-B2: Proposed B2



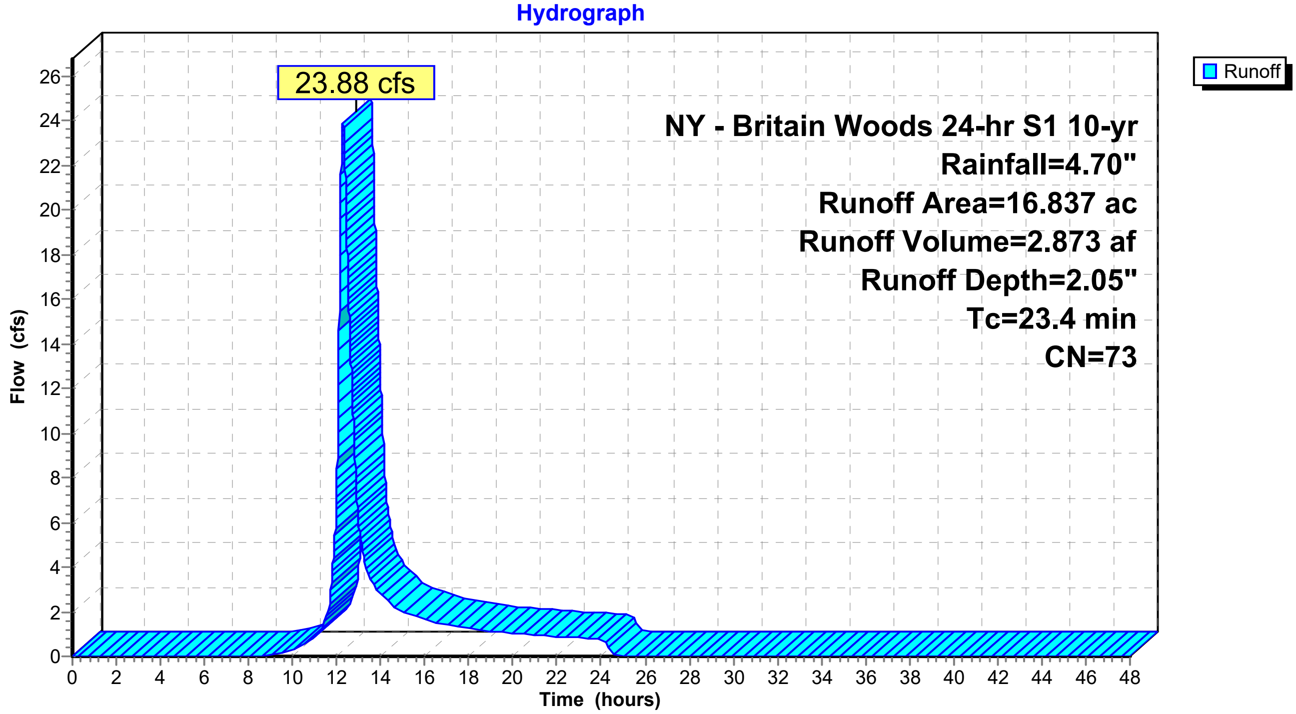
Subcatchment PR-C1-A: Proposed C1-A



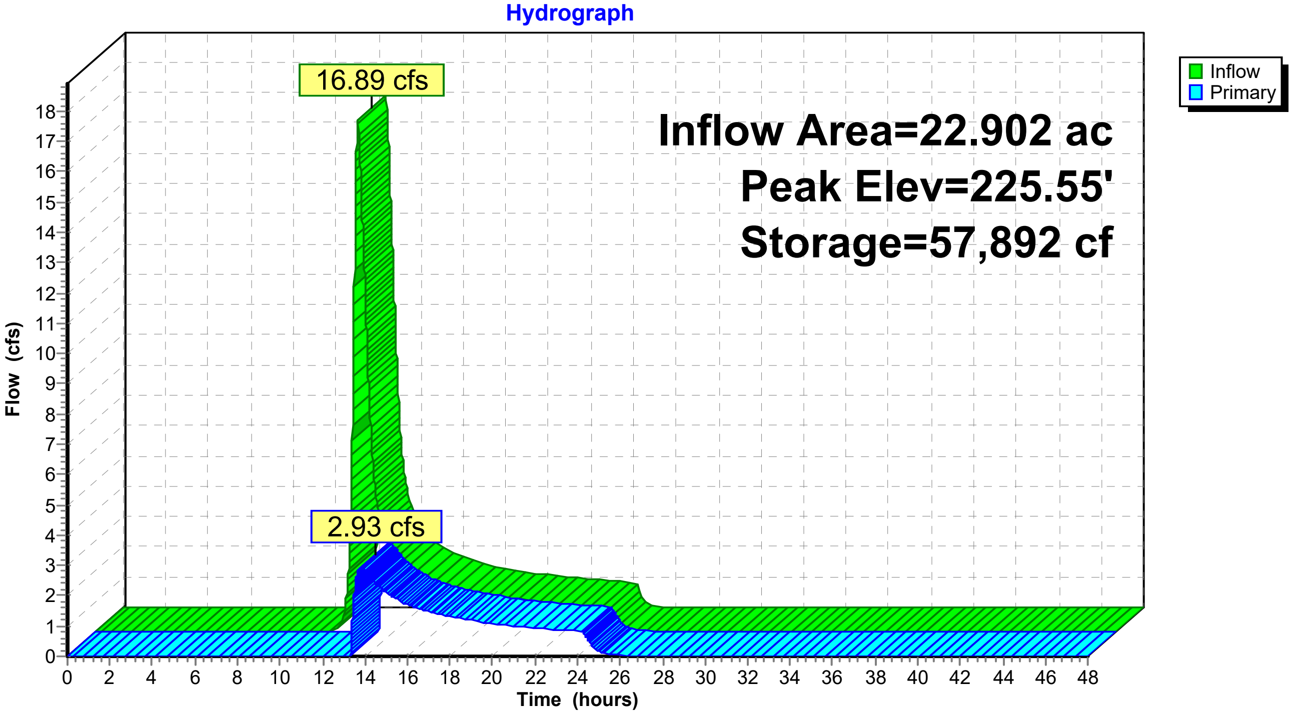
Subcatchment PR-C1-B: Proposed C1-B



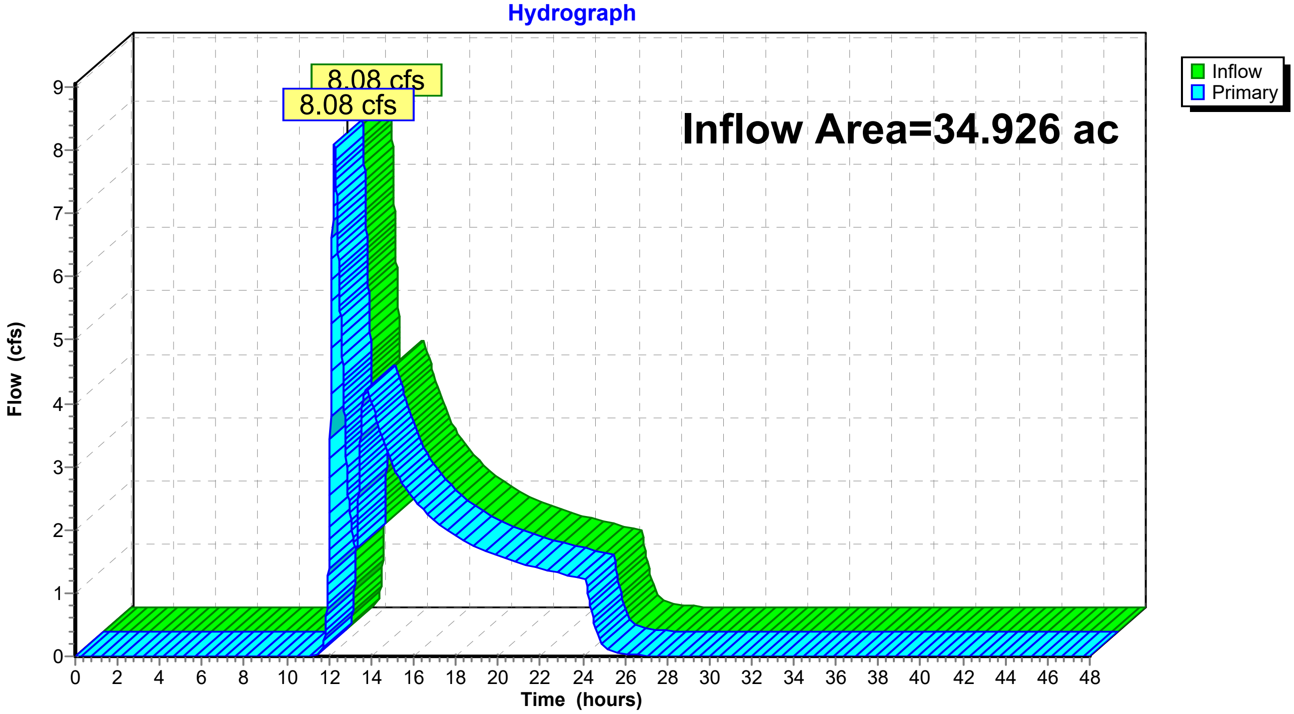
Subcatchment PR-C1-C: Proposed C1-C



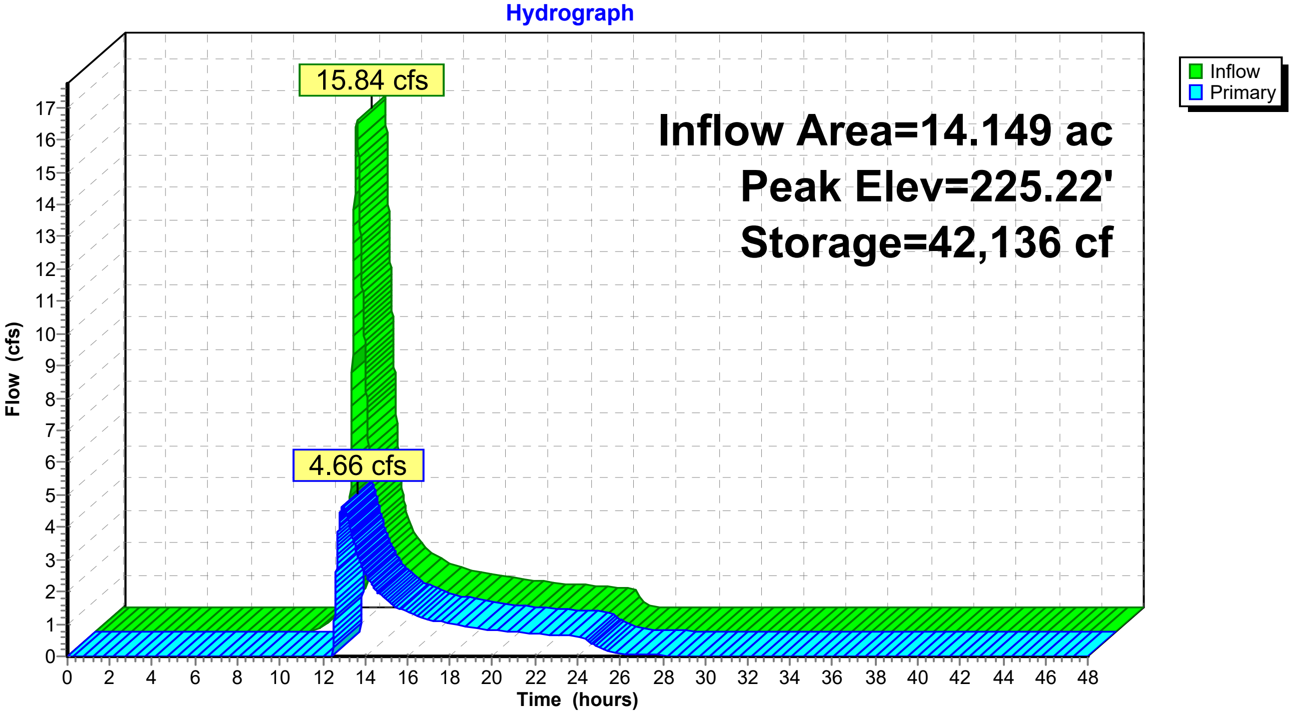
Pond 1P: Existing Wetland



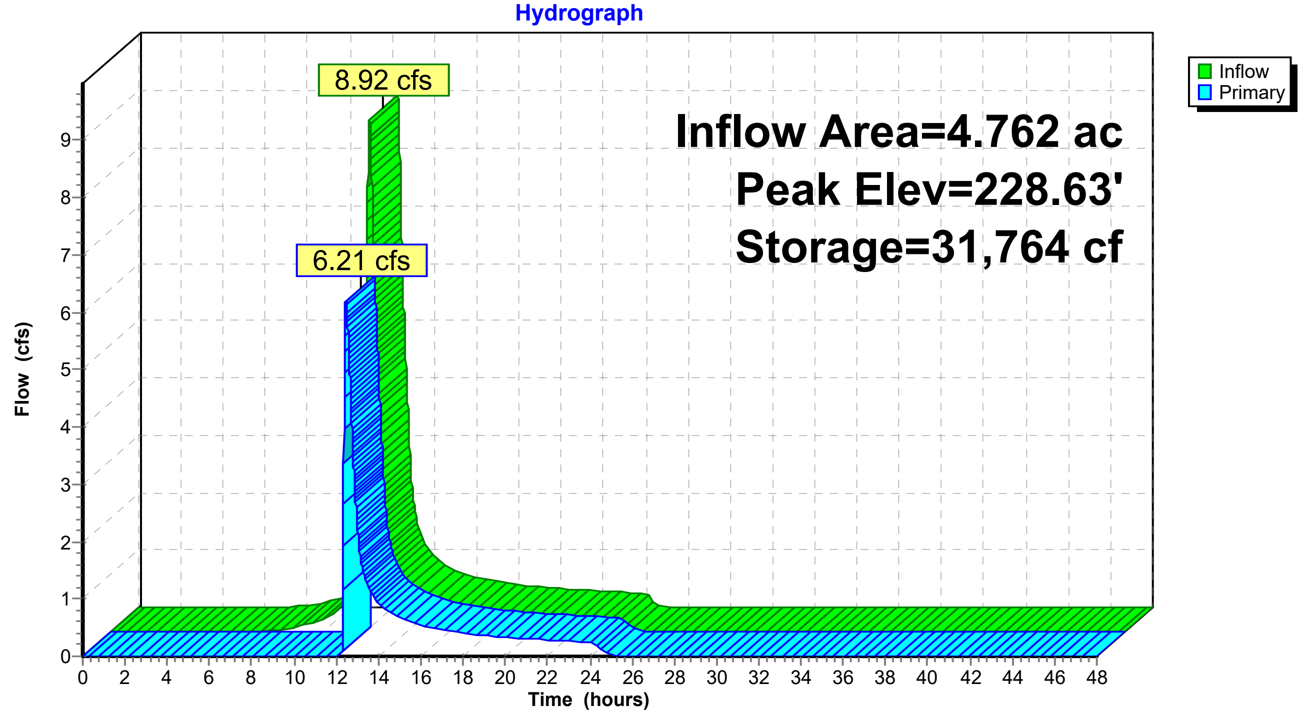
Pond 2P: Existing A



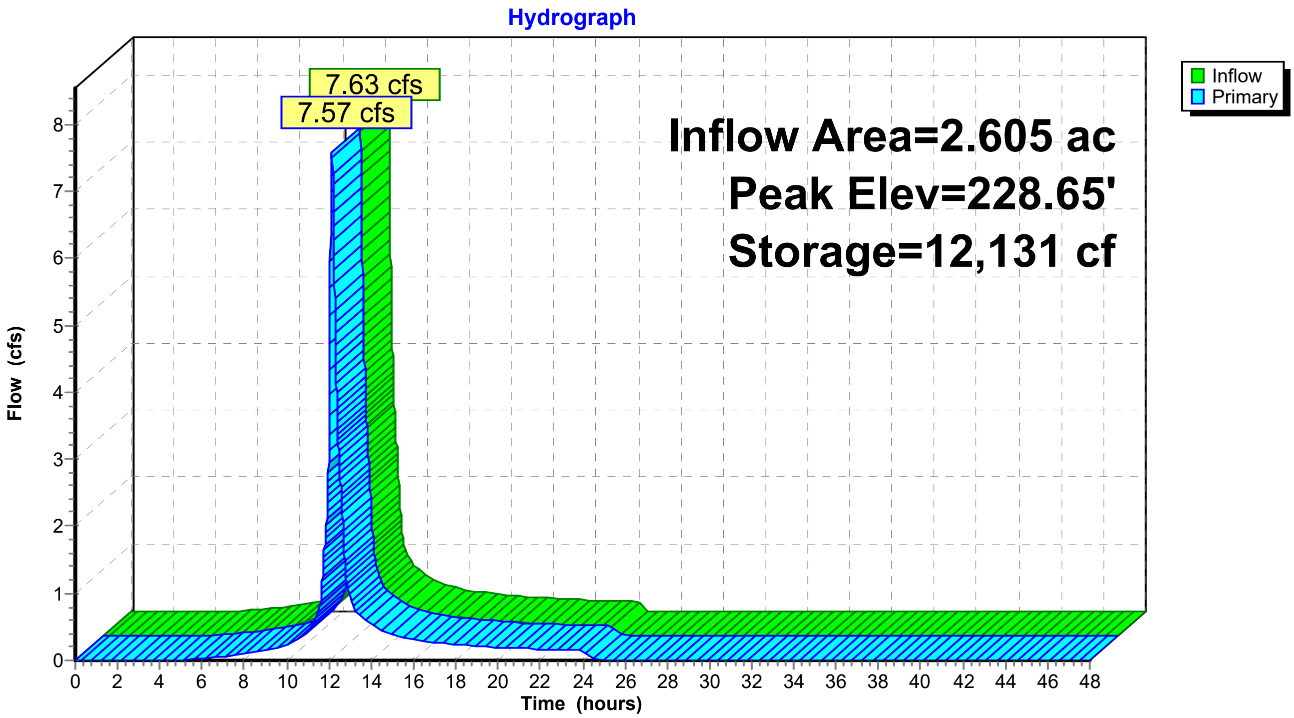
Pond 3P: Existing Wetland



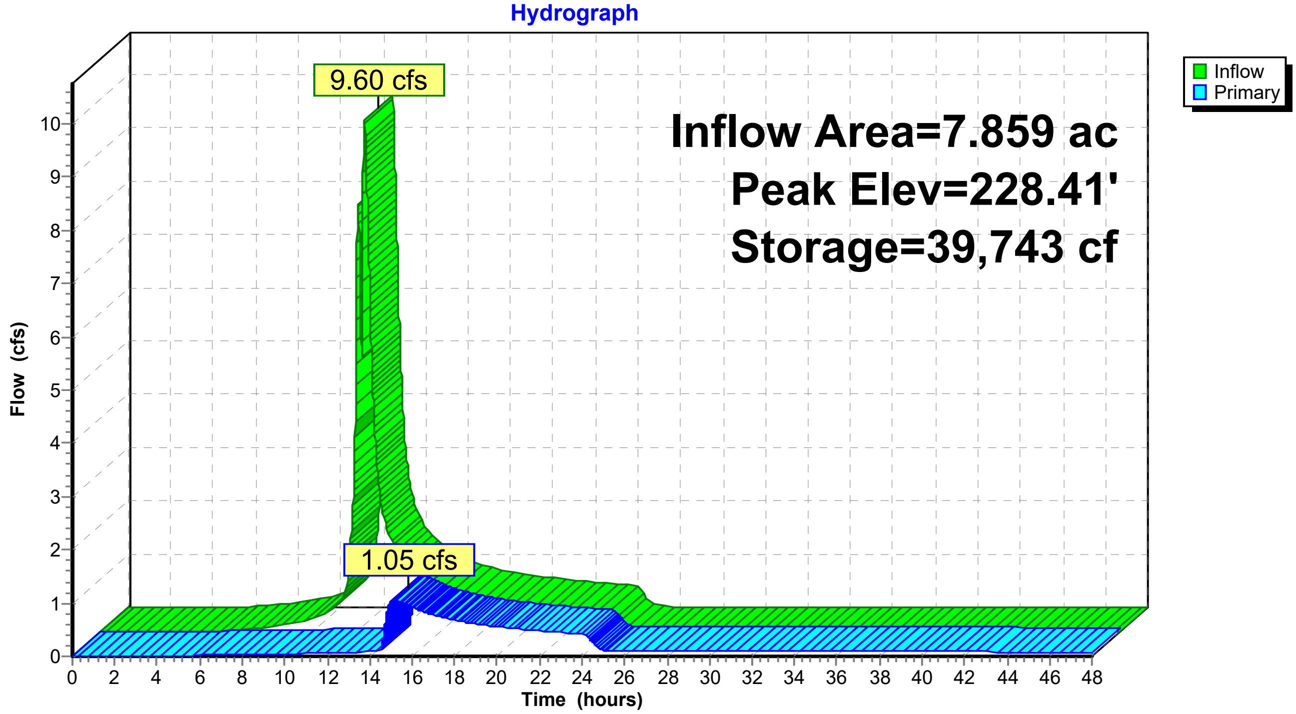
Pond 4P: Forebay & Bio A1-A



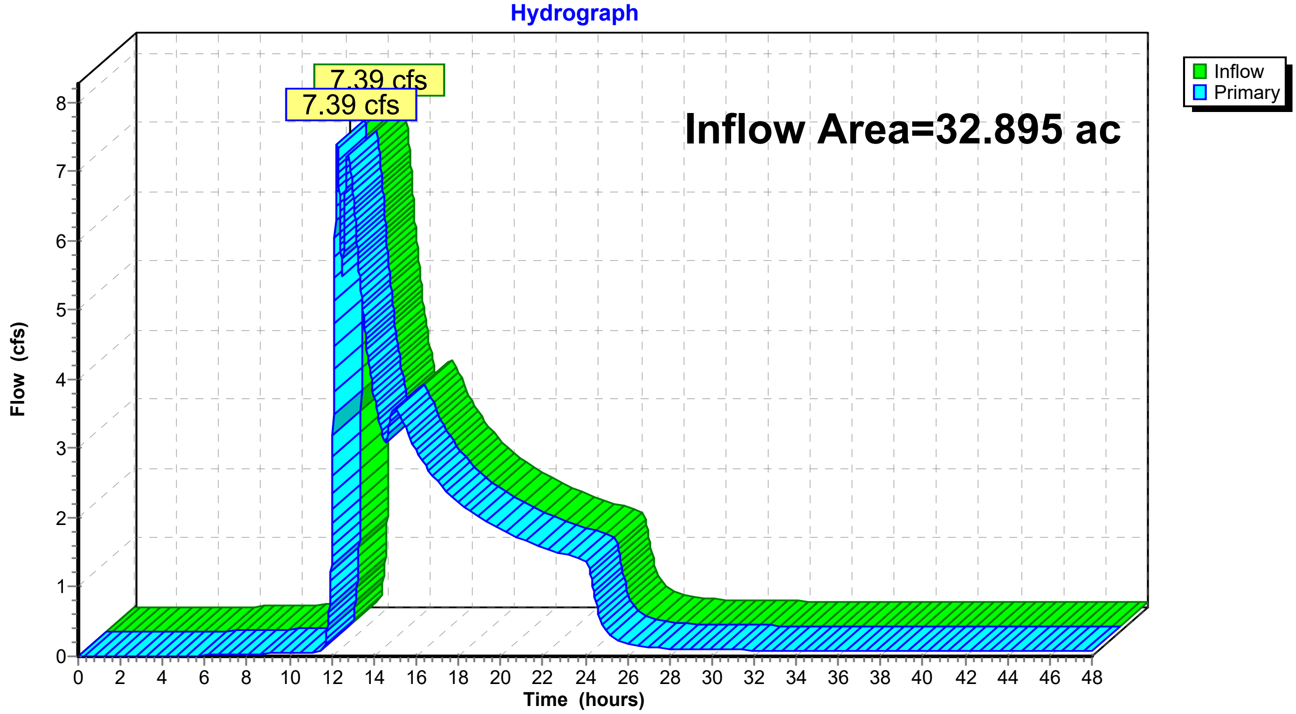
Pond 5P: Forebay A1-B



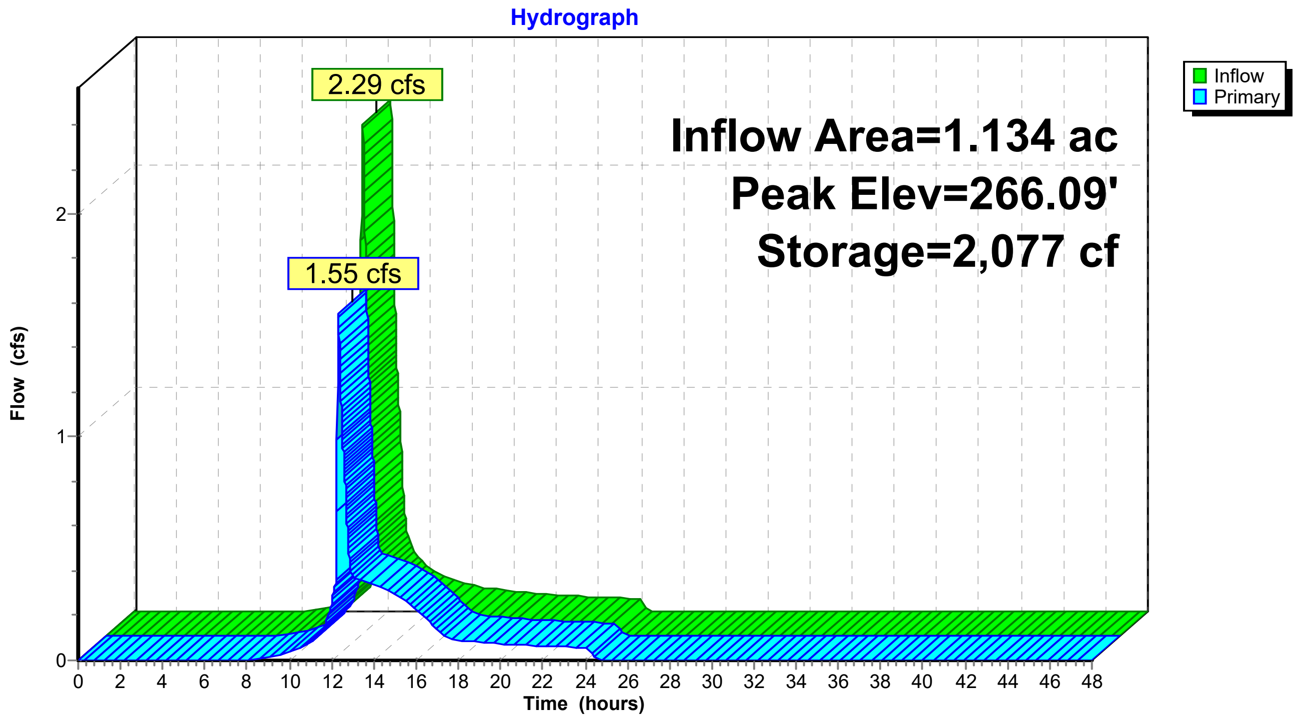
Pond 6P: Detention Basin A1



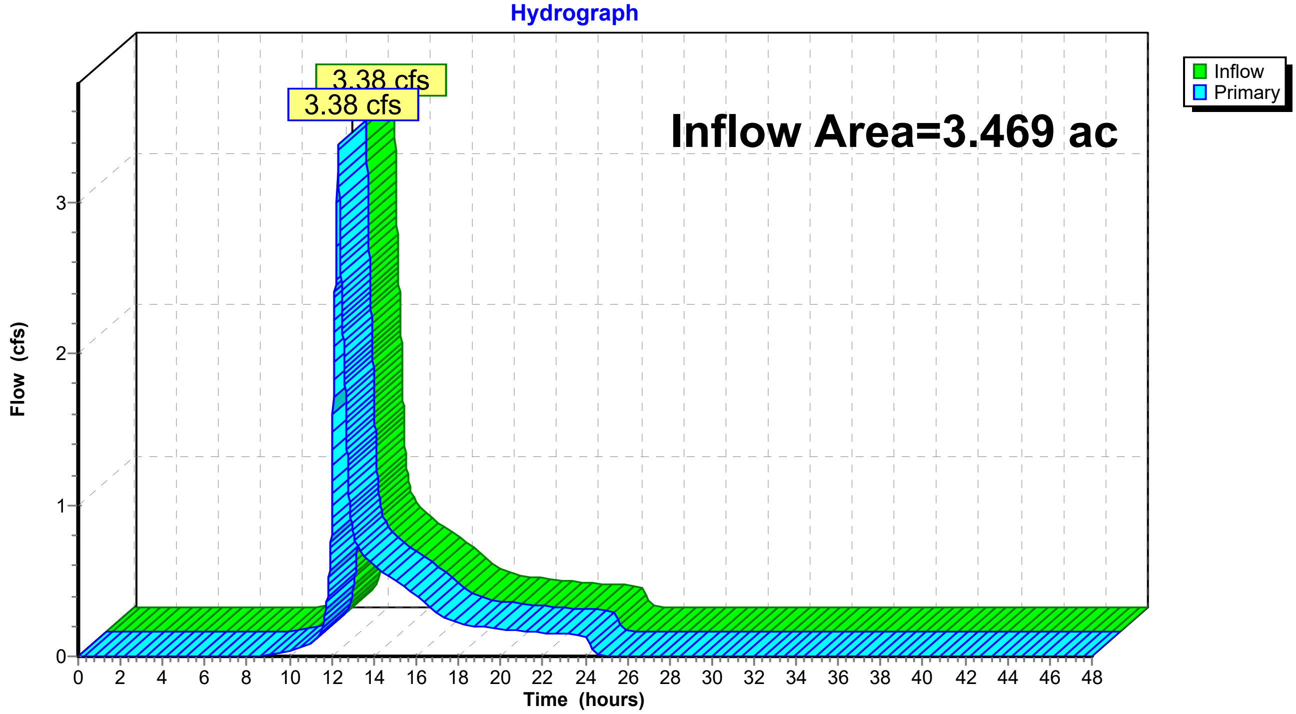
Pond 7P: Design Point A



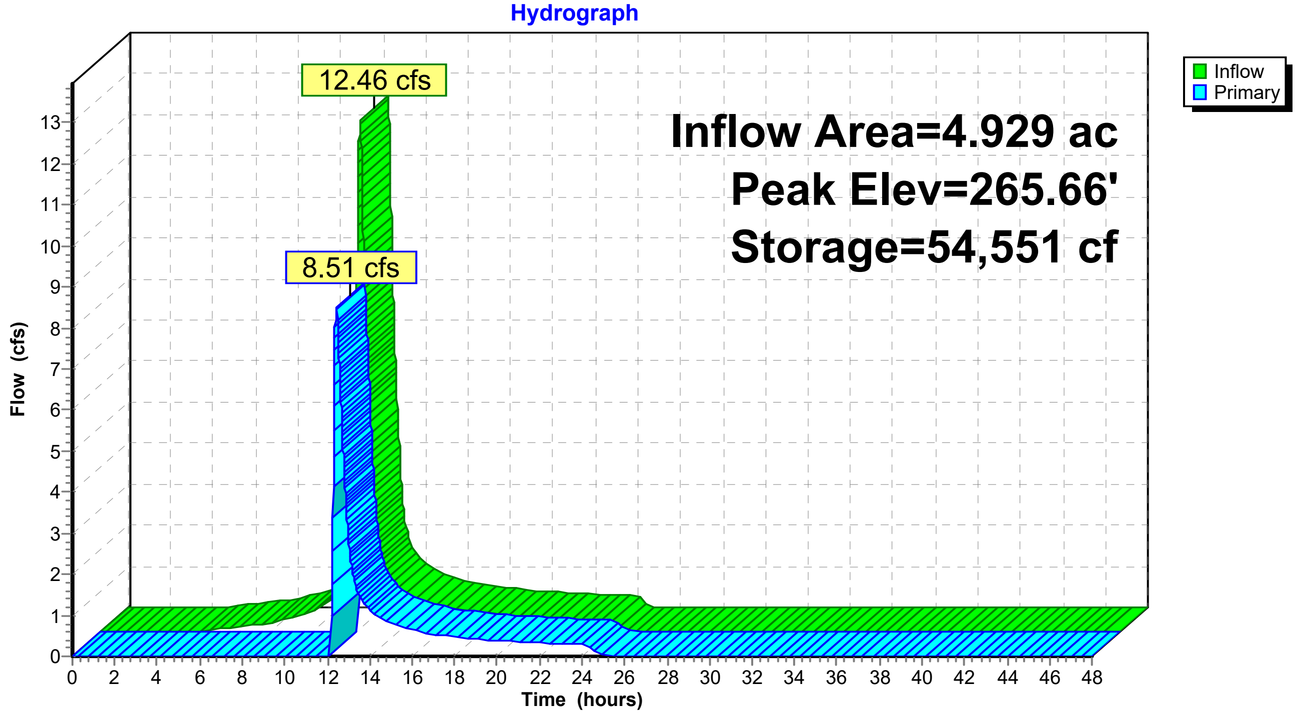
Pond 8P: Detention Basin B1



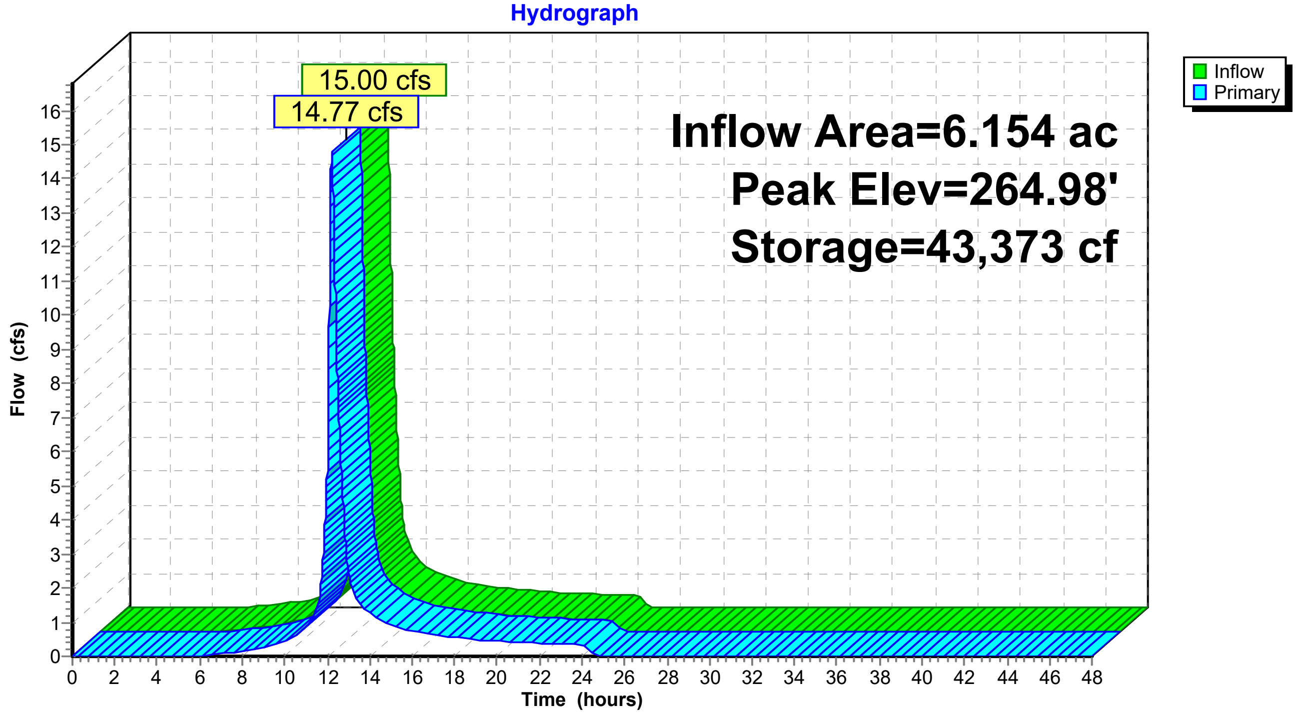
Pond 9P: Design Point B



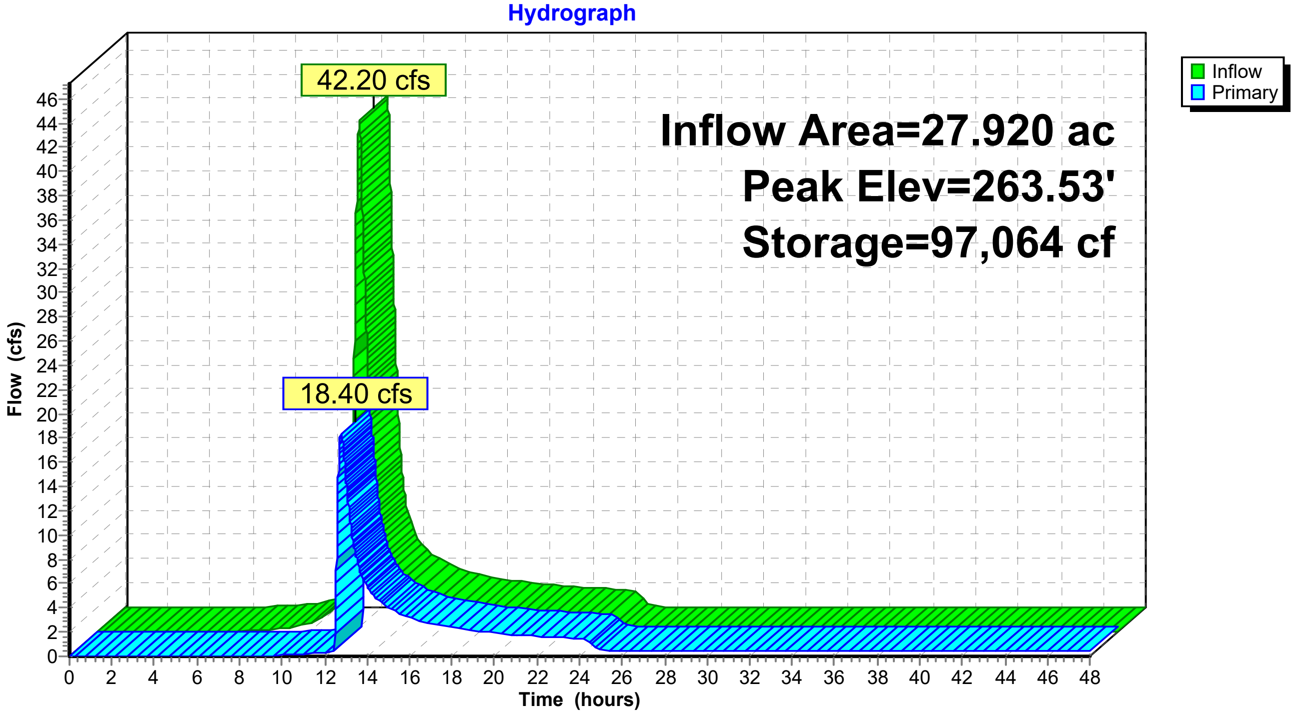
Pond 10P: Forebay & Bio C1-A



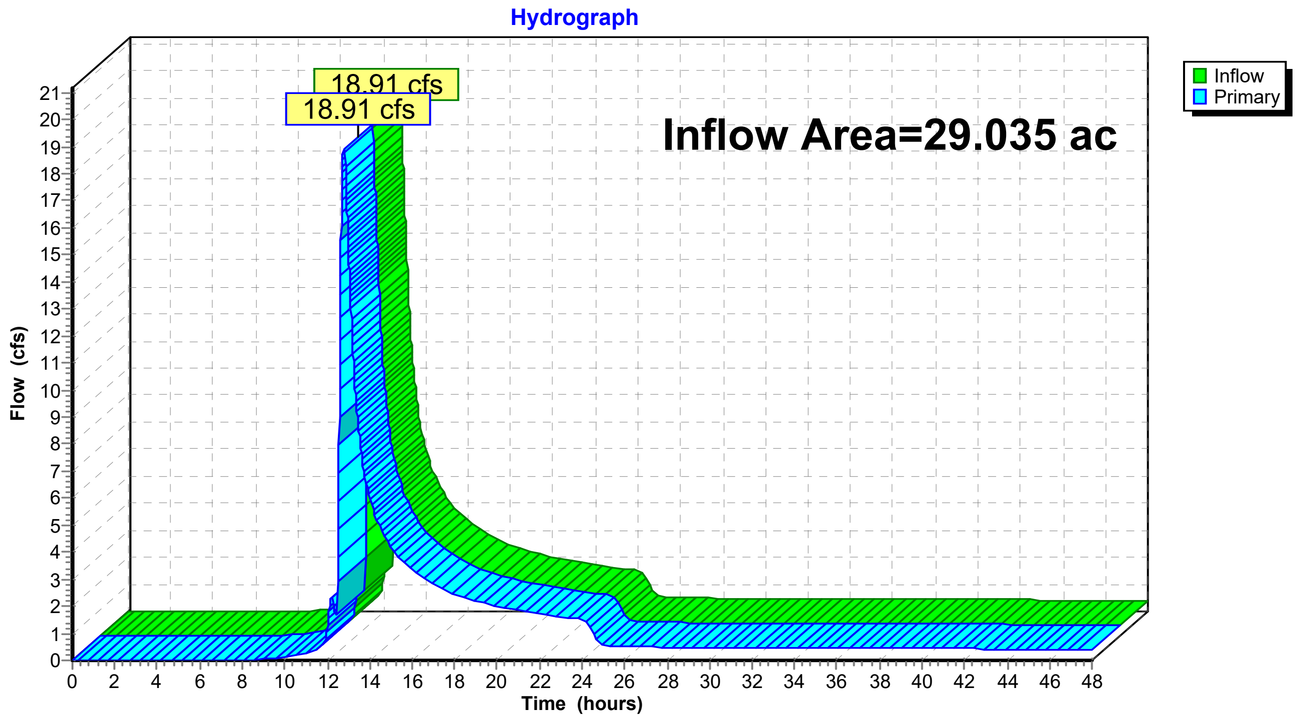
Pond 11P: Forebay C1-B



Pond 12P: Detention Basin C1



Pond 13P: Design Point C



APPENDIX 9

25-YEAR DESIGN STORM

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 5
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 5S: Proposed C2 Runoff Area=1.115 ac 15.16% Impervious Runoff Depth=3.21"
Tc=16.8 min CN=75 Runoff=2.88 cfs 0.298 af

Subcatchment EX-A1: Existing A1 Runoff Area=22.902 ac 8.12% Impervious Runoff Depth=2.03"
Tc=26.4 min CN=62 Runoff=28.63 cfs 3.873 af

Subcatchment EX-A2: Existing A2 Runoff Area=12.024 ac 1.27% Impervious Runoff Depth=1.78"
Tc=19.8 min CN=59 Runoff=14.62 cfs 1.785 af

Subcatchment EX-B: Existing B Runoff Area=7.465 ac 0.00% Impervious Runoff Depth=1.95"
Tc=18.6 min CN=61 Runoff=10.42 cfs 1.210 af

Subcatchment EX-C: Existing C Runoff Area=23.004 ac 0.93% Impervious Runoff Depth=2.73"
Tc=27.0 min CN=70 Runoff=40.10 cfs 5.241 af

Subcatchment PR-A1-A: Proposed A1-A Runoff Area=4.762 ac 47.67% Impervious Runoff Depth=3.60"
Tc=21.6 min CN=79 Runoff=12.36 cfs 1.428 af

Subcatchment PR-A1-B: Proposed A1-B Runoff Area=2.605 ac 63.57% Impervious Runoff Depth=4.32"
Tc=13.2 min CN=86 Runoff=9.99 cfs 0.939 af

Subcatchment PR-A1-C: Proposed A1-C Runoff Area=0.492 ac 0.00% Impervious Runoff Depth=2.11"
Tc=6.0 min CN=63 Runoff=1.20 cfs 0.087 af

Subcatchment PR-A2-A: Proposed A2-A Runoff Area=14.149 ac 15.15% Impervious Runoff Depth=2.55"
Tc=23.4 min CN=68 Runoff=24.48 cfs 3.009 af

Subcatchment PR-A2-B: Proposed A2-B Runoff Area=10.887 ac 2.63% Impervious Runoff Depth=1.78"
Tc=19.8 min CN=59 Runoff=13.24 cfs 1.616 af

Subcatchment PR-B1: Proposed B1 Runoff Area=1.134 ac 0.00% Impervious Runoff Depth=3.30"
Tc=14.4 min CN=76 Runoff=3.24 cfs 0.312 af

Subcatchment PR-B2: Proposed B2 Runoff Area=2.335 ac 0.00% Impervious Runoff Depth=2.03"
Tc=16.2 min CN=62 Runoff=3.65 cfs 0.395 af

Subcatchment PR-C1-A: Proposed C1-A Runoff Area=4.929 ac 70.16% Impervious Runoff Depth=4.54"
Tc=20.4 min CN=88 Runoff=16.17 cfs 1.864 af

Subcatchment PR-C1-B: Proposed C1-B Runoff Area=6.154 ac 61.08% Impervious Runoff Depth=4.11"
Tc=17.4 min CN=84 Runoff=19.95 cfs 2.109 af

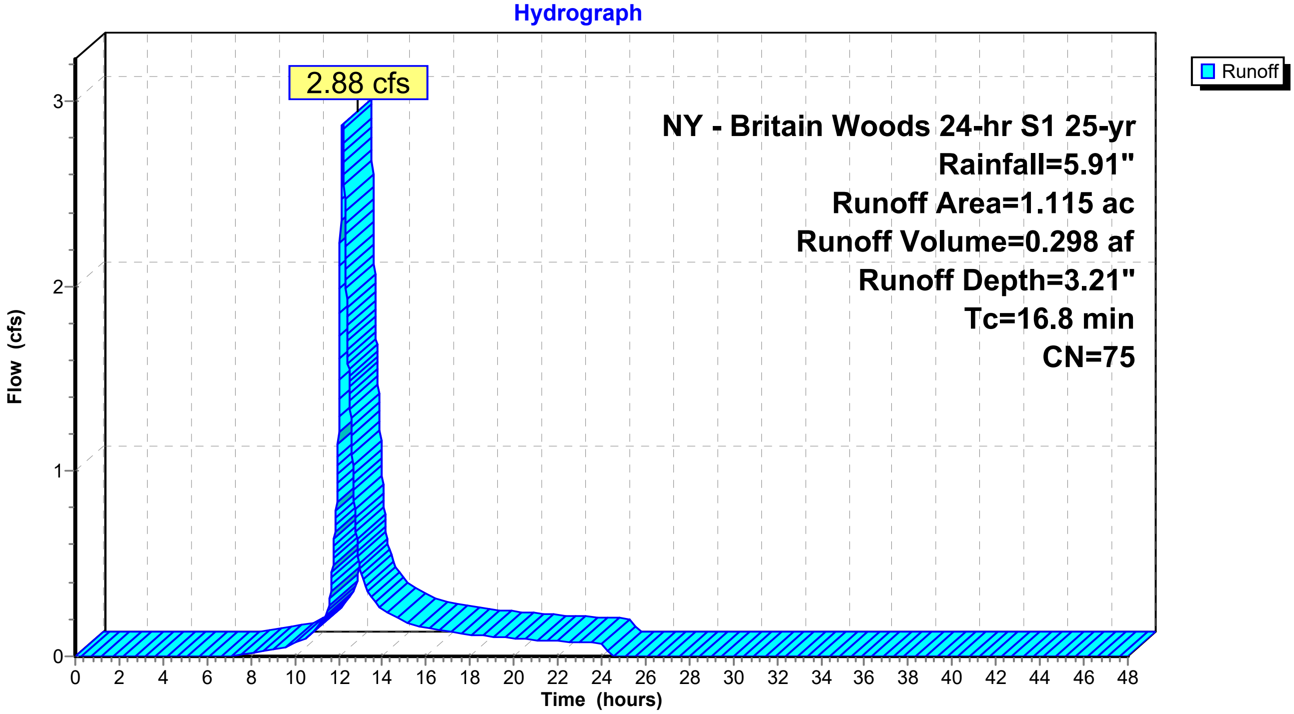
Subcatchment PR-C1-C: Proposed C1-C Runoff Area=16.837 ac 0.26% Impervious Runoff Depth=3.01"
Tc=23.4 min CN=73 Runoff=34.96 cfs 4.229 af

Pond 1P: Existing Wetland Peak Elev=225.65' Storage=63,519 cf Inflow=28.63 cfs 3.873 af
Outflow=16.02 cfs 2.773 af

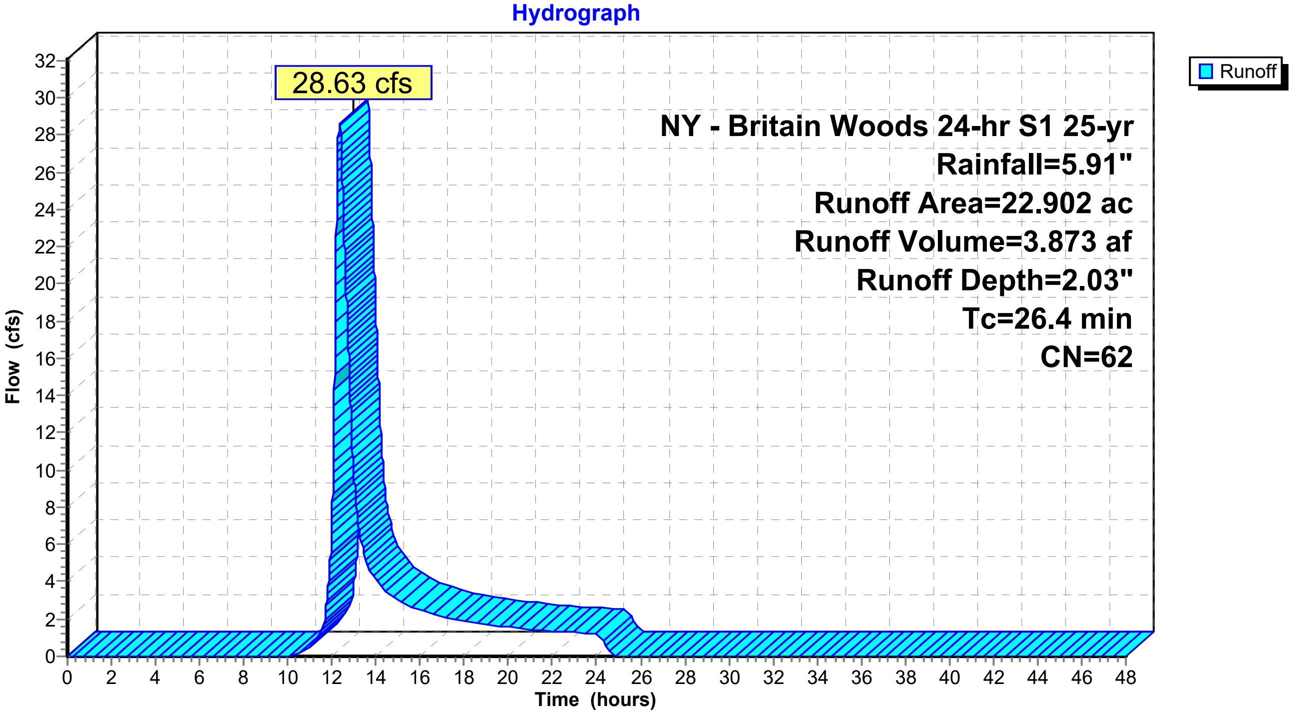
Pond 2P: Existing A		Inflow=22.33 cfs 4.558 af Primary=22.33 cfs 4.558 af
Pond 3P: Existing Wetland	Peak Elev=225.44' Storage=52,307 cf	Inflow=24.48 cfs 3.009 af Outflow=10.81 cfs 2.410 af
Pond 4P: Forebay & Bio A1-A	Peak Elev=228.70' Storage=32,761 cf	Inflow=12.36 cfs 1.428 af Outflow=11.62 cfs 1.123 af
Pond 5P: Forebay A1-B	Peak Elev=228.68' Storage=12,233 cf	Inflow=9.99 cfs 0.939 af Outflow=9.93 cfs 0.939 af
Pond 6P: Detention Basin A1	Peak Elev=228.58' Storage=41,757 cf	Inflow=18.54 cfs 2.149 af Outflow=5.80 cfs 1.411 af
Pond 7P: Design Point A		Inflow=21.79 cfs 5.437 af Primary=21.79 cfs 5.437 af
Pond 8P: Detention Basin B1	Peak Elev=266.15' Storage=2,187 cf	Inflow=3.24 cfs 0.312 af Outflow=3.07 cfs 0.312 af
Pond 9P: Design Point B		Inflow=6.71 cfs 0.707 af Primary=6.71 cfs 0.707 af
Pond 10P: Forebay & Bio C1-A	Peak Elev=265.73' Storage=56,166 cf	Inflow=16.17 cfs 1.864 af Outflow=14.61 cfs 1.390 af
Pond 11P: Forebay C1-B	Peak Elev=265.03' Storage=43,800 cf	Inflow=19.95 cfs 2.109 af Outflow=19.73 cfs 2.109 af
Pond 12P: Detention Basin C1	Peak Elev=264.16' Storage=115,858 cf	Inflow=67.66 cfs 7.728 af Outflow=34.36 cfs 6.766 af
Pond 13P: Design Point C		Inflow=35.51 cfs 7.064 af Primary=35.51 cfs 7.064 af

Total Runoff Area = 130.794 ac Runoff Volume = 28.395 af Average Runoff Depth = 2.61"
87.76% Pervious = 114.784 ac 12.24% Impervious = 16.010 ac

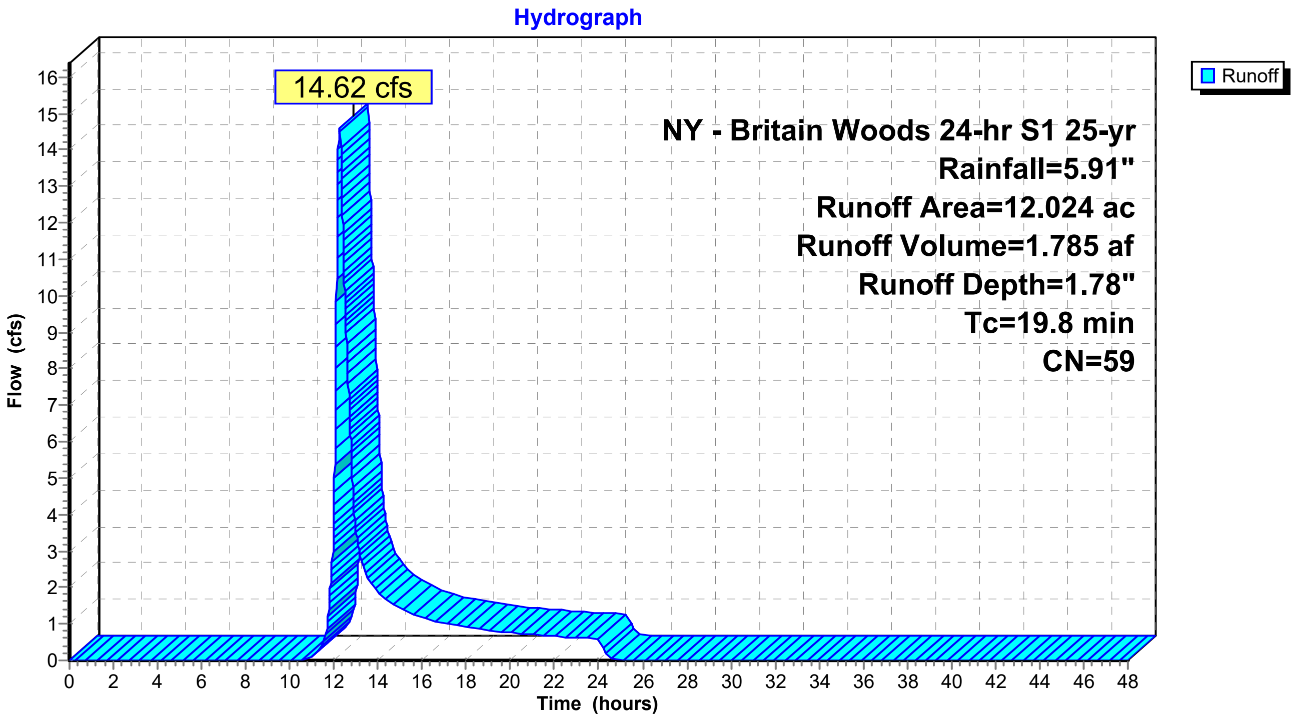
Subcatchment 5S: Proposed C2



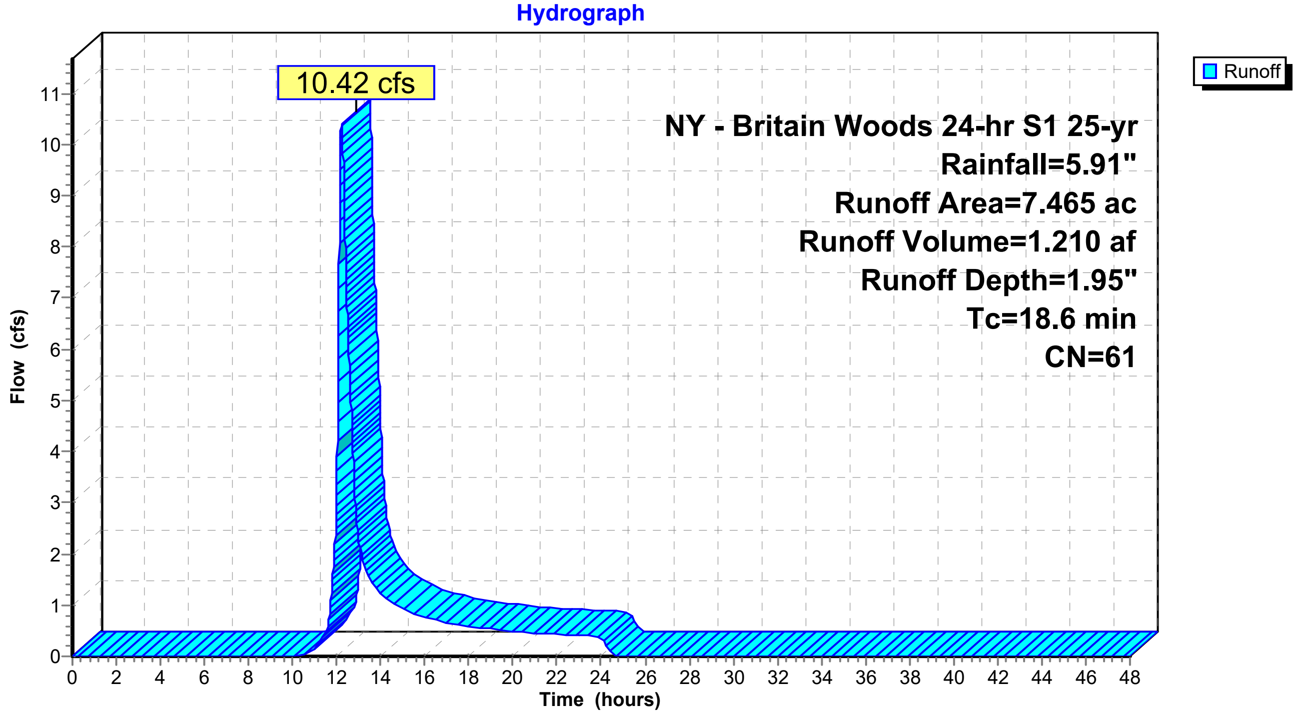
Subcatchment EX-A1: Existing A1



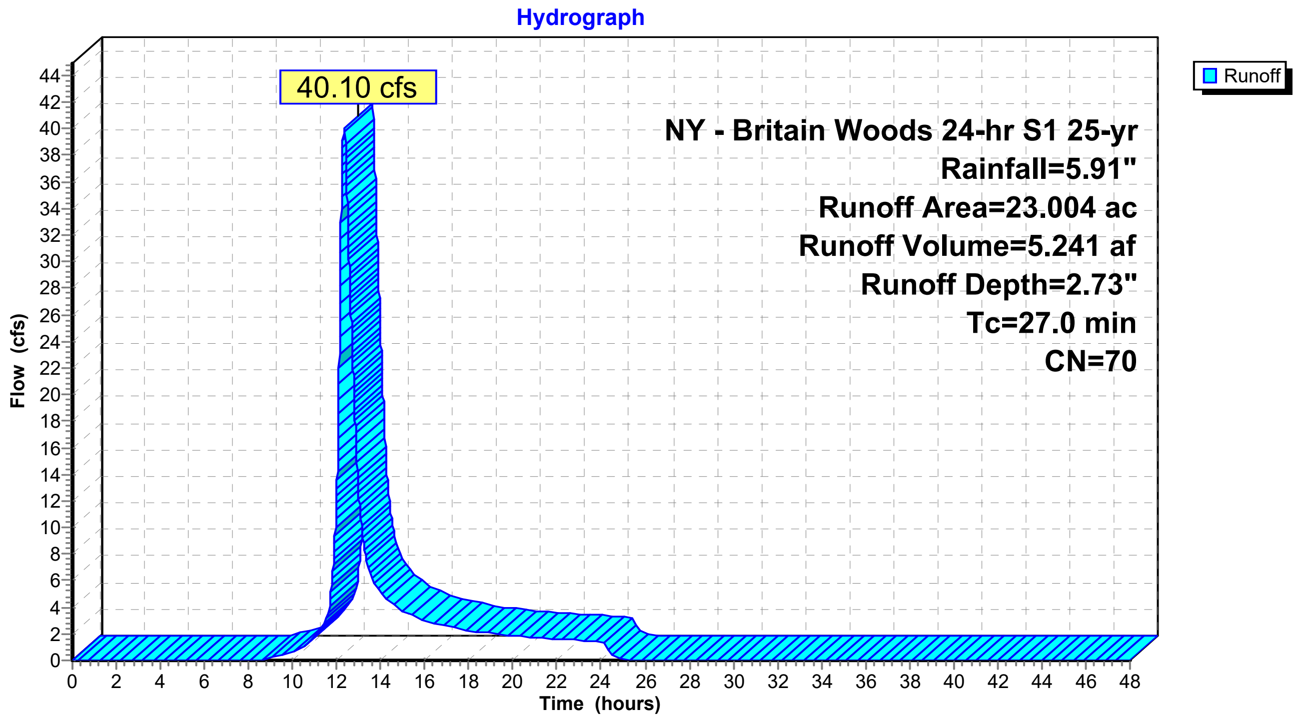
Subcatchment EX-A2: Existing A2



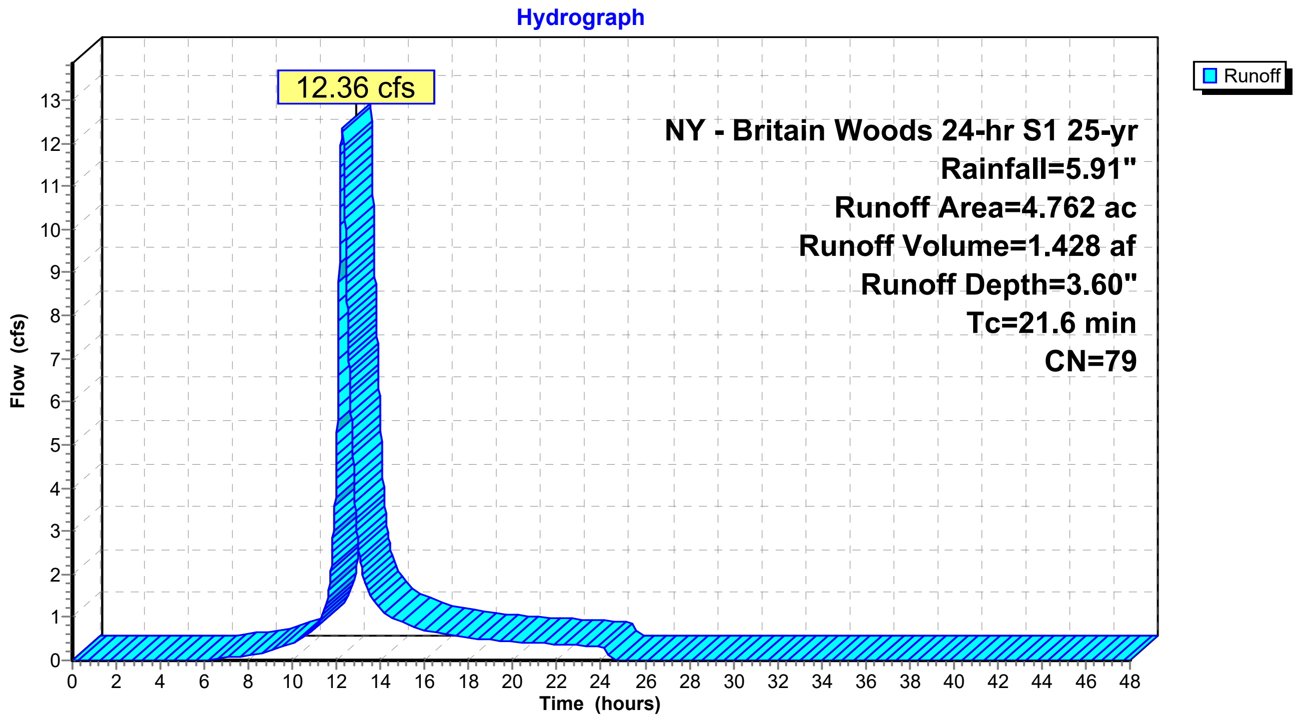
Subcatchment EX-B: Existing B



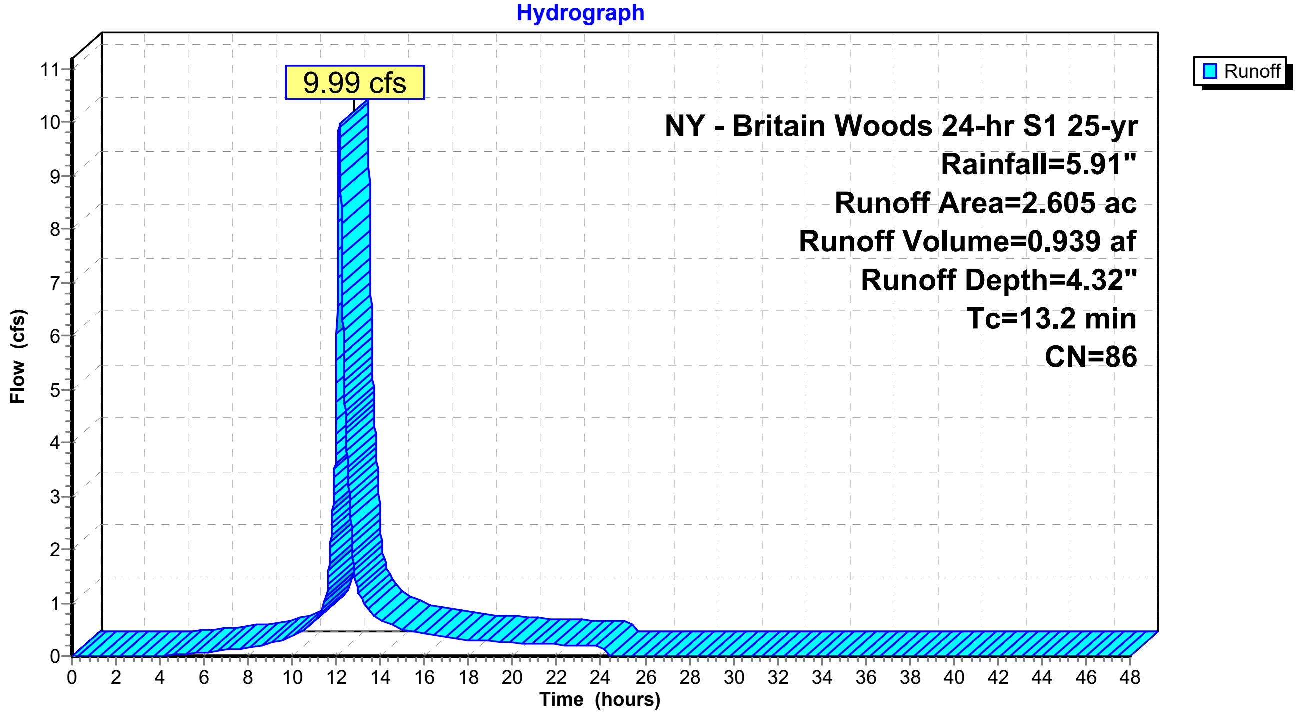
Subcatchment EX-C: Existing C



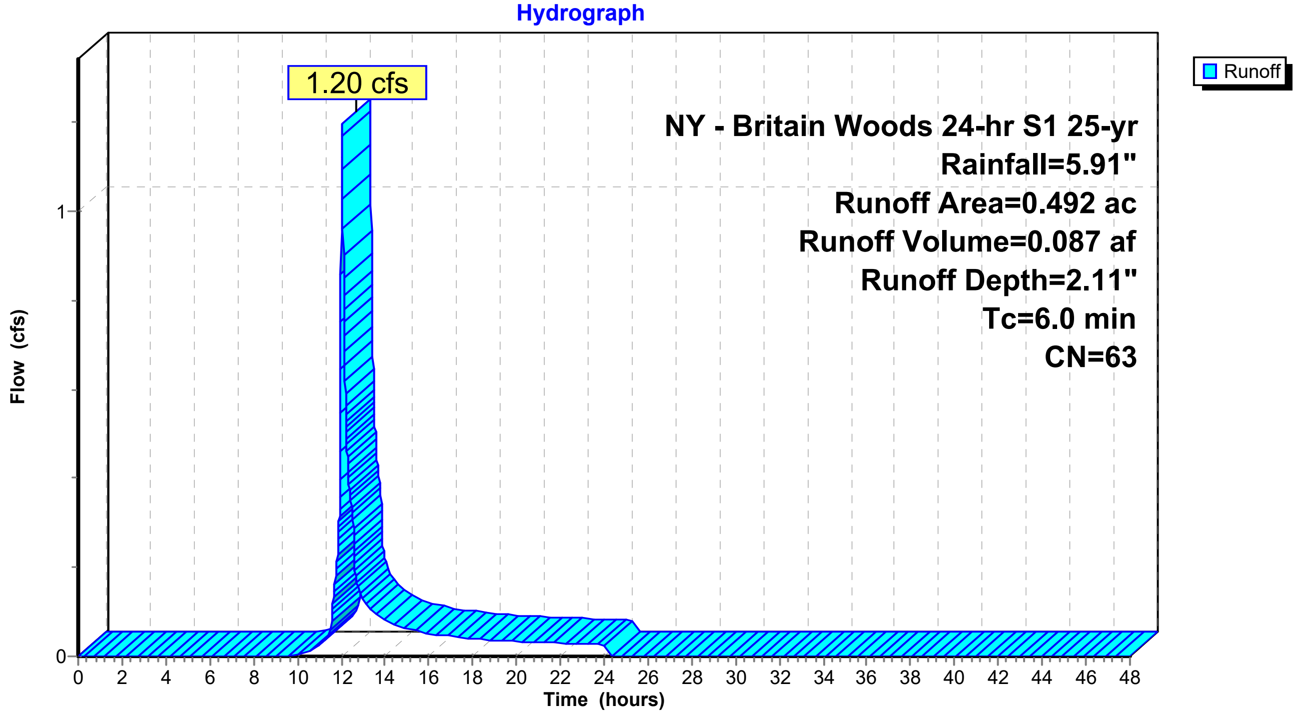
Subcatchment PR-A1-A: Proposed A1-A



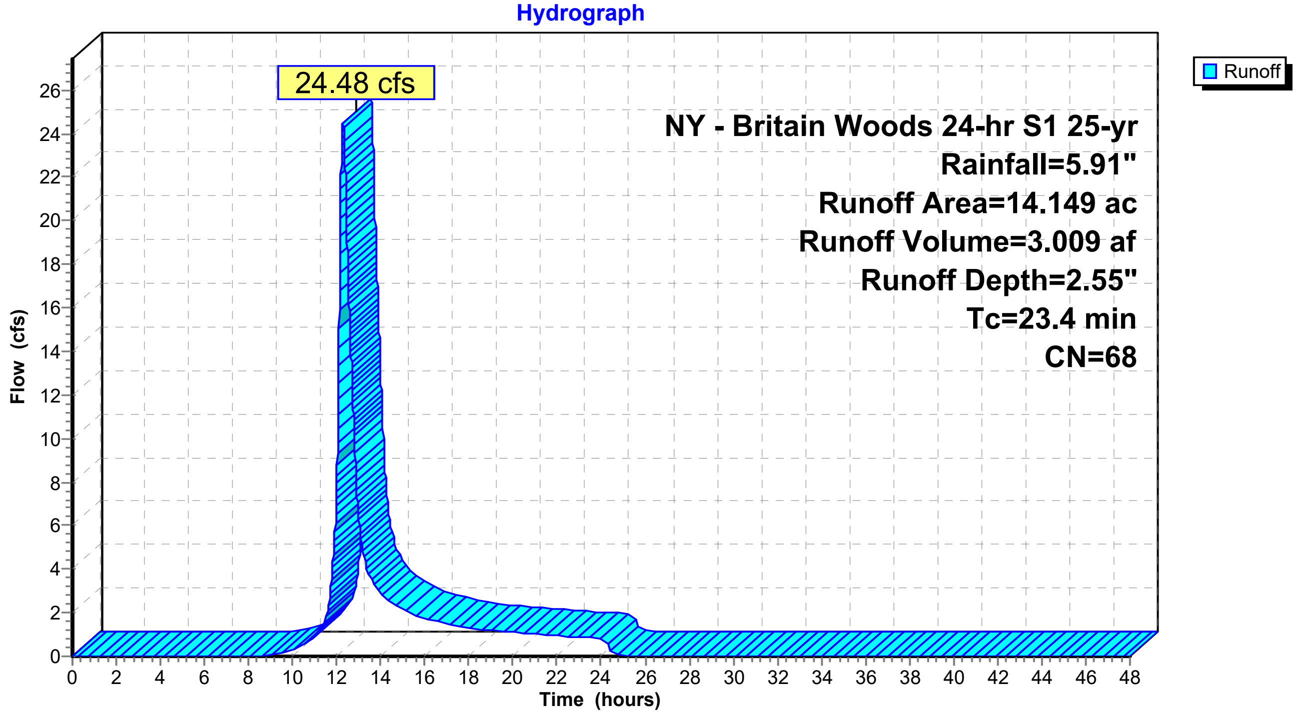
Subcatchment PR-A1-B: Proposed A1-B



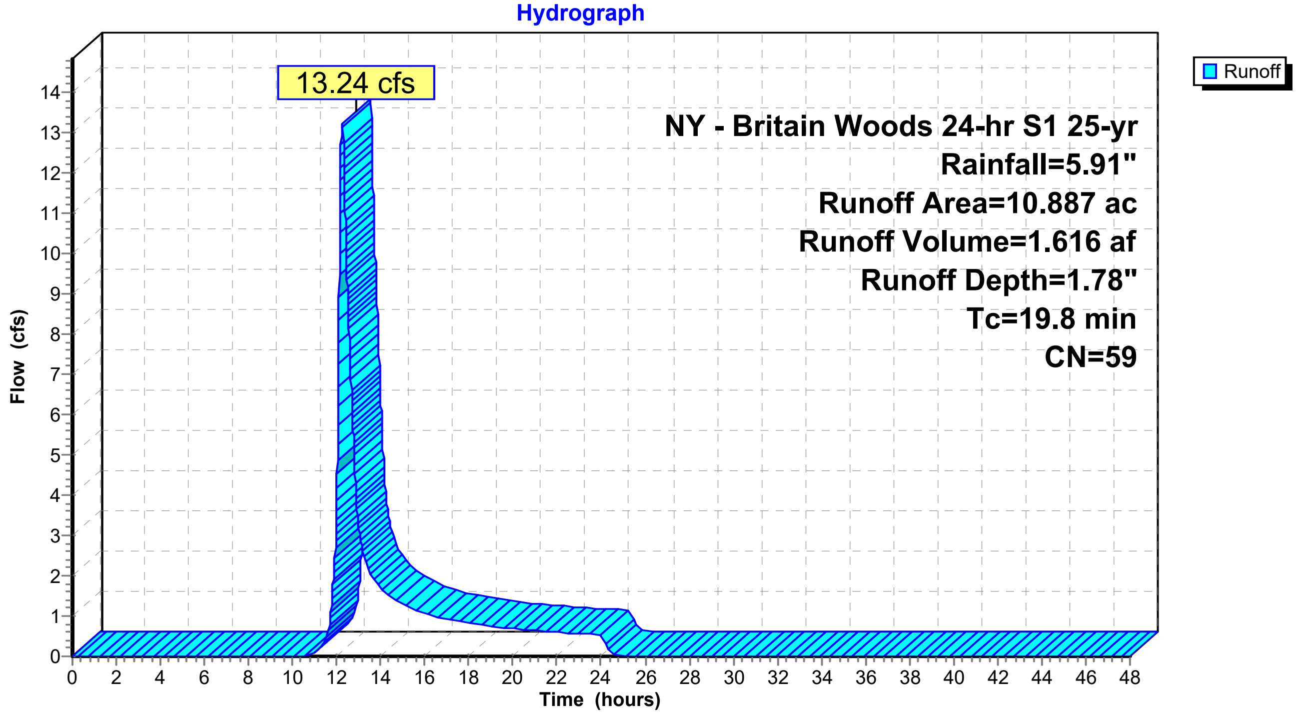
Subcatchment PR-A1-C: Proposed A1-C



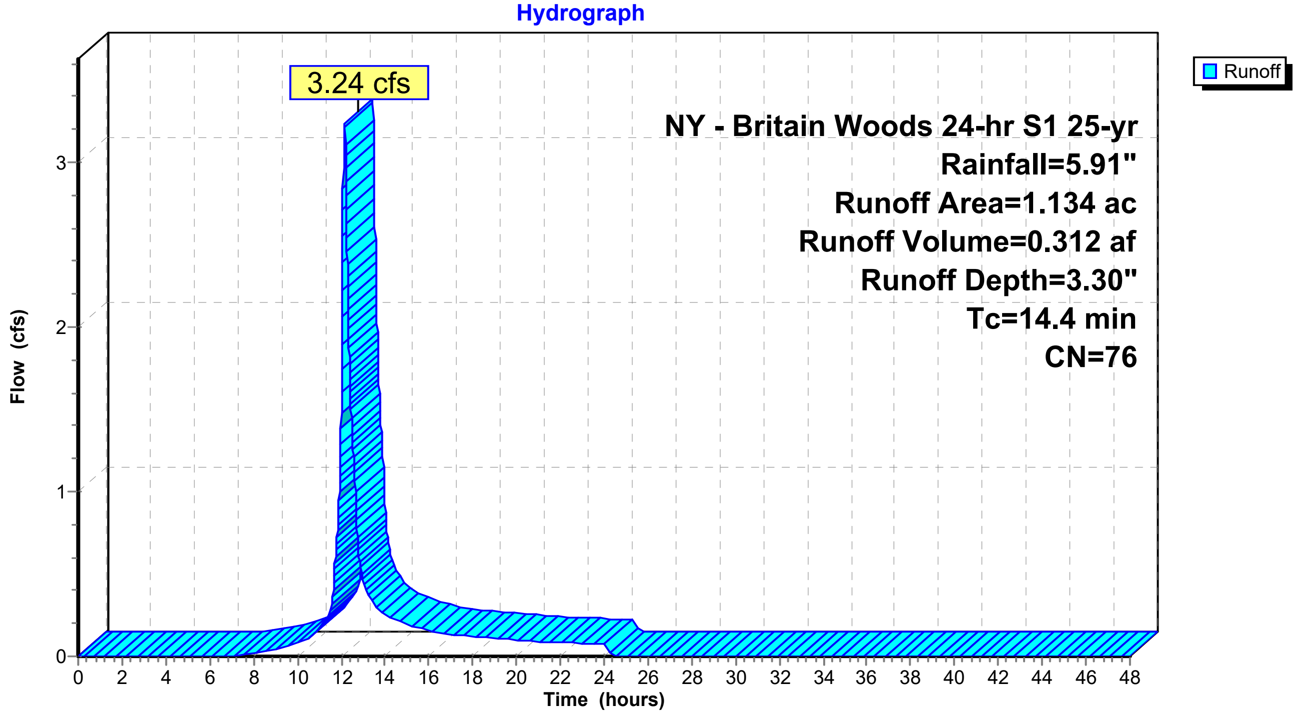
Subcatchment PR-A2-A: Proposed A2-A



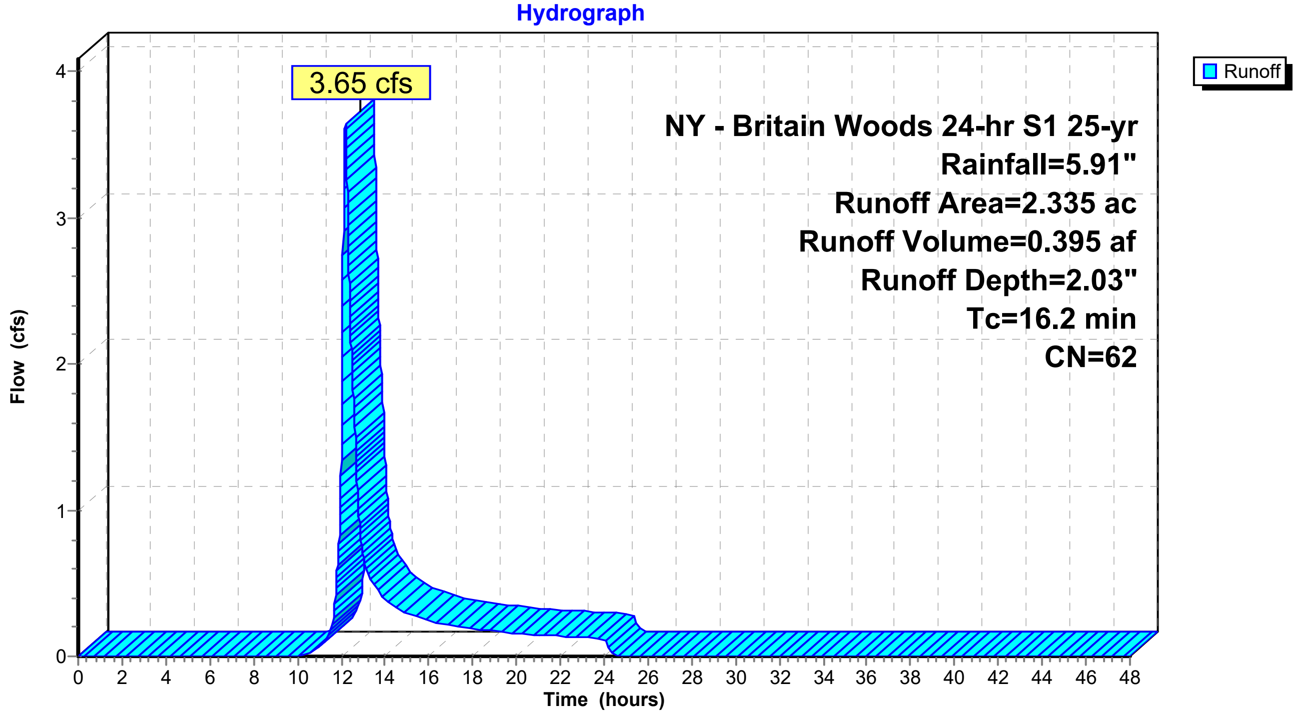
Subcatchment PR-A2-B: Proposed A2-B



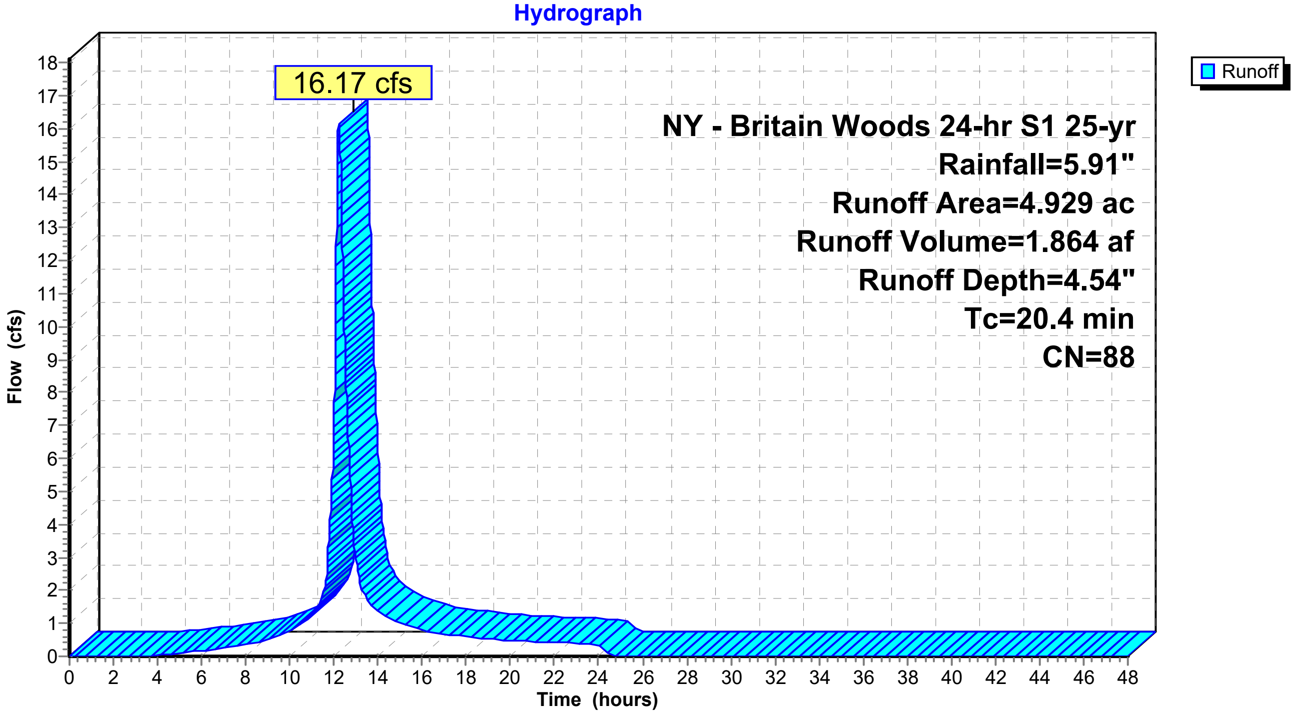
Subcatchment PR-B1: Proposed B1



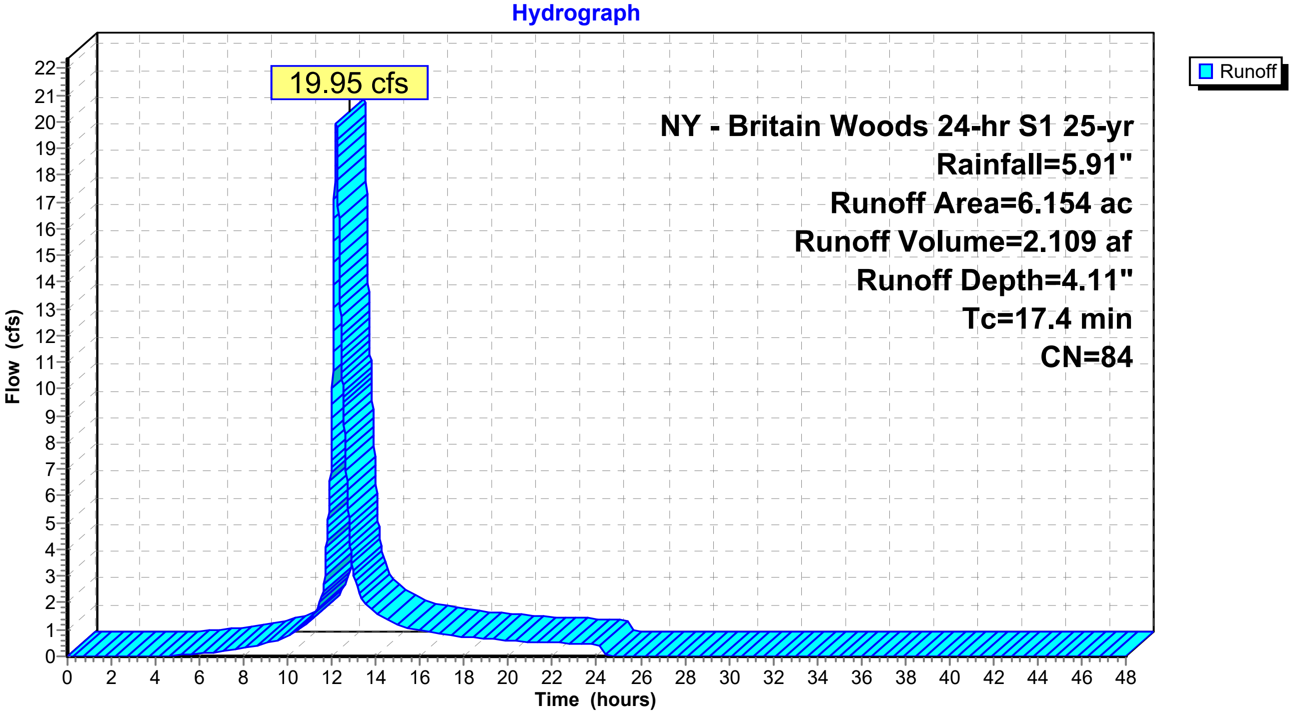
Subcatchment PR-B2: Proposed B2



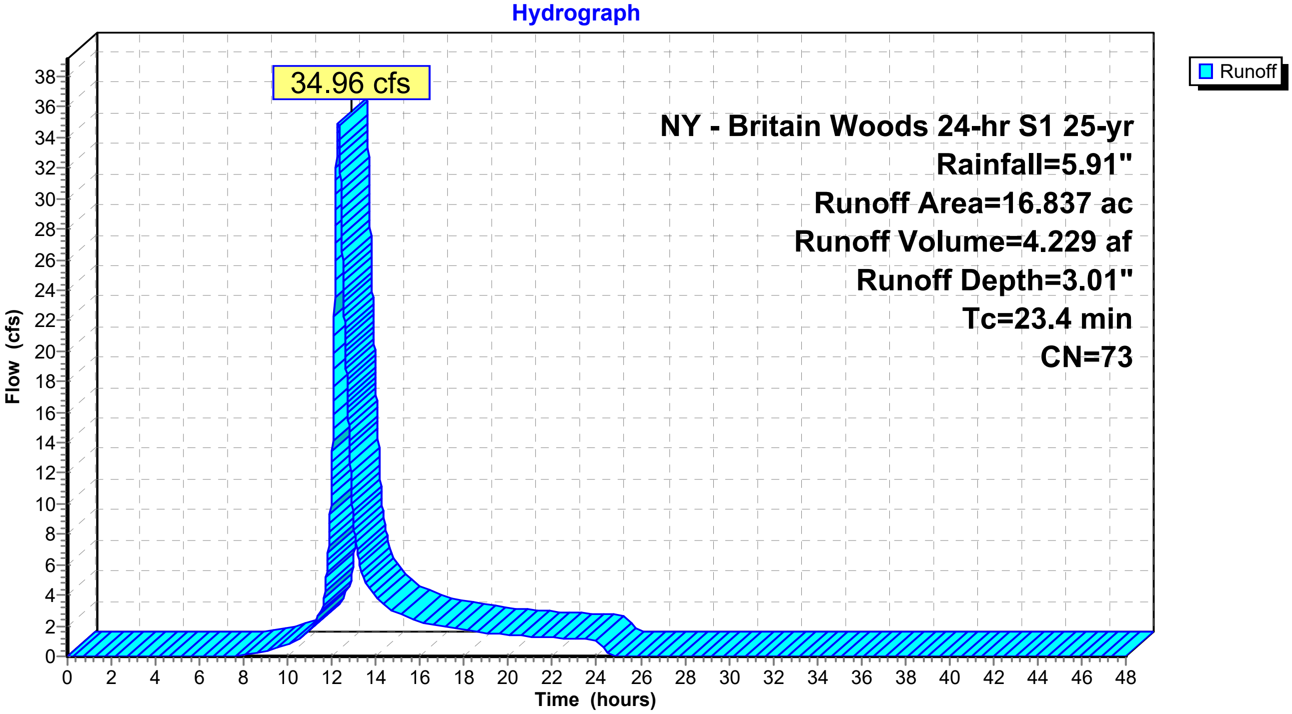
Subcatchment PR-C1-A: Proposed C1-A



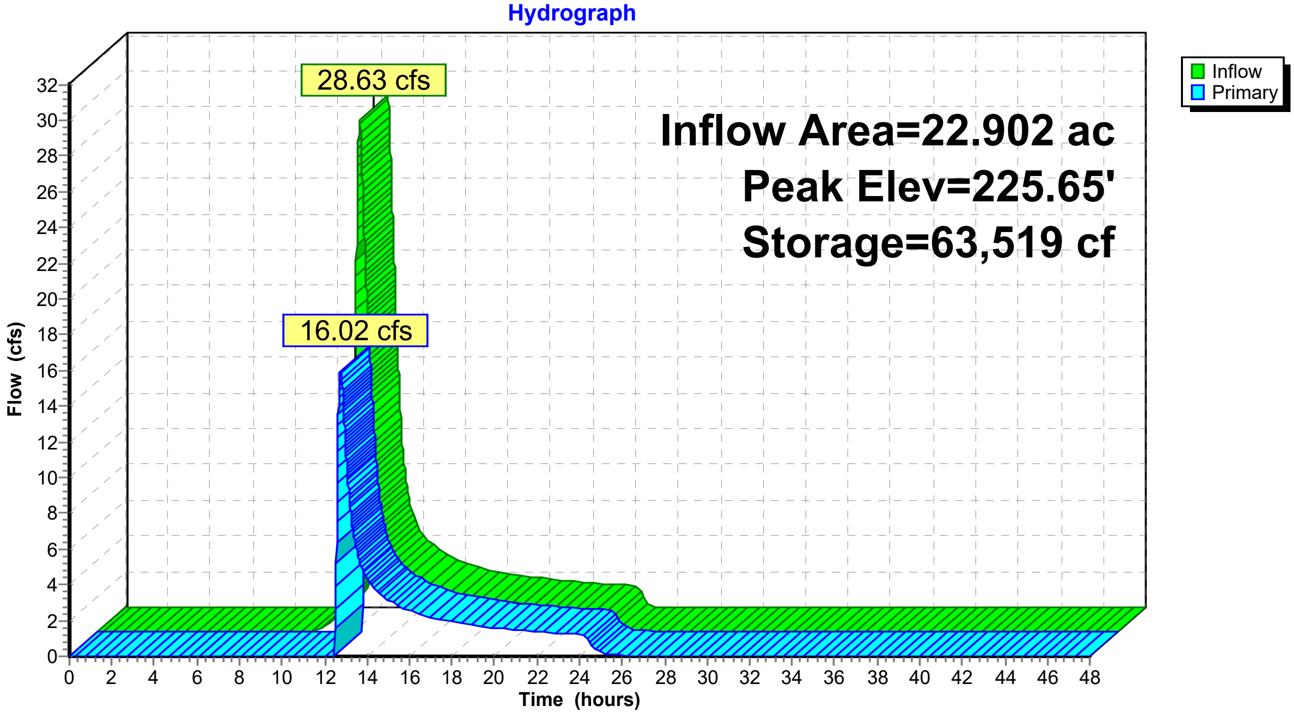
Subcatchment PR-C1-B: Proposed C1-B



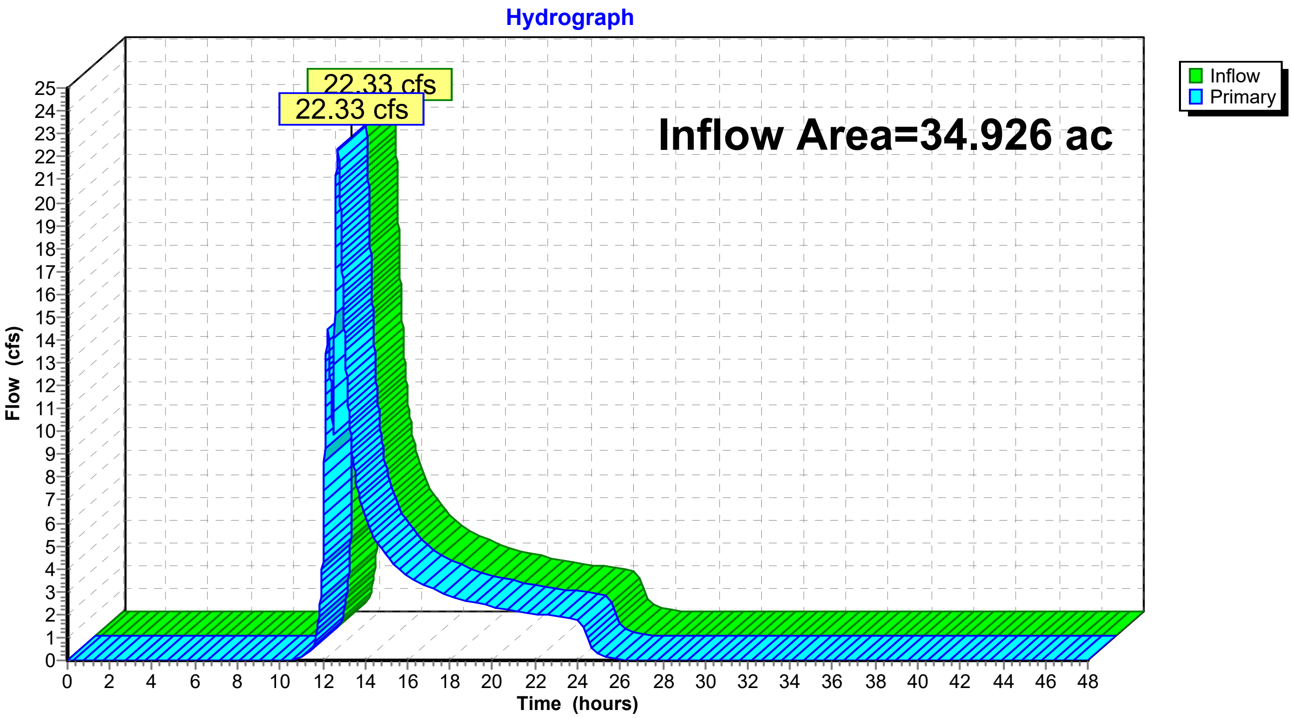
Subcatchment PR-C1-C: Proposed C1-C



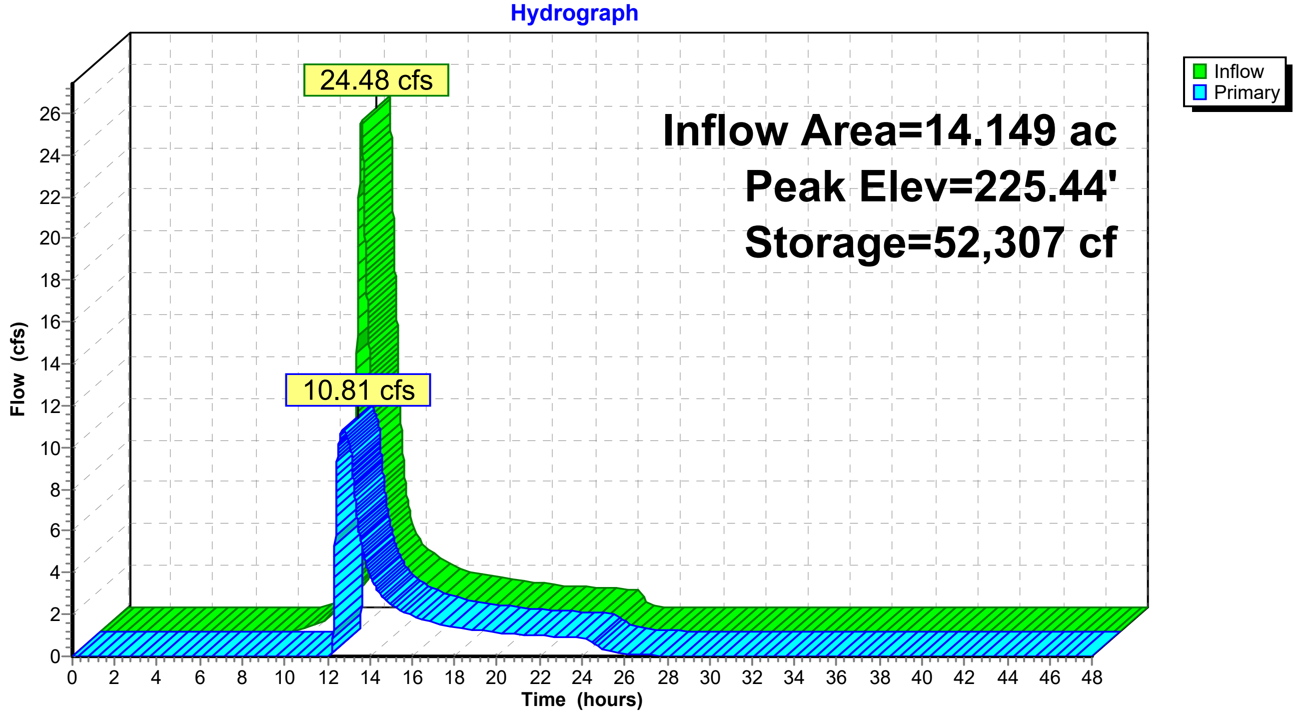
Pond 1P: Existing Wetland



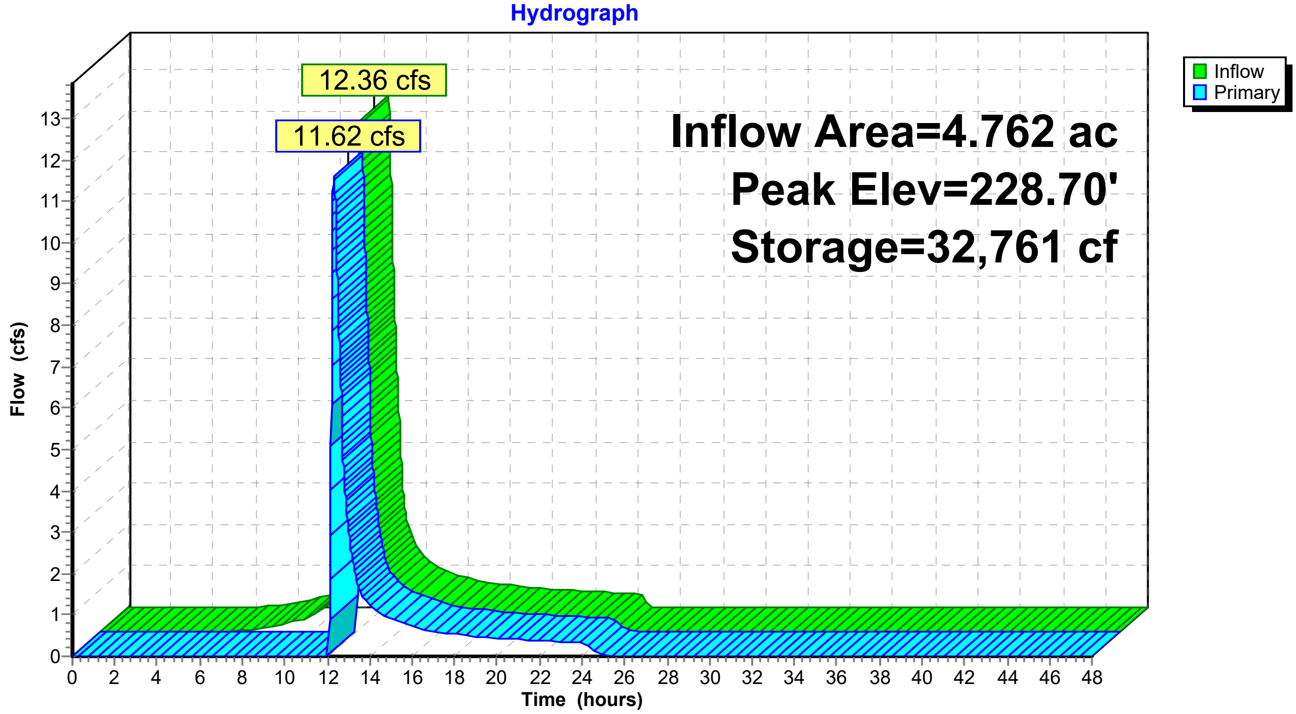
Pond 2P: Existing A



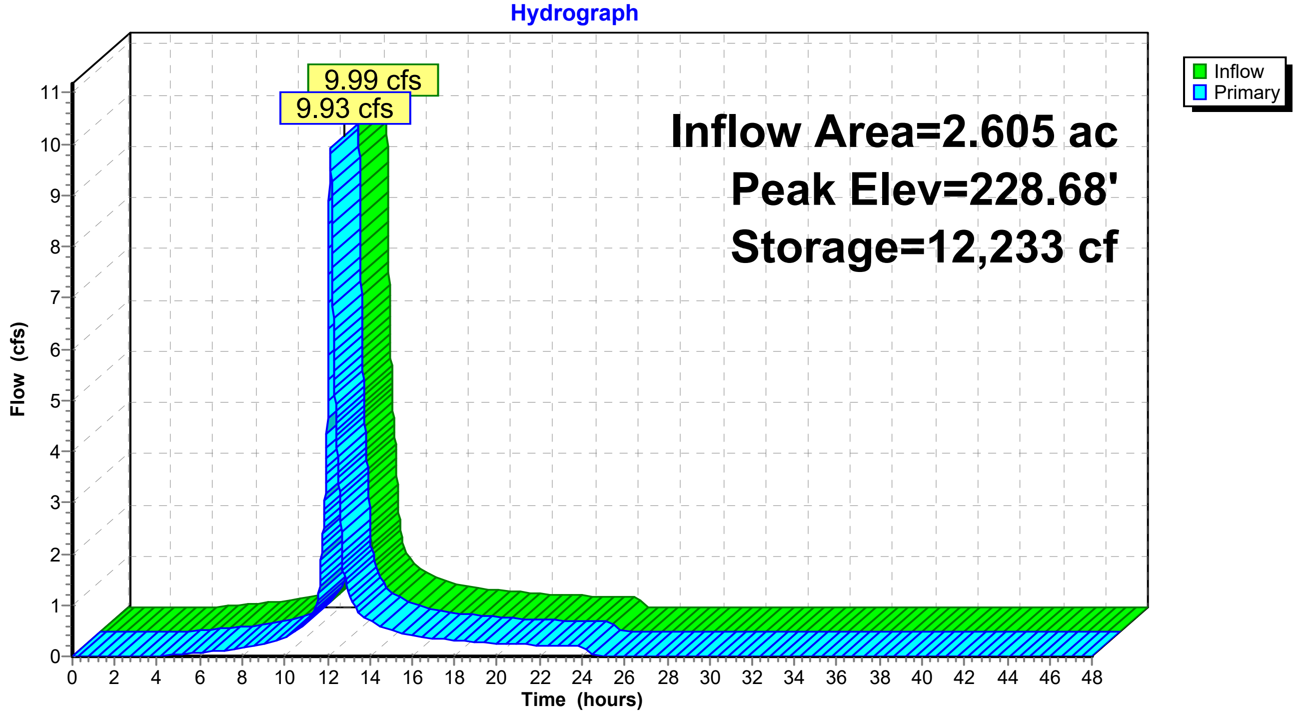
Pond 3P: Existing Wetland



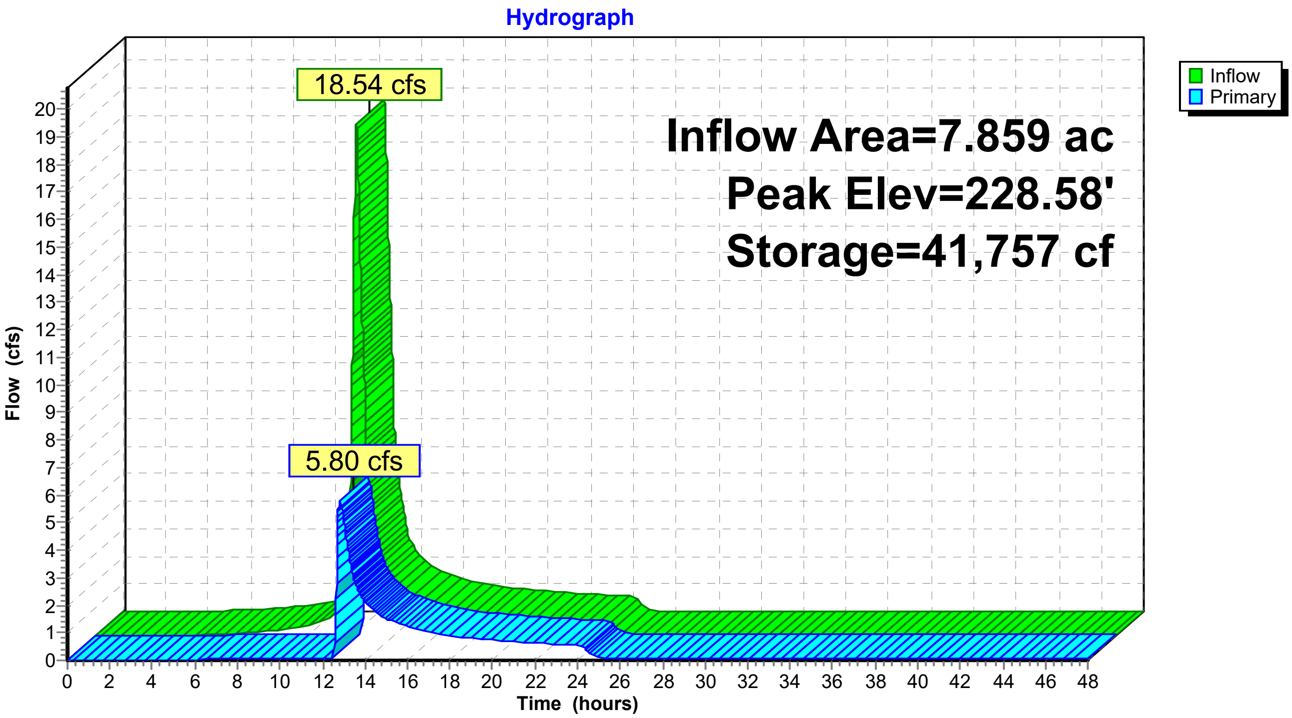
Pond 4P: Forebay & Bio A1-A



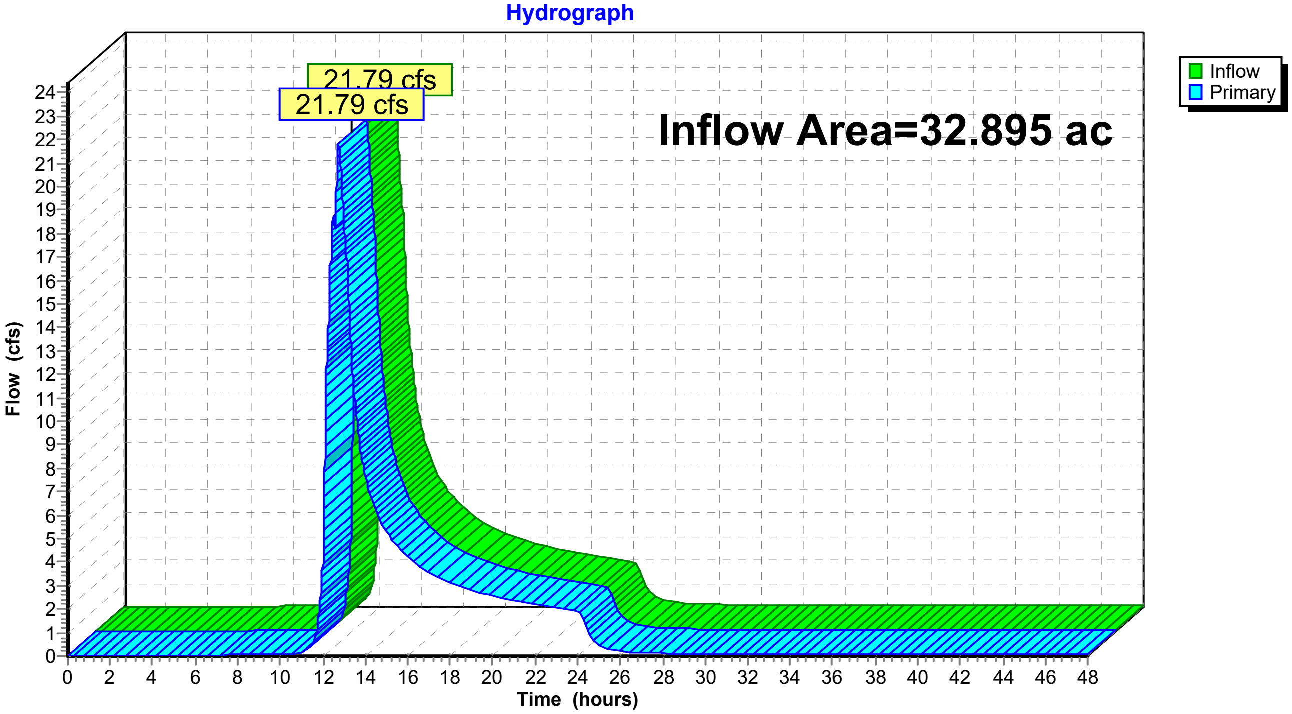
Pond 5P: Forebay A1-B



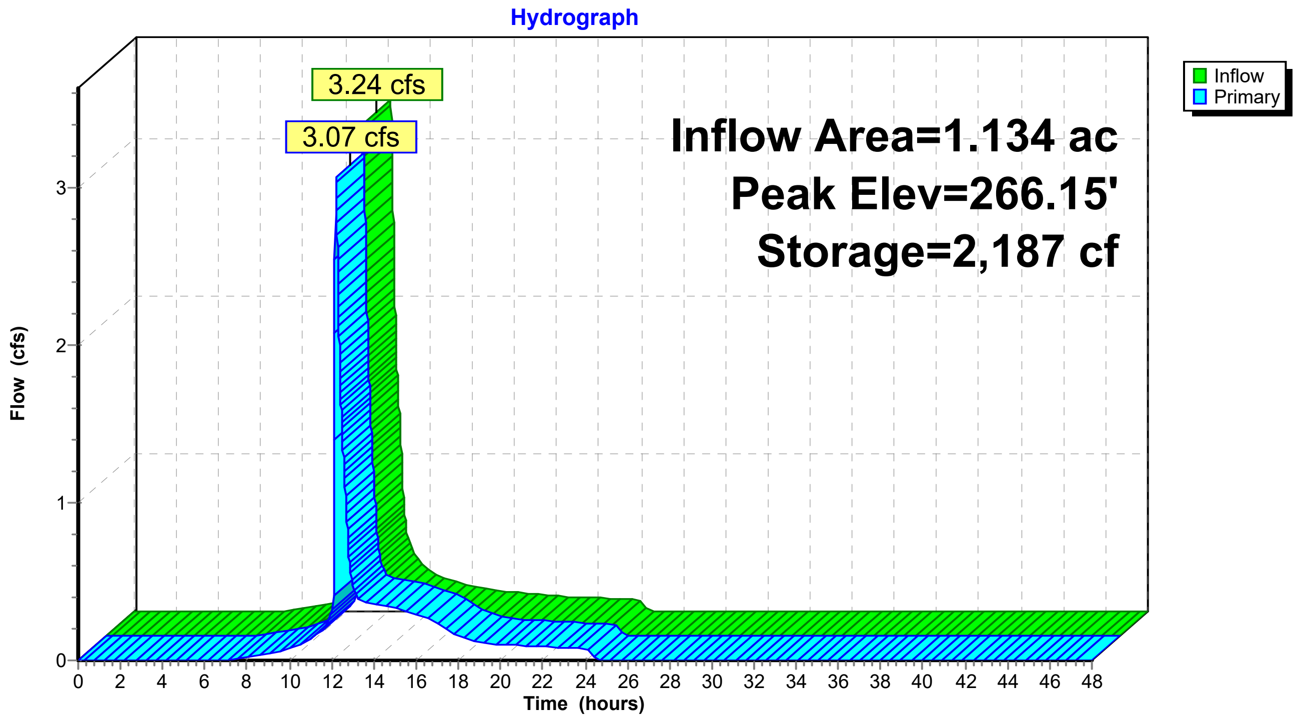
Pond 6P: Detention Basin A1



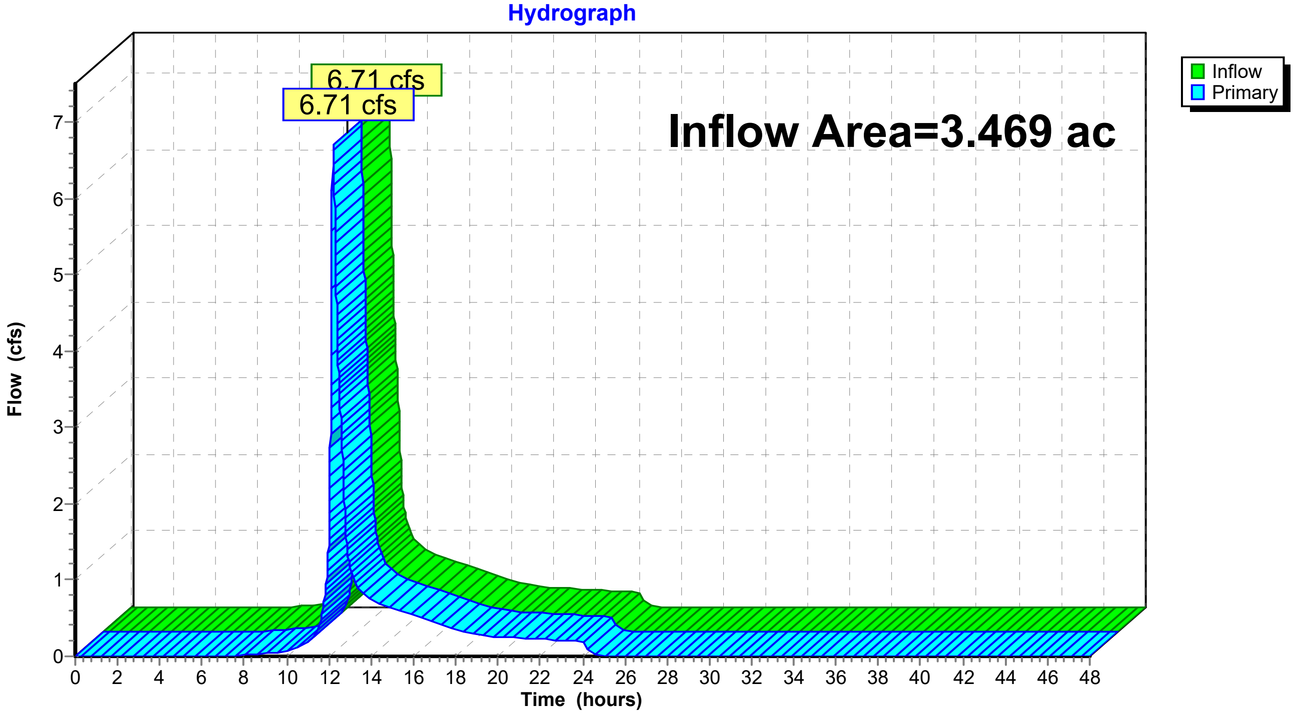
Pond 7P: Design Point A



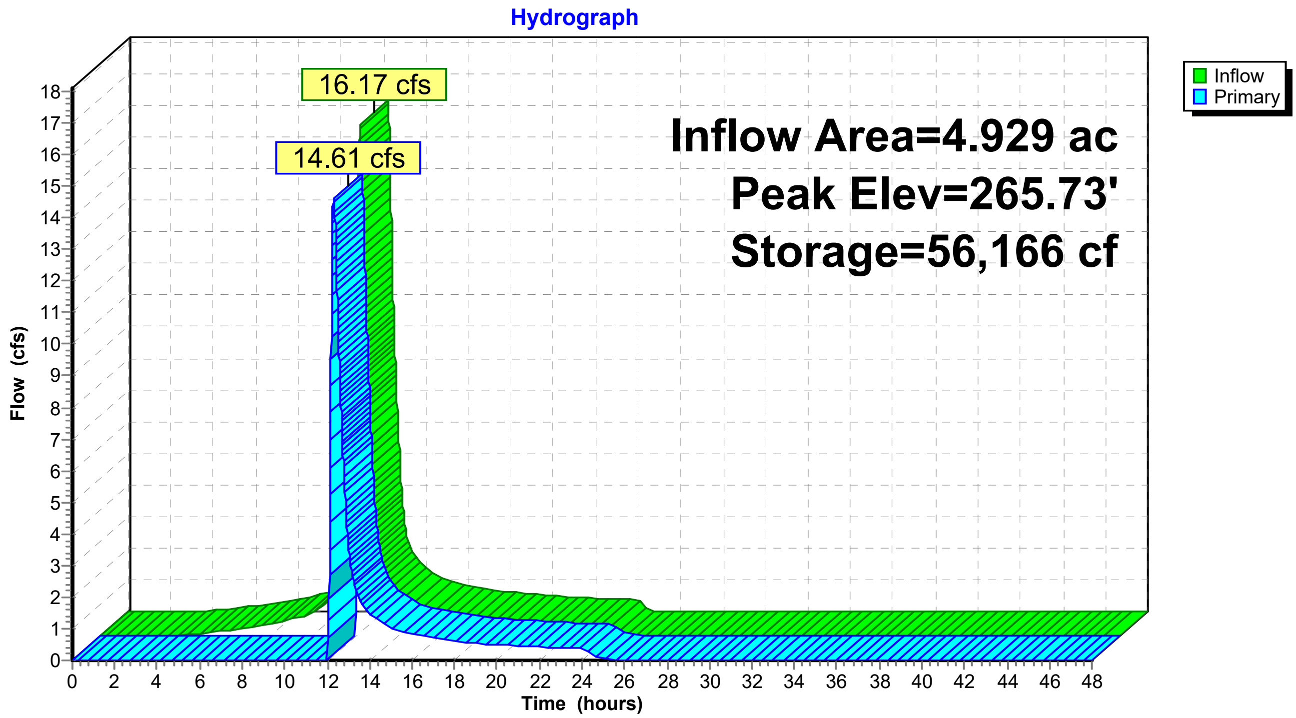
Pond 8P: Detention Basin B1



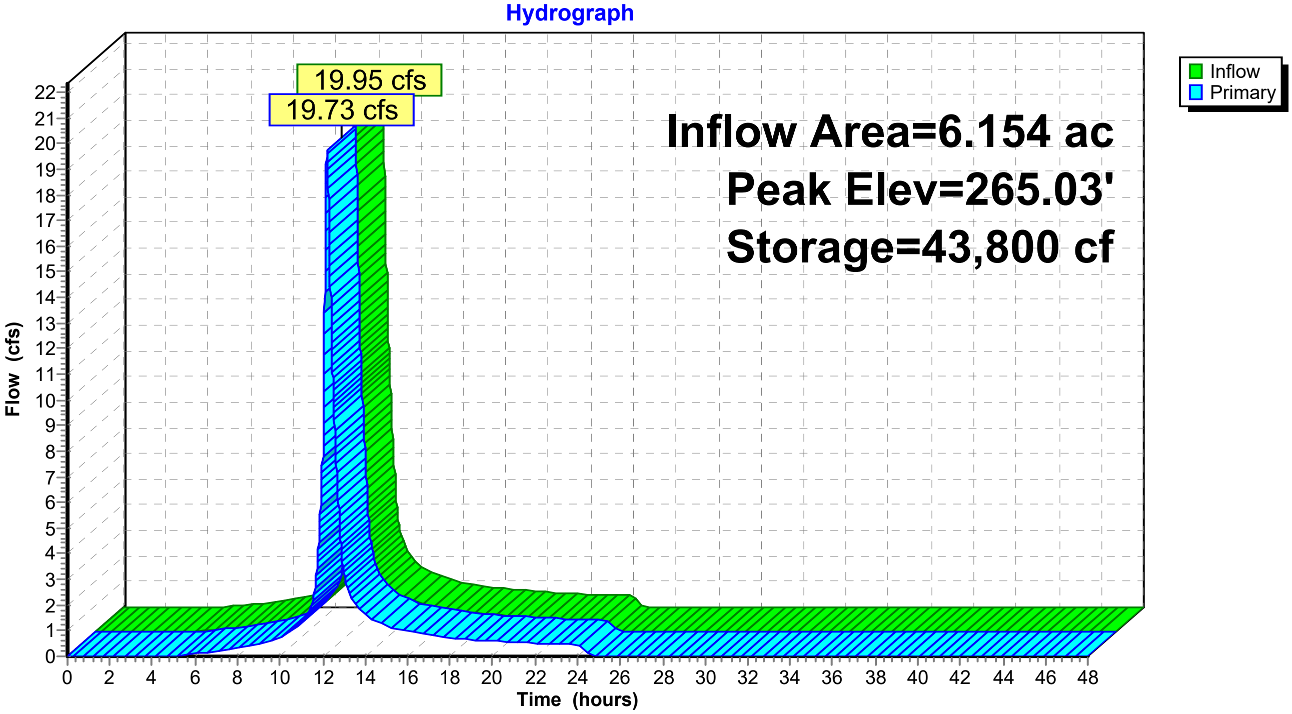
Pond 9P: Design Point B



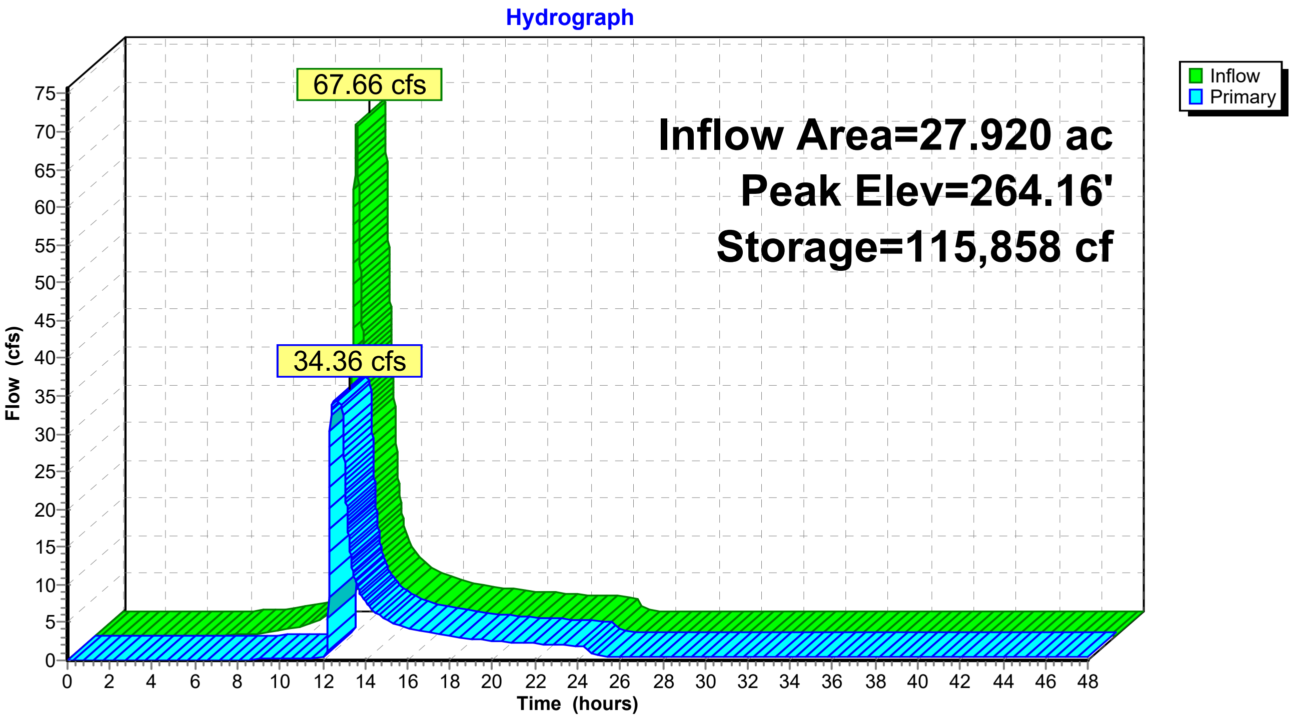
Pond 10P: Forebay & Bio C1-A



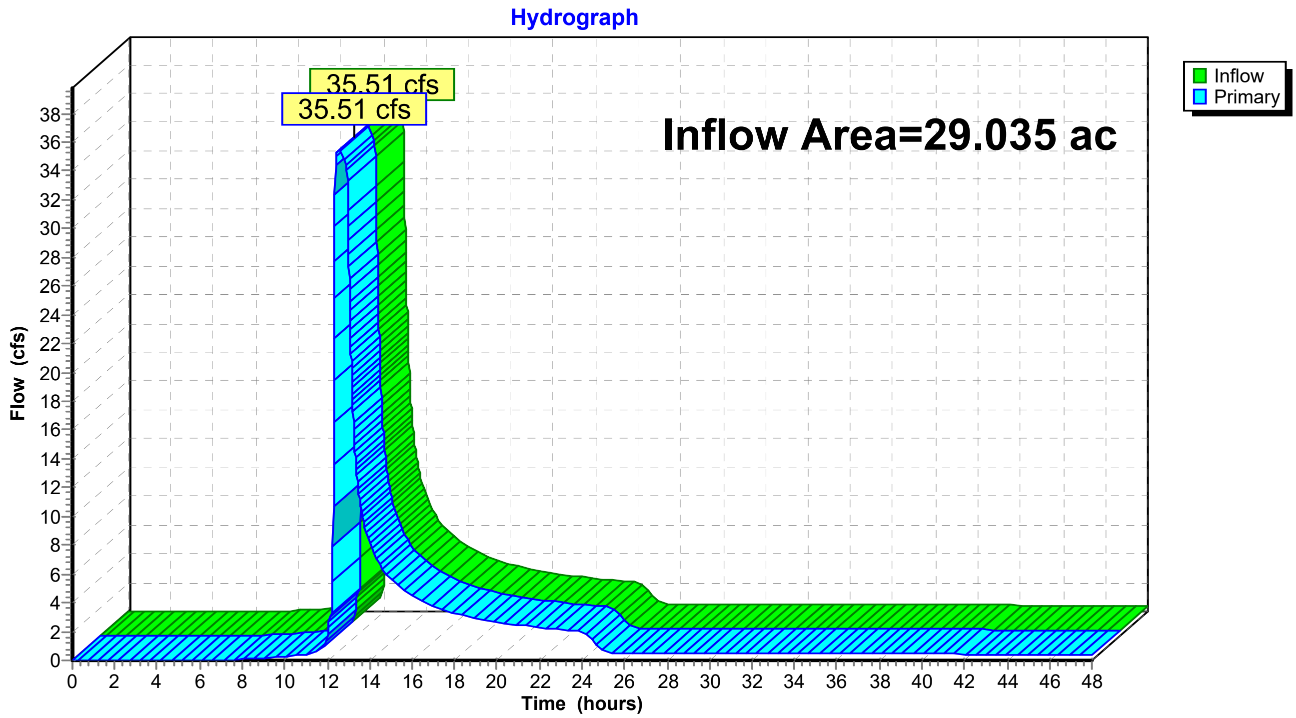
Pond 11P: Forebay C1-B



Pond 12P: Detention Basin C1



Pond 13P: Design Point C



APPENDIX 10

100-YEAR DESIGN STORM

HYDROGRAPHS

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 5
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 5S: Proposed C2 Runoff Area=1.115 ac 15.16% Impervious Runoff Depth=5.39"
Tc=16.8 min CN=75 Runoff=4.62 cfs 0.500 af

Subcatchment EX-A1: Existing A1 Runoff Area=22.902 ac 8.12% Impervious Runoff Depth=3.85"
Tc=26.4 min CN=62 Runoff=54.66 cfs 7.354 af

Subcatchment EX-A2: Existing A2 Runoff Area=12.024 ac 1.27% Impervious Runoff Depth=3.51"
Tc=19.8 min CN=59 Runoff=29.41 cfs 3.512 af

Subcatchment EX-B: Existing B Runoff Area=7.465 ac 0.00% Impervious Runoff Depth=3.74"
Tc=18.6 min CN=61 Runoff=20.20 cfs 2.325 af

Subcatchment EX-C: Existing C Runoff Area=23.004 ac 0.93% Impervious Runoff Depth=4.79"
Tc=27.0 min CN=70 Runoff=68.57 cfs 9.187 af

Subcatchment PR-A1-A: Proposed A1-A Runoff Area=4.762 ac 47.67% Impervious Runoff Depth=5.86"
Tc=21.6 min CN=79 Runoff=19.12 cfs 2.327 af

Subcatchment PR-A1-B: Proposed A1-B Runoff Area=2.605 ac 63.57% Impervious Runoff Depth=6.70"
Tc=13.2 min CN=86 Runoff=14.41 cfs 1.455 af

Subcatchment PR-A1-C: Proposed A1-C Runoff Area=0.492 ac 0.00% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=63 Runoff=2.20 cfs 0.163 af

Subcatchment PR-A2-A: Proposed A2-A Runoff Area=14.149 ac 15.15% Impervious Runoff Depth=4.56"
Tc=23.4 min CN=68 Runoff=42.76 cfs 5.372 af

Subcatchment PR-A2-B: Proposed A2-B Runoff Area=10.887 ac 2.63% Impervious Runoff Depth=3.51"
Tc=19.8 min CN=59 Runoff=26.63 cfs 3.180 af

Subcatchment PR-B1: Proposed B1 Runoff Area=1.134 ac 0.00% Impervious Runoff Depth=5.50"
Tc=14.4 min CN=76 Runoff=5.13 cfs 0.520 af

Subcatchment PR-B2: Proposed B2 Runoff Area=2.335 ac 0.00% Impervious Runoff Depth=3.85"
Tc=16.2 min CN=62 Runoff=6.93 cfs 0.750 af

Subcatchment PR-C1-A: Proposed C1-A Runoff Area=4.929 ac 70.16% Impervious Runoff Depth=6.94"
Tc=20.4 min CN=88 Runoff=23.18 cfs 2.851 af

Subcatchment PR-C1-B: Proposed C1-B Runoff Area=6.154 ac 61.08% Impervious Runoff Depth=6.46"
Tc=17.4 min CN=84 Runoff=29.41 cfs 3.313 af

Subcatchment PR-C1-C: Proposed C1-C Runoff Area=16.837 ac 0.26% Impervious Runoff Depth=5.15"
Tc=23.4 min CN=73 Runoff=57.56 cfs 7.223 af

Pond 1P: Existing Wetland Peak Elev=225.83' Storage=73,694 cf Inflow=54.66 cfs 7.354 af
Outflow=50.04 cfs 6.254 af

Pond 2P: Existing A Inflow=72.00 cfs 9.767 af
Primary=72.00 cfs 9.767 af

Pond 3P: Existing Wetland Peak Elev=226.00' Storage=84,869 cf Inflow=42.76 cfs 5.372 af
Outflow=19.00 cfs 4.774 af

Pond 4P: Forebay & Bio A1-A Peak Elev=228.94' Storage=36,486 cf Inflow=19.12 cfs 2.327 af
Outflow=16.45 cfs 2.022 af

Pond 5P: Forebay A1-B Peak Elev=228.92' Storage=13,117 cf Inflow=14.41 cfs 1.455 af
Outflow=14.34 cfs 1.455 af

Pond 6P: Detention Basin A1 Peak Elev=228.92' Storage=45,957 cf Inflow=30.51 cfs 3.639 af
Outflow=21.12 cfs 2.900 af

Pond 7P: Design Point A Inflow=58.18 cfs 10.854 af
Primary=58.18 cfs 10.854 af

Pond 8P: Detention Basin B1 Peak Elev=266.22' Storage=2,308 cf Inflow=5.13 cfs 0.520 af
Outflow=5.09 cfs 0.520 af

Pond 9P: Design Point B Inflow=11.99 cfs 1.270 af
Primary=11.99 cfs 1.270 af

Pond 10P: Forebay & Bio C1-A Peak Elev=265.97' Storage=62,104 cf Inflow=23.18 cfs 2.851 af
Outflow=21.98 cfs 2.376 af

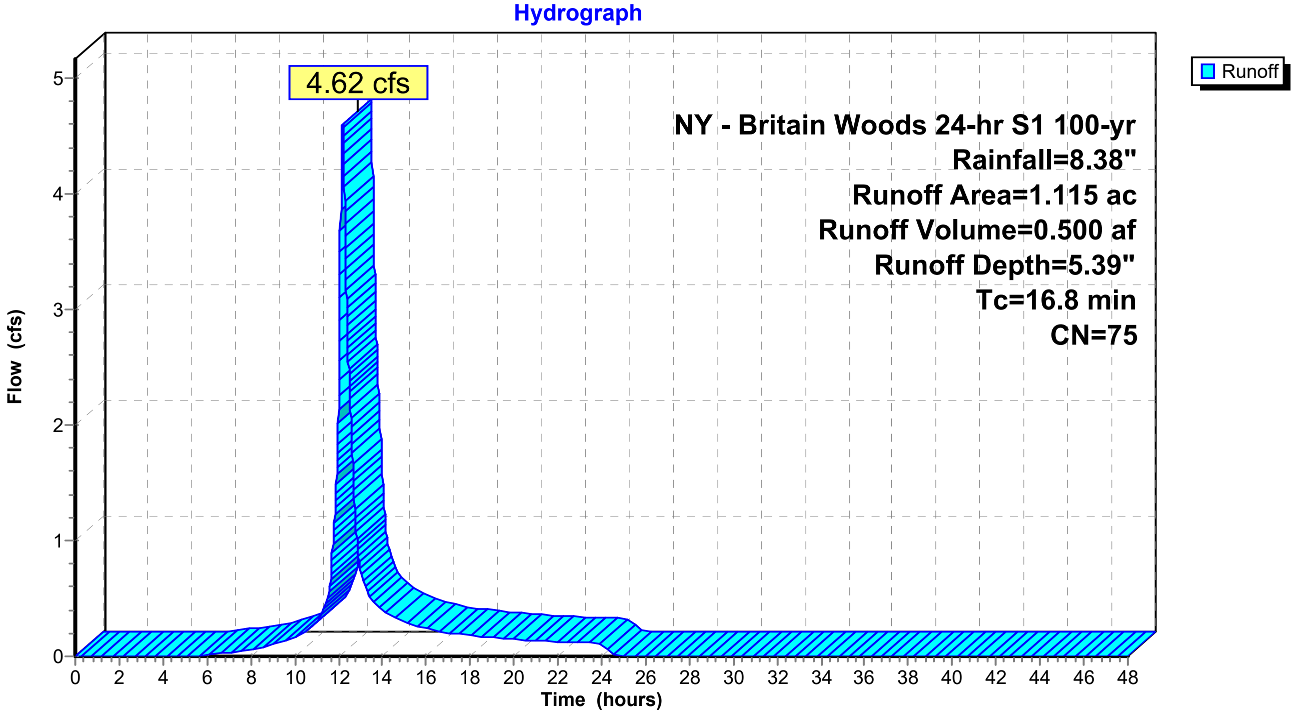
Pond 11P: Forebay C1-B Peak Elev=265.97' Storage=52,727 cf Inflow=29.41 cfs 3.313 af
Outflow=29.18 cfs 3.313 af

Pond 12P: Detention Basin C1 Peak Elev=265.97' Storage=179,909 cf Inflow=106.73 cfs 12.912 af
Outflow=46.95 cfs 11.946 af

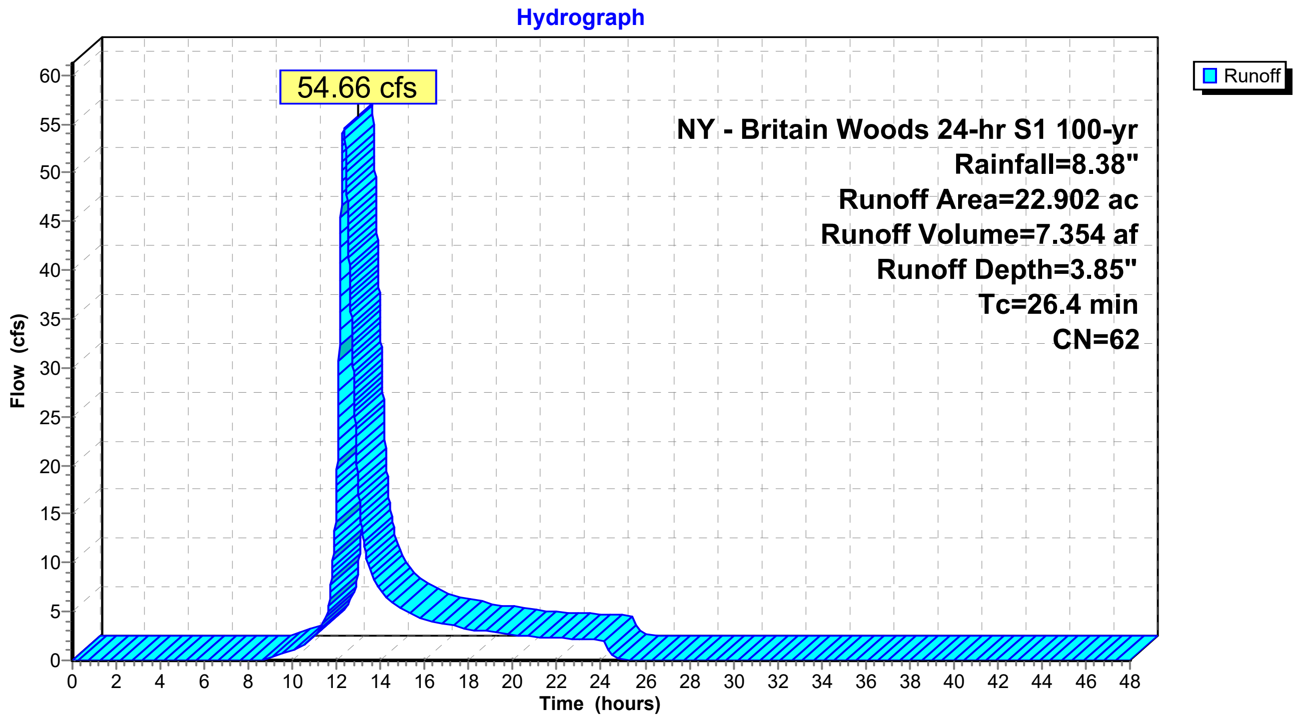
Pond 13P: Design Point C Inflow=48.50 cfs 12.447 af
Primary=48.50 cfs 12.447 af

Total Runoff Area = 130.794 ac Runoff Volume = 50.032 af Average Runoff Depth = 4.59"
87.76% Pervious = 114.784 ac 12.24% Impervious = 16.010 ac

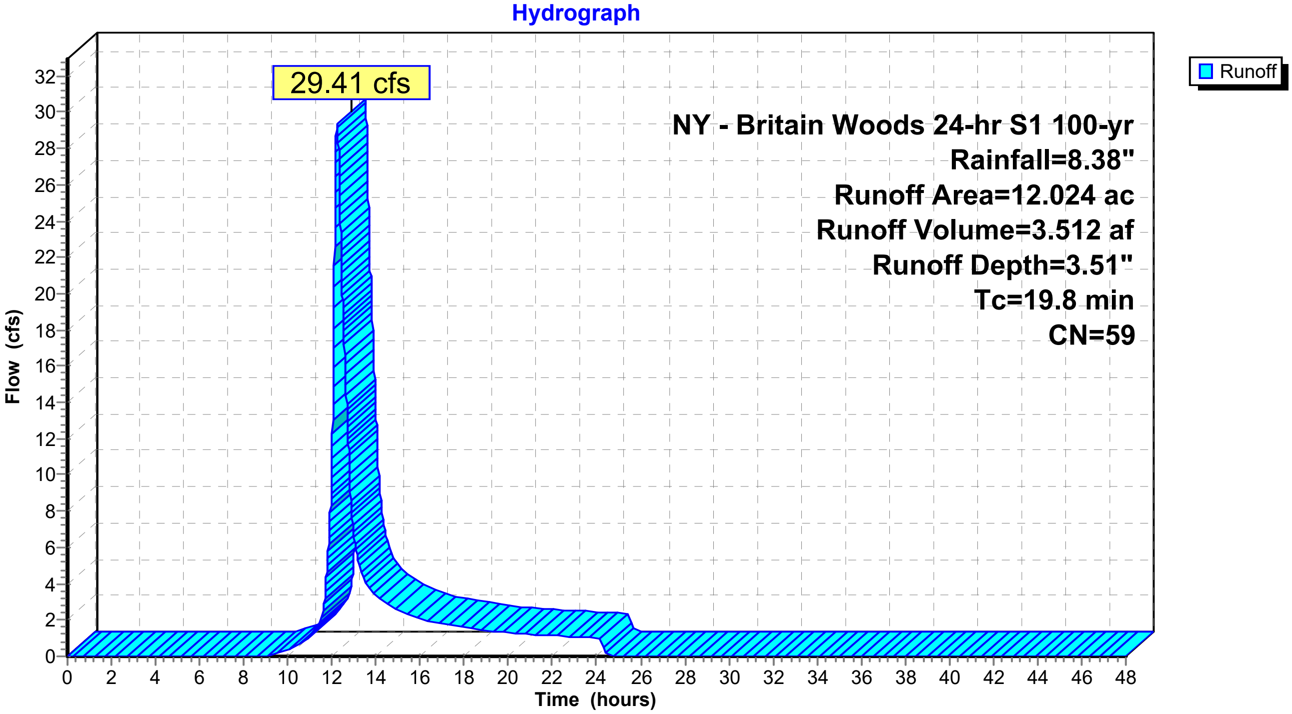
Subcatchment 5S: Proposed C2



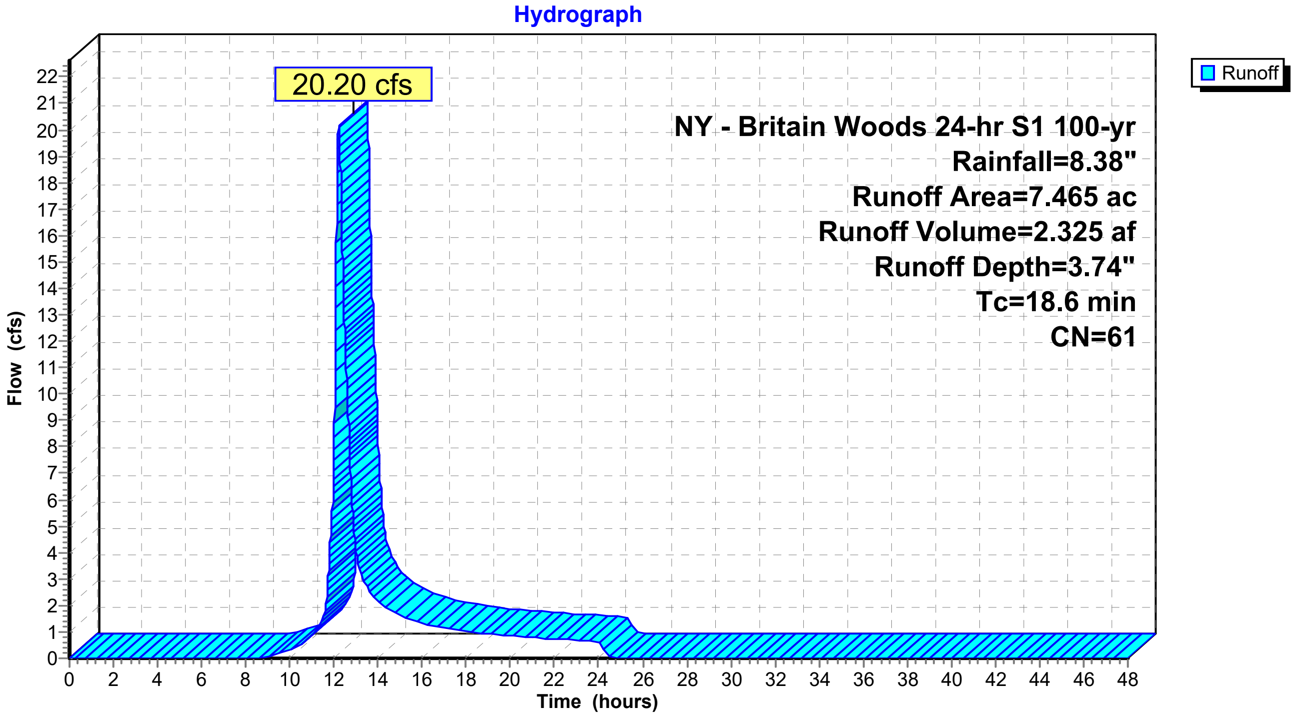
Subcatchment EX-A1: Existing A1



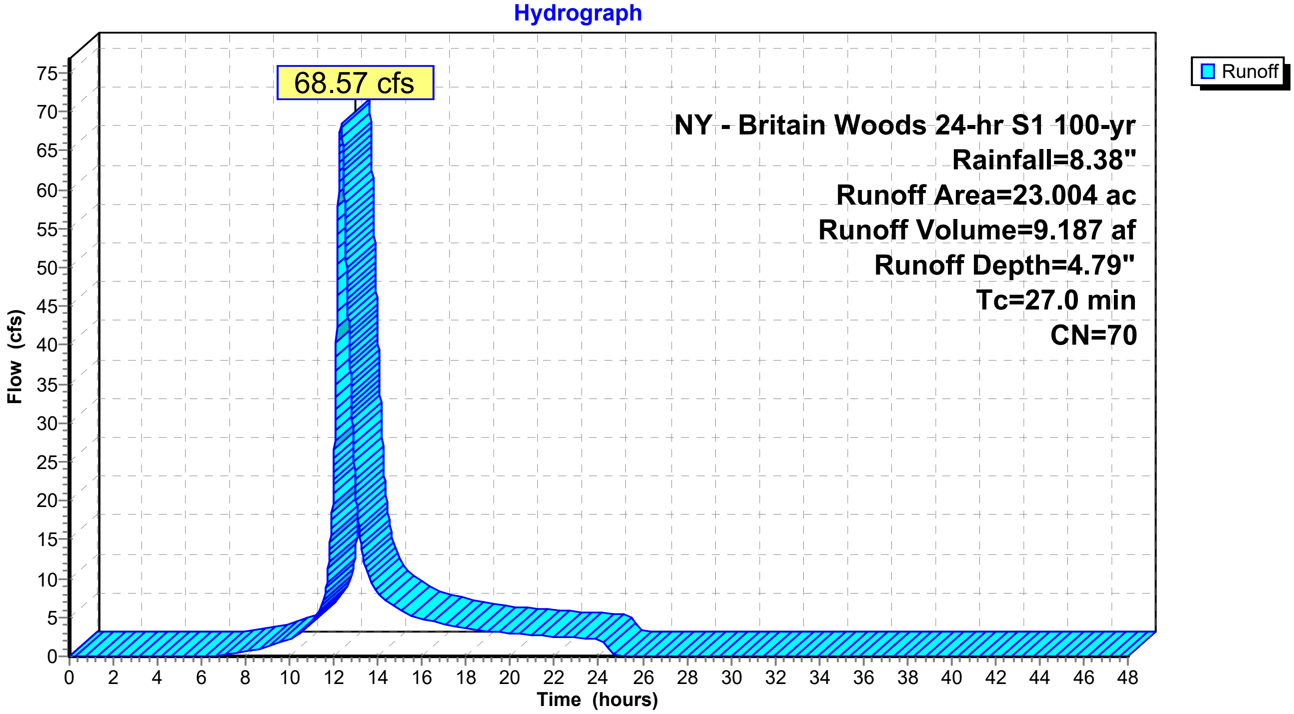
Subcatchment EX-A2: Existing A2



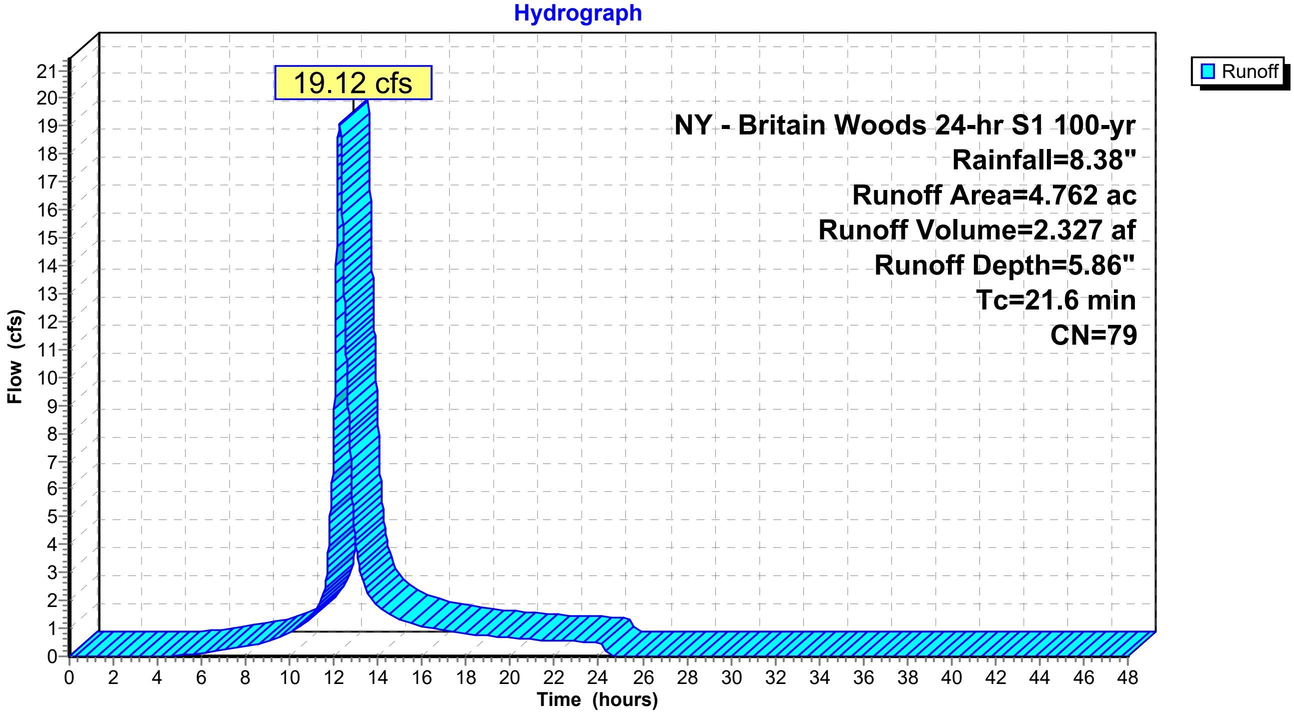
Subcatchment EX-B: Existing B



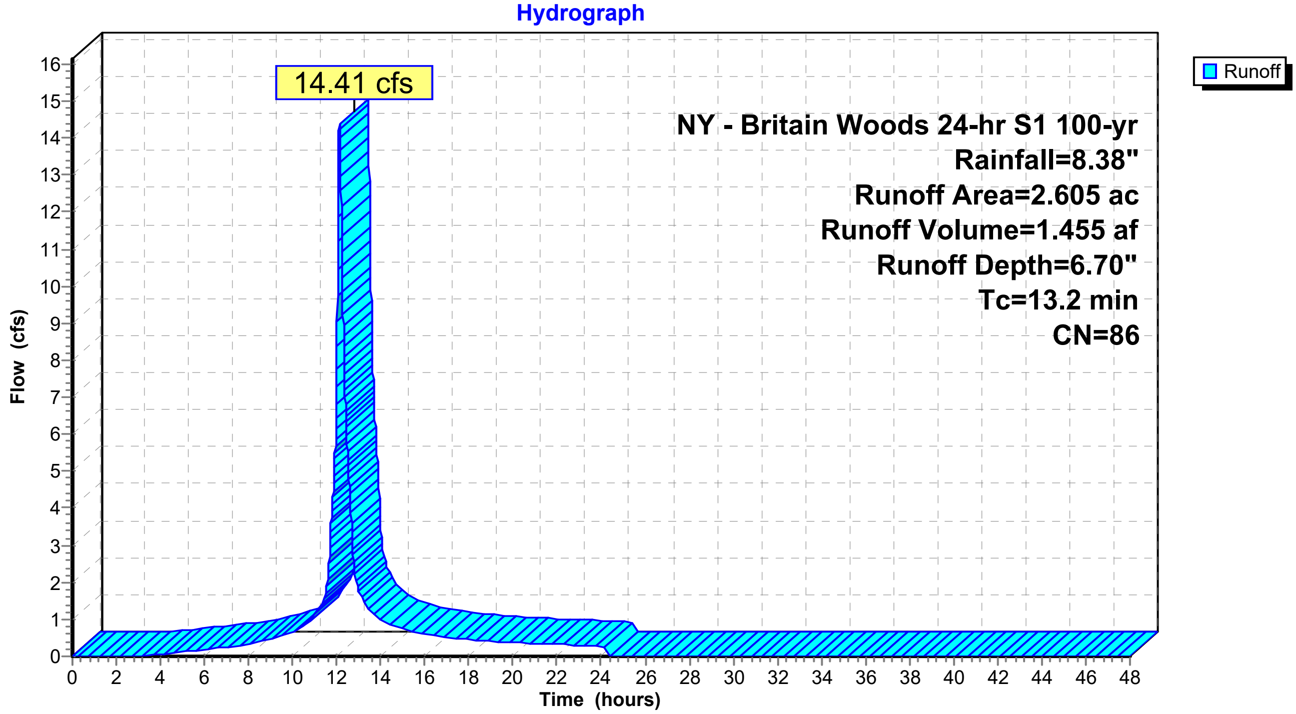
Subcatchment EX-C: Existing C



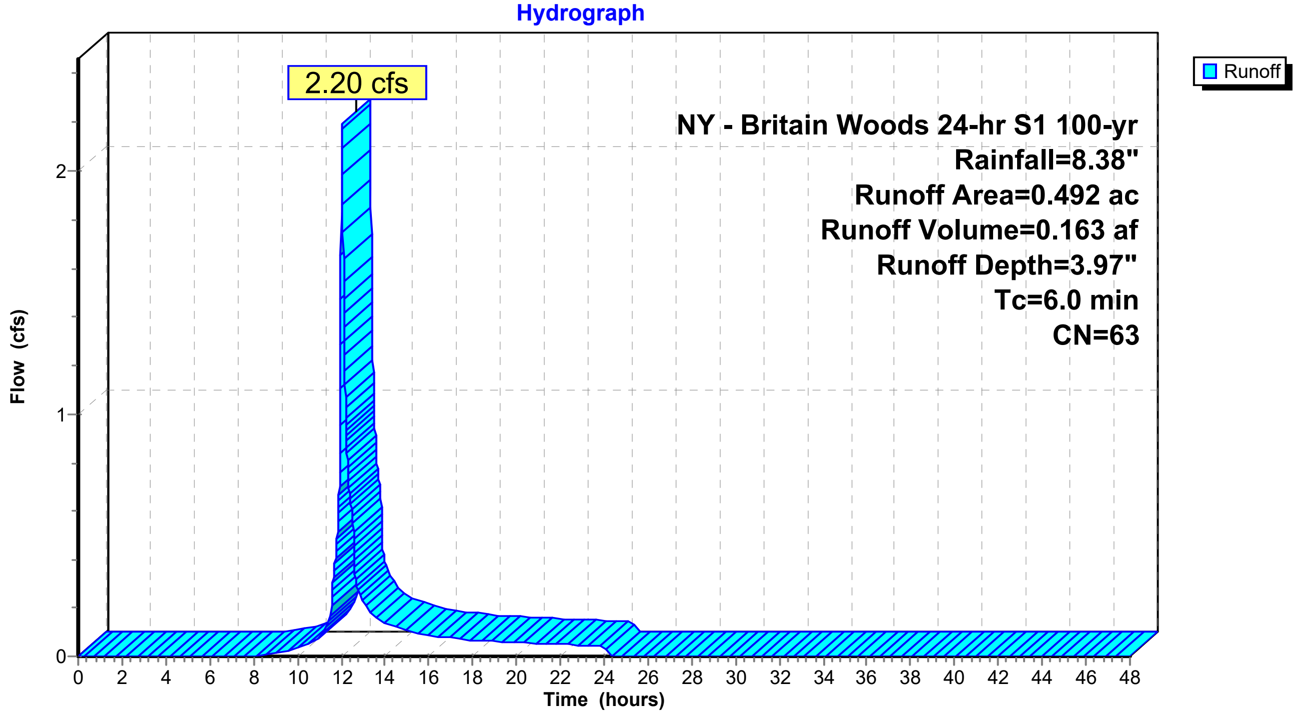
Subcatchment PR-A1-A: Proposed A1-A



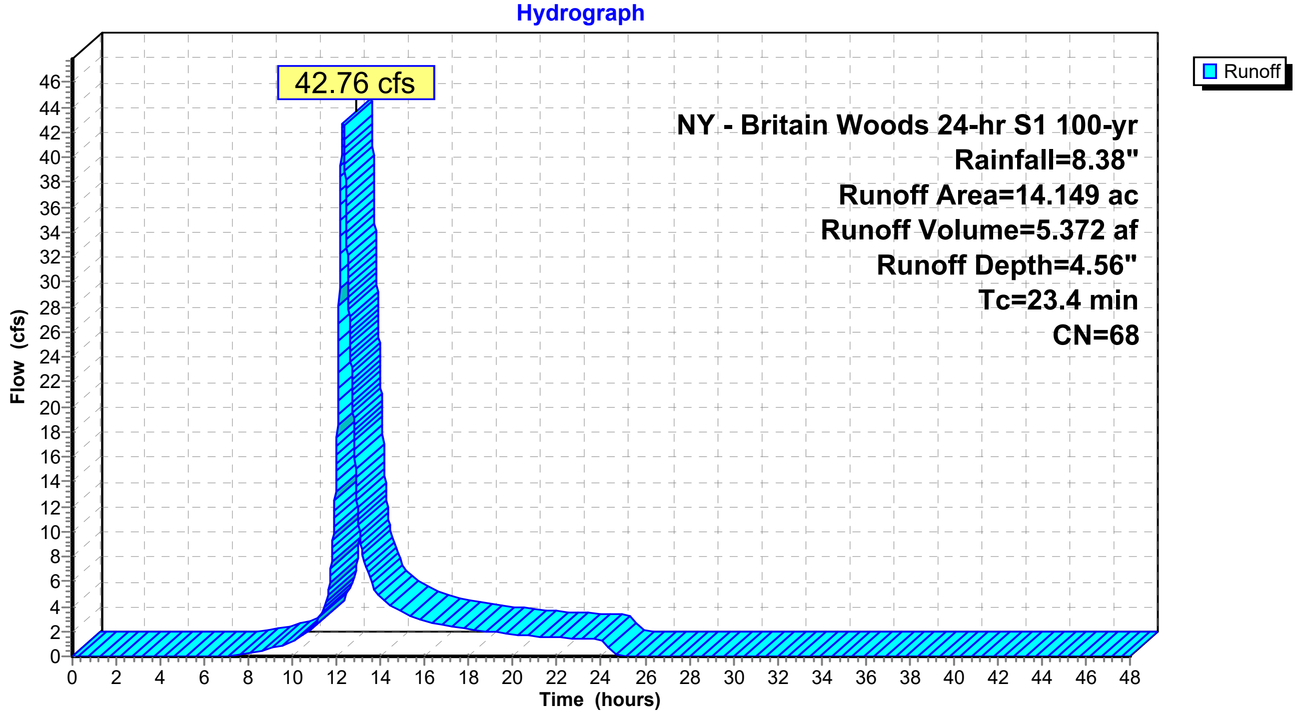
Subcatchment PR-A1-B: Proposed A1-B



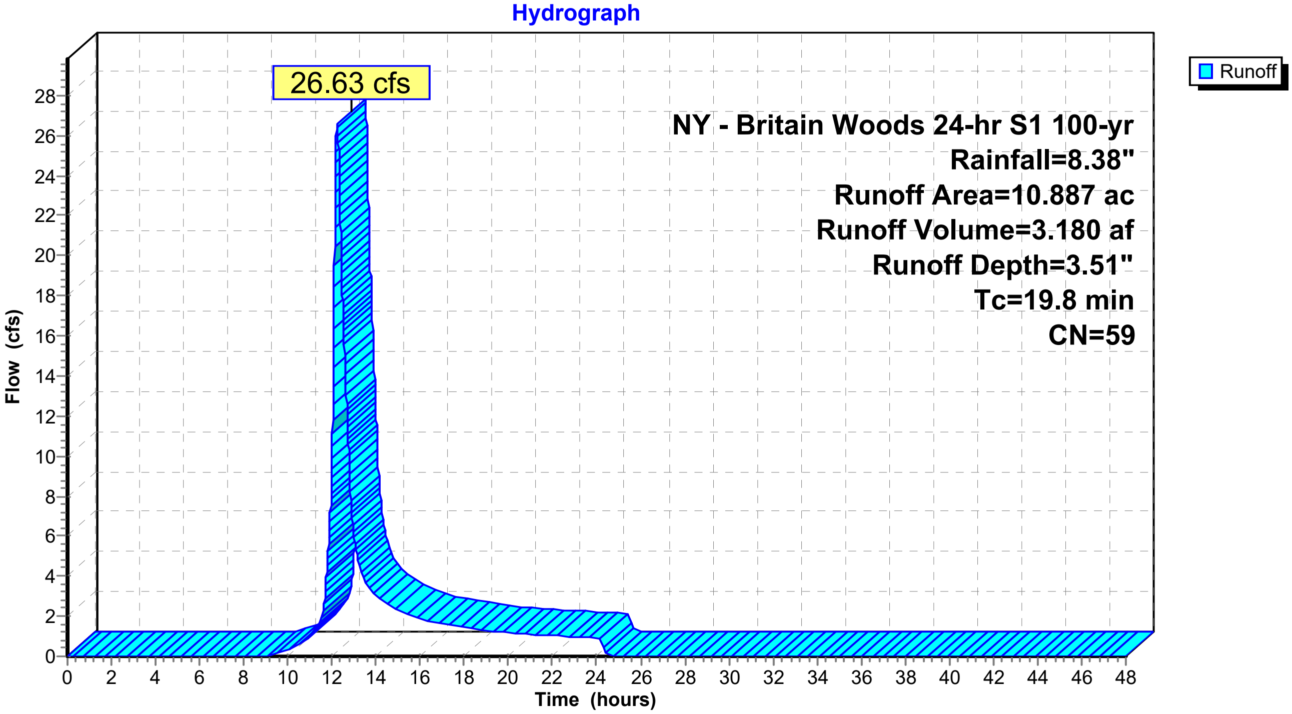
Subcatchment PR-A1-C: Proposed A1-C



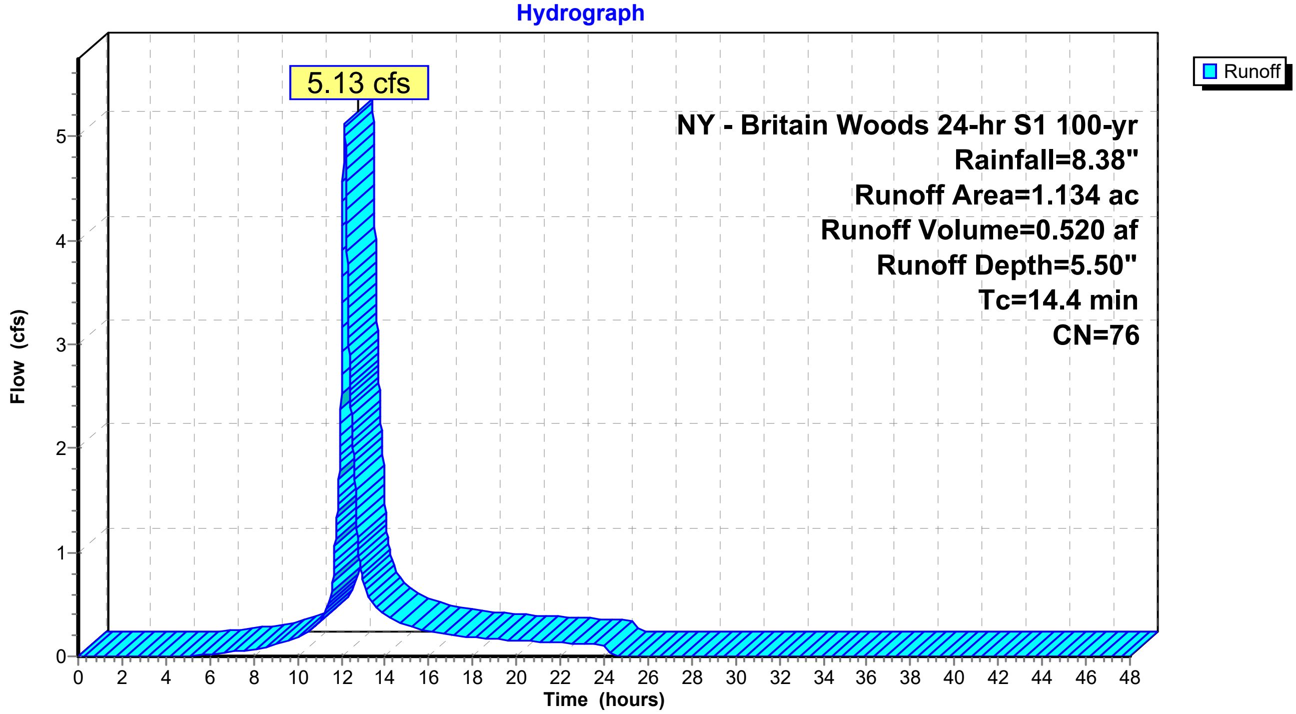
Subcatchment PR-A2-A: Proposed A2-A



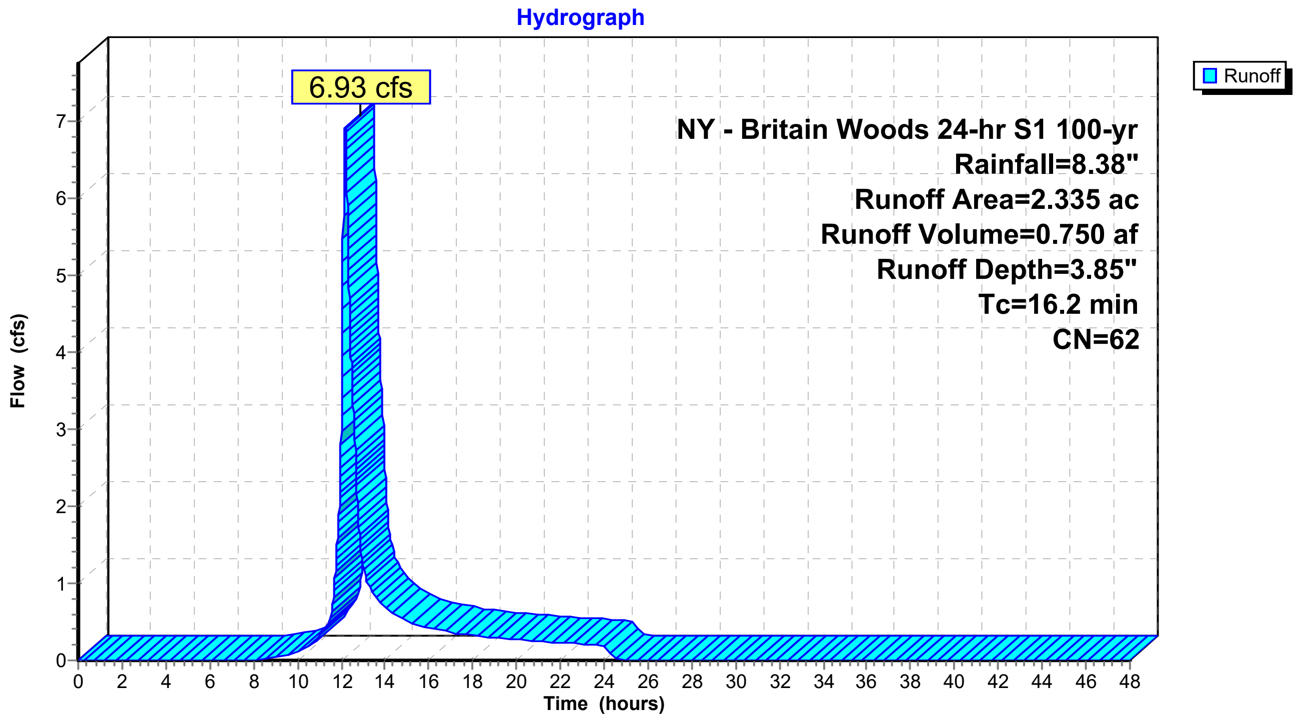
Subcatchment PR-A2-B: Proposed A2-B



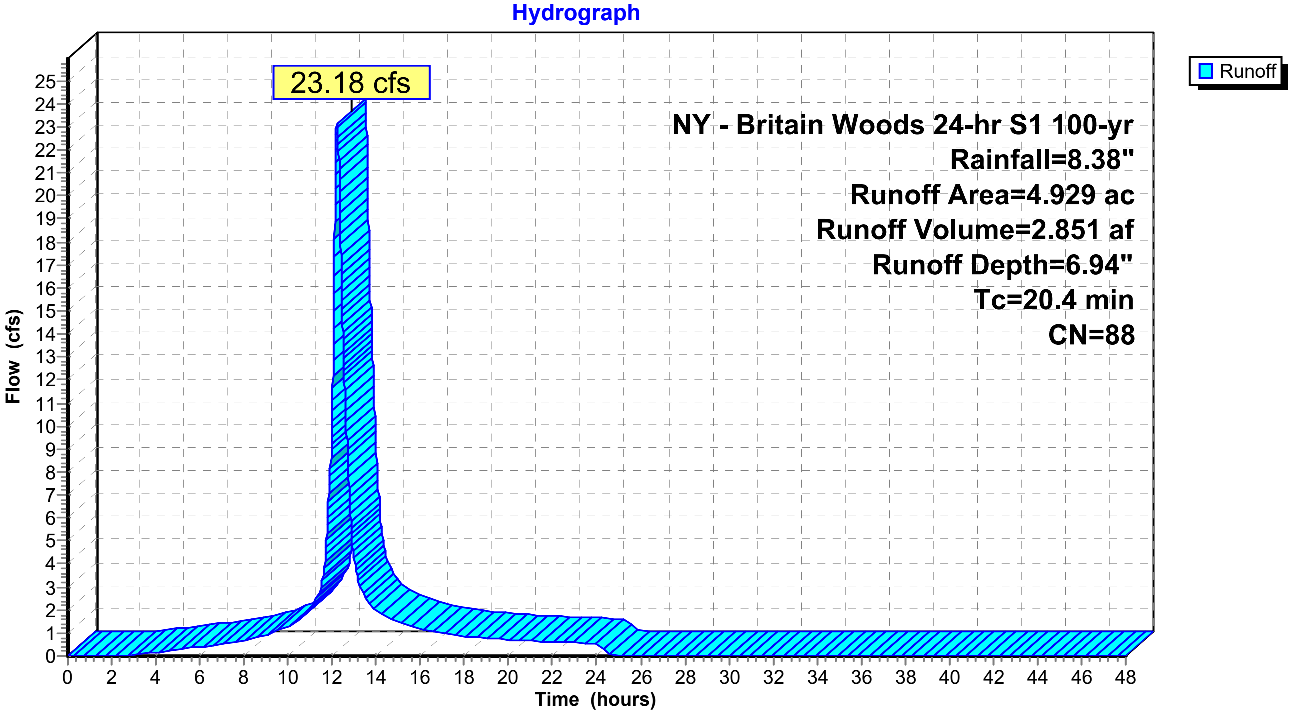
Subcatchment PR-B1: Proposed B1



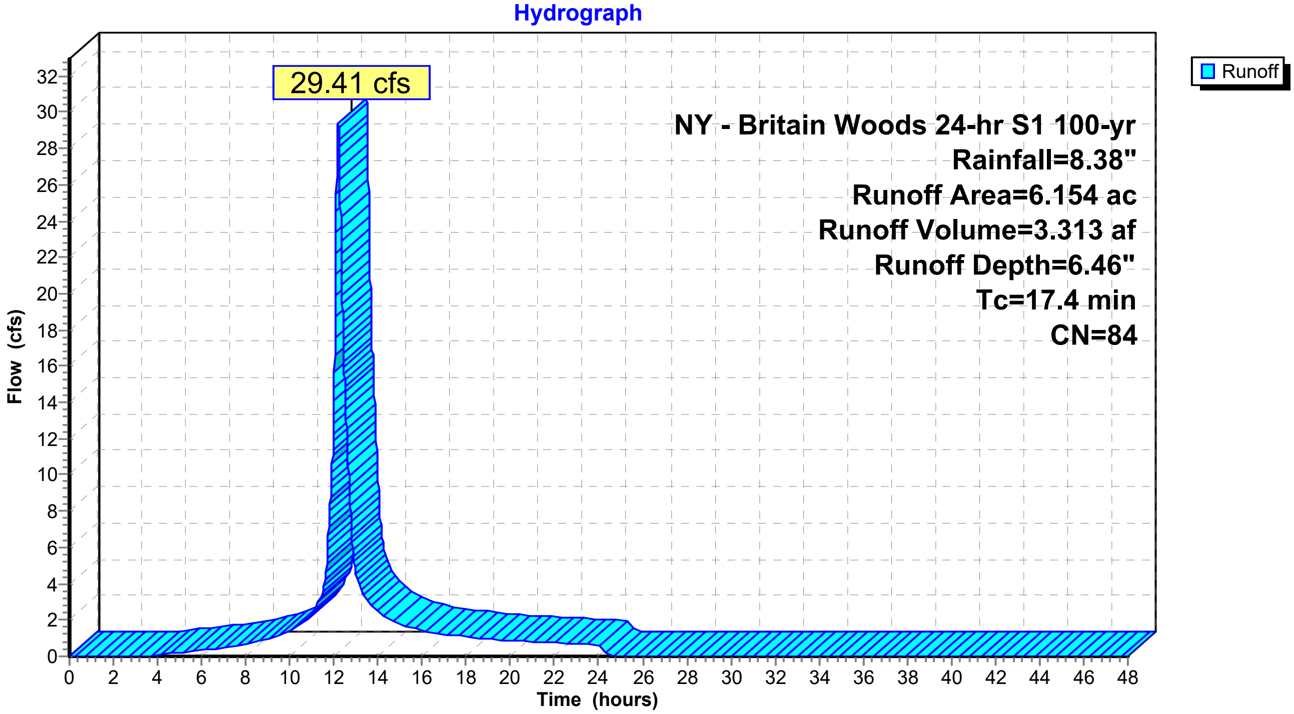
Subcatchment PR-B2: Proposed B2



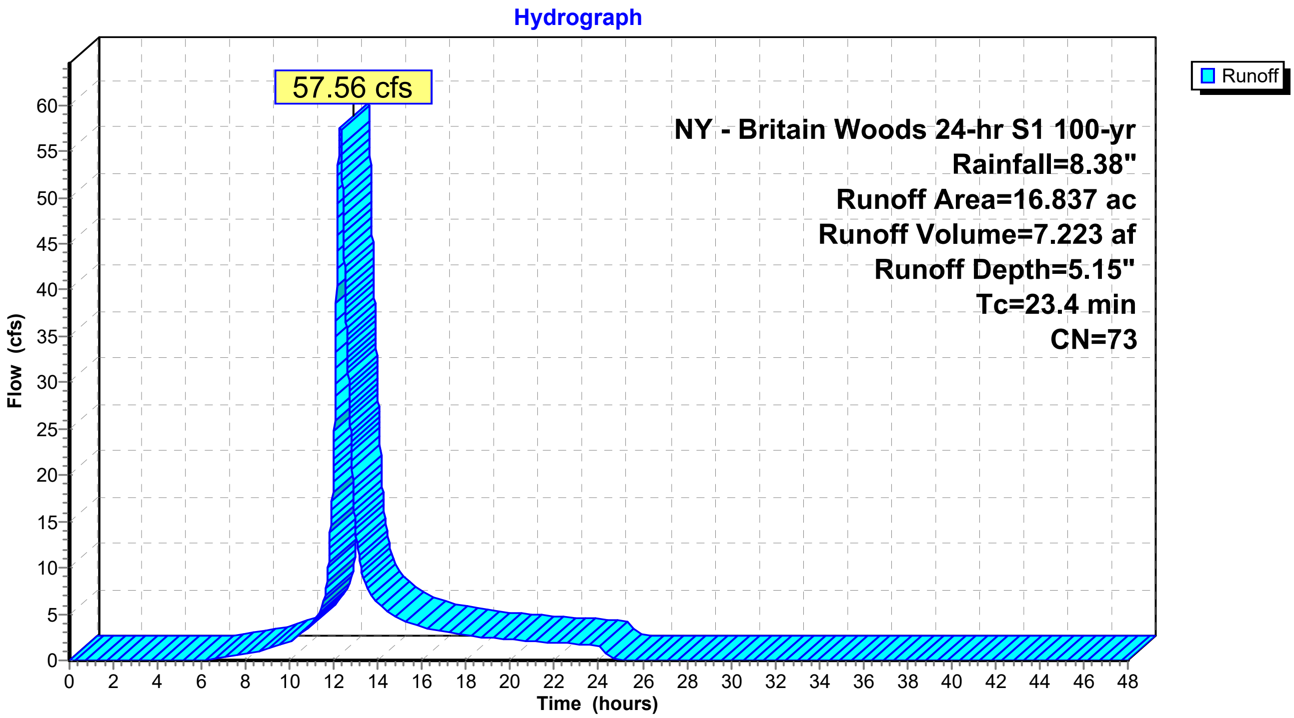
Subcatchment PR-C1-A: Proposed C1-A



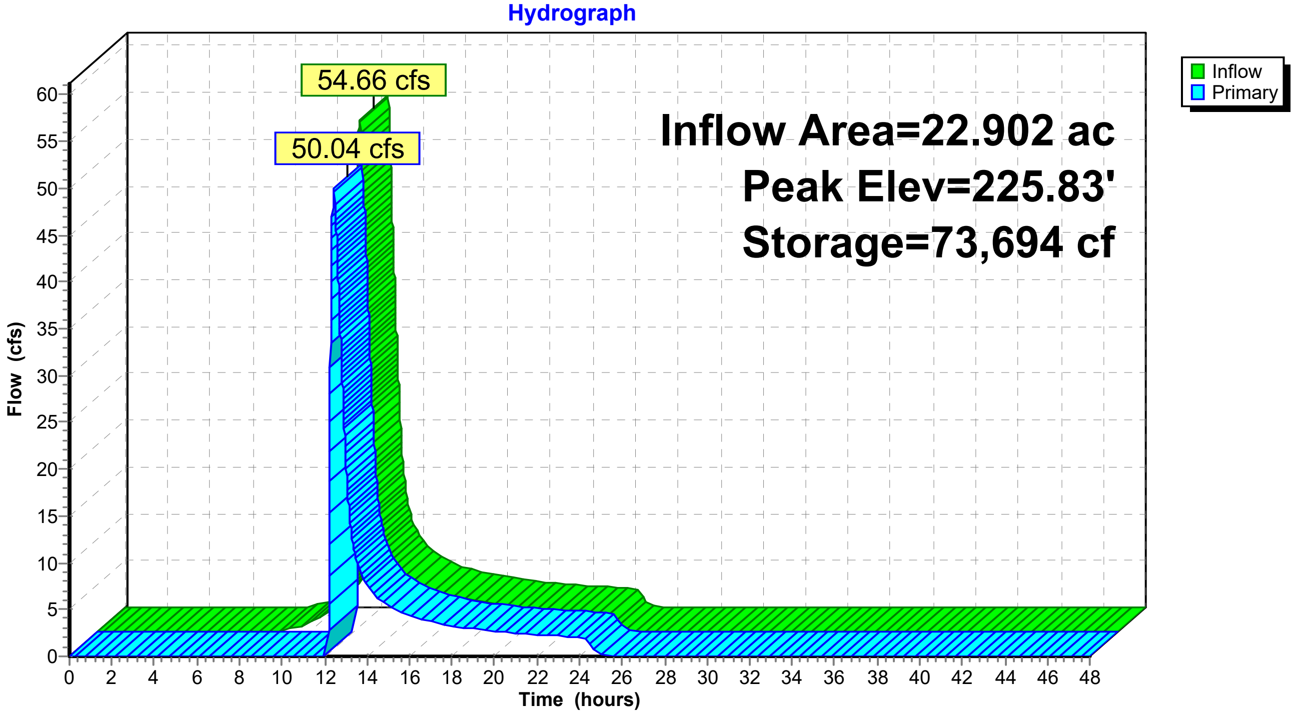
Subcatchment PR-C1-B: Proposed C1-B



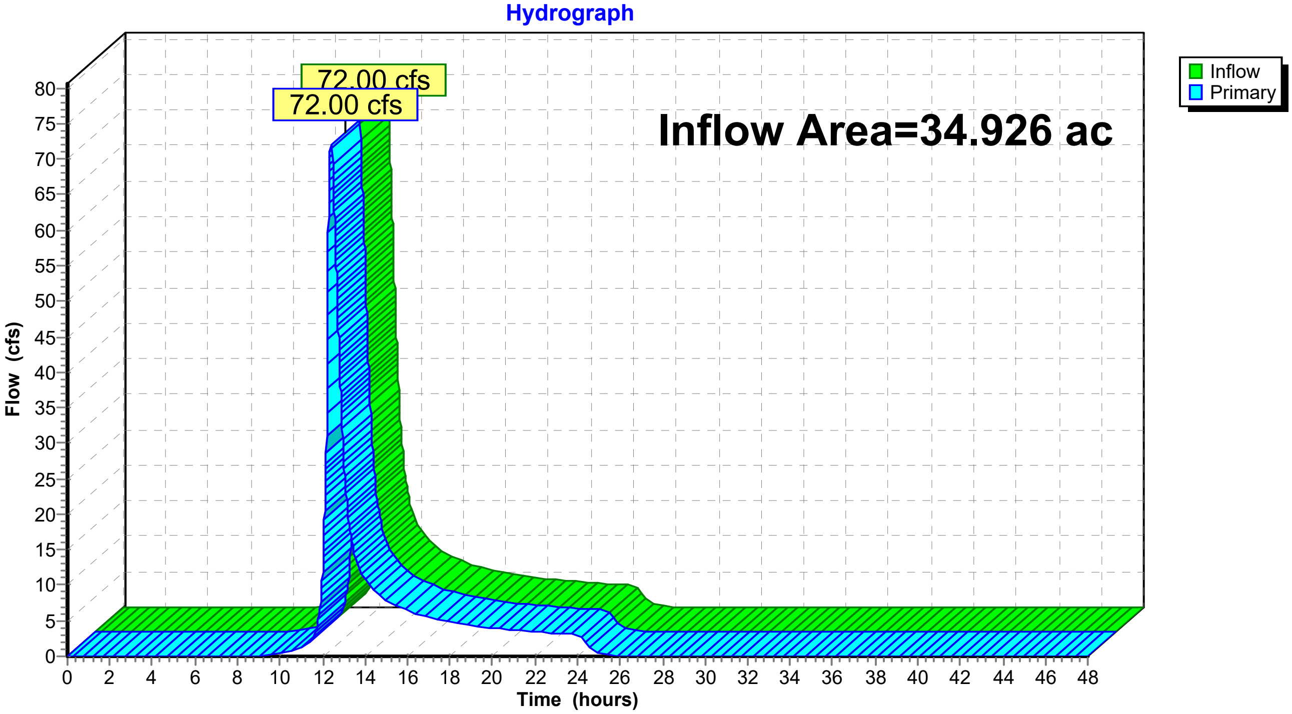
Subcatchment PR-C1-C: Proposed C1-C



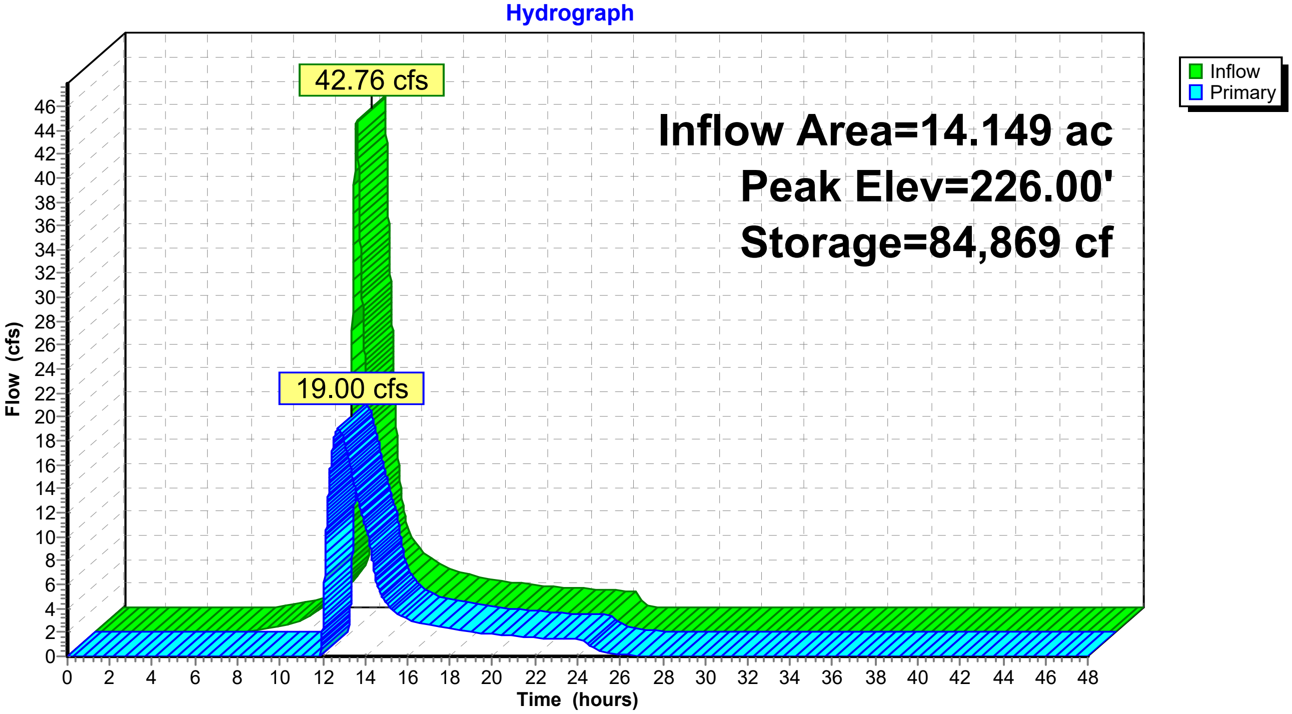
Pond 1P: Existing Wetland



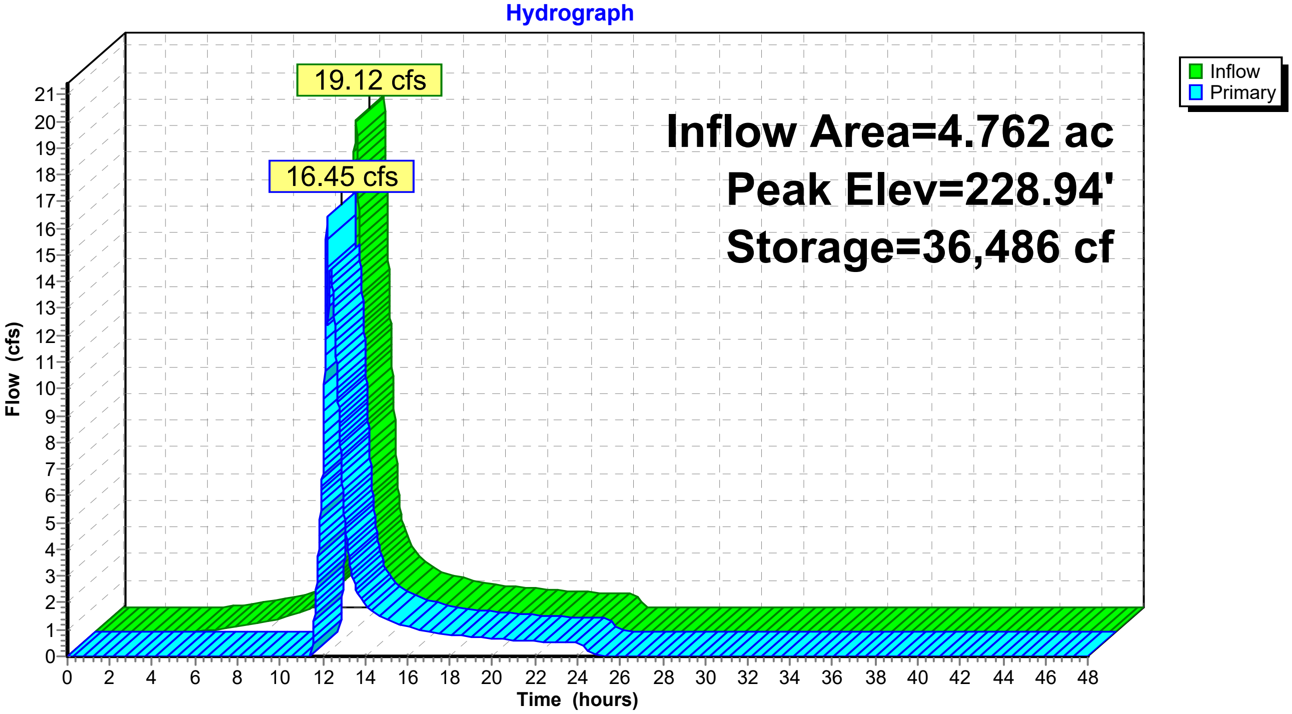
Pond 2P: Existing A



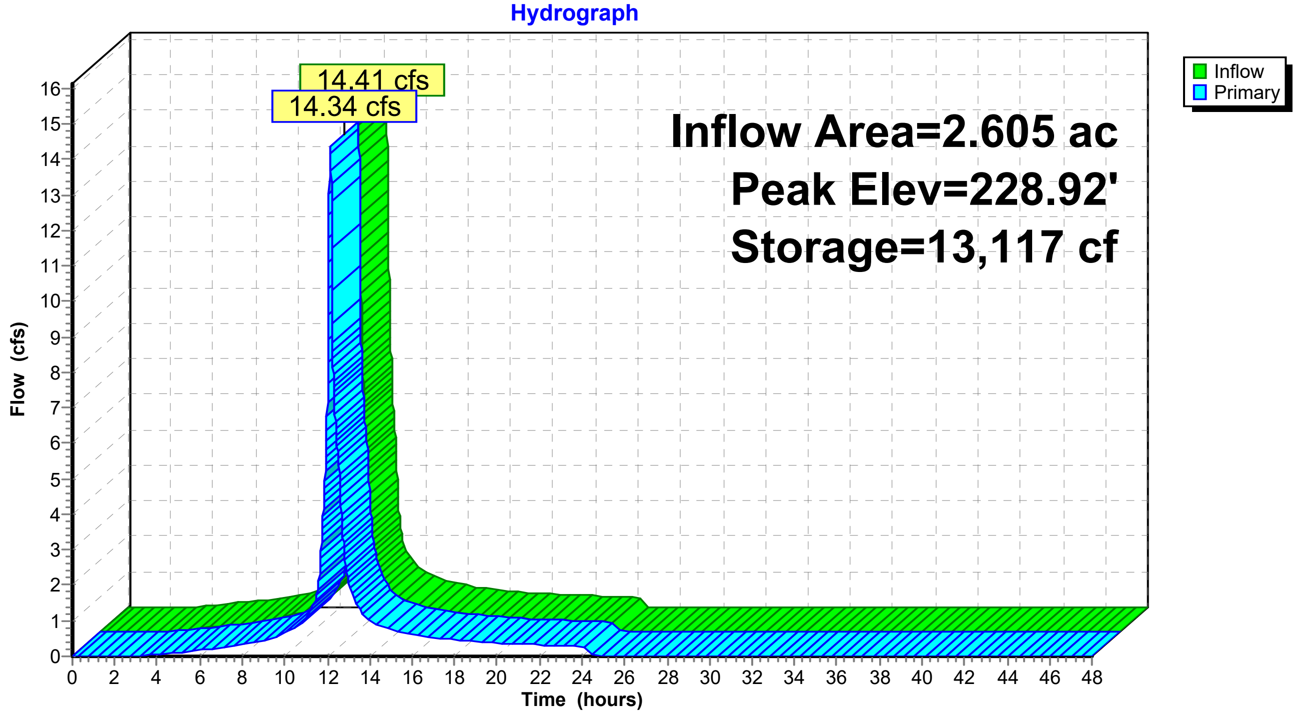
Pond 3P: Existing Wetland



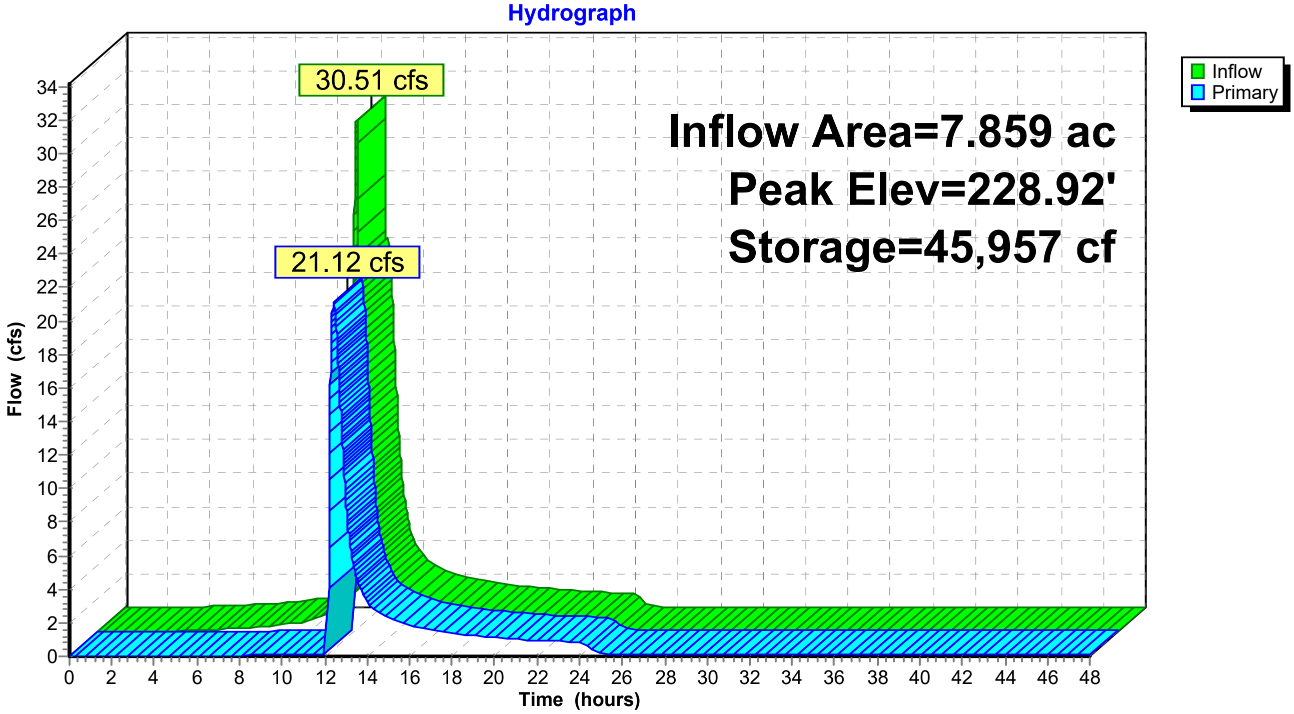
Pond 4P: Forebay & Bio A1-A



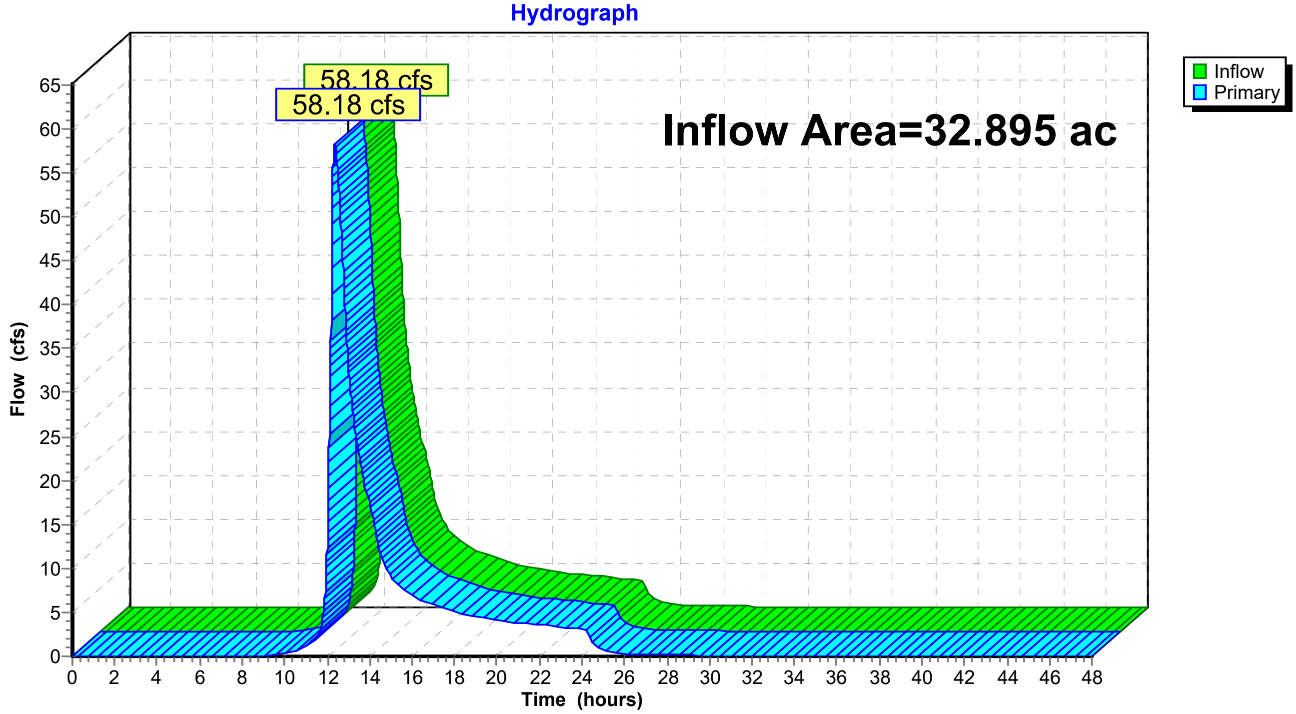
Pond 5P: Forebay A1-B



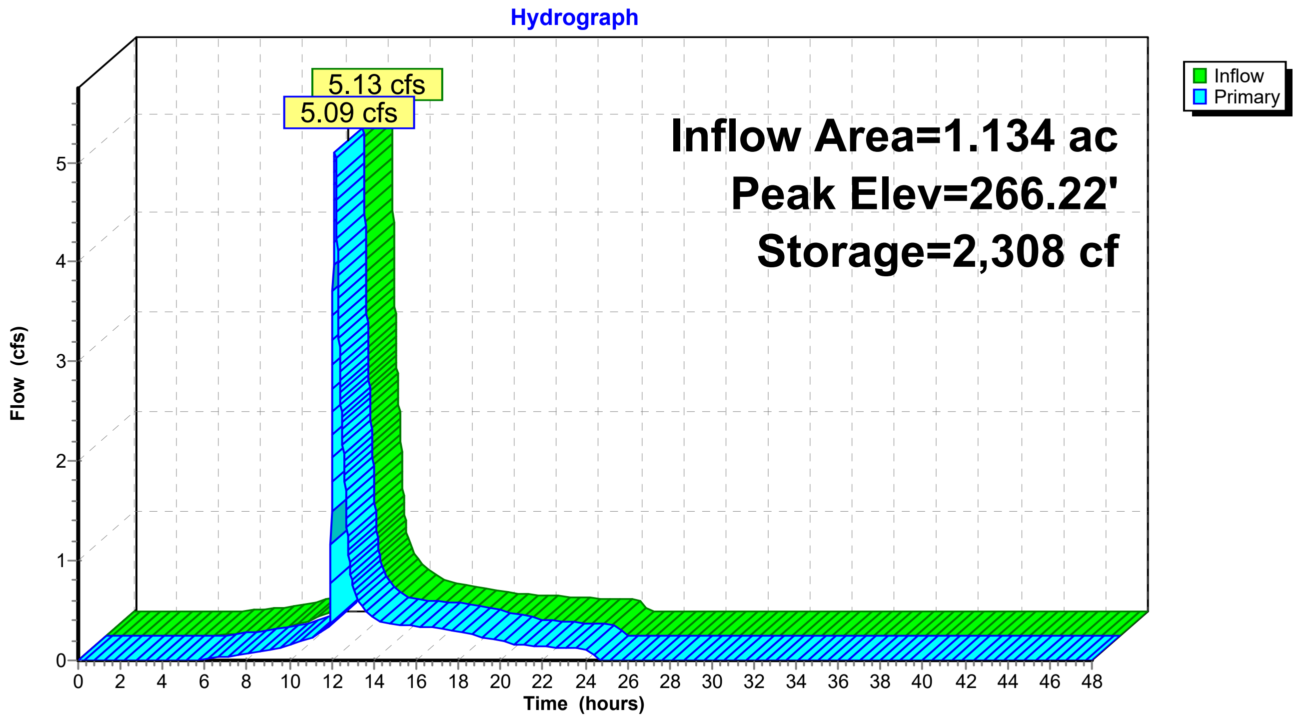
Pond 6P: Detention Basin A1



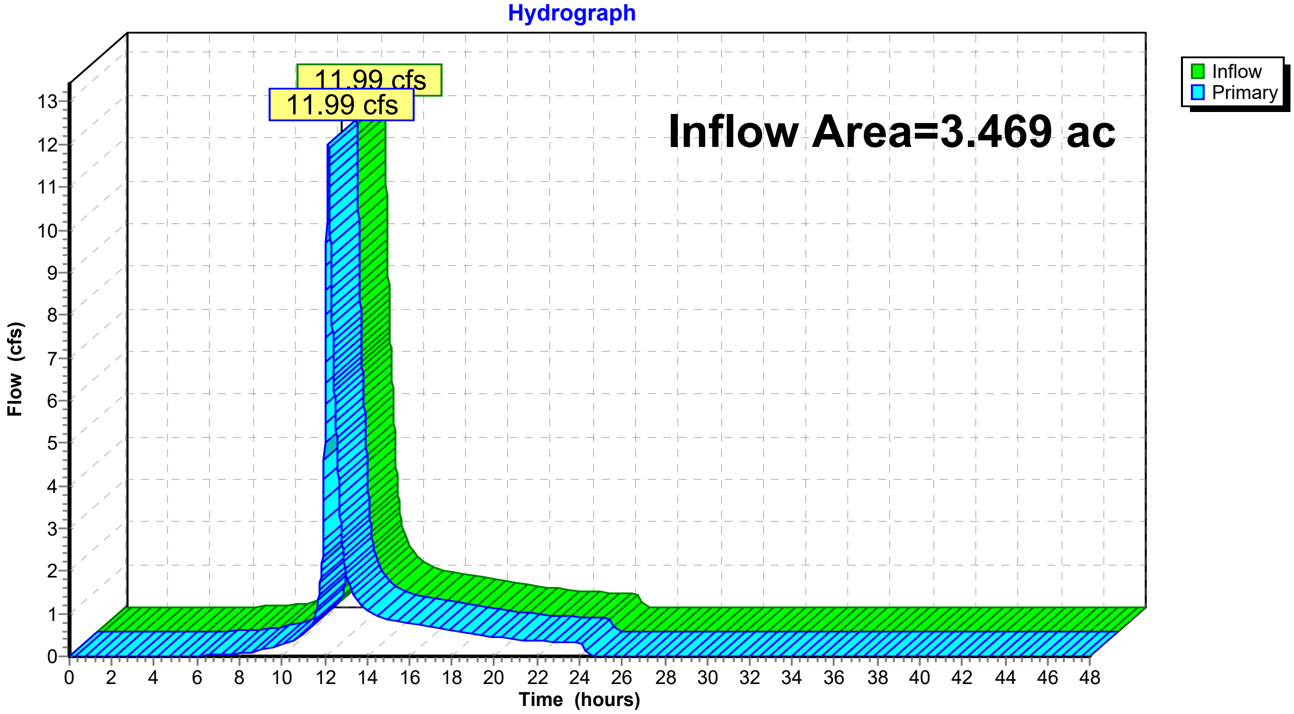
Pond 7P: Design Point A



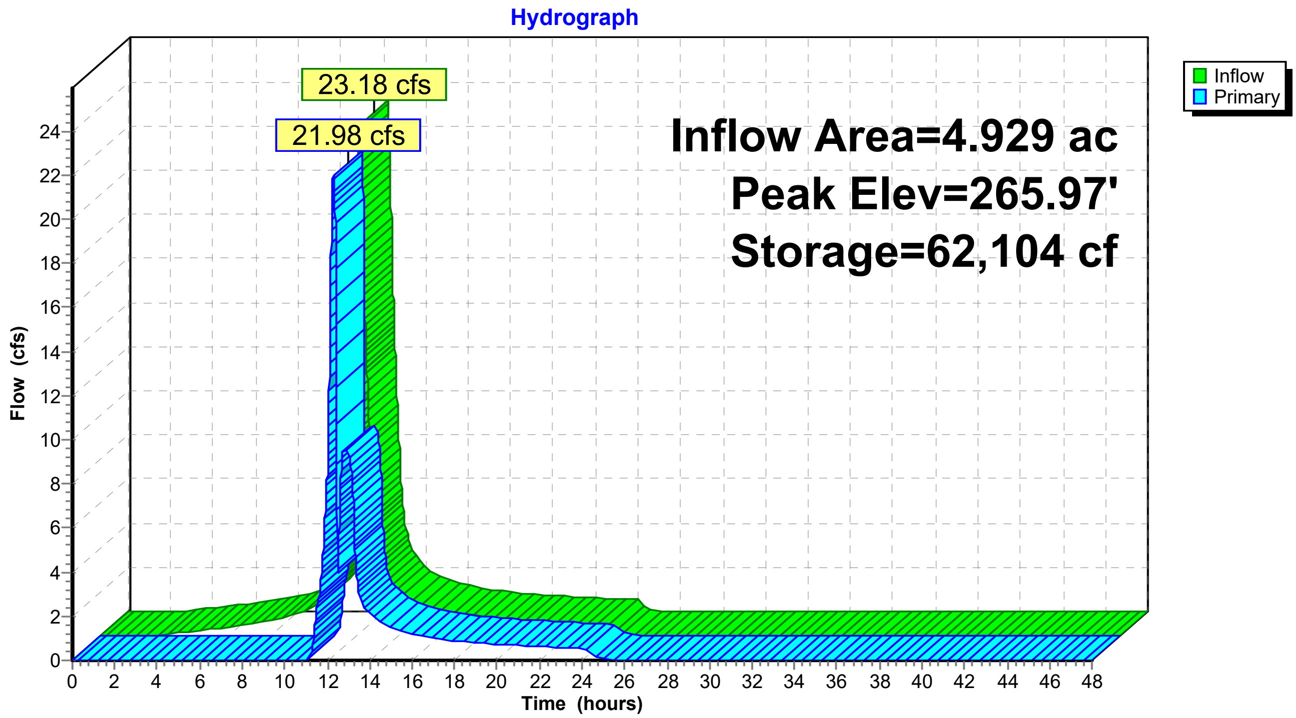
Pond 8P: Detention Basin B1



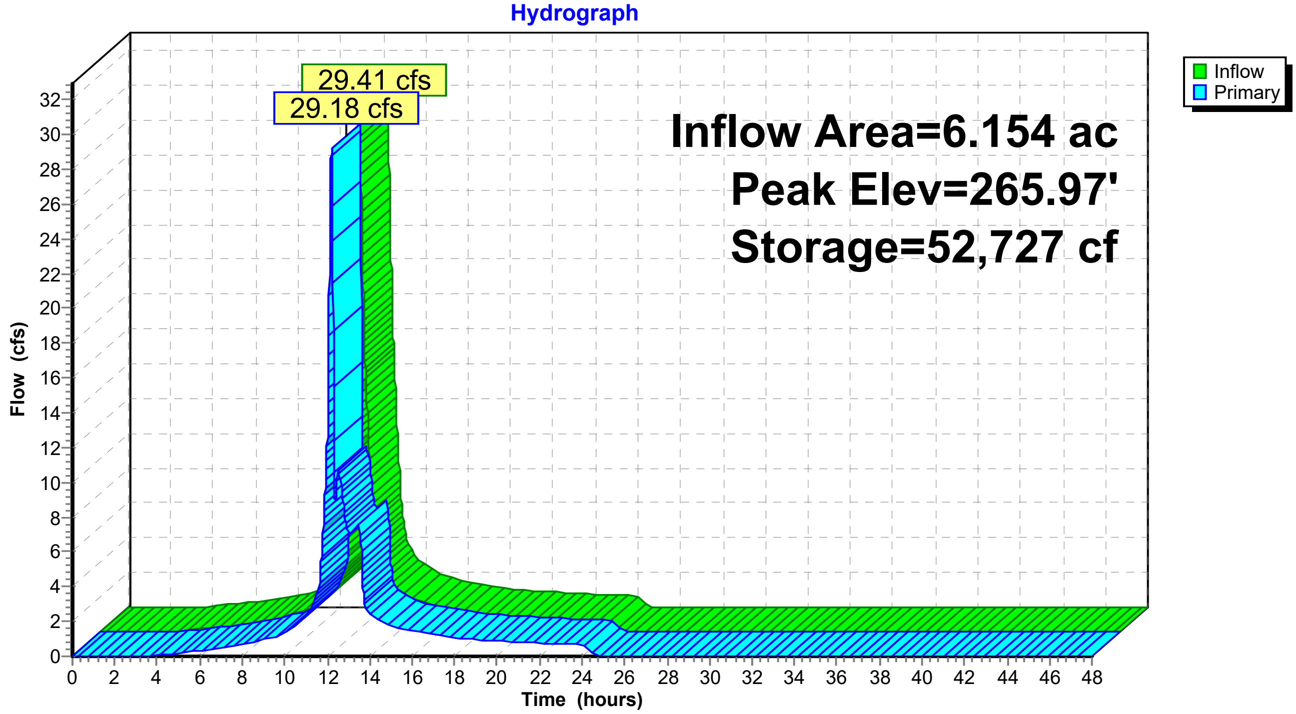
Pond 9P: Design Point B



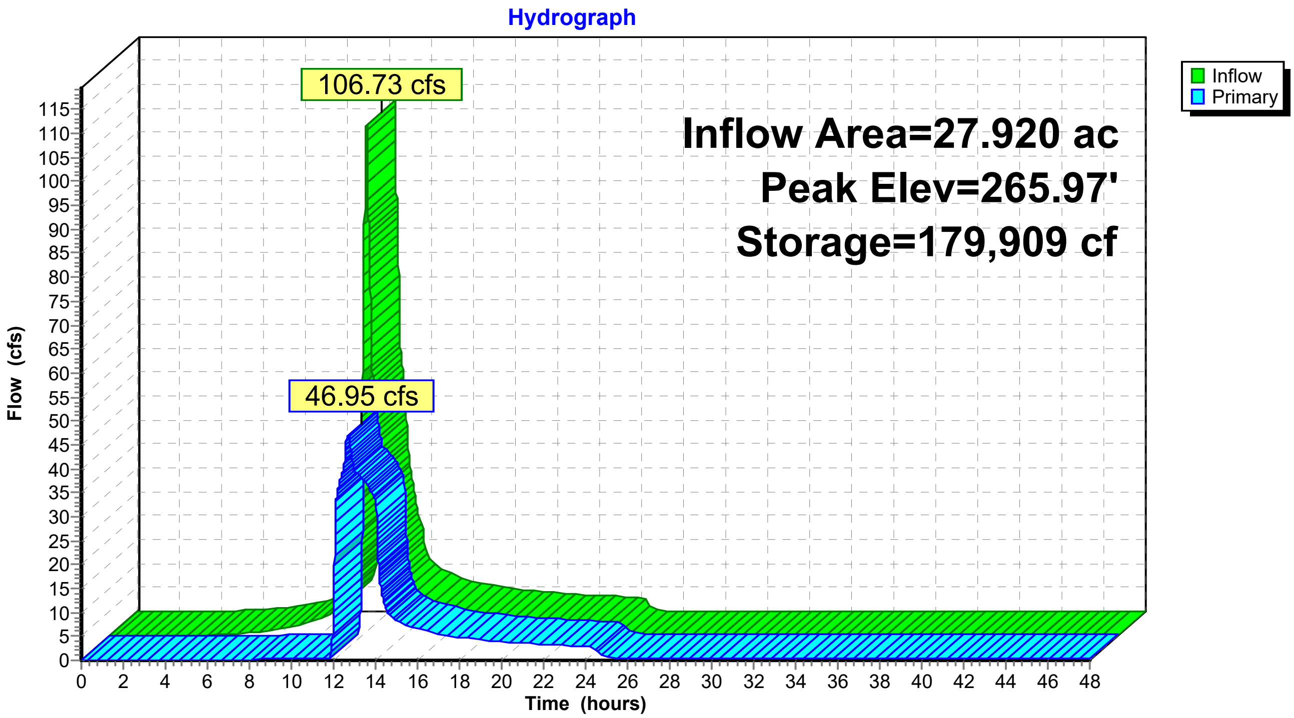
Pond 10P: Forebay & Bio C1-A



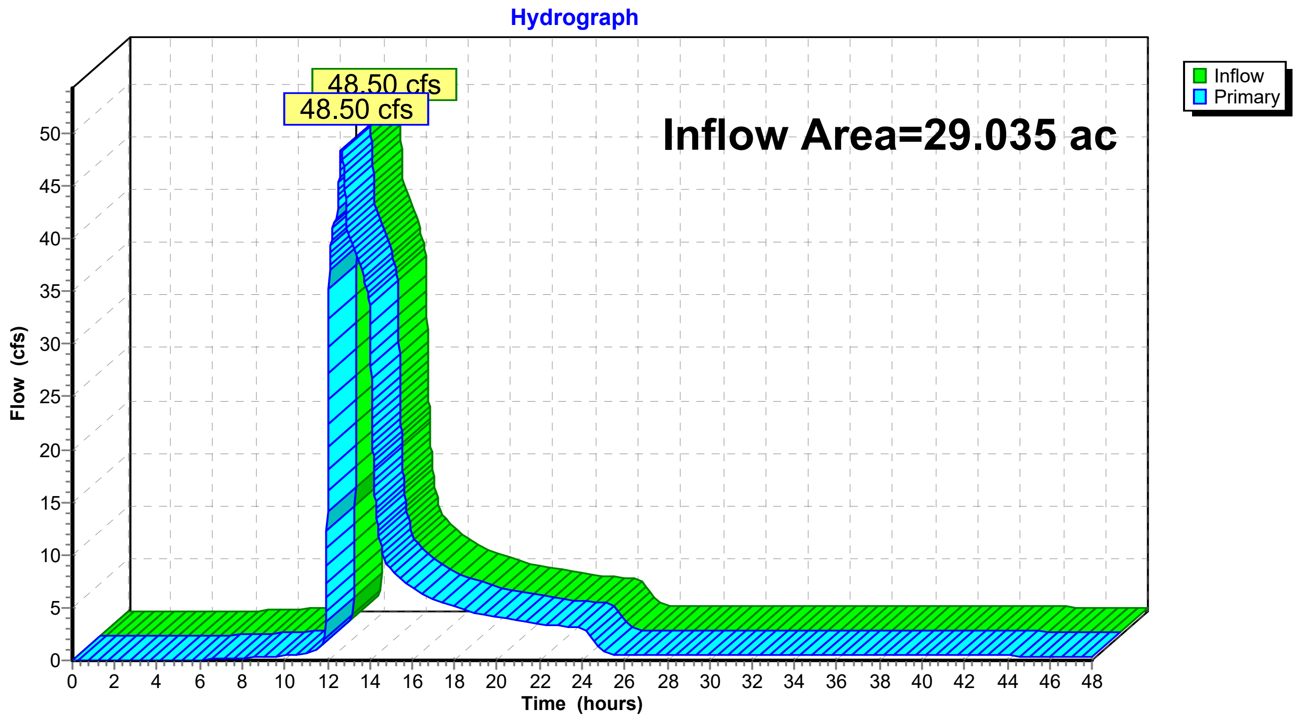
Pond 11P: Forebay C1-B



Pond 12P: Detention Basin C1



Pond 13P: Design Point C



APPENDIX 11

RESERVOIR REPORTS & CPV CALCULATIONS

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Summary for Pond 1P: Existing Wetland

Inflow Area = 22.902 ac, 8.12% Impervious, Inflow Depth = 0.25" for 1-yr event
Inflow = 1.88 cfs @ 12.58 hrs, Volume= 0.480 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : Existing A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Starting Elev= 224.00' Surf.Area= 16,787 sf Storage= 7,446 cf
Peak Elev= 224.85' @ 25.53 hrs Surf.Area= 33,212 sf Storage= 28,370 cf (20,923 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

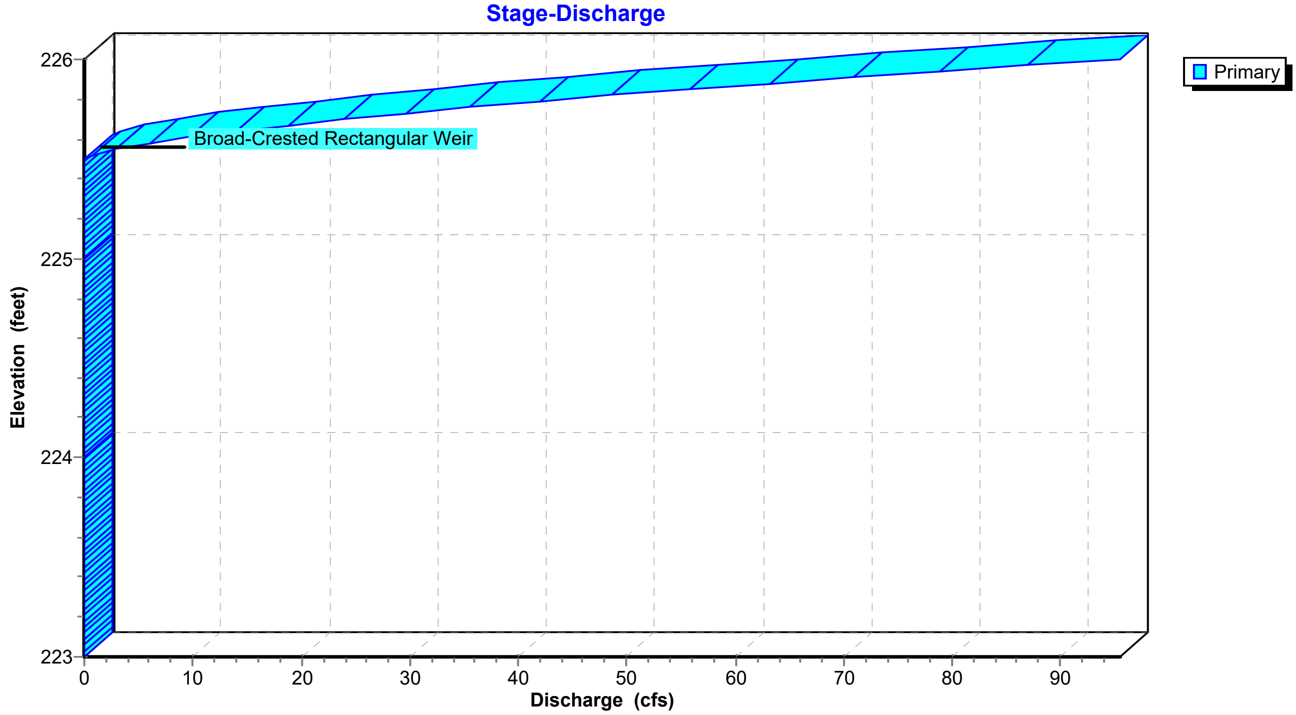
Volume	Invert	Avail.Storage	Storage Description
#1	223.00'	85,006 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
223.00	1,153	0	0	1,153
224.00	16,787	7,446	7,446	16,790
225.00	36,611	26,063	33,509	36,622
226.00	67,988	51,497	85,006	68,009

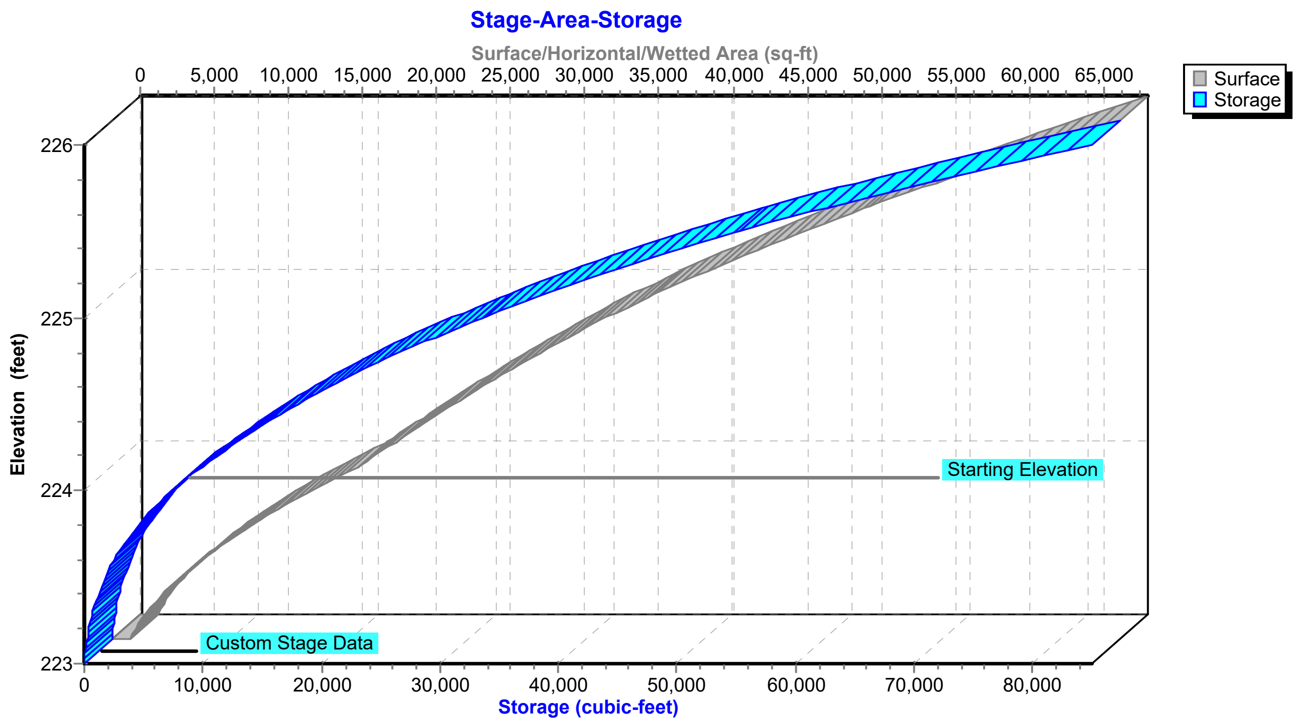
Device	Routing	Invert	Outlet Devices
#1	Primary	225.50'	**100.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=224.00' TW=0.00' (Dynamic Tailwater)
└—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Existing Wetland



Pond 1P: Existing Wetland



Stage-Discharge for Pond 1P: Existing Wetland

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
223.00	0.00	224.04	0.00	225.08	0.00
223.02	0.00	224.06	0.00	225.10	0.00
223.04	0.00	224.08	0.00	225.12	0.00
223.06	0.00	224.10	0.00	225.14	0.00
223.08	0.00	224.12	0.00	225.16	0.00
223.10	0.00	224.14	0.00	225.18	0.00
223.12	0.00	224.16	0.00	225.20	0.00
223.14	0.00	224.18	0.00	225.22	0.00
223.16	0.00	224.20	0.00	225.24	0.00
223.18	0.00	224.22	0.00	225.26	0.00
223.20	0.00	224.24	0.00	225.28	0.00
223.22	0.00	224.26	0.00	225.30	0.00
223.24	0.00	224.28	0.00	225.32	0.00
223.26	0.00	224.30	0.00	225.34	0.00
223.28	0.00	224.32	0.00	225.36	0.00
223.30	0.00	224.34	0.00	225.38	0.00
223.32	0.00	224.36	0.00	225.40	0.00
223.34	0.00	224.38	0.00	225.42	0.00
223.36	0.00	224.40	0.00	225.44	0.00
223.38	0.00	224.42	0.00	225.46	0.00
223.40	0.00	224.44	0.00	225.48	0.00
223.42	0.00	224.46	0.00	225.50	0.00
223.44	0.00	224.48	0.00	225.52	0.76
223.46	0.00	224.50	0.00	225.54	2.14
223.48	0.00	224.52	0.00	225.56	3.94
223.50	0.00	224.54	0.00	225.58	6.06
223.52	0.00	224.56	0.00	225.60	8.47
223.54	0.00	224.58	0.00	225.62	11.14
223.56	0.00	224.60	0.00	225.64	14.04
223.58	0.00	224.62	0.00	225.66	17.15
223.60	0.00	224.64	0.00	225.68	20.47
223.62	0.00	224.66	0.00	225.70	23.97
223.64	0.00	224.68	0.00	225.72	27.68
223.66	0.00	224.70	0.00	225.74	31.56
223.68	0.00	224.72	0.00	225.76	35.61
223.70	0.00	224.74	0.00	225.78	39.83
223.72	0.00	224.76	0.00	225.80	44.20
223.74	0.00	224.78	0.00	225.82	48.73
223.76	0.00	224.80	0.00	225.84	53.41
223.78	0.00	224.82	0.00	225.86	58.23
223.80	0.00	224.84	0.00	225.88	63.20
223.82	0.00	224.86	0.00	225.90	68.31
223.84	0.00	224.88	0.00	225.92	73.49
223.86	0.00	224.90	0.00	225.94	78.80
223.88	0.00	224.92	0.00	225.96	84.24
223.90	0.00	224.94	0.00	225.98	89.79
223.92	0.00	224.96	0.00	226.00	**95.46**
223.94	0.00	224.98	0.00		
223.96	0.00	225.00	0.00		
223.98	0.00	225.02	0.00		
224.00	0.00	225.04	0.00		
224.02	0.00	225.06	0.00		

Stage-Area-Storage for Pond 1P: Existing Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
223.00	1,153	0
223.05	1,501	66
223.10	1,894	151
223.15	2,333	256
223.20	2,817	385
223.25	3,348	539
223.30	3,924	720
223.35	4,545	932
223.40	5,213	1,176
223.45	5,926	1,454
223.50	6,685	1,769
223.55	7,489	2,123
223.60	8,340	2,519
223.65	9,236	2,958
223.70	10,177	3,443
223.75	11,165	3,976
223.80	12,198	4,560
223.85	13,276	5,197
223.90	14,401	5,889
223.95	15,571	6,638
224.00	16,787	7,446
224.05	17,597	8,306
224.10	18,426	9,207
224.15	19,274	10,149
224.20	20,141	11,134
224.25	21,027	12,163
224.30	21,933	13,237
224.35	22,857	14,357
224.40	23,801	15,523
224.45	24,763	16,737
224.50	25,745	18,000
224.55	26,746	19,312
224.60	27,766	20,675
224.65	28,804	22,089
224.70	29,862	23,556
224.75	30,939	25,076
224.80	32,036	26,650
224.85	33,151	28,279
224.90	34,285	29,965
224.95	35,439	31,708
225.00	36,611	33,509
225.05	37,951	35,373
225.10	39,315	37,305
225.15	40,703	39,305
225.20	42,116	41,376
225.25	43,552	43,517
225.30	45,013	45,731
225.35	46,497	48,019
225.40	48,006	50,381
225.45	49,538	52,820
225.50	51,095	55,336
225.55	52,676	57,930
225.60	54,281	60,604
225.65	55,910	63,358
225.70	57,563	66,195
225.75	59,241	69,115
225.80	60,942	72,120
225.85	62,667	75,210
225.90	64,417	78,387
225.95	66,190	81,652
226.00	**67,988**	**85,006**

Summary for Pond 2P: Existing A

Inflow Area = 34.926 ac, 5.76% Impervious, Inflow Depth = 0.06" for 1-yr event
Inflow = 0.58 cfs @ 12.61 hrs, Volume= 0.180 af
Primary = 0.58 cfs @ 12.61 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5

Summary for Pond 3P: Existing Wetland

Inflow Area = 14.149 ac, 15.15% Impervious, Inflow Depth = 0.43" for 1-yr event
Inflow = 3.20 cfs @ 12.35 hrs, Volume= 0.510 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : Design Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Starting Elev= 224.00' Surf.Area= 16,787 sf Storage= 7,446 cf
Peak Elev= 224.89' @ 25.33 hrs Surf.Area= 34,076 sf Storage= 29,652 cf (22,205 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

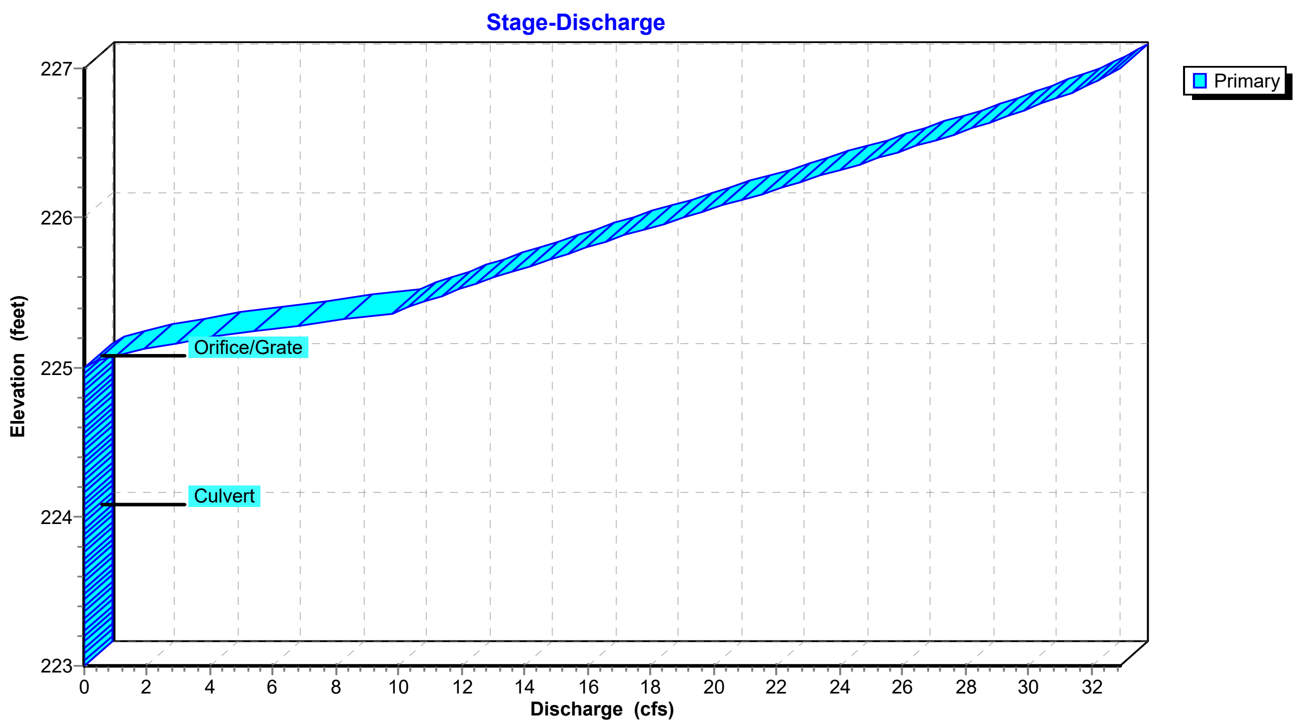
Volume	Invert	Avail.Storage	Storage Description
#1	223.00'	85,006 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
223.00	1,153	0	0	1,153
224.00	16,787	7,446	7,446	16,790
225.00	36,611	26,063	33,509	36,622
226.00	67,988	51,497	85,006	68,009

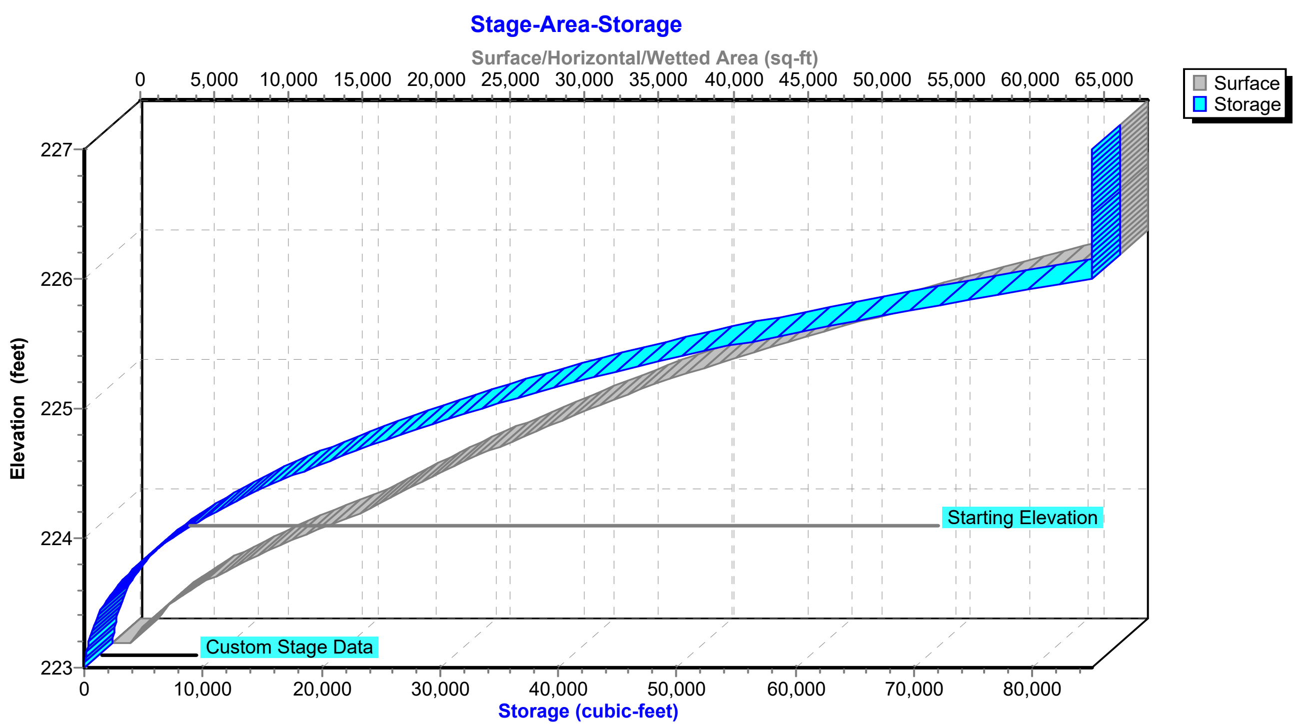
Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**36.0" Round Culvert** L= 230.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 224.00' / 197.30' S= 0.1161 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf
#2	Device 1	225.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=224.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: Existing Wetland



Pond 3P: Existing Wetland



Stage-Discharge for Pond 3P: Existing Wetland

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
223.00	0.00	224.04	0.00	225.08	1.04	226.12	20.90
223.02	0.00	224.06	0.00	225.10	1.45	226.14	21.21
223.04	0.00	224.08	0.00	225.12	1.90	226.16	21.52
223.06	0.00	224.10	0.00	225.14	2.40	226.18	21.84
223.08	0.00	224.12	0.00	225.16	2.93	226.20	22.15
223.10	0.00	224.14	0.00	225.18	3.50	226.22	22.46
223.12	0.00	224.16	0.00	225.20	4.09	226.24	22.77
223.14	0.00	224.18	0.00	225.22	4.72	226.26	23.08
223.16	0.00	224.20	0.00	225.24	5.38	226.28	23.39
223.18	0.00	224.22	0.00	225.26	6.07	226.30	23.70
223.20	0.00	224.24	0.00	225.28	6.78	226.32	24.01
223.22	0.00	224.26	0.00	225.30	7.52	226.34	24.32
223.24	0.00	224.28	0.00	225.32	8.29	226.36	24.63
223.26	0.00	224.30	0.00	225.34	9.08	226.38	24.94
223.28	0.00	224.32	0.00	225.36	9.76	226.40	25.24
223.30	0.00	224.34	0.00	225.38	10.02	226.42	25.55
223.32	0.00	224.36	0.00	225.40	10.29	226.44	25.85
223.34	0.00	224.38	0.00	225.42	10.55	226.46	26.15
223.36	0.00	224.40	0.00	225.44	10.82	226.48	26.45
223.38	0.00	224.42	0.00	225.46	11.09	226.50	26.75
223.40	0.00	224.44	0.00	225.48	11.36	226.52	27.05
223.42	0.00	224.46	0.00	225.50	11.63	226.54	27.34
223.44	0.00	224.48	0.00	225.52	11.91	226.56	27.63
223.46	0.00	224.50	0.00	225.54	12.19	226.58	27.92
223.48	0.00	224.52	0.00	225.56	12.47	226.60	28.21
223.50	0.00	224.54	0.00	225.58	12.75	226.62	28.49
223.52	0.00	224.56	0.00	225.60	13.04	226.64	28.77
223.54	0.00	224.58	0.00	225.62	13.32	226.66	29.05
223.56	0.00	224.60	0.00	225.64	13.61	226.68	29.32
223.58	0.00	224.62	0.00	225.66	13.90	226.70	29.60
223.60	0.00	224.64	0.00	225.68	14.19	226.72	29.86
223.62	0.00	224.66	0.00	225.70	14.48	226.74	30.12
223.64	0.00	224.68	0.00	225.72	14.78	226.76	30.38
223.66	0.00	224.70	0.00	225.74	15.07	226.78	30.63
223.68	0.00	224.72	0.00	225.76	15.37	226.80	30.88
223.70	0.00	224.74	0.00	225.78	15.67	226.82	31.12
223.72	0.00	224.76	0.00	225.80	15.97	226.84	31.36
223.74	0.00	224.78	0.00	225.82	16.27	226.86	31.59
223.76	0.00	224.80	0.00	225.84	16.57	226.88	31.81
223.78	0.00	224.82	0.00	225.86	16.88	226.90	32.02
223.80	0.00	224.84	0.00	225.88	17.18	226.92	32.23
223.82	0.00	224.86	0.00	225.90	17.49	226.94	32.42
223.84	0.00	224.88	0.00	225.92	17.79	226.96	32.60
223.86	0.00	224.90	0.00	225.94	18.10	226.98	32.77
223.88	0.00	224.92	0.00	225.96	18.41	227.00	**32.91**
223.90	0.00	224.94	0.00	225.98	18.72		
223.92	0.00	224.96	0.00	226.00	19.03		
223.94	0.00	224.98	0.00	226.02	19.34		
223.96	0.00	225.00	0.00	226.04	19.65		
223.98	0.00	225.02	0.13	226.06	19.96		
224.00	0.00	225.04	0.37	226.08	20.27		
224.02	0.00	225.06	0.67	226.10	20.59		

Stage-Area-Storage for Pond 3P: Existing Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
223.00	1,153	0	225.60	54,281	60,604
223.05	1,501	66	225.65	55,910	63,358
223.10	1,894	151	225.70	57,563	66,195
223.15	2,333	256	225.75	59,241	69,115
223.20	2,817	385	225.80	60,942	72,120
223.25	3,348	539	225.85	62,667	75,210
223.30	3,924	720	225.90	64,417	78,387
223.35	4,545	932	225.95	66,190	81,652
223.40	5,213	1,176	226.00	**67,988**	**85,006**
223.45	5,926	1,454	226.05	67,988	85,006
223.50	6,685	1,769	226.10	67,988	85,006
223.55	7,489	2,123	226.15	67,988	85,006
223.60	8,340	2,519	226.20	67,988	85,006
223.65	9,236	2,958	226.25	67,988	85,006
223.70	10,177	3,443	226.30	67,988	85,006
223.75	11,165	3,976	226.35	67,988	85,006
223.80	12,198	4,560	226.40	67,988	85,006
223.85	13,276	5,197	226.45	67,988	85,006
223.90	14,401	5,889	226.50	67,988	85,006
223.95	15,571	6,638	226.55	67,988	85,006
224.00	16,787	7,446	226.60	67,988	85,006
224.05	17,597	8,306	226.65	67,988	85,006
224.10	18,426	9,207	226.70	67,988	85,006
224.15	19,274	10,149	226.75	67,988	85,006
224.20	20,141	11,134	226.80	67,988	85,006
224.25	21,027	12,163	226.85	67,988	85,006
224.30	21,933	13,237	226.90	67,988	85,006
224.35	22,857	14,357	226.95	67,988	85,006
224.40	23,801	15,523	227.00	67,988	85,006
224.45	24,763	16,737			
224.50	25,745	18,000			
224.55	26,746	19,312			
224.60	27,766	20,675			
224.65	28,804	22,089			
224.70	29,862	23,556			
224.75	30,939	25,076			
224.80	32,036	26,650			
224.85	33,151	28,279			
224.90	34,285	29,965			
224.95	35,439	31,708			
225.00	36,611	33,509			
225.05	37,951	35,373			
225.10	39,315	37,305			
225.15	40,703	39,305			
225.20	42,116	41,376			
225.25	43,552	43,517			
225.30	45,013	45,731			
225.35	46,497	48,019			
225.40	48,006	50,381			
225.45	49,538	52,820			
225.50	51,095	55,336			
225.55	52,676	57,930			

Summary for Pond 4P: Forebay & Bio A1-A

Inflow Area = 4.762 ac, 47.67% Impervious, Inflow Depth = 0.91" for 1-yr event
Inflow = 3.23 cfs @ 12.26 hrs, Volume= 0.359 af
Outflow = 0.14 cfs @ 20.00 hrs, Volume= 0.054 af, Atten= 96%, Lag= 464.5 min
Primary = 0.14 cfs @ 20.00 hrs, Volume= 0.054 af
Routed to Pond 6P : Detention Basin A1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Starting Elev= 227.50' Surf.Area= 12,044 sf Storage= 16,584 cf
Peak Elev= 228.51' @ 20.00 hrs Surf.Area= 14,586 sf Storage= 30,019 cf (13,435 cf above start)

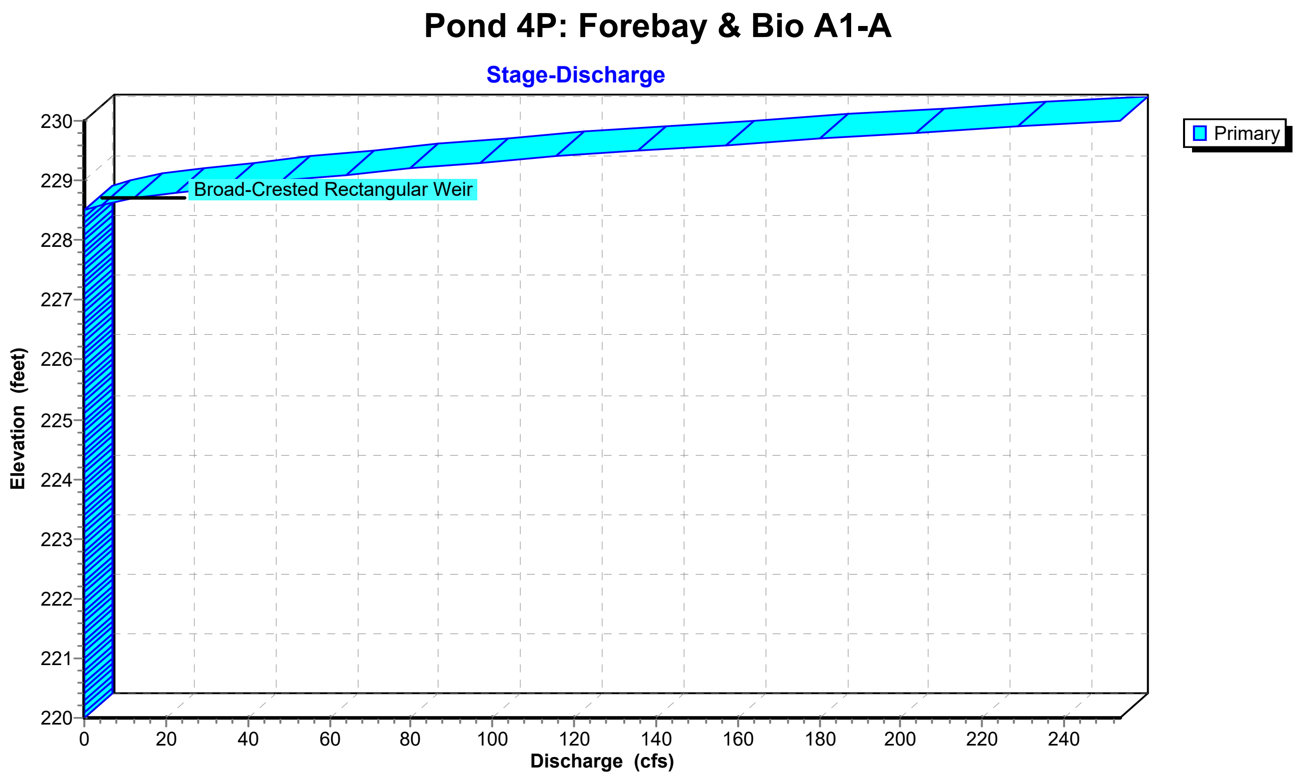
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 422.6 min (1,311.7 - 889.1)

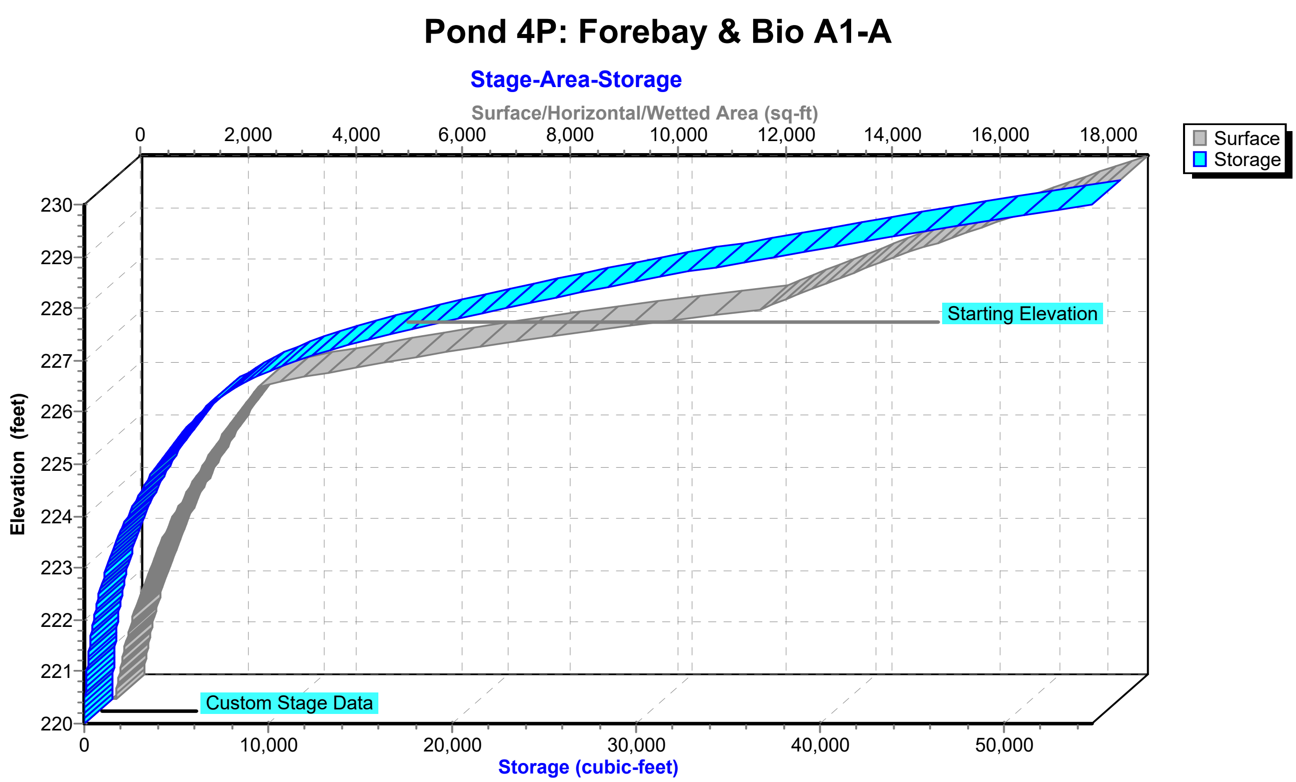
Volume	Invert	Avail.Storage	Storage Description
#1	220.00'	54,786 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
220.00	65	0	0	65
222.00	514	508	508	527
224.00	1,391	1,834	2,342	1,429
226.00	2,700	4,019	6,361	2,776
227.50	12,044	10,223	16,584	12,130
228.00	13,280	6,328	22,913	13,382
230.00	18,750	31,873	54,786	18,925

Device	Routing	Invert	Outlet Devices
#1	Primary	228.50'	**50.0' long + 2.0 '/' SideZ x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.14 cfs @ 20.00 hrs HW=228.51' TW=224.58' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.27 fps)


Pond 4P: Forebay & Bio A1-A
Stage-Discharge
Primary
Broad-Crested Rectangular Weir
Elevation (feet)
230
229
228
227
226
225
224
223
222
221
220
0
20
40
60
80
100
120
140
160
180
200
220
240
Discharge (cfs)


Pond 4P: Forebay & Bio A1-A
Stage-Area-Storage
Surface/Horizontal/Wetted Area (sq-ft)
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
Surface
Storage
Starting Elevation
Custom Stage Data
Elevation (feet)
230
229
228
227
226
225
224
223
222
221
220
0
10,000
20,000
30,000
40,000
50,000
Storage (cubic-feet)

Stage-Discharge for Pond 4P: Forebay & Bio A1-A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
220.00	0.00	222.60	0.00	225.20	0.00	227.80	0.00
220.05	0.00	222.65	0.00	225.25	0.00	227.85	0.00
220.10	0.00	222.70	0.00	225.30	0.00	227.90	0.00
220.15	0.00	222.75	0.00	225.35	0.00	227.95	0.00
220.20	0.00	222.80	0.00	225.40	0.00	228.00	0.00
220.25	0.00	222.85	0.00	225.45	0.00	228.05	0.00
220.30	0.00	222.90	0.00	225.50	0.00	228.10	0.00
220.35	0.00	222.95	0.00	225.55	0.00	228.15	0.00
220.40	0.00	223.00	0.00	225.60	0.00	228.20	0.00
220.45	0.00	223.05	0.00	225.65	0.00	228.25	0.00
220.50	0.00	223.10	0.00	225.70	0.00	228.30	0.00
220.55	0.00	223.15	0.00	225.75	0.00	228.35	0.00
220.60	0.00	223.20	0.00	225.80	0.00	228.40	0.00
220.65	0.00	223.25	0.00	225.85	0.00	228.45	0.00
220.70	0.00	223.30	0.00	225.90	0.00	228.50	0.00
220.75	0.00	223.35	0.00	225.95	0.00	228.55	1.50
220.80	0.00	223.40	0.00	226.00	0.00	228.60	4.25
220.85	0.00	223.45	0.00	226.05	0.00	228.65	7.82
220.90	0.00	223.50	0.00	226.10	0.00	228.70	12.06
220.95	0.00	223.55	0.00	226.15	0.00	228.75	16.92
221.00	0.00	223.60	0.00	226.20	0.00	228.80	22.31
221.05	0.00	223.65	0.00	226.25	0.00	228.85	28.21
221.10	0.00	223.70	0.00	226.30	0.00	228.90	34.59
221.15	0.00	223.75	0.00	226.35	0.00	228.95	41.34
221.20	0.00	223.80	0.00	226.40	0.00	229.00	48.49
221.25	0.00	223.85	0.00	226.45	0.00	229.05	56.03
221.30	0.00	223.90	0.00	226.50	0.00	229.10	63.95
221.35	0.00	223.95	0.00	226.55	0.00	229.15	71.82
221.40	0.00	224.00	0.00	226.60	0.00	229.20	79.94
221.45	0.00	224.05	0.00	226.65	0.00	229.25	88.29
221.50	0.00	224.10	0.00	226.70	0.00	229.30	96.87
221.55	0.00	224.15	0.00	226.75	0.00	229.35	106.16
221.60	0.00	224.20	0.00	226.80	0.00	229.40	115.73
221.65	0.00	224.25	0.00	226.85	0.00	229.45	125.58
221.70	0.00	224.30	0.00	226.90	0.00	229.50	135.71
221.75	0.00	224.35	0.00	226.95	0.00	229.55	146.38
221.80	0.00	224.40	0.00	227.00	0.00	229.60	157.35
221.85	0.00	224.45	0.00	227.05	0.00	229.65	168.62
221.90	0.00	224.50	0.00	227.10	0.00	229.70	180.18
221.95	0.00	224.55	0.00	227.15	0.00	229.75	191.85
222.00	0.00	224.60	0.00	227.20	0.00	229.80	203.79
222.05	0.00	224.65	0.00	227.25	0.00	229.85	215.99
222.10	0.00	224.70	0.00	227.30	0.00	229.90	228.45
222.15	0.00	224.75	0.00	227.35	0.00	229.95	240.94
222.20	0.00	224.80	0.00	227.40	0.00	230.00	**253.66**
222.25	0.00	224.85	0.00	227.45	0.00		
222.30	0.00	224.90	0.00	227.50	0.00		
222.35	0.00	224.95	0.00	227.55	0.00		
222.40	0.00	225.00	0.00	227.60	0.00		
222.45	0.00	225.05	0.00	227.65	0.00		
222.50	0.00	225.10	0.00	227.70	0.00		
222.55	0.00	225.15	0.00	227.75	0.00		

Stage-Area-Storage for Pond 4P: Forebay & Bio A1-A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
220.00	65	0	225.20	2,125	4,436
220.10	77	7	225.30	2,193	4,651
220.20	91	15	225.40	2,262	4,874
220.30	105	25	225.50	2,332	5,104
220.40	121	37	225.60	2,404	5,341
220.50	137	49	225.70	2,476	5,585
220.60	155	64	225.80	2,550	5,836
220.70	174	80	225.90	2,624	6,095
220.80	193	99	226.00	2,700	6,361
220.90	214	119	226.10	3,115	6,651
221.00	236	142	226.20	3,560	6,985
221.10	259	166	226.30	4,035	7,364
221.20	283	194	226.40	4,539	7,793
221.30	308	223	226.50	5,073	8,273
221.40	334	255	226.60	5,636	8,808
221.50	362	290	226.70	6,230	9,401
221.60	390	328	226.80	6,852	10,055
221.70	419	368	226.90	7,505	10,773
221.80	450	412	227.00	8,187	11,557
221.90	481	458	227.10	8,899	12,411
222.00	514	508	227.20	9,641	13,338
222.10	548	561	227.30	10,412	14,340
222.20	582	617	227.40	11,213	15,422
222.30	618	677	227.50	12,044	16,584
222.40	655	741	227.60	12,286	17,801
222.50	693	809	227.70	12,531	19,041
222.60	732	880	227.80	12,778	20,307
222.70	772	955	227.90	13,028	21,597
222.80	813	1,034	228.00	13,280	22,913
222.90	856	1,118	228.10	13,531	24,253
223.00	899	1,205	228.20	13,785	25,619
223.10	943	1,298	228.30	14,041	27,010
223.20	989	1,394	228.40	14,299	28,427
223.30	1,035	1,495	228.50	14,559	29,870
223.40	1,083	1,601	228.60	14,822	31,339
223.50	1,132	1,712	228.70	15,087	32,835
223.60	1,181	1,828	228.80	15,355	34,357
223.70	1,232	1,948	228.90	15,625	35,906
223.80	1,284	2,074	229.00	15,897	37,482
223.90	1,337	2,205	229.10	16,172	39,085
224.00	1,391	2,342	229.20	16,449	40,716
224.10	1,446	2,483	229.30	16,728	42,375
224.20	1,503	2,631	229.40	17,010	44,062
224.30	1,560	2,784	229.50	17,294	45,777
224.40	1,618	2,943	229.60	17,581	47,521
224.50	1,678	3,108	229.70	17,870	49,293
224.60	1,739	3,278	229.80	18,161	51,095
224.70	1,800	3,455	229.90	18,454	52,926
224.80	1,863	3,639	230.00	**18,750**	**54,786**
224.90	1,927	3,828			
225.00	1,992	4,024			
225.10	2,058	4,226			

Summary for Pond 5P: Forebay A1-B

Inflow Area = 2.605 ac, 63.57% Impervious, Inflow Depth = 1.33" for 1-yr event
Inflow = 3.49 cfs @ 12.13 hrs, Volume= 0.288 af
Outflow = 3.45 cfs @ 12.15 hrs, Volume= 0.288 af, Atten= 1%, Lag= 1.1 min
Primary = 3.45 cfs @ 12.15 hrs, Volume= 0.288 af
Routed to Pond 6P : Detention Basin A1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Starting Elev= 228.50' Surf.Area= 3,432 sf Storage= 11,619 cf
Peak Elev= 228.59' @ 12.15 hrs Surf.Area= 3,491 sf Storage= 11,920 cf (301 cf above start)

Plug-Flow detention time= 713.8 min calculated for 0.021 af (7% of inflow)
Center-of-Mass det. time= 3.1 min (855.1 - 852.0)

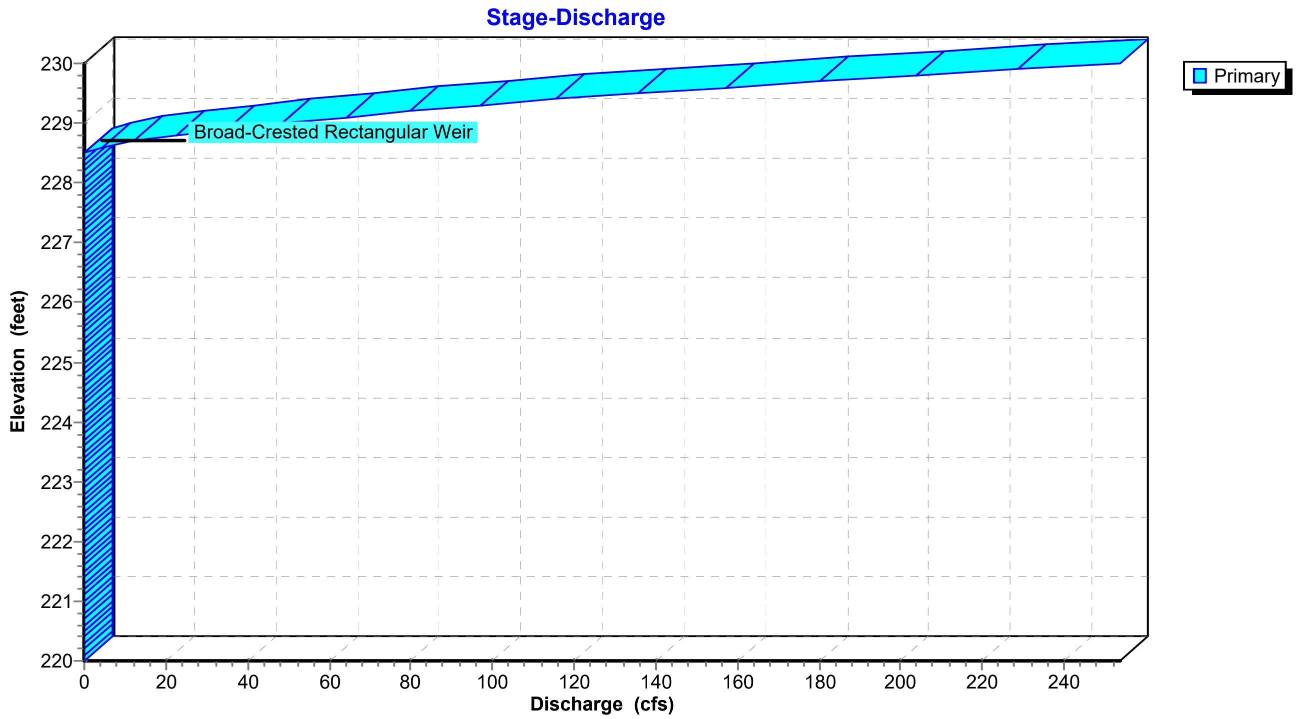
Volume	Invert	Avail.Storage	Storage Description
#1	220.00'	17,559 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
220.00	88	0	0	88
222.00	451	492	492	467
224.00	1,075	1,482	1,974	1,120
226.00	1,960	2,991	4,965	2,046
227.50	2,794	3,547	8,512	2,919
228.00	3,105	1,474	9,986	3,244
230.00	4,512	7,573	17,559	4,717

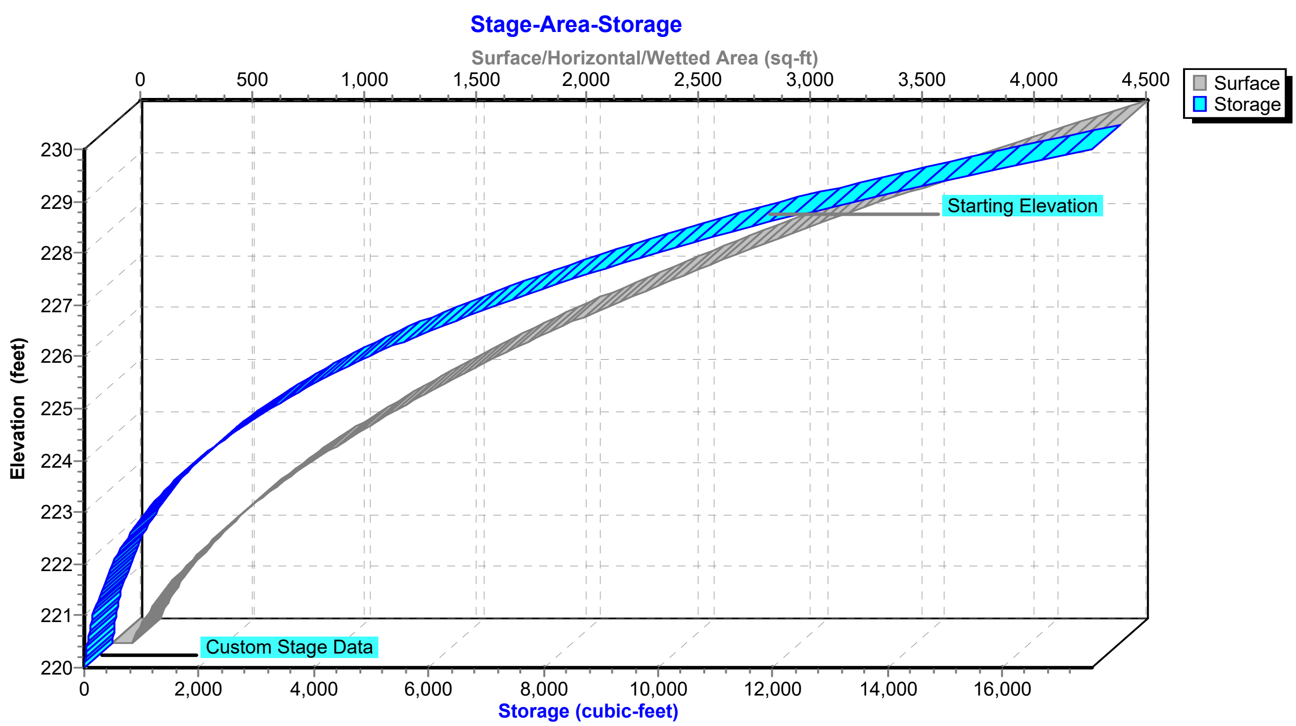
Device	Routing	Invert	Outlet Devices
#1	Primary	228.50'	**50.0' long + 2.0 '/' SideZ x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.44 cfs @ 12.15 hrs HW=228.59' TW=222.08' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 3.44 cfs @ 0.79 fps)

Pond 5P: Forebay A1-B



Pond 5P: Forebay A1-B



Stage-Discharge for Pond 5P: Forebay A1-B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
220.00	0.00	222.60	0.00	225.20	0.00	227.80	0.00
220.05	0.00	222.65	0.00	225.25	0.00	227.85	0.00
220.10	0.00	222.70	0.00	225.30	0.00	227.90	0.00
220.15	0.00	222.75	0.00	225.35	0.00	227.95	0.00
220.20	0.00	222.80	0.00	225.40	0.00	228.00	0.00
220.25	0.00	222.85	0.00	225.45	0.00	228.05	0.00
220.30	0.00	222.90	0.00	225.50	0.00	228.10	0.00
220.35	0.00	222.95	0.00	225.55	0.00	228.15	0.00
220.40	0.00	223.00	0.00	225.60	0.00	228.20	0.00
220.45	0.00	223.05	0.00	225.65	0.00	228.25	0.00
220.50	0.00	223.10	0.00	225.70	0.00	228.30	0.00
220.55	0.00	223.15	0.00	225.75	0.00	228.35	0.00
220.60	0.00	223.20	0.00	225.80	0.00	228.40	0.00
220.65	0.00	223.25	0.00	225.85	0.00	228.45	0.00
220.70	0.00	223.30	0.00	225.90	0.00	228.50	0.00
220.75	0.00	223.35	0.00	225.95	0.00	228.55	1.50
220.80	0.00	223.40	0.00	226.00	0.00	228.60	4.25
220.85	0.00	223.45	0.00	226.05	0.00	228.65	7.82
220.90	0.00	223.50	0.00	226.10	0.00	228.70	12.06
220.95	0.00	223.55	0.00	226.15	0.00	228.75	16.92
221.00	0.00	223.60	0.00	226.20	0.00	228.80	22.31
221.05	0.00	223.65	0.00	226.25	0.00	228.85	28.21
221.10	0.00	223.70	0.00	226.30	0.00	228.90	34.59
221.15	0.00	223.75	0.00	226.35	0.00	228.95	41.34
221.20	0.00	223.80	0.00	226.40	0.00	229.00	48.49
221.25	0.00	223.85	0.00	226.45	0.00	229.05	56.03
221.30	0.00	223.90	0.00	226.50	0.00	229.10	63.95
221.35	0.00	223.95	0.00	226.55	0.00	229.15	71.82
221.40	0.00	224.00	0.00	226.60	0.00	229.20	79.94
221.45	0.00	224.05	0.00	226.65	0.00	229.25	88.29
221.50	0.00	224.10	0.00	226.70	0.00	229.30	96.87
221.55	0.00	224.15	0.00	226.75	0.00	229.35	106.16
221.60	0.00	224.20	0.00	226.80	0.00	229.40	115.73
221.65	0.00	224.25	0.00	226.85	0.00	229.45	125.58
221.70	0.00	224.30	0.00	226.90	0.00	229.50	135.71
221.75	0.00	224.35	0.00	226.95	0.00	229.55	146.38
221.80	0.00	224.40	0.00	227.00	0.00	229.60	157.35
221.85	0.00	224.45	0.00	227.05	0.00	229.65	168.62
221.90	0.00	224.50	0.00	227.10	0.00	229.70	180.18
221.95	0.00	224.55	0.00	227.15	0.00	229.75	191.85
222.00	0.00	224.60	0.00	227.20	0.00	229.80	203.79
222.05	0.00	224.65	0.00	227.25	0.00	229.85	215.99
222.10	0.00	224.70	0.00	227.30	0.00	229.90	228.45
222.15	0.00	224.75	0.00	227.35	0.00	229.95	240.94
222.20	0.00	224.80	0.00	227.40	0.00	230.00	**253.66**
222.25	0.00	224.85	0.00	227.45	0.00		
222.30	0.00	224.90	0.00	227.50	0.00		
222.35	0.00	224.95	0.00	227.55	0.00		
222.40	0.00	225.00	0.00	227.60	0.00		
222.45	0.00	225.05	0.00	227.65	0.00		
222.50	0.00	225.10	0.00	227.70	0.00		
222.55	0.00	225.15	0.00	227.75	0.00		

Stage-Area-Storage for Pond 5P: Forebay A1-B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
220.00	88	0	225.20	1,574	3,554
220.10	99	9	225.30	1,620	3,714
220.20	112	20	225.40	1,667	3,878
220.30	125	32	225.50	1,714	4,047
220.40	138	45	225.60	1,762	4,221
220.50	152	59	225.70	1,810	4,399
220.60	167	75	225.80	1,860	4,583
220.70	183	93	225.90	1,909	4,771
220.80	199	112	226.00	1,960	4,965
220.90	217	133	226.10	2,011	5,163
221.00	234	155	226.20	2,063	5,367
221.10	253	180	226.30	2,115	5,576
221.20	272	206	226.40	2,168	5,790
221.30	292	234	226.50	2,222	6,009
221.40	313	264	226.60	2,276	6,234
221.50	334	297	226.70	2,331	6,465
221.60	356	331	226.80	2,386	6,700
221.70	379	368	226.90	2,443	6,942
221.80	402	407	227.00	2,500	7,189
221.90	426	448	227.10	2,557	7,442
222.00	451	492	227.20	2,615	7,701
222.10	476	538	227.30	2,674	7,965
222.20	501	587	227.40	2,734	8,235
222.30	528	639	227.50	2,794	8,512
222.40	554	693	227.60	2,855	8,794
222.50	582	750	227.70	2,916	9,083
222.60	610	809	227.80	2,979	9,378
222.70	639	872	227.90	3,041	9,679
222.80	669	937	228.00	3,105	9,986
222.90	699	1,005	228.10	3,169	10,300
223.00	730	1,077	228.20	3,234	10,620
223.10	761	1,151	228.30	3,299	10,946
223.20	793	1,229	228.40	3,365	11,280
223.30	826	1,310	228.50	3,432	11,619
223.40	860	1,394	228.60	3,500	11,966
223.50	894	1,482	228.70	3,568	12,319
223.60	929	1,573	228.80	3,636	12,680
223.70	964	1,668	228.90	3,706	13,047
223.80	1,001	1,766	229.00	3,776	13,421
223.90	1,037	1,868	229.10	3,846	13,802
224.00	1,075	1,974	229.20	3,918	14,190
224.10	1,113	2,083	229.30	3,990	14,585
224.20	1,152	2,196	229.40	4,062	14,988
224.30	1,191	2,313	229.50	4,136	15,398
224.40	1,231	2,435	229.60	4,210	15,815
224.50	1,272	2,560	229.70	4,284	16,240
224.60	1,313	2,689	229.80	4,360	16,672
224.70	1,355	2,822	229.90	4,435	17,112
224.80	1,397	2,960	230.00	**4,512**	**17,559**
224.90	1,441	3,102			
225.00	1,485	3,248			
225.10	1,529	3,399			

Summary for Pond 6P: Detention Basin A1

Inflow Area = 7.859 ac, 49.96% Impervious, Inflow Depth = 0.54" for 1-yr event
Inflow = 3.51 cfs @ 12.15 hrs, Volume= 0.353 af
Outflow = 0.07 cfs @ 24.46 hrs, Volume= 0.205 af, Atten= 98%, Lag= 738.8 min
Primary = 0.07 cfs @ 24.46 hrs, Volume= 0.205 af
Routed to Pond 7P : Design Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Peak Elev= 225.03' @ 24.46 hrs Surf.Area= 5,052 sf Storage= 11,989 cf

Plug-Flow detention time= 1,008.3 min calculated for 0.204 af (58% of inflow)
Center-of-Mass det. time= 822.4 min (1,750.8 - 928.4)

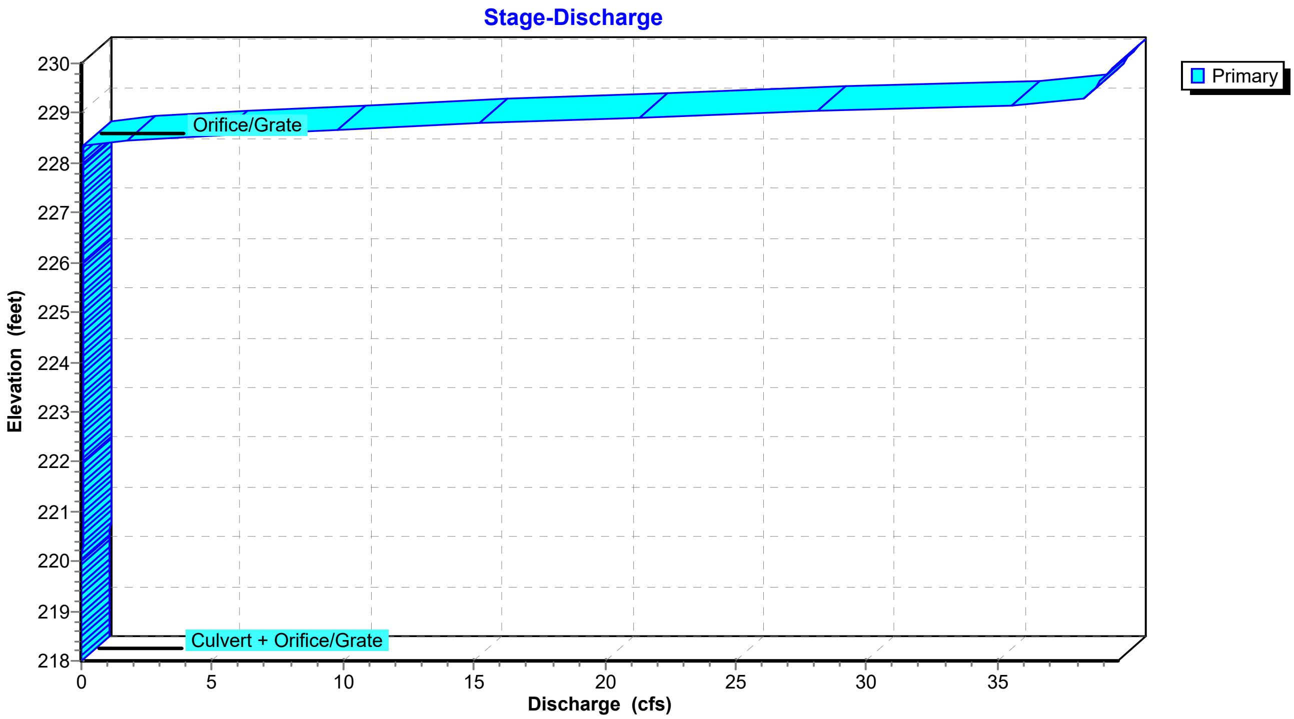
Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	61,071 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
218.00	13	0	0	13
220.00	571	447	447	579
222.00	1,689	2,161	2,608	1,721
224.00	3,441	5,027	7,635	3,508
226.00	6,846	10,094	17,729	6,950
228.00	10,779	17,477	35,206	10,938
230.00	15,213	25,865	61,071	15,445

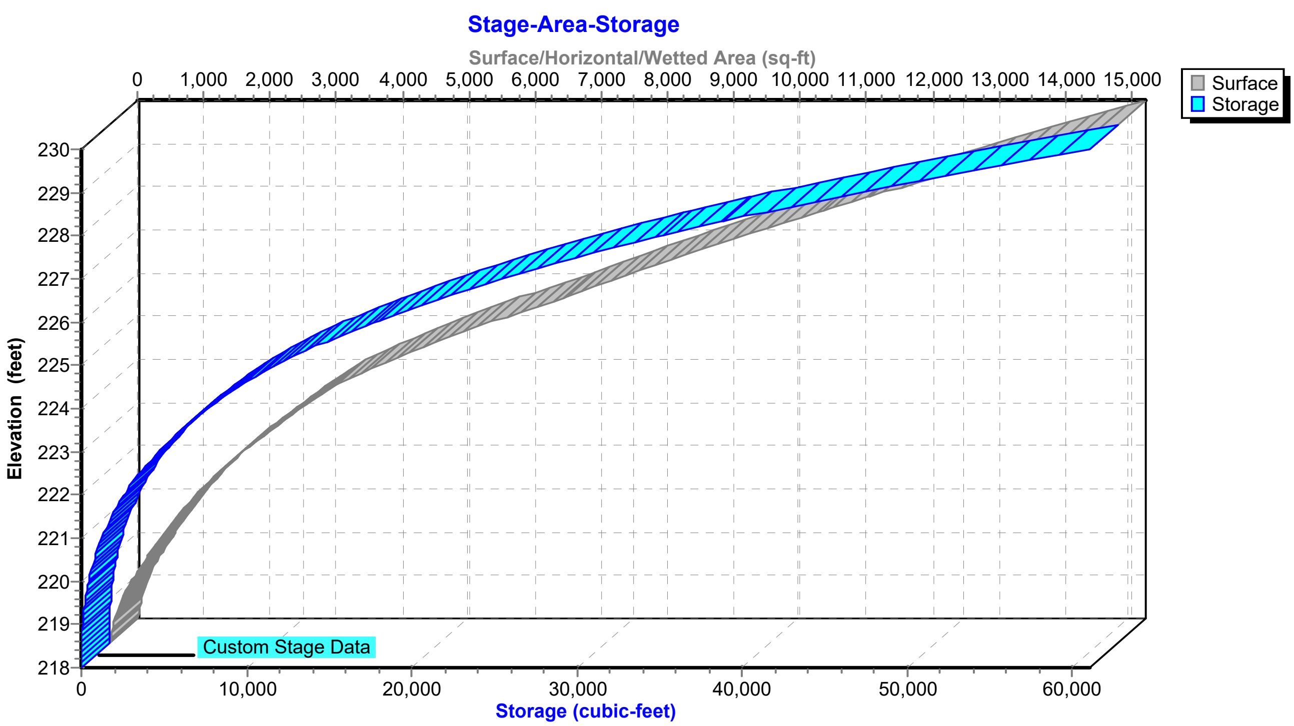
Device	Routing	Invert	Outlet Devices
#1	Primary	218.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 218.00' / 216.00' S= 0.0400 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	218.00'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	228.33'	**38.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 24.46 hrs HW=225.03' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.07 cfs of 29.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 12.73 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: Detention Basin A1



Pond 6P: Detention Basin A1



Stage-Discharge for Pond 6P: Detention Basin A1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
218.00	0.00	223.20	0.06	228.40	0.95
218.10	0.01	223.30	0.06	228.50	3.37
218.20	0.01	223.40	0.06	228.60	6.66
218.30	0.01	223.50	0.06	228.70	10.63
218.40	0.02	223.60	0.06	228.80	15.19
218.50	0.02	223.70	0.06	228.90	20.26
218.60	0.02	223.80	0.06	229.00	25.79
218.70	0.02	223.90	0.06	229.10	31.76
218.80	0.02	224.00	0.06	229.20	38.12
218.90	0.02	224.10	0.06	229.30	38.33
219.00	0.03	224.20	0.07	229.40	38.51
219.10	0.03	224.30	0.07	229.50	38.70
219.20	0.03	224.40	0.07	229.60	38.88
219.30	0.03	224.50	0.07	229.70	39.06
219.40	0.03	224.60	0.07	229.80	39.25
219.50	0.03	224.70	0.07	229.90	39.43
219.60	0.03	224.80	0.07	230.00	**39.61**
219.70	0.03	224.90	0.07		
219.80	0.03	225.00	0.07		
219.90	0.04	225.10	0.07		
220.00	0.04	225.20	0.07		
220.10	0.04	225.30	0.07		
220.20	0.04	225.40	0.07		
220.30	0.04	225.50	0.07		
220.40	0.04	225.60	0.07		
220.50	0.04	225.70	0.07		
220.60	0.04	225.80	0.07		
220.70	0.04	225.90	0.07		
220.80	0.04	226.00	0.07		
220.90	0.04	226.10	0.07		
221.00	0.05	226.20	0.08		
221.10	0.05	226.30	0.08		
221.20	0.05	226.40	0.08		
221.30	0.05	226.50	0.08		
221.40	0.05	226.60	0.08		
221.50	0.05	226.70	0.08		
221.60	0.05	226.80	0.08		
221.70	0.05	226.90	0.08		
221.80	0.05	227.00	0.08		
221.90	0.05	227.10	0.08		
222.00	0.05	227.20	0.08		
222.10	0.05	227.30	0.08		
222.20	0.05	227.40	0.08		
222.30	0.05	227.50	0.08		
222.40	0.05	227.60	0.08		
222.50	0.06	227.70	0.08		
222.60	0.06	227.80	0.08		
222.70	0.06	227.90	0.08		
222.80	0.06	228.00	0.08		
222.90	0.06	228.10	0.08		
223.00	0.06	228.20	0.08		
223.10	0.06	228.30	0.08		

Stage-Area-Storage for Pond 6P: Detention Basin A1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
218.00	13	0
218.20	32	4
218.40	59	13
218.60	94	28
218.80	137	51
219.00	189	84
219.20	249	128
219.40	317	184
219.60	394	255
219.80	478	342
220.00	571	447
220.20	656	569
220.40	747	710
220.60	844	869
220.80	947	1,048
221.00	1,056	1,248
221.20	1,171	1,471
221.40	1,291	1,717
221.60	1,418	1,988
221.80	1,551	2,284
222.00	1,689	2,608
222.20	1,836	2,961
222.40	1,990	3,343
222.60	2,150	3,757
222.80	2,316	4,203
223.00	2,488	4,684
223.20	2,666	5,199
223.40	2,851	5,751
223.60	3,041	6,340
223.80	3,238	6,968
224.00	3,441	7,635
224.20	3,729	8,352
224.40	4,029	9,128
224.60	4,341	9,965
224.80	4,664	10,865
225.00	4,999	11,831
225.20	5,345	12,865
225.40	5,703	13,970
225.60	6,072	15,147
225.80	6,453	16,399
226.00	6,846	17,729
226.20	7,199	19,133
226.40	7,561	20,609
226.60	7,933	22,159
226.80	8,313	23,783
227.00	8,701	25,484
227.20	9,099	27,264
227.40	9,506	29,124
227.60	9,921	31,067
227.80	10,346	33,094
228.00	10,779	35,206
228.20	11,188	37,402
228.40	11,605	39,682
228.60	12,029	42,045
228.80	12,461	44,494
229.00	12,901	47,030
229.20	13,348	49,655
229.40	13,803	52,370
229.60	14,265	55,176
229.80	14,735	58,076
230.00	**15,213**	**61,071**

Summary for Pond 7P: Design Point A

Inflow Area = 32.895 ac, 19.32% Impervious, Inflow Depth > 0.13" for 1-yr event
Inflow = 0.59 cfs @ 12.61 hrs, Volume= 0.367 af
Primary = 0.59 cfs @ 12.61 hrs, Volume= 0.367 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5

Summary for Pond 8P: Detention Basin B1

Inflow Area = 1.134 ac, 0.00% Impervious, Inflow Depth = 0.76" for 1-yr event
Inflow = 0.75 cfs @ 12.16 hrs, Volume= 0.071 af
Outflow = 0.27 cfs @ 12.61 hrs, Volume= 0.071 af, Atten= 64%, Lag= 26.9 min
Primary = 0.27 cfs @ 12.61 hrs, Volume= 0.071 af
Routed to Pond 9P : Design Point B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Automatic Starting Elev= 263.50' Surf.Area= 154 sf Storage= 50 cf
Peak Elev= 264.95' @ 12.61 hrs Surf.Area= 809 sf Storage= 675 cf (625 cf above start)

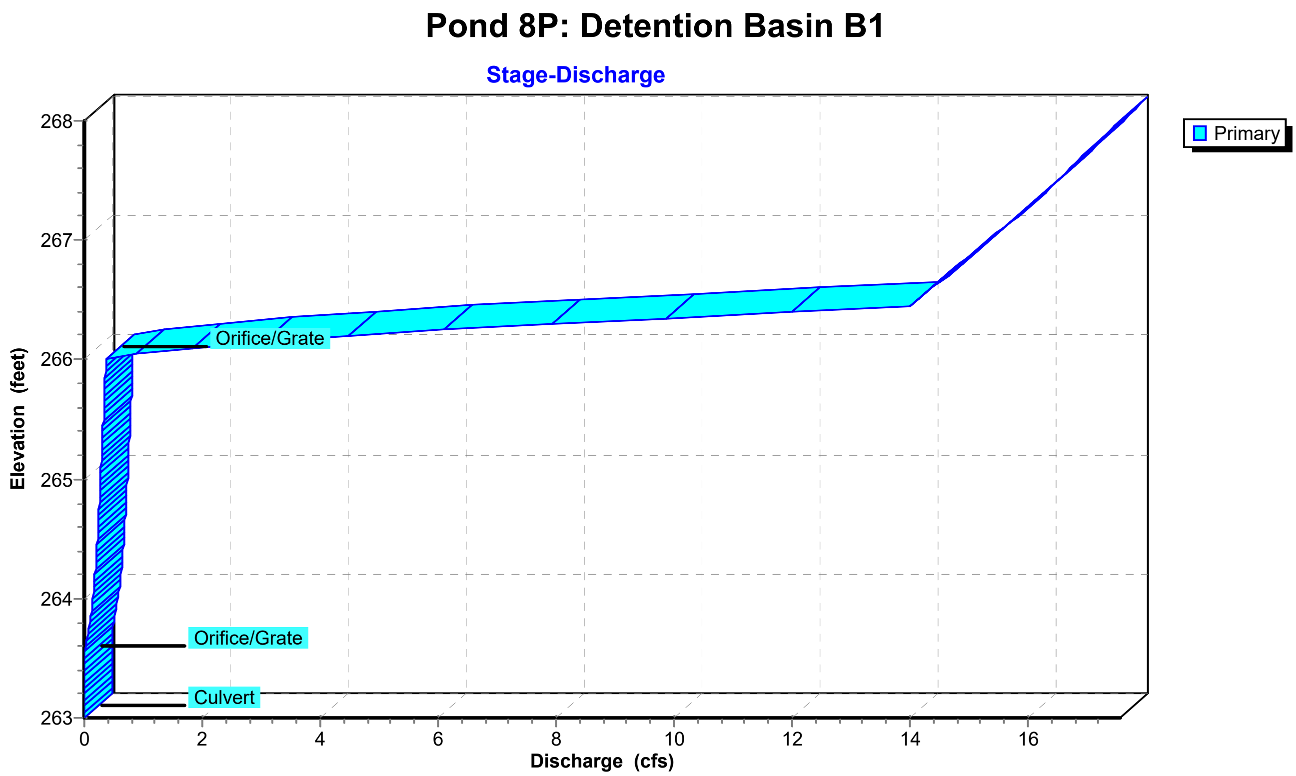
Plug-Flow detention time= 32.7 min calculated for 0.070 af (98% of inflow)
Center-of-Mass det. time= 20.3 min (915.3 - 895.0)

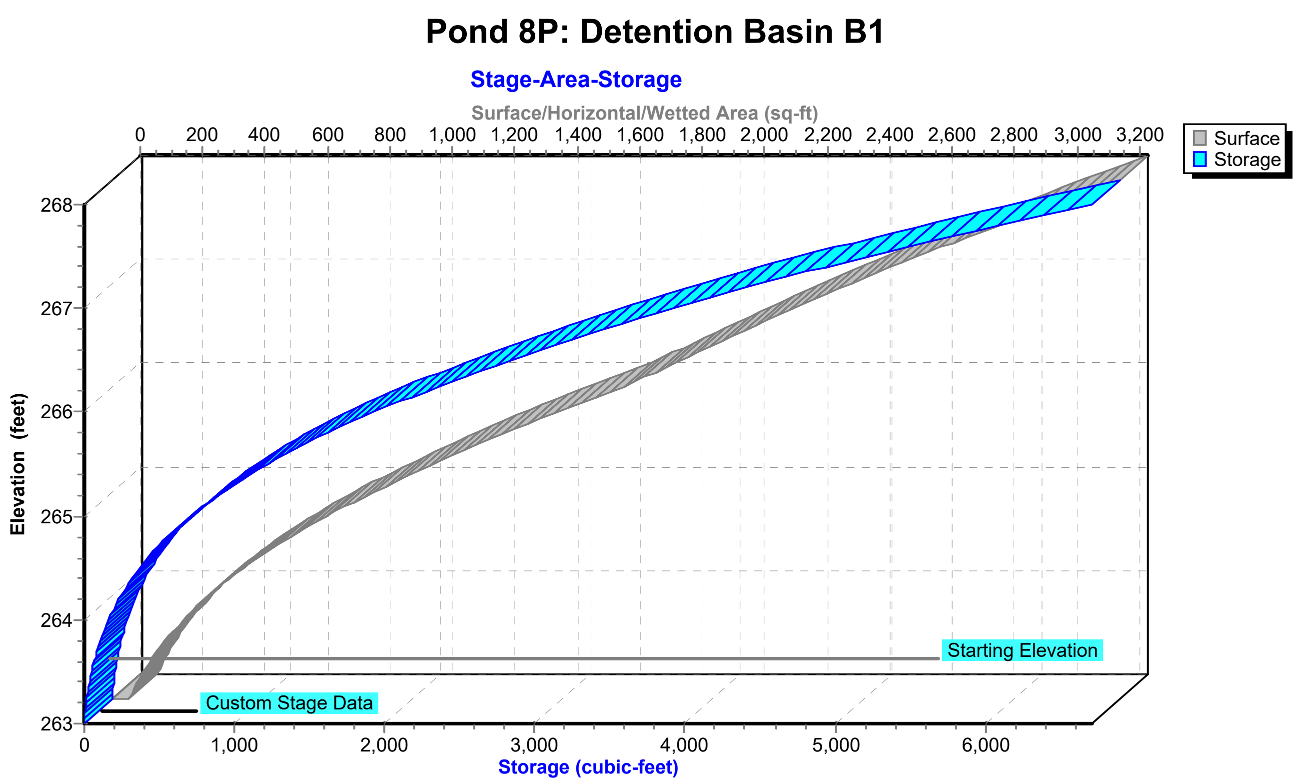
Volume	Invert	Avail.Storage	Storage Description
#1	263.00'	6,709 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
263.00	54	0	0	54
264.00	306	163	163	310
266.00	1,639	1,769	1,932	1,659
268.00	3,227	4,777	6,709	3,284

Device	Routing	Invert	Outlet Devices
#1	Primary	263.00'	**18.0" Round Culvert** L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 263.00' / 262.50' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	263.50'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	266.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.61 hrs HW=264.95' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.27 cfs of 9.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.55 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)


Pond 8P: Detention Basin B1
Stage-Discharge
Primary
Orifice/Grate
Orifice/Grate
Culvert
Elevation (feet)
268
267
266
265
264
263
0
2
4
6
8
10
12
14
16
Discharge (cfs)


Pond 8P: Detention Basin B1
Stage-Area-Storage
Surface/Horizontal/Wetted Area (sq-ft)
0
200
400
600
800
1,000
1,200
1,400
1,600
1,800
2,000
2,200
2,400
2,600
2,800
3,000
3,200
Surface
Storage
Starting Elevation
Custom Stage Data
Elevation (feet)
268
267
266
265
264
263
0
1,000
2,000
3,000
4,000
5,000
6,000
Storage (cubic-feet)

Stage-Discharge for Pond 8P: Detention Basin B1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
263.00	0.00	265.60	0.33
263.05	0.00	265.65	0.34
263.10	0.00	265.70	0.34
263.15	0.00	265.75	0.34
263.20	0.00	265.80	0.35
263.25	0.00	265.85	0.35
263.30	0.00	265.90	0.36
263.35	0.00	265.95	0.36
263.40	0.00	266.00	0.36
263.45	0.00	266.05	0.88
263.50	0.00	266.10	1.82
263.55	0.01	266.15	3.04
263.60	0.02	266.20	4.47
263.65	0.04	266.25	6.11
263.70	0.06	266.30	7.91
263.75	0.08	266.35	9.87
263.80	0.10	266.40	11.98
263.85	0.11	266.45	13.98
263.90	0.12	266.50	14.11
263.95	0.13	266.55	14.24
264.00	0.14	266.60	14.36
264.05	0.15	266.65	14.49
264.10	0.16	266.70	14.61
264.15	0.17	266.75	14.74
264.20	0.18	266.80	14.86
264.25	0.19	266.85	14.98
264.30	0.19	266.90	15.10
264.35	0.20	266.95	15.22
264.40	0.21	267.00	15.34
264.45	0.21	267.05	15.46
264.50	0.22	267.10	15.57
264.55	0.23	267.15	15.69
264.60	0.23	267.20	15.80
264.65	0.24	267.25	15.92
264.70	0.25	267.30	16.03
264.75	0.25	267.35	16.14
264.80	0.26	267.40	16.26
264.85	0.26	267.45	16.37
264.90	0.27	267.50	16.48
264.95	0.27	267.55	16.59
265.00	0.28	267.60	16.70
265.05	0.28	267.65	16.80
265.10	0.29	267.70	16.91
265.15	0.29	267.75	17.02
265.20	0.30	267.80	17.12
265.25	0.30	267.85	17.23
265.30	0.31	267.90	17.33
265.35	0.31	267.95	17.44
265.40	0.31	268.00	**17.54**
265.45	0.32		
265.50	0.32		
265.55	0.33		

Stage-Area-Storage for Pond 8P: Detention Basin B1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
263.00	54	0	265.60	1,288	1,348
263.05	62	3	265.65	1,329	1,413
263.10	70	6	265.70	1,372	1,481
263.15	79	10	265.75	1,415	1,550
263.20	88	14	265.80	1,458	1,622
263.25	98	19	265.85	1,502	1,696
263.30	108	24	265.90	1,547	1,772
263.35	119	30	265.95	1,593	1,851
263.40	130	36	266.00	1,639	1,932
263.45	142	43	266.05	1,672	2,014
263.50	154	50	266.10	1,706	2,099
263.55	167	58	266.15	1,740	2,185
263.60	181	67	266.20	1,774	2,273
263.65	194	76	266.25	1,808	2,362
263.70	209	86	266.30	1,843	2,454
263.75	224	97	266.35	1,878	2,547
263.80	239	108	266.40	1,914	2,642
263.85	255	121	266.45	1,950	2,738
263.90	272	134	266.50	1,986	2,837
263.95	289	148	266.55	2,023	2,937
264.00	306	163	266.60	2,059	3,039
264.05	326	179	266.65	2,097	3,143
264.10	348	196	266.70	2,134	3,248
264.15	369	213	266.75	2,172	3,356
264.20	392	232	266.80	2,210	3,466
264.25	415	253	266.85	2,249	3,577
264.30	439	274	266.90	2,288	3,691
264.35	463	296	266.95	2,327	3,806
264.40	488	320	267.00	2,366	3,923
264.45	514	345	267.05	2,406	4,043
264.50	540	372	267.10	2,446	4,164
264.55	567	399	267.15	2,487	4,287
264.60	595	428	267.20	2,528	4,413
264.65	623	459	267.25	2,569	4,540
264.70	652	491	267.30	2,611	4,669
264.75	682	524	267.35	2,652	4,801
264.80	712	559	267.40	2,695	4,935
264.85	743	595	267.45	2,737	5,071
264.90	775	633	267.50	2,780	5,208
264.95	807	673	267.55	2,823	5,349
265.00	840	714	267.60	2,867	5,491
265.05	874	757	267.65	2,911	5,635
265.10	908	801	267.70	2,955	5,782
265.15	943	848	267.75	2,999	5,931
265.20	979	896	267.80	3,044	6,082
265.25	1,015	946	267.85	3,089	6,235
265.30	1,052	997	267.90	3,135	6,391
265.35	1,090	1,051	267.95	3,181	6,549
265.40	1,128	1,106	268.00	**3,227**	**6,709**
265.45	1,167	1,164			
265.50	1,207	1,223			
265.55	1,247	1,284			

Summary for Pond 9P: Design Point B

Inflow Area =	3.469 ac,	0.00% Impervious, Inflow Depth = 0.42"	for 1-yr event	
Inflow =	0.48 cfs @	12.40 hrs, Volume=	0.120 af	
Primary =	0.48 cfs @	12.40 hrs, Volume=	0.120 af,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5

Summary for Pond 10P: Forebay & Bio C1-A

Inflow Area = 4.929 ac, 70.16% Impervious, Inflow Depth = 1.47" for 1-yr event
Inflow = 5.90 cfs @ 12.23 hrs, Volume= 0.603 af
Outflow = 0.25 cfs @ 17.21 hrs, Volume= 0.128 af, Atten= 96%, Lag= 298.8 min
Primary = 0.25 cfs @ 17.21 hrs, Volume= 0.128 af
Routed to Pond 12P : Detention Basin C1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Starting Elev= 264.50' Surf.Area= 18,768 sf Storage= 30,218 cf
Peak Elev= 265.52' @ 17.21 hrs Surf.Area= 22,707 sf Storage= 51,237 cf (21,020 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 361.9 min (1,211.2 - 849.4)

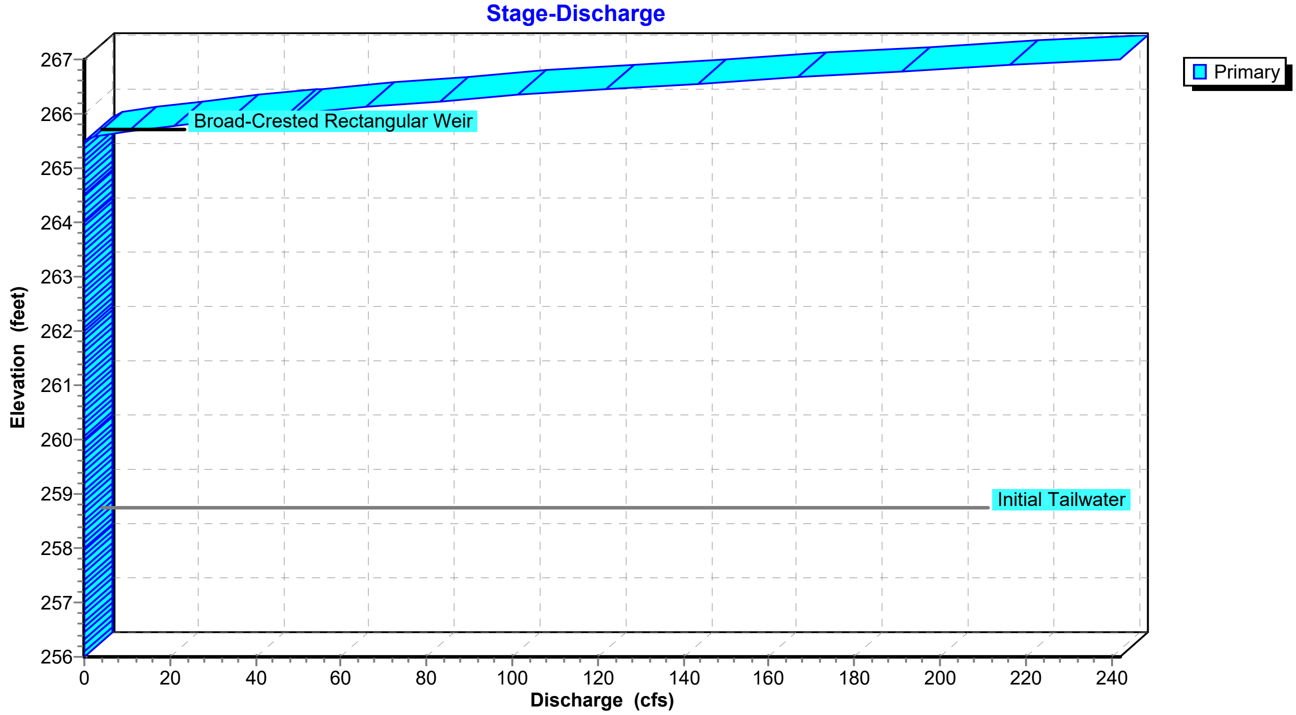
Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	89,274 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
256.00	549	0	0	549
258.00	1,512	1,981	1,981	1,537
260.00	2,803	4,249	6,231	2,868
262.00	4,430	7,171	13,402	4,550
264.00	6,420	10,789	24,190	6,606
264.50	18,768	6,027	30,218	18,956
266.00	24,721	32,514	62,732	24,960
267.00	28,405	26,542	89,274	28,689

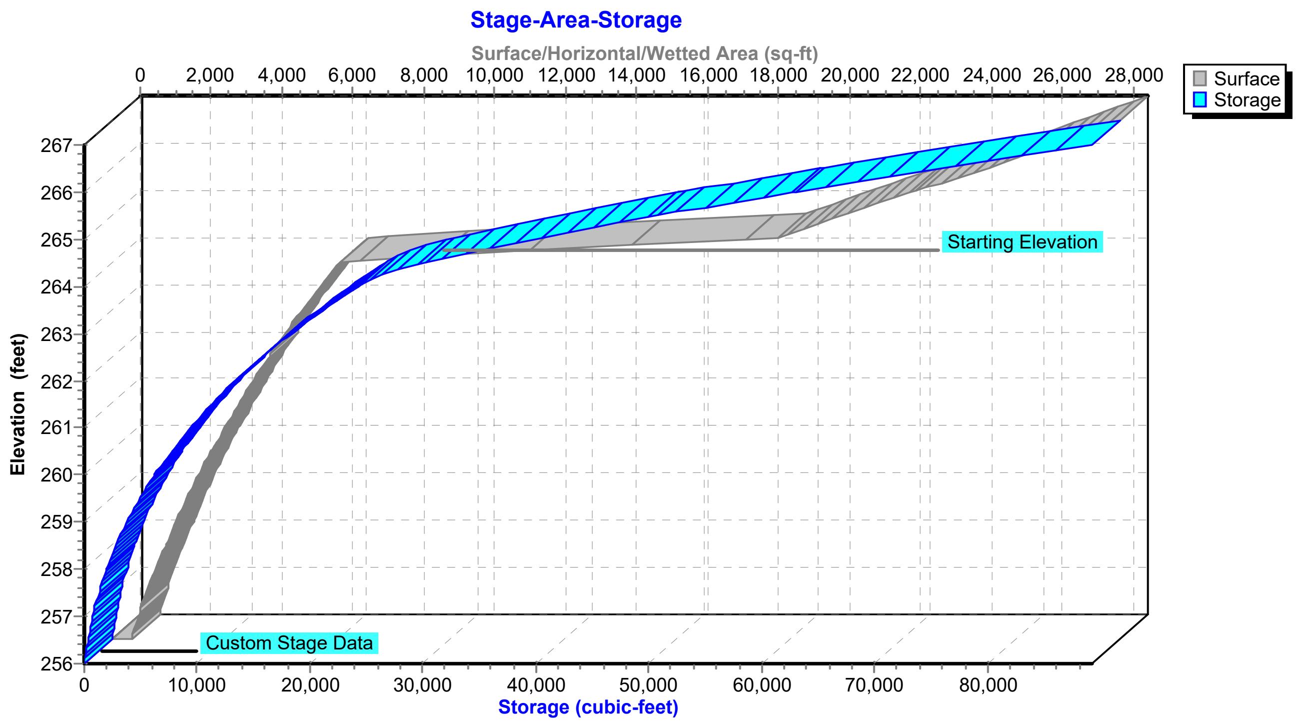
Device	Routing	Invert	Outlet Devices
#1	Primary	265.50'	**50.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.25 cfs @ 17.21 hrs HW=265.52' TW=261.50' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.25 cfs @ 0.33 fps)

Pond 10P: Forebay & Bio C1-A



Pond 10P: Forebay & Bio C1-A



Stage-Discharge for Pond 10P: Forebay & Bio C1-A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
256.00	0.00	261.20	0.00	266.40	112.49
256.10	0.00	261.30	0.00	266.50	131.50
256.20	0.00	261.40	0.00	266.60	152.00
256.30	0.00	261.50	0.00	266.70	173.52
256.40	0.00	261.60	0.00	266.80	195.65
256.50	0.00	261.70	0.00	266.90	218.66
256.60	0.00	261.80	0.00	267.00	**242.04**
256.70	0.00	261.90	0.00		
256.80	0.00	262.00	0.00		
256.90	0.00	262.10	0.00		
257.00	0.00	262.20	0.00		
257.10	0.00	262.30	0.00		
257.20	0.00	262.40	0.00		
257.30	0.00	262.50	0.00		
257.40	0.00	262.60	0.00		
257.50	0.00	262.70	0.00		
257.60	0.00	262.80	0.00		
257.70	0.00	262.90	0.00		
257.80	0.00	263.00	0.00		
257.90	0.00	263.10	0.00		
258.00	0.00	263.20	0.00		
258.10	0.00	263.30	0.00		
258.20	0.00	263.40	0.00		
258.30	0.00	263.50	0.00		
258.40	0.00	263.60	0.00		
258.50	0.00	263.70	0.00		
258.60	0.00	263.80	0.00		
258.70	0.00	263.90	0.00		
258.80	0.00	264.00	0.00		
258.90	0.00	264.10	0.00		
259.00	0.00	264.20	0.00		
259.10	0.00	264.30	0.00		
259.20	0.00	264.40	0.00		
259.30	0.00	264.50	0.00		
259.40	0.00	264.60	0.00		
259.50	0.00	264.70	0.00		
259.60	0.00	264.80	0.00		
259.70	0.00	264.90	0.00		
259.80	0.00	265.00	0.00		
259.90	0.00	265.10	0.00		
260.00	0.00	265.20	0.00		
260.10	0.00	265.30	0.00		
260.20	0.00	265.40	0.00		
260.30	0.00	265.50	0.00		
260.40	0.00	265.60	4.24		
260.50	0.00	265.70	11.99		
260.60	0.00	265.80	22.10		
260.70	0.00	265.90	34.15		
260.80	0.00	266.00	47.73		
260.90	0.00	266.10	62.74		
261.00	0.00	266.20	78.19		
261.10	0.00	266.30	94.45		

Stage-Area-Storage for Pond 10P: Forebay & Bio C1-A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	549	0	266.40	26,164	72,908
256.20	624	117	266.60	26,901	78,214
256.40	703	250	266.80	27,648	83,669
256.60	788	399	267.00	**28,405**	**89,274**
256.80	877	565			
257.00	971	750			
257.20	1,069	954			
257.40	1,173	1,178			
257.60	1,281	1,423			
257.80	1,394	1,691			
258.00	1,512	1,981			
258.20	1,623	2,295			
258.40	1,739	2,631			
258.60	1,858	2,991			
258.80	1,981	3,374			
259.00	2,108	3,783			
259.20	2,239	4,218			
259.40	2,374	4,679			
259.60	2,513	5,168			
259.80	2,656	5,685			
260.00	2,803	6,231			
260.20	2,949	6,806			
260.40	3,099	7,410			
260.60	3,252	8,045			
260.80	3,409	8,711			
261.00	3,570	9,409			
261.20	3,735	10,140			
261.40	3,903	10,903			
261.60	4,075	11,701			
261.80	4,251	12,534			
262.00	4,430	13,402			
262.20	4,612	14,306			
262.40	4,799	15,247			
262.60	4,988	16,226			
262.80	5,182	17,243			
263.00	5,379	18,299			
263.20	5,580	19,394			
263.40	5,784	20,531			
263.60	5,993	21,708			
263.80	6,204	22,928			
264.00	6,420	24,190			
264.20	10,583	25,873			
264.40	15,781	28,493			
264.60	19,139	32,113			
264.80	19,893	36,016			
265.00	20,661	40,071			
265.20	21,444	44,282			
265.40	22,242	48,650			
265.60	23,053	53,179			
265.80	23,880	57,872			
266.00	24,721	62,732			
266.20	25,437	67,748			

Summary for Pond 11P: Forebay C1-B

Inflow Area = 6.154 ac, 61.08% Impervious, Inflow Depth = 1.19" for 1-yr event
Inflow = 6.42 cfs @ 12.20 hrs, Volume= 0.612 af
Outflow = 6.24 cfs @ 12.23 hrs, Volume= 0.612 af, Atten= 3%, Lag= 2.1 min
Primary = 6.24 cfs @ 12.23 hrs, Volume= 0.612 af
Routed to Pond 12P : Detention Basin C1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Automatic Starting Elev= 264.75' Surf.Area= 8,627 sf Storage= 41,372 cf
Peak Elev= 264.88' @ 12.23 hrs Surf.Area= 8,768 sf Storage= 42,494 cf (1,122 cf above start)

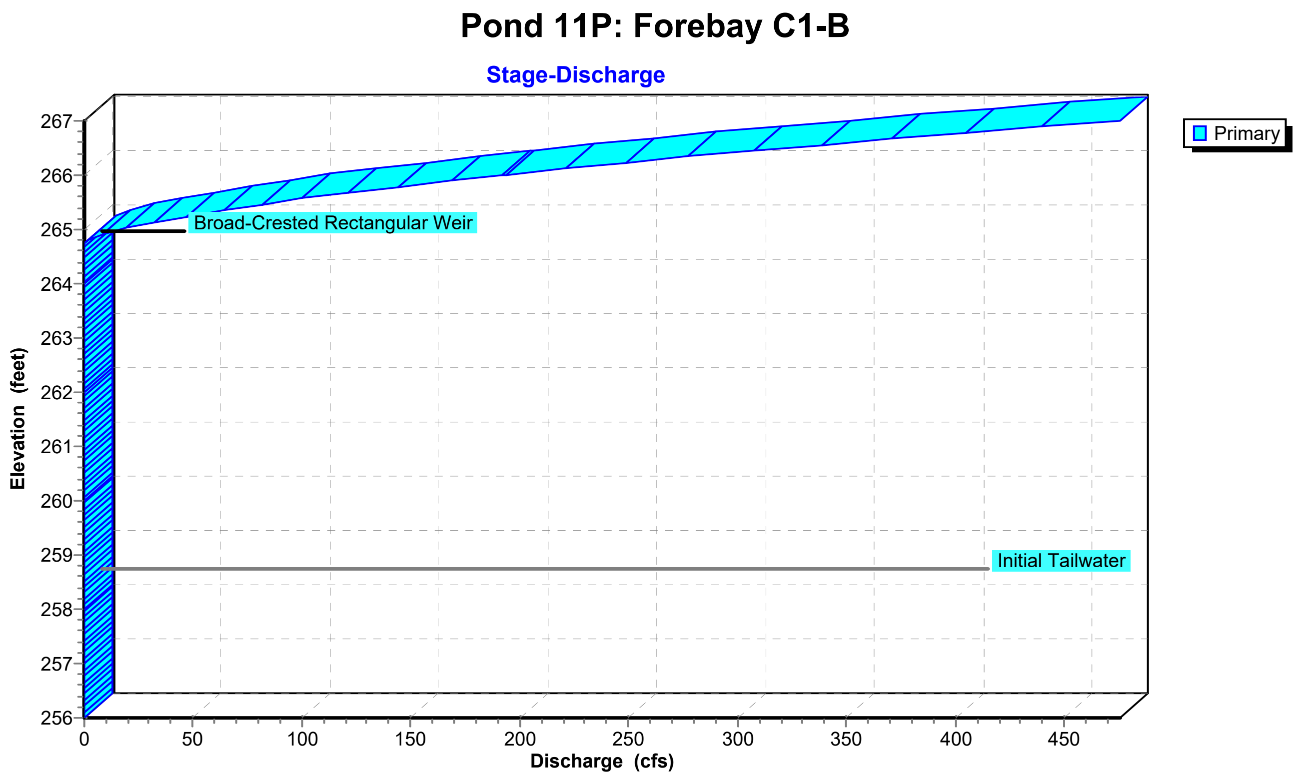
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 6.0 min (870.6 - 864.6)

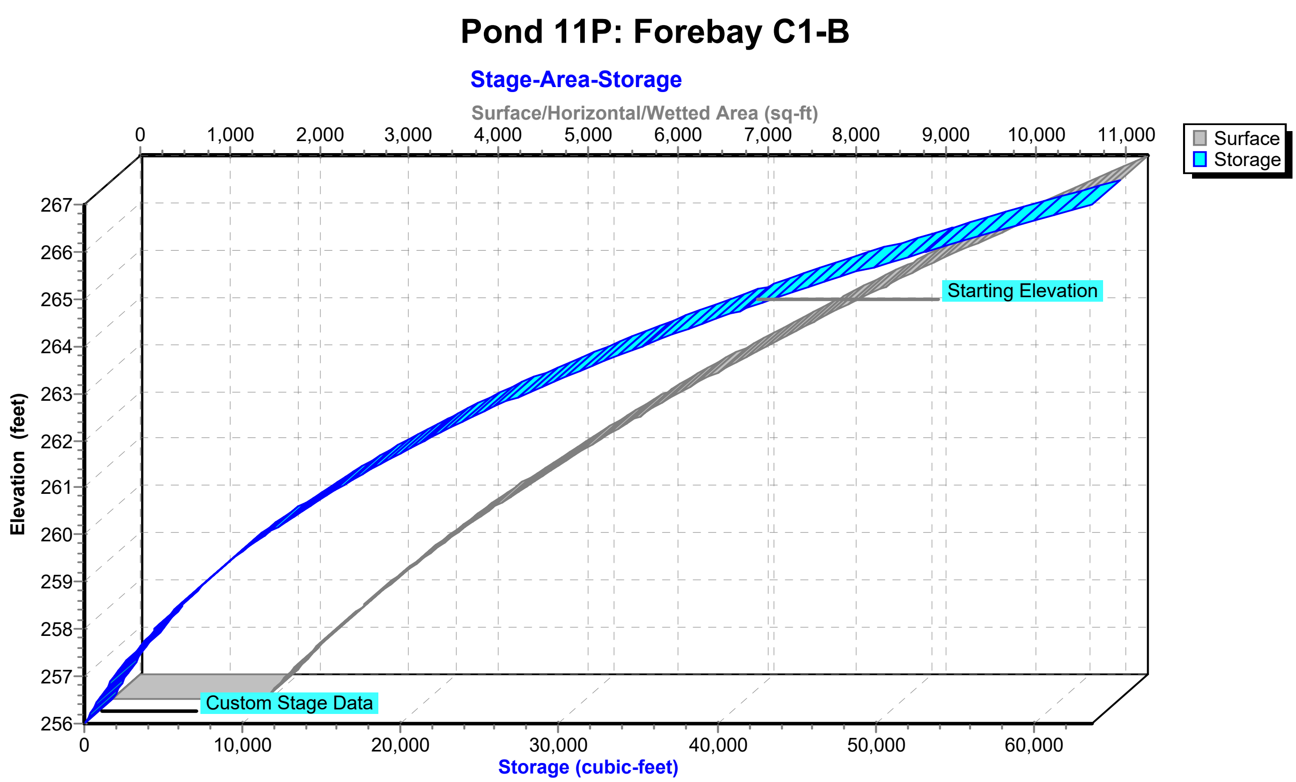
Volume	Invert	Avail.Storage	Storage Description
#1	256.00'	63,668 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
256.00	1,704	0	0	1,704
258.00	2,823	4,480	4,480	2,872
260.00	4,218	6,994	11,475	4,328
262.00	5,887	10,059	21,533	6,071
264.00	7,829	13,670	35,203	8,100
266.00	10,042	17,825	53,028	10,412
267.00	11,249	10,640	63,668	11,673

Device	Routing	Invert	Outlet Devices
#1	Primary	264.75'	**50.0' long + 2.0 '/' SideZ x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.23 cfs @ 12.23 hrs HW=264.88' TW=259.38' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 6.23 cfs @ 0.96 fps)


Pond 11P: Forebay C1-B
Stage-Discharge
Primary
Broad-Crested Rectangular Weir
Initial Tailwater
Elevation (feet)
267
266
265
264
263
262
261
260
259
258
257
256
Discharge (cfs)
0
50
100
150
200
250
300
350
400
450


Pond 11P: Forebay C1-B
Stage-Area-Storage
Surface/Horizontal/Wetted Area (sq-ft)
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
11,000
Surface
Storage
Starting Elevation
Custom Stage Data
Elevation (feet)
267
266
265
264
263
262
261
260
259
258
257
256
Storage (cubic-feet)
0
10,000
20,000
30,000
40,000
50,000
60,000

Stage-Discharge for Pond 11P: Forebay C1-B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
256.00	0.00	261.20	0.00	266.40	293.43
256.10	0.00	261.30	0.00	266.50	321.47
256.20	0.00	261.40	0.00	266.60	350.48
256.30	0.00	261.50	0.00	266.70	380.42
256.40	0.00	261.60	0.00	266.80	411.29
256.50	0.00	261.70	0.00	266.90	443.08
256.60	0.00	261.80	0.00	267.00	**475.77**
256.70	0.00	261.90	0.00		
256.80	0.00	262.00	0.00		
256.90	0.00	262.10	0.00		
257.00	0.00	262.20	0.00		
257.10	0.00	262.30	0.00		
257.20	0.00	262.40	0.00		
257.30	0.00	262.50	0.00		
257.40	0.00	262.60	0.00		
257.50	0.00	262.70	0.00		
257.60	0.00	262.80	0.00		
257.70	0.00	262.90	0.00		
257.80	0.00	263.00	0.00		
257.90	0.00	263.10	0.00		
258.00	0.00	263.20	0.00		
258.10	0.00	263.30	0.00		
258.20	0.00	263.40	0.00		
258.30	0.00	263.50	0.00		
258.40	0.00	263.60	0.00		
258.50	0.00	263.70	0.00		
258.60	0.00	263.80	0.00		
258.70	0.00	263.90	0.00		
258.80	0.00	264.00	0.00		
258.90	0.00	264.10	0.00		
259.00	0.00	264.20	0.00		
259.10	0.00	264.30	0.00		
259.20	0.00	264.40	0.00		
259.30	0.00	264.50	0.00		
259.40	0.00	264.60	0.00		
259.50	0.00	264.70	0.00		
259.60	0.00	264.80	1.50		
259.70	0.00	264.90	7.82		
259.80	0.00	265.00	16.92		
259.90	0.00	265.10	28.21		
260.00	0.00	265.20	41.34		
260.10	0.00	265.30	56.03		
260.20	0.00	265.40	71.82		
260.30	0.00	265.50	88.29		
260.40	0.00	265.60	106.16		
260.50	0.00	265.70	125.58		
260.60	0.00	265.80	146.38		
260.70	0.00	265.90	168.62		
260.80	0.00	266.00	191.85		
260.90	0.00	266.10	215.99		
261.00	0.00	266.20	240.94		
261.10	0.00	266.30	266.60		

Stage-Area-Storage for Pond 11P: Forebay C1-B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
256.00	1,704	0	266.40	10,517	57,140
256.20	1,803	351	266.60	10,758	59,267
256.40	1,905	721	266.80	11,002	61,443
256.60	2,010	1,113	267.00	**11,249**	**63,668**
256.80	2,118	1,526			
257.00	2,228	1,960			
257.20	2,342	2,417			
257.40	2,458	2,897			
257.60	2,577	3,401			
257.80	2,698	3,928			
258.00	2,823	4,480			
258.20	2,950	5,057			
258.40	3,080	5,660			
258.60	3,212	6,289			
258.80	3,348	6,945			
259.00	3,486	7,629			
259.20	3,627	8,340			
259.40	3,770	9,079			
259.60	3,917	9,848			
259.80	4,066	10,646			
260.00	4,218	11,475			
260.20	4,372	12,334			
260.40	4,530	13,224			
260.60	4,690	14,146			
260.80	4,852	15,100			
261.00	5,018	16,087			
261.20	5,186	17,107			
261.40	5,357	18,161			
261.60	5,531	19,250			
261.80	5,708	20,374			
262.00	5,887	21,533			
262.20	6,069	22,729			
262.40	6,253	23,961			
262.60	6,441	25,230			
262.80	6,631	26,537			
263.00	6,823	27,883			
263.20	7,019	29,267			
263.40	7,217	30,691			
263.60	7,418	32,154			
263.80	7,622	33,658			
264.00	7,829	35,203			
264.20	8,038	36,790			
264.40	8,250	38,419			
264.60	8,464	40,090			
264.80	8,681	41,804			
265.00	8,901	43,563			
265.20	9,124	45,365			
265.40	9,349	47,212			
265.60	9,577	49,105			
265.80	9,808	51,043			
266.00	10,042	53,028			
266.20	10,278	55,060			

Summary for Pond 12P: Detention Basin C1

Inflow Area = 27.920 ac, 26.01% Impervious, Inflow Depth = 0.69" for 1-yr event
Inflow = 12.62 cfs @ 12.27 hrs, Volume= 1.614 af
Outflow = 0.43 cfs @ 24.28 hrs, Volume= 1.128 af, Atten= 97%, Lag= 720.9 min
Primary = 0.43 cfs @ 24.28 hrs, Volume= 1.128 af
Routed to Pond 13P : Design Point C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5
Automatic Starting Elev= 258.50' Surf.Area= 8,775 sf Storage= 3,981 cf
Peak Elev= 261.93' @ 24.28 hrs Surf.Area= 22,090 sf Storage= 56,312 cf (52,331 cf above start)

Plug-Flow detention time= 1,068.7 min calculated for 1.036 af (64% of inflow)
Center-of-Mass det. time= 840.8 min (1,763.3 - 922.5)

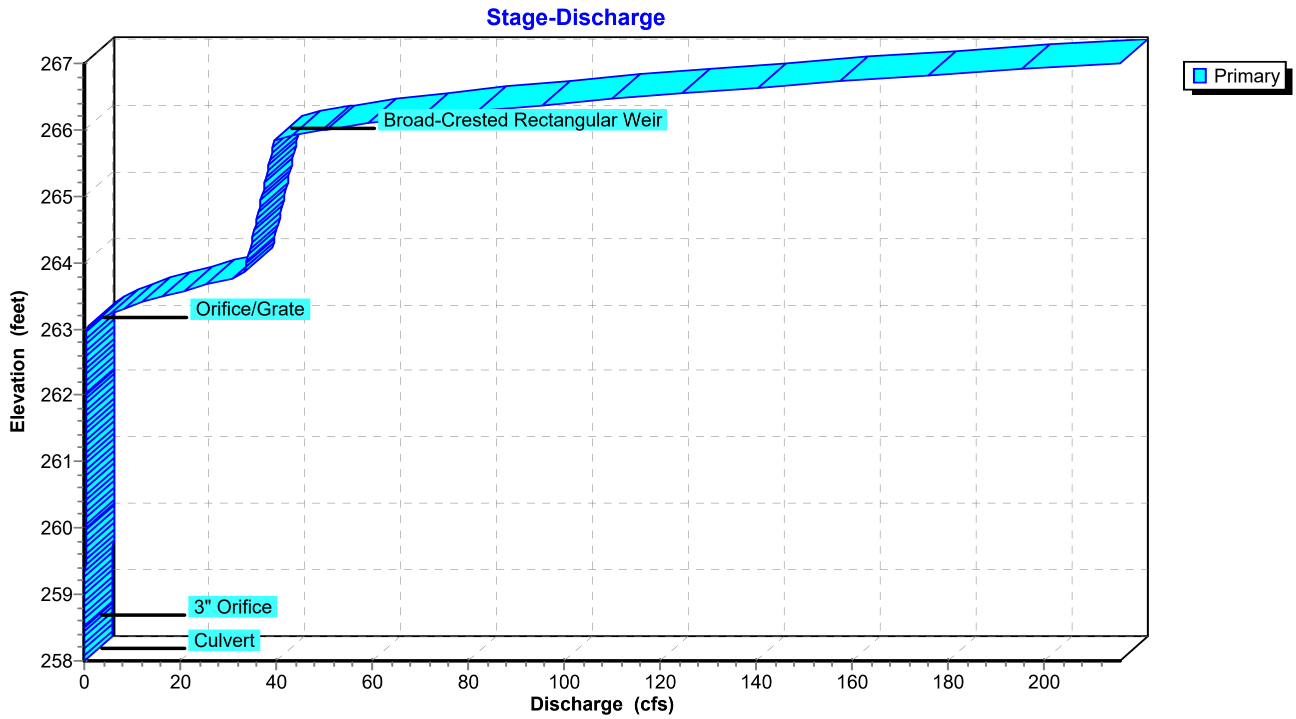
Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	222,991 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
258.00	7,176	0	0	7,176
260.00	14,538	21,285	21,285	14,574
262.00	22,410	36,665	57,951	22,504
264.00	30,774	52,963	110,914	30,947
266.00	39,609	70,197	181,111	39,881
267.00	44,193	41,880	222,991	44,522

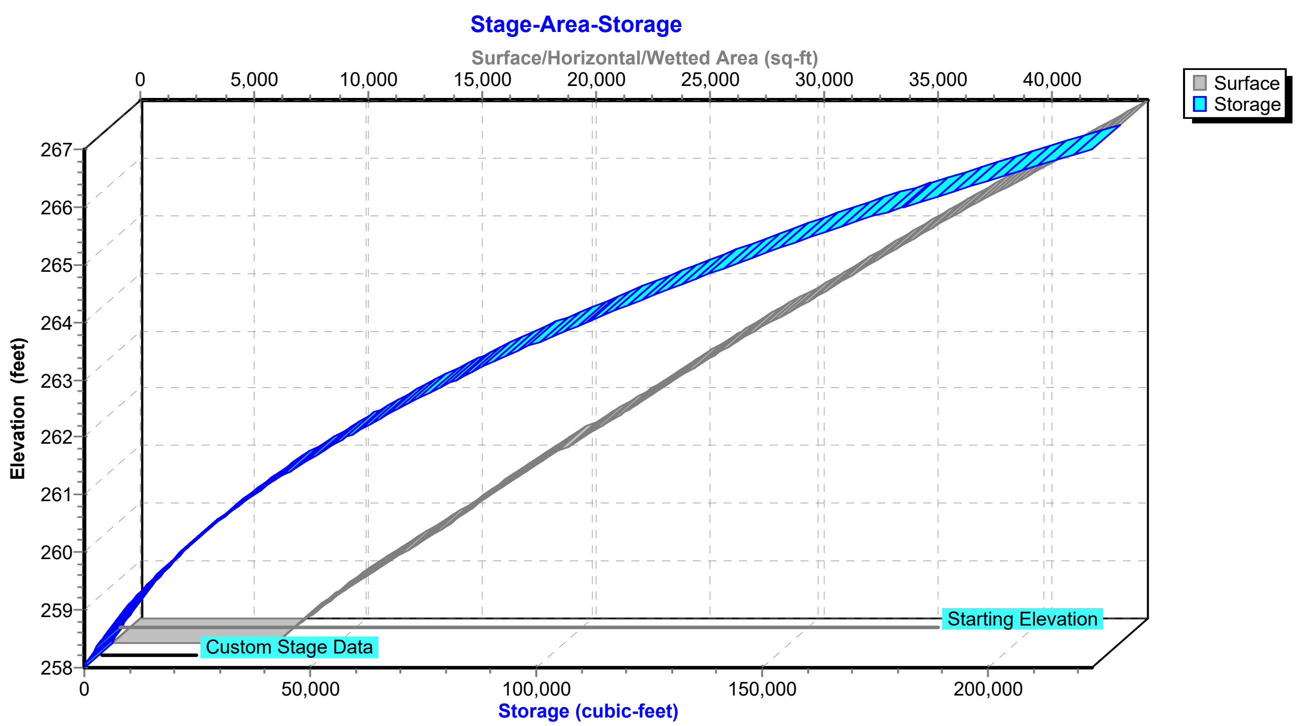
Device	Routing	Invert	Outlet Devices
#1	Primary	258.00'	**24.0" Round Culvert** L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 258.00' / 256.00' S= 0.0400 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Device 1	258.50'	**3.0" Vert. 3" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	263.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	265.83'	**50.0' long + 2.0 '/' SideZ x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.43 cfs @ 24.28 hrs HW=261.93' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Passes 0.43 cfs of 25.88 cfs potential flow)
——**2=3" Orifice** (Orifice Controls 0.43 cfs @ 8.75 fps)
——**3=Orifice/Grate** (Controls 0.00 cfs)
—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Detention Basin C1



Pond 12P: Detention Basin C1



Stage-Discharge for Pond 12P: Detention Basin C1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
258.00	0.00	260.60	0.33	263.20	4.60	265.80	39.45
258.05	0.00	260.65	0.34	263.25	6.23	265.85	39.97
258.10	0.00	260.70	0.34	263.30	8.03	265.90	42.22
258.15	0.00	260.75	0.34	263.35	9.99	265.95	45.47
258.20	0.00	260.80	0.35	263.40	12.10	266.00	49.47
258.25	0.00	260.85	0.35	263.45	14.34	266.05	54.10
258.30	0.00	260.90	0.36	263.50	16.71	266.10	59.32
258.35	0.00	260.95	0.36	263.55	19.20	266.15	65.06
258.40	0.00	261.00	0.36	263.60	21.80	266.20	71.30
258.45	0.00	261.05	0.37	263.65	24.52	266.25	77.97
258.50	0.00	261.10	0.37	263.70	27.34	266.30	85.02
258.55	0.01	261.15	0.38	263.75	30.27	266.35	92.47
258.60	0.02	261.20	0.38	263.80	33.14	266.40	100.30
258.65	0.04	261.25	0.38	263.85	33.31	266.45	108.35
258.70	0.06	261.30	0.39	263.90	33.48	266.50	116.46
258.75	0.08	261.35	0.39	263.95	33.65	266.55	124.82
258.80	0.10	261.40	0.39	264.00	33.82	266.60	133.40
258.85	0.11	261.45	0.40	264.05	33.99	266.65	142.39
258.90	0.12	261.50	0.40	264.10	34.16	266.70	151.93
258.95	0.13	261.55	0.40	264.15	34.33	266.75	161.75
259.00	0.14	261.60	0.41	264.20	34.49	266.80	171.85
259.05	0.15	261.65	0.41	264.25	34.66	266.85	182.32
259.10	0.16	261.70	0.41	264.30	34.82	266.90	193.25
259.15	0.17	261.75	0.42	264.35	34.99	266.95	204.47
259.20	0.18	261.80	0.42	264.40	35.15	267.00	**215.99**
259.25	0.19	261.85	0.42	264.45	35.31		
259.30	0.19	261.90	0.43	264.50	35.48		
259.35	0.20	261.95	0.43	264.55	35.64		
259.40	0.21	262.00	0.43	264.60	35.80		
259.45	0.21	262.05	0.44	264.65	35.96		
259.50	0.22	262.10	0.44	264.70	36.11		
259.55	0.23	262.15	0.44	264.75	36.27		
259.60	0.23	262.20	0.45	264.80	36.43		
259.65	0.24	262.25	0.45	264.85	36.59		
259.70	0.25	262.30	0.45	264.90	36.74		
259.75	0.25	262.35	0.46	264.95	36.90		
259.80	0.26	262.40	0.46	265.00	37.05		
259.85	0.26	262.45	0.46	265.05	37.21		
259.90	0.27	262.50	0.47	265.10	37.36		
259.95	0.27	262.55	0.47	265.15	37.51		
260.00	0.28	262.60	0.47	265.20	37.67		
260.05	0.28	262.65	0.47	265.25	37.82		
260.10	0.29	262.70	0.48	265.30	37.97		
260.15	0.29	262.75	0.48	265.35	38.12		
260.20	0.30	262.80	0.48	265.40	38.27		
260.25	0.30	262.85	0.49	265.45	38.42		
260.30	0.31	262.90	0.49	265.50	38.57		
260.35	0.31	262.95	0.49	265.55	38.71		
260.40	0.31	263.00	0.49	265.60	38.86		
260.45	0.32	263.05	1.01	265.65	39.01		
260.50	0.32	263.10	1.95	265.70	39.15		
260.55	0.33	263.15	3.16	265.75	39.30		

Stage-Area-Storage for Pond 12P: Detention Basin C1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
258.00	7,176	0	263.20	27,270	87,711
258.10	7,483	733	263.30	27,696	90,459
258.20	7,796	1,497	263.40	28,126	93,250
258.30	8,116	2,292	263.50	28,559	96,084
258.40	8,443	3,120	263.60	28,995	98,962
258.50	8,775	3,981	263.70	29,435	101,883
258.60	9,115	4,876	263.80	29,878	104,849
258.70	9,460	5,804	263.90	30,324	107,859
258.80	9,812	6,768	264.00	30,774	110,914
258.90	10,171	7,767	264.10	31,189	114,012
259.00	10,535	8,802	264.20	31,607	117,152
259.10	10,907	9,874	264.30	32,028	120,334
259.20	11,285	10,984	264.40	32,452	123,558
259.30	11,669	12,131	264.50	32,878	126,824
259.40	12,059	13,318	264.60	33,308	130,133
259.50	12,456	14,543	264.70	33,740	133,486
259.60	12,860	15,809	264.80	34,174	136,881
259.70	13,270	17,116	264.90	34,612	140,321
259.80	13,686	18,463	265.00	35,052	143,804
259.90	14,109	19,853	265.10	35,495	147,331
260.00	14,538	21,285	265.20	35,941	150,903
260.10	14,891	22,757	265.30	36,390	154,520
260.20	15,249	24,264	265.40	36,842	158,181
260.30	15,611	25,807	265.50	37,296	161,888
260.40	15,977	27,386	265.60	37,753	165,640
260.50	16,347	29,002	265.70	38,213	169,439
260.60	16,721	30,655	265.80	38,675	173,283
260.70	17,100	32,347	265.90	39,141	177,174
260.80	17,483	34,076	266.00	39,609	181,111
260.90	17,870	35,843	266.10	40,056	185,095
261.00	18,262	37,650	266.20	40,506	189,123
261.10	18,658	39,496	266.30	40,958	193,196
261.20	19,058	41,382	266.40	41,412	197,314
261.30	19,462	43,308	266.50	41,870	201,478
261.40	19,870	45,274	266.60	42,329	205,688
261.50	20,283	47,282	266.70	42,791	209,944
261.60	20,700	49,331	266.80	43,256	214,247
261.70	21,121	51,422	266.90	43,723	218,596
261.80	21,546	53,555	267.00	**44,193**	**222,991**
261.90	21,976	55,731			
262.00	22,410	57,951			
262.10	22,797	60,211			
262.20	23,187	62,510			
262.30	23,580	64,848			
262.40	23,977	67,226			
262.50	24,377	69,644			
262.60	24,780	72,102			
262.70	25,187	74,600			
262.80	25,597	77,139			
262.90	26,010	79,719			
263.00	26,427	82,341			
263.10	26,846	85,005			

Summary for Pond 13P: Design Point C

Inflow Area =	29.035 ac, 25.59% Impervious, Inflow Depth > 0.49"	for 1-yr event
Inflow =	0.82 cfs @ 12.22 hrs, Volume=	1.194 af
Primary =	0.82 cfs @ 12.22 hrs, Volume=	1.194 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 5

Appendix 12

Forebay & WQV Calculations

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

WATER QUALITY VOLUME CALCULATIONS

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	09/01/23	02/09/26	1	1

PROJECT TITLE
Britain Woods

LOCATION
Town of Newburgh / City of Newburgh

CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)

$$WQ_v = (P * R_v * A) / (12)$$

Drainage Area	90% Rainfall Event Number (P)	Impervious Area (I)	Drainage Area (A)	R_v (0.05 + 0.009 * I%)	WQ_v (Ac-ft)
PR - A1-A	1.40	2.27	4.76	0.479	11,593 0.266
PR - A1-B	1.40	1.66	2.61	0.622	8,233 0.189
PR - A1-C	1.40	0.00	0.49	0.050	126 0.003
PR - A2-A	1.40	0.31	14.15	0.070	5,027 0.115
PR - A2-B	1.40	0.23	3.47	0.110	1,939 0.044
PR - B1	1.40	0.00	1.13	0.050	289 0.007
PR - B2	1.40	0.00	2.34	0.050	610 0.014
PR-C1-A	1.40	3.46	4.93	0.681	17,069 0.392
PR-C1-B	1.40	3.76	6.15	0.600	18,775 0.431
PR-C1-C	1.40	0.00	16.84	0.050	4,269 0.098
PR-C2	1.40	0.04	1.12	0.082	480 0.011

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**1**	**6**

PROJECT TITLE
Britain Woods

LOCATION
Town of Newburgh / City of Newburgh

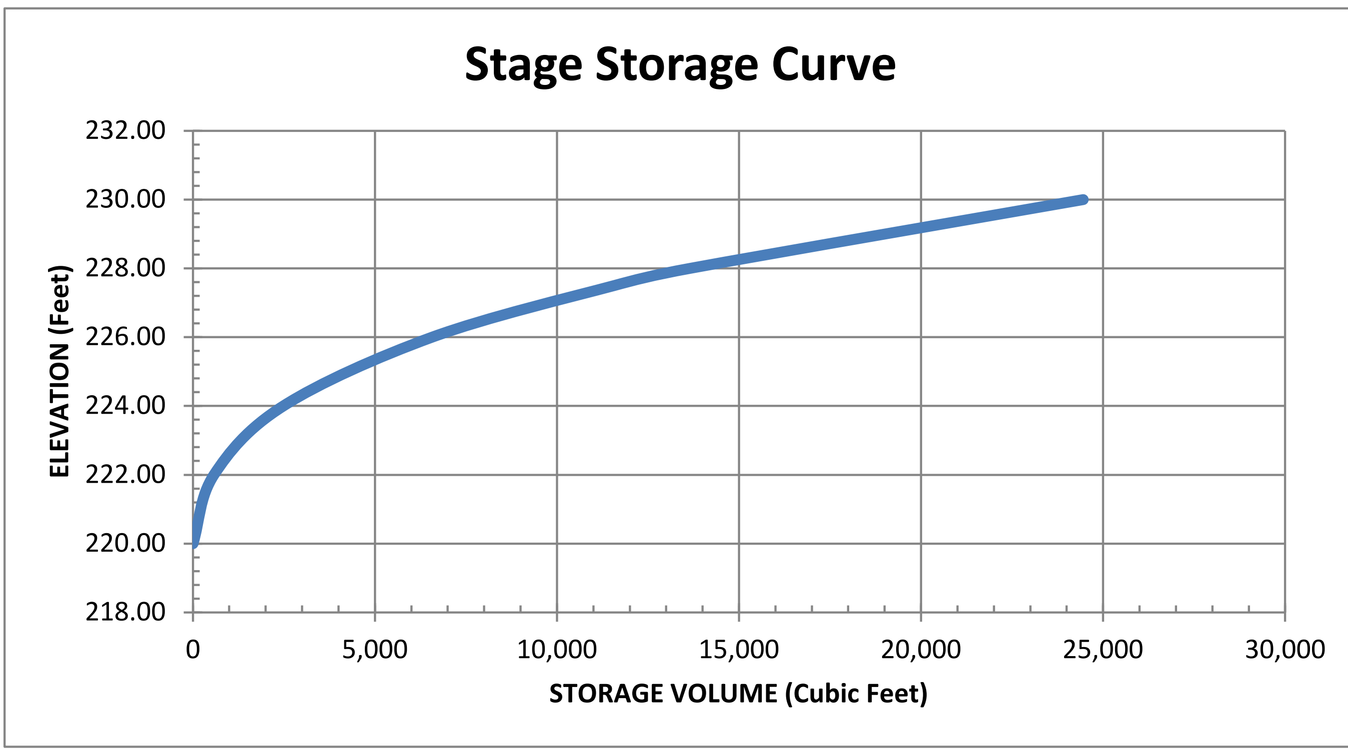
CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

Basin **Forebay A1-A** WQv provided: 0.265 ac-ft

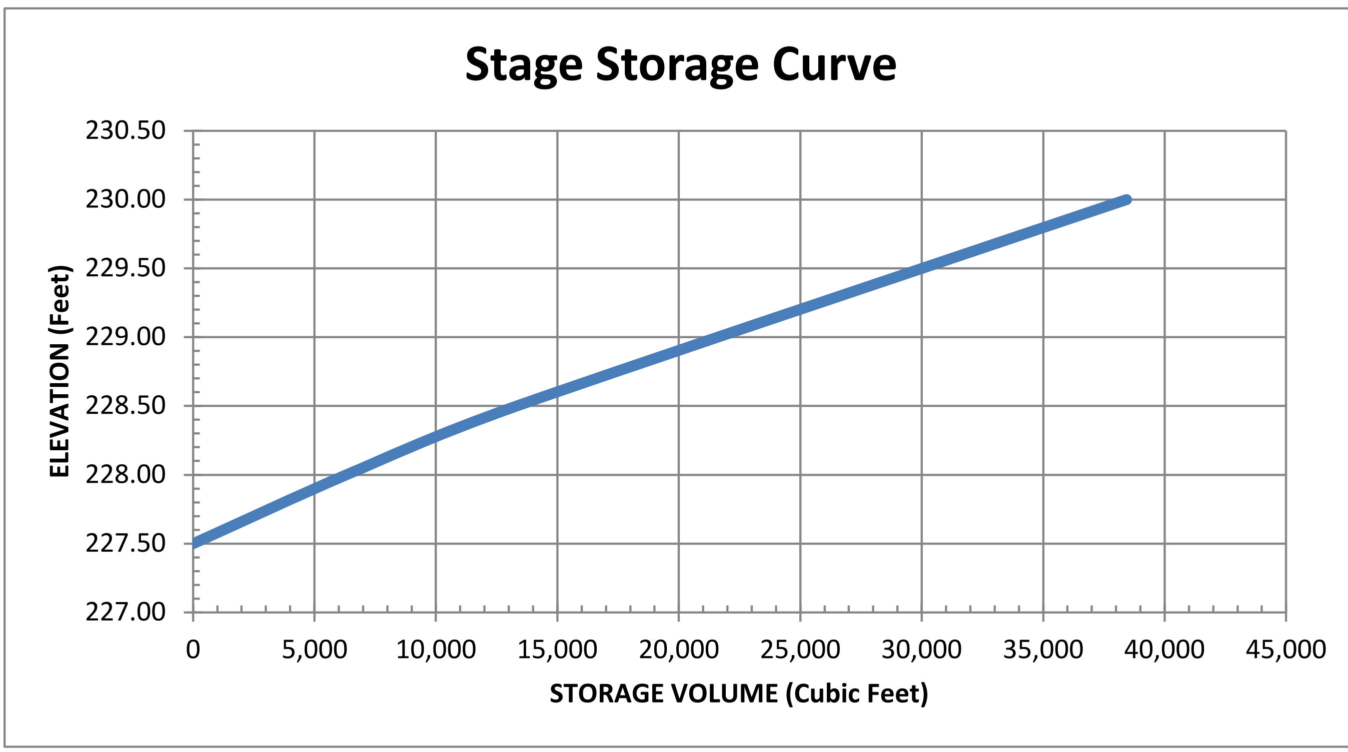
Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
220.00	65.0	--	--	--	0.0
222.00	514.0	289.5	2.0	579.0	579.0
224.00	1,391.0	952.5	2.0	1,905.0	2,484.0
226.00	2,700.0	2,045.5	2.0	4,091.0	6,575.0
227.50	3,951.0	3,325.5	1.5	4,988.3	11,563.3
228.00	4,405.0	4,178.0	0.5	2,089.0	13,652.3
230.00	6,392.0	5,398.5	2.0	10,797.0	24,449.3



ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	**WQv Provided in SMP**				
	WO. NO. **1146.01**	DATE **09/01/23**	REVISED **02/09/26**	SHEET **2**	OF **6**
PROJECT TITLE **Britain Woods**	LOCATION **Town of Newburgh / City of Newburgh**				
CALCULATED BY **ZS** / APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**				

Basin **Bio-Basin A1-A** WQv provided: 0.306 ac-ft

Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
227.50	12,044.0	--	--	--	0.0
228.00	13,280.0	12,662.0	0.5	6,331.0	6,331.0
228.50	14,722.0	14,001.0	0.5	7,000.5	13,331.5
230.00	18,750.0	16,736.0	1.5	25,104.0	38,435.5



ENGINEERING & SURVEYING PROPERTIES
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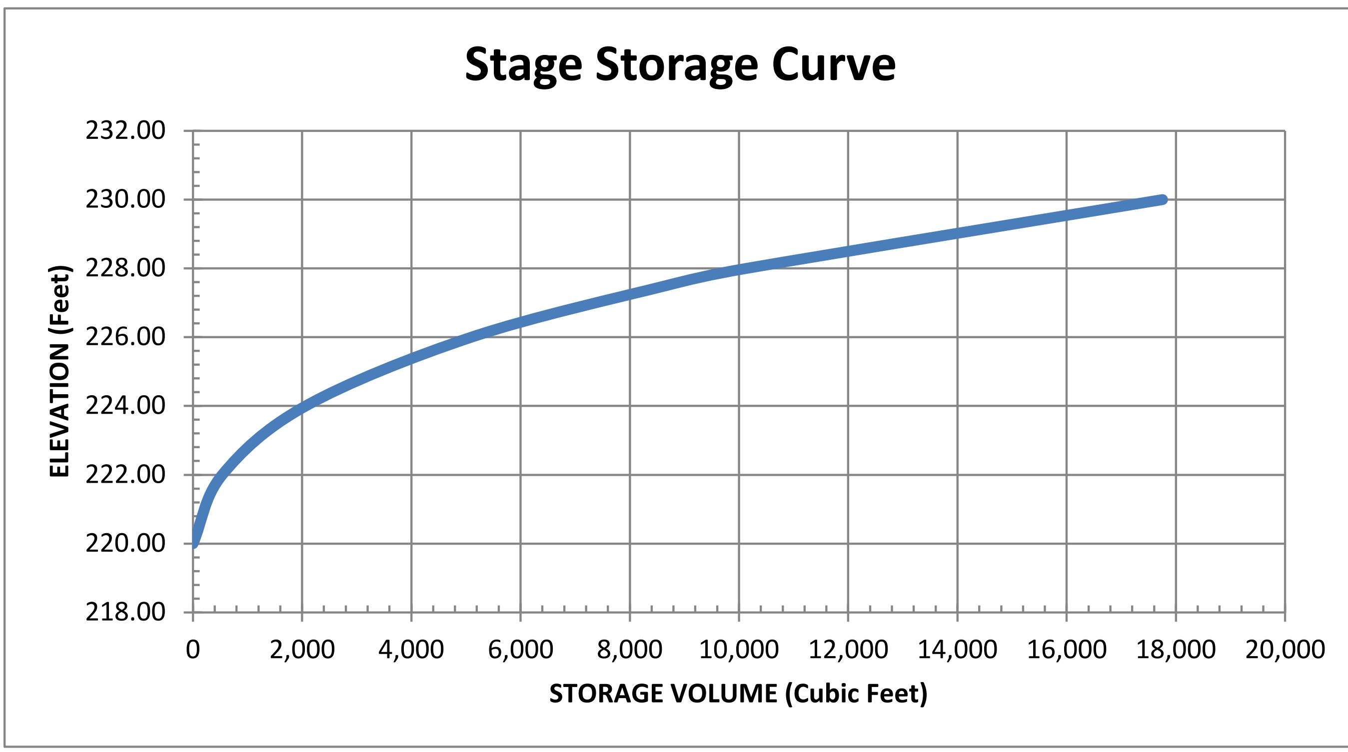
WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**3**	**6**

PROJECT TITLE		LOCATION
Britain Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY	APPROVED BY	REF DRAWING(S)
ZS	**RW**	**DWG LAST REV. 02/09/2026**

Basin **Forebay A1-B** WQv provided: 0.199 ac-ft

Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
220.00	88.0	--	--	--	0.0
222.00	451.0	269.5	2.0	539.0	539.0
224.00	1,075.0	763.0	2.0	1,526.0	2,065.0
226.00	1,960.0	1,517.5	2.0	3,035.0	5,100.0
227.50	2,794.0	2,377.0	1.5	3,565.5	8,665.5
228.00	3,105.0	2,949.5	0.5	1,474.8	10,140.3
230.00	4,512.0	3,808.5	2.0	7,617.0	17,757.3



ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

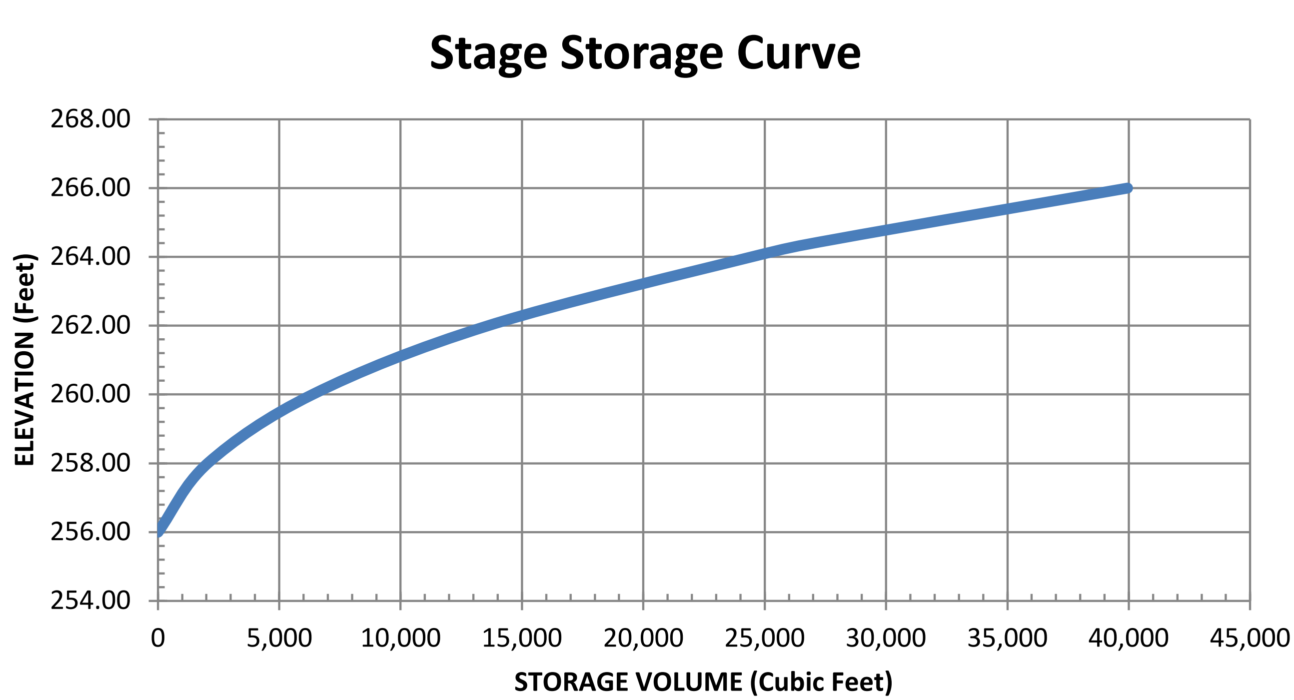
WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**4**	**6**

PROJECT TITLE		LOCATION
Britain Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY **ZS**	APPROVED BY **RW**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**

Basin **Forebay C1-A** WQv provided: 0.638 ac-ft

Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
256.00	549.0	--	--	--	0.0
258.00	1,512.0	1,030.5	2.0	2,061.0	2,061.0
260.00	2,803.0	2,157.5	2.0	4,315.0	6,376.0
262.00	4,430.0	3,616.5	2.0	7,233.0	13,609.0
264.00	6,420.0	5,425.0	2.0	10,850.0	24,459.0
264.50	6,983.0	6,701.5	0.5	3,350.8	27,809.8
266.00	9,205.0	8,094.0	1.5	12,141.0	39,950.8
267.00	10,831.0	10,018.0	1.0	10,018.0	



ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

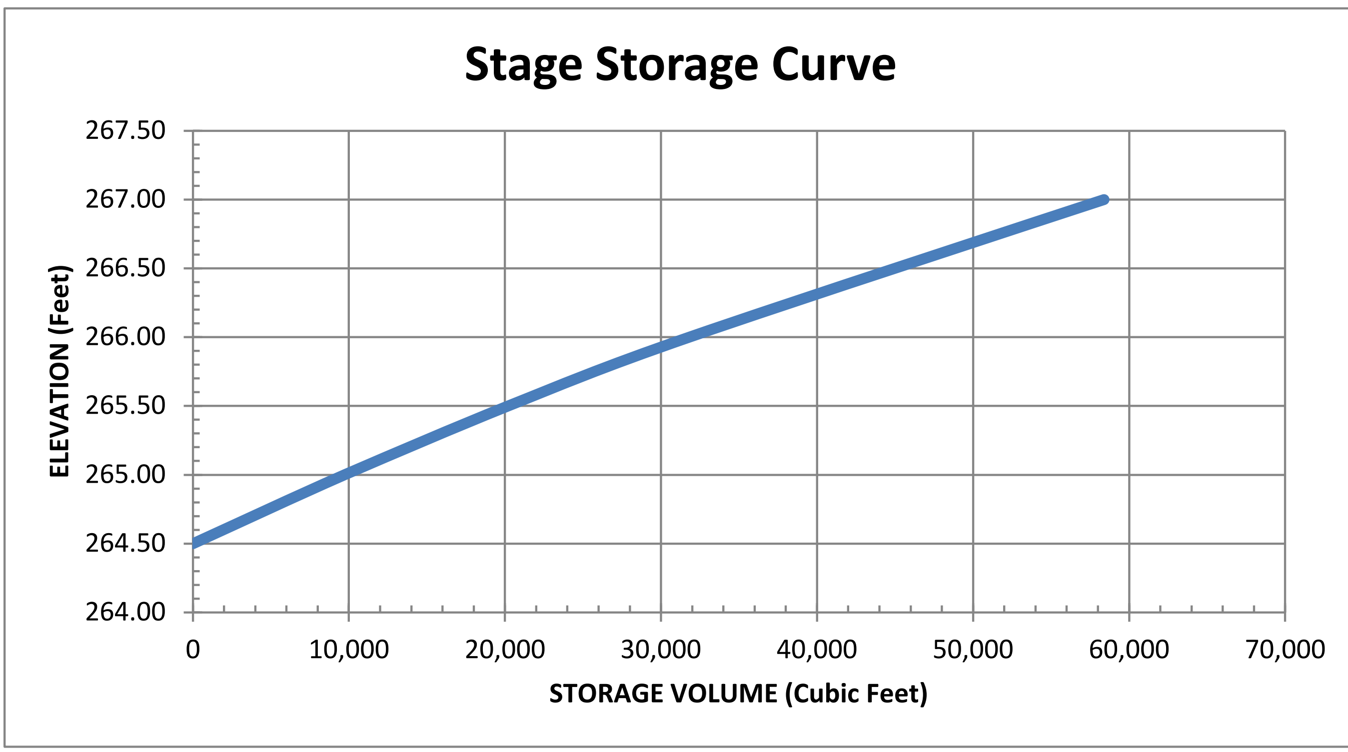
WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**5**	**6**

PROJECT TITLE		LOCATION
Britain Woods		**Town of Newburgh / City of Newburgh**
CALCULATED BY	APPROVED BY	REF DRAWING(S)
ZS	**RW**	**DWG LAST REV. 02/09/2026**

Basin **Bio-Basin C1-A** WQv provided: 0.464 ac-ft

Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
264.50	18,768.0	--	--	--	0.0
265.00	20,210.0	19,489.0	0.5	9,744.5	9,744.5
265.50	21,700.0	20,955.0	0.5	10,477.5	20,222.0
266.00	24,721.0	23,210.5	0.5	11,605.3	31,827.3
267.00	28,405.0	26,563.0	1.0	26,563.0	58,390.3



ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1146.01	**09/01/23**	**02/09/26**	**6**	**6**

PROJECT TITLE
Britain Woods

LOCATION
Town of Newburgh / City of Newburgh

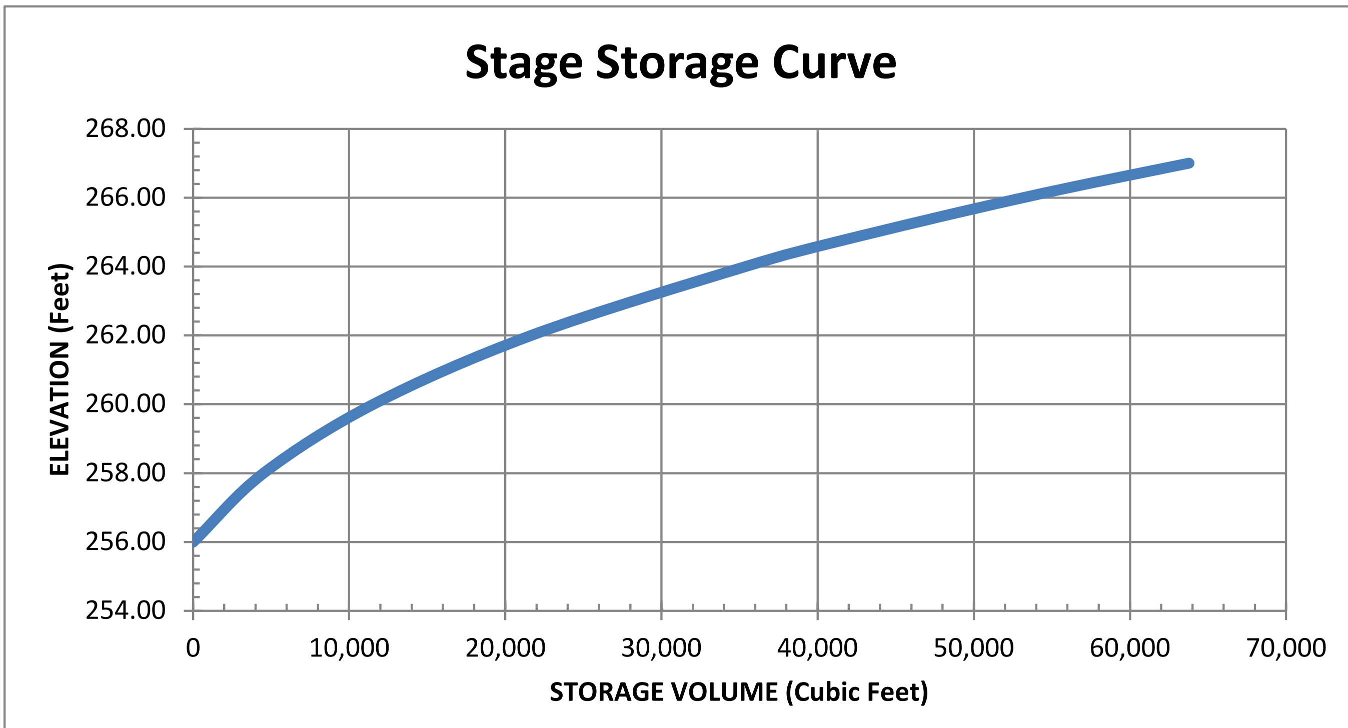
CALCULATED BY
ZS

APPROVED BY
RW

REF DRAWING(S)
DWG LAST REV. 02/09/2026

Basin **Forebay C1-B** WQv provided: 0.953 ac-ft

Water Surface Elevation (Feet)	**Surface Area** (Square Feet)	**Average Area** (Square Feet)	**Difference in Elevation** (Feet)	**Incremental Storage** (Cubic Feet)	**Total Storage Volume** (Cubic Feet)
256.00	1,704.0	--	--	--	0.0
258.00	2,823.0	2,263.5	2.0	4,527.0	4,527.0
260.00	4,218.0	3,520.5	2.0	7,041.0	11,568.0
262.00	5,887.0	5,052.5	2.0	10,105.0	21,673.0
264.00	7,829.0	6,858.0	2.0	13,716.0	35,389.0
264.75	8,532.0	8,180.5	0.8	6,135.4	41,524.4
266.00	10,042.0	9,287.0	1.3	11,608.8	53,133.1
267.00	11,249.0	10,645.5	1.0	10,645.5	63,778.6



APPENDIX 13

CONSTRUCTION SITE

INSPECTION FORM, NOTICE

OF INTENT & MS4

ACCEPTANCE

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SWPPP INSPECTION REPORT

ENGINEERING & SURVEYING PROPERTIES — Achieving Successful Results with Innovative Designs	W.O. No.:	Date:	Greater than 5 Ac. Of Disturbance? Waiver?	Page Of
	Project Name:		Weather Conditions: ☐ Dry ☐ Rain ☐ Snow	
			Soil Conditions: ☐ Dry ☐ Wet ☐ Saturated	
	Location:		Arrival Time :	Photographs Taken?
			Departing Time:	☐ Yes ☐ No

Owner:	**Phone:**	**Documents on-site?**	SWPPP:
Contractor:	**Phone:**	Weekly Inspections:	NOI:

1. Description of current activities onsite and phase of construction (attach sketch showing areas of stabilization, current work, and photo locations):

2. Description of the condition of the runoff at all points of discharge from the construction site (including onsite conveyance systems):	3. Description of the condition of all natural surface water bodies located within, or immediately adjacent to the construction site:
4. Identify all erosion and sediment control practices that require repair and/or maintenance:	5. Identify all erosion and sediment control practices that were not installed properly or are not functioning as designed:
6. Identify current status of construction for all post-construction stormwater management practices:	7. Corrective action(s) required to erosion and sediment control measures and post-construction stormwater management practices:

Was the owner and contractor(s) notified of the deficiencies and repairs needed within one (1) business day? ☐ Yes ☐ No

Qualified Inspector

Notice:

This inspection was performed solely for the purpose of determining compliance with NYSDEC SPDES General Permit:

☐ GP-02-01
☐ GP-08-001
☐ GP-10-001

Name and Title

Signature

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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)

APPENDIX 14

CONSTRUCTION WASTE MANAGEMENT & SPILL PREVENTION PLANS

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CONSTRUCTION WASTE MANAGEMENT & SPILL PREVENTION PLAN

Early in the construction activities, land clearing materials will be collected and recycled either off site or re-used on site as erosion control materials. During early phase construction activities, cardboard, concrete, metal, wood and general trash collection dumpsters will be on site for collection and processing. As the project progresses, concrete dumpsters will be changed over to drywall collection, site clearing dumpsters will be changed over to finish material containers, etc. Typically, (4) open top containers will be on site for the duration of the project. General waste and cardboard/paper containers will be on site for the duration of the project. The contractor will be responsible for organizing and placing containers on site and timely removal/replacement when containers are filled to capacity. As necessary, the contractor will provide areas of collection or hoppers for subcontractors to utilize for intermediate storage of construction and demolition (CD) materials. All containers will be clearly identified with signage indicating stored materials.

Those CD materials generated on this project will be salvaged and re-processed as listed. The contractor will research available processing sources specific to the job site and make all trades aware of project qualifying CD recyclable materials as follows:

<u>Brick:</u> Materials will be stored on site and palletized by processor who will resell as product.

<u>Cardboard:</u> Materials will be separated on the jobsite and stored within dedicated on-site dumpster and delivered loose to processor. Processor will bale materials and deliver/resell to end market users.

<u>Concrete:</u> Scrap and loose materials will either be crushed on site and used for aggregate or stored within dedicated on-site dumpster and delivered to processor. Processor will reuse or resell materials as clean fill back or crush and use for aggregate.

<u>Metals:</u> Materials will be sorted and stored within dedicated on-site dumpster and delivered to processor. Processor will sell materials to metal recyclers (steel, aluminum, brass, copper, lead, stainless).

<u>Stone and Granite:</u> Materials will be collected on site in piles or containers and processor will palletize and haul materials. Processor will re-sell as product or crushed and use as aggregate.

<u>Plastic, paper goods, and aluminum cans:</u> Materials will be collected on job site within construction trailers, cantina areas, etc. and stored in on-site trailers. Materials will be hauled/recycled by processor.

<u>Drywall:</u> Waste materials will be sorted and collected in dedicated on-site containers or materials will be ground on site and used as an erosion control product. Hauled materials to processor will be processed as a soil amendment or used in alternate fuel mixture.

<u>Wood or Lumber:</u> Materials will be sorted and stored on-site within dedicated on-site containers and either resold as retail lumber by processor or ground and mixed with commercial land

clearing and/or approved materials for erosion control applications. Lumber will need to be clean, no paint or other wood treatment.

Land Clearing Debris: Woody materials (stumps, large limbs) will be ground on-site and used for soil erosion control products or hauled to processor to be ground as re-sold as erosion control products.

Roofing Shingles: Materials will be stored on site and processed as temporary road base, mixed into hot asphalt mix or used as alternate fuel blend or hauled offsite via appropriate methods to an authorized disposal/recycling facility.

Fuel Tanks: On site storage of fuel chemicals shall be equipped with a spill kit. The contractor must provide secondary containment for storing any hazardous chemicals on site.

Equipment storage: All equipment stored on site shall be inspected daily by the contractor for any oil or lubricant spills or leaks. Any leaks shall be repaired immediately. In addition all equipment must be closely inspected prior to working in the Village R.O.W.

Spill Response: All petroleum spills that occur within New York State must be reported to the NYS Spill Hotline (1-800-457-7362) within 2 hours of discovery, except spills which meet **all of the following criteria**:

1. The quantity is known to be less than 5 gallons; and
2. The spill is contained and under the control of the spiller; and
3. The spill has not and will not reach the State's water or any land; and
4. The spill is cleaned up within 2 hours of discovery.

A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land is reportable.

Hazardous Material Spills & Waste: Materials deemed to be hazardous (ie, antifreeze, fertilizers, paint, pesticides), as defined by State and Federal regulations, shall be stored in their approved containers, and maintained in good condition. All spills of hazardous materials shall be cleaned sufficiently, in accordance with all State and Federal regulations, and documented accordingly. All hazardous material waste shall be properly collected, handled and transported to an approved hazardous waste processing facility.

This Plan will be displayed in the construction jobsite trailer at all times.

APPENDIX 15

NEW YORK STATE

RECREATION AND HISTORIC

PRESERVATION

DETERMINATION

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APPENDIX 16

DRAINAGE PIPE

CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

STORM DRAINAGE PIPE DESIGN WORKSHEET

WO. NO.	DATE	REVISED	SHEET
1146.01	02/09/26		1 OF 4

PROJECT TITLE		LOCATION	STORM FREQUENCY	PIPE TYPE
Britain Woods		**Town/City of Newburgh**	**25 Year**	**HDPE**
CALCULATED BY	APPROVED BY	REF DRAWING(S)	RAINFALL CURVE	
ZS	**RW**	**DWG LAST REV. 02/09/2026**	**Orange County, NY**	

LOCATION		ROAD	ACRES		" C "	CA	ΣCA	TIME CONC. - MIN			" i "	" Q "		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA.	SUB.	TOTAL				Inlet	Pipe	TOTAL		Des.	Cap.	" n "	Size	Height	V Des	V Cap	Slope	Lgth.	Fall	(feet)	Upper	Lower	Elev	INV	Upper	Lower
			0.22		0.90																							
CB41	CB42		0.26	0.48	0.30	0.27	0.27	5.00	-	5.00	8.33	2.3	8.40	0.010	15		5.8	6.8	1.00%	22	0.22	0.00	278.63	278.41	281.88	3.25	2.00	2.22
			0.37		0.90																							
CB42	DMH 43		0.09	0.93	0.30	0.36	0.63	5.00	0.06	5.06	8.33	5.2	8.40	0.010	15		7.2	6.8	1.00%	41	0.41	0.00	278.41	278.00	281.88	3.47	2.22	2.99
			-		0.90																							
DMH 43	DMH 44		-	0.93	0.30	-	0.63	5.06	0.09	5.16	8.31	5.2	8.40	0.010	15		7.2	6.8	1.00%	167	1.67	0.00	278.00	276.33	282.24	4.24	2.99	4.29
			-		0.90																							
DMH 44	CB 45		-	0.93	0.30	-	0.63	5.16	0.39	5.54	8.28	5.2	8.40	0.010	15		7.2	6.8	1.00%	50	0.50	0.00	276.33	275.83	281.87	5.54	4.29	4.32
			0.58		0.90																							
CB 45	CB 47		0.03	1.54	0.30	0.53	1.40	5.54	0.12	5.66	8.15	11.4	13.66	0.010	18		8.6	7.7	1.00%	230	2.30	0.25	275.58	273.28	281.40	5.82	4.32	6.60
			0.55		0.90																							
CB 47	DMH 49		0.03	2.11	0.30	0.50	2.10	5.66	0.44	6.11	8.11	17.1	29.41	0.010	24		9.7	9.4	1.00%	226	2.26	0.50	272.78	270.52	281.38	8.60	6.60	8.84
			-		0.90																							
DMH 49	CB 50		-	2.11	0.30	-	2.10	6.11	0.39	6.50	7.97	16.8	29.41	0.010	24		9.7	9.4	1.00%	42	0.42	0.00	270.52	270.10	281.36	10.84	8.84	8.84
			0.57		0.90																							
CB 50	CB 52		0.03	2.71	0.30	0.52	2.85	6.50	0.07	6.57	7.85	22.4	29.41	0.010	24		10.3	9.4	1.00%	222	2.22	0.00	270.10	267.88	280.94	10.84	8.84	10.87
			0.27		0.90																							
CB 52	DMH 40		0.02	3.00	0.30	0.25	3.19	6.57	0.36	6.93	7.82	24.9	29.41	0.010	24		10.5	9.4	1.00%	68	0.68	0.00	267.88	267.20	280.75	12.87	10.87	8.32
			-		0.90																							
DMH 40	ES 1		-	3.00	0.30	-	3.28	6.93	0.11	7.04	7.72	25.3	112.83	0.010	24		28.9	35.9	14.72%	54	7.95	0.00	267.20	259.25	277.52	10.32	8.32	**-261.25**
			0.26		0.90																							
CB 46	CB 45		0.05	0.31	0.30	0.25	0.25	-	-	-	10.61	2.6	8.40	0.010	15		6.0	6.8	1.00%	22	0.22	1.25	276.05	275.83	281.40	5.35	4.10	**-277.08**
			0.22		0.90																							
CB 48	CB 47		0.00	0.23	0.30	0.20	0.20	-	-	-	10.61	2.1	8.40	0.010	15		5.7	6.8	1.00%	22	0.22	1.25	273.75	273.53	281.38	7.63	6.38	**-274.78**
			0.03		0.90																							
CB 38	CB 39		-	0.03	0.30	0.03	0.03	-	-	-	10.61	0.3	8.40	0.010	15		3.2	6.8	1.00%	22	0.22	1.25	268.50	268.28	274.03	5.53	4.28	4.55
			0.06		0.90																							
CB 39	DMH 40		0.02	0.11	0.30	0.06	0.09	-	0.11	0.11	10.61	1.0	8.40	0.010	15		4.5	6.8	1.00%	65	0.65	0.00	268.28	267.63	274.08	5.80	4.55	**-268.88**
			0.10		0.90																							
CB 53	CB 52		-	0.10	0.30	0.09	0.09	-	-	-	10.61	0.9	8.40	0.010	15		4.5	6.8	1.00%	22	0.22	1.25	268.85	268.63	280.75	11.90	10.65	**-269.88**
			0.25		0.90																							
CB 51	CB 50		0.01	0.26	0.30	0.23	0.23	-	-	-	10.61	2.4	8.40	0.010	15		5.9	6.8	1.00%	22	0.22	1.25	271.07	270.85	280.94	9.87	8.62	**-272.10**

ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs		**STORM DRAINAGE PIPE DESIGN WORKSHEET**			
		WO. NO. **1146.01**	DATE **02/09/26**	REVISED	SHEET **2 OF 4**
PROJECT TITLE **Britain Woods**	LOCATION **Town/City of Newburgh**	STORM FREQUENCY **25 Year**			PIPE TYPE **HDPE**
CALCULATED BY **XXX**	APPROVED BY **XXX**	REF DRAWING(S) **DWG LAST REV. 02/09/2026**	RAINFALL CURVE **Orange County, NY**		

LOCATION		ROAD	ACRES		" C "	CA	ΣCA	TIME CONC. - MIN			" i "	" Q "		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA.	SUB.	TOTAL				Inlet	Pipe	TOTAL		Des.	Cap.	" n "	Size	Height	V Des	V Cap	Slope	Lgth.	Fall	(feet)	Upper	Lower	Elev	INV	Upper	Lower
			0.27		0.90																							
CB 21	CB 22		0.07	0.34	0.30	0.26	0.26	5.00	-	5.00	8.33	2.2	8.40	0.010	15		5.7	6.8	1.00%	22	0.22	0.00	303.31	303.09	306.56	3.25	2.00	2.19
			0.10		0.90																							
CB 22	CB 23		0.08	0.51	0.30	0.11	0.89	5.00	0.06	5.06	8.33	7.4	8.40	0.010	15		7.7	6.8	1.00%	213	2.13	0.00	303.09	300.96	306.53	3.44	2.19	4.53
			0.20		0.90																							
CB 23	DMH 25		0.20	0.91	0.30	0.24	1.64	5.06	0.46	5.53	8.31	13.6	13.66	0.010	18		8.8	7.7	1.00%	22	0.22	0.25	300.71	300.49	306.74	6.03	4.53	5.00
			-		0.90																							
DMH 25	CB 26		-	0.91	0.30	-	1.64	5.53	0.04	5.57	8.16	13.4	13.66	0.010	18		8.8	7.7	1.00%	183	1.83	0.00	300.49	298.66	306.99	6.50	5.00	6.67
			0.36		0.90																							
CB 26	CB 28		0.26	1.53	0.30	0.40	2.52	5.57	0.35	5.91	8.14	20.6	29.41	0.010	24		10.1	9.4	1.00%	215	2.15	0.50	298.16	296.01	306.83	8.67	6.67	8.60
			0.27		0.90																							
CB 28	CB 30		0.19	1.99	0.30	0.30	2.95	5.91	0.36	6.27	8.03	23.7	29.41	0.010	24		10.4	9.4	1.00%	135	1.35	0.00	296.01	294.66	306.61	10.60	8.60	6.85
			0.11		0.90																							
CB 30	CB 32		0.09	2.19	0.30	0.12	3.21	6.27	0.22	6.48	7.92	25.4	73.52	0.010	24		21.1	23.4	6.25%	161	10.06	0.00	294.66	284.59	303.51	8.85	6.85	2.48
			0.05		0.90																							
CB 32	DMH 34		0.11	2.35	0.30	0.08	3.38	6.48	0.13	6.61	7.85	26.6	90.64	0.010	24		25.0	28.9	9.50%	93	8.84	0.00	284.59	275.75	289.07	4.48	2.48	2.55
			-		0.90																							
DMH 34	CB 35		-	2.35	0.30	-	3.38	6.61	0.06	6.67	7.81	26.4	65.10	0.010	24		19.6	20.7	4.90%	102	5.00	0.00	275.75	270.75	280.30	4.55	2.55	2.54
			0.06		0.90																							
CB 35	DMH 37		0.06	2.47	0.30	0.07	3.56	6.67	0.09	6.76	7.79	27.8	50.94	0.010	24		16.5	16.2	3.00%	73	2.19	0.00	270.75	268.56	275.29	4.54	2.54	3.00
			-		0.90																							
DMH 37	CB 55		-	2.47	0.30	-	3.56	6.76	0.07	6.83	7.76	27.7	50.94	0.010	24		16.5	16.2	3.00%	84	2.52	0.00	268.56	266.04	273.56	5.00	3.00	3.57
			0.21		0.90																							
CB 55	CB 57		0.02	2.71	0.30	0.20	4.07	6.83	0.08	6.92	7.74	31.5	41.59	0.010	24		14.6	13.2	2.00%	211	4.22	0.00	266.04	261.82	271.61	5.57	3.57	3.35
			0.04		0.90																							
CB 57	ES 3		-	2.75	0.30	0.04	4.35	6.92	0.24	7.16	7.72	33.6	94.89	0.010	24		27.6	30.2	10.41%	67	6.97	0.00	261.82	254.84	267.17	5.35	3.35	**-256.84**
			0.54		0.90																							
CB 24	CB 23		0.10	0.64	0.30	0.51	0.51	-	-	-	10.61	5.5	8.40	0.010	15		7.3	6.8	1.00%	22	0.22	1.25	301.18	300.96	306.74	5.56	4.31	**-302.21**
			0.49		0.90																							
CB 27	CB 26		0.13	0.62	0.30	0.48	0.48	-	-	-	10.61	5.1	8.40	0.010	15		7.2	6.8	1.00%	22	0.22	1.25	299.13	298.91	306.83	7.70	6.45	**-300.16**
			0.11		0.90																							
CB 29	CB 28		0.12	0.22	0.30	0.13	0.13	-	-	-	10.61	1.4	8.40	0.010	15		5.0	6.8	1.00%	22	0.22	1.25	296.98	296.76	306.61	9.63	8.38	**-298.01**
			0.11		0.90																							
CB 31	CB 30		0.11	0.22	0.30	0.13	0.13	-	-	-	10.61	1.4	8.40	0.010	15		5.0	6.8	1.00%	22	0.22	1.25	295.63	295.41	303.51	7.88	6.63	**-296.66**
			0.07		0.90																							
CB 33	CB 32		0.11	0.18	0.30	0.10	0.10	-	-	-	10.61	1.0	8.40	0.010	15		4.6	6.8	1.00%	22	0.22	1.25	285.56	285.34	289.08	3.52	2.27	**-286.59**
			0.08		0.90																							

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

STORM DRAINAGE PIPE DESIGN WORKSHEET

WO. NO.	DATE	REVISED	SHEET
1146.01	02/09/26		2 OF 4

PROJECT TITLE		LOCATION	STORM FREQUENCY	PIPE TYPE
Britain Woods		**Town/City of Newburgh**	**25 Year**	**HDPE**
CALCULATED BY	APPROVED BY	REF DRAWING(S)	RAINFALL CURVE	
XXX	**XXX**	**DWG LAST REV. 02/09/2026**	**Orange County, NY**	

LOCATION		ROAD	ACRES		" C "	CA	ΣCA	TIME CONC. - MIN			" i "	" Q "		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA.	SUB.	TOTAL				Inlet	Pipe	TOTAL		Des.	Cap.	" n "	Size	Height	V Des	V Cap	Slope	Lgth.	Fall	(feet)	Upper	Lower	Elev	INV	Upper	Lower
CB 36	CB 35		0.12	0.20	0.30	0.11	0.11	-	-	-	10.61	1.1	8.40	0.010	15		4.7	6.8	1.00%	22	0.22	1.25	271.72	271.50	275.29	3.57	2.32	**-272.75**
			0.32		0.90																							
CB 54	CB 55		0.07	0.39	0.30	0.31	0.31	-	-	-	10.61	3.3	8.40	0.010	15		6.4	6.8	1.00%	22	0.22	1.25	267.01	266.79	271.61	4.60	3.35	**-268.04**
			0.21		0.90																							
CB 56	CB 57		0.16	0.37	0.30	0.24	0.24	-	-	-	10.61	2.5	8.40	0.010	15		5.9	6.8	1.00%	22	0.22	1.25	262.79	262.57	267.16	4.37	3.12	**-263.82**

ENGINEERING & SURVEYING PROPERTIES
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STORM DRAINAGE PIPE DESIGN WORKSHEET

WO. NO.	DATE	REVISED	SHEET
1146.01	02/09/26		3 OF 4

PROJECT TITLE		LOCATION	STORM FREQUENCY	PIPE TYPE
Britain Woods		**Town/City of Newburgh**	**25 Year**	**HDPE**
CALCULATED BY	APPROVED BY	REF DRAWING(S)	RAINFALL CURVE	
XXX	**XXX**	**DWG LAST REV. 02/09/2026**	**Orange County, NY**	

LOCATION		ROAD	ACRES		" C "	CA	ΣCA	TIME CONC. - MIN			" i "	" Q "		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA.	SUB.	TOTAL				Inlet	Pipe	TOTAL		Des.	Cap.	" n "	Size	Height	V Des	V Cap	Slope	Lgth.	Fall	(feet)	Upper	Lower	Elev	INV	Upper	Lower
CB 1	CB 2		0.82 0.60	1.42	0.90 0.30	0.92	0.92	5.00	-	5.00	8.33	7.7	8.40	0.010	15		7.7	6.8	1.00%	22	0.22	0.00	253.14	252.92	256.39	3.25	2.00	2.22
CB 2	CB 3		0.27 0.45	2.14	0.90 0.30	0.38	1.29	5.00	0.05	5.05	8.33	10.8	13.66	0.010	18		8.6	7.7	1.00%	199	1.99	0.25	252.67	250.68	256.39	3.72	2.22	4.23
CB 3	CB 5		0.10 0.05	2.28	0.90 0.30	0.10	1.64	5.05	0.39	5.43	8.32	13.7	26.25	0.010	18		15.0	14.9	3.69%	108	3.99	0.00	250.68	246.69	256.41	5.73	4.23	2.50
CB 5	CB 7		0.35 0.55	3.18	0.90 0.30	0.48	2.25	5.43	0.12	5.55	8.19	18.4	41.59	0.010	24		12.8	13.2	2.00%	218	4.36	0.50	246.19	241.83	250.69	4.50	2.50	6.74
CB 7	CB 8		0.27 0.02	3.46	0.90 0.30	0.25	2.50	5.55	0.28	5.84	8.15	20.4	29.41	0.010	24		10.1	9.4	1.00%	22	0.22	0.00	241.83	241.61	250.57	8.74	6.74	6.96
CB 8	ES 5		0.07 -	3.53	0.90 0.30	0.06	2.56	5.84	0.04	5.88	8.05	20.6	94.77	0.010	24		23.8	30.2	10.39%	217	22.54	0.00	241.61	219.07	250.57	8.96	6.96	**-221.07**
CB 4	CB 3		0.27 0.02	0.29	0.90 0.30	0.25	0.25	-	-	-	10.61	2.6	8.40	0.010	15		6.0	6.8	1.00%	24	0.24	1.25	251.17	250.93	256.12	4.95	3.70	**-252.18**
CB 6	CB 5		0.15 -	0.15	0.90 0.30	0.14	0.14	-	-	-	10.61	1.4	8.40	0.010	15		5.0	6.8	1.00%	22	0.22	1.25	247.16	246.94	250.69	3.53	2.28	**-248.19**

ENGINEERING & SURVEYING PROPERTIES
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STORM DRAINAGE PIPE DESIGN WORKSHEET

WO. NO.	DATE	REVISED	SHEET
1146.01	02/09/26		OF 4

PROJECT TITLE	LOCATION	STORM FREQUENCY	PIPE TYPE
Britain Woods	**Town/City of Newburgh**	**25 Year**	**HDPE**

CALCULATED BY	APPROVED BY	REF DRAWING(S)	RAINFALL CURVE
XXX	**XXX**	**DWG LAST REV. 02/09/2026**	**Orange County, NY**

LOCATION		ROAD	ACRES		" C "	CA	ΣCA	TIME CONC. - MIN			" i "	" Q "		PIPE								DROP	INV	INV	GRATE	Depth to	Cover	Cover
FROM	TO	STA.	SUB.	TOTAL				Inlet	Pipe	TOTAL		Des.	Cap.	" n "	Size	Height	V Des	V Cap	Slope	Lgth.	Fall	(feet)	Upper	Lower	Elev	INV	Upper	Lower
			0.15		0.90																							
CB 10	CB 9		0.00	0.15	0.30	0.13	0.13	5.00	-	5.00	8.33	1.1	8.40	0.010	15		4.7	6.8	1.00%	22	0.22	0.00	244.29	244.07	247.54	3.25	2.00	2.22
			0.32		0.90																							
CB 9	CB 11		0.40	0.87	0.30	0.41	0.54	5.00	0.08	5.08	8.33	4.5	8.40	0.010	15		7.0	6.8	1.00%	215	2.15	0.00	244.07	241.92	247.54	3.47	2.22	4.37
			0.54		0.90																							
CB 11	CB 13		0.25	1.66	0.30	0.56	1.24	5.08	0.52	5.59	8.31	10.3	13.66	0.010	18		8.5	7.7	1.00%	227	2.27	0.25	241.67	239.40	247.54	5.87	4.37	6.47
			0.27		0.90																							
CB 13	CB 14		0.02	1.94	0.30	0.25	1.48	5.59	0.45	6.04	8.13	12.0	13.66	0.010	18		8.7	7.7	1.00%	22	0.22	0.00	239.40	239.18	247.37	7.97	6.47	6.69
			0.07		0.90																							
CB 14	ES 7		-	2.01	0.30	0.06	1.54	6.04	0.04	6.08	7.99	12.3	62.62	0.010	18		27.5	35.4	21.03%	91	19.18	0.00	239.18	220.00	247.37	8.19	6.69	**-221.50**
			0.15		0.90																							
CB 12	CB 11		-	0.15	0.30	0.13	0.13	-	-	-	10.61	1.4	8.40	0.010	15		5.0	6.8	1.00%	22	0.22	1.25	242.14	241.92	247.54	5.40	4.15	**-243.17**