AMENDED STORMWATER POLLUTION PREVENTION PLAN

FOR

REGIONAL FOOD BANK HUDSON VALLEY

580 NYS ROUTE 416

VILLAGE OF MONTGOMERY
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 Regional Food Bank - Hudson Valley 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 and continue the conveyance of upland watershed runoff;

b. Mitigate potential stormwater quality and peak stormwater flow impacts, and prevent soil erosion and sedimentation resulting from stormwater runoff.

1.2 SCOPE

The scope of the SWPPP for Regional Food Bank – Hudson Valley 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 Regional Food Bank – Hudson Valley project site is 27.04± acres in size and is located on the east side of NYS Route 416 in the Village of Montgomery, Orange County, New York. The project as proposed, will be developed on a portion of a parcel that totals 27.04± acres in the Village of Montgomery (Section 214 Block 1 Lot 1). The parcel is proposed to be subdivided into two (2) lots: with Lot 1 being 6.30± acres and Lot 2 proposed as 20.74± acres. The Regional Food Bank – Hudson Valley is being proposed on Lot 1 and Lot 2 is proposed to remain vacant (existing farmland). Access to the project site will be via the existing commercial driveway servicing the existing Aden Brook Agricultural farm property. A Private Commercial Road designation has been granted by the Town of Montgomery over a portion of the existing driveway within the Town of Montgomery. A Private Road Commercial Road designation will be sought from the Village of Montgomery for the section of the proposed commercial driveway within the Village of Montgomery to provide legal access and frontage to the proposed development

lot. The area of analyzed in the SWPPP is 19.9± acres which accounts for areas of runoff contributary to the design point for which the entire Food Bank development is within. A site location map is included as Figure 1 in Appendix 1.

As proposed, the Regional Food Bank – Hudson Valley project involves the development of Lot 1 into a ±43,788 square foot storage building. The building will have a parking area located at the front for employees and a second parking area to the side of the building to be utilized for volunteers and pick-up/deliveries. A loading dock area is located at the rear of the building. A portion (±1,068 feet) of the existing commercial driveway will be "re-constructed" and paved to a width of 30 feet. Multiple stormwater facilities will be constructed within the project area to mitigate any stormwater runoff quality and peak rate quantity increases. As defined in the New York State Stormwater Management Design Manual last revised January 2015, a portion of the proposed facility is classified as a stormwater hotspot. Table 4.3 in the Stormwater Design Manual classifies outdoor loading/unloading facilities as a stormwater hotspot. Additional mitigation/treatment for the loading dock area is proposed to fully treat the hotspot area runoff prior to discharge.

To the north and northeast of the project site there are vacant lands used for agriculture as well as wooded areas. The project site is bounded on the west by an excavating business, the Harrison Meeting House Site & Cemetery, several single-family residences, and NYS Route 416 which the site receives its access from. To the south is the Medline warehouse and to the east are various farmlands. The project is also located across the street from Orange County Airport, however the proposed building is located outside of the existing perpetual avigation easement.

The overall project site is an irregularly shaped area of land that is currently used for agricultural operations; however, the area of focus is mostly rectangular shaped. There is a low area located near the front of the property along NYS Route 416 and a previous excavated area that has been classified as an isolated wetland area. The existing site cover consists predominantly of agricultural growth with some woods, grass, and roadways.

3.0 TOPOGRAPHY AND SOILS

The existing topography in the Regional Food Bank – Hudson Valley project area is relatively gentle across the site, though due to a knoll located on the property it ranges from approximately 398 feet above mean sea level (AMSL) to 374 feet AMSL. The majority of the slopes (94.4%) on the project site are gently sloped (0%-10%), and moderate sloped areas (10%-15%) consist of approximately 4.6% of the site. The area of significant slope (15%-25%) on site represents 0.8% of the site area, with the remaining portion of the site (0.2%) consisting of severe slopes (>25%).

Soils information for the Regional Food Bank – Hudson Valley project area was assembled from data provided by the U.S. Department of Agriculture Soil Conservation Service printed in the Soil Survey of Orange County identifies the presence of Bath-Nassau channery silt loams (BnB), Canandaigua silt loam (Ca), Castile gravelly silt loam (CgB), Chenango gravelly silt loam (CnB), Erie gravelly silt loam (ErA), Fredon loam (Fd) and Histic Humaquepts (HH) soil complexes within the areas of the proposed project site. The CnB soils are considered to be a part of the “A” hydrologic soils group, the BnB soils part of the “C” hydrologic soil group, and the remaining Ca, CgB, ErA, Fd, and HH soils part of the “D” hydrologic soil group. A soil map is included as in Appendix 2.

4.0 ARCHAEOLOGY

On-site archaeological significance was addressed during the SEQR process as all coordination with New York State Parks, Recreation and Historic Preservation (NYSSHPO) Cultural Resource Information System (CRIS) was completed for the proposed project with a determination that there will be no impact to cultural or historical significance. A copy of this determination is included in Appendix 14.

5.0 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 or more 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.

The SWPPP for Regional Food Bank – Hudson Valley was based upon the New York State Stormwater Management Design Manual published by the New York State Department of Environmental Conservation (NYSDEC) issued on January 2015. 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 SWPPP for Regional Food Bank – Hudson Valley was developed utilizing the “five step” process for Stormwater Site Planning and Practice Selection. The five steps consist 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.

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. The current proposed plan was developed after careful consideration of many planning techniques and potential 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 proposed design of the site through grading and stormwater infrastructure along with quality and quantity treatment facilities maintains the existing contributary drainage areas to the greatest extent practical while still achieving the development goals. The natural features such as regulated wetlands, water courses, and steep slopes have been avoided to the greatest extent practical while still achieving the development goals. The avoidance of steep slopes to the extent possible in conjunction with the design and implementation of erosion & sediment control measures eliminates the potential impact to any erodible soils. The site plan with proposed watershed boundaries is included 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 that encompasses the proposed project area contributory to the site's discharge location were found to three drainage areas with three different design points. A design point represents the point at which stormwater, generated within a watershed, will exit via either sheet flow along a linear boundary or as a point discharge. One existing watershed, EX-A, collects runoff via sheet flow across the site and cumulates at a culvert along NYS Route 416: Design Point A. Another

existing watershed, EX-B, collects runoff via sheet flow towards the back of the site and the stormwater ends up in the low-lying area of the isolated wetlands that does not discharge from the site: Design Point B. Finally, Design Point C collects runoff from the eastern side of the site directed toward a culvert underneath the existing access road. Figure 2 in Appendix 1 identifies the subareas and their corresponding design points. The characteristics of the existing subareas of these watersheds are detailed in Table 1 below.

The subareas were delineated and a contributory drainage area, a curve number (CN) and time of concentration (Tc) was determined for each subarea. 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 where appropriate and therefore, the total drainage area size may differ from the project development area.

TABLE 1: EXISTING DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
EX-A	12.36	76	10.2
EX-B	4.73	67	5.4
EX-C	2.81	83	9.0
TOTAL	**19.9**		

6.1.2 PROPOSED CONDITIONS

For the proposed conditions analysis, the existing watershed was broken into a post-development network consisting of eight (8) subareas that are contributary to the three different Design Points. Proposed watershed area "A" includes nearly all of the development taking place. PR-A1 consists of the Food Bank building, its front parking lot, and a portion of the side parking lot. This area is routed to a forebay where the stormwater is treated before flowing into a bioretention basin. From the bioretention basin, the water makes its way through pipes and structures to the Design Point A. PR-A2

consists of the hotspot area which includes the loading area in the rear and tributary areas to the lined forebay and pocket pond. Runoff from the loading area, which is considered the hotspot area, is captured and treated through the Hydrodynamic Separator before being directed to the lined forebay. From the lined forebay, treated water flows over a weir into the pocket pond and will eventually make its way through pipes and structures to Design Point A. PR-A3a includes most of the area north of the proposed commercial driveway and features a vegetated swale to collect the surface sheet flow runoff and discharge to Design Point A. PR-3b is the area north of the proposed commercial driveway that does not flow into the vegetated swale and flows toward Design Point A. PR-A4a includes tributary area to the south of the commercial area and also features a vegetated swale to collect the surface sheet flow runoff and discharge to Design Point A. Like PR-3b, PR-4b includes area that does not flow into the vegetated swale, but is also located south of the proposed commercial driveway and flows toward Design Point A. PR-B and PR-C shares the same Design Point as EX-B and EX-C respectively, however their contributary area has been decreased in the proposed condition as portions of the original contributary area have been redirected to Design Points B and C. These subareas are delineated and identified in Figure 4. The characteristics of each proposed subarea are detailed in Table 2 on the following page. It is noted that the total contributory area to each design point includes off-site areas and therefore, the total drainage area size differs from the project development area. And due to the project development, the total proposed drainage area is slightly larger than the existing drainage area.

TABLE 2: PROPOSED DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
PR-A1	2.43	75	6.0
PR-A2	2.14	71	1.8
PR-A3a	4.09	76	15.0
PR-A3b	0.84	63	9.0
PR-A4a	3.71	80	19.2
PR-A4b	1.85	86	14.4
PR-B	3.00	68	5.4
PR-C	1.84	83	9.0
TOTAL	**19.9**		

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 watershed encompassing the portion of the project site where the proposed development is going to take place. The results of the WQ_v calculations are included in Table 3 below.

TABLE 3: REQUIRED WATER QUALITY VOLUMES

	WQv (Ac-ft)
SITE	0.510

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.

Green Technologies

- Conservation of Natural Areas
  - The proposed project being developed on Lot 1 will utilize the majority of the lot and there will not be any available land to be utilized as conservation of natural areas, therefore conservation of natural areas was not proposed.
- Sheet flow to Riparian Buffers / Filter Areas
  - As all areas suitable for a riparian buffer and filter areas have been accounted for in other green technologies, the implementation for this practice is not proposed.
- Vegetated Open Swales
  - Vegetated swales were utilized for this project to treat runoff from the proposed widening of the existing driveway which shall be a private commercial road, as well as portions of the improved Food Bank site.
- Tree Planting / Tree Box
  - The site design proposes a landscaping plan however this landscaping will be utilized for aesthetic purposes only and will not be designed to incorporate stormwater quality treatment.
- Disconnection of Rooftop runoff
  - The rooftop runoff from the proposed buildings will be directed to the storm drainage system. The runoff collected from the rooftops will be conveyed to the bioretention forebay where it will be treated.

- Stream Daylighting
    - There are no culverted/piped streams on-site therefore this technology is not applicable to this project.
- Rain Gardens
    - Since 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 small rooftops or plaza and courtyards. Stormwater planters work very well within urban redevelopment projects with appropriate soils. 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 smaller areas of rooftop runoff, however as previously stated, the large amount of rooftop runoff will be treated through the bioretention area and its forebay.
- Porous Pavement
    - Porous pavement was not considered as areas eligible for porous pavement have already been considered 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.

Standard SMP's with RR_v Capacity

- Infiltration Practice
  - Infiltration practices were not implemented due to the site grading and the groundwater elevation around the stormwater management areas.
- Bio-Retention Practice
  - A Bio-Retention Basin has been designed to detain and treat tributary stormwater runoff from the proposed development which includes newly created impervious areas.

Alternative SMP's

- Hydro International Hydrodynamic Separator
  - A Hydro International First Defense hydrodynamic separator is proposed to receive runoff from the loading dock area. The hydrodynamic separator will provide one of the two treatment methods required for additional treatment to hotspot runoff prior to discharge. Calculations and manufacturer cutsheets are provided in Appendix 16.

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 defined a Specific Reduction Factor (*S*). The reduction factors for each HSG are shown below on 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 shall 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 are providing 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 6.2 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	0.145 ac-ft	0.168 ac-ft	0.178 ac-ft

6.4 APPLICATION OF STANDARD SMP'S FOR THE REVISED WQV

Continuing with the stormwater site planning process, step four is to ensure treatment for any remaining WQ_v is provided. The RRv does reduce the required WQv treatment for the watershed however, it does not completely eliminate the need to provide treatment through standard stormwater management practices. Additional WQv treatment is provided within the proposed stormwater management practices of the Bio-Retention Forebay A1 as shown below in Table 6. The additional storage within Forebay A1 after the required 25% WQv is accounted for and provides approximately 8,700 cubic feet (0.200 Ac-ft). These calculations can be found in Appendix 5.

TABLE 6: WQV PROVIDED IN STANDARD SMP'S

DRAINAGE AREA	Required WQ_v (Ac-ft)	WQ_v Provided (Ac-ft)	Percent of WQ_v
SITE	0.178	0.200	> 100 %

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 the on-site stormwater facilities (Bio-Retention and Pocket Pond) will be necessary to mitigate the potential increase in peak stormwater runoff rates from the proposed site improvements.

The new stormwater management facilities have been designed as a Pocket Pond and a Bio-Retention facility (F-5) to mitigate any increase in the peak runoff rate from the site improvements

The on-site stormwater management facility is proposed to mitigate any increase in peak runoff from the site improvements tributary to it. The following NYSDEC design criteria are achieved:

- A forebay has been provided for each practice.
- Outlet protection has been provided at the pond outfall for discharges to daylight through rip-rap flow dispersion.
- Forebays are created by an earthen berm.
- Access to the pond and Bio-Retention basin have been provided.
- A fixed sediment marker shall be installed in each forebay and the Bio-Retention facility to measure sediment deposition through time.
- Pond side slopes are designed at 4:1 or a safety bench is provided for facilities with depths greater than four (4) feet and side slopes less than 4:1.
- A non-clogging low flow orifice has been incorporated into the design of the Pocket Pond in PR-A2.
- The outlet structures will be located within the embankments for maintenance access and safety.
- In an emergency should the permanent pool need to be completely drained (Forebays & Pocket Pond), a portable pump will be required to drain the remaining water.

6.5.1 CHANNEL PROTECTION VOLUME

The required Channel Protection Volume (Cp_v) controls are 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, for any volume not previously reduced through runoff reduction volume reduction (RR_V). Ponds that do not meet the 24-hour extended detention period will utilize a minimum 3" orifice. Detention times are shown in Appendix 10 Reservoir Reports and the calculated 1-year storm event runoff volume along with the required Cpv volume provided are shown below in Table 7.

TABLE 7: CALCULATED CHANNEL PROTECTION VOLUMES (CPV)

1-Yr Runoff Volume (Ac-ft)	**RR_V Provided** (Ac-ft)	**Cp_v Required** (Ac-ft)	**Cp_v Provided** (Ac-ft)
1.032	0.168	0.864	0.947

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- and 100-year - 24-hour storm events were computed and evaluated at the aforementioned design points. The total peak runoff rates at the design points for the existing conditions as well as the final proposed conditions have been calculated and shown on the following page in Table 8. Stormwater computations are attached at the end of this report.

The peak runoff rates have been reduced in the proposed conditions during the 1-, 10- 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)	8.946	1.633	3.384
	Proposed (cfs)	7.836	1.190	2.216
	Reduction (cfs)	- 1.110	- 0.443	- 1.168
	Reduction (%)	- 12.40%	- 27.13%	- 34.52%
10 – YEAR (Qp)	Existing (cfs)	28.50	8.735	8.570
	Proposed (cfs)	23.85	5.834	5.612
	Reduction (cfs)	- 4.65	- 2.901	- 2.958
	Reduction (%)	- 16.31%	- 33.21%	- 34.51%
100 – YEAR (Qf)	Existing (cfs)	66.96	24.74	17.87
	Proposed (cfs)	64.03	16.12	11.70
	Reduction (cfs)	- 2.93	- 8.62	- 6.17
	Reduction (%)	- 4.37%	- 34.84%	- 34.52%

Since the runoff rates have been decreased in the post-development condition, there will be no adverse impact to the downstream receiving waters. Therefore, the SWPPP designed for Regional Food Bank – Hudson Valley 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 on the following page 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 following requirements shall apply:

    - The required site inspections by the qualified inspector shall occur once every seven (7) days.
    - In areas where disturbance has temporarily or permanently ceased, stabilization shall be implemented within fourteen (14) 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 the project 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 to ensure that the facilities operate and function as designed through proper maintenance as follows.

a. Regular inspection and maintenance of the proposed facilities is required to ensure its 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. 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 interval, if needed.

d. Bio-Retention

   i. Sediment shall be cleaned out of the sedimentation chamber when it accumulates to a depth of more than six inches. Vegetation within the sedimentation chamber shall be limited to a height of 18 inches. The sedimentation chamber outlet devices shall be cleaned/repaired when drawdown times exceed 36 hours. Trash and debris shall be removed as necessary.

   ii. 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 (i.e., landfill).

   iii. Areas devoid of mulch shall be re-mulched on an annual basis. Dead or diseased plant material shall be replaced.

e. Pocket Pond

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

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

f. Hydro International First Defense Separator:

   i. During the first year of operation, the unit shall be inspected every six months to determine the rate of sediment and floatables accumulation.

   ii. The vortex separator shall be inspected every six months and cleared out once a year or following a spill in the drainage area.

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 Regional Food Bank – Hudson Valley 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 the green technology and soil restoration.

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.

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APPENDIX 1

FIGURES

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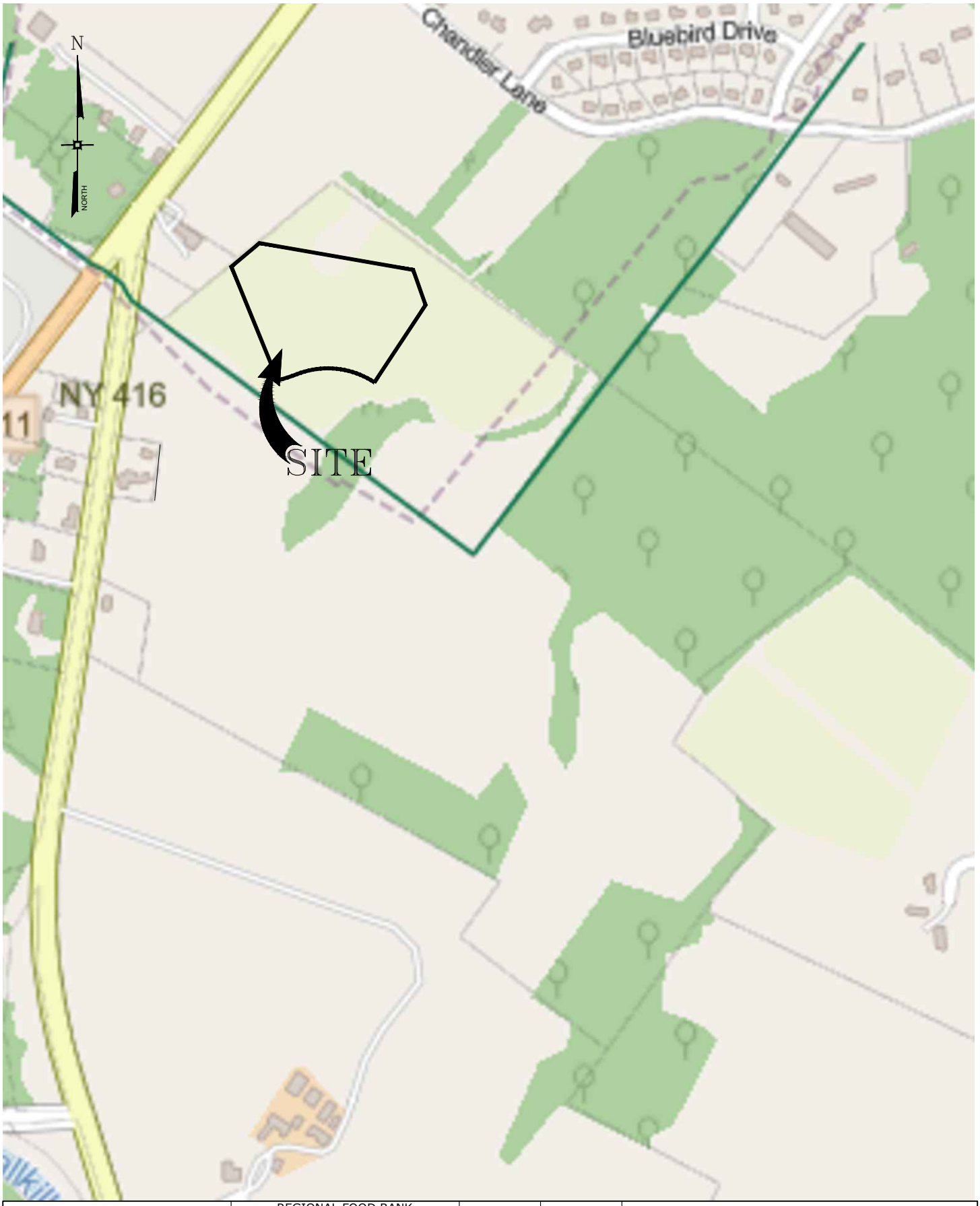

LOCATION MAP	REGIONAL FOOD BANK HUDSON VALLEY 580 NYS ROUTE 416 VILLAGE OF MONTGOMERY ORANGE COUNTY, NEW YORK	DATE: JUL 2024 SCALE: 1"=500'	JOB # 1842.01 SHEET # F-1	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs

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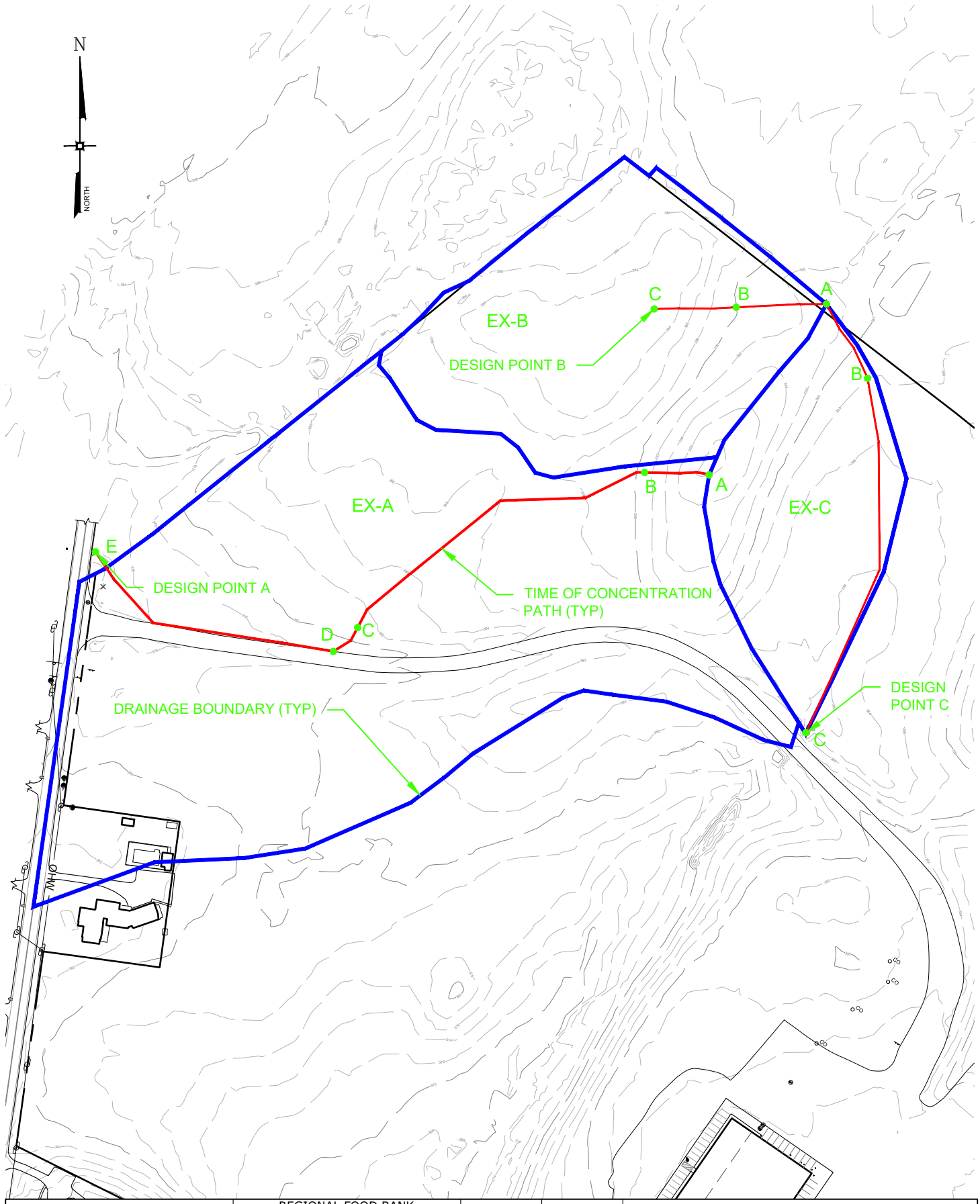

EXISTING CONDITIONS	REGIONAL FOOD BANK HUDSON VALLEY 580 NYS ROUTE 416 VILLAGE OF MONTGOMERY ORANGE COUNTY, NEW YORK	DATE: JUL 2024 SCALE: 1"=200'	JOB # 1842.01 SHEET # F-2	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs

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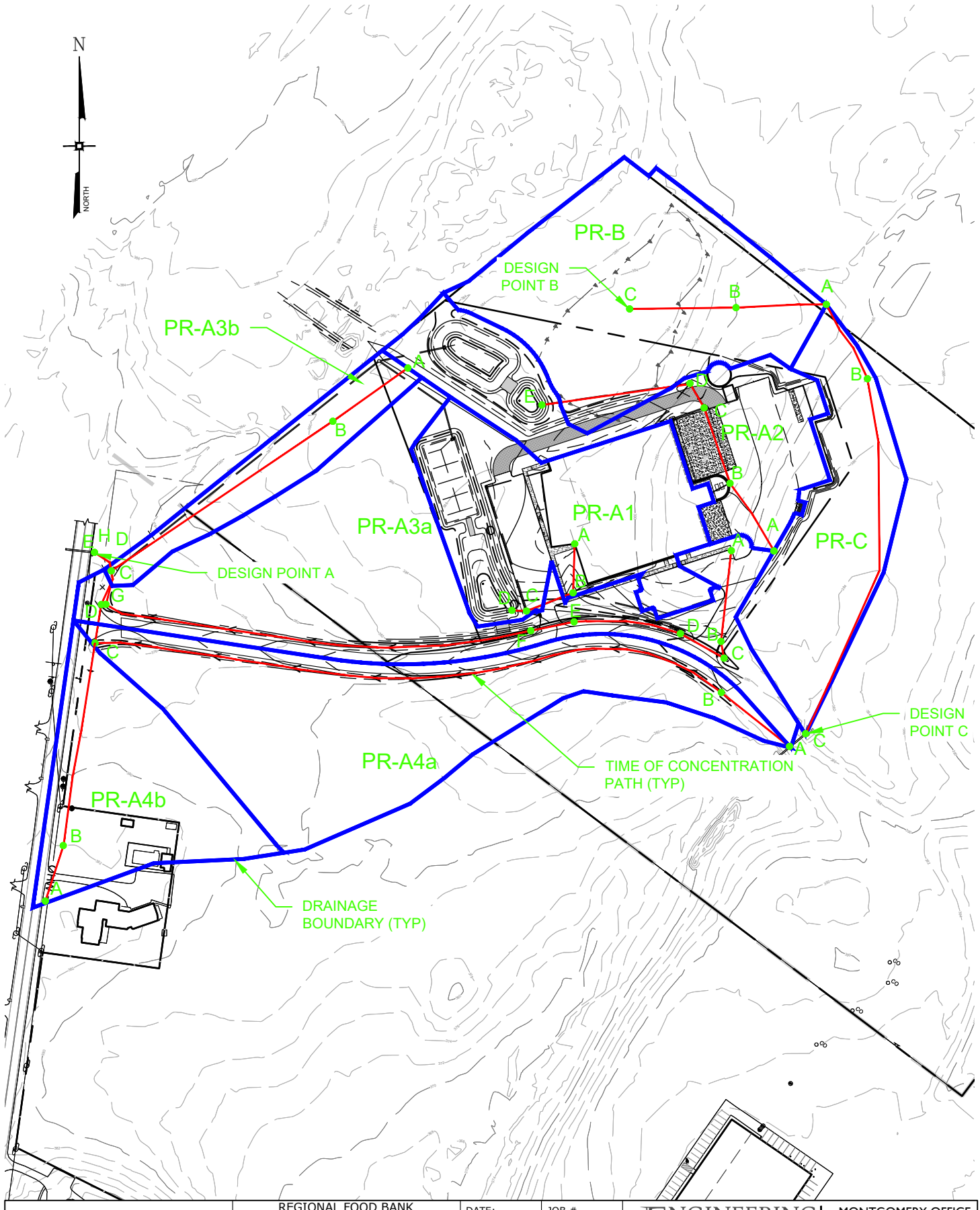

PROPOSED CONDITIONS	REGIONAL FOOD BANK HUDSON VALLEY 580 NYS ROUTE 416 VILLAGE OF MONTGOMERY ORANGE COUNTY, NEW YORK	DATE: JUL 2024	JOB # 1842.01	
		SCALE: 1"=200'	SHEET # F-3	

ENGINEERING & SURVEYING PROPERTIES
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APPENDIX 2

SOILS MAP AND CLASSIFICATIONS

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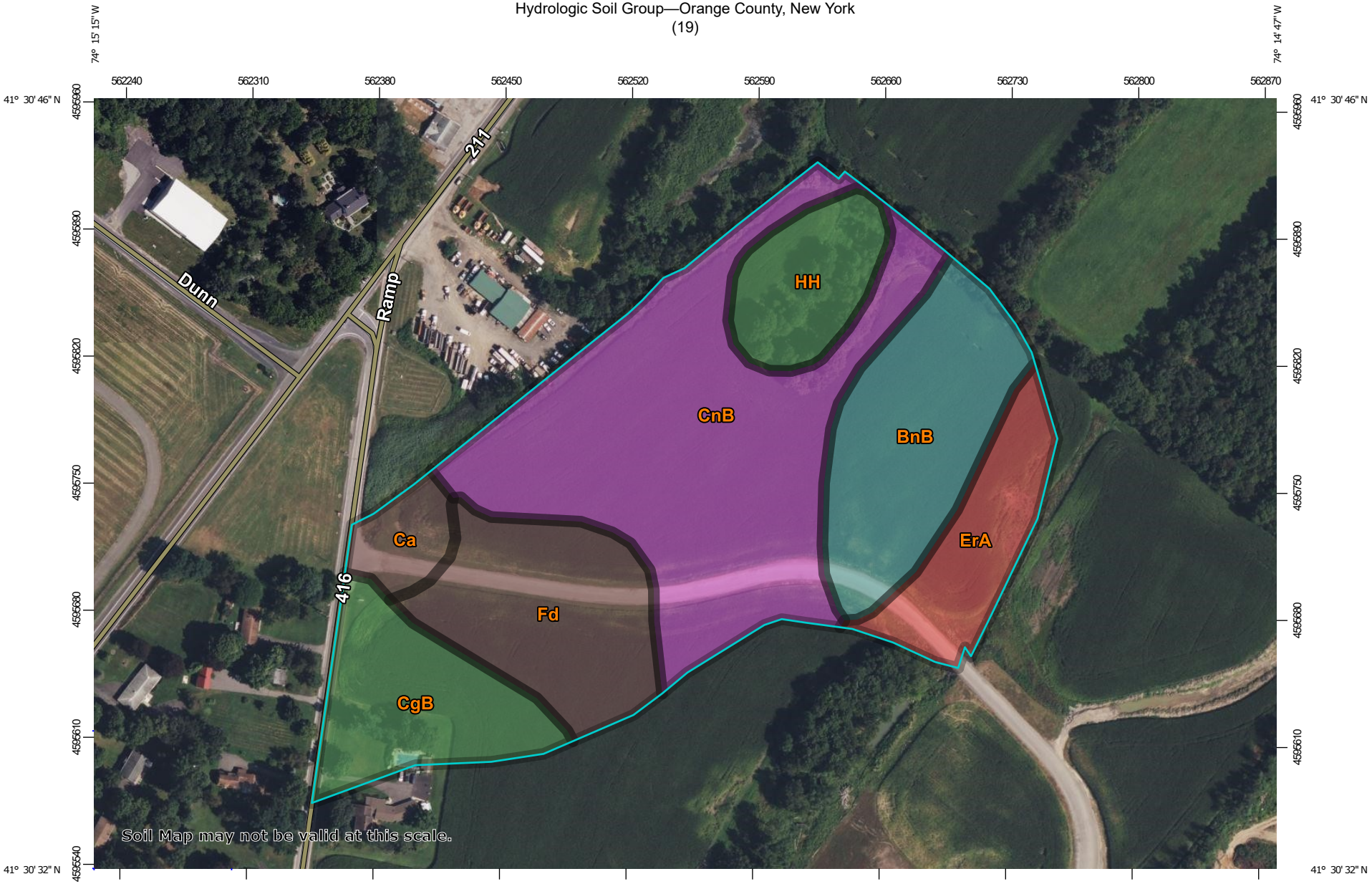

Map Scale: 1:2,990 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

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 23, Sep 10, 2022

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—Oct 27, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BnB	Bath-Nassau channery silt loams, 3 to 8 percent slopes	C	3.2	16.3%
Ca	Canandaigua silt loam	B/D	0.7	3.4%
CgB	Castile gravelly silt loam, 3 to 8 percent slopes	A/D	2.3	11.4%
CnB	Chenango gravelly silt loam, 3 to 8 percent slopes	A	7.6	38.1%
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	D	1.7	8.7%
Fd	Fredon loam	B/D	2.9	14.6%
HH	Histic Humaquepts, ponded	A/D	1.5	7.6%
Totals for Area of Interest			**19.9**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX 3

CURVE NUMBER

CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**02/10/23**	**1**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S)

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

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.08	2.44
A	Grass - Fair Condition	49	0.88	43.36
A	Row Crops - C+CR - Good Condition	64	3.98	254.77
C	Woods - Fair Condition	73	0.00	
C	Grass - Fair Condition	79	0.44	34.50
C	Row Crops - C+CR - Good Condition	81	0.49	39.90
D	Woods - Fair Condition	79	0.00	
D	Grass - Fair Condition	84	2.53	212.74
D	Row Crops - C+CR - Good Condition	85	3.11	264.01
	Impervious	98	0.85	82.86
		TOTAL =	12.36	934.5822801

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{934.58228}{12.360585}$$

CN (weighted) = 75.610 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
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/10/23**		**2**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

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
A	Woods - Good Condition	30	0.65	19.60
A	Grass - Fair Condition	49	0.00	
A	Row Crops - C+CR - Good Condition	64	1.80	115.37
C	Woods - Fair Condition	73	0.07	5.34
C	Grass - Fair Condition	79	0.00	
C	Row Crops - C+CR - Good Condition	81	0.69	55.76
D	Woods - Fair Condition	79	1.03	81.37
D	Grass - Fair Condition	84	0.00	
D	Row Crops - C+CR - Good Condition	85	0.48	40.75
	Impervious	98	0.00	
		TOTAL =	4.73	318.191076

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{318.19108}{4.7269906}$$

CN (weighted) = 67.314 Use CN= **67**

2. Runoff S = 4.93

		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
1842.01	**02/21/23**		**3**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

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
A	Woods - Good Condition	30	0.00	
A	Grass - Fair Condition	49	0.00	
A	Row Crops - C+CR - Good Condition	64	0.00	
C	Woods - Fair Condition	73	0.04	2.88
C	Grass - Fair Condition	79	0.00	
C	Row Crops - C+CR - Good Condition	81	1.44	116.58
D	Woods - Fair Condition	79	0.00	
D	Grass - Fair Condition	84	0.00	
D	Row Crops - C+CR - Good Condition	85	1.33	112.97
	Impervious	98	0.00	
		TOTAL =	2.81	232.4298271

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{232.42983}{2.8077748}$$

CN (weighted) = 82.781 Use CN= **83**

2. Runoff S = 2.05

		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
1842.01	**05/13/22**	**02/21/23**	**4**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S)

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

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Grass - Good Condition	39	0.93	36.18
C	Grass - Good Condition	74	0.02	1.33
D	Grass - Good Condition	80	0.00	
	Impervious	98	1.48	145.49
		TOTAL =	2.43	182.9959986

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{182.996}{2.4301616}$$

CN (weighted) = 75.302 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)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**07/15/24**	**5**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S)

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

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Grass - Good Condition	39	0.90	35.02
C	Grass - Good Condition	74	0.20	14.80
D	Grass - Good Condition	80	0.04	3.03
	Impervious	98	1.00	98.00
		TOTAL =	2.14	150.8462932

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{150.84629}{2.135773}$$

CN (weighted) = 70.628 Use CN= **71**

2. Runoff S = 4.08

		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
1842.01	**05/13/22**	**02/21/23**	**6**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S)

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR - A3a**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.00	
A	Grass - Fair Condition	49	0.35	17.35
A	Row Crops - C+CR - Good Condition	64	1.53	98.18
C	Woods - Fair Condition	73	0.00	
C	Grass - Fair Condition	79	0.19	15.33
C	Row Crops - C+CR - Good Condition	81	0.00	
D	Woods - Fair Condition	79	0.00	
D	Grass - Fair Condition	84	0.68	57.46
D	Row Crops - C+CR - Good Condition	85	0.60	50.61
	Impervious	98	0.72	70.97
		TOTAL =	4.09	309.8804858

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{309.88049}{4.0855613}$$

CN (weighted) = 75.848 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)

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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/21/23**		**7**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S)

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR - A3b**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.00	
A	Grass - Fair Condition	49	0.24	11.90
A	Row Crops - C+CR - Good Condition	64	0.46	29.61
C	Woods - Fair Condition	73	0.00	
C	Grass - Fair Condition	79	0.00	
C	Row Crops - C+CR - Good Condition	81	0.00	
D	Woods - Fair Condition	79	0.00	
D	Grass - Fair Condition	84	0.11	9.42
D	Row Crops - C+CR - Good Condition	85	0.02	1.50
	Impervious	98	0.00	
		TOTAL =	0.84	52.42040932

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{52.420409}{0.8351848}$$

CN (weighted) = 62.765 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
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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/10/23**	**02/21/23**	**8**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S)

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR - A4a**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30		
A	Grass - Fair Condition	49	0.42	20.70
A	Row Crops - C+CR - Good Condition	64	0.33	21.22
C	Woods - Fair Condition	73		
C	Grass - Fair Condition	79	0.08	6.66
C	Row Crops - C+CR - Good Condition	81	0.01	0.50
D	Woods - Fair Condition	79		
D	Grass - Fair Condition	84	0.70	58.81
D	Row Crops - C+CR - Good Condition	85	1.77	150.28
	Impervious	98	0.39	38.48
		TOTAL =	3.71	296.6557041

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{296.6557}{3.7053097}$$

CN (weighted) = 80.062 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.	DATE	REVISED	SHEET	OF
1842.01	**02/21/23**		**9**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S)

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR - A4b**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.00	
A	Grass - Fair Condition	49	0.00	
A	Row Crops - C+CR - Good Condition	64	0.00	
C	Woods - Fair Condition	73	0.00	
C	Grass - Fair Condition	79	0.00	
C	Row Crops - C+CR - Good Condition	81	0.00	
D	Woods - Fair Condition	79		
D	Grass - Fair Condition	84	0.99	82.83
D	Row Crops - C+CR - Good Condition	85	0.71	60.21
	Impervious	98	0.16	15.68
		TOTAL =	1.85	158.7136915

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{158.71369}{1.8543499}$$

CN (weighted) = 85.590 Use CN= **86**

2. Runoff S = 1.63

		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
1842.01	**02/10/23**	**07/15/24**	**10**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S)

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

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.44	13.20
A	Grass - Fair Condition	49	0.17	8.33
A	Row Crops - C+CR - Good Condition	64	0.59	37.76
C	Woods - Fair Condition	73	0.07	5.11
C	Grass - Fair Condition	79	0.02	1.58
C	Row Crops - C+CR - Good Condition	81	0.24	19.44
D	Woods - Fair Condition	79	1.03	81.37
D	Grass - Fair Condition	84	0.00	
D	Row Crops - C+CR - Good Condition	85	0.44	37.40
	Impervious	98	0.00	
		TOTAL =	3.00	204.19

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{204.19}{3}$$

CN (weighted) = 68.063 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)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/21/23**	**07/15/24**	**11**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S)

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

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
A	Woods - Good Condition	30	0.00	
A	Grass - Fair Condition	49	0.00	
A	Row Crops - C+CR - Good Condition	64	0.00	
C	Woods - Fair Condition	73	0.04	2.88
C	Grass - Fair Condition	79	0.22	17.38
C	Row Crops - C+CR - Good Condition	81	0.25	20.25
D	Woods - Fair Condition	79	0.00	
D	Grass - Fair Condition	84	0.02	1.68
D	Row Crops - C+CR - Good Condition	85	1.31	111.35
	Impervious	98	0.00	
		TOTAL =	1.84	153.544539

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{153.54454}{1.8395142}$$

CN (weighted) = 83.470 Use CN= **83**

2. Runoff S = 2.05

		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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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	05/13/22	02/10/23	1	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing | Proposed Area: **EX - A**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		100				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.080				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.037				0.037

2. Shallow Concentrated Flow

		Segment ID	B - C	C - D	D - E		
Surface description (paved or unpaved)			Unpaved	Unpaved	Unpaved		
Flow length, L	ft		536.5	49.7	426.0		
Watercourse slope, s	ft/ft		0.019	0.034	0.014		
Average velocity, V (figure 3-1)	ft/s		2.200	2.953	1.895		
$T_t = \frac{L}{3600\,V}$	hr		0.068	0.005	0.062		0.135

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 = 0.17

min = 10.20

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	02/10/23		2	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing | Proposed Area: **EX - B**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		139				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.022				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr		0.082				0.082

2. Shallow Concentrated Flow

		Segment ID	B - C				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		127.0				
Watercourse slope, s	ft/ft		0.055				
Average velocity, V (figure 3-1)	ft/s		3.784				
$T_t = \frac{L}{3600\, V}$	hr		0.009				0.009

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 = 0.09

min = 5.40

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/21/23**		**3**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S):

Existing | Proposed Area: **EX - C**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		132				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.038				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.063				0.063

2. Shallow Concentrated Flow

		Segment ID	B - C				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		576.0				
Watercourse slope, s	ft/ft		0.014				
Average velocity, V (figure 3-1)	ft/s		1.902				
$T_t = \frac{L}{3600\,V}$	hr		0.084				0.084

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 = 0.15

min = 9.00

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	05/13/22	02/10/23	4	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing [Proposed] Area: **PR - A1**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Grass: S				
Manning's roughness coeff., 'n' (table 3-1)			0.15				
Flow length, L (total L ≤ 300 ft)	ft		76				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.039				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.096				0.096

2. Shallow Concentrated Flow

		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

		Segment ID	B - C	C - D			
Cross sectional flow area, a	ft^2		4.91	7.07			
Wetted perimeter, p_w	ft		7.85	9.43			
Hydraulic radius, $r = a/p_w$	ft		0.63	0.75			
Channel slope, s	ft/ft		0.019	0.015			
Manning's roughness coefficient, n			0.010	0.010			
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s		14.935	14.964			
Flow Length, L	ft		75.0	23.0			
$T_t = \frac{L}{3600\,V}$	hr		0.001	0.000			0.002

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.10

min = 6.00

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**02/10/23**	**5**	**11**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S):

Existing | Proposed (selected) Area: **PR - A2**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Paved				
Manning's roughness coeff., 'n' (table 3-1)			0.01				
Flow length, L (total L ≤ 300 ft)	ft		125				
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		0.030				0.030

2. Shallow Concentrated Flow

		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

		Segment ID	B - C	C - D			
Cross sectional flow area, a	ft^2		4.91	4.91			
Wetted perimeter, p_w	ft		7.85	7.85			
Hydraulic radius, $r = a/p_w$	ft		0.63	0.63			
Channel slope, s	ft/ft		0.021	0.010			
Manning's roughness coefficient, n			0.010	0.010			
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s		15.709	10.892			
Flow Length, L	ft		120.0	41.0			
$T_t = \frac{L}{3600\, V}$	hr		0.002	0.001			0.003

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = **0.03**

min = **1.80**

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	05/13/22	02/21/23	6	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing [Proposed] Area: **PR - A3a**

1. Sheet Flow

Segment ID	A - B	B - C			
Surface Description (table 3-1)	Paved	Grass: S			
Manning's roughness coeff., 'n' (table 3-1)	0.01	0.15			
Flow length, L (total L ≤ 300 ft) ft	141	26			
Two-year 24-hour rainfall, P_2 in	3.50	3.50			
Land Slope, s ft/ft	0.026	0.250			
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ hr	0.023	0.019			0.042

2. Shallow Concentrated Flow

Segment ID	D - E	F - G	G - H		
Surface description (paved or unpaved)	Unpaved	Unpaved	Unpaved		
Flow length, L ft	167.0	668.0	94.0		
Watercourse slope, s ft/ft	0.005	0.006	0.010		
Average velocity, V (figure 3-1) ft/s	1.141	1.250	1.613		
$T_t = \frac{L}{3600\,V}$ hr	0.041	0.148	0.016		0.205

3. Channel Flow

Segment ID	C - D	E - F			
Cross sectional flow area, a ft^2	4.91	4.91			
Wetted perimeter, p_w ft	7.85	7.85			
Hydraulic radius, $r = a/p_w$ ft	0.63	0.63			
Channel slope, s ft/ft	0.010	0.036			
Manning's roughness coefficient, n	0.010	0.010			
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$ ft/s	10.892	20.552			
Flow Length, L ft	77.0	68.0			
$T_t = \frac{L}{3600\,V}$ hr	0.002	0.001			0.003

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.25

min = 15.00

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	02/21/23		7	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing [Proposed] Area: **PR - A3b**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		142				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.012				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.104				0.104

2. Shallow Concentrated Flow

		Segment ID	B - C	C - D			
Surface description (paved or unpaved)			Unpaved	Unpaved			
Flow length, L	ft		414.0	41.0			
Watercourse slope, s	ft/ft		0.031	0.050			
Average velocity, V (figure 3-1)	ft/s		2.827	3.608			
$T_t = \frac{L}{3600\,V}$	hr		0.041	0.003			0.044

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 = **0.15**

min = **9.00**

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	02/10/23	02/21/23	8	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing [Proposed] Area: **PR - A4a**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Grass: S				
Manning's roughness coeff., 'n' (table 3-1)			0.15				
Flow length, L (total L ≤ 300 ft)	ft		136				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.015				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.226				0.226

2. Shallow Concentrated Flow

		Segment ID	B - C	D - E			
Surface description (paved or unpaved)			Unpaved	Unpaved			
Flow length, L	ft		995.0	97.0			
Watercourse slope, s	ft/ft		0.050	0.010			
Average velocity, V (figure 3-1)	ft/s		3.608	1.613			
$T_t = \frac{L}{3600\,V}$	hr		0.077	0.017			0.093

3. Channel Flow

		Segment ID	C - D				
Cross sectional flow area, a	ft^2		4.91				
Wetted perimeter, p_w	ft		7.85				
Hydraulic radius, $r = a/p_w$	ft		0.63				
Channel slope, s	ft/ft		0.005				
Manning's roughness coefficient, n			0.010				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s		7.702				
Flow Length, L	ft		60.0				
$T_t = \frac{L}{3600\,V}$	hr		0.002				0.002

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.32

min = 19.20

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	02/21/23		9	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing | Proposed Area: **PR - A4b**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Grass: S				
Manning's roughness coeff., 'n' (table 3-1)			0.15				
Flow length, L (total L ≤ 300 ft)	ft		91				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.011				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.184				0.184

2. Shallow Concentrated Flow

		Segment ID	B - C	D - E			
Surface description (paved or unpaved)			Unpaved	Unpaved			
Flow length, L	ft		317.0	97.0			
Watercourse slope, s	ft/ft		0.019	0.010			
Average velocity, V (figure 3-1)	ft/s		2.218	1.613			
$T_t = \frac{L}{3600\,V}$	hr		0.040	0.017			0.056

3. Channel Flow

		Segment ID	C - D				
Cross sectional flow area, a	ft^2		4.91				
Wetted perimeter, p_w	ft		7.85				
Hydraulic radius, $r = a/p_w$	ft		0.63				
Channel slope, s	ft/ft		0.005				
Manning's roughness coefficient, n			0.010				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s		7.702				
Flow Length, L	ft		60.0				
$T_t = \frac{L}{3600\,V}$	hr		0.002				0.002

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
1842.01	02/10/23		10	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

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

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		139				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.022				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr		0.082				0.082

2. Shallow Concentrated Flow

		Segment ID	B - C				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		127.0				
Watercourse slope, s	ft/ft		0.055				
Average velocity, V (figure 3-1)	ft/s		3.784				
$T_t = \frac{L}{3600\, V}$	hr		0.009				0.009

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 =** **0.09**

min = **5.40**

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	02/23/23		11	11

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing | Proposed — Area: **PR - C**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Fallow				
Manning's roughness coeff., 'n' (table 3-1)			0.05				
Flow length, L (total L ≤ 300 ft)	ft		132				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.038				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr		0.063				0.063

2. Shallow Concentrated Flow

		Segment ID	B - C				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		576.0				
Watercourse slope, s	ft/ft		0.014				
Average velocity, V (figure 3-1)	ft/s		1.902				
$T_t = \frac{L}{3600\, V}$	hr		0.084				0.084

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 = **0.15**

min = **9.00**

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APPENDIX 5

WATER QUALITY VOLUME CALCULATIONS & RUNOFF REDUCTION VOLUME CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
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WATER QUALITY VOLUME (WQ_v) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**07/15/24**	**1**	**5**

PROJECT TITLE	LOCATION
Regional Food Bank - Hudson Valley	**Village of Montgomery**
CALCULATED BY: **JM** / APPROVED BY: **JS**	Stormwater Management Design Point Designation

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

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	19.90	3.75	0.220	0.510	22,215.6

HSG	**Area (Ac.)**	**%**	**S**
A	7.57	38%	0.55
B	0.00	0%	0.40
C	3.23	16%	0.30
D	9.10	46%	0.20

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

P = 1.40
S = 0.35
I = 3.75
$RR_{v\ MIN}$ **0.145** 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

Revised WQ_v after Area Deductions	**P**	**A**	**I**	**R_v**	**WQ_v**	**$RR_{v\ AREA}$**
	1.40	19.90	3.75	0.220	0.510	**0.000**

Disconnection of Rooftop Runoff — Impervious Area Reduction: 0.00 Acres

Revised WQ_v after Impervious Disconnect	**P**	**A**	**I**	**R_v**	**WQ_v**	**$RR_{v\ IMP}$**
	1.40	19.90	3.75	0.220	0.510	**0.000**

Source Control WQ_v Treatment Practices	**Yes**	**No**	**WQ_v**	**$RR_{v\ SC}$***	**(A)** Reduction	**(I)** Reduction
Vegetated Open Swales	☑	☐	0.162	0.032	7.79	1.11
Rain Garden	☐	☑	-	-	-	-
Green Roof	☐	☑	-	-	-	-
Stormwater Planters	☐	☑	-	-	-	-
Rain Tanks / Cisterns	☐	☑	-	-	-	-
Porous Pavement	☐	☑	-	-	-	-
Standard SMP's with RRv Capacity						
Infiltration	☐	☑	-	-	-	-
Bio-Retention	☑	☐	0.170	0.136	2.43	1.48
Grassed Dry Swales (Open Channel)	☐	☑	-	-	-	-
		Subtotals	0.332	**0.168**	10.22	2.59

Is The Total **RR_v** ($RR_{v\ AREA}$ + $RR_{v\ IMP}$ + $RR_{v\ SC}$) **0.168** **≥ $RR_{v\ MIN}$?** **0.145** **YES**

WQ_v Required by Standard Practices	**P**	**A**	**I**	**R_v**	**WQ_v (Ac-ft)**	**WQ_v (ft^3)**
	1.40	9.68	1.16	0.158	0.178	7,765.3

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

ENGINEERING & SURVEYING PROPERTIES
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RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**02/10/23**	**02/21/23**	**2**	**5**

PROJECT TITLE	LOCATION
Regional Food Bank - Hudson Valley	**Village of Montgomery**

CALCULATED BY	APPROVED BY	
JM	**JS**	Stormwater Management Design Point Designation

BIO-RETENTION

Requirement Checks	Yes	No	Notes:
Runoff enters as sheet flow or through a dissipator	☑	☐	
Pretreatment provided	☑	☐	
Design Complies with Required Elements of Practice	☑	☐	
Infiltration designed to exfiltrate through bottom of practice only?	☑	☐	

Drainage Area (Ac.)	2.43	
Impervious Area (Ac.)	1.48	
Rainfall Event # (P)	1.40	
Rv	0.598	
$WQv_{REQ'D}$	0.170	
A_f (ft^2)	6,175.0	Surface area of filter bed
d_t (ft)	2.5	depth of filter bed
k (ft/day)	0.5	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)	7,410.0	Design volume of filter (WQ_v Provided)
$V_f > WQv_{REQ'D}$	**YES**	
HSG Soil Classification	A	

RRv Reduction Allowance

Soil Group A or B	80%
Soil Group C or D	40%

RRv	0.136

ENGINEERING & SURVEYING PROPERTIES
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RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	2/21/2023		3	5

PROJECT TITLE	LOCATION
Regional Food Bank - Hudson Valley	**Village of Montgomery**

CALCULATED BY	APPROVED BY	
JM	**JS**	Stormwater Management Practice Facility Designation

VEGETATED SWALE - NORTH 1

Requirement Checks	Yes	No	Notes:
Contributing drainage area to swale < 5 Ac. (if NO, Runoff Reduction can't be used)	☑	☐	
WQv Peak Flow (Q_{WQv}) ≤ 3 cfs	☑	☐	
Q_{WQv} Velocity ≤ 1.0 f/s	☑	☐	
Q_{WQv} Flow depth ≤ 4"	☑	☐	
Swale is trapezoidal or parabolic & bottom width between 2' & 6'	☑	☐	
Side Slopes ≥ 3:1	☑	☐	
Swale slope ≥ 0.5% & ≤ 4.0%	☑	☐	
Swale conveys the 10-yr Storm with min. 6" of freeboard with velocity ≤ 5.0 f/s	☑	☐	
Swale provide sufficient retention time ≥ 5 min sheet flow or multiple point discharges ≥10 min direct point discharge	☑	☐	

DA to Swale	0.83		Channel Length (ft)	167.00	
Impervious Area	0.37		WQv Depth of Flow (Ft)	0.3331	4.0 inches
Rainfall Event # (P)	1.40		WQv Velocity	0.30	
Rv	0.451		Retention Time (Min)	9.4	
WQv Peak Flow (QWQv)	0.044		$Q_{10\text{-yr}}$ (cfs)	1.94	
Qr (Runoff Volume)	0.632		$D_{10\text{-yr}}$ (ft)	0.706	
CN	84		$V_{10\text{-yr}}$ (f/s)	0.45	
Tc (hours)	0.030		Swale Design Depth (ft)	1.00	
Ia	0.381		Available Freeboard	0.29	
Ia/P	0.272		HSG Soil Classification	A	
Qu (from Exhibit 4-III (TR-55))	600				
Q_{WQv}	0.492		RRv Reduction Allowance		
Swale Design			Soil Group A or B	20%	
Bottom Width (ft)	4.000		Soil Group C or D	10%	
Side Slopes	3.000				
Depth (ft)	1.000		WQv to Swale	0.044	
Area of Flow (ft^2)	7.00		RRv	0.009	
Wetted Perimeter	10.32				
Slope (ft/ft)	0.005				
Mannings "n":	0.150	(per page L-2 NYSDEC Manual)			
Q_{swale} (Design)	3.79				
V_{swale} (Design)	0.54				

ENGINEERING & SURVEYING PROPERTIES
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RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	2/21/2023		4	5

PROJECT TITLE	LOCATION
Regional Food Bank - Hudson Valley	**Village of Montgomery**

CALCULATED BY	APPROVED BY	
JM	**JS**	Stormwater Management Practice Facility Designation

VEGETATED SWALE - NORTH 2

Requirement Checks	Yes	No	Notes:
Contributing drainage area to swale < 5 Ac. (if NO, Runoff Reduction can't be used)	☑	☐	
WQv Peak Flow (Q_{WQv}) ≤ 3 cfs	☑	☐	
Q_{WQv} Velocity ≤ 1.0 f/s	☑	☐	
Q_{WQv} Flow depth ≤ 4"	☑	☐	
Swale is trapezoidal or parabolic & bottom width between 2' & 6'	☑	☐	
Side Slopes ≥ 3:1	☑	☐	
Swale slope ≥ 0.5% & ≤ 4.0%	☑	☐	
Swale conveys the 10-yr Storm with min. 6" of freeboard with velocity ≤ 5.0 f/s	☑	☐	
Swale provide sufficient retention time ≥ 5 min sheet flow or multiple point discharges ≥10 min direct point discharge	☑	☐	

DA to Swale	3.25		Channel Length (ft)	678.00	
Impervious Area	0.35		WQv Depth of Flow (Ft)	0.2595	3.1 inches
Rainfall Event # (P)	1.40		WQv Velocity	0.29	
Rv	0.147		Retention Time (Min)	39.0	
WQv Peak Flow (QWQv)	0.056		$Q_{10\text{-yr}}$ (cfs)	1.12	
Qr (Runoff Volume)	0.206		$D_{10\text{-yr}}$ (ft)	0.609	
CN	72		$V_{10\text{-yr}}$ (f/s)	0.48	
Tc (hours)	0.250		Swale Design Depth (ft)	1.25	
Ia	0.778		Available Freeboard	0.64	
Ia/P	0.556		HSG Soil Classification	A	
Qu (from Exhibit 4-III (TR-55))	200				
Q_{WQv}	0.209		RRv Reduction Allowance		
Swale Design			Soil Group A or B	20%	
Bottom Width (ft)	2.000		Soil Group C or D	10%	
Side Slopes	3.000				
Depth (ft)	1.250		WQv to Swale	0.056	
Area of Flow (ft^2)	7.19		RRv	0.011	
Wetted Perimeter	9.91				
Slope (ft/ft)	0.008				
Mannings "n":	0.150	(per page L-2 NYSDEC Manual)			
Q_{swale} (Design)	5.16				
V_{swale} (Design)	0.72				

ENGINEERING & SURVEYING PROPERTIES
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RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	2/21/2023		5	5

PROJECT TITLE	LOCATION
Regional Food Bank - Hudson Valley	**Village of Montgomery**

CALCULATED BY	APPROVED BY	
JM	**JS**	Stormwater Management Practice Facility Designation

VEGETATED SWALE - SOUTH

Requirement Checks	Yes	No	Notes:
Contributing drainage area to swale < 5 Ac. (if NO, Runoff Reduction can't be used)	☑	☐	
WQv Peak Flow (Q_{WQv}) ≤ 3 cfs	☑	☐	
Q_{WQv} Velocity ≤ 1.0 f/s	☑	☐	
Q_{WQv} Flow depth ≤ 4"	☑	☐	
Swale is trapezoidal or parabolic & bottom width between 2' & 6'	☑	☐	
Side Slopes ≥ 3:1	☑	☐	
Swale slope ≥ 0.5% & ≤ 4.0%	☑	☐	
Swale conveys the 10-yr Storm with min. 6" of freeboard with velocity ≤ 5.0 f/s	☑	☐	
Swale provide sufficient retention time ≥ 5 min sheet flow or multiple point discharges ≥10 min direct point discharge	☑	☐	

DA to Swale	3.71		Channel Length (ft)	995.00	
Impervious Area	0.39		WQv Depth of Flow (Ft)	0.3307	4.0 inches
Rainfall Event # (P)	1.40		WQv Velocity	0.39	
Rv	0.145		Retention Time (Min)	43.0	
WQv Peak Flow (QWQv)	0.063		$Q_{10\text{-yr}}$ (cfs)	1.57	
Qr (Runoff Volume)	0.202		$D_{10\text{-yr}}$ (ft)	0.679	
CN	79		$V_{10\text{-yr}}$ (f/s)	0.57	
Tc (hours)	0.320		Swale Design Depth (ft)	1.25	
Ia	0.532		Available Freeboard	0.57	
Ia/P	0.380		HSG Soil Classification	A	
Qu (from Exhibit 4-III (TR-55))	325				
Q_{WQv}	0.381		RRv Reduction Allowance		
Swale Design			Soil Group A or B	20%	
Bottom Width (ft)	2.000		Soil Group C or D	10%	
Side Slopes	3.000				
Depth (ft)	1.250		WQv to Swale	0.063	
Area of Flow (ft^2)	7.19		RRv	0.013	
Wetted Perimeter	9.91				
Slope (ft/ft)	0.010				
Mannings "n":	0.150	(per page L-2 NYSDEC Manual)			
Q_{swale} (Design)	5.77				
V_{swale} (Design)	0.80				

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ENGINEERING & SURVEYING PROPERTIES
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WATER QUALITY VOLUME CALCULATIONS

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**07/15/24**	**1**	**1**

PROJECT TITLE
Regional Food Bank - Hudson Valley

LOCATION
Village of Montgomery

CALCULATED BY
JM

APPROVED BY
JS

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)
Forebay A1	1.40	1.48	2.43	0.598	7,387 0.170
Forebay A2	1.40	1.00	2.14	0.471	5,118 0.117

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ENGINEERING & SURVEYING PROPERTIES
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WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	05/13/22	07/15/24	1	2

PROJECT TITLE
Regional Food Bank - Hudson Valley

LOCATION
Village of Montgomery

CALCULATED BY
JM

APPROVED BY
JS

REF DRAWING(S)

Drainage Area: 2.43 acres

Pond: **Forebay A1**

Impervious Area: 1.48 acres

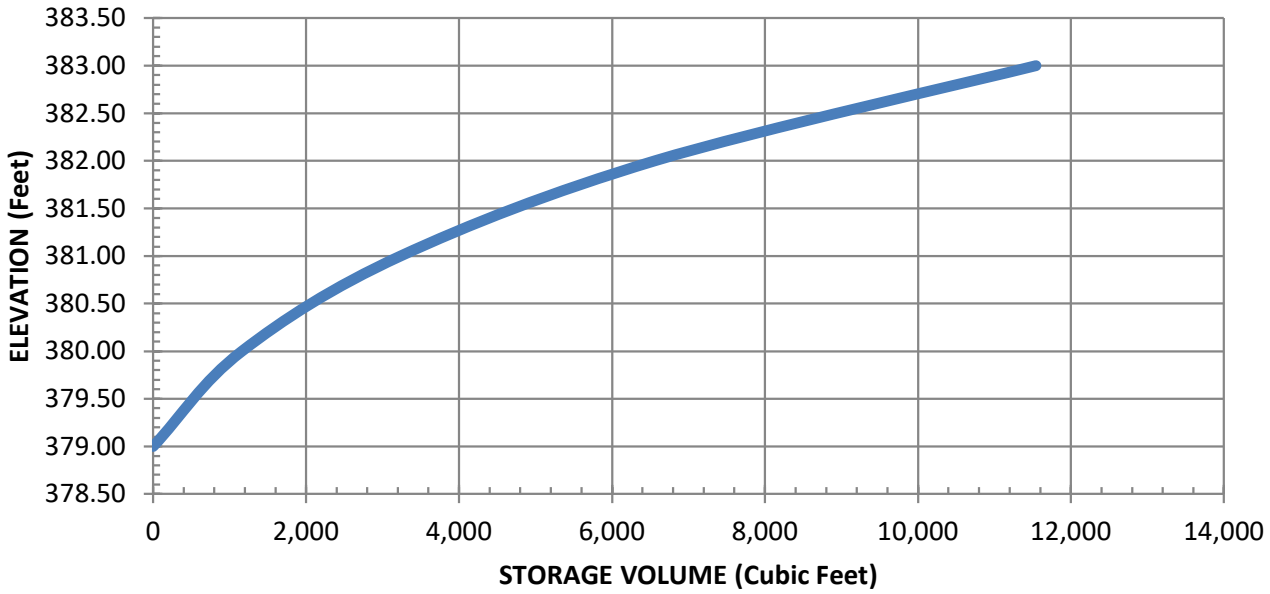
Required Pretreatment Volume % 25

100% WQ_v: 0.170 ac-ft

Required Total Pre-Treatment Volume: 1,847 cubic feet

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)
379.00	819.8	--	--	--	0.0
380.00	1,505.0	1,162.4	1.0	1,162.4	1,162.4
381.00	2,640.0	2,072.5	1.0	2,072.5	3,234.9
382.00	4,019.0	3,329.5	1.0	3,329.5	6,564.4
383.00	**5,933.0**	**4,976.0**	**1.0**	**4,976.0**	**11,540.4**

Stage Storage Curve



ENGINEERING & SURVEYING PROPERTIES
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WQv Provided in SMP

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**05/13/22**	**07/15/24**	**2**	**2**

PROJECT TITLE
Regional Food Bank - Hudson Valley

LOCATION
Village of Montgomery

CALCULATED BY
JM

APPROVED BY
JS

REF DRAWING(S)

Drainage Area: 2.14 acres

Pond: **Forebay A2**

Impervious Area: 1.00 acres

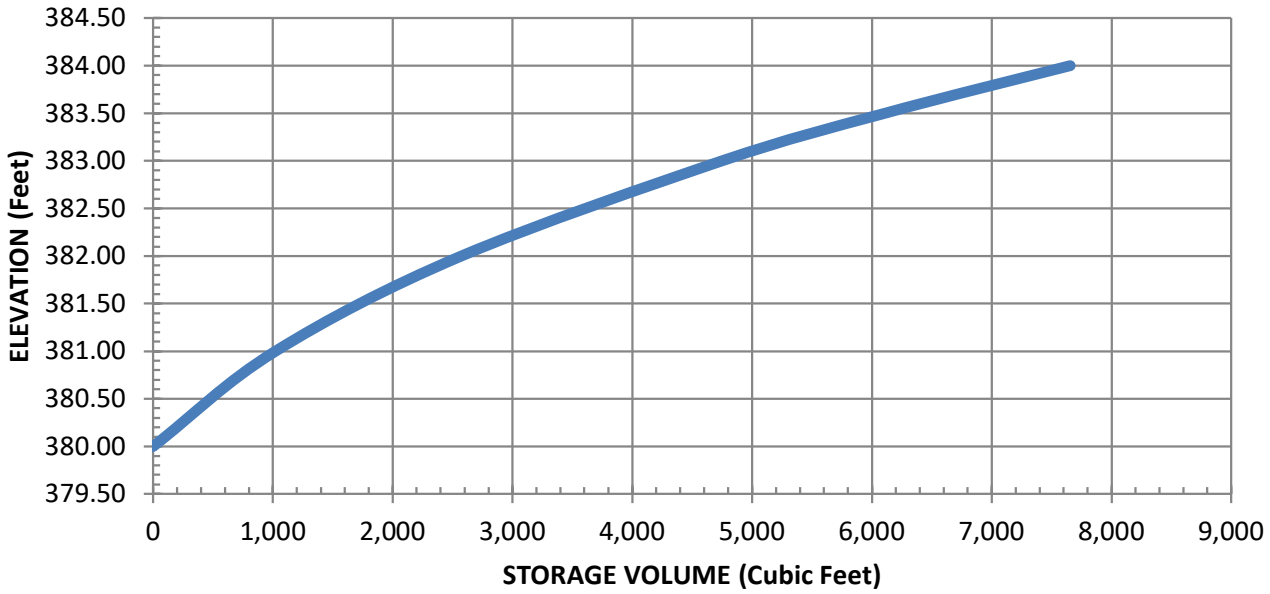
Required Pretreatment Volume % 100

100% WQ_v: 0.117 ac-ft

Required Total Pre-Treatment Volume: 5,118 cubic feet

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)
380.00	783.1	--	--	--	0.0
381.00	1,261.2	1,022.2	1.0	1,022.2	1,022.2
382.00	1,839.9	1,550.6	1.0	1,550.6	2,572.7
383.00	2,519.1	2,179.5	1.0	2,179.5	4,752.2
383.50	**2,896.3**	**2,707.7**	**0.5**	**1,353.8**	**6,106.0**
384.00	3,299.3	3,097.8	0.5	1,548.9	7,654.9

Stage Storage Curve



APPENDIX 6

HYDROGRAPH

SUMMARIES & DIAGRAMS

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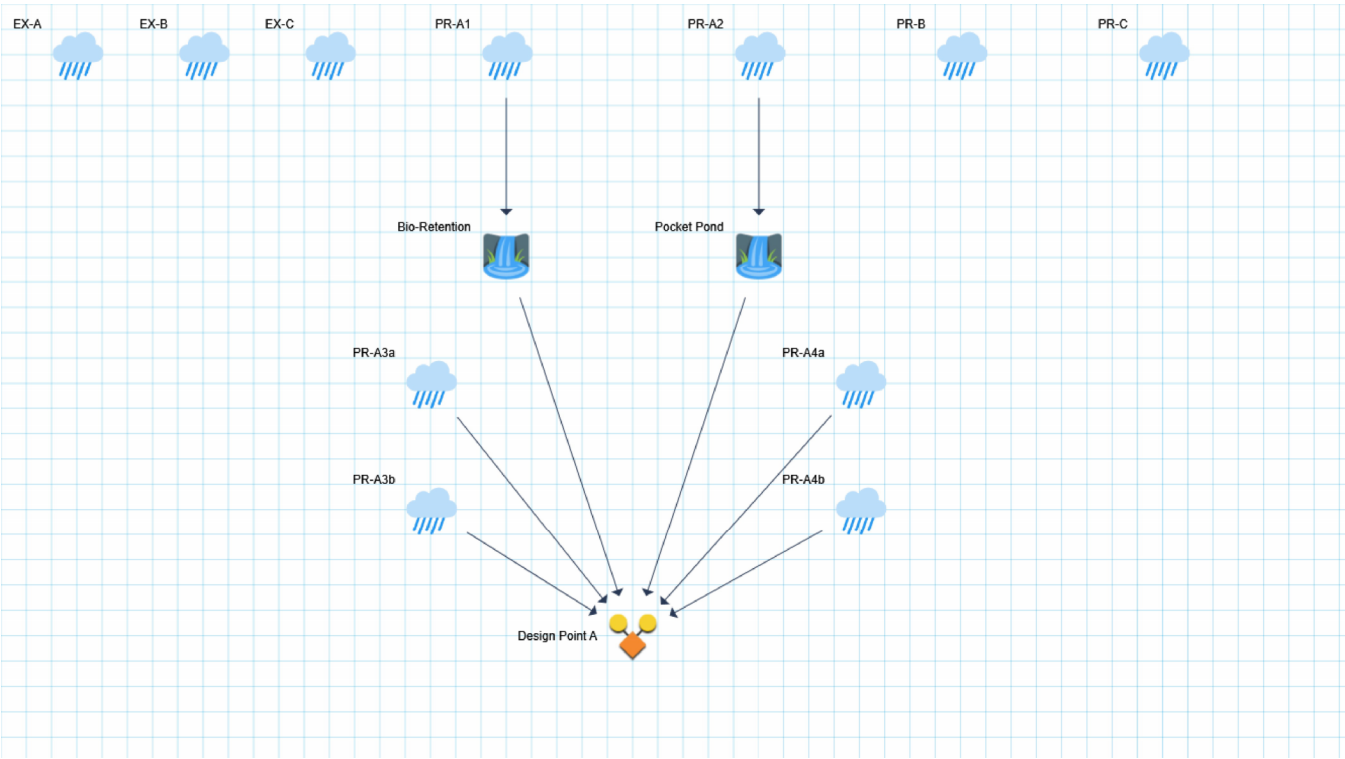
Basin Model

Hydrology Studio v 3.0.0.24

Project Name: Regional Food Bank - Hudson Valley

07-16-2024



Hydrograph by Return Period

Project Name: Regional Food Bank - Hudson Valley

07-17-2024

Hydrology Studio v 3.0.0.24

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX-A	8.946				28.50			66.96
2	NRCS Runoff	EX-B	1.633				8.735			24.74
3	NRCS Runoff	EX-C	3.384				8.570			17.87
4	NRCS Runoff	PR-A1	1.950				6.451			15.36
5	Pond Route	Bio-Retention	0.050				2.267			9.048
6	NRCS Runoff	PR-A2	1.229				4.937			12.78
7	Pond Route	Pocket Pond	0.044				0.169			4.605
8	NRCS Runoff	PR-A3a	2.669				8.506			20.03
9	NRCS Runoff	PR-A3b	0.129				1.068			3.405
10	NRCS Runoff	PR-A4a	2.873				7.985			17.56
11	NRCS Runoff	PR-A4b	2.277				5.338			10.68
12	NRCS Runoff	PR-B	1.190				5.834			16.12
13	NRCS Runoff	PR-C	2.216				5.612			11.70
14	Junction	Design Point A	7.836				23.85			64.03

APPENDIX 7

1-YEAR DESIGN STORM HYDROGRAPHS

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Hydrograph 1-yr Summary

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	8.946	12.15	35,086	----		
2	NRCS Runoff	EX-B	1.633	12.10	7,214	----		
3	NRCS Runoff	EX-C	3.384	12.12	11,702	----		
4	NRCS Runoff	PR-A1	1.950	12.08	6,565	----		
5	Pond Route	Bio-Retention	0.050	20.20	793	4	383.00	15,987
6	NRCS Runoff	PR-A2	1.229	12.05	4,022	----		
7	Pond Route	Pocket Pond	0.044	17.78	2,860	6	383.41	25,494
8	NRCS Runoff	PR-A3a	2.669	12.18	11,406	----		
9	NRCS Runoff	PR-A3b	0.129	12.22	870	----		
10	NRCS Runoff	PR-A4a	2.873	12.25	13,101	----		
11	NRCS Runoff	PR-A4b	2.277	12.17	9,013	----		
12	NRCS Runoff	PR-B	1.190	12.10	4,957	----		
13	NRCS Runoff	PR-C	2.216	12.12	7,663	----		
14	Junction	Design Point A	7.836	12.20	38,045	5, 7, 8, 9, 10, 11		

Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

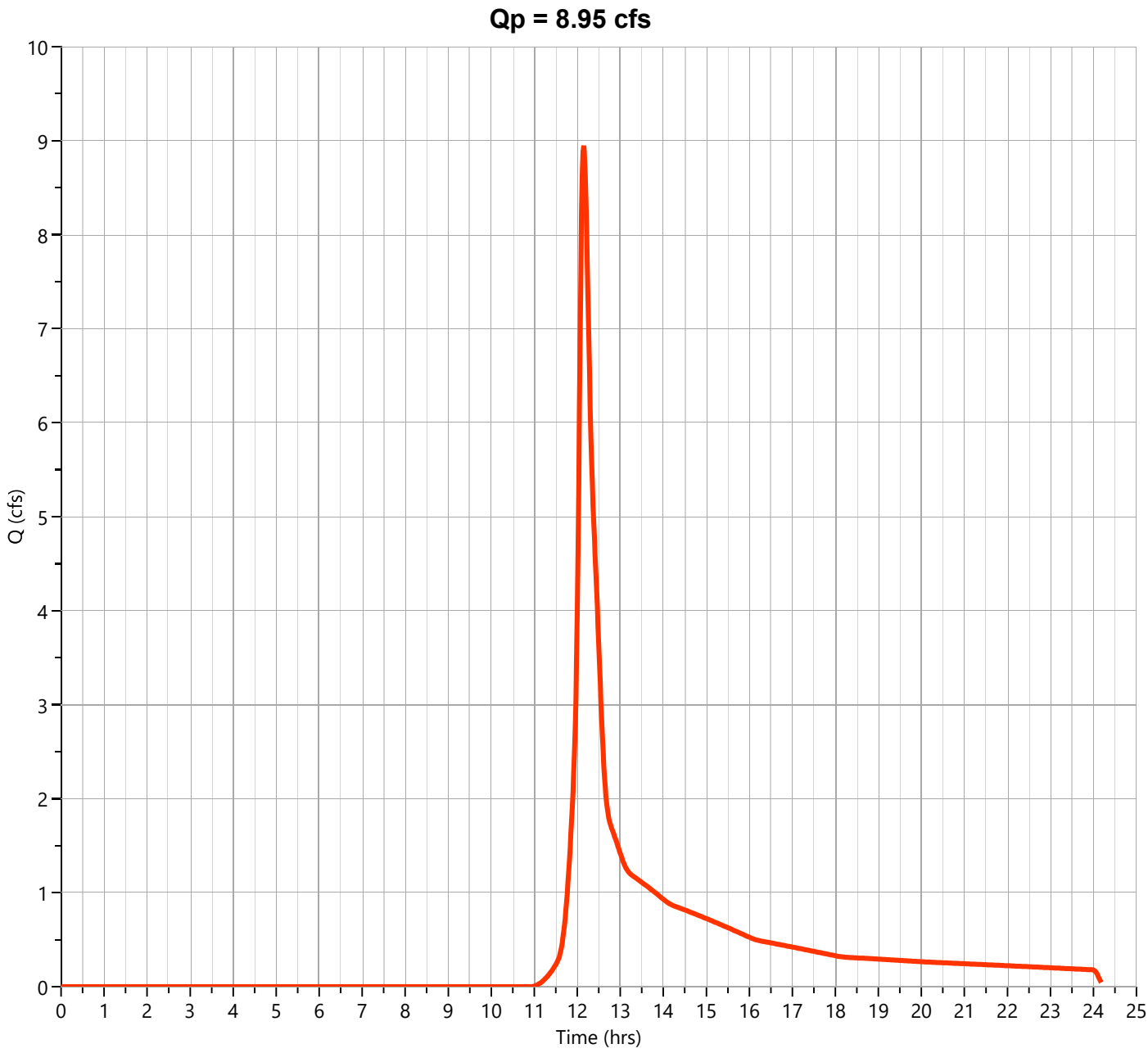
Hydrology Studio v 3.0.0.24

07-17-2024

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.946 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.15 hrs
Time Interval	= 1 min	Runoff Volume	= 35,086 cuft
Drainage Area	= 12.36 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

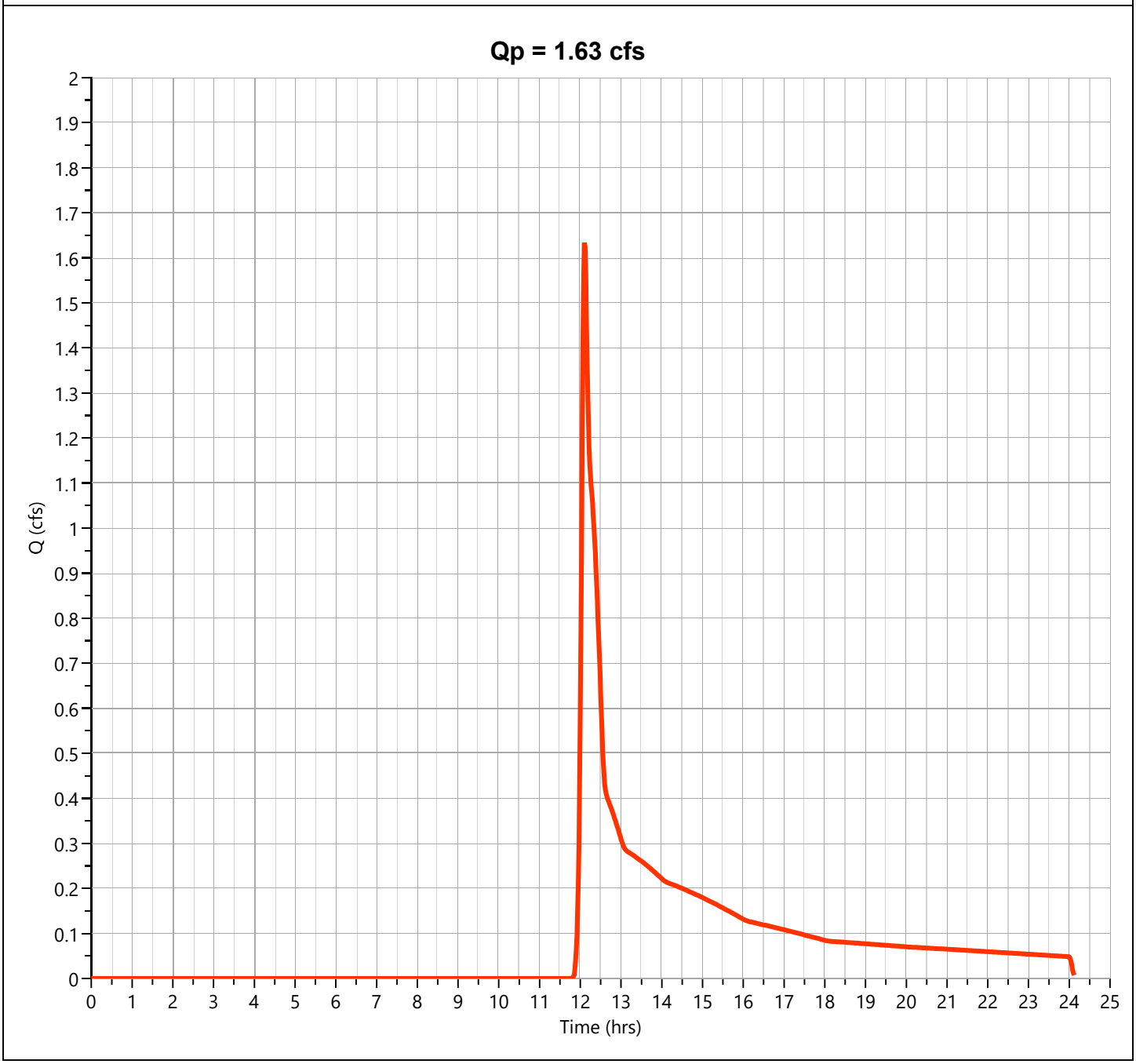
Hydrology Studio v 3.0.0.24

07-17-2024

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.633 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 7,214 cuft
Drainage Area	= 4.73 ac	Curve Number	= 67
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

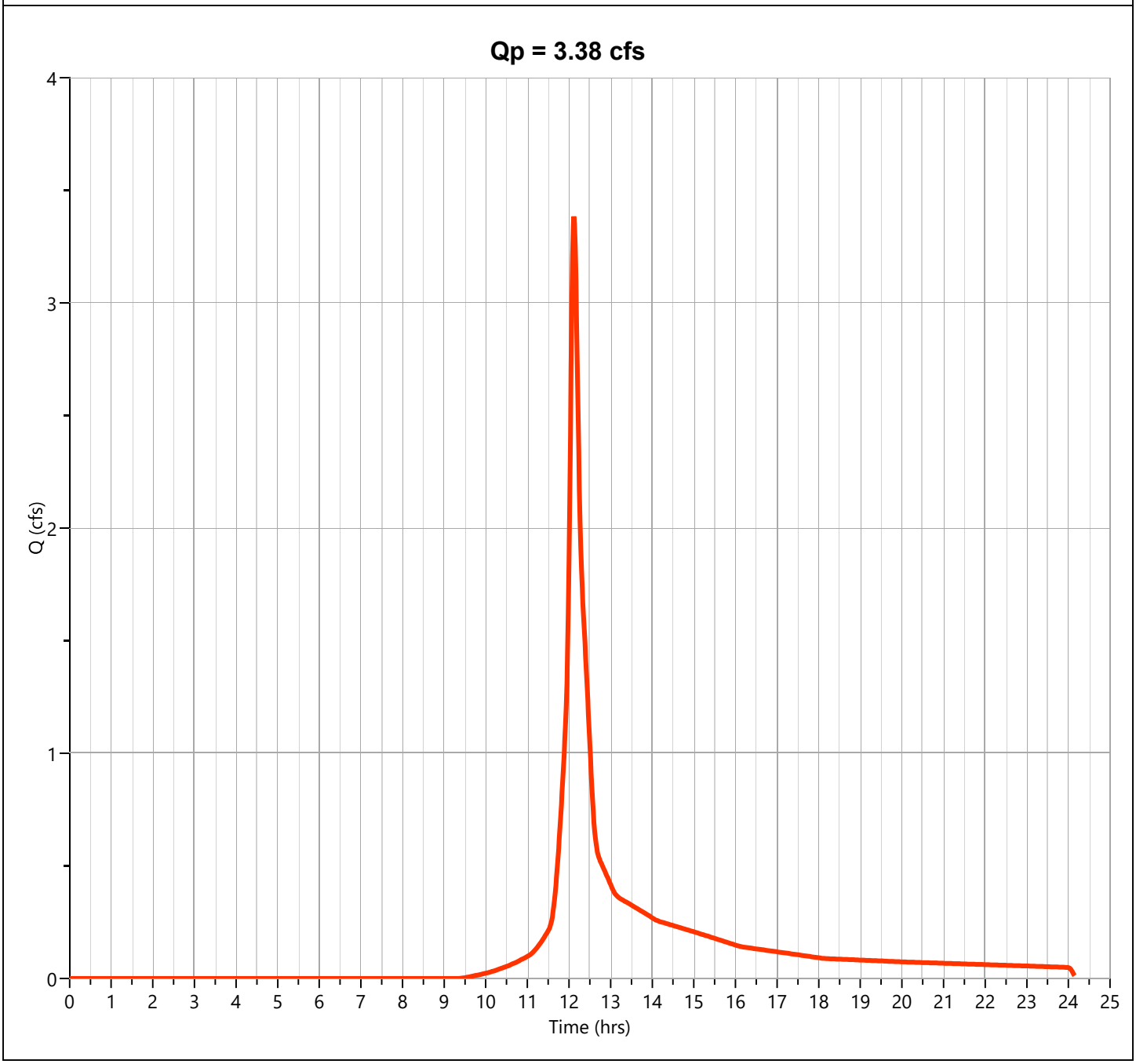
Hydrology Studio v 3.0.0.24

07-17-2024

EX-C

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.384 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 11,702 cuft
Drainage Area	= 2.81 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

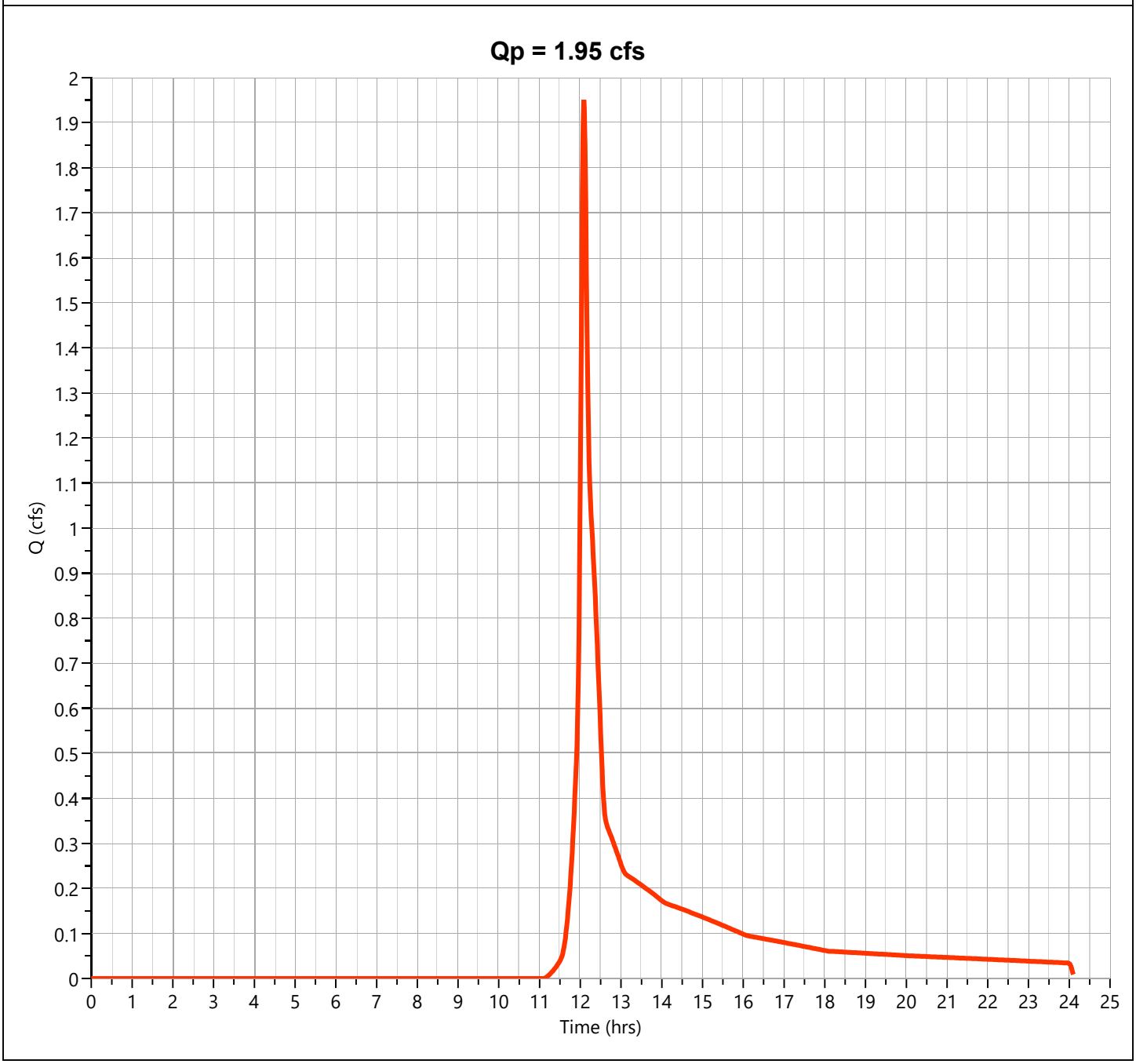
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.950 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 6,565 cuft
Drainage Area	= 2.43 ac	Curve Number	= 75
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

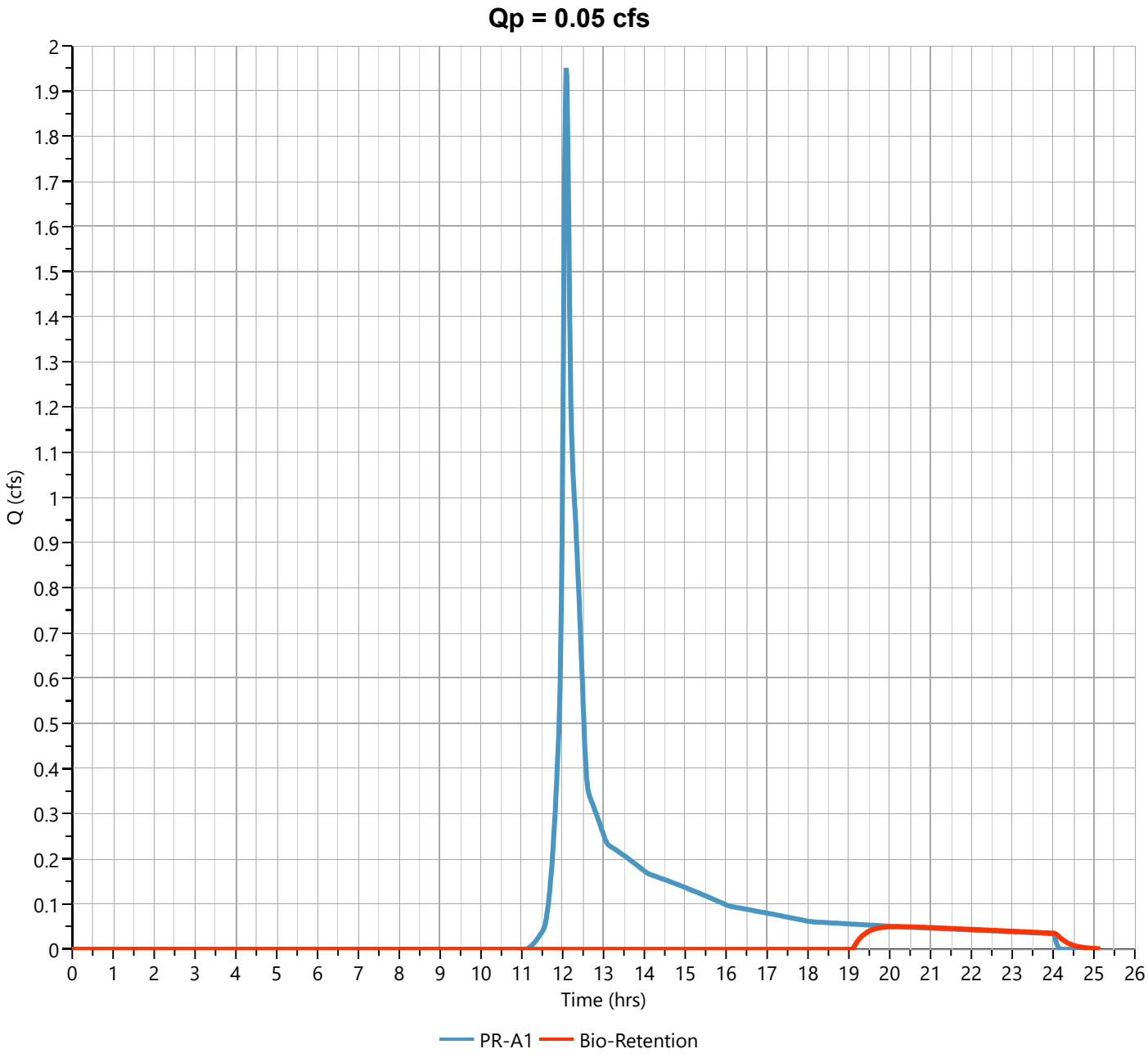
Bio-Retention

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 0.050 cfs
Storm Frequency	= 1-yr	Time to Peak	= 20.20 hrs
Time Interval	= 1 min	Hydrograph Volume	= 793 cuft
Inflow Hydrograph	= 4 - PR-A1	Max. Elevation	= 383.00 ft
Pond Name	= Bioretention	Max. Storage	= 15,987 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 382.50 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 7.17 hrs



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

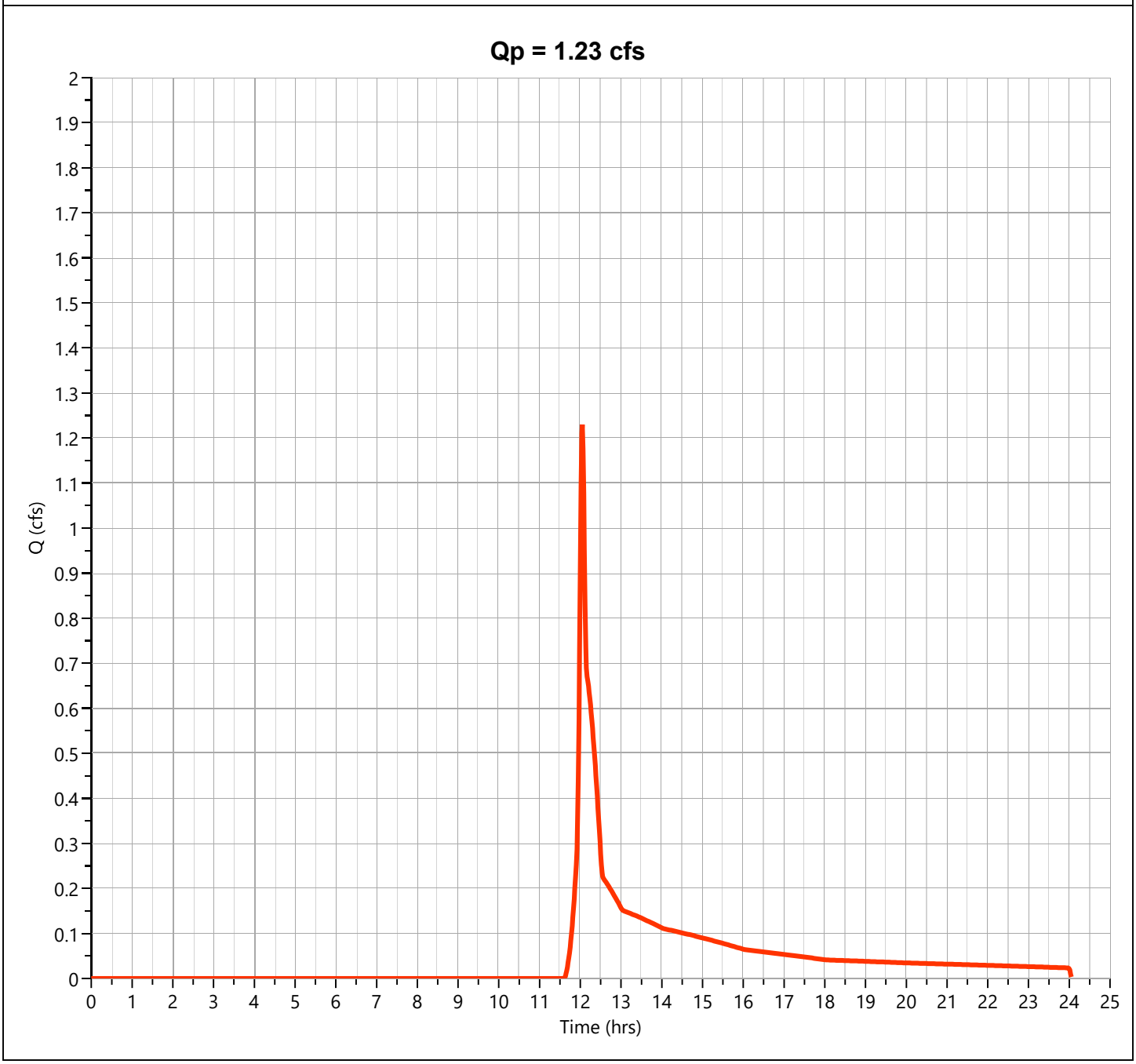
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A2

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.229 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.05 hrs
Time Interval	= 1 min	Runoff Volume	= 4,022 cuft
Drainage Area	= 2.14 ac	Curve Number	= 71
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

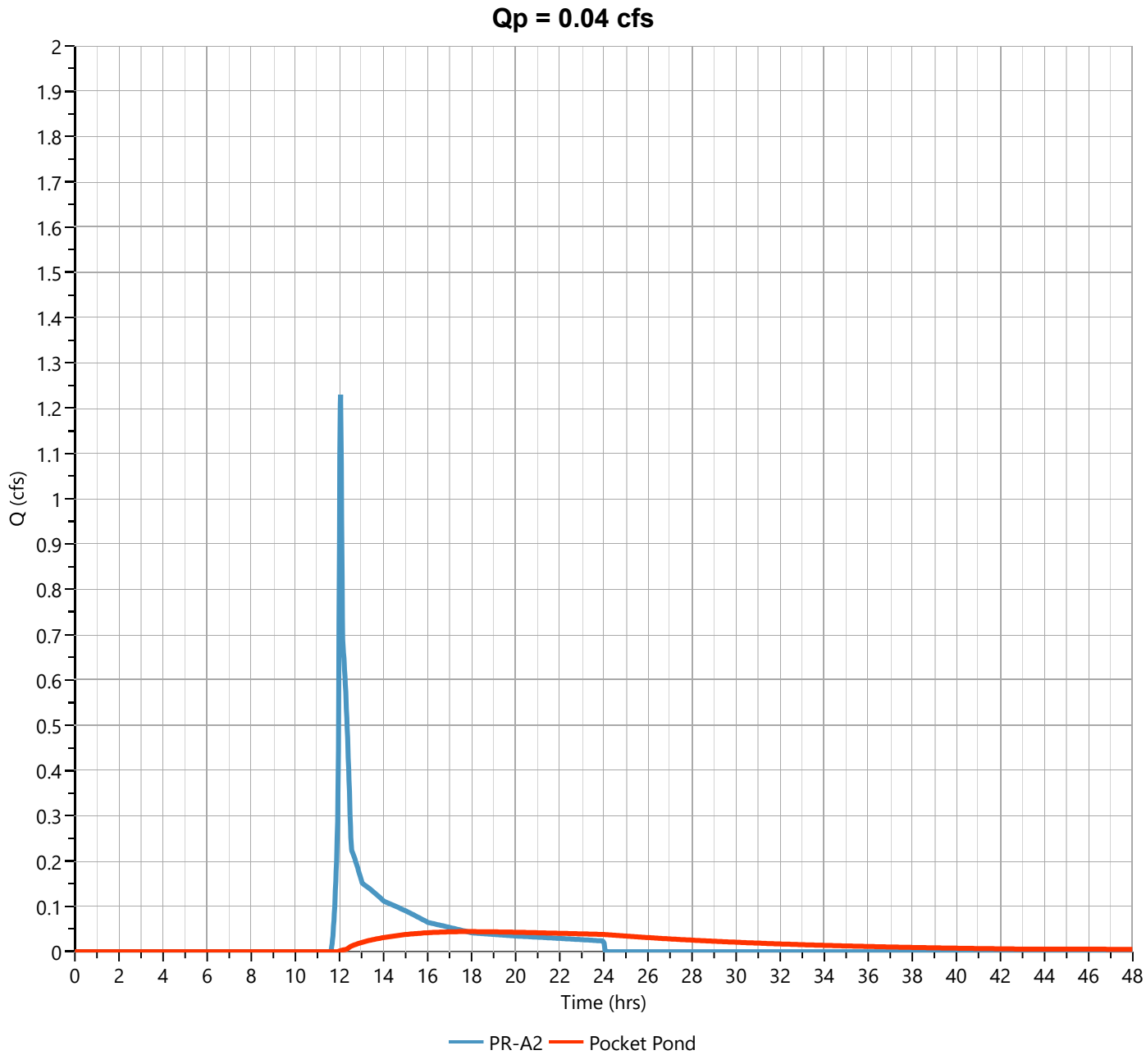
Pocket Pond

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 0.044 cfs
Storm Frequency	= 1-yr	Time to Peak	= 17.78 hrs
Time Interval	= 1 min	Hydrograph Volume	= 2,860 cuft
Inflow Hydrograph	= 6 - PR-A2	Max. Elevation	= 383.41 ft
Pond Name	= Pocket Pond	Max. Storage	= 25,494 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 383.20 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 9.61 hrs



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

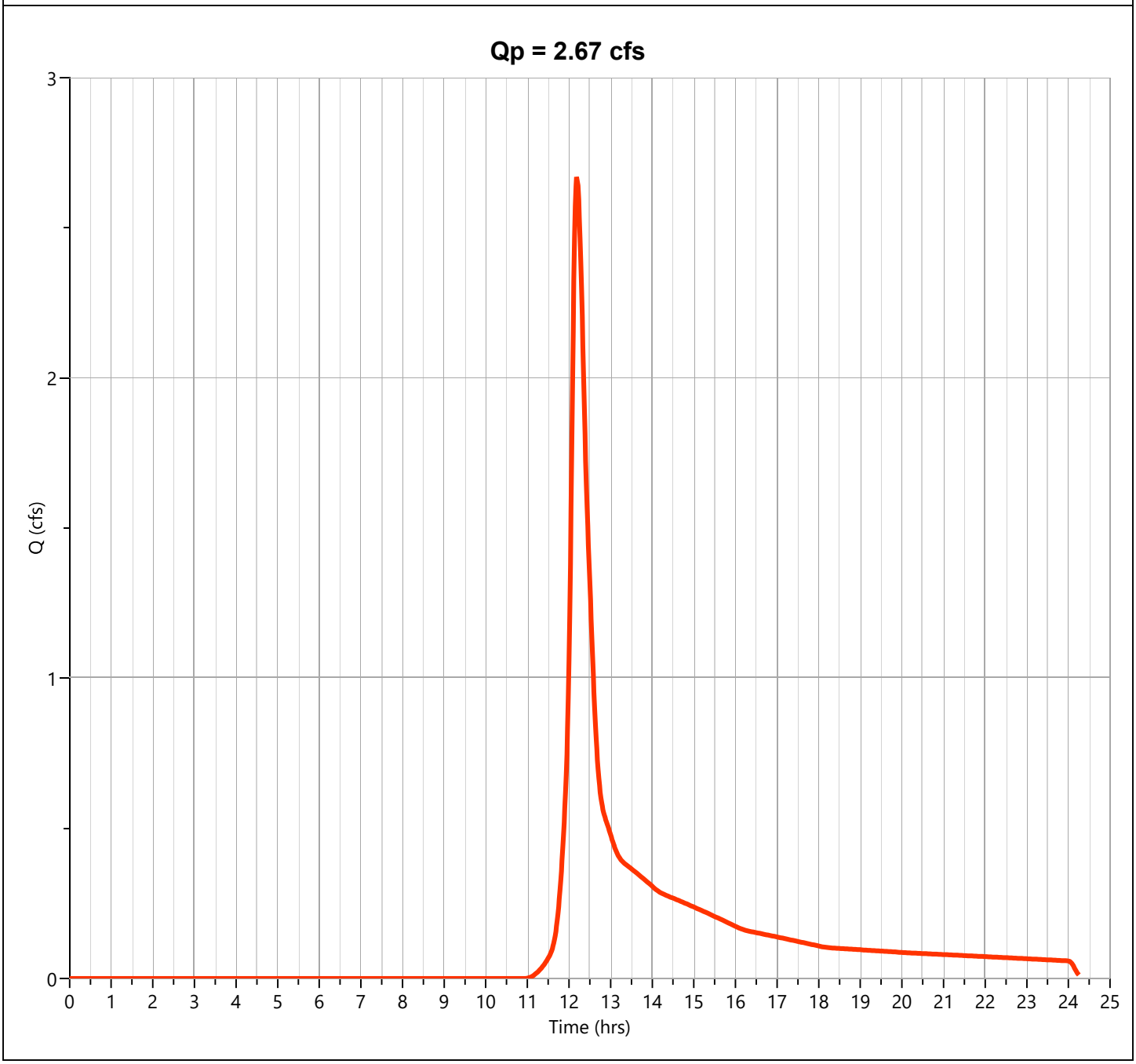
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3a

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.669 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.18 hrs
Time Interval	= 1 min	Runoff Volume	= 11,406 cuft
Drainage Area	= 4.09 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

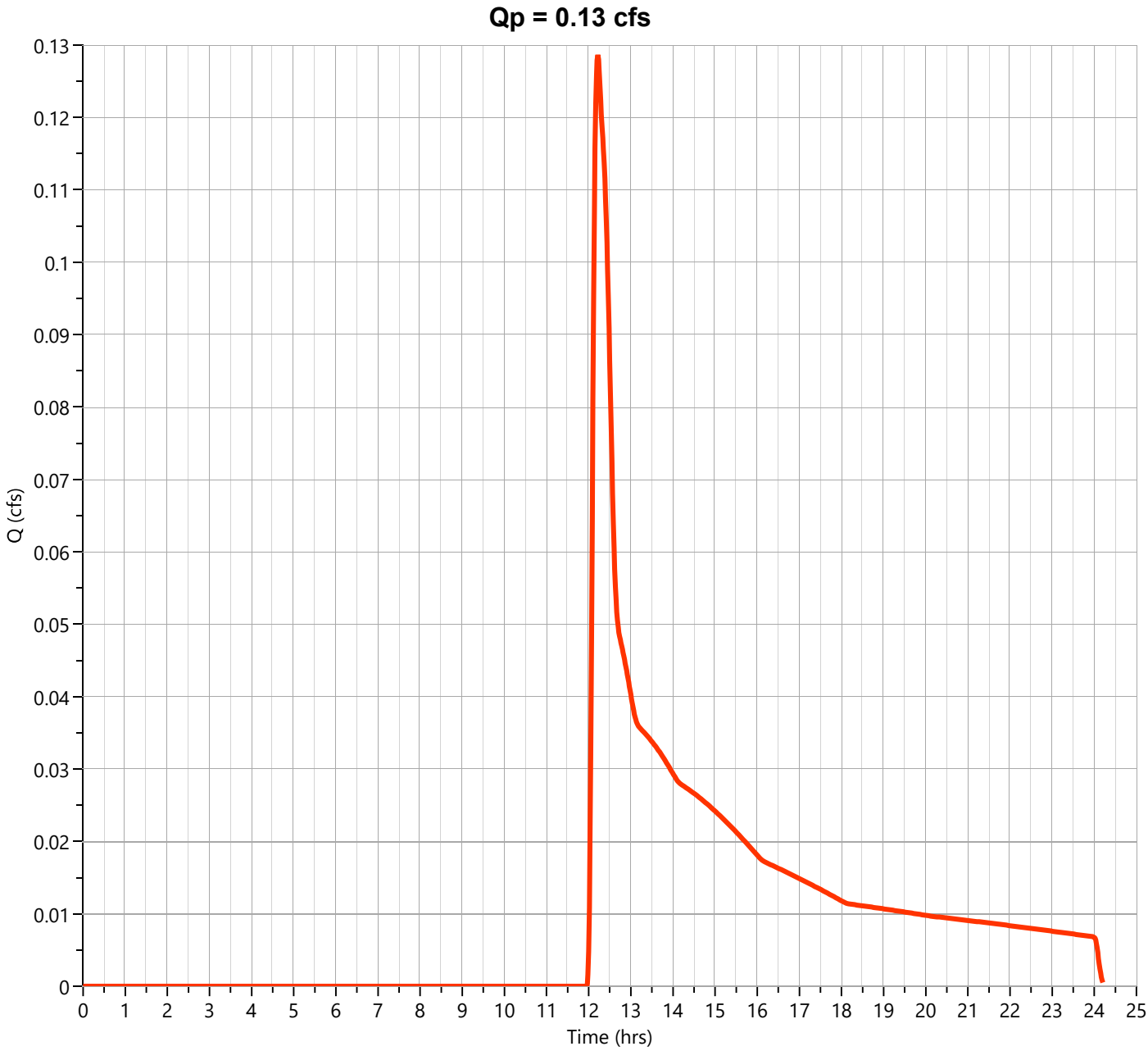
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3b

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.129 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Runoff Volume	= 870 cuft
Drainage Area	= 0.84 ac	Curve Number	= 63
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

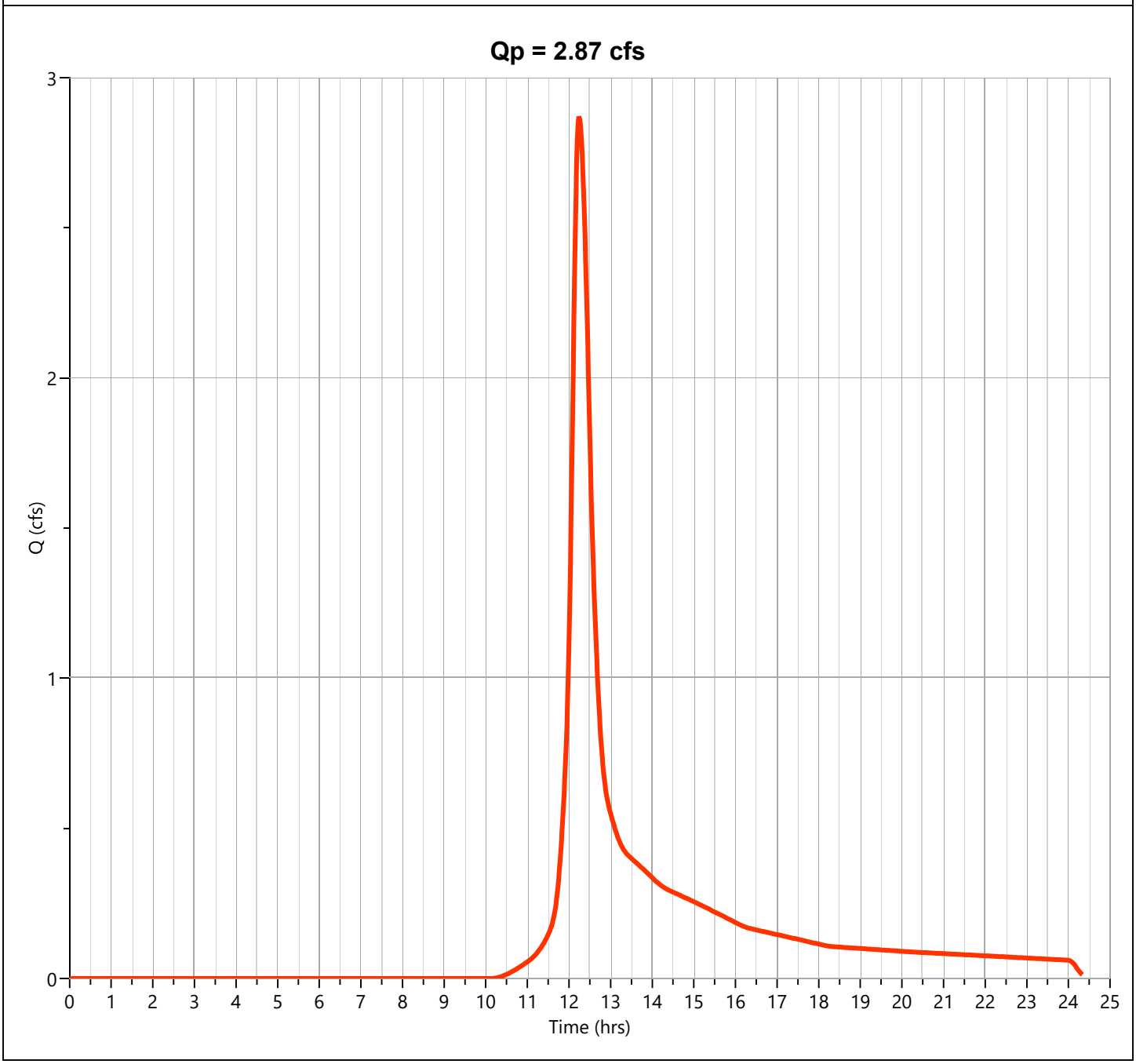
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4a

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.873 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.25 hrs
Time Interval	= 1 min	Runoff Volume	= 13,101 cuft
Drainage Area	= 3.71 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 19.2 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

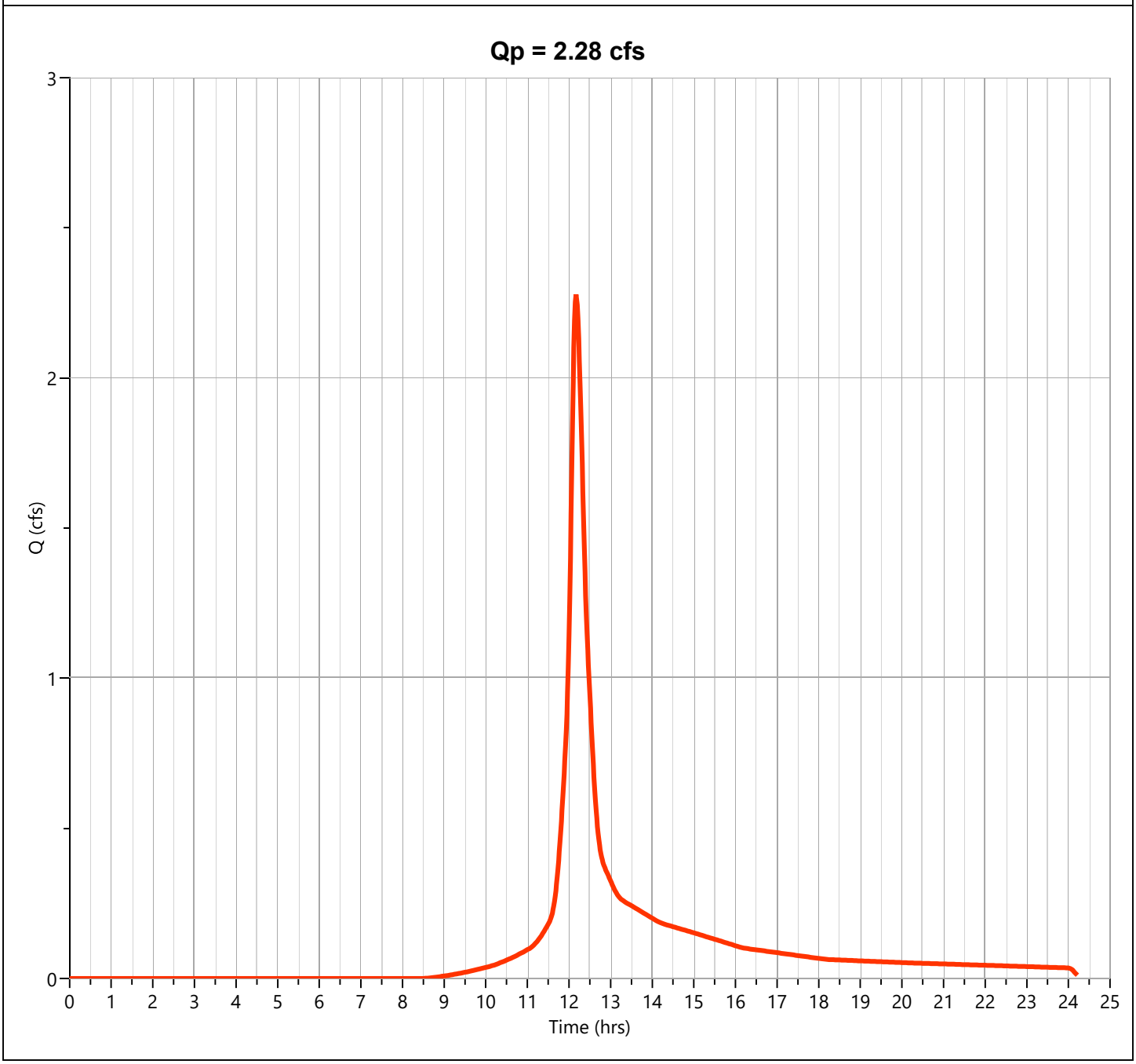
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4b

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.277 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.17 hrs
Time Interval	= 1 min	Runoff Volume	= 9,013 cuft
Drainage Area	= 1.85 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 14.4 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

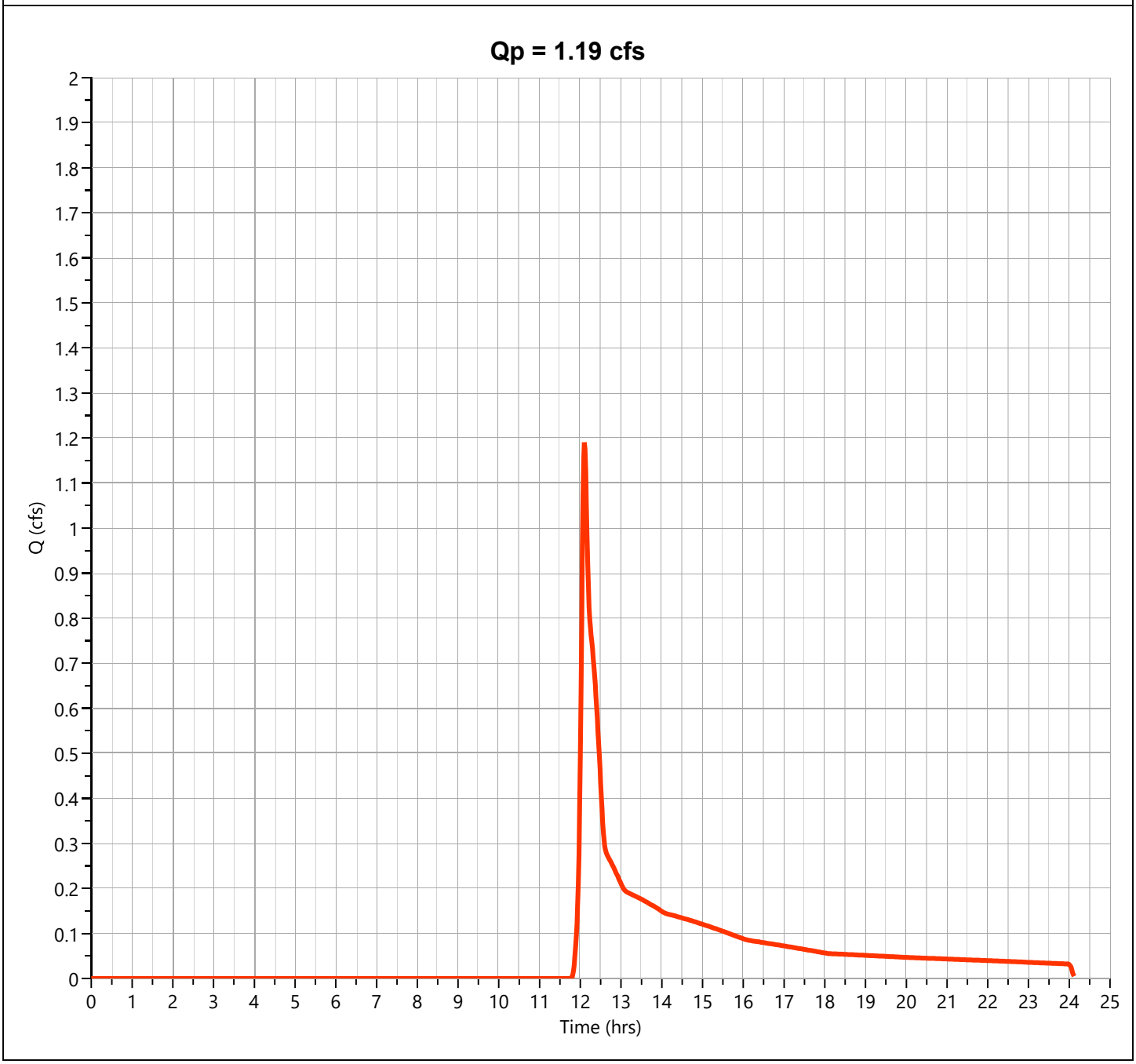
Hydrology Studio v 3.0.0.24

07-17-2024

PR-B

Hyd. No. 12

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.190 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 4,957 cuft
Drainage Area	= 3.0 ac	Curve Number	= 68
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

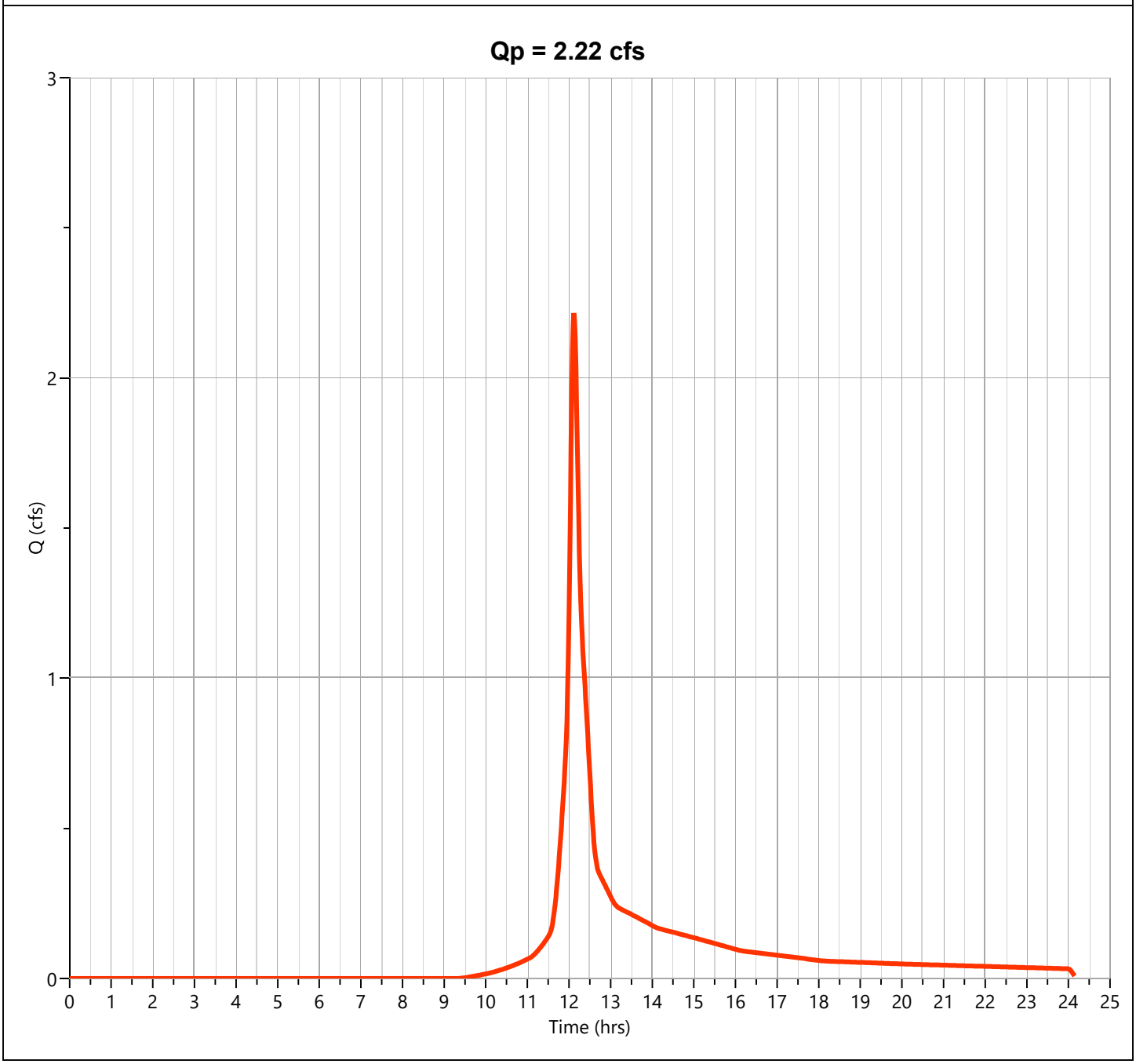
Hydrology Studio v 3.0.0.24

07-17-2024

PR-C

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.216 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 7,663 cuft
Drainage Area	= 1.84 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

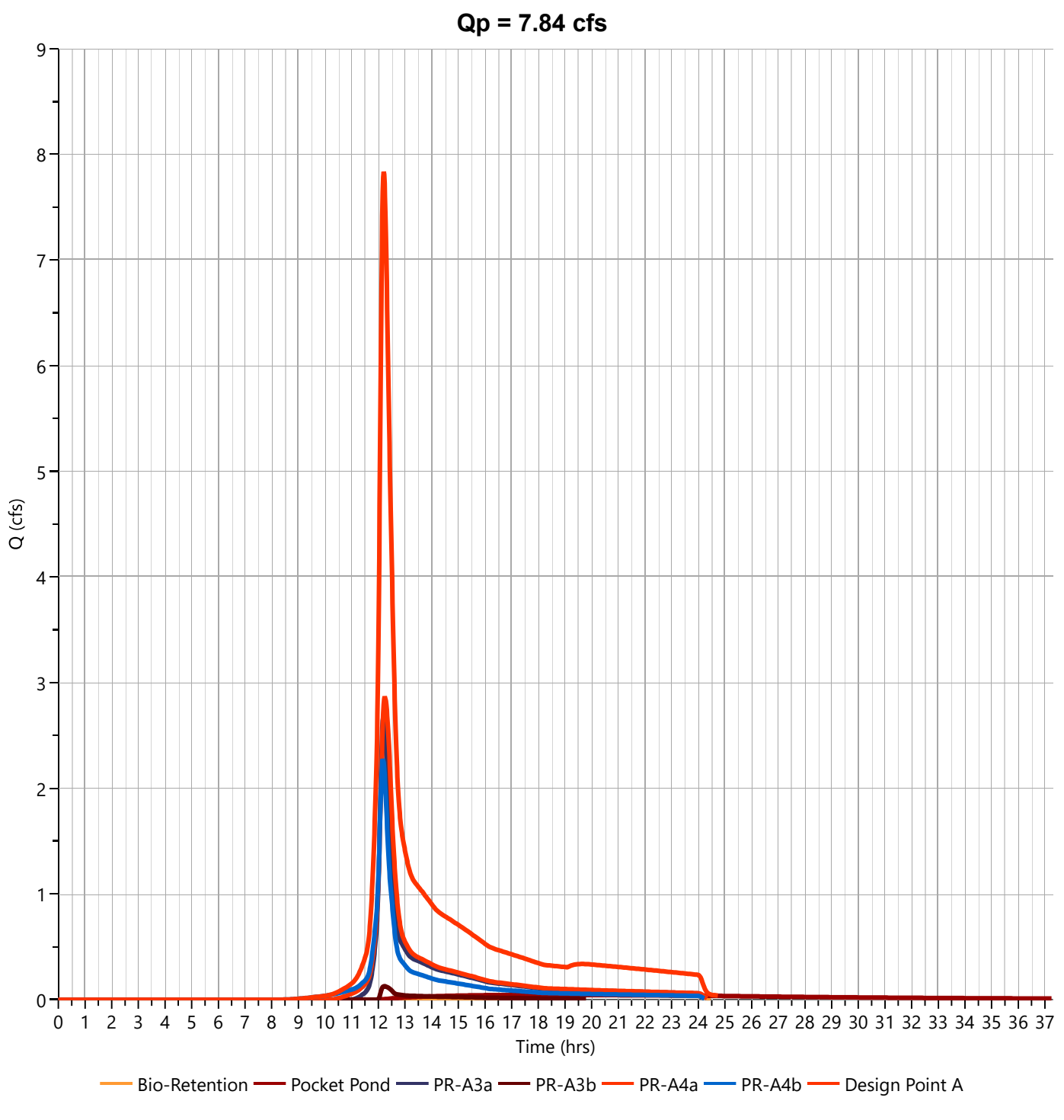
Hydrology Studio v 3.0.0.24

07-17-2024

Design Point A

Hyd. No. 14

Hydrograph Type	= Junction	Peak Flow	= 7.836 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.20 hrs
Time Interval	= 1 min	Hydrograph Volume	= 38,045 cuft
Inflow Hydrographs	= 5, 7, 8, 9, 10, 11	Total Contrib. Area	= 10.49 ac



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APPENDIX 8

10-YEAR DESIGN STORM HYDROGRAPHS

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Hydrograph 10-yr Summary

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	28.50	12.13	103,865	----		
2	NRCS Runoff	EX-B	8.735	12.08	28,043	----		
3	NRCS Runoff	EX-C	8.570	12.12	29,439	----		
4	NRCS Runoff	PR-A1	6.451	12.08	19,943	----		
5	Pond Route	Bio-Retention	2.267	12.38	14,171	4	383.14	17,927
6	NRCS Runoff	PR-A2	4.937	12.03	13,675	----		
7	Pond Route	Pocket Pond	0.169	16.10	12,115	6	383.89	31,513
8	NRCS Runoff	PR-A3a	8.506	12.17	33,767	----		
9	NRCS Runoff	PR-A3b	1.068	12.13	3,995	----		
10	NRCS Runoff	PR-A4a	7.985	12.23	35,225	----		
11	NRCS Runoff	PR-A4b	5.338	12.17	21,285	----		
12	NRCS Runoff	PR-B	5.834	12.08	18,590	----		
13	NRCS Runoff	PR-C	5.612	12.12	19,277	----		
14	Junction	Design Point A	23.85	12.20	120,559	5, 7, 8, 9, 10, 11		

Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

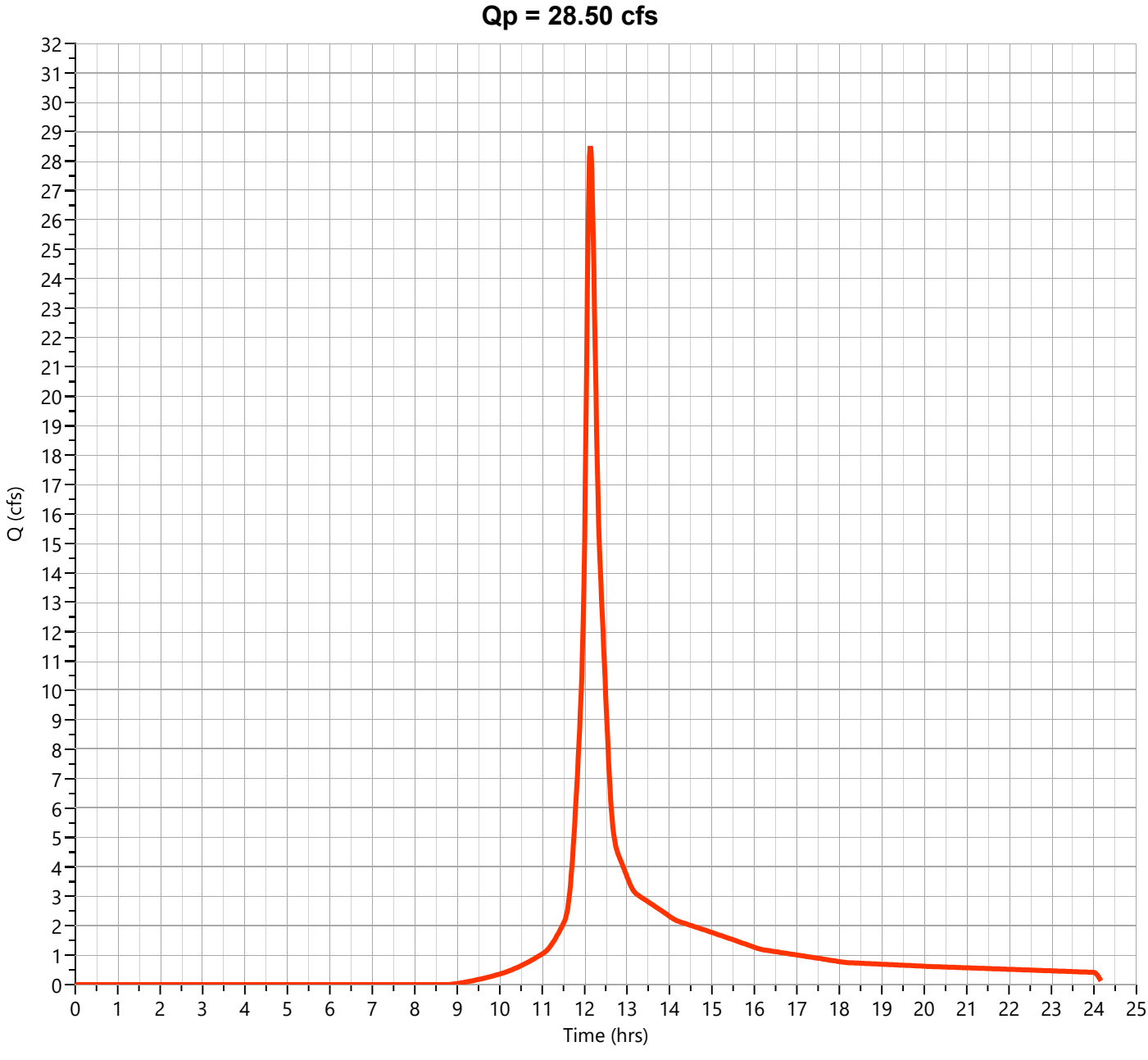
Hydrology Studio v 3.0.0.24

07-17-2024

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 28.50 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 103,865 cuft
Drainage Area	= 12.36 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

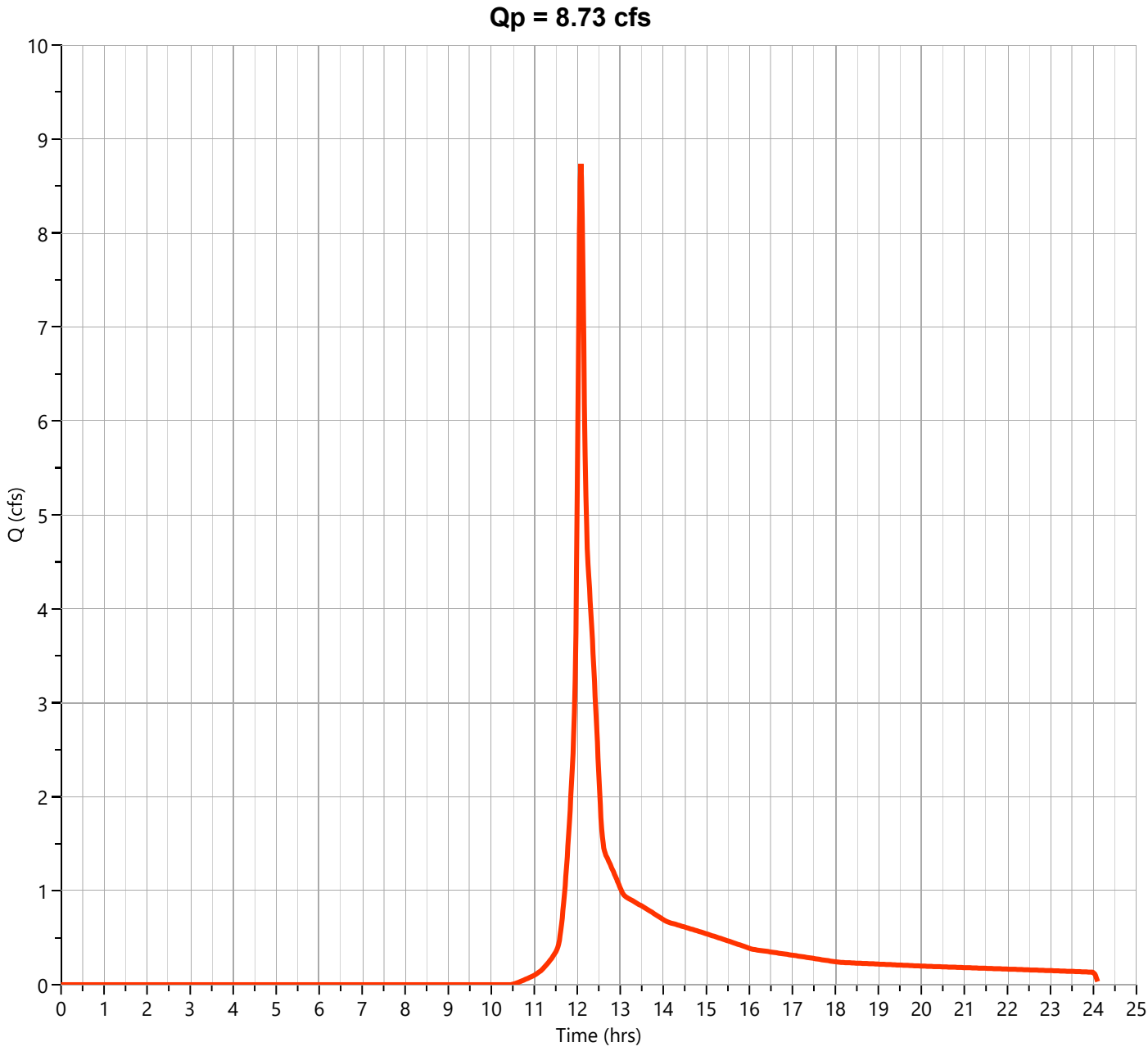
Hydrology Studio v 3.0.0.24

07-17-2024

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.735 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 28,043 cuft
Drainage Area	= 4.73 ac	Curve Number	= 67
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

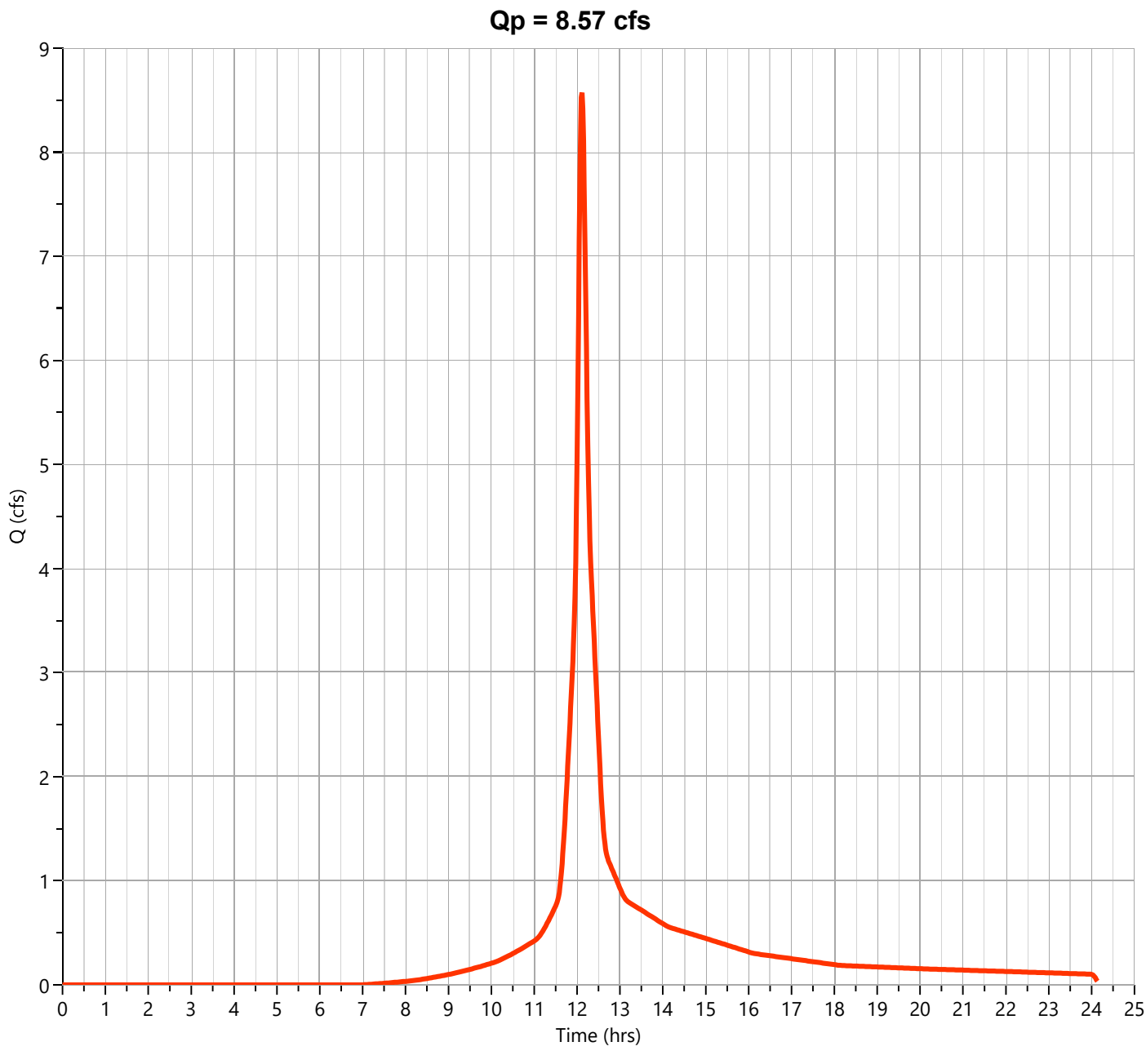
Hydrology Studio v 3.0.0.24

07-17-2024

EX-C

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.570 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 29,439 cuft
Drainage Area	= 2.81 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

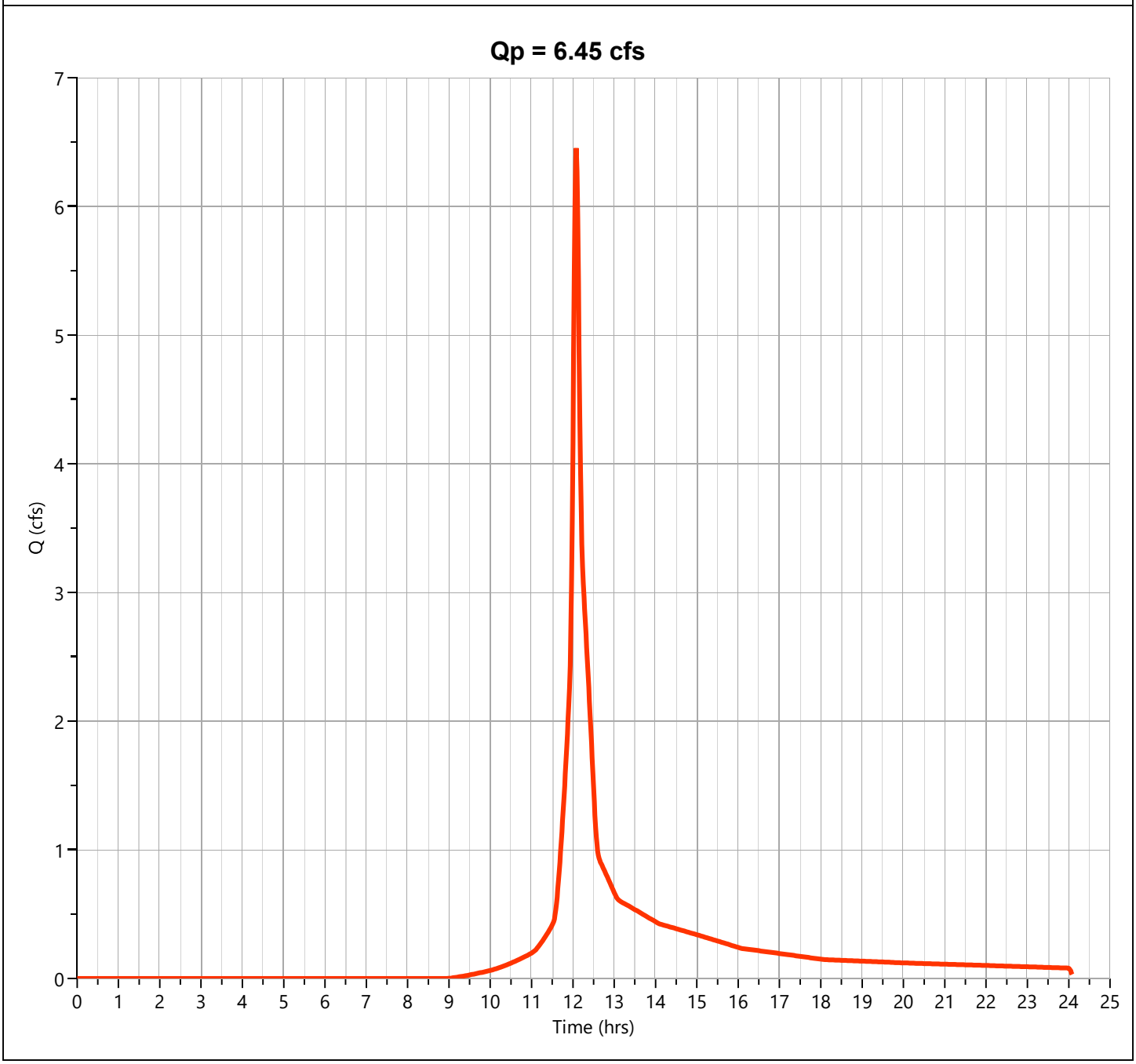
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.451 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 19,943 cuft
Drainage Area	= 2.43 ac	Curve Number	= 75
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

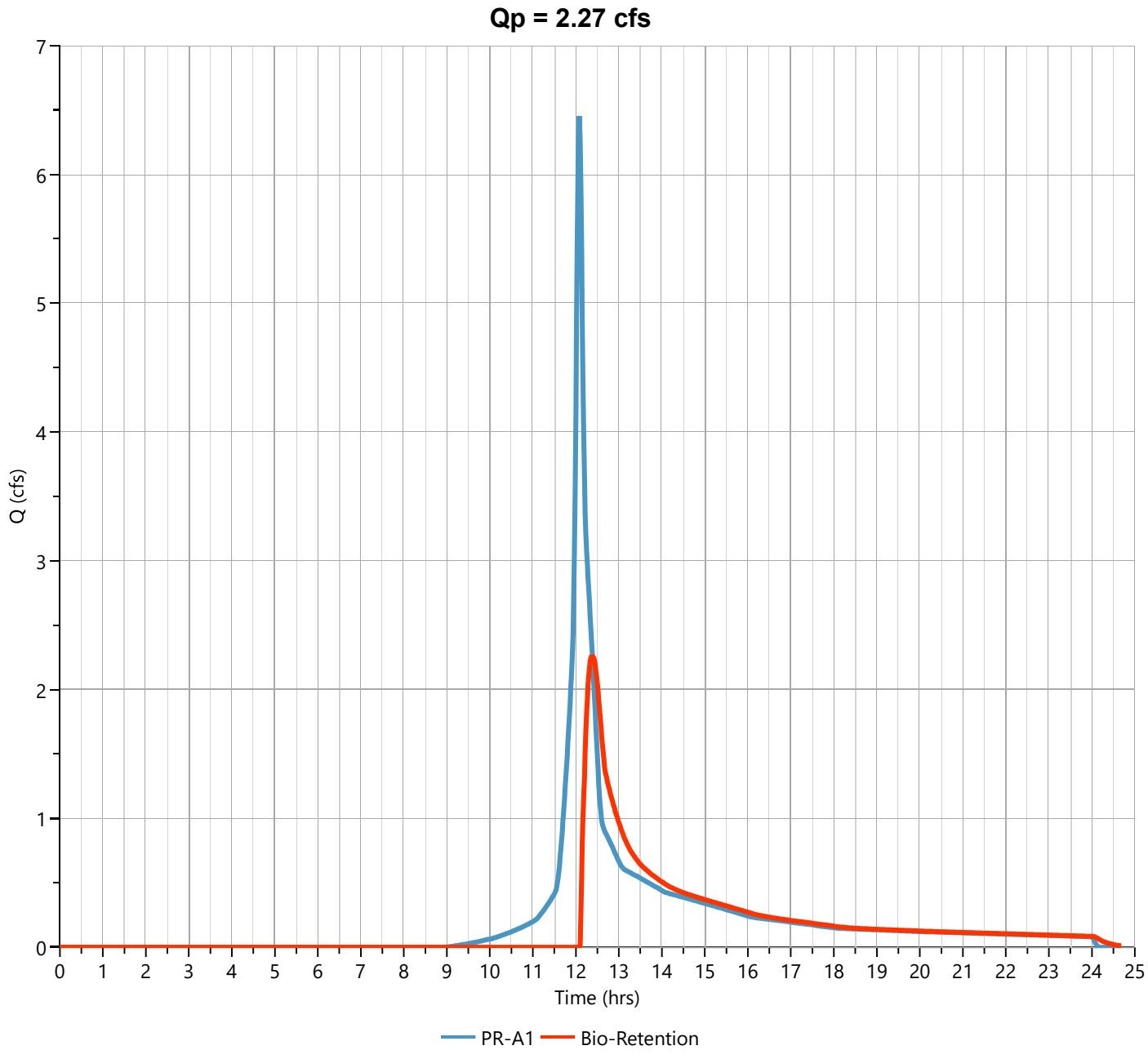
Bio-Retention

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 2.267 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.38 hrs
Time Interval	= 1 min	Hydrograph Volume	= 14,171 cuft
Inflow Hydrograph	= 4 - PR-A1	Max. Elevation	= 383.14 ft
Pond Name	= Bioretention	Max. Storage	= 17,927 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 382.50 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.18 hrs



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

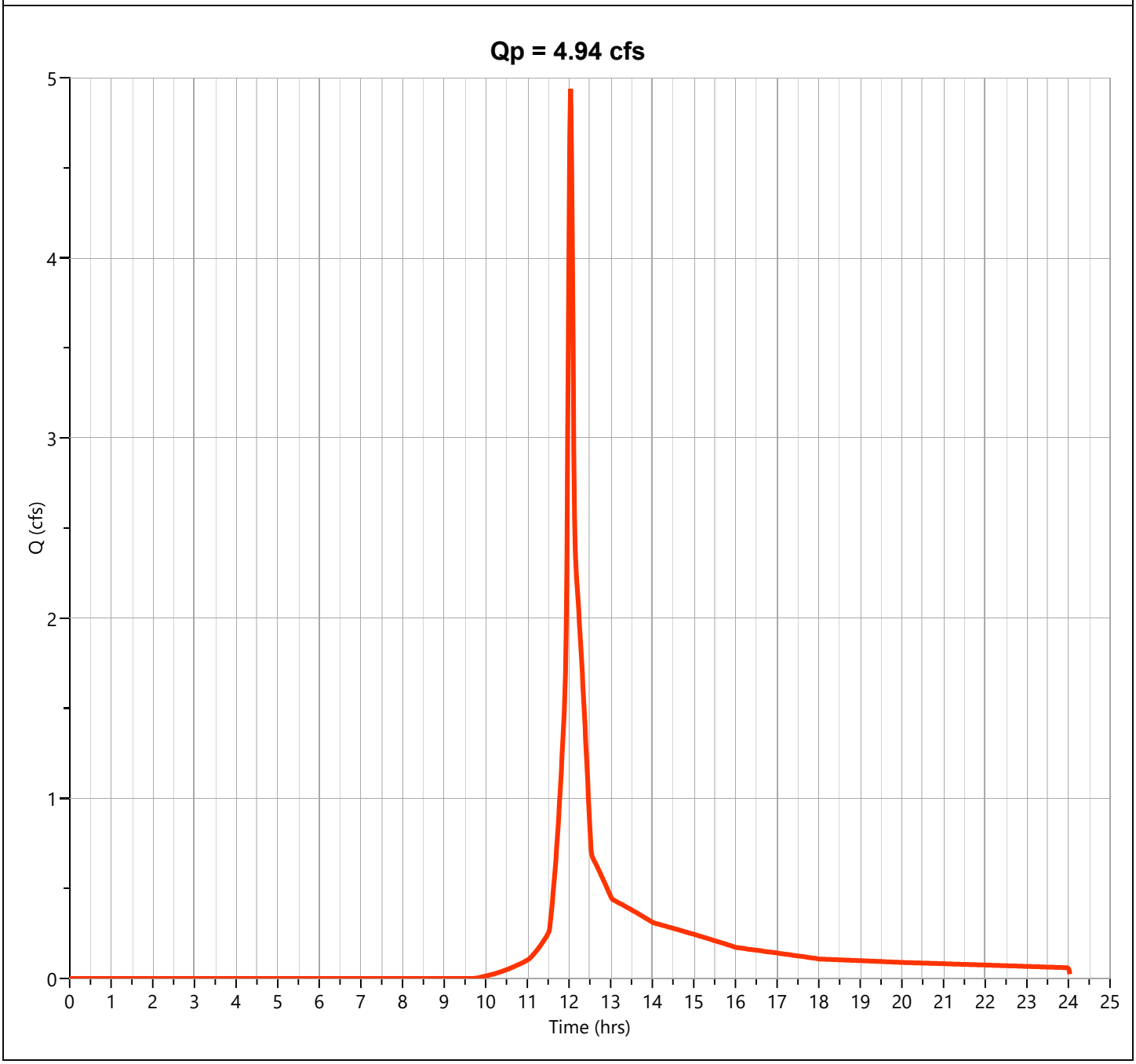
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A2

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.937 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.03 hrs
Time Interval	= 1 min	Runoff Volume	= 13,675 cuft
Drainage Area	= 2.14 ac	Curve Number	= 71
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

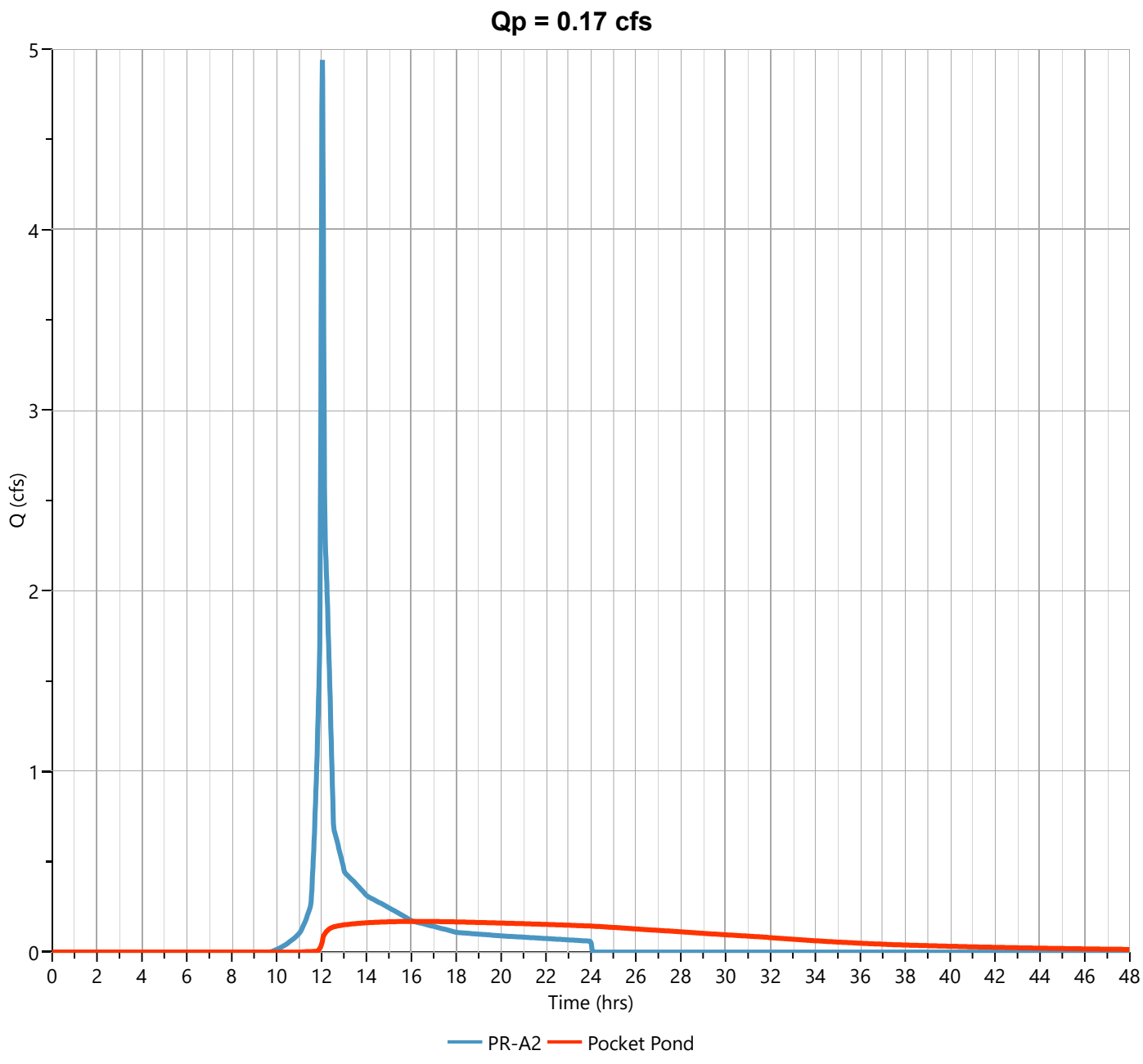
Pocket Pond

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 0.169 cfs
Storm Frequency	= 10-yr	Time to Peak	= 16.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 12,115 cuft
Inflow Hydrograph	= 6 - PR-A2	Max. Elevation	= 383.89 ft
Pond Name	= Pocket Pond	Max. Storage	= 31,513 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 383.20 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 9.87 hrs



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

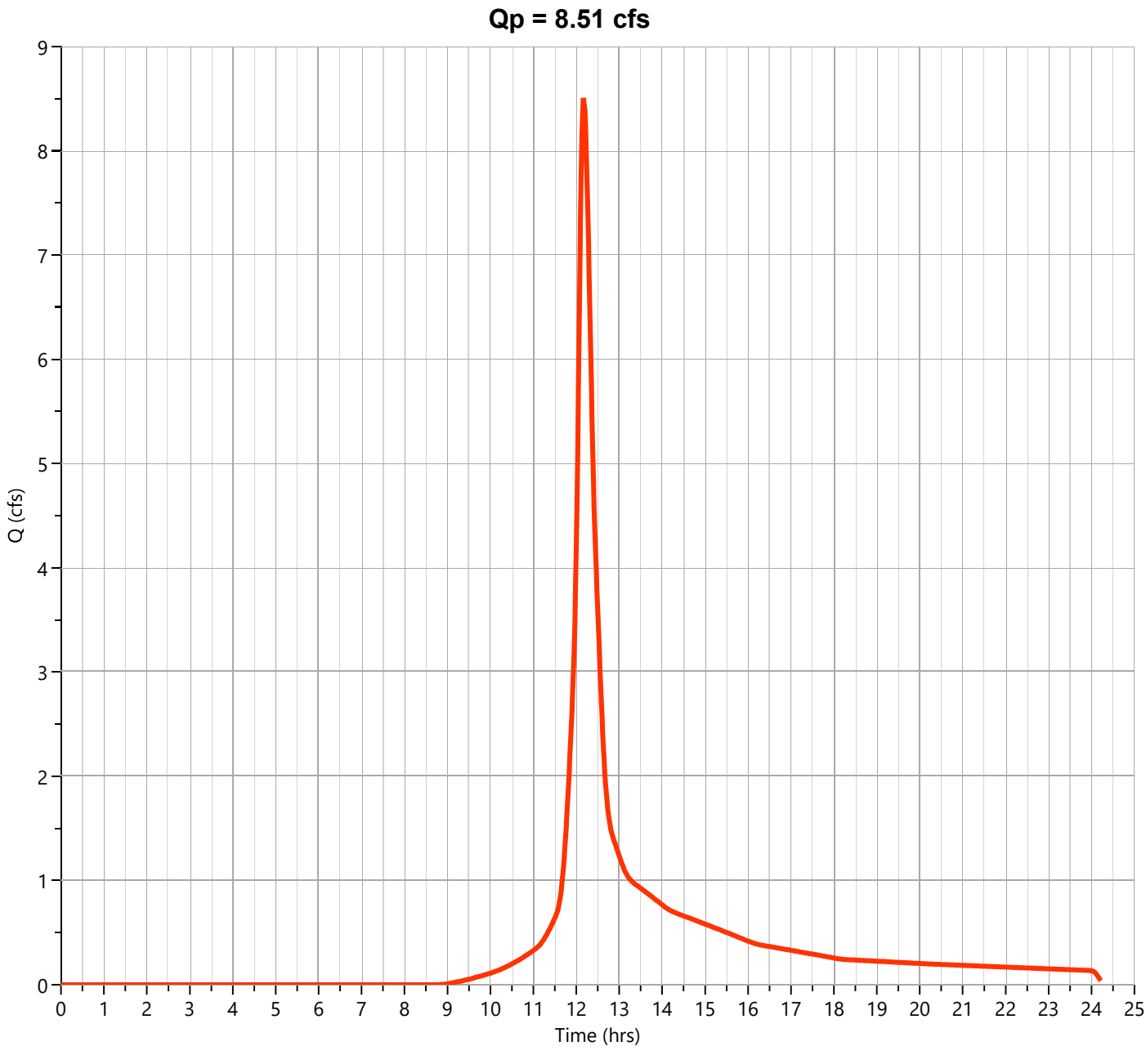
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3a

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.506 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
Time Interval	= 1 min	Runoff Volume	= 33,767 cuft
Drainage Area	= 4.09 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

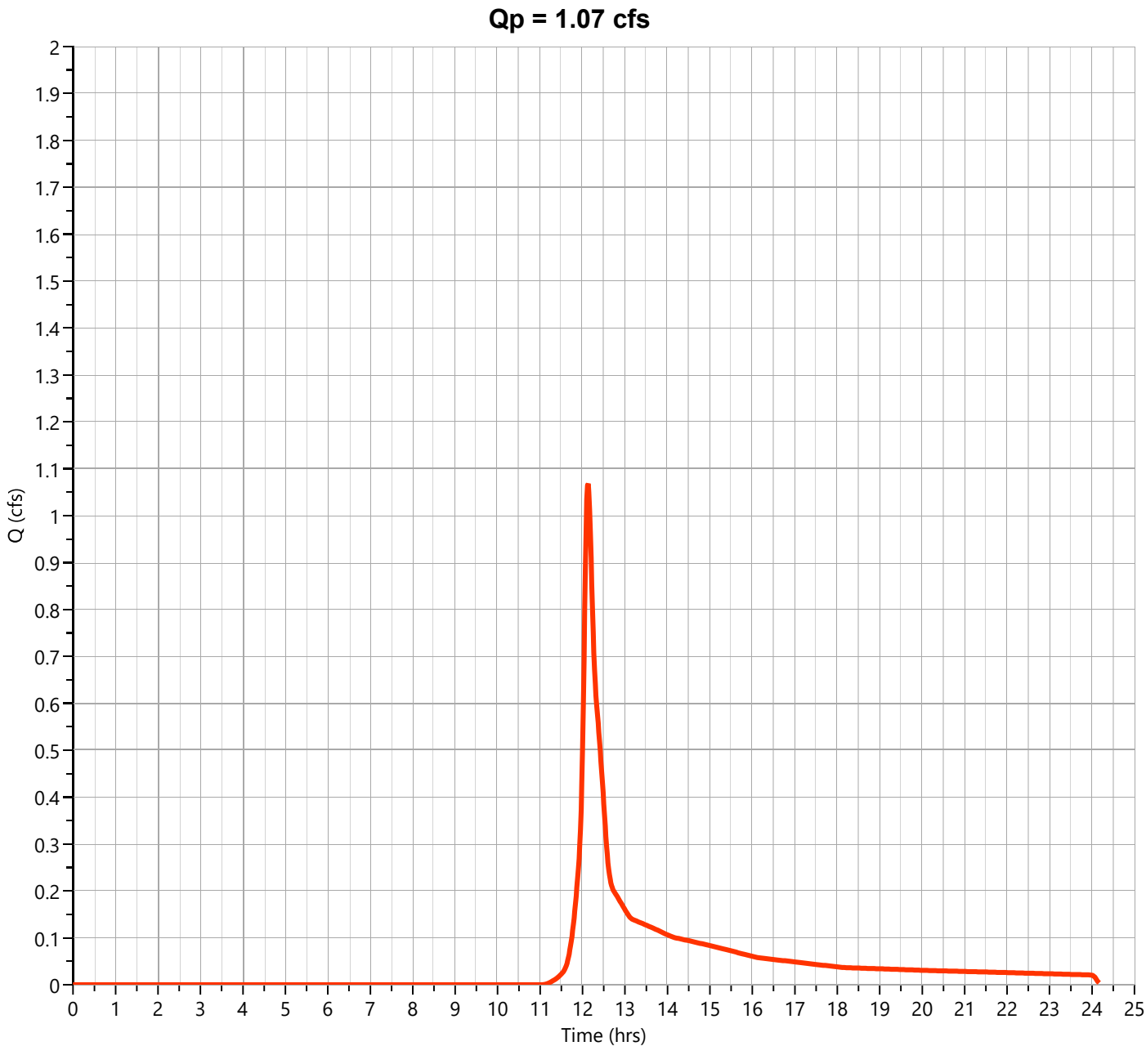
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3b

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.068 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 3,995 cuft
Drainage Area	= 0.84 ac	Curve Number	= 63
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

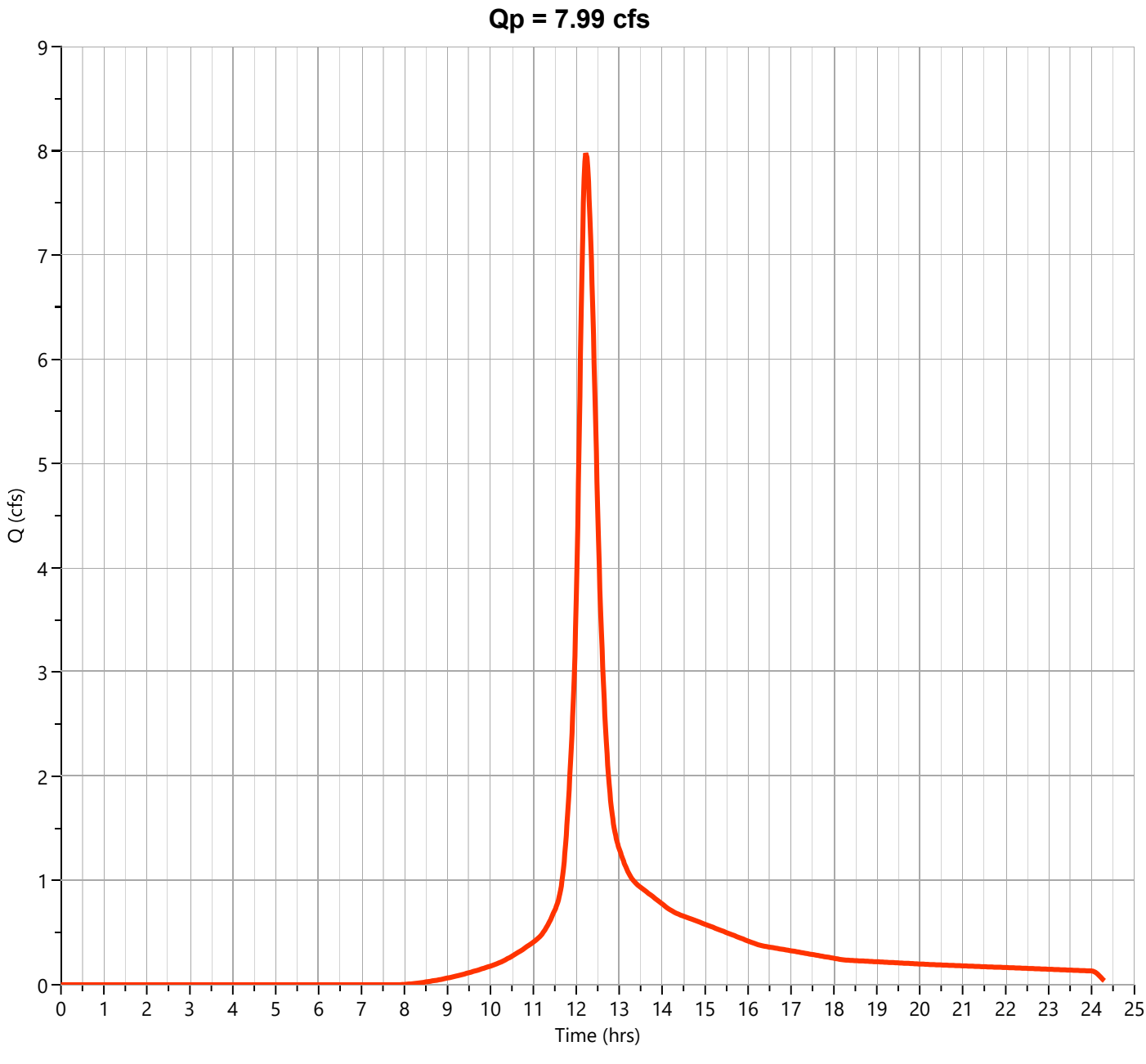
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4a

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 7.985 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 35,225 cuft
Drainage Area	= 3.71 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 19.2 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

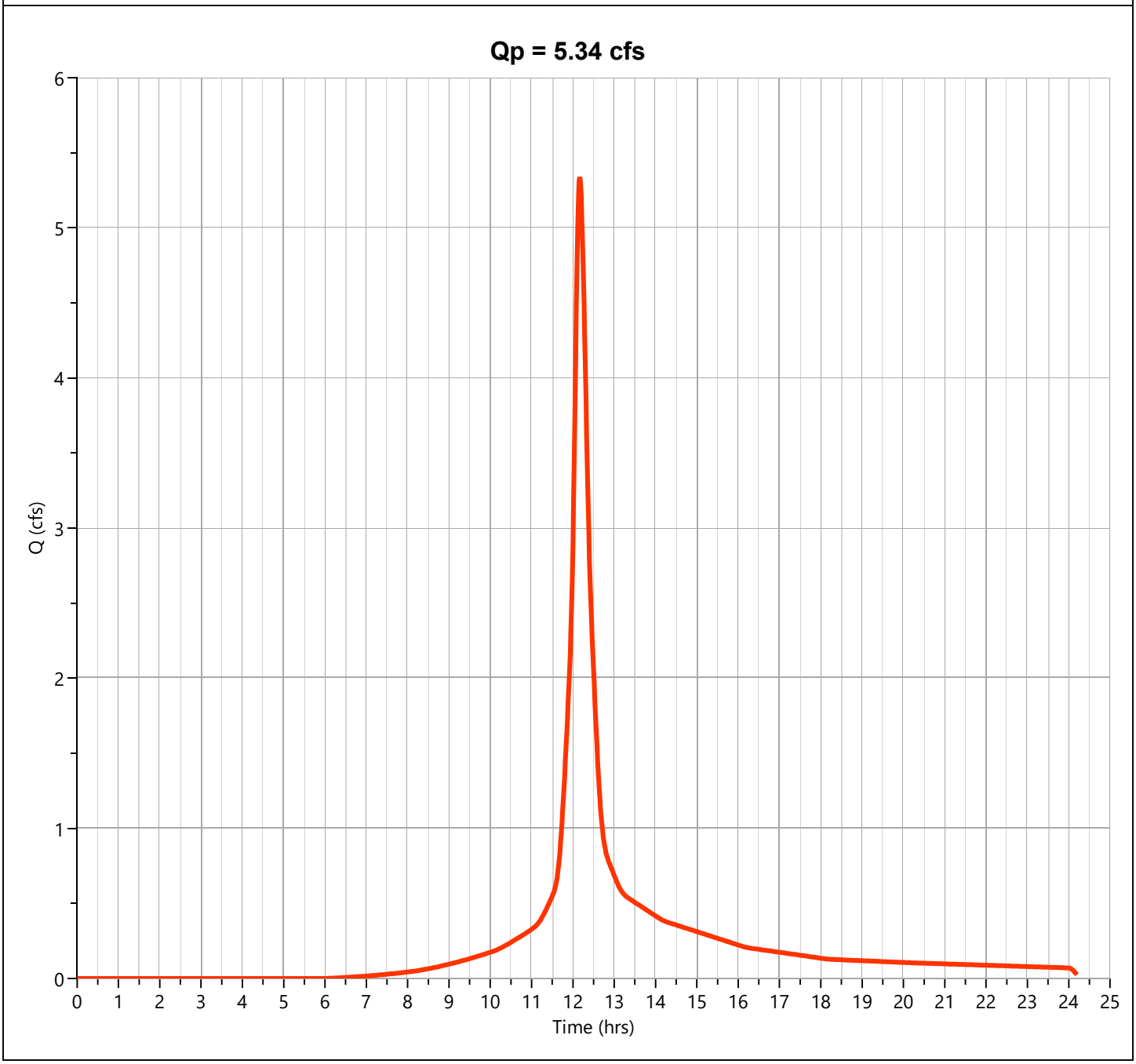
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4b

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.338 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
Time Interval	= 1 min	Runoff Volume	= 21,285 cuft
Drainage Area	= 1.85 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 14.4 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

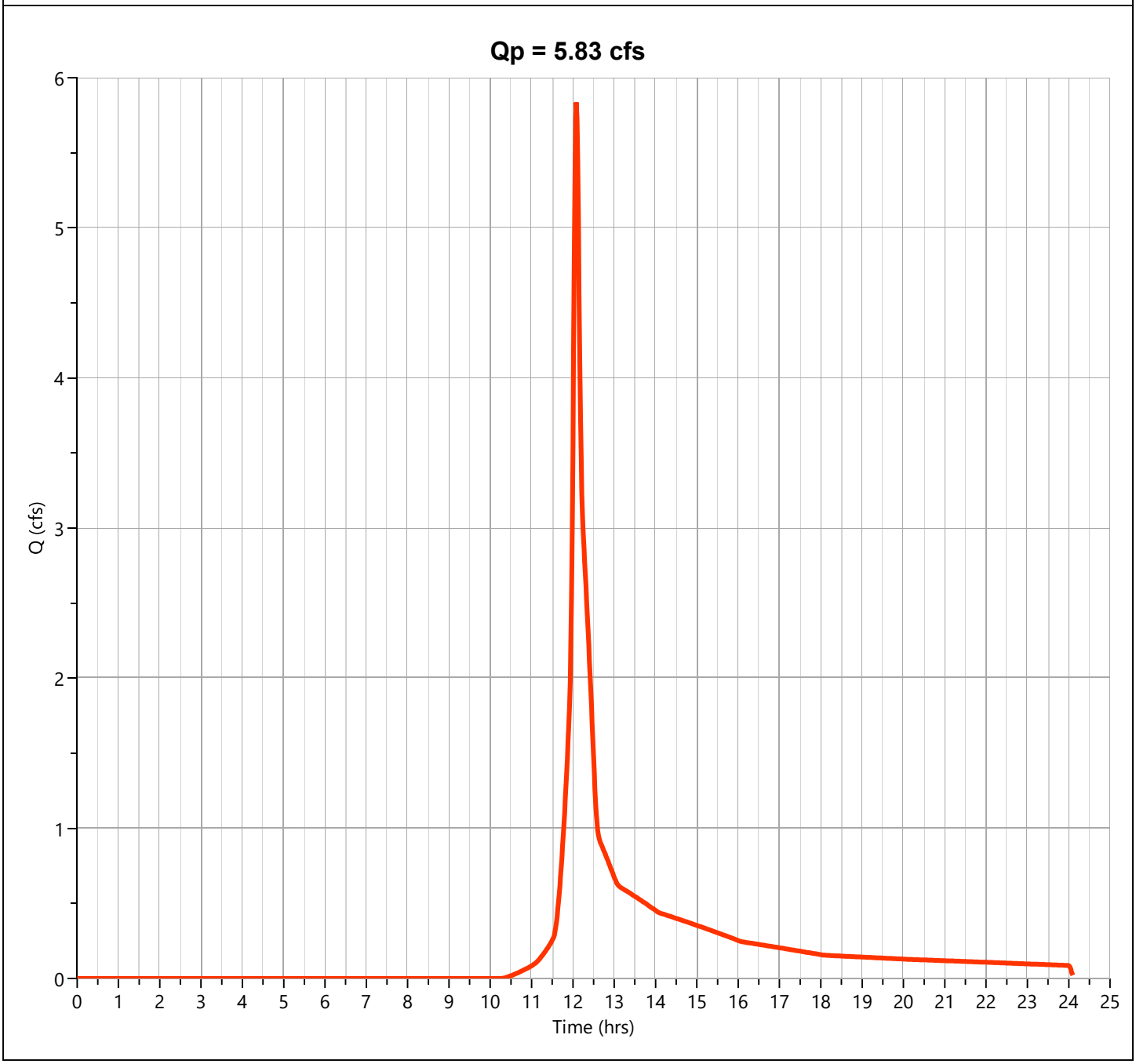
Hydrology Studio v 3.0.0.24

07-17-2024

PR-B

Hyd. No. 12

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.834 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 18,590 cuft
Drainage Area	= 3.0 ac	Curve Number	= 68
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

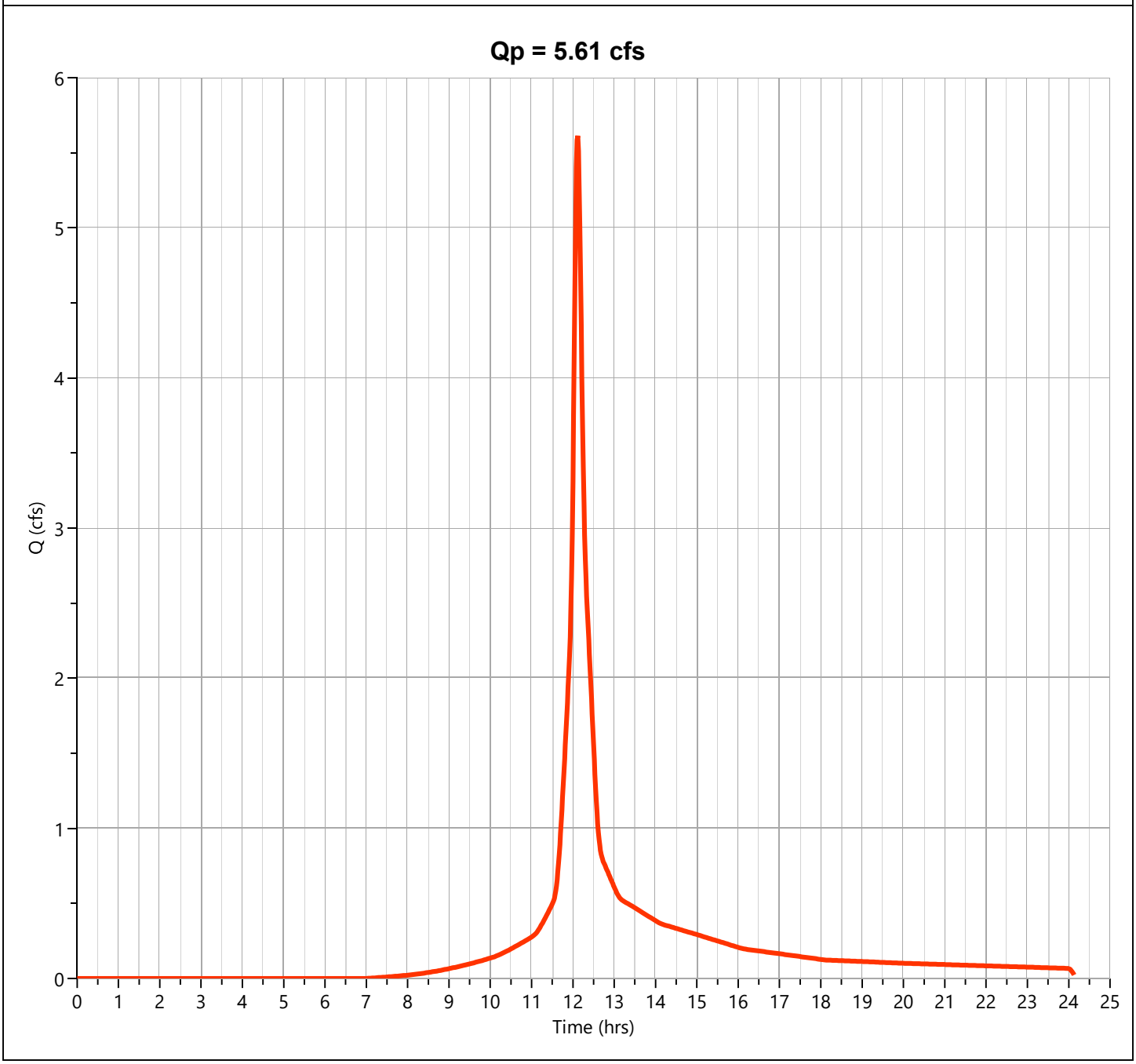
Hydrology Studio v 3.0.0.24

07-17-2024

PR-C

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.612 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 19,277 cuft
Drainage Area	= 1.84 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

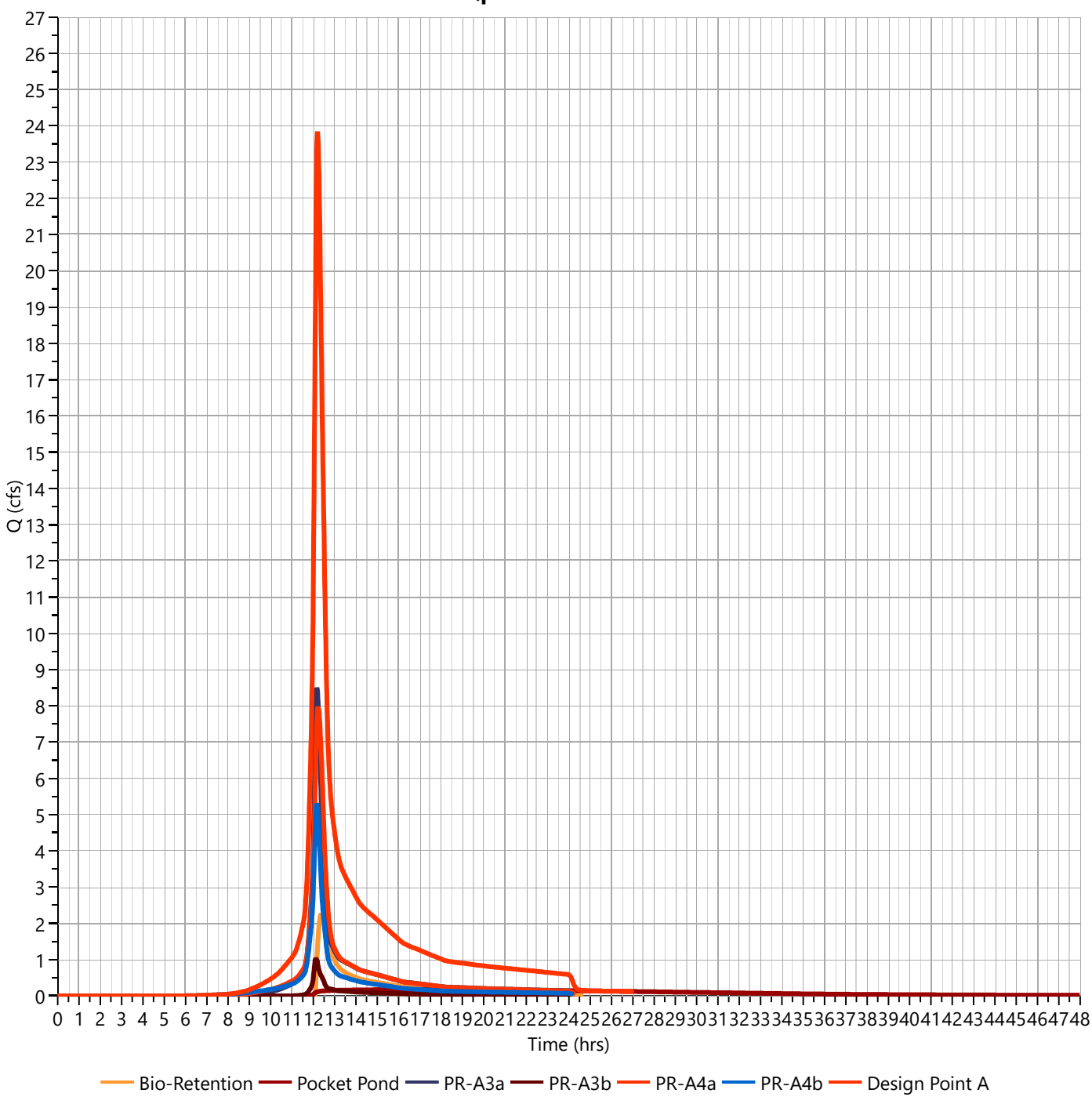
Hydrology Studio v 3.0.0.24

07-17-2024

Design Point A

Hyd. No. 14

Hydrograph Type	= Junction	Peak Flow	= 23.85 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.20 hrs
Time Interval	= 1 min	Hydrograph Volume	= 120,559 cuft
Inflow Hydrographs	= 5, 7, 8, 9, 10, 11	Total Contrib. Area	= 10.49 ac



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APPENDIX 9

100-YEAR DESIGN STORM HYDROGRAPHS

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Hydrograph 100-yr Summary

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	66.96	12.13	244,712	----		
2	NRCS Runoff	EX-B	24.74	12.08	76,218	----		
3	NRCS Runoff	EX-C	17.87	12.12	63,116	----		
4	NRCS Runoff	PR-A1	15.36	12.08	47,672	----		
5	Pond Route	Bio-Retention	9.048	12.18	41,900	4	383.51	23,384
6	NRCS Runoff	PR-A2	12.78	12.03	34,745	----		
7	Pond Route	Pocket Pond	4.605	12.25	32,876	6	384.22	36,362
8	NRCS Runoff	PR-A3a	20.03	12.17	79,556	----		
9	NRCS Runoff	PR-A3b	3.405	12.12	11,716	----		
10	NRCS Runoff	PR-A4a	17.56	12.22	78,535	----		
11	NRCS Runoff	PR-A4b	10.68	12.17	43,952	----		
12	NRCS Runoff	PR-B	16.12	12.08	49,646	----		
13	NRCS Runoff	PR-C	11.70	12.12	41,329	----		
14	Junction	Design Point A	64.03	12.18	288,536	5, 7, 8, 9, 10, 11		

Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

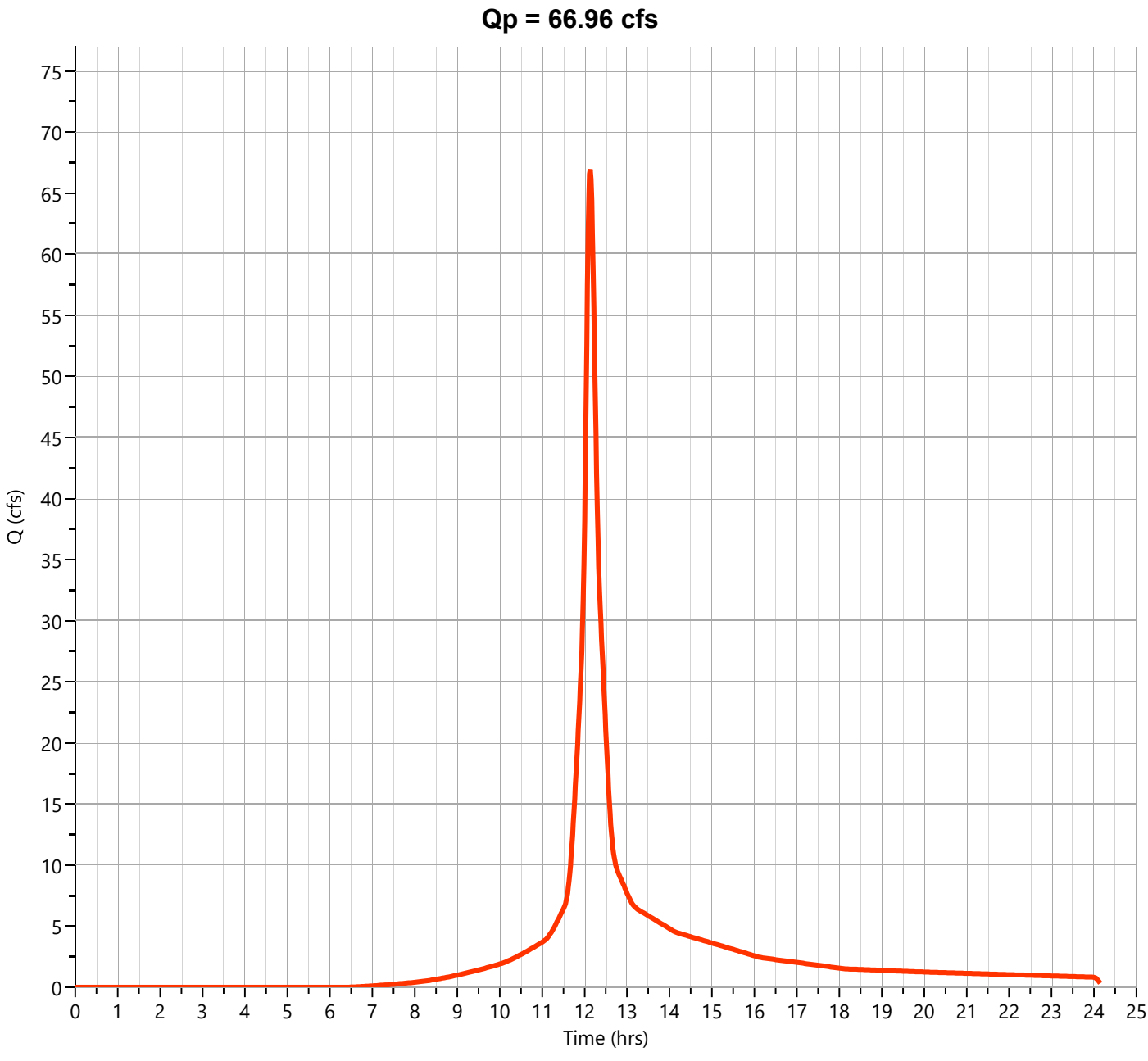
Hydrology Studio v 3.0.0.24

07-17-2024

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 66.96 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 244,712 cuft
Drainage Area	= 12.36 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

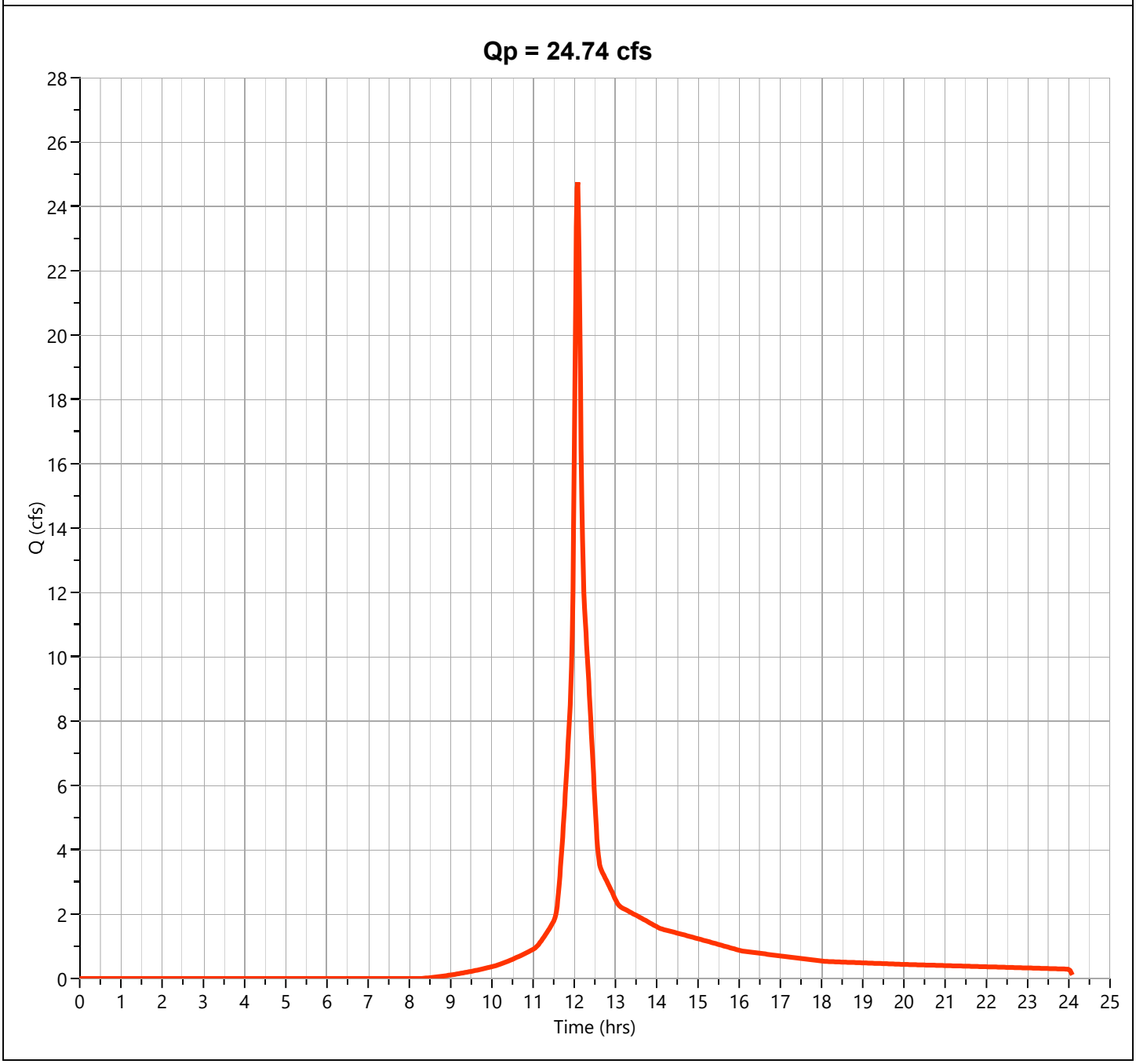
Hydrology Studio v 3.0.0.24

07-17-2024

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 24.74 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 76,218 cuft
Drainage Area	= 4.73 ac	Curve Number	= 67
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

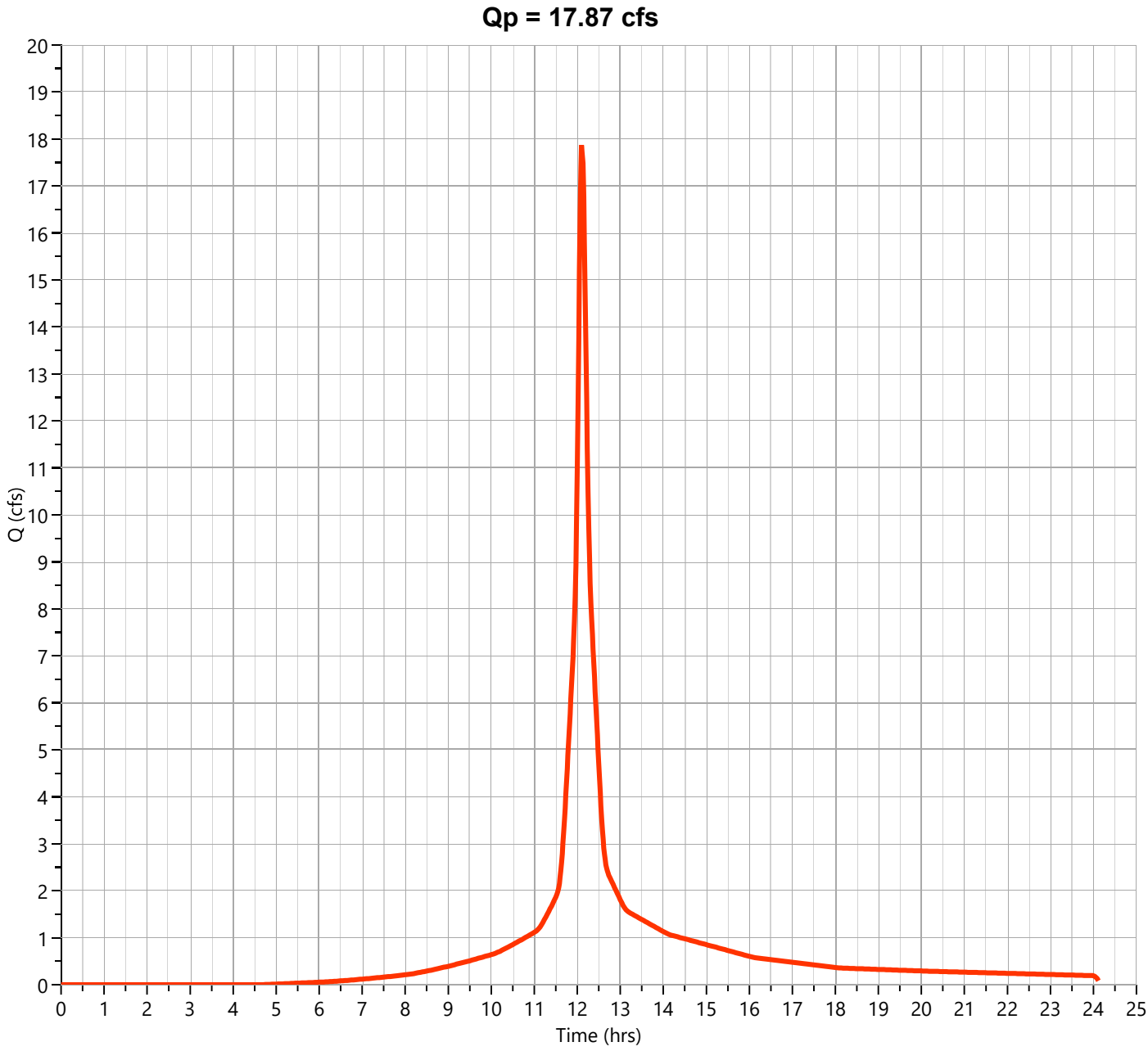
Hydrology Studio v 3.0.0.24

07-17-2024

EX-C

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 17.87 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 63,116 cuft
Drainage Area	= 2.81 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

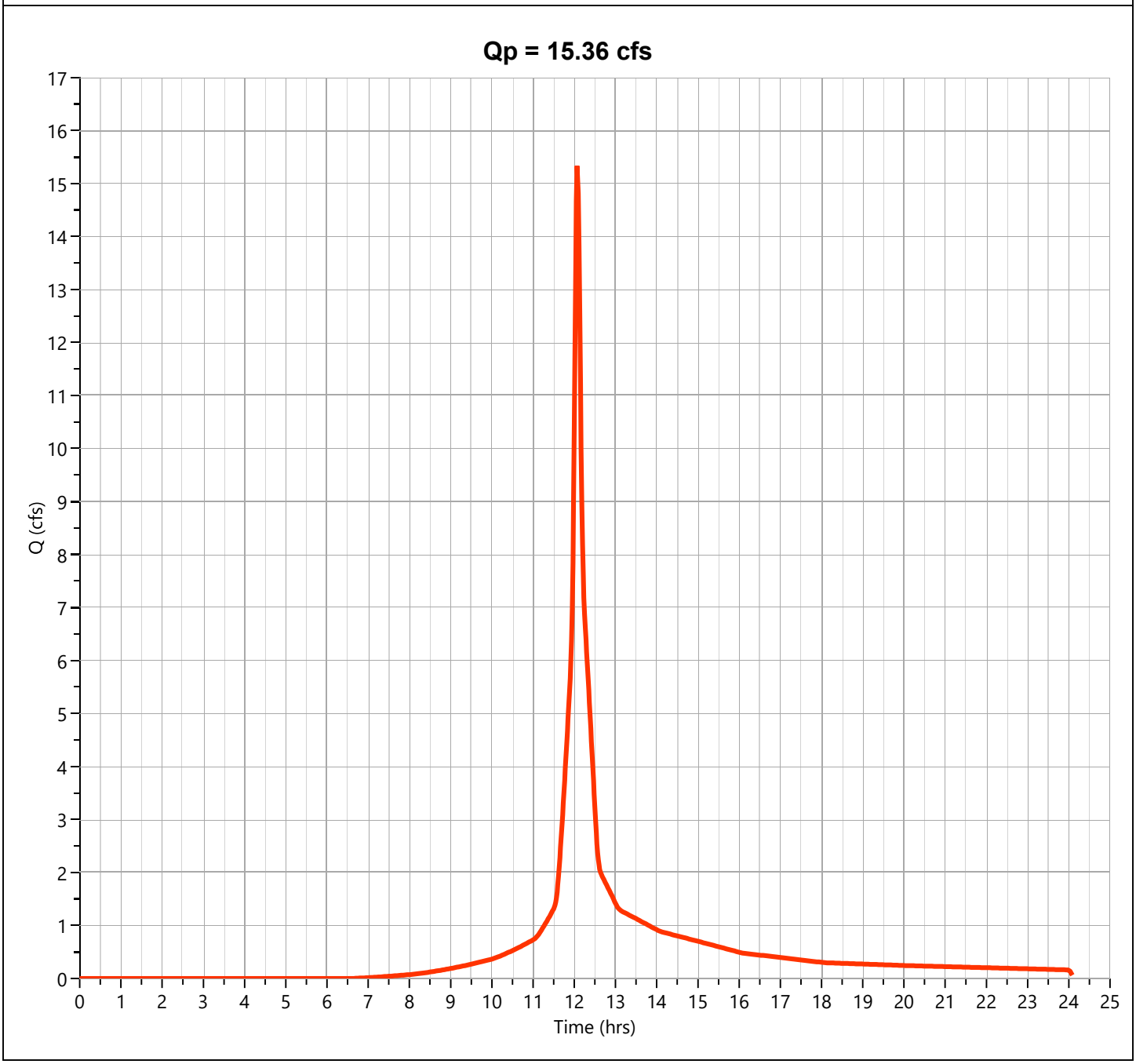
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 15.36 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 47,672 cuft
Drainage Area	= 2.43 ac	Curve Number	= 75
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

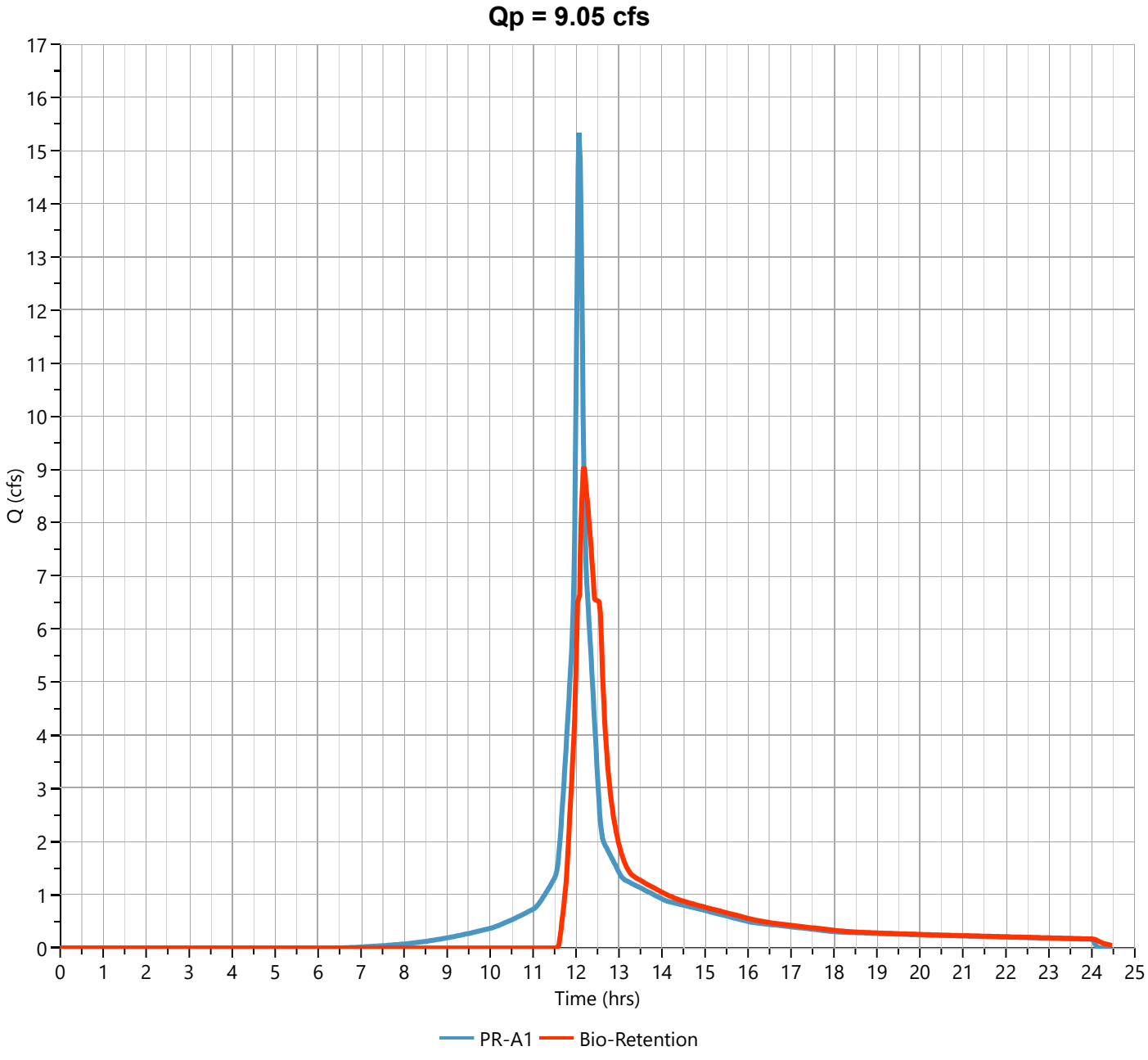
Bio-Retention

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 9.048 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.18 hrs
Time Interval	= 1 min	Hydrograph Volume	= 41,900 cuft
Inflow Hydrograph	= 4 - PR-A1	Max. Elevation	= 383.51 ft
Pond Name	= Bioretention	Max. Storage	= 23,384 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 382.50 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 40 min



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

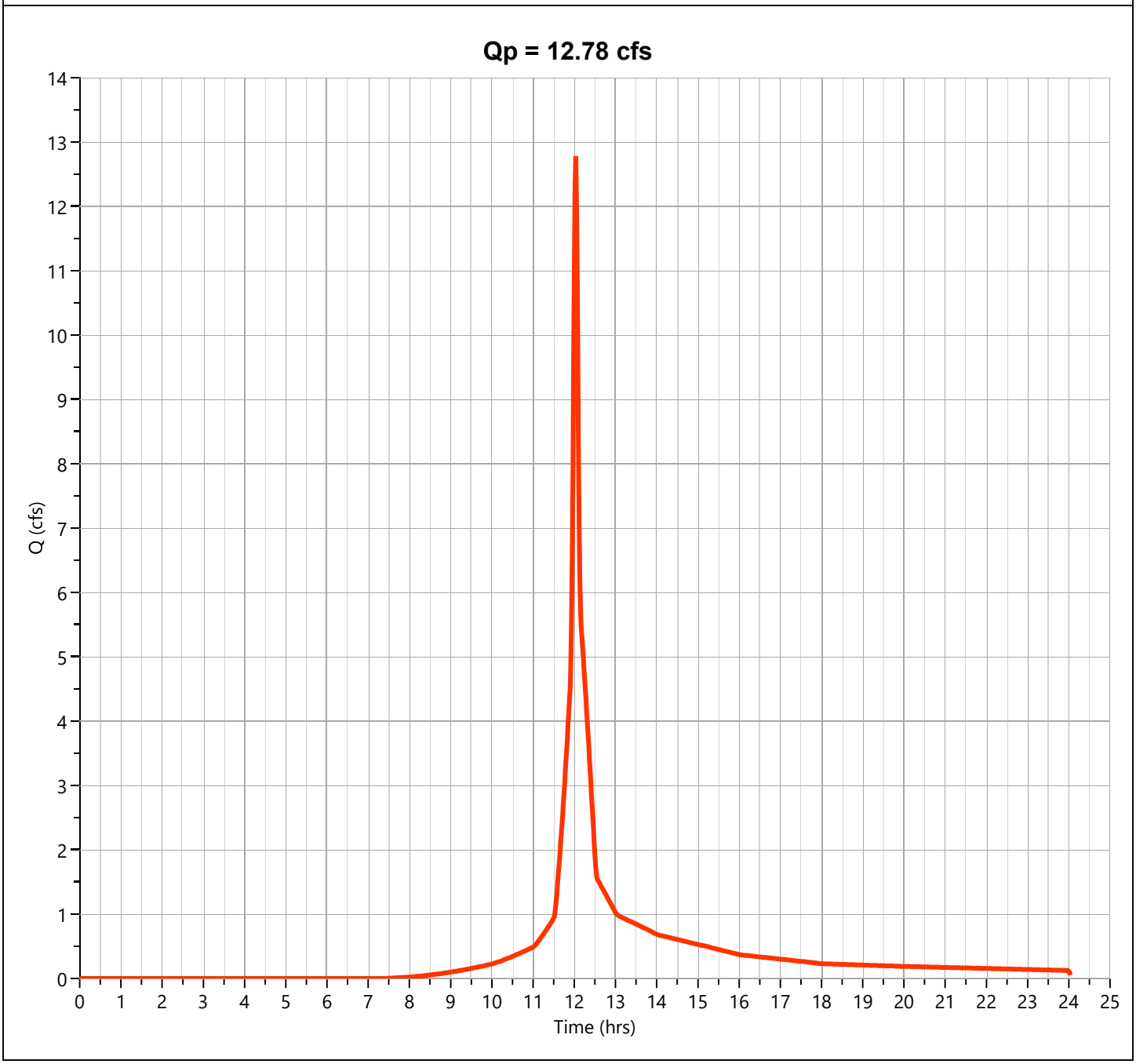
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A2

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 12.78 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.03 hrs
Time Interval	= 1 min	Runoff Volume	= 34,745 cuft
Drainage Area	= 2.14 ac	Curve Number	= 71
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

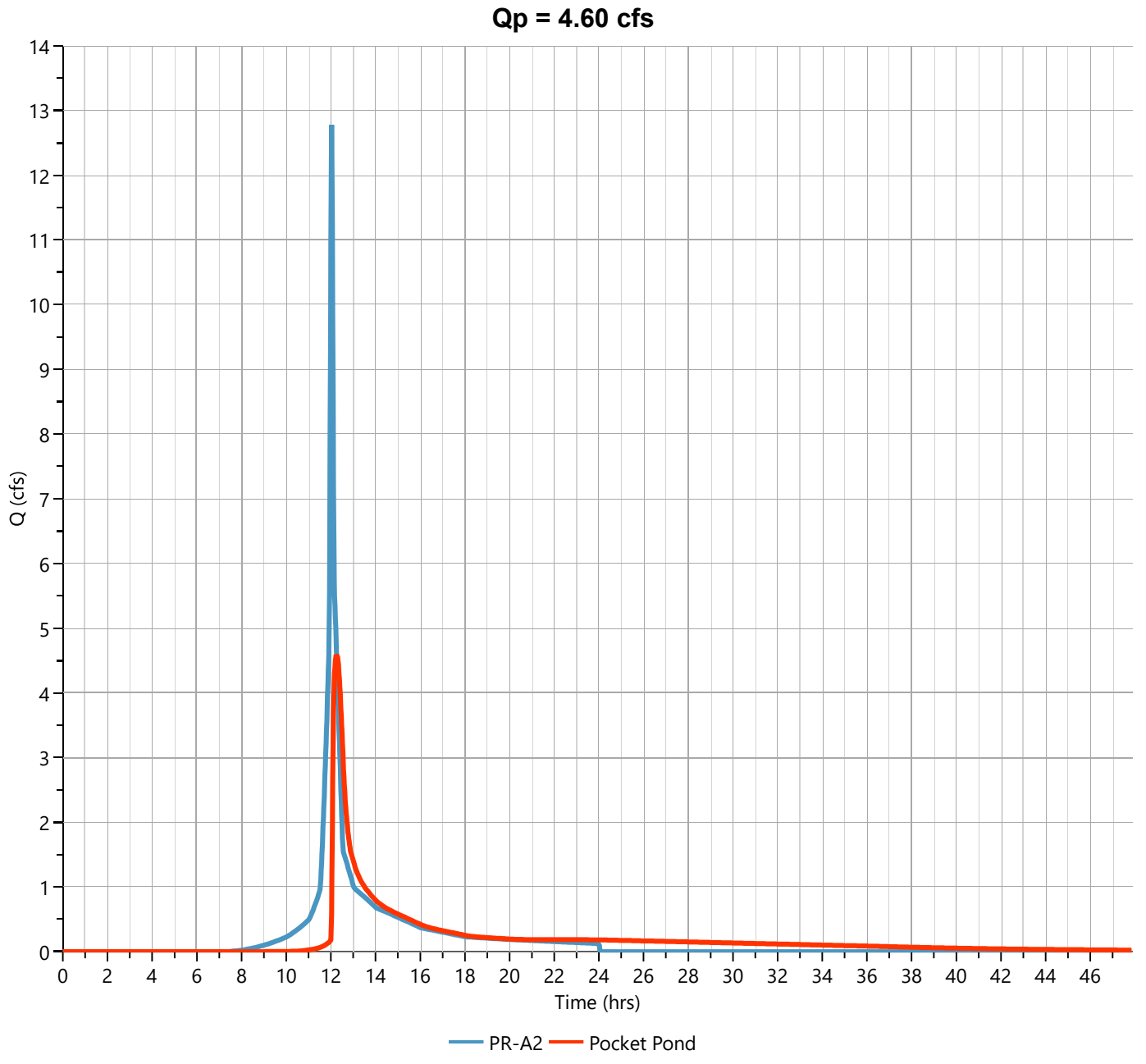
Pocket Pond

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 4.605 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.25 hrs
Time Interval	= 1 min	Hydrograph Volume	= 32,876 cuft
Inflow Hydrograph	= 6 - PR-A2	Max. Elevation	= 384.22 ft
Pond Name	= Pocket Pond	Max. Storage	= 36,362 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 383.20 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 4.72 hrs



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

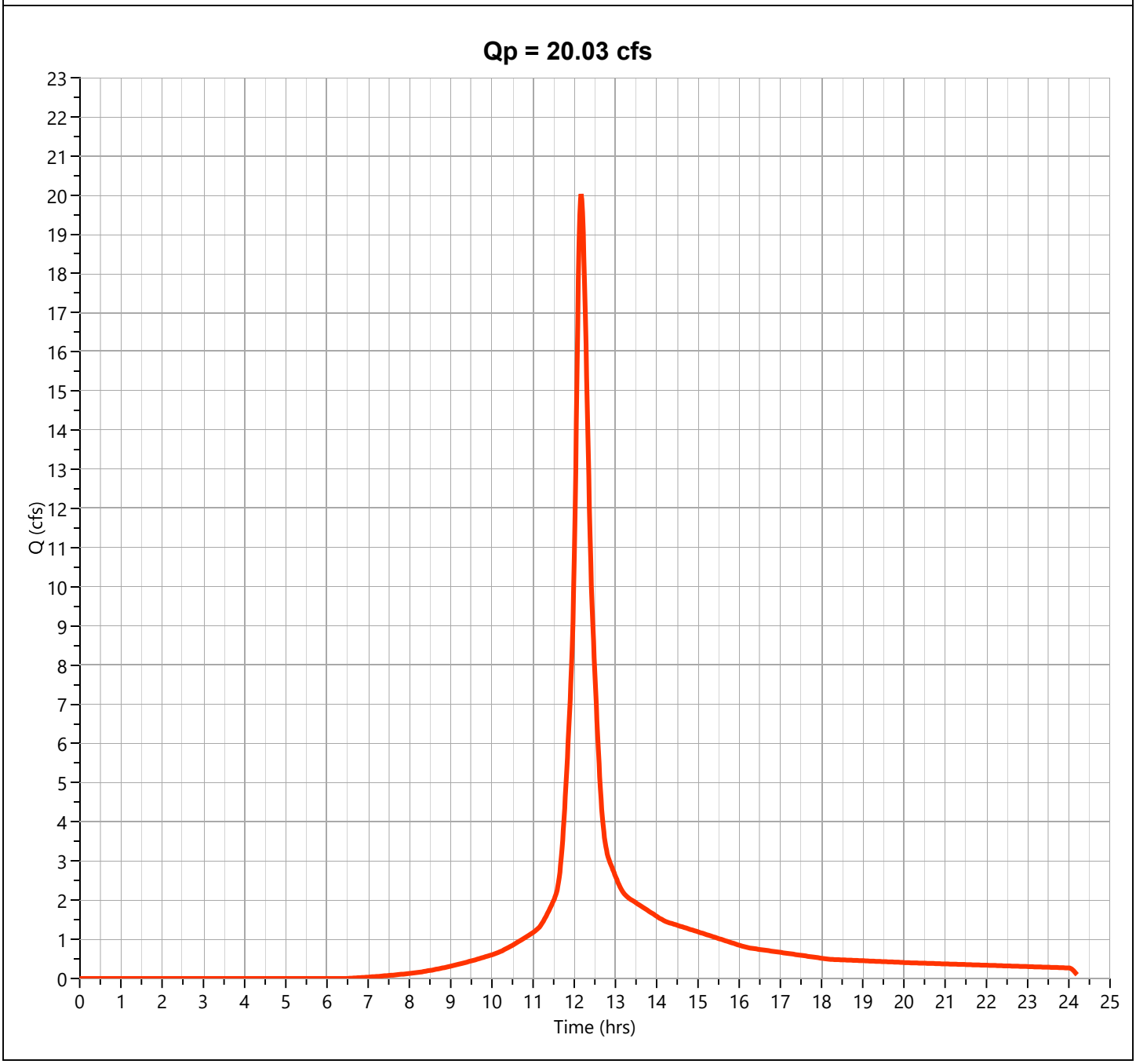
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3a

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 20.03 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.17 hrs
Time Interval	= 1 min	Runoff Volume	= 79,556 cuft
Drainage Area	= 4.09 ac	Curve Number	= 76
Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

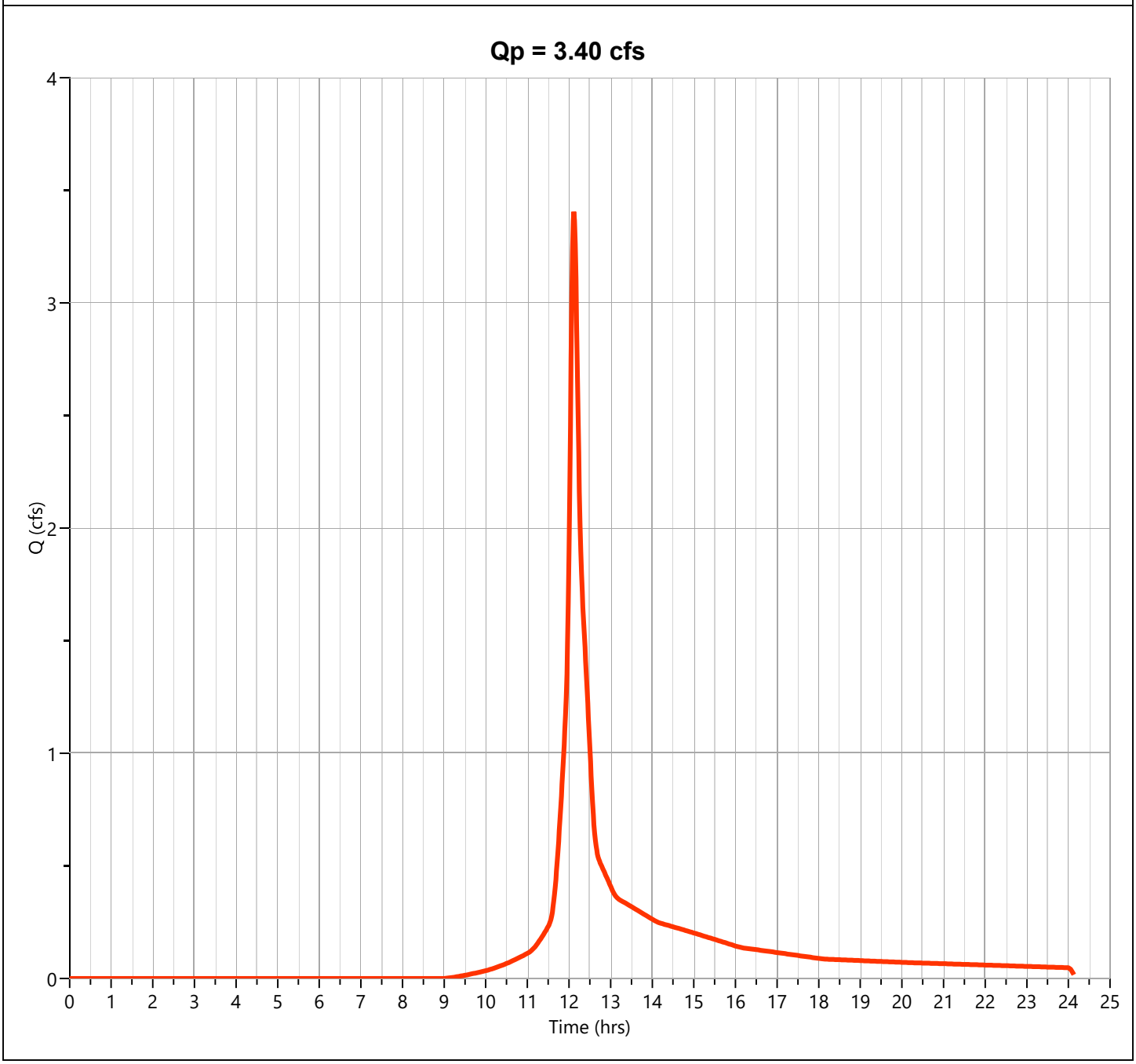
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A3b

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.405 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 11,716 cuft
Drainage Area	= 0.84 ac	Curve Number	= 63
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

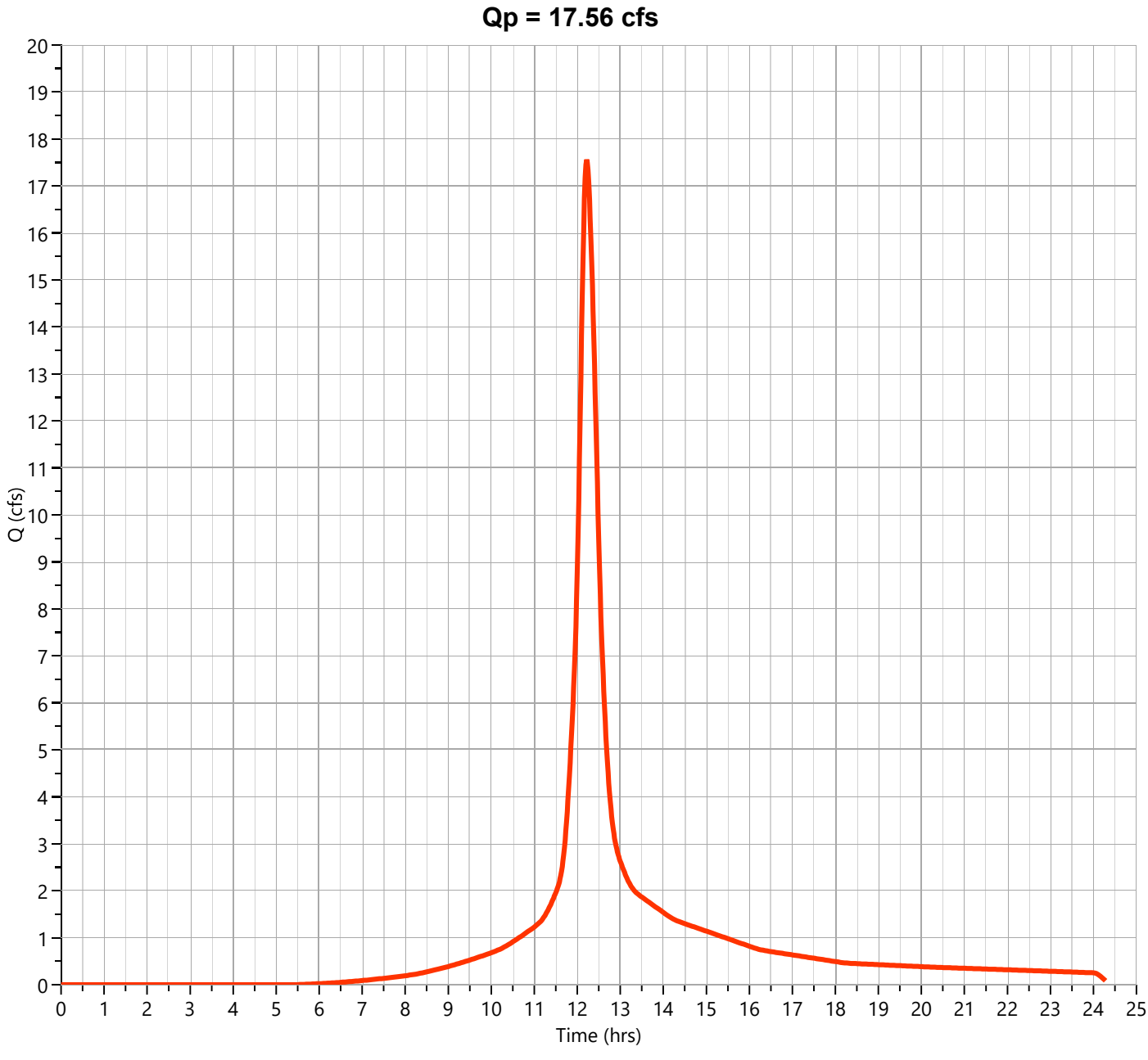
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4a

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 17.56 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Runoff Volume	= 78,535 cuft
Drainage Area	= 3.71 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 19.2 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

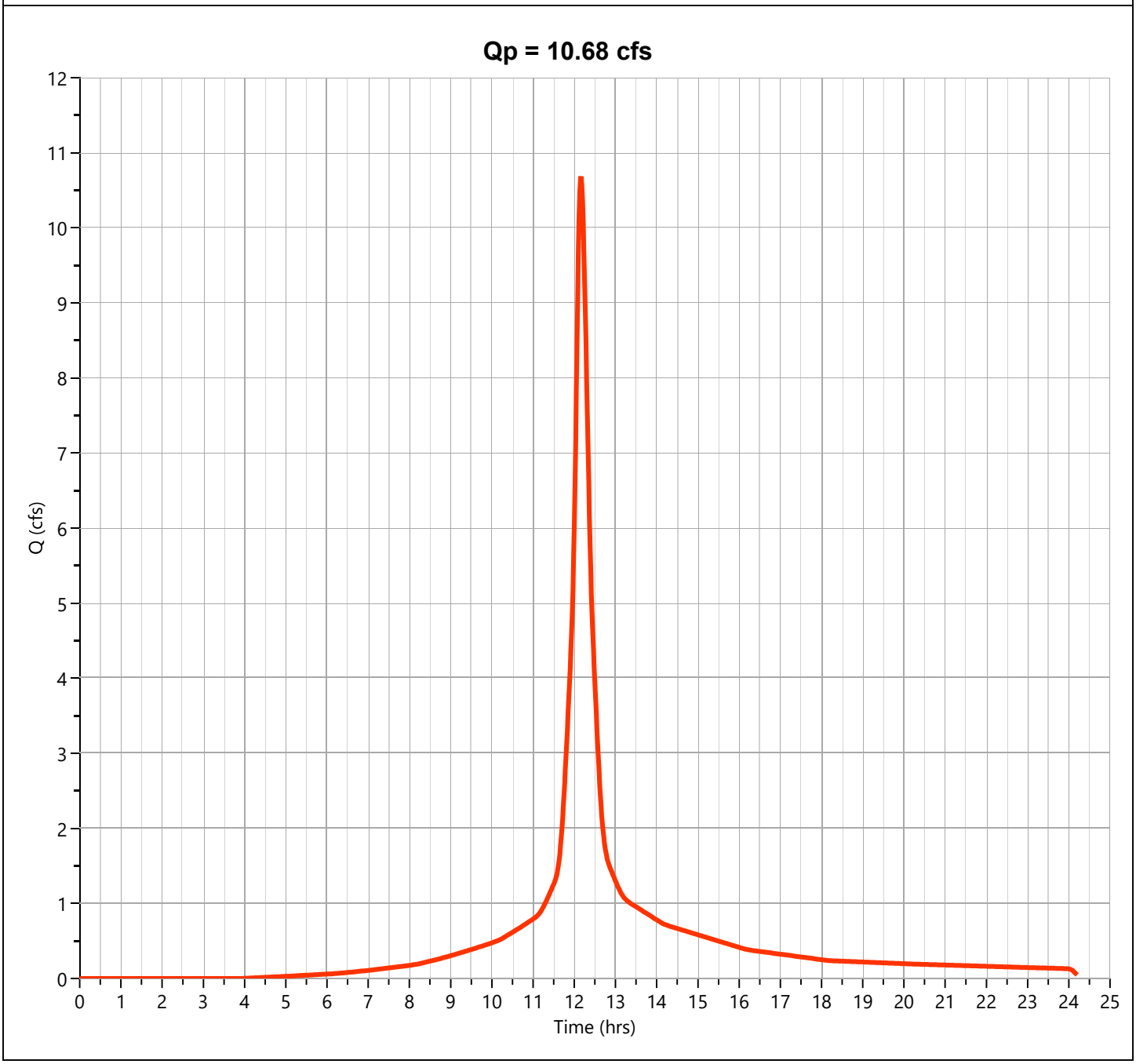
Hydrology Studio v 3.0.0.24

07-17-2024

PR-A4b

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 10.68 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.17 hrs
Time Interval	= 1 min	Runoff Volume	= 43,952 cuft
Drainage Area	= 1.85 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 14.4 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

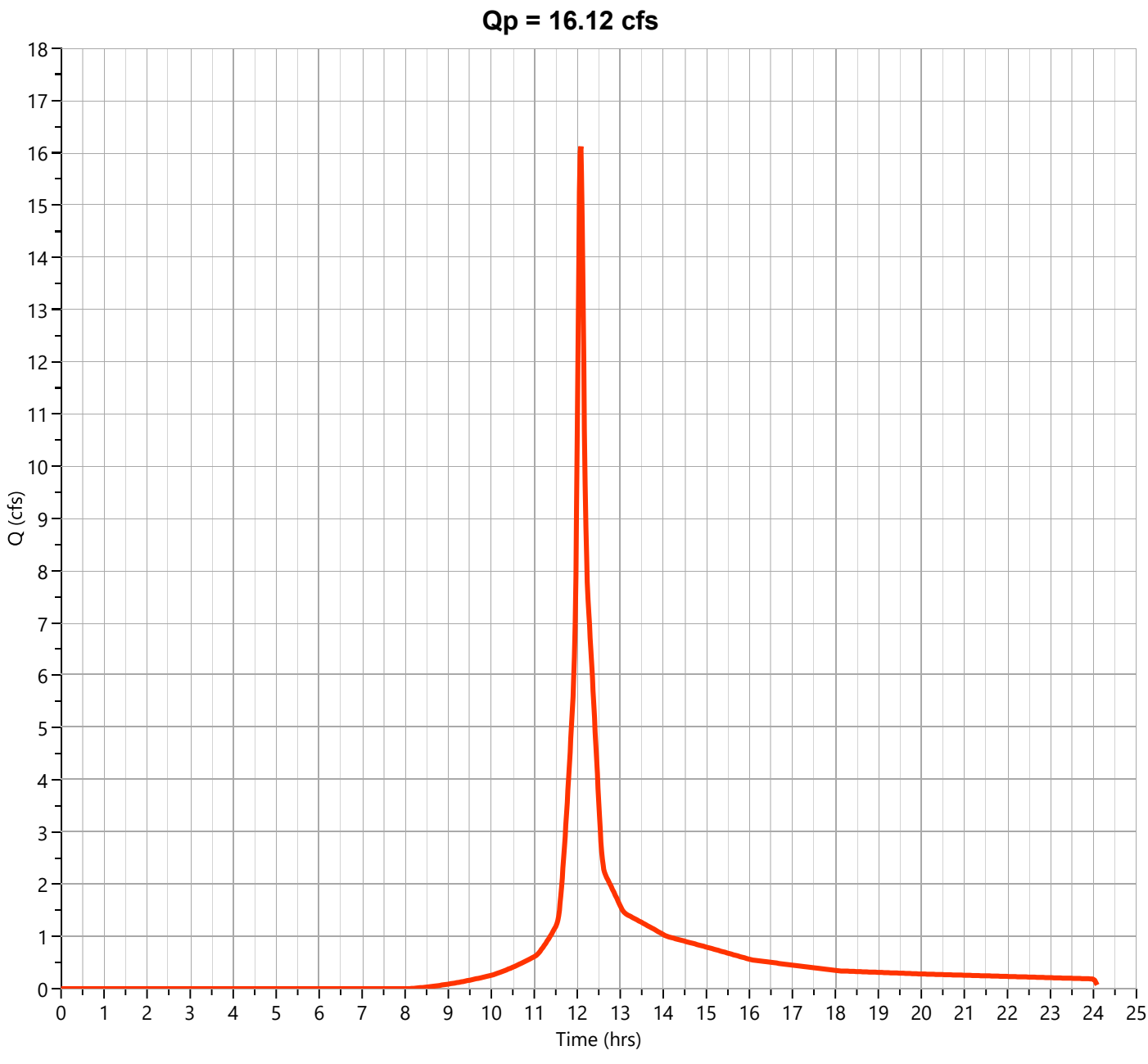
Hydrology Studio v 3.0.0.24

07-17-2024

PR-B

Hyd. No. 12

Hydrograph Type	= NRCS Runoff	Peak Flow	= 16.12 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.08 hrs
Time Interval	= 1 min	Runoff Volume	= 49,646 cuft
Drainage Area	= 3.0 ac	Curve Number	= 68
Tc Method	= User	Time of Conc. (Tc)	= 5.4 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

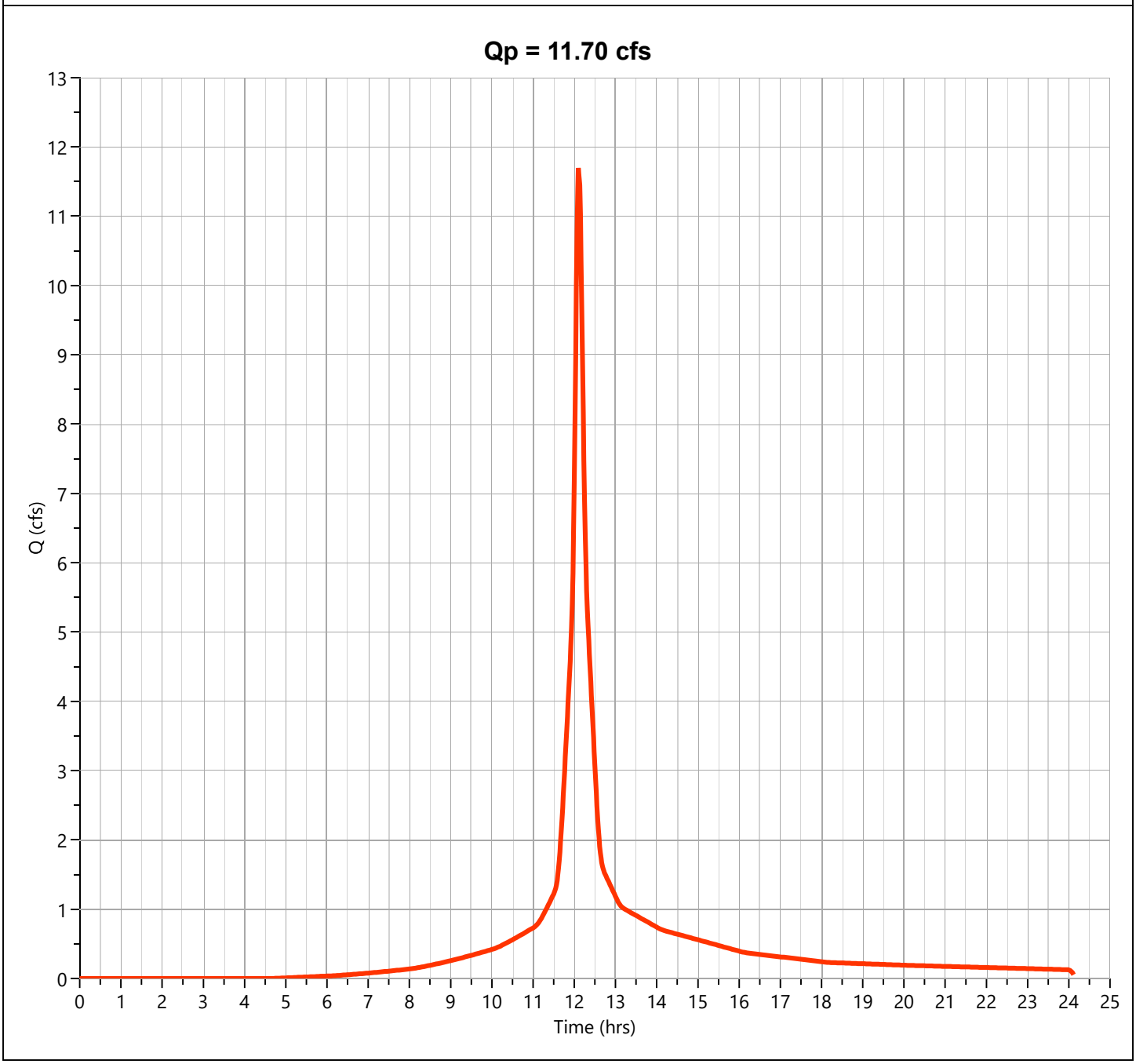
Hydrology Studio v 3.0.0.24

07-17-2024

PR-C

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 11.70 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.12 hrs
Time Interval	= 1 min	Runoff Volume	= 41,329 cuft
Drainage Area	= 1.84 ac	Curve Number	= 83
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

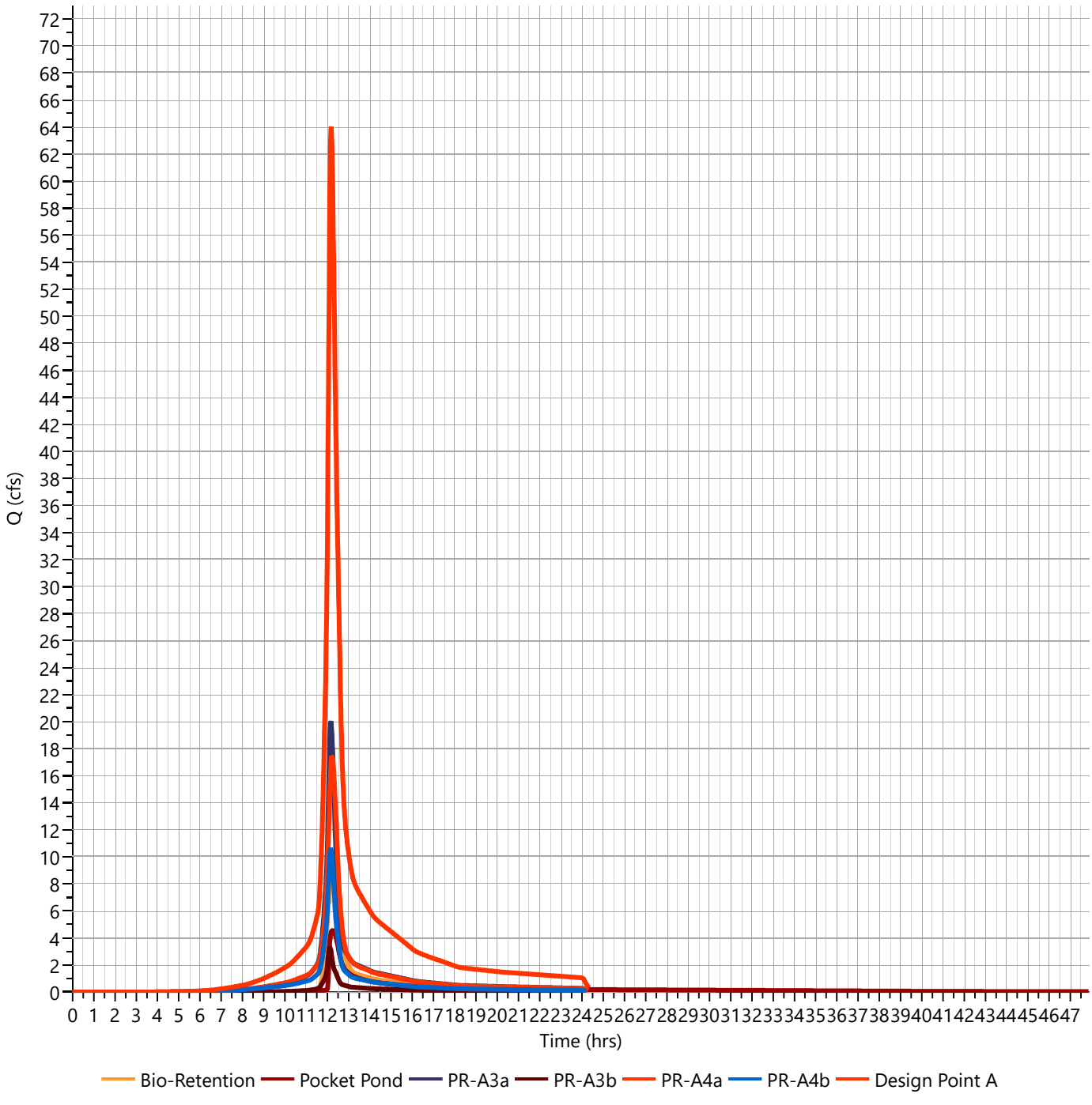
Hydrology Studio v 3.0.0.24

07-17-2024

Design Point A

Hyd. No. 14

Hydrograph Type	= Junction	Peak Flow	= 64.03 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.18 hrs
Time Interval	= 1 min	Hydrograph Volume	= 288,536 cuft
Inflow Hydrographs	= 5, 7, 8, 9, 10, 11	Total Contrib. Area	= 10.49 ac



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APPENDIX 10

RESERVOIR REPORTS

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Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

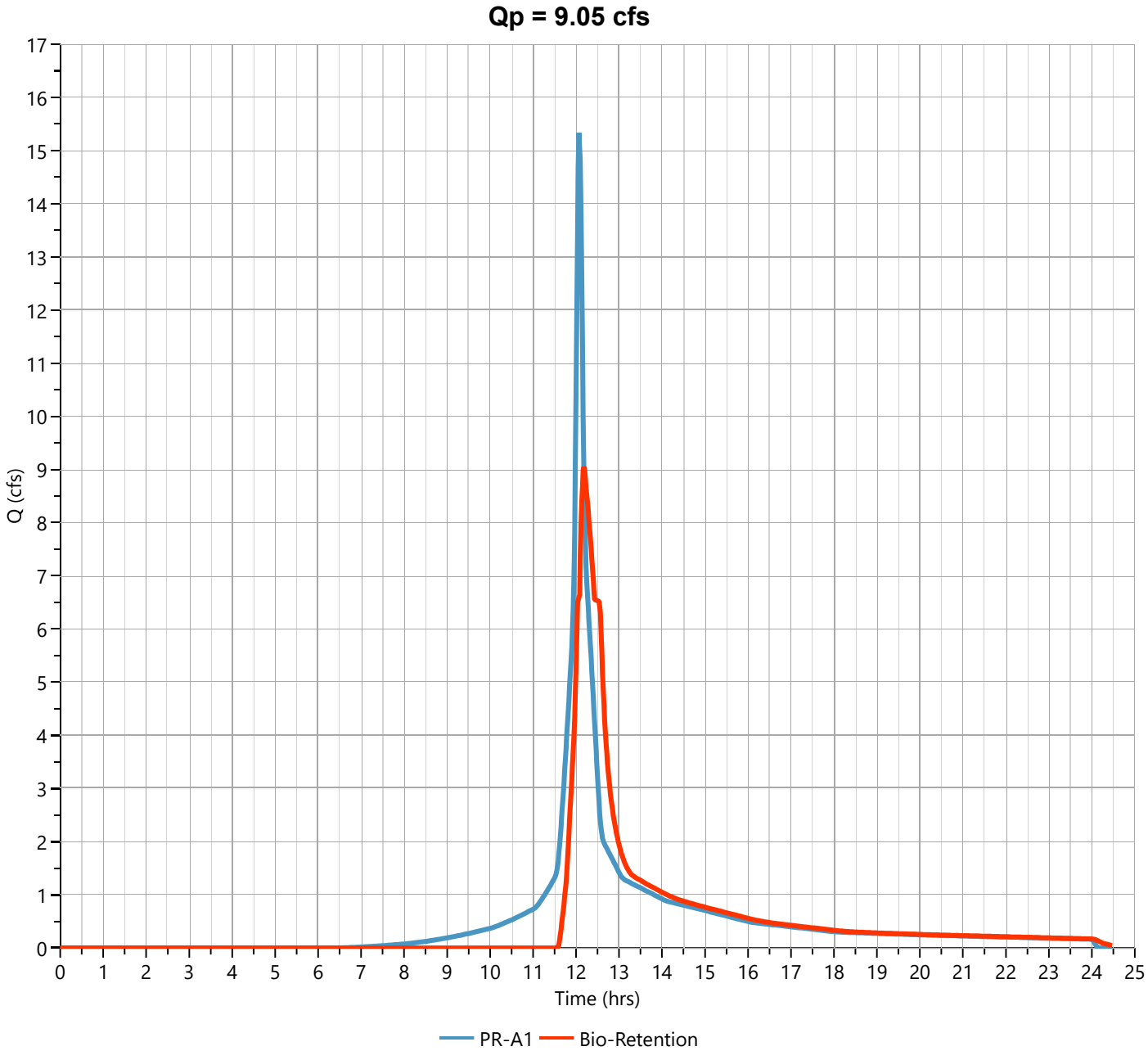
Bio-Retention

Hyd. No. 5

Hydrograph Type	= Pond Route	Peak Flow	= 9.048 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.18 hrs
Time Interval	= 1 min	Hydrograph Volume	= 41,900 cuft
Inflow Hydrograph	= 4 - PR-A1	Max. Elevation	= 383.51 ft
Pond Name	= Bioretention	Max. Storage	= 23,384 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 382.50 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 40 min



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

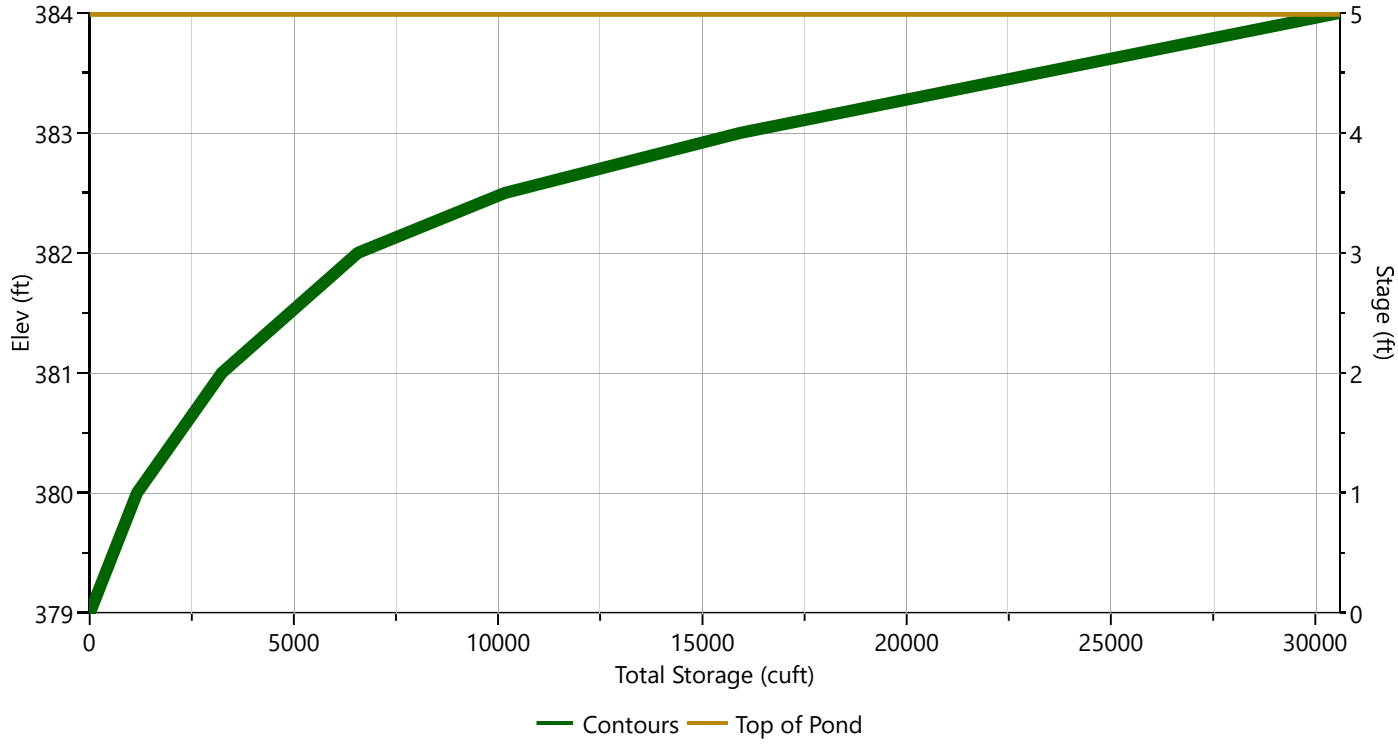
Bioretention

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	379.00
Voids (%)	100.00
Volume Calc	None

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	379.00	819	0.000	0.000
1.00	380.00	1,505	1,162	1,162
2.00	381.00	2,640	2,073	3,235
3.00	382.00	4,019	3,330	6,564
3.50	382.50	10,377	3,599	10,163
4.00	383.00	12,706	5,771	15,934
5.00	384.00	16,638	14,672	30,606



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

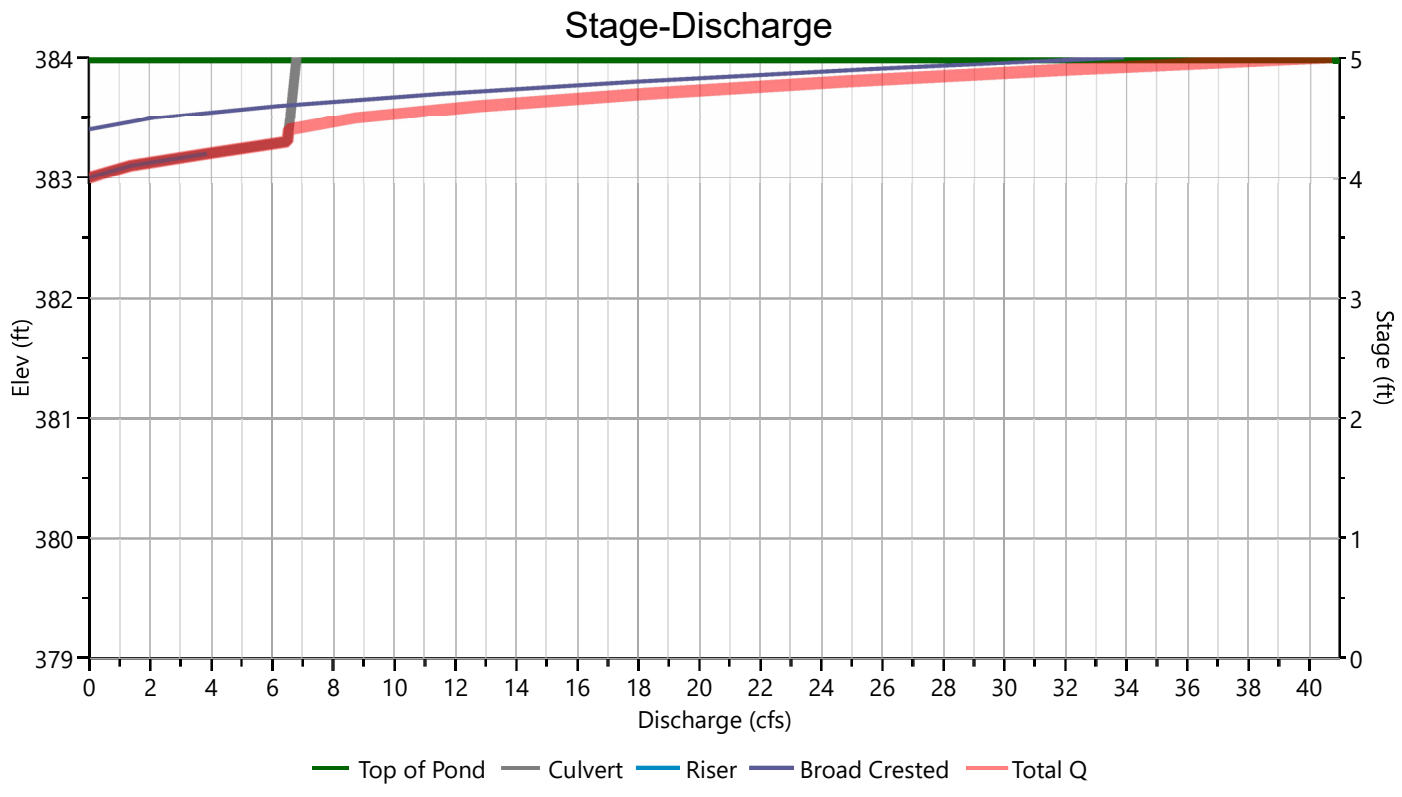
07-17-2024

Bioretention

Stage-Discharge

Culvert / Orifices	Culvert	Orifices			Orifice Plate	
		1	2	3		
Rise, in	15				Orifice Dia, in	
Span, in	15				No. Orifices	
No. Barrels	1				Invert Elevation, ft	
Invert Elevation, ft	378.00				Height, ft	
Orifice Coefficient, Co	0.60				Orifice Coefficient, Co	
Length, ft	672					
Barrel Slope, %	.5					
N-Value, n	0.013					
Weirs	**Riser***	**Weirs**			**Ancillary**	
		1	2	3		
Shape / Type	Box	Broad Crested			Exfiltration, in/hr	
Crest Elevation, ft	383	383.4				
Crest Length, ft	13	20				
Angle, deg		14 (4:1)				
Weir Coefficient, Cw	3.33	3.33				

**Routes through Culvert.*



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Bioretention

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	379.00	0.000	0.000				0.000	0.000						0.000
1.00	380.00	1,162	0.000 ic				0.000	0.000						0.000
2.00	381.00	3,235	0.000 ic				0.000	0.000						0.000
3.00	382.00	6,564	0.000 ic				0.000	0.000						0.000
3.50	382.50	10,163	0.000 ic				0.000	0.000						0.000
4.00	383.00	15,934	0.000 ic				0.000	0.000						0.000
5.00	384.00	30,606	6.807 oc				0.000	33.92						40.73

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

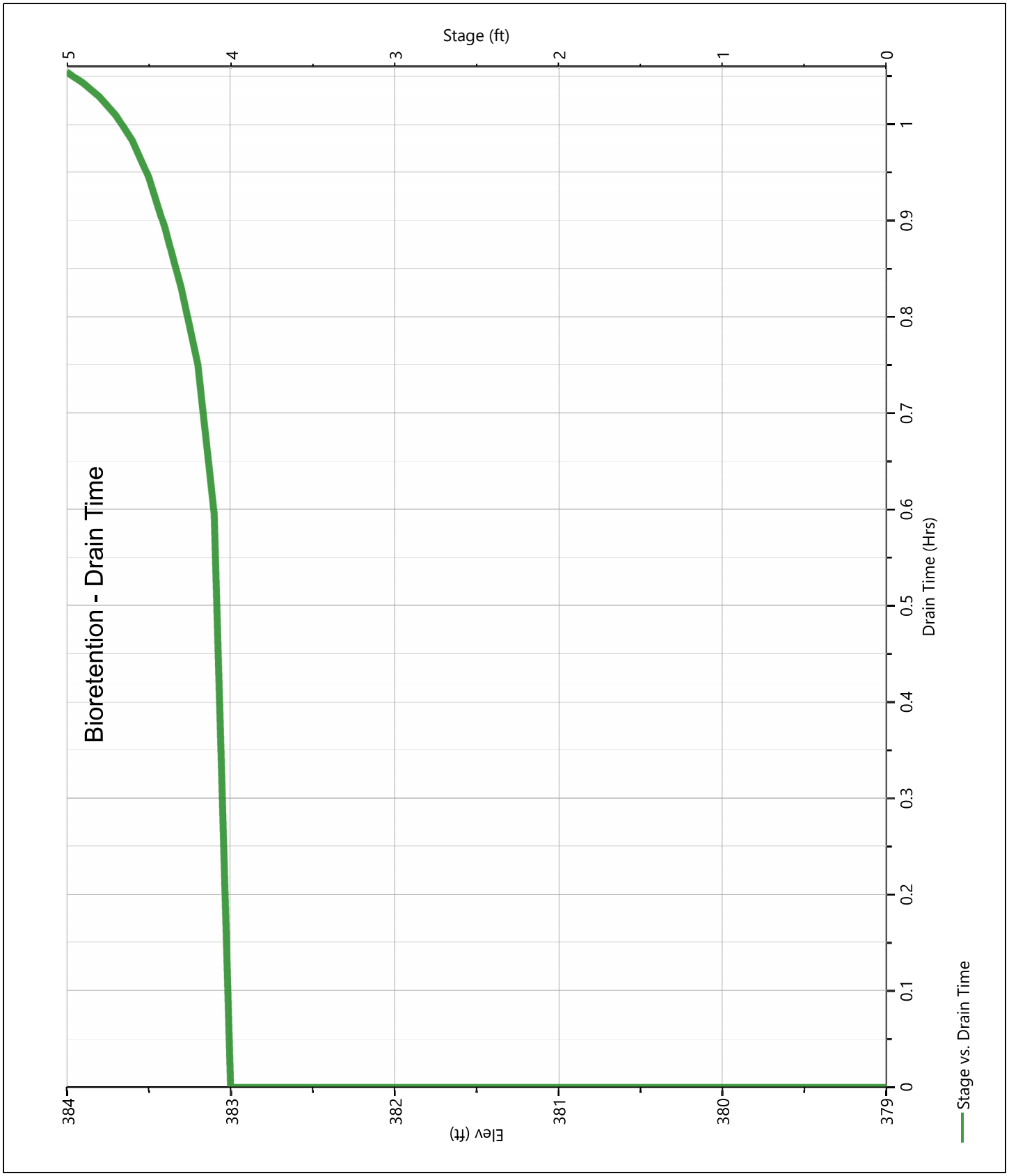
Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Bioretention

Pond Drawdown



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

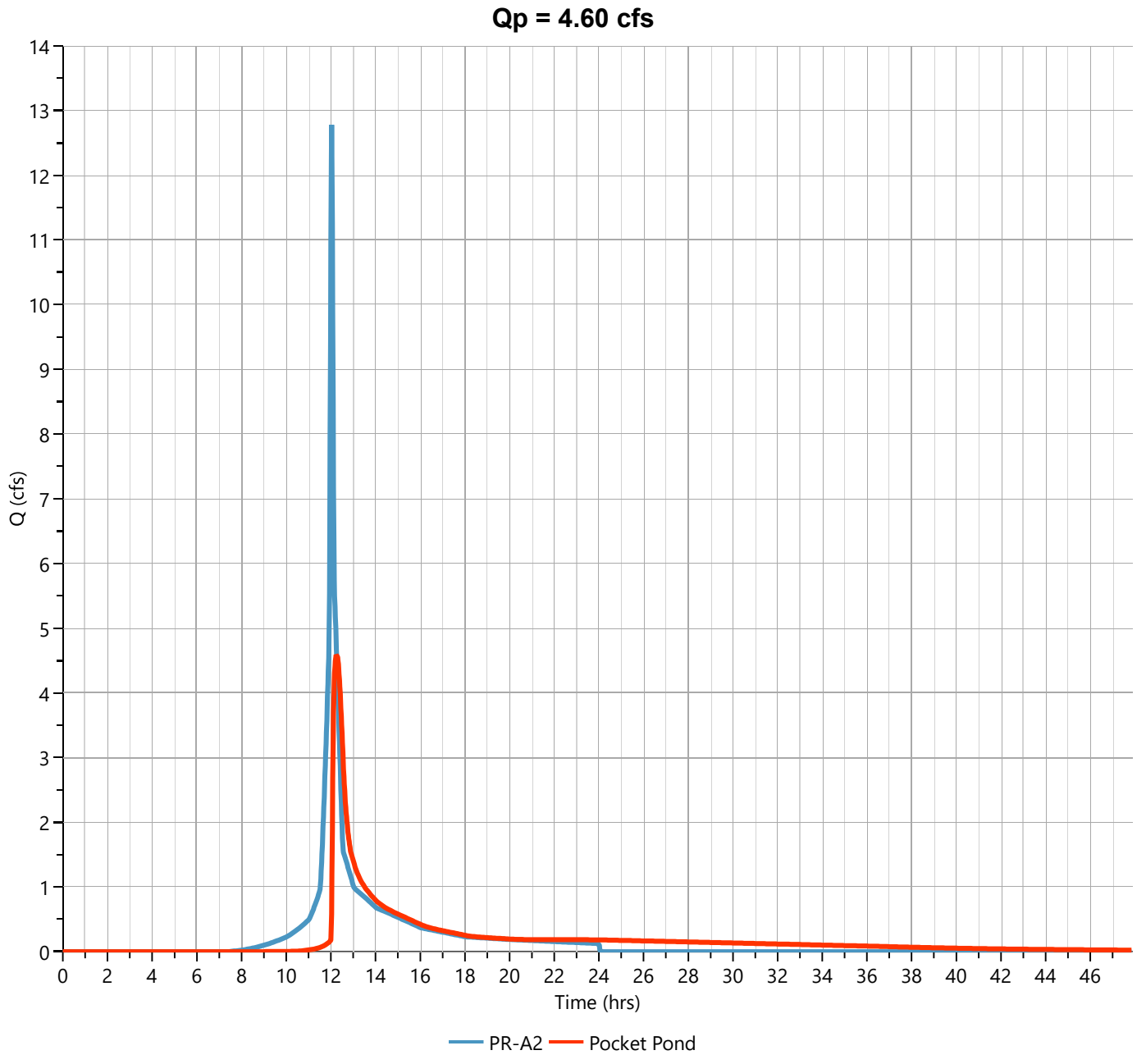
Pocket Pond

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 4.605 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.25 hrs
Time Interval	= 1 min	Hydrograph Volume	= 32,876 cuft
Inflow Hydrograph	= 6 - PR-A2	Max. Elevation	= 384.22 ft
Pond Name	= Pocket Pond	Max. Storage	= 36,362 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 383.20 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 4.72 hrs



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

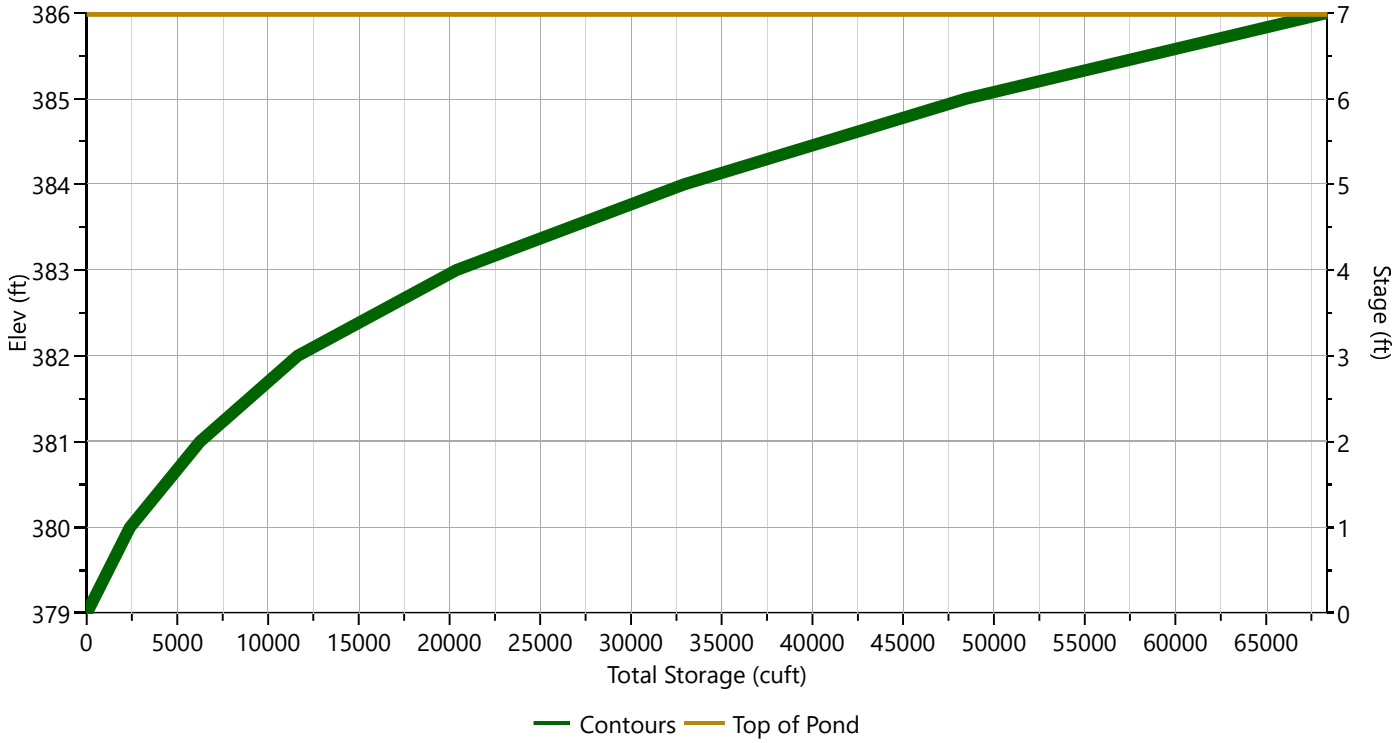
Pocket Pond

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	379.00
Voids (%)	100.00
Volume Calc	None

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	379.00	1,587	0.000	0.000
1.00	380.00	3,177	2,382	2,382
2.00	381.00	4,575	3,876	6,258
3.00	382.00	6,175	5,375	11,633
4.00	383.00	11,294	8,735	20,368
5.00	384.00	13,824	12,559	32,927
6.00	385.00	17,273	15,549	48,475
7.00	386.00	22,529	19,901	68,376



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

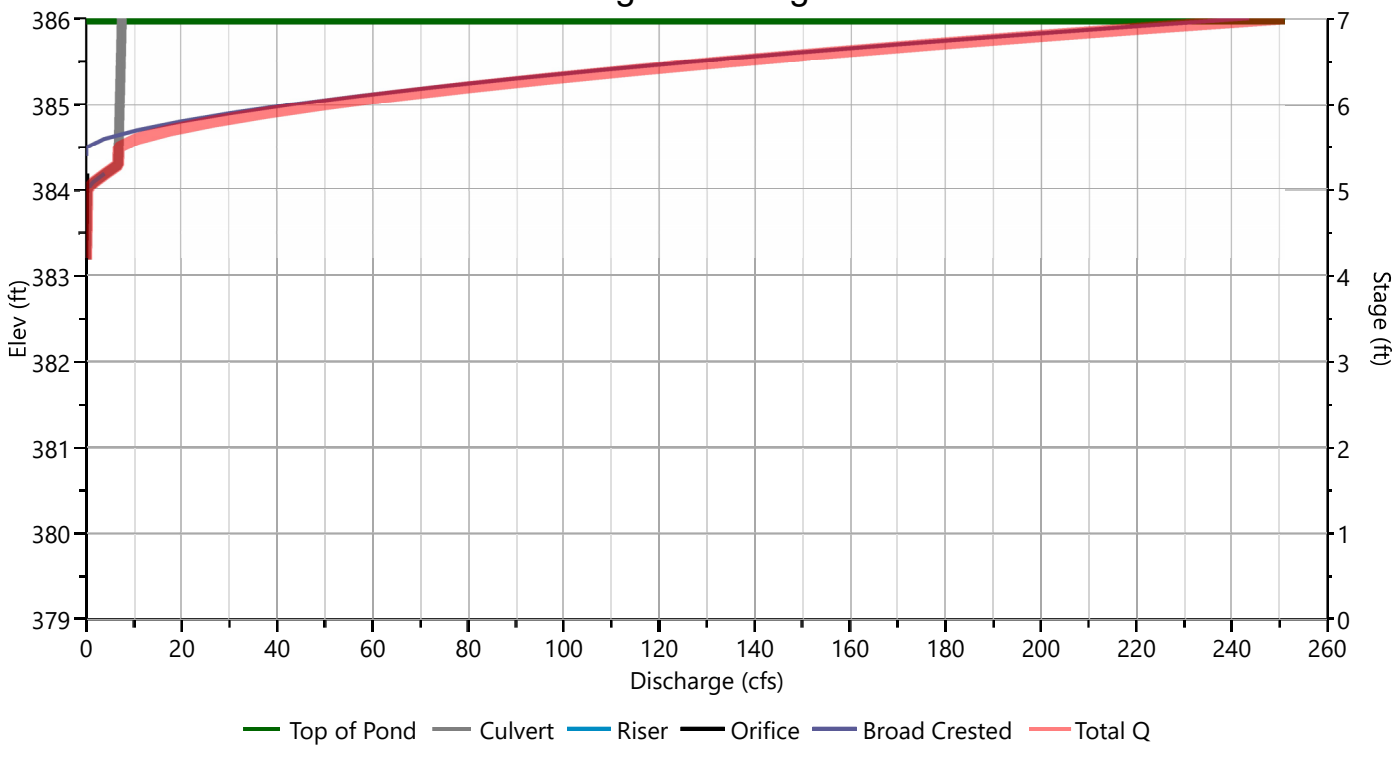
07-17-2024

Pocket Pond

Stage-Discharge

Culvert / Orifices	Culvert	Orifices			Orifice Plate	
		1*	2	3		
Rise, in	15	3			Orifice Dia, in	
Span, in	15	3			No. Orifices	
No. Barrels	1	1			Invert Elevation, ft	
Invert Elevation, ft	379.00	383.25			Height, ft	
Orifice Coefficient, Co	0.60	0.60			Orifice Coefficient, Co	
Length, ft	597					
Barrel Slope, %	.5					
N-Value, n	0.013					
Weirs	**Riser***	**Weirs**			**Ancillary**	
		1	2	3		
Shape / Type	Box	Broad Crested			Exfiltration, in/hr	
Crest Elevation, ft	384	384.5				
Crest Length, ft	13	35				
Angle, deg		14 (4:1)				
Weir Coefficient, Cw	3.3	3.33				

**Routes through Culvert.*



Pond Report

Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Pocket Pond

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	379.00	0.000	0.000	0.000			0.000	0.000						0.000
1.00	380.00	2,382	0.000	0.000			0.000	0.000						0.000
2.00	381.00	6,258	0.000	0.000			0.000	0.000						0.000
3.00	382.00	11,633	0.000	0.000			0.000	0.000						0.000
4.00	383.00	20,368	0.000	0.000			0.000	0.000						0.000
5.00	384.00	32,927	0.187 ic	0.187			0.000	0.000						0.187
6.00	385.00	48,475	7.014 oc	0.000			0.000	43.09						50.10
7.00	386.00	68,376	7.453 oc	0.000			0.000	243.5						250.9

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

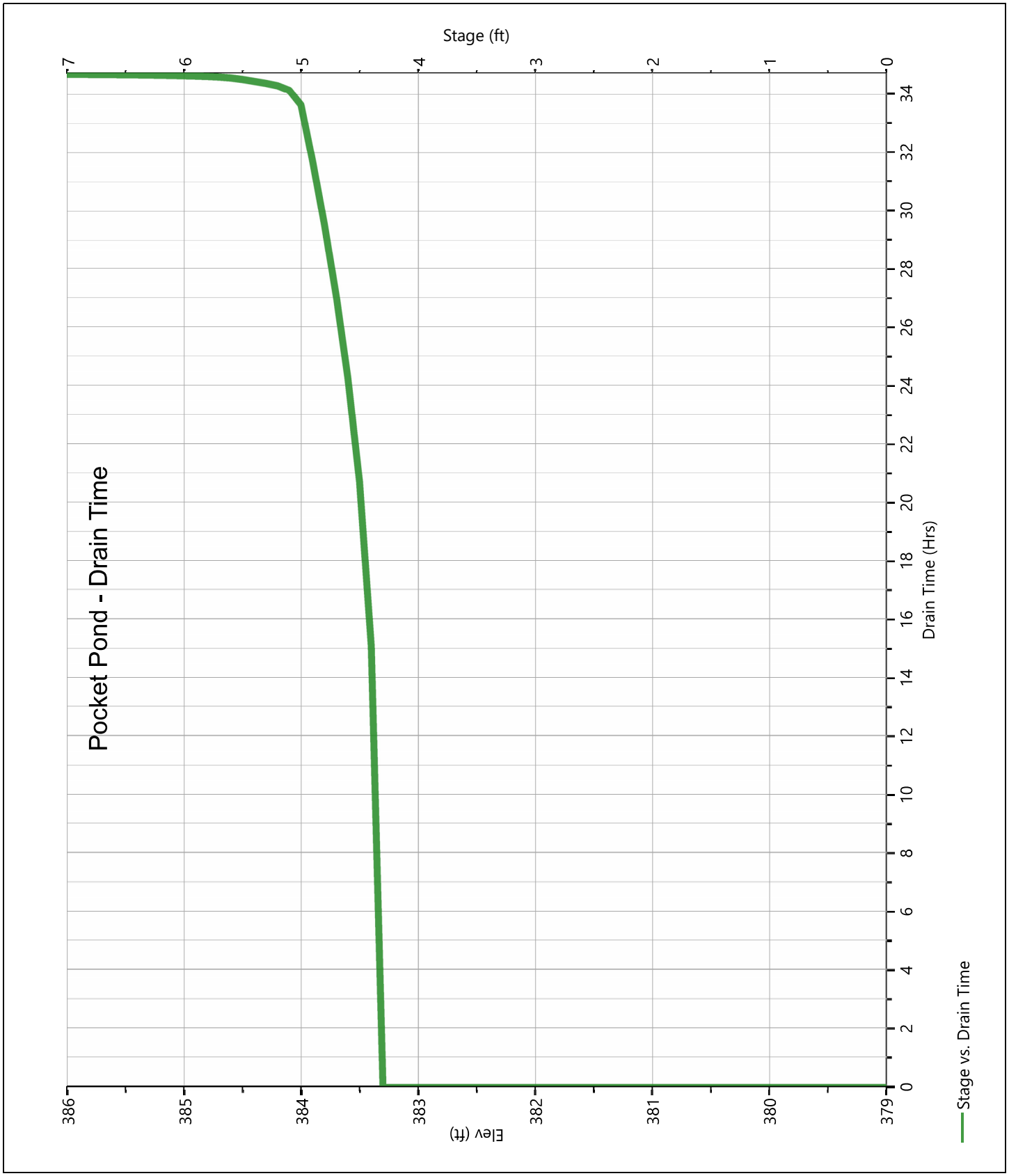
Project Name: Regional Food Bank - Hudson Valley

Hydrology Studio v 3.0.0.24

07-17-2024

Pocket Pond

Pond Drawdown



APPENDIX 11

SOIL TESTING RESULTS

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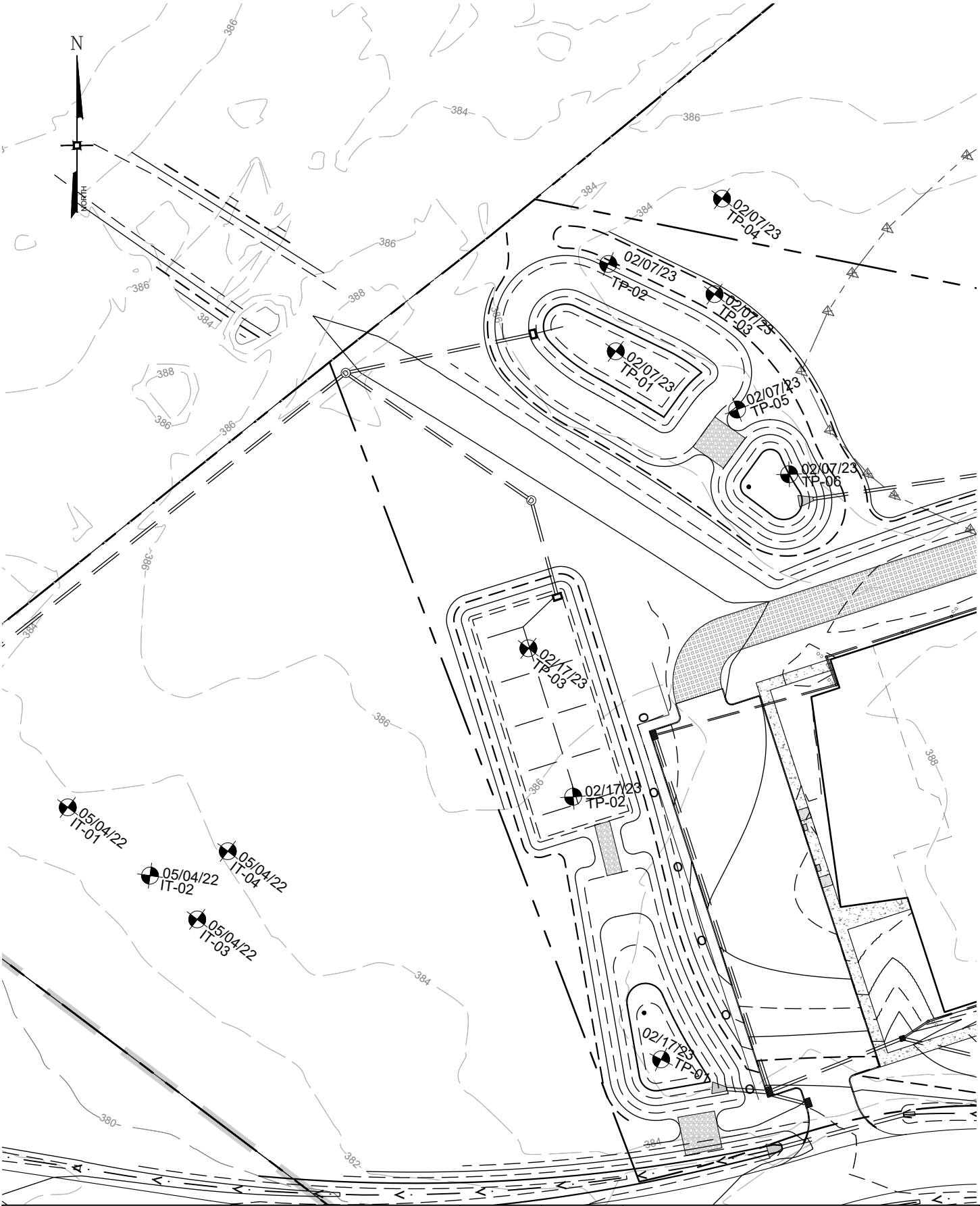
DEEP TEST HOLE RESULTS

TEST HOLE #	DATE	EXIST EL. / BOTTOM EL.	DEPTH	DESCRIPTION
TP-01	05/04/22	384.00' / 377.00'	0" - 6" 6" - 36" 36" - 72"	TOPSOIL TAN CLAY SILTY LOAM DARK BROWN SAND GROUNDWATER AT 72" (±378.00)
TP-02	05/04/22	383.00' / 376.00'	0" - 6" 6" - 36" 36" - 48" 48" - 56"	TOPSOIL TAN CLAY LOAM TAN CLAY LOAM WITH COBBLES GRAY CLAY, GROUNDWATER AT 56"(±378.33)
TP-03	05/04/22	383.40' / 377.40'	0" - 12" 12" - 24" 24" - 36" 36" - 60"	TOPSOIL TAN CLAY LOAM TAN CLAY LOAM WITH COBBLES DARK BROWN SANDY GRAVEL, GROUNDWATER AT 60" (±378.40)
TP-04	05/04/22	384.40' / 377.40'	0" - 12" 12" - 24" 24" - 36" 36" - 56" 56" - 72"	TOPSOIL TAN CLAY SILTY LOAM BROWN SANDY LOAM TAN CLAY WITH GRAY STREAKS BROWN SAND, GROUNDWATER AT 72" (±378.40)
TP-01	02/07/23	384.50' / 378.50'	0" - 12" 12" - 36" 36" - 60" 60" - 72"	TOPSOIL BROWN SILTY CLAY LOAM GRAVELLY LOAM BANK RUN, GROUNDWATER AT 60" (±379.50)
TP-02	02/07/23	383.75' / 377.25'	0" - 12" 12" - 54" 54" - 78"	TOPSOIL BROWN SILTY CLAY LOAM GRAVELLY LOAM, GROUNDWATER AT 66" (±378.25)
TP-03	02/07/23	383.50' / 376.50'	0" - 12" 12" - 48" 48" - 72" 72" - 78" 78" - 84"	TOPSOIL BROWN SILTY CLAY GRAY CLAY GRAVELLY LOAM BANK RUN, GROUNDWATER AT 72" (±377.50)
TP-04	02/07/23	383.67' / 378.67'	0" - 12" 12" - 24" 24" - 51" 51" - 60"	TOPSOIL BROWN SILTY CLAY GRAVELLY LOAM BANK RUN, GROUNDWATER AT 51" (±379.42)
TP-05	02/07/23	384.33' / 379.33'	0" - 12" 12" - 54" 54" - 58" 58" - 60"	TOPSOIL BROWN SILTY CLAY LOAM GRAY CLAY GRAVEL/BANK RUN, GROUNDWATER AT 54" (±379.83)
TP-06	02/07/23	384.55' / 377.55'	0" - 12" 12" - 36" 36" - 42" 42" - 54" 54" - 84"	TOPSOIL BROWN SILTY CLAY LOAM GRAY GRAVEL CLAY LOAM BROWN SILTY CLAY LOAM GRAY CLAY WITH GRAVEL, GROUNDWATER AT 78" (±378.05)
TP-01	02/17/23	386.10' / 378.60'	0" - 12" 12" - 24" 24" - 36" 36" - 90"	TOPSOIL LIGHT BROWN SILTY CLAY LOAM BROWN SILTY CLAY LOAM BROWN SILTY CLAY LOAM WITH GRAVEL
TP-02	02/17/23	385.40' / 377.40'	0" - 12" 12" - 24" 24" - 60" 60" - 78" 78" - 96"	TOPSOIL LIGHT BROWN SILTY CLAY LOAM BROWN SILTY CLAY LOAM GRAY CLAY GRAY CLAY WITH GRAVEL, GROUNDWATER AT 96" (±377.40)
TP-03	02/17/23	386.25' / 377.50'	0" - 12" 12" - 36" 36" - 60" 60" - 78" 78" - 105"	TOPSOIL LIGHT BROWN SILTY CLAY LOAM BROWN SILTY CLAY LOAM GRAY CLAY BANK RUN, GROUNDWATER AT 105" (±377.50)



SOIL TESTING LOCATIONS	REGIONAL FOOD BANK HUDSON VALLEY 580 NYS ROUTE 416 VILLAGE OF MONTGOMERY ORANGE COUNTY, NEW YORK	DATE: JUL 2024 SCALE: 1"=70'	JOB # 1842.01 SHEET # F-5	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

APPENDIX 12

CONSTRUCTION SITE

INSPECTION FORM

& NOTICE OF INTENT

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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? ☐ Yes ☐ No
		Departing Time:	

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

0644089821

NOTICE OF INTENT

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

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

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

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Regional Foodbank of the Northeastern New York Inc

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Nicol

Owner/Operator Contact Person First Name
Molly

Owner/Operator Mailing Address
965 Albany Shaker Road

City
Latham

State
NY

Zip
12110 - ____

Phone (Owner/Operator)
518 - 786 - 3691

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
mollyn@regionalfoodbank.net

FED TAX ID
__ - _____ (not required for individuals)

Project Site Information

Project/Site Name
Regional Food Bank - Hudson Valley

Street Address (NOT P.O. BOX)
580 NYS Route 416

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

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Village of Montgomery

State: NY
Zip: **12549-**
County: Orange
DEC Region: 3

Name of Nearest Cross Street
NYS Route 211

Distance to Nearest Cross Street (Feet)
550

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

Tax Map Numbers
Section-Block-Parcel
214-1-1.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-74.250
Ex. -73.749

Y Coordinates (Northing)
41.512
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

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

Pre-Development Existing Land Use

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

Post-Development Future Land Use

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

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

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

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
19.9	8.1	0.0	3.6

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

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

A	B	C	D
38 %	0 %	16 %	46 %

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

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

Start Date 04/03/2023 - **End Date** 12/31/2024

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

Name: Small local wetland off-site

9a. Type of waterbody identified in Question 9?

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

9b. How was the wetland identified?

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

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ( ) **Yes** (●) **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ( ) **Yes** (●) **No**

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

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

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

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

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

N / A

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

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

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

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

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

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

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

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

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

SWPPP Preparer: Engineering & Surveying Properties, PC

Contact Name (Last, Space, First): Samuelson Jay

Mailing Address: 71 Clinton Street

City: Montgomery

State: NY Zip: 12549-

Phone: 8454577727 Fax: 8454578999

Email: Jay@ep-pc.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name Jay **MI**

Last Name Samuelson

Signature

Date / /

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

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

Temporary Structural

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

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

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

Permanent Structural

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

Other

Post-construction Stormwater Management Practice (SMP) Requirements

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

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

- ● **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ● **Building Footprint Reduction**
- ● **Parking Reduction**

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

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

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

Total WQv Required

		0	.	5	1	0

acre-feet

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

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

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

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

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
● Vegetated Swale (RR-5)			1.11
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)			1.48
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
● Pocket Pond (P-5)			0.78
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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

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

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

Name

Manufacturer

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

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

Total RRv provided

0.168 **acre-feet**

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

○ **Yes** ● **No**

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

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

Minimum RRv Required

0.145 **acre-feet**

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

● **Yes** ○ **No**

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

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

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

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

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

WQv Provided

0.533 **acre-feet**

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

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

0.701

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

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

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

CPv Required

0.864 **acre-feet**

CPv Provided

0.947 **acre-feet**

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

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

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

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

Total Overbank Flood Control Criteria (Qp)

Pre-Development

28.50 **CFS**

Post-development

23.85 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

66.96 **CFS**

Post-development

64.03 **CFS**

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

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

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

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

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

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

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

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

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

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

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

Owner/Operator Certification

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

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date / /

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APPENDIX 13

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:

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

Cardboard: 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.

Concrete: 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.

Metals: 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).

Stone and Granite: 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.

Plastic, paper goods, and aluminum cans: 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.

Drywall: 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.

Wood or Lumber: 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 Town R.O.W.

Spill Response: The contractor shall clean all spills immediately and shall report all spills to the New York State Department of Environmental Conservation.
This Plan will be displayed in the construction jobsite trailer at all times.

APPENDIX 14

SHPO DOCUMENTS

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NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

March 4, 2022

Mary Catherine Welch
Office Manager
Engineering & Surveying Properties, PC
71 Clinton Street
Montgomery, NY 12549

Re: SEQRA
Food Bank of the Hudson Valley
574 State Route 416, Montgomery
22PR00930

Dear Mary Catherine Welch:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP) as part of your SEQRA process. These comments are those of OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

The proposed project area is located adjacent to the Harrison Meeting House Site and Cemetery, listed on both the State and National Registers of Historic Places. Therefore, under SEQRA we have reviewed the project and offer the following comment regarding potential impacts to architectural or archaeological resources:

1. We recommend planting of a vegetative buffer between the Harrison Meeting House Site and Cemetery and the proposed warehouse development.

If the lead agency concludes that additional studies would be beneficial to identify and/or assess potential impacts to archeological and historic resources eligible for the registers, the OPRHP would be pleased to provide additional guidance.

If this project will involve state or federal permitting, funding or licensing, it may require a more rigorous review for potential impacts to architectural and archaeological resources, in accordance with Section 106 of the National Historic Preservation Act or Section 14.09 of NYS Parks Recreation and Historic Preservation Law.

If you have any questions, I can be reached at (518) 268-2127 or by email.

Sincerely,

Sara McIvor
Historic Preservation Technical Specialist
E-mail: sara.mcivor@parks.ny.gov

cc: J. Samuelson – EP-PC K. Molinaro – M&L Associates

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

March 8, 2022

Mary Catherine Welch
Office Manager
Engineering & Surveying Properties, PC
71 Clinton Street
Montgomery, NY 12549

Re: HUD
Food Bank of the Hudson Valley
574 State Route 416, Montgomery
22PR00930

Dear Mary Catherine Welch:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

We note project area is located adjacent to the Harrison Meeting House Site and Cemetery, listed on both the State and National Registers of Historic Places. We have reviewed the site plan dated May 7, 2021. Based on that review, it is SHPO's opinion that the proposed new warehouse, as described, will have No Adverse Effect on historic or archeological resources, provided the following condition is met:

1. Vegetative Buffer: The project shall include the planting of a vegetative buffer between the Harrison Meeting House Site and Cemetery and the proposed warehouse development.

If you have any questions, please feel free to reach out via email.

Sincerely,

Sara McIvor
Historic Preservation Technical Specialist
E-mail: sara.mcivor@parks.ny.gov

cc: J. Samuelson – EP-PC
K. Molinaro – M&L Associates

APPENDIX 15

SEQUENCE OF

CONSTRUCTION ACTIVITY

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SEQUENCE OF CONSTRUCTION ACTIVITY

1. A meeting with village representatives, including village engineer, as well as contractors, project manager and foreman, is to take place a minimum of one week prior to construction.

2. Construction staging: stake out limit of disturbance. Install silt fence downhill of proposed construction. Install stabilized construction entrance and stabilize construction road(s). Install temporary sediment trap. Install permanent/temporary grassed swales.

3. Clearing and grubbing: remove vegetation from area of construction. Strip topsoil and stockpile in areas shown on the plan. Install sediment barriers around and establish temporary vegetation on topsoil stockpiles.

4. Rough grading: cut and fill site to approximate elevations shown on the plan. Implement dust control measures as necessary. Establish permanent stabilization in areas that are complete. Establish temporary stabilization on areas that will be graded again more than 21 days from last disturbance.

5. Road/building construction and utility installation: final grading and construction of roadways. Building excavation and construction. Install utilities. Install drainage inlet and outlet protection as each inlet/outlet is constructed. Ensure all erosion control measures are in working order.

6. Final grading and landscaping: remove temporary sediment traps and install permanent water quality/quantity facilities. Complete fine grading of site. Spread topsoil and prepare for permanent seeding and planting. Establish permanent vegetation in all remaining unstabilized areas. Install all site landscaping and plantings.

7. Post construction: upon stabilization of the site and establishment of all vegetation cover, remove all remaining temporary erosion control measures such as silt fence. Remove all silt and debris from the site including roadways, catch basins, and storm drains.

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APPENDIX 16

HYDRO INTERNATIONAL

FIRST DEFENSE

HYDRODYNAMIC SEPARATOR

CALCULATIONS AND

MANUFACTURER CUTSHEETS

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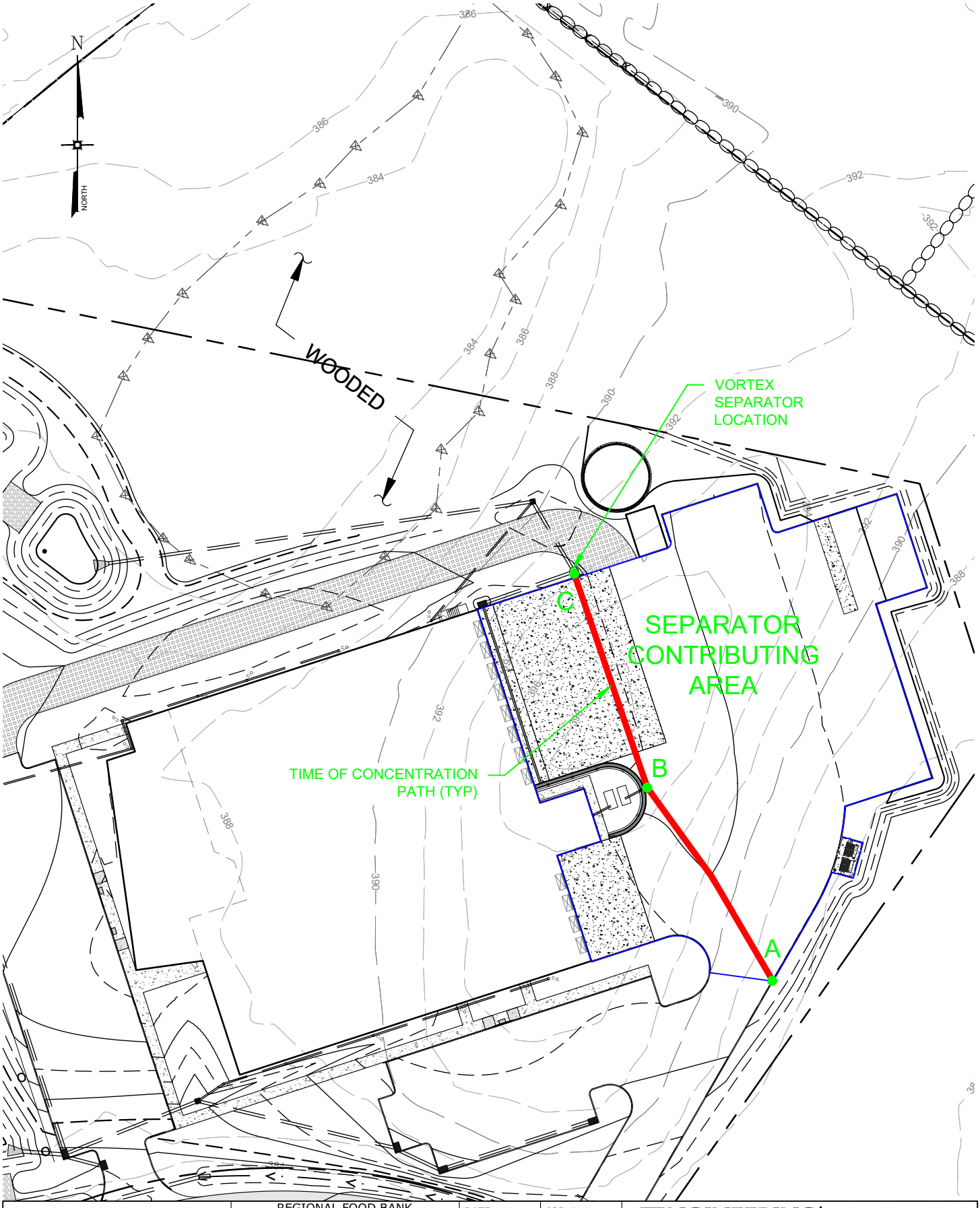

HYDRODYNAMIC SEPARATOR AREA	REGIONAL FOOD BANK HUDSON VALLEY 580 NYS ROUTE 416 VILLAGE OF MONTGOMERY ORANGE COUNTY, NEW YORK	DATE: JUL 2024 SCALE: 1"=70'	JOB # 1842.01 SHEET # F-4	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs

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

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**07/15/22**	**07/15/24**	**1**	**1**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**

LOCATION: **Village of Montgomery**

CALCULATED BY: **JM**

APPROVED BY: **JS**

REF DRAWING(S):

1. Runoff curve number (CN) Existing [Proposed] Subarea: **Vortex Contrib. Area**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Cover	98	0.98	96.04
	TOTAL =		0.98	96.04

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{96.04}{0.98}$$

CN (weighted) = 98.000 Use CN= **98**

2. Runoff S = 0.20

		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

TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1842.01	**07/15/22**	**02/10/23**	**1**	**1**

PROJECT TITLE: **Regional Food Bank - Hudson Valley**
LOCATION: **Village of Montgomery**
CALCULATED BY: **JM**
APPROVED BY: **JS**
REF DRAWING(S):

Existing | Proposed — Area: **Vortex Separator**

1. Sheet Flow

		Segment ID	A - B				
Surface Description (table 3-1)			Paved				
Manning's roughness coeff., 'n' (table 3-1)			0.01				
Flow length, L (total L ≤ 300 ft)	ft		125				
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		0.030				0.030

2. Shallow Concentrated Flow

		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

		Segment ID	B - C				
Cross sectional flow area, a	ft^2		4.91				
Wetted perimeter, p_w	ft		7.85				
Hydraulic radius, $r = a/p_w$	ft		0.63				
Channel slope, s	ft/ft		0.021				
Manning's roughness coefficient, n			0.010				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s		15.709				
Flow Length, L	ft		120.0				
$T_t = \frac{L}{3600\,V}$	hr		0.002				0.002

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr =** **0.03**

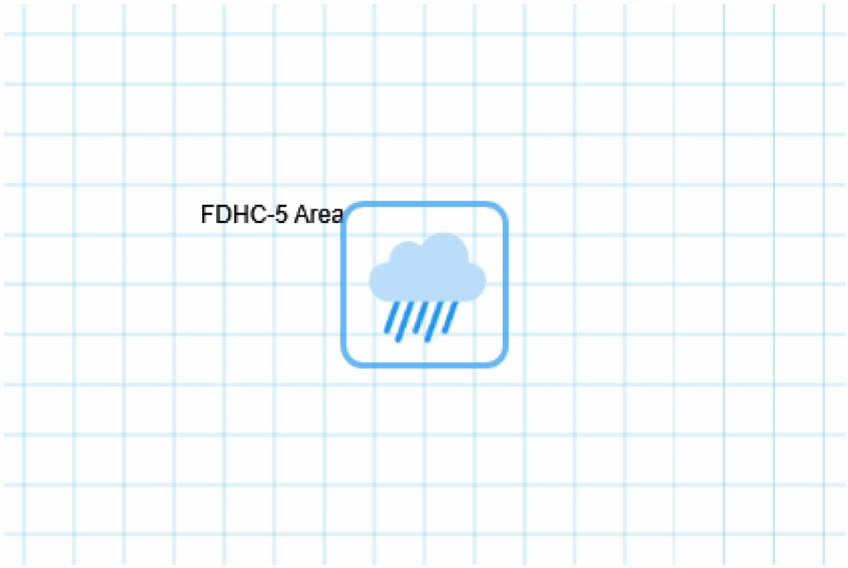
min = **1.80**

Basin Model

Hydrology Studio v 3.0.0.24

Project Name: Regional Food Bank - Hudson Valley

07-17-2024



Hydrograph by Return Period

Project Name: Regional Food Bank - Hudson Valley

07-17-2024

Hydrology Studio v 3.0.0.24

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	FDHC-5 Area	2.632				4.761			8.399

Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

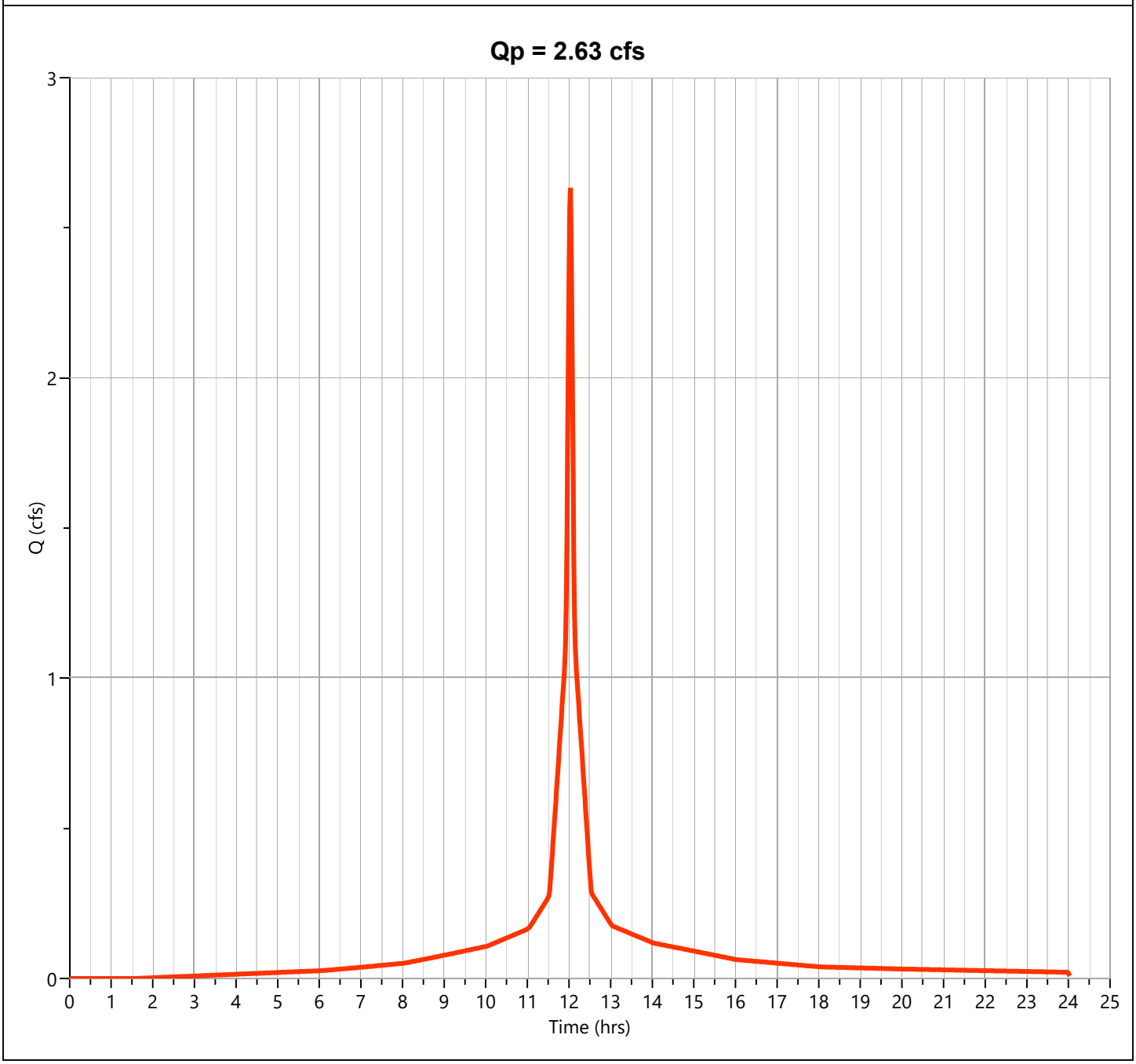
Hydrology Studio v 3.0.0.24

07-17-2024

FDHC-5 Area

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.632 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.03 hrs
Time Interval	= 1 min	Runoff Volume	= 7,971 cuft
Drainage Area	= 0.98 ac	Curve Number	= 98
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 2.62 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

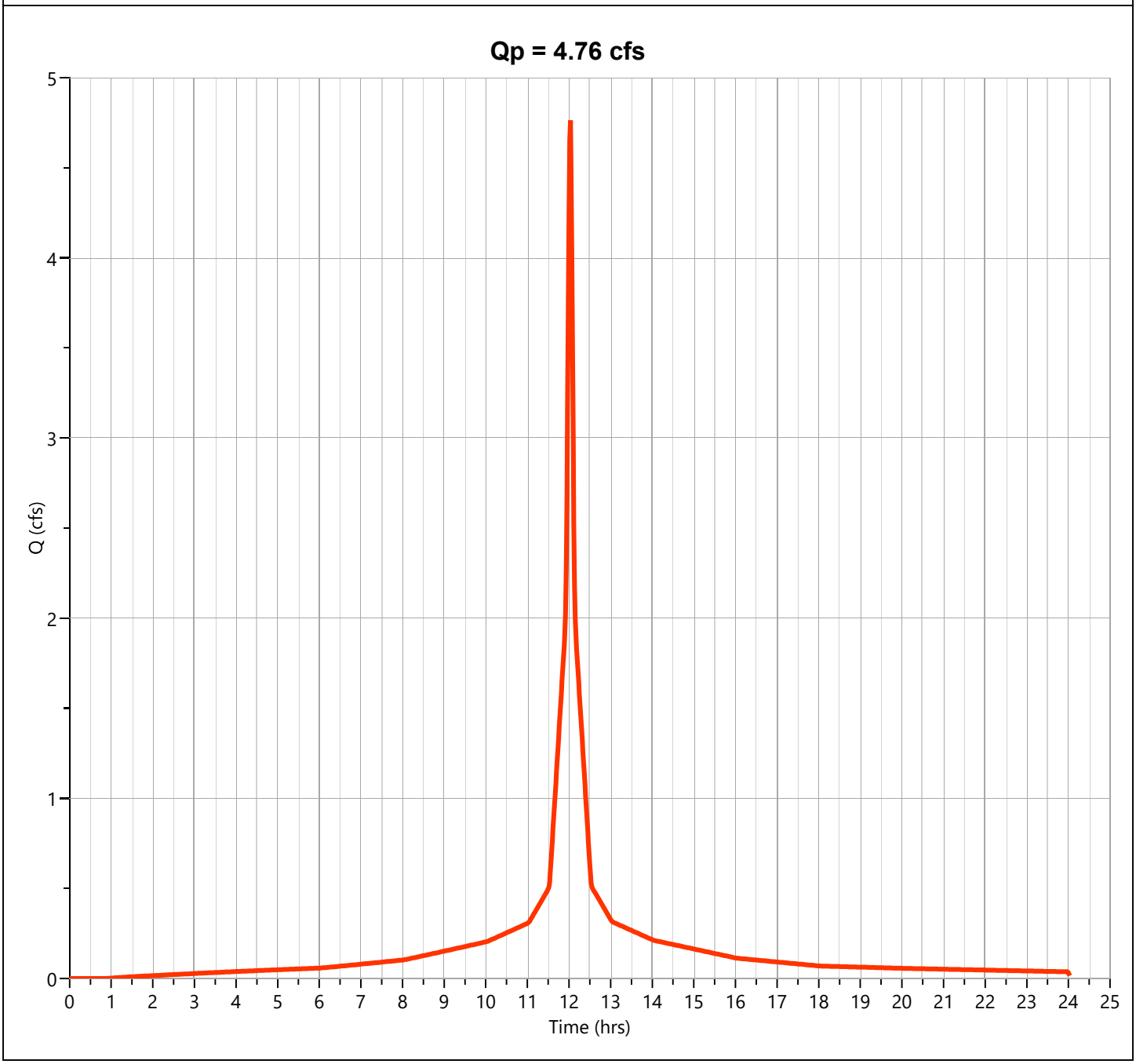
Hydrology Studio v 3.0.0.24

07-17-2024

FDHC-5 Area

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.761 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.03 hrs
Time Interval	= 1 min	Runoff Volume	= 14,820 cuft
Drainage Area	= 0.98 ac	Curve Number	= 98
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 4.68 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Regional Food Bank - Hudson Valley

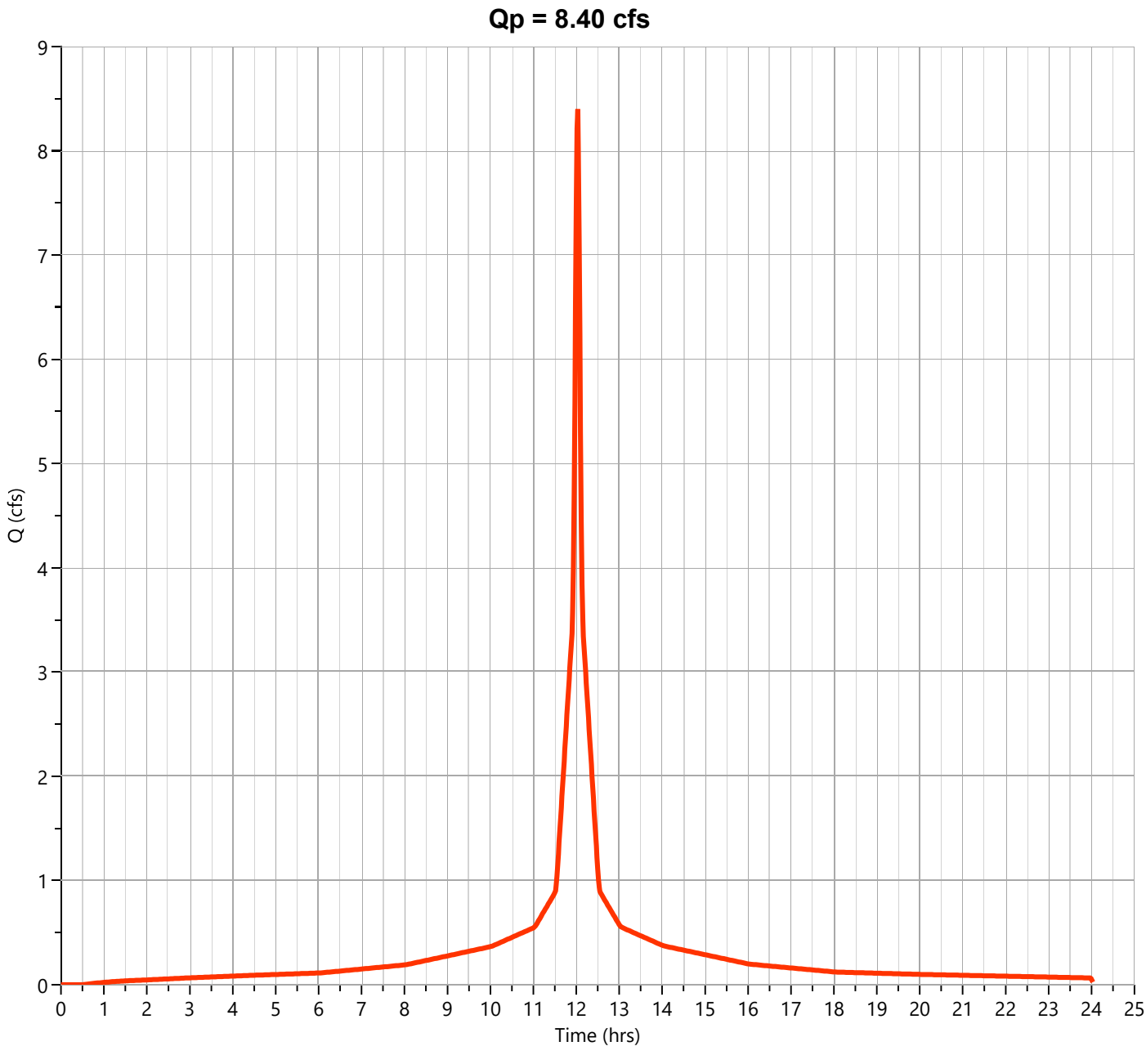
Hydrology Studio v 3.0.0.24

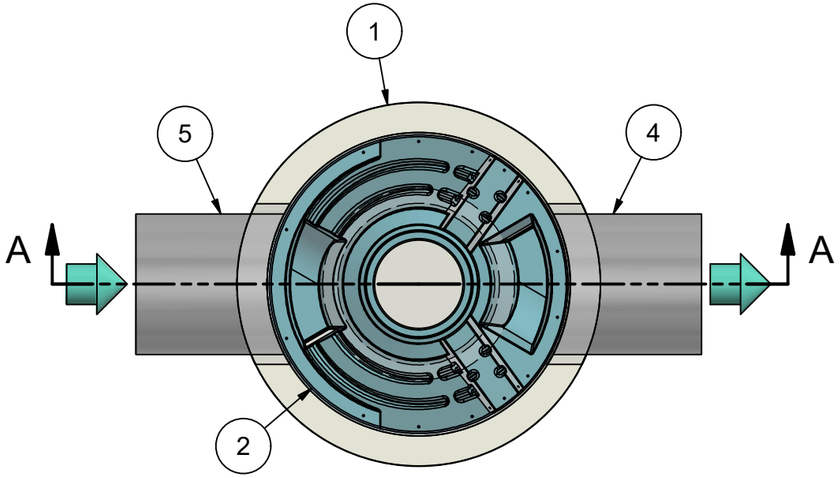
07-17-2024

FDHC-5 Area

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.399 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.03 hrs
Time Interval	= 1 min	Runoff Volume	= 26,614 cuft
Drainage Area	= 0.98 ac	Curve Number	= 98
Tc Method	= User	Time of Conc. (Tc)	= 1.8 min
Total Rainfall	= 8.22 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484

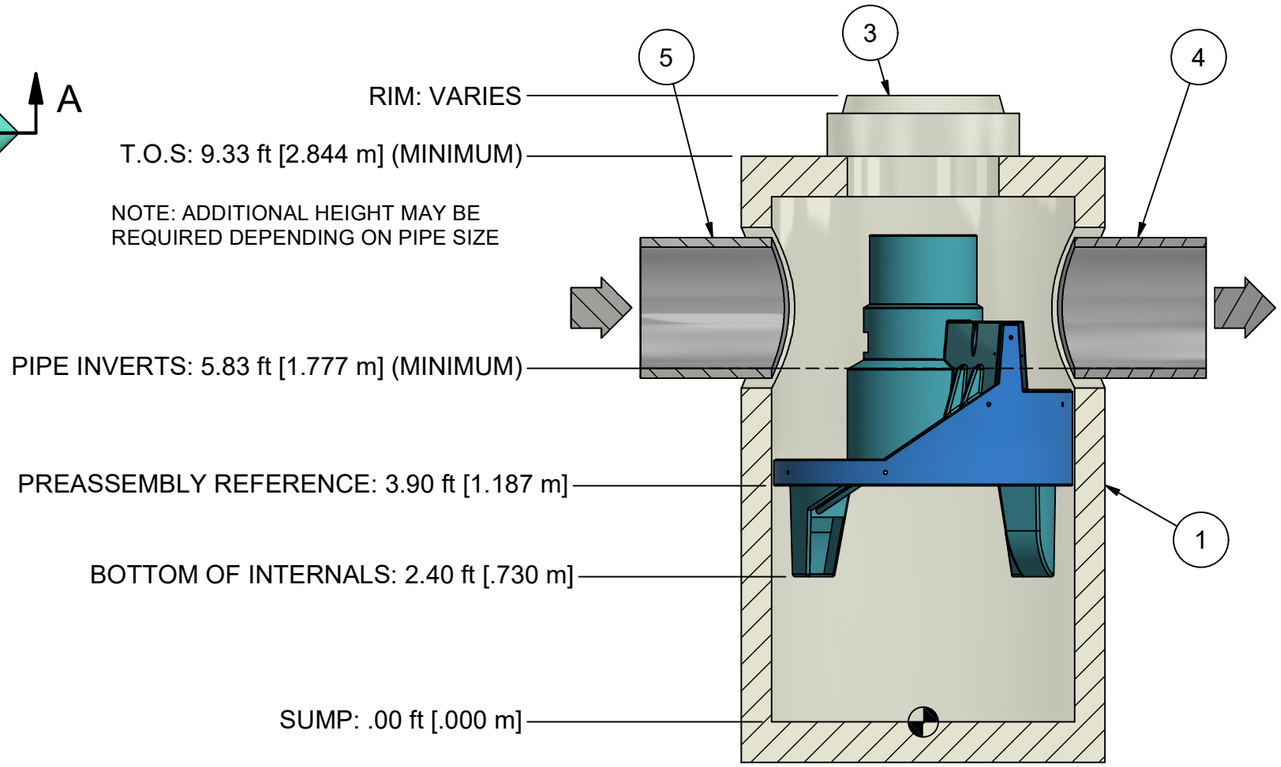




PLAN VIEW

HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS AS REQUIRED



SECTION A-A

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.

3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

PROJECTION

IF IN DOUBT ASK

DATE:	SCALE:
11/2/2021	1:30

DRAWN BY:	CHECKED BY:	APPROVED BY
ER	MRJ	

Title
5-ft DIAMETER
FIRST DEFENSE

GENERAL ARRANGEMENT

Hydro International
hydro-int.com
HYDRO INTERNATIONAL

WEIGHT:	MATERIAL:

STOCK NUMBER:

DRAWING NO.:
FD GA-5

SHEET SIZE:	SHEET:	Rev:
B	1 OF 1	-

PRODUCT SPECIFICATION:

1. Peak Hydraulic Flow: 20.0 cfs (566 l/s)
2. Min Sediment Storage Capacity: 1.1 cu. yd. (0.8 cu. m.)
3. Maximum Inlet/Outlet Pipe Diameters: 24 in. (600 mm)
4. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
5. For more product information including regulatory acceptances, please visit https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plans).
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	60	1500	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

First Defense®

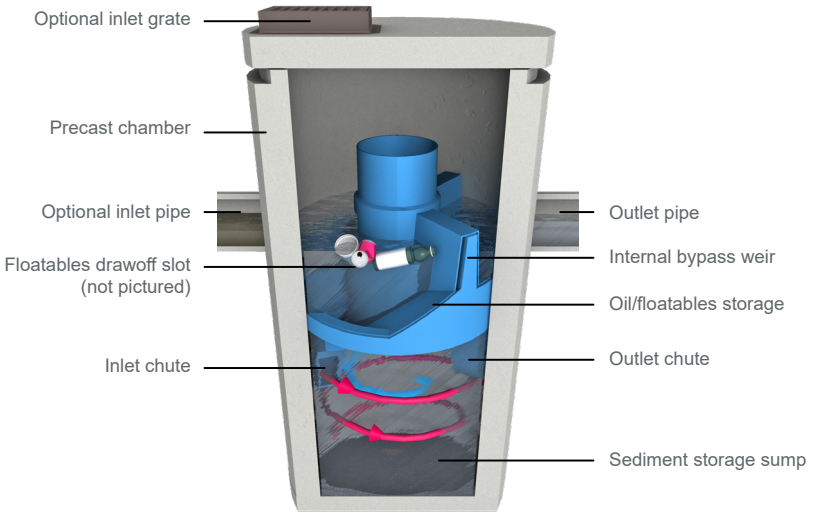
Advanced Hydrodynamic Separator

Product Summary

A Simple Solution for the Trickiest Sites

First Defense is a versatile stormwater separator with some of the highest approved flow rates in the United States. Engineers and contractors can save site space and reduce project costs by using the smallest possible footprint. It works with single or multiple inlet pipes and inlet grates. An internal bypass conveys infrequent peak flows directly to the outlet, efficiently capturing pollutants and preventing washouts.

Features



Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Applications

- Areas requiring a minimum of 50% TSS removal
- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Highways, parking lots, industrial areas and urban developments
- Pre-treatment to ponds, storage systems, green infrastructure

Benefits

Highest Flow Through the Smallest Footprint

- **Smaller Footprint, Lower Costs**
  First Defense provides space-saving, easy-to-install surface water treatment in standard size chambers/manholes.
- **Adapt to Site Limitations**
  Variable configurations will help you effectively slip First Defense into a tight spot. It also works well with large pipes, multiple inlet pipes and inlet grates.
- **Reduce Installation Time & Costs**
  Every First Defense unit is delivered to site pre-assembled and ready for install.
- **Online System Configuration**
  First Defense eliminates the need for separate structures with its integrated internal bypass.
- **Designed with Maintenance in Mind**
  Easy vactor hose access through the center shaft of the system makes for quick sump cleanout, saving time and reducing long-term operational cost.

Sizing & Specifications

First Defense units are available in **six diameters** to fit standard chamber and manhole sizes. The dimensions below are common across all model numbers.

Diameter	Peak Online Flow Rate	Maximum Pipe Diameter[1]	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
(ft / m)	(cfs / L/s)	(in / mm)	(yd^3 / m^3)	(ft / m)	(ft / m)
3 / 0.9	15 / 424	18 / 450	0.4 / 0.3	2.0 - 2.5 / 0.61 - 0.76	3.71 / 1.13
4 / 1.2	18 / 510	24 / 600	0.7 / 0.5	2.0 - 3.0 / 0.61 - 0.91	4.97 / 1.5
5 / 1.5	20 / 566	24 / 600	1.1 / .84	2.0 - 3.7 / 0.61 - 1.13	5.83 / 1.5
6 / 1.8	32 / 906	30 / 750	1.6 / 1.2	2.0 - 4.1 / 0.61 - 1.25	5.97 / 1.8
8 / 2.4	50 / 1415	48 / 1200	2.8 / 2.1	2.4 - 5.4 / 0.73 -1.65	7.40 / 2.2
10 / 3.0	50 / 1415	48 / 1200	4.4 / 3.3	2.4 - 6.8 / 0.73 - 2.07	10.25 / 3.12

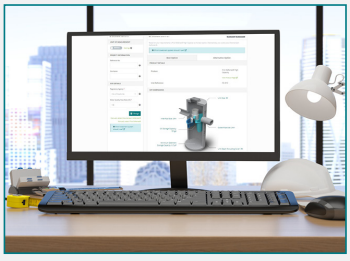
Hydro International offers First Defense units in **two versions** that conform to the performance requirements of different states' water quality regulations.[4]

First Defense High Capacity Model Number	Typical TSS Treatment Flow Rates	
	NJDEP Certified[4]	110µm
	(cfs / L/s)	(cfs / L/s)
FDHC-3	0.84 / 23.7	1.06 / 30.0
FDHC-4	1.50 / 42.4	1.88 / 53.2
FDHC-5	2.35 / 66.2	2.94 / 83.2
FDHC-6	3.38 / 95.7	4.23 / 119.8
FDHC-8	6.00 / 169.9	7.52 / 212.9
FDHC-10	9.38 / 265.6	11.75 / 332.7

First Defense Optimum Model Number	NJDEP Certified Treatment Flow Rates[4]
	(cfs / L/s)
FDO-3	1.02 / 28.9
FDO-4	1.81 / 51.3
FDO-5	2.83 / 80.0
FDO-6	4.07 / 115.2
FDO-8	7.23 / 204.7
FDO-10	11.33 / 320.6

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]These are guidlines only. Minimum distance is based on pipe diameter and headloss at assumed flow rates, contact Hydro for detailed design.
[4]NJDEP Certified / NJCAT Verified, based on one inlet pipe and no inlet grate.

Also available in a screened configuration for Full Trash Capture!



Free Online Design Tool

This free online sizing tool will recommend the best separator, model size and online or offline configuration based on site-specific data entered by the user.

Upon completion, users have the option to submit the design to Hydro International for a free review by our engineering team.

Go to hydro-int.com/sizing to access the tool.

Hydro International

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/firstdefense

FD_SS_B_2203

Download Drawings:
→ hydro-int.com/fddrawings

Operation & Maintenance Manual:
→ hydro-int.com/fd-om

APPENDIX 17

CONTRACTOR CERTIFICATION FORM

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CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-15-002)

As per *Part III.A.6* on page 13 of *GP-0-15-002* (effective January 29, 2015):

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

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence <u>any</u> *construction activity*:

_____	**NYR** _____	_____
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Responsible Corporate Officer/Partner Signature	Date
Name of above Signatory	Name of Company
Title of above Signatory	Mailing Address
Telephone of Company	City, State and Zip

Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:

***'TRAINED CONTRACTOR'* FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR**

_____	_____	_____
Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

A copy of this signed contractor certification statement must be maintained at the SWPPP on site

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APPENDIX 18

SWPPP

CONSTRUCTION

LOG BOOK

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APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS
Project Name _____
Permit No. _____ Date of Authorization _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections
The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____	_____
Inspector (print name)	**Date of Inspection**
_____	_____
Qualified Professional (print name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.