KIRKWOOD

SOLAR FACILITY

STORMWATER POLLUTION PREVENTION PLAN

31 January 2025

Prepared by:

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1.0 INTRODUCTION

1.1 PROJECT NARRATIVE

The proposed development is an unmanned 22.53 MW DC solar energy production and battery energy storage facility depicted in the attached Site Development Plans located on the grounds of an agricultural farmland parcel having a property area of 153.9 Ac at 149 Quilty Hill Road, in the Town of Kirkwood NY. The project involves the installation of a ground mounted solar array, battery energy storage units and associated equipment/infrastructure within a fenced compound (20 ft outside the LOD) having an LOD (extending 2 ft outward of the silt fencing and includes the entrance drives) that has yet to be determined. The final LOD will be based on the final grading plans and cut/fill daylight line, which is expected to be above the 1 ac threshold, and as such the project is subject to New York State's Construction General SPDES Permit, requiring preparation of a stormwater pollution prevention plan (SWPPP) or applicable post-construction stormwater management improvements. The Town of Kirkwood has requested that a SWPPP be prepared for the project, showing the proposed construction is in compliance with the State Pollution Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-20-001) requirements.

This SWPPP is prepared to instruct Owners/Operators and their Contractors on mitigation measures to prevent pollutants in stormwater runoff from entering the waters of the United States. Stormwater discharges from construction activities are required to obtain permit coverage through New York State's SPDES. Appendix A contains a copy of the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Construction Activities permit GP-0-20-001.

1.2 STANDARDS AND GUIDELINES

The following documents were utilized in the design process:

- NYSDEC; New York State Standards and Specifications for Erosion and Sediment Control, November 2016; and
- New York State Stormwater Management Design Manual, July 2024.
- Aquatic Resource Identification Map by ARM Group LLC, dated Jun 19 2023.
- Boundary and Topographic Survey by JHA Companies, dated August 17, 2023

1.3 NOTICE OF INTENT

A copy of the Notice of Intent (NOI), for regulated projects requesting coverage under the General Permit, is included in Appendix B for reference but must be completed and submitted electronically using the NYSDEC on-line NOI prior to construction. The electronic version (eNOI) must be received by NYSDEC a minimum of five business days prior to commencing any soil disturbance. A blank copy of the Notice of Termination (NOT) is also included in Appendix K, and is to be completed upon stabilization of the project site.

1.4 CERTIFICATION

The SWPPP preparer, the Owner/Operator and each Contractor and Subcontractor must complete and sign the appropriate certification. All appropriate signatures must be obtained prior to work commencing on the project site.

The Owner/Operator must identify the Contractor(s) and Subcontractor(s) that will be responsible for installing, repairing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP. Each Contractor and Subcontractor must identify at least one trained individual from their company that will be responsible for implementation of the SWPPP. At least one trained individual must be on site on a daily basis when soil disturbance activities are being performed.

1.5 SUBMITTALS

The Contractor shall submit a "Construction Phasing Plan" indicating the sequence of construction, erosion and sediment control practice installation, a list of areas to be disturbed associated with each construction activity and the procedure for stabilizing inactive disturbed areas. These submittals will need to be in substantial conformance with the measures outlined in this report. Proposed dates shall be provided for all the construction activities including temporary and permanent stormwater control measures.

1.6 SWPPP AVAILABILITY

The owner or operator shall maintain a copy of the General Permit (GP-0-20- 001), NOI, NOI Acknowledgment Letter, SWPPP, 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.

1.7 PRE-CONSTRUCTION REQUIREMENTS

Prior to any soil disturbance at the project site the "Construction Site Logbook" must be located on- site with all required signatures. The pre-construction meeting and inspection form must be completed. All required temporary erosion control measures must be installed for the involved phases of the project.

1.8 SITE LOCATION

The project parcel is located at 149 Quilty Hill Road, in the Town of Kirkwood NY. Location and Aerial maps are provided in Figures 1.a and 1.b at the end of this section.

1.9 SITE OWNER/OPERATOR

The name and address of the Owner/Operator, including contact person is:

Owner/Operator:	Norbut Solar Farms, LLC
Contact:	Victor Ciaccia
Address:	1241 University Avenue
	Rochester, NY 14067
Phone Number:	(585) 504-2215

1.a. Site Location and Aerial Maps

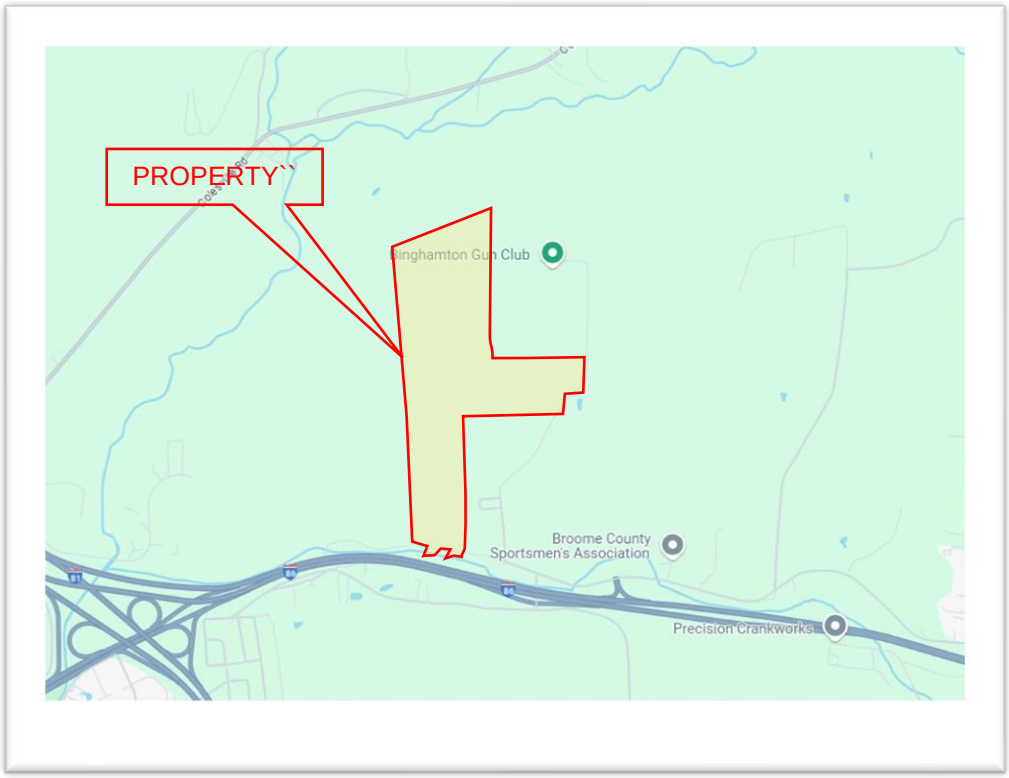


Figure 1.a. - Site Location Map

Figure 1.b. - Site Aerial Map

2.0 SITE CONDITIONS

2.1. TOPOGRAPHY

The USGS Topographic overlay maps and the project survey indicate the overall property exhibits localized physical slopes between 15% and 25%. The steep slope will help aid transfer any runoff to the offsite receiving waters towards the south of the property. The topography indicates the property is on a steep incline and is seen to have multiple streams north of Foley road. These streams come together at a confluence approximately just north of the Foley road R/W and discharges directly into Park Creek.

2.2. FLOODPLAINS AND FLOODWAYS

According to FEMA (FIRM Panel #36007C0381FF, 02/05/2010) this parcel is located within Zone “X”, outside any designated 100 year flood plain or floodway.

2.3. WATERSHED DESIGNATION

The project is located in the Susquehanna River watershed (HUC 020501011208) and drains to Chesapeake Bay.

2.4. WETLANDS AND WATERBODIES

On-site and adjacent wetlands and other waterbodies are addressed and tabulated in the in the final Wetland and Watercourse Delineation Report once it has been completed. The Aquatic Resource Identification Map, was utilized in the layout and design phase of this project in order to minimize any wetland impacts where feasible.

2.5. SOILS

The soil types, for this site as indicated by the NRCS soil survey, consist primarily of silt loams, with soils hydrologically grouped as type “A”, “A/B”,”B”, “C”, “D” soils, with actual locations depicted in the soils mapping provided in Appendix A. The soil types present on this parcel also features those off-site contributing to areas just north of the property. The soils listed are primarily rated with a whole soil erosion K factor of 0.12 to 0.22, which indicates a high susceptibility of erosion by runoff and as such only standard ES&C measures are anticipated to be required.

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Ad	Alluvial land	A/B	4.25	3%
ChA	Chenango and Howard gravelly loams, 0 to 5 percent slopes	A	1.48	1%
Cw	Cut and fill lands, loamy materials	C	0.0	0.0%
LdC	Lordstown channery silt loam, 5 to 15 percent slopes	C	21.59	13%
LdD	Lordstown channery silt loam, 15 to 25 percent slopes	C	24.76	15%
LoE	Lordstown and Oquaga channery silt loams, 25 to 35 percent slopes	B	10.98	7%
MhB	Mardin channery silt loam, 2 to 8 percent slopes	D	0.0	0.0%
MhC	Mardin channery silt loam, 8 to 15 percent slopes	D	18.18	11%
MhD	Bath channery silt loam, 15 to 25 percent slopes	C	22.27	13%
MhE	Bath channery silt loam, 25 to 35 percent slopes	C	0.0	0.0%
Ta	Tioga silt loam	A	4.19	3%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	D	3.83	2%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	D	51.92	32%
VoD	Volusia channery silt loam, 15 to 25 percent slopes	D	0.0	0.0%
Totals for Area of Interest			**163.45**	**100.0%**

2.6. VEGETATION

The vegetative cover for the project area currently consists primarily of woods and meadows in fair condition as indicated in the aerial photo. Based on these observations and in conjunction with the NRCS soils mapping, base curve numbers were applied to specific basin areas for the vegetative coverage and HSG designation, in accordance with standard TR-55 methodology and guidelines from NYSDEC.

2.6. EXISTING LAND USE

The existing property is currently utilized as a mix of *agricultural/rural residence and residence R & agricultural/rural*, with residences found at the lower portion of the parcel. The rest of the property is a mix of meadows, farmland, forest and some rangeland adjacent to the wetlands and tributaries.

2.7. SITE HYDROLOGY

Based on the USDA NRCS TR-55 methodology, using current soils data, vegetation and physical gradients, this site, exhibits sheet flow patterns from the peripheral areas of the project area inwards towards the various tributaries in the center portion of the project area. Topographically the site divides into nine distinct drainage basins, which will remain under post developed conditions. The primary difference between pre and post development conditions is that the existing woods will be replaced with grass (meadow) as the surface coverage, all trees within the fenced compound will have entire trunk and root system removed. Those trees outside the fenced compound will be removed/trimmed with stumps remaining in-place and stump grinding utilized to cut stumps down to grade. The project area will receive approximately 3.42 acres of new permanent impervious coverage, due to the installation of gravel access drives, concrete pads, etc. The actual area of ground disturbance is currently approximated to be at 20 ft outside of the project development area and will include temporary grading/contouring activities. The final LOD will be based on the final grading plans and established of the cut/fill daylight line. The hydrologic basin parameters have been calculated for the pre-developed conditions based on physical data from the survey and are provided in the tables below:

Pre-developed Basin	Total Area (Acres)	Weighted Curve Number	Time of Conc. (hours)
A	33.8	63.9	0.313
B	16.3	78.9	0.620
C	48.4	75.5	0.365
D	40.3	79.0	2.79
E	10.2	79.0	0.269
F	4.94	79.5	0.137
G	38.8	74.7	0.292
H	2.01	79.3	0.135
I	41.2	79.50	0.451

The pre-development analysis is therefore based on a conglomerate of the runoff from all drainage basins sheet flowing off-site and ultimately into the two receiving streams. Under post-developed conditions, Basins C, D, E, G, H, & I were further subdivided into smaller sub-basins specific to the SMPs being deployed (See Appendix H for additional area and curve number breakdown tabulations). The peak runoff rates were calculated for both pre and post developed conditions from runoff hydrographs for the 1 year thru 100 year 24 hour design storm events, with the results tabulated below and in Appendix H.

Pre-Developed Conditions:	**Peak Discharge Rates**				
Design Storm Event - 24 Hr	**1 YR**	**2 YR**	**10 YR**	**25 YR**	**100 YR**
Design Rainfall Depth (in)	2.12	2.59	4.00	4.88	6.24
Basin A Q_p (cfs)	1.823	6.749	55.12	72.53	92.61
Basin B Q_p (cfs)	6.391	10.26	32.73	39.68	47.39
Basin C Q_p (cfs)	19.77	34.31	123.16	151.47	183.11
Basin D Q_p (cfs)	5.398	8.642	28.22	34.31	41.09
Basin E Q_p (cfs)	7.110	11.12	34.58	41.74	49.66
Basin F Q_P (cfs)	4.527	6.993	21.12	25.44	30.23
Basin G Q_P (cfs)	16.61	29.02	105.49	129.91	157.22
Basin H Q_P (cfs)	1.842	2.845	8.591	10.35	12.30
Basin I Q_P (cfs)	20.02	31.88	100.74	121.98	145.51
Off-Site Receiving Waters	70.12	121.12	314.94	452.23	676.86

Post-Development Conditions Analysis in Progress

Post Developed Conditions:	**Peak Discharge Rates**				
Design Storm Event - 24 Hr	**1 YR**	**2 YR**	**10 YR**	**25 YR**	**100 YR**
Design Rainfall Depth (in)	2.12	2.59	4.00	4.88	6.24
Basin A Q_p (cfs)	-	-	-	-	-
Basin B Q_p (cfs)	-	-	-	-	-
Basin C Q_p (cfs)	-	-	-	-	-
Basin D Q_p (cfs)	-	-	-	-	-
Basin E Q_p (cfs)	-	-	-	-	-
Basin F Q_P (cfs)	-	-	-	-	-
Basin G Q_P (cfs)	-	-	-	-	-
Basin H Q_P (cfs)	-	-	-	-	-
Basin I Q_P (cfs)	-	-	-	-	-

Off-Site Receiving Waters	-	-	-	-	-

As of current the Post-Developed Conditions are being tabulated, but the peak runoff rates for the design 1, 2, 10, 25, and 100 year storm events are expected to be reduced. This will be achieved with the use of stormwater catchments proposed to include attenuating devices.

3.0 METHODOLOGIES USED

The hydrologic analysis for this report is based on the results of the Hydraflow computational model which utilized the HEC 22 and TR 55 methods to generate Runoff Hydrographs for each discrete drainage sub-basin. For continuity purposes parts of the program methodology documentation are provided below.

3.1. SCS UNIT HYDROGRAPH

More specifically, the program uses the triangular D-hour Unit Hydrograph approach as used in TR-20. The peak discharge for the unit graph is computed using the following equation.

$Q_p = (484 \times A \times Q)/T_p$
Q_p = peak outflow (cfs)
A = area (sq miles)
Q = total excess precipitation (1 inch)
T_p = time to peak (hrs)

The shape factor value used for this analysis was set to 484 and reflects a unit hydrograph that has 3/8 of its area under the rising limb.

The time to peak, T_p and the time base, T_b are what determines the characteristics of the unit Hydrograph. The Hydraflow program computes these values using the following relationships.

$T_p = (T_c + D)/1.7$
T_p = time to peak (hrs)
T_c = time of concentration (hrs)
D = unit duration of time intervals (hrs)
T_c = 1.67 x Lag Time (L)

$L = l^{0.8} (S + 1)^{0.7}/1900 \times Y^{0.5}$

L = Lag Time (hrs)
l = hydraulic length (ft)
S = (1000/CN) – 10
Y = basin slope (%)
CN = SCS curve number

Time Base = 2.67 x T_p
T_b = time base (hrs)
T_p = time to peak (hrs)

3.2. TIME OF CONCENTRATION CALCULATIONS

Time of Concentration calculations for this analysis utilized the 3 component TR-55 algorithm as follows:.

Tc = Sheet Flow Time + Shallow Conc Flow Time + Channel Flow Time

Sheet Flow Time (hrs)

$T_{sheet} = [0.007(n \times L)^{0.8}]/[P_2^{0.5} \times S^{0.4}]$
n = Manning's roughness coefficient
L = Flow Length (a value of 100' used for this site)
P_2 = Two Year 24-hr rainfall (in)
S = Land Slope (ft/ft)

Shallow Channel Time (hrs)

$T_{shallow} = L/(3600 \times V)$
V = Average velocity (ft/s)
L = Flow Length (ft)
$V = C_p \times S^{0.5}$
V = Average velocity (ft/s)
C_p = 20.3282 paved surfaces
C_p = 16.1345 unpaved surfaces
S = Watercourse Slope (ft/ft)

Channel Flow Time (hrs)

$T_{channel} = L/(3600 \times V)$
V = Average velocity (ft/s)
L = Flow Length (ft)
$V = (1.486 \times R^{2/3} \times S^{1/2})/n$
V = Average velocity (ft/s)
n = Manning's roughness coefficient
R = Hydraulic Radius (ft)
S = Channel Slope (ft/ft

3.3. SCS 24-HOUR DISTRIBUTIONS

The analysis utilized the SCS Type II 24-hr distributions for the 1yr, 2 yr, 10 yr, 25 yr, and 100 yr duration storm events with 2 minute time intervals. The incremental rainfall amounts were computed from a polynomial equation. This equation is used with coefficients that vary depending on the elapsed time of the storm. The equation is of the form:

$P_t = C_0 + C_1T + C_2T^2 + C_3T^3$

P_t = Fraction of 24-hour precipitation
T = Elapsed time (hrs)
C_0 = Coefficient
C_1 = Coefficient
C_2 = Coefficient
C_3 = Coefficient

3.4. EXCESS PRECIPITATION HYETOGRAPH

The precipitation increments of the specified storm are converted to excess precipitation by use of the following equation.

$Q = [P – (0.2 \times S)]^2/[P+(0.8 \times S)]$

Q = Excess volume of precipitation (in)
P = Accumulated precipitation (in)
S = Potential maximum retention = (1000/CN) - 10
S = SCS Curve Number

The computed volumes are then converted to excess increments. These excess increments are then used for the final excess precipitation hyetograph.

3.5. COMBINING HYDROGRAPHS

Due to the configuration of this project and a hydraulically bisecting receiving stream, combining of hydrographs was required to properly ascertain pre and post developed condition runoff rates and volumes discharged into the receiving s

3.6. CULVERTS/ORIFICES

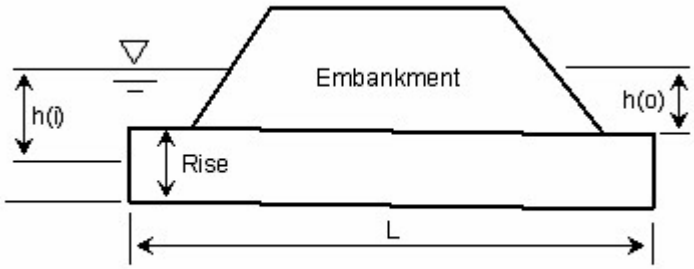
The equation used for culvert/orifice structures is:

Under Inlet Control:

Q = Discharge (cfs)

A = Culvert area (sqft)
h = Distance between the water surface and the centroid of the culvert barrel (1/2 flow depth during partial flow) (ft)
Nb = Number of barrels
Co = Orifice coefficient
k = 1

Under Outlet Control:
Q = Discharge (cfs)
A = Culvert area (sqft)
h = Distance between the upstream and downstream water surface
Nb = Number of barrels
Co = 1
$k = 1.5 + [(29n^2L)/R^{4/3}]$
n = Manning's n-value
L = Culvert length (ft)
R = Area/wetted perimeter (ft)



Profile of typical culvert

h(i) is the head under inlet control. H(o) under outlet control.

During the calculation process, both inlet and outlet control are evaluated. Under inlet control, the discharge depends on the barrel shape, cross-sectional area and inlet edge. In other words, the inlet of the culvert controls the amount of flow the culvert can handle. Under outlet control, the discharge depends on the slope, length and roughness of the barrel. Outlet control means that flow can enter the structure at a faster rate than it can exit.

Hydraflow computes the discharge at each stage, including intermediate stage points that it generates, using both inlet and outlet control equation parameters. The smallest value is used as the discharge at that elevation. This is reflected on the screen tabulation as "ic", inlet control and "oc", outlet control. Note that Hydraflow does not assume full flow when the depth is actually partial.

3.7. WEIRS

The basic equations used to calculate weir flow are:
Rectangular, Cipoletti, Broad Crested & Riser

$Q = C_W L H^{1.5}$

Q = Discharge over weir (cfs)
L = Length of the weir crest (ft)
H = Distance between water surface and the crest (ft)
C_w = Weir coefficient, typically 3.33

3.8. STAGE-STORAGE CALCULATIONS

Contours:

Hydraflow will use either the average-end-area method applied vertically or the Conic method. The conic method uses the following equation:

$$V = d\left(\frac{A_1 + \sqrt{A_1 A_2} + A_2}{3}\right)$$

V = Storage (cuft)
d = Change in elevation between points 1 and 2
A1 = Surface area at elevation 1 (sqft)
A2 = Surface area at elevation 2 (sqft)
ream.

4.0 SUMMARY AND CONCLUSION

4.1. SUMMARY:

The existing site conditions were initially analyzed based on a vegetative cover primarily comprised of woods, farmland, forest, and some rangeland. Pursuant to NYSDEC directives, the portion of the site currently utilized as *Agricultural/Rural Residence, Agricultural/Rural Residence and Residence R* within site boundaries was analyzed as ***meadow*** in fair condition and assigned base curve numbers accordingly. This analysis also factored in the average physical gradient of each basin/sub-basin and predominate soils having an HSG rating of Type "D". Runoff Hydrographs were created for the 1 yr, 2 yr, 10 yr, 25 yr and 100 yr storm events to determine peak runoff rates and discharge volumes.

Post developed conditions are currently being analyzed.

Summary of Results: Receiving Waters (Runoff From Post developed Basins A, B, C, D, E, F, G, H and I)					
Design Storm Event - 24 Hr	**1 YR**	**2 YR**	**10 YR**	**25 YR**	**100 YR**
Design Rainfall Depth (in)	2.12	2.59	4.00	4.88	6.24
Peak Discharge Rate Q_{pre} (cfs)	70.120	121.120	314.940	452.230	676.860
Peak Discharge Rate Q_{post} (cfs)	-	-	-	-	-
Pre-developed Runoff Volume (cf)	408,680	638,856	1,473,385	2,064,086	3,039,563
Post-developed Runoff Volume (cf)	-	-	-	-	-
Post developed Detention Volume (cf)	-	-	-	-	-
Post-developed Discharge Volume (cf)	-	-	-	-	-

4.2. CONCLUSION:

Based on the pre-developed conditions calculations and site construction, whether or not the proposed project will not increase the peak discharge rates of any of the design storm events, meet all water quality and channel protection volume requirements, and have no downstream impacts cannot be determined as of yet. Currently post-developed conditions calculations are in progress, and once completed these conclusions will be met.

5.0 POLLUTION CONTROL PLAN

5.1 POLLUTION PREVENTION MEASURES

All debris and waste materials from construction activities will be disposed of using an on-site trash dumpster to minimize stormwater pollution.

Expected construction materials to be stored on-site include solar panels, racking supports, fencing, geotextile and aggregate fill material. No pollutants are known to be associated with any of these materials. The aggregate material will be protected to prevent sediment runoff during storm events. Potential pollutant sources due to construction activities include diesel fuel, gasoline and concrete slurry.

- Diesel Fuel (30 to 100 gal) – Mobile fueling truck w/spill kit on board, no full time storage.
- Gasoline (Less than 50 gal) - Mobile fueling truck w/spill kit on board, no full time storage.
- Concrete Slurry – Utilized for directional boring at locations indicated on sheet C6 of the plans. Volume as determined by contractor

Fuels and Oil

Vehicles requiring refueling or lubrication shall be brought to a portion of the site away from environmentally sensitive areas (such as wetlands, storm drains, culverts, wells, etc.). All construction equipment shall be refueled at least 100 feet from a waterbody, wetland, rare species habitat, or unique natural community and in an upland area away from conveyance channels. The Contractor shall take precautions to ensure that drips, spills, or seeps do not enter the ground. The use of absorbent towels and/or a portable basin beneath the fuel tank is recommended. Refueling activities shall be performed under continual surveillance with extreme care.

Where there is no reasonable alternative, refueling may occur within these setbacks, but only under the observation of the Trained Contractor and after proper precautions are taken to prevent an accidental spill. Drip pans shall be used and a supply of absorbent pads shall be available and utilized, as required. In the event of a release, the spill shall be promptly cleaned up in accordance with the NY State spill response and clean-up procedures.

On-site construction vehicles including Contractor employee vehicles shall be monitored for leaks and shall receive regular preventative maintenance to reduce

the risk of leakage. Any equipment leaking oil, fuel, or hydraulic fluid shall be repaired immediately or removed from the site. Construction equipment and Contractor personal vehicles shall be parked at least 100 feet from a wetland, river, creek, stream, lake, reservoir, spring, well or other ecologically sensitive site, or existing recreational area along the proposed rights-of-way at the end of the working day except where it is necessary to maintain continuity of construction.

Petroleum products and hydraulic fluids that are not in vehicles shall be stored in tightly sealed containers that are clearly labeled. All gasoline and fuel storage vessels with greater than a 25-gallon capacity must have secondary containment constructed of an impervious material and be capable of holding 110% of the vessel capacity. All state and federal regulations shall be followed for the storage, handling, application, usage, and disposal of pesticides, fertilizers, and petroleum products.

Equipment shall have sufficient spill containment equipment on board to provide for prompt control and cleanup, in the event of a release.

Management of Spills and Releases:
Should a fuel, oil, or chemical spill occur during the project, The Contractor will be responsible for reporting the spill or release to the NYSDEC Spill Hotline 1-800-457-7362 as applicable, within two hours of the release.
Contractor is also responsible for any and all response actions. Any contaminated soil shall be removed from the worksite and disposed of in accordance with product specific MSDS and NYSDEC guidance. Petroleum spills that do not need to be reported, are those that meet the following criteria:

- The quantity is known to be less than 5 gallons; and
- The spill is contained and under the control of the spiller; and
- The spill has not and will not reach the State's water or any land (A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable.); and
- The spill is cleaned up within 2 hours of discovery.

Concrete Slurry
The use of concrete slurry for directional boring is a fluid-assisted excavation technique that uses a semi-liquid mix to improve drilling effectiveness. It is used in

horizontal directional drilling (HDD) to create pilot boreholes. Slurry boring can stabilize borehole walls as well as remove suspended spoil from the excavation site.

Slurry Management Plan:
Contractor is to provide and adhere to a written Slurry Management Plan, using but not limited to tools and techniques (CSDA-BP-001, 10/24/2017) listed below:

- Determine the 'low point' of the specific work area to potentially let gravity assist the flow of the water/slurry and minimize the use of pumps.
- Restrict access to the worksite as needed to minimize hazards associated with the water/slurry and/or RCS exposure. Clearly post with appropriate hazard signs.
- Use polyurethane sheets or tarps to protect surfaces from slurry splash or spray.
- Collection and control – wet/slurry vacuums, shrouds/slurry collection rings, wands, squeegees, troughs/socks/bags/'pig' to direct flow and pumps (dewatering, semi-trash or trash pumps).
- For small to mid-sized vacuums in rough terrain, the slurry could possibly splash past the ball float and damage the vacuum motor. The size of the vacuum tank could be a limitation on the weight of a full vacuum. Slurry can sometimes foam up and the bubbles or slurry mist (both may be abrasive) can get past the ball float and damage the vacuum motors. Some slurry vacuums offer nylon or other filters to protect the motors to minimize the damage from abrasive mist/foam. Sometimes a surfactant can be added to the vacuum to minimize the foaming. Another alternative is using a superabsorbent polymer in the vacuum drum that can solidify/gel the slurry as it is being collected to minimize sloshing and splashing of the slurry/water in the drum. F. Thick paste slurries can be diluted with water to help the vacuum suck up the liquid.
- Drum vacuum heads using standard 55-gallon drums are very common to minimize the number of times the slurry is transferred (simply move the vacuum head to another drum). The drums can be used to help facilitate the settling of the slurry to recycle the water and later handling the sludge.
- Large vacuum trucks and other mobile devices are available to handle large amounts of slurry on road jobs. Some large systems utilize centrifuges to separate out the solids from the water in the slurry so the water can be treated for disposal or recycled.
- Flocculants can be used to accelerate the settling time in recycling the water by quickly separating the solids. Flocculants require some level of agitation of

the slurry to mix in the floc to properly drop out the solids from the slurry. If the slurry is thick and pasty, additional water can be added to allow the floc to mix thoroughly in the slurry and to help drop more of the solids out of the slurry. It seems counter intuitive, but the additional water will separate back out and pull out more water from the original slurry, potentially creating an even more concentrated slurry. Air bubblers can be used to stir in the floc in lieu of mixers.

- Recycling slurry water. The water might have a high Ph, which could potentially damage equipment so it might be worth monitoring the pH level and adding an acid to lower the pH. Note high pH alkaline solutions can be irritating to the skin. Typically a 9-1/2 pH is the threshold for a ground dump and typically 12.5 or more is considered hazardous. In 55-gallon drums, a large drill mixer can be used to mix in the floc and as solids sink the water can be transferred (or decanted) out using a small dewatering pump or a wet vacuum with a wand. On larger tanks or truck vacuums, a cascading system of weirs can be used to get a larger volume of clean water available faster. The weir system acts as a series of individual settling tanks. Only the cleanest of the water out of the slurry in each tank is able to flow over the weir into the next tank in the series.
- Storage of slurry. The slurry can be stored in pits, tanks, drums or other structures using liners. Be certain the structure can handle the weight of the slurry. Have a plan for handling potential leaks. 55-gallon drums are very common and the water can be decanted off after settling. Drum dollies help move the barrels. Drums can be strapped to a pallet so a forklift or pallet jack can be used to move them around the jobsite.
- Filter presses can be used to process slurry to squeeze out the clean water and leave cakes/bricks for disposal of the solids from the slurry. The water can be recycled. Some filter presses work more efficiently when the slurry is pretreated with a flocculent. The floc will increase the particle size in the slurry so the small openings in the filter press are more open and less susceptible to being plugged up.
- Surfactants will make the water ‘wetter’ and reduce the surface tension on the water droplets. This makes the water more effective at dust control and can sometimes reduce the amount of water needed.
- Spoil areas may be provided on some jobsites by the owner for temporary storage.
- Regardless of how the slurry is collected or stored on the jobsite, plan for where and how the slurry will be properly disposed of.

- Hauling slurry. If you decant to water prior to moving, you will be hauling less weight and volume. The liquid's center of gravity shifts as it moved during transport. In large tanks or trucks, a large shift in the center of gravity can be potentially dangerous. One technique to handle sloshing liquid is to put baffles in the tank.
- Vacuum truck services are available in many areas. For some jobs it might be worth considering subcontracting a waste hauler/super sucker truck.
- Some concrete batch plants will accept slurry.
- Slurry can be solidified and treated as solid waste. Large dewatering/filter bags in a tank with a drain can allow the water to slowly drain out of the slurry. The solids remain in the bag for disposal. Settling pits or tanks can allow solids in the slurry to settle out and the water can evaporate or be decanted. Cascading tanks or weirs can be used to allow the solids to settle out of the water (used more in dynamic water flow scenarios whereby water is being continually recirculated). A filter press can be used to press out the water from the slurry and create a solid cake/brick. Flocculants can speed up the process of separating solids in slurry. Super Absorbent Polymers (SAPs) can be used to absorb the water and dry out slurry. The SAPs have been shown to pass a paint filter test (PFT) method 9095B, which is a key consideration for disposing in a solid waste landfill. The alkalinity of slurry and some dissolved elements in the slurry can reduce the effectiveness of the SAPs, thus requiring more than a theoretical ideal amount to be used, or the slurry can be pretreated to make it more efficient with the SAP.

5.2 EROSION AND SEDIMENT CONTROL

Temporary erosion and sedimentation controls will be implemented during construction. These measures are presented in detail in the attached Erosion and Sedimentation Control Plan within the plan set and are based upon the New York State Standards and Specifications for Erosion and Sediment Control (Nov 2016):

- Stabilized Construction Entrance: Install gravel entrance pursuant to construction details provided and in the location indicated in the plans. To remain in place and functional for the duration of construction activities.
- Silt Fencing: Silt fencing to be installed as per the silt fencing plan and associated details. Silt fencing to be inspected on a daily basis for damaged or failing sections. Silt fencing to be installed between graded and undisturbed areas to prevent sediment from entering the undisturbed areas or adjacent water bodies or runoff conveyances (ie culverts).

- Concrete Washout: Concrete washout areas are to be constructed and installed per the details provided and located adjacent to those areas where substantial concrete work is being performed (ie slabs).
- Rock check dams: Install check dams consisting of gravel and riprap at locations indicated on the approved plans, and in conformance with construction details.
- Top Soil Stockpile: Enclose perimeter of stockpile with silt fencing and vegetative matting or cover. Locate stock pile away from streams, ditches or other water bodies
- Site Stabilization: Any disturbed areas of the site where construction activities have temporarily or permanently ceased for more than 14 days shall be stabilized with vegetative cover. Winter stabilization can be done using mulch or other Engineer approved products.

5.3 PERMANENT EROSION AND SEDIMENT CONTROL FACILITIES

Surface Stabilization: Stabilization of exposed disturbed soils following construction will be accomplished with grass and mulch.

6.0 CONSTRUCTION IMPLEMENTATION

6.1 CONSTRUCTION SCHEDULE AND SEQUENCE

The general site notes and anticipated construction sequence for the site improvements consist of the following:

6.1.a. GENERAL NOTES

1. One week prior to beginning earthwork operations, a pre-construction meeting will be held to discuss the erosion and sediment control plan and to finalize the paperwork for the Stormwater Pollution Prevention Plan, as specified in the DEC SPDES General Permit for Stormwater Discharge from Construction Activities.
2. Erosion and sediment control measures shall be provided prior to beginning any land disturbance activities. The devices providing protection to a given area shall not be removed until the disturbed lands in that area are stabilized.
3. No disturbed area shall remain exposed for more than 14 days, except for portions of the site in which work will be continuous beyond 14 days.

6.1.b. CONSTRUCTION SEQUENCE

1. Control dust on site to prevent dust leaving the site and creating off-site damage, health hazards, and traffic safety problems. Treatment includes but is not limited to spraying disturbed soil surfaces with water.
2. Install 12’ wide x 50’ long (min.) stabilized construction access.
3. Install 15’ wide temporary construction access road in the alignment of the proposed final access road.
4. Install perimeter silt fence as indicated in the plans and around any other ground disturbances within the project area.
5. Excavate and rough grade roadside collector and divertor swales. Install stabilization measures on the banks and flowline. Install check dams.
6. Clear and grub site. Strip topsoil and stockpile on-site with perimeter silt fence and vegetative cover. Perform earthwork grading and contouring in accordance with approved plans.
7. Install outfall structures and spillways with inlet protection as needed.
8. Construction of main project elements including infrastructure, trenching, panel racking structures and new access drive(s).
9. Perform soil restoration for all temporary construction access road segments and gravel staging/stock pile areas, that will be converted to pervious cover in post-construction conditions. Soil restoration includes deep ripping the subsoil to a minimum depth of 12-Inches, mixing 3-Inche of compost into the subsoil, and spreading 6-Inches of topsoil to the site.

10. Seed/Sod and mulch disturbed areas. No connection to the proposed downstream basins can be made until all upstream construction has been completed and stabilized with a vigorous vegetative cover established over all the pervious surfaces of the drainage basin.
11. Remove sediment from silt fence, concrete washouts, and inlet protection if necessary.
12. Remove all temporary erosion control methods when contributing drainage areas have reached final stabilization.

6.2 INSPECTION AND MAINTENANCE PROCEDURES

Refer to the Site Erosion Control Plan for guidelines concerning the inspection and maintenance procedures for the erosion and sediment control facilities. A Construction Site Inspection and Maintenance Log Book (Appendix I) is included with the SWPPP for inspections to be performed during construction. In addition to the Log Book, a Pre-Construction Site Assessment Checklist (Appendix I) is to be completed per the attached instructions.

6.2.a. SITE INSPECTIONS

1. The operator shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days for projects with less than 5 acres of ground disturbance. If more than 5 acres are disturbed at any time these inspections will be conducted twice during the seven calendar day time period, with a minimum separation of 2 full calendar days. If construction has been temporarily suspended and temporary stabilization measures have been applied to all disturbed areas, the site inspection cycles may be reduced to once every (30) thirty calendar days, after written notification has been made to the DOW Water Program Contact at the regional office. During each inspection, the qualified professional shall record the following information:

2. The purpose of site inspections is to assess performance of pollutant controls. Based on these inspections, the Owner/Developer designated qualified professional may ascertain whether or not it is necessary to modify the Final SWPPP, add or relocate sediment barriers, or take whatever actions are deemed prudent to prevent pollutants from leaving the site via storm water runoff. The contractor is required to ensure any damaged ES&C measures are repaired, modified or replaced in order to safeguard their functionality.
3. The operator shall maintain a record of all inspection reports (Appendix I) in a site logbook. The site log book shall be maintained on-site and be made available to the permitting authority upon request. Prior to commencement of construction, the operator shall certify in the site logbook that the SWPPP meets all Federal, State and local erosion and sediment control requirements. In addition, the qualified professional shall complete monthly summaries of the compliance status of the site. The summaries of the site inspection activities will be stored on-site by the operator on a monthly basis.

6.2.b. MAINTENANCE

1. During construction, the contractor will be responsible for inspecting and maintaining the permanent and temporary erosion control facilities. Also, areas that have been seeded will be inspected regularly after seed germination to ensure complete coverage of exposed areas.
2. The operator shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in the portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:
    a. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.
    b. Where construction activity on a portion of the site is temporarily 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.

c. Where construction activity associated with the footprint of the solar array and/or equipment area has temporarily ceased, temporary stabilization measures need not be initiated on that portion of the site.

3. Inspections of all devices should be completed weekly and after each rainfall event. Repairs should be completed immediately upon discovery.

6.3. REVISIONS TO THE SWPPP

Based on construction activities and the results of inspections, changes to the erosion and sediment control plan are expected and shall be documented using the Report Form for Changes in Pollution Prevention Plan (Appendix J).

6.4 NOTICE OF TERMINATION

The operator shall certify that the requirements of Parts III.D.3, III.D.4 and III.D.5 (Site Assessment and Inspections, Stabilization and Maintenance Completion) of the SPDES permit have been satisfied within 48 hours of actually meeting such requirements.

When construction is completed and all areas that were disturbed by construction activities have been permanently stabilized, the operator or authorized representative of the operator shall sign and submit a completed Notice of Termination (Appendix K).

Prior to filing of the Notice of Termination, the operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

The completed form shall be submitted to the address shown on the form.

A copy of the SWPPP and all documents associated with the permit shall be retained for three years from the submittal of the Notice of Termination.

6.5 MAINTENANCE OF STORMWATER MANAGEMENT PRACTICES

6.5.a. OPERATIONS AND MAINTENANCE

Post-construction inspections and maintenance shall be performed by the owner. Inspections and maintenance for the various site components and stormwater management facilities shall be performed in accordance with the accompanying project plans and this SWPPP. A summary of the stormwater management system inspection and maintenance parameters is provided in Table 6.5.a and 6.5.b. below.

Maintenance of the proposed stormwater facilities consist primarily of monthly mowing of the roadside swales and shoulders in order to maintain a grass height of 4 to 6 inches. It also includes monthly trash/debris removal from the catchment areas, although for this type of project those activities are expected to be minimal.

6.5.b. SEDIMENT MONITORING AND REMOVAL PRACTICES

Proposed stormwater ponds and/or swales utilized as temporary sediment basins or traps during construction shall be inspected at least every seven calendar days for accumulated buildup of sediment. Accumulated sediment buildup in excess of 50% capacity or 1/3 the height of the compost sock trap shall be removed off-site and any damages to the sediment basin/trap will be repaired immediately upon discovery.

For those ponds or swale areas, where a geofilter fabric has been installed as a temporary surface protection to prevent clogging of the underlying soils; the fabric shall be replaced each time accumulated sediment has to be removed.

Table 6.5.a.: General Site Post-Construction Inspection and Maintenance

Maintenance Item	Frequency	Description of Inspection Parameters	Description of Remedy Procedures
Site Structures	Annual & After Major Storms	-Accumulated sediment, debris and litter in outfall structures and drain basins -Damage of storm structures or associated components -Accumulation of pollutants, including oils or grease, in drain basins	-Remove -Replace and/or repair, as necessary -Remove pollutants from catch basins. Replace and/or repair pollutant source.
Pavement	Biannual/ Annual	-Accumulated sediment in paved areas -Accumulated debris and litter	-Remove (sweep min. 2 times/year) -Remove
Embankments	Annual	-Differential settlement of embankments -Embankment erosion -Animal burrows -Cracking, bulging, or sliding of embankment	-Stabilize and restore to original specs - Stabilize and restore to original specs -Remove - Stabilize and restore to original specs
Grass and Landscaped areas	Annual	-Vegetation: 80% coverage + less than 15% invasive plant species -Unauthorized plantings -Undesirable vegetative growth -Accumulated debris and litter	-Restore original specs -Remove -Mow a min. of 3 times/year. May increase -Remove
Winter Maintenance	Monthly	-Accumulation of snow and ice on catch basins, inlet and outlet structures, and end sections -Stock piled snow near inlets and outlets -Remaining deicing materials	-Remove -Remove -Remove in early spring by sweeping
Swales	Monthly	-Erosion of side slopes -Formation of rills or gullies -Excess grass growth -Undesirable vegetative growth -Accumulated debris, litter, or sediment -Residual deicing materials (sand)	- Stabilize and restore to original specs -Repair and restore to original specs -Mow -Remove -Remove -Remove & replace any damaged vegetation

Table 6.5.b.: General Site Post-Construction Inspection and Maintenance

Maintenance Item	Frequency	Description of Inspection Parameters	Description of Remedy Procedures
Pond Embankment	Annual	-Vegetation: 80% coverage + less than 15% invasive plant species -Embankment erosion -Animal burrows -Unauthorized plantings -Cracking, bulging, or sliding of embankment -Function of pond drain -Seeps and leaks of downstream face -Rip-rap failure -Vertical alignment of top of embankment "as-built" -Spillway weir erosion and debris	- Restore original specs -Stabilize & restore to original specs -Remove -Remove -Stabilize & restore to original specs -Clean as necessary -Stabilize & repair any breach -Restore rip-rap cover as necessary -Add/remove material & stabilize to original specs -Clean debris and add rip-rap as necessary
Outlet Structures	Annual & After Major Storm Events	-Trees and shrubs around inlets, outlets, and end sections -Rip-rap failure -Accumulated debris and sediment	-Remove -Restore rip-rap cover as necessary -Remove
Filter Bed	Annual	-Filter bed blocked or filled in -Water ponding for more than 48 hours	-Remove and replace filter media meeting original specifications
Infiltration Trench	Annual	-Trench Drain Basin blocked or filled in -Water ponding for more than 48 hours	-Remove -Remove and replace trench gravel

APPENDIX A
GENERAL PERMIT FOR CONSTRUCTION ACTIVITY (GP-0-20-001)

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

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

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

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

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, 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 *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

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

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

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

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site 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 *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

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

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

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

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

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

E. Eligibility Under This General Permit

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

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; 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 *discharge*s 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. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

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

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

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

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.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 *discharge*s 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 *discharge*s 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. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. 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 *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

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

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

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* 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 source*s. 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 source*s, 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

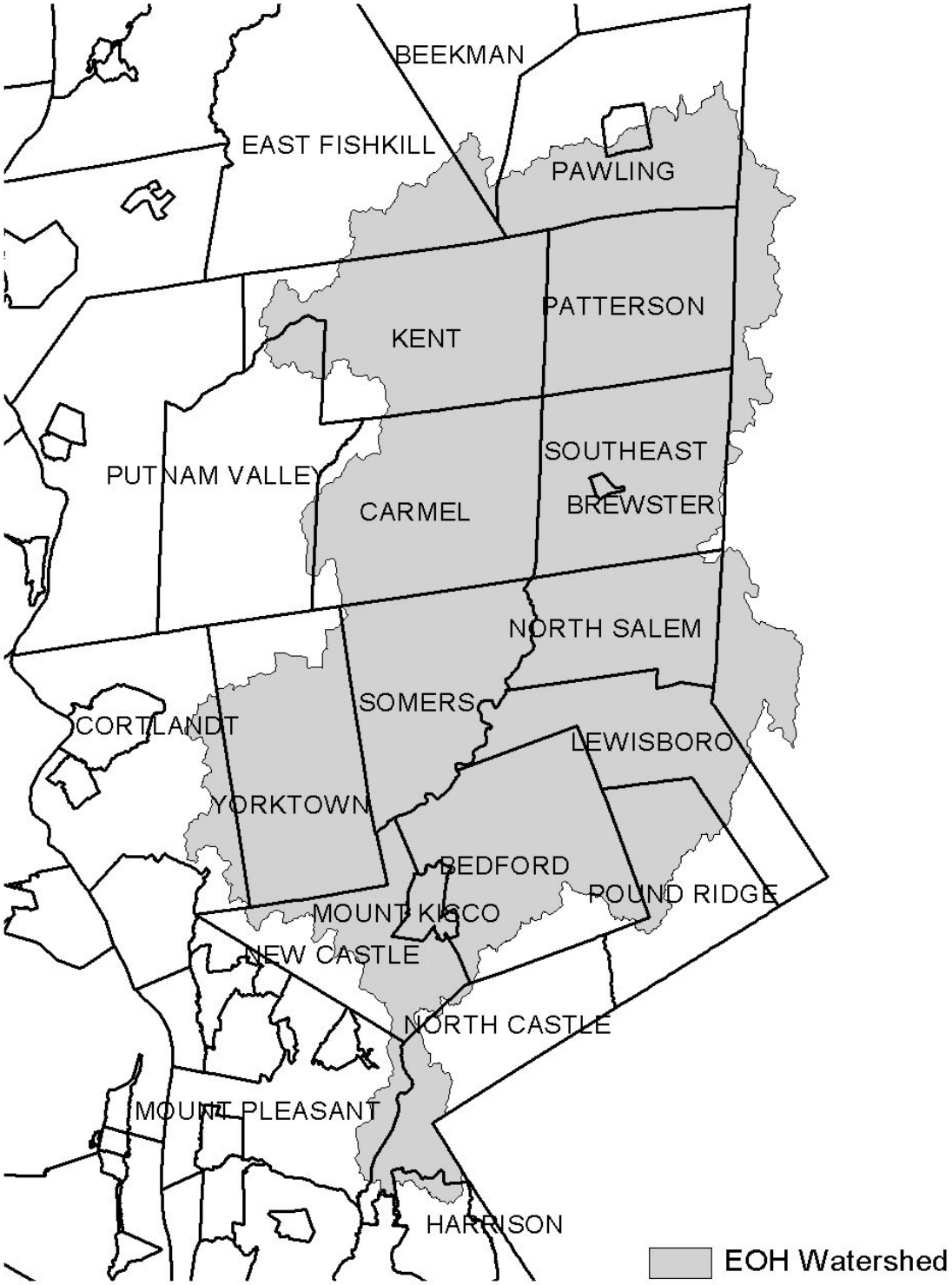


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

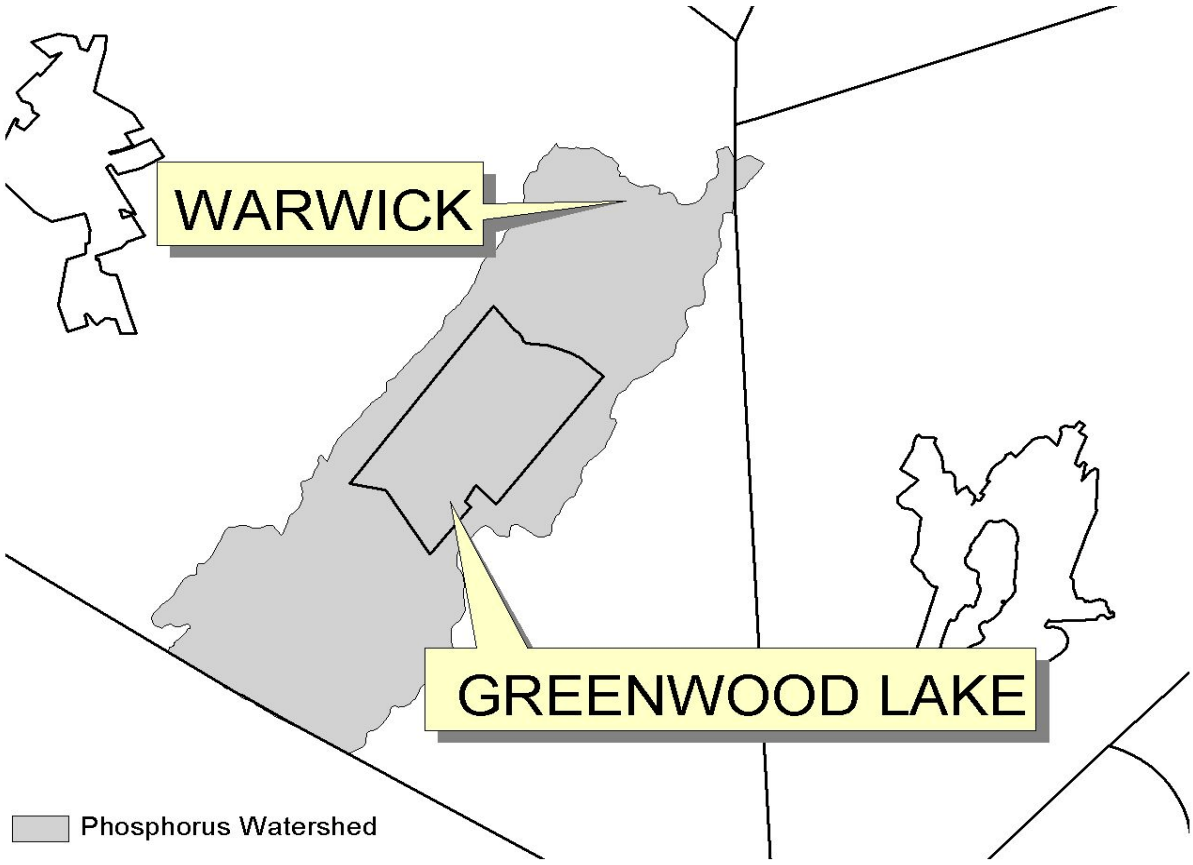


Figure 4 - Oscawana Lake Watershed

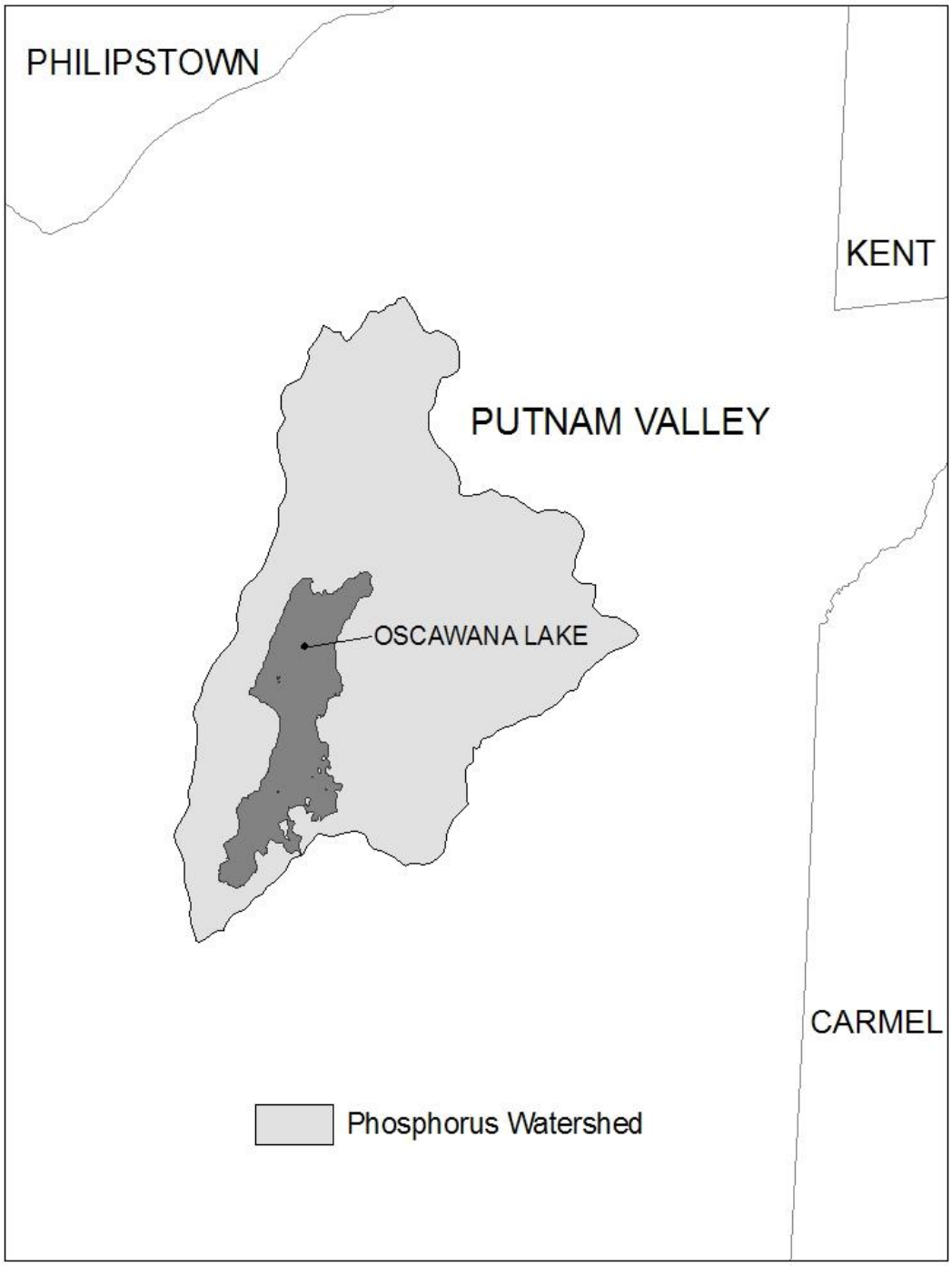
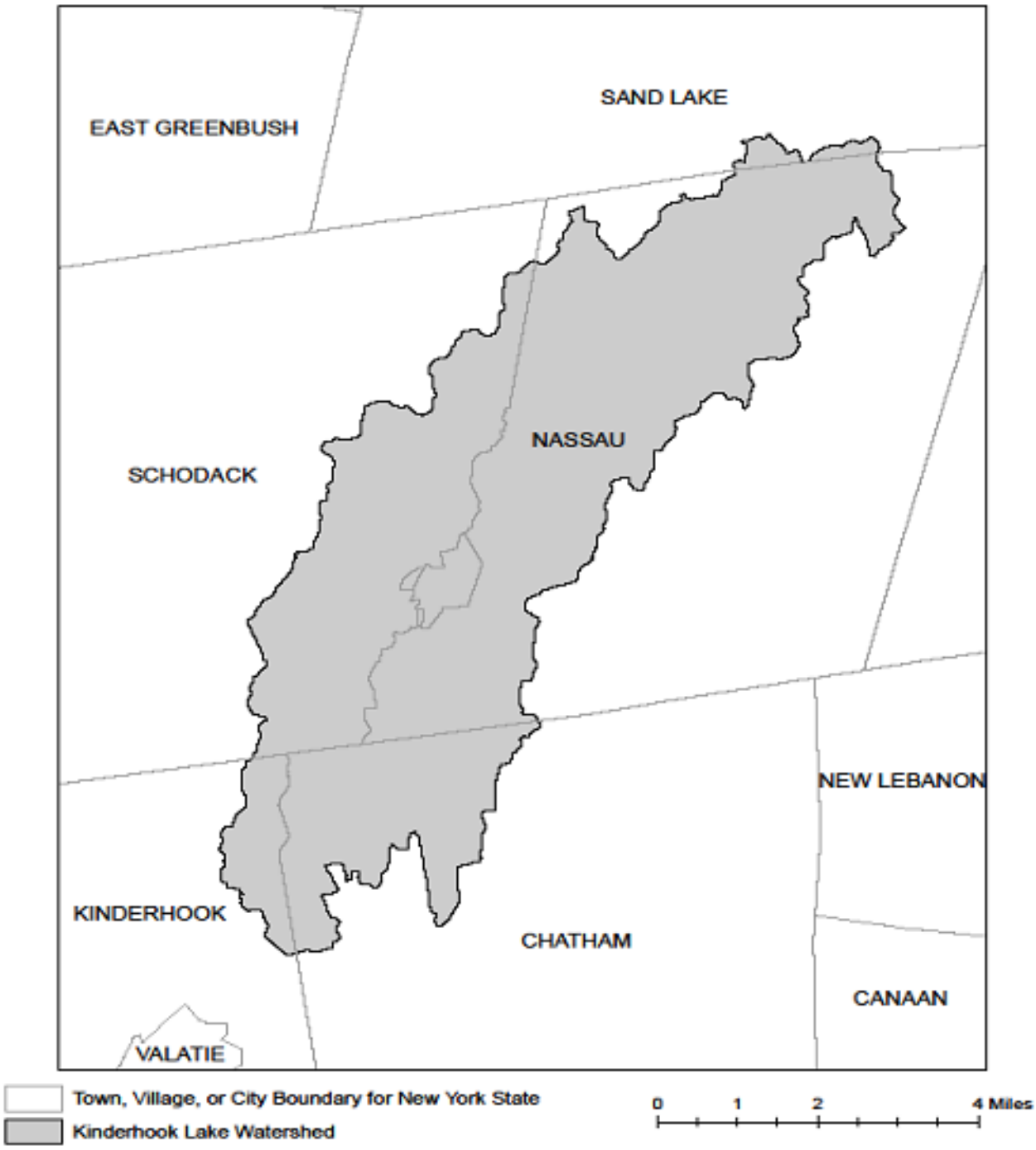


Figure 5 - Kinderhook Lake Watershed



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

APPENDIX B
NOTICE OF INTENT

0644089821

NOTICE OF INTENT

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

NYR _____
(for DEC use only)

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

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

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Norbut Solar Farms, LLC

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

Owner/Operator Contact Person First Name
Victor

Owner/Operator Mailing Address
1241 University Avenue

City
Rochester

State
NY

Zip
14067 -

Phone (Owner/Operator)
5855002215

Fax (Owner/Operator)
- -

Email (Owner/Operator)
victor@norbutsolarfarms.com

FED TAX ID
- (not required for individuals)

Project Site Information

Project/Site Name
Kirkwood Solar Facilty

Street Address (NOT P.O. BOX)
165 Foley Road

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

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Kirkwood

State NY | Zip 13795- | County Broome | DEC Region 7

Name of Nearest Cross Street
Quilty Hill Road

Distance to Nearest Cross Street (Feet)
1070

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

Tax Map Numbers
Section-Block-Parcel
003-01-17.7

Tax Map Numbers
003-01-17.6

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

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

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

X Coordinates (Easting)
-76.0169
Ex. -73.749

Y Coordinates (Northing)
42.998833
Ex. 42.652

2. What is the nature of this construction project?

◉ **New Construction**

○ **Redevelopment with increase in impervious area**

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

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

Pre-Development Existing Land Use

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

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots: 1
- ○ 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: SOLAR FACILITY

***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
110.16	65.5	0.0	2.1

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
0 %	8 %	1 %	91 %

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

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

Start Date	End Date
03/01/2025	09/30/2025

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

Name

WEST BRANCH LIMESTONE CREEK

9a. Type of waterbody identified in Question 9?

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

9b. How was the wetland identified?

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

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

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

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

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

.

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

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

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

N.A.

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

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

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

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

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

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

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

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

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

SWPPP Preparer
TECTONIC ENGINEERING

Contact Name (Last, Space, First)
PRIVETTE JAMES

Mailing Address
407 LITHIA PINECREST ROAD

City
BRANDON

State FL Zip 33511-

Phone 8133749177 Fax ---

Email
MPRIVETTE@TECTONICENGINEERING.COM

SWPPP Preparer Certification

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

First Name JAMES **MI** M

Last Name PRIVETTE

Signature

Date 11/20/2024

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

. 4 3 2 **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)	41.77	and/or	1.81
○ Tree Planting/Tree Pit (RR-3)		and/or	
✓ Disconnection of Rooftop Runoff (RR-4)	9.39	and/or	0.00
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
○ Bioretention (F-5)			
✓ Dry Swale (O-1)	0.25		0.25
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

.43343 **acre-feet**

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

◉ **Yes** ○ **No**

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

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

Minimum RRv Required

. **acre-feet**

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

◉ **Yes** ○ **No**

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

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

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

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

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

WQv Provided

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

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

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

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

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

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

CPv Required

0.06563 **acre-feet**

CPv Provided

0.07276 **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

108.17 **CFS**

Post-development

77.72 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

213.10 **CFS**

Post-development

180.10 **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

NORBUT SOLAR FARMS LLC

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
- ○ 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. NA

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: Victor

MI:

Print Last Name: Ciaccia

Owner/Operator Signature:

Date: / /

APPENDIX C
ENGINEER'S CERTIFICATION

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Kirkwood Solar Facility

Owner/Operator Information

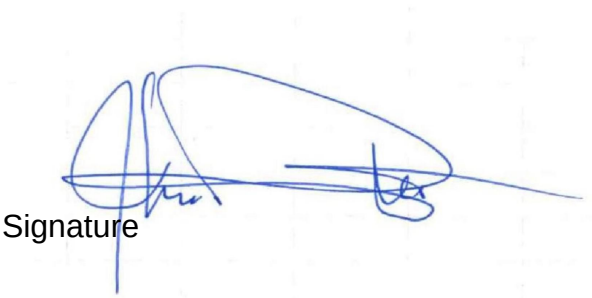
Owner/Operator (Company Name/Private Owner/Municipality Name)

Norbut Solar Farms, LLC

Certification Statement – SWPPP Preparer

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

James	M	Privette
First name	MI	Last Name



Signature

30 Jan 2025

Date

Revised: January 2020

APPENDIX D
OWNER/OPERATOR CERTIFICATION

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Kirkwood Solar Facility

eNOI Submission Number: _____

eNOI Submitted by: ☑ **Owner/Operator** ☐ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

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.

Owner/Operator First Name M.I. Last Name

_____

Signature

_____

Date

APPENDIX E
CONTRACTOR/SUBCONTRACTOR CERTIFICATION

CONR 5
(10/19)

Contractor / Subcontractor SPDES Permit Certification

Contract No.: _____ PIN: _____

Description: _____

Town, Village, City: _____

County: _____

Check Applicable Box: ☐ Prime Contractor ☐ Subcontractor

Name of Contractor/
Subcontractor: _____

Address: _____

City: _____ State: _____ ZIP: _____

Phone: _____ Fax: _____

Core Pay Item Groups for which the Contractor/Subcontractor will be responsible (e.g. 203, 207, 209, etc.): _____ _____ _____ _____ _____ _____ _____ _____

Mandatory Certification: The SPDES General Permit for Stormwater Discharges from Construction Activities requires the Prime Contractor and subcontractors to certify they understand the Stormwater Pollution Prevention Plan (SWPPP), the General Permit conditions, and their responsibilities for compliance. The certification must be signed prior to performing any contract work. The certification shall be signed by an Owner, Principal, President, Secretary or Treasurer of the firm in accordance with the signature requirements of 102-05 *Proposal Submission* of the Standard Specifications.

"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."

Signature: _____ Date: _____

Name: _____ Title: _____

Required Training: Effective April 30, 2010, the SPDES General Permit also requires the Prime Contractor and all subcontractors ***performing earthwork or soil-disturbing activities*** to identify at least one trained individual ***from each company*** who will be responsible for implementing the SWPPP and who shall be on-site on a daily basis when the company is performing soil disturbance activities. These activities include clearing, grubbing, grading, filling, excavation, stockpiling, demolition, landscaping, and installation and maintenance of Erosion & Sediment Control practices. Training must consist of 4 hours of NYSDEC-endorsed Erosion & Sediment Control Training every 3 years. (Training is not required if the individual is a licensed Professional Engineer, registered licensed Landscape Architect, or CPESC.) Provide the information below for trained individuals who will be on-site and responsible for SWPPP implementation on this Contract (attach a separate sheet if needed for additional Trained Individuals):

Trained Individual Name/Title : _____

Name of Training Course: _____

Trainee Number: _____ Date of Training: _____

Trained Individual Name/Title : _____

Name of Training Course: _____

Trainee Number: _____ Date of Training: _____

APPENDIX F
LIST OF CONTRACTORS AND SUBCONTRACTORS

LIST OF CONTRACTORS/SUBCONTRACTORS

Project Name:	Kirkwood Solar Facility

Contractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

Contractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

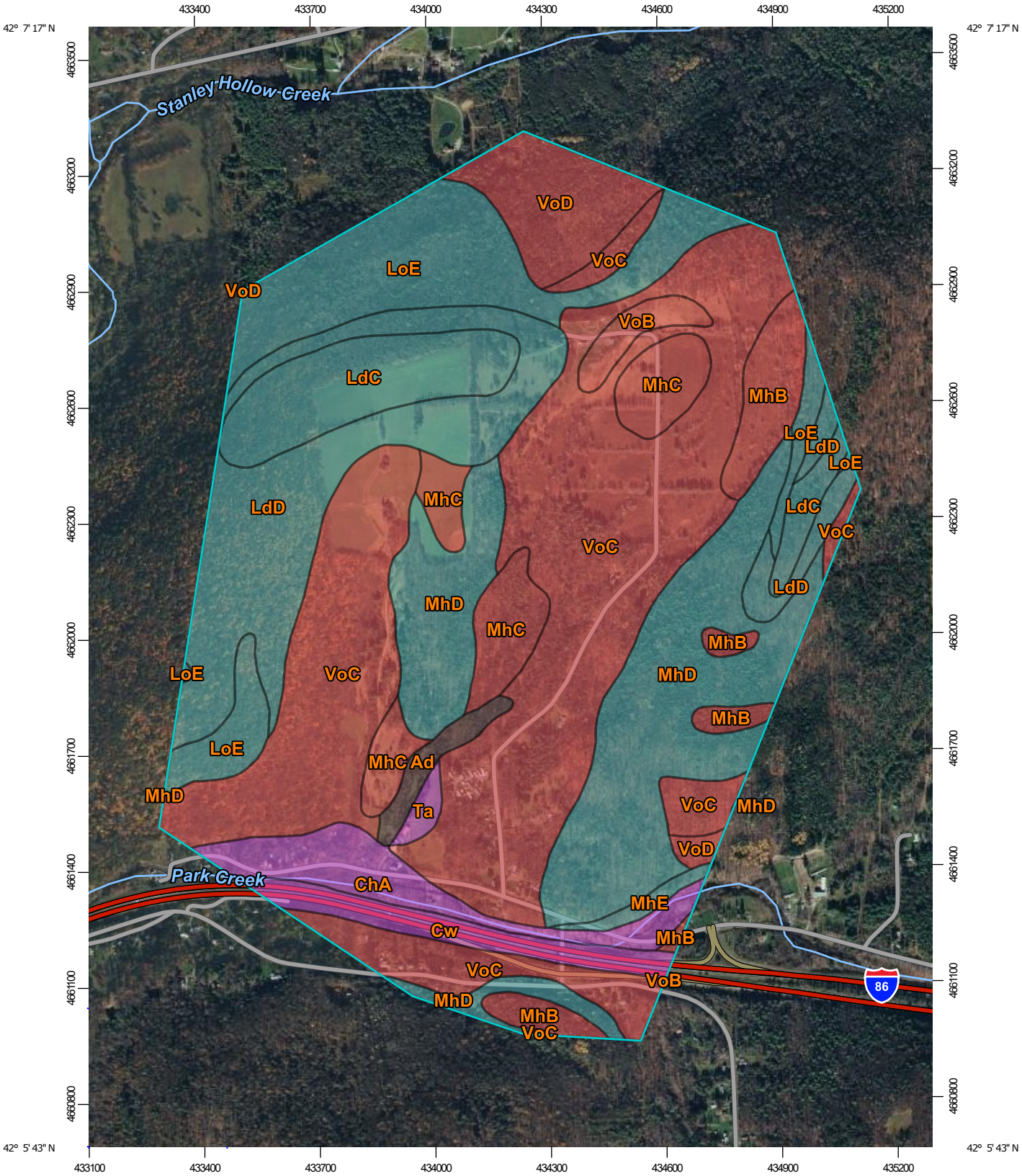
Subcontractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

Subcontractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

Subcontractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

Subcontractor:	
Address:	
Contact Name:	
Contact Phone:	
Contact email:	

APPENDIX G
NRCS SOILS MAPPING



Map Scale: 1:14,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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: Broome County, New York
Survey Area Data: Version 22, Aug 28, 2024

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

Date(s) aerial images were photographed: Jul 26, 2020—Nov 10, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ad	Alluvial land	B/D	6.9	0.9%
ChA	Chenango and Howard gravelly loams, 0 to 5 percent slopes	A	26.7	3.6%
Cw	Cut and fill lands, loamy materials	A	17.7	2.4%
LdC	Lordstown channery silt loam, 5 to 15 percent slopes	C	43.4	5.8%
LdD	Lordstown channery silt loam, 15 to 25 percent slopes	C	89.1	11.9%
LoE	Lordstown and Oquaga channery silt loams, 25 to 35 percent slopes	C	77.1	10.3%
MhB	Mardin channery silt loam, 2 to 8 percent slopes	D	26.4	3.5%
MhC	Mardin channery silt loam, 8 to 15 percent slopes	D	36.5	4.9%
MhD	Bath channery silt loam, 15 to 25 percent slopes	C	121.5	16.2%
MhE	Bath channery silt loam, 25 to 35 percent slopes	C	3.6	0.5%
Ta	Tioga silt loam	A	3.1	0.4%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	D	7.5	1.0%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	D	261.9	34.9%
VoD	Volusia channery silt loam, 15 to 25 percent slopes	D	30.0	4.0%
Totals for Area of Interest			**751.5**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX H
STORMWATER RUNOFF CALCULATIONS

H.1. Rainfall, Curve Number and Time of Concentration Calculations

H1.a. Rainfall Tables and Maps
H1.b. Area Tabulation and TR-55 Curve Number Calculations
H1.c. Time of Concentration Calculations

H1.a. Rainfall Tables and Maps

NOAA Atlas 14, Volume 10, Version 3
Location name: Kirkwood, New York, USA*
Latitude: 42.1024°, Longitude: -75.7994°
Elevation: 1010 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.308** (0.243-0.385)	**0.371** (0.292-0.464)	**0.474** (0.373-0.596)	**0.559** (0.437-0.708)	**0.676** (0.509-0.898)	**0.764** (0.564-1.04)	**0.856** (0.612-1.21)	**0.959** (0.648-1.40)	**1.10** (0.717-1.68)	**1.22** (0.775-1.90)
10-min	**0.436** (0.344-0.546)	**0.525** (0.414-0.658)	**0.670** (0.527-0.842)	**0.791** (0.618-1.00)	**0.957** (0.722-1.27)	**1.08** (0.798-1.47)	**1.21** (0.867-1.72)	**1.36** (0.918-1.98)	**1.57** (1.02-2.38)	**1.74** (1.10-2.69)
15-min	**0.513** (0.405-0.642)	**0.618** (0.487-0.774)	**0.789** (0.619-0.992)	**0.931** (0.726-1.18)	**1.13** (0.849-1.50)	**1.27** (0.938-1.73)	**1.43** (1.02-2.02)	**1.60** (1.08-2.33)	**1.84** (1.20-2.80)	**2.04** (1.29-3.17)
30-min	**0.686** (0.541-0.857)	**0.823** (0.649-1.03)	**1.05** (0.823-1.32)	**1.24** (0.964-1.56)	**1.49** (1.12-1.98)	**1.69** (1.24-2.29)	**1.89** (1.35-2.68)	**2.11** (1.43-3.08)	**2.44** (1.58-3.70)	**2.70** (1.71-4.19)
60-min	**0.858** (0.677-1.07)	**1.03** (0.811-1.29)	**1.31** (1.03-1.64)	**1.54** (1.20-1.95)	**1.86** (1.40-2.47)	**2.10** (1.55-2.86)	**2.35** (1.68-3.33)	**2.63** (1.78-3.83)	**3.03** (1.97-4.60)	**3.36** (2.12-5.21)
2-hr	**1.09** (0.863-1.35)	**1.27** (1.01-1.58)	**1.57** (1.24-1.96)	**1.82** (1.43-2.29)	**2.16** (1.65-2.87)	**2.42** (1.80-3.30)	**2.69** (1.96-3.85)	**3.04** (2.06-4.41)	**3.58** (2.33-5.40)	**4.04** (2.56-6.24)
3-hr	**1.24** (0.984-1.53)	**1.44** (1.14-1.78)	**1.76** (1.40-2.19)	**2.03** (1.60-2.55)	**2.41** (1.84-3.19)	**2.68** (2.01-3.65)	**2.98** (2.19-4.28)	**3.38** (2.29-4.89)	**4.01** (2.61-6.04)	**4.57** (2.91-7.03)
6-hr	**1.51** (1.21-1.85)	**1.77** (1.42-2.18)	**2.19** (1.75-2.71)	**2.54** (2.02-3.16)	**3.03** (2.33-3.99)	**3.38** (2.56-4.59)	**3.78** (2.78-5.39)	**4.29** (2.92-6.18)	**5.12** (3.35-7.66)	**5.85** (3.73-8.96)
12-hr	**1.80** (1.46-2.20)	**2.17** (1.75-2.66)	**2.77** (2.23-3.40)	**3.27** (2.61-4.04)	**3.95** (3.05-5.16)	**4.46** (3.37-5.99)	**5.00** (3.69-7.06)	**5.69** (3.89-8.13)	**6.74** (4.42-10.0)	**7.65** (4.90-11.6)
24-hr	**2.12** (1.72-2.57)	**2.59** (2.10-3.15)	**3.36** (2.72-4.10)	**4.00** (3.22-4.91)	**4.88** (3.79-6.33)	**5.53** (4.20-7.37)	**6.24** (4.60-8.70)	**7.08** (4.87-10.1)	**8.35** (5.50-12.4)	**9.44** (6.06-14.3)
2-day	**2.47** (2.02-2.98)	**3.00** (2.45-3.62)	**3.87** (3.15-4.68)	**4.58** (3.71-5.59)	**5.57** (4.35-7.18)	**6.31** (4.82-8.35)	**7.10** (5.26-9.85)	**8.05** (5.56-11.4)	**9.49** (6.27-14.0)	**10.7** (6.90-16.1)
3-day	**2.73** (2.24-3.28)	**3.28** (2.69-3.94)	**4.19** (3.42-5.05)	**4.94** (4.01-6.00)	**5.97** (4.68-7.66)	**6.74** (5.16-8.88)	**7.56** (5.62-10.4)	**8.55** (5.92-12.0)	**10.0** (6.66-14.7)	**11.3** (7.30-17.0)
4-day	**2.96** (2.44-3.54)	**3.52** (2.90-4.22)	**4.45** (3.64-5.35)	**5.22** (4.25-6.32)	**6.28** (4.93-8.02)	**7.06** (5.42-9.27)	**7.91** (5.88-10.9)	**8.92** (6.18-12.5)	**10.4** (6.92-15.3)	**11.7** (7.58-17.6)
7-day	**3.56** (2.95-4.24)	**4.15** (3.44-4.95)	**5.12** (4.22-6.12)	**5.92** (4.84-7.12)	**7.01** (5.53-8.90)	**7.83** (6.03-10.2)	**8.71** (6.49-11.9)	**9.74** (6.78-13.6)	**11.3** (7.50-16.4)	**12.6** (8.14-18.7)
10-day	**4.15** (3.44-4.92)	**4.76** (3.95-5.65)	**5.76** (4.76-6.86)	**6.58** (5.41-7.90)	**7.72** (6.11-9.75)	**8.58** (6.62-11.1)	**9.48** (7.06-12.8)	**10.5** (7.35-14.7)	**12.1** (8.05-17.5)	**13.3** (8.65-19.8)
20-day	**5.91** (4.94-6.96)	**6.61** (5.52-7.79)	**7.75** (6.45-9.17)	**8.70** (7.19-10.4)	**10.0** (7.94-12.5)	**11.0** (8.50-14.1)	**12.0** (8.93-16.0)	**13.1** (9.22-18.1)	**14.7** (9.83-21.1)	**15.9** (10.3-23.5)
30-day	**7.40** (6.22-8.68)	**8.18** (6.86-9.61)	**9.46** (7.90-11.2)	**10.5** (8.72-12.5)	**12.0** (9.53-14.8)	**13.1** (10.1-16.6)	**14.2** (10.6-18.8)	**15.4** (10.8-21.2)	**17.0** (11.4-24.3)	**18.2** (11.9-26.8)
45-day	**9.30** (7.84-10.9)	**10.2** (8.58-11.9)	**11.6** (9.75-13.6)	**12.8** (10.7-15.2)	**14.5** (11.6-17.8)	**15.7** (12.2-19.9)	**17.0** (12.7-22.3)	**18.3** (12.9-25.0)	**20.0** (13.5-28.5)	**21.2** (13.8-31.1)
60-day	**10.9** (9.23-12.7)	**11.9** (10.0-13.8)	**13.5** (11.3-15.8)	**14.8** (12.3-17.4)	**16.6** (13.3-20.4)	**18.0** (14.0-22.6)	**19.4** (14.4-25.3)	**20.7** (14.7-28.3)	**22.5** (15.2-32.1)	**23.8** (15.6-34.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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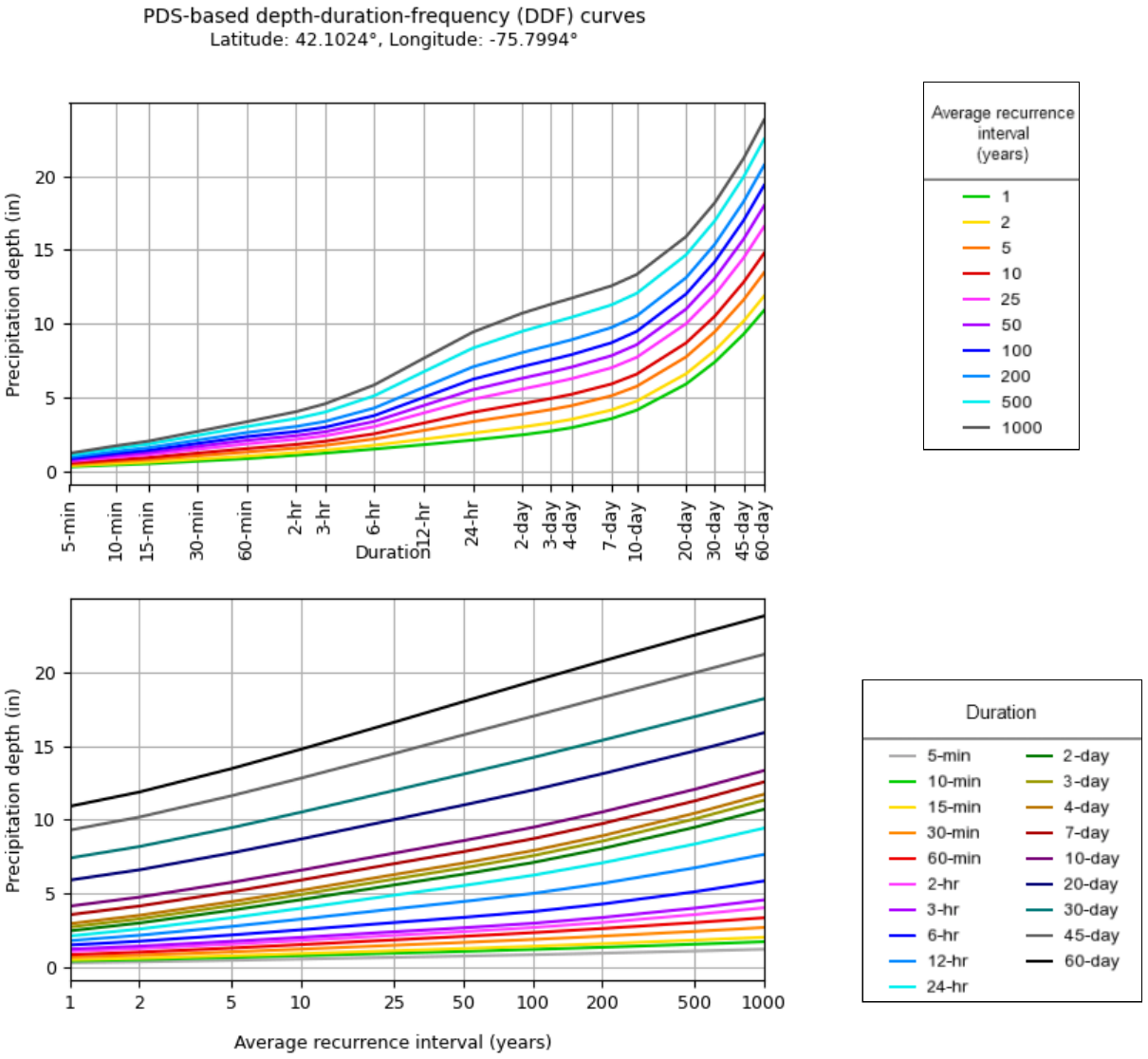
PF graphical



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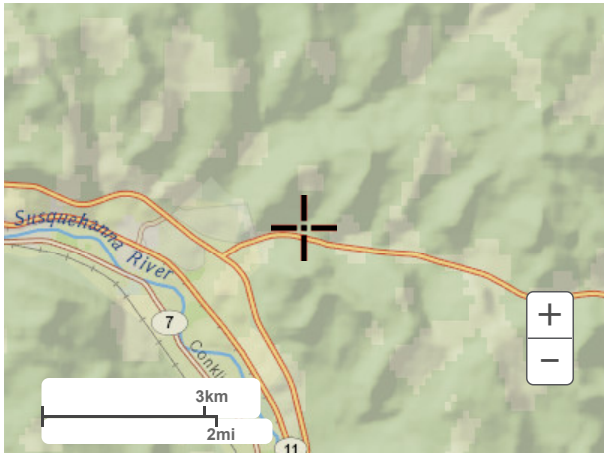
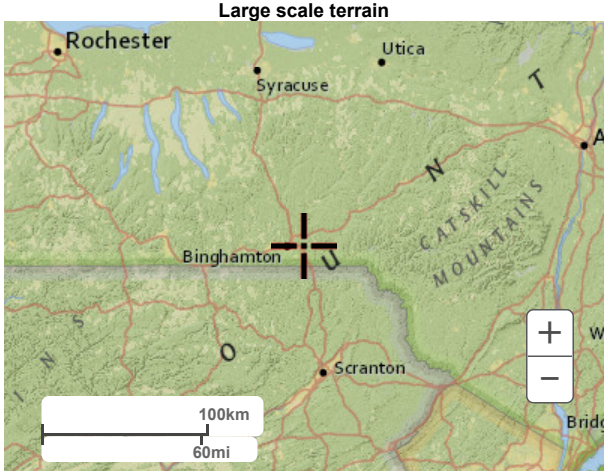
Maps & aerials

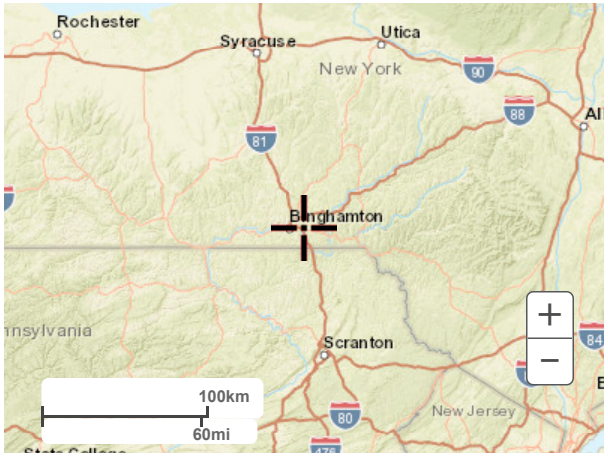
Small scale terrain



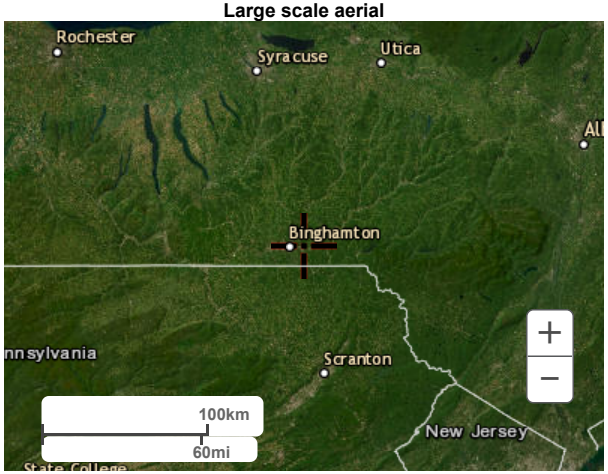
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

H1.b. Area Tabulation and TR-55 Curve Number Calculations

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin A

Total Basin Area:	1,470,302.28	SF	33.7535	Ac	

Pre-Developed Conditions:

Total Basin Area	1,470,302.28	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	0.00	SF	0.00%	CN= 98
Meadow (HSG C)	225,379.12	SF *	15.33%	CN= 58
Meadow (HSG D)	0.00	SF *	0.00%	CN= 78
Forest/Woods Area (HSG C)	1,244,923.16	SF	84.67%	CN= 65
Forest/Woods Area (HSG D)	0.00	SF	0.00%	CN= 82
Fringe Range Land (HSG B)	0.00	SF	0.00%	CN= 79
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 89
Weighted Curve Number: CN'_{PRE}	1,470,302.28		63.9270	

Post-Developed Conditions:

Total Basin Area	1,470,302.28	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	0.00	SF	0.00%	CN= 89
Gravel Access Drives (HSG D)	0.00	SF	0.00%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Forest/Woods Area (HSG C)	986,264.77	SF	67.08%	CN= 61
Forest/Woods Area (HSG D)	0.00	SF *	0.00%	CN= 80
Meadow (HSG C)	484,037.51	SF *	32.92%	CN= 65
Meadow (HSG D)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	1,470,302.28		62.3168	

Primary Soil Type	HSG "D"		100.00%	
Infiltration Rate "K"	3.0906	µ/sec	0.4380	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =		18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =		24.16	Min.	0.4027	hrs
Existing Conditions Impervious Coverage		0.00	SF	0.00%	
Proposed Conditions Impervious Coverage		0.00	SF	0.00%	

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin B

Total Basin Area:	709,409.95	SF	16.2858	Ac

Pre-Developed Conditions:

Total Basin Area	709,409.95	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	0.00	SF	0.00%	CN= 98
Meadow (HSG C)	0.00	SF *	0.00%	CN= 58
Meadow (HSG D)	145,726.32	SF *	20.54%	CN= 78
Woods/Grass Combo (HSG C-Fair)	(2,877.57)	SF	-0.41%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG D)	0.00	SF	0.00%	CN= 60
Forest/Woods Area (HSG C)	563,683.64	SF	79.46%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Water Body (HSG D)	2,877.57	SF	0.41%	CN= 100
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 89
Weighted Curve Number: CN'_{PRE}	709,409.95		78.9366	

Post-Developed Conditions:

Total Basin Area	709,409.95	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	7,511.82	SF	1.06%	CN= 89
Gravel Access Drives (HSG D)	9,064.26	SF	1.28%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Open Grassed Area (HSG B-Good)	671,314.25	SF	94.63%	CN= 61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	3.03%	CN= 80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	709,409.95		62.2562	

Primary Soil Type	HSG "D"		100.00%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin C

Total Basin Area:	2,107,168.07	SF	48.3739	Ac	

Pre-Developed Conditions:

Total Basin Area	2,107,168.07	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	0.00	SF	0.00%	CN= 98
Meadow Area (HSG C)	285,642.60	SF *	13.56%	CN= 58
Meadow Area (HSG D)	456,780.52	SF *	21.68%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	88,265.99	SF	4.19%	CN= 60
Forest/Woods Area (HSG D)	1,167,405.41	SF	55.40%	CN= 79
Gravel Drive (HSG C)	2,852.26	SF	0.14%	CN= 79
Gravel Drive (HSG C)	41,027.61	SF	1.95%	CN= 79
Water Body (HSG D)	15,910.78	SF	0.76%	CN= 100
Fringe Range Land (HSG D)	49,282.90	SF	2.34%	CN= 89
Weighted Curve Number: CN'_{PRE}	2,107,168.07		75.5331	

Post-Developed Conditions:

Total Basin Area	2,107,168.07	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG C)	6,980.44	SF	0.33%	CN= 89
Gravel Access Drives (HSG D)	87,581.15	SF	4.16%	CN= 91
Loose Gravel Surface Cover (HSG C)	496.46	SF	0.02%	CN= 82
Loose Gravel Surface Cover (HSG D)	1,482.18	SF	0.07%	CN= 86
Meadow Area (HSG C)	501,315.36	SF	23.79%	CN= 61
Meadow Area (HSG D)	1,444,118.80	SF *	68.53%	CN= 80
Water Body (HSG D)	15,910.78	SF *	0.76%	CN= 65
Fringe Range Land (HSG D)	49,282.90	SF	2.34%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	2,107,168.07		75.9049	

Primary Soil Type	HSG "D"		98.05%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin D

Total Basin Area:	1,756,785.62	SF	40.3302	Ac

Pre-Developed Conditions:

Total Basin Area	1,756,785.62	SF	100.00%	
Building Coverage	7,374.00	SF	0.42%	CN= 98
Concrete/Asphalt Area	0.00	SF	0.00%	CN= 98
Meadow Area (HSG C)	0.00	SF *	0.00%	CN= 58
Meadow Area (HSG D)	633,586.65	SF *	36.07%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	0.00	SF	0.00%	CN= 60
Forest/Woods Area (HSG D)	1,069,970.29	SF	60.91%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG C)	8,589.73	SF	0.49%	CN= 79
Water Body (HSG D)	11,823.92	SF	0.67%	CN= 100
Fringe Range Land (HSG D)	25,441.03	SF	1.45%	CN= 89
Weighted Curve Number: CN'_{PRE}	1,756,785.62		79.0053	

Post-Developed Conditions:

Total Basin Area	1,756,785.62	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG C)	GRAVEL DRIVE	SF	#VALUE!	CN= 89
Gravel Access Drives (HSG D)	57,435.32	SF	3.27%	CN= 91
Loose Gravel Surface Cover (HSG C)	GRAVEL LOOSE	SF	#VALUE!	CN= 82
Loose Gravel Surface Cover (HSG D)	407.53	SF	0.02%	CN= 86
Meadow Area (HSG C)	1,698,942.76	SF	96.71%	CN= 61
Meadow Area (HSG D)	MEADOW	SF *	#VALUE!	CN= 80
Water Body (HSG D)	0.00	SF *	0.00%	CN= 65
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	1,756,785.62		#VALUE!	

Primary Soil Type	HSG "D"		99.51%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

** Includes the 1,826.95 sf of gravel equipment area

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin E

Total Basin Area:	442,239.58	SF	10.1524	Ac	

Pre-Developed Conditions:

Total Basin Area	442,239.58	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	0.00	SF	0.00%	CN= 98
Meadow (HSG C)	0.00	SF *	0.00%	CN= 58
Meadow (HSG D)	90,151.25	SF *	20.39%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	0.00	SF	0.00%	CN= 60
Forest/Woods Area (HSG D)	342,128.86	SF	77.36%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG C)	5,129.29	SF	1.16%	CN= 79
Water Body (HSG D)	4,830.19	SF	1.09%	CN= 100
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 89
Weighted Curve Number: CN'_{PRE}	442,239.58		79.0255	

Post-Developed Conditions:

Total Basin Area	54,666.74	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	7,511.82	SF	13.74%	CN= 89
Gravel Access Drives (HSG D)	9,064.26	SF	16.58%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Open Grassed Area (HSG B-Good)	16,571.04	SF	30.31%	CN= 61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	39.37%	CN= 80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	54,666.74		9.5555	

Primary Soil Type	HSG "D"		98.84%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin F

Total Basin Area:	215,215.38	SF	4.9407	Ac	

Pre-Developed Conditions:

Total Basin Area	215,215.38	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	4,350.34	SF	2.02%	CN= 98
Meadow (HSG C)	0.00	SF *	0.00%	CN= 58
Meadow (HSG D)	88,827.15	SF *	41.27%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	0.00	SF	0.00%	CN= 60
Forest/Woods Area (HSG D)	112,093.00	SF	52.08%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG D)	4,268.39	SF	1.98%	CN= 79
Water Body (HSG D)	4,508.63	SF	2.09%	CN= 100
Fringe Range Land (HSG D)	1,167.86	SF	0.54%	CN= 89
Weighted Curve Number: CN'_{PRE}	215,215.38		79.4655	

Post-Developed Conditions:

Total Basin Area	54,666.74	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	7,511.82	SF	13.74%	CN= 89
Gravel Access Drives (HSG D)	9,064.26	SF	16.58%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Open Grassed Area (HSG B-Good)	16,571.04	SF	30.31%	CN= 61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	39.37%	CN= 80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	54,666.74		19.6352	

Primary Soil Type	HSG "D"		98.02%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin G

Total Basin Area:	1,691,573.31	SF	38.8332	Ac	

Pre-Developed Conditions:

Total Basin Area	1,691,573.31	SF	100.00%	
Building Coverage	5,507.96	SF	0.33%	CN= 98
Concrete/Asphalt Area	51,978.10	SF	3.07%	CN= 98
Meadow (HSG C)	256,422.22	SF *	15.16%	CN= 58
Meadow (HSG D)	987,000.44	SF *	58.35%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	111,171.31	SF	6.57%	CN= 60
Forest/Woods Area (HSG D)	275,481.65	SF	16.29%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG D)	0.00	SF	0.00%	CN= 79
Water Body (HSG D)	4,011.63	SF	0.24%	CN= 100
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 89
Weighted Curve Number: CN'_{PRE}	1,691,573.31		74.6800	

Post-Developed Conditions:

Total Basin Area	54,666.74	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	7,511.82	SF	13.74%	CN= 89
Gravel Access Drives (HSG D)	9,064.26	SF	16.58%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Open Grassed Area (HSG B-Good)	16,571.04	SF	30.31%	CN= 61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	39.37%	CN= 80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	54,666.74		2.4981	

Primary Soil Type	HSG "D"		100.00%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin H

Total Basin Area:	87,414.57	SF	2.0068	Ac	
Pre-Developed Conditions:					
Total Basin Area	87,414.57	SF	100.00%		
Building Coverage	0.00	SF	0.00%	CN=	98
Concrete/Asphalt Area	4,833.61	SF	5.53%	CN=	98
Meadow (HSG C)	0.00	SF *	0.00%	CN=	58
Meadow (HSG D)	67,067.79	SF *	76.72%	CN=	78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN=	65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN=	82
Forest/Woods Area (HSG C)	0.00	SF	0.00%	CN=	60
Forest/Woods Area (HSG D)	15,513.18	SF	17.75%	CN=	79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN=	79
Gravel Drive (HSG D)	0.00	SF	0.00%	CN=	79
Water Body (HSG D)	0.00	SF	0.00%	CN=	100
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN=	89
Weighted Curve Number: CN'_{PRE}	87,414.57		79.2834		
Post-Developed Conditions:					
Total Basin Area	54,666.74	SF	100.00%		
Building Coverage	0.00	SF	0.00%	CN=	98
Concrete Coverage	0.00	SF	0.00%	CN=	98
Asphalt Coverage	0.00	SF	0.00%	CN=	98
Gravel Access Drives (HSG B)	7,511.82	SF	13.74%	CN=	89
Gravel Access Drives (HSG D)	9,064.26	SF	16.58%	CN=	91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN=	82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN=	86
Open Grassed Area (HSG B-Good)	16,571.04	SF	30.31%	CN=	61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	39.37%	CN=	80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN=	65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN=	82
Other	0.00	SF	0.00%	CN=	78
Weighted Curve Number: CN'_{POST}	54,666.74		48.3421		
Primary Soil Type	HSG "D"		100.00%		
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr	
(Established From NRCS Soils Mapping)					

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

Stormwater Runoff Volume Calculations

SITE NAME: KIRKWOOD SOLAR FARM

Basin I

Total Basin Area:	1,792,582.60	SF	41.1520	Ac

Pre-Developed Conditions:

Total Basin Area	1,792,582.60	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete/Asphalt Area	6,949.47	SF	0.39%	CN= 98
Meadow (HSG C)	0.00	SF *	0.00%	CN= 58
Meadow (HSG D)	0.00	SF *	0.00%	CN= 78
Woods/Grass Combo (HSG C-Fair)	0.00	SF	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Forest/Woods Area (HSG C)	0.00	SF	0.00%	CN= 60
Forest/Woods Area (HSG D)	1,749,977.02	SF	97.62%	CN= 79
Gravel Drive (HSG C)	0.00	SF	0.00%	CN= 79
Gravel Drive (HSG D)	0.00	SF	0.00%	CN= 79
Water Body (HSG D)	35,656.12	SF	1.99%	CN= 100
Fringe Range Land (HSG D)	0.00	SF	0.00%	CN= 89
Weighted Curve Number: CN'_{PRE}	1,792,582.60		79.4914	

Post-Developed Conditions:

Total Basin Area	54,666.74	SF	100.00%	
Building Coverage	0.00	SF	0.00%	CN= 98
Concrete Coverage	0.00	SF	0.00%	CN= 98
Asphalt Coverage	0.00	SF	0.00%	CN= 98
Gravel Access Drives (HSG B)	7,511.82	SF	13.74%	CN= 89
Gravel Access Drives (HSG D)	9,064.26	SF	16.58%	CN= 91
Loose Gravel Surface Cover (HSG B)	0.00	SF	0.00%	CN= 82
Loose Gravel Surface Cover (HSG D)	0.00	SF	0.00%	CN= 86
Open Grassed Area (HSG B-Good)	16,571.04	SF	30.31%	CN= 61
Open Grassed Area (HSG D-Good)	21,519.62	SF *	39.37%	CN= 80
Woods/Grass Combo (HSG B-Fair)	0.00	SF *	0.00%	CN= 65
Woods/Grass Combo (HSG D-Fair)	0.00	SF	0.00%	CN= 82
Other	0.00	SF	0.00%	CN= 78
Weighted Curve Number: CN'_{POST}	54,666.74		2.3574	

Primary Soil Type	HSG "D"		100.00%	
Infiltration Rate "K"	1.9856349	µ/sec	0.2814	In/Hr
(Established From NRCS Soils Mapping)				

*** Per NYSDEC direction, area is considered as *Meadow* and assigned base CN accordingly.**

Pre-Developed Time of Concentration: T_{conc} =	18.14	Min.	0.3023	hrs
Post-Developed Time of Concentration: T_{conc} =	24.16	Min.	0.4027	hrs

H1.c. Time of Concentration Calculations

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
BASIN A	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100.00	0.03975	h	0.400	n/a	n/a	0.088652353	0.3133
SHALLOW CONCENTRATED	1505.7	------	l	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	0	------	f	0.00	15	14.544	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.3133 hrs
								18.8000 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8} / P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.41 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	11.28	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
BASIN B	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100.00	0.02100	h	0.400	n/a	n/a	0.068682755	0.4044
SHALLOW CONCENTRATED	3250.2	0.06716	u	n/a	n/a	n/a	4.181396678	0.2159
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	15	14.544	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.6204 hrs
								37.2211 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8} / P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.41 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	22.33	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
BASIN C	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	99.95	0.02001	e	0.150	n/a	n/a	0.147635368	0.1881
SHALLOW CONCENTRATED	651.4	0.04298	u	n/a	n/a	n/a	3.344986604	0.0541
SHALLOW CONCENTRATED	730.7392	0.112215138	p	n/a	n/a	n/a	6.809647767	0.0298
SHALLOW CONCENTRATED	403.1	0.105435118	u	n/a	n/a	n/a	5.238997079	0.0214
OPEN CHANNEL-swale	2875.578	0.115976672	u	0.05	16	13.7967	11.20262376	0.0713
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.3646 hrs
								21.8783 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8} / P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.41 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	13.13	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin D	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100.3	0.07979	e	0.150	n/a	n/a	0.256889465	0.1084
SHALLOW CONCENTRATED	1542.8	0.1128	u	n/a	n/a	n/a	5.41838534	0.0791
SHALLOW CONCENTRATED	2231.4	0.129964644	u	n/a	n/a	n/a	5.816585573	0.1066
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	214.7034	0.046575881	u	n/a	n/a	n/a	3.482058398	0.0171
OPEN CHANNEL	319.2351	0.050119802	u	n/a	n/a	n/a	3.612103489	0.0245
OPEN CHANNEL	26.3556	0.075126349	a	0.01	50.27	25.1357	64.84273873	2.4531
OPEN CHANNEL	0	------	e	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	2.7889 hrs
								167.3326 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8}/P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.41 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1}...T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	100.40	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin E	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100	0.08000	h	0.400	n/a	n/a	0.121573059	0.2285
SHALLOW CONCENTRATED	714.5	0.09167	u	n/a	n/a	n/a	4.884962553	0.0406
SHALLOW CONCENTRATED				n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED				n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL			----------				----------	0.0000
OPEN CHANNEL			----------				----------	0.0000
OPEN CHANNEL			----------				----------	0.0000
OPEN CHANNEL			----------				----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.2691 hrs
								16.1469 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8} / P_2^{0.5} \times S^{0.4}]$		
Manning's Roughness Coefficient:	n		
Travel Length (feet):	L		
2 Yr/24 hr Rainfall depth:	P_2	2.59	in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$		
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$		(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$		(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$		
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$		

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	9.69	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin F	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100	0.08000	e	0.150	n/a	n/a	0.266447917	0.1043
SHALLOW CONCENTRATED	444.7	0.09000	u	n/a	n/a	n/a	4.84035	0.0255
SHALLOW CONCENTRATED	94.4975	0.11	u	n/a	n/a	n/a	5.351208268	0.0049
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	134.3688	0.1	u	0.04	15	14.544	13.74234842	0.0027
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.1374 hrs
								8.2437 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8}/P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.59 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	4.95	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin G	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100	0.03000	e	0.150	n/a	n/a	0.179980244	0.1543
SHALLOW CONCENTRATED	1204.0	0.09880	u	n/a	n/a	n/a	5.071471435	0.0659
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	501.4392	0.002	u	0.04	15	14.544	1.943461551	0.0717
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.2920 hrs
								17.5172 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8} / P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.59 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	10.51	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin H	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100	0.07000	j	0.150	n/a	n/a	0.252589649	0.1100
SHALLOW CONCENTRATED	467.7	0.10690	u	n/a	n/a	n/a	5.275179648	0.0246
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	15	14.544	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.1346 hrs
								8.0761 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8}/P_2^{0.5} \times S^{0.4}]$		
Manning's Roughness Coefficient:	n		
Travel Length (feet):	L		
2 Yr/24 hr Rainfall depth:	P_2	2.59	in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$		
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)	
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)	
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$		
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$		

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	4.85	min.

TIME OF CONCENTRATION AND TRAVEL TIME	
PROJECT NAME	KIRKWOOD SOLAR FARM
EXISTING	CONDITIONS
Basin I	

FLOW TYPE	LENGTH (feet)	SLOPE (ft./ft.)	SURFACE a	MANNINGS "N"	AREA (sq.ft.)	WP (feet)	VELOCITY (ft./sec.)	TRAVEL TIME (Hrs)
SHEET	100	0.10000	l	0.800	n/a	n/a	0.076344429	0.3638
SHALLOW CONCENTRATED	1465.6	0.09620	u	n/a	n/a	n/a	5.004383669	0.0814
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
SHALLOW CONCENTRATED	0	------	----------	n/a	n/a	n/a	----------	0.0000
OPEN CHANNEL	259.3857	0.07324999	u	0.04	15	14.544	11.76155493	0.0061
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
OPEN CHANNEL	0	------	----------	0.00	--------	--------	----------	0.0000
							TIME OF CONCENTRATION "T_{conc}":	0.4513 hrs
								27.0797 min.

Sheet Flow Surface Codes

a Smooth Surface	f grass, dense
b fallow (no residue)	g grass, bermuda
c cultivated < 20% Res.	h woods, light
d cultivated > 20% Res.	i woods, dense
e grass - range, short	j range, natural
	k gravel, firm

Shallow Concentrated Surface Codes

u unpaved surface

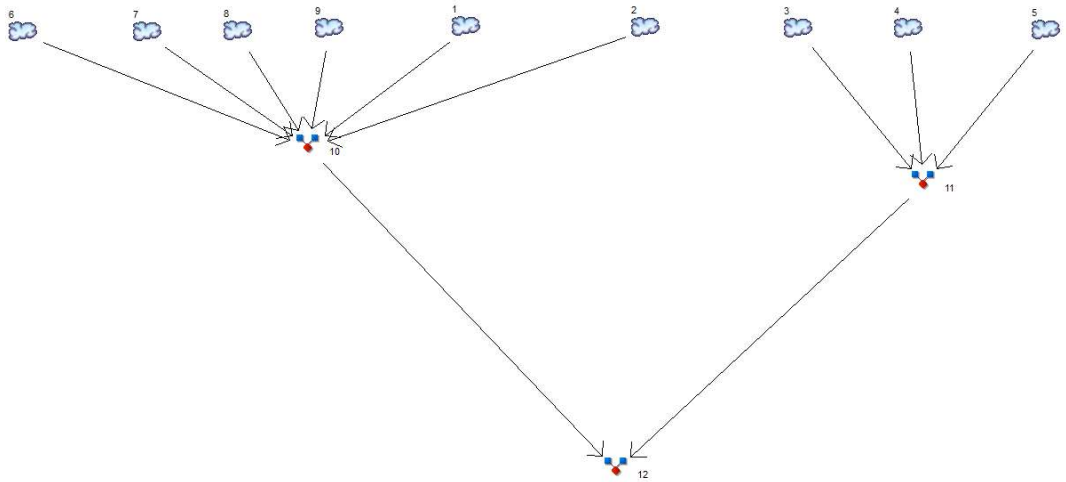
p paved surface

Overland Travel Time (NRCS eqn):	$T_t = [0.007 \times (n \times L)^{0.8}/P_2^{0.5} \times S^{0.4}]$	
Manning's Roughness Coefficient:	n	
Travel Length (feet):	L	
2 Yr/24 hr Rainfall depth:	P_2	2.59 in
Hydraulic Grade Line/Slope:	$S = (Elev_{up} - Elev_{dn}) / L$	
Shallow Concentrated Travel Time:	$T_t = 16.1345 \times S^{0.5}$	(unpaved)
Shallow Concentrated Travel Time:	$T_t = 20.3282 \times S^{0.5}$	(paved)
Open Channel Travel Time:	$T_t = [(1.486 \times (Area/WP)^{2/3} \times S^{1/2})/n] / L$	
Time of Concentration:	$T_{conc} = \sum (T_t + T_{t+1} \ldots T_{t+n})$	

Overland Lag Time	$T_{Lag} = 0.6\ T_{Conc}$	=	16.25	min.

H.2. Pre-Developed Conditions Runoff Hydrographs

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Basin E
2	SCS Runoff	Basin F
3	SCS Runoff	Basin G
4	SCS Runoff	Basin H
5	SCS Runoff	Basin I
6	SCS Runoff	Basin A
7	SCS Runoff	Basin B
8	SCS Runoff	Basin C
9	SCS Runoff	Basin D
10	Combine	Basin A-F Receiving Waters
11	Combine	Basin G-I Receiving Waters
12	Combine	Overall Receiving Waters

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

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	-------	7.110	11.12	-------	-------	25.11	34.58	-------	49.66	Basin E
2	SCS Runoff	-------	4.527	6.993	-------	-------	15.38	21.12	-------	30.23	Basin F
3	SCS Runoff	-------	16.61	29.02	-------	-------	73.73	105.49	-------	157.22	Basin G
4	SCS Runoff	-------	1.842	2.845	-------	-------	6.260	8.591	-------	12.30	Basin H
5	SCS Runoff	-------	20.02	31.88	-------	-------	72.77	100.74	-------	145.51	Basin I
6	SCS Runoff	-------	1.823	6.749	-------	-------	33.50	55.12	-------	92.61	Basin A
7	SCS Runoff	-------	6.391	10.26	-------	-------	23.64	32.73	-------	47.39	Basin B
8	SCS Runoff	-------	19.77	34.31	-------	-------	86.46	123.16	-------	183.11	Basin C
9	SCS Runoff	-------	5.398	8.642	-------	-------	20.25	28.22	-------	41.09	Basin D
10	Combine	1, 2, 6, 7, 8, 9	34.55	62.39	-------	-------	171.65	250.45	-------	380.61	Basin A-F Receiving Waters
11	Combine	3, 4, 5,	35.57	59.19	-------	-------	143.29	201.77	-------	296.25	Basin G-I Receiving Waters
12	Combine	10, 11	70.12	121.12	-------	-------	314.94	452.23	-------	676.86	Overall Receiving Waters

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	7.110	2	724	21,342	----	------	------	Basin E
2	SCS Runoff	4.527	2	720	10,653	----	------	------	Basin F
3	SCS Runoff	16.61	2	726	62,191	----	------	------	Basin G
4	SCS Runoff	1.842	2	720	4,335	----	------	------	Basin H
5	SCS Runoff	20.02	2	732	88,742	----	------	------	Basin I
6	SCS Runoff	1.823	2	732	18,058	----	------	------	Basin A
7	SCS Runoff	6.391	2	738	34,875	----	------	------	Basin B
8	SCS Runoff	19.77	2	728	82,007	----	------	------	Basin C
9	SCS Runoff	5.398	2	822	86,757	----	------	------	Basin D
10	Combine	34.55	2	728	253,691	1, 2, 6, 7, 8, 9	------	------	Basin A-F Receiving Waters
11	Combine	35.57	2	728	155,268	3, 4, 5,	------	------	Basin G-I Receiving Waters
12	Combine	70.12	2	728	408,960	10, 11	------	------	Overall Receiving Waters

Hydrograph Report

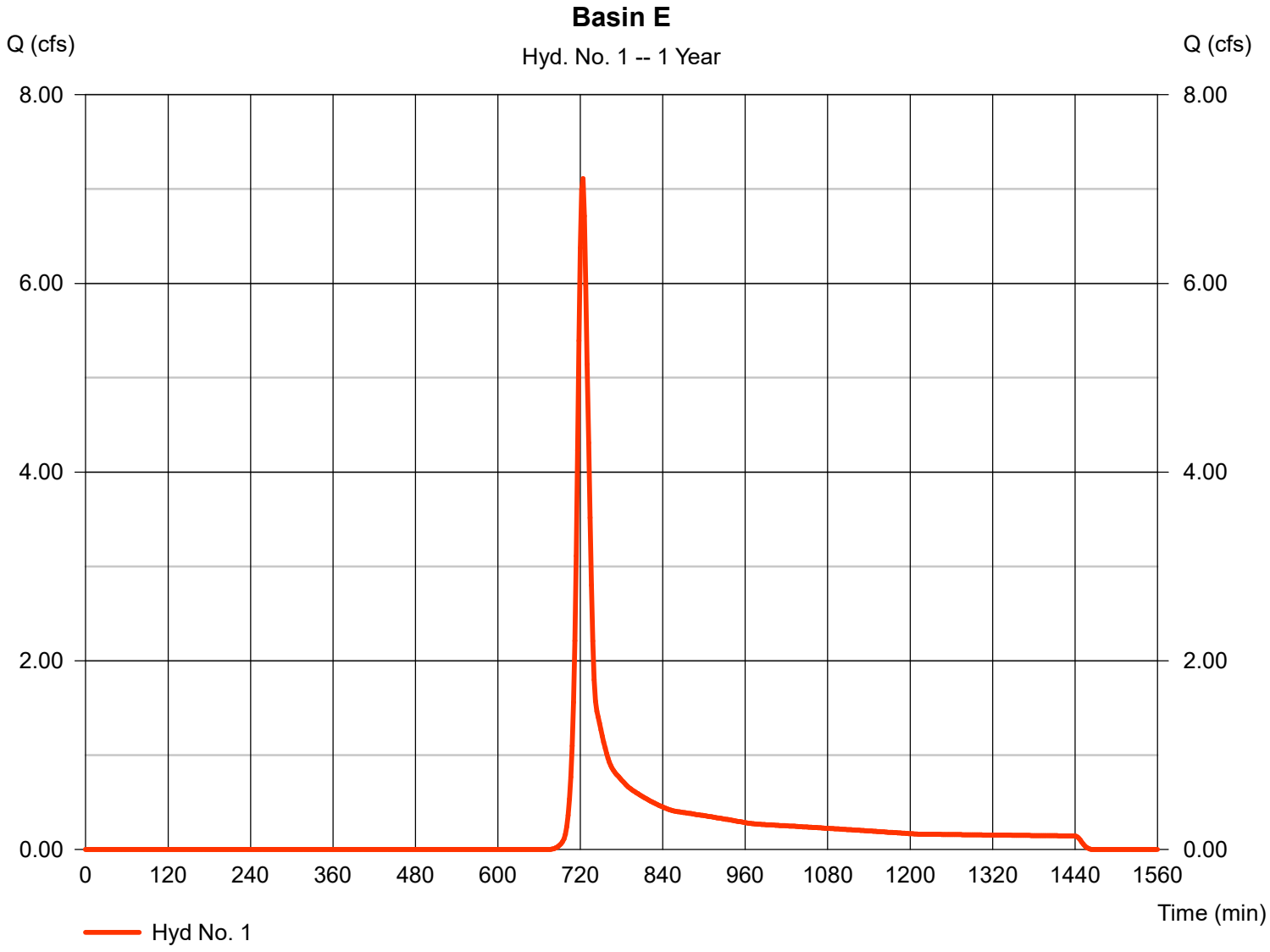
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 1

Basin E

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.110 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	21,342 cuft
Drainage area	=	10.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	16.10 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 79) + (7.850 x 79) + (2.070 x 78) + (0.110 x 100)] / 10.150



Hydrograph Report

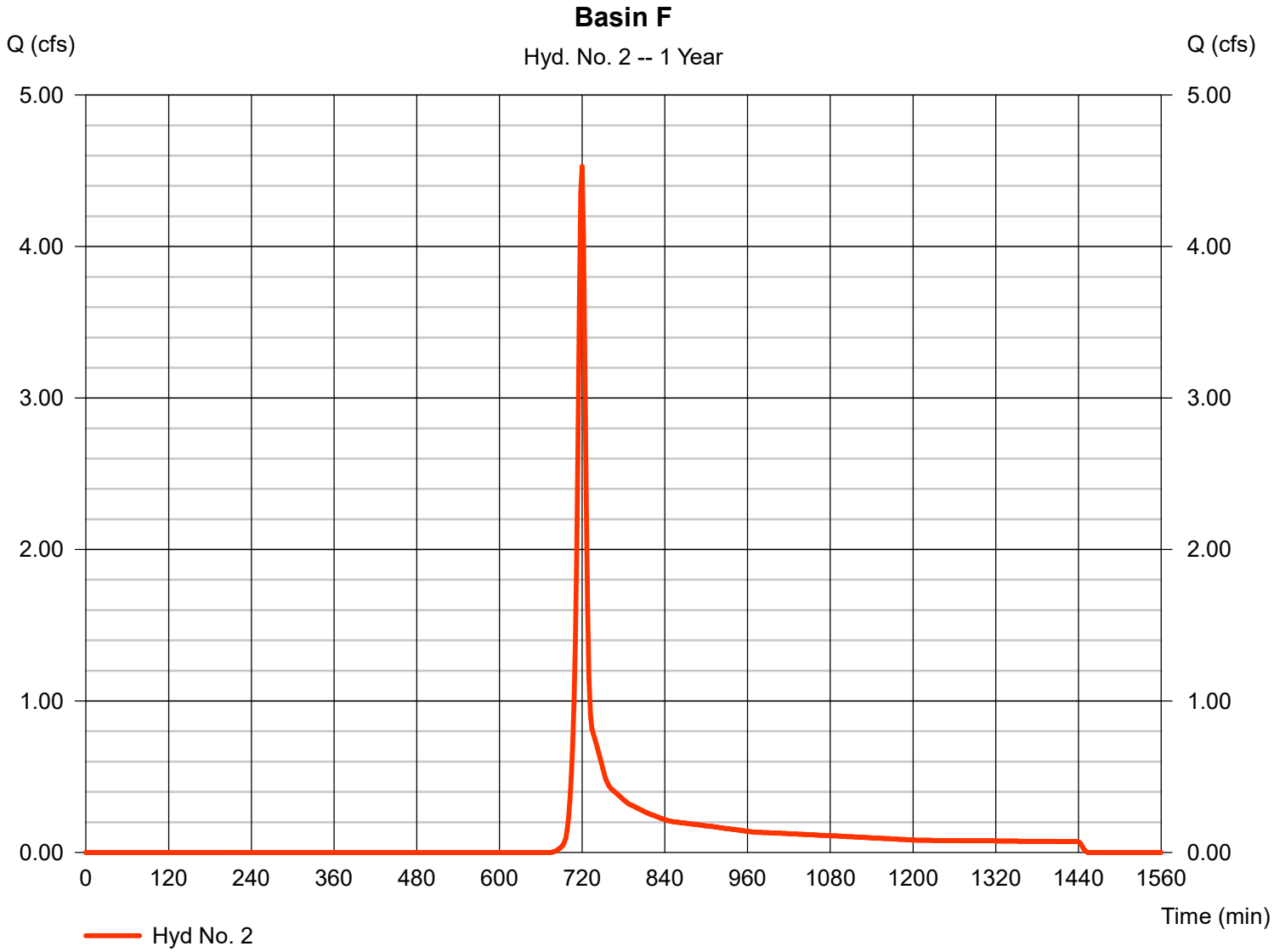
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 2

Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.527 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	10,653 cuft
Drainage area	=	4.940 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.20 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 79) + (2.570 x 79) + (2.040 x 78) + (0.100 x 100) + (0.030 x 89) + (0.100 x 98)] / 4.940



Hydrograph Report

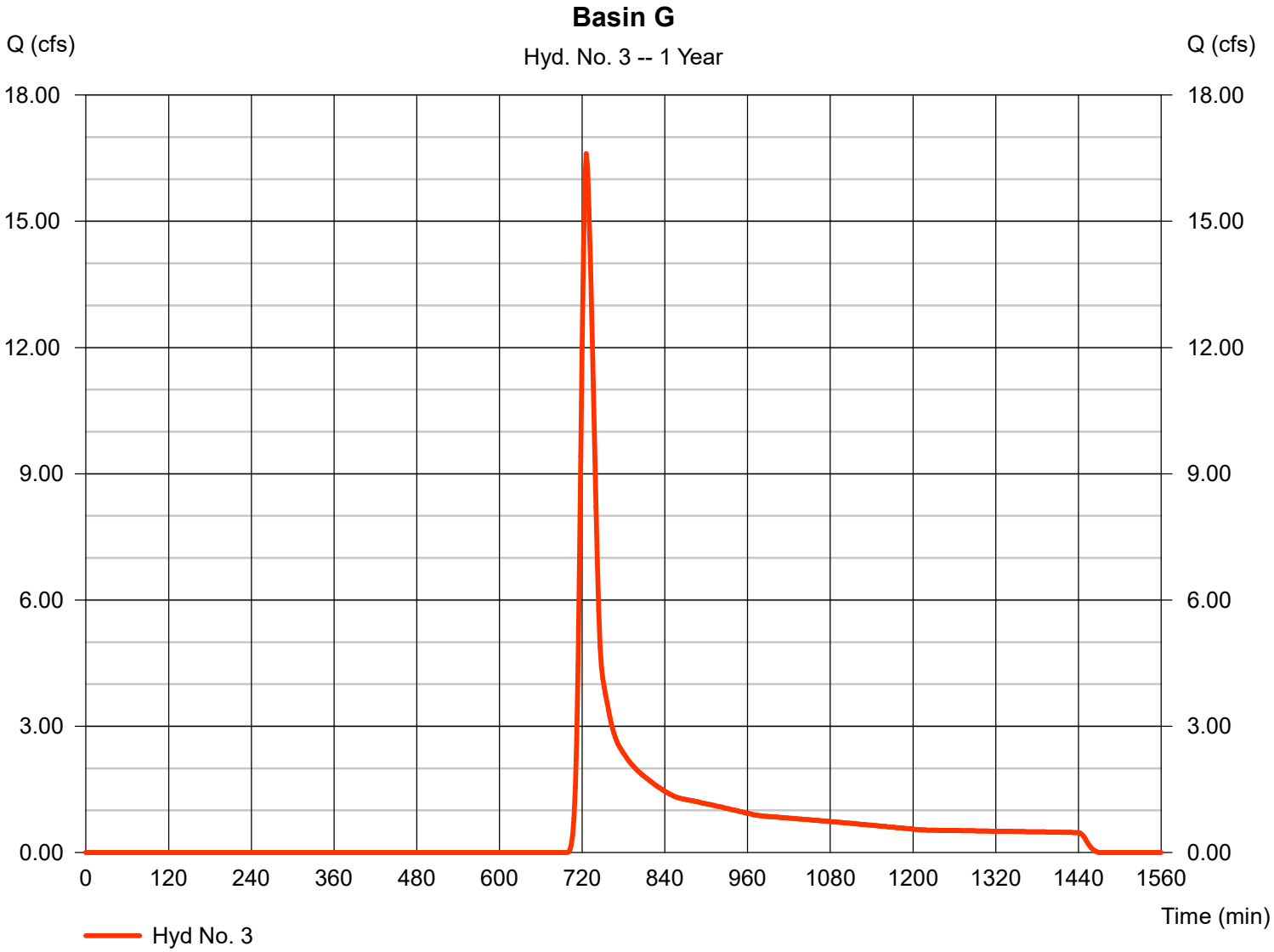
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 3

Basin G

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.61 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	62,191 cuft
Drainage area	=	38.830 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	17.50 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.320 x 98) + (6.320 x 79) + (2.550 x 60) + (22.660 x 78) + (5.890 x 58) + (0.090 x 100)] / 38.830



Hydrograph Report

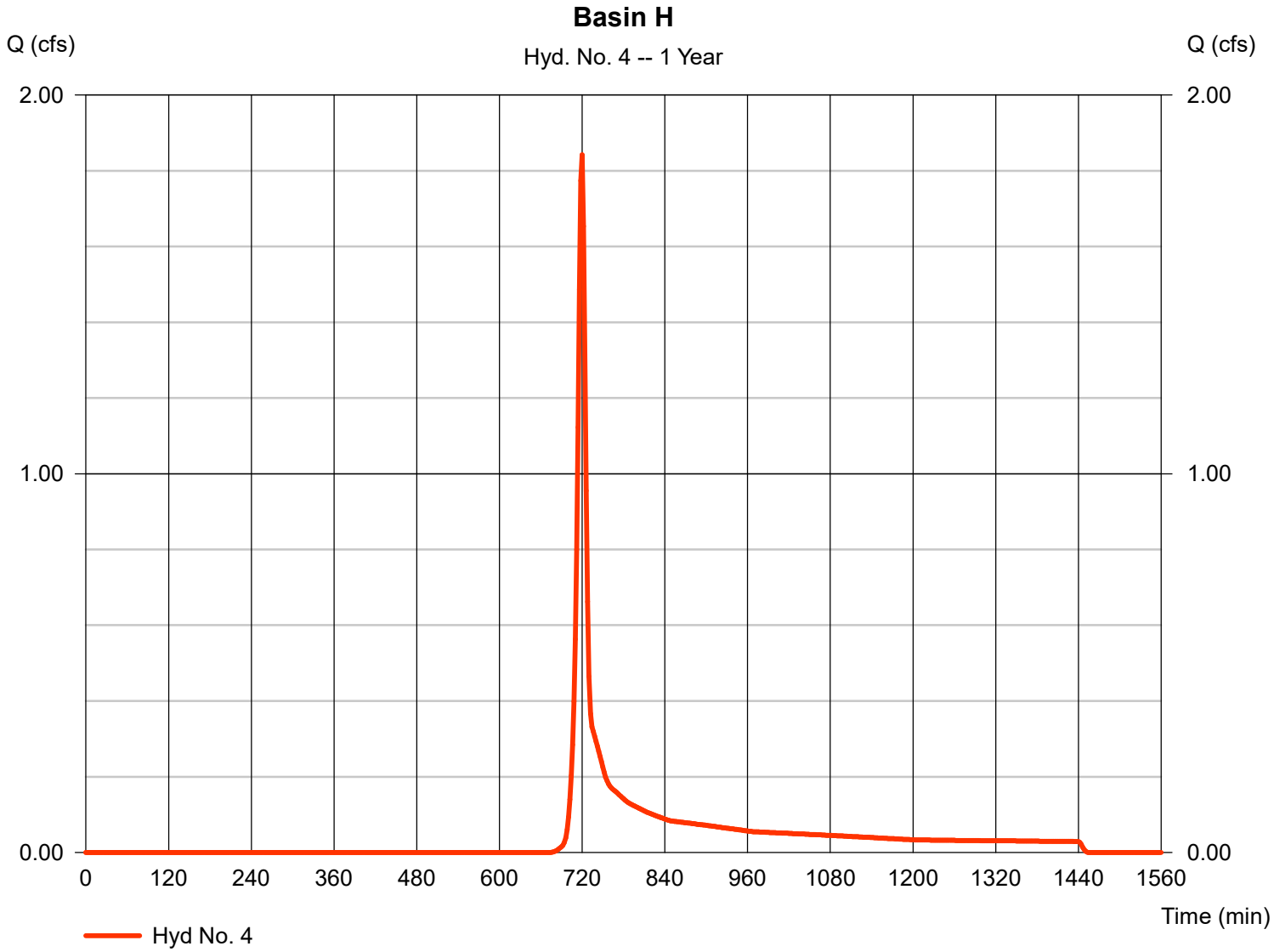
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 4

Basin H

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.842 cfs
Storm frequency	=	1 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	4,335 cuft
Drainage area	=	2.010 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.10 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.360 x 79) + (1.540 x 78) + (0.110 x 98)] / 2.010



Hydrograph Report

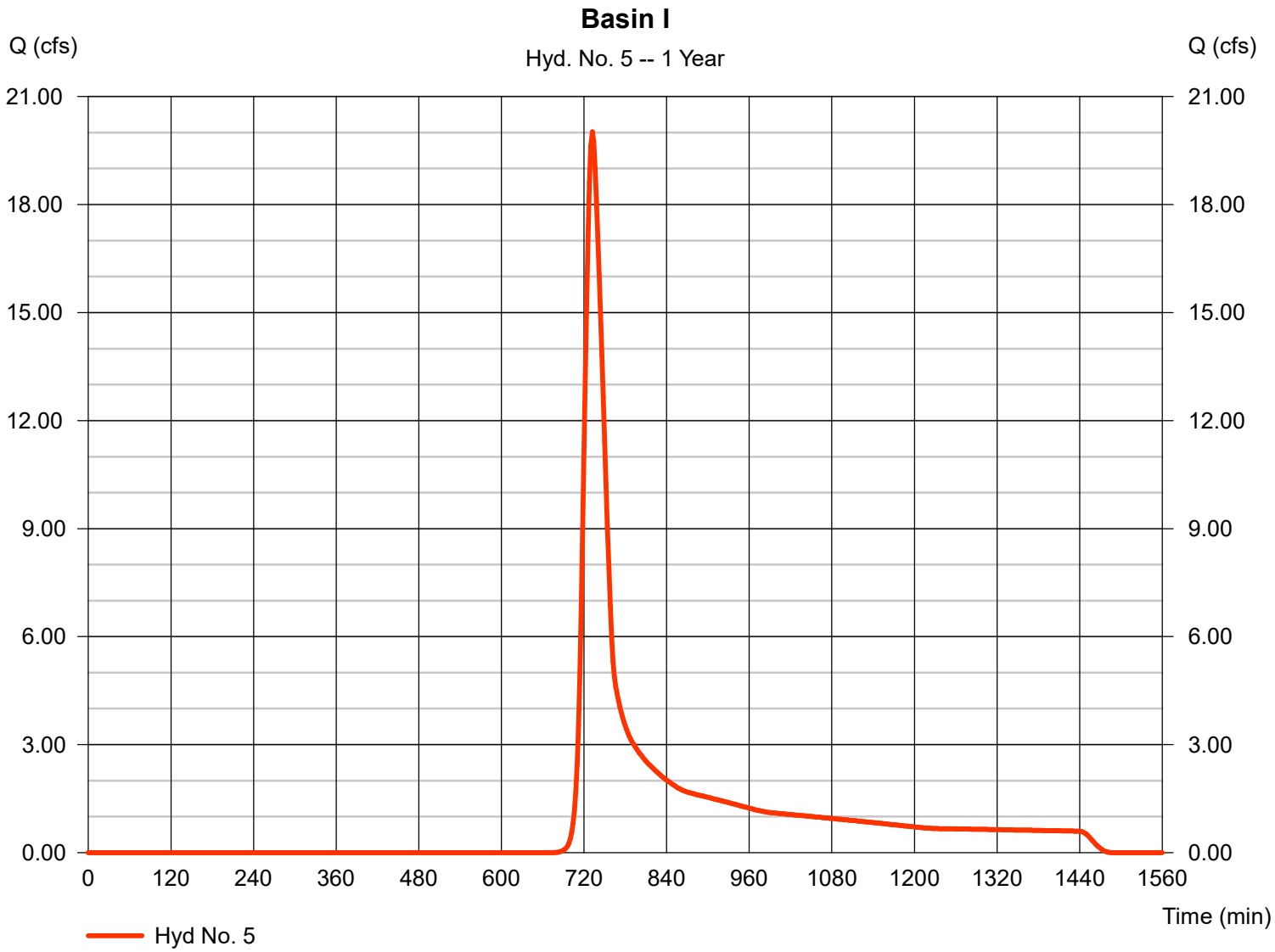
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 5

Basin I

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.02 cfs
Storm frequency	=	1 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	88,742 cuft
Drainage area	=	41.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	27.10 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(40.170 x 79) + (0.160 x 98) + (0.820 x 100)] / 41.150



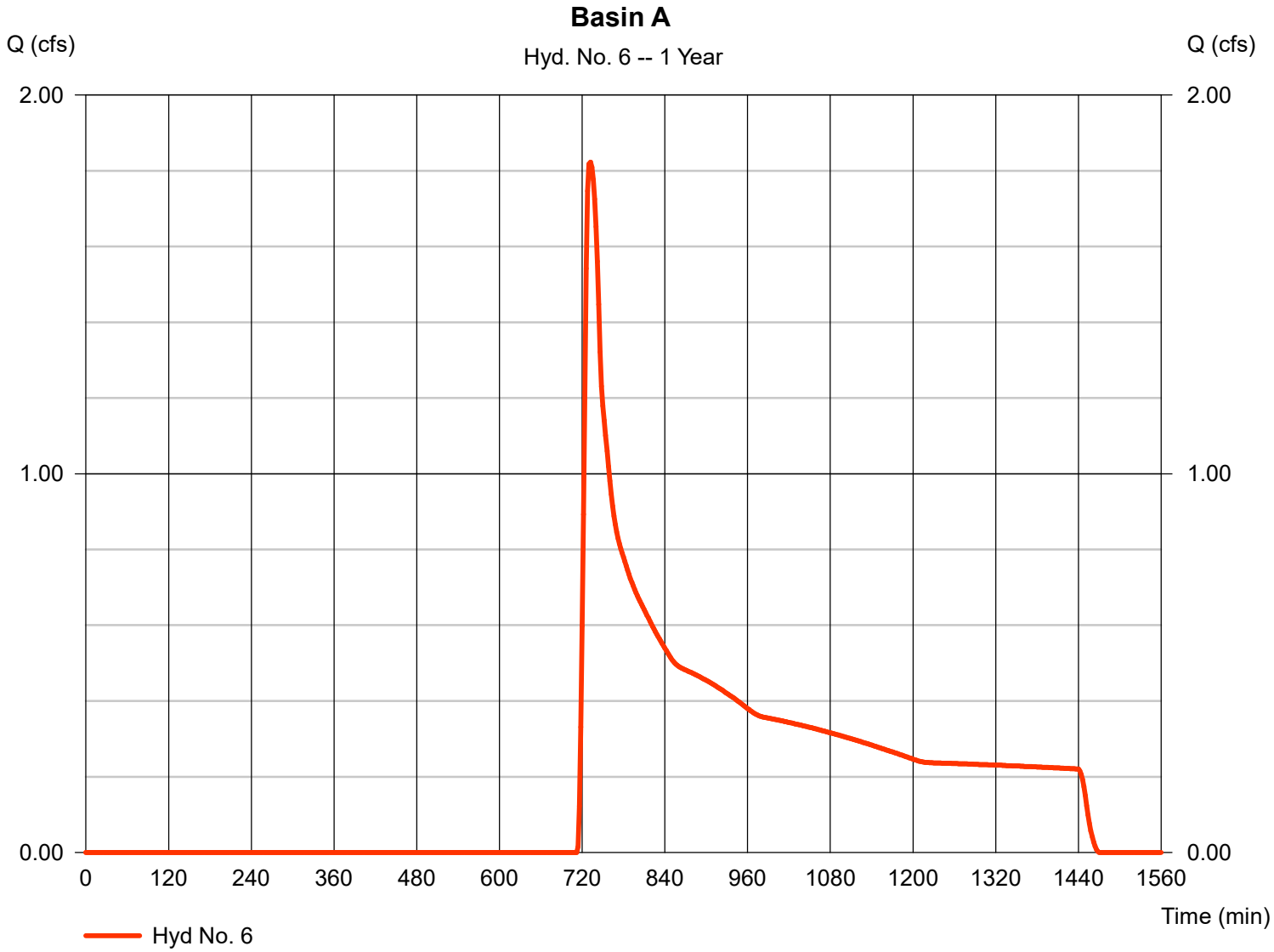
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 6

Basin A

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.823 cfs
Storm frequency	=	1 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	18,058 cuft
Drainage area	=	33.753 ac	Curve number	=	63.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	18.80 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



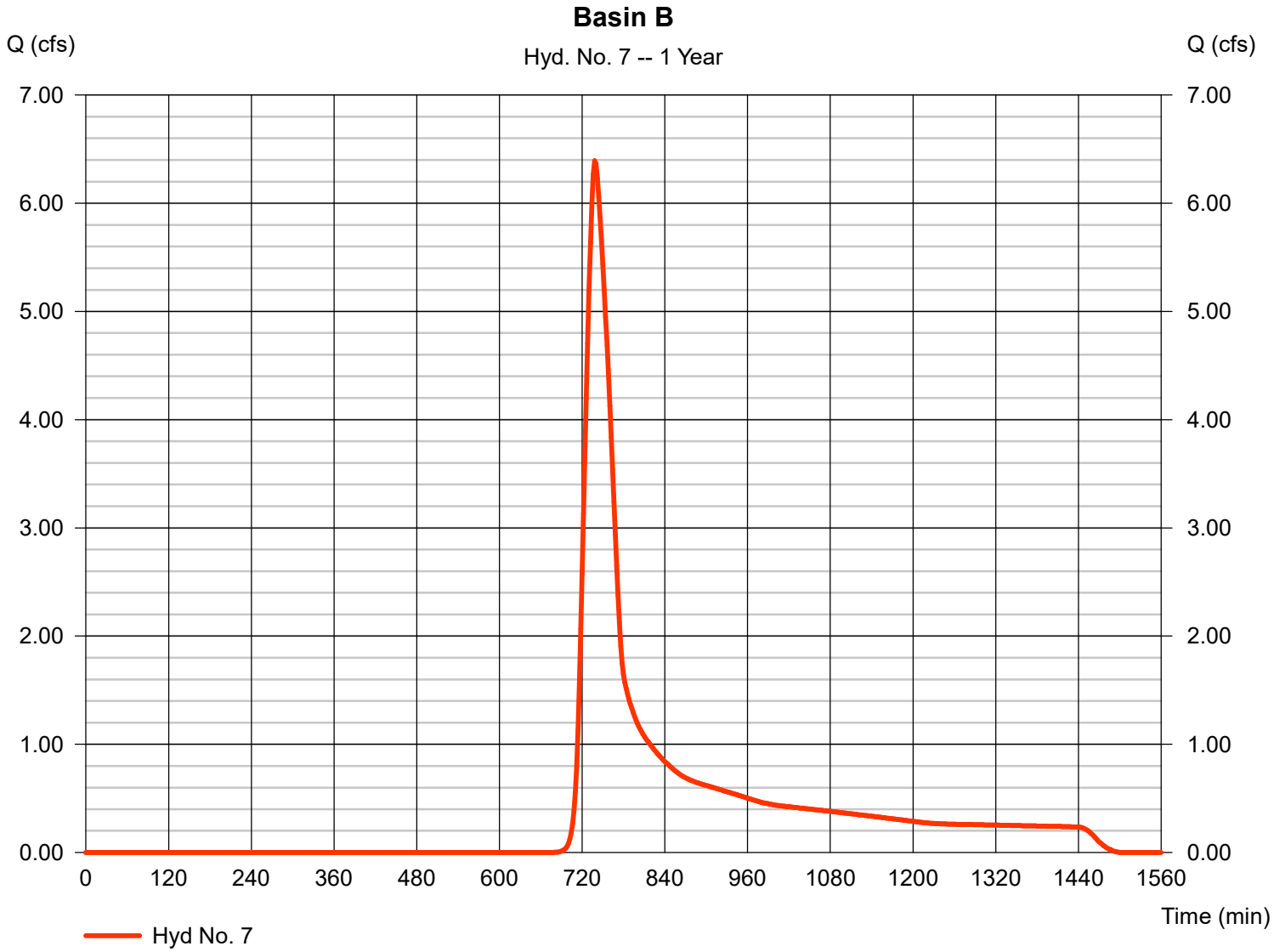
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 7

Basin B

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.391 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	34,875 cuft
Drainage area	=	16.286 ac	Curve number	=	78.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	37.22 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



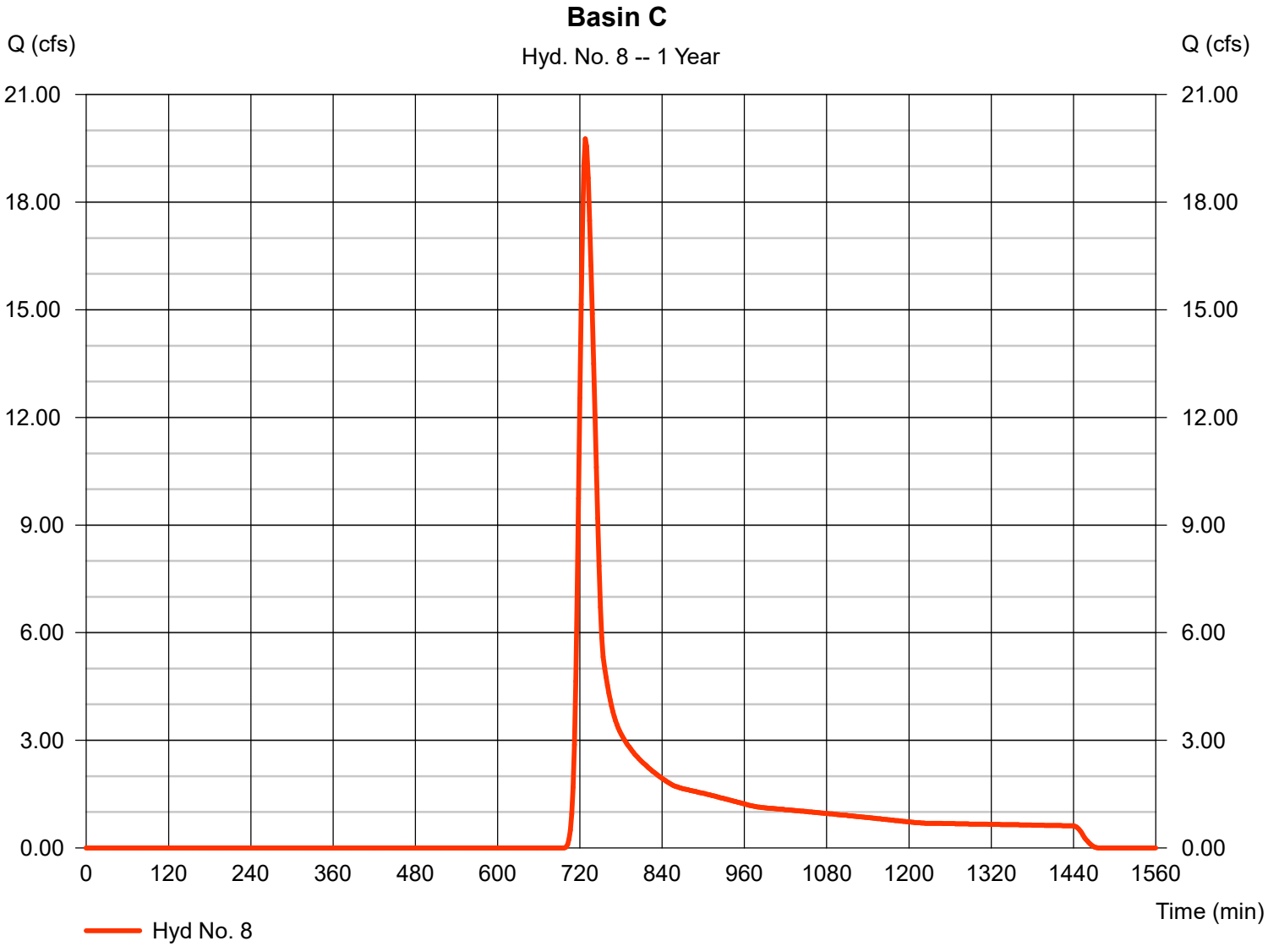
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 8

Basin C

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.77 cfs
Storm frequency	=	1 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	82,007 cuft
Drainage area	=	48.374 ac	Curve number	=	75.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	21.90 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



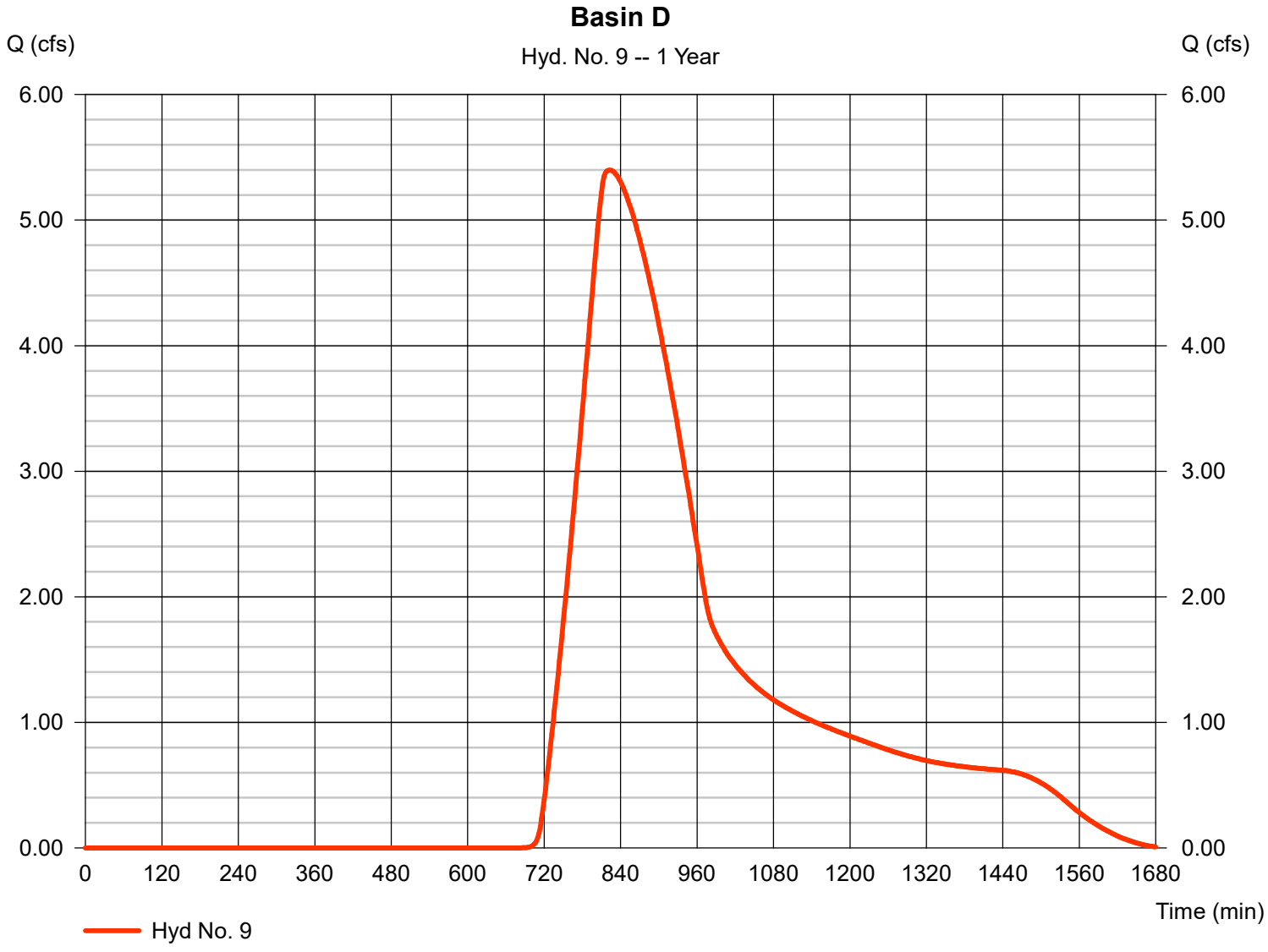
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 9

Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.398 cfs
Storm frequency	=	1 yrs	Time to peak	=	822 min
Time interval	=	2 min	Hyd. volume	=	86,757 cuft
Drainage area	=	40.330 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	167.00 min
Total precip.	=	2.12 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



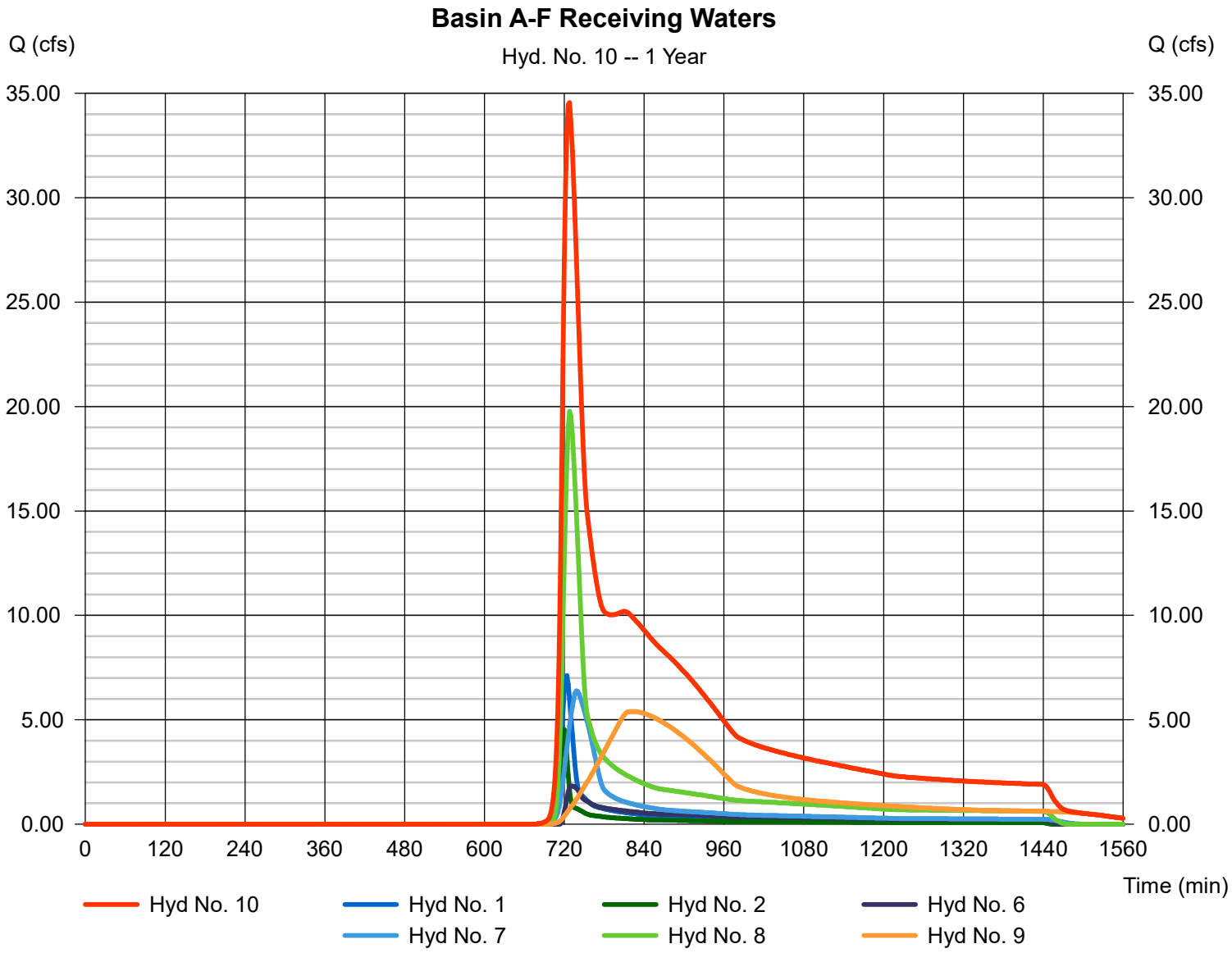
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 10

Basin A-F Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 34.55 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 253,691 cuft
Inflow hyds.	= 1, 2, 6, 7, 8, 9	Contrib. drain. area	= 153.833 ac



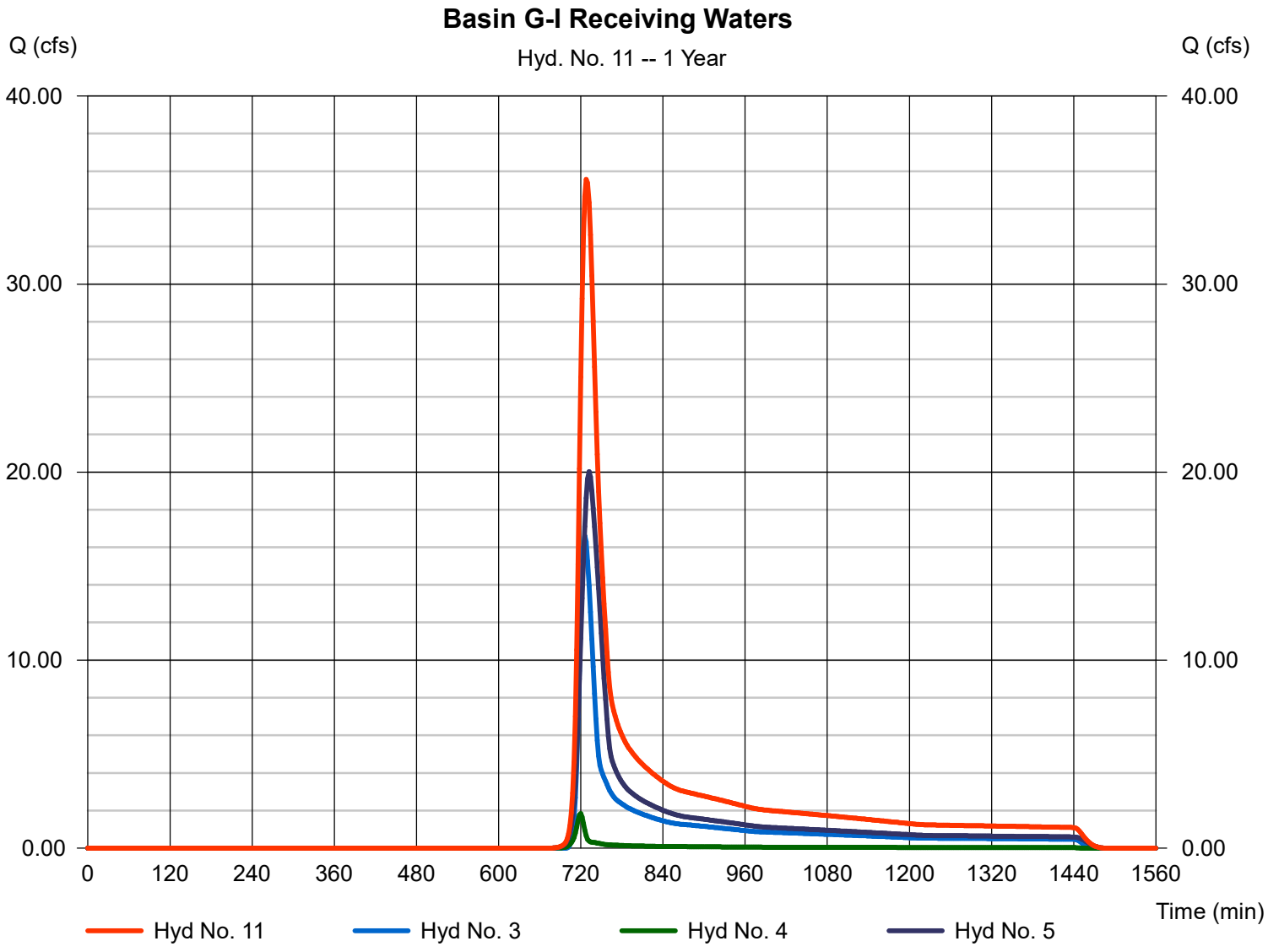
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 11

Basin G-I Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 35.57 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 155,268 cuft
Inflow hyds.	= 3, 4, 5	Contrib. drain. area	= 81.990 ac



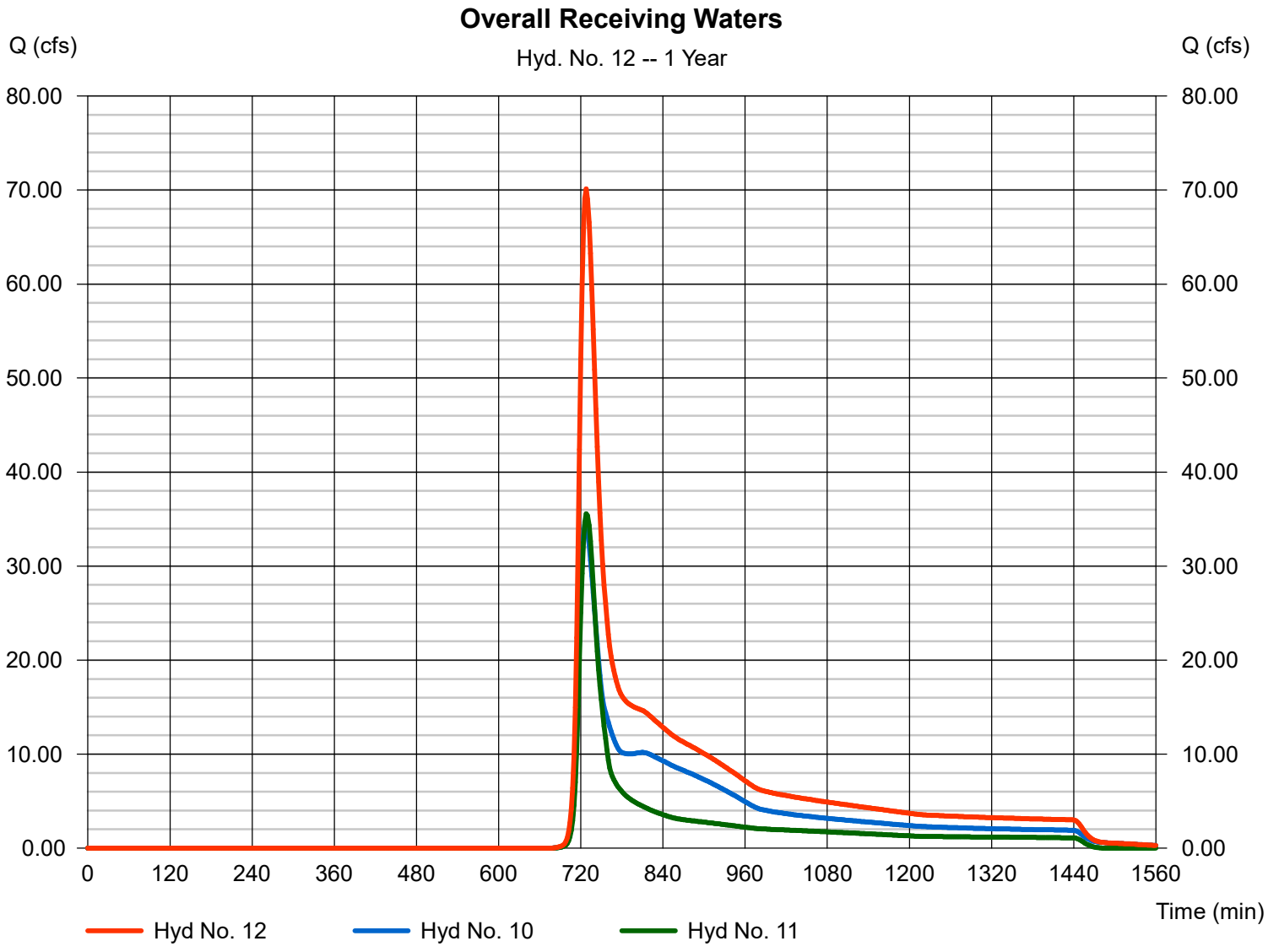
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 12

Overall Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 70.12 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 408,960 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	11.12	2	724	32,269	----	------	------	Basin E
2	SCS Runoff	6.993	2	720	16,108	----	------	------	Basin F
3	SCS Runoff	29.02	2	726	99,191	----	------	------	Basin G
4	SCS Runoff	2.845	2	720	6,554	----	------	------	Basin H
5	SCS Runoff	31.88	2	732	134,181	----	------	------	Basin I
6	SCS Runoff	6.749	2	728	36,736	----	------	------	Basin A
7	SCS Runoff	10.26	2	738	52,796	----	------	------	Basin B
8	SCS Runoff	34.31	2	728	129,843	----	------	------	Basin C
9	SCS Runoff	8.642	2	818	131,178	----	------	------	Basin D
10	Combine	62.39	2	726	398,930	1, 2, 6, 7, 8, 9	------	------	Basin A-F Receiving Waters
11	Combine	59.19	2	728	239,925	3, 4, 5,	------	------	Basin G-I Receiving Waters
12	Combine	121.12	2	728	638,856	10, 11	------	------	Overall Receiving Waters

Hydrograph Report

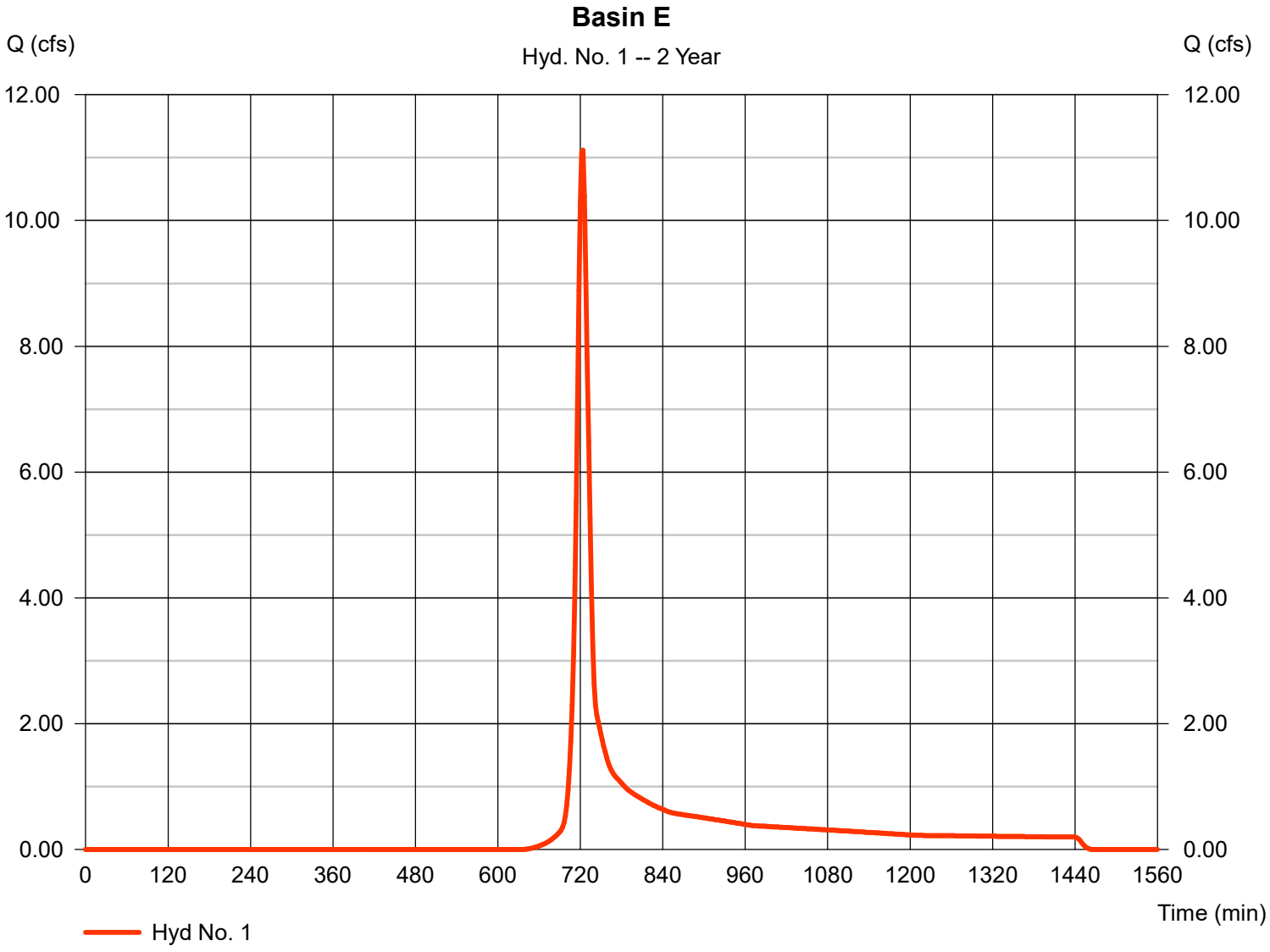
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 1

Basin E

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.12 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	32,269 cuft
Drainage area	=	10.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	16.10 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 79) + (7.850 x 79) + (2.070 x 78) + (0.110 x 100)] / 10.150



Hydrograph Report

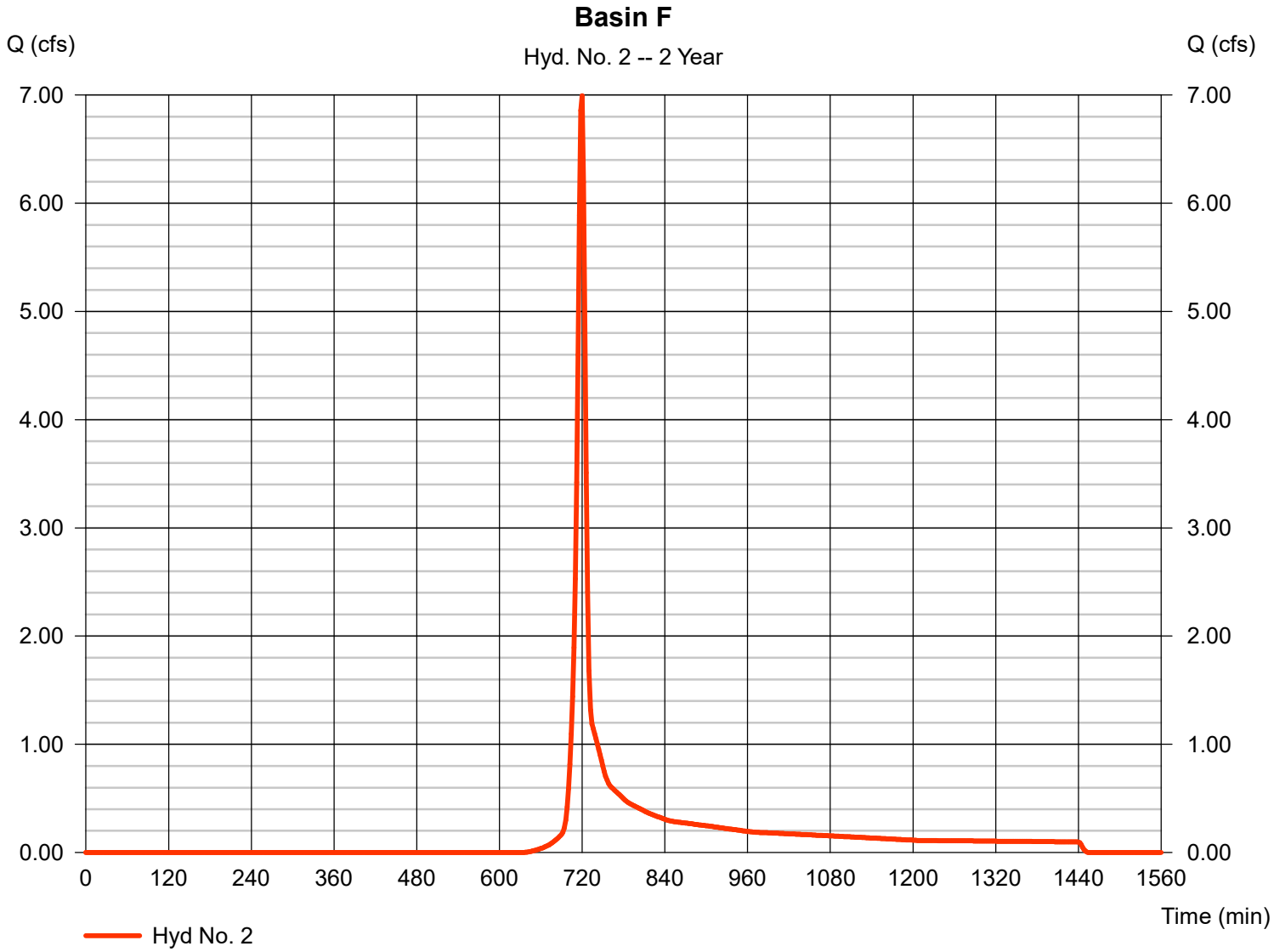
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 2

Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.993 cfs
Storm frequency	=	2 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	16,108 cuft
Drainage area	=	4.940 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.20 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 79) + (2.570 x 79) + (2.040 x 78) + (0.100 x 100) + (0.030 x 89) + (0.100 x 98)] / 4.940



Hydrograph Report

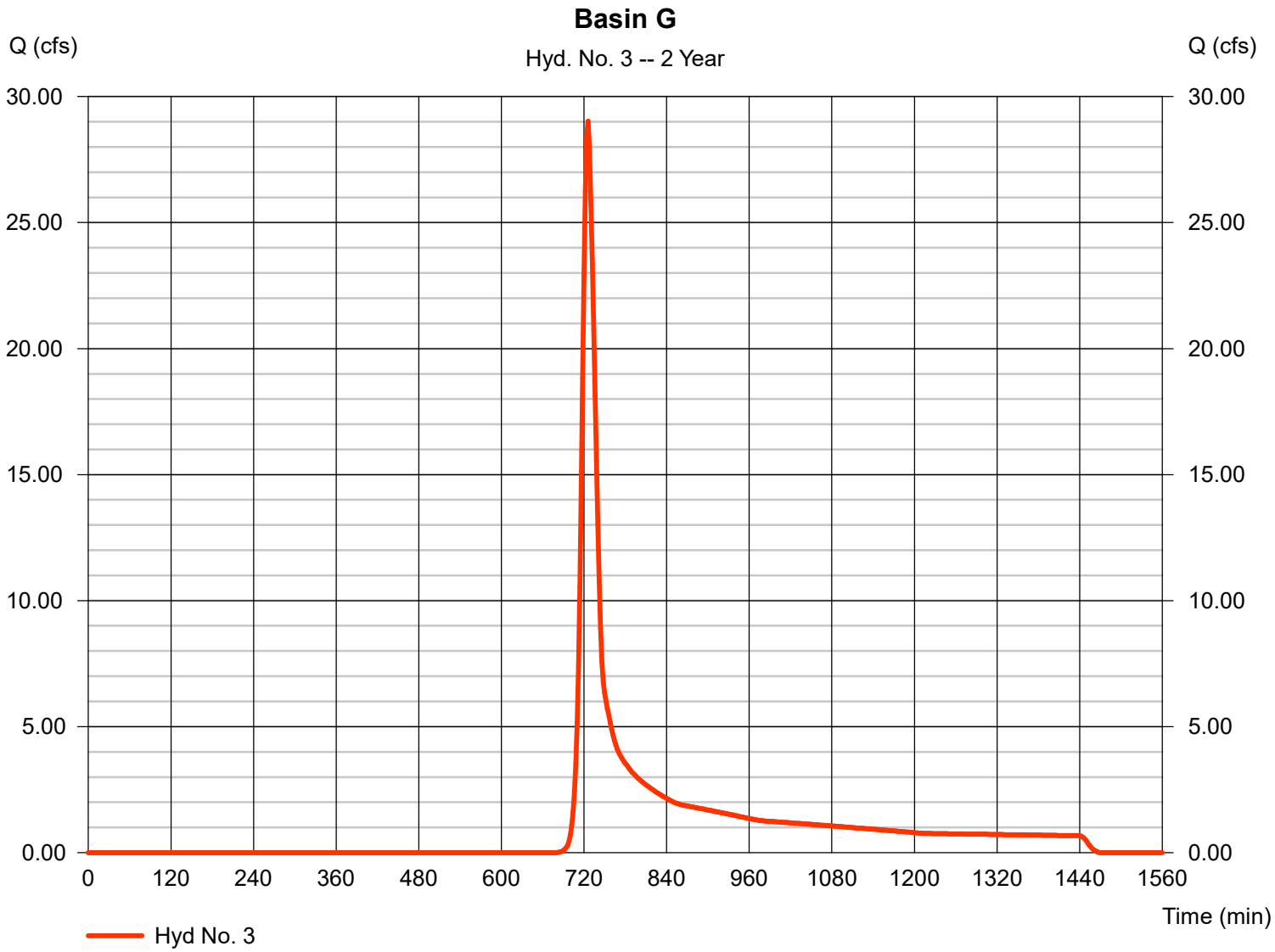
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 3

Basin G

Hydrograph type	=	SCS Runoff	Peak discharge	=	29.02 cfs
Storm frequency	=	2 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	99,191 cuft
Drainage area	=	38.830 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	17.50 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.320 x 98) + (6.320 x 79) + (2.550 x 60) + (22.660 x 78) + (5.890 x 58) + (0.090 x 100)] / 38.830



Hydrograph Report

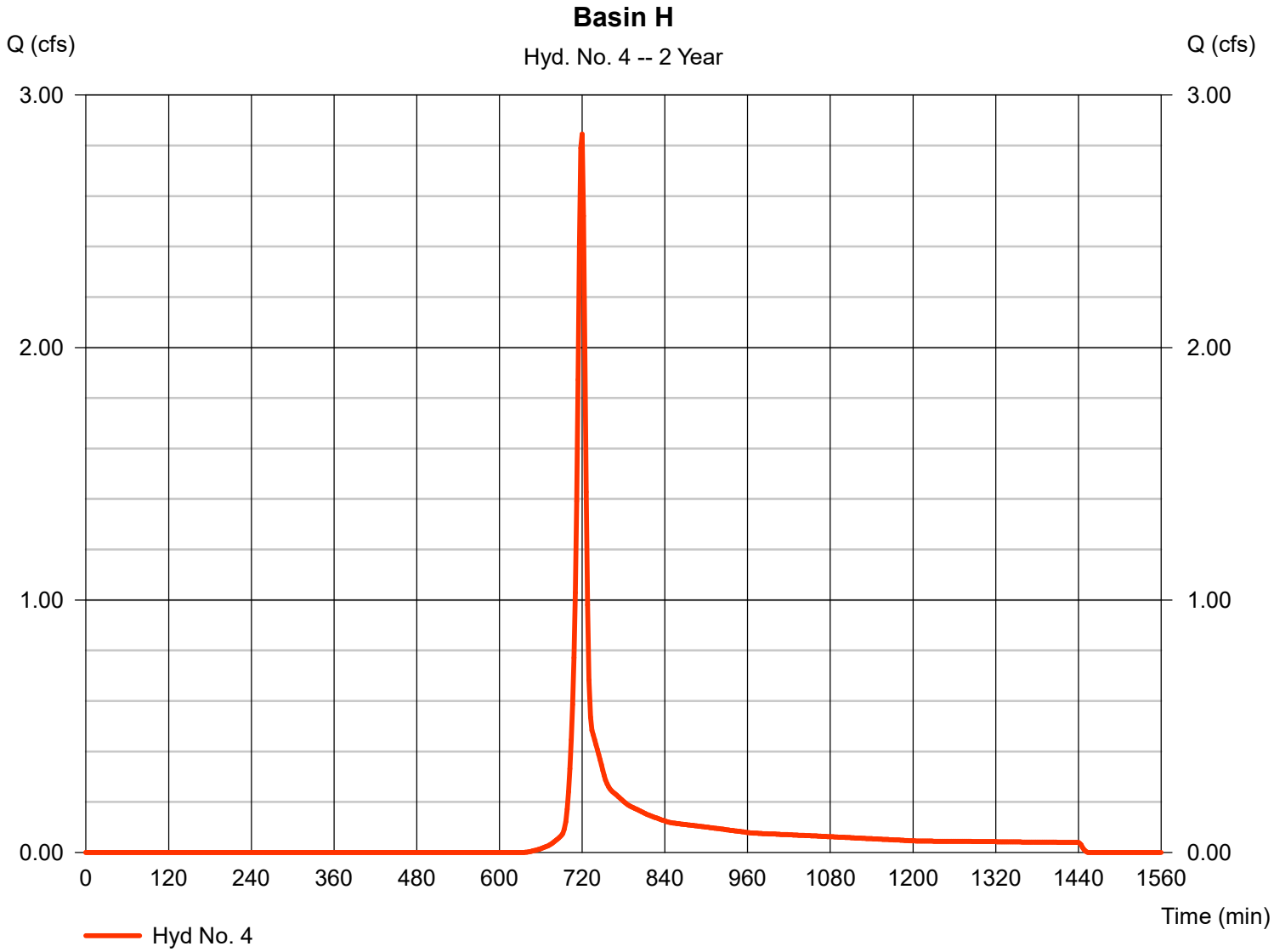
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 4

Basin H

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.845 cfs
Storm frequency	=	2 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	6,554 cuft
Drainage area	=	2.010 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.10 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.360 x 79) + (1.540 x 78) + (0.110 x 98)] / 2.010



Hydrograph Report

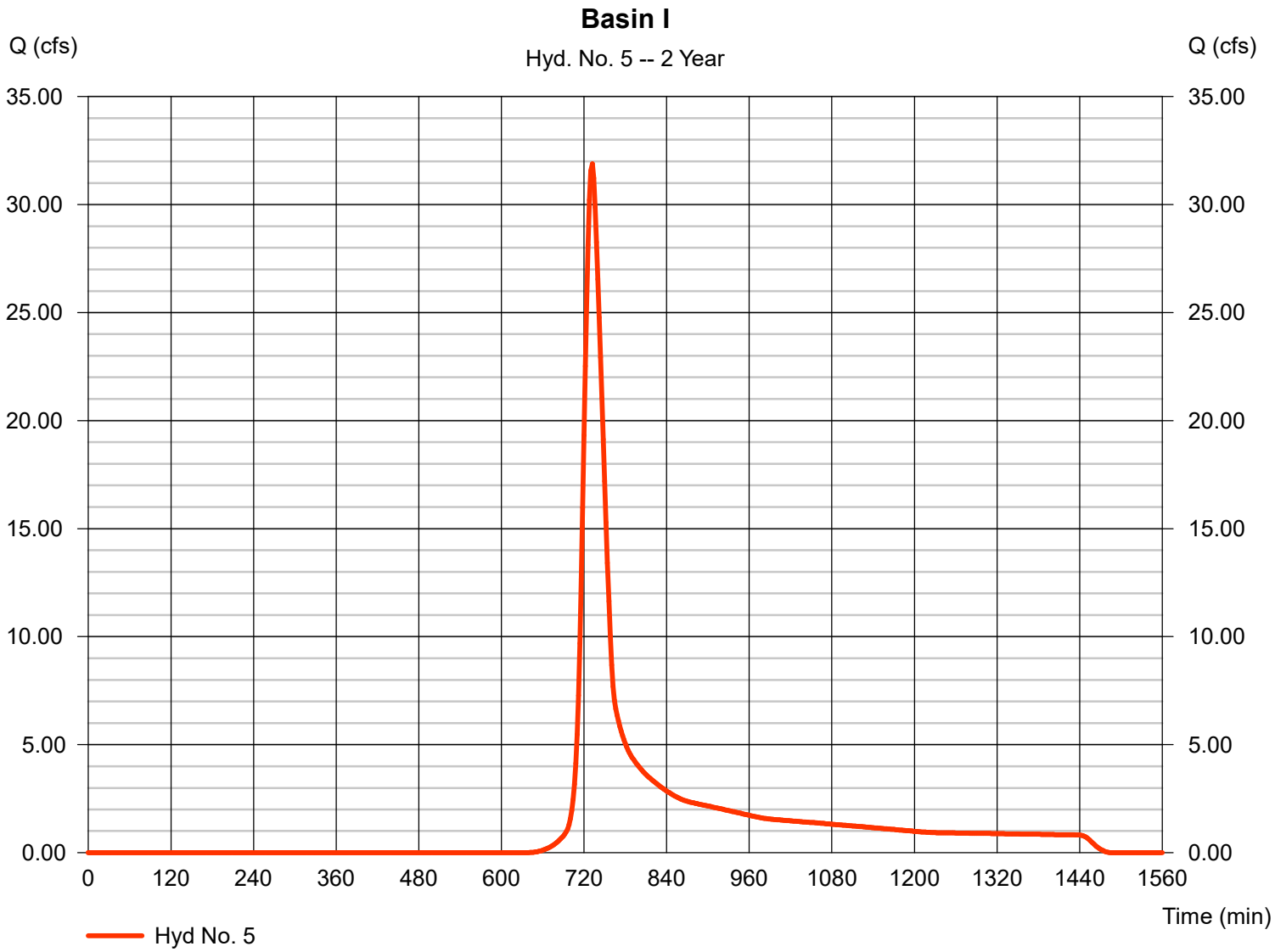
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 5

Basin I

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.88 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	134,181 cuft
Drainage area	=	41.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	27.10 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(40.170 x 79) + (0.160 x 98) + (0.820 x 100)] / 41.150



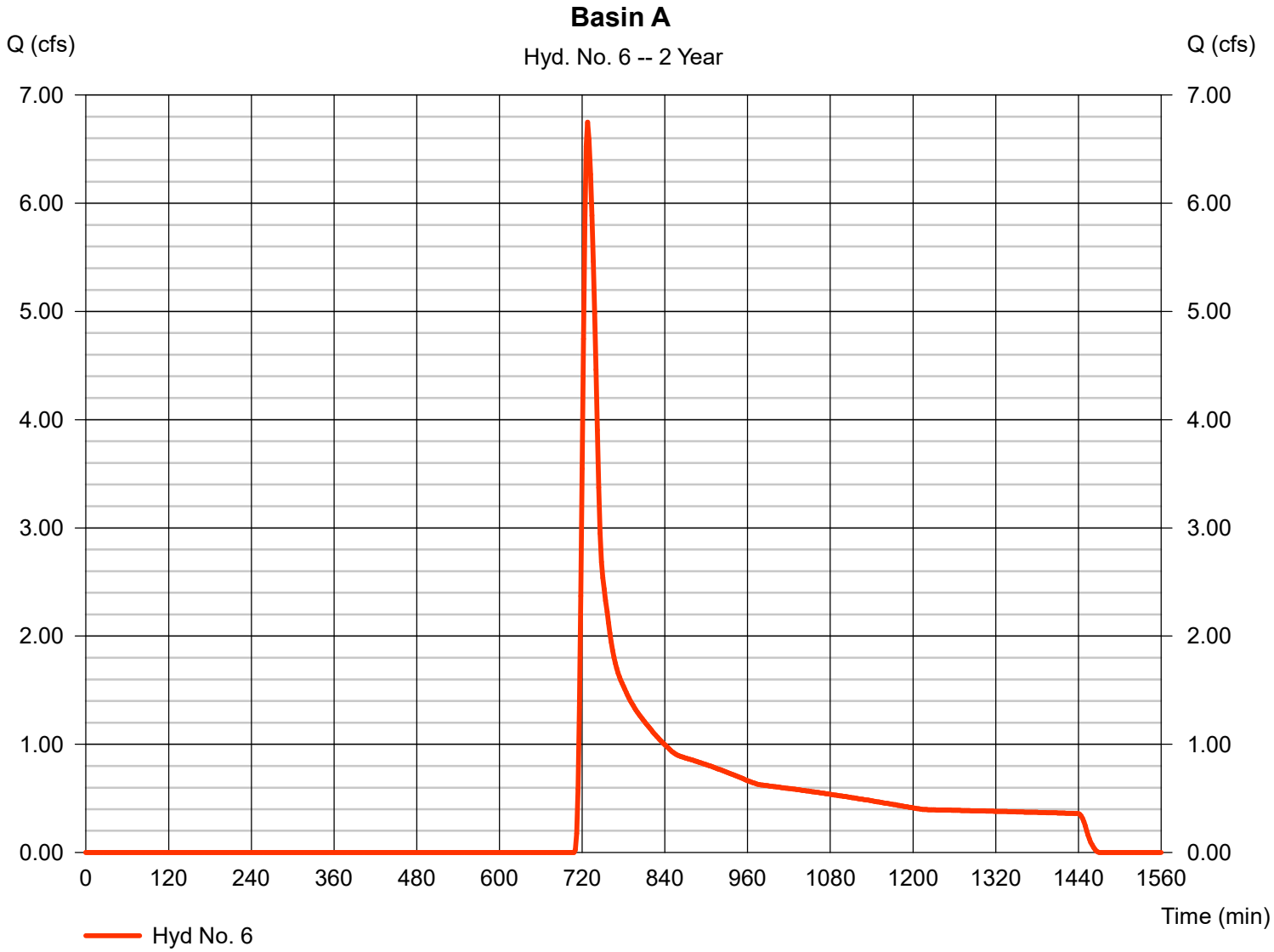
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 6

Basin A

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.749 cfs
Storm frequency	=	2 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	36,736 cuft
Drainage area	=	33.753 ac	Curve number	=	63.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	18.80 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



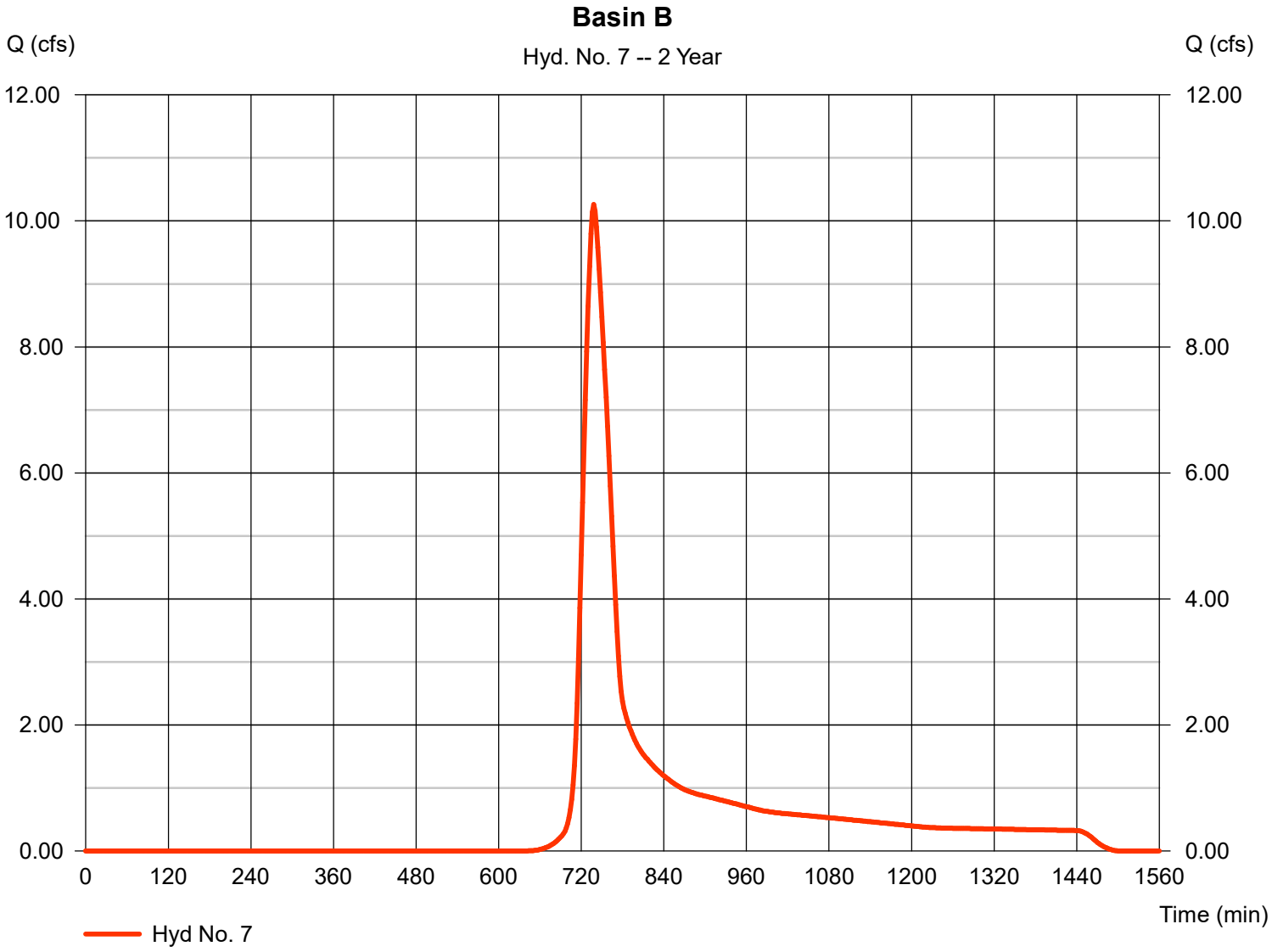
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 7

Basin B

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.26 cfs
Storm frequency	=	2 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	52,796 cuft
Drainage area	=	16.286 ac	Curve number	=	78.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	37.22 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



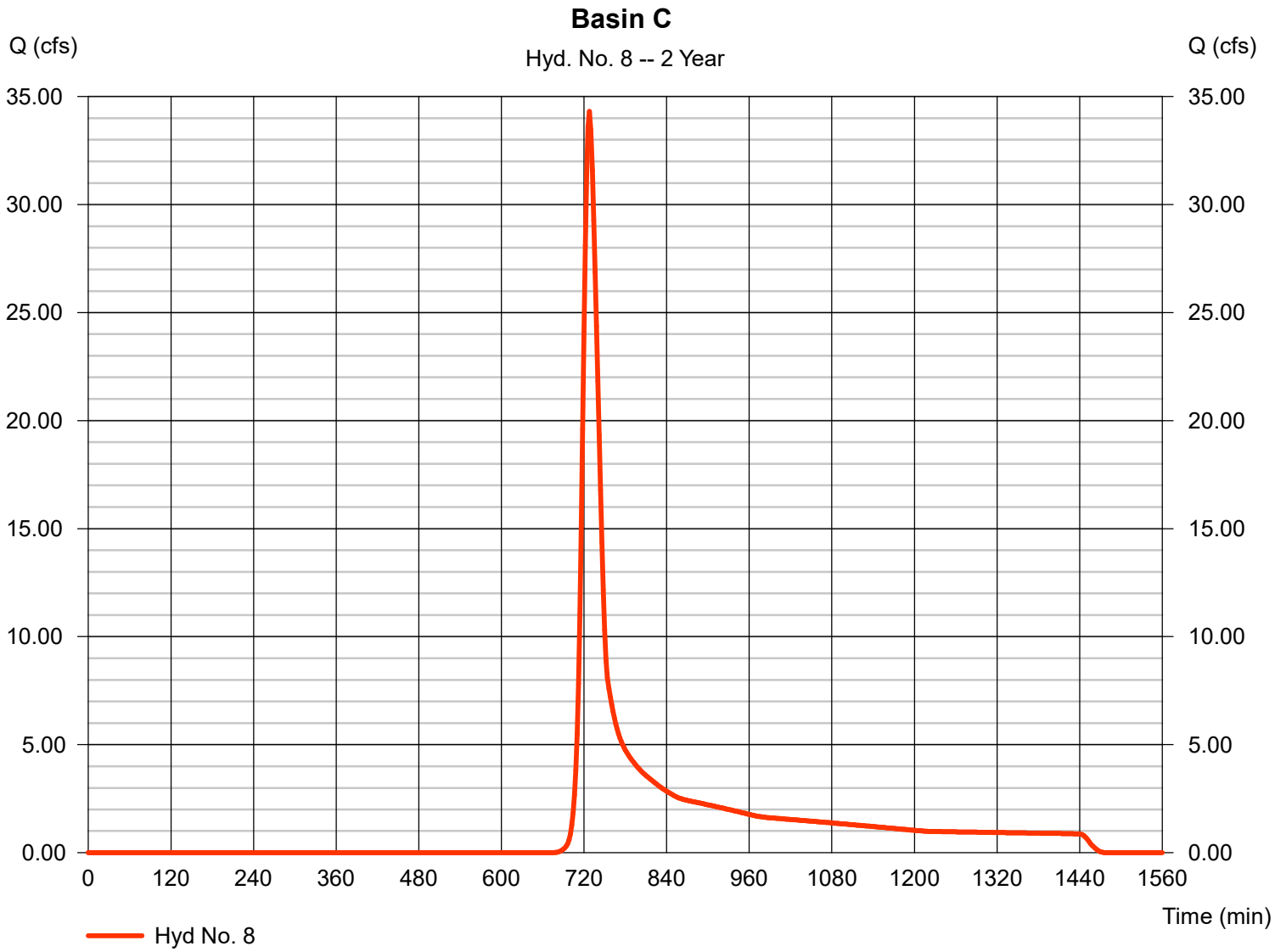
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 8

Basin C

Hydrograph type	=	SCS Runoff	Peak discharge	=	34.31 cfs
Storm frequency	=	2 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	129,843 cuft
Drainage area	=	48.374 ac	Curve number	=	75.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	21.90 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



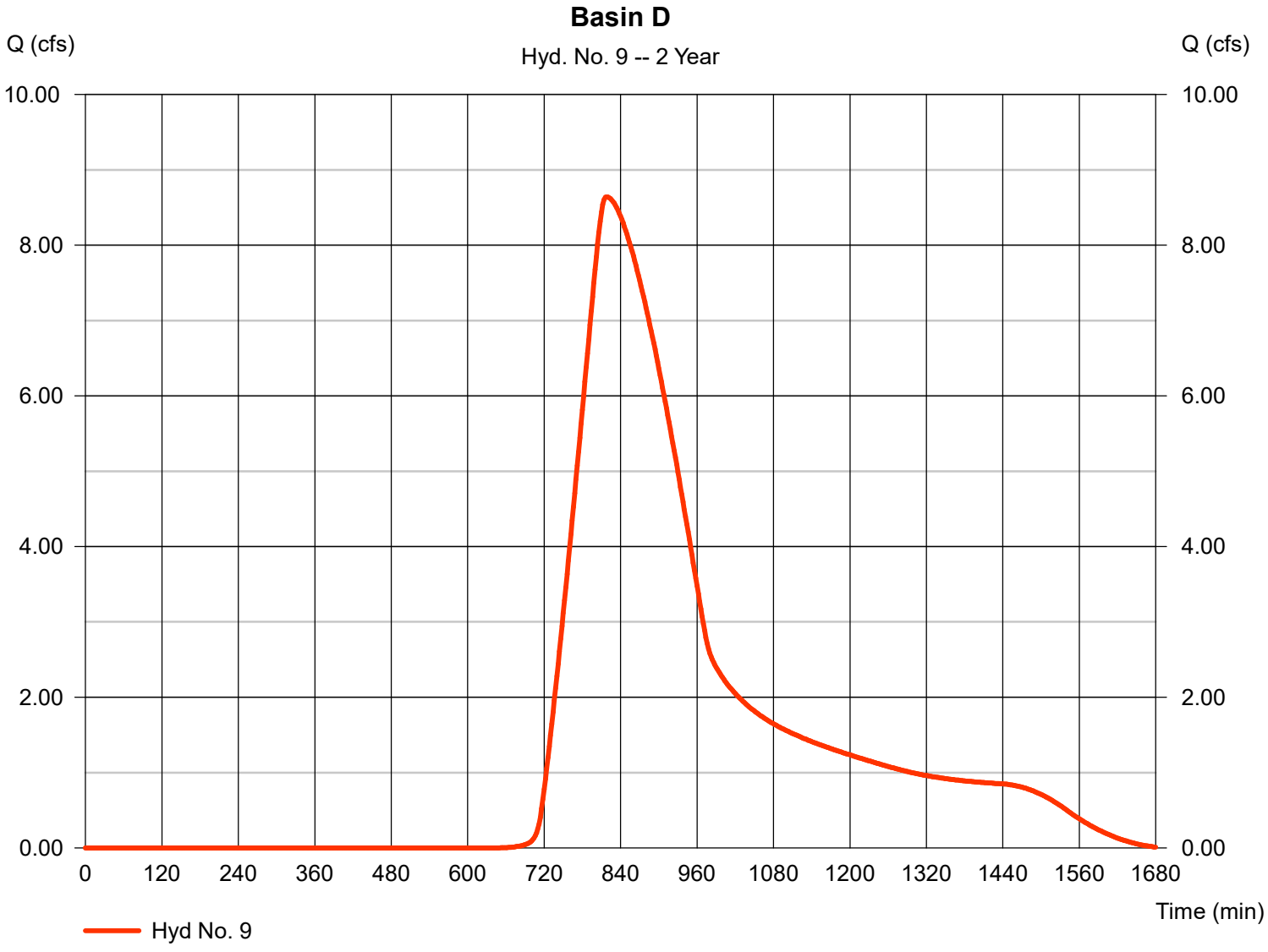
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 9

Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.642 cfs
Storm frequency	=	2 yrs	Time to peak	=	818 min
Time interval	=	2 min	Hyd. volume	=	131,178 cuft
Drainage area	=	40.330 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	167.00 min
Total precip.	=	2.59 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



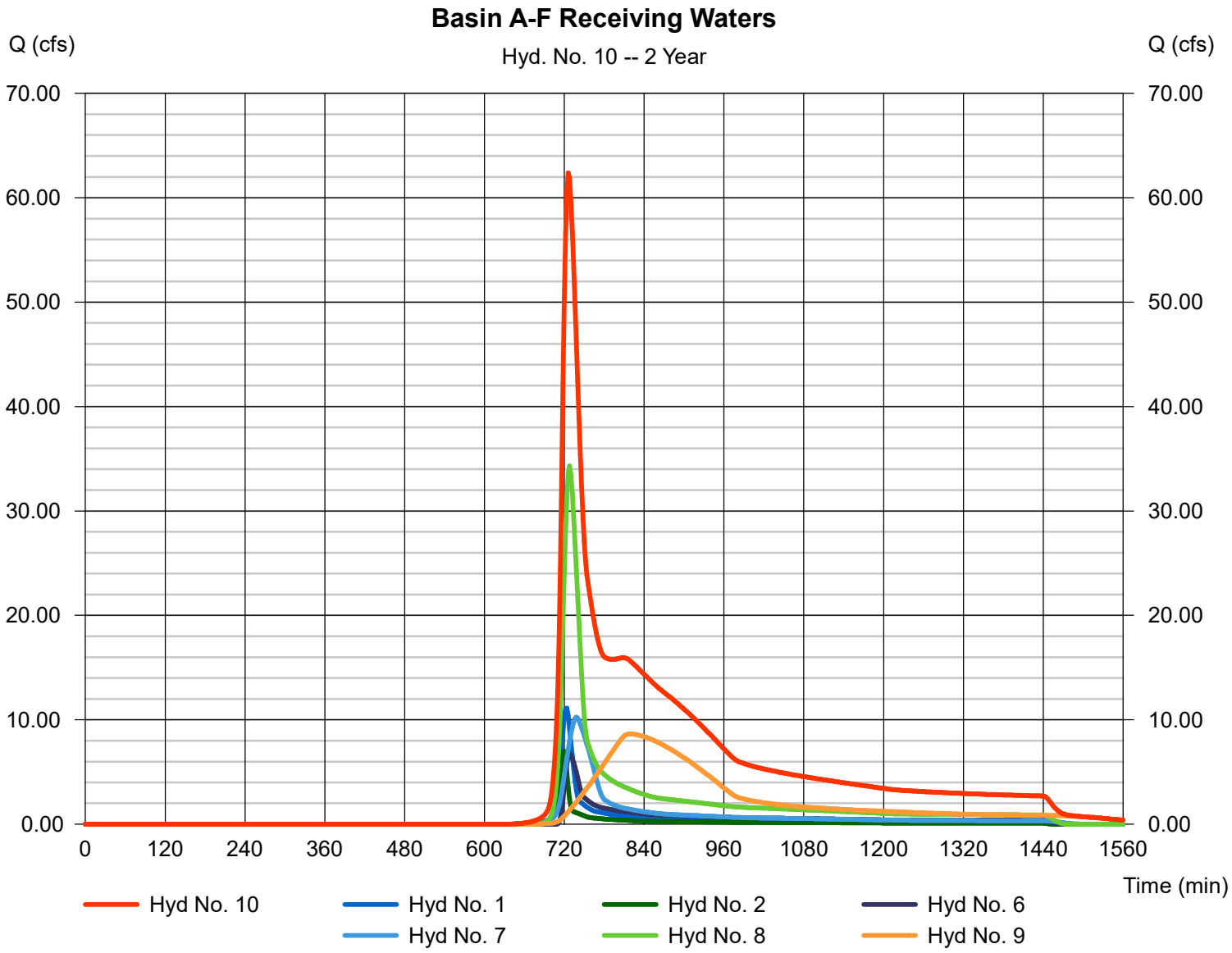
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 10

Basin A-F Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 62.39 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 398,930 cuft
Inflow hyds.	= 1, 2, 6, 7, 8, 9	Contrib. drain. area	= 153.833 ac



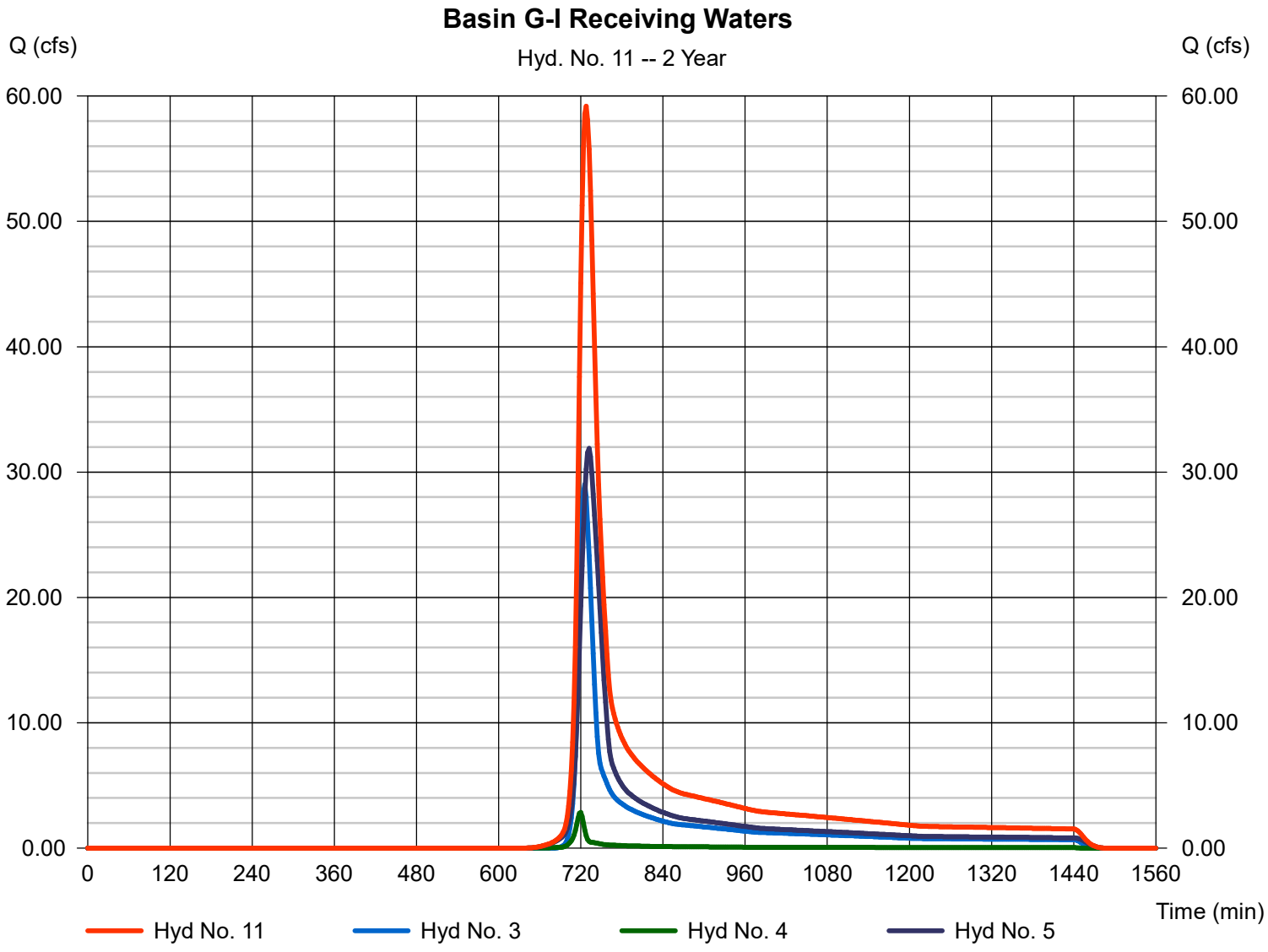
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 11

Basin G-I Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 59.19 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 239,925 cuft
Inflow hyds.	= 3, 4, 5	Contrib. drain. area	= 81.990 ac



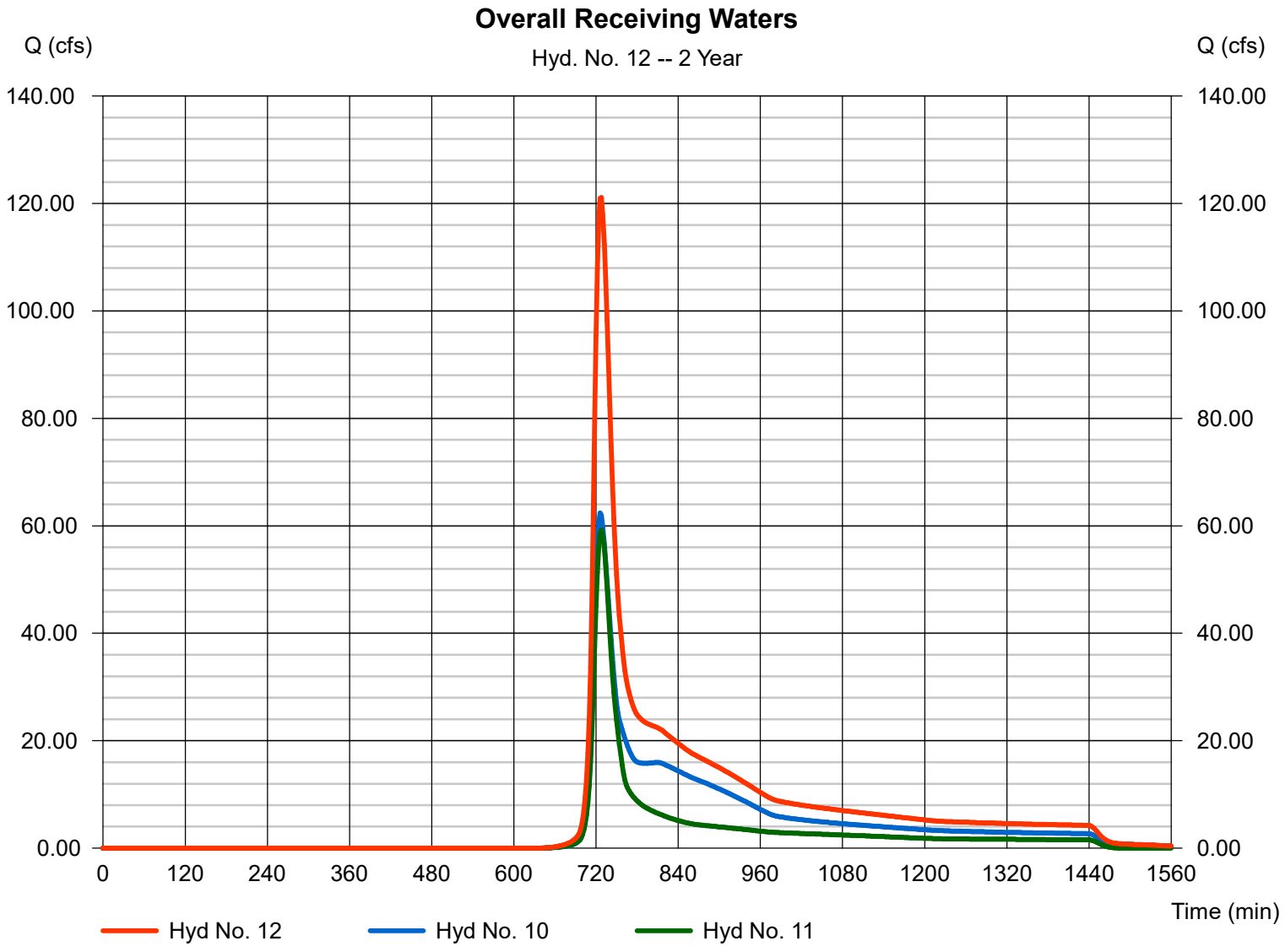
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 12

Overall Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 121.12 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 638,856 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	25.11	2	722	70,535	----	------	------	Basin E
2	SCS Runoff	15.38	2	718	35,210	----	------	------	Basin F
3	SCS Runoff	73.73	2	724	234,921	----	------	------	Basin G
4	SCS Runoff	6.260	2	718	14,326	----	------	------	Basin H
5	SCS Runoff	72.77	2	730	293,295	----	------	------	Basin I
6	SCS Runoff	33.50	2	726	118,467	----	------	------	Basin A
7	SCS Runoff	23.64	2	738	115,621	----	------	------	Basin B
8	SCS Runoff	86.46	2	728	304,278	----	------	------	Basin C
9	SCS Runoff	20.25	2	816	286,732	----	------	------	Basin D
10	Combine	171.65	2	726	930,844	1, 2, 6, 7, 8, 9	------	------	Basin A-F Receiving Waters
11	Combine	143.29	2	726	542,543	3, 4, 5,	------	------	Basin G-I Receiving Waters
12	Combine	314.94	2	726	1,473,385	10, 11	------	------	Overall Receiving Waters

Hydrograph Report

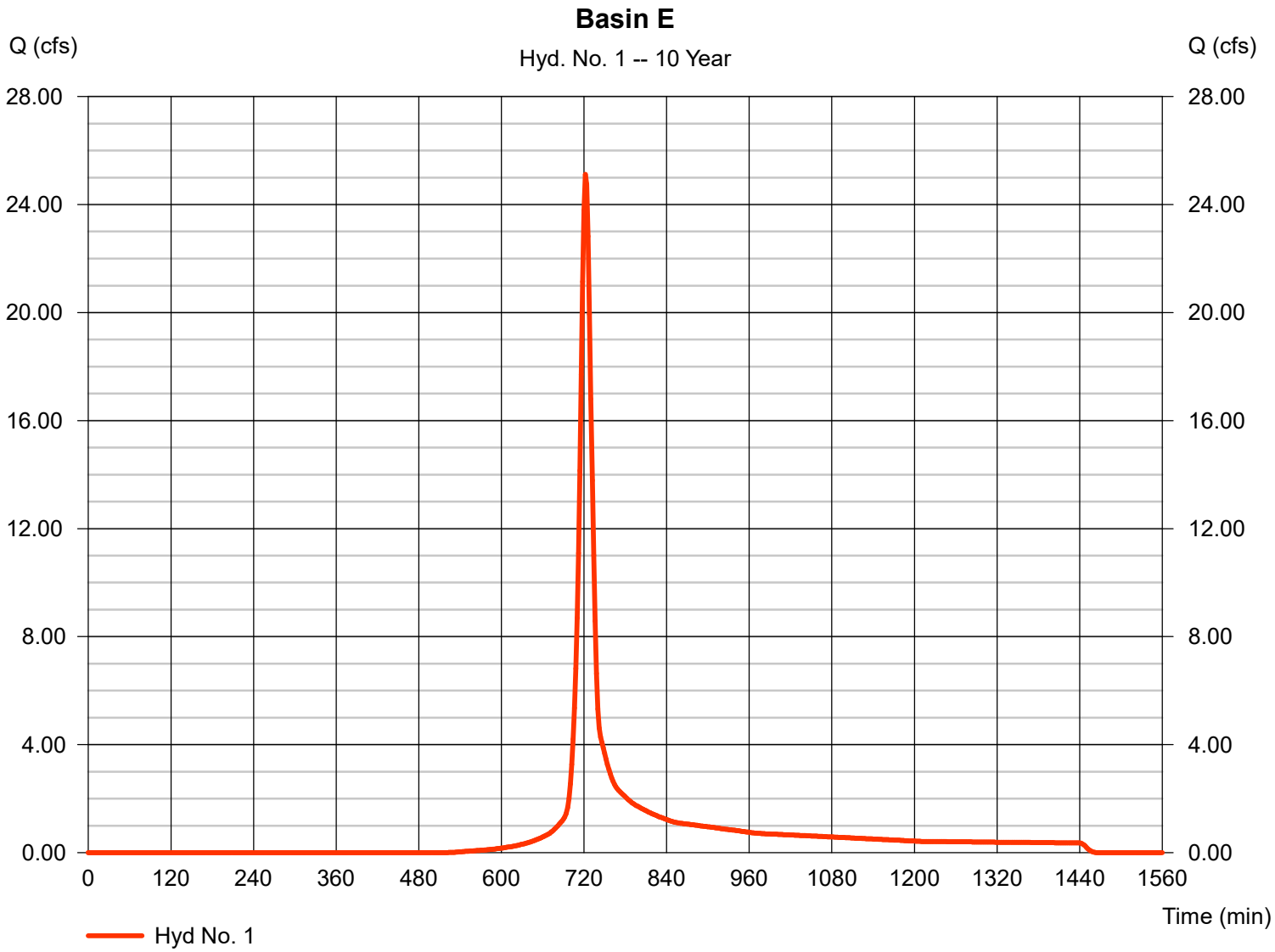
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 1

Basin E

Hydrograph type	=	SCS Runoff	Peak discharge	=	25.11 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	70,535 cuft
Drainage area	=	10.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	16.10 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 79) + (7.850 x 79) + (2.070 x 78) + (0.110 x 100)] / 10.150



Hydrograph Report

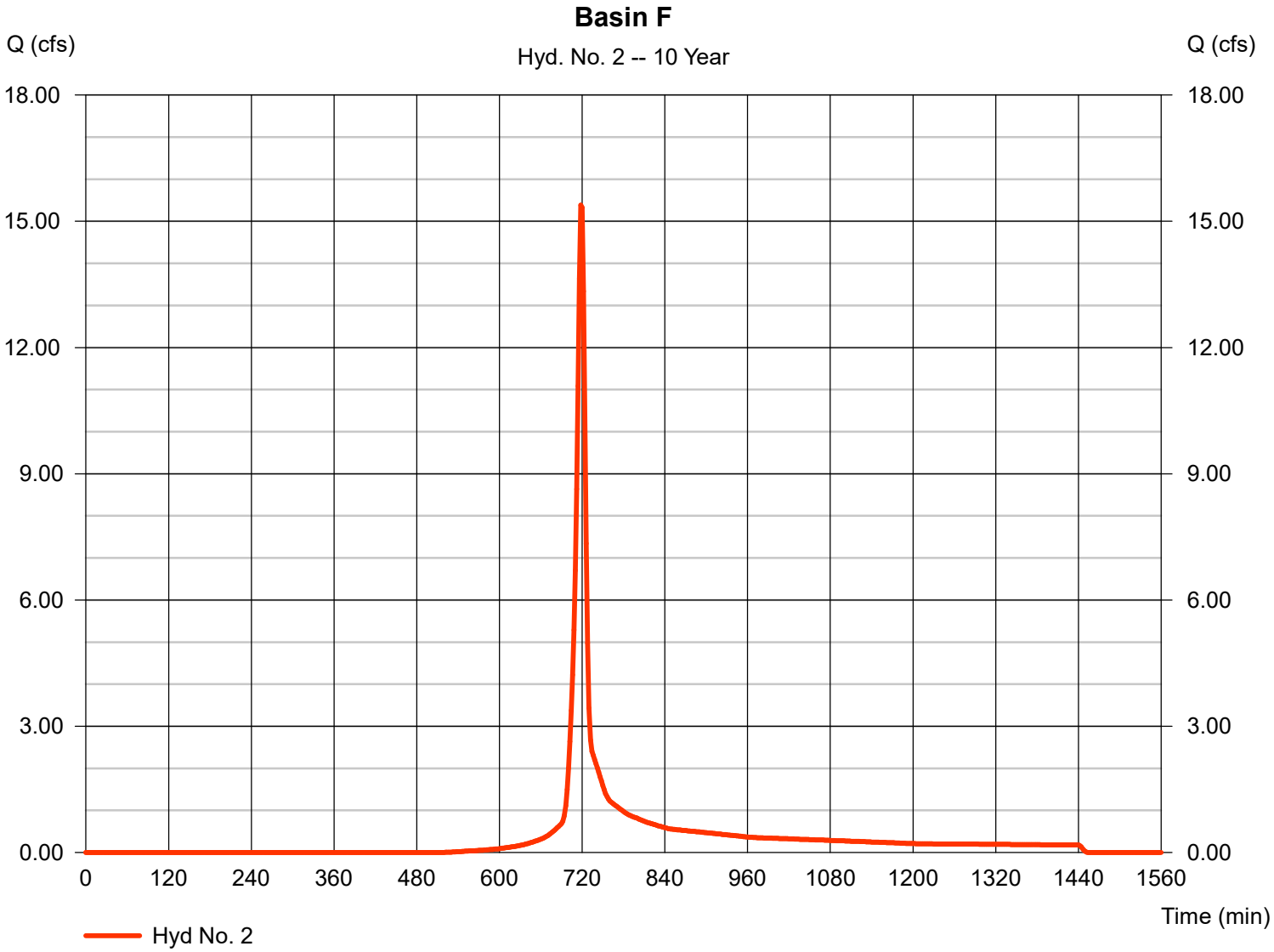
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 2

Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.38 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	35,210 cuft
Drainage area	=	4.940 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.20 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 79) + (2.570 x 79) + (2.040 x 78) + (0.100 x 100) + (0.030 x 89) + (0.100 x 98)] / 4.940



Hydrograph Report

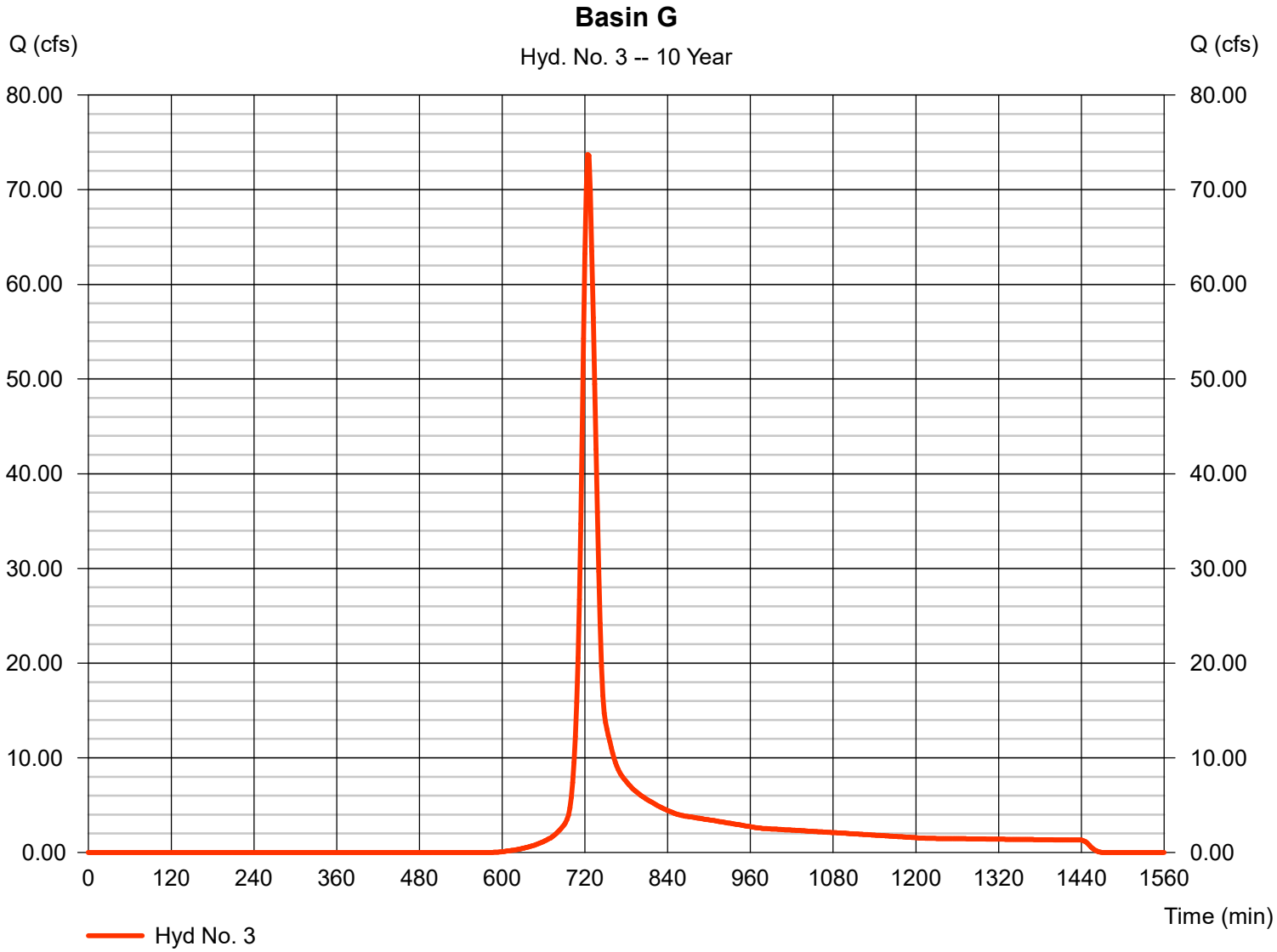
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 3

Basin G

Hydrograph type	=	SCS Runoff	Peak discharge	=	73.73 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	234,921 cuft
Drainage area	=	38.830 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	17.50 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.320 x 98) + (6.320 x 79) + (2.550 x 60) + (22.660 x 78) + (5.890 x 58) + (0.090 x 100)] / 38.830



Hydrograph Report

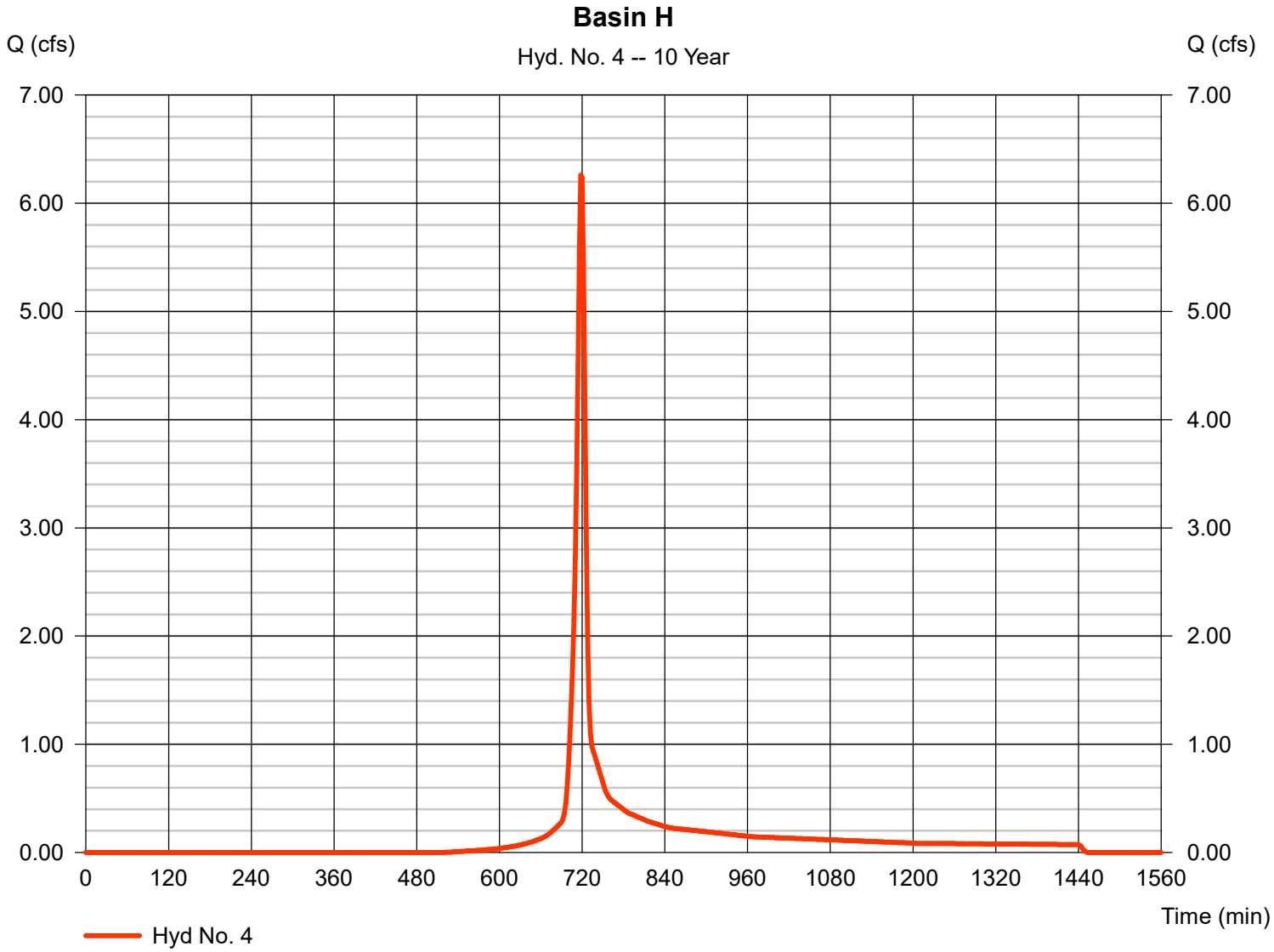
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 4

Basin H

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.260 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	14,326 cuft
Drainage area	=	2.010 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.10 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.360 x 79) + (1.540 x 78) + (0.110 x 98)] / 2.010



Hydrograph Report

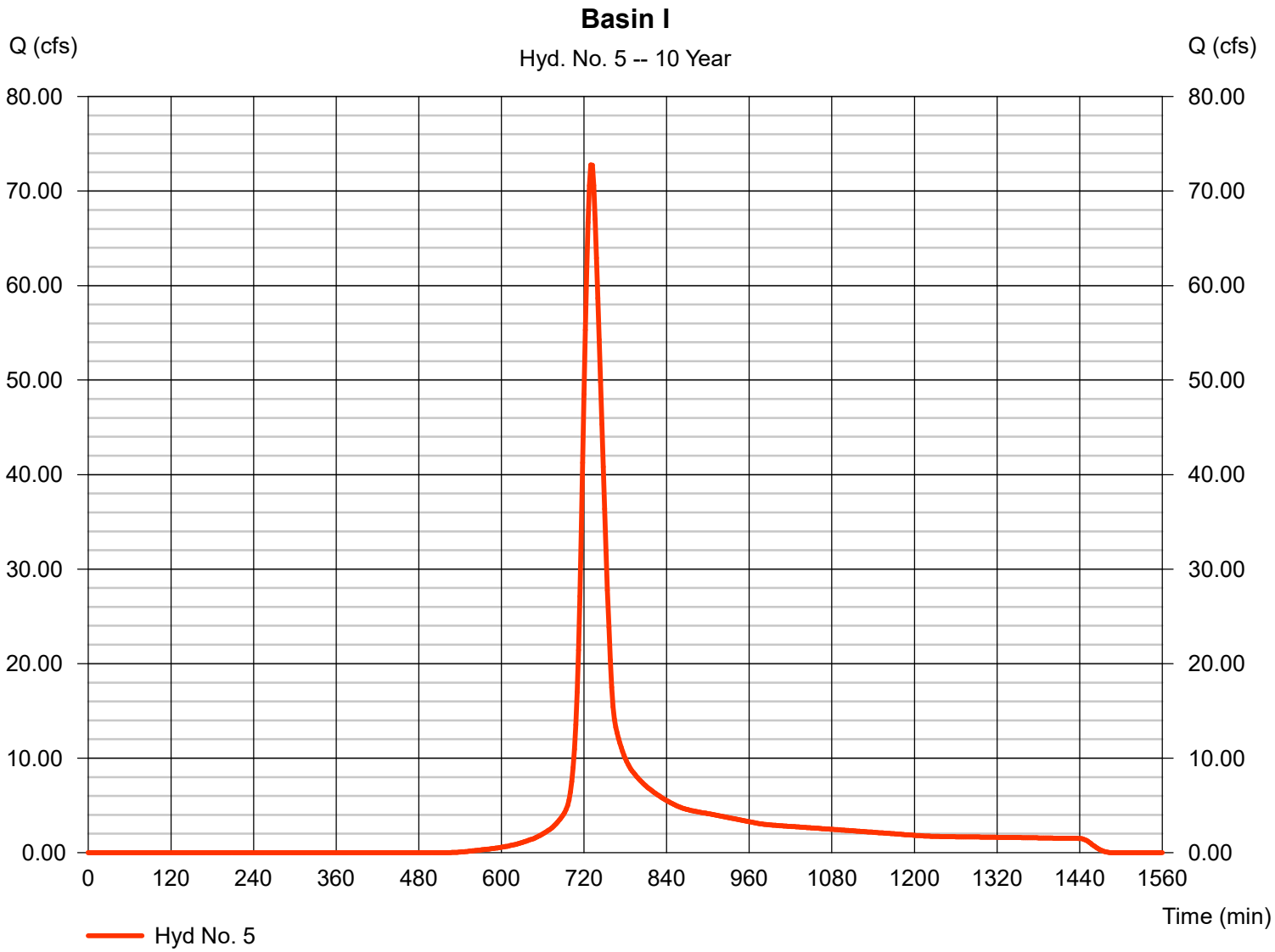
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 5

Basin I

Hydrograph type	=	SCS Runoff	Peak discharge	=	72.77 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	293,295 cuft
Drainage area	=	41.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	27.10 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(40.170 x 79) + (0.160 x 98) + (0.820 x 100)] / 41.150



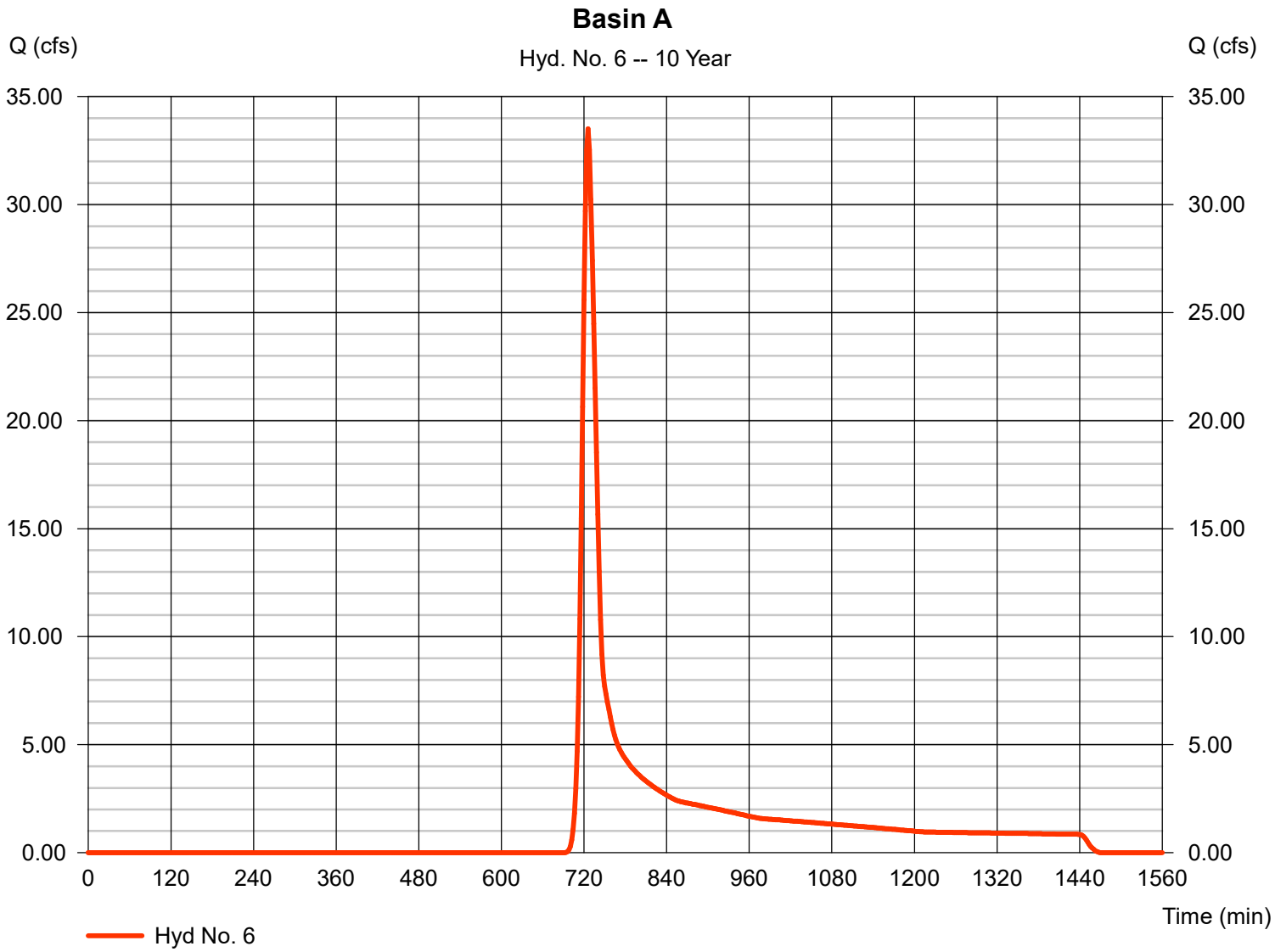
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 6

Basin A

Hydrograph type	=	SCS Runoff	Peak discharge	=	33.50 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	118,467 cuft
Drainage area	=	33.753 ac	Curve number	=	63.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	18.80 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



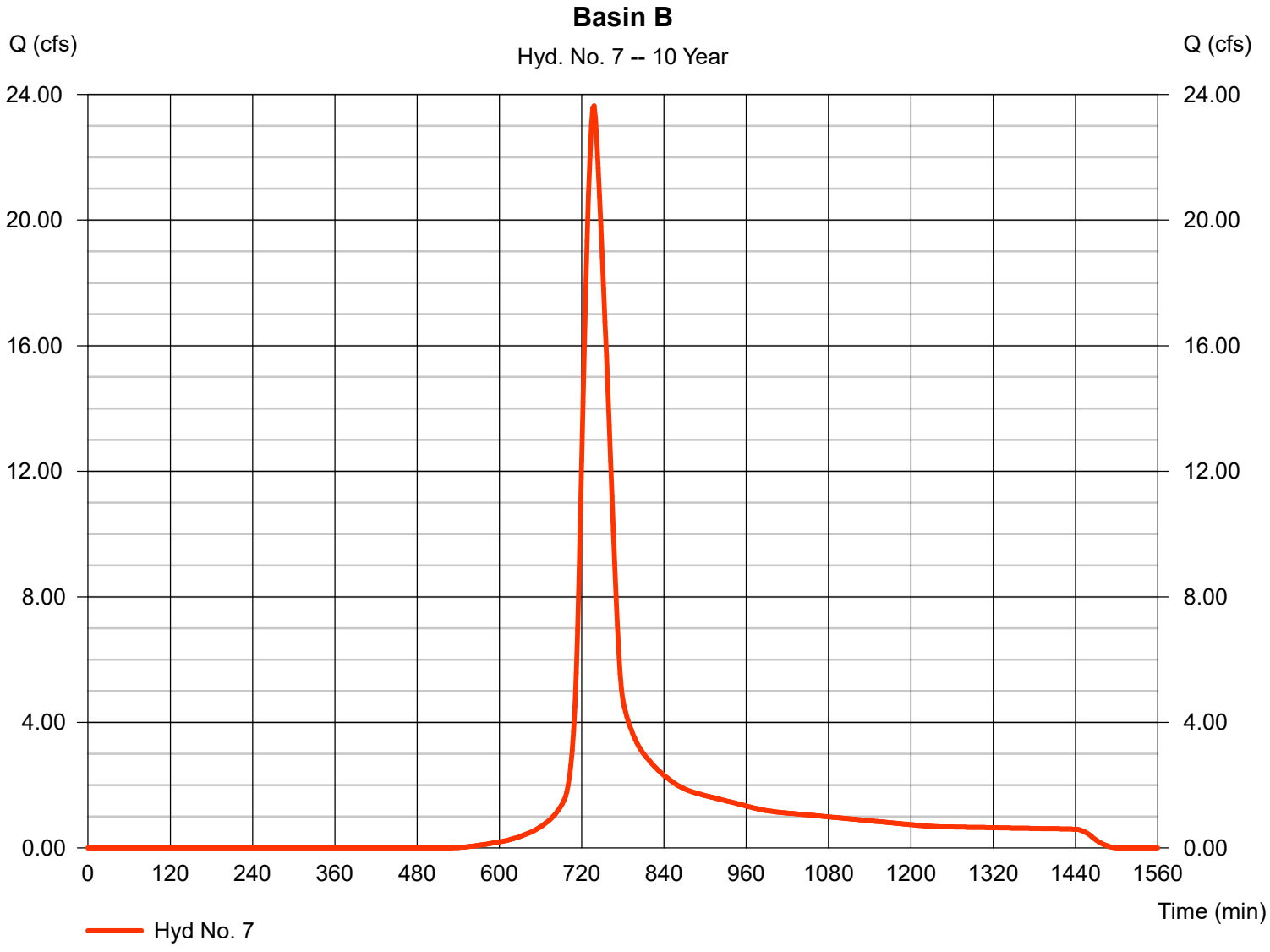
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 7

Basin B

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.64 cfs
Storm frequency	=	10 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	115,621 cuft
Drainage area	=	16.286 ac	Curve number	=	78.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	37.22 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



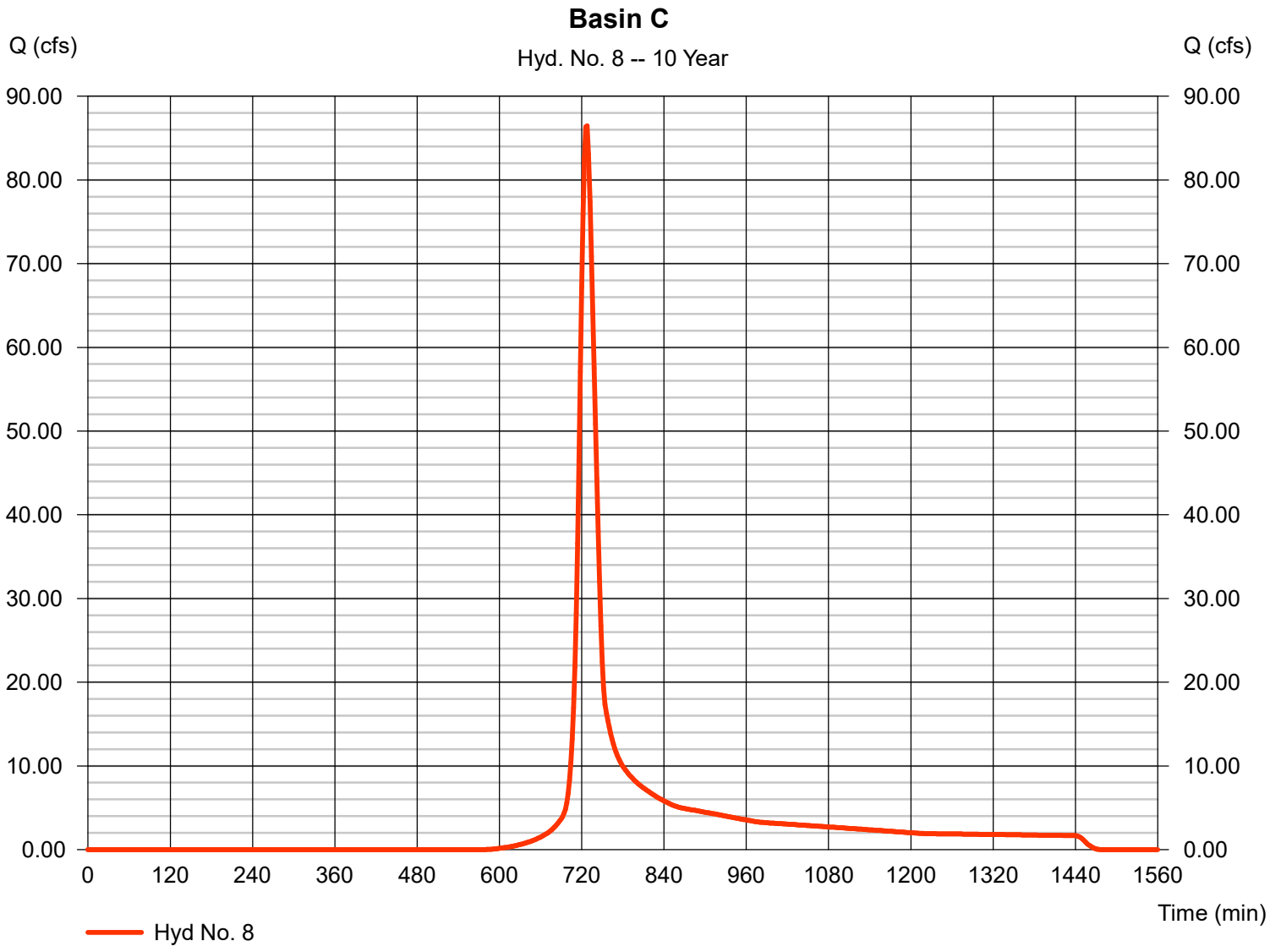
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 8

Basin C

Hydrograph type	=	SCS Runoff	Peak discharge	=	86.46 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	304,278 cuft
Drainage area	=	48.374 ac	Curve number	=	75.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	21.90 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



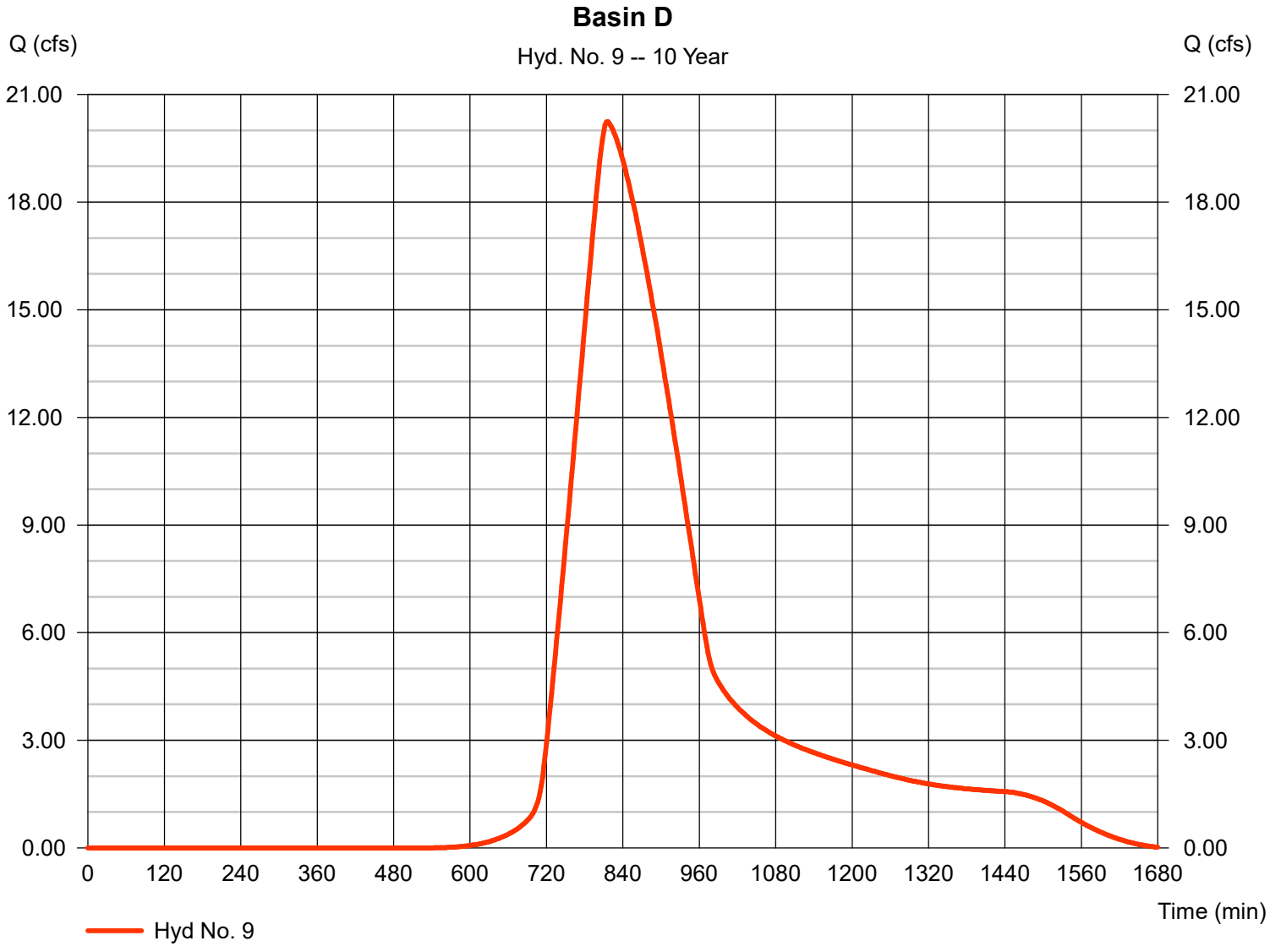
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 9

Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.25 cfs
Storm frequency	=	10 yrs	Time to peak	=	816 min
Time interval	=	2 min	Hyd. volume	=	286,732 cuft
Drainage area	=	40.330 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	167.00 min
Total precip.	=	4.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

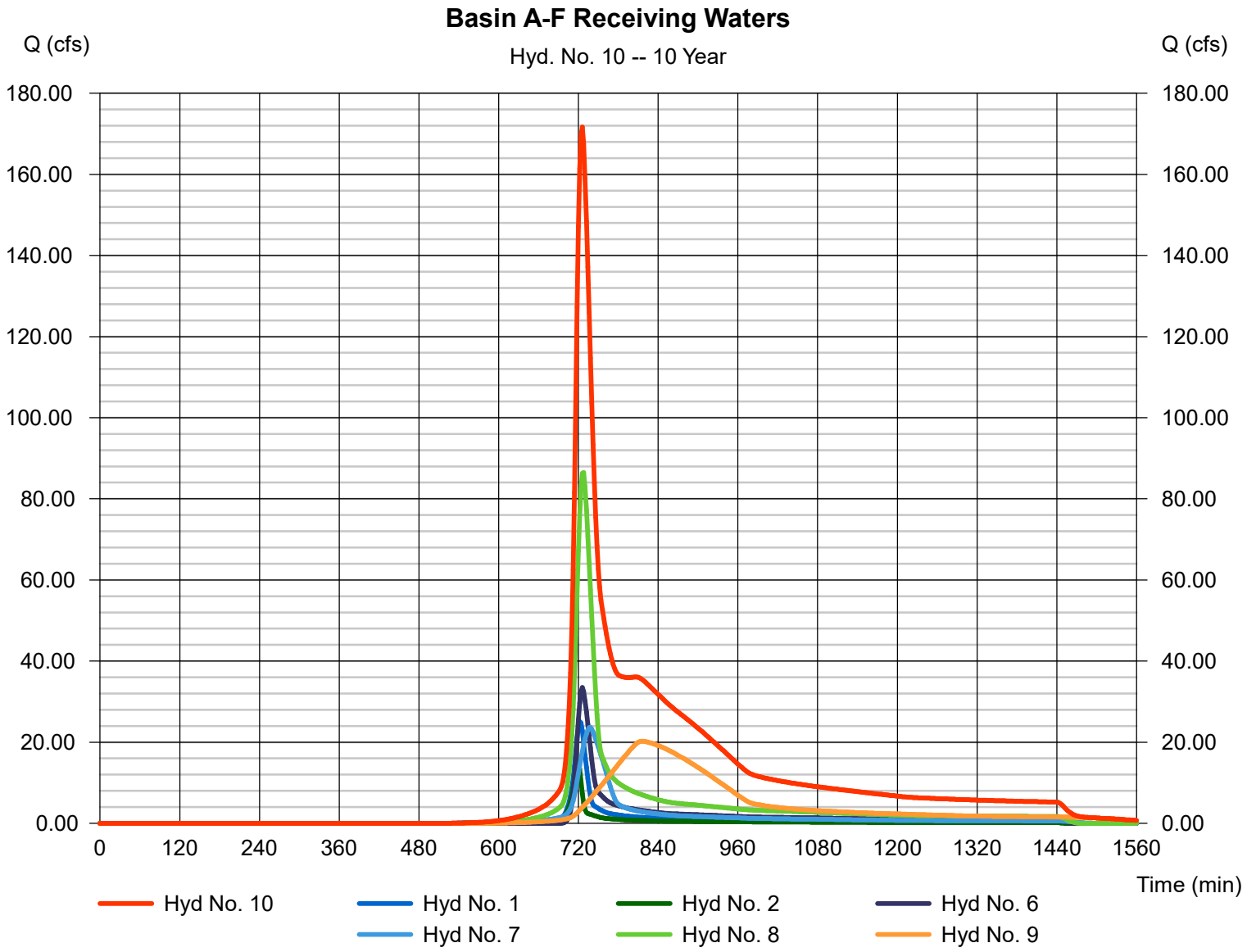


Hydrograph Report

Hyd. No. 10

Basin A-F Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 171.65 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 930,844 cuft
Inflow hyds.	= 1, 2, 6, 7, 8, 9	Contrib. drain. area	= 153.833 ac



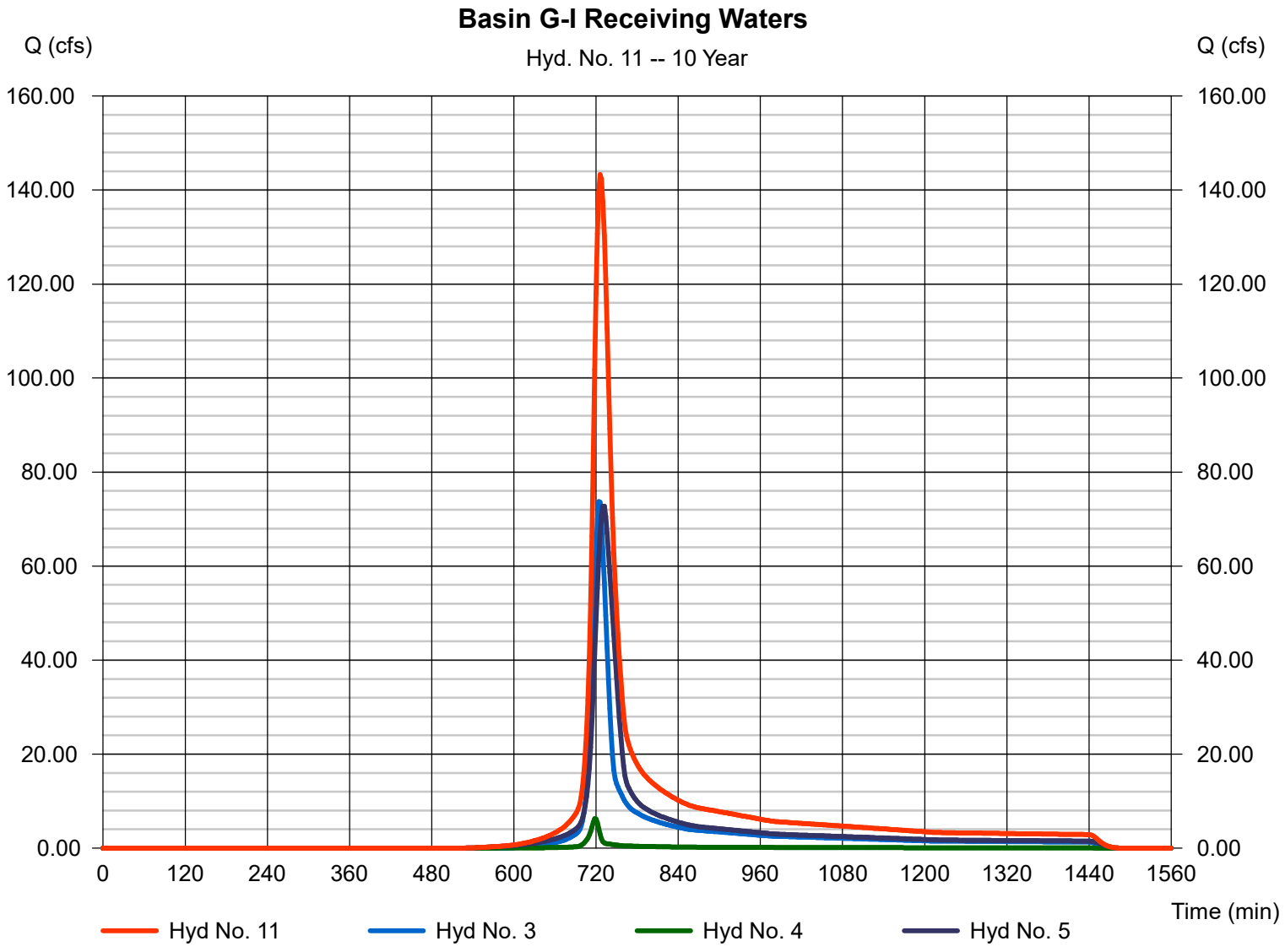
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 11

Basin G-I Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 143.29 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 542,543 cuft
Inflow hyds.	= 3, 4, 5	Contrib. drain. area	= 81.990 ac



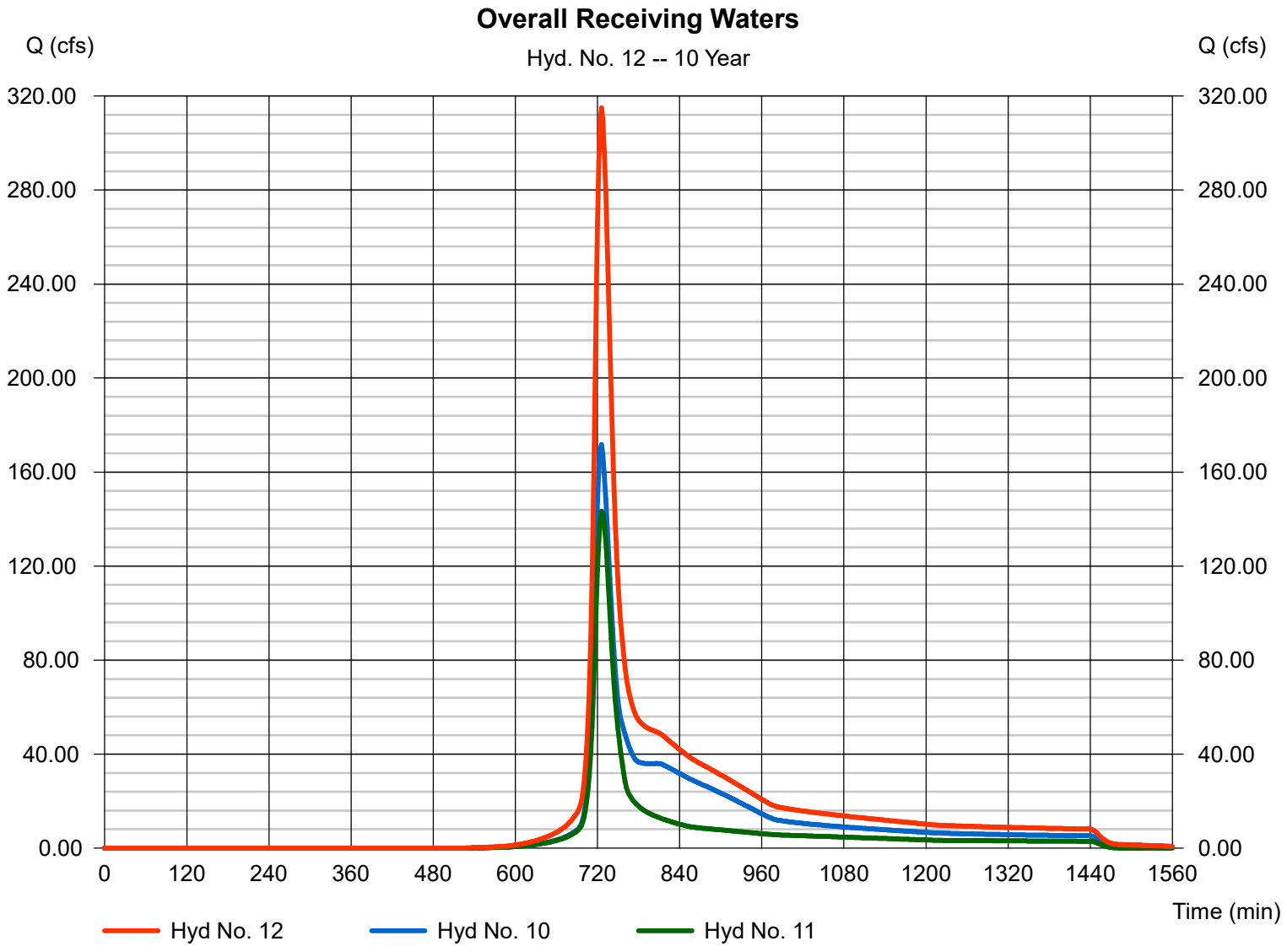
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 12

Overall Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 314.94 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,473,385 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	34.58	2	722	96,944	----	------	------	Basin E
2	SCS Runoff	21.12	2	718	48,392	----	------	------	Basin F
3	SCS Runoff	105.49	2	724	331,566	----	------	------	Basin G
4	SCS Runoff	8.591	2	718	19,690	----	------	------	Basin H
5	SCS Runoff	100.74	2	730	403,106	----	------	------	Basin I
6	SCS Runoff	55.12	2	726	183,315	----	------	------	Basin A
7	SCS Runoff	32.73	2	738	159,012	----	------	------	Basin B
8	SCS Runoff	123.16	2	726	427,976	----	------	------	Basin C
9	SCS Runoff	28.22	2	814	394,086	----	------	------	Basin D
10	Combine	250.45	2	726	1,309,725	1, 2, 6, 7, 8, 9	------	------	Basin A-F Receiving Waters
11	Combine	201.77	2	726	754,363	3, 4, 5,	------	------	Basin G-I Receiving Waters
12	Combine	452.23	2	726	2,064,086	10, 11	------	------	Overall Receiving Waters

Hydrograph Report

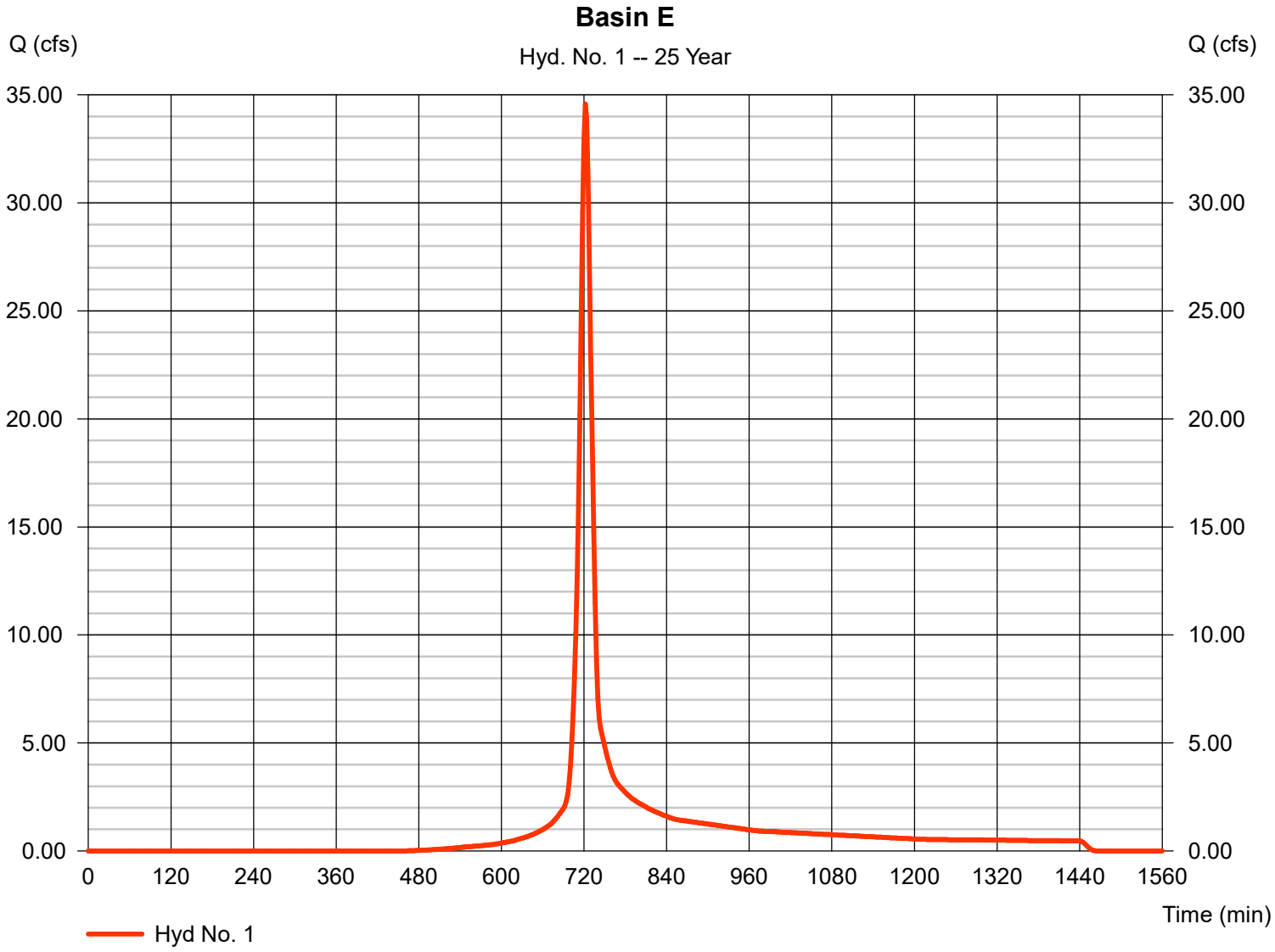
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 1

Basin E

Hydrograph type	=	SCS Runoff	Peak discharge	=	34.58 cfs
Storm frequency	=	25 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	96,944 cuft
Drainage area	=	10.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	16.10 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 79) + (7.850 x 79) + (2.070 x 78) + (0.110 x 100)] / 10.150



Hydrograph Report

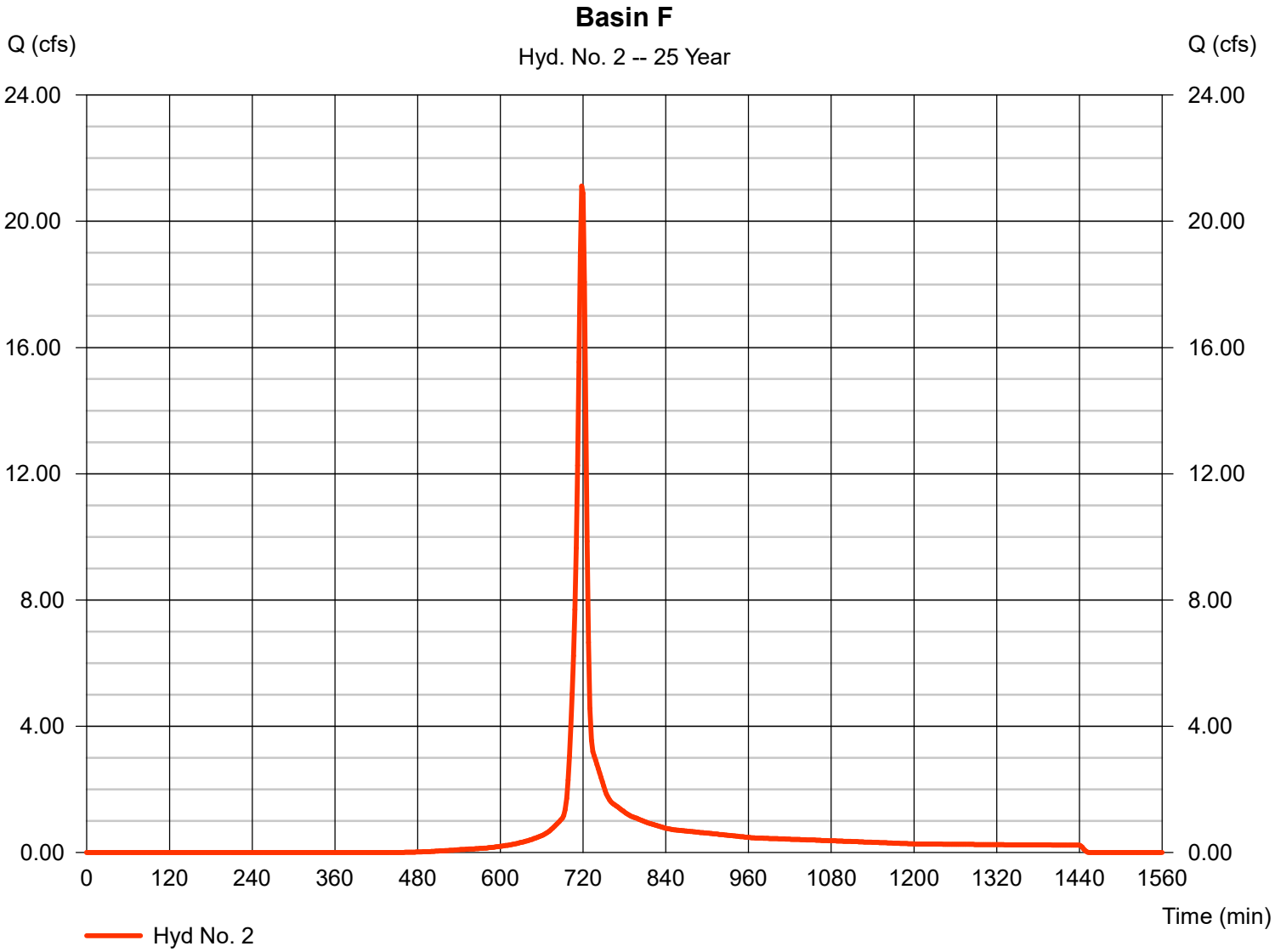
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 2

Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	21.12 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	48,392 cuft
Drainage area	=	4.940 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.20 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 79) + (2.570 x 79) + (2.040 x 78) + (0.100 x 100) + (0.030 x 89) + (0.100 x 98)] / 4.940



Hydrograph Report

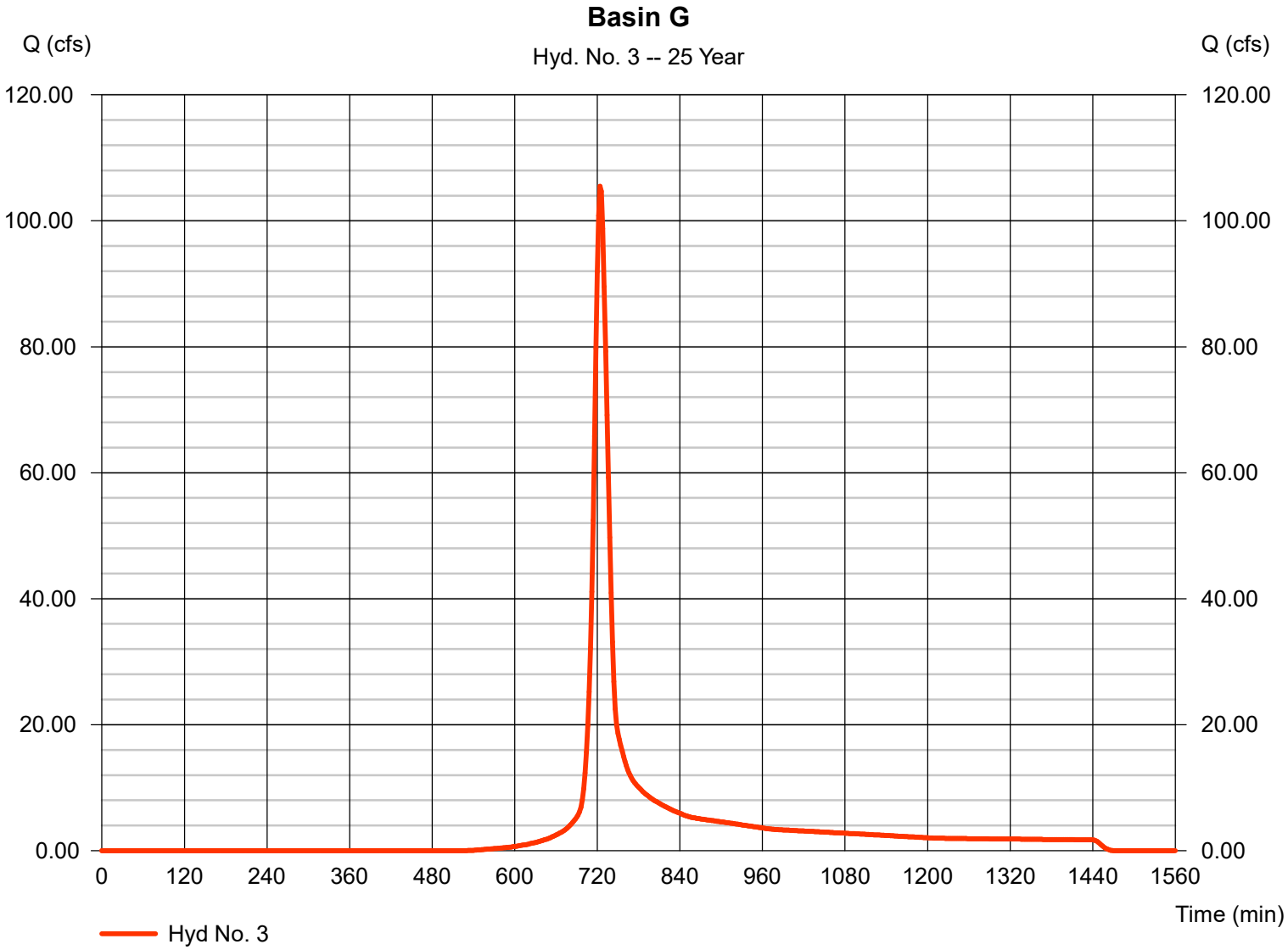
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 3

Basin G

Hydrograph type	=	SCS Runoff	Peak discharge	=	105.49 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	331,566 cuft
Drainage area	=	38.830 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	17.50 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.320 x 98) + (6.320 x 79) + (2.550 x 60) + (22.660 x 78) + (5.890 x 58) + (0.090 x 100)] / 38.830



Hydrograph Report

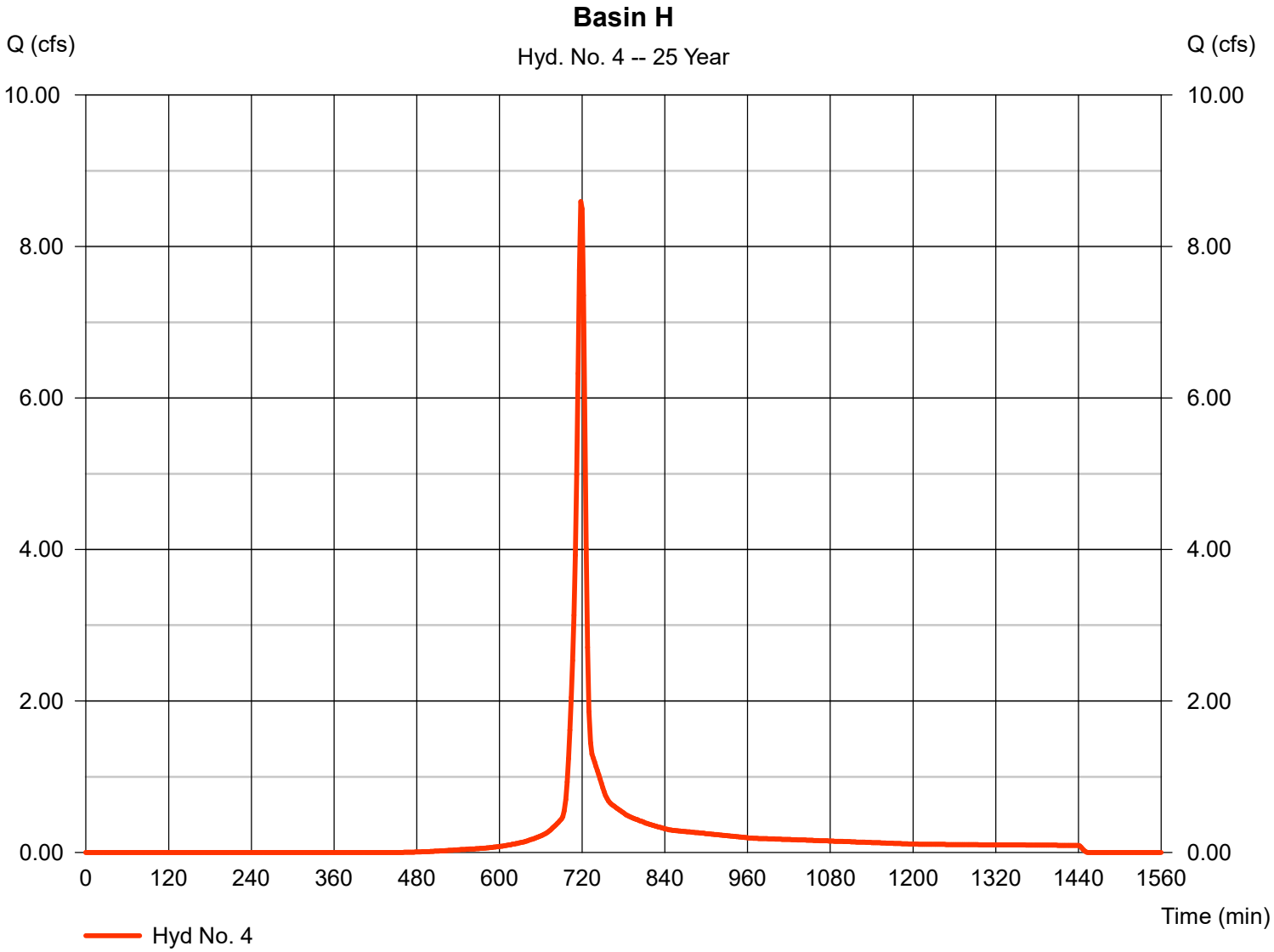
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 4

Basin H

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.591 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	19,690 cuft
Drainage area	=	2.010 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.10 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.360 x 79) + (1.540 x 78) + (0.110 x 98)] / 2.010



Hydrograph Report

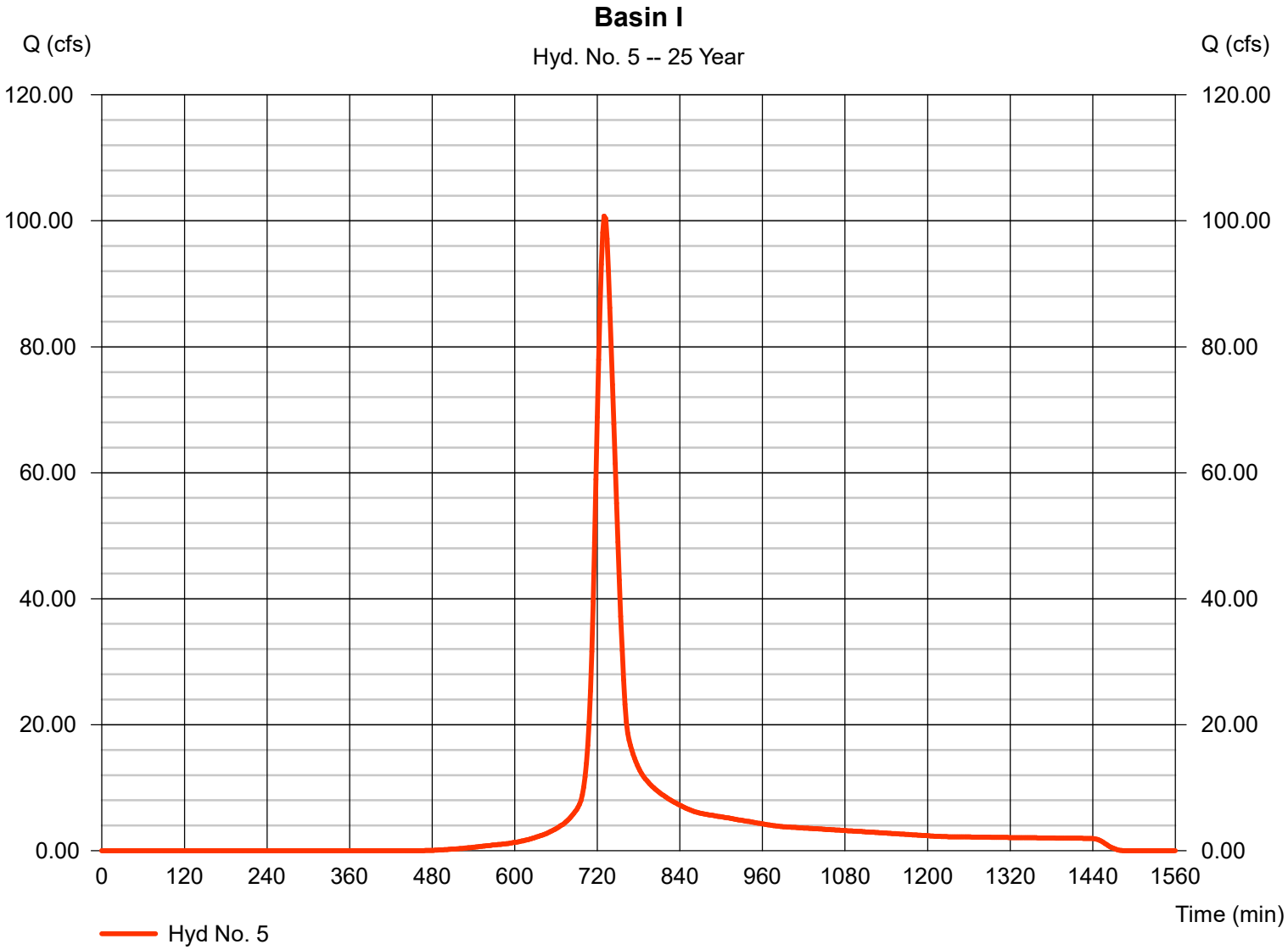
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 5

Basin I

Hydrograph type	=	SCS Runoff	Peak discharge	=	100.74 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	403,106 cuft
Drainage area	=	41.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	27.10 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(40.170 x 79) + (0.160 x 98) + (0.820 x 100)] / 41.150



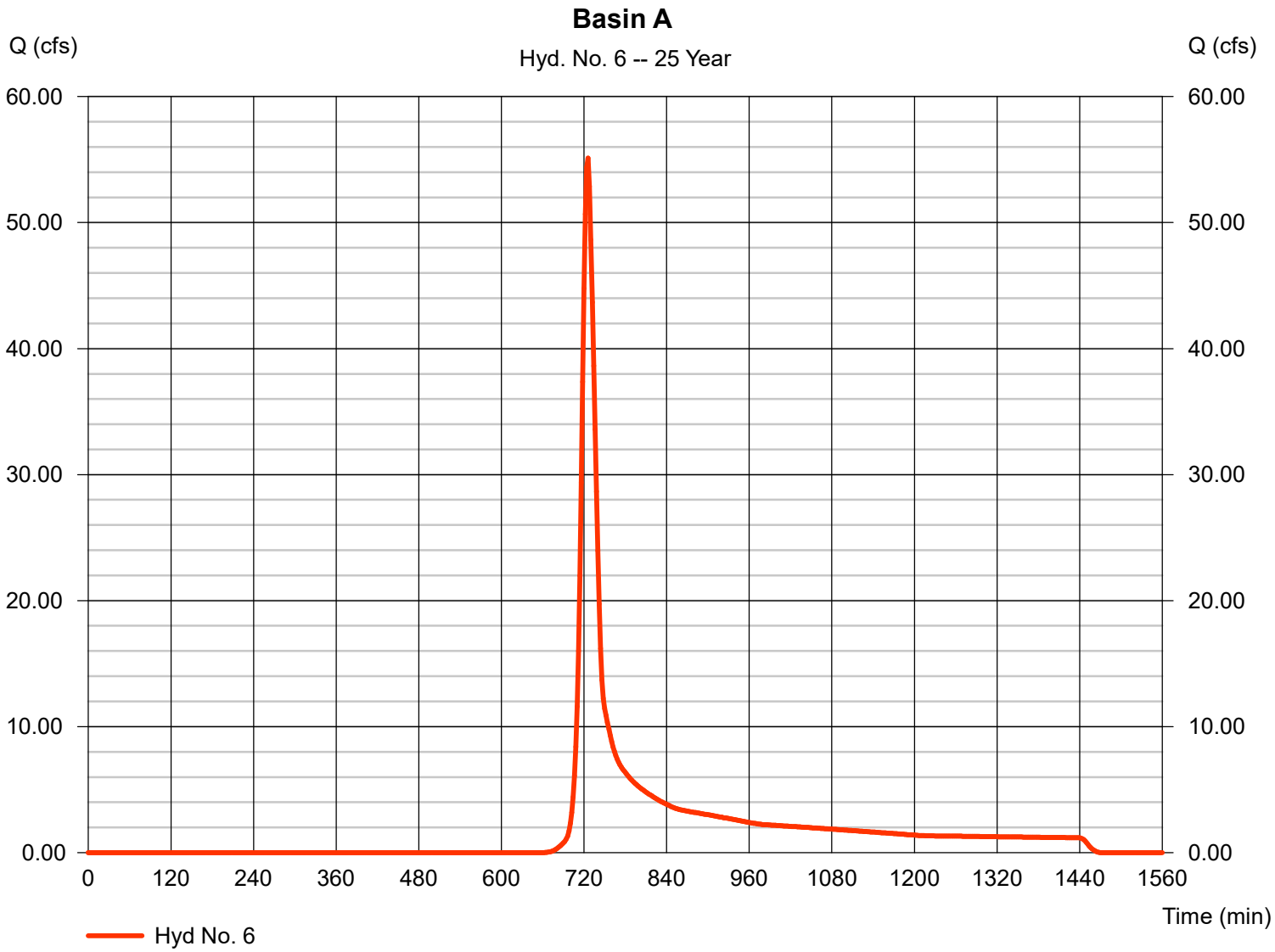
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 6

Basin A

Hydrograph type	=	SCS Runoff	Peak discharge	=	55.12 cfs
Storm frequency	=	25 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	183,315 cuft
Drainage area	=	33.753 ac	Curve number	=	63.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	18.80 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



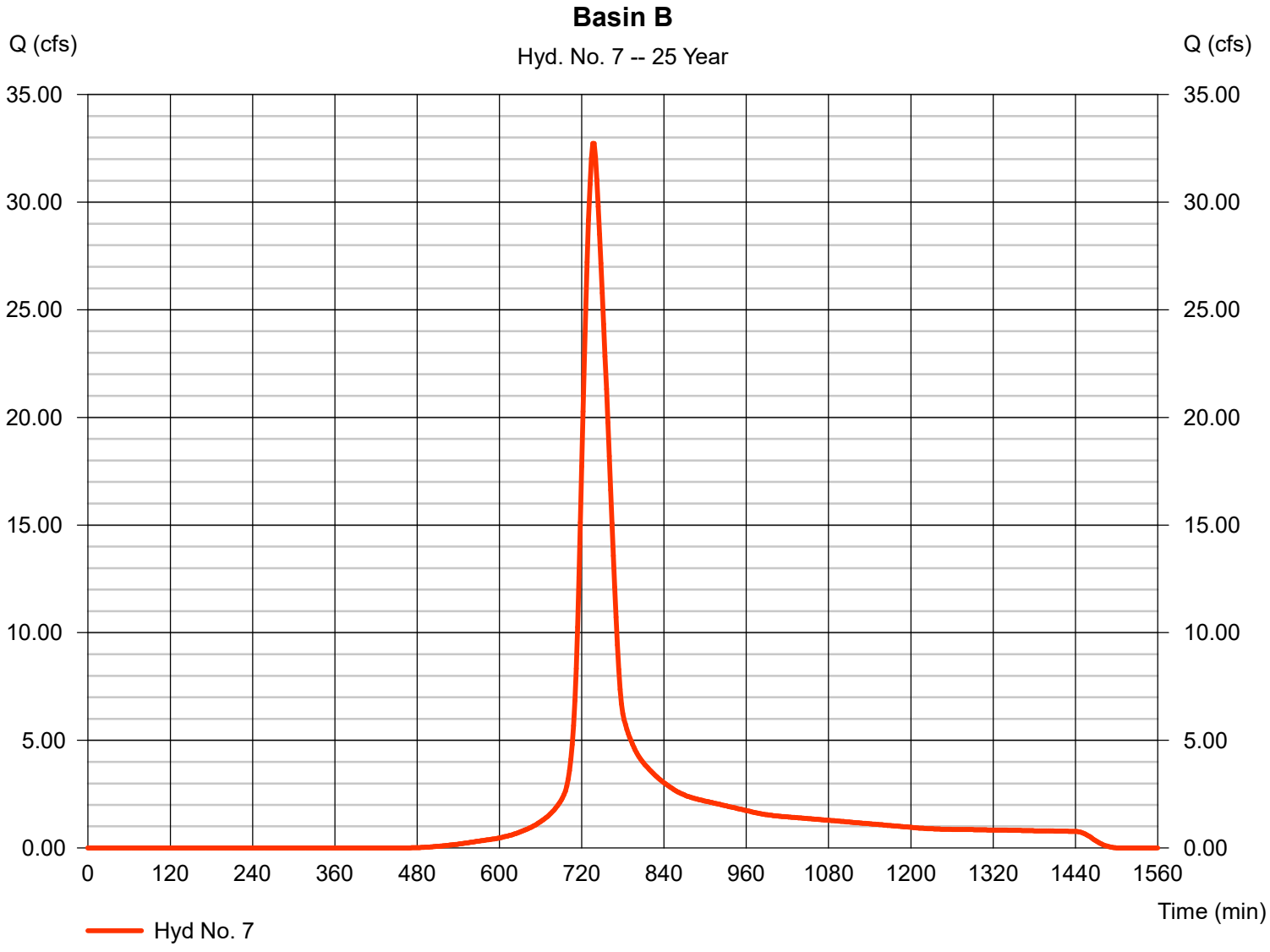
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 7

Basin B

Hydrograph type	=	SCS Runoff	Peak discharge	=	32.73 cfs
Storm frequency	=	25 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	159,012 cuft
Drainage area	=	16.286 ac	Curve number	=	78.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	37.22 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



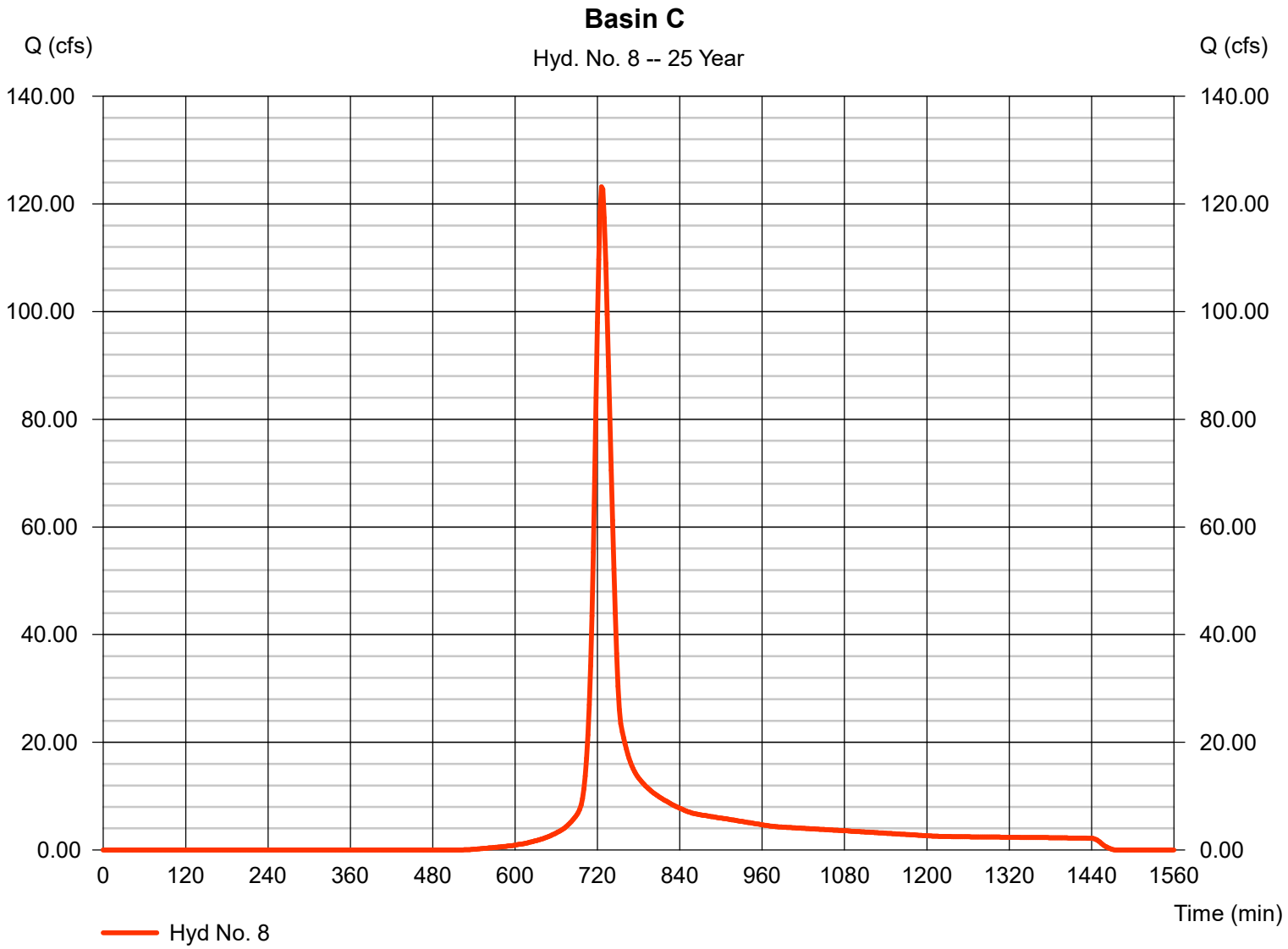
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 8

Basin C

Hydrograph type	=	SCS Runoff	Peak discharge	=	123.16 cfs
Storm frequency	=	25 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	427,976 cuft
Drainage area	=	48.374 ac	Curve number	=	75.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	21.90 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



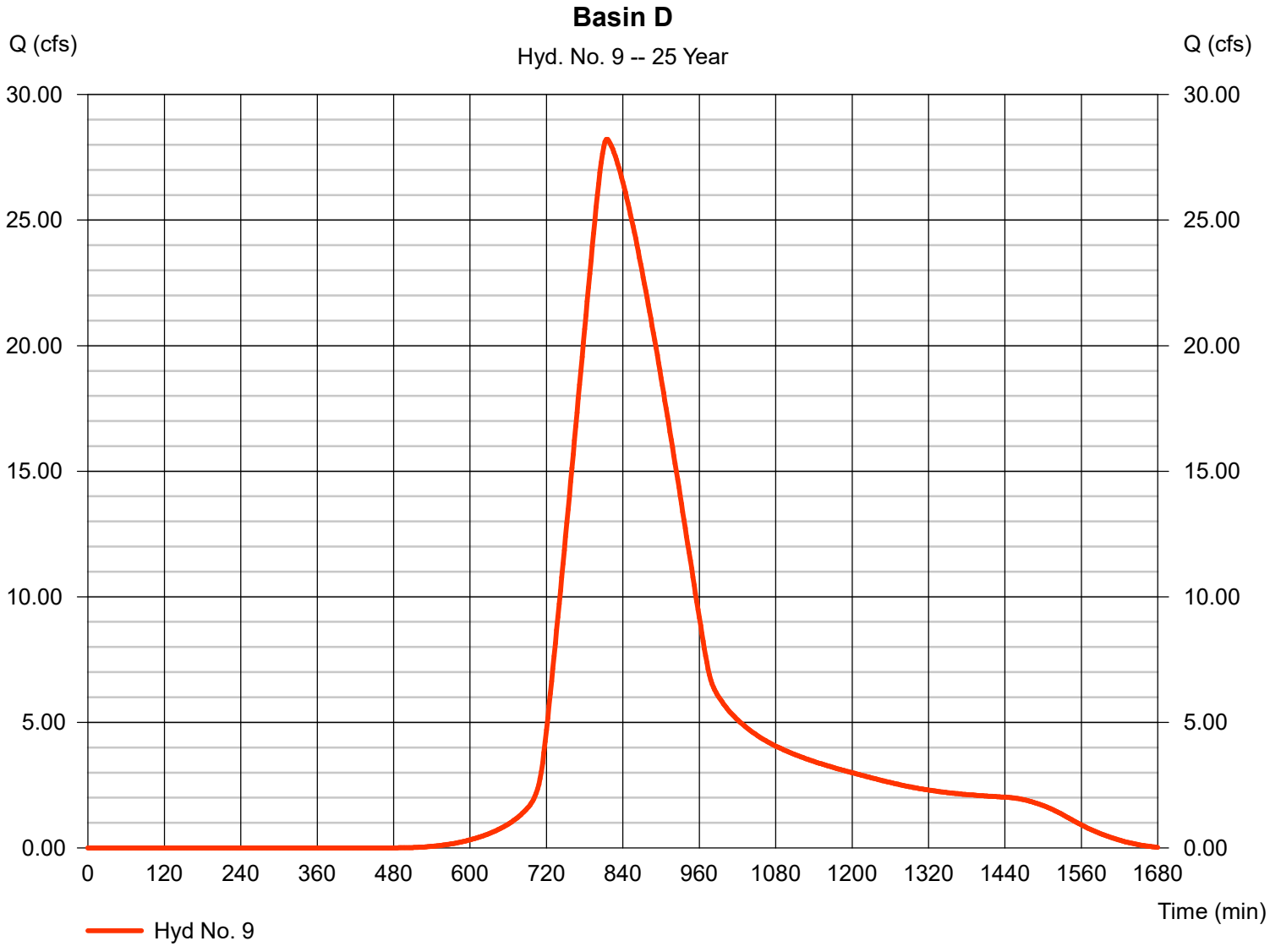
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 9

Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	28.22 cfs
Storm frequency	=	25 yrs	Time to peak	=	814 min
Time interval	=	2 min	Hyd. volume	=	394,086 cuft
Drainage area	=	40.330 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	167.00 min
Total precip.	=	4.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



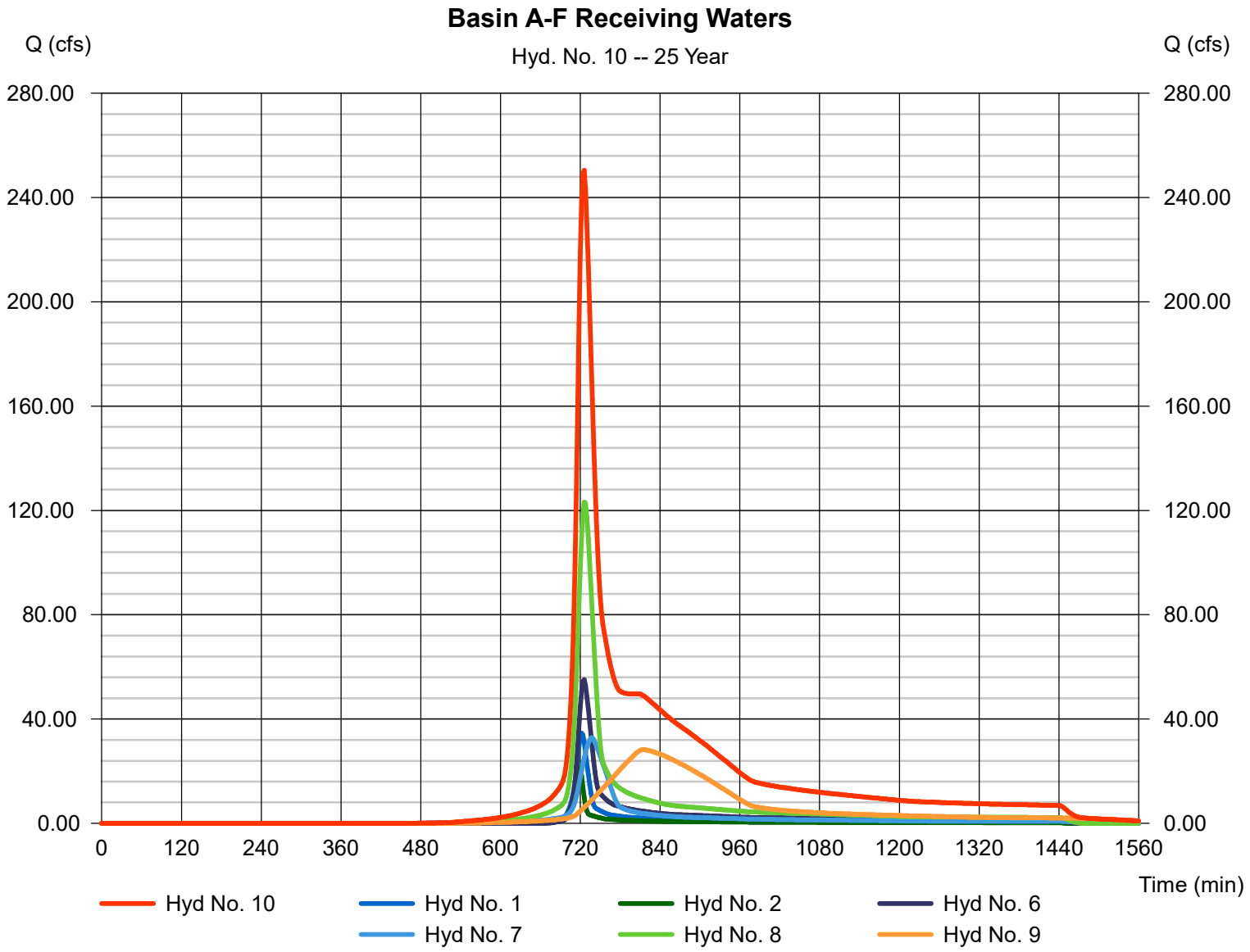
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 10

Basin A-F Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 250.45 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,309,725 cuft
Inflow hyds.	= 1, 2, 6, 7, 8, 9	Contrib. drain. area	= 153.833 ac



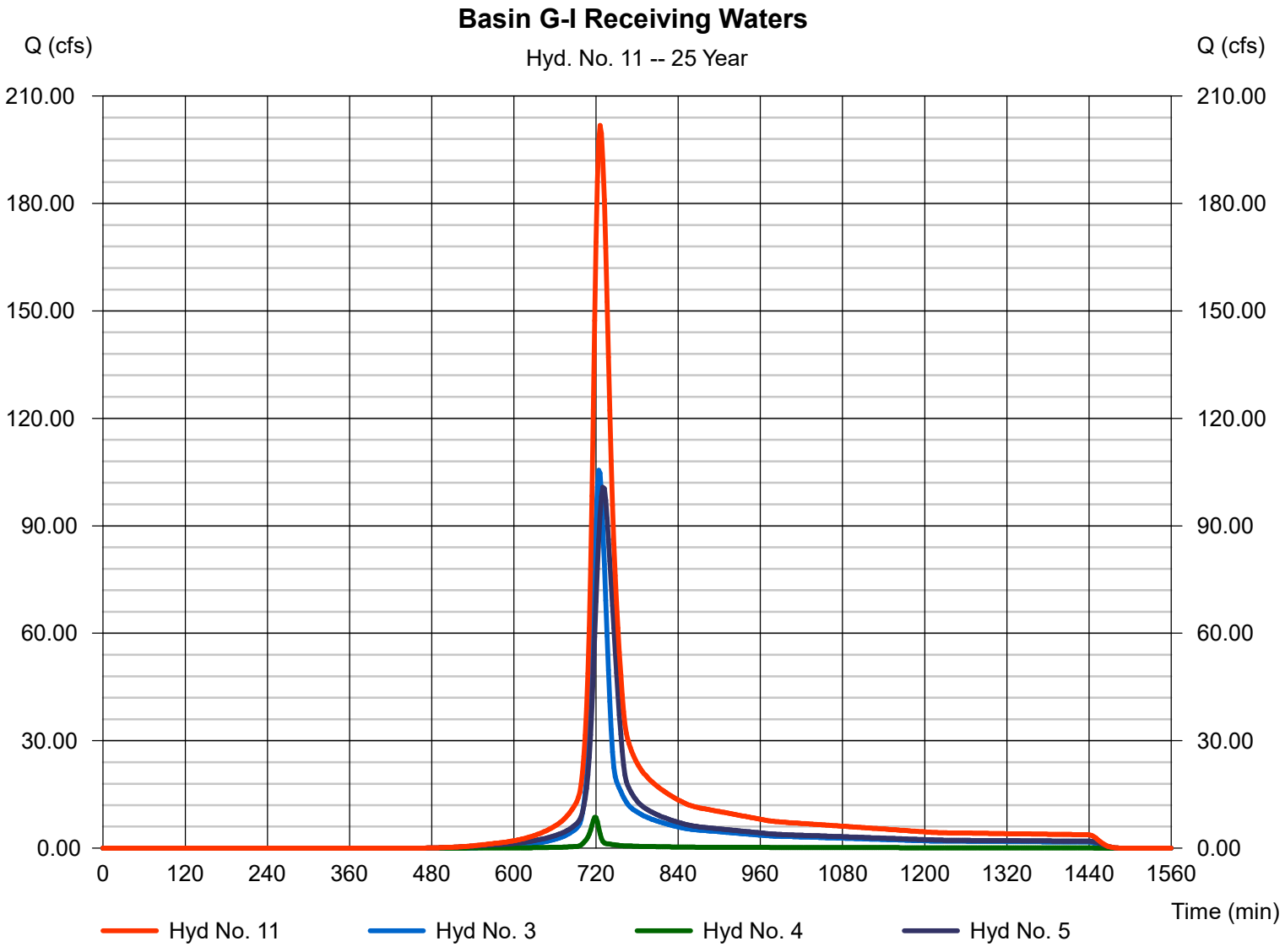
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 11

Basin G-I Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 201.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 754,363 cuft
Inflow hyds.	= 3, 4, 5	Contrib. drain. area	= 81.990 ac



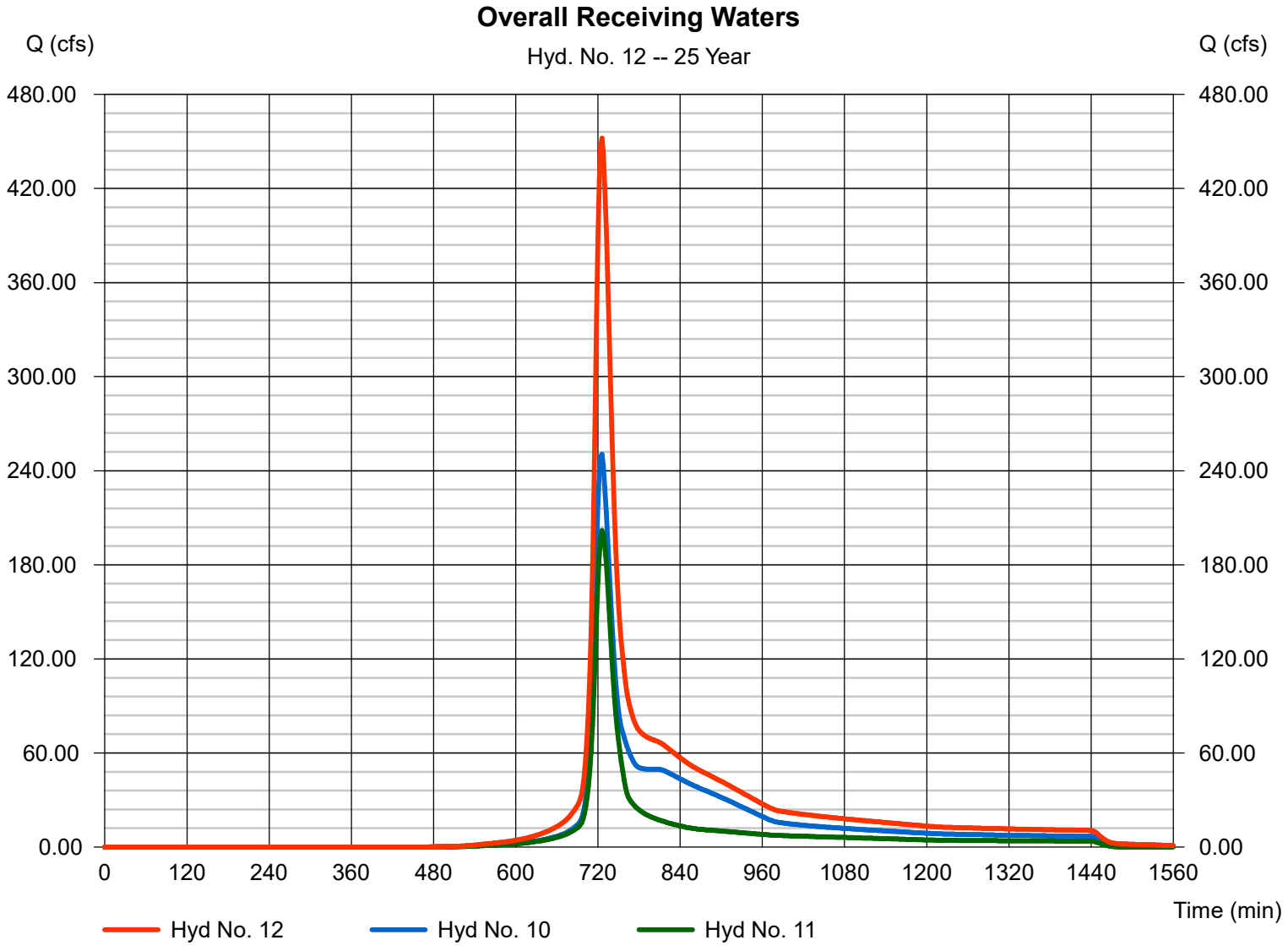
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 12

Overall Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 452.23 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 2,064,086 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	49.66	2	722	139,911	----	------	------	Basin E
2	SCS Runoff	30.23	2	718	69,840	----	------	------	Basin F
3	SCS Runoff	157.22	2	724	491,574	----	------	------	Basin G
4	SCS Runoff	12.30	2	718	28,417	----	------	------	Basin H
5	SCS Runoff	145.51	2	730	581,769	----	------	------	Basin I
6	SCS Runoff	92.61	2	726	297,362	----	------	------	Basin A
7	SCS Runoff	47.39	2	736	229,636	----	------	------	Basin B
8	SCS Runoff	183.11	2	726	632,305	----	------	------	Basin C
9	SCS Runoff	41.09	2	814	568,750	----	------	------	Basin D
10	Combine	380.61	2	726	1,937,804	1, 2, 6, 7, 8, 9	------	------	Basin A-F Receiving Waters
11	Combine	296.25	2	726	1,101,759	3, 4, 5,	------	------	Basin G-I Receiving Waters
12	Combine	676.86	2	726	3,039,563	10, 11	------	------	Overall Receiving Waters

Hydrograph Report

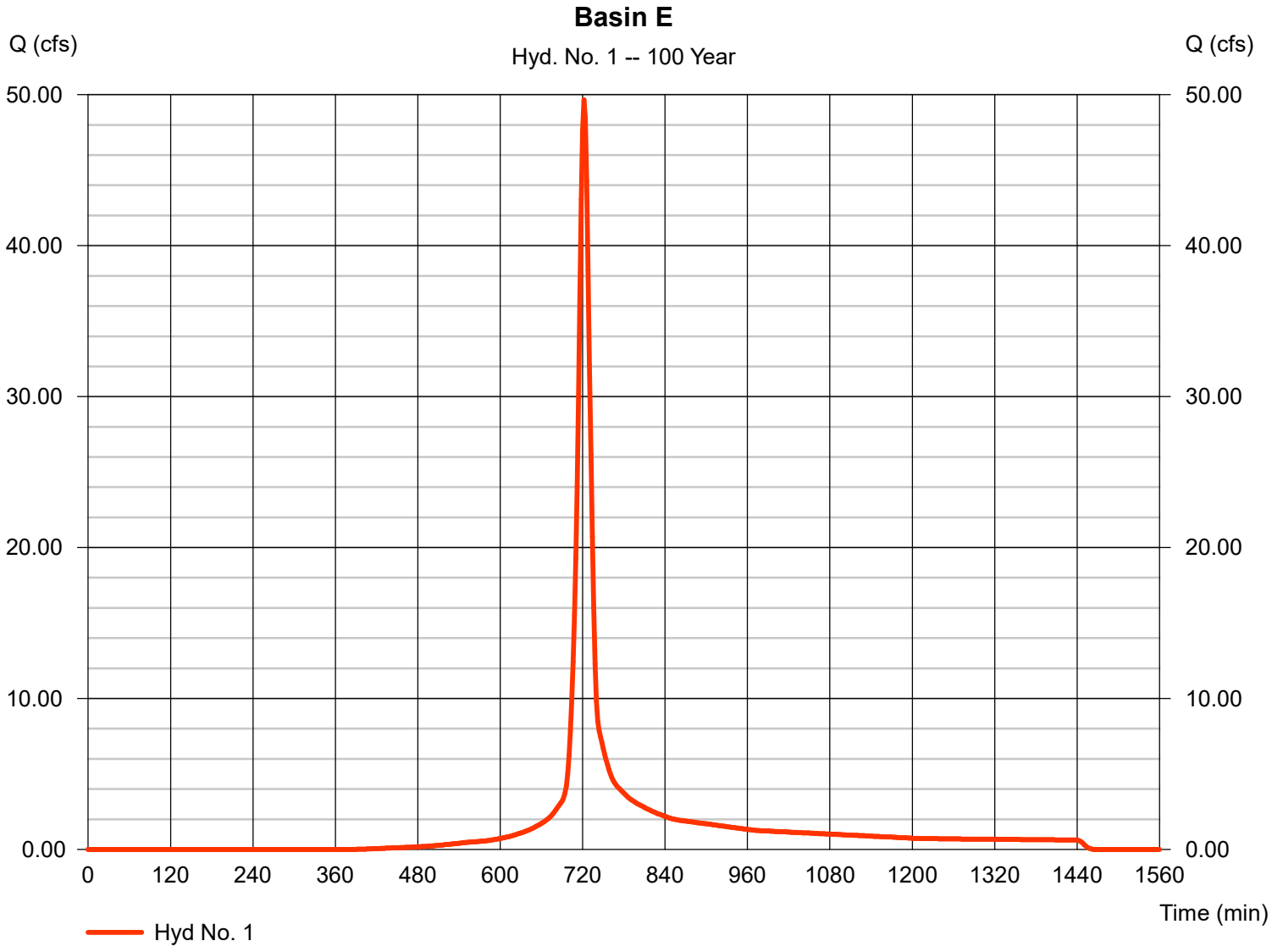
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 1

Basin E

Hydrograph type	=	SCS Runoff	Peak discharge	=	49.66 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	139,911 cuft
Drainage area	=	10.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	16.10 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 79) + (7.850 x 79) + (2.070 x 78) + (0.110 x 100)] / 10.150



Hydrograph Report

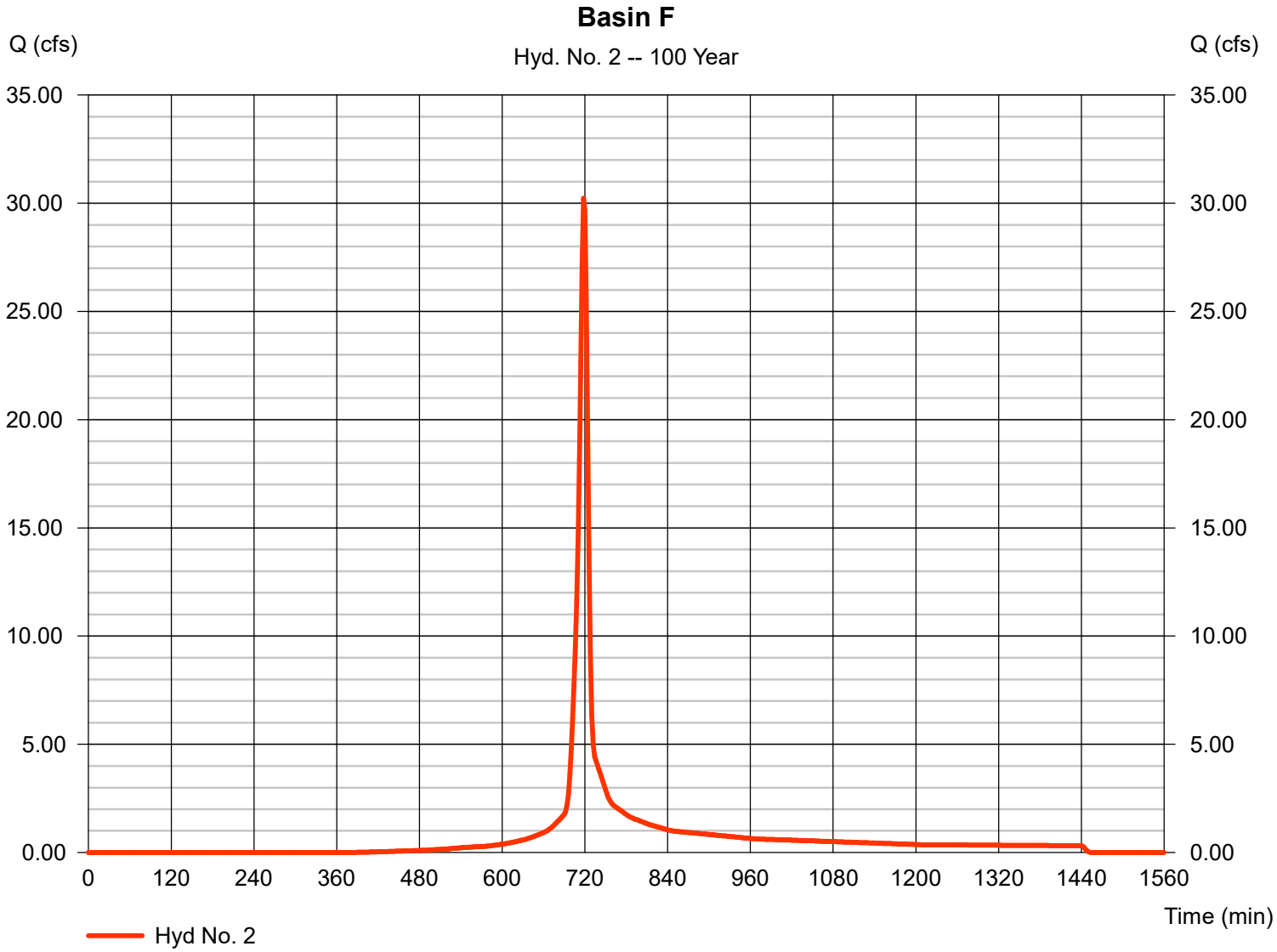
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 2

Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	30.23 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	69,840 cuft
Drainage area	=	4.940 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.20 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 79) + (2.570 x 79) + (2.040 x 78) + (0.100 x 100) + (0.030 x 89) + (0.100 x 98)] / 4.940



Hydrograph Report

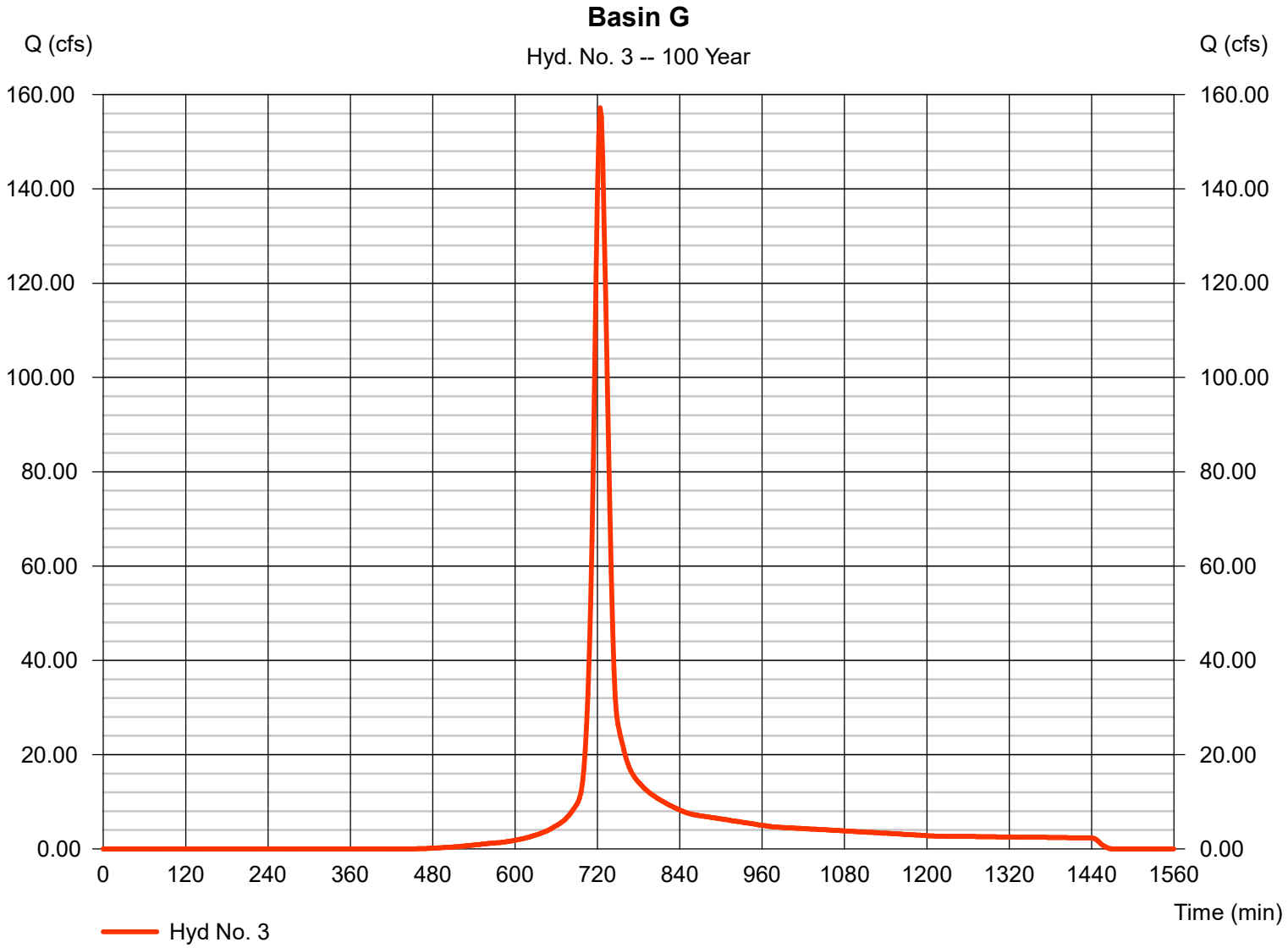
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 3

Basin G

Hydrograph type	=	SCS Runoff	Peak discharge	=	157.22 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	491,574 cuft
Drainage area	=	38.830 ac	Curve number	=	75*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	17.50 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.320 x 98) + (6.320 x 79) + (2.550 x 60) + (22.660 x 78) + (5.890 x 58) + (0.090 x 100)] / 38.830



Hydrograph Report

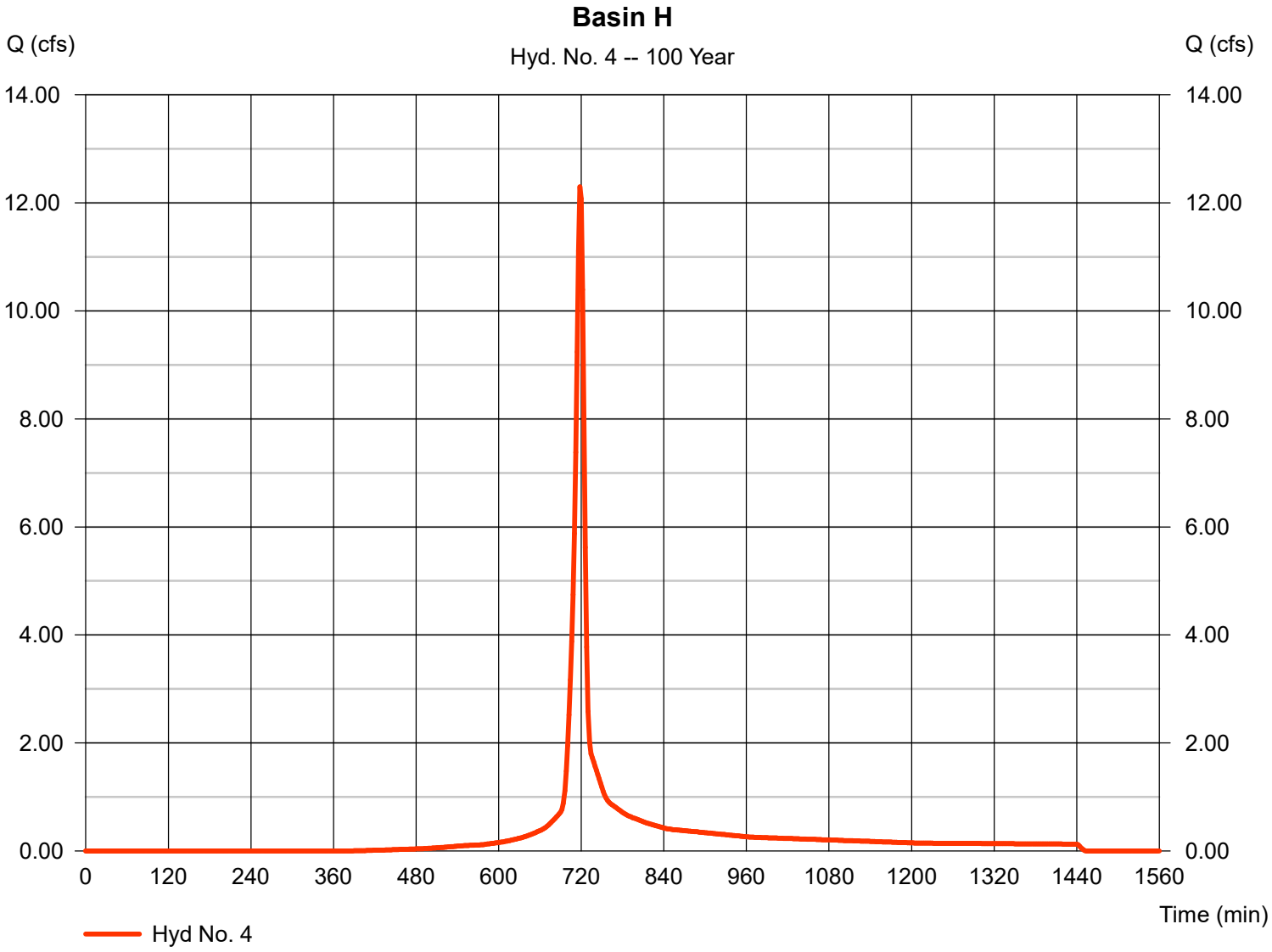
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 4

Basin H

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.30 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	28,417 cuft
Drainage area	=	2.010 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	8.10 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.360 x 79) + (1.540 x 78) + (0.110 x 98)] / 2.010



Hydrograph Report

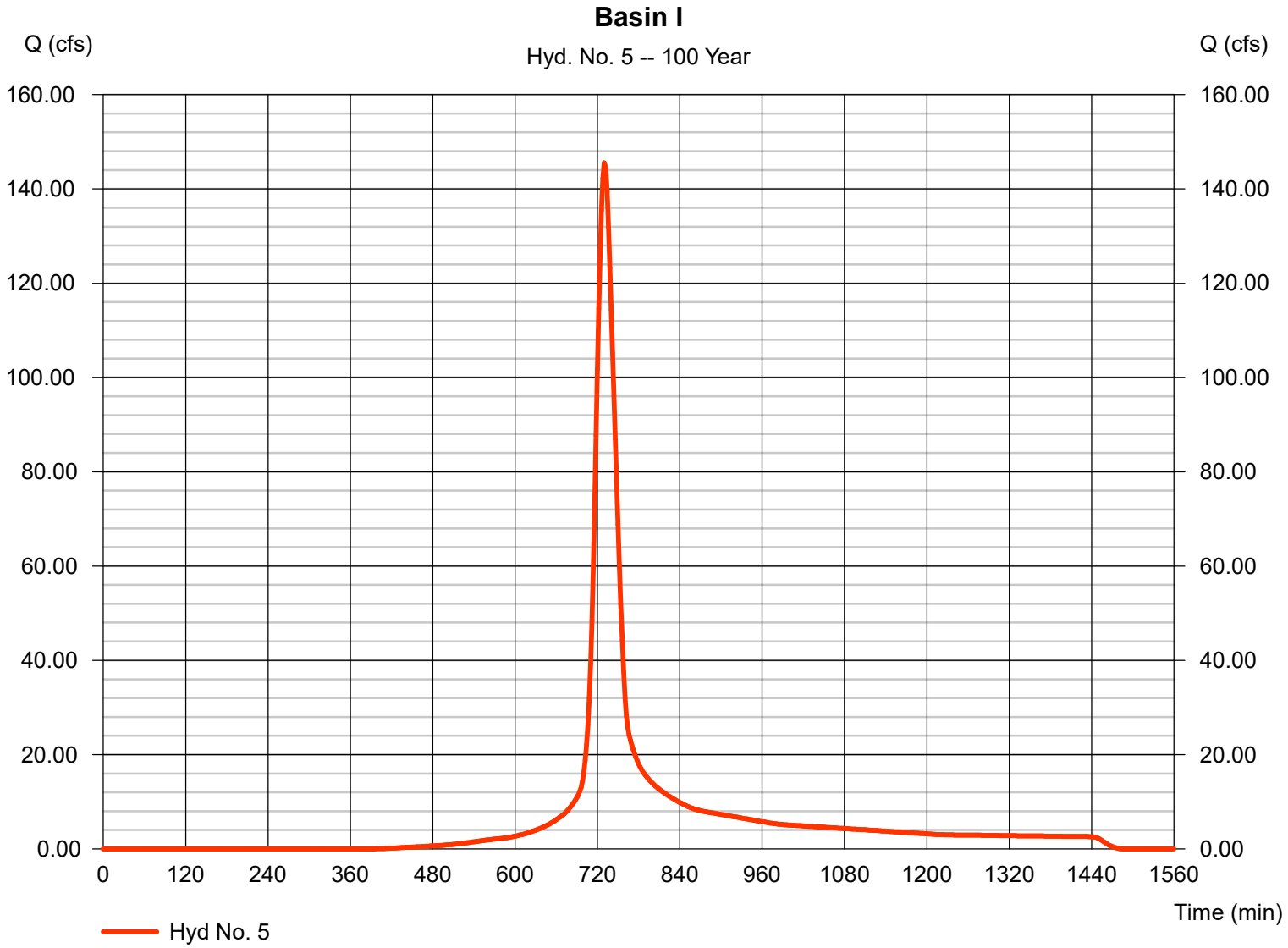
Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 5

Basin I

Hydrograph type	=	SCS Runoff	Peak discharge	=	145.51 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	581,769 cuft
Drainage area	=	41.150 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	27.10 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(40.170 x 79) + (0.160 x 98) + (0.820 x 100)] / 41.150



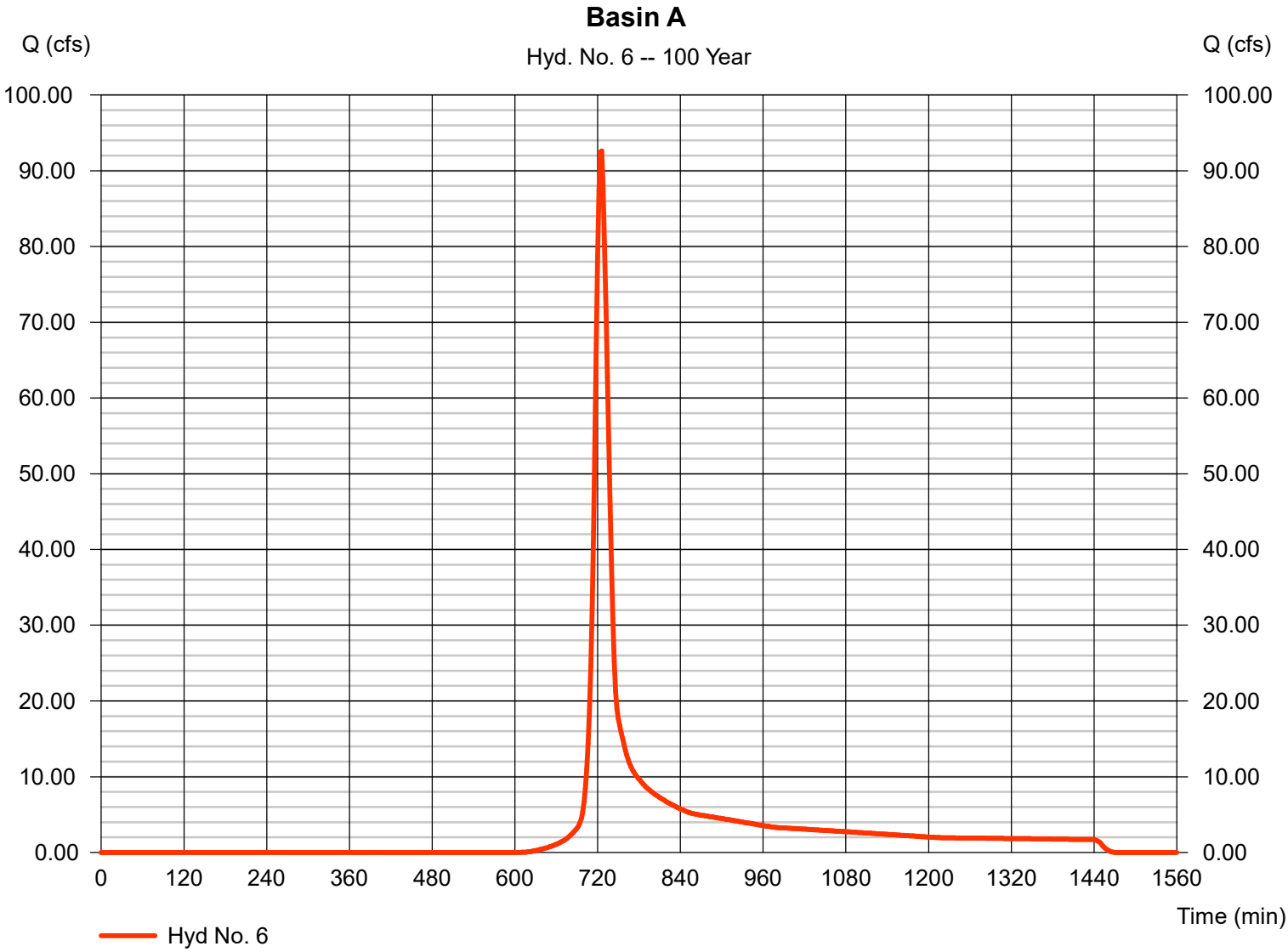
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 6

Basin A

Hydrograph type	=	SCS Runoff	Peak discharge	=	92.61 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	297,362 cuft
Drainage area	=	33.753 ac	Curve number	=	63.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	18.80 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



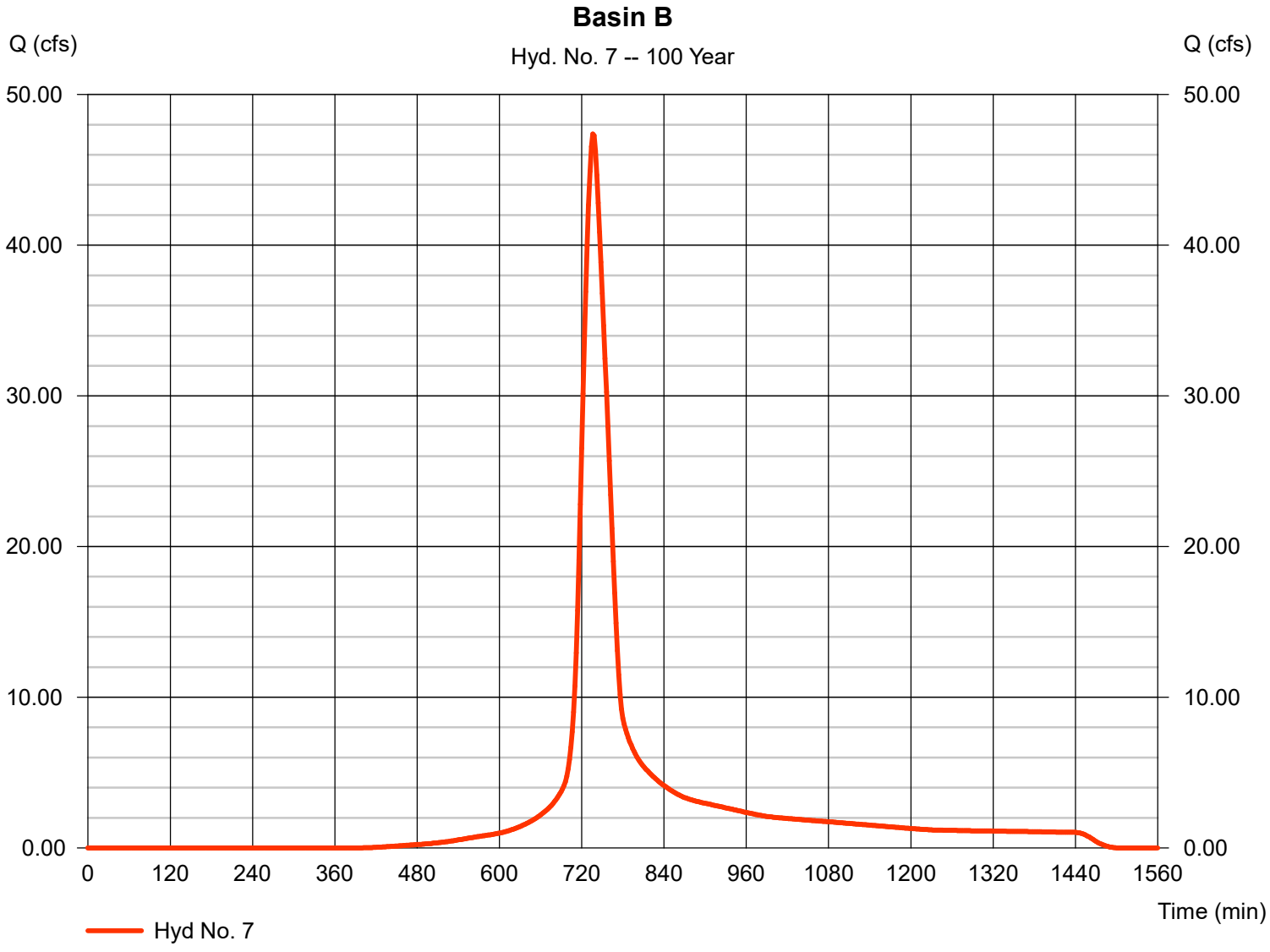
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 7

Basin B

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	229,636 cuft
Drainage area	=	16.286 ac	Curve number	=	78.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	37.22 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



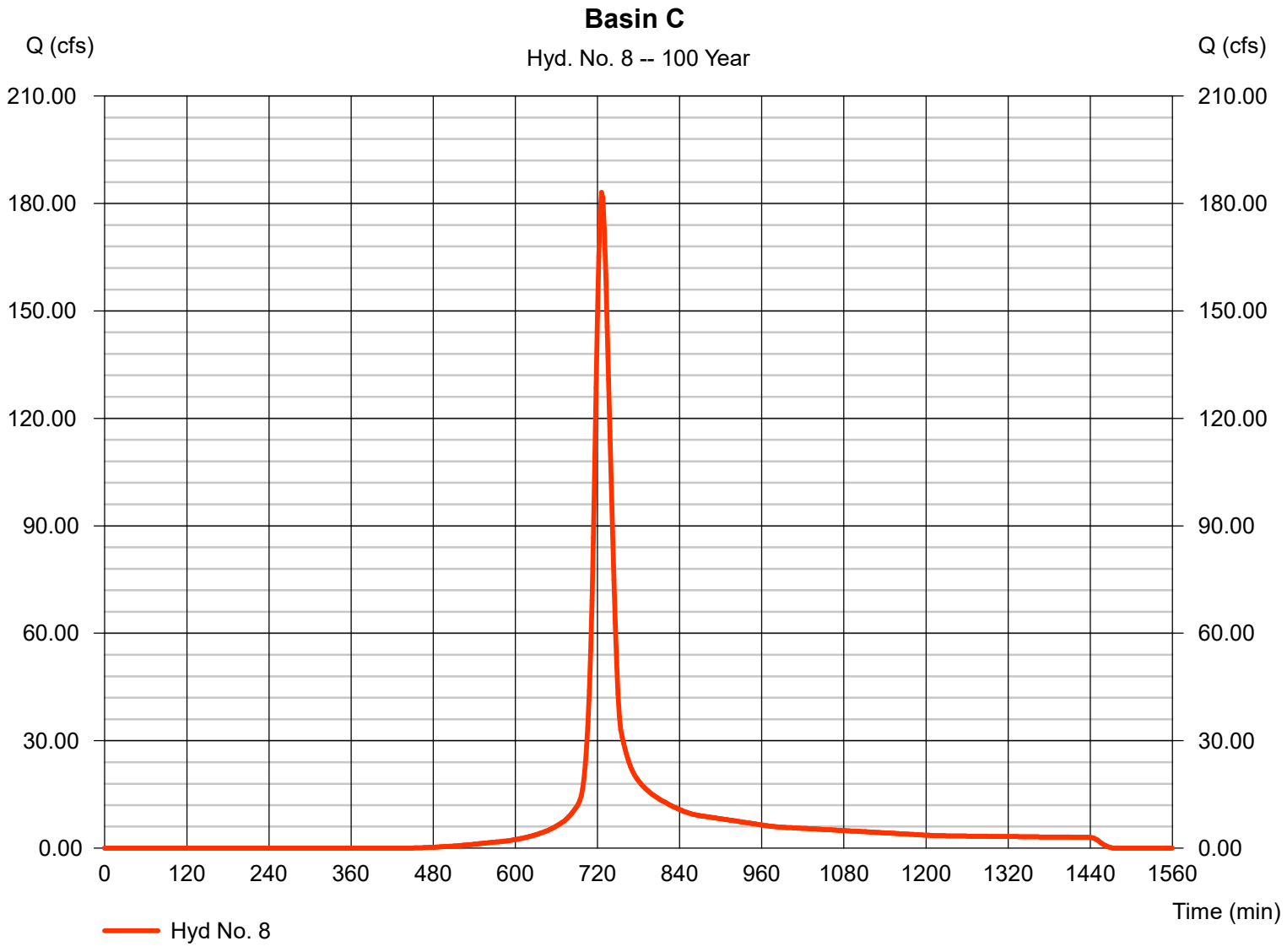
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 8

Basin C

Hydrograph type	=	SCS Runoff	Peak discharge	=	183.11 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	632,305 cuft
Drainage area	=	48.374 ac	Curve number	=	75.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	21.90 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

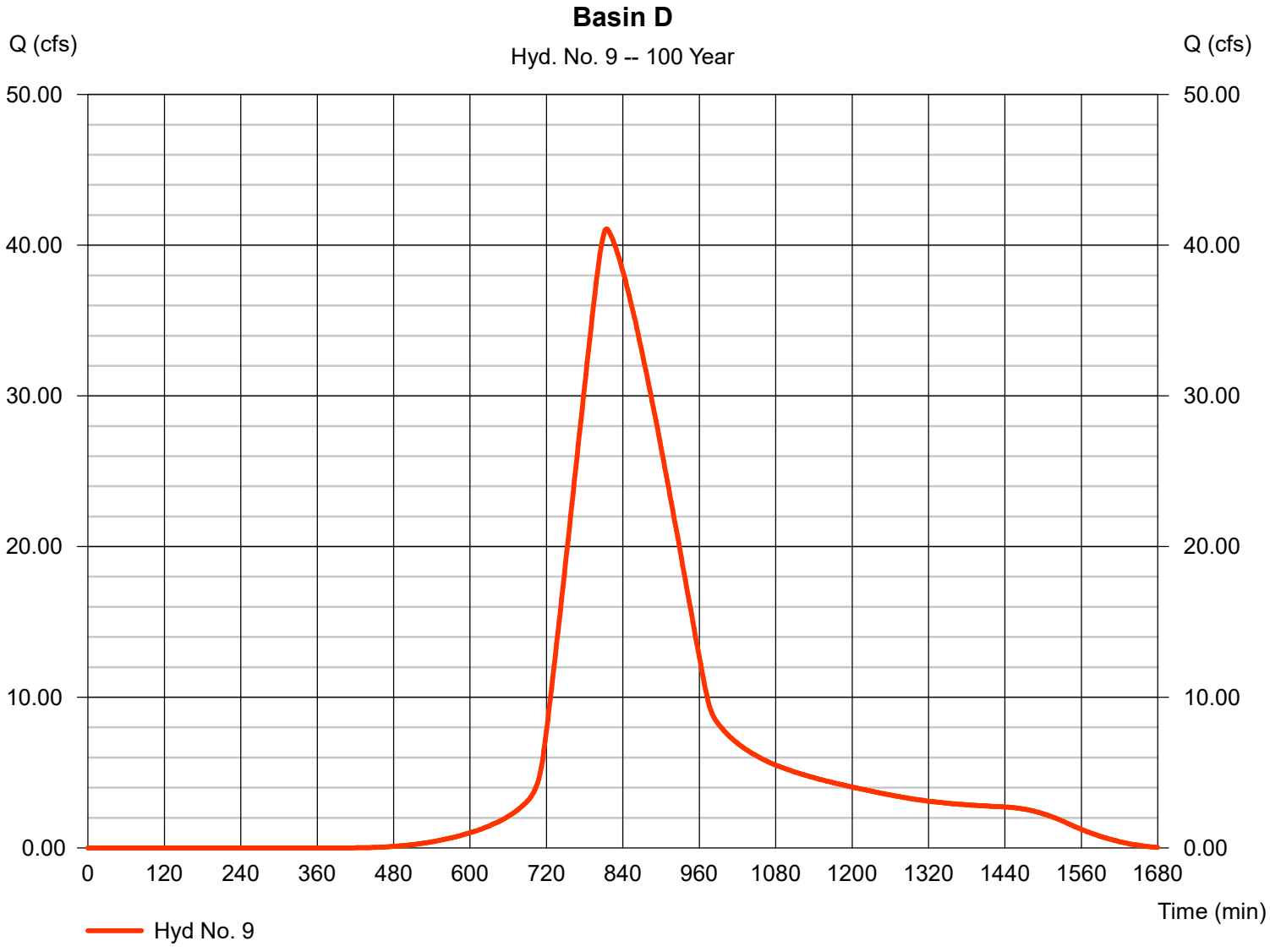


Hydrograph Report

Hyd. No. 9

Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	41.09 cfs
Storm frequency	=	100 yrs	Time to peak	=	814 min
Time interval	=	2 min	Hyd. volume	=	568,750 cuft
Drainage area	=	40.330 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	167.00 min
Total precip.	=	6.24 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



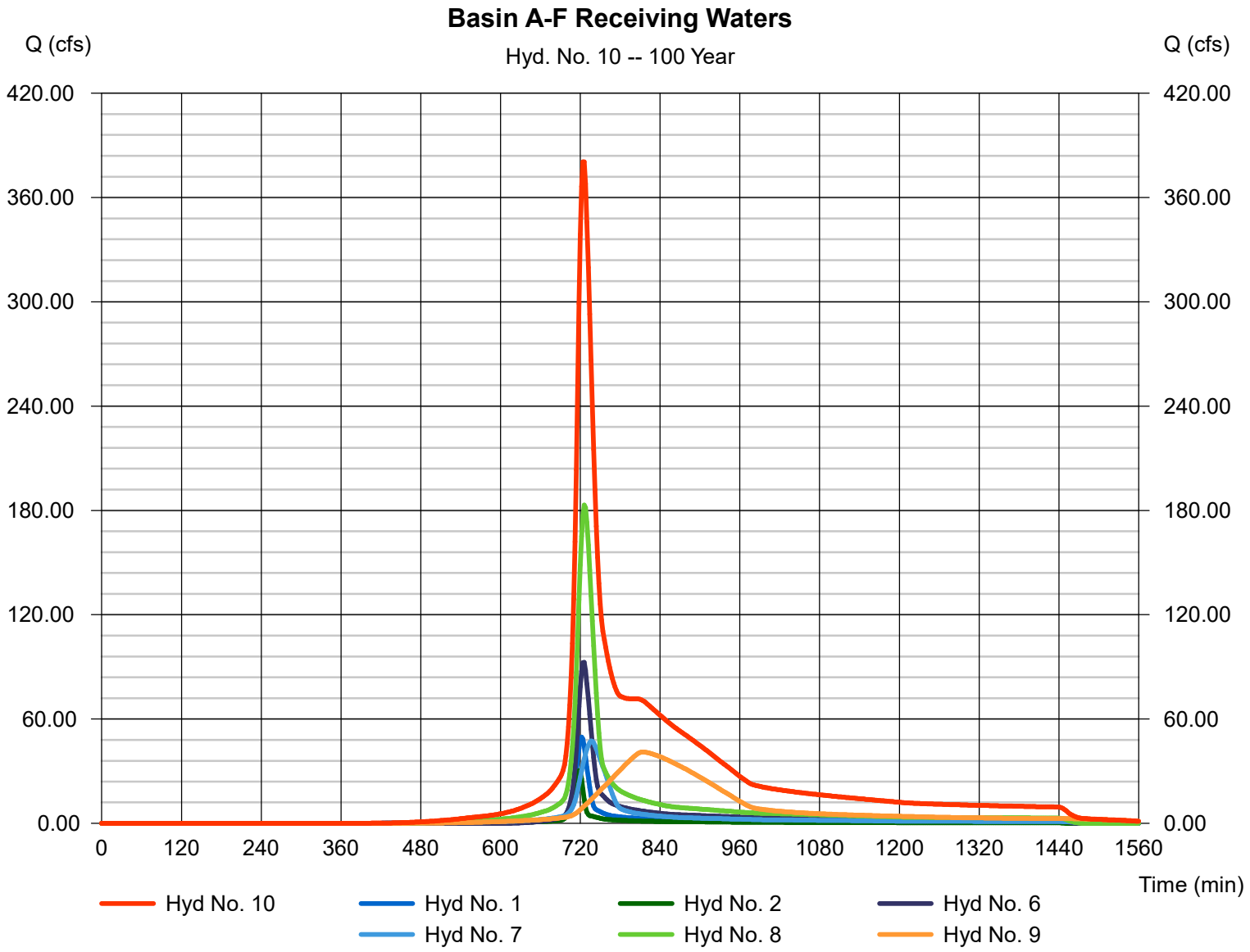
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 10

Basin A-F Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 380.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,937,804 cuft
Inflow hyds.	= 1, 2, 6, 7, 8, 9	Contrib. drain. area	= 153.833 ac



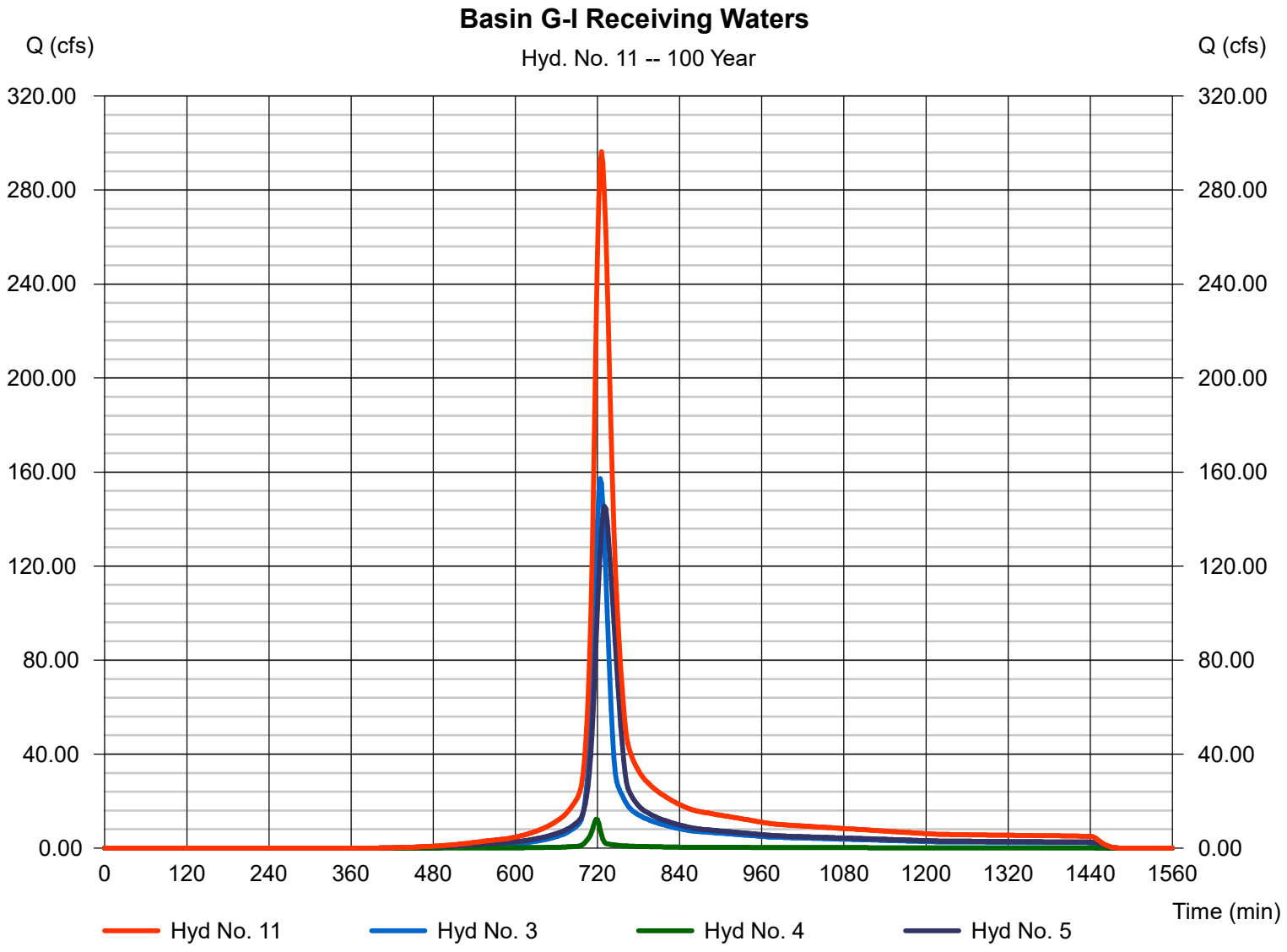
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 11

Basin G-I Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 296.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 1,101,759 cuft
Inflow hyds.	= 3, 4, 5	Contrib. drain. area	= 81.990 ac



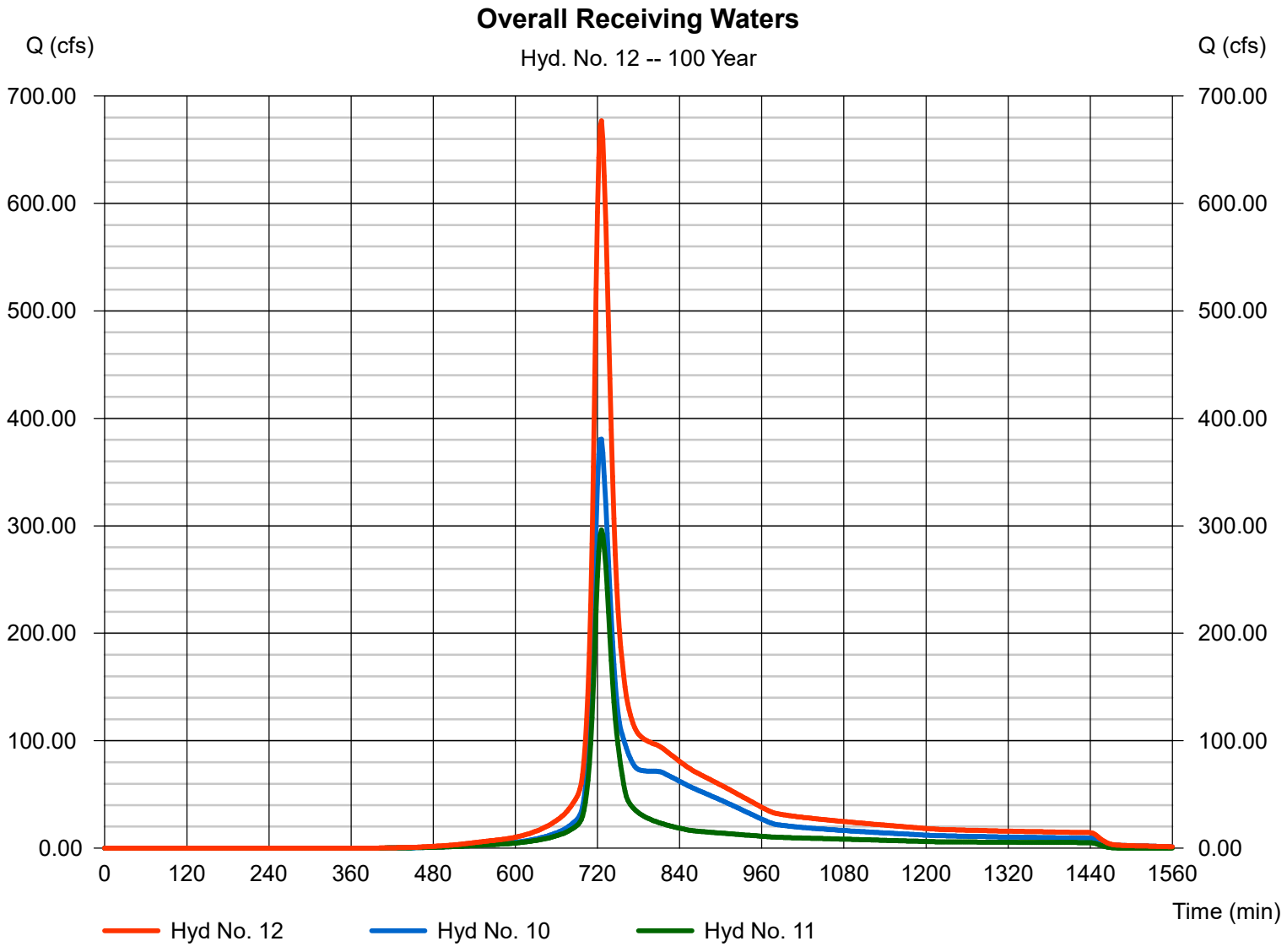
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

Hyd. No. 12

Overall Receiving Waters

Hydrograph type	= Combine	Peak discharge	= 676.86 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 3,039,563 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.000 ac



Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.1 Thursday, Jan 30, 2025

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: Sample.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	2.12	2.59	0.00	3.36	4.00	4.88	0.00	6.24
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

H.3. Tabulated Results and Summary

RESULTS SUMMARY

SITE NAME: KIRKWOOD SOLAR FARM

Pre Developed Conditions:

Design Storm Event - 24 Hr	**1 YR**	**2 YR**	**10 YR**	**25 YR**	**100 YR**
Design Rainfall Depth (in)	2.12	2.59	4.00	4.88	6.24
Sub-basin A					
Peak Discharge Rate Q_{pre-A} (cfs)	1.823	6.749	33.500	55.120	92.610
Pre-developed Runoff Volume (cf)	18,058.00	36,736.00	118,467.00	183,315.00	297,362.00
Sub-basin B					
Peak Discharge Rate Q_{pre-B1} (cfs)	6.391	10.260	23.640	32.730	47.390
Pre-developed Runoff Volume (cf)	34,875.00	52,796.00	115,621.00	159,012.00	229,636.00
Sub-basin C					
Peak Discharge Rate Q_{pre-B2} (cfs)	19.770	34.310	86.460	123.160	183.110
Pre-developed Runoff Volume (cf)	82,007.00	129,843.00	304,278.00	427,976.00	632,305.00
Sub-basin D					
Peak Discharge Rate Q_{pre-B3} (cfs)	5.398	8.642	20.250	28.220	41.090
Pre-developed Runoff Volume (cf)	86,757.00	131,178.00	286,732.00	394,086.00	598,750.00
Sub-basin E					
Peak Discharge Rate Q_{pre-C} (cfs)	7.110	11.120	25.110	34.580	49.660
Pre-developed Runoff Volume (cf)	21,342	32,269	70,535.00	96,944.00	139,911
Sub-basin F					
Peak Discharge Rate Q_{pre-F} (cfs)	4.527	6.993	15.380	21.120	30.230
Pre-developed Runoff Volume (cf)	10,653	16,108	70,535.00	48,392	69,840
Sub-basin G					
Peak Discharge Rate Q_{pre-G} (cfs)	16.610	29.020	73.730	105.490	157.220
Pre-developed Runoff Volume (cf)	62,191	99,191	234,921.00	331,566	491,574
Sub-basin H					
Peak Discharge Rate Q_{pre-G} (cfs)	1.842	2.845	6.260	8.591	12.300
Pre-developed Runoff Volume (cf)	4,335	6,554	14,326.00	19,690	28,417
Sub-basin I					
Peak Discharge Rate Q_{pre-G} (cfs)	20.020	31.880	72.770	100.740	145.510
Pre-developed Runoff Volume (cf)	88,742	134,181	293,295.00	403,106	581,769
Summary of Results: Receiving Waters (Runoff From Pre-developed Basins A, B, C, D, E, F, G, H, and I)					
Design Storm Event - 24 Hr	**1 YR**	**2 YR**	**10 YR**	**25 YR**	**100 YR**
Design Rainfall Depth (in)	2.12	2.59	4.00	4.88	6.24
Peak Discharge Rate $Q_{pre-Total}$ (cfs)	70.120	121.120	314.940	452.230	676.860
Pre-developed Runoff Volume (cf)	408,860.00	638,856.00	1,473,385.00	2,064,086.00	3,039,563.00

Design Criteria: 1 year Storm Event Runoff volume (Channel Protection Volume)

Channel Protection Volume: **28,421.39 cf (Req'd) ≤ 32,406.00 cf (Prov'd)** √ OK

Design Criteria: 10 year Storm Event Discharge rate and Runoff volume (Overbank Flood Control)

Postdeveloped Peak discharge Rate = **78.390 cfs ≤ 314.940 cfs** √ OK

Design Criteria: 100 year Storm Event Discharge rate and Runoff volume (Extreme Flood Control)

Postdeveloped Peak discharge Rate = **180.810 cfs ≤ 676.860 cfs** √ OK

Channel Protection Volume $CP_{V\text{-}Prov'd}$ (1 year / 24 Hr) > Channel Protection $CP_{V\text{-}Req'd}$ - **Criteria Satisfied**

Post developed Q_{p10} < Pre-developed Q_p for 10 Yr/24 Hr storm event - **Criteria Satisfied**

Post developed Q_{p100} < Pre-developed Q_p for 100 Yr/24 Hr storm event - **Criteria Satisfied**

APPENDIX I
CONSTRUCTION INSPECTION LOG BOOK AND CERTIFICATION FORMS

APPENDIX I
CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG BOOK

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. **PRE-CONSTRUCTION MEETING DOCUMENTS**

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. **Preamble to Site Assessment and Inspections**

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

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

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

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

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

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

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

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

Yes No NA

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

2. Resource Protection

Yes No NA

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

3. Surface Water Protection

Yes No NA

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

4. Stabilized Construction Access

Yes No NA

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

5. Sediment Controls

Yes No NA

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

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

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

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

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

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

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

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

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

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

SITE PLAN/SKETCH

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

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

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

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

3. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

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

4. Stone Check Dam

Yes No NA

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

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

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

Yes No NA

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

Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA

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

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

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

The Operator shall amend the SWPPP whenever:

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

Modification & Reason:

APPENDIX J
CORRECTIVE ACTION AND SWPPP AMENDMENTS LOGS

Corrective Action Log

Project Name: **Kirkwood Solar Facility**
SWPPP Contact:

Inspection Date	Inspector's Name	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible person

SWPPP Amendment Log

Project Name: **Kirkwood Solar Facility**
SWPPP Contact:

Amendment Number	Inspector's Name	Description of the Amendment	Date of Amendment	Date Action Taken/Responsible Person

APPENDIX K
NOTICE OF TERMINATION

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

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

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

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

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

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

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

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

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

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

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

V. Additional Information/Explanation:

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

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX L
SITE CONSTRUCTION PLANS

SITE CONSTRUCTION PLANS:

This SWPPP has been prepared in conjunction with the Site Construction Plans titled POMPEY SOLAR FACILITY, as prepared by Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., dated 01/31/2025.

A copy of the plans are to be kept on-site with this document pursuant to Section 1.6. and considered as an essential supporting document under separate cover.