Stormwater Management Report
for
(Part I)

42 Gates Ave

Village of Victory
Saratoga County, New York

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STORMWATER MANAGEMENT REPORT

For
42 GATES AVE
VILLAGE OF VICTORY, SARATOGA COUNTY, NEW YORK

The overall Stormwater Management package consists of three reports:

- The first report is the Stormwater Management Report. The Engineering report demonstrates through calculations that the proposed management technique will operate correctly and that the practice is designed in accordance with applicable standards.
- The second report is the Stormwater Pollution Prevention Plan (SWPPP). The SWPPP details activities that are to occur during construction of the site. The SWPPP identifies the individuals that are responsible to prevent water quality violations and offsite degradation. The narrative report, along with the plans, show locations for temporary measures, such as silt fence, that should be used to protect the site until the site is stabilized. Sample weekly, monthly and quarterly reports have been included for documenting compliance with the SPDES permit.
- The third report is the Post-Construction Maintenance Plan. The Maintenance Plan identifies to the Owner which activities can be anticipated to ensure that the stormwater management practice operated correctly. Routine maintenance activities have been identified and typical annual operating expenses have been presented.

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B. Stormwater Pollution Prevention Plan (SWPPP)

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C. Post Construction Maintenance Plan

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1.0 EXECUTIVE SUMMARY

The applicant proposes to redevelop the historic mill located at 42 Gates Ave in the Village of Victory. The parcel is 6.6 acres (tax parcel 170.30-2-27.1) and is mostly overgrown with vegetation as the site has been abandoned for some time. The redeveloped will consist of removing the one-story building on the site and changing the 5-story mill into 186 apartments and 5,0000 sf of retail space. The main mill building exterior will be repaired and will keep the same general appearance as NYSORRHP has jurisdiction of the historic structure. The parking area has been proposed to be phased for this project. 288 parking stalls are proposed for the project with 69 parking spaces being banked in two locations. The banked parking can be constructed at a later date if required by village or owner. This report assumes all bank parking and soil disturbance are to be constructed. Thus, water quality volume, stormwater runoff calculations etc. within this report is based upon the banked parking being constructed.

The proposed plan the project will be subject to NYSDEC SPDES Phase II requirements for water quality and quantity as the project will disturb greater than 1 acre. Approximately 4.0 acres will be disturbed for the redevelopment of the site. The proposed site improvements have been designed in accordance with the Stormwater Management Design Manual (SWDM) published by the New York State Department of Environmental Conservation (NYSDEC) The objective of controlling water quantity is to ensure that the peak rate of runoff leaving the site does not increase as result of site development. Enhanced stormwater regulations implemented in 2003 call for more stringent design standards when dealing with stormwater runoff on sites disturbing more than 1 acre of land. The "new" regulations are commonly referred to as "Phase II" guidelines. The proposed improvements for the project site meet or exceed water quantity, runoff reduction and water quality requirements as specified in the 2015 NYSDEC SWDM guidelines.

GP-0-15-002 expired on January 30, 2020 and is now GP-0-20-001. The NYSDEC has not issued guidance on the current transitional policy. However using the prior policy guidance from 2015, that if the construction activities are subject to governmental review and approval and an application was made before the effective date of the permit change, the project may seek coverage under the current permit as long as it conforms with the current Design Manual at the time of application (refer to DOW-IGP 4 issued May 14, 2015 by the NYSDEC Division of Water found at https://www.dec.ny.gov/chemical/43133.html) . This project was substantially designed before the effective date of the new General Permit. As such and unless an updated transitional policy is issued by the NYSDEC, this project may seek coverage under GP-0-20-002 by applying the design principles found in the 2015 NYSDEC Design Manual.

The proposed management strategy consists of using Underground Infiltration Array (I-4), to meet NYSDEC water quality and runoff reduction volume requirements the project directly for the project site.

Routine maintenance is a key component in the successful operation of the stormwater management practice. Provisions ensuring the upkeep are required and are submitted in the accompanying maintenance plan. The Maintenance Plan, Stormwater Pollution Prevention Plan (SWPPP) and draft Notice-of-Intent (NOI) Application have been completed for this site. The NOI is required to be submitted to NYSDEC in order to obtain a SPDES Phase II permit. Application to NYSDEC for coverage under the Phase II permit occurs prior to construction activities and after municipal site plan approvals are obtained.

The following Stormwater Management Report quantitatively assesses the pre-development and post-development runoff conditions of the site. The report documents that the proposed improvements will meet the minimum requirements of water quality parameters as set forth in the NYSDEC guidelines.

1.1 Methodology for Designing Storm Water Management

1. Determine contributory watershed area(s) and subsequent sub-watersheds for proposed site according to site conditions. Design a pipe layout to convey stormwater to selected locations.

2. Evaluate pre and post development stormwater runoff conditions for various storm intensities, durations and frequencies of occurrences using USDA Technical Release 55 (TR-55) methodology.

3. Evaluate peak runoff and storage requirements for the NYSDEC specified 1, 2, 10, 25 and 100-year storm frequencies.

2.0 SITE CONDITIONS

2.1 Topography

The general topography slopes to the rear of the property (west to east). See Exhibit E.2 for the existing topography and is generally steep.

2.2 Soils

The USDA Soil Survey was used to determine the existing soils within the project boundaries. Hydrologic soil groups were determined to analyze runoff volumes and flow rates. Soils found within the project and adjacent properties are as follows:

MnC	Manlius-Nassau Complex	HSG C

The soils varied within hydrologic soil groups A and D; ranging from well to poorly drained soils respectively. See Exhibit A.4 for further soil information. The information in Exhibit A.4 is depicted in Exhibit E.2, entitled "Soil Map" for soil delineation within the project site.

2.3 Test Pits and Percolation Test

Contained with the plans there are multiply test pits and percolation test that have been performed by MJ Engineering. The proposed Infiltration system is situated near in test pits TP#1, TP#2 and TP#3. Per the test pit results the test pit went down over 8 feet (elevation) in depth at had a starting elevation of about 171.0. The proposed bottom of infiltration system will be at elevation 167.5. Based upon the test pits, the highest season high water elevation was determined to be lower than elevation 163.0. Per NYSDEC SWDM an infiltration basin is required to have 3-foot separation requirement between seasonal high-water surface elevation and bottom of infiltration system. Thus, the proposed bottom of infiltration array is at elevation 167.50 or it provides 3.0 feet of separation minimally.

Two Percolation tests (falling head test in conformance with NYSDEC SWDM) were performed next to the test pits. The infiltration rate of the proposed infiltration area has been set at 5.5 inches/hour in the design calculations or over a 1.5 safety factor has been used based upon the existing soil infiltration rate was determined to be 8.5 and 12.7 inch/hour.

3.0 PRE AND POST DEVELOPMENT GRAPHICAL PEAK DISCHARGE

This section describes the stormwater analysis relative to the site, including the runoff generated within the limits of the site as well as contributing watershed to the discharge point. Analysis of upstream/downstream watershed to the receiving waters for this project site is not included in the computations for this report. The peak discharge rates represented in this report demonstrate only the expected peak flows from the delineated watersheds and do not take into account the overall watersheds. The non-delineated Pre and Post Development upstream/downstream watersheds are considered base flow and where the proposed site improvement will not have an effect on stormwater runoff. Therefore, the Pre and Post Development non-delineated upstream/downstream watershed will have the exact same stormwater runoff characteristics.

3.1 Pre-Development Area Descriptions and Discharge Points

The Pre-Development stormwater system was analyzed by subdividing the watershed areas to estimate the runoff from each watershed area. The site was divided into one area, based on the discharge points. (Refer to Figure 2– "Pre-Development Watersheds" in Exhibit E.3)

Pre-Development Area #1 has been delineated as the area which discharges stormwater runoff to the Fish Kill (Discharge Point #1). The is no closed drainage system on the existing site and stormwater is allowed to sheet flow directly into the stream. The watershed is approximately 8.7 acres in size, and contains the grass, woods, brush and impervious area from roads, sidewalks and buildings.

3.2 Post Development Area Descriptions and Discharge Points

The following section describes the post development stormwater system. The post development watershed has been subdivided in order to accurately estimate the runoff from the watershed and the affect of the proposed development. To analyze and compare the post development conditions, with the pre-development conditions, the watershed was divided into two areas. (Refer to Figure 3 – "Post-Development Watersheds" in Exhibit E.4)

Post Development Area #1 has been delineated as the area which discharges stormwater runoff to the Fish Kill (Discharge Point #1). The and stormwater is allowed to sheet flow directly into the stream. The watershed is approximately 3.5 acres in size, and contains the grass, woods, brush and impervious area from sidewalks.

Post Development Area #1A contains grass, woods and impervious area from the proposed site improvements as well-as existing impervious areas from pavement, and buildings. The stormwater runoff will be collected by an on-site closed drainage system. The closed drainage system will direct stormwater runoff to first go through a hydrodynamic device (pretreatment) before the stormwater is allowed to enter the Infiltration Array. During larger storm events stormwater runoff is diverted around the underground infiltration array and is directed to the Fish Kill (Discharge Point #1). As the First Kill is a 5th order stream or larger per NYSDEC SWDM attenuation of peak stormwater runoff is not required for this project.

3.3 Time of Concentration (TOC)

Times of Concentration (TOC) paths were determined for pre and post development subareas by using the methodology described in National Resource Conservation Service's TR-55 manual. Sheet flow never exceeded 150 feet over natural terrain for Pre-Development and 100 feet for Post Development per NYSDEC standards over disturbed areas. A Manning's n=0.40 was used for Pre and Post development areas that sheet flowed across wooded areas. Manning's n=0.24 for areas in which there was sheet flow across lawns. Channel flow time for existing swales were estimated based on a 1-foot depth along with contours from the base map to determine cross sectional area and wetted perimeter. Channel flow time through proposed/existing piping was based on a 12" SICPP, flowing full with a Manning's n=0.022. Calculations for the TOC paths can be found in Exhibit A.2 and A.3.

3.4 Weighted Curve Number (CN)

Within each watershed area, cover type and hydrologic condition are compared to the Hydrologic Soil Group classification to derive a runoff curve number. Subsequently, a weighted average, or composite runoff curve number (CN) is determined. Runoff curve number supporting calculations for pre-development and post-development scenarios are presented in Exhibit A.2 and A.3.

3.5 Peak Discharges for Pre and Post Development Areas

Using TR-55 Graphical Method, the peak discharges for both pre and post development areas/watersheds are shown in the following tables. Note: the peak discharges for both pre and post development were based on TOC, runoff (Q), Weighted Curve Number (CN) and other factors. The calculations for these values are found in Exhibit A.2 and A.3.

Table-1 Pre-Development Peak Discharge

Watershed	1-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	100-Year Peak Flow (cfs)	CN	Area (Acres)	TOC (Hrs.)
Pre #1	6.18	8.12	17.09	22.97	31.49	80	8.73	0.346

Table-2 Post Development Peak Discharge (Unattenuated)

Watershed	1-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	100-Year Peak Flow (cfs)	CN	Area (Acres)	TOC (Hrs.)
Post #1	0.92	1.39	4.07	6.05	8.89	70	2.43	0.163
Post #1A	15.20	17.85	29.29	36.41	46.35	94	6.30	0.10

3.6 Pre-Development vs Post Development Peak Discharges at Discharge Points

Post Development Areas #1 and #1A have a combined peak rate greater than Pre-Development Area #1 peak rate to discharge point #1 if a stormwater detention facility is not constructed. Stormwater discharge from the project site goes directly to a 5th other stream or large per NYSDEC SWDM and does not required water quantity mitigation. The proposed infiltration array will lower Post Development peak rates from the site. See section 5.0 for further discussion.

3.7 Graphical Peak Discharges Usage

The graphical peak discharge method was used for the following:

1. Preliminary sizing of Holding Facility;
2. Sizing the Proposed Conveyance System;
3. Sizing of Holding Facility
4. Analysis of Holding Facility.

4.0 NYSDEC UNIFORM SIZING CRITERIA

The Environmental Protection Agency and New York State Department of Environmental Conservation have placed a greater emphasis on ensuring that water quality standards are maintained both onsite as well as downstream of the development. Maintaining water quality involves the removal or reduction of pollutants including suspended solids, phosphates, nitrates and other chemicals generated by development. The new water quality standards expand upon the peak flow attenuation concept to include parameters designed to protect downstream channels from stream bank erosion and flooding.

NYSDEC assumes that, by default, the proposed stormwater management practice meets water quality objectives if the proposed practice is designed in accordance with the List of Acceptable Stormwater Management Practices set forth in the *NYS Stormwater Management Design Manual (SMDM, page 4-3)*.

The proposed strategy consists of utilizing closed drainage system to send stormwater runoff to the Infiltration Array. The stormwater analysis was performed using *Hydraflow Hydrographs* software developed by *Intellisolve®*. The software uses the Soil Conservation Service (SCS), now known as (NRCS) National Resources Conservation Service, hydrologic methods to compute the 24-hour precipitation event. The runoff curve numbers and time of concentrations were computed using the NRCS TR-55 tabular methodology as describe in Section 3.0 of this report. The 24-hour rainfall amounts for Saratoga County are documented in Exhibit A.1.

4.1 Runoff Reduction Volume (RRv)

Implementation of green infrastructure practices aids in the reduction of runoff by proactively reducing runoff volume, peak flow, and flow duration. It promotes infiltration and evapotranspiration to improve groundwater recharge, and also relieves pollutants for the "end of pipe" stormwater treatment practice. The green infrastructure techniques listed below are pre-approved methods that the NYSDEC has deemed acceptable to be used towards the planning of development projects, and runoff reduction. Some standard SMPs may also be used instead of the factors below.

Table-3 Runoff Reduction Techniques

Group	Practice	Implementation/Justification
Preservation of Natural Resources	Preservation of Undisturbed Areas	A minimum 20 foot proposed buffer along river is being implemented.
	Preservation of Buffers	A minimum 20 foot proposed buffer along river is being implemented.
	Reduction of Clearing and Grading	As the parcel size is small and the site development criteria of Village and site grading as be reduced so to construct the site.
	Locating Development in Less Sensitive Areas	Generally, none present on the site.
	Open Space Design	Generally, none present on the site.
	Soil Restoration	Soil restoration will be utilized for this site.
Reduction of Impervious Cover	Roadway Reduction	Roadway/accessway cross sections are minimal while maintaining Fire Code compliance.
	Sidewalk Reduction	Sidewalk widths are based on ADA compliance and good engineering practice.
	Driveway Reduction	None present for project.
	Cul-de-sac Reduction	Cul-de-sacs have been avoided at this project.
	Building Footprint Reduction	The existing building is to remain on the site as it is historic.

	Parking Reduction	The parking variance has been obtained to reduce parking below Village Code requirements.
Runoff Reduction Techniques	Conservation of natural areas	Natural Areas have been protected to the extent possible based upon Village code requirements
	Sheetflow to riparian buffers or filter strips	The existing riparian buffer is to be maintained.
	Vegetated open swale	Swales are not practical at this project location based on the topography.
	Tree planting/tree box	Extensive landscaping is to be provided on-site.
	Disconnection of rooftop runoff	Project site does not allow enough space for dedicated filter strip area and the existing building has internal drainage.
	Stream daylighting for redevelopment projects	Not applicable
	Rain garden	Per Chapter 5 of NYSDEC SWDM page 5-79 states "rain garden cannot be used to treat parking lot or roadway runoff". Rain gardens are also not a suitable treatment practice for the buildings based on the proposed grades and site design.
	Green roof	Not applicable as the existing building is historic.
	Stormwater Planter	Planters is not conducive for this site because the maximum allowable area is 15,000 sf and the proposed building footprints are minimally 40,000 sf, thus planters are not an option per NYSDEC for this site.
	Rain tank/Cistern	The intent of cisterns is to collect roof water and reuse. As the green space is minimal, there are no opportunities for reuse of stormwater on this project.
	Porous Pavement	Porous pavement requires soils to be A, B or C to function properly per NYSDEC SWDM Chapter 5 page 5-116. As the site is C soils but was not selected for the project do to maintenance and cold weather climate.

The RRv is the minimum volume of runoff that is to be removed from the runoff volume that is sent to the "end of pipe" treatment practice by utilizing infiltration, evaporation, recycling, recharging, etc. The intent of implementing the green infrastructure techniques is to redistribute the WQv prior to runoff being collected by the proposed stormwater drainage system. As it is often difficult to remove the whole WQv, the minimum volume required is set as RRv. The remaining volume that is not treated (WQv – RRv as necessary) will then be treated at the "end of pipe" treatment system.

$$RR_v(\text{acre-feet}) = [(P)(Rv^*)(Ai)] / 12$$

Where:
Ai=(S)(Aic)
=impervious cover targeted for runoff reduction
(Aic)=Total area of new impervious cover
Rv* = 0.05+0.009(I) where I is 100% impervious
S=Hydrologic Soil Group (HSG) Specific Reduction Factor (S)

HSG A = 0.55
HSG B = 0.40
HSG C = 0.30
HSG D = 0.20

Based upon calculations in Exhibit B.2 the following was determined:
Minimum RRv= 6,276 cf
Project achieves= 21,134 cf of RRv on the site.

It should be noted that the 100% reduction shown in the calculations utilizes the for infiltration areas.

4.2 Water Quality Volume (WQv)

The Water Quality Volume is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The proposed stormwater management strategy for this project is sized to accommodate the Water Quality Volume. The WQv was determined to be 21,134 cf for Post Development Area #1A. The Water Quantity Area was based upon the existing buildings, parking areas, banked parking areas and sidewalk within Post Area #1A. There is a small amount of impervious area with Post Development #1 watershed (5,280 sf). This impervious area not being treated is offset by the existing impervious area with Post Development #1A watershed. The existing building (40,000 sf + Gates Ave + existing homes on Gates Ave) are all being sent to the proposed infiltration array which more then satisfies NYSDEC SWDM.

4.3 Channel Protection Volume (CPv)

The channel protection storage volume requirements are designed to protect downstream channels from erosion. This goal is accomplished by providing 24-hour extended detention of the one-year, 24-hour rainfall storm event. This volume is held over a 24 hour period; controlled by a discharge rate (volume/24 hours).

4.4 Overbank Flood Protection Volume

Not applicable for project.

4.5 Extreme Flood Protection Volume

Not applicable for project.

4.6 Safe passage of the 100-Year Design Storm

Not applicable for project.

5.0 PROPOSED WATER QUALITY AND QUANTITY CONTROLS

5.1 Proposed Stormwater Management Strategy

Stormwater is to be collected catch basins and a closed drainage system and directed towards the stormwater detention area located at the north side of the project site. The stormwater is to be treated by an Infiltration Array and recharge stormwater runoff up to the 100-year storm event.

The stormwater analysis was performed using *Hydraflow Hydrographs* software developed by *Intellisolve®*. The software uses the Soil Conservation Service (SCS), now known as (NRCS) National Resources Conservation Service, hydrologic methods to compute the 24-hour precipitation event. The runoff curve numbers and time of concentrations were computed using the NRCS TR-55 tabular methodology as describe in Section 3.0 of this report. The 24-hour rainfall amounts for Saratoga County are documented in Exhibit A.1.

The hydrograph model is set up to simulate Pre-Development Area #1 versus Post-Development Areas #1 and #1A to Discharge Point #1. It is the goal of the hydraulic model to demonstrate the water surface elevation within the proposed infiltration array and the net increase in peak discharge rates occur between pre-development and post-development conditions for the 1, 2, 10, 25 and 100-year storm events. While the discharge rate does not need to be controlled to the pre-development rate, the discharge rates must be simulated to ensure the existing downstream infrastructure can accommodate the increased flow, or to be replaced with one that is sized appropriately

5.2 Water Quality (WQv/RRv) For Post Development Areas #1A

Stormwater from Post Development Area #1A will be collected by a closed drainage system and will be sent to a Infiltration Array (I-4). Using the New York State Stormwater Design Manual, the WQv was established to be 21,134 cf this calculation can be found in Exhibit B.1. For an infiltration system, 100% of WQv must be pretreated before it enters the Infiltration basin as a result of the percolation rate being faster than 5.0 inch/hour. As there is not enough space for a traditional forebay, a hydrodynamic unit will be used as a pretreatment device for this project.

Catch basin (CB) #15 will send stormwater to a hydrodynamic unit before it is allowed to flow into the Infiltration array. Using the New York State Stormwater Design Manual, the WQv was established to be 21,134 cf (see Exhibit B.1) and that equals to a WQv peak flow 7.91 cfs (Exhibit B.3). The proposed hydrodynamic unit will be model 6-downstream defender by Hydro International which can treat a WQv rate up to 8.0 cfs. (See Exhibits B.4 and is sized per NJDEP treatment standards).

The Infiltration array will achieve 100% WQv treatment and 100% RRv treatment for the project, thus meeting NYSDEC SWDM requirements.

5.3 Water Quantity Using TR-55 Tabular Method For Post Development Areas #2

Hydraflow Hydrographs software was used to develop a hydraulic model for Pre-Development Area #1 and Post-Development Areas #1, and #1A watersheds to determine stormwater discharge rates from the project site. The Post Development resultant expected flow to discharge point #1 for the various storm intensities on a time line is calculated by hydrograph #8 labeled "Post Combined Flow" in *Hydraflow Hydrographs* software model. Pre-Development Area #1 is designated by hydrograph #1 labeled "Pre Area #1" in *Hydraflow Hydrographs* software model.

Table-4 Pre vs Post Flow to Discharge Point #1

Discharge Point #1	1-Year Flow (cfs)	2-Year Flow (cfs)	10-Year Flow (cfs)	25-Year Flow (cfs)	100-Year Flow (cfs)
Pre Areas #1,	6.341	8.780	17.52	24.68	39.61
Post Areas #1, #1A (Discharge from Bypass flow + Overland Flow form Post Area #1)	6.292	9.519	20.93	29.94	47.77
Net Change in Flow	-0.049	+0.739	+3.41	+5.26	+8.16

See Exhibit C.1 for *Hydraflow Hydrographs* software model information. Per NYSDEC SWDM, Fish Kill (discharge point #1) is consider a 5th order stream or large in which water quantity mitigation is not require, but as the infiltration array does reduce peak rates from the site but not significantly over the 10-year event.

To obtain the results in Table 4, Post Development Area #1A stormwater runoff was diverted via the diversion structure by hydrograph# 4. Hydrograph 4 (flow split/ or CB#15) allows the model to determine flow rate to the hydrodynamic unit by the 18" pipe (elevation 168.20 at CB#15) and how the 30" high flow bypass (elevation 167.70 within CB#15) works together during a storm event.

Post Development Areas #1A inflow vs. outflow hydrographs were stimulated for various storm events to determine the expect discharge rate from the diversion structure to the outfall, and to the hydrodynamic unit that flows to the underground infiltration array. The hydrograph #3 labeled" Post Development #1A" is directed to hydrograph #4, which represents the diversion structure. Results are as follow:

Table-5 Diversion Structure

	1-Year Flow (cfs)	2-Year Flow (cfs)	10-Year Flow (cfs)	25-Year Flow (cfs)	100-Year Flow (cfs)
Post Development Area #1A Peak Flow	**16.62**	**19.98**	**30.68**	**38.70**	**54.66**
Flow Rate to Hydrodynamic Unit	**10.96**	**11.77**	**13.56**	**14.77**	**17.88**
Flow Rate from 30" by-pass pipe	**5.629**	**8.233**	**17.14**	**23.91**	**36.74**
Max. Water Surface Elevation (WSEL) In Diversion Structure	**171.08**	**171.18**	**171.67**	**172.24**	**173.87**

As seen above the flow during the 1-year event to the hydrodynamic unit exceeds 8-cfs which ensures all WQv flow is treated. Also, the high flow by-pass is 18" higher than the pipe to underground array/hydrodynamic unit. This again ensures WQv flow is treated before stormwater is allowed to flow through the 30" high flow by-pass pipe.

Table-6 Bioretention Basin

	1-Year Flow (cfs)	2-Year Flow (cfs)	10-Year Flow (cfs)	25-Year Flow (cfs)	100-Year Flow (cfs)
Flow Rate to hydrodynamic Unit/Array	**10.96**	**11.77**	**13.56**	**14.77**	**17.88**
Max. Water Surface Elevation (WSEL) In Underground Infiltration Array	**169.15**	**169.45**	**170.23**	**170.73**	**171.98**

The 100-year WSEL has been determined to be 173.87 within the diversion structure (CB#15) while the top of frame is at 174.00 or allowing 0.13 feet of freeboard within the structure. The 100-year WSEL has been determined to be 171.98 within the underground infiltration array while the array has storage to elevation 172.50 or allowing 0.52 feet of freeboard within the array.

The infiltration rate of the proposed infiltration area has been set at 5.5 inches/hour in the design calculations or over a 1.5 safety factor has been used based upon the existing lowest percolation rate of 8.5 inches/per. The potential storage volume in the catch basins and closed drainage system was not account when the *Hydraflow Hydrographs* software model was developed.

6.0 PROPOSED CONVEYANCE SYSTEM AND DISCHARGE POINT

The proposed closed drainage was designed and verified to pass the 25-year storm event. Calculations for anticipated flow through each pipe run can be found in Exhibit D.1. The anticipated flows through each proposed pipe run were based upon percentage of watershed flowing to each proposed catch basin. The delineated surface water runoff area to each of proposed catch basin surface water can be found in Exhibit E.5, entitled "Catch Basin Catchment Areas".

The outfall from the 30" pipe will experience 17.41 cfs during the 10-year storm event. The 30 foot long rip-rap swale at +/- 14% slope will discharge stormwater runoff to a plunge pool/flow diffuser to disperse flow and reduce velocity. The discharge of stormwater from the plunge pool/flow diffuser is less than 0.25 fps per NYSDEC requirements. See exhibit D.2 for calculations.

7.0 EXHIBITS

Exhibit A – Graphical Peak Discharge Calculations

.1 24-Hour Rainfall Intensity Table

.2 Pre-Development (CN. TOC, Peak Discharge)

.3 Post Development (CN. TOC, Peak Discharge)

.4 NRCS Soil Information

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	73.591 degrees West
Latitude	43.089 degrees North
Elevation	0 feet
Date/Time	Mon, 30 Sep 2019 10:25:39 -0400

Value Use

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.42	0.53	0.69	0.86	1.07	**1yr**	0.74	0.98	1.23	1.51	1.84	2.25	2.53	**1yr**	1.99	2.44	2.83	3.42	3.93	**1yr**
2yr	0.33	0.51	0.64	0.84	1.06	1.32	**2yr**	0.92	1.18	1.50	1.82	2.19	2.62	2.94	**2yr**	2.32	2.83	3.29	3.91	4.44	**2yr**
5yr	0.40	0.62	0.77	1.04	1.33	1.65	**5yr**	1.14	1.46	1.89	2.29	2.74	3.24	3.65	**5yr**	2.87	3.51	4.03	4.69	5.32	**5yr**
10yr	0.45	0.70	0.89	1.20	1.56	1.97	**10yr**	1.35	1.73	2.25	2.72	3.23	3.81	4.29	**10yr**	3.37	4.13	4.71	5.39	6.10	**10yr**
25yr	0.53	0.84	1.07	1.47	1.95	2.47	**25yr**	1.69	2.16	2.83	3.41	4.04	4.71	5.34	**25yr**	4.17	5.13	5.78	6.48	7.31	**25yr**
50yr	0.59	0.95	1.22	1.72	2.31	2.95	**50yr**	2.00	2.55	3.38	4.06	4.78	5.54	6.29	**50yr**	4.90	6.05	6.75	7.44	8.39	**50yr**
100yr	0.68	1.10	1.42	2.01	2.74	3.49	**100yr**	2.36	3.01	4.01	4.81	5.65	6.52	7.42	**100yr**	5.77	7.14	7.89	8.56	9.63	**100yr**
200yr	0.77	1.26	1.64	2.35	3.25	4.16	**200yr**	2.80	3.56	4.78	5.72	6.68	7.67	8.77	**200yr**	6.79	8.43	9.22	9.85	11.06	**200yr**
500yr	0.93	1.53	1.99	2.90	4.06	5.23	**500yr**	3.50	4.45	6.01	7.18	8.35	9.52	10.93	**500yr**	8.42	10.51	11.34	11.86	13.30	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.38	0.46	0.62	0.76	0.82	1yr	0.66	0.80	0.96	1.19	1.56	2.07	2.22	1yr	1.83	2.13	2.48	3.13	3.48	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.18	2yr	0.87	1.15	1.32	1.68	2.13	2.51	2.79	2yr	2.22	2.69	3.12	3.74	4.28	2yr
5yr	0.37	0.57	0.70	0.97	1.23	1.39	5yr	1.06	1.36	1.55	1.98	2.47	2.82	3.19	5yr	2.49	3.07	3.59	4.16	4.79	5yr
10yr	0.41	0.62	0.77	1.08	1.39	1.59	10yr	1.20	1.56	1.77	2.20	2.74	3.05	3.51	10yr	2.70	3.37	3.91	4.50	5.17	10yr

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.47	0.71	0.89	1.27	1.67	1.89	**25yr**	1.44	1.84	2.08	2.54	3.14	3.38	3.92	**25yr**	2.99	3.77	4.36	4.93	5.67	**25yr**
50yr	0.52	0.79	0.98	1.41	1.90	2.13	**50yr**	1.64	2.09	2.35	2.82	3.48	3.61	4.22	**50yr**	3.20	4.05	4.77	5.26	6.03	**50yr**
100yr	0.58	0.87	1.09	1.58	2.17	2.43	**100yr**	1.87	2.37	2.66	3.14	3.83	3.82	4.48	**100yr**	3.38	4.30	5.19	5.57	6.37	**100yr**
200yr	0.64	0.97	1.23	1.78	2.48	2.76	**200yr**	2.14	2.70	3.02	3.50	4.21	3.99	4.66	**200yr**	3.53	4.48	5.62	5.85	6.70	**200yr**
500yr	0.75	1.12	1.44	2.10	2.98	3.28	**500yr**	2.57	3.21	3.55	4.00	4.72	4.13	4.75	**500yr**	3.66	4.57	6.29	6.17	7.02	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.78	0.96	1.09	**1yr**	0.83	1.07	1.23	1.59	2.01	2.47	2.87	**1yr**	2.19	2.76	3.11	3.74	4.33	**1yr**
2yr	0.36	0.56	0.69	0.94	1.15	1.26	**2yr**	1.00	1.24	1.41	1.81	2.27	2.81	3.13	**2yr**	2.48	3.01	3.48	4.10	4.68	**2yr**
5yr	0.43	0.66	0.82	1.13	1.43	1.66	**5yr**	1.24	1.62	1.86	2.33	2.87	3.72	4.14	**5yr**	3.29	3.98	4.57	5.21	5.92	**5yr**
10yr	0.51	0.78	0.97	1.35	1.75	2.05	**10yr**	1.51	2.01	2.30	2.86	3.43	4.61	5.17	**10yr**	4.08	4.97	5.66	6.27	7.12	**10yr**
25yr	0.64	0.98	1.22	1.74	2.28	2.71	**25yr**	1.97	2.65	3.06	3.76	4.38	6.19	6.97	**25yr**	5.48	6.71	7.53	8.05	9.13	**25yr**
50yr	0.76	1.16	1.44	2.07	2.79	3.37	**50yr**	2.40	3.29	3.79	4.65	5.26	7.75	8.80	**50yr**	6.86	8.46	9.34	9.78	11.10	**50yr**
100yr	0.91	1.37	1.71	2.48	3.40	4.16	**100yr**	2.93	4.07	4.69	5.73	6.33	9.71	11.16	**100yr**	8.59	10.73	11.64	11.89	13.47	**100yr**
200yr	1.08	1.63	2.06	2.98	4.16	5.16	**200yr**	3.59	5.05	5.83	7.08	7.64	12.21	14.20	**200yr**	10.80	13.65	14.53	14.49	16.39	**200yr**
500yr	1.37	2.04	2.63	3.82	5.43	6.86	**500yr**	4.69	6.70	7.78	9.36	9.83	16.56	19.62	**500yr**	14.66	18.87	19.42	18.89	21.23	**500yr**

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Engineering and Land Surveying, P.C.

PROJECT # 972.32

SHEET # 1 OF: 2 PAGE # OF:

MADE BY: JWE DATE: 10/6/2019

CHKD BY: DATE:

REVISED BY: DATE:

CHKD BY: DATE:

PROJECT: 42 Gates Road

SUBJECT: TOC and Peak Discharges

Pre Development #1 & #2

DRAINAGE AREA NAME	PRE DEVELOPMENT AREA #1			
TIME OF CONCENTRATION 2-YR 24 Hr RAINFALL= 2.6 IN	SURFACE COVER CROSS SECTION	MANNING "N" WETTED PER.	FLOW LENGTH AVG VELOCITY	SLOPE Tt (Hrs)
SHEET FLOW	Grass/Brush	N= 0.28	150 FT.	4.00% 0.313 Hrs
SHALLOW FLOW	UNPAVED		533 FT. 4.5 F.P.S	7.50% 0.033 Hrs
CHANNEL FLOW Hydraulic Radius=				

DRAINAGE AREA NAME	PRE DEVELOPMENT AREA #X			
TIME OF CONCENTRATION 2-YR 24 Hr RAINFALL= 2.6 IN	SURFACE COVER CROSS SECTION	MANNING "N" WETTED PER.	FLOW LENGTH AVG VELOCITY	SLOPE Tt (Hrs)
SHEET FLOW				
SHALLOW FLOW				
CHANNEL FLOW Hydraulic Radius=				

Peak Discharge for Pre-Development Area #1

Total Area in Acres= 8.73 Ac

Weighted CN= 80 Ia= 0.500

Time of Concentration= 0.346 Hrs

Pond Factor= 1

Peak Discharge for Pre Development Area #X

Total Area in Acres= 0.00 Ac

Weighted CN= 0 Ia= 0.000

Time of Concentration= 0.000 Hrs

Pond Factor= 1

RAINFALL TYPE II

Pre-Development Area #1

STORM	Precipitation (P) inches	Runoff (Q)	Ia/P	Qu		Qp PEAK DISCHARGE	
1 Year	2.25	0.75 In.	0.22	604	csm/in	6.18	CFS
2 Year	2.62	0.96 In.	0.19	620	csm/in	8.12	CFS
10 Year	3.81	1.96 In.	0.13	639	csm/in	17.09	CFS
25 Year	4.04	2.63 In.	0.12	640	csm/in	22.97	CFS
100 Year	6.52	3.60 In.	0.08	641	csm/in	31.49	CFS

Pre Development Area #X

STORM	Precipitation (P) inches	Runoff (Q)	Ia/P	Qu		Qp PEAK DISCHARGE	
1 Year	2.25	0.00 In.	0.00	0	csm/in	0.00	CFS
2 Year	2.62	0.00 In.	0.00	0	csm/in	0.00	CFS
10 Year	3.81	0.00 In.	0.00	0	csm/in	0.00	CFS
25 Year	4.04	0.00 In.	0.00	0	csm/in	0.00	CFS
100 Year	6.52	0.00 In.	0.00	0	csm/in	0.00	CFS

Engineering and Land Surveying, P.C.

PROJECT # 972.32 | SHEET # 2 OF: 2 | PAGE # OF:

MADE BY: JWE | DATE: 10/6/2019

PROJECT: 42 Gates Road | CHKD BY: | DATE:

SUBJECT: Pre-Development Condition | REVISED BY: | DATE:

AREA #1 | CHKD BY: | DATE:

Applicable Standards:

Urban Hydrology for Small Watersheds, Technical Release 55. USDA, June 1986.

PRE-DEVELOPMENT

AREA	Land Use Area (feet^2)	Land Use / Cover Description[1]	Hydrologic Soil Group[1]	Actual CN[1]	AREA Area (feet^2)	Factored CN %	Factored CN CN	Weighted CN
#1	152,834	*Paved parking lots,roofs etc.*	C	98	**380,418**	40%	39.4	80
	20,158	*Urban Open Space, Good (> 75% grass)*	C	74	**sq. feet**	5%	3.9	
	126,715	*Woods (Good)*	C	70		33%	23.3	
	80,711	*Brush, brush-weed-grass mix (Good)*	C	65	=	21%	13.8	
				0		0%	0.0	
				0	**8.733**	0%	0.0	
				0	**acres**	0%	0.0	
				0		0%	0.0	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**0.014**	0%	0.0	
				0	**sq. mi**	0%	0.0	
	380,418					100%		

AREA	Land Use Area (feet^2)	Land Use / Cover Description[1]	Hydrologic Soil Group[1]	Actual CN[1]	AREA Area (feet^2)	Factored CN %	Factored CN CN	Weighted CN
				0	**0**	0%	0.0	0
				0	**sq. feet**	0%	0.0	
				0		0%	0.0	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**0.000**	0%	0.0	
				0	**acres**	0%	0.0	
				0		0%	0.0	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**0.000**	0%	0.0	
				0	**sq. mi**	0%	0.0	
	-					0%		

Comments: [1] Source: TR-55, Tables 2-2a,b,c.

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PROJECT # 972.32 | SHEET # 1 OF: 2 | PAGE # OF:

MADE BY: JWE DATE: 10/6/2019

PROJECT: 42 Gates Ave | CHKD BY: DATE:

SUBJECT: TOC and Peak Discharges | REVISED BY: DATE:

Post Development Area #1 and #1A | CHKD BY: DATE:

DRAINAGE AREA NAME	**POST DEVELOPMENT AREA #1**			
TIME OF CONCENTRATION 2-YR 24 Hr RAINFALL= 2.6 IN	SURFACE COVER CROSS SECTION	MANNING "N" WETTED PER.	FLOW LENGTH AVG VELOCITY	SLOPE Tt (Hrs)
SHEET FLOW	Grass/Woods	N= 0.24	145 FT.	14.00% 0.163 Hrs
SHALLOW FLOW				
CHANNEL FLOW Hydraulic Radius=				

DRAINAGE AREA NAME	**POST DEVELOPMENT AREA #1A**			
TIME OF CONCENTRATION 2-YR 24 Hr RAINFALL= 2.6 IN	SURFACE COVER CROSS SECTION	MANNING "N" WETTED PER.	FLOW LENGTH AVG VELOCITY	SLOPE Tt (Hrs)
SHEET FLOW	Grass/Pavement	N= 0.04	65 FT.	2.00% 0.045 Hrs
CHANNEL FLOW Hydraulic Radius= 0.33	PIPE 1.00 SqFt	N= 0.012 3 FT	720 FT. 6.01 F.P.S	1.00% 0.033 Hrs
CHANNEL FLOW Hydraulic Radius=	Use TOC of 0.1 hours (min. value)			

Peak Discharge for Post-Development Area #1

Total Area in Acres= 2.43 Ac
Weighted CN= 70 Ia= 0.860
Time of Concentration= 0.163 Hrs
Pond Factor= 1

Peak Discharge for Post-Development Area #1A

Total Area in Acres= 6.30 Ac
Weighted CN= 94 Ia= 0.128
Time of Concentration= 0.100 Hrs
Pond Factor= 1

RAINFALL TYPE II

Post-Development Area #1

STORM	Precipitation (P) inches	Runoff (Q)	Ia/P	Qu	Qp PEAK DISCHARGE
1 Year	2.25	0.36 In.	0.38	675 csm/in	0.92 CFS
2 Year	2.62	0.50 In.	0.33	730 csm/in	1.39 CFS
10 Year	3.81	1.26 In.	0.23	851 csm/in	4.07 CFS
25 Year	4.71	1.82 In.	0.18	875 csm/in	6.05 CFS
100 Year	6.52	2.65 In.	0.13	883 csm/in	8.89 CFS

Post Development Area #1A

STORM	Precipitation (P) inches	Runoff (Q)	Ia/P	Qu	Qp PEAK DISCHARGE
1 Year	2.25	1.68 In.	0.06	919 csm/in	15.20 CFS
2 Year	2.62	1.97 In.	0.05	920 csm/in	17.85 CFS
10 Year	3.81	3.23 In.	0.03	921 csm/in	29.29 CFS
25 Year	4.71	4.01 In.	0.03	922 csm/in	36.41 CFS
100 Year	6.52	5.10 In.	0.02	923 csm/in	46.35 CFS

Engineering and Land Surveying, P.C.

PROJECT # 972.32 | SHEET # 2 OF: 2 | PAGE # OF:

MADE BY: JWE | DATE: 10/6/2019

PROJECT: 42 Gates Ave | CHKD BY: | DATE:

SUBJECT: Post-Development Condition | REVISED BY: | DATE:

AREA #1 and #1A | CHKD BY: | DATE:

Applicable Standards:

Urban Hydrology for Small Watersheds, Technical Release 55. USDA, June 1986.

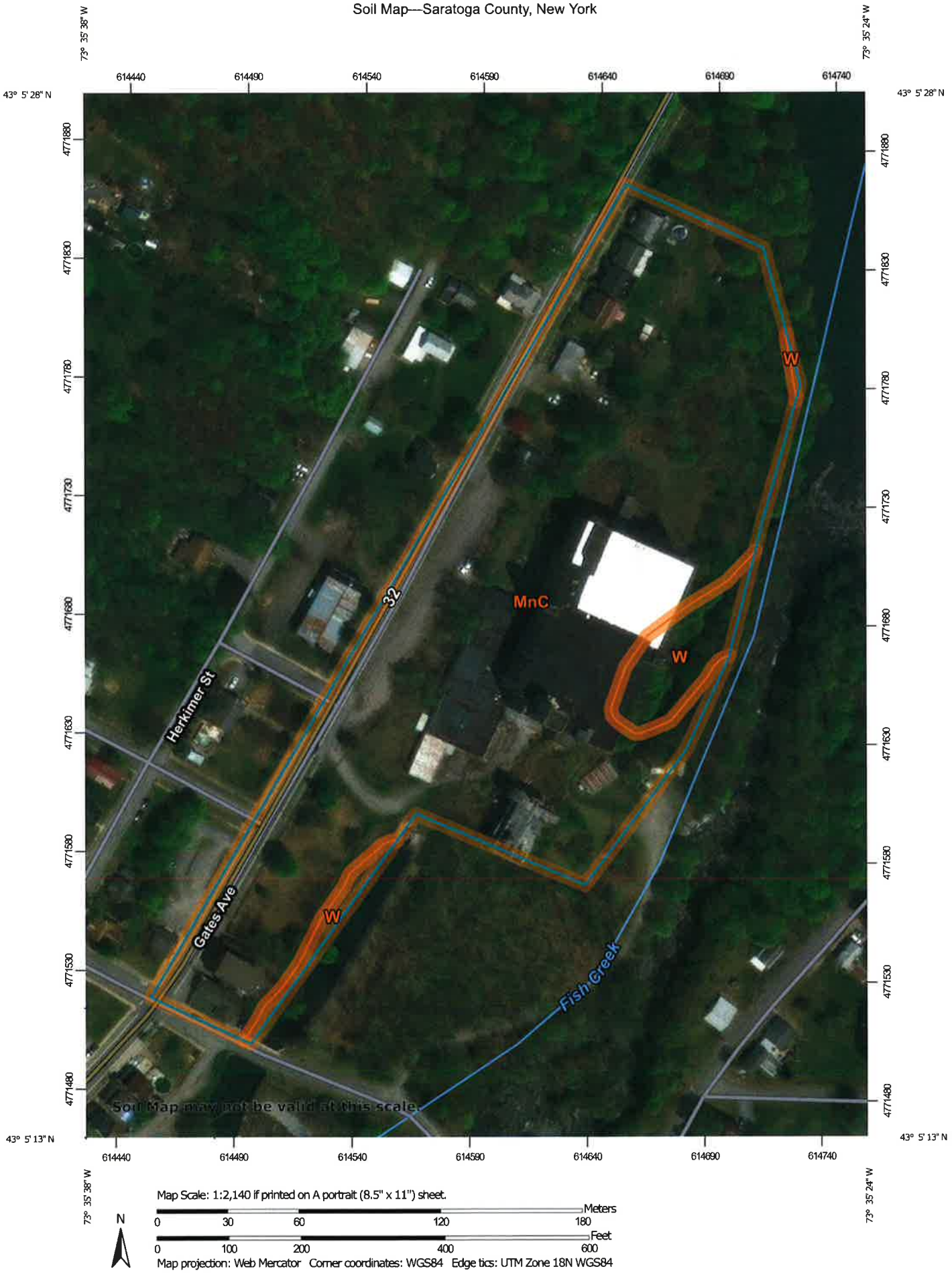
POST-DEVELOPMENT

AREA	Land Use Area (feet^2)	Land Use / Cover Description[1]	Hydrologic Soil Group[1]	Actual CN[1]	AREA Area (feet^2)	Factored CN %	Factored CN CN	Weighted CN
#1	5,280	*Paved parking lots,roofs etc.*	C	98	**105,892**	5%	4.9	**70**
	10,782	*Urban Open Space, Good (> 75% grass)*	C	74	**sq. feet**	10%	7.5	
	47,643	*Woods (Good)*	C	70		45%	31.5	
	42,187	*Brush, brush-weed-grass mix (Good)*	C	65	=	40%	25.9	
				0		0%	0.0	
				0	**2.431**	0%	0.0	
				0	**acres**	0%	0.0	
				0		0%	0.0	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**0.004**	0%	0.0	
				0	**sq. mi**	0%	0.0	
	105,892					100%		

AREA	Land Use Area (feet^2)	Land Use / Cover Description[1]	Hydrologic Soil Group[1]	Actual CN[1]	AREA Area (feet^2)	Factored CN %	Factored CN CN	Weighted CN
#1A	229,813	*Paved parking lots,roofs etc.*	C	98	**274,525**	84%	82.0	**94**
	34,712	*Urban Open Space, Good (> 75% grass)*	C	74	**sq. feet**	13%	9.4	
	10,000	*Woods (Good)*	C	70		4%	2.5	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**6.302**	0%	0.0	
				0	**acres**	0%	0.0	
				0		0%	0.0	
				0	=	0%	0.0	
				0		0%	0.0	
				0	**0.010**	0%	0.0	
				0	**sq. mi**	0%	0.0	
	274,525					100%		

Comments: [1] Source: TR-55, Tables 2-2a,b,c.

Soil Map---Saratoga County, New York



Map Scale: 1:2,140 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Saratoga County, New York
Survey Area Data: Version 18, Sep 3, 2018

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

Date(s) aerial images were photographed: Jun 10, 2015—Mar 29, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MnC	Manlius-Nassau complex, rolling, rocky	9.5	93.9%
W	Water	0.6	6.1%
Totals for Area of Interest		**10.1**	**100.0%**

Water Features

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

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 four hydrologic soil groups are:

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.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The water features table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. The kind of water table, apparent or perched, is given if a seasonal high water table exists in the soil. A water table is perched if free water is restricted from moving downward in the soil by a restrictive feature, in most cases a hardpan; there is a dry layer of soil underneath a wet layer. A water table is apparent if free water is present in all horizons from its upper boundary to below 2 meters or to the depth of observation. The water table kind listed is for the first major component in the map unit.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Report—Water Features

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
MnC—Manlius-Nassau complex, rolling, rocky											
Manlius, rocky	C		Jan-Dec	—	—	—	—	—	None	—	None
Nassau	D		Jan-Dec	—	—	—	—	—	None	—	None
W—Water											
Water				—	—	—	—	—	—	—	

Data Source Information

Soil Survey Area: Saratoga County, New York
Survey Area Data: Version 18, Sep 3, 2018

Exhibit B – WQv, Filter Sizing and Pretreatment

.1 WQv calculations

.2 RRv Treatment

.3 WQV peak flow

.4 Hydrodynamic Model Information and NJDEP CS Unit Verification

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.15	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.30	5.28	84%	0.80	21,134	
2						
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	6.30	5.28	84%	0.80	**21,134**	**Subtotal 1**
Total	6.30	5.28	84%	0.80	**21,134**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	6.30	5.28	84%	0.80	21,134
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**6.30**	**5.28**	84%	0.80	21,134
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	6.30	5.28	84%	0.80	**21,134**
WQv reduced by Area Reduction techniques					0

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	6.30	5.28	21134	
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			6.30	5.28	21134	0
Totals by Standard SMP →			0.00	0.00		0
Totals (Area + Volume + all SMPs) →			6.30	5.28	21,134	0
	Impervious Cover √	error				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	0.00	55%
B	0.00	40%
C	6.30	30%
D	**0.00**	20%
Total Area	6.302	
Calculate the Minimum RRv		
S =	**0.30**	
Impervious =	5.28	*acre*
Precipitation	1.15	*in*
Rv	0.95	
Minimum RRv	**6,276**	***ft3***
	0.14	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	21134	*0.485*
30	Total RRV Provided	21134	*0.485*
31	Is RRv Provided ≥WQv Required?	Yes	
32	Minimum RRv	6276	*0.144*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	0	*0.000*
34	Sum of Volume Reduced & Treated	21134	*0.485*
34	Sum of Volume Reduced and Treated	21134	*0.485*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Engineering and Land Surveying, P.C.

PROJECT # 972.27 | SHEET # 1 OF: 1 | PAGE # OF:

MADE BY: JWE DATE: 10/6/2019

PROJECT: 42 Gates Ave | CHKD BY: DATE:

SUBJECT: Water Quality Peak Flow Calculations | REVISED BY: DATE:

Post Development Area #1A | CHKD BY: DATE:

The Water Quality Peak Flow calculations in accordance with Appendix B of the August 2015 NYSDEC Stormwater Management Design Manual for the purposes of sizing diversion or off-line structures.

Using the water quality volume (WQv), a corresponding Curve Number (CN) is computed utilizing the following equation:

CN = 1000 / [10 + 5P + 10Q - 10(Q^2 + 1.25 QP)^1/2]

Where P = rainfall, in inches (use the 90% rainfall event from Figure 4.1 for the Water Quailty Storm)
Q = runoff, in inches

P = 1.2 inch for Saratoga County
Q = 21134 WQv in cf = 0.92 inches
274525 Watershed Area in sf

CN = 98

Once a CN is computed, the time of concentration (tc) is computed using guidance provided in TR-55.

The tc for this watershed is 0.10 hrs

Using the computed CN, tc, and drainage area (A) in acres, the peak discharge (Qp) for the water quailty storm event is computed (either Type II or Type III in the state of New York)

Read initial abstraction (Ia), compute Ia / P
Read the unit peak discharge (qu) for appropriate tc
Using the water quality volume (WQv), compute the peak discharge (Qp)

Qp = qu x A x WQv

Where Qp = the peak discharge, in cfs
qu = the unit peak discharge, in cfs/sq mi/inch
A = drainage area, in square miles
WQv = Water Quality Volume, in watershed inches

qu = 870 csm/in
A = 6.30 acres, or 0.0098 square miles
WQv = 0.48517 acft or 0.9 watershed inches

Qp = 7.91 cfs

Downstream Defender®

High-Level Treatment in a Small Footprint

Product Profile

The Downstream Defender® is an advanced vortex separator used to treat stormwater runoff in pretreatment or stand-alone applications. Its unique flow-modifying internal components distinguish the Downstream Defender® from conventional and simple swirl separators that typically bypass untreated peak flows to prevent washout of captured pollutants. Its wide treatment flow range, low headloss, small footprint and low-profile make it a compact and economical solution for capturing nonpoint source pollution.

Components

1. Inlet to Precast Vortex Chamber
2. Cylindrical Baffle
3. Center Shaft
4. Outlet Pipe
5. Sediment Storage Sump
6. Access Lid

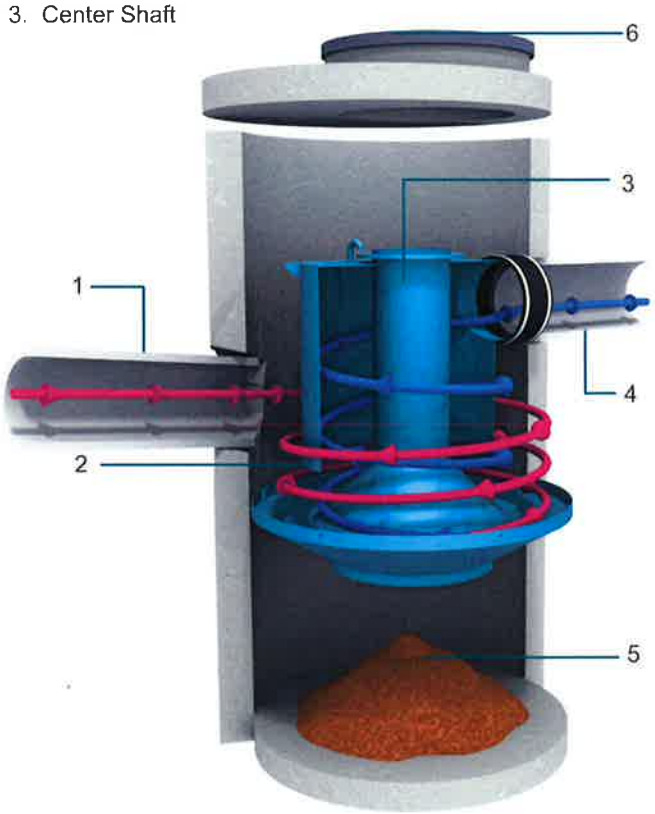


Fig.1 The Downstream Defender® has internal components designed to maximize pollutant capture and minimize pollutant washout.

Applications

- Removal of total suspended solids (TSS), floatable trash and petroleum products from stormwater runoff
- New construction or redevelopment of commercial and residential sites
- Pollutant hotspots such as maintenance yards, parking lots, gas stations, streets, highways, airports and transportation hubs
- Site constrained LID or green infrastructure based developments
- LEED® development projects

Advantages

- Special internal components maximize pollutant capture and minimize footprint, headloss and washout
- Captures and retains a wide range of TSS particles
- High peak treatment flow rates
- Treats the entire storm with no washout or untreated bypass flows
- Low maintenance requirements - no dredging required, and no screens or media to block
- Variable inlet/outlet angles for ease of site layout

How it Works

Advanced hydrodynamic vortex separation is a complex hydraulic process that augments gravity separation with low-energy rotary forces. The flow modifying internal components used in the Downstream Defender® harness the energy from vortex flow and maximize the time for separation to occur while deflecting high scour velocities (**Fig.1**).

Polluted stormwater is introduced tangentially into the side of the precast vortex chamber to establish rotational flow. A cylindrical baffle with an inner center shaft creates an outer (magenta arrow) and inner (blue arrow) spiraling column of flow and ensures maximum residence time for pollutant travel between the inlet and outlet.

Oil, trash and other floating pollutants are captured and stored on the surface of the outer spiraling column. Low energy vortex motion directs sediment into the protected sump region. Only after following a long three-dimensional flow path is the treated stormwater discharged from the outlet pipe. Maintenance ports at ground level provide access for easy inspection and clean-out.

Downstream Defender®

Downstream Defender® Design

Drainage Profile

The Downstream Defender® is designed with a submerged tangential inlet to minimize turbulence within the device. Turbulence increases system headlosses and reduces performance by keeping pollutant particles in suspension.

The inlet elevation of the Downstream Defender® is located one inlet pipe diameter lower than the elevation of the outlet invert (**Fig.2**). This arrangement ensures that influent flows are introduced to the treatment chamber quiescently below the water surface elevation, minimizing turbulence.

The unique flow-modifying internal components also minimize hydraulic losses. There are no internal weirs or orifices; large clear openings ensure low headloss at peak flow rates with little risk of blockages that cause upstream flooding.

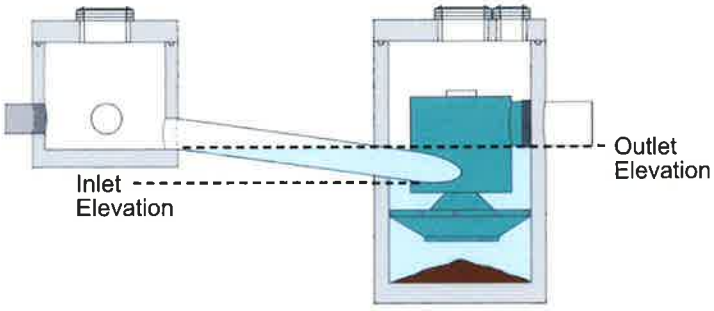


Fig.2 The Downstream Defender® has a submerged inlet that reduces headloss and improves efficiency of pollutant capture.

Sizing & Design

The Downstream Defender® can be used to meet a wide range of stormwater treatment objectives. It is available in 5 precast models that fit easily into the drainage network (**Table 1**). Selection and layout of the appropriate Downstream Defender® model depends on site hydraulics, site constraints and local regulations. Both online (**Fig.3a**) and offline (**Fig.3b**) configurations are common.

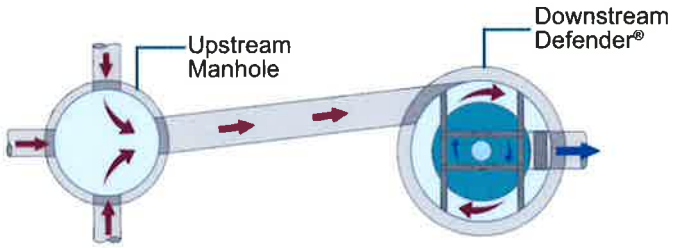


Fig.3a The Downstream Defender® in an online configuration.

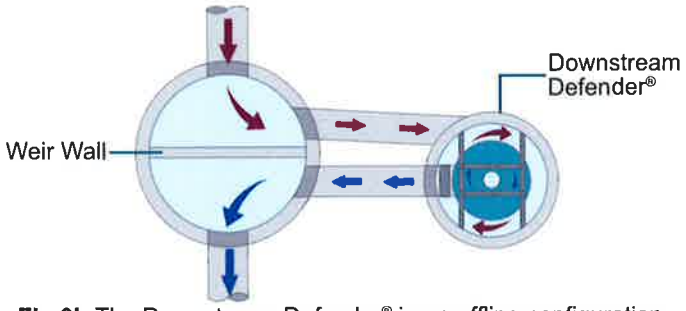


Fig.3b The Downstream Defender® in an offline configuration.

Free *Stormwater Separator Sizing Calculator* for Engineers

This simple online tool will recommend the best separatror, model size and online/offline arrangement based on site-specific data entered by the user.

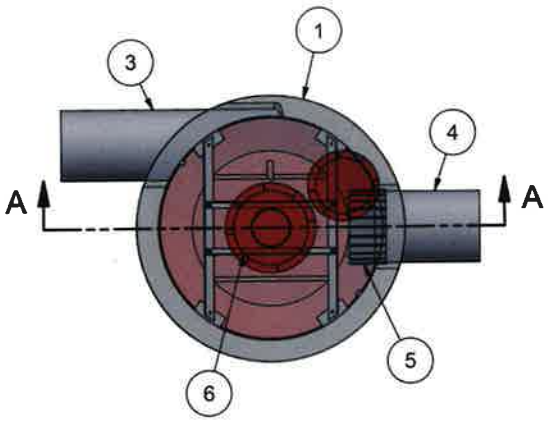
Go to hydro-int.com/sizing to access the tool.

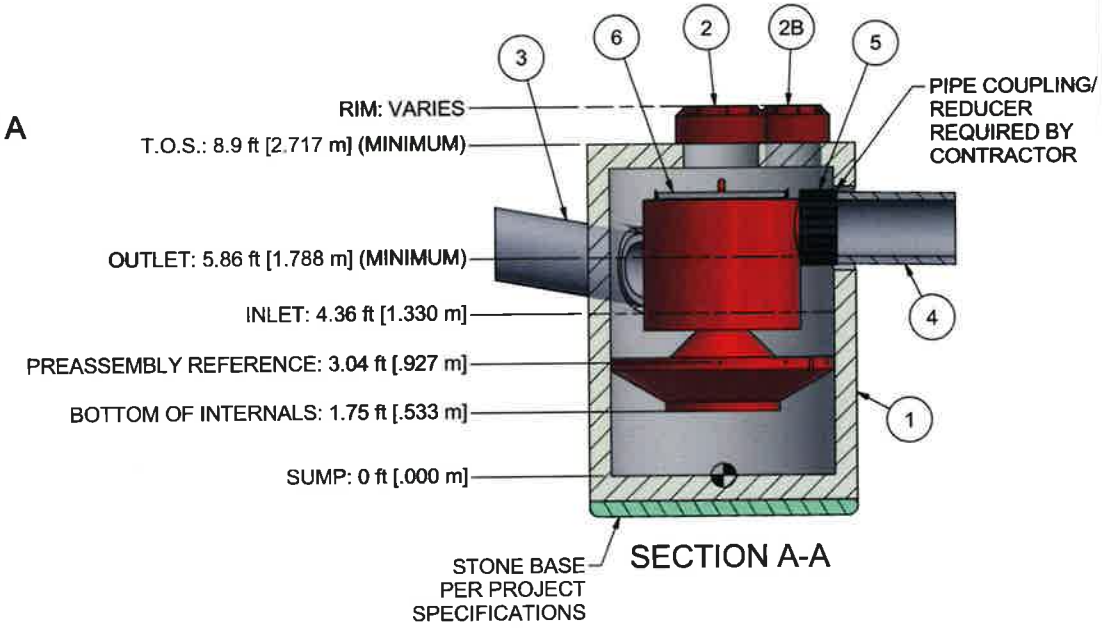
Table 1. Downstream Defender® Design Chart.

Model Number and Diameter		Peak Treatment Flow Rate		Maximum Pipe Diameter		Oil Storage Capacity		Sediment Storage Capacity		Minimum Distance from Outlet Invert to Top of Rim		Standard Height from Outlet Invert to Sump Floor	
(ft)	(m)	(cfs)	(L/s)	(in)	(mm)	(gal)	(L)	(yd^3)	(m^3)	(ft)	(m)	(ft)	(m)
4	1.2	3.0	85	12	300	70	265	0.70	0.53	2.8	0.85	4.1	1.25
6	1.8	8.0	227	18	450	216	818	2.10	1.61	3.2	0.98	5.9	1.80
8	2.4	15.0	425	24	600	540	2,044	4.65	3.56	4.2	1.28	7.7	2.35
10	3.0	25.0	708	30	750	1,050	3,975	8.70	6.65	5.0	1.52	9.4	2.85
12*	3.7	38.0	1,076	36	900	1,770	6,700	14.70	11.24	5.6	1.71	11.2	3.41

*Not available in all areas. Contact Hydro International for details.

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com





SECTION A-A

HYDRO FRAME AND COVER (INLCUDED)

GRADE RINGS BY OTHERS AS REQUIRED

DD SIZE	4' (1200 mm)	6' (1800 mm)	8' (2400 mm)	10' (3000 mm)	12' (3700 mm)
OUTLET STUB ID	12" (300 mm)	18" (450 mm)	24" (600 mm)	30" (750 mm)	36" (900 mm)
OUTLET STUB OD	12.5" (318 mm)	18.7" (475 mm)	24.8" (630 mm)	36" (900 mm)	42" (1050 mm)

EQUIPMENT PERFORMANCE

The stormwater treatment unit shall adhere to the hydraulic parameters given in the chart below and provide the removal efficiencies and storage capacities as follows:

1. The treatment system shall use an induced vortex to separate pollutants from stormwater runoff.
2. Peak Hydraulic Capacity: 8.0 cfs (227 l/s)
3. Sediment Storage Capacity: 2.10 cu. yd. (1.59 cu. m)
4. Continuous Oil Storage Capacity: 216 gal. (818 liters)
5. Sediment shall be stored in a zone that is isolated from the main flow path and protected from reintrainment by a benching skirt.
6. OK-110 110 micron 80% TSS removal 4.25 cfs (120.3 l/s) (NJDEP Test Protocol)

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	72	1800	PRECAST MANHOLE (BY HYDRO VIA PRECASTER)
2	3	24	600	FRAME AND COVER
2B	1	18	450	FRAME AND COVER
3	1	18 (MAX)	450 (MAX)	MAX INLET PIPE (BY OTHERS)
4	1	18 (MAX)	450 (MAX)	MAX OUTLET PIPE (BY OTHERS)
5	1			PIPE COUPLING (BY OTHERS)
6	1			INTERNAL COMPONENTS (PRE-INTALLED)

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERENCES ARE:

FRACTIONS ± 1/16
DECIMALS ± .06
ANGLES ± 1°

PROJECTION

COMMENTS:

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING DOWNSTREAM DEFENDER MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

REVISION HISTORY

REV	BY	DESCRIPTION	DATE
-		FIRST RELEASE	

DATE: 6/3/2019
SCALE:
DRAWN BY: ER
CHECKED BY: MRJ
APPROVED BY

Title: 6-ft DIAMETER DOWNSTREAM DEFENDER

GENERAL ARRANGEMENT

Hydro International

94 Hutchins Drive
Portland, ME 04102
Tel: +1 (207) 756-6200
Fax: +1 (207) 756-6212
hydro-int.com

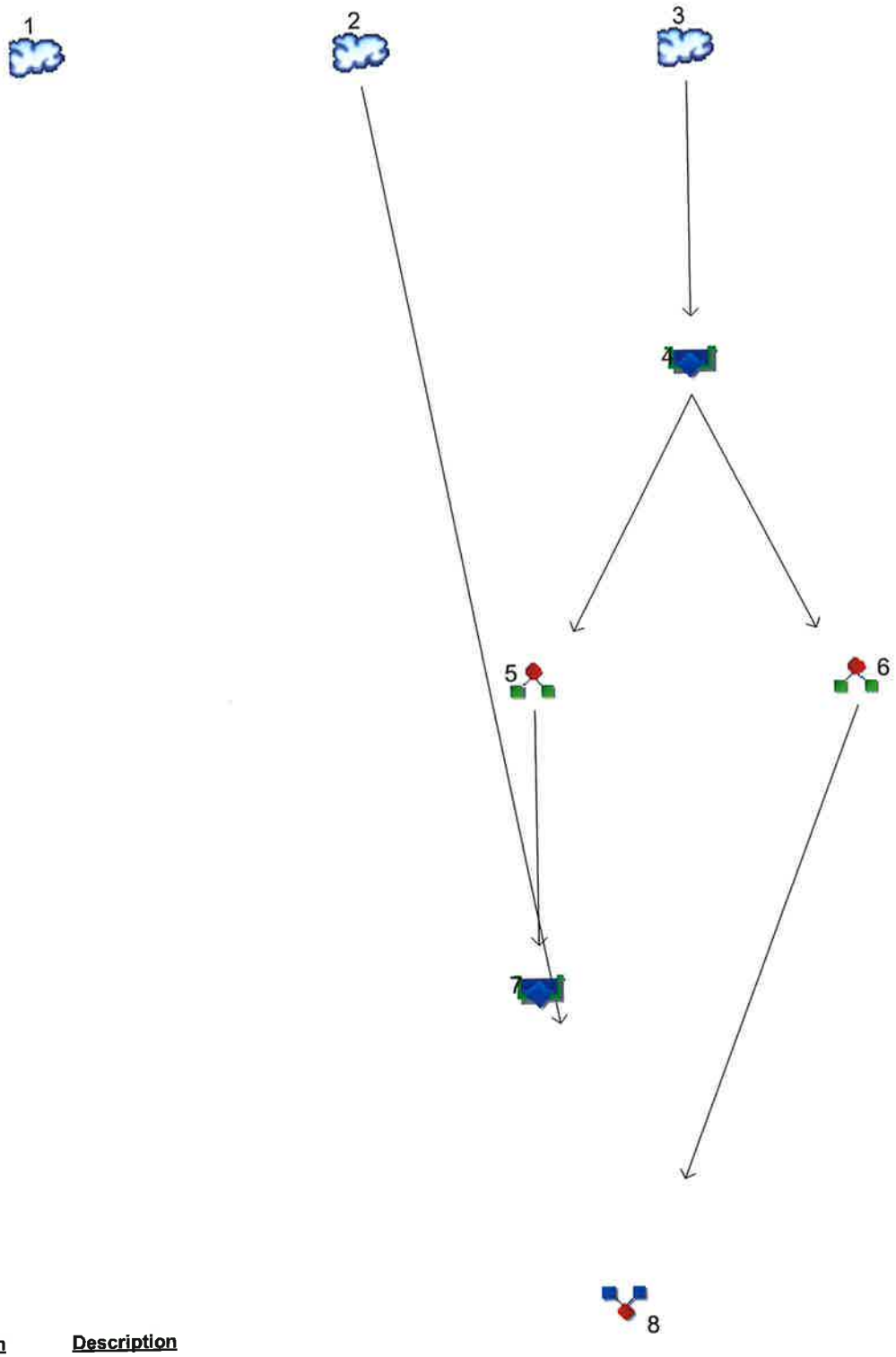
APPROX WEIGHT: N/A
MATERIAL:
NEXT ASSEMBLY: 12-34567-NEXT ASSY
DRAWING NO.: 12-34567-DD GA
SHEET SIZE: B
SHEET: 1 OF 3
Rev: -

Exhibit C – Hydrologic Model Simulation Using TR-55 Tabular Method

.1 Routing Tables for the 1, 2, 10, 25 and 100 year storms with Inflow and Outflow Hydrographs

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12



Legend

Hyd.	Origin	Description
1	SCS Runoff	Pre Area #1
2	SCS Runoff	Post Area #1
3	SCS Runoff	Post Area #1A
4	Reservoir	Route Diversion Str.
5	Diversion1	Flow to Array
6	Diversion2	By-Pass Flow
7	Reservoir	Route Infil. Array
8	Combine	Post Combined Flow

Hydraflow Table of Contents

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	6.341	8.780	-------	-------	17.52	24.68	-------	39.61	Pre Area #1
2	SCS Runoff	------	1.055	1.778	-------	-------	4.582	7.024	-------	12.43	Post Area #1
3	SCS Runoff	------	16.62	19.98	-------	-------	30.68	38.70	-------	54.66	Post Area #1A
4	Reservoir	3	16.59	20.00	-------	-------	30.70	38.68	-------	54.62	Route Diversion Str.
5	Diversion1	4	10.96	11.77	-------	-------	13.56	14.77	-------	17.88	Flow to Array
6	Diversion2	4	5.629	8.233	-------	-------	17.14	23.91	-------	36.74	By-Pass Flow
7	Reservoir	5	3.775	3.775	-------	-------	3.775	3.775	-------	3.775	Route Infil. Array
8	Combine	2, 6,	6.292	9.519	-------	-------	20.93	29.94	-------	47.77	Post Combined Flow

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

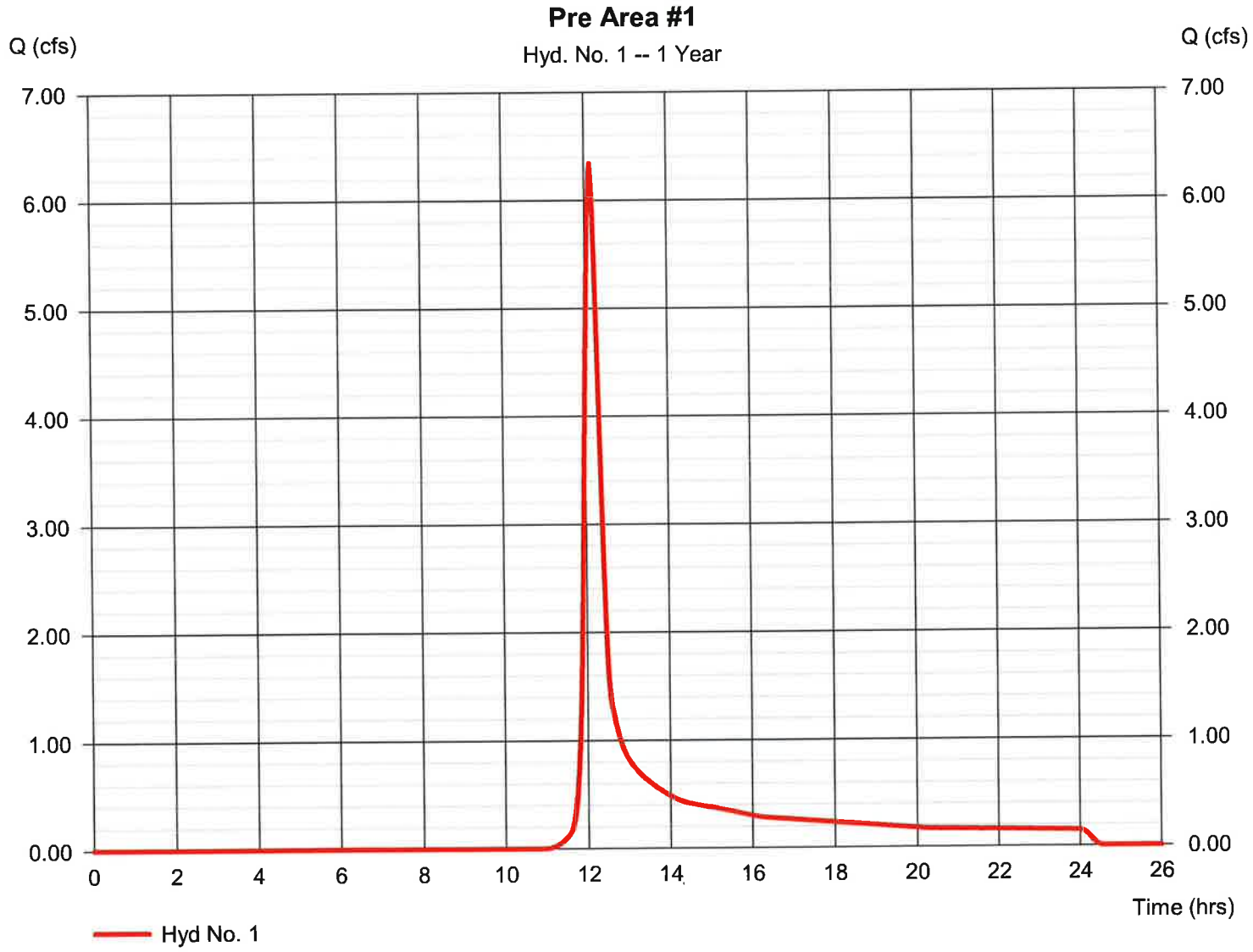
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	6.341	2	728	23,251	------	------	------	Pre Area #1
2	SCS Runoff	1.055	2	720	3,015	------	------	------	Post Area #1
3	SCS Runoff	16.62	2	716	34,993	------	------	------	Post Area #1A
4	Reservoir	16.59	2	716	34,993	3	171.08	10.1	Route Diversion Str.
5	Diversion1	10.96	2	716	32,021	4	------	------	Flow to Array
6	Diversion2	5.629	2	716	2,971	4	------	------	By-Pass Flow
7	Reservoir	3.775	2	704	25,661	5	169.15	4,313	Route Infil. Array
8	Combine	6.292	2	716	5,986	2, 6,	------	------	Post Combined Flow

Hydrograph Report

Hyd. No. 1

Pre Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 6.341 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 23,251 cuft
Drainage area	= 8.733 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.76 min
Total precip.	= 2.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

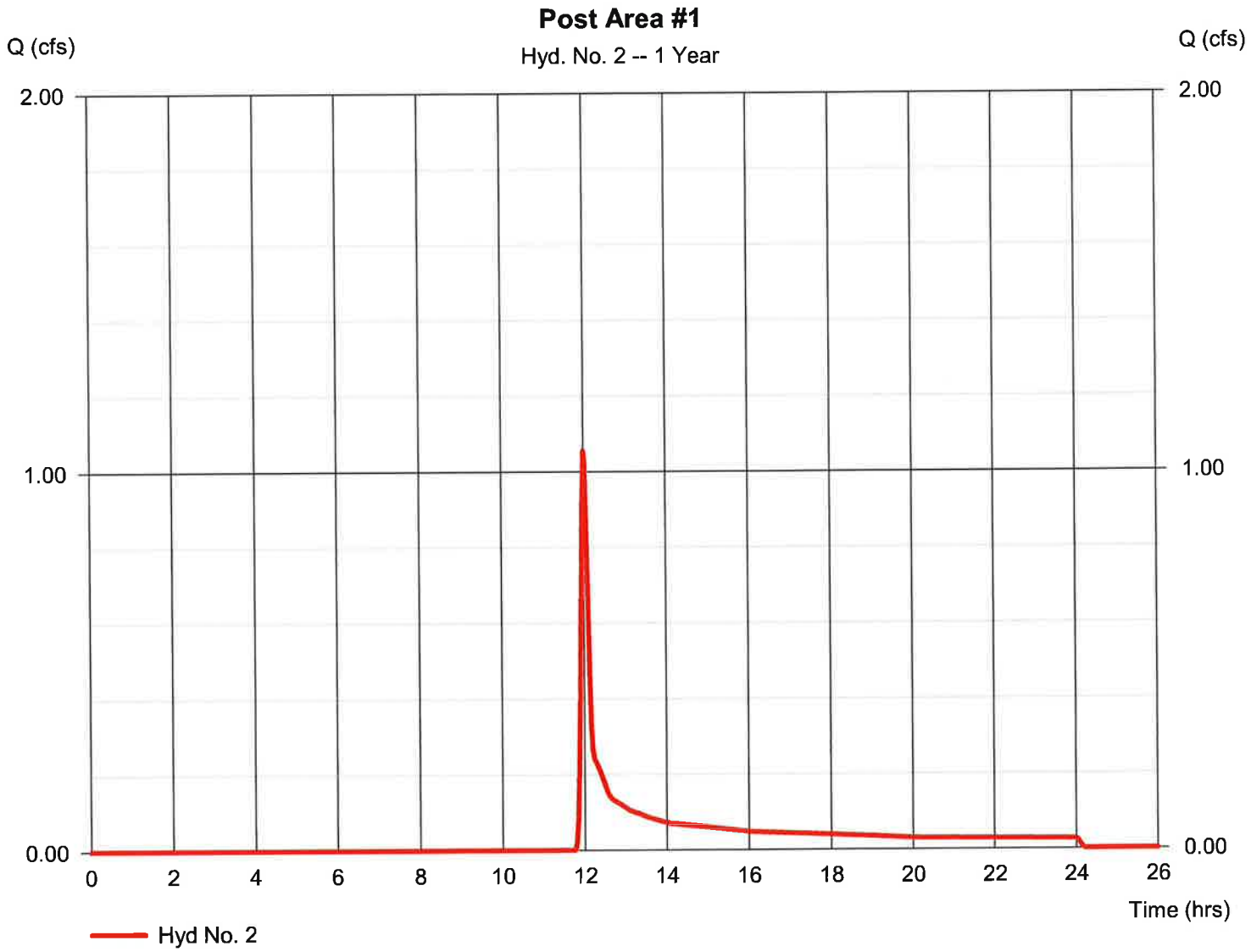


Hydrograph Report

Hyd. No. 2

Post Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.055 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 3,015 cuft
Drainage area	= 2.431 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.80 min
Total precip.	= 2.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

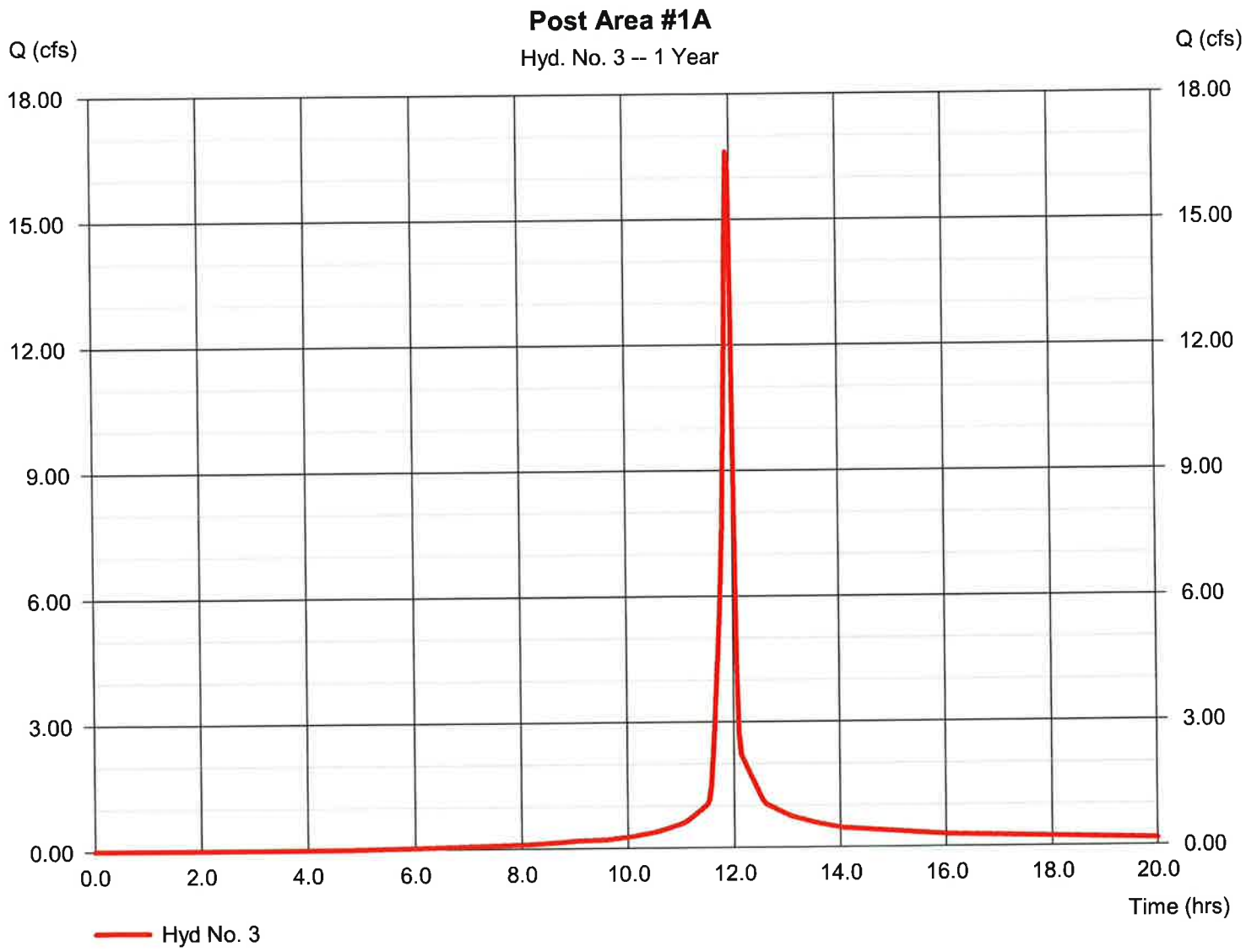


Hydrograph Report

Hyd. No. 3

Post Area #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 16.62 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 34,993 cuft
Drainage area	= 6.302 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



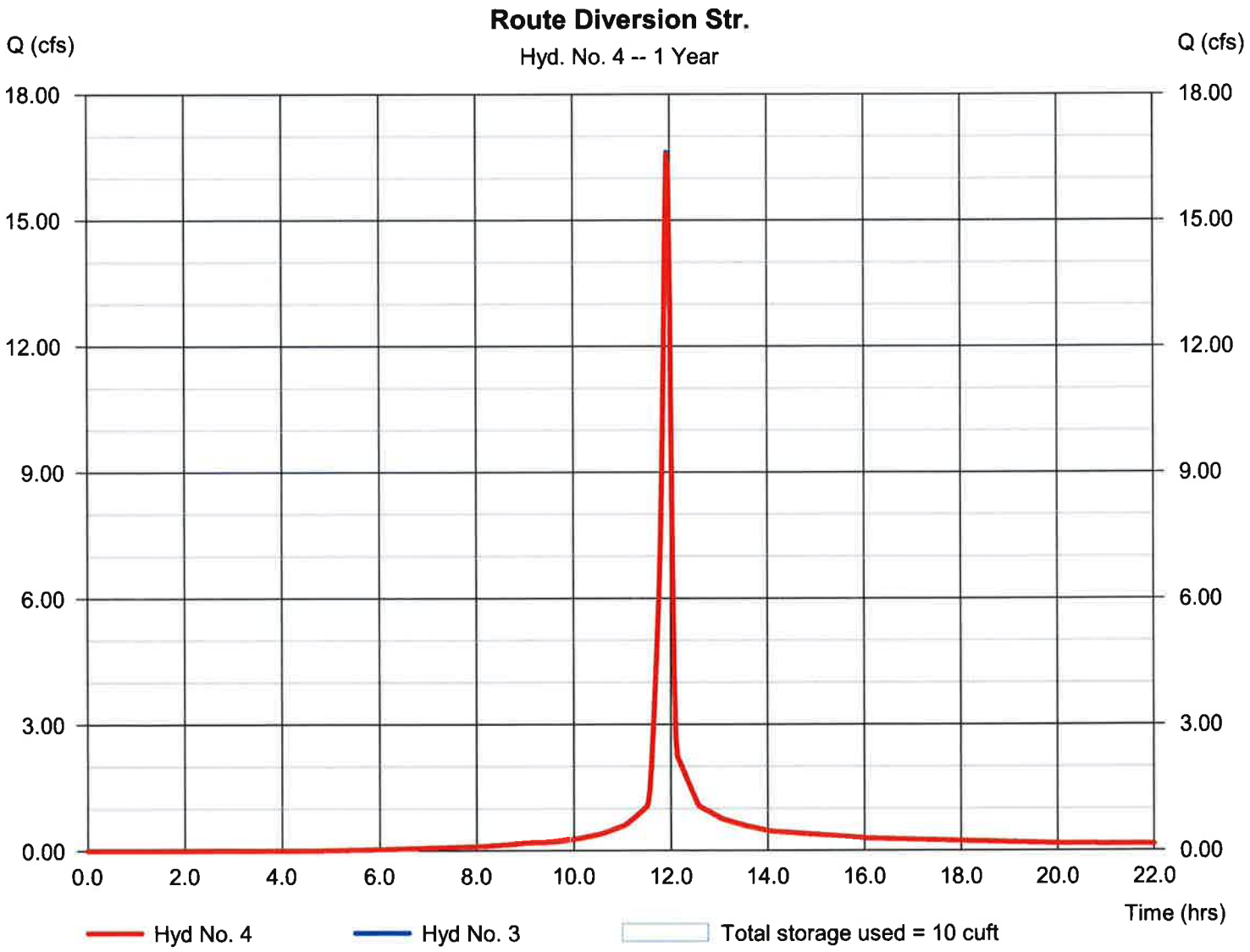
Hydrograph Report

Hyd. No. 4

Route Diversion Str.

Hydrograph type	= Reservoir	Peak discharge	= 16.59 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 34,993 cuft
Inflow hyd. No.	= 3 - Post Area #1A	Max. Elevation	= 171.08 ft
Reservoir name	= Diversion Str	Max. Storage	= 10 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Diversion Str

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 168.20 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	168.20	04	0	0
0.80	169.00	04	3	3
1.80	170.00	04	4	7
2.80	171.00	04	4	12
3.80	172.00	04	4	16
4.80	173.00	05	4	20
5.80	174.00	05	5	25

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	30.00	0.00	0.00
Span (in)	= 18.00	30.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 168.20	169.70	0.00	0.00
Length (ft)	= 4.00	65.00	0.00	0.00
Slope (%)	= 0.00	19.50	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	168.20	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.08	0	168.28	0.04 ic	0.00	---	---	---	---	---	---	---	---	0.035
0.16	1	168.36	0.14 ic	0.00	---	---	---	---	---	---	---	---	0.138
0.24	1	168.44	0.30 ic	0.00	---	---	---	---	---	---	---	---	0.304
0.32	1	168.52	0.53 ic	0.00	---	---	---	---	---	---	---	---	0.533
0.40	2	168.60	0.81 ic	0.00	---	---	---	---	---	---	---	---	0.815
0.48	2	168.68	1.15 ic	0.00	---	---	---	---	---	---	---	---	1.152
0.56	2	168.76	1.53 ic	0.00	---	---	---	---	---	---	---	---	1.533
0.64	3	168.84	1.96 ic	0.00	---	---	---	---	---	---	---	---	1.962
0.72	3	168.92	2.43 ic	0.00	---	---	---	---	---	---	---	---	2.425
0.80	3	169.00	2.92 ic	0.00	---	---	---	---	---	---	---	---	2.922
0.90	4	169.10	3.58 ic	0.00	---	---	---	---	---	---	---	---	3.580
1.00	4	169.20	4.26 ic	0.00	---	---	---	---	---	---	---	---	4.265
1.10	4	169.30	4.96 ic	0.00	---	---	---	---	---	---	---	---	4.964
1.20	5	169.40	5.65 ic	0.00	---	---	---	---	---	---	---	---	5.654
1.30	5	169.50	6.32 ic	0.00	---	---	---	---	---	---	---	---	6.319
1.40	6	169.60	6.92 ic	0.00	---	---	---	---	---	---	---	---	6.916
1.50	6	169.70	7.37 ic	0.00	---	---	---	---	---	---	---	---	7.368
1.60	7	169.80	3.58 oc	0.07 ic	---	---	---	---	---	---	---	---	3.648
1.70	7	169.90	5.06 oc	0.28 ic	---	---	---	---	---	---	---	---	5.341
1.80	7	170.00	6.19 oc	0.62 ic	---	---	---	---	---	---	---	---	6.818
1.90	8	170.10	7.15 oc	1.09 ic	---	---	---	---	---	---	---	---	8.244
2.00	8	170.20	8.00 oc	1.69 ic	---	---	---	---	---	---	---	---	9.684
2.10	9	170.30	8.76 oc	2.39 ic	---	---	---	---	---	---	---	---	11.15
2.20	9	170.40	9.46 oc	3.21 ic	---	---	---	---	---	---	---	---	12.67
2.30	10	170.50	10.11 oc	4.13 ic	---	---	---	---	---	---	---	---	14.24
2.40	10	170.60	10.73 oc	5.15 ic	---	---	---	---	---	---	---	---	15.88
2.50	10	170.70	11.25 ic	6.25 ic	---	---	---	---	---	---	---	---	17.50
2.60	11	170.80	11.57 ic	7.44 ic	---	---	---	---	---	---	---	---	19.01
2.70	11	170.90	11.88 ic	8.70 ic	---	---	---	---	---	---	---	---	20.58
2.80	12	171.00	12.18 ic	10.02 ic	---	---	---	---	---	---	---	---	22.20
2.90	12	171.10	12.47 ic	11.40 ic	---	---	---	---	---	---	---	---	23.88
3.00	13	171.20	12.76 ic	12.84 ic	---	---	---	---	---	---	---	---	25.60
3.10	13	171.30	13.04 ic	14.30 ic	---	---	---	---	---	---	---	---	27.34
3.20	13	171.40	13.32 ic	15.79 ic	---	---	---	---	---	---	---	---	29.11
3.30	14	171.50	13.59 ic	17.30 ic	---	---	---	---	---	---	---	---	30.89

Continues on next page...

Diversion Str

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.40	14	171.60	13.85 ic	18.80 ic	---	---	---	---	---	---	---	---	32.65
3.50	15	171.70	14.11 ic	20.28 ic	---	---	---	---	---	---	---	---	34.38
3.60	15	171.80	14.36 ic	21.73 ic	---	---	---	---	---	---	---	---	36.09
3.70	16	171.90	14.61 ic	23.11 ic	---	---	---	---	---	---	---	---	37.72
3.80	16	172.00	14.86 ic	24.40 ic	---	---	---	---	---	---	---	---	39.26
3.90	16	172.10	15.10 ic	25.55 ic	---	---	---	---	---	---	---	---	40.65
4.00	17	172.20	15.34 ic	26.42 ic	---	---	---	---	---	---	---	---	41.76
4.10	17	172.30	15.57 ic	27.46 ic	---	---	---	---	---	---	---	---	43.03
4.20	18	172.40	15.80 ic	28.46 ic	---	---	---	---	---	---	---	---	44.26
4.30	18	172.50	16.03 ic	29.42 ic	---	---	---	---	---	---	---	---	45.45
4.40	19	172.60	16.25 ic	30.36 ic	---	---	---	---	---	---	---	---	46.61
4.50	19	172.70	16.48 ic	31.26 ic	---	---	---	---	---	---	---	---	47.74
4.60	20	172.80	16.69 ic	32.14 ic	---	---	---	---	---	---	---	---	48.84
4.70	20	172.90	16.91 ic	33.00 ic	---	---	---	---	---	---	---	---	49.91
4.80	20	173.00	17.12 ic	33.84 ic	---	---	---	---	---	---	---	---	50.96
4.90	21	173.10	17.33 ic	34.65 ic	---	---	---	---	---	---	---	---	51.98
5.00	21	173.20	17.54 ic	35.45 ic	---	---	---	---	---	---	---	---	52.99
5.10	22	173.30	17.74 ic	36.23 ic	---	---	---	---	---	---	---	---	53.97
5.20	22	173.40	17.95 ic	36.99 ic	---	---	---	---	---	---	---	---	54.94
5.30	23	173.50	18.15 ic	37.74 ic	---	---	---	---	---	---	---	---	55.89
5.40	23	173.60	18.35 ic	38.47 ic	---	---	---	---	---	---	---	---	56.82
5.50	24	173.70	18.54 ic	39.19 ic	---	---	---	---	---	---	---	---	57.73
5.60	24	173.80	18.74 ic	39.90 ic	---	---	---	---	---	---	---	---	58.63
5.70	25	173.90	18.93 ic	40.59 ic	---	---	---	---	---	---	---	---	59.52
5.80	25	174.00	19.12 ic	41.27 ic	---	---	---	---	---	---	---	---	60.39

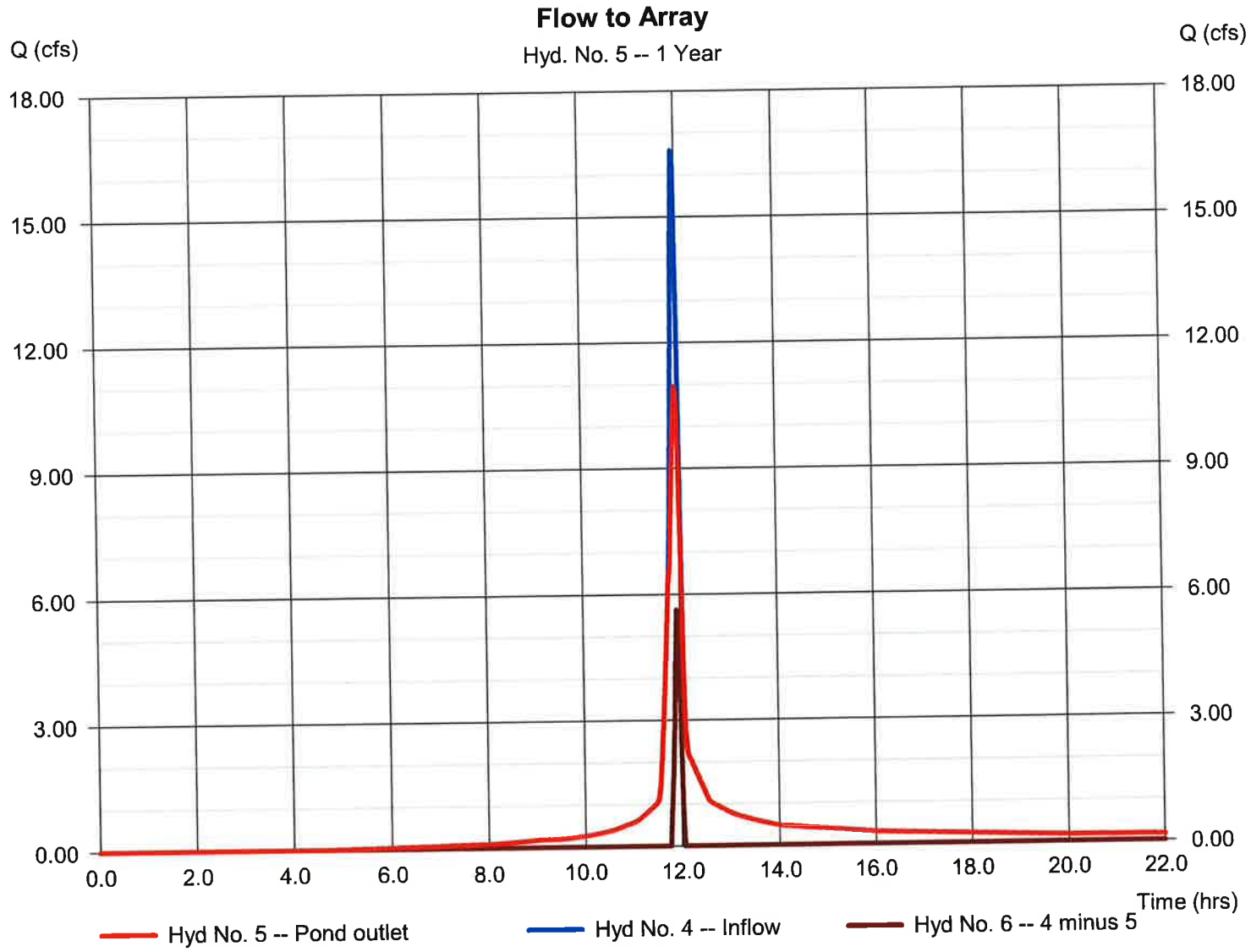
...End

Hydrograph Report

Hyd. No. 5

Flow to Array

Hydrograph type	= Diversion1	Peak discharge	= 10.96 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 32,021 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 6
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A

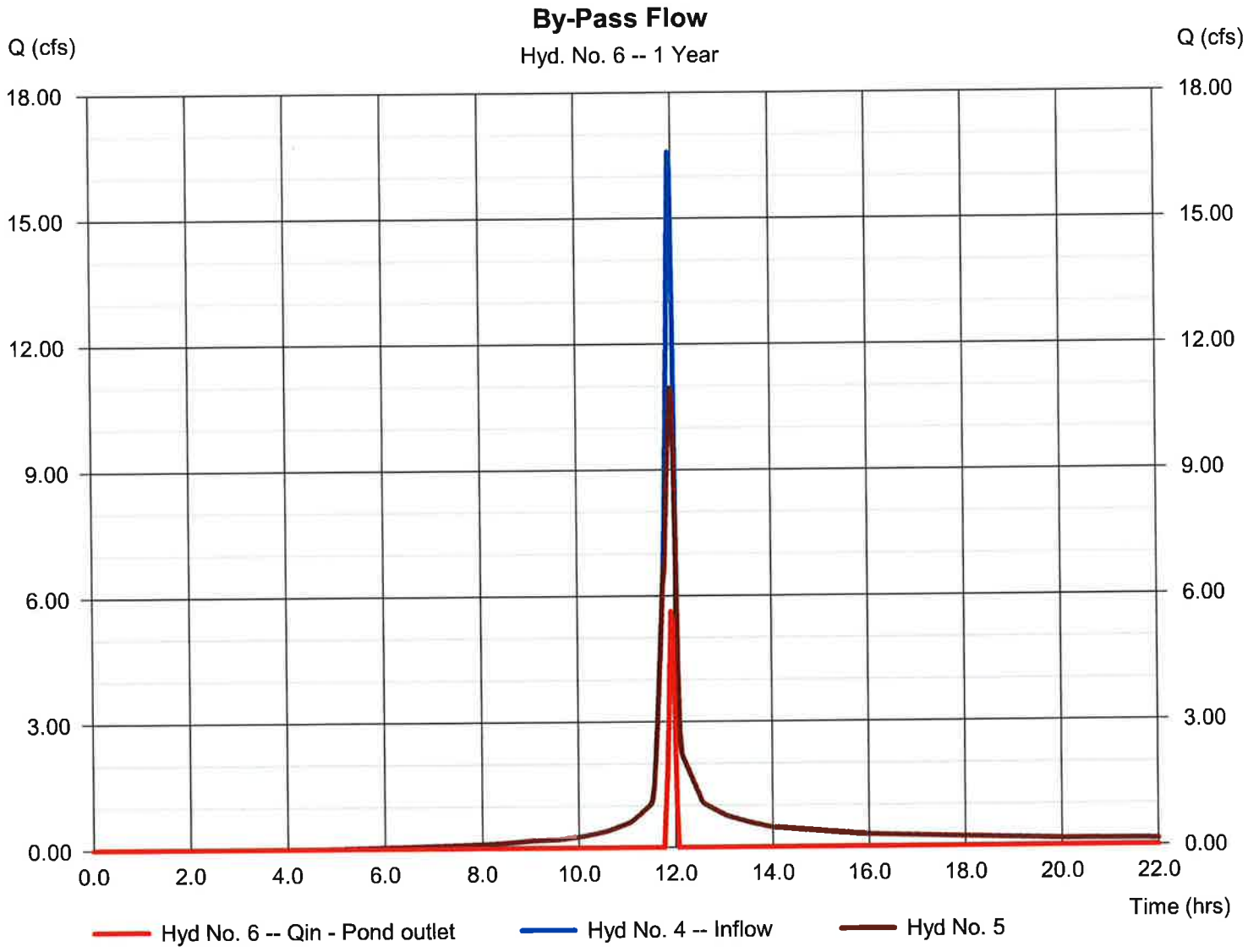


Hydrograph Report

Hyd. No. 6

By-Pass Flow

Hydrograph type	= Diversion2	Peak discharge	= 5.629 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,971 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 5
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A



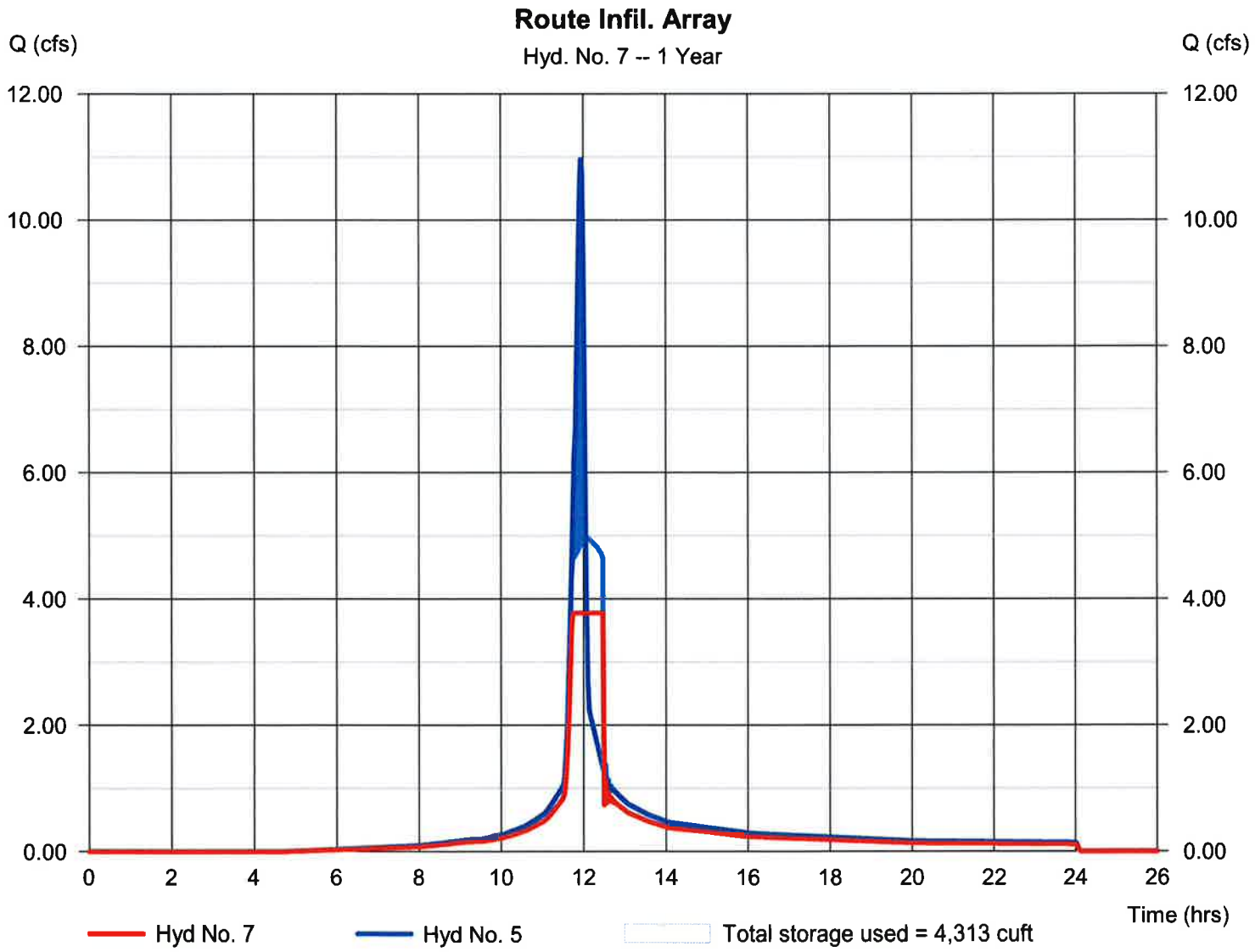
Hydrograph Report

Hyd. No. 7

Route Infil. Array

Hydrograph type	= Reservoir	Peak discharge	= 3.775 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.73 hrs
Time interval	= 2 min	Hyd. volume	= 25,661 cuft
Inflow hyd. No.	= 5 - Flow to Array	Max. Elevation	= 169.15 ft
Reservoir name	= Array	Max. Storage	= 4,313 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 2 - Array

Pond Data

UG Chambers -Invert elev. = 168.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 200.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 167.50 ft, Width = 8.00 ft, Height = 4.50 ft, Voids = 20.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	167.50	n/a	0	0
0.45	167.95	n/a	622	622
0.90	168.40	n/a	1,074	1,697
1.35	168.85	n/a	1,520	3,217
1.80	169.30	n/a	1,722	4,938
2.25	169.75	n/a	1,827	6,765
2.70	170.20	n/a	1,864	8,629
3.15	170.65	n/a	1,836	10,465
3.60	171.10	n/a	1,738	12,203
4.05	171.55	n/a	1,548	13,751
4.50	172.00	n/a	1,159	14,909

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 5.500 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	167.50	---	---	---	---	---	---	---	---	0.000	---	0.000
0.05	62	167.54	---	---	---	---	---	---	---	---	0.857	---	4.632
0.09	124	167.59	---	---	---	---	---	---	---	---	0.866	---	4.641
0.14	187	167.63	---	---	---	---	---	---	---	---	0.876	---	4.651
0.18	249	167.68	---	---	---	---	---	---	---	---	0.886	---	4.660
0.22	311	167.73	---	---	---	---	---	---	---	---	0.895	---	4.670
0.27	373	167.77	---	---	---	---	---	---	---	---	0.905	---	4.679
0.31	436	167.82	---	---	---	---	---	---	---	---	0.914	---	4.689
0.36	498	167.86	---	---	---	---	---	---	---	---	0.924	---	4.698
0.40	560	167.90	---	---	---	---	---	---	---	---	0.933	---	4.708
0.45	622	167.95	---	---	---	---	---	---	---	---	0.943	---	4.718
0.50	730	167.99	---	---	---	---	---	---	---	---	0.952	---	4.727
0.54	837	168.04	---	---	---	---	---	---	---	---	0.962	---	4.737
0.58	944	168.09	---	---	---	---	---	---	---	---	0.971	---	4.746
0.63	1,052	168.13	---	---	---	---	---	---	---	---	0.981	---	4.756
0.68	1,159	168.18	---	---	---	---	---	---	---	---	0.990	---	4.765
0.72	1,267	168.22	---	---	---	---	---	---	---	---	1.000	---	4.775
0.76	1,374	168.26	---	---	---	---	---	---	---	---	1.009	---	4.784
0.81	1,482	168.31	---	---	---	---	---	---	---	---	1.019	---	4.794
0.86	1,589	168.35	---	---	---	---	---	---	---	---	1.029	---	4.803
0.90	1,697	168.40	---	---	---	---	---	---	---	---	1.038	---	4.813
0.94	1,849	168.45	---	---	---	---	---	---	---	---	1.048	---	4.822
0.99	2,001	168.49	---	---	---	---	---	---	---	---	1.057	---	4.832
1.03	2,153	168.54	---	---	---	---	---	---	---	---	1.067	---	4.841
1.08	2,305	168.58	---	---	---	---	---	---	---	---	1.076	---	4.851
1.13	2,457	168.63	---	---	---	---	---	---	---	---	1.086	---	4.861
1.17	2,609	168.67	---	---	---	---	---	---	---	---	1.095	---	4.870
1.22	2,761	168.71	---	---	---	---	---	---	---	---	1.105	---	4.880
1.26	2,913	168.76	---	---	---	---	---	---	---	---	1.114	---	4.889
1.30	3,065	168.80	---	---	---	---	---	---	---	---	1.124	---	4.899
1.35	3,217	168.85	---	---	---	---	---	---	---	---	1.133	---	4.908
1.39	3,389	168.90	---	---	---	---	---	---	---	---	1.143	---	4.918

Continues on next page...

Array

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.44	3,561	168.94	---	---	---	---	---	---	---	---	1.152	---	4.927
1.49	3,733	168.99	---	---	---	---	---	---	---	---	1.162	---	4.937
1.53	3,905	169.03	---	---	---	---	---	---	---	---	1.172	---	4.946
1.58	4,078	169.07	---	---	---	---	---	---	---	---	1.181	---	4.956
1.62	4,250	169.12	---	---	---	---	---	---	---	---	1.191	---	4.965
1.66	4,422	169.16	---	---	---	---	---	---	---	---	1.200	---	4.975
1.71	4,594	169.21	---	---	---	---	---	---	---	---	1.210	---	4.984
1.75	4,766	169.26	---	---	---	---	---	---	---	---	1.219	---	4.994
1.80	4,938	169.30	---	---	---	---	---	---	---	---	1.229	---	5.004
1.85	5,121	169.35	---	---	---	---	---	---	---	---	1.238	---	5.013
1.89	5,304	169.39	---	---	---	---	---	---	---	---	1.248	---	5.023
1.93	5,486	169.43	---	---	---	---	---	---	---	---	1.257	---	5.032
1.98	5,669	169.48	---	---	---	---	---	---	---	---	1.267	---	5.042
2.03	5,852	169.52	---	---	---	---	---	---	---	---	1.276	---	5.051
2.07	6,035	169.57	---	---	---	---	---	---	---	---	1.286	---	5.061
2.12	6,217	169.62	---	---	---	---	---	---	---	---	1.295	---	5.070
2.16	6,400	169.66	---	---	---	---	---	---	---	---	1.305	---	5.080
2.20	6,583	169.71	---	---	---	---	---	---	---	---	1.315	---	5.089
2.25	6,765	169.75	---	---	---	---	---	---	---	---	1.324	---	5.099
2.30	6,952	169.79	---	---	---	---	---	---	---	---	1.334	---	5.108
2.34	7,138	169.84	---	---	---	---	---	---	---	---	1.343	---	5.118
2.38	7,324	169.88	---	---	---	---	---	---	---	---	1.353	---	5.127
2.43	7,511	169.93	---	---	---	---	---	---	---	---	1.362	---	5.137
2.47	7,697	169.98	---	---	---	---	---	---	---	---	1.372	---	5.147
2.52	7,884	170.02	---	---	---	---	---	---	---	---	1.381	---	5.156
2.57	8,070	170.07	---	---	---	---	---	---	---	---	1.391	---	5.166
2.61	8,256	170.11	---	---	---	---	---	---	---	---	1.400	---	5.175
2.66	8,443	170.15	---	---	---	---	---	---	---	---	1.410	---	5.185
2.70	8,629	170.20	---	---	---	---	---	---	---	---	1.419	---	5.194
2.74	8,813	170.24	---	---	---	---	---	---	---	---	1.429	---	5.204
2.79	8,996	170.29	---	---	---	---	---	---	---	---	1.438	---	5.213
2.84	9,180	170.34	---	---	---	---	---	---	---	---	1.448	---	5.223
2.88	9,363	170.38	---	---	---	---	---	---	---	---	1.458	---	5.232
2.92	9,547	170.43	---	---	---	---	---	---	---	---	1.467	---	5.242
2.97	9,731	170.47	---	---	---	---	---	---	---	---	1.477	---	5.251
3.02	9,914	170.51	---	---	---	---	---	---	---	---	1.486	---	5.261
3.06	10,098	170.56	---	---	---	---	---	---	---	---	1.496	---	5.270
3.11	10,282	170.60	---	---	---	---	---	---	---	---	1.505	---	5.280
3.15	10,465	170.65	---	---	---	---	---	---	---	---	1.515	---	5.290
3.19	10,639	170.70	---	---	---	---	---	---	---	---	1.524	---	5.299
3.24	10,813	170.74	---	---	---	---	---	---	---	---	1.534	---	5.309
3.29	10,986	170.79	---	---	---	---	---	---	---	---	1.543	---	5.318
3.33	11,160	170.83	---	---	---	---	---	---	---	---	1.553	---	5.328
3.38	11,334	170.88	---	---	---	---	---	---	---	---	1.562	---	5.337
3.42	11,508	170.92	---	---	---	---	---	---	---	---	1.572	---	5.347
3.47	11,682	170.96	---	---	---	---	---	---	---	---	1.581	---	5.356
3.51	11,855	171.01	---	---	---	---	---	---	---	---	1.591	---	5.366
3.56	12,029	171.05	---	---	---	---	---	---	---	---	1.601	---	5.375
3.60	12,203	171.10	---	---	---	---	---	---	---	---	1.610	---	5.385
3.64	12,358	171.15	---	---	---	---	---	---	---	---	1.620	---	5.394
3.69	12,513	171.19	---	---	---	---	---	---	---	---	1.629	---	5.404
3.73	12,667	171.24	---	---	---	---	---	---	---	---	1.639	---	5.413
3.78	12,822	171.28	---	---	---	---	---	---	---	---	1.648	---	5.423
3.83	12,977	171.32	---	---	---	---	---	---	---	---	1.658	---	5.433
3.87	13,132	171.37	---	---	---	---	---	---	---	---	1.667	---	5.442
3.92	13,286	171.41	---	---	---	---	---	---	---	---	1.677	---	5.452
3.96	13,441	171.46	---	---	---	---	---	---	---	---	1.686	---	5.461
4.01	13,596	171.51	---	---	---	---	---	---	---	---	1.696	---	5.471
4.05	13,751	171.55	---	---	---	---	---	---	---	---	1.705	---	5.480
4.09	13,867	171.60	---	---	---	---	---	---	---	---	1.715	---	5.490
4.14	13,983	171.64	---	---	---	---	---	---	---	---	1.724	---	5.499
4.18	14,098	171.68	---	---	---	---	---	---	---	---	1.734	---	5.509
4.23	14,214	171.73	---	---	---	---	---	---	---	---	1.744	---	5.518
4.28	14,330	171.77	---	---	---	---	---	---	---	---	1.753	---	5.528
4.32	14,446	171.82	---	---	---	---	---	---	---	---	1.763	---	5.537
4.37	14,562	171.87	---	---	---	---	---	---	---	---	1.772	---	5.547
4.41	14,678	171.91	---	---	---	---	---	---	---	---	1.782	---	5.556
4.46	14,794	171.96	---	---	---	---	---	---	---	---	1.791	---	5.566
4.50	14,909	172.00	---	---	---	---	---	---	---	---	1.801	---	5.576

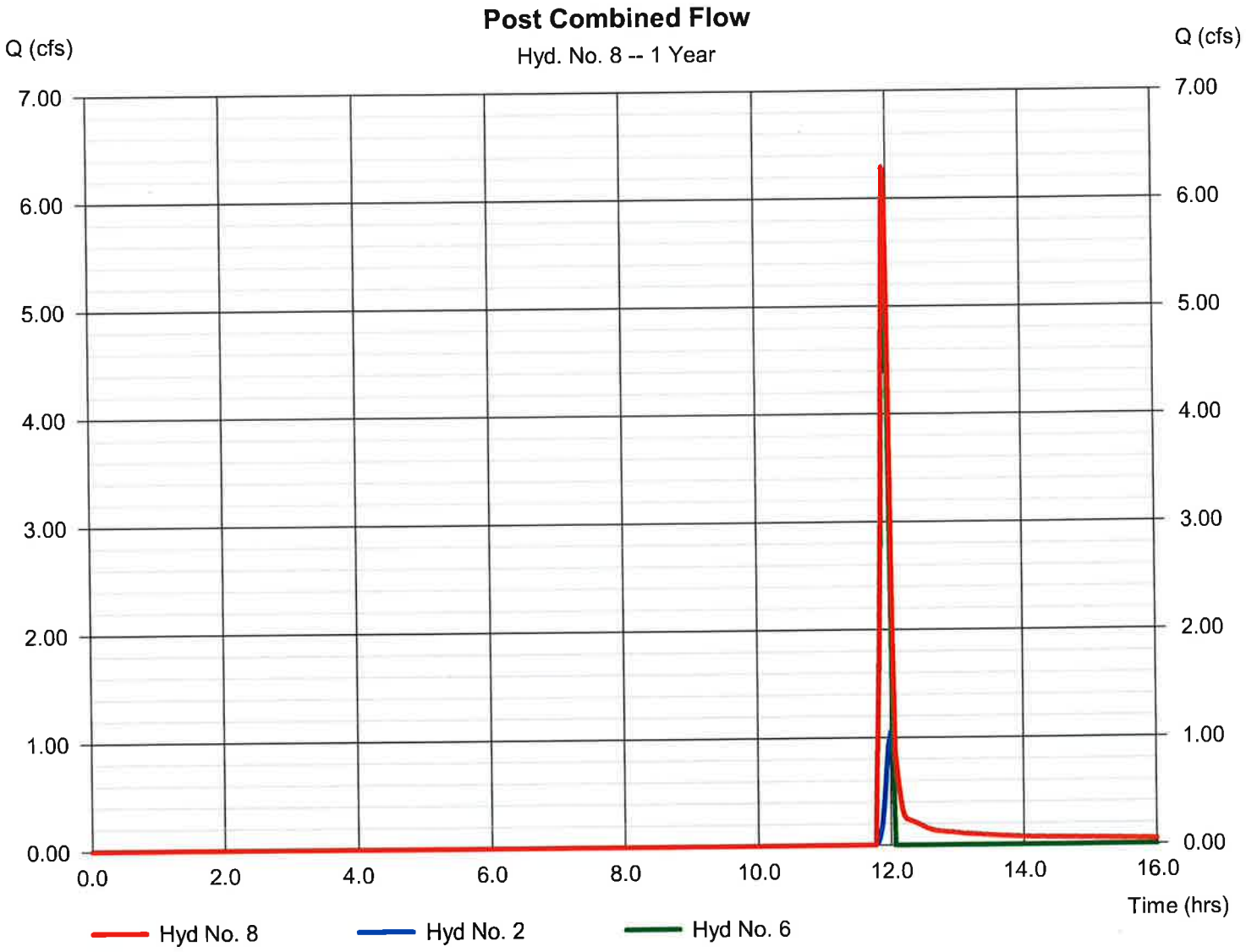
...End

Hydrograph Report

Hyd. No. 8

Post Combined Flow

Hydrograph type	= Combine	Peak discharge	= 6.292 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 5,986 cuft
Inflow hyds.	= 2, 6	Contrib. drain. area	= 2.431 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

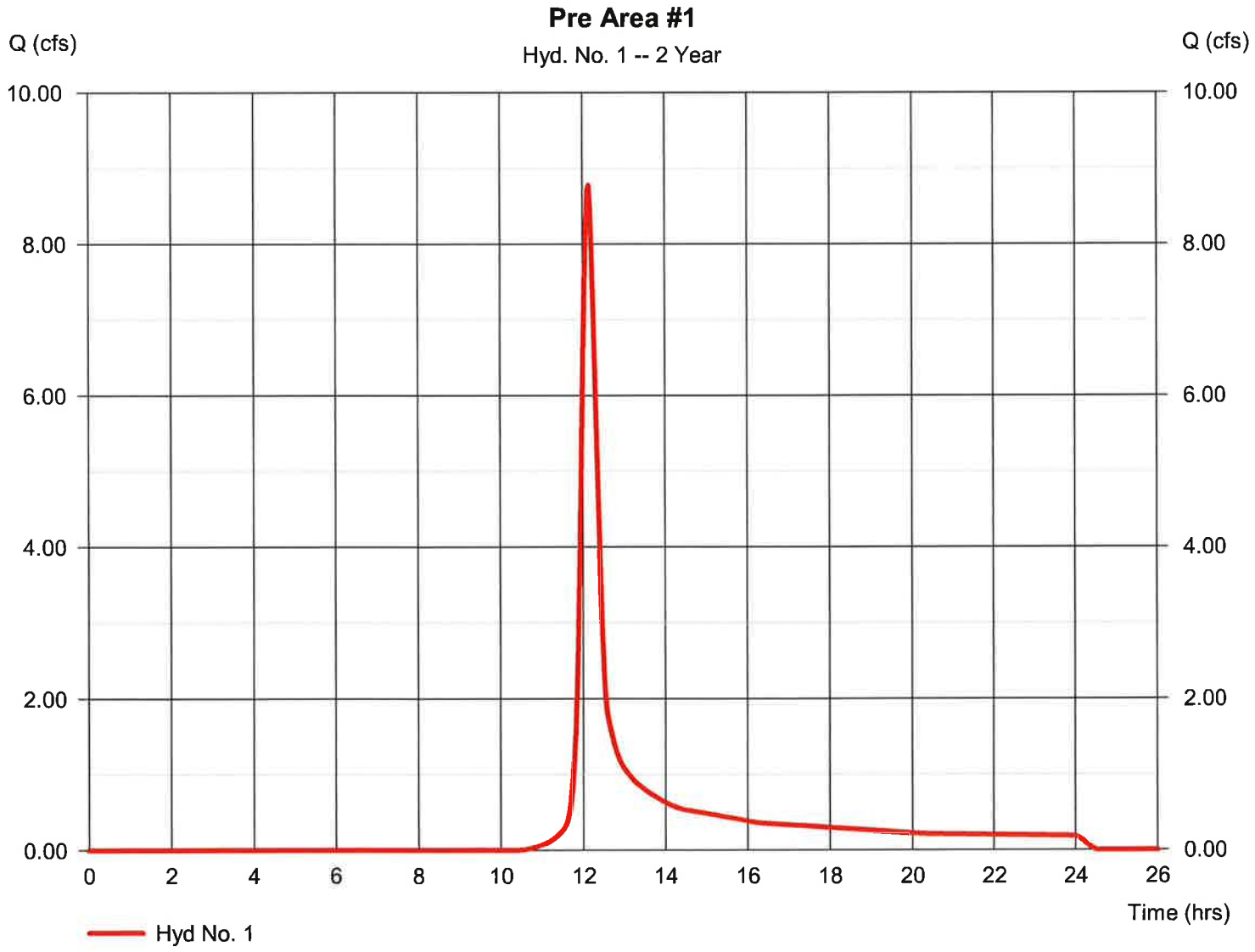
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.780	2	728	31,390	------	------	------	Pre Area #1
2	SCS Runoff	1.778	2	720	4,533	------	------	------	Post Area #1
3	SCS Runoff	19.98	2	716	42,554	------	------	------	Post Area #1A
4	Reservoir	20.00	2	716	42,554	3	171.18	11.1	Route Diversion Str.
5	Diversion1	11.77	2	716	38,024	4	------	------	Flow to Array
6	Diversion2	8.233	2	716	4,530	4	------	------	By-Pass Flow
7	Reservoir	3.775	2	702	30,345	5	169.45	5,543	Route Infil. Array
8	Combine	9.519	2	716	9,063	2, 6,	------	------	Post Combined Flow

Hydrograph Report

Hyd. No. 1

Pre Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 8.780 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 31,390 cuft
Drainage area	= 8.733 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.76 min
Total precip.	= 2.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

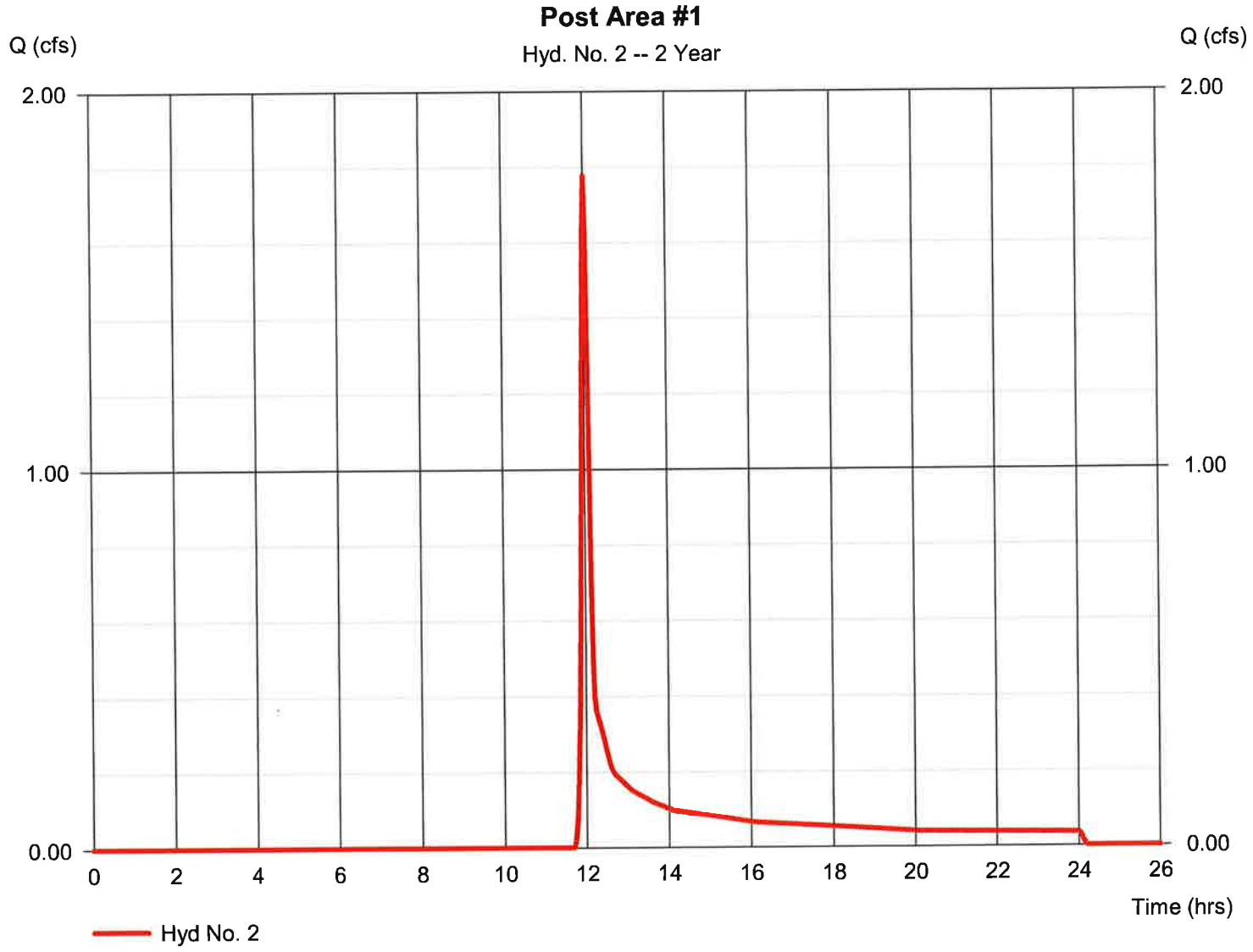


Hydrograph Report

Hyd. No. 2

Post Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.778 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,533 cuft
Drainage area	= 2.431 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.80 min
Total precip.	= 2.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

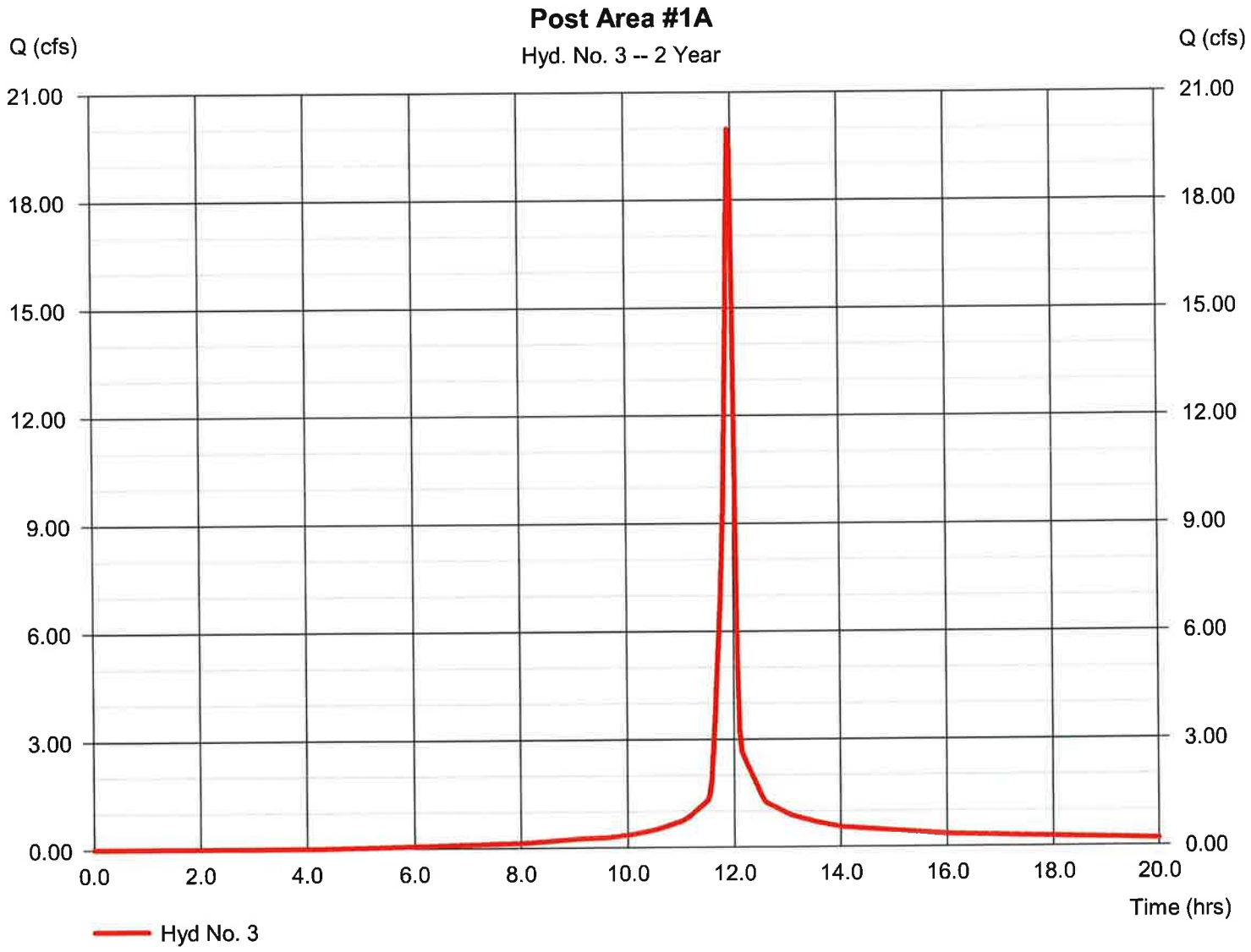


Hydrograph Report

Hyd. No. 3

Post Area #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 19.98 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 42,554 cuft
Drainage area	= 6.302 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



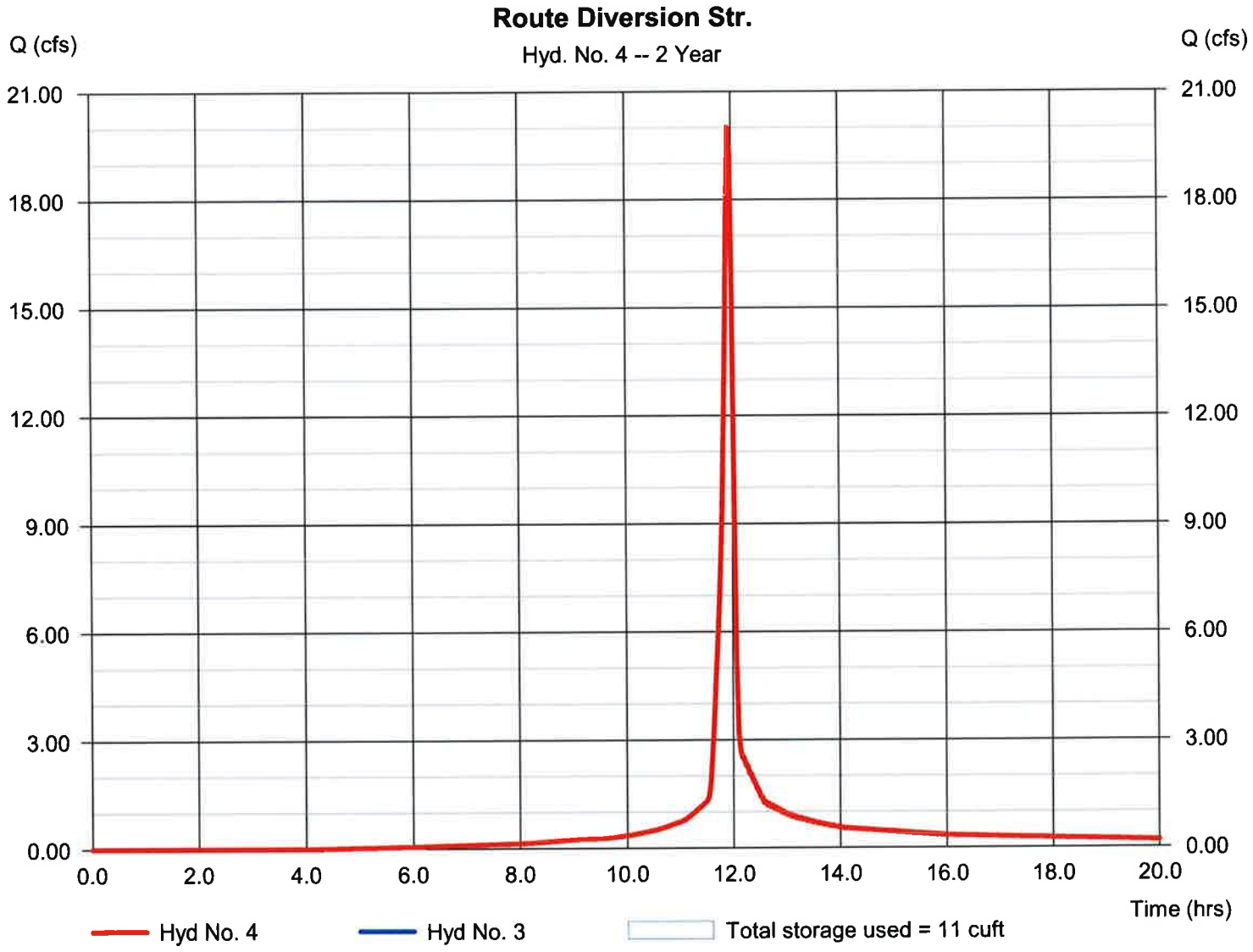
Hydrograph Report

Hyd. No. 4

Route Diversion Str.

Hydrograph type	= Reservoir	Peak discharge	= 20.00 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 42,554 cuft
Inflow hyd. No.	= 3 - Post Area #1A	Max. Elevation	= 171.18 ft
Reservoir name	= Diversion Str	Max. Storage	= 11 cuft

Storage Indication method used.

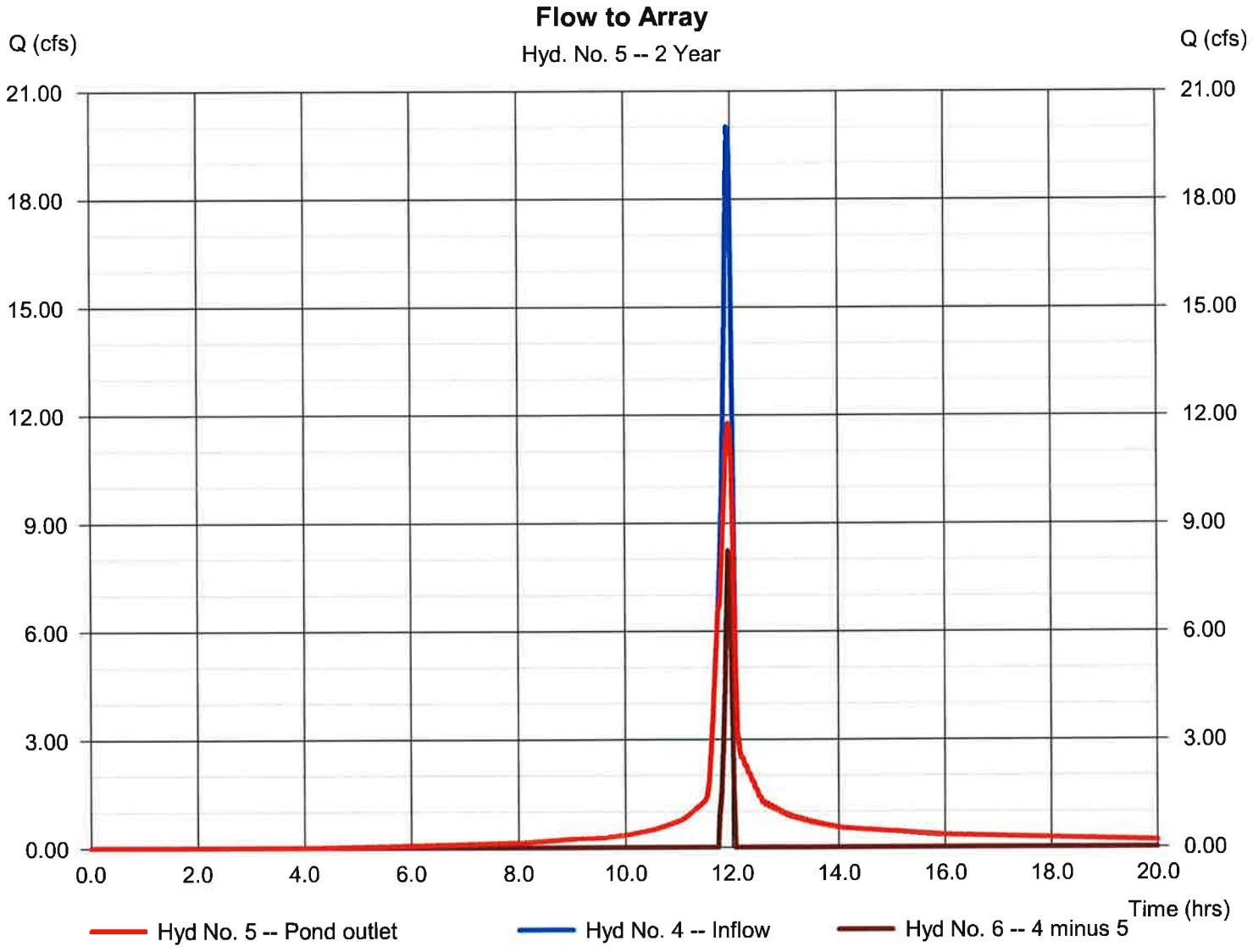


Hydrograph Report

Hyd. No. 5

Flow to Array

Hydrograph type	= Diversion1	Peak discharge	= 11.77 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 38,024 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 6
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A

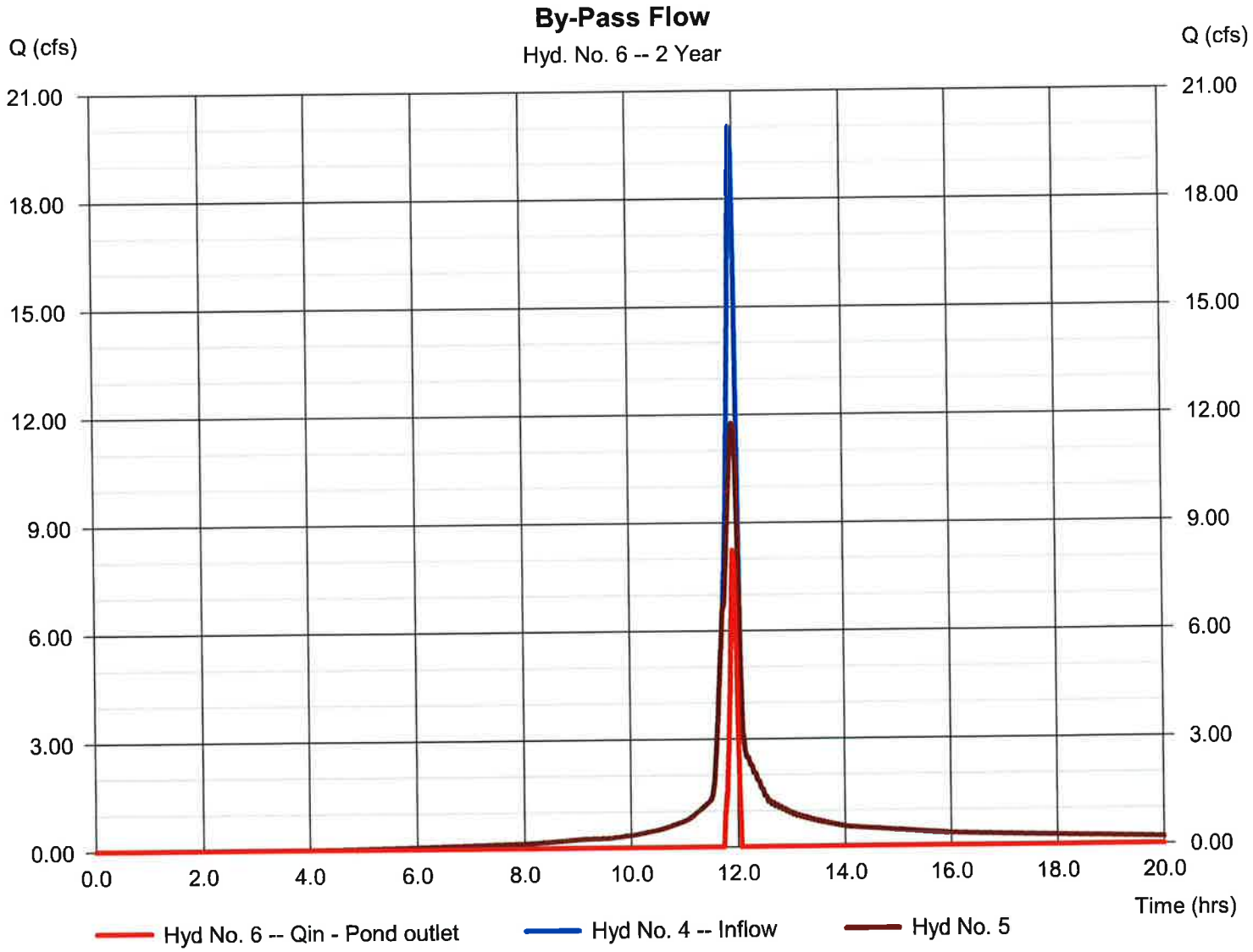


Hydrograph Report

Hyd. No. 6

By-Pass Flow

Hydrograph type	= Diversion2	Peak discharge	= 8.233 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 4,530 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 5
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A



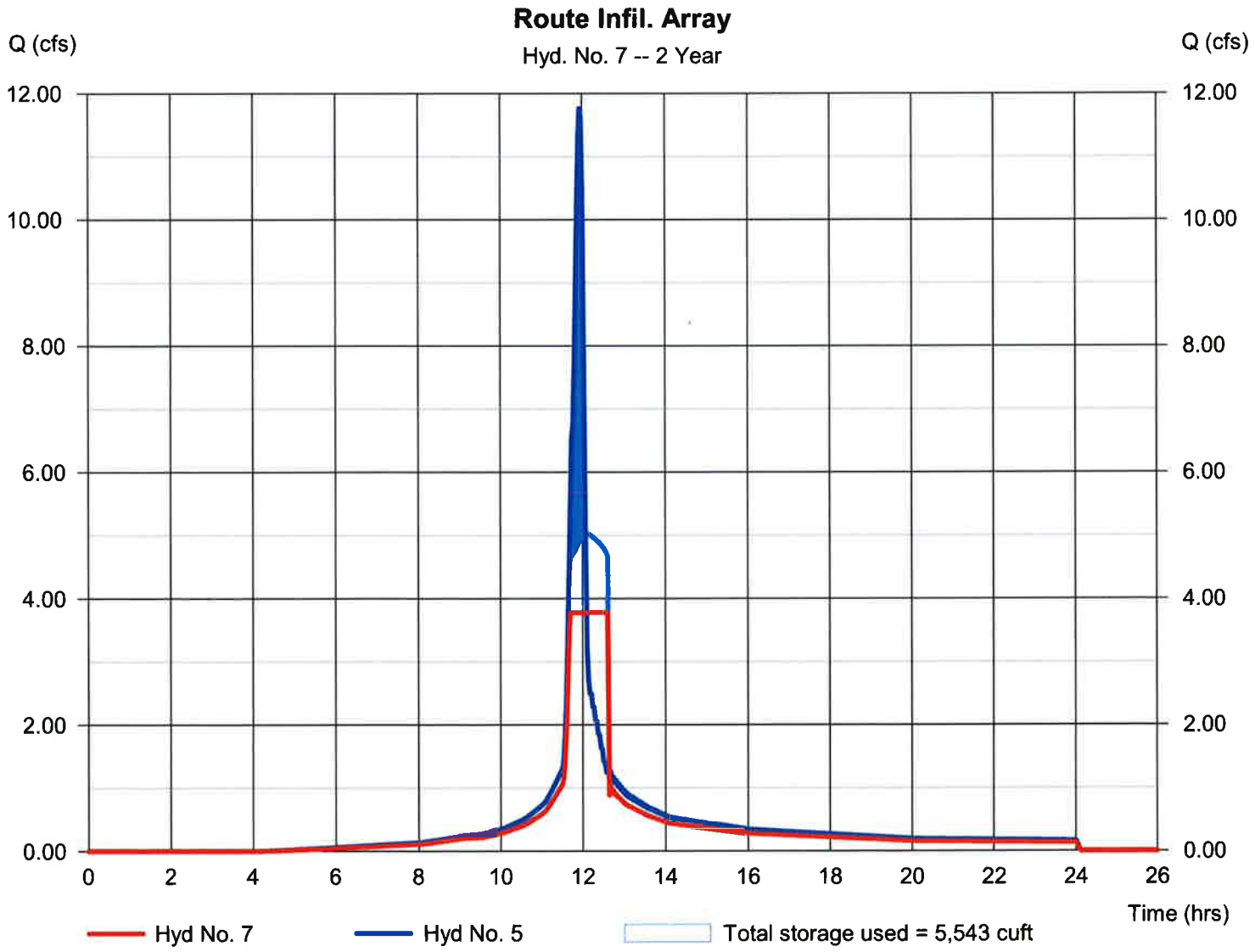
Hydrograph Report

Hyd. No. 7

Route Infil. Array

Hydrograph type	= Reservoir	Peak discharge	= 3.775 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.70 hrs
Time interval	= 2 min	Hyd. volume	= 30,345 cuft
Inflow hyd. No.	= 5 - Flow to Array	Max. Elevation	= 169.45 ft
Reservoir name	= Array	Max. Storage	= 5,543 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

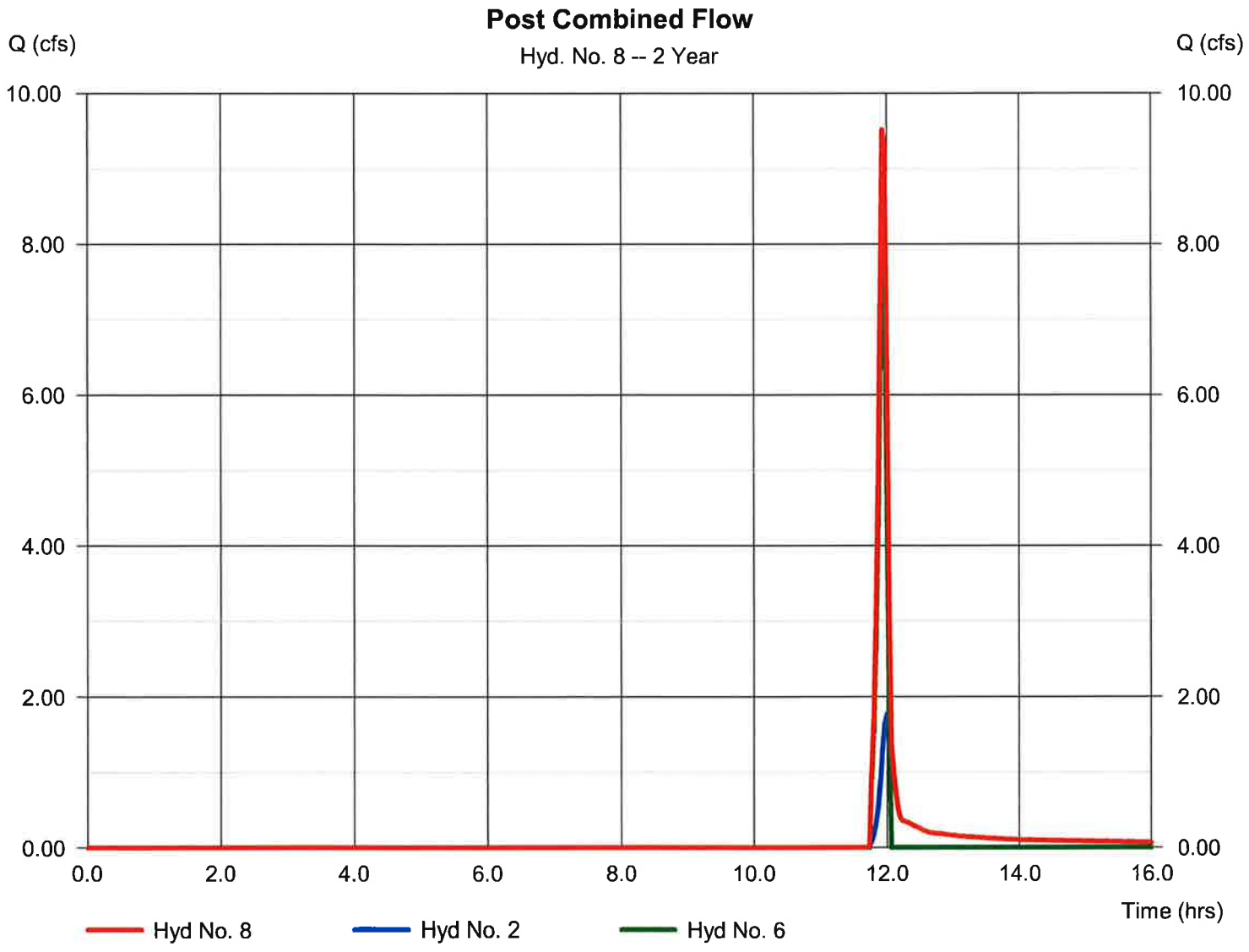


Hydrograph Report

Hyd. No. 8

Post Combined Flow

Hydrograph type	= Combine	Peak discharge	= 9.519 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 9,063 cuft
Inflow hyds.	= 2, 6	Contrib. drain. area	= 2.431 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

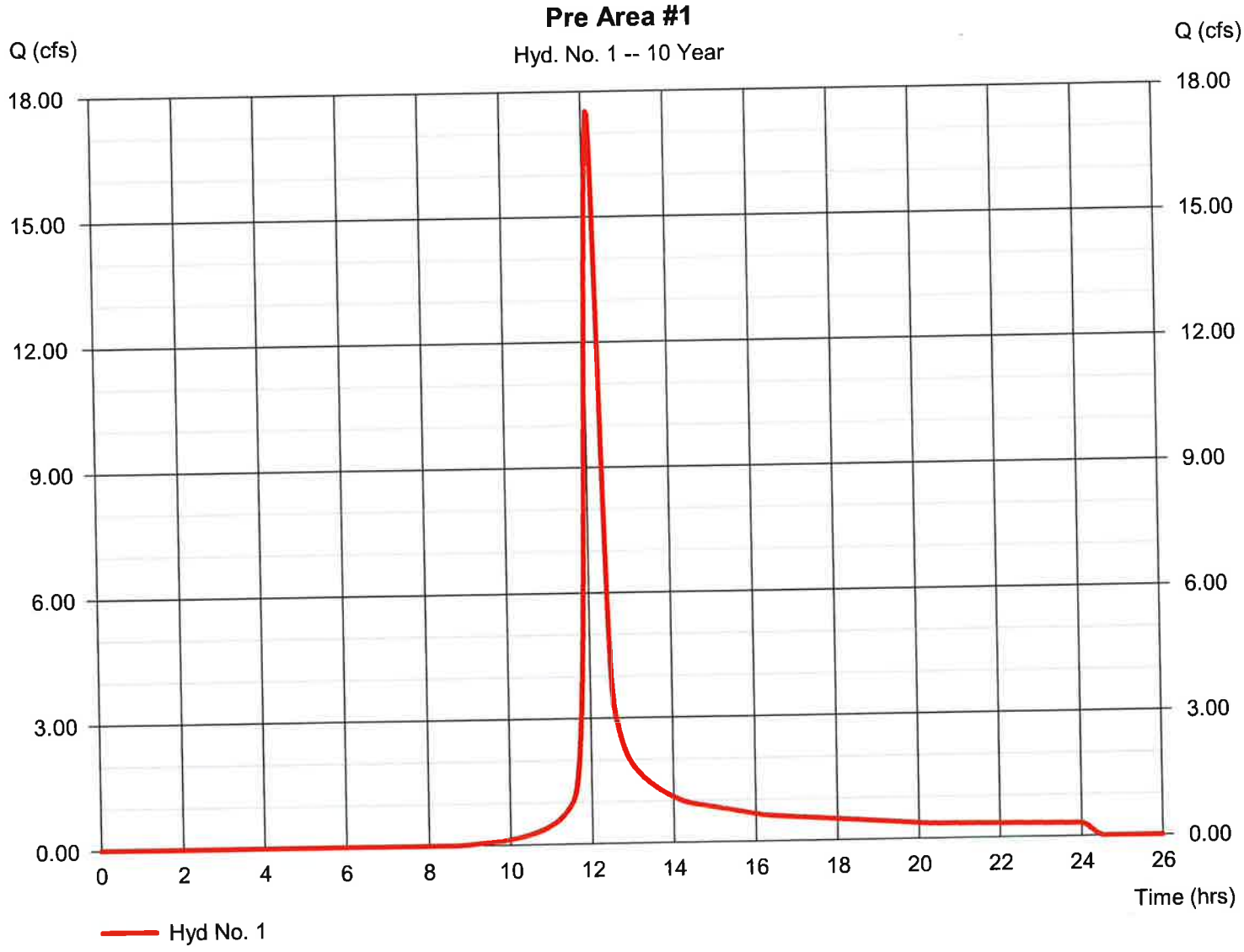
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	17.52	2	726	60,847	------	------	------	Pre Area #1
2	SCS Runoff	4.582	2	720	10,630	------	------	------	Post Area #1
3	SCS Runoff	30.68	2	716	67,306	------	------	------	Post Area #1A
4	Reservoir	30.70	2	716	67,307	3	171.67	13.8	Route Diversion Str.
5	Diversion1	13.56	2	716	56,376	4	------	------	Flow to Array
6	Diversion2	17.14	2	716	10,930	4	------	------	By-Pass Flow
7	Reservoir	3.775	2	698	44,543	5	170.23	8,734	Route Infil. Array
8	Combine	20.93	2	716	21,560	2, 6,	------	------	Post Combined Flow

Hydrograph Report

Hyd. No. 1

Pre Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 17.52 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 60,847 cuft
Drainage area	= 8.733 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.76 min
Total precip.	= 3.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

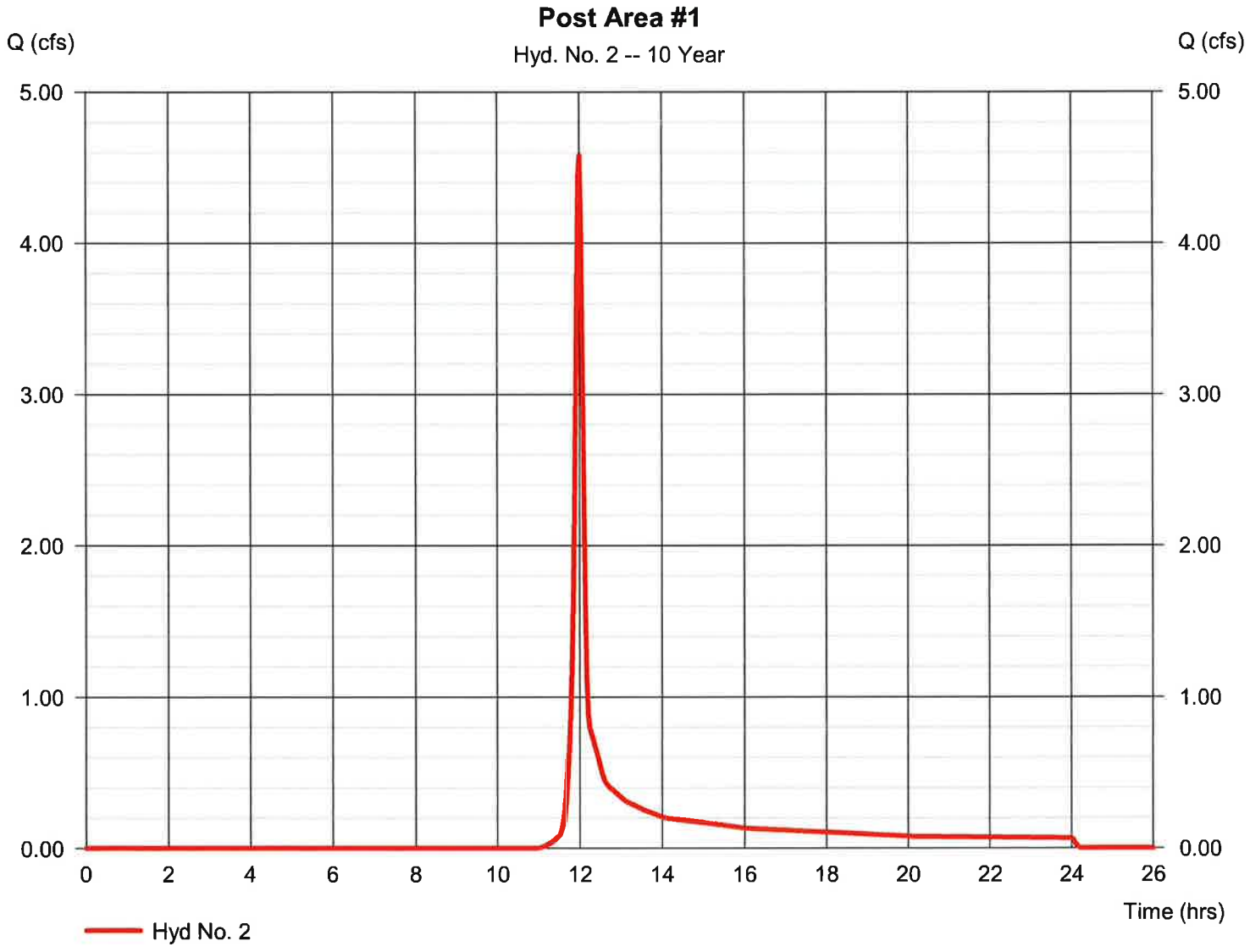


Hydrograph Report

Hyd. No. 2

Post Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.582 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 10,630 cuft
Drainage area	= 2.431 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.80 min
Total precip.	= 3.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

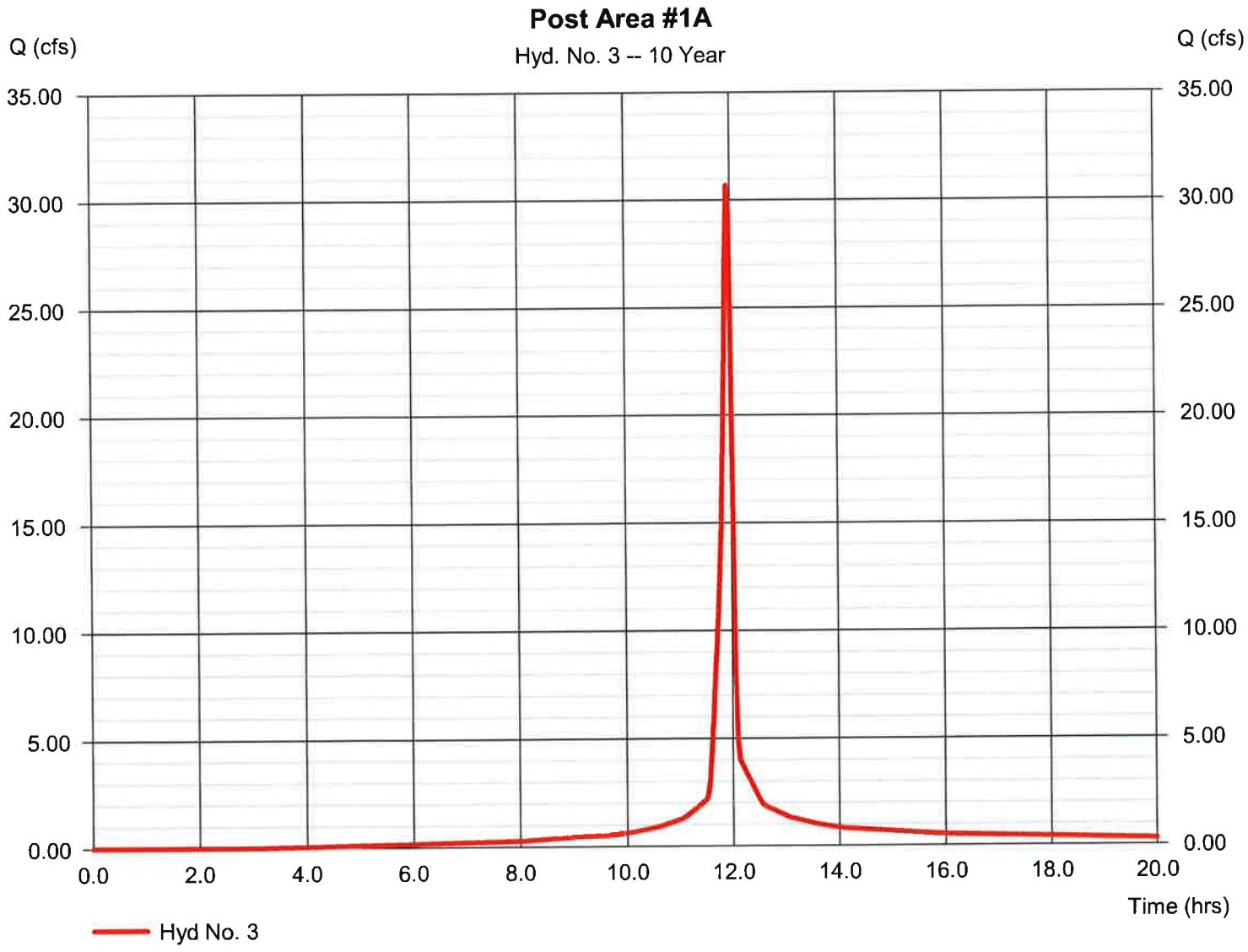


Hydrograph Report

Hyd. No. 3

Post Area #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 30.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 67,306 cuft
Drainage area	= 6.302 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



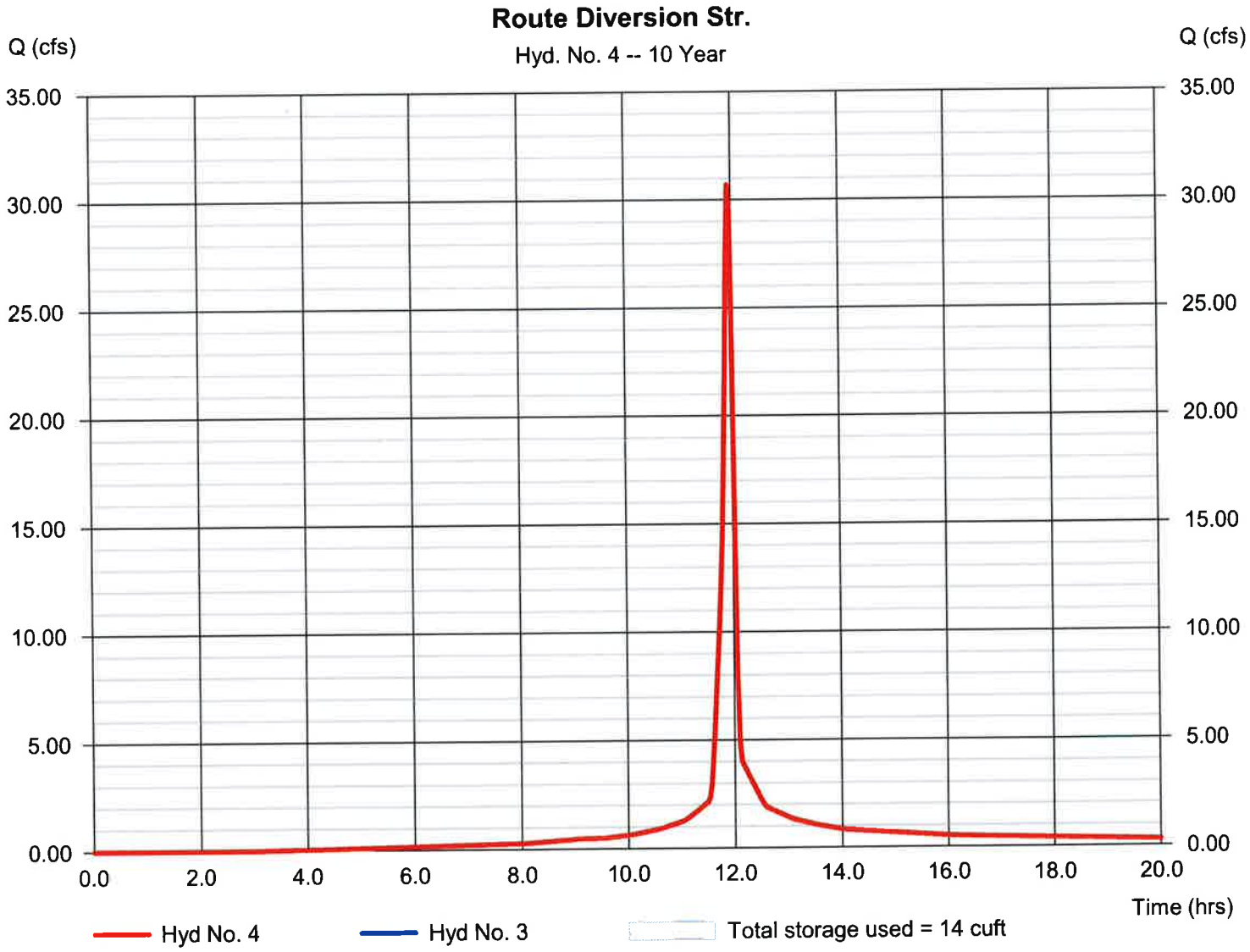
Hydrograph Report

Hyd. No. 4

Route Diversion Str.

Hydrograph type	= Reservoir	Peak discharge	= 30.70 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 67,307 cuft
Inflow hyd. No.	= 3 - Post Area #1A	Max. Elevation	= 171.67 ft
Reservoir name	= Diversion Str	Max. Storage	= 14 cuft

Storage Indication method used.

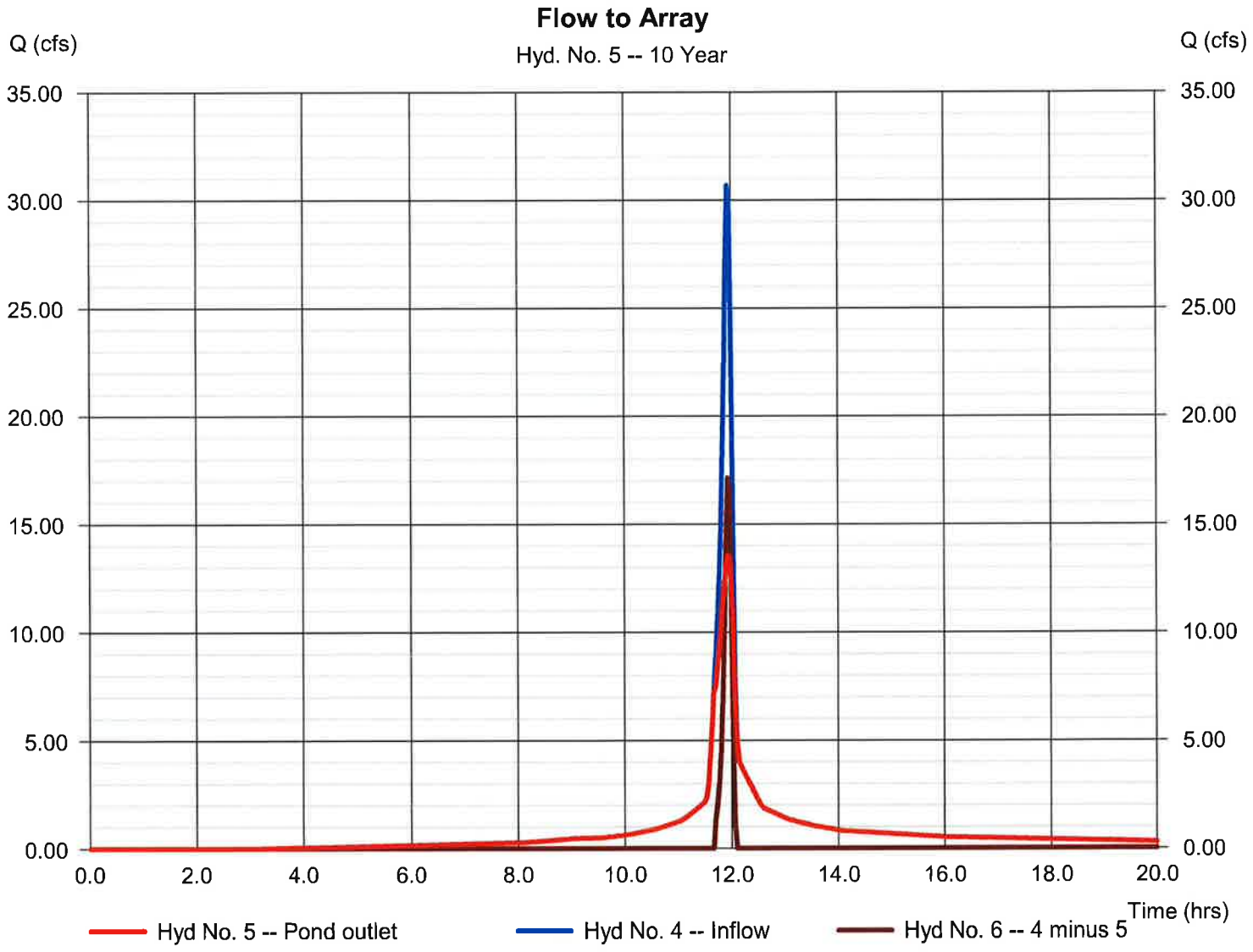


Hydrograph Report

Hyd. No. 5

Flow to Array

Hydrograph type	= Diversion1	Peak discharge	= 13.56 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 56,376 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 6
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A

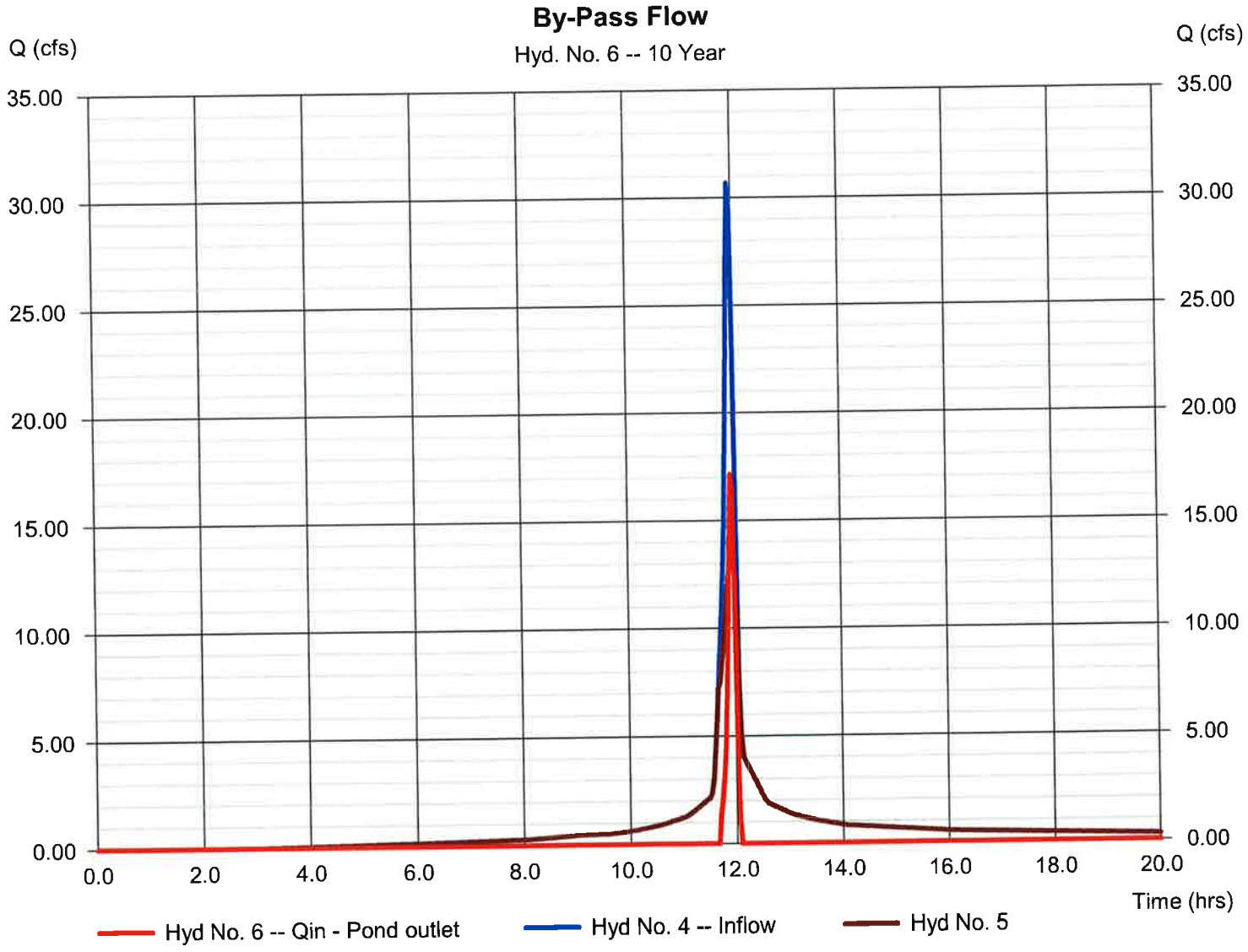


Hydrograph Report

Hyd. No. 6

By-Pass Flow

Hydrograph type	= Diversion2	Peak discharge	= 17.14 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,930 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 5
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A



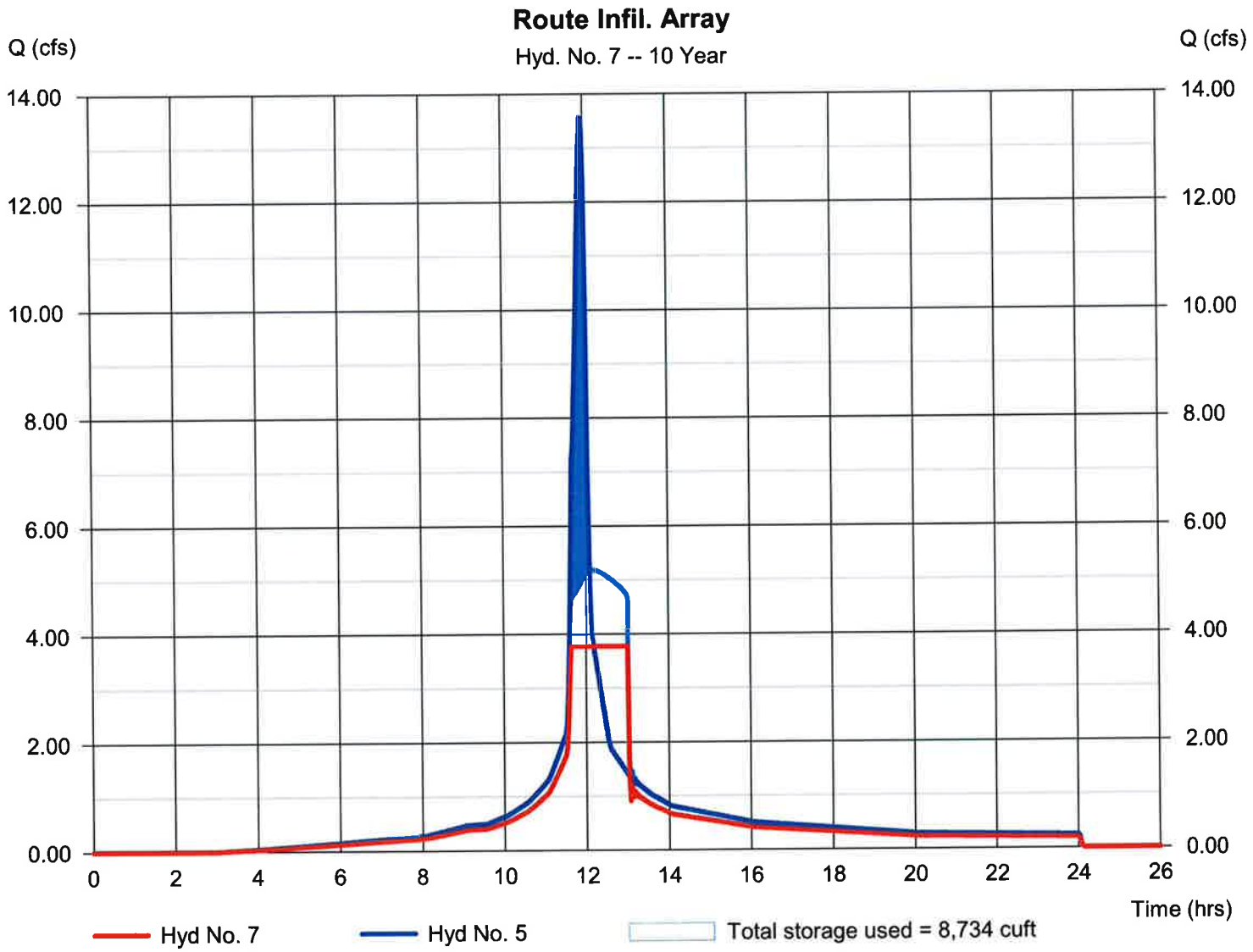
Hydrograph Report

Hyd. No. 7

Route Infil. Array

Hydrograph type	= Reservoir	Peak discharge	= 3.775 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.63 hrs
Time interval	= 2 min	Hyd. volume	= 44,543 cuft
Inflow hyd. No.	= 5 - Flow to Array	Max. Elevation	= 170.23 ft
Reservoir name	= Array	Max. Storage	= 8,734 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

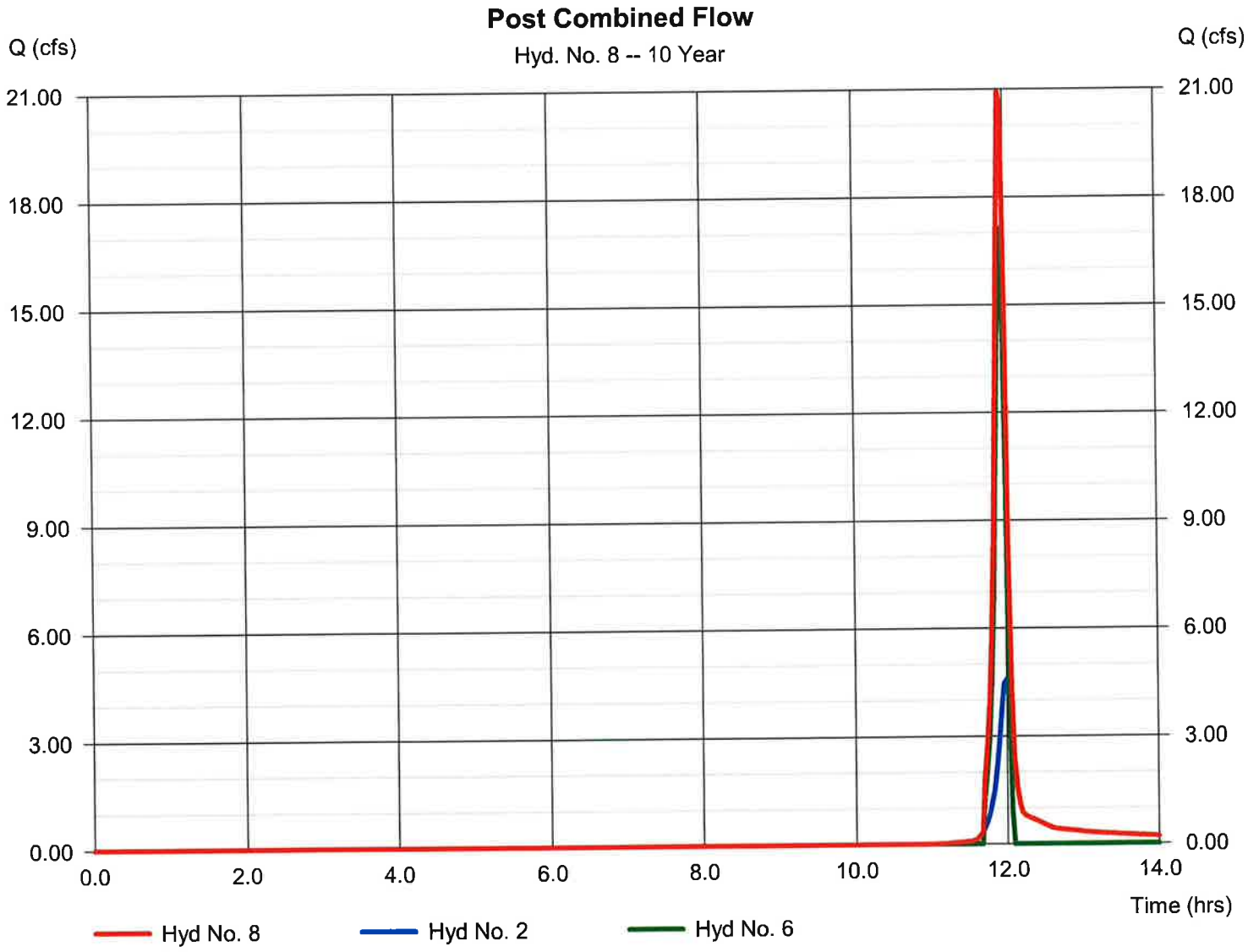


Hydrograph Report

Hyd. No. 8

Post Combined Flow

Hydrograph type	= Combine	Peak discharge	= 20.93 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 21,560 cuft
Inflow hyds.	= 2, 6	Contrib. drain. area	= 2.431 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

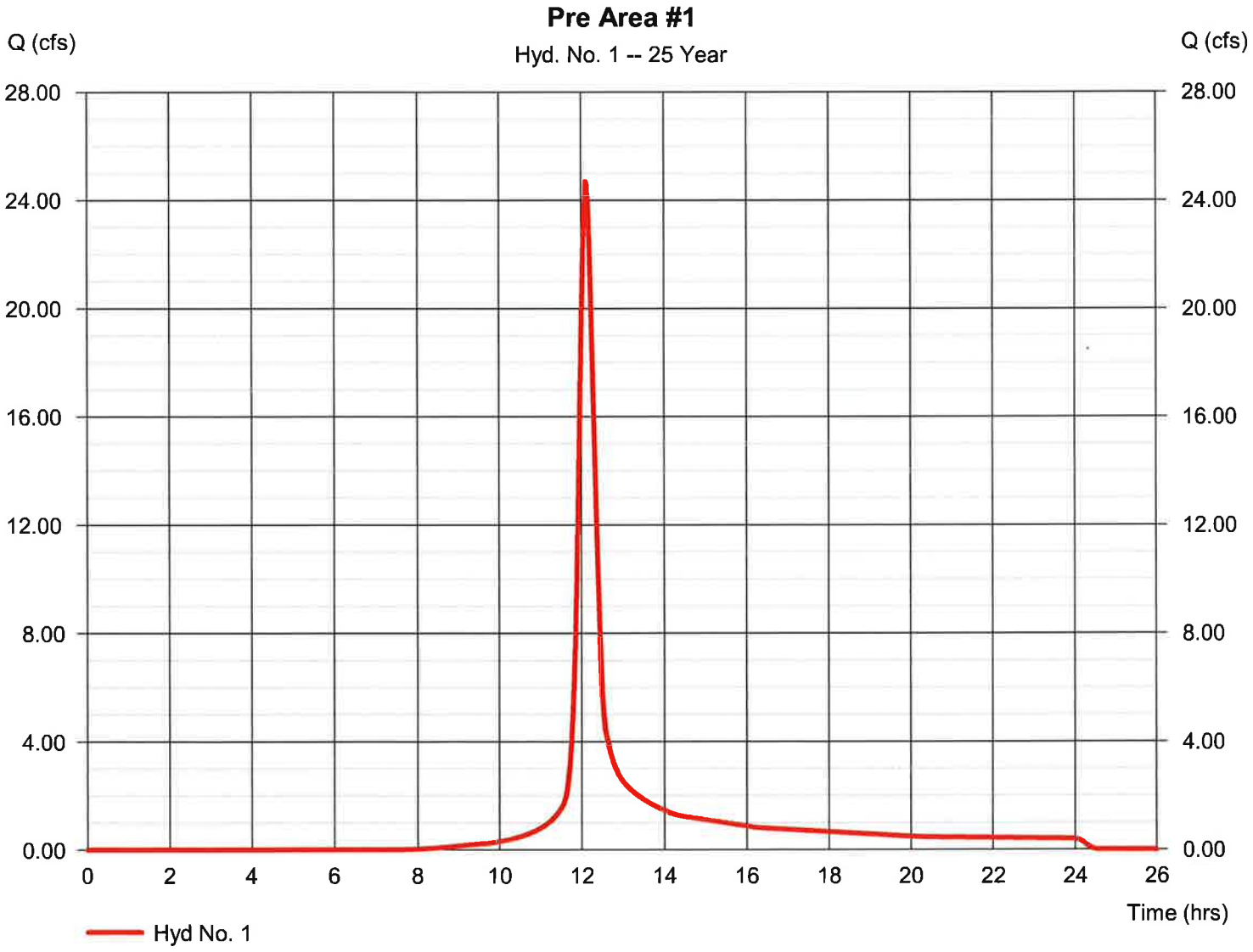
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.68	2	726	85,231	------	------	------	Pre Area #1
2	SCS Runoff	7.024	2	720	16,096	------	------	------	Post Area #1
3	SCS Runoff	38.70	2	716	86,260	------	------	------	Post Area #1A
4	Reservoir	38.68	2	716	86,260	3	172.24	15.8	Route Diversion Str.
5	Diversion1	14.77	2	716	69,836	4	------	------	Flow to Array
6	Diversion2	23.91	2	716	16,423	4	------	------	By-Pass Flow
7	Reservoir	3.775	2	696	54,831	5	170.73	10,775	Route Infil. Array
8	Combine	29.94	2	716	32,519	2, 6,	------	------	Post Combined Flow

Hydrograph Report

Hyd. No. 1

Pre Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 24.68 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 85,231 cuft
Drainage area	= 8.733 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.76 min
Total precip.	= 4.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

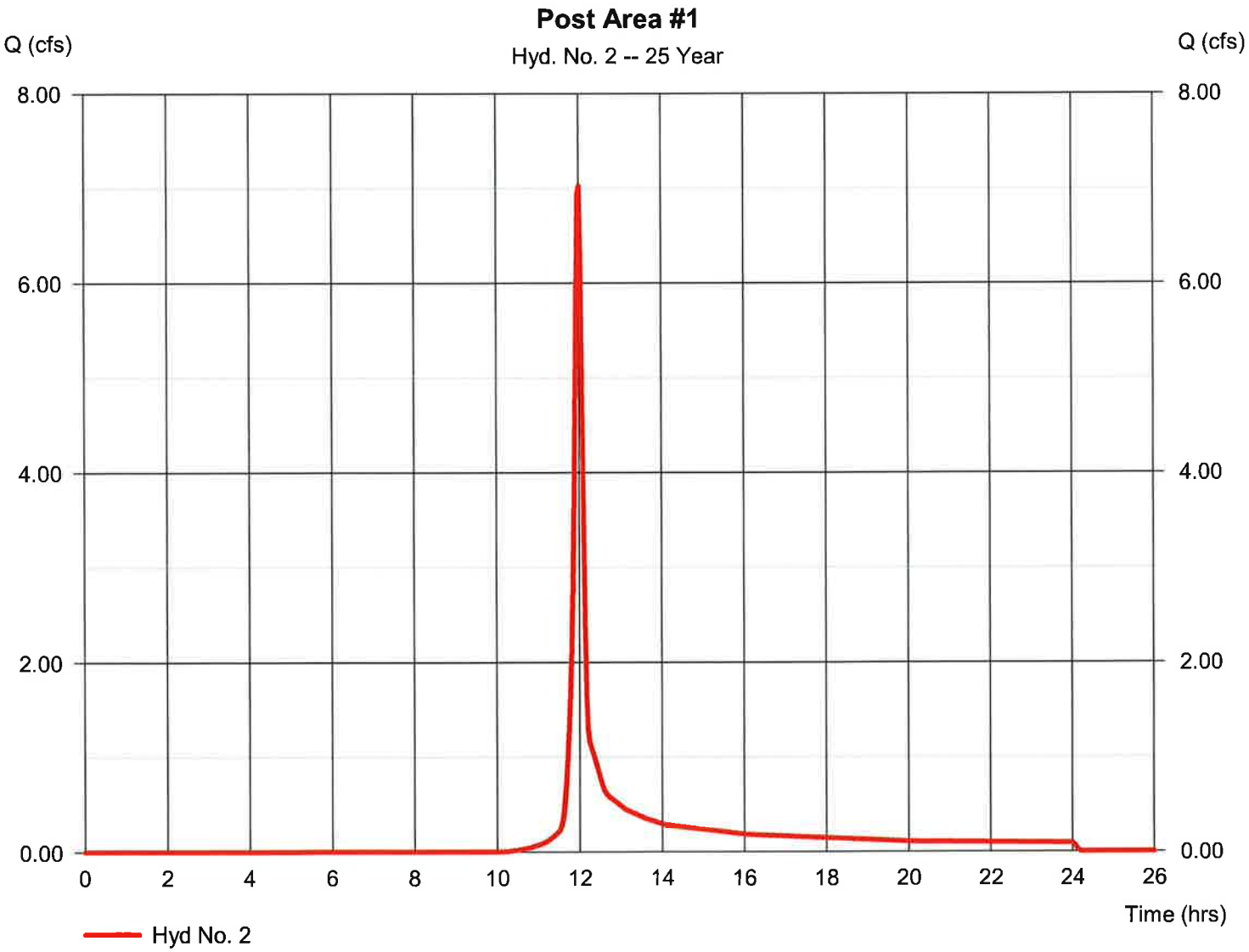


Hydrograph Report

Hyd. No. 2

Post Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.024 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 16,096 cuft
Drainage area	= 2.431 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.80 min
Total precip.	= 4.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

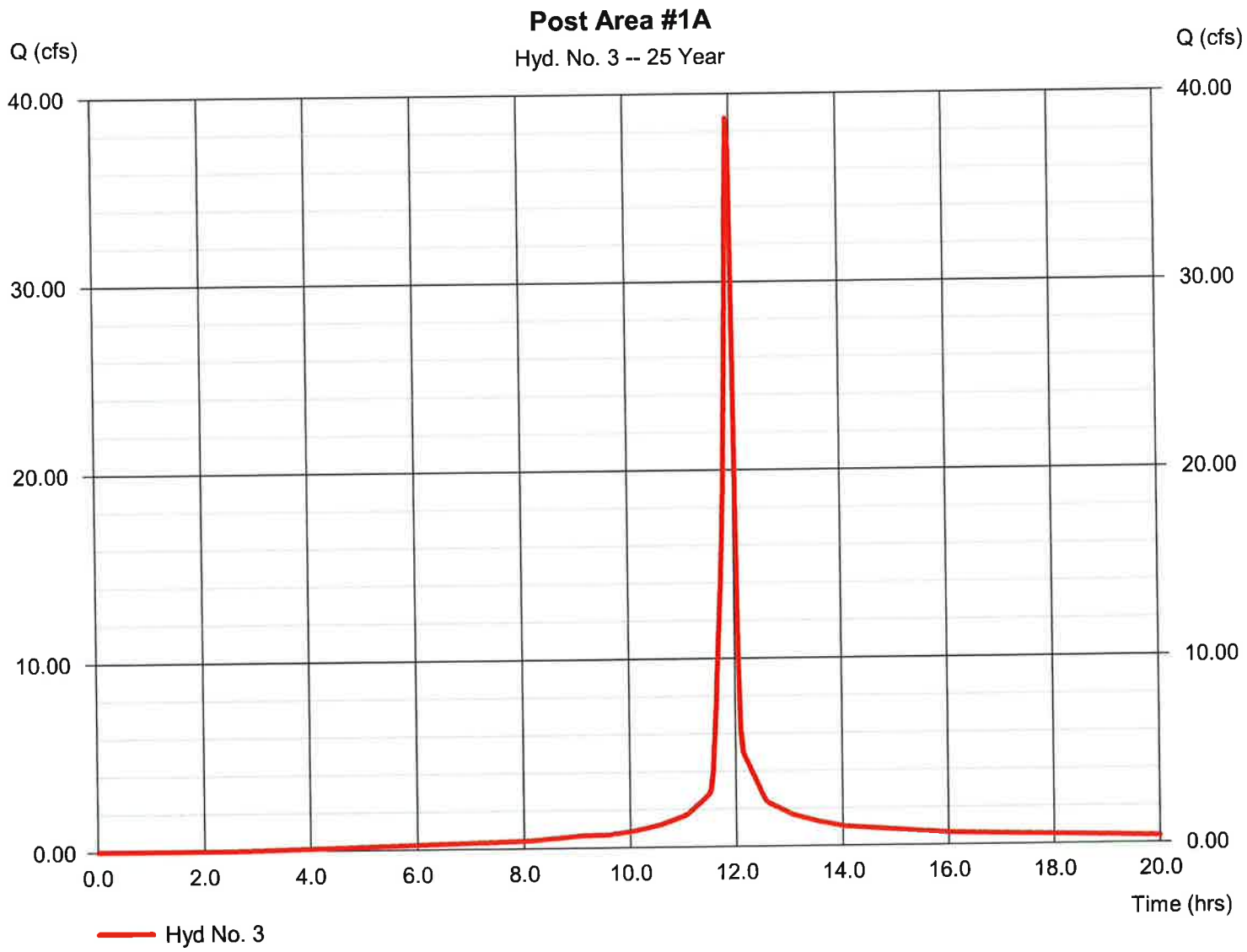


Hydrograph Report

Hyd. No. 3

Post Area #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 38.70 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 86,260 cuft
Drainage area	= 6.302 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



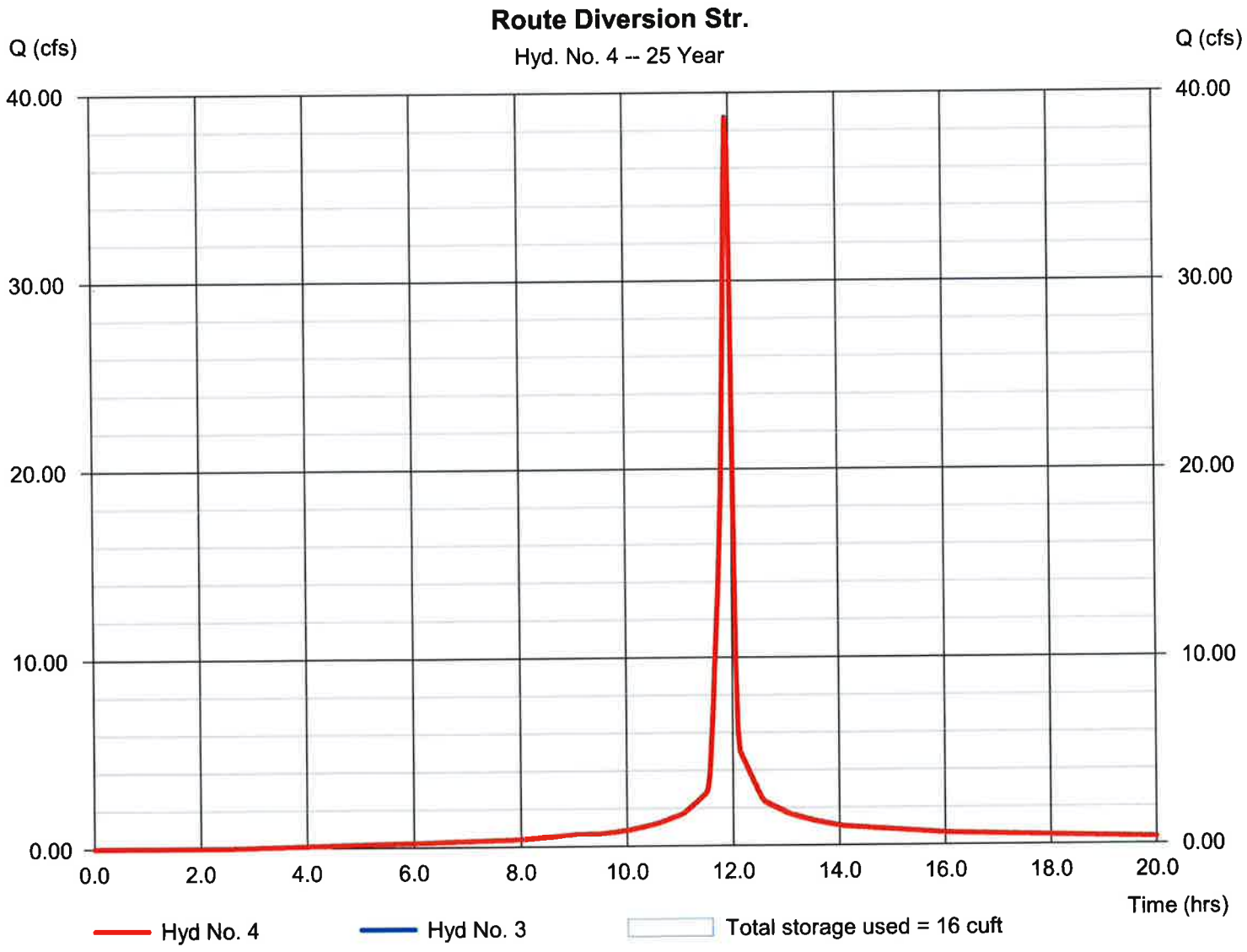
Hydrograph Report

Hyd. No. 4

Route Diversion Str.

Hydrograph type	= Reservoir	Peak discharge	= 38.68 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 86,260 cuft
Inflow hyd. No.	= 3 - Post Area #1A	Max. Elevation	= 172.24 ft
Reservoir name	= Diversion Str	Max. Storage	= 16 cuft

Storage Indication method used.

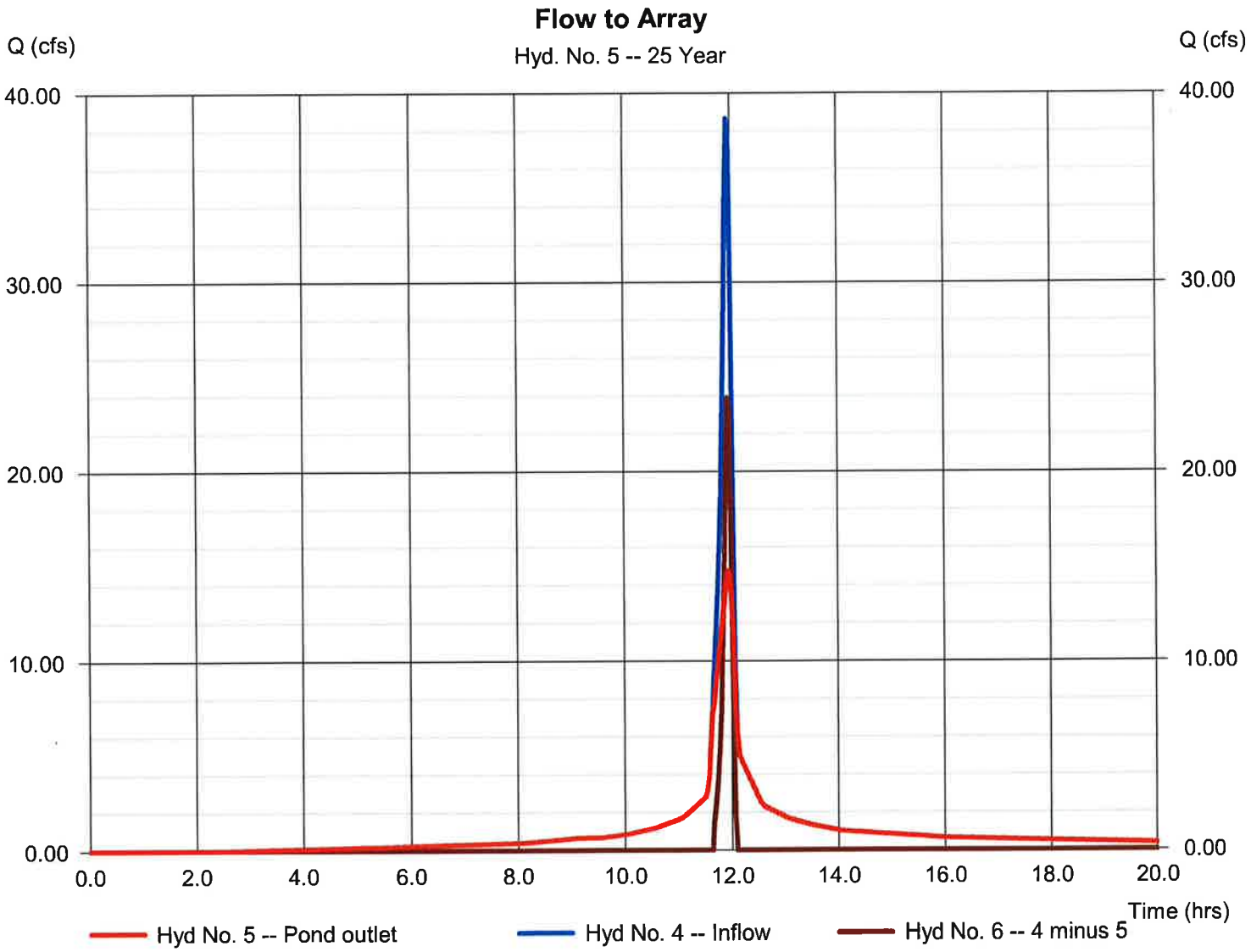


Hydrograph Report

Hyd. No. 5

Flow to Array

Hydrograph type	= Diversion1	Peak discharge	= 14.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 69,836 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 6
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A

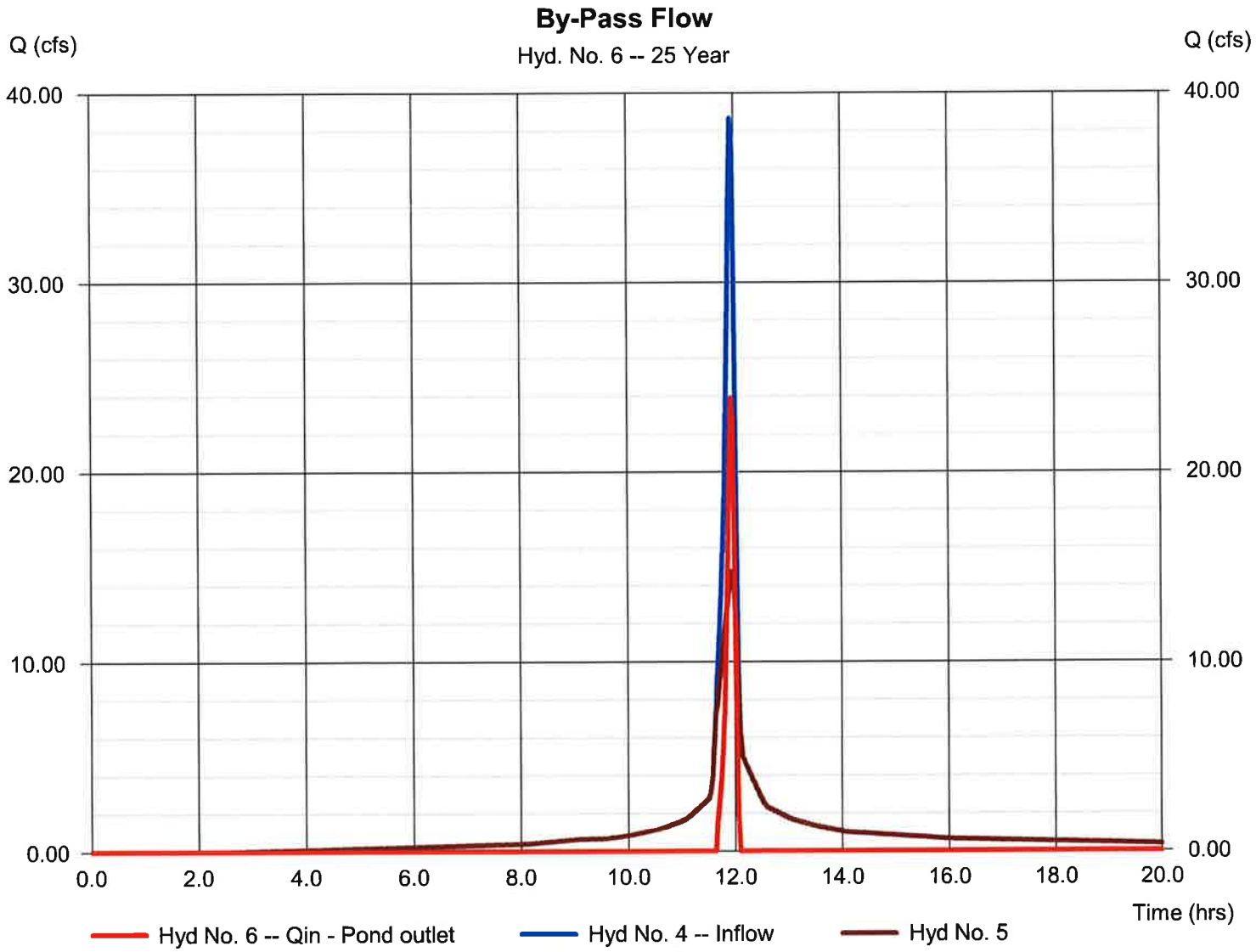


Hydrograph Report

Hyd. No. 6

By-Pass Flow

Hydrograph type	= Diversion2	Peak discharge	= 23.91 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 16,423 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 5
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A



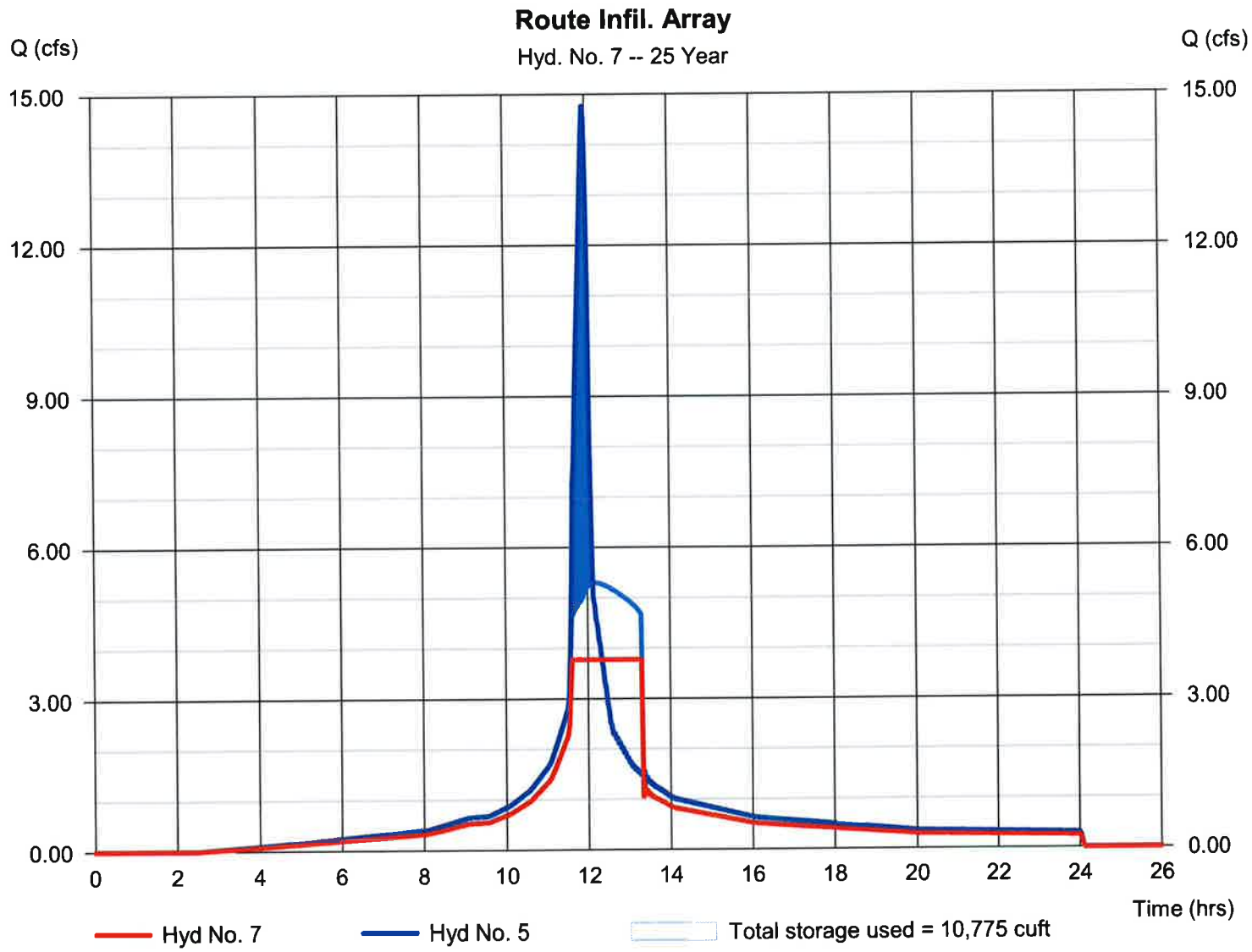
Hydrograph Report

Hyd. No. 7

Route Infil. Array

Hydrograph type	= Reservoir	Peak discharge	= 3.775 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.60 hrs
Time interval	= 2 min	Hyd. volume	= 54,831 cuft
Inflow hyd. No.	= 5 - Flow to Array	Max. Elevation	= 170.73 ft
Reservoir name	= Array	Max. Storage	= 10,775 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

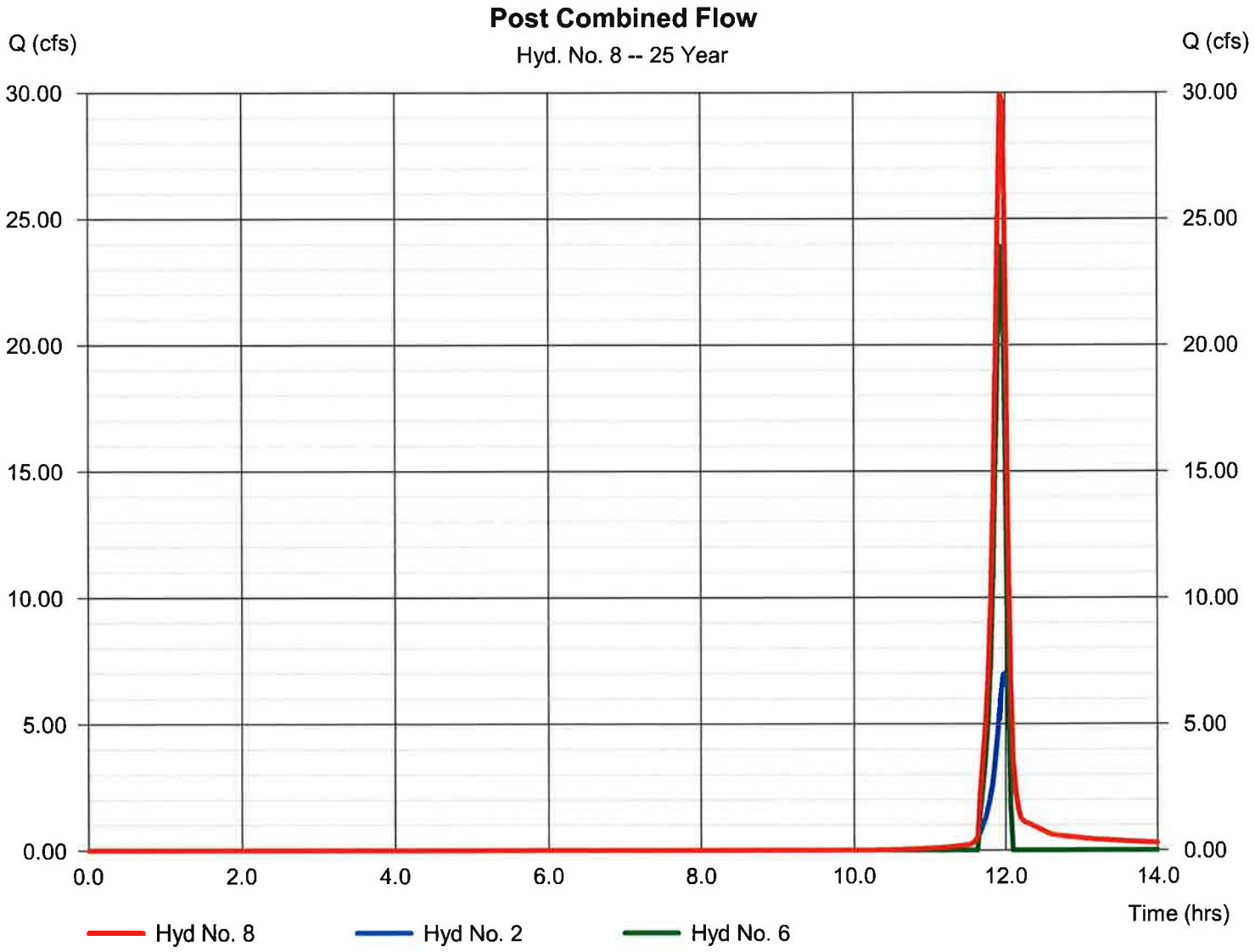


Hydrograph Report

Hyd. No. 8

Post Combined Flow

Hydrograph type	= Combine	Peak discharge	= 29.94 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 32,519 cuft
Inflow hyds.	= 2, 6	Contrib. drain. area	= 2.431 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

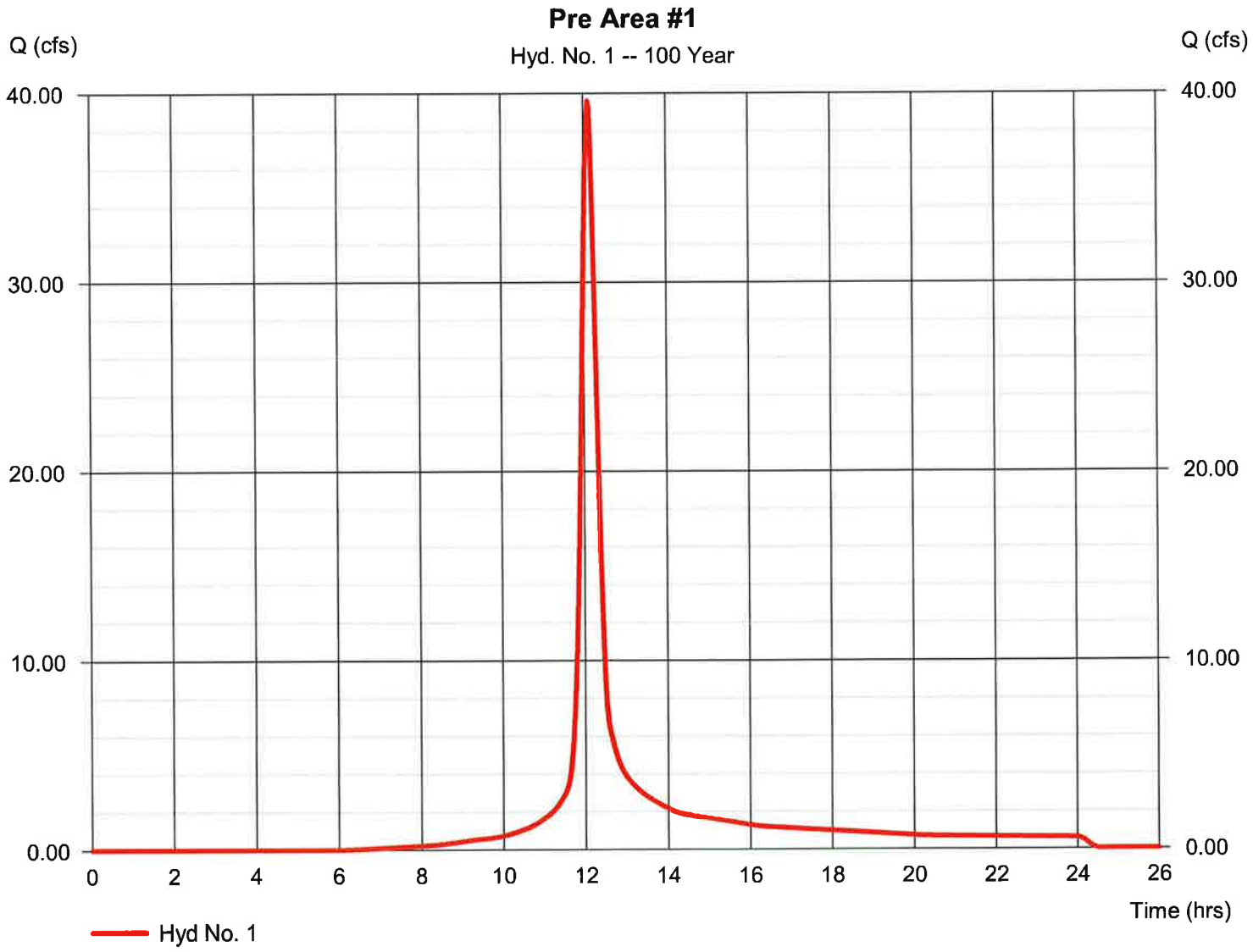
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	39.61	2	726	137,249	------	------	------	Pre Area #1
2	SCS Runoff	12.43	2	718	28,445	------	------	------	Post Area #1
3	SCS Runoff	54.66	2	716	124,647	------	------	------	Post Area #1A
4	Reservoir	54.62	2	716	124,647	3	173.87	22.1	Route Diversion Str.
5	Diversion1	17.88	2	716	96,371	4	------	------	Flow to Array
6	Diversion2	36.74	2	716	28,276	4	------	------	By-Pass Flow
7	Reservoir	3.775	2	694	74,726	5	171.98	14,854	Route Infil. Array
8	Combine	47.77	2	716	56,721	2, 6,	------	------	Post Combined Flow

Hydrograph Report

Hyd. No. 1

Pre Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 39.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 137,249 cuft
Drainage area	= 8.733 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.76 min
Total precip.	= 6.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

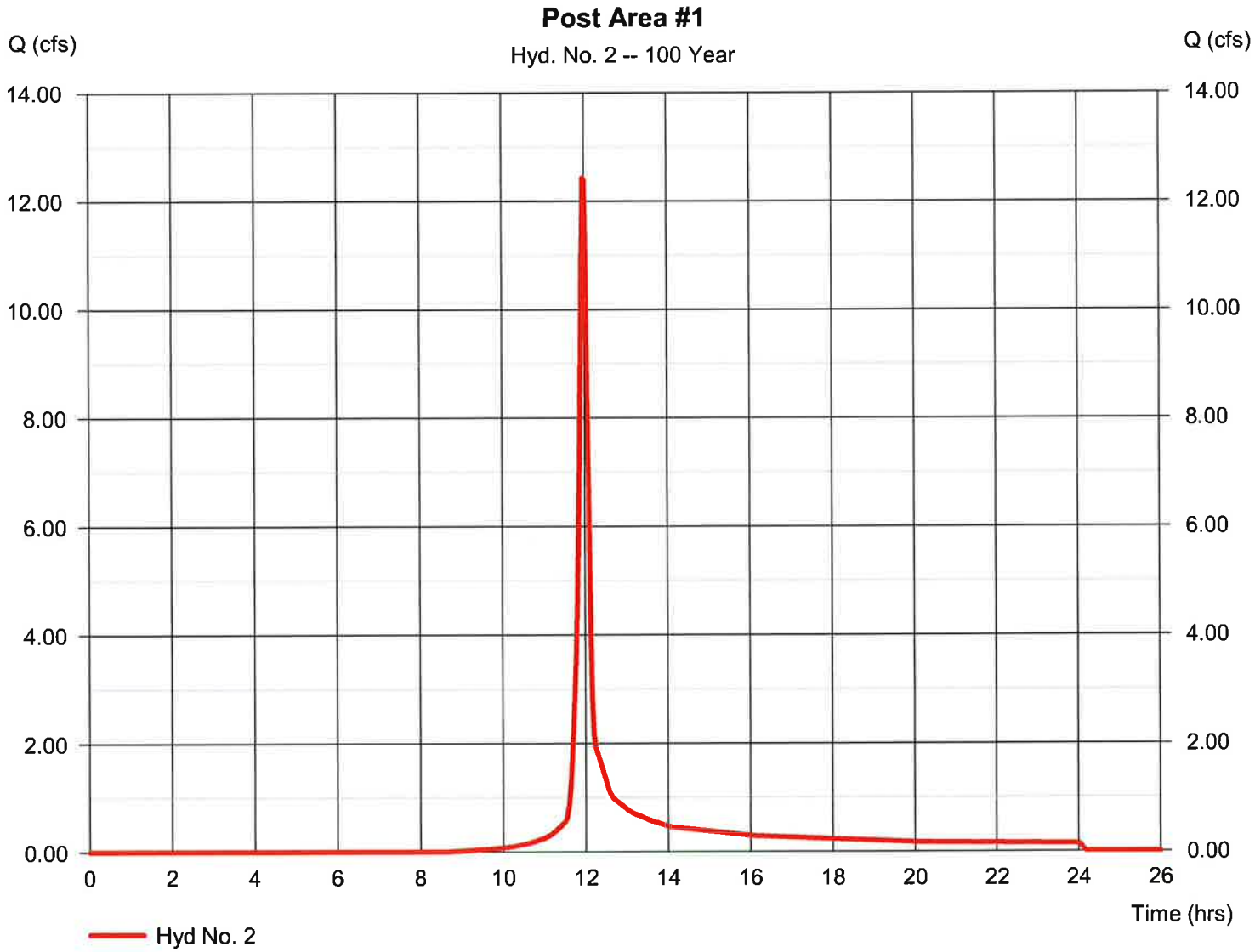


Hydrograph Report

Hyd. No. 2

Post Area #1

Hydrograph type	= SCS Runoff	Peak discharge	= 12.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 28,445 cuft
Drainage area	= 2.431 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.80 min
Total precip.	= 6.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

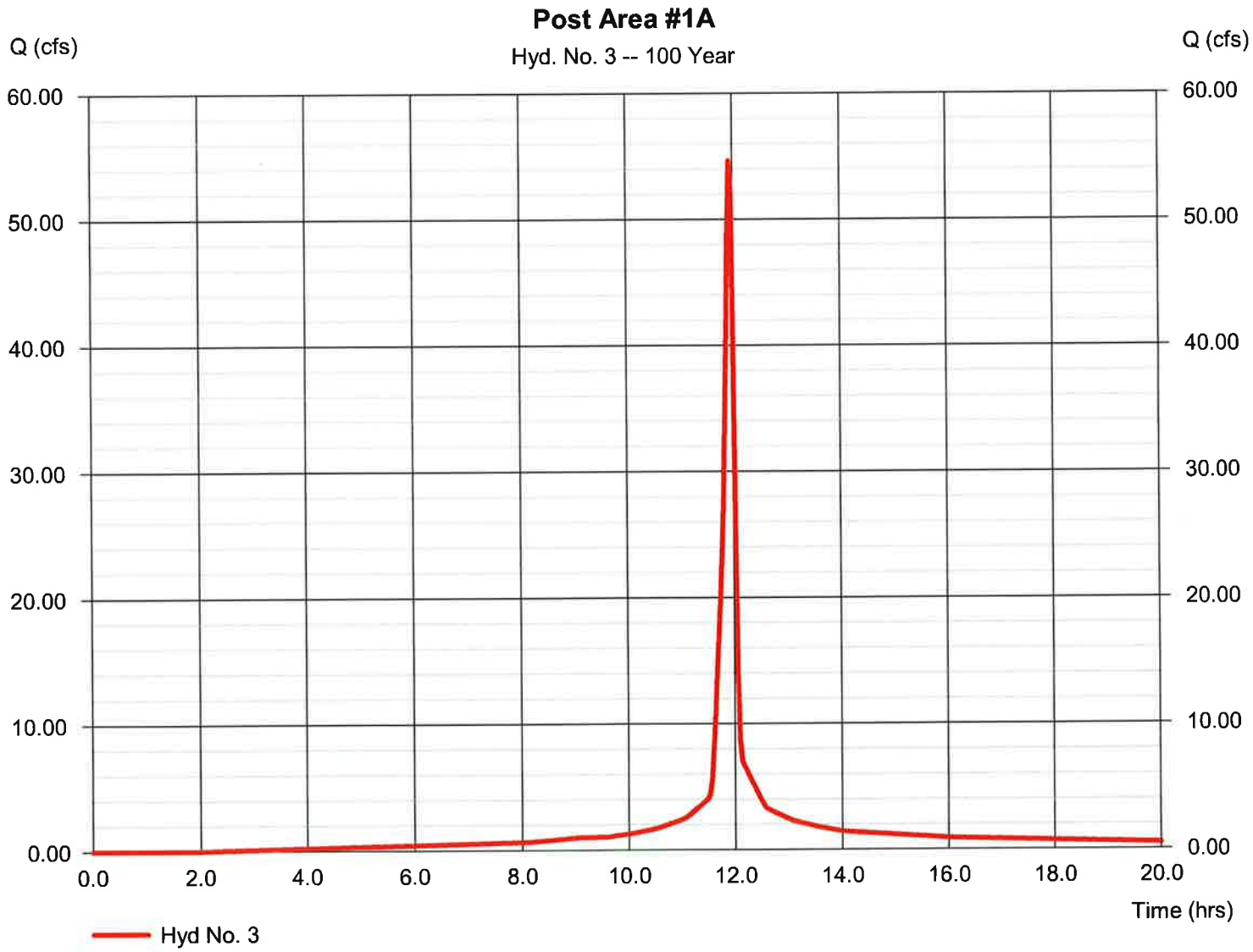


Hydrograph Report

Hyd. No. 3

Post Area #1A

Hydrograph type	= SCS Runoff	Peak discharge	= 54.66 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 124,647 cuft
Drainage area	= 6.302 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



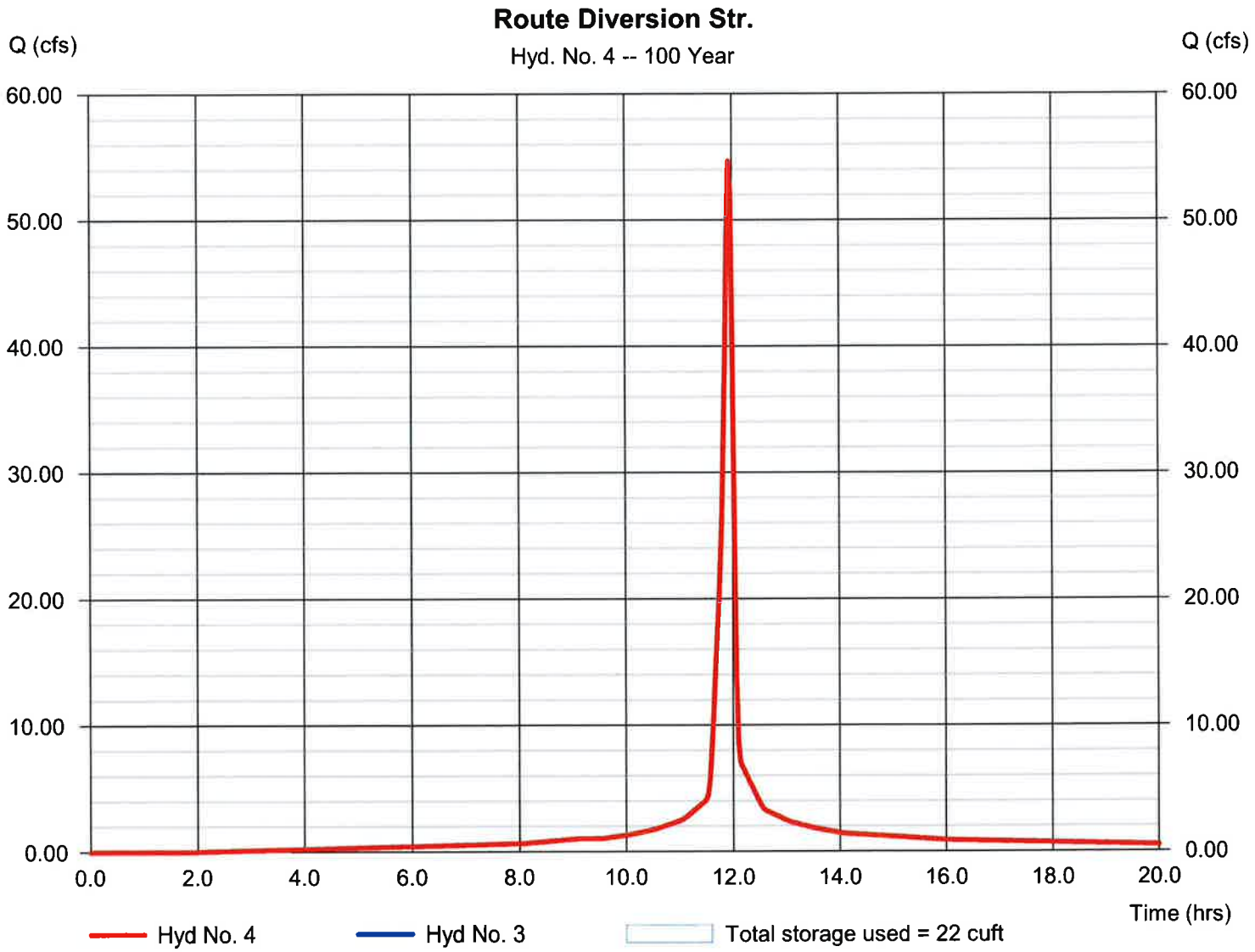
Hydrograph Report

Hyd. No. 4

Route Diversion Str.

Hydrograph type	= Reservoir	Peak discharge	= 54.62 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 124,647 cuft
Inflow hyd. No.	= 3 - Post Area #1A	Max. Elevation	= 173.87 ft
Reservoir name	= Diversion Str	Max. Storage	= 22 cuft

Storage Indication method used.

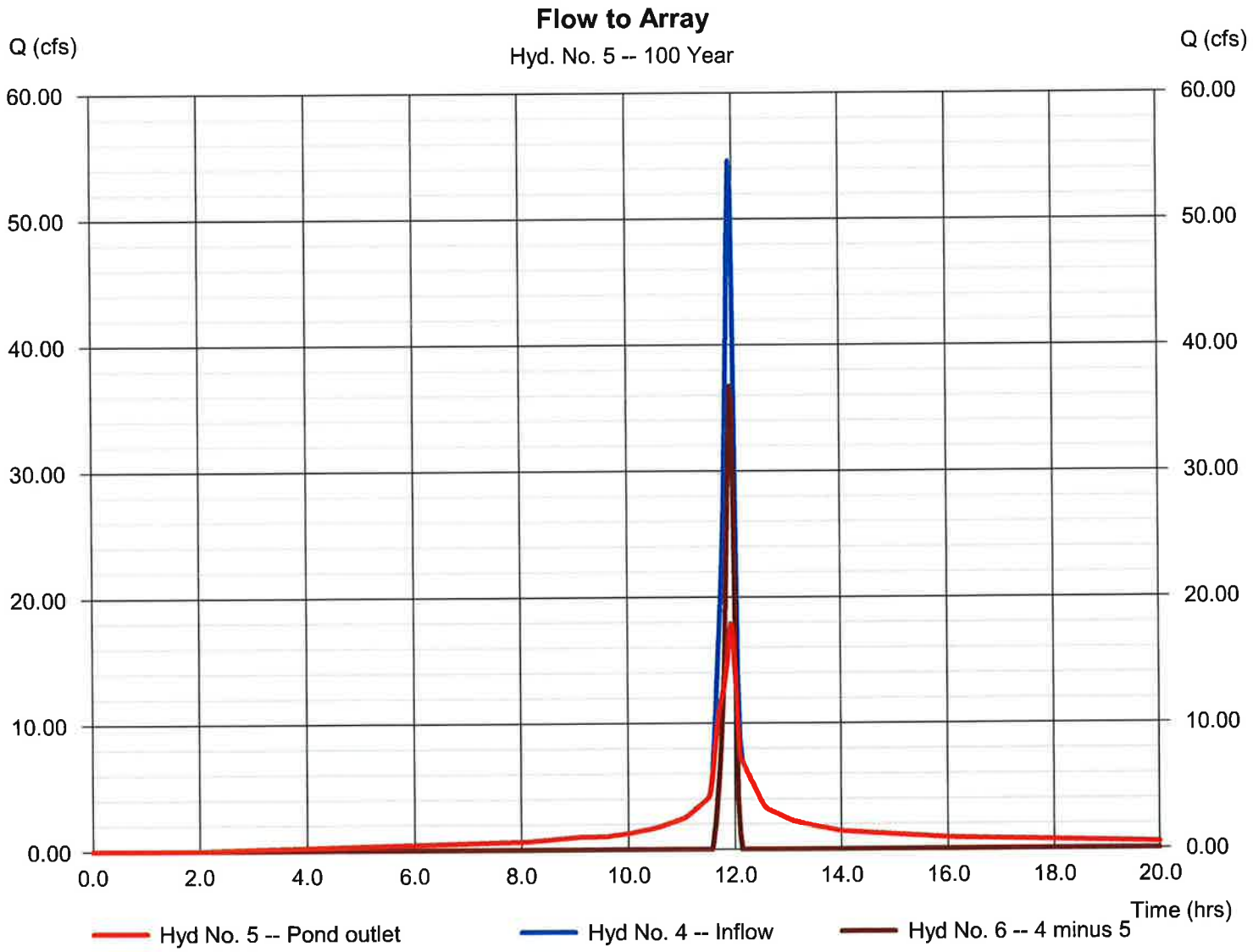


Hydrograph Report

Hyd. No. 5

Flow to Array

Hydrograph type	= Diversion1	Peak discharge	= 17.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 96,371 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 6
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A

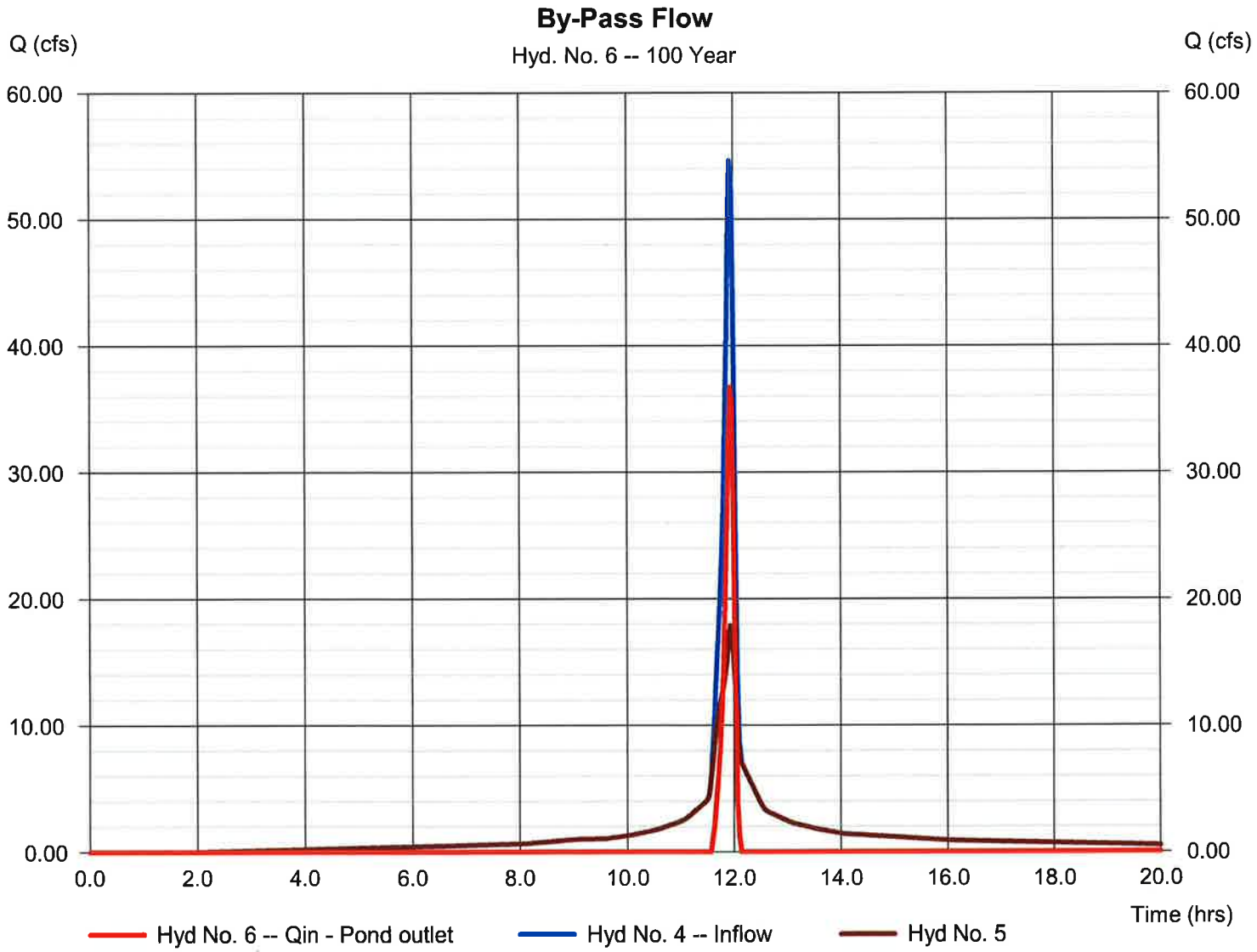


Hydrograph Report

Hyd. No. 6

By-Pass Flow

Hydrograph type	= Diversion2	Peak discharge	= 36.74 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 28,276 cuft
Inflow hydrograph	= 4 - Route Diversion Str.	2nd diverted hyd.	= 5
Diversion method	= Pond - Diversion Str	Pond structure	= Culv/Orf A



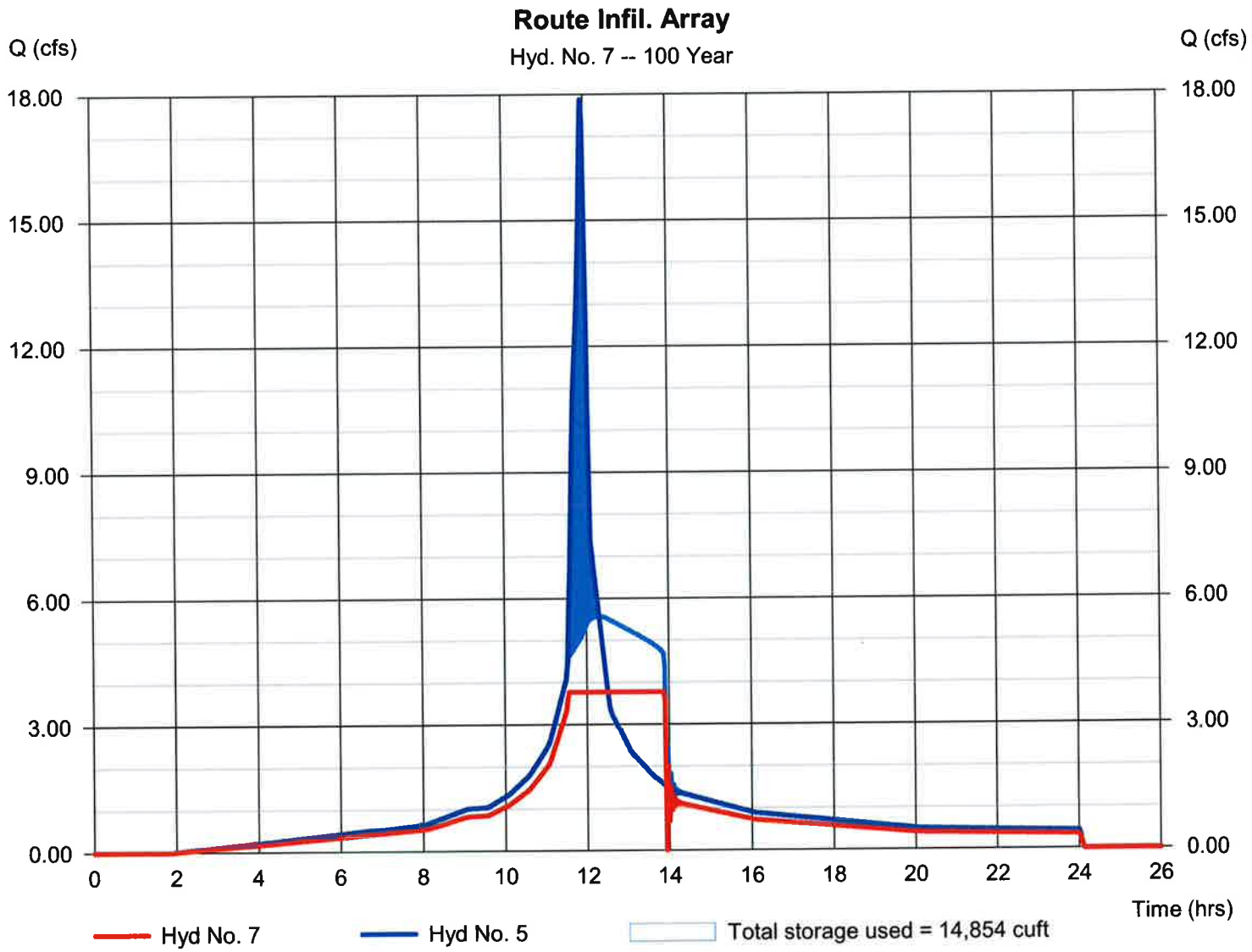
Hydrograph Report

Hyd. No. 7

Route Infil. Array

Hydrograph type	= Reservoir	Peak discharge	= 3.775 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.57 hrs
Time interval	= 2 min	Hyd. volume	= 74,726 cuft
Inflow hyd. No.	= 5 - Flow to Array	Max. Elevation	= 171.98 ft
Reservoir name	= Array	Max. Storage	= 14,854 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

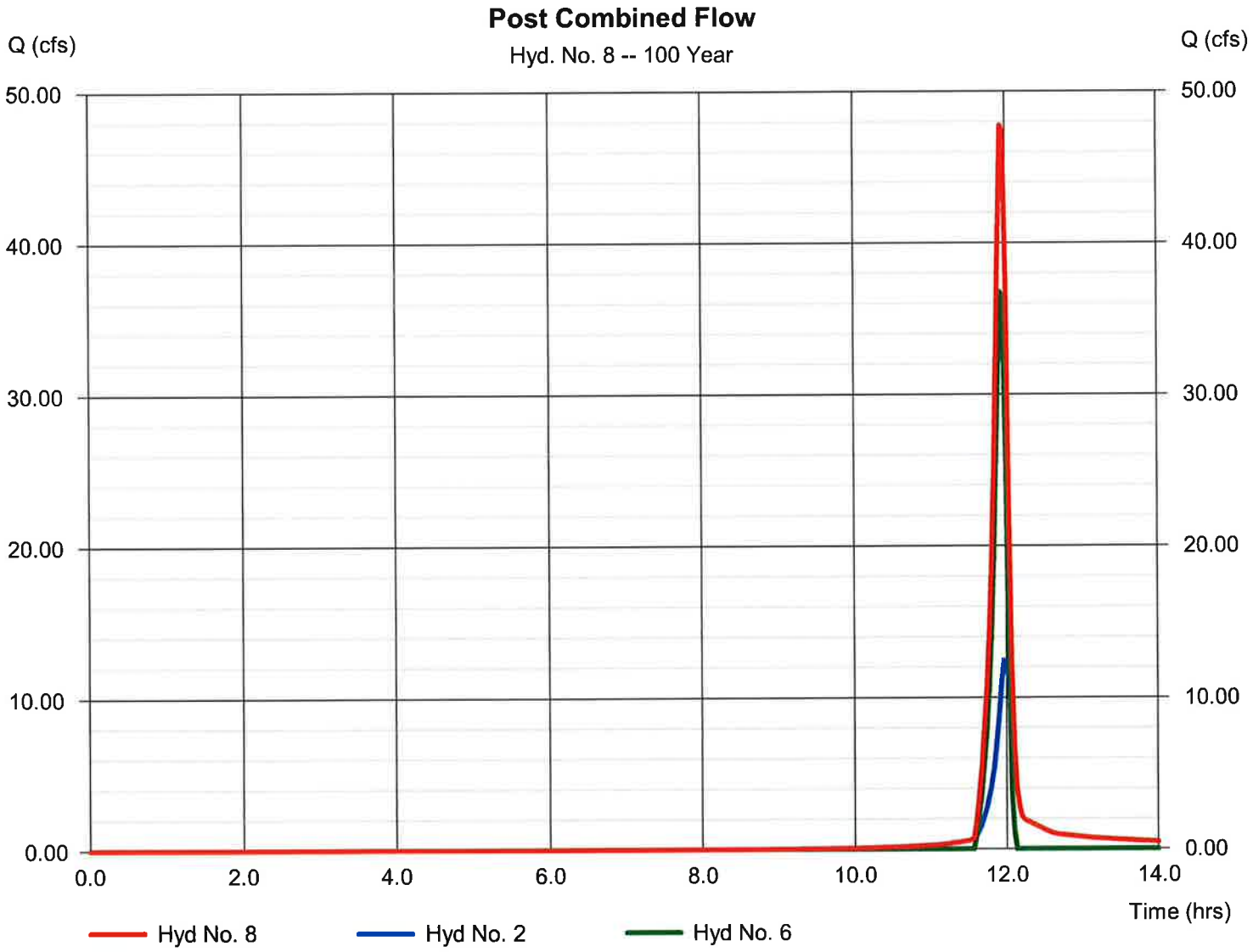


Hydrograph Report

Hyd. No. 8

Post Combined Flow

Hydrograph type	= Combine	Peak discharge	= 47.77 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 56,721 cuft
Inflow hyds.	= 2, 6	Contrib. drain. area	= 2.431 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Z:\stormwater\Victory NY.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.25	2.62	0.00	3.24	3.81	4.71	5.54	6.52
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Exhibit D – Drainage Calculations

.1 Pipe Capacities and Expected Flows

.2 Plunge Pool

PROJECT # 972.32 SHEET # 1 OF: 1 PAGE # OF:

MADE BY: JWE DATE: 10/15/2019

PROJECT: 42 GATES AVE CHKD BY: DATE:

SUBJECT: PIPE CAPACITIES USING MANNING'S EQUATION REVISED BY: DATE:

CHKD BY: DATE:

Pipe Run	Drainage Area (sf) To CB		Percentage of Watershed	Expected 25-year Peak Flow (cfs) to CB	Expected Velocity (fps) At Peak Flow in Pipes	Allowable Flow in Pipe (cfs)	Proposed Pipe Size and Slope	% FULL
POST DEVELOPMENT AREA #1A								
CB#1 to CB#2	6600		2.40%	0.88	5.39	8.54	12" SICPP @ 4.6%	20%
CB#2A to CB#2	14757	6600	7.78%	2.83	1.78	2.87	12" SICPP @ 0.5%	96%
CB#2 to CB#3	4642	21357	9.47%	3.45	7.21	10.79	15" SICPP @ 3.1%	40%
CB#3 to CB#4	3598	25999	10.78%	3.93	7.20	12.22	15" SICPP @ 2.8%	44%
CB#4 to CB#5	2549	29597	11.71%	4.26	6.05	15.57	18" SICPP @ 1.7%	40%
CB#6 to CB#5	18622		6.78%	2.47	4.04	3.40	12" SICPP @ 0.7%	76%
CB#7 to CB#5	5558		2.02%	0.74	4.69	7.13	12" SICPP @ 3.2%	21%
CB#5 to CB#8	21100	56326	28.20%	10.27	6.15	24.48	24" SICPP @ 0.9%	54%
CB#9 to CB#8	3651		1.33%	0.48	5.31	12.61	12" SICPP @ 5.7%	15%
CB#8 to STMH#1	36992	81077	43.01%	15.66	6.74	44.40	30" SICPP @ 0.9%	47%
CB#10 to STMH#1	13289		4.84%	1.76	6.18	7.01	12" SICPP @ 3.1%	39%
STMH#1 to CB#11		131358	47.85%	17.42	7.20	46.80	30" SICPP @ 1.0%	49%
CB#13 to CB#12	9877		3.60%	1.31	6.75	9.68	12" SICPP @ 5.9%	24%
CB#12 to CB#11	1601	9877	4.18%	1.52	7.60	10.69	12" SICPP @ 7.2%	26%
CB#11 to CB#14	3453	142836	53.29%	19.40	14.71	219.06	36" SICPP @ 8.3%	18%
CB#14 to STMH#2	16149	146289	59.17%	21.54	10.99	136.02	36" SICPP @ 3.2%	27%
STMH#2 to CB#15	84454	162438	89.93%	32.75	10.76	107.53	36" SICPP @ 2.0%	43%
CB#17 to STMH5	13037		4.75%	1.73	6.79	12.85	15" SICPP @ 4.4%	23%
CB#16 to ARRAY	14596		5.32%	1.94	n/a			
Totals	**274525**		**100.00%**	36.41	25 yr Peak=36.41 cfs for entire watershed			

Expected flow calculations in Pipe Runs

$$Q = \frac{\text{Drainage area to CB}}{\text{Total Area of Watershed (Post Development Area \#1A)}} \times \text{25 year peak discharge}$$

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Feb 20 2020

<Name>

Trapezoidal

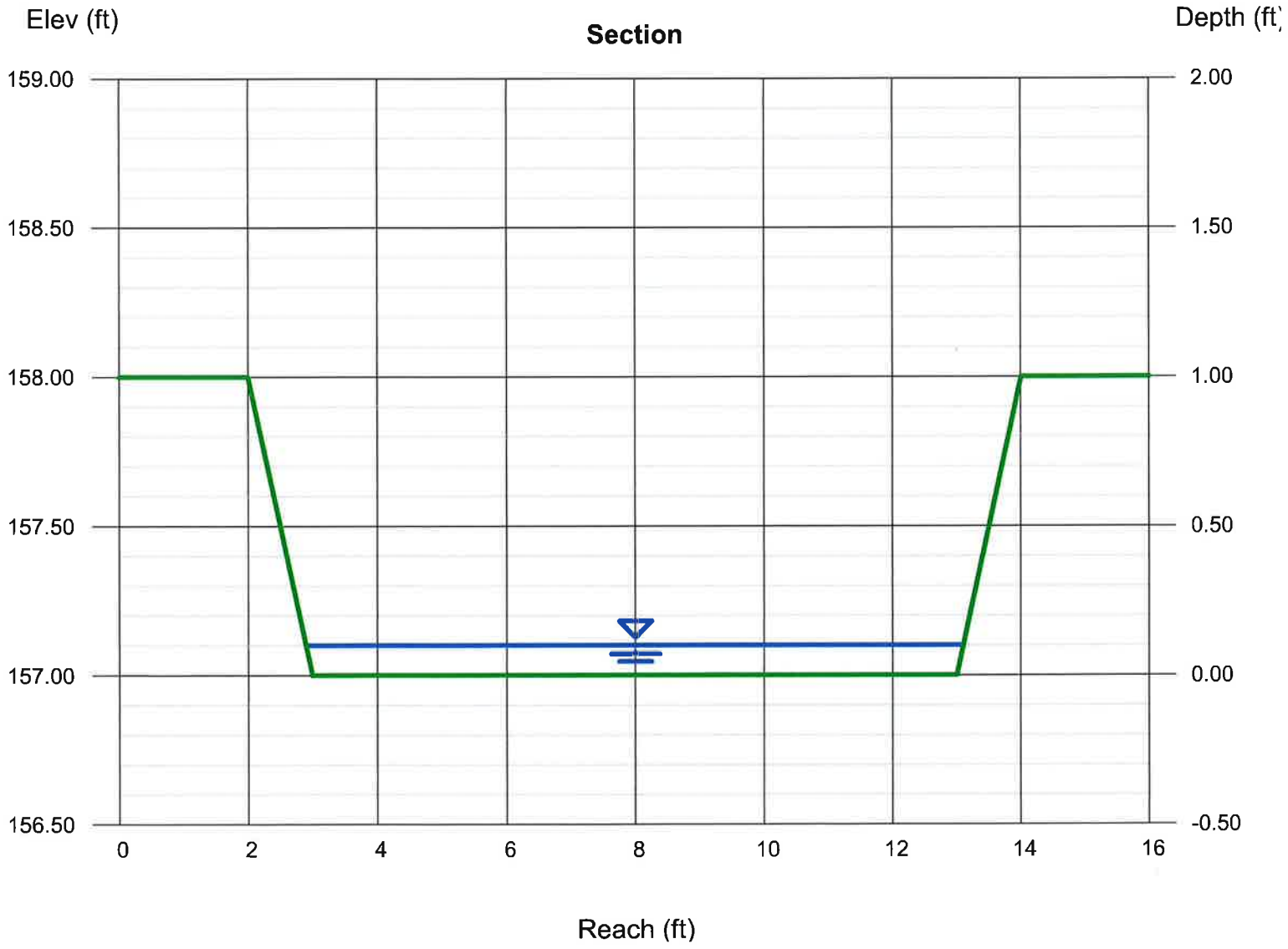
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 1.00, 1.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 157.00
Slope (%)	= 10.00
N-Value	= 0.030

Calculations

Compute by:	Q vs Depth
No. Increments	= 10

Highlighted

Depth (ft)	= 0.10
Q (cfs)	= 3.365
Area (sqft)	= 1.01
Velocity (ft/s)	= 3.33
Wetted Perim (ft)	= 10.28
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 10.20
EGL (ft)	= 0.27



Depth	Q	Area	Veloc	Wp
(ft)	(cfs)	(sqft)	(ft/s)	(ft)
0.10	3.365	1.010	3.33	10.28
0.20	10.67	2.040	5.23	10.57
0.30	20.94	3.090	6.78	10.85
0.40	33.80	4.160	8.12	11.13
0.50	48.99	5.250	9.33	11.41
0.60	66.35	6.360	10.43	11.70
0.70	85.77	7.490	11.45	11.98
0.80	107.1	8.640	12.40	12.26
0.90	130.4	9.810	13.29	12.55
1.00	155.5	11.00	14.14	12.83

STANDARD AND SPECIFICATIONS FOR FLOW DIFFUSER

Definition & Scope

A permanent non-erosive outlet for concentrated runoff constructed to diffuse flow uniformly through a stone matrix onto a stablilized area in the form of shallow, low velocity, sheet flow.

Conditions Where Practice Applies

Where sediment-free stormwater runoff can be released in low velocity sheet flow down stabilized areas without causing erosion; where the ground slope at the outlet of the diffuser is less than 30% and the runoff will not re-concentrate after release; and where construction of a flow spreader is not practicable.

Design Criteria

1. **Drainage area:** The maximum drainage area to the diffuser may not exceed 0.10 acre per foot length of the flow diffuser. The drainage area served by the diffuser discharging directly cannot be 10-20% more than half the size of the receiving buffer area.

2. **Discharge from diffuser onto receiving area:** The peak stormwater flow rate from a flow diffuser onto a receiving area from a 10-year 24-hour storm must be less than 0.25 cubic feet per second (0.25 cfs) per linear foot of weir crest length.

3. **Receiving area of buffer:** Each flow diffuser shall have a vegetated receiving area with a minimum continuous length of 150 feet and the capacity to pass the flow without erosion. The receiving area shall be stable prior to the construction of the flow diffuser. The receiving area shall have topography regular enough to prevent undue flow concentration before entering a stable watercourse but it shall have a slope that is less than 30%. If the receiving area is not presently stable, then the receiving area shall be stabilized prior to construction of the flow diffuser. The receiving area below the flow diffuser shall be protected from harm during construction. Sodding and/or turf reinforcement mat (TRM) in combination with vegetative measures shall stabilize disturbed areas. The receiving area shall not be used by the flow diffuser until stabilization has been accomplished. A temporary diversion may be necessary in this case.

4. **Cross-section:** The minimum stone diffuser cross-section shall be trapezoidal with a height of 1 foot above natural ground; top width equal to 2 foot and side slope equal to 1 horizontal to 1 vertical. The storage area behind the diffuser shall be excavated to a depth of 1 foot and overall width of storage area equal to 6 feet minimum.

5. **Sizing the diffuser:** The length of the stone diffuser is governed by the size of the stone in the structure, the height of the diffuser, and the flow length through it. The following equation is used to establish the design of the diffuser:

$$Q_d = \frac{h^{3/2} W}{[(\frac{L}{D}) + 2.5 + L^2]^{0.5}}$$

Where:

Q_d = Outflow through the stone diffuser (cfs)
h = Ponding depth behind the diffuser (ft.)
W = Linear length of the diffuser along centerline (ft.)
L = Average horizontal flow length through the diffuser perpendicular to the centerline (ft.)
D = Average stone diameter (d_{50}) in the structure (ft.)

The maximum d_{50} size shall be 9" or 0.75'.

The designer shall calculate the length of diffuser needed depending on the geometry of the cross-section and rock size to be used recognizing that the maximum allowable discharge through the diffuser shall be 0.25 cfs per foot of length.

Once the discharge is calculated for the 10 year storm for the drainage area to the diffuser (Q_{10}) it can be divided by the design discharge of the diffuser to determine the diffuser length as follows:

$$W = \frac{Q_{10}}{Q_d}$$

Where:

Q_d = Outflow through the stone diffuser (cfs/ft)
Q_{10} = Discharge rate for the 10 year storm (cfs)
W = Linear length of the diffuser along centerline (ft.)

Design examples are shown in Appendix B.

M.J. Engineering and Land Surveying, P.C.
1533 Crescent Road, Clifton Park, NY 12065
phone: (518) 371-0799 fax: (518) 371-0822
www.mjels.com

MJ PROJECT NO. _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SUBJECT _____

$$Q_D = \frac{h^{2/3} w}{\left(\frac{L}{D} + 2.5 + L^2\right)^{0.5}}$$

Q_D max = 0.25 cfs per foot

$$w = \frac{Q_{10}}{Q_D} = \frac{17.41}{0.25} = 68.56 \text{ ft} \quad \text{have } 70'$$

Figure 3.6
Flow Diffuser Detail

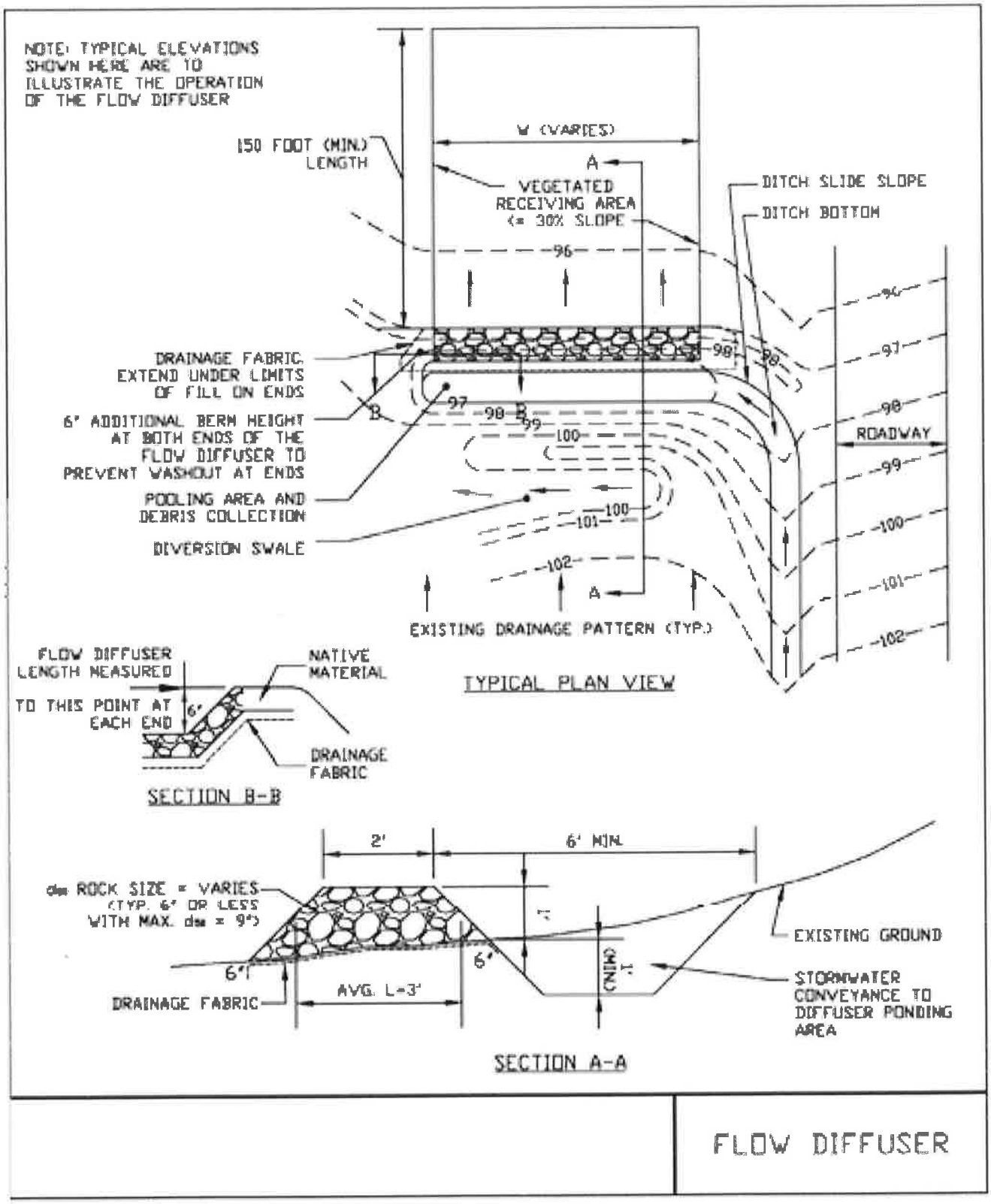


Exhibit E – Maps

.1 Project Location Map

.2 Soil Map (Figure 1)

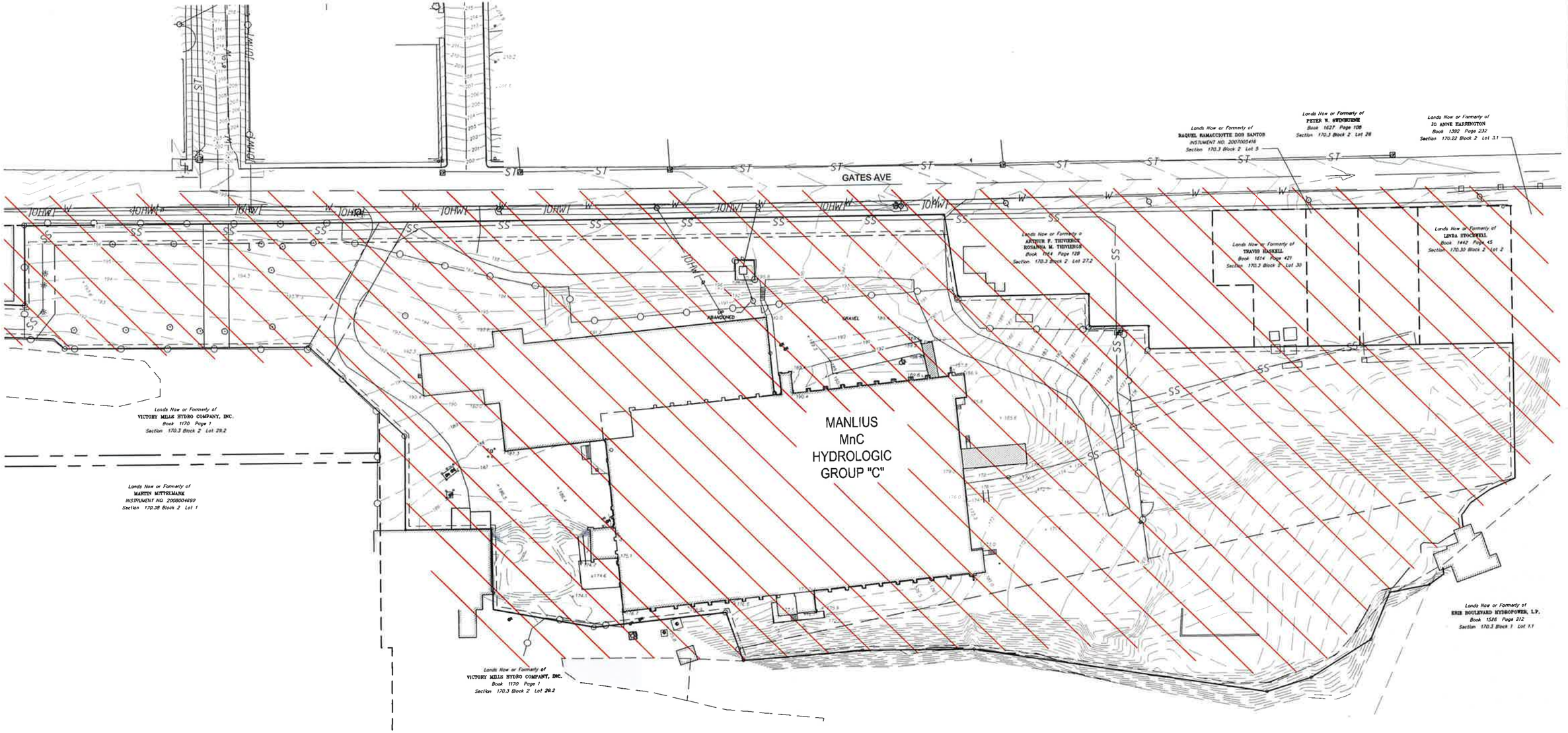
.3 Pre-Development Watersheds (Figure 2)

.4 Post Development Watersheds (Figure 3)

.5 Catch Basin Catchment Map (Figure 4)

Google Maps 42 Gates Ave

Map data ©2019 500 ft



THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, (I.E.) ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS "A" MISDEMEANOR.

SUBMITTAL / REVISIONS

No.	DATE	DESCRIPTION	BY	REVIEWED BY:	DATE

PROJ. MANAGER:	JWE
CHIEF DESIGNER:	JWE
DESIGNED BY:	JWE
DRAWN BY:	AML
CHECKED BY:	JWE

SEAL

Engineering and Land Surveying, P.C.
1533 Crescent Road - Clifton Park, NY 12065

REGAN DEVELOPMENT

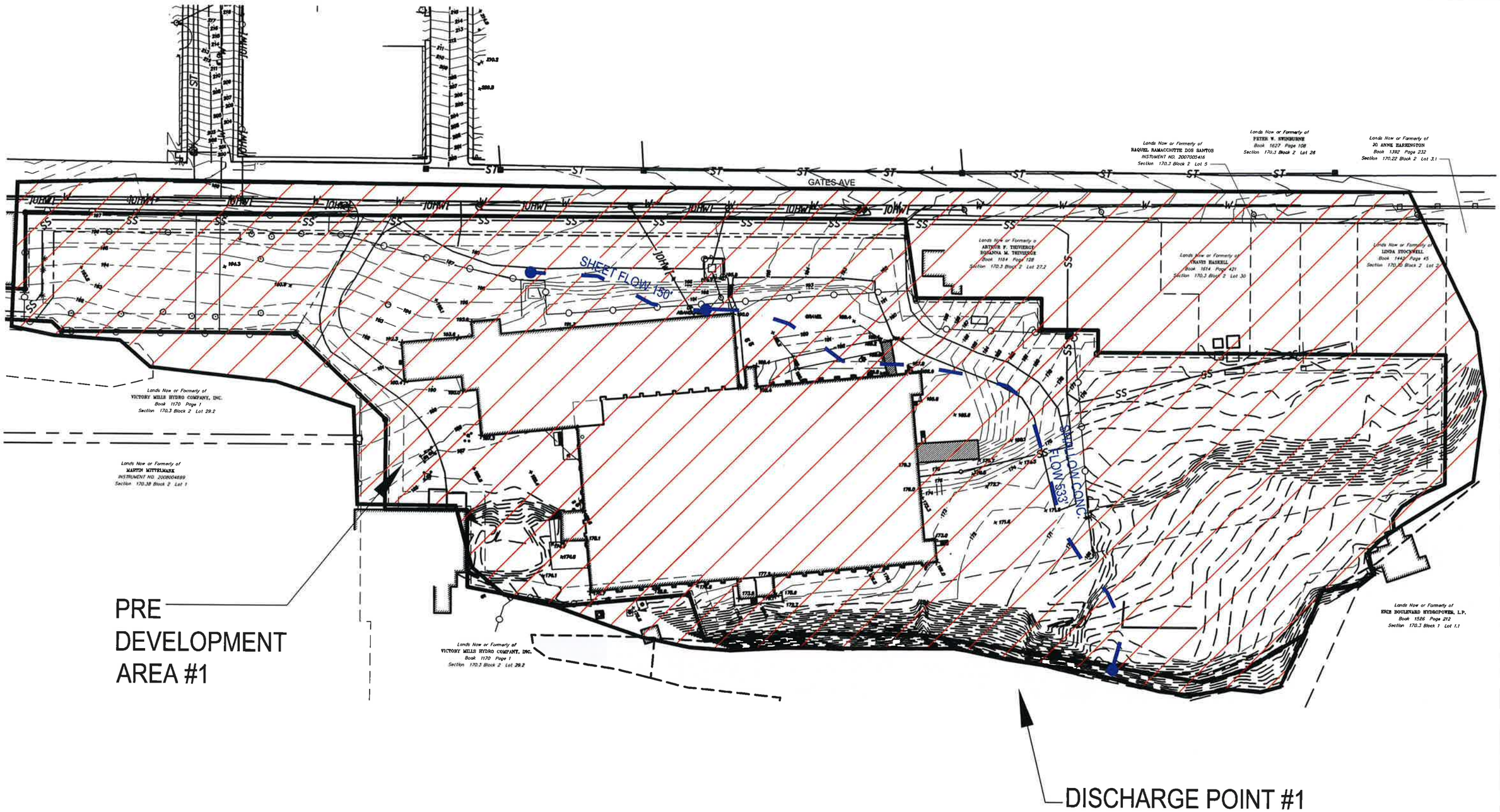
SOIL MAP

42 GATES AVE
VILLAGE OF VICTORY NY

SCALE: 1"=80'
CONTRACT No.: 972.32
MJ PROJ. No.: 972.32
DATE: 10/5/2019

FIG 1

File Name: F:\mj\72972.32 Victory Mills\Stormwater.dwg (Layout: soil map)
Date: Wed, Oct 23, 2019 - 8:53 AM (Name: jlaston)



SUBMITTAL / REVISIONS

No.	DATE	DESCRIPTION	BY	REVIEWED BY:	DATE

PROJ. MANAGER:	JWE
CHIEF DESIGNER:	JWE
DESIGNED BY:	JWE
DRAWN BY:	AML
CHECKED BY:	JWE

SEAL

Engineering and Land Surveying, P.C.
1533 Crescent Road - Clifton Park, NY 12065

REGAN DEVELOPMENT

PRE DEVELOPMENT MAP

42 GATES AVE
VILLAGE OF VICTORY NY

SCALE:	1"=80'
CONTRACT No.:	972.32
MJ PROJ. No.:	972.32
DATE:	10/5/2019

FIG 2

File Name: F:\mj\972\972.32 Victory Mills\Stormwater.dwg (Layout: PRE)
Date: Wed, Oct 23, 2019 - 8:59 AM (Name: jeaston)

POST DEVELOPMENT AREA #1

GATES AVE

Lands Now or Formerly of
VICTORY MILLS HYDRO COMPANY, INC.
Book 1170 Page 1
Section 170.3 Block 2 Lot 29.2

Lands Now or Formerly of
MARVIN MITTELMARK
INSTRUMENT NO. 2008004899
Section 170.38 Block 2 Lot 1

Lands Now or Formerly of
RAQUEL RAMACCIOTTE DOS SANTOS
INSTRUMENT NO. 2007005418
Section 170.3 Block 2 Lot 5

Lands Now or Formerly of
ARTHUR P. TIVERIOS
ROSANNA M. TIVERIOS
Book 1164 Page 128
Section 170.3 Block 2 Lot 27.2

Lands Now or Formerly of
PETER W. SWINBURNE
Book 1627 Page 108
Section 170.3 Block 2 Lot 28

Lands Now or Formerly of
FRAYES RAMZELL
Book 1614 Page 421
Section 170.3 Block 2 Lot 30

Lands Now or Formerly of
ED ANNE HARRINGTON
Book 1792 Page 332
Section 170.22 Block 2 Lot 31

Lands Now or Formerly of
LINDA STOCKWELL
Book 147 Page 42
Section 170.30 Block 2 Lot 1

EXISTING 4-STORY BUILDING
186 1 & 2-BEDROOM APARTMENT UNITS

BREWERY/ BREWPUB ENTRY

DECK 302'x100'
(43,000 SF)

AMPHITHEATER

PLAY GROUND AREA

STREET FLOW V45V

Lands Now or Formerly of
ERIE BOULEVARD HYDROPOWER, L.P.
Book 1526 Page 212
Section 170.3 Block 1 Lot 1.1

POST DEVELOPMENT AREA #1

DISCHARGE POINT #1

THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, (I.E.) ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS "A" MISDEMEANOR.

SUBMITTAL / REVISIONS

No.	DATE	DESCRIPTION	BY	REVIEWED BY:	DATE

PROJ. MANAGER:	JWE
CHIEF DESIGNER:	JWE
DESIGNED BY:	JWE
DRAWN BY:	AML
CHECKED BY:	JWE

SEAL

Engineering and Land Surveying, P.C.
1533 Crescent Road - Clifton Park, NY 12065

REGAN DEVELOPMENT

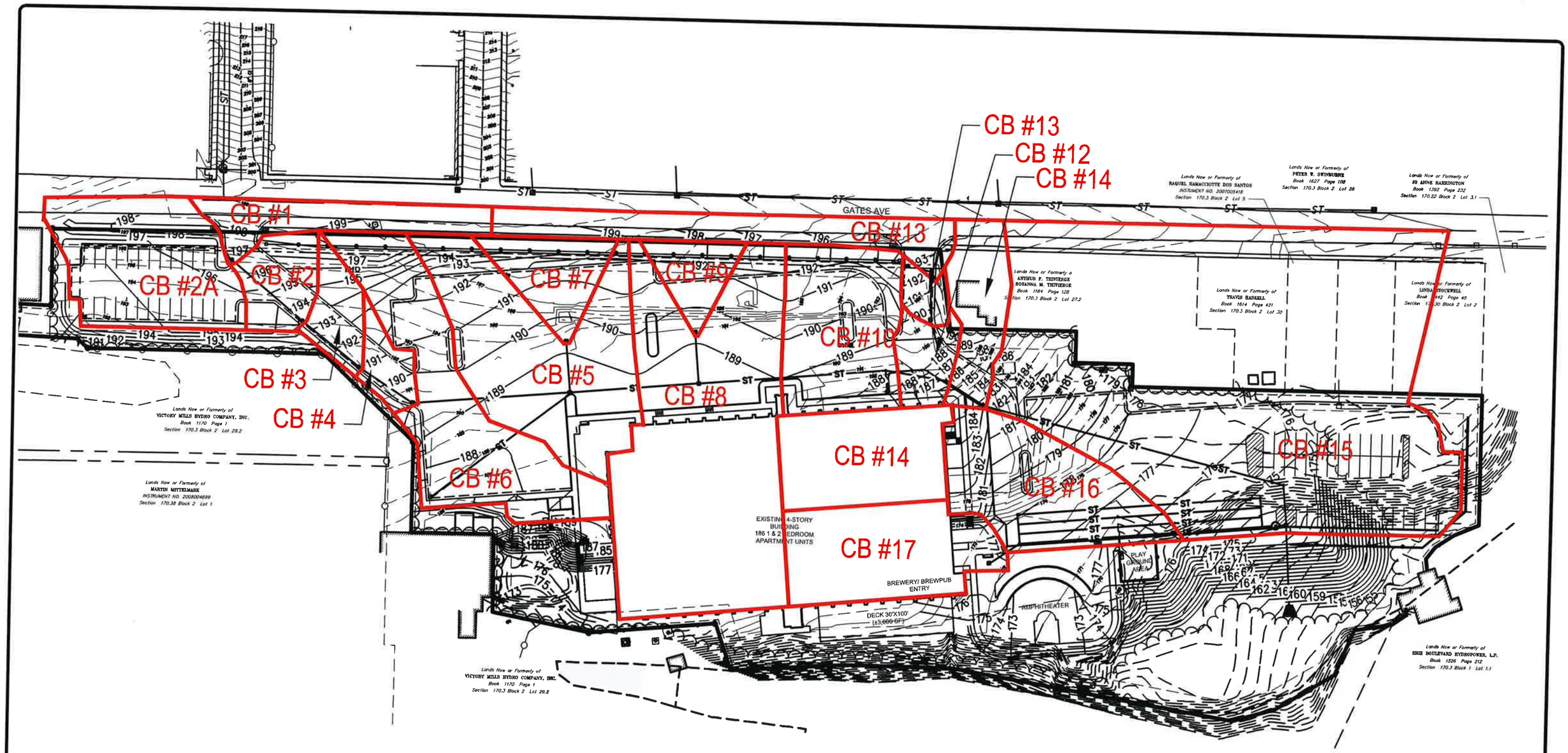
POST DEVELOPMENT MAP

42 GATES AVE
VILLAGE OF VICTORY NY

SCALE: 1"=80'
CONTRACT No.: 972.32
MJ PROJ. No.: 972.32
DATE: 10/5/2019

FIG 3

File Name: F:\mj\972\972.32 Victory Mills\Stormwater.dwg (Layout: POST)
Date: Wed, Oct 23, 2019 - 9:16 AM (Name: jlesston)



File Name: F:\mj\972\972.32 Victory Mills\Stormwater.dwg (Layout: CB)
Date: Wed, Oct 23, 2019 - 9:28 AM (Name: jstalcup)

SUBMITTAL / REVISIONS

No.	DATE	DESCRIPTION	BY	REVIEWED BY:	DATE

PROJ. MANAGER:	JWE
CHIEF DESIGNER:	JWE
DESIGNED BY:	JWE
DRAWN BY:	AML
CHECKED BY:	JWE

SEAL

Engineering and Land Surveying, P.C.
1533 Crescent Road - Clifton Park, NY 12065

REGAN DEVELOPMENT

CATCH BASIN AREA MAP

42 GATES AVE
VILLAGE OF VICTORY NY

SCALE: 1"=80'
CONTRACT No.: 972.32
MJ PROJ. No.: 972.32
DATE: 10/5/2019

FIG 4

Stormwater Pollution Prevention Plan (SWPPP)
for
(Part II)

42 Gates Ave

Village of Victory
Saratoga County, New York

October 25, 2019

Revised February 21, 2020

Prepared by:

Engineering and
Land Surveying, P.C.

1533 Crescent Road
Clifton Park, NY 12065
Tel: 518-371-0799
Fax: 518-371-082

STORMWATER POLLUTION PREVENTION PLAN
for
42 GATES AVE
VILLAGE OF VICTORY, SARATOGA COUNTY

Table of Contents

1.0 OWNER AND CONTRACTOR'S/SUBCONTRACTOR'S CERTIFICATION

Notice of Intent (NOI) Permitee and General Contractor and Subcontractors shall read Section 2.0 through Section 5.0 of Stormwater Pollution Prevention Plan (SWPPP). Each representative of his or her company shall understand their responsibilities, base upon their scope of work, that Erosion Control and Pollution Control are required for this project. The NOI Permittee, General Contractor and all Subcontractors shall sign the "logbook" listed below. If a Subcontractor wishes **NOT** to sign the logbook the General Contractor is to obtain the name, company and phone number of this company and list the information in the logbook.

1.1 NOI Permittee's Certification:

"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 New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharge 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 referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Print Name: _____ Company Name: _____

Signature: _____ Company Address: _____

_____

Phone #: _____

1.2 General Site Contractor's Contractor and Subcontractors Certification:

"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 New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharge 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 referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

General Site Contractor

Print Name: _____ Company Name: _____

Signature: _____ Company Address: _____

_____

Phone #: _____

Each Subcontractor to site General Contractor (GC) or contractor responsible for site construction aspects shall list their company responsibility (i.e. Landscaper, Underground Utilities (water or sewer) Installer, Electric Service Installer, Gas Service Installer, Asphalt Pavement Installer, Curb (concrete, granite) Installer, Lighting Installer, etc.)

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

General Site SubContractor (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

For each subcontractor listed, the affidavit statement in Section 1.2 of this document shall apply.

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

General Site SubContractor (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

SubContractor to Site GC (list responsibility)_____

Print Name: _____ Company Name:_____

Signature:_____ Phone #:_____

For each subcontractor listed, the affidavit statement in Section 1.2 of this document shall apply.

1.3 Building Contractor and Subcontractors Certification:

"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 New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharge 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 referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Building Contractor

Print Name: _____ Company Name: _____

Signature: _____ Company Address: _____

_____

Phone #: _____

Each Subcontractor to site General Contractor (GC) of the building(s) or contractor responsible for building construction aspects shall list their company responsibility (i.e. Electrical, Plugging, Masonry, Structural, Foundations, Fit-Up, etc.)

SubContractor to Building GC (list Responsibility) _____

Print Name: _____ Company Name: _____

Signature: _____ Phone #: _____

SubContractor to Building GC (list Responsibility) _____

Print Name: _____ Company Name: _____

Signature: _____ Phone #: _____

SubContractor to Building GC (list Responsibility) _____

Print Name: _____ Company Name: _____

Signature: _____ Phone #: _____

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

SubContractor to Building GC (list Responsibility)____________________________

Print Name: ________________________ Company Name:________________________

Signature:________________________ Phone #:________________________

For each subcontractor listed, the affidavit statement in Section 1.3 of this document shall apply.

2.0 NYSDEC GUIDELINES FOR PREPARING A SWPPP

2.1 Stormwater Pollution Prevention (SWPPP) Requirements

A. The Narrative Report

Provide applicant information such as name, legal address and phone number on the cover sheet or attach a copy the NOI after submission of the form. ***(A Draft NOI can be found at and of this Exhibit F.1)***

Site Address	*42 Gates Ave, Schuylerville NY, 12871*
Descriptive Site Location	*Property approximately 300 feet north of NYS Route 32 and Hill St Intersection*
Property Owner	Regan Development Corpooration 1055 Saw Mill Road Ardsley NY 10502
Property Management (if different than Owner)	SAME AS OWNER

1. Provide address and complete description of the site along with background information about the scope of the project. ***(See Section 1.0 of Stormwater Management Report (SWMR).)***
2. Provide a statement of stormwater management objectives. ***(See Section 1.0 of SWMR.)***
3. Provide a brief description of pre-development conditions:
   a. Identify the natural drainage areas and drainage points.

      (See Section 3.0 of SWMR and Exhibit E.3).

   b. Name the bodies of waters and wetlands and describe the drainage structures on the site of impacted by the site.

      (See Exhibits E.3 and Construction Drawings)

   c. Identify critical and environmentally sensitive areas such as high erodible areas, steep slopes, natural resource conservation areas, and wildlife habitats.

      (See Exhibits E.3 and Construction Drawings)

   d. Identify utility lines, easements, water supply wells, and sewage treatment systems.

      (See Exhibits E.3 and Construction Drawings)

   e. Identify soil type:
      - General description (texture, permeability, drainage capacity)

        (See Section 2.0 of SWMR and Exhibits E.2)
      - Hydrologic Soil Group (HSG) for hydrologic calculations

        (See Section 2.0 of SWMR and Exhibits E.2)
4. Describe the future site:

   Provide a brief description of planned post-development conditions, the stormwater runoff quality and quantity comparing to pre-development conditions, and the measures employed to maintain a safe stormwater discharge:

(See Section 1.0, 3.0, 4.0 and 5.0 of SWMR and Exhibits E.3 and E.4)

a. The proposed development and the scope of the SWPPP. ***(See Section 5.0 of SWMR)***

b. Disturbed area in acres ***(4.0 acres)***

c. Duration of activity, from ***(5/1/2020~12/1/2021)***

d. Acreage, location and boundaries of proposed impervious area

(See Exhibits E.4, E.5, A.2 and Construction Drawings)

e. Future utility lines, easements, water supply wells, and sewage treatment systems.

(See Exhibits E.4 and Construction Drawings)

f. Define environmentally sensitive areas that will be protected from disturbance

(See Exhibits E.4 and Construction Drawings)

g. Define the divide lines of drainage areas in the future site according to proposed changes.

(See Exhibits E.4 and Construction Drawings)

h. The SWPPP should include the following pollution prevention measures:

- Identify the plan for preventing litter, construction chemicals, and construction debris exposed to stormwater from becoming a pollutant source in storm water discharges (e.g., screening outfalls, picked up daily; and ***(See Section 4.0 of this report)***
- Describe how construction and waste materials will be stored on-site and the controls planned to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response. ***(See Section 4.0 of this report)***

i. If the site discharges to a TMDL or 303d segment, it is the responsibility of the applicant to identify the requirements and accommodate them in the SWPPP. ***(n/a)***

j. The responsible person(s) for implementation of the SWPPP and inspection. The plan must identify the contractor(s) and subcontractor(s) responsible for each measure and include and signed contractor certification statement.

(See Section 1.0 of this report for contactor and owner certification)

k. An updated plan must include copies of the written summaries of the compliance status that are prepared quarterly. The updated plan and required reports must be signed / certified by the permittee. ***(See Section 6.0 of this report for NYSDEC quarterly form)***

B. Maps

Attach individual maps.

1. Provide, at minimum, a 1:24,000, scale map that identifies:
   - location of the site
   - topography
   - offsite drainage area
   - bodies of water in the vicinity of the site

   (See Exhibits E.1 through E.4 and Construction Drawings)

2. Provide a 1"=50' to 1"=100' map that shows the **existing** condition of the site including:
   - contour lines

- drainage area
- structures
- natural resources and vegetative cover
- water bodies, streams perennial and intermittent

(See Exhibits E.1 through E.3 and Construction Drawings)

3. Provide individual map(s) based on the requirement of each component of the SWPPP to show all the above features for the future condition of the site:

- final grading, areas of cuts and fills and change of land cover
- future utility lines, easements, water supply wells, and sewage treatment systems
- locations of off-site material, waste, borrow or equipment storage areas
- points of stormwater discharge, flow patterns and discharges to surface water
- all proposed practices: E&SC, water quality controls
- boundaries of existing predominant vegetation and proposed limits of clearing

(See Exhibits E.4 and construction drawings)

C. Plan Components

The three components of a SWPPP are: Erosion and Sediment Control; Water Quality Control and Quantity Control.

(See Exhibits E.1 through E.4, construction drawings and Section 5.0 of SWMR demonstrate how the three components of the SWPPP are managed)

2.2 Erosion and Sediment Control Design Elements By NYSDEC

A generic E&SC plan may be utilized for minor grading activities associated with small construction activities. Any sites with and approved standard grading plan also require an E&SC plan designed for the site at the same time as the grading plan development. The following describes basic steps in preparing and E&SC plan. A complete set of design specifications and maintenance requirements of all the E&SC practices may be found in the Department's technical standards for erosion and sedimentation control NY Standards for Erosion and Sediment Control.

Follow construction sequence scheduling. The sequence of actions in an E&SC plan is runoff control, stabilization, and then sediment control. The management practices used in each phase of the plan must be identified on the Construction Sequence Schedule and appropriate maps.

Erosion and sediment control provisions should be included for all construction activities where any excavation, stripping, filling, grading or earth movement takes place. Provide dimensional details of proposed practices. The details must include plan and vertical view (cross sectional design) calculations used in sizing and justification for the sizing of selected practices.

(The following Step 1 through 8 should be incorporated into the plan SWPPP package. Step 1 through 8 were incorporated where applicable and are discussed in Sections 3.0 through 6.0 in further detail and depicted in the Construction Drawings package.)

Step 1: Pre-Construction Actions

Resource Protection

- Evaluate, mark and protect important trees and associated rooting zones, wetlands, on-site septic systems absorption fields, etc. ***(See Construction Drawings SWPPP Drawing)***
- Protect existing vegetated areas suitable for filter strips, especially in perimeter areas.

  (See Construction Drawings)

Surface Water Protection

- Identify the drainage area in the plan. Divide the site into natural drainage areas.

  (See Exhibits E.3 and E.4)
- Divert the off-site clean runoff from entering disturbed areas. ***(See Construction Drawings)***
- Identify bodies of water located on site or in the vicinity of the site.

  (See Construction Drawings and Exhibits E.3 and E.4)
- Plan appropriate practices to protect on-site or downstream surface water. ***(See Construction Drawings)***

Stabilize Construction Entrance

- Establish a temporary construction entrance to capture mud and debris from construction vehicles before then enter the public highway. ***(See Construction Drawings)***
- Stabilize bare areas (entrances, construction routes, equipment parking areas) immediately as work takes place. Top these areas with gravel or maintain vegetative cover. ***(See Construction Drawings)***
- Sediment tracked onto public streets should be removed or cleaned on a daily basis.

  (See Construction Drawings)

Perimeter Sediment Controls

- Silt fence material and installation comply with the standard drawing and specifications.

  (See Construction Drawings and Section 3.0)
- Install silt fences based on appropriate spacing intervals. Decrease this interval as the slope increases. Silt fence should be placed on or parallel to contours where this is no erosion. The area below the silt fence should be undisturbed ground. ***(See Construction Drawing SWPPP Drawing)***
- Install principal basins after construction site is assessed.

  (See Construction Drawing SWPPP Drawing)
- Install additional sediment traps and barriers as needed during grading.

  (See Construction Drawing SWPPP Drawing)

Step2: Runoff and Drainage Control

Runoff Control

- Install practices after sediment traps are installed and before land grading starts.

  (See Construction Drawings and Section 3.0)
- Control the runoff in each small drainage area before flow reaches runoff from entire site.

  (See Construction Drawings)

- Divert offsite or clean runoff from disturbed areas. ***(See Construction Drawings)***
- Convey surface flows from highly erodible soil and steep slope to more suitable stable area.

  (See Construction Drawings)
- Runoff from existing or proposed cut and fill slopes should be redirected to lower water velocity without causing erosion. ***(See Construction Drawings)***
- Final site drainage should be designed to prevent erosion, concentrated flows to adjacent properties, controlled overflow, and ponding. ***(See Construction Drawings)***

Runoff Conveyance System.

- Stabilize conveyance system. ***(See Construction Drawings)***
- Channels and streambanks need to be seeded at the outlet points. ***(See Construction Drawings)***
- Install check dams to slow down the velocity of concentrated flow. ***(See Construction Drawings)***
- Protect existing natural drainage systems and streams by maintaining vegetative buffers and by implanting other appropriate practices. ***(See Construction Drawings)***

Groundwater Recharge

- Install practices to infiltrate the runoff on the site as much as possible.

  (See Construction Drawings)
- Provide groundwater recharge to maintain the hydrologic regime of the downstream water bodies and simulate predevelopment hydrology.

  (See Construction Drawings)
- Use infiltration practices to prevent concentrate flows.

  (See Construction Drawings)

Outlet Stabilization

- Install practices to prevent erosion and discharge points. ***(See Construction Drawings)***

Step 3: Grading

- Limit the initial clearing and earth disturbance to the minimum necessary to install sediment control measures. Excavation for footings, clearing, or other earth disturbance may only take place after the sediment and erosion controls are installed. ***(See Construction Drawings)***
- Stockpile the topsoil removed from the site. The topsoil should be protected, stabilized and sited in a location away from the storm drains and waterbodies.

  (See Construction Drawings)
- Changed in grade or removal of vegetation should not disturb established buffers and should not be allowed within any regulated distance from wetlands, the high water line of a body of water affected by tidal action, or other such protected zones.

  (Disturbance buffers are proposed along wetland boundaries. See Construction Drawings)
- Avoid disturbance of steep slopes.

  (See Construction Drawings)
- An undisturbed buffer should be maintained to control runoff from steep slopes within sensitive areas.

(See Construction Drawings)

- Proposed grading should not impair existing surface drainage resulting in a potential erosion hazard impacting adjacent land or waterbodies. ***(See Construction Drawings)***

Step 4: Erosion Control (Stabilization)

- Implement erosion control practices to keep the soil in place. ***(See Construction Drawings and Section 3.0)***
- Stabilization should be completed immediately for the surface of all perimeter control and perimeter slopes. ***(See Construction Drawings and Section 3.0 of this report)***
- When activates temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures as soon as possible, but in no case more than 14 days after construction activity has ceased. ***(See Construction Drawings and Section 3.0 of this report)***
- Following initial soil disturbance, or re-disturbance, permanent or temporary, stabilization should be completed within 14 days or as soon as possible. ***(See Construction Drawings and Section 3.0 of this report)***
- Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or completed. ***(See Construction Drawings and Section 3.0 of this report)***
- Consult the local Soil and Water Conservation District for proper timing and application rate of seed, fertilizer and mulch. ***(See Construction Drawings and Section 3.0 of this report)***

Step 5: Sediment Control

- At any location where surface runoff from disturbed or graded areas may flow off the construction area, sediment control measures must be installed to prevent sediment from being transported off site. No grading, filling or other disturbance is allowed within existing drainage swales. ***(See Construction Drawings)***
- Swales or other areas that transport concentrated flow should be appropriately stabilized. ***(See Construction Drawings)***
- Downspout or sump pump discharges must have acceptable outfalls that are protected by splash blocks, sod, or piping as required by site conditions (i.e., no concentrated flow directed over fill slopes) ***(See Construction Drawings)***

Step 6: Maintenance and Inspection

- Identify the type, number and frequency of maintenance actions required for stormwater management and erosion control during construction and for permanent practices that remain on the site once construction is finalized. ***(See Construction Drawings, Section 6.0 of this report and Post Construction Maintenance Plan)***
- Inspection must be indicated on the Construction Sequence Schedule. Inspection must be performed every 7 calendar days and immediately after periods of rainfall greater than 0.5 inch. ***(See Section 6.0 of this report and Exhibit F.3)***
- Inspection must verify that all practices are adequately operational, maintained properly and that sediment is removed from all control structures. ***(See Section 6.0 of this report and Exhibit F)***

- Inspection must look for evidence of the soil erosion on the site, potential of pollutants entering drainage systems, problems at discharge points (such as turbidity in receiving water), and signs of soil and mud transport from the site to the public road at the entrance. ***(See Section 6.0 of this report and Construction Drawings)***
- Routine maintenance must be identified on the schedule and performed on a regular basis and as soon as possible as a problem is identified. ***(See Section 6.0 of this report, Exhibit E and Construction Drawings)***
- Identify the person or entities responsible for conducting the maintenance actions during construction and post-construction. ***(See Section 6.0 of this report, Exhibit F, Post Construction Maintenance Plan and Construction Drawings)***
- Retain a copy of the inspection and quarterly reports on-site with the SWPPP.

  (See Exhibit F for Reports)

Step 7: Finalize Grading & Landscaping

- Identify the final grading and stabilization plan once the construction is completed.

  (See Construction Drawings)
- All open areas, including borrow and spoil areas must be stabilized. ***(See Construction Drawings)***
- Plan a permanent top soil, seed, sod, mulch, riprap or other stabilization practice in the remaining disturbed areas as appropriate. ***(See Construction Drawings)***
- Stabilization must be undertaken no later than 14 days after construction activities has ceased except as noted in the GP-0-20-001. ***(See Construction Drawings and Section 3.0)***
- Remove the temporary control measures. ***(See Construction Drawings and Section 6.0)***

Step 8: Post Construction Controls

- Identify the permanent structural or non-structural practices that will remain on site. ***(See Construction Drawings and Post Construction Maintenance Plan)***
- Ensure that the permanent structural or non-structural practices utilized during construction are properly designed to suit the post-construction site conditions. ***(See Construction Drawings)***
- In finalizing the plan, evaluate the post-construction runoff condition on site. ***(See Section 5.0 of SWMR)***
- Minimize the risk of concentrated flow and erosion. ***(See Section 5.0 of SWMR)***
- On-site runoff controls help reduce the risk of increased runoff velocity, erosion and point source discharge. In addition to the standard runoff and erosion control practices identified in NY Standards for Erosion and Sediment Control, some of the techniques discussed under on-site runoff control discussion may be applied. ***(See Construction Drawings)***

Steps 1 through 8 are basic instructional guidelines for preparing a SWPPP for pre construction, during construction and post construction activities for a given site. Site characteristics and construction sequencing will impact the amount of work to be preformed. Additional erosion control practices procedures post maintenance practices are included in the following sections.

2.3 SWPPP Requirements For Water Quality and Water Quantity Control Plans

A Water Quality and Water Quantity Control Plan must be designed to meet DEC's required sizing criteria and pollutant removal goals. These criteria are fully presented in the Chapter 4 and Chapter 5 of NYS Stormwater Management Design Manual. The following provides a list of information and calculations required for completing the water quality and quantity components of the SWPPP. The outline of the following place may also be used by those who choose to deviate from DEC's standards.

Water Quality and Quantity Plan Details **(See Section 5.0 of SWMR and Construction Drawings)**

Select stormwater management practices from the list of approved practices in the Chapter 5 of the Design Manual that suit the future condition of the site. Identify a list of selected practices along with a brief description and site information. Location of these practices must also be identified on a map. The SWPPP must provide dimensional details of proposed practices and include summary tables of corresponding calculations for the design of the selected practices. Use Appendix H of the Design Manual for an example checklist for final stormwater management plan preparation.

A. Mapping requirements:

- Ensure that in addition to the general features identified previously, maps prepared for the site illustrate at a minimum:
  - Existing and proposed topography (minimum of 2-foot contours recommended)
  - Mapping of predominant soils from USDA soil surveys as well as location of any site-specific borehole investigations that may have been performed
  - Location of existing and proposed conveyance systems such as grass channels, swales, and storm drain and flow paths
  - Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainages
  - Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
  - Location, size, maintenance access, and limits of disturbance of proposed structural stormwater management practices

(See Exhibits E.3 and E.4 and Construction Drawings for all of the above)

- Prepare representative cross-section and profile drawings and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, etc). Drawings should include:
  - Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)
  - Design water surface elevations
  - Structural details of outlet structures, embankments, spillways, stilling basins, grade control structures, conveyance channels, etc
  - Logs of borehole investigations that may have been performed along with supporting geotechnical report

(See Exhibits E.3 and E.4 and Construction Drawings for all of the above that applies)

B. Hydrologic and hydraulic analysis:

Conduct a hydrologic and hydraulic analysis for all structural components of the stormwater system (e.g., storm drains, open channels, swales, management practices, etc.) for applicable design storms. The analysis should include:

- Existing condition analysis for time of concentrations, runoff rates, volumes, velocities, and water surface elevations showing methodologies used and supporting calculations. ***(See Sections 1.0, 3.0 and 5.0 of SWMR and Exhibit A.2)***
- Proposed condition analysis for time of concentrations, runoff rates, volumes, velocities, water surface elevations, and routing showing the methodologies used and supporting calculations. ***(See Sections 1.0, 3.0 and 5.0 of SWMR and Exhibit A.3)***
- Final sizing calculations for structural stormwater management practices including contributing drainage area, storage, and outlet configuration ***(See Sections 1.0, 3.0 and 5.0 of SWMR and Exhibit C.2)***

  Sizing for Water Quality (WQ_V) Control: Size the selected practices base on the 90% rule methodology defined in the Chapter 4 of the Design Manual. Identify the numeric values and provide calculations for:

  $WQ_V=[(P)(R_V)(A)] / 12$

  $R_V = 0.05+0.009I$

  I = Impervious Cover (Percent)

  Minimum $R_V = 0.2$

  P = 90% Rainfall Event Number (See figure 4.1)

  A = site area in acres

  (See Exhibit B for WQv calculations)

  Sizing for Water Quantity Controls:

- Channel Protection (CP_V), Default Criterion: CP_V = 24-hour extended detention of post-developed, 1-year, 24-hour event. ***(See Exhibit B and C for WQv calculations)***
- Channel Protection, Options for Sites Larger than 50 Acres: Distributed Runoff Control – geomorphic assessment to determine the bankfull channel characteristics and thresholds for channel stability and bedload movement. ***(See Exhibits B and C for calculations)***
- Sizing for Overbank Flood (Q_p): Control the peak discharge from the 10-year storm to 10-year pre-development rates. ***(See Exhibit C for calculations)***
- Sizing for Extreme Storm (Q_f): Control the peak discharge from the 100-year storm to 100-year pre-development rates. Safely pass the 100-year storm event. ***(See Exhibit C for calculations)***
- Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities (e.g., stormwater ponds and wetlands) ***(See Exhibit C)***
- Final analysis of potential downstream impact/effects of project, where necessary ***(n/a for this project)***
- Dam breach analysis, where necessary ***(n/a for this project)***

C. Finalize landscaping

- Final landscaping plans for structural stormwater management practices and any site reforestation or revegetation ***(Topsoil and Seed and buffering landscape along stormwater practices)***
- Provide structural calculations and construction specification, where necessary ***(n/a for this project)***

D. Maintenance Plan

Maintenance plan must include:

- Name, address, and phone number of responsible parties for maintenance
- Description of annual maintenance tasks

- Description of applicable easements
- Description of funding source
- Minimum vegetative cover requirements
- Access and Safety issues
- Testing and disposal of sediments that will likely be necessary
- Evidence of acquisition of all applicable local and non-local permits
- Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts)

(Post Construction Maintenance Plan section in report)

2.4 Construction Sequence Scheduling

Prepare a schedule for activities during and after construction. Define the sequence of implementing the E&SC and water quality / quantity control practices identified in your SWPPP. This schedule must identify activities during the period prior to soil disturbance through site stabilization. Also identify the inspection and maintenance measures during and after construction. Quantity of practices may be identified by the number of units or any other type of measures identified in the SWPPP. All the planned activities should be marked corresponding maps. A copy of the schedule along with the maps should be available at the construction site.

Type	Activites *(Identify name of planned practices)*	Number *(Quantity)*	Map Symbols	Estimated Start(Date)----End(Date) Pre During Post	Maintenance Actions
1-Pre-Construction Actions	To be determined by Contractor prior to site disturbance				
2- Runoff & Drainage Control					
3- Grading					
4- Erosion Control					
5- Sediment Control					
M6-Maintenance, Inspection & Plan Update					
7- Finalize Grading & Landscaping					
8- Post construction SW Mgmt.					

3.0 CONSTRUCTION EROSION CONTROL PRACTICES

Listed below are the suggested Temporary Erosion Control Devices that **may** be required for this site above what is indicated on the Erosion Control Plan in the construction drawings. A SWPPP has been provided for the contractor to follow in the Construction Drawing Plan. The SWPPP is a general guideline for the contractor to follow during the course of construction. The site inspector may/can revise the SWPPP as he/she feels necessary to prevent erodable soils form leaving the construction work area. All anticipated Temporary and Permanent Erosion Control measures required for construction of this project have been shown in the "Construction Drawing" documents. Any modifications to the SWPPP during construction shall be subject to engineer review.

The SPDES Permittee will be held responsible for any soil exposure and/or erosion that occurs outside the defined limits of work and haul roads, and will immediately install erosion control measures and stabilize disturbed areas. Furthermore, any fines that could arise as a result of improper implementation of the SWPPP will be the responsibility of the SPDES Permittee.

Siltation Fence (Temporary)

Silt fence shall be installed and maintained to prevent sediment transport until permanent soil stabilization occurs. The anticipated locations for silt fence placement are shown on the plans. Additional Silt fence may be needed as site conditions warrant. The Contractor and Stormwater Management Inspector are encouraged to identify additional placement opportunities as necessary to maintain the highest water quality standards possible. (See Construction Drawings for typical silt fence installation). Silt fence shall be placed parallel to contours and should not be placed in concentrated flows.

Stockpile (Temporary)

Topsoil or any other soil excavated during construction shall stockpile in a suitable area clear from any stormwater drainage course. Silt fence will be used to enclose all stockpile areas. Stockpiles which are inactive for more than 14 days shall be temporary seeded. The temporary stockpile shall be protected with a diversion swale if necessary.

Seed and Mulch (Temporary)

Any disturbed areas that are exposed for than 14 days and not subject to construction traffic will immediately receive temporary seeding. If the season prevents the establishment of the temporary cover the disturbed areas with mulch or straw at rate of 2.0 tons per acre.

Construction Entrance (Temporary)

Construction entrance shall 50 foot long by 24 feet. The construction entrance captures material and debris before construction vehicles leave the project work zone. (See Construction Drawing for construction entrance installation)

Dust Control (Temporary)

Water will be applied at a rate to minimize air born particles from leaving the construction site as instructed by inspector.

4.0 CONSTRUCTION WASTE MANAGEMENT

Material Stockpiles

Material resulting from the clearing and grubbing operation will be stockpiled up slope from adequate sedimentation controls.

Equipment Cleaning and Maintenance

The general Contractor will designate areas for equipment cleaning, maintenance, and repair. The general Contractor and subcontractors will utilize those areas. The areas will be protected by a temporary perimeter berm.

Detergents

The use of detergents for large-scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

Spill Prevention and Response

A Spill Prevention and Response Plan shall be developed for the site by the Contractor. The plan shall detail the steps needed to be followed in the event of an accidental spill and shall identify contact names and phone numbers of people and agencies that must be notified.

The plan shall include Material Safety Data Sheets (MSDS) for all materials to be stored on-site. All workers on-site will be required to be trained on safe handling and spill prevention procedures for all materials used during construction. Regular tailgate safety meetings shall be held and all workers that are expected on the site during the week shall be required to attend.

Concrete Wash Areas

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in specifically designated diked and impervious washout areas which have been prepared to prevent contact between the concrete wash and storm water. Waste generated from concrete wash water shall not be allowed to flow into drainage ways, inlets, receiving waters or highway right of ways, or any location other than the designated Concrete Wash Areas. Proper signage designating the "Concrete Wash Areas" shall be placed near the facility. Concrete Wash Areas shall be located at minimum 100 linear feet from drainage ways, inlets and surface waters.

The hardened residue from the Concrete Wash Areas will be disposed of in the same manner as other non-hazardous construction waste materials. Maintenance of the wash area is to include removal of hardened concrete. The facility shall have sufficient volume to contain all the concrete waste resulting from washout and a minimum freeboard of 12 inches. The facility shall not be filled beyond 95% capacity and shall be cleaned out once 75% full unless a new facility is constructed. The Contractor will be responsible for seeing that these procedures are followed.

Saw-cut Portland Cement Concrete (PCC) slurry shall not be allowed to enter storm drains or watercourses. Saw-cut residue should not be left on the surface of pavement or be allowed to flow over and off pavement.

The Project may require the use of multiple concrete wash areas. All concrete wash areas will be located in an area where the likelihood of the area contributing to storm water discharges is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to stormwater discharges.

Material Storage

Construction materials shall be stored in a dedicated staging area. The staging area shall be located in an area that minimizes the impacts of the construction materials effecting stormwater quality.

Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed of at an approved solid waste or chemical disposal facility

5.0 SEQUENCE OF CONSTRUCTION

The following sequence of construction is intended to demonstrate the general order of construction activities to ensuring that no off-site degradation will be caused by erosion within the project limits. The sequencing of construction may be modified as field conditions warrant ensuring environmental compliance and good housekeeping.

The general sequence of construction for the project shall be:

1. CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE AND SILT FENCE.
2. ROUGH GRADE SITE AND DEMOLINATION OF SITE AREA.
3. INSTALL PUMP STATION/FORCEMAIN
4. INSTALL DRAINAGE SYSTEM, WATER LINE, GRAVITY SEWER, ETC.
5. INSTALL TEMPORARY CATCH BASIN INLET PROTECTION.
6. CONSTRUCT INFILTRATION ARRAY
7. INSTALL SUBBASE FOR PARKING LOT
8. INSTALL PAVEMENT.
9. SOIL RESTORATION
10. FINISH GRADE AROUND BUILDING AND SEED/INSTALL PLANTING.

SOIL RESTORATION

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO DEPTH OF AT LEAST 12 INCHES USING XCAT-MOUNTED RIPPER, TRACTOR MOUNTED DISC, OR TILLER, MIXING AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
3. ROCK-PICK UNTIL UPLIFT STONE/ROCK MATERIALS OF FOUR INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO DEPTH OF 6 INCHES
5. VEGETATE AS REQUIRED BY APPROVED PLAN.

AT THE END OF PROJECT AN INSPECTOR SHOULD BE ABLE TO TO PUSH A 3/8" METAL BAR 12" INCHES INTO SOIL JUST WITH BODY WEIGHT. TILLING (STEP 2 ABOVE) SHOULD NOT BE PERFORMED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATIONS THAT ARE WITHIN 24 INCHES OF THE SURFACE. COMPOST SHALL BE AGED, FROM PLANT DERIVED MATERIALS, FREE OF VIABLE WEEDS SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALH INCH SCREEN AND HAVE A PH SUITABLE TO GROW DESIRED PLANTS. TOPSOIL SHALL MEET THE SPECIFACTIONS OF NYSDOT TYPE "A" TOPSOIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING EROSION AND SEDIMENT CONTROL TO PROTECT SURROUNDING WATER BODIES.

6.0 EROSION CONTROL MAINTENANCE DURING CONSTRUCTION

A certified/qualified inspector shall inspect the site at least once every (7) calendar days. The qualified inspector shall make modifications to the SWPPP as he/she feels the site conditions warrant. The qualified inspector shall complete weekly, monthly and quarterly reports as required by NYSDEC. Weekly, monthly, and quarterly reports can be found in Exhibit F.4. Maintenance of erosion control devices shall follow the recommendations set forth in the "New York Standards and Specifications for Erosion and Sediment Controls" dated August 2005, commonly know as the "Blue Book". The Contractor must maintain a record of the inspections in a site logbook. The logbook shall be maintained onsite and be made available to authorities upon request.

7.0 GENERAL PERMIT (GP-0-20-002) INFORMATION

7.1 HISTORICAL PLACES

Stormwater discharge from the site does not affect listed or eligible for listing on State or National Register of Historic Places; (see archeological report by Hartgen Archeological)

7.2 ENDANGERED SPECIES

Per NYSDEC environmental mapper no endangered or threatened species are within the site.

7.3 NOTICE OF INTENT

Application for a SPDES discharge permit is deemed necessary for the proposed project. The owner shall make application to the New York State Department of Environmental Conservation for the SPDES General Permit (GP-0-15-002). The draft permit application is included as Exhibit F.1.The owner will make a formal submission to NYSDEC for coverage under SPDES General Permit (GP-0-15-002) after local, county and state approvals for this project are granted. Draft MS4 acceptance form is located in Exhibit F.2

7.4 NOTICE OF TERMINATION

After satisfactory completion of the construction of the project, the Owner will file a Notice of Termination of Coverage (NOT) with NYSDEC for the SPDES General Permit (GP-0-15-002). Prior to filing the NOT, the Owner shall have the qualified professional perform a final site inspection. Applications for NOT and Final Stabilization report are included in Exhibit F.4

Exhibits

Exhibit F – Stormwater Pollution Prevention Plan (SWPPP)

.1 Notice of Intent (NOI)

.2 General Permit

.3 Construction Site Log Book

.4 Notice of Termination (NOT)

0644089821

NOTICE OF INTENT

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

NYR _____ (for DEC use only)

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

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

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Regan Development Corporation

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

Owner/Operator Contact Person First Name
Larry

Owner/Operator Mailing Address
1055 Saw Mill Road #204

City
Ardsley

State: NY Zip: 10502 -

Phone (Owner/Operator): 914 - 693 - 6613 Fax (Owner/Operator): ___ - ___ - ____

Email (Owner/Operator)
larry@regandevelopment.com

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

Project Site Information

Project/Site Name
Victory Mills

Street Address (NOT P.O. BOX)
42 Gates Ave

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

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

State: NY
Zip: 12871 -
County: Saratoga
DEC Region: 5

Name of Nearest Cross Street
Pond Street

Distance to Nearest Cross Street (Feet)
0

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

Tax Map Numbers
Section-Block-Parcel
170.30-2

Tax Map Numbers
27.1

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

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

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

X Coordinates (Easting)
614550

Y Coordinates (Northing)
4771636

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 — Number of Lots
- ○ SINGLE FAMILY SUBDIVISION
- ○ 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
6.5	4.0	3.5	5.3

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
%	%	100 %	%

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

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

Start Date 05 / 01 / 2020 – **End Date** 12 / 30 / 2021

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

Name

Fish Kill

9a. Type of waterbody identified in Question 9?

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

9b. How was the wetland identified?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SWPPP Preparer
MJ Engineering

Contact Name (Last, Space, First)
Easton James

Mailing Address
21 Corporate Drive Suite 105

City
Clifton Park

State NY Zip 12065-

Phone 518-371-0799

Fax 518-371-0822

Email
jeaston@mjels.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-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name James **MI** W

Last Name Easton

Signature

Date 10/25/2019

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

0.485 **acre-feet**

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

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

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

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

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

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

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

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

Name

Manufacturer

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

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

Total RRv provided

0.485 **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

0.144 **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

0.0 **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). 0.485

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. **acre-feet**

CPv Provided

0. **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

17.52 **CFS**

Post-development

20.93 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

39.61 **CFS**

Post-development

47.77 **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

Regan Development

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][ ][ ][ ][ ][ ][ ]

3547089826

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 Larry

MI

Print Last Name Regan

Owner/Operator Signature

Date / /

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

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

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

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

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

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

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

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

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

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

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

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

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

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

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

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

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

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

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

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

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

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

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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

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

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

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

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

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

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

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

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

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

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

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

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

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

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

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

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

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

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

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

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

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

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

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

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

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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

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

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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

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

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

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

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

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

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

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

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

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

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

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

C. Permit Authorization

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

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

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

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

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

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

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

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

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

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

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

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator.*

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

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

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

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

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

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

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

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

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

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

d. to document the final construction conditions.

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

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

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

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

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

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

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

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

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

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

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

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

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

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

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

C. Qualified Inspector Inspection Requirements

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

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

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

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

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

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

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

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

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

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

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

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

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

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

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

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

a. Date and time of inspection;

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

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

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

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

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

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

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

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

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

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

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

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

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

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

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

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

G. Other Information

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

H. Signatory Requirements

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

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

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

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

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

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

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

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

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

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

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

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

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

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

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

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

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

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

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

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

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

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

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

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

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

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

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

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

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

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

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

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

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

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

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

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

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

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

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

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

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

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

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

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

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

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

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

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

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

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

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

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

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

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

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

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

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

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

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

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

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

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

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

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

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

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

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

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

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

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

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

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

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

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

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

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

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
Construction Activities that Require the Preparation of a SWPPP That Includes Post-construction Stormwater Management Practices

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

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

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

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

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

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

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

Figure 1 - New York City Watershed East of the Hudson

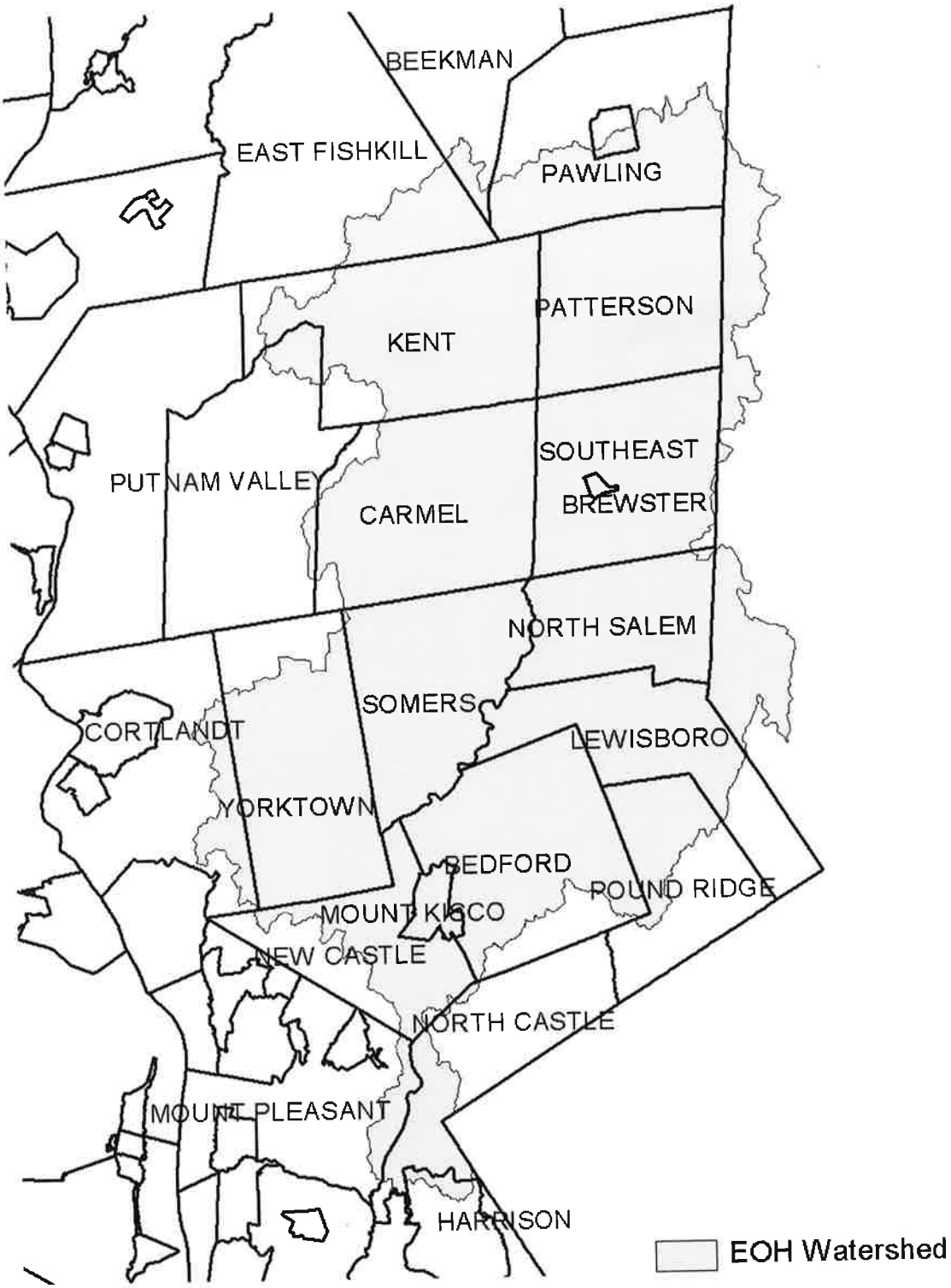


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

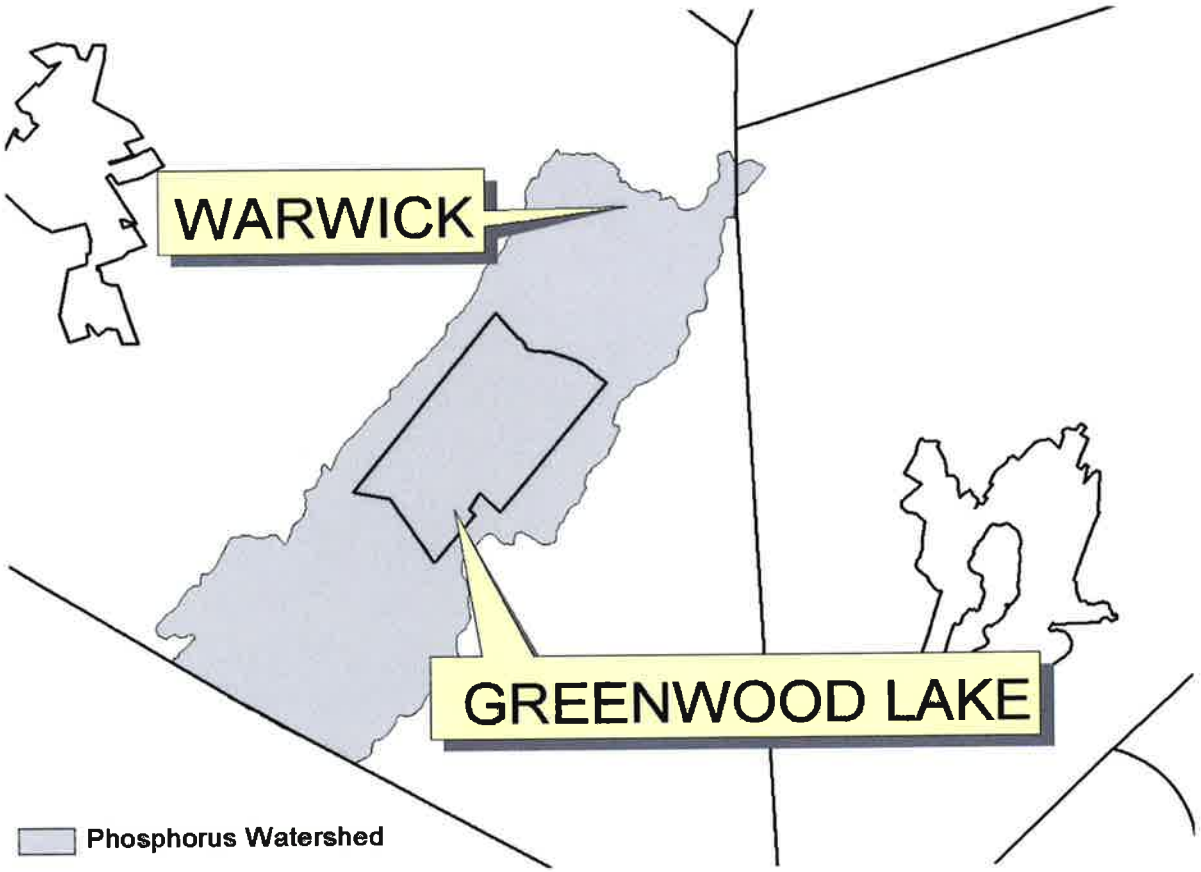


Figure 4 - Oscawana Lake Watershed

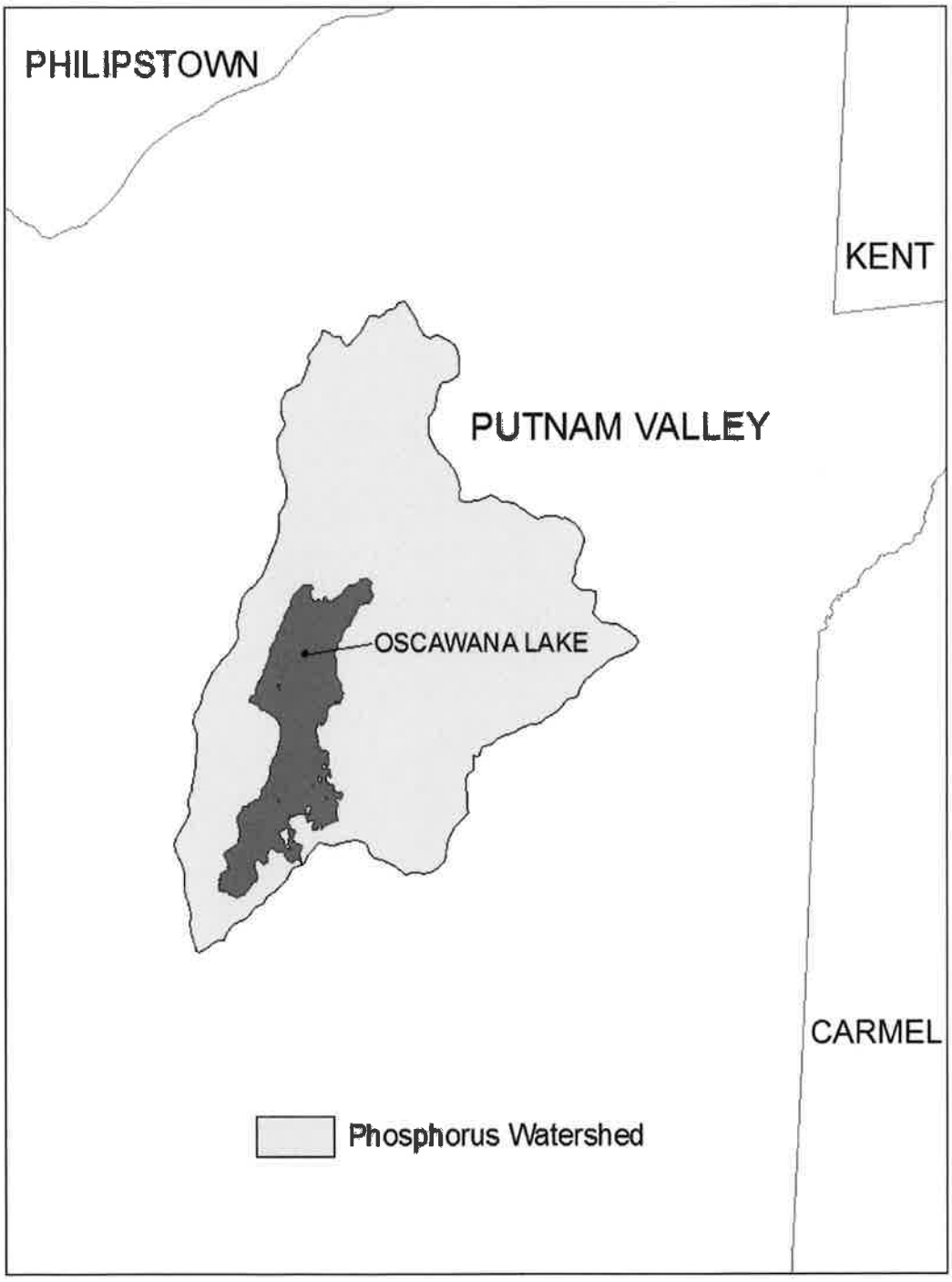
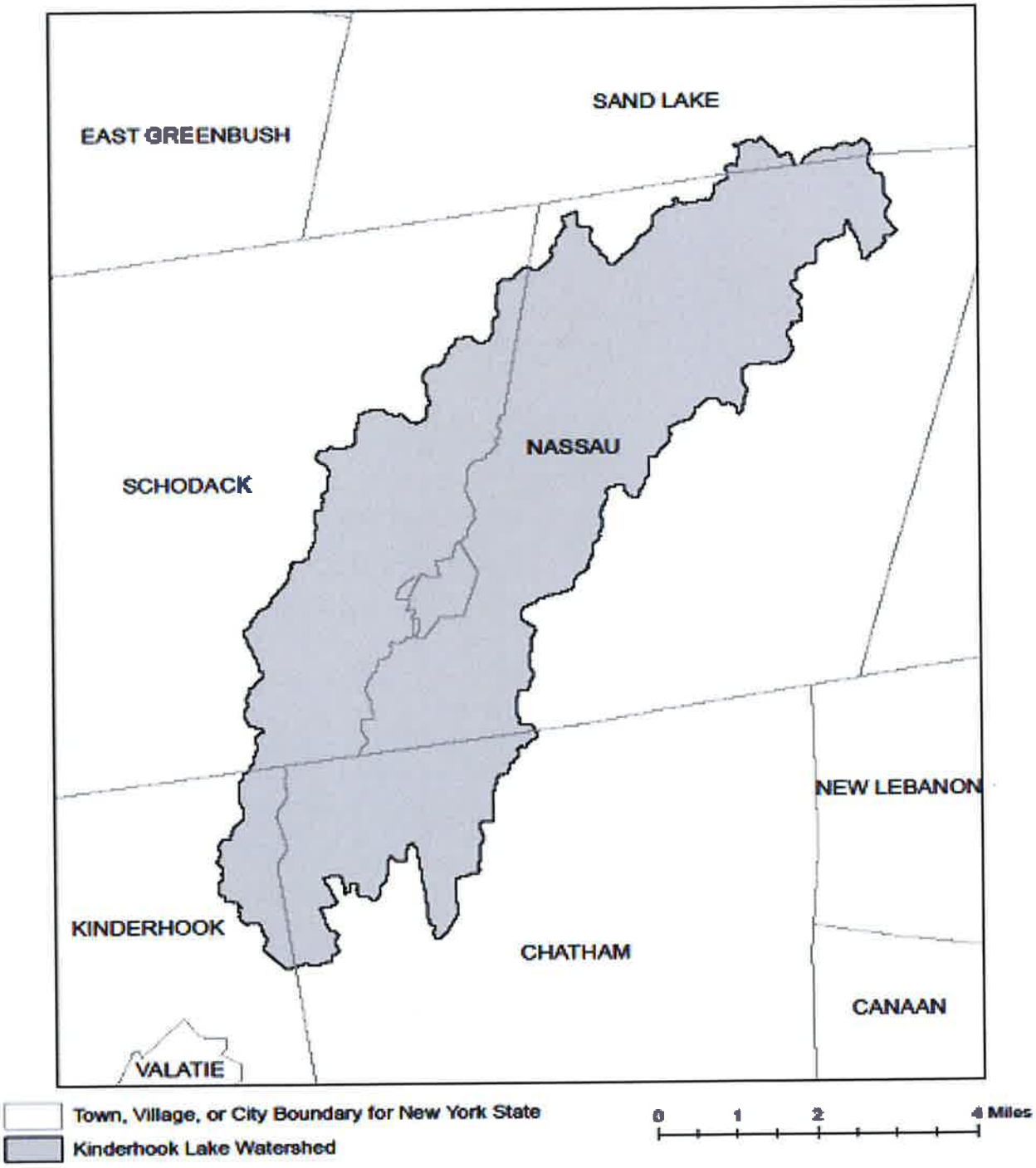


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

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

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

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

4. CONSTRUCTION DURATION INSPECTIONS

These Inspection Forms will be filled out during the entire construction phase of the project.

_____ _____

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.

Check one of the following:

Weekly Inspection or, **Rain Event Inspection** (greater than 0.5 inches in 24 hour period)

☐ **Weekly Inspection or,** ☐ **Rain Event Inspection** (greater than 0.5 inches in 24 hrs)
Date of Rain Event _____ **Amount of Rain** ____ **in.**

On a plan/sketch below that represents the project area, or on an attached site map:
1.Indicate the extent of all disturbed site areas and drainage pathways;
2.Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;
3.Indicate all areas of the site that have undergone temporary or permanent stabilization;
4.Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

SITE PLAN/SKETCH

Time on site _____ AM/PM

Time off site _____ AM/PM

Weather _____

Temp _____ °F

Photos Taken _____

Comments:

Contractor Signature _____ Date _____

General Housekeeping

Y N NA

[ ][ ][ ] Is there an increase in turbidity that will cause a substantial visible contrast to natural conditions?

[ ][ ][ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ][ ][ ] 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?

Temporary Stream Crossing

Y N NA

[ ][ ][ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ][ ][ ] Installed non-woven geotextile fabric beneath approaches.

[ ][ ][ ] 20 feet minimum approach length, minimum 6 inch depth of rock, 18 inch maximum fill depth over pipes.

[ ][ ][ ] Installed diversion dike/swale through both approaches 50 feet (max) from top of bank.

[ ][ ][ ] Fill composed of clean shot rock or KTC Class III channel lining.

[ ][ ][ ] Rock clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Excavation Dewatering

Y N 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.

Vegetative Filter Strips

Y N NA

[ ][ ][ ] Vegetation is dense and there are no signs of erosion.

[ ][ ][ ] Width of filter strip is per the approved plan.

[ ][ ][ ] Ground slope of filter strip is between 1% and 5%.

Level Spreader

Y N 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.

Interceptor Dikes and Swales

Y N 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

Sediment Control

Y N NA

[ ][ ][ ] Sediment control practices are located and installed correctly.

[ ][ ][ ] BMPs are maintained per specifications

[ ][ ][ ] Stockpiles are stabilized and contained.

[ ][ ][ ] De-watering operations prevent direct discharges to sensitive features.

[ ][ ][ ] Construction Schedule—Are clearing and grading operations divided into stages for

large areas (i.e. greater than 2 acres), as opposed to mass grading? (NOTE: If staged, erosion control measures may also need to be staged.)

Adverse Impacts or Off-Site Degradation

Y N NA

[ ][ ][ ] Work is within the limits of the approved plans, including clearing and blasting.
[ ][ ][ ] Adverse impacts – ponds, streams, wetlands and sinkholes are free of sediment from site.
[ ][ ][ ] Off-site degradation - sediment is kept out of roadways, adjacent property, storm sewers, or air (dust).

Stabilized Construction Entrance

Y N 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?

Reinforced Silt Fence

Y N 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.
[ ][ ][ ] Installed steel posts, downstream side of flow, maximum 6 foot intervals with 6 x 6 inch 14 gage wire.
[ ][ ][ ] Fabric buried 6 inches minimum.
[ ][ ][ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ][ ][ ] Sediment accumulation is ___% of design capacity.

Stone Check Dam

Y N NA

[ ][ ][ ] Channel is without erosion (i.e., flow is not eroding soil underneath or around the structure).
[ ][ ][ ] Check is in good condition (i.e., rocks have not been displaced and no permanent pools behind the structure).
[ ][ ][ ] Sediment accumulation is ___% of design capacity.

Block and Gravel Drop Inlet Protection

Y N NA

[ ][ ][ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ][ ][ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ][ ][ ] Sediment accumulation ___% of design capacity.

Filter Fabric (Drop) Inlet Protection

Y N NA

[ ][ ][ ] Installed 2-inch x 4-inch wood frame and wood posts, with maximum 3-foot spacing.
[ ][ ][ ] Filter fabric buried a minimum of 8 inches and secured to frame/posts with staples at max 8-inch spacing.
[ ][ ][ ] Posts 3-foot maximum spacing between posts.
[ ][ ][ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ][ ][ ] Sediment accumulation is ___% of design capacity.

Excavated Drop Inlet Protection

Y N NA

[ ][ ][ ] Excavated depth is a minimum 1-foot, but no more that 2-feet maximum.
[ ][ ][ ] Gravel supported by hardware cloth to allow drainage and restrict sediment movement.

[ ][ ][ ] Excavated side slopes should be 2:1.

Temporary Sediment Trap

Y N 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.

Temporary Sediment Basin

Y N NA

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

MODIFICATIONS TO THE SWPPP

Modification & Reason:

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

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

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

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

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

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

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

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

Printed Name:

Title/Position:

Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

Post Construction Maintenance Manual
For
(Part III)

42 Gates Ave

Village of Victory
Saratoga County, New York

October 25, 2019

Prepared by:

Engineering and
Land Surveying, P.C.

1533 Crescent Road
Clifton Park, NY 12065
Tel: 518-371-0799
Fax: 518-371-082

POST CONSTRUCTION STORMWATER MAINTENANCE MANUAL
for
42 GATES AVE

VILLAGE OF VICTORY, SARATOGA COUNTY

Table of Contents

I:\projects\mj972 land development\972.32 (victory mills)\reports\stormwater\post construction maintenance plan\pcmp.doc

1.0 OPERATION AND MAINTENANCE INFORMATION

Site Address	42 Gates Ave, Schuylerville NY, 12871
Descriptive Site Location	Property approximately 300 feet north of NYS Route 32 and Hill St Intersection
Property Owner	Regan Development Corpooration 1055 Saw Mill Road Ardsley NY 10502
Property Management (if different than Owner)	SAME AS OWNER

2.0 DESIGN AND CONSTRUCTION INFORMATION

Maintenance Mechanism

☒ Maintenance Agreement

☒ Commercial Property

☐ Homeowners Association

☐ Maintenance Assumed by Government Entity

List:

Required Inspections

- Inspection by a licensed professional engineer is required in accordance with Inspection forms in Exhibit G.
- Local municipality has authority to enter the site to inspect the stormwater management practices. The frequency of municipal inspection has not been determined.

Providers of Maintenance Services

Coordinator of maintenance activities and inspections:

Regan Development Corpooration

Landscaping and snow removal activities:

TO BE DETERMINED _____ ***(List Company)***

Stormwater Management Practice (SMP) Maintenance:

TO BE DETERMINED _____ ***(List Company)***

SMP inspections and party required to submit required reports to the local municipality:

TO BE DETERMINED _____ ***(List Company)***

Emergency Contact

(Local government authority to contact in case of failure of the stormwater treatment practice that threatens public safety)

Village of Victory DPW

23 Pine Street
PO Box 305
Victory Mills, NY 12884

Phone: (518) 695-3808

If calling off-hours for an emergency, please call the Saratoga County Sheriff's Office at 518-885-6761

3.0 MAINTENANCE AND INSPECTION RESPONSIBILITIES

Permitting Authority	Village of Victory 23 Pine Street PO Box 305 Victory Mills, NY 12884 Phone: (518) 695-3808
Design Engineer	MJ Engineering & Land Surveying, PC 21 Corporate Drive, Suite 105 Clifton Park, NY 12065 Phone: 518-371-0799 Fax: 518-371-0822
Contractor	***TO BE DETERMINED*** _____ ***(List Company)***
Emergency Contact (Local government authority to contact in case of failure of the stormwater treatment practice that threatens public safety)	Village of Victory DPW 23 Pine Street PO Box 305 Victory Mills, NY 12884 Phone: (518) 695-3808 If calling off-hours for an emergency, please call the Saratoga County Sheriff's Office at 518-885-6761

4.0 FUNDING MECHANISM

	☐ Maintenance performed by Municipality and Funded through: ☐ General Revenues ☐ Stormwater Utility of other fee assessment --- OR --- ☒ Maintenance performed by Owner and Funded or guaranteed through: ☐ Performance Bond ☐ Letter of Credit ☐ Escrow Account ☒ Private Funds ☒ Maintenance Agreement, See Attached
Estimated Annual O & M Costs	The estimated cost of maintenance of the stormwater management practice (SMP) excluding landscaping costs are: **$ 9,900** per year. The estimated annual cost is in terms of year 2019 dollars. The anticipated annual cost for subsequent years may be estimated from the attached inflation worksheet. An inflation rate of 3.0% per year has been used. A cost projection is attached that includes a detailed estimate of the annual routine maintenance cost and the cost of infrequent maintenance items.

5.0 POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES (PRACTICES)

Practice A: Underground Infiltration Array (I-4)	
Site Map identifying location of practice	Refer to Construction Plans
Practice Type	Infiltration Array (I-4)
Contributing Drainage Area	Post Area #1A (6.30 ac)
Attachments	• See Exhibit G.1 for location of Practice A. • See Exhibit G.3 for Operation and Maintenance for required inspections of Infiltration. All or any item(s) indicated on inspection report shall be rectified within one (1) month of report submission.
Frequency	• Exhibit G.3 shall be completed least once a year or if the rainfall within a 24-hour time frame exceeds 3.0 inches by a certified inspector. • Sediment in infiltration area shall be removed when 10% of their volume has been occupied. Estimated at every 10-years.
Special Needs or Requirements	• Testing of sediment must be performed per NYSDEC to determine levels of toxic elements with the soil before sediment within the stilling and infiltration basin is removed and properly disposed of. • Vacuum Truck for sediment removal. • Inspectors and maintenance staff may need to be certified in confined space entry.

Practice B: Hydrodynamic Unit (Hydro-International)	
Site Map identifying location of practice	Refer to Construction Plans
Practice Type	Pre-fabricated hydrodynamic unit
Contributing Drainage Area	Post Area #1A (6.30 ac)
Attachments	• See Exhibit G.1 for location of Practice A. • See Exhibit G.2 for Hydro International Maintenance Literature for required activities, timing, methods and inspection.
Frequency	• Exhibit G.2 shall be completed least once a year or if the rainfall within a 24-hour time frame exceeds 3.0 inches by a certified inspector. • Sediment removal shall be performed per the Hydro International Operation and Maintenance manual dictates.
Special Needs or Requirements	• Testing of sediment must be performed per NYSDEC to determine levels of toxic elements with the soil before sediment within the stilling and infiltration basin is removed and properly disposed of. • Vacuum Truck for sediment removal. • Inspectors and maintenance staff may need to be certified in confined space entry.

Practice C: Private Closed Drainage System	
Site Map identifying location of practice	Refer to Construction Plans
Practice Type	N/A
Contributing Drainage Area	Post Area #1A (6.30 ac)
Private Drainage System Location	Throughout project site – see construction drawings
Attachments	None
Frequency	• Private Closed drainage system and catch basins shall be cleaned when maximum 6" sediment occurs within the closed drainage system. Estimated at every 10-years. • Private Catch basin, manholes, outlet structure, flared end sections and piping shall be repaired, replaced or fixed. • Private Closed drainage system and catch basins shall be cleaned when a maximum 6" sediment occurs within the closed drainage system. Estimated at every 10-years.
Special Needs or Requirements	• High Pressure Water to clean underground closed drainage system. • A vacuum truck may be needed for removal of sediment to wash out location. • Catch basins/ manhole frame and grates, mortar or pipe. • Rip-Rap

6.0 ATTACHMENTS TO MAINTENANCE PLAN

The following items shall be kept with the Post-Construction Maintenance Plan:

Present	*Item*	**Description**
☐	***As-Built Plans***	
☐	***Final Landscaping Plans***	Refer to Construction Drawings
☒	***Design Calculations Report***	Owner shall keep a copy of the Stormwater Management Report, including design calculations, with the Maintenance Plan.
☐	***Specifications for Potential Repair Items***	No detailed specifications have been developed for this project. Owner is referred to construction drawing set.
☒	***Operation, Maintenance and Inspection Checklist***	Attached document(s) list the estimated frequencies for maintenance and inspection items anticipated with this development project. The checklist is presented as an estimated frequency for activities. Actual site conditions may require more (or less) frequent assessment and maintenance.
☐	***Manuals and Warranties***	Any documentation or instructions for proprietary products and mechanical components, such as valves, pumps, aerators, etc.
☐	***Bid Specifications***	Detailed bid specifications have not been developed for this project. Owner is referred to construction drawing set.
☐	***Easements***	Owner shall keep a copy of all recorded stormwater related easements with the Maintenance Plan.
☐	***Covenants***	Not Applicable. Owner shall keep a copy of all stormwater related covenants with the Maintenance Plan. Typically developed for projects with Homeowners Associations.
☒	***Maintenance Agreement***	Owner shall keep a copy of the stormwater related Maintenance Agreement with the Maintenance Plan. See attached Agreement between Municipality and Owner regarding upkeep of Stormwater Management Practice.
☒	***Detailed Cost Estimate***	Detailed cost estimates are provided, showing anticipated costs for routine and infrequent maintenance aspects related to the Stormwater management practice.
☒	***Maintenance and Tracking Log***	Owner shall keep copies of all maintenance, inspection and regulatory correspondence related to the stormwater practice. Correspondence and records shall be made available to regulatory agencies upon request.

Exhibits

Exhibit G – Post Construction Maintenance Information

.1 Location Map

.2 Hydro-International Maintenance Information

.3 Maintenance Checklist

.4 Estimated O & M Costs

ROSANNA M. THIVIERGE
Book 1164 Page 128
Section 170.3 Block 2 Lot 27.2

Lands Now or Formerly of
TRAVIS HASKELL
Book 1614 Page 421
Section 170.3 Block 2 Lot 30

HYDRODYNAMIC UNIT

INFILTRATION ARRAY

GRAVEL

PLAY GROUND AREA

BREWERY/ BREWPUB ENTRY

ST

SUBMITTAL / REVISIONS

No.	DATE	DESCRIPTION	BY	REVIEWED BY:	DATE

PROJ. MANAGER:	JWE
CHIEF DESIGNER:	JWE
DESIGNED BY:	JWE
DRAWN BY:	AML
CHECKED BY:	JWE

SEAL

Engineering and Land Surveying, P.C.
1533 Crescent Road - Clifton Park, NY 12065

REGAN DEVELOPMENT

MAINTENANCE MAP

42 GATES AVE
VILLAGE OF VICTORY NY

SCALE: 1"=30'
CONTRACT No.: 972.32
MJ PROJ. No.: 972.32
DATE: 10/5/2019

FIG 1

File Name: F:\mj\972\972.32 Victory Mills\Stormwater.dwg (Layout: MAIN)
Date: Wed, Oct 23, 2019 - 9:35 AM (Name: jesston)

Hydro International®

Operation and Maintenance Manual

Downstream Defender®

Vortex Separator for Stormwater Treatment

Turning Water Around ...®

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Downstream Defender® by Hydro International

The Downstream Defender® is an advanced Hydrodynamic Vortex Separator designed to provide high removal efficiencies of settleable solids and their associated pollutants, oil, and floatables over a wide range of flow rates.

The Downstream Defender® has unique, flow-modifying internal components developed from extensive full-scale testing, CFD modeling and over thirty years of hydrodynamic separation experience in wastewater, combined sewer and stormwater applications. These internal components distinguish the Downstream Defender® from simple swirl-type devices and conventional oil/grit separators by minimizing turbulence and headlosses, enhancing separation, and preventing washout of previously stored pollutants.

The high removal efficiencies and inherent low headlosses of the Downstream Defender® allow for a small footprint making it a compact and economical solution for the treatment of non-point source pollution.

Benefits of the Downstream Defender®

- Removes sediment, floatables, oil and grease
- No pollutant washouts
- Small footprint
- No loss of treatment capacity between clean-outs
- Low headloss
- Efficient over a wide ranges of flows
- Easy to install
- Low maintenance

Applications

- New developments and retrofits
- Utility yards
- Streets and roadways
- Parking lots
- Pre-treatment for filters, infiltration and storage
- Industrial and commercial facilities
- Wetlands protection

Downstream Defender® Components

1. Central Access Port
2. Floatables Access Port (6-ft., 8-ft. and 10-ft. models only)
3. Dip Plate
4. Tangential Inlet
5. Center Shaft
6. Center Cone
7. Benching Skirt
8. Floatables Lid
9. Outlet Pipe
10. Floatables Storage
11. Isolated Sediment Storage Zone

Hydro Maintenance Services

Hydro International has been engineering stormwater treatment systems for over 30 years. We understand the mechanics of removing pollutants from stormwater and how to keep systems running at an optimal level.

Nobody Knows our Systems Better than we do

Avoid Service Negligence

Sanitation services providers not intimately familiar with stormwater treatment systems are at risk of the following:

- Inadvertently breaking parts or failing to clean/replace system components appropriately.
- Charging you for more frequent maintenance because they lacked the tools to service your system properly in the first place.
- Billing you for replacement parts that might have been covered under your Hydro warranty plan
- Charging for maintenance that may not yet have been required.

Leave the Dirty Work to us

Trash, sediment and polluted water is stored inside treatment systems until they are removed by our team with a vactor truck. Sometimes teams must physically enter the system chambers in order to prepare the system for maintenance and install any replacement parts. Services include but are not limited to:

- Solids removal
- Removal of liquid pollutants
- Replacement media installation (when applicable)

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Downstream Defender® Operation and Maintenance Manual

Better Tools, Better Results

Not all vactor trucks are created equal. Appropriate tools and suction power are needed to service stormwater systems appropriately. Companies who don't specialize in stormwater treatment won't have the tools to properly clean systems or install new parts.

Service Warranty

Make sure you're not paying for service that is covered under your warranty plan. Only Hydro International's service teams can identify tune-ups that should be on us, not you.

Treatment Systems Serviced by Hydro:

- Stormwwater filters
- Stormwater separators
- Baffle boxes
- Biofilters/biorention systems
- Storage structures
- Catch basins
- Stormwater ponds
- Permeable pavement

SAVE TIME & MONEY: CALL HYDRO FOR A QUOTE

1 (888) 382-7808

LEARN MORE AT HYDRO-INT.COM/SERVICE

Operation

Introduction

The Downstream Defender® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The Downstream Defender® has been designed to allow for easy and safe access for inspection/monitoring and clean-out procedures. Entry into the unit or removal of the internal components is not necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the Downstream Defender® have been designed to protect the oil, floatables and sediment storage volumes so that separator performance is not reduced as pollutants accumulate between clean-outs. Additionally, the Downstream Defender® is designed and installed into the storm drain system so that the vessel remains wet between storm events. Oil and floatables are stored on the water surface in the outer annulus separate from the sediment storage volume in the sump of the unit providing the option for separate oil disposal, and accessories such as adsorbant pads. Since the oil/floatables and sediment storage volumes are isolated from the active separation region, the potential for re-suspension and washout of stored pollutants between clean-outs is minimized.

Wet Sump

The sump of the Downstream Defender® retains a standing water level between storm events. The water in the sump prevents stored sediment from solidifying in the base of the unit. The clean-out procedure becomes more difficult and labor intensive if the system allows fine sediment to dry-out and consolidate. Dried sediment must be manually removed by maintenance crews. This is a labor intensive operation in a hazardous environment.

Blockage Protection

The Downstream Defender® has large clear openings and no internal restrictions or weirs, minimizing the risk of blockage and hydraulic losses. In addition to increasing the system headloss, orifices and internal weirs can increase the risk of blockage within the unit.

Maintenance

Overview

The Downstream Defender® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the Downstream Defender®. The Downstream Defender® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. **When sediment and oil storage capacities are reached, the Downstream Defender® will no longer be able to store removed sediment and oil. Maximum pollutant storage capacities are provided in Table 1.**

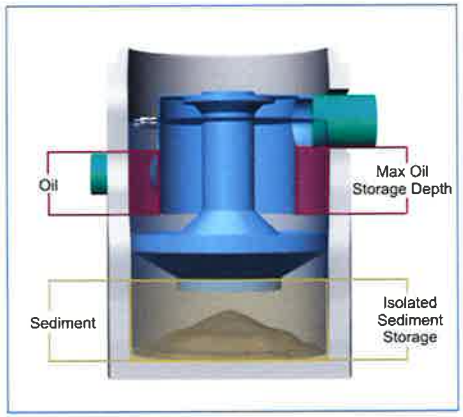


Fig.1 Pollutant storage volumes of the Downswtream Defender®.

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

The Downstream Defender® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole. On the 6-ft, 8-ft and 10-ft units, the floatables access port is above the outlet pipe between the concrete manhole wall and the dip plate. The sediment removal access ports for all Downstream Defender® models are located directly over the hollow center shaft.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the Downstream Defender®, nor do they require the internal components of the Downstream Defender® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Determining Your Maintenance Schedule

The frequency of cleanout is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil/flotables removal, for a 6-ft Downstream Defender® typically takes less than 30 minutes and removes a combined water/oil volume of about 500 gallons.

Inspection Procedures

Inspection is a simple process that does not involve entry into the Downstream Defender®. Maintenance crews should be familiar with the Downstream Defender® and its components prior to inspection.

Scheduling

- It is important to inspect your Downstream Defender® every six months during the first year of operation to determine your site-specific rate of pollutant accumulation
- Typically, inspection may be conducted during any season of the year
- Sediment removal is not required unless sediment depths exceed 75% of maximum clean-out depths stated in Table 1

Recommended Equipment

- Safety Equipment and Personal Protective Equipment (traffic cones, work gloves, etc.)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net
- Sediment probe (such as a Sludge Judge®)
- Trash bag for removed floatables
- Downstream Defender® Maintenance Log

Table 1. Downstream Defender® Pollutant Storage Capacities and Max. Cleanout Depths.

Unit Diameter	Total Oil Storage	Oil Clean-out Depth	Total Sediment Storage	Sediment Clean-out Depth	Max. Liquid Volume Removed
(feet)	(gallons)	(inches)	(gallons)	(inches)	(gallons)
4	70	<16	141	<18	384
6	216	<23	424	<24	1,239
8	540	<33	939	<30	2,884
10	1,050	<42	1,757	<36	5,546
12	1,770	<49	2,970	<42	9,460

NOTES

1. Refer to Downstream Defender® Clean-out Detail (Fig. 1) for measurement of depths.
2. Oil accumulation is typically less than sediment, however, removal of oil and sediment during the same service is recommended.
3. Remove floatables first, then remove sediment storage volume.
4. Sediment removal is not required unless sediment depths exceed 75% of maximum clean-out depths stated in Table 1.


Fig.4


Fig.5


Fig.6

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the Downstream Defender® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.
2. Remove the lids to the manhole (Fig. 4). NOTE: The 4-ft Downstream Defender® will only have one lid.
3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. See Fig.7 and 8 for typical inspection views.
4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the outer annulus of the chamber.
5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel (Fig.5).
6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.
7. Securely replace the grate or lid.
8. Take down safety equipment.
9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Cleanout

Floatables cleanout is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.6).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose and skimmer pole to be lowered to the base of the sump.

Scheduling

- Floatables and sump cleanout are typically conducted once a year during any season.
- If sediment depths are greater than 75% of maximum clean-out depths stated in Table 1, sediment removal is required.
- Floatables and sump cleanout should occur as soon as possible following a spill in the contributing drainage area.


Fig.7 View over center shaft into sediment storage zone.


Fig.8 View of outer annulus of floatables and oil collection zone.

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (6-inch flexible hose recommended)
- Downstream Defender® Maintenance Log

1. Set up any necessary safety equipment around the access port or grate of the Downstream Defender® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.
2. Remove the lids to the manhole (NOTE: The 4-ft Downstream Defender® will only have one lid).
3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.
4. Using the Floatables Port for access, remove oil and floatables stored on the surface of the water with the vactor hose or the skimmer net (Fig.9).
5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (Pg.9).
6. Once all floatables have been removed, drop the vactor hose to the base of the sump via the Central Access Port. Vactor out the sediment and gross debris off the sump floor (Fig.6).
7. Retract the vactor hose from the vessel.
8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.
9. Securely replace the grate or lid.

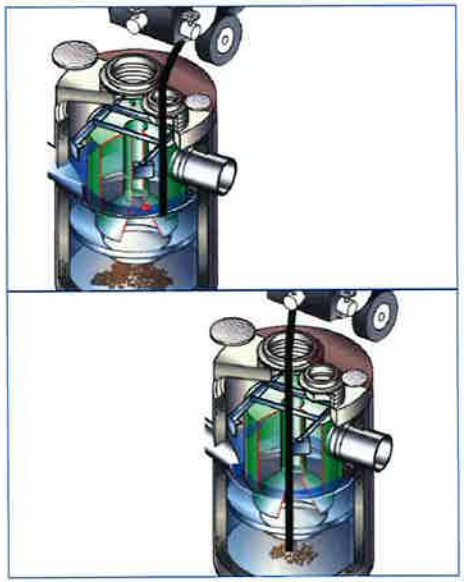


Fig.9 Floatables and sediment are removed with a vactor hose

Maintenance at a Glance

Activity	Frequency
Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most cleanouts it is not necessary to remove the entire volume of liquid in the vessel. Only removing the first few inches of oils/floatables and the sediment storage volume is required.	

Downstream Defender® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL (CIRCLE ONE): 4-FT 6-FT 8-FT 10-FT CUSTOM

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Downstream Defender® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment * Depth Measured	Volume of Sediment Removed	Site Activity and Comments

*Note: Sediment removal is not required unless sediment depths exceed 75% of maximum clean-out depths stated in Table 1.

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Notes

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Hydro International

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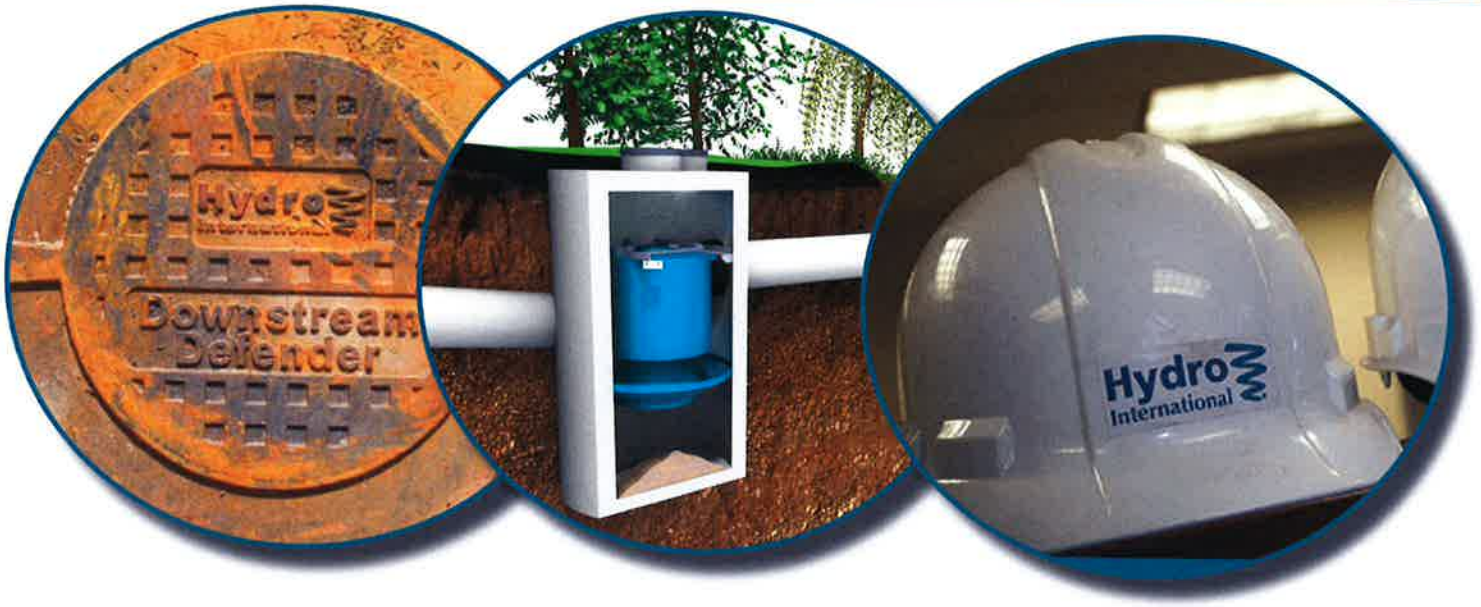

CALL **1 (888) 382-7808** TO SCHEDULE AN INSPECTION

Stormwater Solutions

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

PROJECT # 972.32

PROJECT: 42 Gates Ave

SUBJECT: Estimated Operation and Maintenance Costs

SHEET # 1 OF: 2 PAGE # 1 OF: 2

MADE BY: JWE DATE: 10/22/2019

CHKD BY: DATE:

REVISED BY: DATE:

CHKD BY: DATE:

Estimated Annual Operation and Maintenance Costs associated with the Stormwater Management Practices (SMP)

Estimated Frequency	Maintenance Item	Unit of Measurement	Unit Cost	Estimated Quantity	Cost	Maintenance Interval (years)	Frequency (per year)	Annual Cost
Annual	Inspection & Report by Qualified Professional	Each	$ 1,500	1	$ 1,500	1	1.00	$ 1,500
	Rain event inspection (3 inches in 24 hr storm)	Each	$ 500	1	$ 500	1	1.00	$ 500
	Infiltration Array Maintenance	Lump Sum	$ 2,000	1	$ 2,000	1	1.00	$ 2,000
	Clean, Remove and dispose of sediment from hydrodynamic unit	Crew Day	$ 2,000	1	$ 2,000	1	1.00	$ 2,000
		Disposal	$ 1,000	1	$ 1,000	1	1.00	$ 1,000
10-Year [2]	Clean, Remove and dispose of sediment from Closed Drainage System	Crew Day	$ 5,000	1	$ 5,000	10	0.10	$ 500
		Disposal	$ 1,500	1	$ 1,500	10	0.10	$ 150
	Repair Private Closed Drainage System	Lump Sum	$ 10,000	1	$ 10,000	10	0.10	$ 1,000

Subtotal: $ 8,650

Contingency (15%): $ 1,298

Total: $ 9,948

Estimated Total Annual Cost[3] say: $ 9,900

Notes:
(1) Included in landscaping contract
(2) Detailed maintenance guidelines are provided in NYS Stormwater Management Design Manual and Stormwater Pollution Prevention Plan developed for this project.
(3) Estimated annual costs should be adjusted for inflation, recommend 3% annually. Costs are in 2019 dollars.

PROJECT # 972.32	SHEET # 2 OF: 2	PAGE # 2 OF: 2
	MADE BY:	DATE:
PROJECT: 42 Gates Ave	CHKD BY:	DATE:
SUBJECT: Estimated Operation and Maintenance Costs	REVISED BY:	DATE:
Stormwater Management Practices	CHKD BY:	DATE:

Suggested Annual funding, accounting for inflation

Estimated Total Annual Cost: $ 9,948

Year	Inflation Rate			
	2.50%	2.75%	3.00%	4.00%
2019	$ 9,948	$ 9,948	$ 9,948	$ 9,948
2020	$ 10,196	$ 10,221	$ 10,246	$ 10,345
2021	$ 10,451	$ 10,502	$ 10,553	$ 10,759
2022	$ 10,712	$ 10,791	$ 10,870	$ 11,190
2023	$ 10,980	$ 11,088	$ 11,196	$ 11,637
2024	$ 11,255	$ 11,393	$ 11,532	$ 12,103
2025	$ 11,536	$ 11,706	$ 11,878	$ 12,587
2026	$ 11,824	$ 12,028	$ 12,234	$ 13,090
2027	$ 12,120	$ 12,359	$ 12,601	$ 13,614
2028	$ 12,423	$ 12,698	$ 12,979	$ 14,158
2029	$ 12,734	$ 13,048	$ 13,369	$ 14,725
2030	$ 13,052	$ 13,406	$ 13,770	$ 15,314
2031	$ 13,378	$ 13,775	$ 14,183	$ 15,926
2032	$ 13,713	$ 14,154	$ 14,608	$ 16,563
2033	$ 14,056	$ 14,543	$ 15,046	$ 17,226
2034	$ 14,407	$ 14,943	$ 15,498	$ 17,915
2035	$ 14,767	$ 15,354	$ 15,963	$ 18,631
2036	$ 15,136	$ 15,776	$ 16,442	$ 19,377
2037	$ 15,515	$ 16,210	$ 16,935	$ 20,152
2038	$ 15,903	$ 16,656	$ 17,443	$ 20,958
2039	$ 16,300	$ 17,114	$ 17,966	$ 21,796
2040	$ 16,708	$ 17,585	$ 18,505	$ 22,668
2041	$ 17,125	$ 18,068	$ 19,060	$ 23,575
2042	$ 17,553	$ 18,565	$ 19,632	$ 24,518
2043	$ 17,992	$ 19,076	$ 20,221	$ 25,498
2044	$ 18,442	$ 19,600	$ 20,828	$ 26,518
2045	$ 18,903	$ 20,139	$ 21,453	$ 27,579
2046	$ 19,376	$ 20,693	$ 22,096	$ 28,682
2047	$ 19,860	$ 21,262	$ 22,759	$ 29,830
2048	$ 20,357	$ 21,847	$ 23,442	$ 31,023
2049	$ 20,866	$ 22,448	$ 24,145	$ 32,264