Stormwater Management Study

Northern Pass Transmission, LLC.

Transition Station #2
Project No. 58466

RE-ISSUED FOR PERMITTING
December 13, 2016

Stormwater Management Study

prepared for

Northern Pass Transmission, LLC.

Transition Station #2
Clarksville, Coos County, NH, 03592

Project No. 58466

RE-ISSUED FOR PERMITTING
December 13, 2016

prepared by

Burns & McDonnell Engineering Company, Inc.

INDEX AND CERTIFICATION

Northern Pass Transmission, LLC.
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Report Index

Certification

I hereby certify, as a Professional Engineer in the State of New Hampshire, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the Northern Pass Transmission, LLC. or others without specific verification or adaptation by the Engineer.

STATE OF NEW HAMPSHIRE
ROBBYN
L.
REED
No. 13781
LICENSED
PROFESSIONAL ENGINEER

12/13/16

Robbyn Reed, P.E. Date

Additional reference information provided by others and not certified by the above sealing Engineer.

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BMcD	Burns & McDonnell
BMP	Best Management Practice
CFS	Cubic Feet per Second
E&S	Erosion and Sedimentation Control
FPS	Feet per Second
FT	Feet
LF	Linear Feet
LiDAR	Light Detection and Ranging
NAD	North American Datum
NAVD	North American Vertical Datum
NH DES	New Hampshire Department of Environmental Services
NPT	Northern Pass Transmission, LLC.
ORW	Outstanding Resource Water
ROW	Right-of-way
TMDL	Total Maximum Daily Loads
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
WQF	Water Quality Flow
WQV	Water Quality Volume

1.0 PROJECT OVERVIEW

1.1 Location and Project Summary

Northern Pass Transmission, LLC. (NPT) plans to construct Transition Station #2 (Project), a new transition station located on Eversource owned property on US-3 (45.018593 latitude and -71.462250 longitude) in Clarksville, Coos County, NH (Site). Refer to Figure 1-1: USGS Site Location Map.

The Site is part of an active gravel pit operation on the western slope of a hill overlooking the Connecticut River. Access to the site is from US Route 3 along a gravel road. The Site is bounded by gravel to the north and west, and woodland to the east and south. The Site is located within the surface watershed of the Connecticut River.

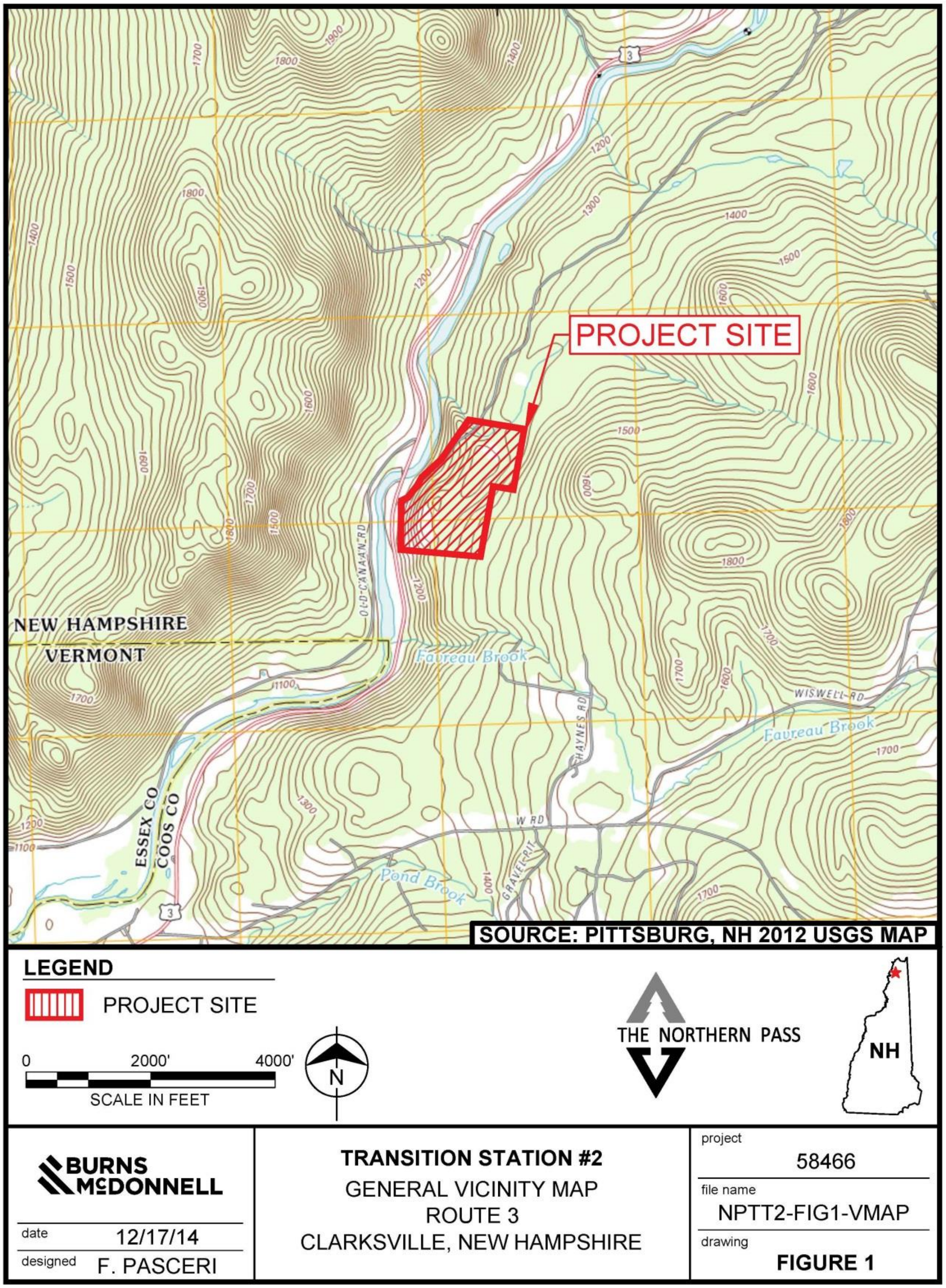
Pre-development conditions primarily consist of undeveloped woodland and existing gravel areas. Stormwater runoff in existing conditions generally sheet flows overland from east to west to existing wetlands located on the southern portion of the Site.

The post-development conditions of the Site include construction of a transition station associated with the Northern Pass Transmission (NPT) project. The NPT project is an approximately 200-mile AC and DC transmission line route extending from the United States/Canadian border in Pittsburg, NH to Deerfield, NH. The station development consists of a gravel pad approximately 80-ft by 135-ft with a perimeter fence and access gates. The post-development conditions will increase the impervious area of the Site and as a result, stormwater infiltration systems will be implemented. Wherever possible, the pre-development drainage and grading patterns were maintained in the post-development conditions.

A hydrologic model was developed to evaluate the pre- and post-development drainage conditions on the Site for the 2-, 10-, and 50-year design frequency storm events. The results of the analysis indicate that there is no increase in peak discharge rates in post-development conditions from pre-development conditions. The analyses summary, results, and model output are located in further sections.

The Project Site property area is 62.50 acres. The Project will result in approximately 1.01 acres of disturbance, all of which is on-site. The existing impervious area within the property line is 4.59 acres and the additional impervious cover as a result of the project is 0.03 acres which accounts for structure footings, structures and pads and the basin area. The total impervious cover within the property is 4.62 acres. The total undisturbed cover of the property is 57.24 acres.

Figure 1-1: USGS Site Location Map



1.2 Existing Conditions Survey Information

An Existing Conditions Plan with topography was prepared for the Project and was used as a base throughout the analysis and design of the Site Development Plans and Stormwater Management Study. In the instance where the watershed areas extended outside the survey topography limits, State published LiDAR was obtained from the New Hampshire GRANIT Statewide GIS Clearinghouse and used to determine the watershed limits.

Horizontal Datum: The survey references the New Hampshire State Plane Coordinate System, NAD 83. The Site Development Plans are drawn in the same state plane coordinate system.

Vertical Datum: North American Vertical Datum of 1988 (NAVD88). The proposed elevations referenced within the Site Development Plans refer to the same vertical datum.

1.3 Geotechnical Investigations

A Geotechnical Engineering Report has been prepared for NPT.

- "Geotechnical Engineering Report, Transition Station #2 Project, Northern Pass Transmission Line, Clarksville, New Hampshire" by Quanta Subsurface.

Furthermore infiltration testing has been completed for the site at specified locations relevant to the Stormwater Management Study. Refer to the Infiltration Feasibility Report included in Appendix H.

The geotechnical investigation report can be found in Appendix H.

1.4 Soils

National Resource Conservation Service (NRCS) Web Soil Survey describes the soil within the Site watershed as Sheepscot cobbly very fine sandy loam, Colton gravelly fine sandy loam, Madawaska very fine sandy loam, Tunbridge-Lyman-Rock outcrop complex, Charles silt loam, Stetson fine sandy loam, Tunbridge-Plaisted-Lyman complex, Bangor silt loam, Dixmont very fine sandy loam, Cabot silt loam, and Tunbridge-Berkshire-Lyman complex. The soils were classified as hydrologic soil groups A, B, C, and D. The NRCS Web Soil Survey information is located in Appendix G.

There is also a soil survey report for the Site, entitled "Northern Pass Transmission Project, Soil Survey Report for Transition Stations, Substation Expansions, and Converter Terminal" by Normandeau Environmental Consultants, dated February 6, 2015. Station specific excerpts from the soil survey report can be found in Appendix G. The soils were classified as hydrologic soil groups B, C, and D.

Thirty-two soil types are present on and in the vicinity of the Project Site according to the US Department of Agriculture Soil Conservation Service Soil Survey for Coos County, New Hampshire (Version 20, September 15, 2014) and the aforementioned soil survey report for the Project Site by Normandeau. Four of the mapped soil types are disturbed soils from excavation for sand and gravel: Udipsamments (300); Udorthents, sandy or gravelly (400); Udorthents, loamy (500) and Rubble land (727). Rubble land indicates areas where materials have been sorted and stored. As the Project Site is actively worked, these areas may change in size and location. Table 1-1 below lists the soil types and hydrologic soil groups.

Table 1-1: Soil Types

Map Legend	Soil Type	Hydrologic Soil Group
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes	B
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	A
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	C
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	C
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	C
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	C
209A	Charles silt loam, 0 to 2 percent slopes, frequently flooded	B/D
300B/cbaab	Udipsamments, 3 to 8 percent slopes	B
300E/cbaab	Udipsamments, 25 to 50 percent slopes	B
400A/cbaab	Udorthents, sandy or gravely, 0 to 3 percent slopes	B
400B/cbaab	Udorthents, sandy or gravely, 3 to 8 percent slopes	B
400E/cbaab	Udorthents, sandy or gravely, 25 to 50 percent slopes	B

Map Legend	Soil Type	Hydrologic Soil Group
500A	Udorthents, loamy, 0 to 3 percent slopes	B
523B	Stetson fine sandy loam, 3 to 8 percent slopes	B
523C	Stetson fine sandy loam, 8 to 15 percent slopes	B
523E	Stetson fine sandy loam, 15 to 60 percent slopes	A/B
560C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes	B
560D	Tunbridge-Plaisted-Lyman complex, 15 to 25 percent slopes	B
560E	Tunbridge-Plaisted-Lyman complex, 25 to 35 percent slopes	B
561B	Tunbridge-Plaisted-Lyman complex, 3 to 8 percent slopes, very stony	B
561C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes, very stony	B
573C	Bangor silt loam, 8 to 15 percent slopes, very stony	B
573D	Bangor silt loam, 15 to 25 percent slopes, very stony	B
573E	Bangor silt loam, 25 to 35 percent slopes, very stony	B
578B	Dixmont very fine sandy loam, 3 to 8 percent slopes	B/D
579B	Dixmont very fine sandy loam, 3 to 8 percent slopes, very stony	B/C/D
579C	Dixmont very fine sandy loam, 8 to 15 percent slopes, very stony	B/D
579D	Dixmont very fine sandy loam, 15 to 25 percent slopes, very stony	B/D
590B	Cabot silt loam, 0 to 8 percent slopes, very stony	D

Map Legend	Soil Type	Hydrologic Soil Group
590C	Cabot silt loam, 8 to 15 percent slopes, very stony	D
670D	Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes	B
727	Rubble land, one to 50 percent slopes	unknown

This soil series has an erosion factor K of 0.05-0.37 or is not rated. The erosion factor K, with values ranging from 0.02 to 0.69, signifies how susceptible a soil is to erosion. The larger the K value the more susceptible the soil is to erosion by water. The K factor for the Project Site indicates that the soils are moderately susceptible to erosion by water. The susceptibility of the soils to moderate erosion will be resolved by the site stabilization with rock and native vegetation.

1.5 Wetlands, Rivers, Streams and Vernal Pools

A report entitled "Wetlands, Rivers, Streams and Vernal Pools Resource Report and Impact Analysis" by Normandeau Environmental Consultants, dated October 1, 2015 has been prepared for the NPT Project. Environmentally sensitive areas were found within the Project Site. Refer to Appendix I for a copy of this report.

1.6 Floodplain

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Map No. 33007C0215D for Coos County, New Hampshire, Effective Date February 20, 2013, the Project Site is located in Zone 'AE', special flood hazard areas subject to inundation by the 1% annual chance flood and Zone 'X', areas determined to be outside the 0.2% annual chance floodplain. The FIRM Map is located in Appendix F.

1.7 Receiving Surface Waters

The Site is within the Upper Connecticut River Watershed. The Site and onsite streams and wetlands directly discharge to the Connecticut River.

1.8 Pre-Development Site Conditions

The Pre-developed site consists of heavily forested rolling hill terrain, gravel pit areas and associated gravel access roads that drain east to west toward existing onsite wetlands. There are two discharge points from this Site. Outlet O-2 receives surface runoff from a small portion of an existing gravel access road crossing through the Site. Outlet O-1 receives surface runoff from the above-described Site area draining to the existing onsite wetlands.

1.9 Post-Development Site Conditions

Pre-developed stormwater drainage patterns are mimicked in post-developed conditions and utilize the same two aforementioned Site discharge points as pre-development. Pre- and Post-development watershed maps are located in Appendix A. The post-development peak stormwater discharge rates are the same or below pre-development rates.

No new water or septic/sanitary sewer services are required for the Project.

No proposed improvements are located within a FEMA 100-year flood plain, as a result, there are no adverse impacts to properties.

* * * * *

2.0 HYDROLOGY AND HYDRAULICS

The stormwater management for the Project has been developed to minimize the downstream effects of development at the Site. The stormwater requirements set forth by the New Hampshire Department of Environmental Services Stormwater Manual Volumes 1, 2, & 3, dated December 2008 and the New Hampshire Department of Transportation Manual on Design for Highways, Revision Date April 1998 were followed to the maximum extent practical for the design of the Site Development Plans and this Report.

The development of the Site results in the need to infiltrate stormwater onsite. One above-ground infiltration basin is proposed and is discussed in further detail below. The following is the data used in the stormwater management analysis.

2.1 Methodology and Design Criteria

2.1.1 Rainfall Data

Type II 24-hour rainfall depths for Clarksville, NH were obtained from the Northeast Regional Climate Center – http://precip.eas.cornell.edu/.

Table 2-1: 24-Hour Type II Rainfall Data

Return Frequency (yr)	24 Hour Depth (in)
2	2.20
10	3.08
50	4.31

2.1.2 Runoff Data

The stormwater runoff calculations were completed using the USDA NRCS/SCS TR-55 runoff curve number method in Bentley's PondPack v8i modeling software. Refer to Appendix B for the inputs and generated outputs. The input values that were used in the PondPack model are shown in the tables below.

Maximum sheet flow length for unpaved areas according to the NH DES Stormwater Manual is 100-ft. Below are the standard SCS runoff curve numbers used in the hydrology modeling and the pre-development and post-development watershed cover data used in the hydrology modeling.

Table 2-2: Standard SCS Runoff Curve Numbers

Land Type	Hydrologic Soil Group	Curve Number
Woods	B	55
Woods	C	70
Woods	D	77
Meadow	B	58
Meadow	C	71
Gravel	B	85
Gravel	C	89
Gravel	D	91
Impervious (Asphalt Pavement, Water, Structures, Foundations)	-	98

Table 2-3: Pre-Developed Model Data

Subarea	Area (ac)	Curve Number	Time of Concentration (Minutes)
1	114.161	69	48.7
2	0.117	85	5
Total	114.278	-	-

Table 2-4: Post-Developed Model Data

Subarea	Area (ac)	Composite Curve Number	Time of Concentration (Minutes)
1A	113.645	68	50
1B	0.573	82	11.8
2	0.060	75	5
Total	114.278	-	-

The below table summarizes the Manning's roughness coefficients used in the analysis.

Table 2-5: Manning's Roughness Coefficients

Surface Description	Manning's n
Grass, Dense grasses (sheet)	0.240
Smooth Surface Gravel (sheet)	0.100
Woods, Light underbrush (sheet)	0.400
Woods, Dense underbrush (sheet)	0.800
Earth-Straight Channel	0.030
Grass w/ NAG Stabilization	0.045

2.2 Stormwater Modeling Results

For the proposed Project, a new infiltration basin is proposed to be constructed on the north side of the transition station pad. Runoff from the transition station pad will discharge to the basin via a pretreatment swale (Swale SW-1) on the east side of the station pad. Runoff from the hill area east of the Site will collect in Swale SW-2 which will convey runoff to Outlet O-1. Remaining areas within the watershed not draining to the basin will drain to the same discharge points as the pre-development runoff. The infiltration basin is designed with a vegetated spillway to convey the 2, 10, 50 and 100-year storm events. Runoff from the vegetated spillway travels to Outlet O-1 via Swale SW-2.

The proposed infiltration basin was analyzed to mitigate the impacts of stormwater runoff from changes in drainage patterns that would result from the construction of this project. The hydrology model was analyzed using an infiltration rate of 2.7 inches per hour (based on results from field data). The following tables summarize flow conditions for the Project and the reduction of flow achieved by the infiltration basin.

There are two Analysis Points for the Site. The tables below summarize the pre- and post-developed peak discharge runoff rates from each respective analysis point. Refer to Appendix A for the Pre-Developed and Post-Developed Watershed Maps. Modeling results and output can be found in Appendix B.

Table 2-6: Outlet-1 Flow

Return Frequency (yr)	Pre-Developed Flow (cfs)	Post-Developed Flow (cfs)
2	12.78	10.77
10	41.46	36.88
50	96.07	88.96
100	130.53	122.18

Table 2-7: Outlet-2 Flow

Return Frequency (yr)	Pre-Developed Flow (cfs)	Post-Developed Flow (cfs)
2	0.17	0.04
10	0.31	0.09
50	0.50	0.18
100	0.61	0.23

2.3 Infiltration Basin Design

The infiltration basin was designed and analyzed to provide long term stormwater attenuation, water quality treatment, and infiltration once the Project has been constructed. The basin has been designed to meet the requirements in the NH DES Stormwater Manual. The infiltration basin fully contains and infiltrates a volume larger than both the required Water Quality Volume and Groundwater Recharge Volume, as further discussed in Section 3.1. A vegetated spillway is designed to convey the 2-, 10-, 50- and 100-year design storms. The infiltration basin has been designed as to not require a State Dam permit. The below tables summarize the infiltration basin storage volumes and water surface elevations with respect to the design storm events.

Table 2-8: Infiltration Basin Storage Volume

Elevation (feet-NAVD88)	Surface Area (SF)	Cumulative Storage Volume (CF)
1303.00	664	-
1303.83	923	659
1304.00	996	822
1305.00	1381	2010

Table 2-9: Infiltration Basin Water Surface Elevation

Return Frequency (yr)	Maximum Water Surface Elevation (ft)
2	1303.83
10	1303.91
50	1303.99
100	1304.02

2.4 Stormwater Swales

The Stormwater swales are designed for the 10-year storm event with a minimum of one foot of freeboard. In addition, all open swales are expected to convey the 100-year storm event without overtopping. The open swales will be vegetated as specified in the Site Development Plans. The following table summarizes the design criteria as well as the proposed lining for the proposed open swales. The results show that the swales will be stable for storms up to the 10 year flow.

Table 2-10: Stormwater Swale Summary

Swale	10 Year Max. Flow (cfs)	10 Year Velocity (ft/s)	100 Year Max. Flow (cfs)	100 Year Velocity (ft/s)	Swale Depth (ft)	Swale Bottom Width (ft)	Side Slopes (H:V ft)	Slope (%)
SW-1	1.08	1.11	2.29	1.43	1.5	4.0	3:1	1.1
SW-2	36.76	2.35	121.86	3.24	3.0	6.0	3:1	0.5

Refer to Appendix C for the FlowMaster model results for the Swales.

The table below summarizes the stormwater swale stabilization types. The calculations can be found in Appendix C.

Table 2-11: Stormwater Swale Stability

Swale	Stabilization Type	10 Yr. Design Discharge (cfs)	Allowable Shear Stress (psf)	Calculated Shear Stress (psf)
SW-1	Unreinforced Vegetation	1.08	4.2	0.37
SW-2	Unreinforced Vegetation	36.76	5.73	0.72

2.5 Basin Spillway

The basin spillway is designed for the 100-year storm event without overtopping the basin. The basin spillway will be vegetated as specified in the Site Development Plans. The following table summarizes the design criteria as well as the proposed lining for the basin spillway. The results show that the basin spillway will be stable for storms up to the 100 year flow.

Table 2-12: Basin Spillway Summary & Stability

100 Year Max. Flow (cfs)	100 Year Velocity (ft/s)	Spillway (Weir) Width (ft)	Side Slopes (H:V ft)	Downstream Slope (%)	Allowable Shear Stress (psf)	Calculated Shear Stress (psf)
2.29	0.83	9	3:1	5	4.2	0.96

Refer to Appendix C for the stabilization calculation results for the Basin Spillway.

* * * * *

3.0 BEST MANAGEMENT PRACTICES

The proposed Stormwater Management System contains Best Management Practices (BMPs) that will, if maintained properly, will provide treatment of Site generated stormwater runoff. The proposed BMPs are described below.

3.1 Groundwater Recharge Volume & Water Quality Volume

The infiltration basin will treat and recharge runoff from the structures and foundations on the transition station pad. The Water Quality Volume (WQV) that is required to be treated from these areas is 140 cubic feet. The Groundwater Recharge Volume (GRV) that is required to be infiltrated from these areas is 9 cubic feet. The infiltration basin has a volume of 659 cubic feet below the lowest outlet (basin spillway), which is larger than both the WQV and the GRV. All runoff stored in the infiltration basin below the basin spillway will recharge into the underlying soils. Runoff entering the infiltration basin receives pretreatment in Swale SW-1, designed in accordance with pretreatment swale requirements. Additional pretreatment is provided as surface runoff travels via sheet flow across the crushed rock surfacing of the station pad and parking areas. The worksheets for the infiltration basin and GRV calculation are located in Appendix D.

3.2 Temporary Erosion Controls

During construction of the proposed station, the Contractor will be responsible for installation, implementation, and maintenance of temporary erosion and sedimentation control measures, that if implemented and maintained properly, will help to prevent off-site tracking and conveyance of waterborne loss of sediment and debris. The specific measures proposed are located in the Site Development Plans, which are under separate cover.

Temporary erosion and sedimentation controls shall not be removed until construction is complete and site stabilization is achieved.

3.3 Permanent Erosion Controls

Upon completion of construction, the Site shall be stabilized by one or more of the following measures in accordance with the Site Development Plans (under separate cover):

3.3.1 Crushed Rock

Crushed rock will be installed on the station pad area and access roads. Additional rock may be required during final stabilization as a result of the original crushed rock application being disturbed during construction.

3.3.2 Seeding

Any disturbed area not proposed as an impervious or gravel surface will be restored to natural meadow vegetation over 4" of topsoil. Planting and mulching of permanent seed will occur as soon as practical after final grading, placement of topsoil, and soil preparation has been completed. Seeding should occur during the growing season.

3.3.3 Stormwater Swale & Spillway Lining

Stormwater swales and the basin spillway will be vegetated as to help prevent erosion.

3.3.4 Flood Protection Analysis

Flood protection has been implemented for the infiltration basin as follows:

- Swales have been designed to convey the 10-year, 24-hour storm event with minimum 1.0 ft of freeboard;
- Swales have been designed to convey the 100-year, 24-hour storm event;
- The infiltration basin will detain the 2-year through 100-year, 24-hour storm events;
- A basin spillway will be used to convey the 2-year through 100-year, 24-hour storm events.

3.3.5 Antidegredation

There is no greater than 10% effective impervious cover (EIC) and no less than 65% undisturbed cover within the property boundary of the Site, therefore the Site satisfies the NHDES 1065 Rule. Refer to the Site Cover Plan located in Appendix A.

The Site stormwater runoff discharges to an Outstanding Resource Water (ORW) according to the New Hampshire Department of Environmental Services (NH DES) OneStop GIS mapper. As a result, pollutant loading calculations were performed using the NH DES standard Simple Method worksheet to demonstrate that there is no increase in Total Suspended Solids (TSS), Total Phosphorus (TP), and Total Nitrogen (TN) resulting from the Project. The pollutant loading calculations and other supporting information are located in Appendix J. Also, an impervious area summary table has been prepared to outline the impervious areas draining to the proposed BMP, refer to Appendix D.

The Simple Method generates pollutant loads based on the pre- and post- drainage areas indicated on the Watershed Maps located in Appendix A. The proposed BMP is designed to remove a percentage of the pollutants. Sub-watershed Post-Area 1B is considered disconnected impervious area because it drains through a vegetated swale to the infiltration basin for treatment. The disconnected impervious credit and the treatment BMP provides water quality and limits post-development pollutant levels to less than the pre-development condition.

The Site lies within the NE Regional Mercury Total Maximum Daily Load (TMDL) according to EPA 2008 Waterbody Report for the Connecticut River. The Project is not anticipated to produce mercury byproducts, thus restrictions from the NE Regional Mercury TMDL are not applicable.

* * * *

4.0 CONCLUSION

In order to mitigate the impacts of stormwater runoff caused by the addition of the transition station, several BMPs were implemented. Those BMPs include the addition of vegetated swales and an infiltration basin. The results of the hydrologic analysis indicate that there is no increase in peak discharge rates in post-development conditions from pre-development conditions, however there is an increase in impervious area. The infiltration basin fully contains and infiltrates a volume larger than both the required Water Quality Volume and Groundwater Recharge Volume. The infiltration basin will also hold and attenuate the 2-year through the 100-year storm events. The on-site BMPs have been designed in accordance with the New Hampshire Department of Environmental Services Stormwater Manual Volumes 1, 2, & 3.

* * * * *

APPENDIX A – PRE- AND POST-DEVELOPMENT WATERSHED MAPS

SOIL TYPE LEGEND

Map Legend	Soil Type	Hydrologic Soil Group
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes	B
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	A
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	C
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	C
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	C
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	C
209A	Charles silt loam, 0 to 2 percent slopes, frequently flooded	B/D
300B/cbaab	Udipsamments, 3 to 8 percent slopes	B
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400E/cbaab	Udorthents, sandy or gravely, 25 to 50 percent slopes	B
500A	Udorthents, loamy, 0 to 3 percent slopes	B
523B	Stetson fine sandy loam, 3 to 8 percent slopes	B
523C	Stetson fine sandy loam, 8 to 15 percent slopes	B

Map Legend	Soil Type	Hydrologic Soil Group
523E	Stetson fine sandy loam, 15 to 60 percent slopes	A/B
560C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes	B
560D	Tunbridge-Plaisted-Lyman complex, 15 to 25 percent slopes	B
560E	Tunbridge-Plaisted-Lyman complex, 25 to 35 percent slopes	B
561B	Tunbridge-Plaisted-Lyman complex, 3 to 8 percent slopes, very stony	B
561C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes, very stony	B
573C	Bangor silt loam, 8 to 15 percent slopes, very stony	B
573D	Bangor silt loam, 15 to 25 percent slopes, very stony	B
573E	Bangor silt loam, 25 to 35 percent slopes, very stony	B
578B	Dixmont very fine sandy loam, 3 to 8 percent slopes	B/D
579B	Dixmont very fine sandy loam, 3 to 8 percent slopes, very stony	B/C/D (D)
579C	Dixmont very fine sandy loam, 8 to 15 percent slopes, very stony	B/D
579D	Dixmont very fine sandy loam, 15 to 25 percent slopes, very stony	B/D
590B	Cabot silt loam, 0 to 8 percent slopes, very stony	D
590C	Cabot silt loam, 8 to 15 percent slopes, very stony	D

Map Legend	Soil Type	Hydrologic Soil Group
670D	Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes	B
727	Rubble land, one to 50 percent slopes	unknown (B)

2

HSG TOTAL AREA IN ACRES

HSG	AREA 1	AREA 2	TOTAL
A	-	-	-
B	39.300	0.089	39.389
C	22.220	-	22.220
D	51.607	-	51.607
WATER	-	-	-
IMPERVIOUS	1.034	0.028	1.062
TOTAL	114.161	0.117	114.278

LEGEND

PRE-DEVELOPMENT SUB-AREA BOUNDARY
NRCS WEB SOIL APPROX. SURVEY SOIL BOUNDARY
TIME OF CONCENTRATION
140B NRCS SOIL DESIGNATION
1318.03 SPOT ELEVATION

0 150' 300'
SCALE IN FEET

NORTH

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
2	REVISED PER PERMIT REVIEW COMMENTS	11/18/16	KAM	BSS	BSS
1	ISSUED FOR PERMITTING	10/1/15	RLR	JJS	BSS

SEAL

A/E INFO

THE NORTHERN PASS
Transmission Business

#

TRANSITION STATION #2
PRE-DEVELOPMENT WATERSHED

DATE: 10/1/2015
SCALE: H 1" = 150'

DES: RLR CHK: JJS
DRW: RLR APR: BSS
TOWN: ROUTE 3, CLARKSVILLE, NH
TRANSMISSION LINE:
MILE NO:
SHEET 1 OF 2
NPTT2-PRE
REVISION: 11/10/2013

SOIL TYPE LEGEND

Map Legend	Soil Type	Hydrologic Soil Group
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes	B
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	A
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	C
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	C
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	C
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	C
209A	Charles silt loam, 0 to 2 percent slopes, frequently flooded	B/D
300B/cbaab	Udipsamments, 3 to 8 percent slopes	B
300E/cbaab	Udipsamments, 25 to 50 percent slopes	B
400A/cbaab	Udorthents, sandy or gravely, 0 to 3 percent slopes	B
400B/cbaab	Udorthents, sandy or gravely, 3 to 8 percent slopes	B
400E/cbaab	Udorthents, sandy or gravely, 25 to 50 percent slopes	B
500A	Udorthents, loamy, 0 to 3 percent slopes	B
523B	Stetson fine sandy loam, 3 to 8 percent slopes	B
523C	Stetson fine sandy loam, 8 to 15 percent slopes	B

Map Legend	Soil Type	Hydrologic Soil Group
523E	Stetson fine sandy loam, 15 to 60 percent slopes	A/B
560C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes	B
560D	Tunbridge-Plaisted-Lyman complex, 15 to 25 percent slopes	B
560E	Tunbridge-Plaisted-Lyman complex, 25 to 35 percent slopes	B
561B	Tunbridge-Plaisted-Lyman complex, 3 to 8 percent slopes, very stony	B
561C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes, very stony	B
573C	Bangor silt loam, 8 to 15 percent slopes, very stony	B
573D	Bangor silt loam, 15 to 25 percent slopes, very stony	B
573E	Bangor silt loam, 25 to 35 percent slopes, very stony	B
578B	Dixmont very fine sandy loam, 3 to 8 percent slopes	B/D
579B	Dixmont very fine sandy loam, 3 to 8 percent slopes, very stony	B/C/D (D)
579C	Dixmont very fine sandy loam, 8 to 15 percent slopes, very stony	B/D
579D	Dixmont very fine sandy loam, 15 to 25 percent slopes, very stony	B/D
590B	Cabot silt loam, 0 to 8 percent slopes, very stony	D
590C	Cabot silt loam, 8 to 15 percent slopes, very stony	D

Map Legend	Soil Type	Hydrologic Soil Group
670D	Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes	B
727	Rubble land, one to 50 percent slopes	unknown (B)

2

HSG TOTAL AREA IN ACRES				
HSG	AREA 1A	AREA 1B	AREA 2	TOTAL
A	-	-	-	-
B	38.995	0.319	0.044	39.358
C	22.000	0.220	-	22.220
D	51.636	-	-	51.636
WATER	-	0.023	-	0.023
IMPERVIOUS	1.014	0.011	0.016	1.041
TOTAL	113.645	0.573	0.060	114.278

LEGEND

- POST-DEVELOPMENT SUB-AREA BOUNDARY
- NRCS WEB SOIL APPROX. SURVEY SOIL BOUNDARY
- TIME OF CONCENTRATION
- 140B NRCS SOIL DESIGNATION
- 1318.03 SPOT ELEVATION

0 150' 300'
SCALE IN FEET

NORTH

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
2	REVISED PER PERMIT REVIEW COMMENTS	11/18/16	KAM	BSS	BSS
1	ISSUED FOR PERMITTING	10/1/15	RLR	JJS	BSS

SEAL

A/E INFO

THE NORTHERN PASS
Transmission Business

#

TRANSITION STATION #2
POST-DEVELOPMENT WATERSHED

SCALE: H 1 = 150'
DATE: 10/1/2015

DES: RLR | CHK: JJS
DRW: RLR | APR: BSS
TOWN: ROUTE 3, CLARKSVILLE, NH
TRANSMISSION LINE:
MILE NO:
SHEET 2 OF 2
NPTT2-POST

REVISION: 11/10/2013

COVER TYPE TOTAL AREA IN ACRES			
COVER TYPE	AREA 1	AREA 2	TOTAL
WOODS (HSG A)	-	-	-
WOODS (HSG B)	38.023	-	38.023
WOODS (HSG C)	22.220	-	22.220
WOODS (HSG D)	51.444	-	51.444
GRAVEL (HSG A)	-	-	-
GRAVEL (HSG B)	1.795	0.117	1.912
GRAVEL (HSG C)	-	-	-
GRAVEL (HSG D)	0.679	-	0.679
TOTAL	114.161	0.117	114.278

LEGEND

- PRE-DEVELOPMENT SUB-AREA BOUNDARY
- NRCS WEB SOIL APPROX. SURVEY SOIL BOUNDARY
- TIME OF CONCENTRATION
- 140B NRCS SOIL DESIGNATION
- 1318.03 SPOT ELEVATION

0 150' 300'
SCALE IN FEET

NORTH

NOTES:

REFER TO PRE-DEVELOPMENT WATERSHED MAP DRAWING NPTT2-PRE FOR FURTHER INFORMATION

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	11/18/16	KAM	RLR	RLR
2					

SEAL

A/E INFO

THE NORTHERN PASS

Transmission Business

#

TRANSITION STATION #2
PRE-DEVELOPMENT
COVER TYPE SUMMARY

DATE: 7/08/2016
SCALE: 1" = 150'

DES: RLR CHK: JJS
DRW: KAM APR: BSS
TOWN: ROUTE 3, CLARKSVILLE, NH
TRANSMISSION LINE:
MILE NO:
SHEET 1 OF 2
NPTT2-PRE-COVER

REVISION: 11/10/2013

COVER TYPE TOTAL AREA IN ACRES				
COVER TYPE	AREA 1A	AREA 1B	AREA 2	TOTAL
WOODS (HSG A)	-	-	-	-
WOODS (HSG B)	37.960	-	-	37.960
WOODS (HSG C)	21.700	-	-	21.700
WOODS (HSG D)	51.430	-	-	51.430
GRAVEL (HSG A)	-	-	-	-
GRAVEL (HSG B)	1.510	0.230	0.037	1.777
GRAVEL (HSG C)	-	0.178	-	0.178
GRAVEL (HSG D)	0.680	-	-	0.680
MEADOW (HSG B)	0.065	0.089	0.023	0.177
MEADOW (HSG C)	0.300	0.042	-	0.342
MEADOW (HSG D)	-	-	-	-
IMPERVIOUS (HSG B)	-	0.011	-	0.011
WATER (HSG B)	-	0.023	-	0.023
TOTAL	113.645	0.573	0.060	114.278

LEGEND

- POST-DEVELOPMENT SUB-AREA BOUNDARY
- NRCS WEB SOIL APPROX. SURVEY SOIL BOUNDARY
- TIME OF CONCENTRATION
- 140B NRCS SOIL DESIGNATION
- 1318.03 SPOT ELEVATION

0 150' 300'
SCALE IN FEET

NORTH

NOTES:

REFER TO PRE-DEVELOPMENT WATERSHED MAP DRAWING NPTT2-POST FOR FURTHER INFORMATION

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	11/18/16	KAM	RLR	RLR
2	.	.	.	.	.
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.	.	.	.	.	.

SEAL

THE NORTHERN PASS
Transmission Business

#

TRANSITION STATION #2
POST-DEVELOPMENT
COVDER TYPE SUMMARY

DATE: 7/11/2016
SCALE: H 1 = 150'

DES: RLR CHK: BSS
DRW: KAM APR: BSS
TOWN: ROUTE 3, CLARKSVILLE, NH
TRANSMISSION LINE:
MILE NO:
SHEET 2 OF 2
NPTT2-POST-COVER

REVISION: 11/10/2013

LEGEND

- EI - EXISTING IMPERVIOUS AREA
- UDC - UNDISTURBED COVER
- PI - PROPOSED IMPERVIOUS AREA
- DIA - PROPOSED DISCONNECTED IMPERVIOUS AREA
- EXISTING PARCEL LINE
- PROPOSED LIMIT OF DISTURBANCE LINE (LOD)

MAP REFERENCES:
1. 2011 ORTHOIMAGERY OBTAINED IN .SID FORMAT FROM NH STATEWIDE GIS CLEARINGHOUSE WEBSITE AT www.granit.unh.edu.
   TILES USED: 1035009150 & 1035009200

SITE COVER AREA

ITEM	DESCRIPTION	AREA (SF)	AREA (AC)
PS	PARCEL SIZE	2,722,455	62.50
EI	EXISTING IMPERVIOUS	200,061	4.59
PI	PROPOSED IMPERVIOUS	1,394	0.03
PDA	PROPOSED DISTURBED AREA	44,060	1.01
UDC	UNDISTURBED COVER	2,493,524	57.24
DIA	PROPOSED DISCONNECTED IMPERVIOUS AREA	1,394	0.03

SITE COVER TABULATION

ITEM	DESCRIPTION	FORMULA	TOTAL
TIC	TOTAL IMPERVIOUS COVER (ACRES)	EI + PI	4.62 AC
EIC	EFFECTIVE IMPERVIOUS COVER (ACRES)	TIC - DIA	4.59 AC
EIC %	EIC PERCENTAGE	EIC / PS	7.3%
UDC %	UDC PERCENTAGE	UDC / PS	91.6%

NORTH

0 100' 200'
SCALE IN FEET

FOR PERMITTING PURPOSES ONLY NOT FOR CONSTRUCTION

NO.	REVISION	DATE	DRAWN	CHKD	APPRV.
1	ISSUED FOR PERMITTING	10/1/15	RLR	JJS	BSS

THE NORTHERN PASS
Transmission Business

#

TRANSITION STATION #2
SITE COVER PLAN

DATE: 10/1/2015
SCALE: H 1"=100'

DES: RLR | CHK: JJS
DRW: FP | APR: BSS

TOWN: ROUTE 3, CLARKSVILLE, NH
TRANSMISSION LINE:
MILE NO:
SHEET 1 OF 1

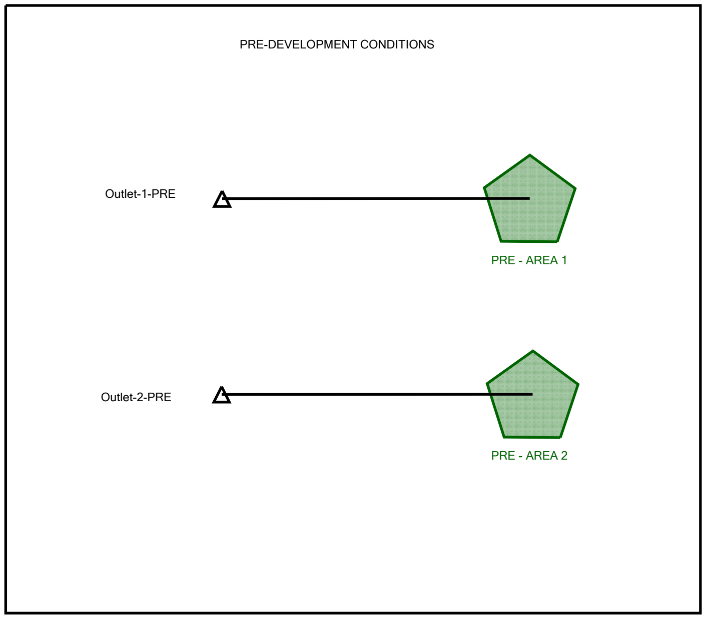
NPTT2-SCP

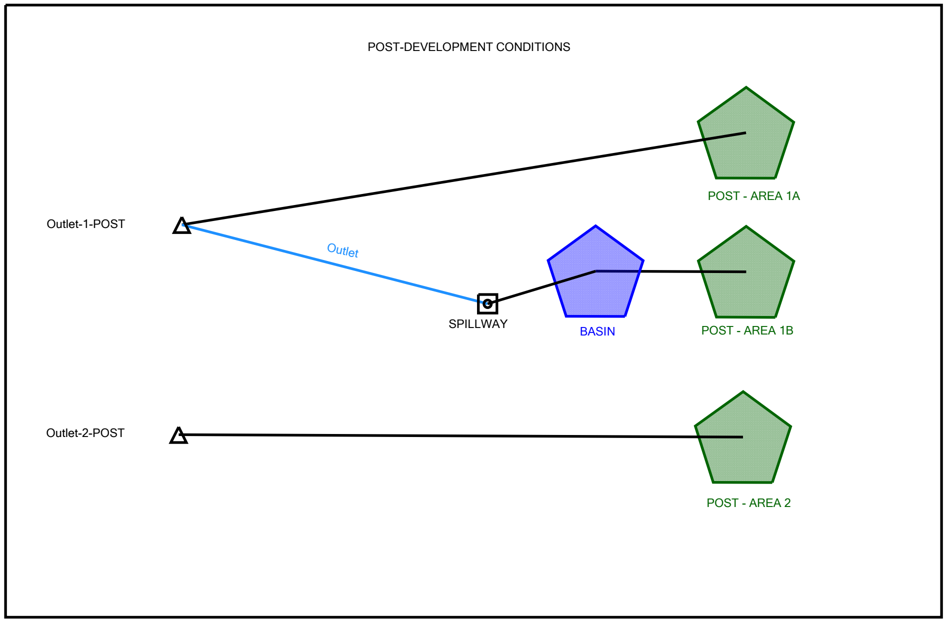
REVISION: 11/10/2013

Z:\CLIENTS\TND\NUSC\58466_NPT\DESIGN\SUBSTATION\200-TRANSITION_STATION-2\CADD\CIVIL-SITE\WORKING\NPTT2-SCP.DWG 9/30/2015 12:59 PM RLREED

APPENDIX B – HYDROLOGY MODEL (PONDPACK)

Scenario: Clarksville, NH - Synthetic Curve, 2 yrs





Project Summary

Title	Northern Pass Transition Station #2 Stormwater Model
Engineer	R. Reed
Company	Burns & McDonnell
Date	11/16/2016

Notes

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
PRE - AREA 1	Clarksville, NH - Synthetic Curve, 2 yrs	2	2.721	12.550	12.78
PRE - AREA 1	Clarksville, NH - Synthetic Curve, 10 yrs	10	6.668	12.450	41.46
PRE - AREA 1	Clarksville, NH - Synthetic Curve, 50 yrs	50	13.807	12.450	96.07
PRE - AREA 1	Clarksville, NH - Synthetic Curve, 100 yrs	100	18.303	12.350	130.53
POST - AREA 1A	Clarksville, NH - Synthetic Curve, 2 yrs	2	2.458	12.550	10.74
POST - AREA 1A	Clarksville, NH - Synthetic Curve, 10 yrs	10	6.216	12.450	36.76
POST - AREA 1A	Clarksville, NH - Synthetic Curve, 50 yrs	50	13.111	12.425	88.70
POST - AREA 1A	Clarksville, NH - Synthetic Curve, 100 yrs	100	17.485	12.425	121.86
PRE - AREA 2	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.009	11.925	0.17
PRE - AREA 2	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.016	11.925	0.31
PRE - AREA 2	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.027	11.925	0.50
PRE - AREA 2	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.033	11.925	0.61
POST - AREA 2	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.002	11.950	0.04
POST - AREA 2	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.005	11.925	0.09
POST - AREA 2	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.010	11.925	0.18
POST - AREA 2	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.012	11.925	0.23
POST - AREA 1B	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.037	12.025	0.58
POST - AREA 1B	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.069	12.025	1.08
POST - AREA 1B	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.118	12.000	1.85

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
POST - AREA 1B	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.146	12.000	2.29

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Outlet-1-PRE	Clarksville, NH - Synthetic Curve, 2 yrs	2	2.721	12.550	12.78
Outlet-1-PRE	Clarksville, NH - Synthetic Curve, 10 yrs	10	6.668	12.450	41.46
Outlet-1-PRE	Clarksville, NH - Synthetic Curve, 50 yrs	50	13.807	12.450	96.07
Outlet-1-PRE	Clarksville, NH - Synthetic Curve, 100 yrs	100	18.303	12.350	130.53
Outlet-1-POST	Clarksville, NH - Synthetic Curve, 2 yrs	2	2.459	12.550	10.77
Outlet-1-POST	Clarksville, NH - Synthetic Curve, 10 yrs	10	6.236	12.450	36.88
Outlet-1-POST	Clarksville, NH - Synthetic Curve, 50 yrs	50	13.167	12.425	88.96
Outlet-1-POST	Clarksville, NH - Synthetic Curve, 100 yrs	100	17.562	12.425	122.18
Outlet-2-PRE	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.009	11.925	0.17
Outlet-2-PRE	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.016	11.925	0.31
Outlet-2-PRE	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.027	11.925	0.50
Outlet-2-PRE	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.033	11.925	0.61
Outlet-2-POST	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.002	11.950	0.04
Outlet-2-POST	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.005	11.925	0.09
Outlet-2-POST	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.010	11.925	0.18
Outlet-2-POST	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.012	11.925	0.23

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
BASIN (IN)	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.037	12.025	0.58	(N/A)	(N/A)
BASIN (OUT)	Clarksville, NH - Synthetic Curve, 2 yrs	2	0.001	12.475	0.03	1,303.83	0.015
BASIN (IN)	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.069	12.025	1.08	(N/A)	(N/A)
BASIN (OUT)	Clarksville, NH - Synthetic Curve, 10 yrs	10	0.021	12.075	0.94	1,303.91	0.017
BASIN (IN)	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.118	12.000	1.85	(N/A)	(N/A)
BASIN (OUT)	Clarksville, NH - Synthetic Curve, 50 yrs	50	0.056	12.025	1.76	1,303.99	0.019
BASIN (IN)	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.146	12.000	2.29	(N/A)	(N/A)
BASIN (OUT)	Clarksville, NH - Synthetic Curve, 100 yrs	100	0.078	12.025	2.22	1,304.02	0.019

Time-Depth Curve: 100-Year Type II 24-Hour	
Label	100-Year Type II 24-Hour
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.4	0.5	0.5	0.5	0.5
7.000	0.5	0.5	0.5	0.5	0.5
7.500	0.5	0.6	0.6	0.6	0.6
8.000	0.6	0.6	0.6	0.6	0.6
8.500	0.7	0.7	0.7	0.7	0.7
9.000	0.7	0.7	0.8	0.8	0.8
9.500	0.8	0.8	0.8	0.9	0.9
10.000	0.9	0.9	0.9	1.0	1.0
10.500	1.0	1.0	1.1	1.1	1.1
11.000	1.2	1.2	1.3	1.3	1.4
11.500	1.4	1.5	1.8	2.1	2.8
12.000	3.3	3.4	3.5	3.6	3.6
12.500	3.7	3.7	3.7	3.8	3.8
13.000	3.9	3.9	3.9	3.9	4.0
13.500	4.0	4.0	4.0	4.1	4.1
14.000	4.1	4.1	4.1	4.1	4.2
14.500	4.2	4.2	4.2	4.2	4.2
15.000	4.3	4.3	4.3	4.3	4.3
15.500	4.3	4.3	4.4	4.4	4.4
16.000	4.4	4.4	4.4	4.4	4.4
16.500	4.4	4.5	4.5	4.5	4.5
17.000	4.5	4.5	4.5	4.5	4.5
17.500	4.5	4.6	4.6	4.6	4.6
18.000	4.6	4.6	4.6	4.6	4.6
18.500	4.6	4.6	4.7	4.7	4.7
19.000	4.7	4.7	4.7	4.7	4.7
19.500	4.7	4.7	4.7	4.7	4.7
20.000	4.8	4.8	4.8	4.8	4.8
20.500	4.8	4.8	4.8	4.8	4.8
21.000	4.8	4.8	4.8	4.8	4.8
21.500	4.8	4.9	4.9	4.9	4.9

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
22.000	4.9	4.9	4.9	4.9	4.9
22.500	4.9	4.9	4.9	4.9	4.9
23.000	4.9	4.9	4.9	5.0	5.0
23.500	5.0	5.0	5.0	5.0	5.0
24.000	5.0	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10-Year Type II 24-Hour	
Label	10-Year Type II 24-Hour
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.3	0.3	0.3	0.3
7.500	0.3	0.3	0.3	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.4
8.500	0.4	0.4	0.4	0.4	0.4
9.000	0.5	0.5	0.5	0.5	0.5
9.500	0.5	0.5	0.5	0.5	0.5
10.000	0.6	0.6	0.6	0.6	0.6
10.500	0.6	0.6	0.7	0.7	0.7
11.000	0.7	0.7	0.8	0.8	0.8
11.500	0.9	0.9	1.1	1.3	1.7
12.000	2.0	2.1	2.2	2.2	2.2
12.500	2.3	2.3	2.3	2.3	2.4
13.000	2.4	2.4	2.4	2.4	2.4
13.500	2.5	2.5	2.5	2.5	2.5
14.000	2.5	2.5	2.5	2.6	2.6
14.500	2.6	2.6	2.6	2.6	2.6
15.000	2.6	2.6	2.6	2.7	2.7
15.500	2.7	2.7	2.7	2.7	2.7
16.000	2.7	2.7	2.7	2.7	2.7
16.500	2.7	2.8	2.8	2.8	2.8
17.000	2.8	2.8	2.8	2.8	2.8
17.500	2.8	2.8	2.8	2.8	2.8
18.000	2.8	2.8	2.8	2.9	2.9
18.500	2.9	2.9	2.9	2.9	2.9
19.000	2.9	2.9	2.9	2.9	2.9
19.500	2.9	2.9	2.9	2.9	2.9
20.000	2.9	2.9	2.9	2.9	2.9
20.500	3.0	3.0	3.0	3.0	3.0
21.000	3.0	3.0	3.0	3.0	3.0
21.500	3.0	3.0	3.0	3.0	3.0

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
22.000	3.0	3.0	3.0	3.0	3.0
22.500	3.0	3.0	3.0	3.0	3.0
23.000	3.0	3.0	3.1	3.1	3.1
23.500	3.1	3.1	3.1	3.1	3.1
24.000	3.1	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 2-Year Type II 24-Hour	
Label	2-Year Type II 24-Hour
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.1	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.2	0.2	0.2	0.2	0.2
7.500	0.2	0.2	0.2	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.3	0.3	0.3	0.3	0.3
9.000	0.3	0.3	0.3	0.3	0.4
9.500	0.4	0.4	0.4	0.4	0.4
10.000	0.4	0.4	0.4	0.4	0.4
10.500	0.4	0.5	0.5	0.5	0.5
11.000	0.5	0.5	0.6	0.6	0.6
11.500	0.6	0.7	0.8	0.9	1.2
12.000	1.5	1.5	1.5	1.6	1.6
12.500	1.6	1.6	1.7	1.7	1.7
13.000	1.7	1.7	1.7	1.7	1.7
13.500	1.8	1.8	1.8	1.8	1.8
14.000	1.8	1.8	1.8	1.8	1.8
14.500	1.8	1.9	1.9	1.9	1.9
15.000	1.9	1.9	1.9	1.9	1.9
15.500	1.9	1.9	1.9	1.9	1.9
16.000	1.9	1.9	1.9	2.0	2.0
16.500	2.0	2.0	2.0	2.0	2.0
17.000	2.0	2.0	2.0	2.0	2.0
17.500	2.0	2.0	2.0	2.0	2.0
18.000	2.0	2.0	2.0	2.0	2.0
18.500	2.0	2.0	2.1	2.1	2.1
19.000	2.1	2.1	2.1	2.1	2.1
19.500	2.1	2.1	2.1	2.1	2.1
20.000	2.1	2.1	2.1	2.1	2.1
20.500	2.1	2.1	2.1	2.1	2.1
21.000	2.1	2.1	2.1	2.1	2.1
21.500	2.1	2.1	2.1	2.1	2.1

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
22.000	2.1	2.2	2.2	2.2	2.2
22.500	2.2	2.2	2.2	2.2	2.2
23.000	2.2	2.2	2.2	2.2	2.2
23.500	2.2	2.2	2.2	2.2	2.2
24.000	2.2	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 50-Year Type II 24-Hour	
Label	50-Year Type II 24-Hour
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	50 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.4	0.4	0.4	0.4
6.500	0.4	0.4	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.5	0.5
7.500	0.5	0.5	0.5	0.5	0.5
8.000	0.5	0.5	0.5	0.5	0.6
8.500	0.6	0.6	0.6	0.6	0.6
9.000	0.6	0.6	0.7	0.7	0.7
9.500	0.7	0.7	0.7	0.7	0.8
10.000	0.8	0.8	0.8	0.8	0.9
10.500	0.9	0.9	0.9	1.0	1.0
11.000	1.0	1.0	1.1	1.1	1.2
11.500	1.2	1.3	1.5	1.9	2.4
12.000	2.9	2.9	3.0	3.1	3.1
12.500	3.2	3.2	3.2	3.3	3.3
13.000	3.3	3.4	3.4	3.4	3.4
13.500	3.4	3.5	3.5	3.5	3.5
14.000	3.5	3.6	3.6	3.6	3.6
14.500	3.6	3.6	3.6	3.7	3.7
15.000	3.7	3.7	3.7	3.7	3.7
15.500	3.7	3.8	3.8	3.8	3.8
16.000	3.8	3.8	3.8	3.8	3.8
16.500	3.8	3.9	3.9	3.9	3.9
17.000	3.9	3.9	3.9	3.9	3.9
17.500	3.9	3.9	3.9	4.0	4.0
18.000	4.0	4.0	4.0	4.0	4.0
18.500	4.0	4.0	4.0	4.0	4.0
19.000	4.0	4.0	4.1	4.1	4.1
19.500	4.1	4.1	4.1	4.1	4.1
20.000	4.1	4.1	4.1	4.1	4.1
20.500	4.1	4.1	4.1	4.1	4.2
21.000	4.2	4.2	4.2	4.2	4.2
21.500	4.2	4.2	4.2	4.2	4.2

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
22.000	4.2	4.2	4.2	4.2	4.2
22.500	4.2	4.2	4.2	4.3	4.3
23.000	4.3	4.3	4.3	4.3	4.3
23.500	4.3	4.3	4.3	4.3	4.3
24.000	4.3	(N/A)	(N/A)	(N/A)	(N/A)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.400
Slope	0.020 ft/ft
2 Year 24 Hour Depth	2.4 in
Average Velocity	0.07 ft/s
Segment Time of Concentration	0.413 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	4,288.00 ft
Is Paved?	False
Slope	0.120 ft/ft
Average Velocity	5.59 ft/s
Segment Time of Concentration	0.213 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.3 ft²
Hydraulic Length	241.00 ft
Manning's n	0.120
Slope	0.019 ft/ft
Wetted Perimeter	4.16 ft
Average Velocity	0.77 ft/s
Segment Time of Concentration	0.087 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	194.00 ft
Is Paved?	False
Slope	0.004 ft/ft
Average Velocity	0.95 ft/s
Segment Time of Concentration	0.056 hours

Segment #5: TR-55 Channel Flow	
Flow Area	15.7 ft²
Hydraulic Length	100.00 ft
Manning's n	0.045
Slope	0.005 ft/ft
Wetted Perimeter	15.50 ft
Average Velocity	2.36 ft/s
Segment Time of Concentration	0.012 hours

Segment #6: TR-55 Shallow Concentrated Flow	
Hydraulic Length	94.00 ft
Is Paved?	False
Slope	0.001 ft/ft
Average Velocity	0.51 ft/s

Segment #6: TR-55 Shallow Concentrated Flow	
Segment Time of Concentration	0.051 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.833 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.100
Slope	0.015 ft/ft
2 Year 24 Hour Depth	2.2 in
Average Velocity	0.17 ft/s
Segment Time of Concentration	0.160 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	48.00 ft
Is Paved?	False
Slope	0.010 ft/ft
Average Velocity	1.61 ft/s
Segment Time of Concentration	0.008 hours

Segment #3: TR-55 Channel Flow	
Flow Area	0.9 ft^2
Hydraulic Length	111.00 ft
Manning's n	0.045
Slope	0.011 ft/ft
Wetted Perimeter	5.30 ft
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.029 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.197 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.400
Slope	0.020 ft/ft
2 Year 24 Hour Depth	2.4 in
Average Velocity	0.07 ft/s
Segment Time of Concentration	0.413 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	4,288.00 ft
Is Paved?	False
Slope	0.120 ft/ft
Average Velocity	5.59 ft/s
Segment Time of Concentration	0.213 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.3 ft²
Hydraulic Length	241.00 ft
Manning's n	0.120
Slope	0.019 ft/ft
Wetted Perimeter	4.16 ft
Average Velocity	0.77 ft/s
Segment Time of Concentration	0.087 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	362.00 ft
Is Paved?	False
Slope	0.004 ft/ft
Average Velocity	1.02 ft/s
Segment Time of Concentration	0.099 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.812 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	0.083 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Woods - good - Soil B	55.000	37.960	0.0	0.0	55.000
Woods - good - Soil C	70.000	21.700	0.0	0.0	70.000
Woods - good - Soil D	77.000	51.430	0.0	0.0	77.000
Impervious Areas - Gravel (w/ right-of-way) - Soil B	85.000	1.510	0.0	0.0	85.000
Impervious Areas - Gravel (w/ right-of-way) - Soil D	91.000	0.680	0.0	0.0	91.000
Meadow - cont. grass (non grazed) - ---- - Soil B	58.000	0.065	0.0	0.0	58.000
Meadow - cont. grass (non grazed) - ---- - Soil C	71.000	0.300	0.0	0.0	71.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	113.645	(N/A)	(N/A)	68.478

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Gravel (w/ right-of-way) - Soil B	85.000	0.230	0.0	0.0	85.000
Impervious Areas - Gravel (w/ right-of-way) - Soil C	89.000	0.178	0.0	0.0	89.000
Meadow - cont. grass (non grazed) - ---- - Soil B	58.000	0.089	0.0	0.0	58.000
Meadow - cont. grass (non grazed) - ---- - Soil C	71.000	0.042	0.0	0.0	71.000
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil B	98.000	0.011	0.0	0.0	98.000
Water/Ponds Soil B	98.000	0.023	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.573	(N/A)	(N/A)	81.794

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Gravel (w/ right-of-way) - Soil B	85.000	0.037	0.0	0.0	85.000
Meadow - cont. grass (non grazed) - ---- - Soil B	58.000	0.023	0.0	0.0	58.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.060	(N/A)	(N/A)	74.650

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Woods - good - Soil B	55.000	38.023	0.0	0.0	55.000
Woods - good - Soil C	70.000	22.220	0.0	0.0	70.000
Woods - good - Soil D	77.000	51.444	0.0	0.0	77.000
Impervious Areas - Gravel (w/ right-of-way) - Soil B	85.000	1.795	0.0	0.0	85.000
Impervious Areas - Gravel (w/ right-of-way) - Soil D	91.000	0.679	0.0	0.0	91.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	114.161	(N/A)	(N/A)	68.519

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Impervious Areas - Gravel (w/ right-of-way) - Soil B	85.000	0.117	0.0	0.0	85.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.117	(N/A)	(N/A)	85.000

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

Computational Time Increment	0.111 hours
Time to Peak (Computed)	12.550 hours
Flow (Peak, Computed)	10.74 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.550 hours
Flow (Peak Interpolated Output)	10.74 ft³/s

Drainage Area	
SCS CN (Composite)	68.000
Area (User Defined)	113.645 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.3 in
Runoff Volume (Pervious)	2.516 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.458 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.833 hours
Computational Time Increment	0.111 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	154.59 ft³/s
Unit peak time, Tp	0.555 hours
Unit receding limb, Tr	2.221 hours
Total unit time, Tb	2.777 hours

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

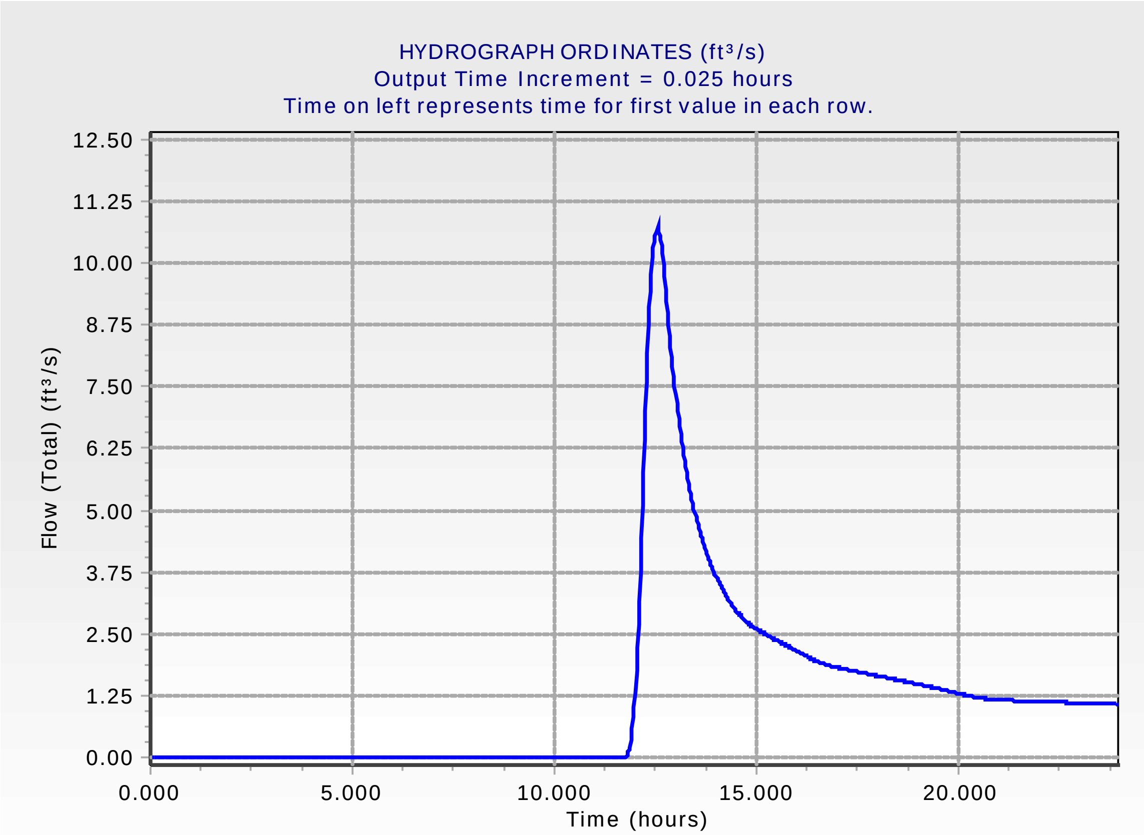
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
11.750	0.00	0.00	0.05	0.10	0.15
11.875	0.19	0.35	0.58	0.80	1.02
12.000	1.30	1.76	2.22	2.68	3.15
12.125	3.77	4.44	5.10	5.77	6.41
12.250	7.00	7.58	8.17	8.75	9.11
12.375	9.44	9.77	10.11	10.33	10.44
12.500	10.54	10.64	10.74	10.64	10.55
12.625	10.46	10.36	10.19	9.95	9.72
12.750	9.48	9.24	9.01	8.78	8.54
12.875	8.31	8.10	7.91	7.72	7.53
13.000	7.34	7.18	7.02	6.86	6.69
13.125	6.55	6.41	6.26	6.12	5.99
13.250	5.87	5.75	5.64	5.52	5.42
13.375	5.32	5.23	5.13	5.04	4.95
13.500	4.87	4.79	4.70	4.63	4.56
13.625	4.49	4.42	4.36	4.30	4.24
13.750	4.17	4.11	4.06	4.01	3.95
13.875	3.90	3.85	3.81	3.76	3.71
14.000	3.66	3.62	3.58	3.54	3.50
14.125	3.46	3.42	3.38	3.34	3.31
14.250	3.27	3.24	3.20	3.17	3.14
14.375	3.11	3.08	3.05	3.02	2.99
14.500	2.96	2.94	2.91	2.89	2.86
14.625	2.84	2.82	2.80	2.78	2.76
14.750	2.74	2.73	2.71	2.70	2.68
14.875	2.67	2.65	2.64	2.62	2.61
15.000	2.60	2.59	2.57	2.56	2.55
15.125	2.54	2.53	2.51	2.50	2.49
15.250	2.48	2.47	2.46	2.45	2.44
15.375	2.43	2.41	2.40	2.39	2.38
15.500	2.37	2.36	2.35	2.34	2.33
15.625	2.32	2.31	2.30	2.28	2.27
15.750	2.26	2.25	2.24	2.23	2.22
15.875	2.21	2.20	2.19	2.17	2.16
16.000	2.15	2.14	2.13	2.12	2.11
16.125	2.10	2.09	2.07	2.06	2.05
16.250	2.04	2.03	2.02	2.01	2.00
16.375	1.99	1.98	1.97	1.96	1.95
16.500	1.94	1.94	1.93	1.92	1.91
16.625	1.90	1.90	1.89	1.88	1.88
16.750	1.87	1.86	1.86	1.85	1.85
16.875	1.84	1.84	1.83	1.83	1.82
17.000	1.82	1.81	1.81	1.80	1.80

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
17.125	1.79	1.79	1.79	1.78	1.78
17.250	1.77	1.77	1.76	1.76	1.76
17.375	1.75	1.75	1.74	1.74	1.74
17.500	1.73	1.73	1.72	1.72	1.72
17.625	1.71	1.71	1.70	1.70	1.69
17.750	1.69	1.69	1.68	1.68	1.67
17.875	1.67	1.67	1.66	1.66	1.65
18.000	1.65	1.65	1.64	1.64	1.63
18.125	1.63	1.63	1.62	1.62	1.61
18.250	1.61	1.61	1.60	1.60	1.59
18.375	1.59	1.58	1.58	1.58	1.57
18.500	1.57	1.56	1.56	1.55	1.55
18.625	1.55	1.54	1.54	1.53	1.53
18.750	1.52	1.52	1.52	1.51	1.51
18.875	1.50	1.50	1.49	1.49	1.48
19.000	1.48	1.48	1.47	1.47	1.46
19.125	1.46	1.45	1.45	1.44	1.44
19.250	1.44	1.43	1.43	1.42	1.42
19.375	1.41	1.41	1.40	1.40	1.39
19.500	1.39	1.38	1.38	1.37	1.37
19.625	1.37	1.36	1.36	1.35	1.35
19.750	1.34	1.34	1.33	1.33	1.32
19.875	1.32	1.31	1.31	1.30	1.30
20.000	1.29	1.29	1.28	1.28	1.27
20.125	1.27	1.26	1.26	1.26	1.25
20.250	1.25	1.24	1.24	1.23	1.23
20.375	1.22	1.22	1.22	1.21	1.21
20.500	1.21	1.20	1.20	1.20	1.19
20.625	1.19	1.19	1.19	1.18	1.18
20.750	1.18	1.18	1.18	1.17	1.17
20.875	1.17	1.17	1.17	1.17	1.16
21.000	1.16	1.16	1.16	1.16	1.16
21.125	1.16	1.16	1.16	1.15	1.15
21.250	1.15	1.15	1.15	1.15	1.15
21.375	1.15	1.15	1.15	1.15	1.14
21.500	1.14	1.14	1.14	1.14	1.14
21.625	1.14	1.14	1.14	1.14	1.14
21.750	1.14	1.14	1.13	1.13	1.13
21.875	1.13	1.13	1.13	1.13	1.13
22.000	1.13	1.13	1.13	1.13	1.13
22.125	1.13	1.12	1.12	1.12	1.12
22.250	1.12	1.12	1.12	1.12	1.12
22.375	1.12	1.12	1.12	1.12	1.12
22.500	1.11	1.11	1.11	1.11	1.11
22.625	1.11	1.11	1.11	1.11	1.11
22.750	1.11	1.11	1.11	1.10	1.10
22.875	1.10	1.10	1.10	1.10	1.10
23.000	1.10	1.10	1.10	1.10	1.10
23.125	1.10	1.10	1.09	1.09	1.09
23.250	1.09	1.09	1.09	1.09	1.09
23.375	1.09	1.09	1.09	1.09	1.09
23.500	1.08	1.08	1.08	1.08	1.08

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.625	1.08	1.08	1.08	1.08	1.08
23.750	1.08	1.08	1.07	1.07	1.07
23.875	1.07	1.07	1.07	1.07	1.07
24.000	1.07	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
12.50
11.25
10.00
8.75
7.50
6.25
5.00
3.75
2.50
1.25
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

Computational Time Increment	0.111 hours
Time to Peak (Computed)	12.439 hours
Flow (Peak, Computed)	36.85 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.450 hours
Flow (Peak Interpolated Output)	36.76 ft³/s

Drainage Area

SCS CN (Composite)	68.000
Area (User Defined)	113.645 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	0.7 in
Runoff Volume (Pervious)	6.330 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	6.216 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.833 hours
Computational Time Increment	0.111 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	154.59 ft³/s
Unit peak time, Tp	0.555 hours
Unit receding limb, Tr	2.221 hours
Total unit time, Tb	2.777 hours

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

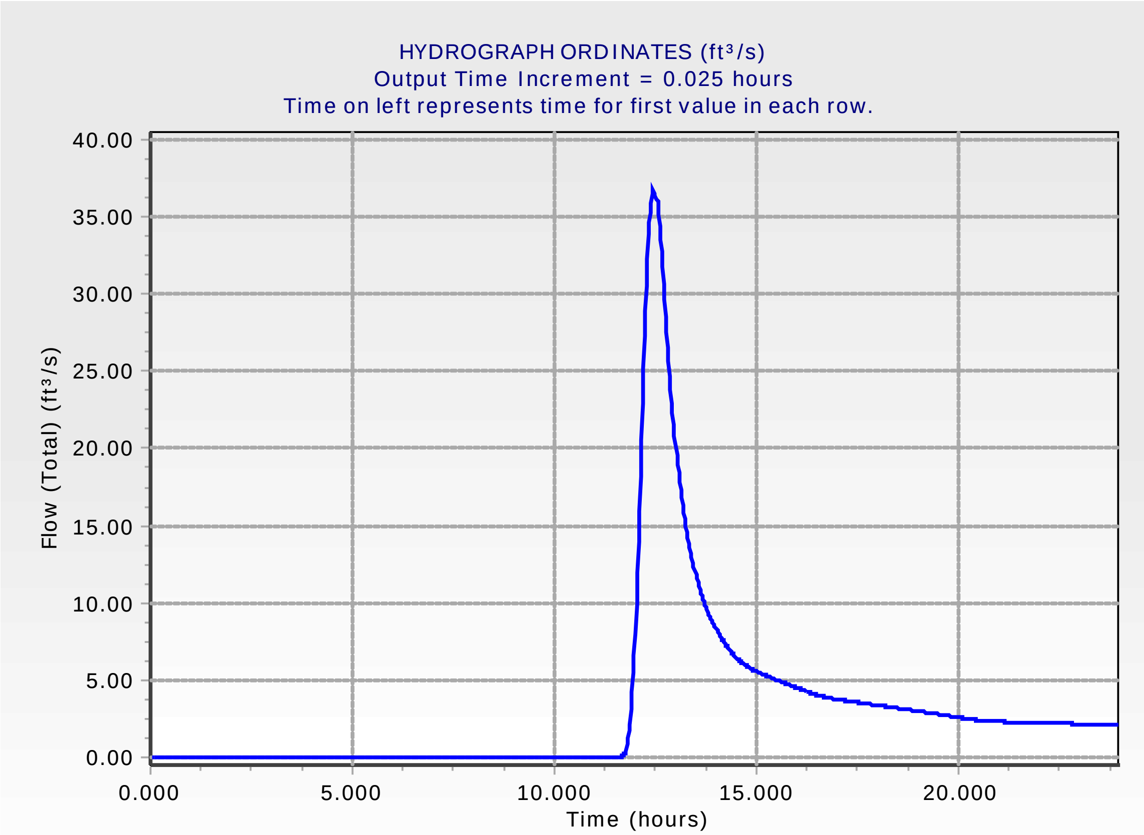
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
11.550	0.00	0.01	0.01	0.02	0.03
11.675	0.07	0.15	0.23	0.31	0.42
11.800	0.86	1.29	1.73	2.17	3.09
11.925	4.28	5.47	6.65	8.02	10.01
12.050	12.01	14.01	16.01	18.25	20.57
12.175	22.88	25.20	27.29	28.94	30.59
12.300	32.23	33.88	34.62	35.25	35.87
12.425	36.50	36.76	36.56	36.36	36.16
12.550	35.96	35.16	34.35	33.54	32.73
12.675	31.77	30.70	29.62	28.54	27.48
12.800	26.55	25.63	24.70	23.78	22.99
12.925	22.27	21.55	20.83	20.15	19.56
13.050	18.98	18.40	17.81	17.31	16.82
13.175	16.34	15.85	15.40	15.02	14.63
13.300	14.25	13.86	13.54	13.22	12.91
13.425	12.60	12.31	12.05	11.80	11.54
13.550	11.28	11.07	10.86	10.65	10.44
13.675	10.25	10.07	9.90	9.72	9.55
13.800	9.40	9.25	9.10	8.95	8.81
13.925	8.68	8.55	8.42	8.30	8.19
14.050	8.08	7.96	7.85	7.75	7.65
14.175	7.55	7.45	7.36	7.27	7.18
14.300	7.09	7.00	6.92	6.84	6.76
14.425	6.69	6.61	6.54	6.47	6.40
14.550	6.33	6.27	6.22	6.16	6.10
14.675	6.05	6.01	5.97	5.92	5.88
14.800	5.84	5.80	5.77	5.73	5.70
14.925	5.66	5.63	5.60	5.57	5.54
15.050	5.51	5.48	5.45	5.42	5.39
15.175	5.36	5.33	5.31	5.28	5.25
15.300	5.23	5.20	5.17	5.15	5.12
15.425	5.10	5.07	5.04	5.02	4.99
15.550	4.97	4.94	4.92	4.89	4.87
15.675	4.84	4.82	4.79	4.77	4.74
15.800	4.71	4.69	4.66	4.64	4.61
15.925	4.59	4.56	4.54	4.51	4.49
16.050	4.46	4.44	4.41	4.39	4.36
16.175	4.34	4.31	4.29	4.26	4.24
16.300	4.22	4.19	4.17	4.15	4.13
16.425	4.10	4.08	4.06	4.04	4.02
16.550	4.01	3.99	3.97	3.95	3.94
16.675	3.92	3.91	3.89	3.88	3.86
16.800	3.85	3.84	3.82	3.81	3.80

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
16.925	3.79	3.78	3.76	3.75	3.74
17.050	3.73	3.72	3.71	3.70	3.69
17.175	3.68	3.67	3.66	3.65	3.64
17.300	3.63	3.62	3.61	3.60	3.59
17.425	3.58	3.57	3.56	3.55	3.54
17.550	3.54	3.53	3.52	3.51	3.50
17.675	3.49	3.48	3.47	3.46	3.45
17.800	3.44	3.43	3.42	3.42	3.41
17.925	3.40	3.39	3.38	3.37	3.36
18.050	3.35	3.34	3.33	3.32	3.31
18.175	3.31	3.30	3.29	3.28	3.27
18.300	3.26	3.25	3.24	3.23	3.22
18.425	3.21	3.20	3.19	3.18	3.17
18.550	3.16	3.16	3.15	3.14	3.13
18.675	3.12	3.11	3.10	3.09	3.08
18.800	3.07	3.06	3.05	3.04	3.03
18.925	3.02	3.01	3.00	2.99	2.98
19.050	2.97	2.96	2.95	2.94	2.93
19.175	2.93	2.92	2.91	2.90	2.89
19.300	2.88	2.87	2.86	2.85	2.84
19.425	2.83	2.82	2.81	2.80	2.79
19.550	2.78	2.77	2.76	2.75	2.74
19.675	2.73	2.72	2.71	2.70	2.69
19.800	2.68	2.67	2.66	2.65	2.64
19.925	2.63	2.62	2.61	2.59	2.58
20.050	2.57	2.56	2.55	2.54	2.53
20.175	2.52	2.51	2.51	2.50	2.49
20.300	2.48	2.47	2.46	2.45	2.44
20.425	2.43	2.43	2.42	2.41	2.41
20.550	2.40	2.39	2.39	2.38	2.37
20.675	2.37	2.36	2.36	2.36	2.35
20.800	2.35	2.34	2.34	2.34	2.33
20.925	2.33	2.33	2.32	2.32	2.32
21.050	2.31	2.31	2.31	2.31	2.30
21.175	2.30	2.30	2.30	2.29	2.29
21.300	2.29	2.29	2.28	2.28	2.28
21.425	2.28	2.28	2.27	2.27	2.27
21.550	2.27	2.27	2.27	2.26	2.26
21.675	2.26	2.26	2.26	2.25	2.25
21.800	2.25	2.25	2.25	2.25	2.24
21.925	2.24	2.24	2.24	2.24	2.23
22.050	2.23	2.23	2.23	2.23	2.23
22.175	2.22	2.22	2.22	2.22	2.22
22.300	2.22	2.21	2.21	2.21	2.21
22.425	2.21	2.21	2.20	2.20	2.20
22.550	2.20	2.20	2.20	2.19	2.19
22.675	2.19	2.19	2.19	2.18	2.18
22.800	2.18	2.18	2.18	2.18	2.17
22.925	2.17	2.17	2.17	2.17	2.17
23.050	2.16	2.16	2.16	2.16	2.16
23.175	2.16	2.15	2.15	2.15	2.15
23.300	2.15	2.14	2.14	2.14	2.14

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.425	2.14	2.14	2.13	2.13	2.13
23.550	2.13	2.13	2.12	2.12	2.12
23.675	2.12	2.12	2.12	2.11	2.11
23.800	2.11	2.11	2.11	2.10	2.10
23.925	2.10	2.10	2.10	2.09	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

Computational Time Increment	0.111 hours
Time to Peak (Computed)	12.439 hours
Flow (Peak, Computed)	89.10 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.425 hours
Flow (Peak Interpolated Output)	88.70 ft³/s

Drainage Area

SCS CN (Composite)	68.000
Area (User Defined)	113.645 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.4 in
Runoff Volume (Pervious)	13.311 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	13.111 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.833 hours
Computational Time Increment	0.111 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	154.59 ft³/s
Unit peak time, Tp	0.555 hours
Unit receding limb, Tr	2.221 hours
Total unit time, Tb	2.777 hours

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

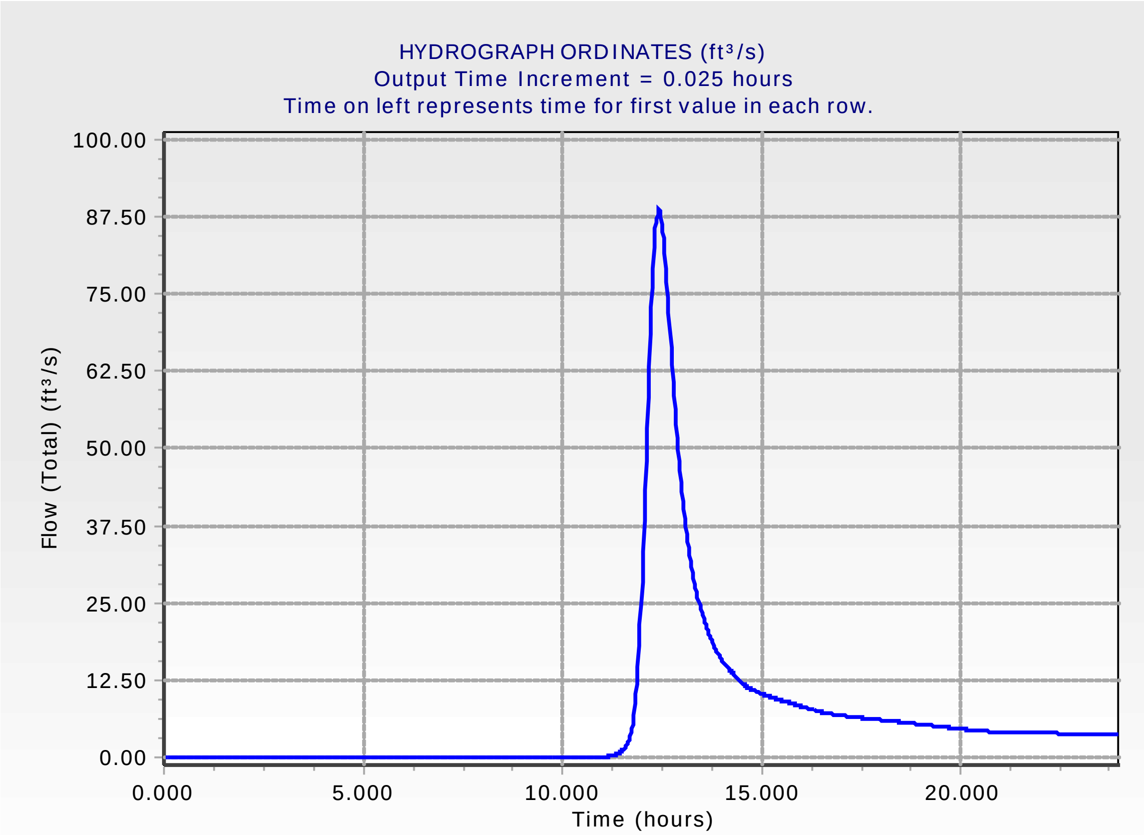
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
10.775	0.00	0.00	0.00	0.00	0.00
10.900	0.01	0.01	0.02	0.02	0.03
11.025	0.04	0.06	0.07	0.08	0.11
11.150	0.14	0.17	0.20	0.23	0.28
11.275	0.34	0.39	0.44	0.52	0.60
11.400	0.68	0.76	0.86	0.98	1.11
11.525	1.24	1.36	1.61	1.85	2.10
11.650	2.35	2.79	3.39	3.99	4.59
11.775	5.30	6.94	8.58	10.23	11.87
11.900	14.64	18.00	21.36	24.72	28.42
12.025	33.34	38.25	43.17	48.08	53.14
12.150	58.23	63.33	68.42	72.88	76.06
12.275	79.24	82.42	85.60	86.58	87.29
12.400	88.00	88.70	88.58	87.43	86.28
12.525	85.13	83.98	81.60	79.22	76.84
12.650	74.46	71.86	69.09	66.33	63.56
12.775	60.85	58.57	56.29	54.01	51.73
12.900	49.82	48.07	46.33	44.59	42.93
13.025	41.53	40.14	38.75	37.36	36.17
13.150	35.03	33.90	32.76	31.71	30.83
13.275	29.94	29.05	28.16	27.43	26.72
13.400	26.00	25.29	24.64	24.06	23.49
13.525	22.91	22.34	21.88	21.41	20.95
13.650	20.49	20.07	19.68	19.30	18.91
13.775	18.54	18.22	17.89	17.57	17.25
13.900	16.96	16.69	16.41	16.14	15.88
14.025	15.64	15.41	15.17	14.94	14.73
14.150	14.52	14.32	14.11	13.92	13.73
14.275	13.55	13.37	13.19	13.02	12.86
14.400	12.70	12.53	12.38	12.24	12.09
14.525	11.95	11.81	11.70	11.58	11.47
14.650	11.36	11.26	11.17	11.09	11.00
14.775	10.92	10.84	10.77	10.70	10.62
14.900	10.56	10.49	10.43	10.36	10.30
15.025	10.24	10.18	10.12	10.06	10.01
15.150	9.95	9.90	9.84	9.79	9.74
15.275	9.68	9.63	9.58	9.53	9.48
15.400	9.43	9.37	9.32	9.27	9.22
15.525	9.17	9.12	9.08	9.03	8.98
15.650	8.93	8.88	8.83	8.78	8.73
15.775	8.68	8.64	8.59	8.54	8.49
15.900	8.44	8.39	8.34	8.30	8.25
16.025	8.20	8.15	8.10	8.05	8.01

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.150	7.96	7.91	7.87	7.82	7.77
16.275	7.73	7.68	7.64	7.60	7.55
16.400	7.51	7.47	7.43	7.39	7.36
16.525	7.32	7.28	7.25	7.22	7.19
16.650	7.15	7.12	7.10	7.07	7.04
16.775	7.01	6.99	6.96	6.94	6.91
16.900	6.89	6.87	6.84	6.82	6.80
17.025	6.78	6.76	6.74	6.72	6.70
17.150	6.68	6.66	6.64	6.62	6.60
17.275	6.58	6.56	6.54	6.53	6.51
17.400	6.49	6.47	6.45	6.43	6.42
17.525	6.40	6.38	6.36	6.34	6.33
17.650	6.31	6.29	6.27	6.25	6.24
17.775	6.22	6.20	6.18	6.17	6.15
17.900	6.13	6.11	6.10	6.08	6.06
18.025	6.04	6.03	6.01	5.99	5.98
18.150	5.96	5.94	5.92	5.91	5.89
18.275	5.87	5.85	5.84	5.82	5.80
18.400	5.78	5.76	5.75	5.73	5.71
18.525	5.69	5.68	5.66	5.64	5.62
18.650	5.60	5.59	5.57	5.55	5.53
18.775	5.52	5.50	5.48	5.46	5.44
18.900	5.43	5.41	5.39	5.37	5.35
19.025	5.34	5.32	5.30	5.28	5.26
19.150	5.25	5.23	5.21	5.19	5.17
19.275	5.16	5.14	5.12	5.10	5.08
19.400	5.06	5.05	5.03	5.01	4.99
19.525	4.97	4.95	4.94	4.92	4.90
19.650	4.88	4.86	4.84	4.82	4.81
19.775	4.79	4.77	4.75	4.73	4.71
19.900	4.69	4.68	4.66	4.64	4.62
20.025	4.60	4.58	4.56	4.55	4.53
20.150	4.51	4.49	4.47	4.46	4.44
20.275	4.42	4.40	4.39	4.37	4.36
20.400	4.34	4.33	4.31	4.30	4.29
20.525	4.27	4.26	4.25	4.24	4.23
20.650	4.22	4.21	4.20	4.19	4.18
20.775	4.17	4.16	4.16	4.15	4.14
20.900	4.14	4.13	4.12	4.12	4.11
21.025	4.11	4.10	4.10	4.09	4.09
21.150	4.08	4.08	4.07	4.07	4.06
21.275	4.06	4.05	4.05	4.05	4.04
21.400	4.04	4.03	4.03	4.03	4.02
21.525	4.02	4.02	4.01	4.01	4.00
21.650	4.00	4.00	3.99	3.99	3.99
21.775	3.98	3.98	3.98	3.97	3.97
21.900	3.97	3.96	3.96	3.96	3.95
22.025	3.95	3.95	3.94	3.94	3.94
22.150	3.93	3.93	3.93	3.92	3.92
22.275	3.91	3.91	3.91	3.90	3.90
22.400	3.90	3.89	3.89	3.89	3.88
22.525	3.88	3.88	3.87	3.87	3.87

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.650	3.86	3.86	3.86	3.85	3.85
22.775	3.85	3.84	3.84	3.84	3.83
22.900	3.83	3.83	3.82	3.82	3.82
23.025	3.81	3.81	3.81	3.80	3.80
23.150	3.80	3.79	3.79	3.79	3.78
23.275	3.78	3.78	3.77	3.77	3.77
23.400	3.76	3.76	3.76	3.75	3.75
23.525	3.75	3.74	3.74	3.74	3.73
23.650	3.73	3.73	3.72	3.72	3.71
23.775	3.71	3.71	3.70	3.70	3.70
23.900	3.69	3.69	3.69	3.68	3.68


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

Computational Time Increment	0.111 hours
Time to Peak (Computed)	12.439 hours
Flow (Peak, Computed)	122.23 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.425 hours
Flow (Peak Interpolated Output)	121.86 ft³/s

Drainage Area

SCS CN (Composite)	68.000
Area (User Defined)	113.645 acres
Maximum Retention (Pervious)	4.7 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.9 in
Runoff Volume (Pervious)	17.733 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	17.485 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.833 hours
Computational Time Increment	0.111 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	154.59 ft³/s
Unit peak time, Tp	0.555 hours
Unit receding limb, Tr	2.221 hours
Total unit time, Tb	2.777 hours

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.833 hours
Area (User Defined)	113.645 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

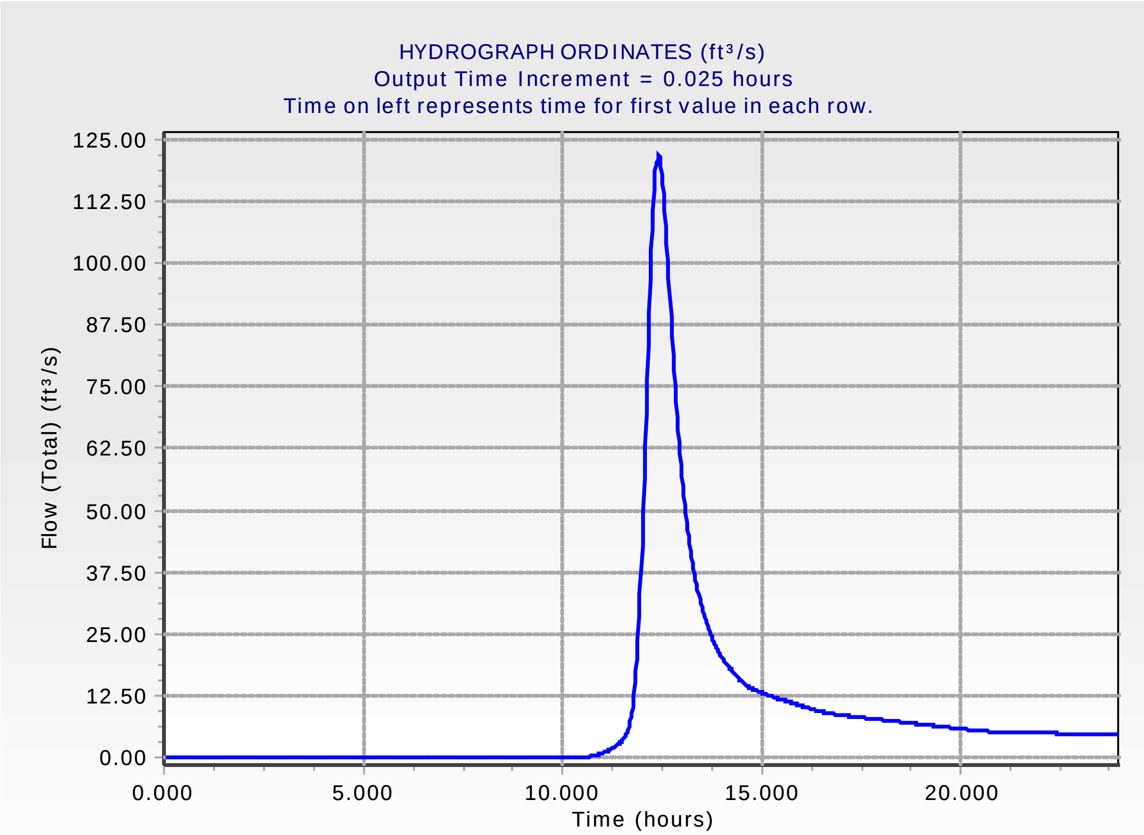
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
10.225	0.00	0.00	0.00	0.00	0.00
10.350	0.01	0.01	0.02	0.02	0.03
10.475	0.04	0.05	0.06	0.07	0.09
10.600	0.11	0.13	0.15	0.17	0.21
10.725	0.24	0.27	0.31	0.36	0.41
10.850	0.45	0.50	0.56	0.63	0.69
10.975	0.76	0.82	0.91	0.99	1.07
11.100	1.16	1.26	1.36	1.46	1.57
11.225	1.68	1.81	1.94	2.07	2.21
11.350	2.37	2.53	2.70	2.87	3.06
11.475	3.29	3.52	3.75	3.97	4.38
11.600	4.79	5.20	5.61	6.31	7.25
11.725	8.18	9.12	10.21	12.60	15.00
11.850	17.39	19.79	23.71	28.41	33.12
11.975	37.83	42.96	49.66	56.35	63.05
12.100	69.74	76.49	83.24	90.00	96.75
12.225	102.61	106.66	110.70	114.74	118.79
12.350	119.84	120.51	121.19	121.86	121.43
12.475	119.61	117.80	115.99	114.17	110.76
12.600	107.35	103.93	100.52	96.87	93.02
12.725	89.17	85.33	81.56	78.42	75.28
12.850	72.14	69.00	66.36	63.97	61.58
12.975	59.19	56.91	55.01	53.11	51.20
13.100	49.30	47.68	46.14	44.60	43.05
13.225	41.63	40.43	39.22	38.02	36.82
13.350	35.83	34.86	33.90	32.93	32.06
13.475	31.29	30.52	29.74	28.98	28.36
13.600	27.73	27.11	26.49	25.93	25.42
13.725	24.91	24.40	23.89	23.47	23.04
13.850	22.61	22.18	21.80	21.44	21.08
13.975	20.72	20.37	20.06	19.75	19.44
14.100	19.13	18.86	18.59	18.32	18.05
14.225	17.79	17.55	17.31	17.07	16.83
14.350	16.61	16.40	16.19	15.97	15.77
14.475	15.58	15.40	15.21	15.03	14.88
14.600	14.73	14.59	14.44	14.31	14.20
14.725	14.09	13.98	13.87	13.77	13.68
14.850	13.58	13.49	13.40	13.32	13.23
14.975	13.15	13.07	12.99	12.92	12.84
15.100	12.76	12.69	12.62	12.55	12.48
15.225	12.41	12.34	12.27	12.21	12.14
15.350	12.07	12.01	11.94	11.87	11.81
15.475	11.75	11.68	11.62	11.55	11.49

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
15.600	11.43	11.36	11.30	11.24	11.17
15.725	11.11	11.05	10.98	10.92	10.86
15.850	10.80	10.74	10.67	10.61	10.55
15.975	10.49	10.43	10.36	10.30	10.24
16.100	10.18	10.12	10.06	10.00	9.94
16.225	9.88	9.82	9.76	9.70	9.64
16.350	9.59	9.54	9.48	9.43	9.38
16.475	9.33	9.29	9.24	9.19	9.15
16.600	9.11	9.07	9.02	8.99	8.95
16.725	8.91	8.88	8.84	8.81	8.78
16.850	8.75	8.72	8.69	8.66	8.63
16.975	8.60	8.57	8.54	8.52	8.49
17.100	8.46	8.44	8.41	8.39	8.36
17.225	8.34	8.31	8.29	8.27	8.24
17.350	8.22	8.19	8.17	8.15	8.12
17.475	8.10	8.08	8.05	8.03	8.01
17.600	7.98	7.96	7.94	7.92	7.89
17.725	7.87	7.85	7.83	7.80	7.78
17.850	7.76	7.74	7.71	7.69	7.67
17.975	7.65	7.62	7.60	7.58	7.56
18.100	7.53	7.51	7.49	7.47	7.45
18.225	7.42	7.40	7.38	7.36	7.33
18.350	7.31	7.29	7.27	7.24	7.22
18.475	7.20	7.18	7.15	7.13	7.11
18.600	7.08	7.06	7.04	7.02	6.99
18.725	6.97	6.95	6.93	6.90	6.88
18.850	6.86	6.83	6.81	6.79	6.77
18.975	6.74	6.72	6.70	6.67	6.65
19.100	6.63	6.61	6.58	6.56	6.54
19.225	6.51	6.49	6.47	6.45	6.42
19.350	6.40	6.38	6.35	6.33	6.31
19.475	6.28	6.26	6.24	6.21	6.19
19.600	6.17	6.14	6.12	6.10	6.07
19.725	6.05	6.02	6.00	5.98	5.95
19.850	5.93	5.91	5.88	5.86	5.84
19.975	5.81	5.79	5.77	5.74	5.72
20.100	5.70	5.67	5.65	5.63	5.61
20.225	5.58	5.56	5.54	5.52	5.50
20.350	5.48	5.46	5.44	5.42	5.40
20.475	5.38	5.37	5.35	5.33	5.32
20.600	5.31	5.29	5.28	5.27	5.26
20.725	5.24	5.23	5.22	5.21	5.20
20.850	5.20	5.19	5.18	5.17	5.16
20.975	5.15	5.15	5.14	5.13	5.13
21.100	5.12	5.11	5.11	5.10	5.10
21.225	5.09	5.08	5.08	5.07	5.07
21.350	5.06	5.06	5.05	5.05	5.04
21.475	5.04	5.03	5.03	5.02	5.02
21.600	5.01	5.01	5.00	5.00	4.99
21.725	4.99	4.98	4.98	4.98	4.97
21.850	4.97	4.96	4.96	4.95	4.95
21.975	4.94	4.94	4.94	4.93	4.93

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.100	4.92	4.92	4.91	4.91	4.91
22.225	4.90	4.90	4.89	4.89	4.88
22.350	4.88	4.88	4.87	4.87	4.86
22.475	4.86	4.85	4.85	4.85	4.84
22.600	4.84	4.83	4.83	4.82	4.82
22.725	4.81	4.81	4.81	4.80	4.80
22.850	4.79	4.79	4.78	4.78	4.78
22.975	4.77	4.77	4.76	4.76	4.75
23.100	4.75	4.75	4.74	4.74	4.73
23.225	4.73	4.72	4.72	4.71	4.71
23.350	4.71	4.70	4.70	4.69	4.69
23.475	4.68	4.68	4.68	4.67	4.67
23.600	4.66	4.66	4.65	4.65	4.64
23.725	4.64	4.64	4.63	4.63	4.62
23.850	4.62	4.61	4.61	4.60	4.60
23.975	4.60	4.59	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
125.00
112.50
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.028 hours
Flow (Peak, Computed)	0.58 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.025 hours
Flow (Peak Interpolated Output)	0.58 ft³/s

Drainage Area	
SCS CN (Composite)	82.000
Area (User Defined)	0.573 acres
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.8 in
Runoff Volume (Pervious)	0.037 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.037 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.197 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.30 ft³/s
Unit peak time, Tp	0.131 hours
Unit receding limb, Tr	0.525 hours
Total unit time, Tb	0.657 hours

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

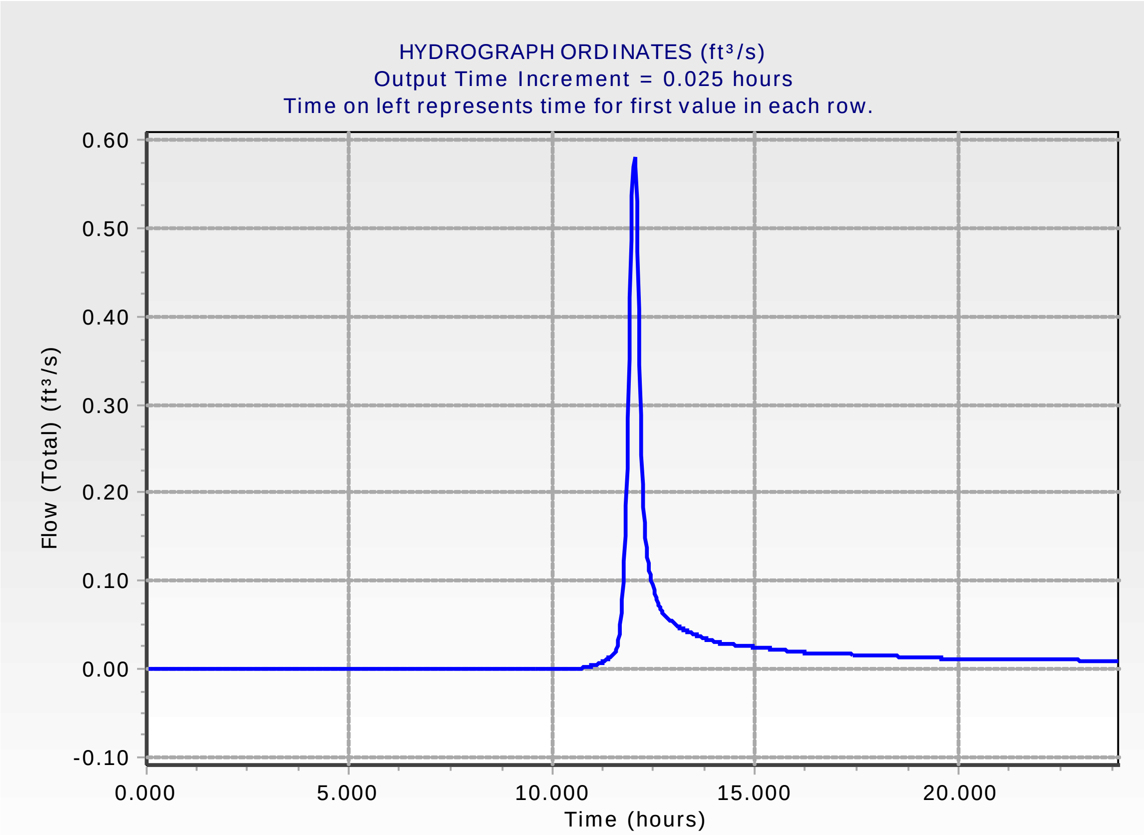
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
10.700	0.00	0.00	0.00	0.00	0.00
10.825	0.00	0.00	0.00	0.00	0.00
10.950	0.00	0.00	0.00	0.00	0.00
11.075	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.325	0.01	0.01	0.01	0.01	0.01
11.450	0.01	0.02	0.02	0.02	0.02
11.575	0.02	0.03	0.03	0.04	0.05
11.700	0.06	0.08	0.10	0.12	0.15
11.825	0.18	0.23	0.28	0.35	0.42
11.950	0.49	0.54	0.57	0.58	0.57
12.075	0.53	0.47	0.41	0.35	0.29
12.200	0.24	0.21	0.18	0.16	0.15
12.325	0.14	0.13	0.12	0.11	0.11
12.450	0.10	0.10	0.09	0.09	0.08
12.575	0.08	0.07	0.07	0.07	0.07
12.700	0.06	0.06	0.06	0.06	0.06
12.825	0.06	0.06	0.06	0.06	0.05
12.950	0.05	0.05	0.05	0.05	0.05
13.075	0.05	0.05	0.05	0.05	0.05
13.200	0.05	0.05	0.04	0.04	0.04
13.325	0.04	0.04	0.04	0.04	0.04
13.450	0.04	0.04	0.04	0.04	0.04
13.575	0.04	0.04	0.04	0.04	0.04
13.700	0.04	0.04	0.04	0.03	0.03
13.825	0.03	0.03	0.03	0.03	0.03
13.950	0.03	0.03	0.03	0.03	0.03
14.075	0.03	0.03	0.03	0.03	0.03
14.200	0.03	0.03	0.03	0.03	0.03
14.325	0.03	0.03	0.03	0.03	0.03
14.450	0.03	0.03	0.03	0.03	0.03
14.575	0.03	0.03	0.03	0.03	0.03
14.700	0.03	0.03	0.03	0.03	0.03
14.825	0.03	0.03	0.03	0.03	0.03
14.950	0.03	0.03	0.03	0.02	0.02
15.075	0.02	0.02	0.02	0.02	0.02
15.200	0.02	0.02	0.02	0.02	0.02
15.325	0.02	0.02	0.02	0.02	0.02
15.450	0.02	0.02	0.02	0.02	0.02
15.575	0.02	0.02	0.02	0.02	0.02
15.700	0.02	0.02	0.02	0.02	0.02
15.825	0.02	0.02	0.02	0.02	0.02
15.950	0.02	0.02	0.02	0.02	0.02

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
16.075	0.02	0.02	0.02	0.02	0.02
16.200	0.02	0.02	0.02	0.02	0.02
16.325	0.02	0.02	0.02	0.02	0.02
16.450	0.02	0.02	0.02	0.02	0.02
16.575	0.02	0.02	0.02	0.02	0.02
16.700	0.02	0.02	0.02	0.02	0.02
16.825	0.02	0.02	0.02	0.02	0.02
16.950	0.02	0.02	0.02	0.02	0.02
17.075	0.02	0.02	0.02	0.02	0.02
17.200	0.02	0.02	0.02	0.02	0.02
17.325	0.02	0.02	0.02	0.02	0.02
17.450	0.02	0.02	0.02	0.02	0.02
17.575	0.02	0.02	0.02	0.02	0.02
17.700	0.02	0.02	0.02	0.02	0.02
17.825	0.02	0.02	0.02	0.02	0.02
17.950	0.02	0.02	0.02	0.02	0.02
18.075	0.02	0.02	0.02	0.02	0.02
18.200	0.02	0.02	0.01	0.01	0.01
18.325	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.575	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.825	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.075	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.325	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.575	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.825	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01
20.075	0.01	0.01	0.01	0.01	0.01
20.200	0.01	0.01	0.01	0.01	0.01
20.325	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.575	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.825	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.075	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.325	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.575	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.825	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.075	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.325	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.575	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.01
22.825	0.01	0.01	0.01	0.01	0.01
22.950	0.01	0.01	0.01	0.01	0.01
23.075	0.01	0.01	0.01	0.01	0.01
23.200	0.01	0.01	0.01	0.01	0.01
23.325	0.01	0.01	0.01	0.01	0.01
23.450	0.01	0.01	0.01	0.01	0.01
23.575	0.01	0.01	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.825	0.01	0.01	0.01	0.01	0.01
23.950	0.01	0.01	0.01	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-0.10
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.028 hours
Flow (Peak, Computed)	1.08 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.025 hours
Flow (Peak Interpolated Output)	1.08 ft³/s

Drainage Area

SCS CN (Composite)	82.000
Area (User Defined)	0.573 acres
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.4 in
Runoff Volume (Pervious)	0.069 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.069 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.197 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.30 ft³/s
Unit peak time, Tp	0.131 hours
Unit receding limb, Tr	0.525 hours
Total unit time, Tb	0.657 hours

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

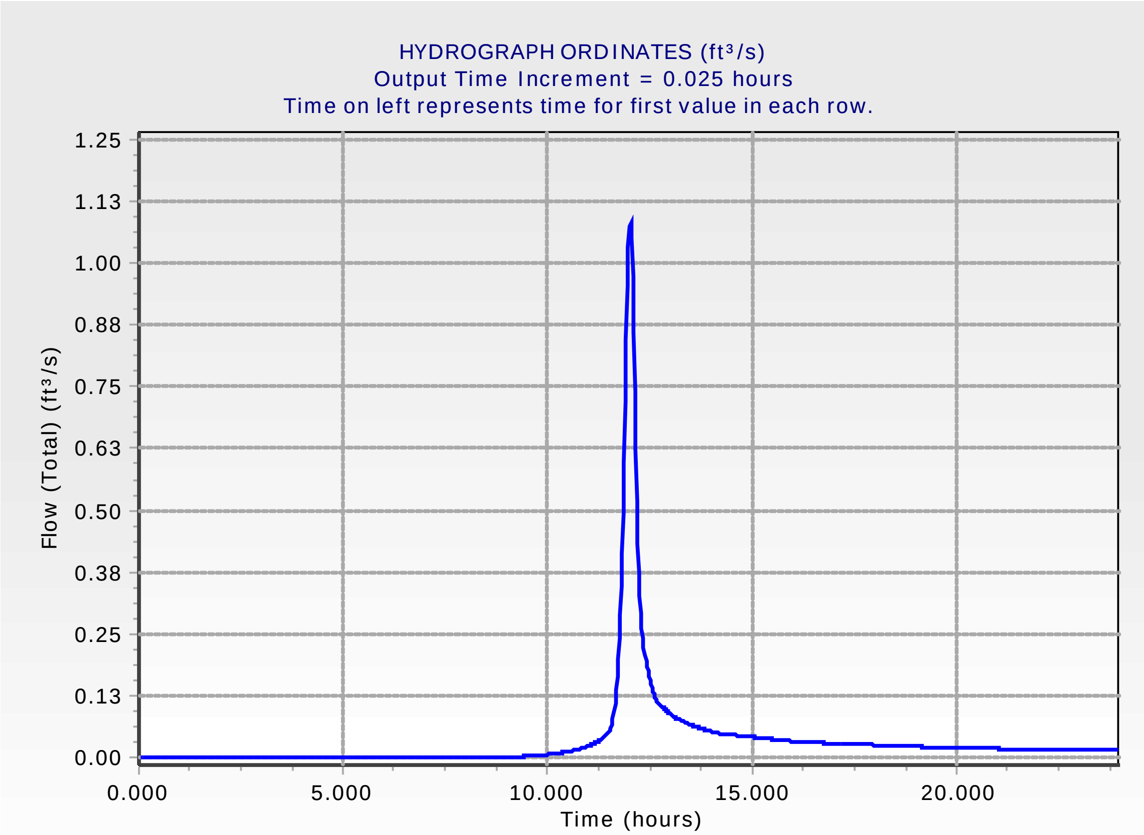
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.200	0.00	0.00	0.00	0.00	0.00
9.325	0.00	0.00	0.00	0.00	0.00
9.450	0.00	0.00	0.00	0.00	0.00
9.575	0.00	0.00	0.00	0.00	0.00
9.700	0.00	0.00	0.00	0.00	0.00
9.825	0.00	0.00	0.00	0.00	0.01
9.950	0.01	0.01	0.01	0.01	0.01
10.075	0.01	0.01	0.01	0.01	0.01
10.200	0.01	0.01	0.01	0.01	0.01
10.325	0.01	0.01	0.01	0.01	0.01
10.450	0.01	0.01	0.01	0.01	0.01
10.575	0.01	0.01	0.01	0.01	0.01
10.700	0.02	0.02	0.02	0.02	0.02
10.825	0.02	0.02	0.02	0.02	0.02
10.950	0.02	0.02	0.02	0.02	0.02
11.075	0.03	0.03	0.03	0.03	0.03
11.200	0.03	0.03	0.03	0.04	0.04
11.325	0.04	0.04	0.04	0.04	0.05
11.450	0.05	0.05	0.05	0.05	0.06
11.575	0.07	0.08	0.09	0.11	0.14
11.700	0.16	0.20	0.24	0.29	0.35
11.825	0.41	0.49	0.60	0.72	0.84
11.950	0.95	1.03	1.08	1.08	1.05
12.075	0.97	0.86	0.74	0.62	0.52
12.200	0.43	0.37	0.33	0.29	0.26
12.325	0.24	0.22	0.21	0.19	0.18
12.450	0.17	0.16	0.16	0.15	0.14
12.575	0.13	0.13	0.12	0.12	0.11
12.700	0.11	0.11	0.11	0.10	0.10
12.825	0.10	0.10	0.10	0.09	0.09
12.950	0.09	0.09	0.09	0.09	0.08
13.075	0.08	0.08	0.08	0.08	0.08
13.200	0.08	0.08	0.08	0.07	0.07
13.325	0.07	0.07	0.07	0.07	0.07
13.450	0.07	0.07	0.07	0.07	0.06
13.575	0.06	0.06	0.06	0.06	0.06
13.700	0.06	0.06	0.06	0.06	0.06
13.825	0.06	0.06	0.06	0.05	0.05
13.950	0.05	0.05	0.05	0.05	0.05
14.075	0.05	0.05	0.05	0.05	0.05
14.200	0.05	0.05	0.05	0.05	0.05
14.325	0.05	0.05	0.05	0.05	0.05
14.450	0.05	0.05	0.05	0.05	0.05

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
14.575	0.05	0.04	0.04	0.04	0.04
14.700	0.04	0.04	0.04	0.04	0.04
14.825	0.04	0.04	0.04	0.04	0.04
14.950	0.04	0.04	0.04	0.04	0.04
15.075	0.04	0.04	0.04	0.04	0.04
15.200	0.04	0.04	0.04	0.04	0.04
15.325	0.04	0.04	0.04	0.04	0.04
15.450	0.04	0.04	0.04	0.04	0.04
15.575	0.04	0.04	0.04	0.04	0.04
15.700	0.04	0.03	0.03	0.03	0.03
15.825	0.03	0.03	0.03	0.03	0.03
15.950	0.03	0.03	0.03	0.03	0.03
16.075	0.03	0.03	0.03	0.03	0.03
16.200	0.03	0.03	0.03	0.03	0.03
16.325	0.03	0.03	0.03	0.03	0.03
16.450	0.03	0.03	0.03	0.03	0.03
16.575	0.03	0.03	0.03	0.03	0.03
16.700	0.03	0.03	0.03	0.03	0.03
16.825	0.03	0.03	0.03	0.03	0.03
16.950	0.03	0.03	0.03	0.03	0.03
17.075	0.03	0.03	0.03	0.03	0.03
17.200	0.03	0.03	0.03	0.03	0.03
17.325	0.03	0.03	0.03	0.03	0.03
17.450	0.03	0.03	0.03	0.03	0.03
17.575	0.03	0.03	0.03	0.03	0.03
17.700	0.03	0.03	0.03	0.03	0.03
17.825	0.03	0.03	0.03	0.03	0.03
17.950	0.03	0.03	0.03	0.03	0.03
18.075	0.02	0.02	0.02	0.02	0.02
18.200	0.02	0.02	0.02	0.02	0.02
18.325	0.02	0.02	0.02	0.02	0.02
18.450	0.02	0.02	0.02	0.02	0.02
18.575	0.02	0.02	0.02	0.02	0.02
18.700	0.02	0.02	0.02	0.02	0.02
18.825	0.02	0.02	0.02	0.02	0.02
18.950	0.02	0.02	0.02	0.02	0.02
19.075	0.02	0.02	0.02	0.02	0.02
19.200	0.02	0.02	0.02	0.02	0.02
19.325	0.02	0.02	0.02	0.02	0.02
19.450	0.02	0.02	0.02	0.02	0.02
19.575	0.02	0.02	0.02	0.02	0.02
19.700	0.02	0.02	0.02	0.02	0.02
19.825	0.02	0.02	0.02	0.02	0.02
19.950	0.02	0.02	0.02	0.02	0.02
20.075	0.02	0.02	0.02	0.02	0.02
20.200	0.02	0.02	0.02	0.02	0.02
20.325	0.02	0.02	0.02	0.02	0.02
20.450	0.02	0.02	0.02	0.02	0.02
20.575	0.02	0.02	0.02	0.02	0.02
20.700	0.02	0.02	0.02	0.02	0.02
20.825	0.02	0.02	0.02	0.02	0.02
20.950	0.02	0.02	0.02	0.02	0.02

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
21.075	0.02	0.02	0.02	0.02	0.02
21.200	0.02	0.02	0.02	0.02	0.02
21.325	0.02	0.02	0.02	0.02	0.02
21.450	0.02	0.02	0.02	0.02	0.02
21.575	0.02	0.02	0.02	0.02	0.02
21.700	0.02	0.02	0.02	0.02	0.02
21.825	0.02	0.02	0.02	0.02	0.02
21.950	0.02	0.02	0.02	0.02	0.02
22.075	0.02	0.02	0.02	0.02	0.02
22.200	0.02	0.02	0.02	0.02	0.02
22.325	0.02	0.02	0.02	0.02	0.02
22.450	0.02	0.02	0.02	0.02	0.02
22.575	0.02	0.02	0.02	0.02	0.02
22.700	0.02	0.02	0.02	0.02	0.02
22.825	0.02	0.02	0.02	0.02	0.02
22.950	0.02	0.02	0.02	0.02	0.02
23.075	0.02	0.02	0.02	0.02	0.02
23.200	0.02	0.02	0.02	0.02	0.02
23.325	0.02	0.02	0.02	0.02	0.02
23.450	0.02	0.02	0.02	0.02	0.02
23.575	0.02	0.02	0.02	0.02	0.02
23.700	0.02	0.02	0.02	0.02	0.02
23.825	0.02	0.02	0.02	0.02	0.02
23.950	0.02	0.02	0.02	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
1.25
1.13
1.00
0.88
0.75
0.63
0.50
0.38
0.25
0.13
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.002 hours
Flow (Peak, Computed)	1.85 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.85 ft³/s

Drainage Area

SCS CN (Composite)	82.000
Area (User Defined)	0.573 acres
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	2.5 in
Runoff Volume (Pervious)	0.118 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.118 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.197 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.30 ft³/s
Unit peak time, Tp	0.131 hours
Unit receding limb, Tr	0.525 hours
Total unit time, Tb	0.657 hours

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

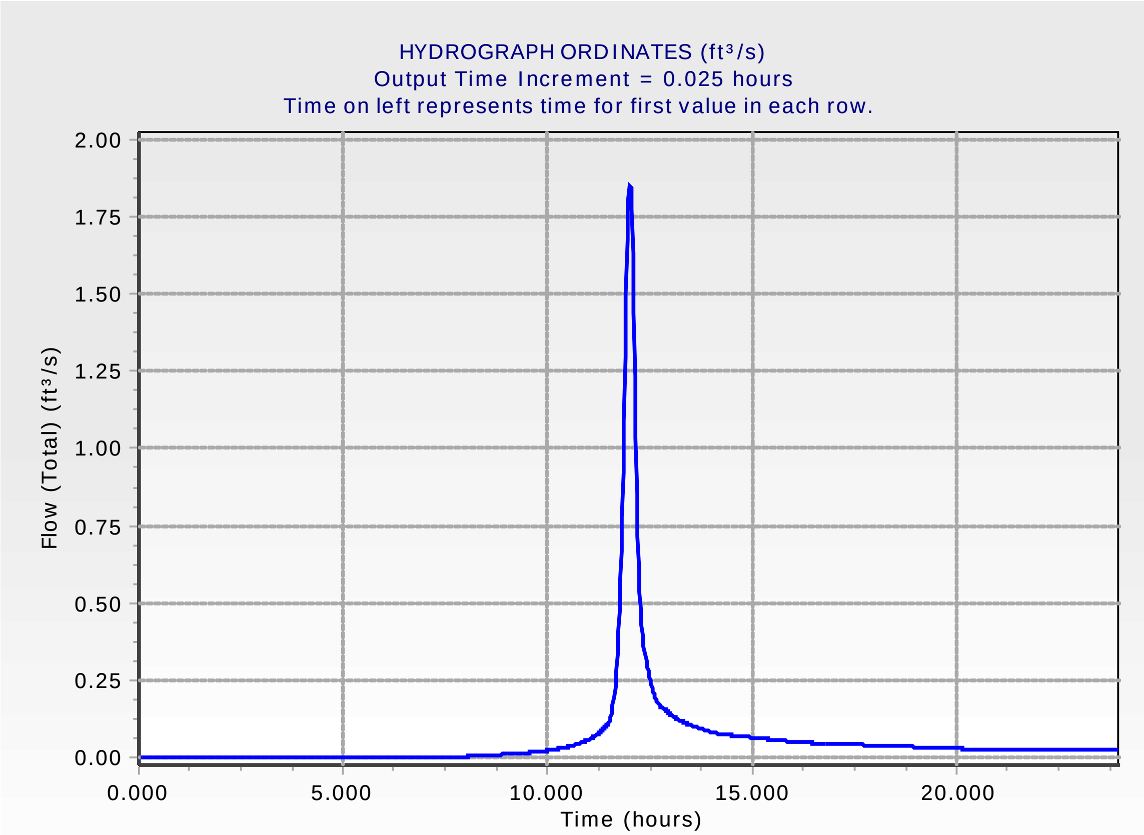
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.550	0.00	0.00	0.00	0.00	0.00
7.675	0.00	0.00	0.00	0.00	0.00
7.800	0.00	0.00	0.00	0.00	0.00
7.925	0.00	0.00	0.00	0.00	0.00
8.050	0.00	0.00	0.00	0.00	0.00
8.175	0.00	0.00	0.00	0.00	0.00
8.300	0.00	0.00	0.00	0.01	0.01
8.425	0.01	0.01	0.01	0.01	0.01
8.550	0.01	0.01	0.01	0.01	0.01
8.675	0.01	0.01	0.01	0.01	0.01
8.800	0.01	0.01	0.01	0.01	0.01
8.925	0.01	0.01	0.01	0.01	0.01
9.050	0.01	0.01	0.01	0.01	0.01
9.175	0.01	0.01	0.01	0.01	0.01
9.300	0.01	0.01	0.01	0.01	0.01
9.425	0.01	0.01	0.01	0.02	0.02
9.550	0.02	0.02	0.02	0.02	0.02
9.675	0.02	0.02	0.02	0.02	0.02
9.800	0.02	0.02	0.02	0.02	0.02
9.925	0.02	0.02	0.02	0.02	0.02
10.050	0.02	0.02	0.02	0.02	0.03
10.175	0.03	0.03	0.03	0.03	0.03
10.300	0.03	0.03	0.03	0.03	0.03
10.425	0.03	0.03	0.03	0.03	0.04
10.550	0.04	0.04	0.04	0.04	0.04
10.675	0.04	0.04	0.04	0.04	0.05
10.800	0.05	0.05	0.05	0.05	0.05
10.925	0.05	0.05	0.06	0.06	0.06
11.050	0.06	0.06	0.06	0.07	0.07
11.175	0.07	0.07	0.08	0.08	0.08
11.300	0.08	0.09	0.09	0.09	0.10
11.425	0.10	0.10	0.11	0.11	0.12
11.550	0.13	0.14	0.17	0.19	0.23
11.675	0.28	0.33	0.40	0.48	0.56
11.800	0.66	0.78	0.92	1.09	1.30
11.925	1.50	1.67	1.79	1.85	1.84
12.050	1.77	1.63	1.44	1.23	1.03
12.175	0.86	0.72	0.61	0.53	0.47
12.300	0.43	0.39	0.36	0.34	0.31
12.425	0.30	0.28	0.26	0.25	0.24
12.550	0.22	0.21	0.20	0.20	0.19
12.675	0.18	0.18	0.17	0.17	0.16
12.800	0.16	0.16	0.16	0.15	0.15

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.925	0.15	0.14	0.14	0.14	0.14
13.050	0.13	0.13	0.13	0.13	0.13
13.175	0.12	0.12	0.12	0.12	0.12
13.300	0.12	0.11	0.11	0.11	0.11
13.425	0.11	0.11	0.11	0.10	0.10
13.550	0.10	0.10	0.10	0.10	0.10
13.675	0.10	0.09	0.09	0.09	0.09
13.800	0.09	0.09	0.09	0.09	0.09
13.925	0.09	0.08	0.08	0.08	0.08
14.050	0.08	0.08	0.08	0.08	0.08
14.175	0.08	0.08	0.08	0.08	0.07
14.300	0.07	0.07	0.07	0.07	0.07
14.425	0.07	0.07	0.07	0.07	0.07
14.550	0.07	0.07	0.07	0.07	0.07
14.675	0.07	0.07	0.07	0.07	0.07
14.800	0.07	0.07	0.07	0.07	0.07
14.925	0.07	0.07	0.07	0.06	0.06
15.050	0.06	0.06	0.06	0.06	0.06
15.175	0.06	0.06	0.06	0.06	0.06
15.300	0.06	0.06	0.06	0.06	0.06
15.425	0.06	0.06	0.06	0.06	0.06
15.550	0.06	0.06	0.06	0.06	0.06
15.675	0.06	0.05	0.05	0.05	0.05
15.800	0.05	0.05	0.05	0.05	0.05
15.925	0.05	0.05	0.05	0.05	0.05
16.050	0.05	0.05	0.05	0.05	0.05
16.175	0.05	0.05	0.05	0.05	0.05
16.300	0.05	0.05	0.05	0.05	0.05
16.425	0.05	0.05	0.05	0.05	0.05
16.550	0.05	0.05	0.05	0.05	0.05
16.675	0.05	0.05	0.05	0.05	0.05
16.800	0.05	0.04	0.04	0.04	0.04
16.925	0.04	0.04	0.04	0.04	0.04
17.050	0.04	0.04	0.04	0.04	0.04
17.175	0.04	0.04	0.04	0.04	0.04
17.300	0.04	0.04	0.04	0.04	0.04
17.425	0.04	0.04	0.04	0.04	0.04
17.550	0.04	0.04	0.04	0.04	0.04
17.675	0.04	0.04	0.04	0.04	0.04
17.800	0.04	0.04	0.04	0.04	0.04
17.925	0.04	0.04	0.04	0.04	0.04
18.050	0.04	0.04	0.04	0.04	0.04
18.175	0.04	0.04	0.04	0.04	0.04
18.300	0.04	0.04	0.04	0.04	0.04
18.425	0.04	0.04	0.04	0.04	0.04
18.550	0.04	0.04	0.04	0.04	0.04
18.675	0.04	0.04	0.04	0.04	0.04
18.800	0.03	0.03	0.03	0.03	0.03
18.925	0.03	0.03	0.03	0.03	0.03
19.050	0.03	0.03	0.03	0.03	0.03
19.175	0.03	0.03	0.03	0.03	0.03
19.300	0.03	0.03	0.03	0.03	0.03

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
19.425	0.03	0.03	0.03	0.03	0.03
19.550	0.03	0.03	0.03	0.03	0.03
19.675	0.03	0.03	0.03	0.03	0.03
19.800	0.03	0.03	0.03	0.03	0.03
19.925	0.03	0.03	0.03	0.03	0.03
20.050	0.03	0.03	0.03	0.03	0.03
20.175	0.03	0.03	0.03	0.03	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.425	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.675	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.03	0.03	0.03
20.925	0.03	0.03	0.03	0.03	0.03
21.050	0.03	0.03	0.03	0.03	0.03
21.175	0.03	0.03	0.03	0.03	0.03
21.300	0.03	0.03	0.03	0.03	0.03
21.425	0.03	0.03	0.03	0.03	0.03
21.550	0.03	0.03	0.03	0.03	0.03
21.675	0.03	0.03	0.03	0.03	0.03
21.800	0.03	0.03	0.03	0.03	0.03
21.925	0.03	0.03	0.03	0.03	0.03
22.050	0.03	0.03	0.03	0.03	0.03
22.175	0.03	0.03	0.03	0.03	0.03
22.300	0.03	0.03	0.03	0.03	0.03
22.425	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.03	0.03
22.675	0.03	0.03	0.03	0.03	0.03
22.800	0.03	0.03	0.03	0.03	0.03
22.925	0.03	0.03	0.03	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.175	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.425	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.675	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02
23.925	0.02	0.02	0.02	0.02	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.002 hours
Flow (Peak, Computed)	2.30 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	2.29 ft³/s

Drainage Area

SCS CN (Composite)	82.000
Area (User Defined)	0.573 acres
Maximum Retention (Pervious)	2.2 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	3.1 in
Runoff Volume (Pervious)	0.147 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.146 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.197 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.30 ft³/s
Unit peak time, Tp	0.131 hours
Unit receding limb, Tr	0.525 hours
Total unit time, Tb	0.657 hours

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.197 hours
Area (User Defined)	0.573 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

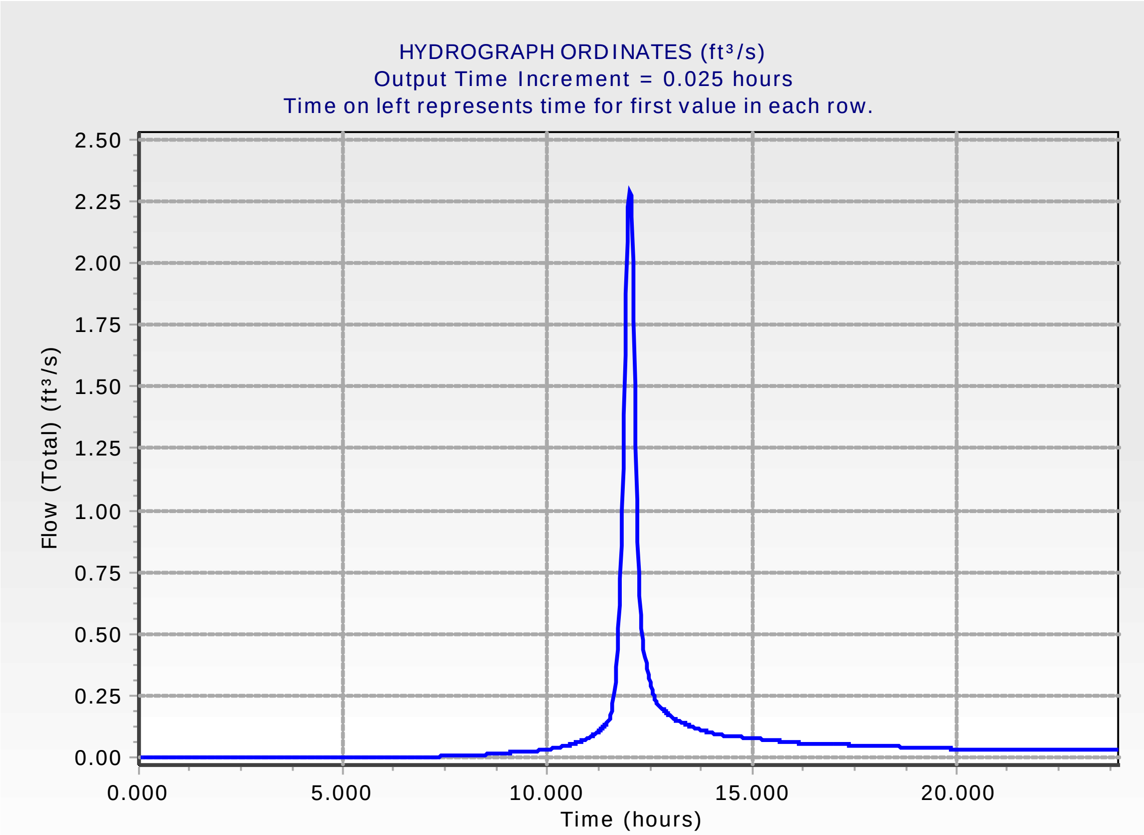
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
6.800	0.00	0.00	0.00	0.00	0.00
6.925	0.00	0.00	0.00	0.00	0.00
7.050	0.00	0.00	0.00	0.00	0.00
7.175	0.00	0.00	0.00	0.00	0.00
7.300	0.00	0.00	0.00	0.00	0.00
7.425	0.00	0.00	0.00	0.00	0.00
7.550	0.00	0.01	0.01	0.01	0.01
7.675	0.01	0.01	0.01	0.01	0.01
7.800	0.01	0.01	0.01	0.01	0.01
7.925	0.01	0.01	0.01	0.01	0.01
8.050	0.01	0.01	0.01	0.01	0.01
8.175	0.01	0.01	0.01	0.01	0.01
8.300	0.01	0.01	0.01	0.01	0.01
8.425	0.01	0.01	0.01	0.01	0.01
8.550	0.01	0.01	0.01	0.01	0.01
8.675	0.01	0.01	0.01	0.01	0.02
8.800	0.02	0.02	0.02	0.02	0.02
8.925	0.02	0.02	0.02	0.02	0.02
9.050	0.02	0.02	0.02	0.02	0.02
9.175	0.02	0.02	0.02	0.02	0.02
9.300	0.02	0.02	0.02	0.02	0.02
9.425	0.02	0.02	0.02	0.02	0.02
9.550	0.02	0.02	0.02	0.02	0.03
9.675	0.03	0.03	0.03	0.03	0.03
9.800	0.03	0.03	0.03	0.03	0.03
9.925	0.03	0.03	0.03	0.03	0.03
10.050	0.03	0.03	0.04	0.04	0.04
10.175	0.04	0.04	0.04	0.04	0.04
10.300	0.04	0.04	0.04	0.04	0.05
10.425	0.05	0.05	0.05	0.05	0.05
10.550	0.05	0.05	0.05	0.06	0.06
10.675	0.06	0.06	0.06	0.06	0.06
10.800	0.07	0.07	0.07	0.07	0.07
10.925	0.07	0.08	0.08	0.08	0.08
11.050	0.08	0.09	0.09	0.09	0.09
11.175	0.10	0.10	0.10	0.11	0.11
11.300	0.11	0.12	0.12	0.13	0.13
11.425	0.14	0.14	0.14	0.15	0.16
11.550	0.17	0.19	0.22	0.26	0.30
11.675	0.36	0.44	0.52	0.62	0.73
11.800	0.85	1.00	1.17	1.38	1.63
11.925	1.88	2.09	2.23	2.29	2.28
12.050	2.18	2.01	1.77	1.51	1.26

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
12.175	1.05	0.87	0.75	0.65	0.58
12.300	0.52	0.47	0.44	0.41	0.38
12.425	0.36	0.34	0.32	0.30	0.29
12.550	0.27	0.26	0.25	0.24	0.23
12.675	0.22	0.21	0.21	0.20	0.20
12.800	0.19	0.19	0.19	0.18	0.18
12.925	0.18	0.17	0.17	0.17	0.17
13.050	0.16	0.16	0.16	0.15	0.15
13.175	0.15	0.15	0.15	0.14	0.14
13.300	0.14	0.14	0.14	0.13	0.13
13.425	0.13	0.13	0.13	0.13	0.12
13.550	0.12	0.12	0.12	0.12	0.12
13.675	0.12	0.11	0.11	0.11	0.11
13.800	0.11	0.11	0.11	0.11	0.10
13.925	0.10	0.10	0.10	0.10	0.10
14.050	0.10	0.10	0.09	0.09	0.09
14.175	0.09	0.09	0.09	0.09	0.09
14.300	0.09	0.09	0.09	0.09	0.09
14.425	0.09	0.09	0.09	0.09	0.09
14.550	0.09	0.08	0.08	0.08	0.08
14.675	0.08	0.08	0.08	0.08	0.08
14.800	0.08	0.08	0.08	0.08	0.08
14.925	0.08	0.08	0.08	0.08	0.08
15.050	0.08	0.08	0.08	0.08	0.08
15.175	0.07	0.07	0.07	0.07	0.07
15.300	0.07	0.07	0.07	0.07	0.07
15.425	0.07	0.07	0.07	0.07	0.07
15.550	0.07	0.07	0.07	0.07	0.07
15.675	0.07	0.07	0.07	0.06	0.06
15.800	0.06	0.06	0.06	0.06	0.06
15.925	0.06	0.06	0.06	0.06	0.06
16.050	0.06	0.06	0.06	0.06	0.06
16.175	0.06	0.06	0.06	0.06	0.06
16.300	0.06	0.06	0.06	0.06	0.06
16.425	0.06	0.06	0.06	0.06	0.06
16.550	0.06	0.06	0.06	0.06	0.05
16.675	0.05	0.05	0.05	0.05	0.05
16.800	0.05	0.05	0.05	0.05	0.05
16.925	0.05	0.05	0.05	0.05	0.05
17.050	0.05	0.05	0.05	0.05	0.05
17.175	0.05	0.05	0.05	0.05	0.05
17.300	0.05	0.05	0.05	0.05	0.05
17.425	0.05	0.05	0.05	0.05	0.05
17.550	0.05	0.05	0.05	0.05	0.05
17.675	0.05	0.05	0.05	0.05	0.05
17.800	0.05	0.05	0.05	0.05	0.05
17.925	0.05	0.05	0.05	0.05	0.05
18.050	0.05	0.05	0.05	0.05	0.05
18.175	0.05	0.05	0.05	0.05	0.04
18.300	0.04	0.04	0.04	0.04	0.04
18.425	0.04	0.04	0.04	0.04	0.04
18.550	0.04	0.04	0.04	0.04	0.04

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
18.675	0.04	0.04	0.04	0.04	0.04
18.800	0.04	0.04	0.04	0.04	0.04
18.925	0.04	0.04	0.04	0.04	0.04
19.050	0.04	0.04	0.04	0.04	0.04
19.175	0.04	0.04	0.04	0.04	0.04
19.300	0.04	0.04	0.04	0.04	0.04
19.425	0.04	0.04	0.04	0.04	0.04
19.550	0.04	0.04	0.04	0.04	0.04
19.675	0.04	0.04	0.04	0.04	0.04
19.800	0.04	0.04	0.04	0.03	0.03
19.925	0.03	0.03	0.03	0.03	0.03
20.050	0.03	0.03	0.03	0.03	0.03
20.175	0.03	0.03	0.03	0.03	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.425	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.675	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.03	0.03	0.03
20.925	0.03	0.03	0.03	0.03	0.03
21.050	0.03	0.03	0.03	0.03	0.03
21.175	0.03	0.03	0.03	0.03	0.03
21.300	0.03	0.03	0.03	0.03	0.03
21.425	0.03	0.03	0.03	0.03	0.03
21.550	0.03	0.03	0.03	0.03	0.03
21.675	0.03	0.03	0.03	0.03	0.03
21.800	0.03	0.03	0.03	0.03	0.03
21.925	0.03	0.03	0.03	0.03	0.03
22.050	0.03	0.03	0.03	0.03	0.03
22.175	0.03	0.03	0.03	0.03	0.03
22.300	0.03	0.03	0.03	0.03	0.03
22.425	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.03	0.03
22.675	0.03	0.03	0.03	0.03	0.03
22.800	0.03	0.03	0.03	0.03	0.03
22.925	0.03	0.03	0.03	0.03	0.03
23.050	0.03	0.03	0.03	0.03	0.03
23.175	0.03	0.03	0.03	0.03	0.03
23.300	0.03	0.03	0.03	0.03	0.03
23.425	0.03	0.03	0.03	0.03	0.03
23.550	0.03	0.03	0.03	0.03	0.03
23.675	0.03	0.03	0.03	0.03	0.03
23.800	0.03	0.03	0.03	0.03	0.03
23.925	0.03	0.03	0.03	0.03	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.944 hours
Flow (Peak, Computed)	0.04 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.950 hours
Flow (Peak Interpolated Output)	0.04 ft³/s

Drainage Area

SCS CN (Composite)	75.000
Area (User Defined)	0.060 acres
Maximum Retention (Pervious)	3.3 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	0.5 in
Runoff Volume (Pervious)	0.002 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.002 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.82 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

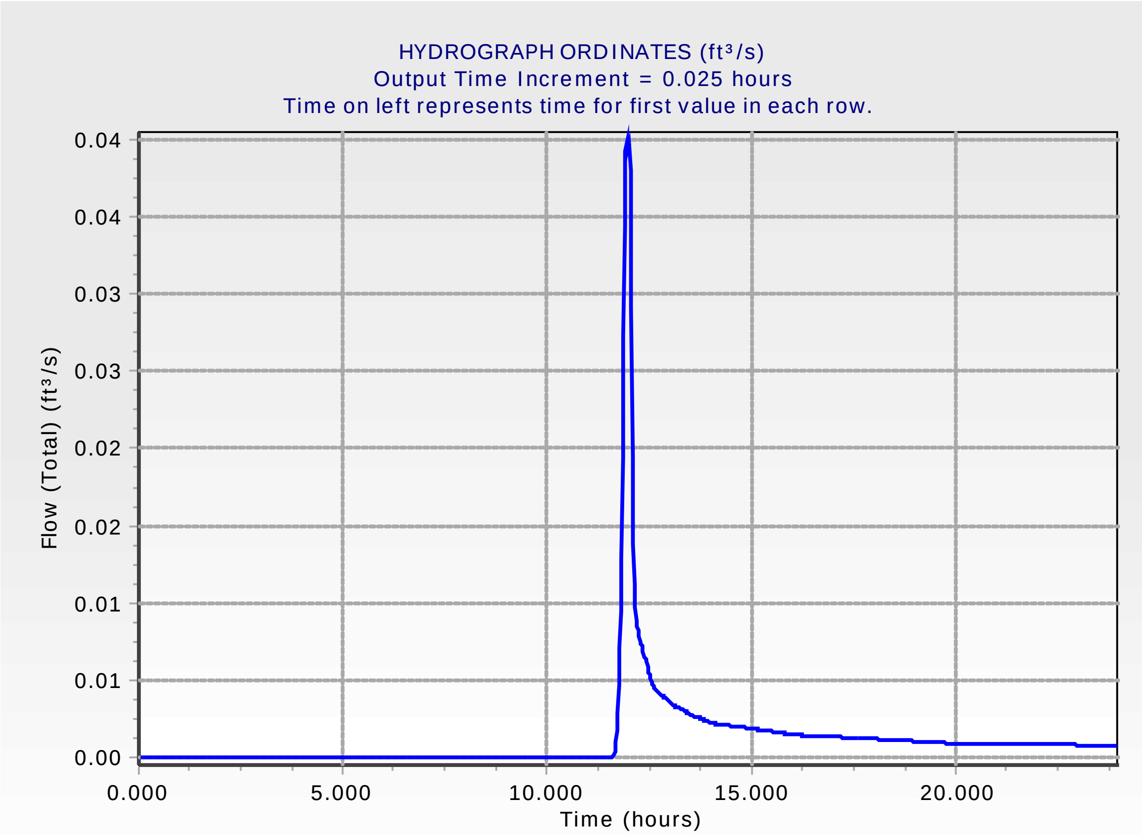
Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.675	0.00	0.00	0.00	0.00	0.01
11.800	0.01	0.01	0.02	0.03	0.03
11.925	0.04	0.04	0.04	0.04	0.04
12.050	0.03	0.02	0.01	0.01	0.01
12.175	0.01	0.01	0.01	0.01	0.01
12.300	0.01	0.01	0.01	0.01	0.01
12.425	0.01	0.01	0.01	0.01	0.01
12.550	0.00	0.00	0.00	0.00	0.00
12.675	0.00	0.00	0.00	0.00	0.00
12.800	0.00	0.00	0.00	0.00	0.00
12.925	0.00	0.00	0.00	0.00	0.00
13.050	0.00	0.00	0.00	0.00	0.00
13.175	0.00	0.00	0.00	0.00	0.00
13.300	0.00	0.00	0.00	0.00	0.00
13.425	0.00	0.00	0.00	0.00	0.00
13.550	0.00	0.00	0.00	0.00	0.00
13.675	0.00	0.00	0.00	0.00	0.00
13.800	0.00	0.00	0.00	0.00	0.00
13.925	0.00	0.00	0.00	0.00	0.00
14.050	0.00	0.00	0.00	0.00	0.00
14.175	0.00	0.00	0.00	0.00	0.00
14.300	0.00	0.00	0.00	0.00	0.00
14.425	0.00	0.00	0.00	0.00	0.00
14.550	0.00	0.00	0.00	0.00	0.00
14.675	0.00	0.00	0.00	0.00	0.00
14.800	0.00	0.00	0.00	0.00	0.00
14.925	0.00	0.00	0.00	0.00	0.00
15.050	0.00	0.00	0.00	0.00	0.00
15.175	0.00	0.00	0.00	0.00	0.00
15.300	0.00	0.00	0.00	0.00	0.00
15.425	0.00	0.00	0.00	0.00	0.00
15.550	0.00	0.00	0.00	0.00	0.00
15.675	0.00	0.00	0.00	0.00	0.00
15.800	0.00	0.00	0.00	0.00	0.00
15.925	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	0.00	0.00
16.175	0.00	0.00	0.00	0.00	0.00
16.300	0.00	0.00	0.00	0.00	0.00
16.425	0.00	0.00	0.00	0.00	0.00
16.550	0.00	0.00	0.00	0.00	0.00
16.675	0.00	0.00	0.00	0.00	0.00
16.800	0.00	0.00	0.00	0.00	0.00
16.925	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
17.050	0.00	0.00	0.00	0.00	0.00
17.175	0.00	0.00	0.00	0.00	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.425	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.675	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
17.925	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.175	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00
18.425	0.00	0.00	0.00	0.00	0.00
18.550	0.00	0.00	0.00	0.00	0.00
18.675	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
18.925	0.00	0.00	0.00	0.00	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.04
0.04
0.03
0.03
0.02
0.02
0.01
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.933 hours
Flow (Peak, Computed)	0.09 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.09 ft³/s

Drainage Area

SCS CN (Composite)	75.000
Area (User Defined)	0.060 acres
Maximum Retention (Pervious)	3.3 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.0 in
Runoff Volume (Pervious)	0.005 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.005 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.82 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

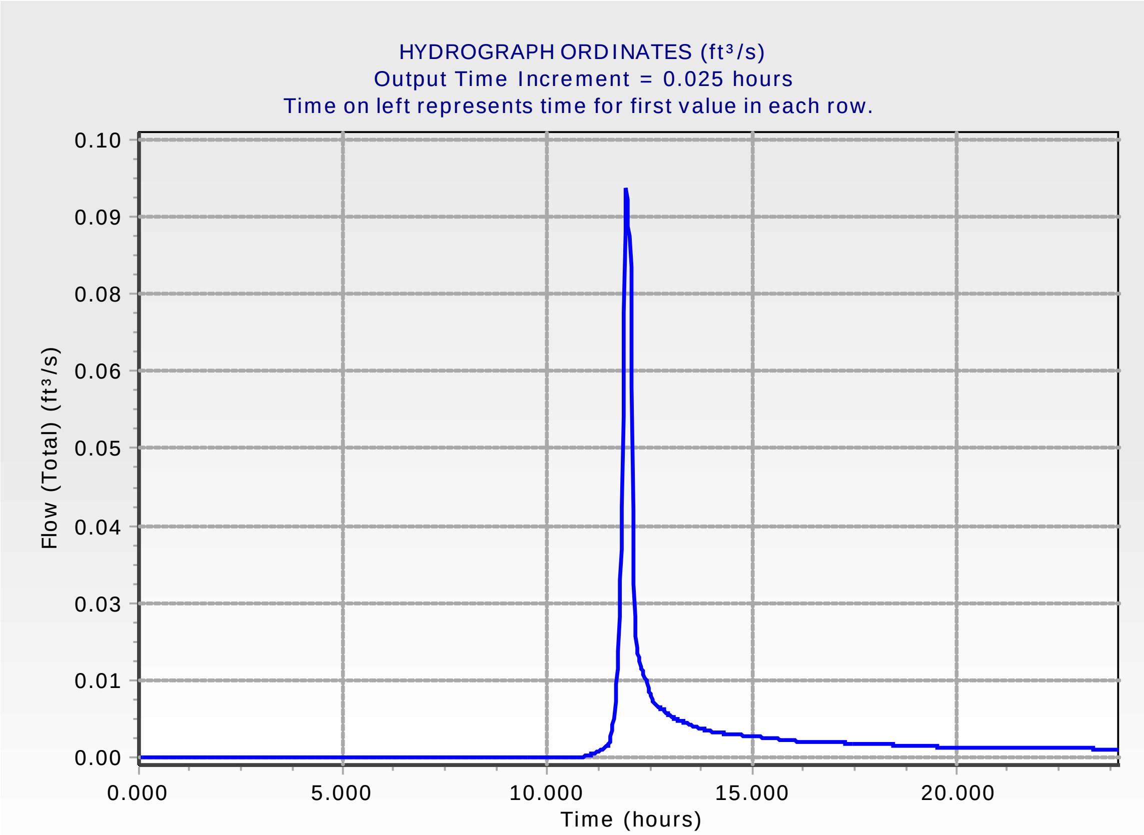
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.250	0.00	0.00	0.00	0.00	0.00
11.375	0.00	0.00	0.00	0.00	0.00
11.500	0.00	0.00	0.00	0.00	0.01
11.625	0.01	0.01	0.01	0.01	0.02
11.750	0.02	0.03	0.03	0.04	0.06
11.875	0.07	0.09	0.09	0.09	0.09
12.000	0.08	0.08	0.06	0.04	0.03
12.125	0.02	0.02	0.02	0.02	0.02
12.250	0.02	0.01	0.01	0.01	0.01
12.375	0.01	0.01	0.01	0.01	0.01
12.500	0.01	0.01	0.01	0.01	0.01
12.625	0.01	0.01	0.01	0.01	0.01
12.750	0.01	0.01	0.01	0.01	0.01
12.875	0.01	0.01	0.01	0.01	0.01
13.000	0.01	0.01	0.01	0.01	0.01
13.125	0.01	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.01
13.375	0.01	0.01	0.01	0.01	0.01
13.500	0.01	0.01	0.01	0.01	0.00
13.625	0.00	0.00	0.00	0.00	0.00
13.750	0.00	0.00	0.00	0.00	0.00
13.875	0.00	0.00	0.00	0.00	0.00
14.000	0.00	0.00	0.00	0.00	0.00
14.125	0.00	0.00	0.00	0.00	0.00
14.250	0.00	0.00	0.00	0.00	0.00
14.375	0.00	0.00	0.00	0.00	0.00
14.500	0.00	0.00	0.00	0.00	0.00
14.625	0.00	0.00	0.00	0.00	0.00
14.750	0.00	0.00	0.00	0.00	0.00
14.875	0.00	0.00	0.00	0.00	0.00
15.000	0.00	0.00	0.00	0.00	0.00
15.125	0.00	0.00	0.00	0.00	0.00
15.250	0.00	0.00	0.00	0.00	0.00
15.375	0.00	0.00	0.00	0.00	0.00
15.500	0.00	0.00	0.00	0.00	0.00
15.625	0.00	0.00	0.00	0.00	0.00
15.750	0.00	0.00	0.00	0.00	0.00
15.875	0.00	0.00	0.00	0.00	0.00
16.000	0.00	0.00	0.00	0.00	0.00
16.125	0.00	0.00	0.00	0.00	0.00
16.250	0.00	0.00	0.00	0.00	0.00
16.375	0.00	0.00	0.00	0.00	0.00
16.500	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
16.625	0.00	0.00	0.00	0.00	0.00
16.750	0.00	0.00	0.00	0.00	0.00
16.875	0.00	0.00	0.00	0.00	0.00
17.000	0.00	0.00	0.00	0.00	0.00
17.125	0.00	0.00	0.00	0.00	0.00
17.250	0.00	0.00	0.00	0.00	0.00
17.375	0.00	0.00	0.00	0.00	0.00
17.500	0.00	0.00	0.00	0.00	0.00
17.625	0.00	0.00	0.00	0.00	0.00
17.750	0.00	0.00	0.00	0.00	0.00
17.875	0.00	0.00	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.125	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.375	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.625	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
18.875	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.125	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.375	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.625	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
19.875	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.125	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.375	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.625	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
20.875	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.125	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.375	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00
21.625	0.00	0.00	0.00	0.00	0.00
21.750	0.00	0.00	0.00	0.00	0.00
21.875	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.125	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.375	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.625	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
22.875	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
23.125	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.375	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.625	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
23.875	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.10
0.09
0.08
0.06
0.05
0.04
0.03
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.18 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.18 ft³/s

Drainage Area

SCS CN (Composite)	75.000
Area (User Defined)	0.060 acres
Maximum Retention (Pervious)	3.3 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.9 in
Runoff Volume (Pervious)	0.010 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.010 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.82 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

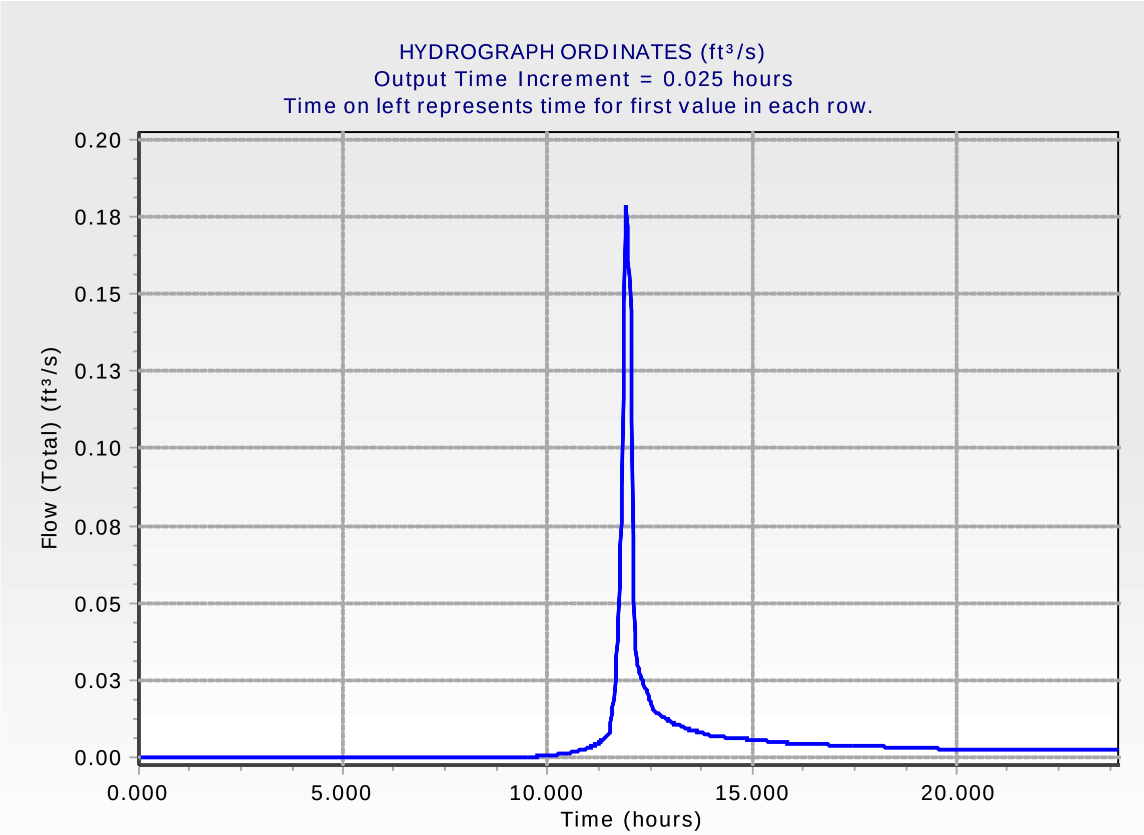
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
10.300	0.00	0.00	0.00	0.00	0.00
10.425	0.00	0.00	0.00	0.00	0.00
10.550	0.00	0.00	0.00	0.00	0.00
10.675	0.00	0.00	0.00	0.00	0.00
10.800	0.00	0.00	0.00	0.00	0.00
10.925	0.00	0.00	0.00	0.00	0.00
11.050	0.00	0.00	0.00	0.00	0.00
11.175	0.00	0.00	0.00	0.00	0.01
11.300	0.01	0.01	0.01	0.01	0.01
11.425	0.01	0.01	0.01	0.01	0.01
11.550	0.01	0.01	0.02	0.02	0.03
11.675	0.03	0.04	0.04	0.05	0.07
11.800	0.08	0.09	0.12	0.15	0.17
11.925	0.18	0.17	0.16	0.16	0.14
12.050	0.11	0.07	0.05	0.04	0.03
12.175	0.03	0.03	0.03	0.03	0.03
12.300	0.03	0.02	0.02	0.02	0.02
12.425	0.02	0.02	0.02	0.02	0.02
12.550	0.02	0.02	0.02	0.01	0.01
12.675	0.01	0.01	0.01	0.01	0.01
12.800	0.01	0.01	0.01	0.01	0.01
12.925	0.01	0.01	0.01	0.01	0.01
13.050	0.01	0.01	0.01	0.01	0.01
13.175	0.01	0.01	0.01	0.01	0.01
13.300	0.01	0.01	0.01	0.01	0.01
13.425	0.01	0.01	0.01	0.01	0.01
13.550	0.01	0.01	0.01	0.01	0.01
13.675	0.01	0.01	0.01	0.01	0.01
13.800	0.01	0.01	0.01	0.01	0.01
13.925	0.01	0.01	0.01	0.01	0.01
14.050	0.01	0.01	0.01	0.01	0.01
14.175	0.01	0.01	0.01	0.01	0.01
14.300	0.01	0.01	0.01	0.01	0.01
14.425	0.01	0.01	0.01	0.01	0.01
14.550	0.01	0.01	0.01	0.01	0.01
14.675	0.01	0.01	0.01	0.01	0.01
14.800	0.01	0.01	0.01	0.01	0.01
14.925	0.01	0.01	0.01	0.01	0.01
15.050	0.01	0.01	0.01	0.01	0.01
15.175	0.01	0.01	0.01	0.01	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.425	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
15.675	0.00	0.00	0.00	0.00	0.00
15.800	0.00	0.00	0.00	0.00	0.00
15.925	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	0.00	0.00
16.175	0.00	0.00	0.00	0.00	0.00
16.300	0.00	0.00	0.00	0.00	0.00
16.425	0.00	0.00	0.00	0.00	0.00
16.550	0.00	0.00	0.00	0.00	0.00
16.675	0.00	0.00	0.00	0.00	0.00
16.800	0.00	0.00	0.00	0.00	0.00
16.925	0.00	0.00	0.00	0.00	0.00
17.050	0.00	0.00	0.00	0.00	0.00
17.175	0.00	0.00	0.00	0.00	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.425	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.675	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
17.925	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.175	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00
18.425	0.00	0.00	0.00	0.00	0.00
18.550	0.00	0.00	0.00	0.00	0.00
18.675	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
18.925	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.175	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.425	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.675	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00
19.925	0.00	0.00	0.00	0.00	0.00
20.050	0.00	0.00	0.00	0.00	0.00
20.175	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00
20.425	0.00	0.00	0.00	0.00	0.00
20.550	0.00	0.00	0.00	0.00	0.00
20.675	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
20.925	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.175	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.425	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.675	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
21.925	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.175	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.425	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.675	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
22.925	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.175	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.425	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.675	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00
23.925	0.00	0.00	0.00	0.00	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.20
0.18
0.15
0.13
0.10
0.08
0.05
0.03
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.23 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.23 ft³/s

Drainage Area

SCS CN (Composite)	75.000
Area (User Defined)	0.060 acres
Maximum Retention (Pervious)	3.3 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	2.4 in
Runoff Volume (Pervious)	0.012 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.012 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.82 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.060 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

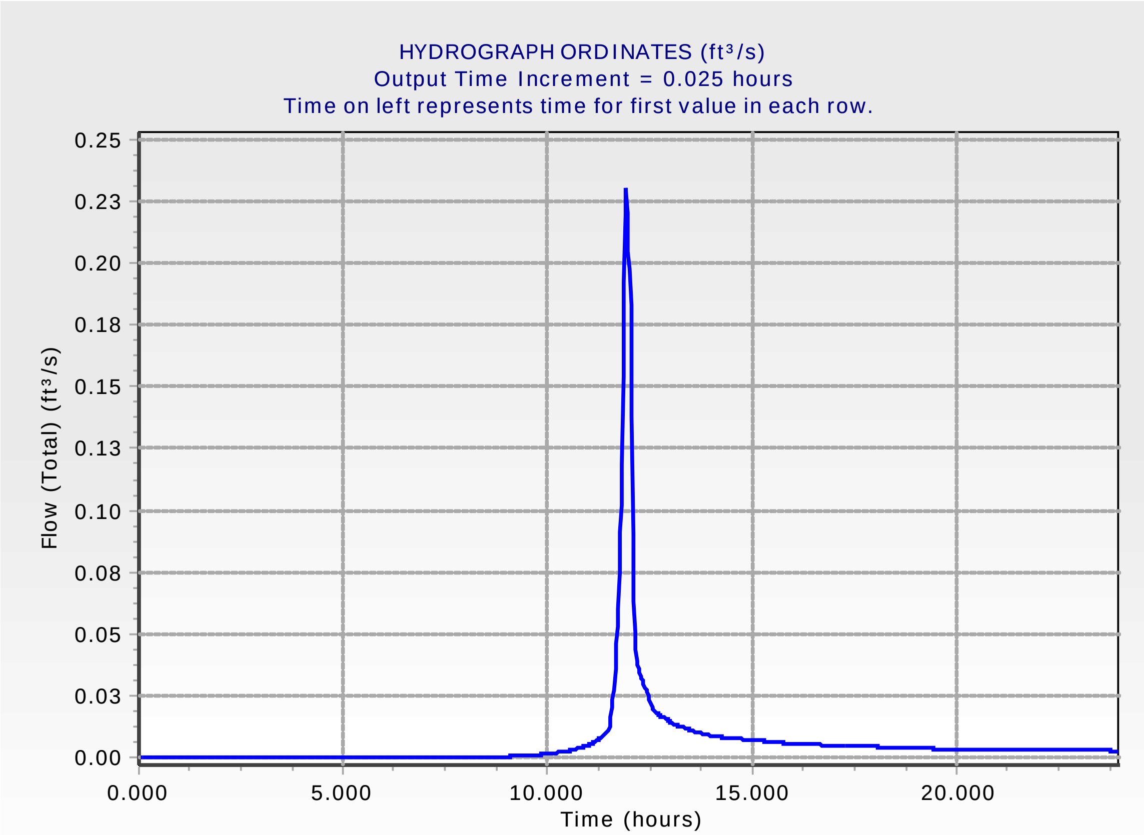
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
9.750	0.00	0.00	0.00	0.00	0.00
9.875	0.00	0.00	0.00	0.00	0.00
10.000	0.00	0.00	0.00	0.00	0.00
10.125	0.00	0.00	0.00	0.00	0.00
10.250	0.00	0.00	0.00	0.00	0.00
10.375	0.00	0.00	0.00	0.00	0.00
10.500	0.00	0.00	0.00	0.00	0.00
10.625	0.00	0.00	0.00	0.00	0.00
10.750	0.00	0.00	0.00	0.00	0.00
10.875	0.00	0.00	0.00	0.00	0.00
11.000	0.00	0.01	0.01	0.01	0.01
11.125	0.01	0.01	0.01	0.01	0.01
11.250	0.01	0.01	0.01	0.01	0.01
11.375	0.01	0.01	0.01	0.01	0.01
11.500	0.01	0.01	0.02	0.02	0.02
11.625	0.03	0.04	0.05	0.05	0.06
11.750	0.08	0.09	0.10	0.12	0.15
11.875	0.19	0.22	0.23	0.22	0.21
12.000	0.20	0.18	0.14	0.09	0.06
12.125	0.05	0.04	0.04	0.04	0.04
12.250	0.03	0.03	0.03	0.03	0.03
12.375	0.03	0.03	0.03	0.02	0.02
12.500	0.02	0.02	0.02	0.02	0.02
12.625	0.02	0.02	0.02	0.02	0.02
12.750	0.02	0.02	0.02	0.02	0.02
12.875	0.02	0.02	0.02	0.01	0.01
13.000	0.01	0.01	0.01	0.01	0.01
13.125	0.01	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.01
13.375	0.01	0.01	0.01	0.01	0.01
13.500	0.01	0.01	0.01	0.01	0.01
13.625	0.01	0.01	0.01	0.01	0.01
13.750	0.01	0.01	0.01	0.01	0.01
13.875	0.01	0.01	0.01	0.01	0.01
14.000	0.01	0.01	0.01	0.01	0.01
14.125	0.01	0.01	0.01	0.01	0.01
14.250	0.01	0.01	0.01	0.01	0.01
14.375	0.01	0.01	0.01	0.01	0.01
14.500	0.01	0.01	0.01	0.01	0.01
14.625	0.01	0.01	0.01	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
14.875	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
15.125	0.01	0.01	0.01	0.01	0.01
15.250	0.01	0.01	0.01	0.01	0.01
15.375	0.01	0.01	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.625	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
15.875	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01
16.125	0.01	0.01	0.01	0.01	0.01
16.250	0.01	0.01	0.01	0.01	0.01
16.375	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.625	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.00	0.00	0.00
16.875	0.00	0.00	0.00	0.00	0.00
17.000	0.00	0.00	0.00	0.00	0.00
17.125	0.00	0.00	0.00	0.00	0.00
17.250	0.00	0.00	0.00	0.00	0.00
17.375	0.00	0.00	0.00	0.00	0.00
17.500	0.00	0.00	0.00	0.00	0.00
17.625	0.00	0.00	0.00	0.00	0.00
17.750	0.00	0.00	0.00	0.00	0.00
17.875	0.00	0.00	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.125	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.375	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.625	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
18.875	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.125	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.375	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.625	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
19.875	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.125	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.375	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.625	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
20.875	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.125	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.375	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
21.625	0.00	0.00	0.00	0.00	0.00
21.750	0.00	0.00	0.00	0.00	0.00
21.875	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.125	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.375	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.625	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
22.875	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.125	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.375	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.625	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
23.875	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.25
0.23
0.20
0.18
0.15
0.13
0.10
0.08
0.05
0.03
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

Computational Time Increment	0.108 hours
Time to Peak (Computed)	12.561 hours
Flow (Peak, Computed)	12.80 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.550 hours
Flow (Peak Interpolated Output)	12.78 ft³/s

Drainage Area

SCS CN (Composite)	69.000
Area (User Defined)	114.161 acres
Maximum Retention (Pervious)	4.5 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	0.3 in
Runoff Volume (Pervious)	2.781 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	2.721 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.812 hours
Computational Time Increment	0.108 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	159.28 ft³/s
Unit peak time, Tp	0.541 hours
Unit receding limb, Tr	2.166 hours
Total unit time, Tb	2.707 hours

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

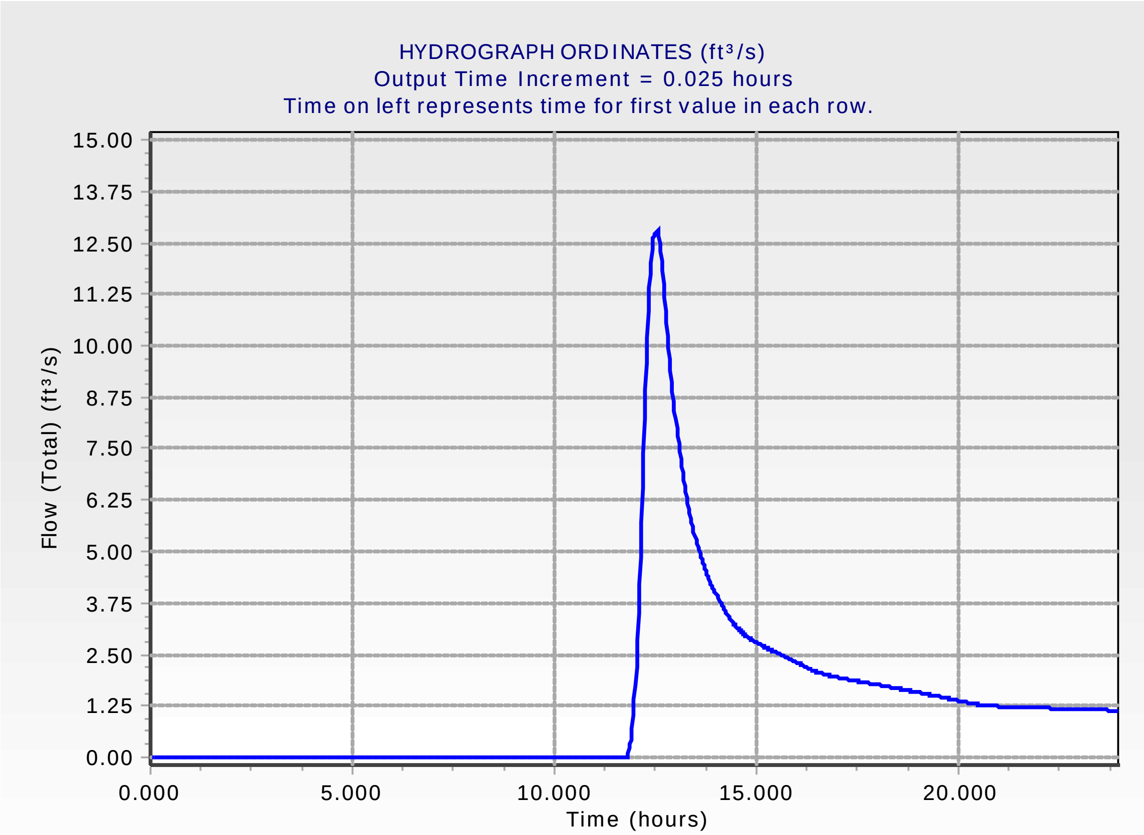
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.00	0.00	0.01	0.01	0.01
11.825	0.11	0.22	0.33	0.43	0.68
11.950	1.04	1.39	1.74	2.17	2.85
12.075	3.52	4.19	4.87	5.69	6.53
12.200	7.37	8.20	8.93	9.57	10.20
12.325	10.84	11.40	11.71	12.01	12.32
12.450	12.63	12.69	12.72	12.75	12.78
12.575	12.68	12.47	12.27	12.07	11.83
12.700	11.51	11.19	10.86	10.54	10.25
12.825	9.96	9.67	9.38	9.12	8.89
12.950	8.66	8.43	8.20	8.01	7.81
13.075	7.61	7.42	7.25	7.08	6.91
13.200	6.74	6.59	6.45	6.32	6.18
13.325	6.05	5.93	5.82	5.70	5.59
13.450	5.49	5.39	5.30	5.20	5.11
13.575	5.03	4.95	4.87	4.79	4.72
13.700	4.65	4.58	4.51	4.45	4.39
13.825	4.33	4.27	4.21	4.16	4.10
13.950	4.05	4.00	3.95	3.90	3.86
14.075	3.81	3.77	3.72	3.68	3.64
14.200	3.60	3.56	3.52	3.48	3.44
14.325	3.41	3.37	3.34	3.30	3.27
14.450	3.24	3.21	3.18	3.15	3.12
14.575	3.10	3.07	3.05	3.03	3.01
14.700	2.99	2.97	2.95	2.93	2.91
14.825	2.90	2.88	2.86	2.85	2.83
14.950	2.82	2.80	2.79	2.78	2.76
15.075	2.75	2.74	2.72	2.71	2.70
15.200	2.69	2.67	2.66	2.65	2.64
15.325	2.63	2.61	2.60	2.59	2.58
15.450	2.57	2.55	2.54	2.53	2.52
15.575	2.51	2.50	2.48	2.47	2.46
15.700	2.45	2.44	2.43	2.41	2.40
15.825	2.39	2.38	2.37	2.35	2.34
15.950	2.33	2.32	2.30	2.29	2.28
16.075	2.27	2.26	2.24	2.23	2.22
16.200	2.21	2.20	2.18	2.17	2.16
16.325	2.15	2.14	2.13	2.12	2.11
16.450	2.10	2.09	2.08	2.07	2.06
16.575	2.05	2.04	2.04	2.03	2.02
16.700	2.01	2.01	2.00	1.99	1.99
16.825	1.98	1.98	1.97	1.96	1.96
16.950	1.95	1.95	1.94	1.94	1.93

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
17.075	1.93	1.92	1.92	1.91	1.91
17.200	1.90	1.90	1.89	1.89	1.89
17.325	1.88	1.88	1.87	1.87	1.86
17.450	1.86	1.85	1.85	1.85	1.84
17.575	1.84	1.83	1.83	1.82	1.82
17.700	1.81	1.81	1.81	1.80	1.80
17.825	1.79	1.79	1.78	1.78	1.77
17.950	1.77	1.77	1.76	1.76	1.75
18.075	1.75	1.74	1.74	1.74	1.73
18.200	1.73	1.72	1.72	1.71	1.71
18.325	1.70	1.70	1.69	1.69	1.69
18.450	1.68	1.68	1.67	1.67	1.66
18.575	1.66	1.65	1.65	1.64	1.64
18.700	1.63	1.63	1.62	1.62	1.62
18.825	1.61	1.61	1.60	1.60	1.59
18.950	1.59	1.58	1.58	1.57	1.57
19.075	1.56	1.56	1.55	1.55	1.54
19.200	1.54	1.53	1.53	1.52	1.52
19.325	1.51	1.51	1.50	1.50	1.49
19.450	1.49	1.48	1.48	1.47	1.47
19.575	1.46	1.46	1.45	1.45	1.44
19.700	1.44	1.43	1.43	1.42	1.42
19.825	1.41	1.41	1.40	1.40	1.39
19.950	1.39	1.38	1.38	1.37	1.37
20.075	1.36	1.35	1.35	1.34	1.34
20.200	1.33	1.33	1.32	1.32	1.31
20.325	1.31	1.31	1.30	1.30	1.29
20.450	1.29	1.29	1.28	1.28	1.28
20.575	1.27	1.27	1.27	1.26	1.26
20.700	1.26	1.26	1.25	1.25	1.25
20.825	1.25	1.25	1.24	1.24	1.24
20.950	1.24	1.24	1.24	1.24	1.23
21.075	1.23	1.23	1.23	1.23	1.23
21.200	1.23	1.23	1.23	1.22	1.22
21.325	1.22	1.22	1.22	1.22	1.22
21.450	1.22	1.22	1.22	1.22	1.21
21.575	1.21	1.21	1.21	1.21	1.21
21.700	1.21	1.21	1.21	1.21	1.21
21.825	1.21	1.20	1.20	1.20	1.20
21.950	1.20	1.20	1.20	1.20	1.20
22.075	1.20	1.20	1.20	1.20	1.19
22.200	1.19	1.19	1.19	1.19	1.19
22.325	1.19	1.19	1.19	1.19	1.19
22.450	1.19	1.18	1.18	1.18	1.18
22.575	1.18	1.18	1.18	1.18	1.18
22.700	1.18	1.18	1.18	1.18	1.17
22.825	1.17	1.17	1.17	1.17	1.17
22.950	1.17	1.17	1.17	1.17	1.17
23.075	1.17	1.16	1.16	1.16	1.16
23.200	1.16	1.16	1.16	1.16	1.16
23.325	1.16	1.16	1.16	1.15	1.15
23.450	1.15	1.15	1.15	1.15	1.15

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
23.575	1.15	1.15	1.15	1.15	1.15
23.700	1.14	1.14	1.14	1.14	1.14
23.825	1.14	1.14	1.14	1.14	1.14
23.950	1.13	1.13	1.13	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
15.00
13.75
12.50
11.25
10.00
8.75
7.50
6.25
5.00
3.75
2.50
1.25
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

Computational Time Increment	0.108 hours
Time to Peak (Computed)	12.452 hours
Flow (Peak, Computed)	41.49 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.450 hours
Flow (Peak Interpolated Output)	41.46 ft³/s

Drainage Area

SCS CN (Composite)	69.000
Area (User Defined)	114.161 acres
Maximum Retention (Pervious)	4.5 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	0.7 in
Runoff Volume (Pervious)	6.783 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	6.668 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.812 hours
Computational Time Increment	0.108 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	159.28 ft³/s
Unit peak time, Tp	0.541 hours
Unit receding limb, Tr	2.166 hours
Total unit time, Tb	2.707 hours

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

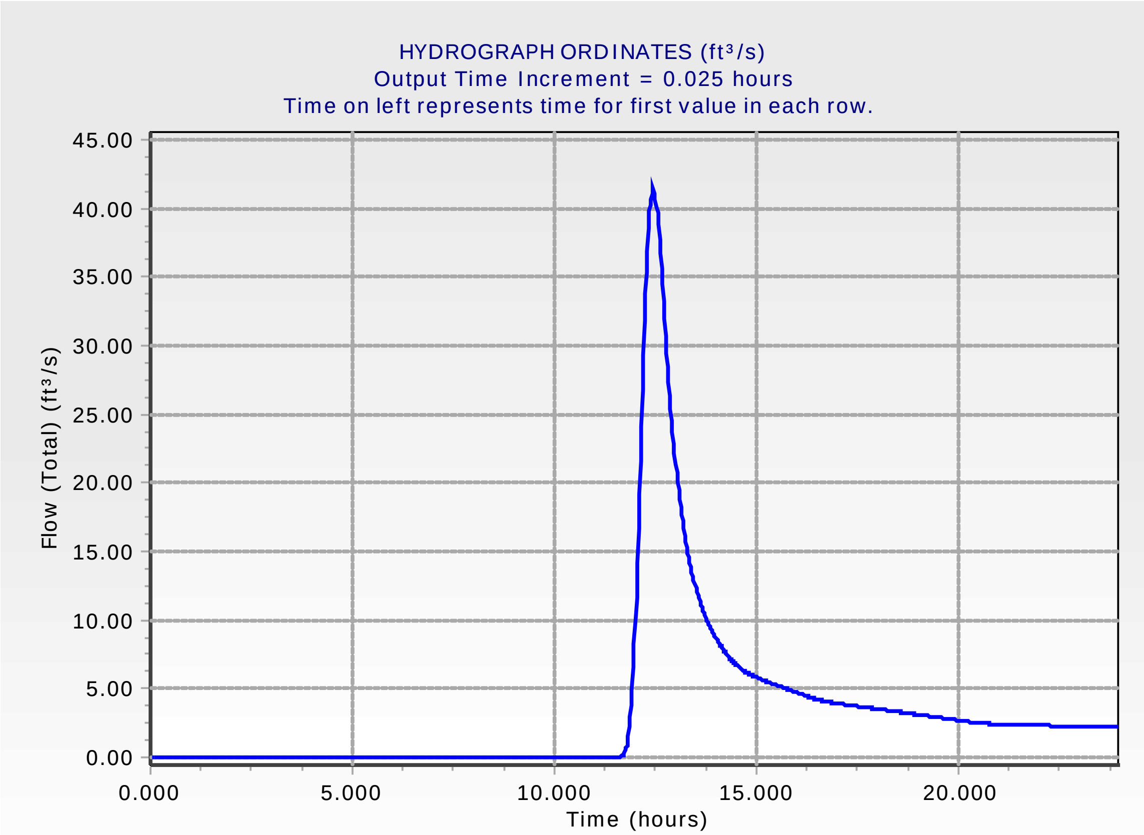
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
11.500	0.00	0.00	0.00	0.00	0.02
11.625	0.05	0.08	0.10	0.17	0.34
11.750	0.52	0.69	0.87	1.54	2.26
11.875	2.99	3.72	4.96	6.59	8.23
12.000	9.86	11.69	14.18	16.66	19.15
12.125	21.63	24.17	26.71	29.25	31.79
12.250	33.78	35.36	36.93	38.51	39.80
12.375	40.22	40.63	41.04	41.46	41.07
12.500	40.60	40.13	39.67	38.84	37.75
12.625	36.67	35.58	34.45	33.20	31.96
12.750	30.71	29.46	28.42	27.40	26.39
12.875	25.37	24.48	23.69	22.91	22.12
13.000	21.37	20.72	20.07	19.43	18.78
13.125	18.24	17.71	17.18	16.65	16.19
13.250	15.77	15.35	14.93	14.53	14.19
13.375	13.85	13.50	13.16	12.88	12.60
13.500	12.32	12.05	11.80	11.57	11.34
13.625	11.12	10.90	10.71	10.52	10.32
13.750	10.13	9.97	9.81	9.64	9.48
13.875	9.33	9.19	9.05	8.92	8.78
14.000	8.66	8.54	8.42	8.30	8.19
14.125	8.08	7.98	7.87	7.77	7.67
14.250	7.58	7.48	7.38	7.30	7.21
14.375	7.12	7.03	6.96	6.88	6.80
14.500	6.73	6.66	6.60	6.54	6.48
14.625	6.42	6.37	6.33	6.28	6.23
14.750	6.19	6.15	6.11	6.07	6.03
14.875	5.99	5.96	5.92	5.89	5.86
15.000	5.82	5.79	5.76	5.73	5.70
15.125	5.67	5.64	5.61	5.58	5.55
15.250	5.52	5.50	5.47	5.44	5.41
15.375	5.38	5.36	5.33	5.30	5.28
15.500	5.25	5.22	5.20	5.17	5.14
15.625	5.12	5.09	5.06	5.04	5.01
15.750	4.98	4.96	4.93	4.90	4.88
15.875	4.85	4.82	4.80	4.77	4.74
16.000	4.72	4.69	4.66	4.64	4.61
16.125	4.58	4.56	4.53	4.50	4.48
16.250	4.45	4.43	4.40	4.38	4.35
16.375	4.33	4.31	4.29	4.26	4.24
16.500	4.22	4.20	4.18	4.16	4.15
16.625	4.13	4.11	4.10	4.08	4.07
16.750	4.05	4.04	4.02	4.01	4.00

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.875	3.98	3.97	3.96	3.95	3.93
17.000	3.92	3.91	3.90	3.89	3.88
17.125	3.87	3.86	3.85	3.83	3.82
17.250	3.81	3.80	3.79	3.78	3.77
17.375	3.76	3.75	3.74	3.73	3.72
17.500	3.71	3.70	3.69	3.68	3.67
17.625	3.66	3.65	3.64	3.63	3.63
17.750	3.62	3.61	3.60	3.59	3.58
17.875	3.57	3.56	3.55	3.54	3.53
18.000	3.52	3.51	3.50	3.49	3.48
18.125	3.47	3.46	3.45	3.44	3.43
18.250	3.42	3.41	3.40	3.39	3.38
18.375	3.37	3.36	3.35	3.34	3.33
18.500	3.32	3.31	3.30	3.29	3.28
18.625	3.27	3.26	3.25	3.24	3.23
18.750	3.22	3.21	3.20	3.19	3.18
18.875	3.17	3.16	3.15	3.14	3.13
19.000	3.12	3.11	3.10	3.09	3.08
19.125	3.07	3.06	3.05	3.04	3.03
19.250	3.02	3.01	3.00	2.99	2.98
19.375	2.97	2.96	2.95	2.94	2.93
19.500	2.92	2.90	2.89	2.88	2.87
19.625	2.86	2.85	2.84	2.83	2.82
19.750	2.81	2.80	2.79	2.78	2.77
19.875	2.76	2.75	2.74	2.73	2.71
20.000	2.70	2.69	2.68	2.67	2.66
20.125	2.65	2.64	2.63	2.62	2.61
20.250	2.60	2.59	2.58	2.57	2.56
20.375	2.55	2.54	2.54	2.53	2.52
20.500	2.51	2.51	2.50	2.49	2.49
20.625	2.48	2.47	2.47	2.46	2.46
20.750	2.45	2.45	2.45	2.44	2.44
20.875	2.43	2.43	2.43	2.42	2.42
21.000	2.42	2.41	2.41	2.41	2.41
21.125	2.40	2.40	2.40	2.40	2.39
21.250	2.39	2.39	2.39	2.38	2.38
21.375	2.38	2.38	2.38	2.37	2.37
21.500	2.37	2.37	2.37	2.36	2.36
21.625	2.36	2.36	2.36	2.35	2.35
21.750	2.35	2.35	2.35	2.34	2.34
21.875	2.34	2.34	2.34	2.34	2.33
22.000	2.33	2.33	2.33	2.33	2.32
22.125	2.32	2.32	2.32	2.32	2.32
22.250	2.31	2.31	2.31	2.31	2.31
22.375	2.30	2.30	2.30	2.30	2.30
22.500	2.30	2.29	2.29	2.29	2.29
22.625	2.29	2.28	2.28	2.28	2.28
22.750	2.28	2.28	2.27	2.27	2.27
22.875	2.27	2.27	2.26	2.26	2.26
23.000	2.26	2.26	2.25	2.25	2.25
23.125	2.25	2.25	2.25	2.24	2.24
23.250	2.24	2.24	2.24	2.23	2.23

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
23.375	2.23	2.23	2.23	2.22	2.22
23.500	2.22	2.22	2.22	2.22	2.21
23.625	2.21	2.21	2.21	2.21	2.20
23.750	2.20	2.20	2.20	2.20	2.19
23.875	2.19	2.19	2.19	2.18	2.18
24.000	2.18	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

Computational Time Increment	0.108 hours
Time to Peak (Computed)	12.452 hours
Flow (Peak, Computed)	96.09 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.450 hours
Flow (Peak Interpolated Output)	96.07 ft³/s

Drainage Area

SCS CN (Composite)	69.000
Area (User Defined)	114.161 acres
Maximum Retention (Pervious)	4.5 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.5 in
Runoff Volume (Pervious)	14.008 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	13.807 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.812 hours
Computational Time Increment	0.108 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	159.28 ft³/s
Unit peak time, Tp	0.541 hours
Unit receding limb, Tr	2.166 hours
Total unit time, Tb	2.707 hours

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

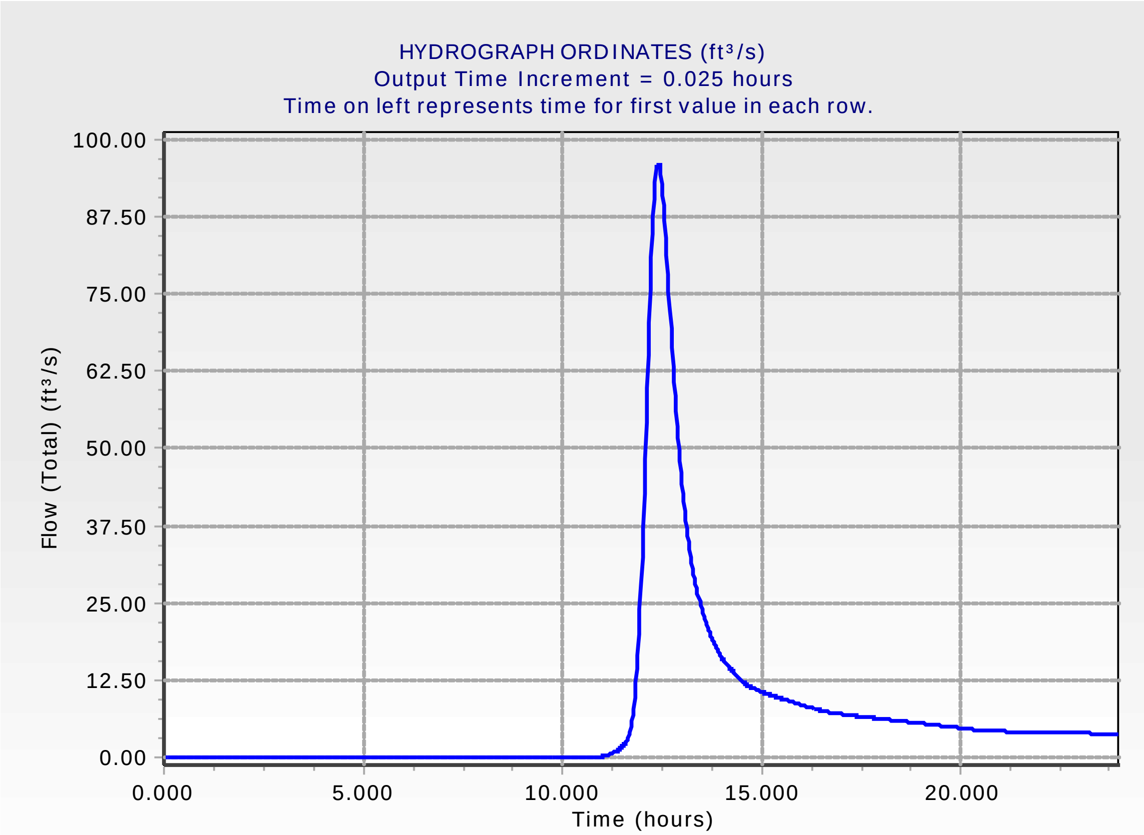
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.625	0.00	0.00	0.00	0.00	0.01
10.750	0.01	0.01	0.02	0.02	0.03
10.875	0.05	0.06	0.07	0.09	0.11
11.000	0.14	0.16	0.19	0.24	0.28
11.125	0.32	0.36	0.42	0.49	0.55
11.250	0.61	0.69	0.78	0.87	0.96
11.375	1.06	1.18	1.30	1.42	1.54
11.500	1.72	1.90	2.08	2.26	2.54
11.625	2.90	3.26	3.63	4.11	4.99
11.750	5.88	6.76	7.65	9.77	12.04
11.875	14.31	16.59	19.94	24.12	28.30
12.000	32.49	37.02	42.70	48.39	54.07
12.125	59.75	65.07	70.34	75.62	80.90
12.250	84.77	87.59	90.41	93.23	95.41
12.375	95.57	95.74	95.91	96.07	94.53
12.500	92.82	91.11	89.40	87.00	84.11
12.625	81.22	78.33	75.40	72.38	69.35
12.750	66.33	63.30	60.84	58.44	56.04
12.875	53.63	51.56	49.72	47.89	46.05
13.000	44.30	42.82	41.33	39.85	38.37
13.125	37.15	35.96	34.76	33.57	32.53
13.250	31.59	30.65	29.72	28.83	28.08
13.375	27.32	26.57	25.82	25.21	24.60
13.500	24.00	23.40	22.87	22.38	21.89
13.625	21.40	20.94	20.53	20.13	19.72
13.750	19.32	18.97	18.64	18.30	17.96
13.875	17.65	17.36	17.07	16.79	16.51
14.000	16.26	16.02	15.77	15.52	15.30
14.125	15.09	14.87	14.65	14.45	14.26
14.250	14.06	13.87	13.68	13.50	13.33
14.375	13.15	12.98	12.82	12.67	12.52
14.500	12.37	12.24	12.12	12.00	11.88
14.625	11.77	11.68	11.59	11.50	11.40
14.750	11.33	11.25	11.17	11.09	11.02
14.875	10.95	10.88	10.81	10.74	10.68
15.000	10.61	10.55	10.49	10.43	10.37
15.125	10.31	10.26	10.20	10.14	10.09
15.250	10.03	9.98	9.93	9.87	9.82
15.375	9.77	9.72	9.66	9.61	9.56
15.500	9.51	9.46	9.41	9.36	9.31
15.625	9.26	9.21	9.15	9.10	9.05
15.750	9.00	8.95	8.90	8.85	8.80
15.875	8.75	8.70	8.65	8.60	8.55

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.000	8.50	8.45	8.40	8.35	8.30
16.125	8.25	8.20	8.15	8.10	8.05
16.250	8.00	7.96	7.91	7.87	7.82
16.375	7.78	7.74	7.69	7.65	7.61
16.500	7.58	7.54	7.50	7.47	7.43
16.625	7.40	7.37	7.34	7.31	7.28
16.750	7.25	7.23	7.20	7.18	7.15
16.875	7.13	7.10	7.08	7.06	7.03
17.000	7.01	6.99	6.97	6.95	6.93
17.125	6.91	6.88	6.86	6.84	6.82
17.250	6.80	6.79	6.77	6.75	6.73
17.375	6.71	6.69	6.67	6.65	6.63
17.500	6.61	6.60	6.58	6.56	6.54
17.625	6.52	6.50	6.48	6.47	6.45
17.750	6.43	6.41	6.39	6.38	6.36
17.875	6.34	6.32	6.30	6.28	6.27
18.000	6.25	6.23	6.21	6.19	6.18
18.125	6.16	6.14	6.12	6.10	6.09
18.250	6.07	6.05	6.03	6.01	5.99
18.375	5.98	5.96	5.94	5.92	5.90
18.500	5.88	5.87	5.85	5.83	5.81
18.625	5.79	5.77	5.76	5.74	5.72
18.750	5.70	5.68	5.66	5.64	5.63
18.875	5.61	5.59	5.57	5.55	5.53
19.000	5.51	5.49	5.48	5.46	5.44
19.125	5.42	5.40	5.38	5.36	5.34
19.250	5.33	5.31	5.29	5.27	5.25
19.375	5.23	5.21	5.19	5.17	5.16
19.500	5.14	5.12	5.10	5.08	5.06
19.625	5.04	5.02	5.00	4.98	4.97
19.750	4.95	4.93	4.91	4.89	4.87
19.875	4.85	4.83	4.81	4.79	4.77
20.000	4.75	4.73	4.72	4.70	4.68
20.125	4.66	4.64	4.62	4.60	4.58
20.250	4.56	4.55	4.53	4.51	4.50
20.375	4.48	4.47	4.45	4.44	4.42
20.500	4.41	4.40	4.38	4.37	4.36
20.625	4.35	4.34	4.33	4.32	4.31
20.750	4.30	4.29	4.29	4.28	4.27
20.875	4.27	4.26	4.25	4.25	4.24
21.000	4.23	4.23	4.22	4.22	4.21
21.125	4.21	4.20	4.20	4.19	4.19
21.250	4.19	4.18	4.18	4.17	4.17
21.375	4.16	4.16	4.16	4.15	4.15
21.500	4.14	4.14	4.14	4.13	4.13
21.625	4.12	4.12	4.12	4.11	4.11
21.750	4.11	4.10	4.10	4.10	4.09
21.875	4.09	4.08	4.08	4.08	4.07
22.000	4.07	4.07	4.06	4.06	4.06
22.125	4.05	4.05	4.05	4.04	4.04
22.250	4.04	4.03	4.03	4.03	4.02
22.375	4.02	4.01	4.01	4.01	4.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.500	4.00	4.00	3.99	3.99	3.99
22.625	3.98	3.98	3.98	3.97	3.97
22.750	3.97	3.96	3.96	3.96	3.95
22.875	3.95	3.94	3.94	3.94	3.93
23.000	3.93	3.93	3.92	3.92	3.92
23.125	3.91	3.91	3.91	3.90	3.90
23.250	3.90	3.89	3.89	3.88	3.88
23.375	3.88	3.87	3.87	3.87	3.86
23.500	3.86	3.86	3.85	3.85	3.85
23.625	3.84	3.84	3.83	3.83	3.83
23.750	3.82	3.82	3.82	3.81	3.81
23.875	3.81	3.80	3.80	3.79	3.78
24.000	3.78	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

Computational Time Increment	0.108 hours
Time to Peak (Computed)	12.344 hours
Flow (Peak, Computed)	130.55 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	12.350 hours
Flow (Peak Interpolated Output)	130.53 ft³/s

Drainage Area	
SCS CN (Composite)	69.000
Area (User Defined)	114.161 acres
Maximum Retention (Pervious)	4.5 in
Maximum Retention (Pervious, 20 percent)	0.9 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.0 in
Runoff Volume (Pervious)	18.552 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	18.303 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.812 hours
Computational Time Increment	0.108 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	159.28 ft³/s
Unit peak time, Tp	0.541 hours
Unit receding limb, Tr	2.166 hours
Total unit time, Tb	2.707 hours

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.812 hours
Area (User Defined)	114.161 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

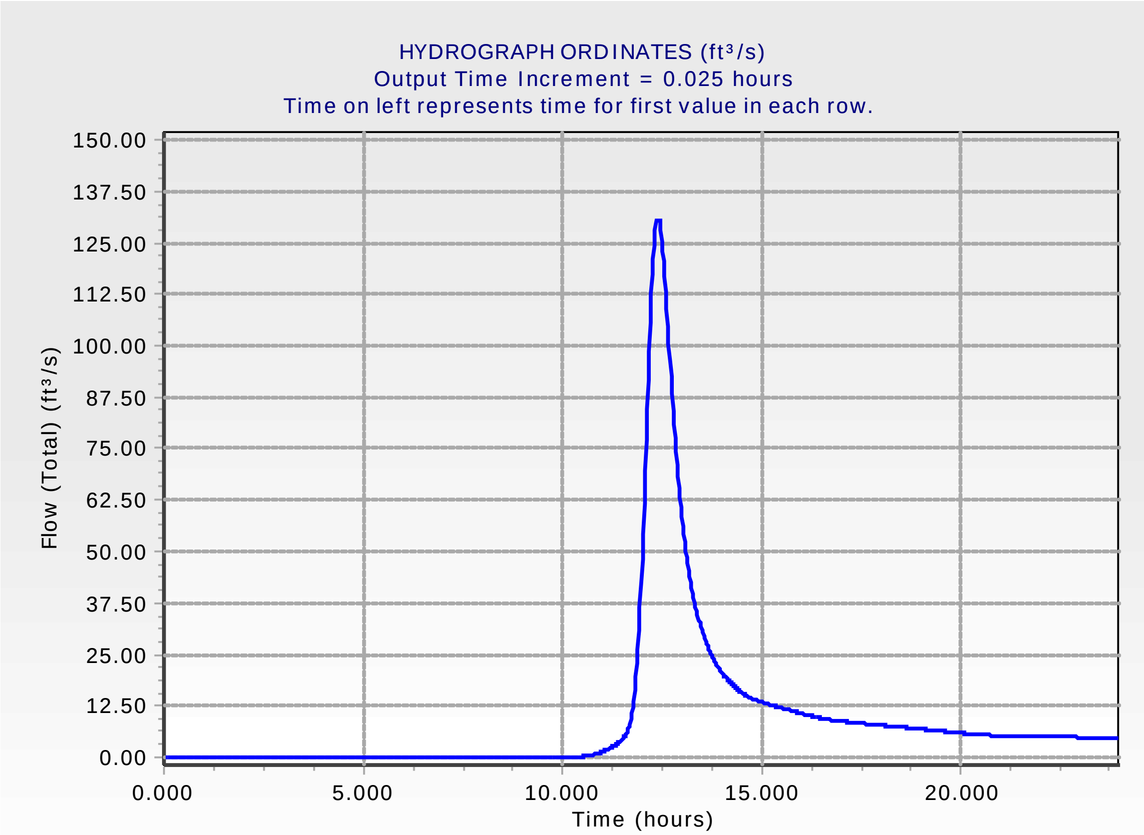
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
10.050	0.00	0.00	0.00	0.01	0.01
10.175	0.01	0.01	0.02	0.03	0.03
10.300	0.04	0.05	0.07	0.08	0.09
10.425	0.12	0.14	0.16	0.18	0.21
10.550	0.25	0.28	0.32	0.36	0.40
10.675	0.45	0.50	0.55	0.61	0.67
10.800	0.73	0.79	0.86	0.94	1.01
10.925	1.08	1.17	1.26	1.35	1.44
11.050	1.53	1.64	1.75	1.86	1.97
11.175	2.10	2.23	2.37	2.50	2.65
11.300	2.82	2.98	3.14	3.32	3.52
11.425	3.73	3.93	4.13	4.42	4.71
11.550	5.00	5.29	5.73	6.30	6.86
11.675	7.42	8.15	9.47	10.79	12.11
11.800	13.44	16.46	19.69	22.91	26.13
11.925	30.78	36.54	42.29	48.04	54.23
12.050	61.85	69.47	77.10	84.72	91.69
12.175	98.59	105.49	112.40	117.36	120.87
12.300	124.37	127.88	130.53	130.47	130.41
12.425	130.35	130.29	127.97	125.42	122.88
12.550	120.34	116.92	112.87	108.82	104.77
12.675	100.69	96.54	92.40	88.25	84.10
12.800	80.75	77.48	74.20	70.93	68.11
12.925	65.62	63.12	60.63	58.26	56.25
13.050	54.25	52.24	50.23	48.59	46.99
13.175	45.38	43.77	42.38	41.12	39.86
13.300	38.61	37.41	36.41	35.40	34.40
13.425	33.39	32.57	31.77	30.97	30.17
13.550	29.46	28.81	28.16	27.51	26.90
13.675	26.36	25.83	25.29	24.76	24.30
13.800	23.86	23.41	22.96	22.56	22.18
13.925	21.80	21.43	21.06	20.74	20.42
14.050	20.10	19.77	19.49	19.20	18.92
14.175	18.64	18.37	18.12	17.86	17.61
14.300	17.36	17.13	16.91	16.68	16.45
14.425	16.25	16.06	15.86	15.66	15.50
14.550	15.34	15.19	15.04	14.90	14.78
14.675	14.66	14.54	14.42	14.32	14.22
14.800	14.12	14.02	13.92	13.83	13.74
14.925	13.65	13.57	13.49	13.41	13.32
15.050	13.24	13.17	13.09	13.02	12.94
15.175	12.87	12.80	12.73	12.66	12.59
15.300	12.52	12.45	12.38	12.32	12.25

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
15.425	12.18	12.12	12.05	11.99	11.92
15.550	11.85	11.79	11.72	11.66	11.60
15.675	11.53	11.47	11.40	11.34	11.27
15.800	11.21	11.15	11.08	11.02	10.95
15.925	10.89	10.83	10.76	10.70	10.63
16.050	10.57	10.50	10.44	10.38	10.31
16.175	10.25	10.19	10.13	10.06	10.01
16.300	9.95	9.89	9.83	9.78	9.72
16.425	9.67	9.61	9.57	9.52	9.47
16.550	9.42	9.38	9.34	9.30	9.26
16.675	9.22	9.18	9.14	9.11	9.07
16.800	9.04	9.01	8.98	8.94	8.91
16.925	8.88	8.86	8.83	8.80	8.77
17.050	8.74	8.72	8.69	8.66	8.64
17.175	8.61	8.58	8.56	8.53	8.51
17.300	8.48	8.46	8.44	8.41	8.39
17.425	8.36	8.34	8.31	8.29	8.27
17.550	8.24	8.22	8.20	8.17	8.15
17.675	8.13	8.10	8.08	8.06	8.03
17.800	8.01	7.99	7.96	7.94	7.92
17.925	7.89	7.87	7.85	7.82	7.80
18.050	7.78	7.75	7.73	7.71	7.69
18.175	7.66	7.64	7.62	7.59	7.57
18.300	7.55	7.52	7.50	7.48	7.45
18.425	7.43	7.41	7.39	7.36	7.34
18.550	7.32	7.29	7.27	7.25	7.22
18.675	7.20	7.17	7.15	7.13	7.10
18.800	7.08	7.06	7.03	7.01	6.99
18.925	6.96	6.94	6.91	6.89	6.87
19.050	6.84	6.82	6.80	6.77	6.75
19.175	6.72	6.70	6.68	6.65	6.63
19.300	6.61	6.58	6.56	6.53	6.51
19.425	6.49	6.46	6.44	6.42	6.39
19.550	6.37	6.34	6.32	6.30	6.27
19.675	6.25	6.22	6.20	6.18	6.15
19.800	6.13	6.10	6.08	6.05	6.03
19.925	6.01	5.98	5.96	5.93	5.91
20.050	5.88	5.86	5.84	5.81	5.79
20.175	5.77	5.74	5.72	5.70	5.67
20.300	5.65	5.63	5.61	5.59	5.57
20.425	5.55	5.53	5.51	5.50	5.48
20.550	5.47	5.45	5.44	5.42	5.41
20.675	5.40	5.39	5.38	5.37	5.35
20.800	5.34	5.34	5.33	5.32	5.31
20.925	5.30	5.29	5.29	5.28	5.27
21.050	5.27	5.26	5.25	5.25	5.24
21.175	5.23	5.23	5.22	5.22	5.21
21.300	5.20	5.20	5.19	5.19	5.18
21.425	5.18	5.17	5.17	5.16	5.16
21.550	5.15	5.15	5.14	5.14	5.13
21.675	5.13	5.12	5.12	5.11	5.11
21.800	5.10	5.10	5.10	5.09	5.09

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.925	5.08	5.08	5.07	5.07	5.06
22.050	5.06	5.05	5.05	5.05	5.04
22.175	5.04	5.03	5.03	5.02	5.02
22.300	5.01	5.01	5.01	5.00	5.00
22.425	4.99	4.99	4.98	4.98	4.97
22.550	4.97	4.97	4.96	4.96	4.95
22.675	4.95	4.94	4.94	4.93	4.93
22.800	4.93	4.92	4.92	4.91	4.91
22.925	4.90	4.90	4.89	4.89	4.88
23.050	4.88	4.88	4.87	4.87	4.86
23.175	4.86	4.85	4.85	4.84	4.84
23.300	4.83	4.83	4.83	4.82	4.82
23.425	4.81	4.81	4.80	4.80	4.79
23.550	4.79	4.78	4.78	4.78	4.77
23.675	4.77	4.76	4.76	4.75	4.75
23.800	4.74	4.74	4.73	4.73	4.73
23.925	4.72	4.71	4.70	4.69	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
150.00
137.50
125.00
112.50
100.00
87.50
75.00
62.50
50.00
37.50
25.00
12.50
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.17 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.17 ft³/s

Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	0.117 acres
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.9 in
Runoff Volume (Pervious)	0.009 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.009 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.59 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	2-Year Type II 24-Hour
Return Event	2 years
Duration	24.000 hours
Depth	2.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

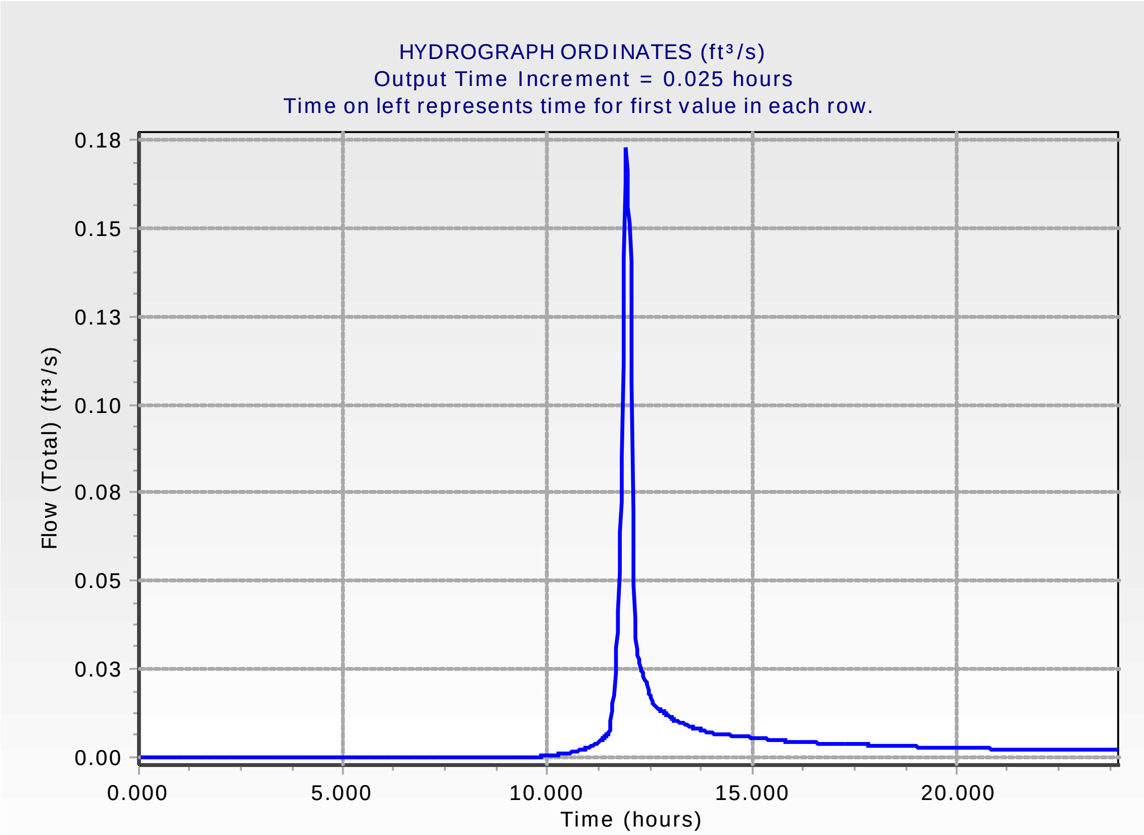
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.00	0.00	0.00	0.00	0.00
10.525	0.00	0.00	0.00	0.00	0.00
10.650	0.00	0.00	0.00	0.00	0.00
10.775	0.00	0.00	0.00	0.00	0.00
10.900	0.00	0.00	0.00	0.00	0.00
11.025	0.00	0.00	0.00	0.00	0.00
11.150	0.00	0.00	0.00	0.00	0.00
11.275	0.00	0.00	0.01	0.01	0.01
11.400	0.01	0.01	0.01	0.01	0.01
11.525	0.01	0.01	0.01	0.01	0.02
11.650	0.02	0.03	0.04	0.04	0.05
11.775	0.06	0.07	0.08	0.11	0.14
11.900	0.16	0.17	0.17	0.16	0.15
12.025	0.14	0.11	0.07	0.05	0.04
12.150	0.03	0.03	0.03	0.03	0.03
12.275	0.03	0.02	0.02	0.02	0.02
12.400	0.02	0.02	0.02	0.02	0.02
12.525	0.02	0.02	0.02	0.01	0.01
12.650	0.01	0.01	0.01	0.01	0.01
12.775	0.01	0.01	0.01	0.01	0.01
12.900	0.01	0.01	0.01	0.01	0.01
13.025	0.01	0.01	0.01	0.01	0.01
13.150	0.01	0.01	0.01	0.01	0.01
13.275	0.01	0.01	0.01	0.01	0.01
13.400	0.01	0.01	0.01	0.01	0.01
13.525	0.01	0.01	0.01	0.01	0.01
13.650	0.01	0.01	0.01	0.01	0.01
13.775	0.01	0.01	0.01	0.01	0.01
13.900	0.01	0.01	0.01	0.01	0.01
14.025	0.01	0.01	0.01	0.01	0.01
14.150	0.01	0.01	0.01	0.01	0.01
14.275	0.01	0.01	0.01	0.01	0.01
14.400	0.01	0.01	0.01	0.01	0.01
14.525	0.01	0.01	0.01	0.01	0.01
14.650	0.01	0.01	0.01	0.01	0.01
14.775	0.01	0.01	0.01	0.01	0.01
14.900	0.01	0.01	0.01	0.01	0.01
15.025	0.01	0.01	0.01	0.01	0.01
15.150	0.01	0.01	0.01	0.01	0.01
15.275	0.01	0.01	0.01	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.525	0.01	0.00	0.00	0.00	0.00
15.650	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
15.775	0.00	0.00	0.00	0.00	0.00
15.900	0.00	0.00	0.00	0.00	0.00
16.025	0.00	0.00	0.00	0.00	0.00
16.150	0.00	0.00	0.00	0.00	0.00
16.275	0.00	0.00	0.00	0.00	0.00
16.400	0.00	0.00	0.00	0.00	0.00
16.525	0.00	0.00	0.00	0.00	0.00
16.650	0.00	0.00	0.00	0.00	0.00
16.775	0.00	0.00	0.00	0.00	0.00
16.900	0.00	0.00	0.00	0.00	0.00
17.025	0.00	0.00	0.00	0.00	0.00
17.150	0.00	0.00	0.00	0.00	0.00
17.275	0.00	0.00	0.00	0.00	0.00
17.400	0.00	0.00	0.00	0.00	0.00
17.525	0.00	0.00	0.00	0.00	0.00
17.650	0.00	0.00	0.00	0.00	0.00
17.775	0.00	0.00	0.00	0.00	0.00
17.900	0.00	0.00	0.00	0.00	0.00
18.025	0.00	0.00	0.00	0.00	0.00
18.150	0.00	0.00	0.00	0.00	0.00
18.275	0.00	0.00	0.00	0.00	0.00
18.400	0.00	0.00	0.00	0.00	0.00
18.525	0.00	0.00	0.00	0.00	0.00
18.650	0.00	0.00	0.00	0.00	0.00
18.775	0.00	0.00	0.00	0.00	0.00
18.900	0.00	0.00	0.00	0.00	0.00
19.025	0.00	0.00	0.00	0.00	0.00
19.150	0.00	0.00	0.00	0.00	0.00
19.275	0.00	0.00	0.00	0.00	0.00
19.400	0.00	0.00	0.00	0.00	0.00
19.525	0.00	0.00	0.00	0.00	0.00
19.650	0.00	0.00	0.00	0.00	0.00
19.775	0.00	0.00	0.00	0.00	0.00
19.900	0.00	0.00	0.00	0.00	0.00
20.025	0.00	0.00	0.00	0.00	0.00
20.150	0.00	0.00	0.00	0.00	0.00
20.275	0.00	0.00	0.00	0.00	0.00
20.400	0.00	0.00	0.00	0.00	0.00
20.525	0.00	0.00	0.00	0.00	0.00
20.650	0.00	0.00	0.00	0.00	0.00
20.775	0.00	0.00	0.00	0.00	0.00
20.900	0.00	0.00	0.00	0.00	0.00
21.025	0.00	0.00	0.00	0.00	0.00
21.150	0.00	0.00	0.00	0.00	0.00
21.275	0.00	0.00	0.00	0.00	0.00
21.400	0.00	0.00	0.00	0.00	0.00
21.525	0.00	0.00	0.00	0.00	0.00
21.650	0.00	0.00	0.00	0.00	0.00
21.775	0.00	0.00	0.00	0.00	0.00
21.900	0.00	0.00	0.00	0.00	0.00
22.025	0.00	0.00	0.00	0.00	0.00
22.150	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.275	0.00	0.00	0.00	0.00	0.00
22.400	0.00	0.00	0.00	0.00	0.00
22.525	0.00	0.00	0.00	0.00	0.00
22.650	0.00	0.00	0.00	0.00	0.00
22.775	0.00	0.00	0.00	0.00	0.00
22.900	0.00	0.00	0.00	0.00	0.00
23.025	0.00	0.00	0.00	0.00	0.00
23.150	0.00	0.00	0.00	0.00	0.00
23.275	0.00	0.00	0.00	0.00	0.00
23.400	0.00	0.00	0.00	0.00	0.00
23.525	0.00	0.00	0.00	0.00	0.00
23.650	0.00	0.00	0.00	0.00	0.00
23.775	0.00	0.00	0.00	0.00	0.00
23.900	0.00	0.00	0.00	0.00	0.00


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.18
0.15
0.13
0.10
0.08
0.05
0.03
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.31 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.31 ft³/s

Drainage Area

SCS CN (Composite)	85.000
Area (User Defined)	0.117 acres
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.016 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.016 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.59 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	10-Year Type II 24-Hour
Return Event	10 years
Duration	24.000 hours
Depth	3.1 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

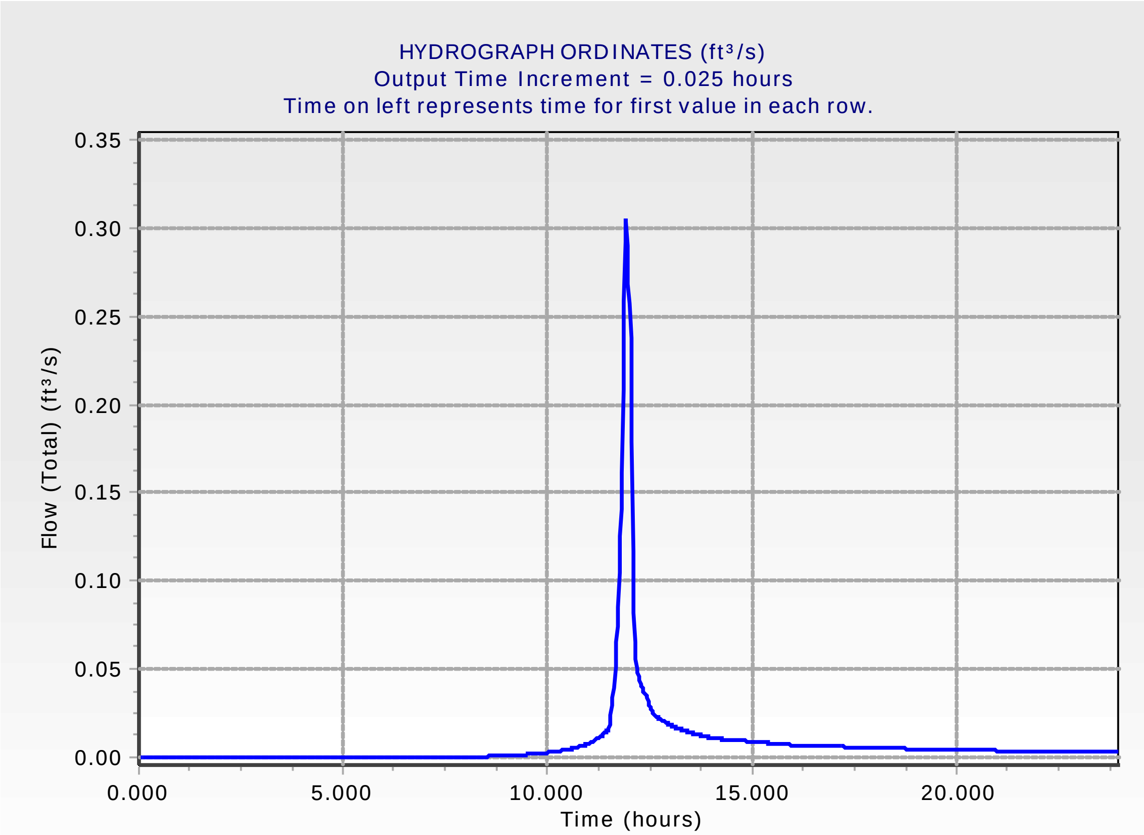
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.950	0.00	0.00	0.00	0.00	0.00
9.075	0.00	0.00	0.00	0.00	0.00
9.200	0.00	0.00	0.00	0.00	0.00
9.325	0.00	0.00	0.00	0.00	0.00
9.450	0.00	0.00	0.00	0.00	0.00
9.575	0.00	0.00	0.00	0.00	0.00
9.700	0.00	0.00	0.00	0.00	0.00
9.825	0.00	0.00	0.00	0.00	0.00
9.950	0.00	0.00	0.00	0.00	0.00
10.075	0.00	0.00	0.00	0.00	0.00
10.200	0.00	0.00	0.00	0.00	0.00
10.325	0.00	0.00	0.00	0.00	0.00
10.450	0.00	0.00	0.00	0.00	0.00
10.575	0.00	0.00	0.01	0.01	0.01
10.700	0.01	0.01	0.01	0.01	0.01
10.825	0.01	0.01	0.01	0.01	0.01
10.950	0.01	0.01	0.01	0.01	0.01
11.075	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.325	0.01	0.01	0.01	0.01	0.01
11.450	0.02	0.02	0.02	0.02	0.02
11.575	0.03	0.03	0.04	0.05	0.07
11.700	0.07	0.08	0.10	0.13	0.14
11.825	0.16	0.21	0.26	0.29	0.31
11.950	0.29	0.27	0.26	0.24	0.18
12.075	0.12	0.08	0.07	0.06	0.05
12.200	0.05	0.05	0.04	0.04	0.04
12.325	0.04	0.04	0.04	0.03	0.03
12.450	0.03	0.03	0.03	0.03	0.03
12.575	0.02	0.02	0.02	0.02	0.02
12.700	0.02	0.02	0.02	0.02	0.02
12.825	0.02	0.02	0.02	0.02	0.02
12.950	0.02	0.02	0.02	0.02	0.02
13.075	0.02	0.02	0.02	0.02	0.02
13.200	0.02	0.02	0.02	0.02	0.02
13.325	0.02	0.02	0.01	0.01	0.01
13.450	0.01	0.01	0.01	0.01	0.01
13.575	0.01	0.01	0.01	0.01	0.01
13.700	0.01	0.01	0.01	0.01	0.01
13.825	0.01	0.01	0.01	0.01	0.01
13.950	0.01	0.01	0.01	0.01	0.01
14.075	0.01	0.01	0.01	0.01	0.01
14.200	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
14.325	0.01	0.01	0.01	0.01	0.01
14.450	0.01	0.01	0.01	0.01	0.01
14.575	0.01	0.01	0.01	0.01	0.01
14.700	0.01	0.01	0.01	0.01	0.01
14.825	0.01	0.01	0.01	0.01	0.01
14.950	0.01	0.01	0.01	0.01	0.01
15.075	0.01	0.01	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.325	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.575	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.825	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.01
16.075	0.01	0.01	0.01	0.01	0.01
16.200	0.01	0.01	0.01	0.01	0.01
16.325	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.575	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.825	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.075	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.325	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.575	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.825	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.075	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.325	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.575	0.01	0.01	0.01	0.00	0.00
18.700	0.00	0.00	0.00	0.00	0.00
18.825	0.00	0.00	0.00	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00
19.075	0.00	0.00	0.00	0.00	0.00
19.200	0.00	0.00	0.00	0.00	0.00
19.325	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.575	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.825	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00
20.075	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	0.00	0.00	0.00
20.325	0.00	0.00	0.00	0.00	0.00
20.450	0.00	0.00	0.00	0.00	0.00
20.575	0.00	0.00	0.00	0.00	0.00
20.700	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
20.825	0.00	0.00	0.00	0.00	0.00
20.950	0.00	0.00	0.00	0.00	0.00
21.075	0.00	0.00	0.00	0.00	0.00
21.200	0.00	0.00	0.00	0.00	0.00
21.325	0.00	0.00	0.00	0.00	0.00
21.450	0.00	0.00	0.00	0.00	0.00
21.575	0.00	0.00	0.00	0.00	0.00
21.700	0.00	0.00	0.00	0.00	0.00
21.825	0.00	0.00	0.00	0.00	0.00
21.950	0.00	0.00	0.00	0.00	0.00
22.075	0.00	0.00	0.00	0.00	0.00
22.200	0.00	0.00	0.00	0.00	0.00
22.325	0.00	0.00	0.00	0.00	0.00
22.450	0.00	0.00	0.00	0.00	0.00
22.575	0.00	0.00	0.00	0.00	0.00
22.700	0.00	0.00	0.00	0.00	0.00
22.825	0.00	0.00	0.00	0.00	0.00
22.950	0.00	0.00	0.00	0.00	0.00
23.075	0.00	0.00	0.00	0.00	0.00
23.200	0.00	0.00	0.00	0.00	0.00
23.325	0.00	0.00	0.00	0.00	0.00
23.450	0.00	0.00	0.00	0.00	0.00
23.575	0.00	0.00	0.00	0.00	0.00
23.700	0.00	0.00	0.00	0.00	0.00
23.825	0.00	0.00	0.00	0.00	0.00
23.950	0.00	0.00	0.00	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.50 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.50 ft³/s

Drainage Area	
SCS CN (Composite)	85.000
Area (User Defined)	0.117 acres
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.7 in
Runoff Volume (Pervious)	0.027 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.027 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.59 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	50-Year Type II 24-Hour
Return Event	50 years
Duration	24.000 hours
Depth	4.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

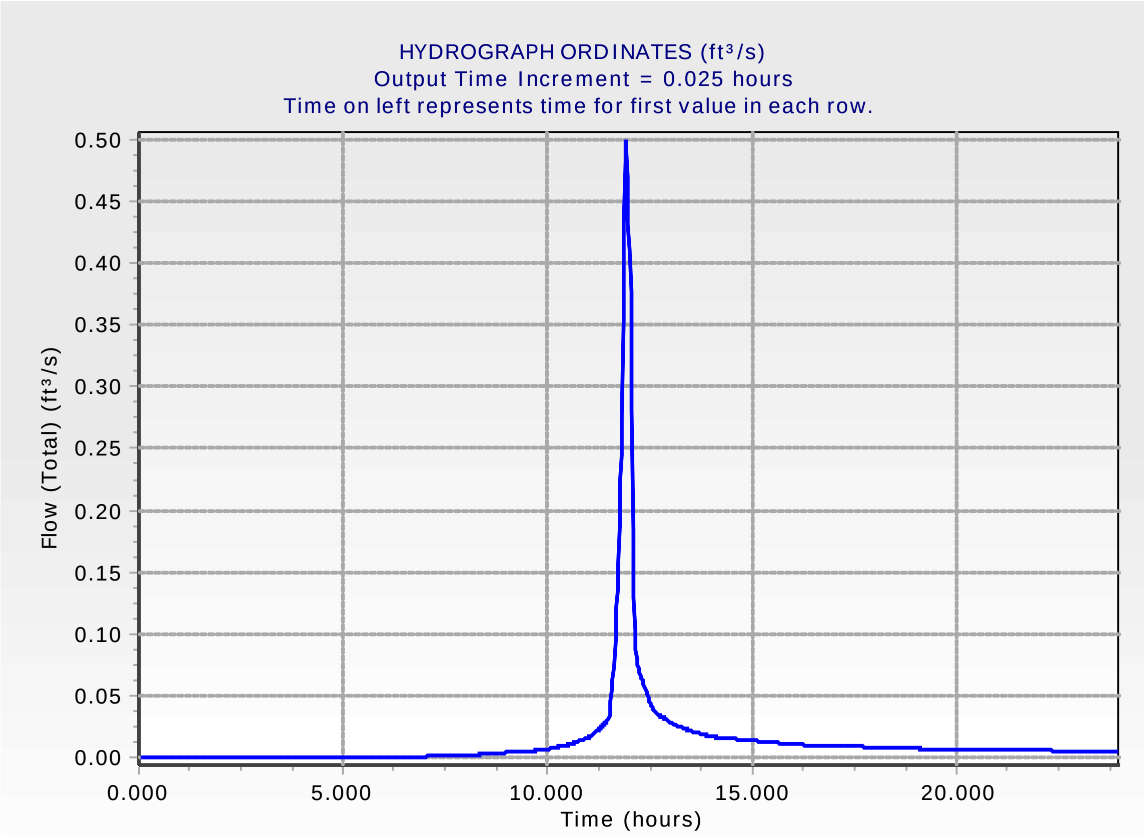
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.300	0.00	0.00	0.00	0.00	0.00
7.425	0.00	0.00	0.00	0.00	0.00
7.550	0.00	0.00	0.00	0.00	0.00
7.675	0.00	0.00	0.00	0.00	0.00
7.800	0.00	0.00	0.00	0.00	0.00
7.925	0.00	0.00	0.00	0.00	0.00
8.050	0.00	0.00	0.00	0.00	0.00
8.175	0.00	0.00	0.00	0.00	0.00
8.300	0.00	0.00	0.00	0.00	0.00
8.425	0.00	0.00	0.00	0.00	0.00
8.550	0.00	0.00	0.00	0.00	0.00
8.675	0.00	0.00	0.00	0.00	0.00
8.800	0.00	0.00	0.00	0.00	0.00
8.925	0.00	0.00	0.00	0.00	0.00
9.050	0.00	0.00	0.00	0.00	0.00
9.175	0.00	0.00	0.00	0.00	0.00
9.300	0.00	0.00	0.00	0.00	0.00
9.425	0.00	0.00	0.00	0.00	0.00
9.550	0.00	0.01	0.01	0.01	0.01
9.675	0.01	0.01	0.01	0.01	0.01
9.800	0.01	0.01	0.01	0.01	0.01
9.925	0.01	0.01	0.01	0.01	0.01
10.050	0.01	0.01	0.01	0.01	0.01
10.175	0.01	0.01	0.01	0.01	0.01
10.300	0.01	0.01	0.01	0.01	0.01
10.425	0.01	0.01	0.01	0.01	0.01
10.550	0.01	0.01	0.01	0.01	0.01
10.675	0.01	0.01	0.01	0.01	0.01
10.800	0.01	0.01	0.01	0.01	0.01
10.925	0.02	0.02	0.02	0.02	0.02
11.050	0.02	0.02	0.02	0.02	0.02
11.175	0.02	0.02	0.02	0.02	0.02
11.300	0.02	0.02	0.03	0.03	0.03
11.425	0.03	0.03	0.03	0.03	0.03
11.550	0.05	0.06	0.06	0.07	0.10
11.675	0.12	0.14	0.15	0.19	0.22
11.800	0.24	0.28	0.35	0.43	0.48
11.925	0.50	0.47	0.43	0.41	0.38
12.050	0.28	0.18	0.13	0.10	0.09
12.175	0.08	0.07	0.07	0.07	0.06
12.300	0.06	0.06	0.06	0.06	0.05
12.425	0.05	0.05	0.05	0.04	0.04
12.550	0.04	0.04	0.04	0.04	0.04

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
12.675	0.04	0.03	0.03	0.03	0.03
12.800	0.03	0.03	0.03	0.03	0.03
12.925	0.03	0.03	0.03	0.03	0.03
13.050	0.03	0.03	0.03	0.03	0.03
13.175	0.03	0.03	0.02	0.02	0.02
13.300	0.02	0.02	0.02	0.02	0.02
13.425	0.02	0.02	0.02	0.02	0.02
13.550	0.02	0.02	0.02	0.02	0.02
13.675	0.02	0.02	0.02	0.02	0.02
13.800	0.02	0.02	0.02	0.02	0.02
13.925	0.02	0.02	0.02	0.02	0.02
14.050	0.02	0.02	0.02	0.02	0.02
14.175	0.02	0.02	0.02	0.02	0.02
14.300	0.02	0.02	0.02	0.02	0.02
14.425	0.02	0.02	0.02	0.02	0.02
14.550	0.01	0.01	0.01	0.01	0.01
14.675	0.01	0.01	0.01	0.01	0.01
14.800	0.01	0.01	0.01	0.01	0.01
14.925	0.01	0.01	0.01	0.01	0.01
15.050	0.01	0.01	0.01	0.01	0.01
15.175	0.01	0.01	0.01	0.01	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.425	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.01	0.01	0.01
15.675	0.01	0.01	0.01	0.01	0.01
15.800	0.01	0.01	0.01	0.01	0.01
15.925	0.01	0.01	0.01	0.01	0.01
16.050	0.01	0.01	0.01	0.01	0.01
16.175	0.01	0.01	0.01	0.01	0.01
16.300	0.01	0.01	0.01	0.01	0.01
16.425	0.01	0.01	0.01	0.01	0.01
16.550	0.01	0.01	0.01	0.01	0.01
16.675	0.01	0.01	0.01	0.01	0.01
16.800	0.01	0.01	0.01	0.01	0.01
16.925	0.01	0.01	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.01
17.175	0.01	0.01	0.01	0.01	0.01
17.300	0.01	0.01	0.01	0.01	0.01
17.425	0.01	0.01	0.01	0.01	0.01
17.550	0.01	0.01	0.01	0.01	0.01
17.675	0.01	0.01	0.01	0.01	0.01
17.800	0.01	0.01	0.01	0.01	0.01
17.925	0.01	0.01	0.01	0.01	0.01
18.050	0.01	0.01	0.01	0.01	0.01
18.175	0.01	0.01	0.01	0.01	0.01
18.300	0.01	0.01	0.01	0.01	0.01
18.425	0.01	0.01	0.01	0.01	0.01
18.550	0.01	0.01	0.01	0.01	0.01
18.675	0.01	0.01	0.01	0.01	0.01
18.800	0.01	0.01	0.01	0.01	0.01
18.925	0.01	0.01	0.01	0.01	0.01
19.050	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
19.175	0.01	0.01	0.01	0.01	0.01
19.300	0.01	0.01	0.01	0.01	0.01
19.425	0.01	0.01	0.01	0.01	0.01
19.550	0.01	0.01	0.01	0.01	0.01
19.675	0.01	0.01	0.01	0.01	0.01
19.800	0.01	0.01	0.01	0.01	0.01
19.925	0.01	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01
20.175	0.01	0.01	0.01	0.01	0.01
20.300	0.01	0.01	0.01	0.01	0.01
20.425	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.675	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01
20.925	0.01	0.01	0.01	0.01	0.01
21.050	0.01	0.01	0.01	0.01	0.01
21.175	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.425	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01
21.675	0.01	0.01	0.01	0.01	0.01
21.800	0.01	0.01	0.01	0.01	0.01
21.925	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.175	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01
22.425	0.01	0.01	0.01	0.01	0.01
22.550	0.01	0.01	0.01	0.01	0.01
22.675	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
22.925	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.175	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.425	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.675	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01
23.925	0.01	0.01	0.01	0.01	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Flow (Total) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.922 hours
Flow (Peak, Computed)	0.61 ft³/s
Output Increment	0.025 hours
Time to Flow (Peak Interpolated Output)	11.925 hours
Flow (Peak Interpolated Output)	0.61 ft³/s

Drainage Area

SCS CN (Composite)	85.000
Area (User Defined)	0.117 acres
Maximum Retention (Pervious)	1.8 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff

Cumulative Runoff Depth (Pervious)	3.4 in
Runoff Volume (Pervious)	0.033 ac-ft

Hydrograph Volume (Area under Hydrograph curve)

Volume	0.033 ac-ft

SCS Unit Hydrograph Parameters

Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.59 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	100-Year Type II 24-Hour
Return Event	100 years
Duration	24.000 hours
Depth	5.0 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.117 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

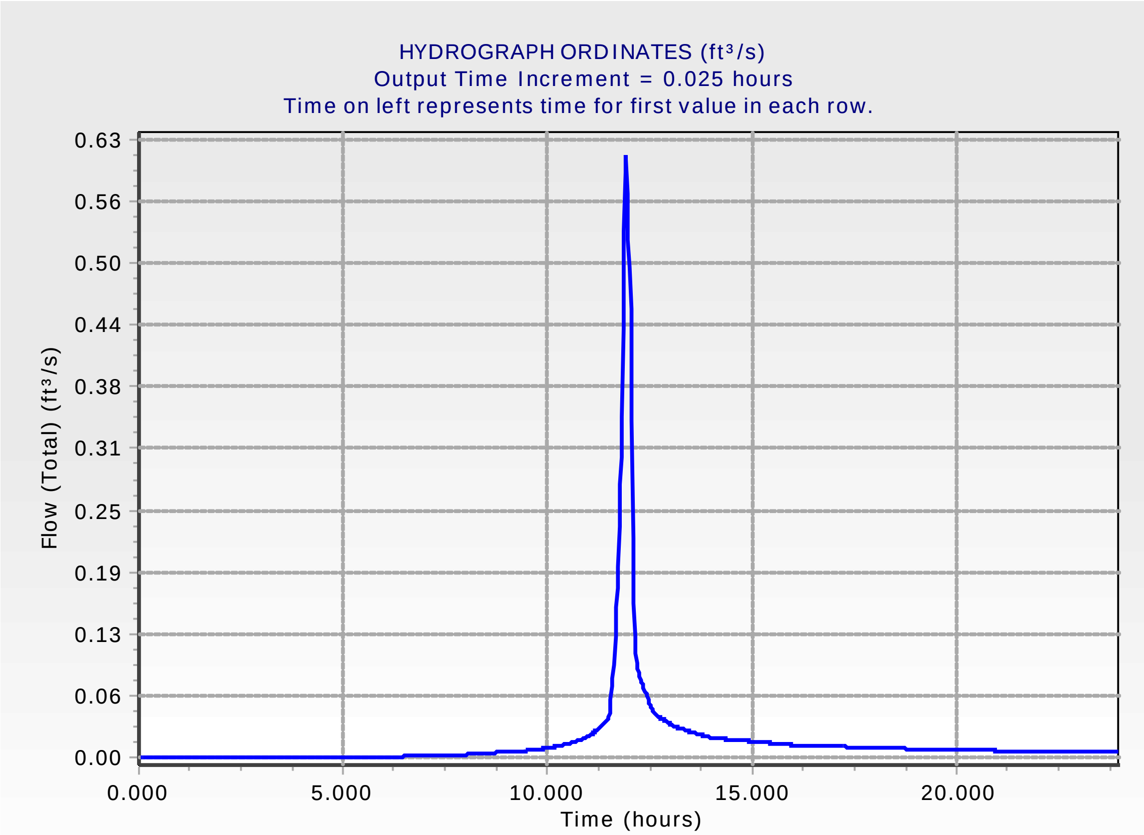
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.525	0.00	0.00	0.00	0.00	0.00
6.650	0.00	0.00	0.00	0.00	0.00
6.775	0.00	0.00	0.00	0.00	0.00
6.900	0.00	0.00	0.00	0.00	0.00
7.025	0.00	0.00	0.00	0.00	0.00
7.150	0.00	0.00	0.00	0.00	0.00
7.275	0.00	0.00	0.00	0.00	0.00
7.400	0.00	0.00	0.00	0.00	0.00
7.525	0.00	0.00	0.00	0.00	0.00
7.650	0.00	0.00	0.00	0.00	0.00
7.775	0.00	0.00	0.00	0.00	0.00
7.900	0.00	0.00	0.00	0.00	0.00
8.025	0.00	0.00	0.00	0.00	0.00
8.150	0.00	0.00	0.00	0.00	0.00
8.275	0.00	0.00	0.00	0.00	0.00
8.400	0.00	0.00	0.00	0.00	0.00
8.525	0.00	0.00	0.00	0.00	0.00
8.650	0.00	0.00	0.00	0.00	0.00
8.775	0.01	0.01	0.01	0.01	0.01
8.900	0.01	0.01	0.01	0.01	0.01
9.025	0.01	0.01	0.01	0.01	0.01
9.150	0.01	0.01	0.01	0.01	0.01
9.275	0.01	0.01	0.01	0.01	0.01
9.400	0.01	0.01	0.01	0.01	0.01
9.525	0.01	0.01	0.01	0.01	0.01
9.650	0.01	0.01	0.01	0.01	0.01
9.775	0.01	0.01	0.01	0.01	0.01
9.900	0.01	0.01	0.01	0.01	0.01
10.025	0.01	0.01	0.01	0.01	0.01
10.150	0.01	0.01	0.01	0.01	0.01
10.275	0.01	0.01	0.01	0.01	0.01
10.400	0.01	0.01	0.01	0.01	0.01
10.525	0.01	0.01	0.01	0.02	0.02
10.650	0.02	0.02	0.02	0.02	0.02
10.775	0.02	0.02	0.02	0.02	0.02
10.900	0.02	0.02	0.02	0.02	0.02
11.025	0.02	0.02	0.02	0.02	0.02
11.150	0.03	0.03	0.03	0.03	0.03
11.275	0.03	0.03	0.03	0.03	0.03
11.400	0.04	0.04	0.04	0.04	0.04
11.525	0.04	0.06	0.07	0.08	0.09
11.650	0.12	0.15	0.17	0.19	0.23
11.775	0.28	0.30	0.34	0.44	0.53

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
11.900	0.59	0.61	0.57	0.52	0.50
12.025	0.45	0.34	0.22	0.16	0.12
12.150	0.11	0.09	0.09	0.09	0.08
12.275	0.08	0.08	0.07	0.07	0.07
12.400	0.06	0.06	0.06	0.05	0.05
12.525	0.05	0.05	0.05	0.04	0.04
12.650	0.04	0.04	0.04	0.04	0.04
12.775	0.04	0.04	0.04	0.04	0.04
12.900	0.04	0.04	0.03	0.03	0.03
13.025	0.03	0.03	0.03	0.03	0.03
13.150	0.03	0.03	0.03	0.03	0.03
13.275	0.03	0.03	0.03	0.03	0.03
13.400	0.03	0.03	0.03	0.03	0.03
13.525	0.03	0.03	0.02	0.02	0.02
13.650	0.02	0.02	0.02	0.02	0.02
13.775	0.02	0.02	0.02	0.02	0.02
13.900	0.02	0.02	0.02	0.02	0.02
14.025	0.02	0.02	0.02	0.02	0.02
14.150	0.02	0.02	0.02	0.02	0.02
14.275	0.02	0.02	0.02	0.02	0.02
14.400	0.02	0.02	0.02	0.02	0.02
14.525	0.02	0.02	0.02	0.02	0.02
14.650	0.02	0.02	0.02	0.02	0.02
14.775	0.02	0.02	0.02	0.02	0.02
14.900	0.02	0.02	0.02	0.02	0.02
15.025	0.02	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.275	0.02	0.02	0.02	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.525	0.01	0.01	0.01	0.01	0.01
15.650	0.01	0.01	0.01	0.01	0.01
15.775	0.01	0.01	0.01	0.01	0.01
15.900	0.01	0.01	0.01	0.01	0.01
16.025	0.01	0.01	0.01	0.01	0.01
16.150	0.01	0.01	0.01	0.01	0.01
16.275	0.01	0.01	0.01	0.01	0.01
16.400	0.01	0.01	0.01	0.01	0.01
16.525	0.01	0.01	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.775	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.025	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.275	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.525	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.775	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.025	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.275	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
18.400	0.01	0.01	0.01	0.01	0.01
18.525	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.775	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.025	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.275	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.525	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.775	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.025	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.275	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.525	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.775	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.025	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.275	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.525	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.775	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.025	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.275	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01
22.525	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.775	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.025	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.275	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.525	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.775	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	0.01	0.01


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Total) (ft³/s)
0.63
0.56
0.50
0.44
0.38
0.31
0.25
0.19
0.13
0.06
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Summary for Hydrograph Addition at 'Outlet-1-POST'

Upstream Link	Upstream Node
Outlet	BASIN
<Catchment to Outflow Node>	POST - AREA 1A

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet	0.001	12.475	0.03
Flow (From)	POST - AREA 1A	2.458	12.550	10.74
Flow (In)	Outlet-1-POST	2.459	12.550	10.77

Summary for Hydrograph Addition at 'Outlet-1-POST'

Upstream Link	Upstream Node
Outlet	BASIN
<Catchment to Outflow Node>	POST - AREA 1A

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Flow (From)	Outlet	0.021	12.075	0.94
Flow (From)	POST - AREA 1A	6.216	12.450	36.76
Flow (In)	Outlet-1-POST	6.236	12.450	36.88

Summary for Hydrograph Addition at 'Outlet-1-POST'

Upstream Link	Upstream Node
Outlet	BASIN
<Catchment to Outflow Node>	POST - AREA 1A

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet	0.056	12.025	1.76
Flow (From)	POST - AREA 1A	13.111	12.425	88.70
Flow (In)	Outlet-1-POST	13.167	12.425	88.96

Summary for Hydrograph Addition at 'Outlet-1-POST'

Upstream Link	Upstream Node
Outlet	BASIN
<Catchment to Outflow Node>	POST - AREA 1A

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Flow (From)	Outlet	0.078	12.025	2.22
Flow (From)	POST - AREA 1A	17.485	12.425	121.86
Flow (In)	Outlet-1-POST	17.562	12.425	122.18

Summary for Hydrograph Addition at 'Outlet-1-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 1	2.721	12.550	12.78
Flow (In)	Outlet-1-PRE	2.721	12.550	12.78

Summary for Hydrograph Addition at 'Outlet-1-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 1	6.668	12.450	41.46
Flow (In)	Outlet-1-PRE	6.668	12.450	41.46

Summary for Hydrograph Addition at 'Outlet-1-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft³/s)
Flow (From)	PRE - AREA 1	13.807	12.450	96.07
Flow (In)	Outlet-1-PRE	13.807	12.450	96.07

Summary for Hydrograph Addition at 'Outlet-1-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 1	18.303	12.350	130.53
Flow (In)	Outlet-1-PRE	18.303	12.350	130.53

Summary for Hydrograph Addition at 'Outlet-2-POST'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	POST - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	POST - AREA 2	0.002	11.950	0.04
Flow (In)	Outlet-2-POST	0.002	11.950	0.04

Summary for Hydrograph Addition at 'Outlet-2-POST'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	POST - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	POST - AREA 2	0.005	11.925	0.09
Flow (In)	Outlet-2-POST	0.005	11.925	0.09

Summary for Hydrograph Addition at 'Outlet-2-POST'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	POST - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	POST - AREA 2	0.010	11.925	0.18
Flow (In)	Outlet-2-POST	0.010	11.925	0.18

Summary for Hydrograph Addition at 'Outlet-2-POST'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	POST - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	POST - AREA 2	0.012	11.925	0.23
Flow (In)	Outlet-2-POST	0.012	11.925	0.23

Summary for Hydrograph Addition at 'Outlet-2-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 2	0.009	11.925	0.17
Flow (In)	Outlet-2-PRE	0.009	11.925	0.17

Summary for Hydrograph Addition at 'Outlet-2-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 2	0.016	11.925	0.31
Flow (In)	Outlet-2-PRE	0.016	11.925	0.31

Summary for Hydrograph Addition at 'Outlet-2-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 2	0.027	11.925	0.50
Flow (In)	Outlet-2-PRE	0.027	11.925	0.50

Summary for Hydrograph Addition at 'Outlet-2-PRE'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PRE - AREA 2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PRE - AREA 2	0.033	11.925	0.61
Flow (In)	Outlet-2-PRE	0.033	11.925	0.61

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
1,303.00	0.0	0.015	0.000	0.000	0.000
1,304.00	0.0	0.023	0.057	0.019	0.019
1,305.00	0.0	0.032	0.081	0.027	0.046

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,303.00 ft
Increment (Headwater)	0.25 ft
Maximum (Headwater)	1,305.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	1,303.83	1,305.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,303.83 ft
Weir Length	9.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Infiltration

Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	2.7000 in/h

Initial Conditions

Elevation (Water Surface, Initial)	1,303.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.025 hours

Inflow/Outflow Hydrograph Summary

Flow (Peak In)	0.58 ft³/s	Time to Peak (Flow, In)	12.025 hours
Infiltration (Peak)	0.06 ft³/s	Time to Peak (Infiltration)	12.475 hours
Flow (Peak Outlet)	0.03 ft³/s	Time to Peak (Flow, Outlet)	12.475 hours

Elevation (Water Surface, Peak)	1,303.83 ft
Volume (Peak)	0.015 ac-ft

Mass Balance (ac-ft)

Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.037 ac-ft
Volume (Total Infiltration)	0.036 ac-ft
Volume (Total Outlet Outflow)	0.001 ac-ft
Volume (Retained)	0.001 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	2.7000 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	1,303.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.025 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.08 ft³/s	Time to Peak (Flow, In)	12.025 hours
Infiltration (Peak)	0.06 ft³/s	Time to Peak (Infiltration)	12.075 hours
Flow (Peak Outlet)	0.94 ft³/s	Time to Peak (Flow, Outlet)	12.075 hours

Elevation (Water Surface, Peak)	1,303.91 ft
Volume (Peak)	0.017 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.069 ac-ft
Volume (Total Infiltration)	0.047 ac-ft
Volume (Total Outlet Outflow)	0.021 ac-ft
Volume (Retained)	0.001 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.1 %

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	2.7000 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	1,303.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.025 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.85 ft³/s	Time to Peak (Flow, In)	12.000 hours
Infiltration (Peak)	0.06 ft³/s	Time to Peak (Infiltration)	12.025 hours
Flow (Peak Outlet)	1.76 ft³/s	Time to Peak (Flow, Outlet)	12.025 hours

Elevation (Water Surface, Peak)	1,303.99 ft
Volume (Peak)	0.019 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.118 ac-ft
Volume (Total Infiltration)	0.059 ac-ft
Volume (Total Outlet Outflow)	0.056 ac-ft
Volume (Retained)	0.003 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	2.7000 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	1,303.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.025 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	2.29 ft³/s	Time to Peak (Flow, In)	12.000 hours
Infiltration (Peak)	0.06 ft³/s	Time to Peak (Infiltration)	12.025 hours
Flow (Peak Outlet)	2.22 ft³/s	Time to Peak (Flow, Outlet)	12.025 hours

Elevation (Water Surface, Peak)	1,304.02 ft
Volume (Peak)	0.019 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.146 ac-ft
Volume (Total Infiltration)	0.064 ac-ft
Volume (Total Outlet Outflow)	0.078 ac-ft
Volume (Retained)	0.005 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Peak Discharge	0.06 ft³/s
Time to Peak	12.475 hours
Hydrograph Volume	0.036 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

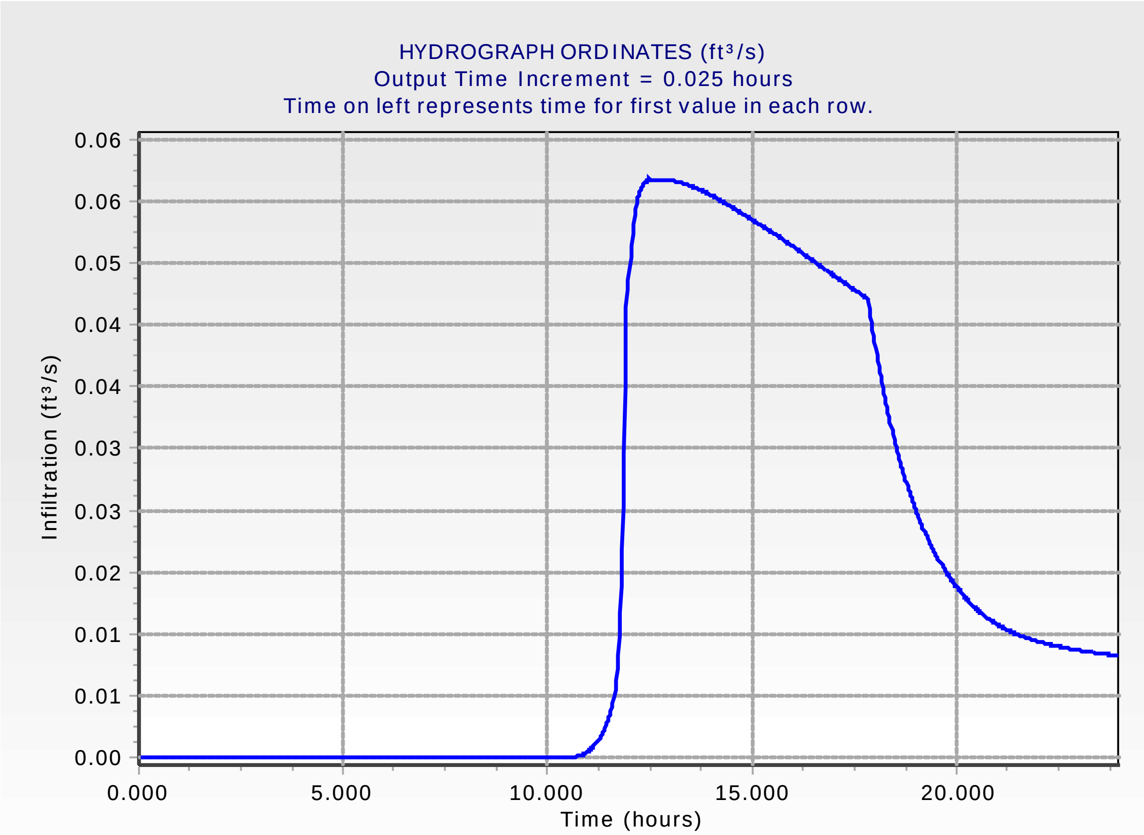
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.100	0.00	0.00	0.00	0.00	0.00
11.225	0.00	0.00	0.00	0.00	0.00
11.350	0.00	0.00	0.00	0.00	0.00
11.475	0.00	0.00	0.00	0.00	0.01
11.600	0.01	0.01	0.01	0.01	0.01
11.725	0.01	0.01	0.01	0.02	0.02
11.850	0.03	0.03	0.04	0.05	0.05
11.975	0.05	0.05	0.05	0.05	0.05
12.100	0.05	0.05	0.06	0.06	0.06
12.225	0.06	0.06	0.06	0.06	0.06
12.350	0.06	0.06	0.06	0.06	0.06
12.475	0.06	0.06	0.06	0.06	0.06
12.600	0.06	0.06	0.06	0.06	0.06
12.725	0.06	0.06	0.06	0.06	0.06
12.850	0.06	0.06	0.06	0.06	0.06
12.975	0.06	0.06	0.06	0.06	0.06
13.100	0.06	0.06	0.06	0.06	0.06
13.225	0.06	0.06	0.06	0.06	0.06
13.350	0.06	0.06	0.06	0.06	0.06
13.475	0.06	0.06	0.06	0.06	0.06
13.600	0.06	0.06	0.06	0.06	0.06
13.725	0.06	0.06	0.06	0.06	0.06
13.850	0.06	0.06	0.06	0.06	0.06
13.975	0.06	0.06	0.06	0.06	0.06
14.100	0.06	0.06	0.06	0.06	0.06
14.225	0.06	0.06	0.06	0.06	0.06
14.350	0.06	0.06	0.06	0.06	0.06
14.475	0.06	0.06	0.06	0.06	0.06
14.600	0.06	0.06	0.06	0.06	0.06
14.725	0.06	0.06	0.05	0.05	0.05
14.850	0.05	0.05	0.05	0.05	0.05
14.975	0.05	0.05	0.05	0.05	0.05
15.100	0.05	0.05	0.05	0.05	0.05
15.225	0.05	0.05	0.05	0.05	0.05
15.350	0.05	0.05	0.05	0.05	0.05
15.475	0.05	0.05	0.05	0.05	0.05
15.600	0.05	0.05	0.05	0.05	0.05
15.725	0.05	0.05	0.05	0.05	0.05
15.850	0.05	0.05	0.05	0.05	0.05
15.975	0.05	0.05	0.05	0.05	0.05
16.100	0.05	0.05	0.05	0.05	0.05
16.225	0.05	0.05	0.05	0.05	0.05
16.350	0.05	0.05	0.05	0.05	0.05
16.475	0.05	0.05	0.05	0.05	0.05
16.600	0.05	0.05	0.05	0.05	0.05
16.725	0.05	0.05	0.05	0.05	0.05
16.850	0.05	0.05	0.05	0.05	0.05
16.975	0.05	0.05	0.05	0.05	0.05

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
17.100	0.05	0.05	0.05	0.05	0.05
17.225	0.05	0.05	0.05	0.05	0.05
17.350	0.05	0.05	0.05	0.05	0.05
17.475	0.05	0.05	0.05	0.05	0.05
17.600	0.05	0.05	0.05	0.05	0.05
17.725	0.05	0.05	0.05	0.05	0.05
17.850	0.05	0.05	0.04	0.04	0.04
17.975	0.04	0.04	0.04	0.04	0.04
18.100	0.04	0.04	0.04	0.04	0.04
18.225	0.04	0.04	0.04	0.04	0.03
18.350	0.03	0.03	0.03	0.03	0.03
18.475	0.03	0.03	0.03	0.03	0.03
18.600	0.03	0.03	0.03	0.03	0.03
18.725	0.03	0.03	0.03	0.03	0.03
18.850	0.03	0.03	0.03	0.03	0.03
18.975	0.03	0.03	0.02	0.02	0.02
19.100	0.02	0.02	0.02	0.02	0.02
19.225	0.02	0.02	0.02	0.02	0.02
19.350	0.02	0.02	0.02	0.02	0.02
19.475	0.02	0.02	0.02	0.02	0.02
19.600	0.02	0.02	0.02	0.02	0.02
19.725	0.02	0.02	0.02	0.02	0.02
19.850	0.02	0.02	0.02	0.02	0.02
19.975	0.02	0.02	0.02	0.02	0.02
20.100	0.02	0.02	0.02	0.02	0.02
20.225	0.02	0.02	0.02	0.02	0.02
20.350	0.02	0.02	0.02	0.02	0.02
20.475	0.02	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.725	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
20.975	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.225	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01
21.475	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.725	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
21.975	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.225	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.475	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.725	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01
22.975	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.225	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.475	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
23.600	0.01	0.01	0.01	0.01	0.01
23.725	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	0.01
23.975	0.01	0.01	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Infiltration (ft³/s)
0.06
0.06
0.05
0.04
0.04
0.03
0.03
0.02
0.01
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	0.06 ft³/s
Time to Peak	12.075 hours
Hydrograph Volume	0.047 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

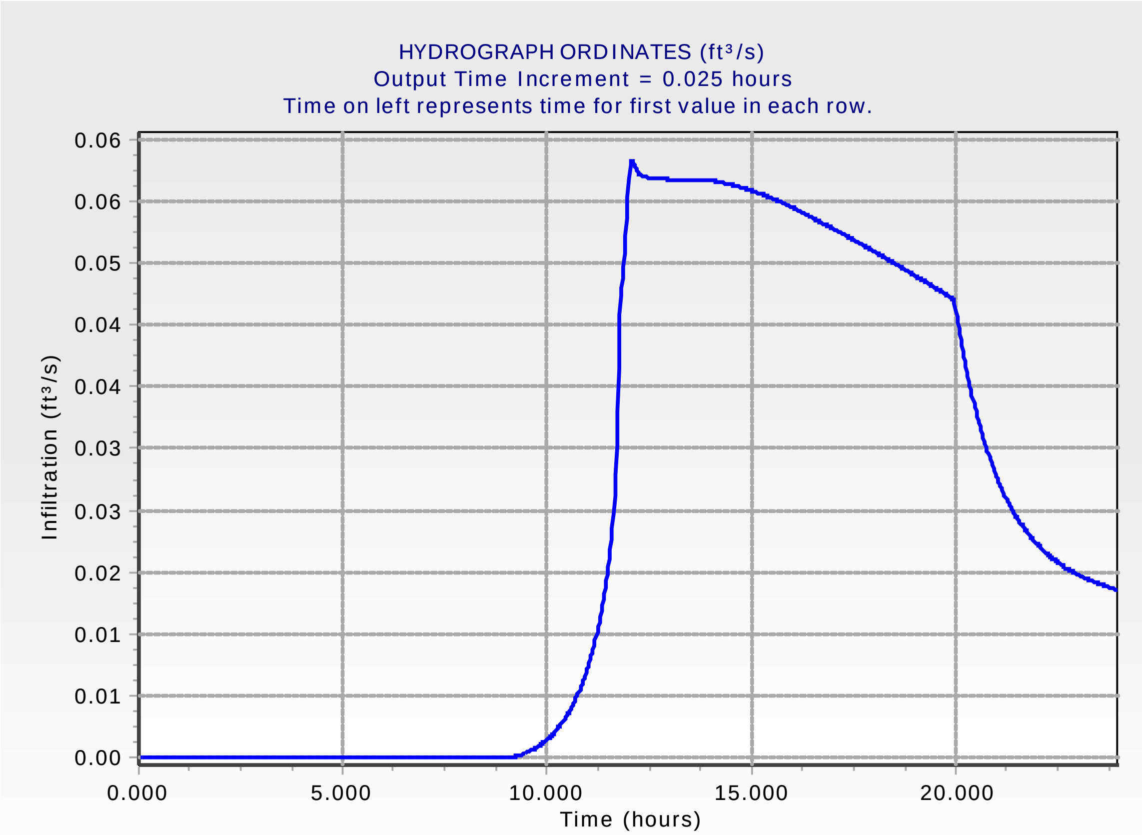
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.750	0.00	0.00	0.00	0.00	0.00
9.875	0.00	0.00	0.00	0.00	0.00
10.000	0.00	0.00	0.00	0.00	0.00
10.125	0.00	0.00	0.00	0.00	0.00
10.250	0.00	0.00	0.00	0.00	0.00
10.375	0.00	0.00	0.00	0.00	0.00
10.500	0.00	0.00	0.00	0.00	0.01
10.625	0.01	0.01	0.01	0.01	0.01
10.750	0.01	0.01	0.01	0.01	0.01
10.875	0.01	0.01	0.01	0.01	0.01
11.000	0.01	0.01	0.01	0.01	0.01
11.125	0.01	0.01	0.01	0.01	0.01
11.250	0.01	0.01	0.01	0.01	0.02
11.375	0.02	0.02	0.02	0.02	0.02
11.500	0.02	0.02	0.02	0.02	0.02
11.625	0.02	0.03	0.03	0.03	0.04
11.750	0.04	0.04	0.05	0.05	0.05
11.875	0.05	0.05	0.05	0.05	0.06
12.000	0.06	0.06	0.06	0.06	0.06
12.125	0.06	0.06	0.06	0.06	0.06
12.250	0.06	0.06	0.06	0.06	0.06
12.375	0.06	0.06	0.06	0.06	0.06
12.500	0.06	0.06	0.06	0.06	0.06
12.625	0.06	0.06	0.06	0.06	0.06
12.750	0.06	0.06	0.06	0.06	0.06
12.875	0.06	0.06	0.06	0.06	0.06
13.000	0.06	0.06	0.06	0.06	0.06
13.125	0.06	0.06	0.06	0.06	0.06
13.250	0.06	0.06	0.06	0.06	0.06
13.375	0.06	0.06	0.06	0.06	0.06
13.500	0.06	0.06	0.06	0.06	0.06
13.625	0.06	0.06	0.06	0.06	0.06
13.750	0.06	0.06	0.06	0.06	0.06
13.875	0.06	0.06	0.06	0.06	0.06
14.000	0.06	0.06	0.06	0.06	0.06
14.125	0.06	0.06	0.06	0.06	0.06
14.250	0.06	0.06	0.06	0.06	0.06
14.375	0.06	0.06	0.06	0.06	0.06
14.500	0.06	0.06	0.06	0.06	0.06
14.625	0.06	0.06	0.06	0.06	0.06
14.750	0.06	0.06	0.06	0.06	0.06
14.875	0.06	0.06	0.06	0.06	0.06
15.000	0.06	0.06	0.06	0.06	0.06
15.125	0.06	0.06	0.06	0.06	0.06
15.250	0.06	0.06	0.06	0.06	0.06
15.375	0.06	0.06	0.06	0.06	0.06
15.500	0.06	0.06	0.06	0.06	0.06
15.625	0.06	0.06	0.06	0.06	0.06

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
15.750	0.06	0.06	0.06	0.06	0.06
15.875	0.06	0.06	0.06	0.06	0.06
16.000	0.06	0.06	0.06	0.06	0.06
16.125	0.06	0.06	0.06	0.06	0.06
16.250	0.06	0.06	0.06	0.05	0.05
16.375	0.05	0.05	0.05	0.05	0.05
16.500	0.05	0.05	0.05	0.05	0.05
16.625	0.05	0.05	0.05	0.05	0.05
16.750	0.05	0.05	0.05	0.05	0.05
16.875	0.05	0.05	0.05	0.05	0.05
17.000	0.05	0.05	0.05	0.05	0.05
17.125	0.05	0.05	0.05	0.05	0.05
17.250	0.05	0.05	0.05	0.05	0.05
17.375	0.05	0.05	0.05	0.05	0.05
17.500	0.05	0.05	0.05	0.05	0.05
17.625	0.05	0.05	0.05	0.05	0.05
17.750	0.05	0.05	0.05	0.05	0.05
17.875	0.05	0.05	0.05	0.05	0.05
18.000	0.05	0.05	0.05	0.05	0.05
18.125	0.05	0.05	0.05	0.05	0.05
18.250	0.05	0.05	0.05	0.05	0.05
18.375	0.05	0.05	0.05	0.05	0.05
18.500	0.05	0.05	0.05	0.05	0.05
18.625	0.05	0.05	0.05	0.05	0.05
18.750	0.05	0.05	0.05	0.05	0.05
18.875	0.05	0.05	0.05	0.05	0.05
19.000	0.05	0.05	0.05	0.05	0.05
19.125	0.05	0.05	0.05	0.05	0.05
19.250	0.05	0.05	0.05	0.05	0.05
19.375	0.05	0.05	0.05	0.05	0.05
19.500	0.05	0.05	0.05	0.05	0.05
19.625	0.05	0.05	0.05	0.05	0.05
19.750	0.05	0.05	0.05	0.05	0.05
19.875	0.05	0.05	0.05	0.05	0.05
20.000	0.05	0.04	0.04	0.04	0.04
20.125	0.04	0.04	0.04	0.04	0.04
20.250	0.04	0.04	0.04	0.04	0.04
20.375	0.04	0.04	0.04	0.04	0.04
20.500	0.03	0.03	0.03	0.03	0.03
20.625	0.03	0.03	0.03	0.03	0.03
20.750	0.03	0.03	0.03	0.03	0.03
20.875	0.03	0.03	0.03	0.03	0.03
21.000	0.03	0.03	0.03	0.03	0.03
21.125	0.03	0.03	0.03	0.03	0.03
21.250	0.03	0.03	0.03	0.03	0.03
21.375	0.03	0.02	0.02	0.02	0.02
21.500	0.02	0.02	0.02	0.02	0.02
21.625	0.02	0.02	0.02	0.02	0.02
21.750	0.02	0.02	0.02	0.02	0.02
21.875	0.02	0.02	0.02	0.02	0.02
22.000	0.02	0.02	0.02	0.02	0.02
22.125	0.02	0.02	0.02	0.02	0.02

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
22.250	0.02	0.02	0.02	0.02	0.02
22.375	0.02	0.02	0.02	0.02	0.02
22.500	0.02	0.02	0.02	0.02	0.02
22.625	0.02	0.02	0.02	0.02	0.02
22.750	0.02	0.02	0.02	0.02	0.02
22.875	0.02	0.02	0.02	0.02	0.02
23.000	0.02	0.02	0.02	0.02	0.02
23.125	0.02	0.02	0.02	0.02	0.02
23.250	0.02	0.02	0.02	0.02	0.02
23.375	0.02	0.02	0.02	0.02	0.02
23.500	0.02	0.02	0.02	0.02	0.02
23.625	0.02	0.02	0.02	0.02	0.02
23.750	0.02	0.02	0.02	0.02	0.02
23.875	0.02	0.02	0.02	0.02	0.02
24.000	0.02	(N/A)	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
0.06
0.06
0.05
0.04
0.04
0.03
0.03
0.02
0.01
0.01
0.00
Infiltration (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	0.06 ft³/s
Time to Peak	12.025 hours
Hydrograph Volume	0.059 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

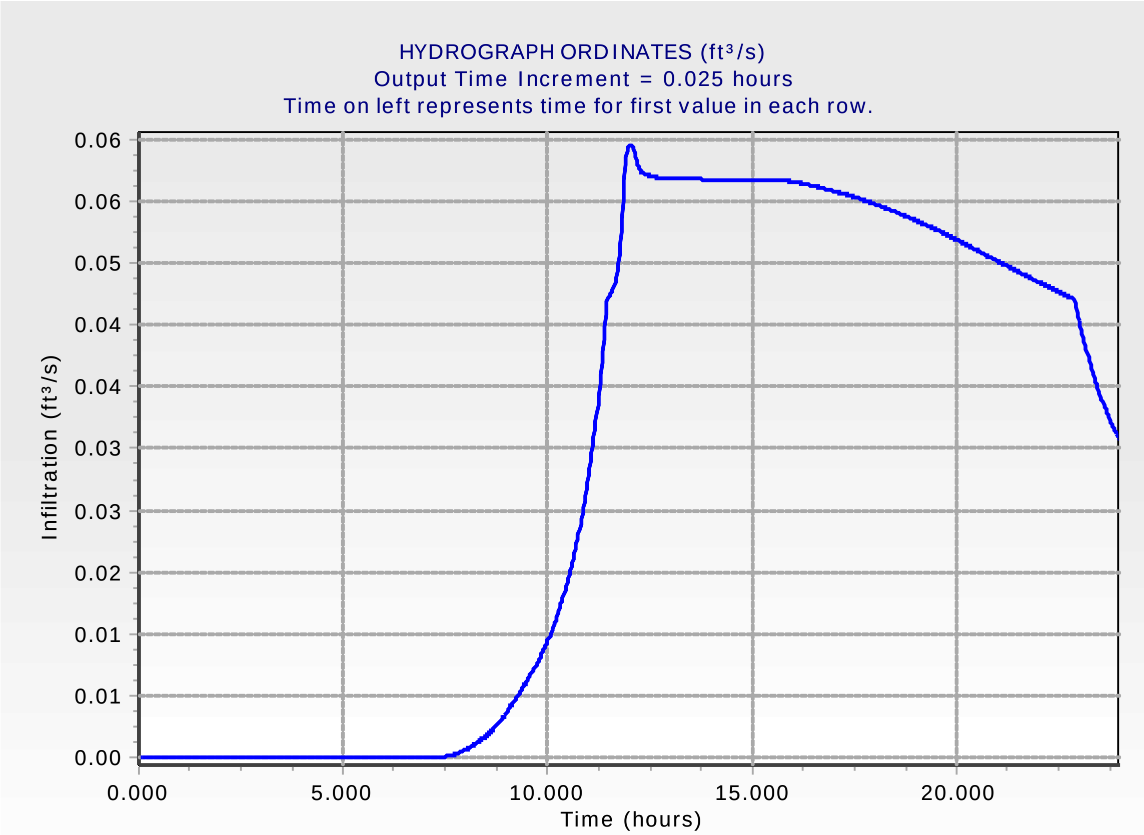
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.100	0.00	0.00	0.00	0.00	0.00
8.225	0.00	0.00	0.00	0.00	0.00
8.350	0.00	0.00	0.00	0.00	0.00
8.475	0.00	0.00	0.00	0.00	0.00
8.600	0.00	0.00	0.00	0.00	0.00
8.725	0.00	0.00	0.00	0.00	0.00
8.850	0.00	0.00	0.00	0.00	0.00
8.975	0.00	0.00	0.00	0.00	0.01
9.100	0.01	0.01	0.01	0.01	0.01
9.225	0.01	0.01	0.01	0.01	0.01
9.350	0.01	0.01	0.01	0.01	0.01
9.475	0.01	0.01	0.01	0.01	0.01
9.600	0.01	0.01	0.01	0.01	0.01
9.725	0.01	0.01	0.01	0.01	0.01
9.850	0.01	0.01	0.01	0.01	0.01
9.975	0.01	0.01	0.01	0.01	0.01
10.100	0.01	0.01	0.01	0.01	0.01
10.225	0.01	0.01	0.01	0.02	0.02
10.350	0.02	0.02	0.02	0.02	0.02
10.475	0.02	0.02	0.02	0.02	0.02
10.600	0.02	0.02	0.02	0.02	0.02
10.725	0.02	0.02	0.02	0.02	0.02
10.850	0.02	0.03	0.03	0.03	0.03
10.975	0.03	0.03	0.03	0.03	0.03
11.100	0.03	0.03	0.03	0.03	0.03
11.225	0.04	0.04	0.04	0.04	0.04
11.350	0.04	0.04	0.04	0.04	0.05
11.475	0.05	0.05	0.05	0.05	0.05
11.600	0.05	0.05	0.05	0.05	0.05
11.725	0.05	0.05	0.05	0.05	0.05
11.850	0.06	0.06	0.06	0.06	0.06
11.975	0.06	0.06	0.06	0.06	0.06
12.100	0.06	0.06	0.06	0.06	0.06
12.225	0.06	0.06	0.06	0.06	0.06
12.350	0.06	0.06	0.06	0.06	0.06
12.475	0.06	0.06	0.06	0.06	0.06
12.600	0.06	0.06	0.06	0.06	0.06
12.725	0.06	0.06	0.06	0.06	0.06
12.850	0.06	0.06	0.06	0.06	0.06
12.975	0.06	0.06	0.06	0.06	0.06
13.100	0.06	0.06	0.06	0.06	0.06
13.225	0.06	0.06	0.06	0.06	0.06
13.350	0.06	0.06	0.06	0.06	0.06
13.475	0.06	0.06	0.06	0.06	0.06
13.600	0.06	0.06	0.06	0.06	0.06
13.725	0.06	0.06	0.06	0.06	0.06
13.850	0.06	0.06	0.06	0.06	0.06
13.975	0.06	0.06	0.06	0.06	0.06

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
14.100	0.06	0.06	0.06	0.06	0.06
14.225	0.06	0.06	0.06	0.06	0.06
14.350	0.06	0.06	0.06	0.06	0.06
14.475	0.06	0.06	0.06	0.06	0.06
14.600	0.06	0.06	0.06	0.06	0.06
14.725	0.06	0.06	0.06	0.06	0.06
14.850	0.06	0.06	0.06	0.06	0.06
14.975	0.06	0.06	0.06	0.06	0.06
15.100	0.06	0.06	0.06	0.06	0.06
15.225	0.06	0.06	0.06	0.06	0.06
15.350	0.06	0.06	0.06	0.06	0.06
15.475	0.06	0.06	0.06	0.06	0.06
15.600	0.06	0.06	0.06	0.06	0.06
15.725	0.06	0.06	0.06	0.06	0.06
15.850	0.06	0.06	0.06	0.06	0.06
15.975	0.06	0.06	0.06	0.06	0.06
16.100	0.06	0.06	0.06	0.06	0.06
16.225	0.06	0.06	0.06	0.06	0.06
16.350	0.06	0.06	0.06	0.06	0.06
16.475	0.06	0.06	0.06	0.06	0.06
16.600	0.06	0.06	0.06	0.06	0.06
16.725	0.06	0.06	0.06	0.06	0.06
16.850	0.06	0.06	0.06	0.06	0.06
16.975	0.06	0.06	0.06	0.06	0.06
17.100	0.06	0.06	0.06	0.06	0.06
17.225	0.06	0.06	0.06	0.06	0.06
17.350	0.06	0.06	0.06	0.06	0.06
17.475	0.06	0.06	0.06	0.06	0.06
17.600	0.06	0.06	0.06	0.06	0.06
17.725	0.06	0.06	0.06	0.06	0.06
17.850	0.06	0.06	0.06	0.06	0.06
17.975	0.06	0.06	0.06	0.06	0.06
18.100	0.06	0.06	0.06	0.06	0.06
18.225	0.06	0.06	0.06	0.06	0.06
18.350	0.06	0.06	0.06	0.06	0.06
18.475	0.06	0.06	0.06	0.06	0.06
18.600	0.06	0.05	0.05	0.05	0.05
18.725	0.05	0.05	0.05	0.05	0.05
18.850	0.05	0.05	0.05	0.05	0.05
18.975	0.05	0.05	0.05	0.05	0.05
19.100	0.05	0.05	0.05	0.05	0.05
19.225	0.05	0.05	0.05	0.05	0.05
19.350	0.05	0.05	0.05	0.05	0.05
19.475	0.05	0.05	0.05	0.05	0.05
19.600	0.05	0.05	0.05	0.05	0.05
19.725	0.05	0.05	0.05	0.05	0.05
19.850	0.05	0.05	0.05	0.05	0.05
19.975	0.05	0.05	0.05	0.05	0.05
20.100	0.05	0.05	0.05	0.05	0.05
20.225	0.05	0.05	0.05	0.05	0.05
20.350	0.05	0.05	0.05	0.05	0.05
20.475	0.05	0.05	0.05	0.05	0.05

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.600	0.05	0.05	0.05	0.05	0.05
20.725	0.05	0.05	0.05	0.05	0.05
20.850	0.05	0.05	0.05	0.05	0.05
20.975	0.05	0.05	0.05	0.05	0.05
21.100	0.05	0.05	0.05	0.05	0.05
21.225	0.05	0.05	0.05	0.05	0.05
21.350	0.05	0.05	0.05	0.05	0.05
21.475	0.05	0.05	0.05	0.05	0.05
21.600	0.05	0.05	0.05	0.05	0.05
21.725	0.05	0.05	0.05	0.05	0.05
21.850	0.05	0.05	0.05	0.05	0.05
21.975	0.05	0.05	0.05	0.05	0.05
22.100	0.05	0.05	0.05	0.05	0.05
22.225	0.05	0.05	0.05	0.05	0.05
22.350	0.05	0.05	0.05	0.05	0.05
22.475	0.05	0.05	0.05	0.05	0.05
22.600	0.05	0.05	0.05	0.05	0.05
22.725	0.05	0.05	0.05	0.05	0.05
22.850	0.05	0.05	0.05	0.05	0.05
22.975	0.04	0.04	0.04	0.04	0.04
23.100	0.04	0.04	0.04	0.04	0.04
23.225	0.04	0.04	0.04	0.04	0.04
23.350	0.04	0.04	0.04	0.04	0.04
23.475	0.04	0.04	0.04	0.04	0.04
23.600	0.04	0.04	0.04	0.03	0.03
23.725	0.03	0.03	0.03	0.03	0.03
23.850	0.03	0.03	0.03	0.03	0.03
23.975	0.03	0.03	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Infiltration (ft³/s)
0.06
0.06
0.05
0.04
0.04
0.03
0.03
0.02
0.01
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	0.06 ft³/s
Time to Peak	12.025 hours
Hydrograph Volume	0.064 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

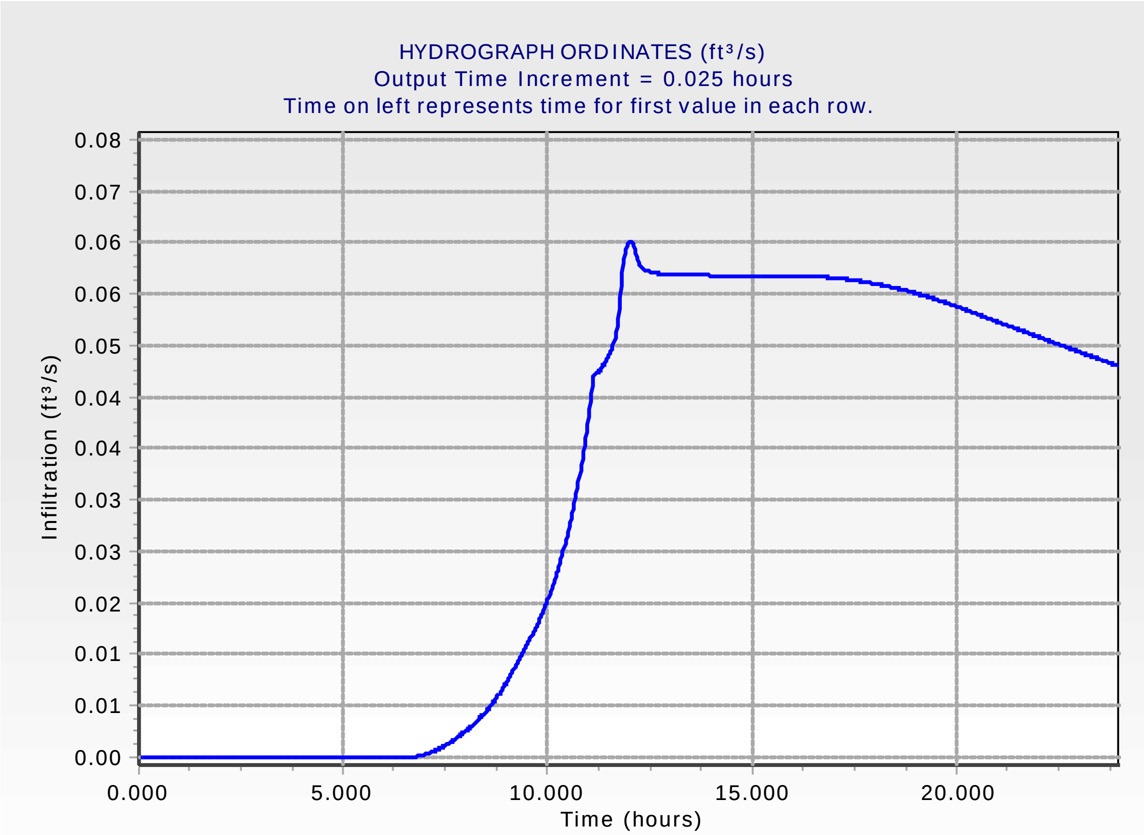
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.325	0.00	0.00	0.00	0.00	0.00
7.450	0.00	0.00	0.00	0.00	0.00
7.575	0.00	0.00	0.00	0.00	0.00
7.700	0.00	0.00	0.00	0.00	0.00
7.825	0.00	0.00	0.00	0.00	0.00
7.950	0.00	0.00	0.00	0.00	0.00
8.075	0.00	0.00	0.00	0.00	0.00
8.200	0.00	0.00	0.00	0.00	0.00
8.325	0.00	0.00	0.00	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.575	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.825	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.01
9.075	0.01	0.01	0.01	0.01	0.01
9.200	0.01	0.01	0.01	0.01	0.01
9.325	0.01	0.01	0.01	0.01	0.01
9.450	0.01	0.01	0.01	0.01	0.01
9.575	0.01	0.01	0.01	0.02	0.02
9.700	0.02	0.02	0.02	0.02	0.02
9.825	0.02	0.02	0.02	0.02	0.02
9.950	0.02	0.02	0.02	0.02	0.02
10.075	0.02	0.02	0.02	0.02	0.02
10.200	0.02	0.02	0.02	0.02	0.02
10.325	0.02	0.02	0.02	0.03	0.03
10.450	0.03	0.03	0.03	0.03	0.03
10.575	0.03	0.03	0.03	0.03	0.03
10.700	0.03	0.03	0.03	0.03	0.03
10.825	0.04	0.04	0.04	0.04	0.04
10.950	0.04	0.04	0.04	0.04	0.04
11.075	0.04	0.05	0.05	0.05	0.05
11.200	0.05	0.05	0.05	0.05	0.05
11.325	0.05	0.05	0.05	0.05	0.05
11.450	0.05	0.05	0.05	0.05	0.05
11.575	0.05	0.05	0.05	0.05	0.05
11.700	0.05	0.05	0.05	0.06	0.06
11.825	0.06	0.06	0.06	0.06	0.06
11.950	0.06	0.06	0.06	0.06	0.06
12.075	0.06	0.06	0.06	0.06	0.06
12.200	0.06	0.06	0.06	0.06	0.06
12.325	0.06	0.06	0.06	0.06	0.06
12.450	0.06	0.06	0.06	0.06	0.06
12.575	0.06	0.06	0.06	0.06	0.06
12.700	0.06	0.06	0.06	0.06	0.06
12.825	0.06	0.06	0.06	0.06	0.06
12.950	0.06	0.06	0.06	0.06	0.06
13.075	0.06	0.06	0.06	0.06	0.06
13.200	0.06	0.06	0.06	0.06	0.06

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
13.325	0.06	0.06	0.06	0.06	0.06
13.450	0.06	0.06	0.06	0.06	0.06
13.575	0.06	0.06	0.06	0.06	0.06
13.700	0.06	0.06	0.06	0.06	0.06
13.825	0.06	0.06	0.06	0.06	0.06
13.950	0.06	0.06	0.06	0.06	0.06
14.075	0.06	0.06	0.06	0.06	0.06
14.200	0.06	0.06	0.06	0.06	0.06
14.325	0.06	0.06	0.06	0.06	0.06
14.450	0.06	0.06	0.06	0.06	0.06
14.575	0.06	0.06	0.06	0.06	0.06
14.700	0.06	0.06	0.06	0.06	0.06
14.825	0.06	0.06	0.06	0.06	0.06
14.950	0.06	0.06	0.06	0.06	0.06
15.075	0.06	0.06	0.06	0.06	0.06
15.200	0.06	0.06	0.06	0.06	0.06
15.325	0.06	0.06	0.06	0.06	0.06
15.450	0.06	0.06	0.06	0.06	0.06
15.575	0.06	0.06	0.06	0.06	0.06
15.700	0.06	0.06	0.06	0.06	0.06
15.825	0.06	0.06	0.06	0.06	0.06
15.950	0.06	0.06	0.06	0.06	0.06
16.075	0.06	0.06	0.06	0.06	0.06
16.200	0.06	0.06	0.06	0.06	0.06
16.325	0.06	0.06	0.06	0.06	0.06
16.450	0.06	0.06	0.06	0.06	0.06
16.575	0.06	0.06	0.06	0.06	0.06
16.700	0.06	0.06	0.06	0.06	0.06
16.825	0.06	0.06	0.06	0.06	0.06
16.950	0.06	0.06	0.06	0.06	0.06
17.075	0.06	0.06	0.06	0.06	0.06
17.200	0.06	0.06	0.06	0.06	0.06
17.325	0.06	0.06	0.06	0.06	0.06
17.450	0.06	0.06	0.06	0.06	0.06
17.575	0.06	0.06	0.06	0.06	0.06
17.700	0.06	0.06	0.06	0.06	0.06
17.825	0.06	0.06	0.06	0.06	0.06
17.950	0.06	0.06	0.06	0.06	0.06
18.075	0.06	0.06	0.06	0.06	0.06
18.200	0.06	0.06	0.06	0.06	0.06
18.325	0.06	0.06	0.06	0.06	0.06
18.450	0.06	0.06	0.06	0.06	0.06
18.575	0.06	0.06	0.06	0.06	0.06
18.700	0.06	0.06	0.06	0.06	0.06
18.825	0.06	0.06	0.06	0.06	0.06
18.950	0.06	0.06	0.06	0.06	0.06
19.075	0.06	0.06	0.06	0.06	0.06
19.200	0.06	0.06	0.06	0.06	0.06
19.325	0.06	0.06	0.06	0.06	0.06
19.450	0.06	0.06	0.06	0.06	0.06
19.575	0.06	0.06	0.06	0.06	0.06
19.700	0.06	0.06	0.06	0.06	0.06

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

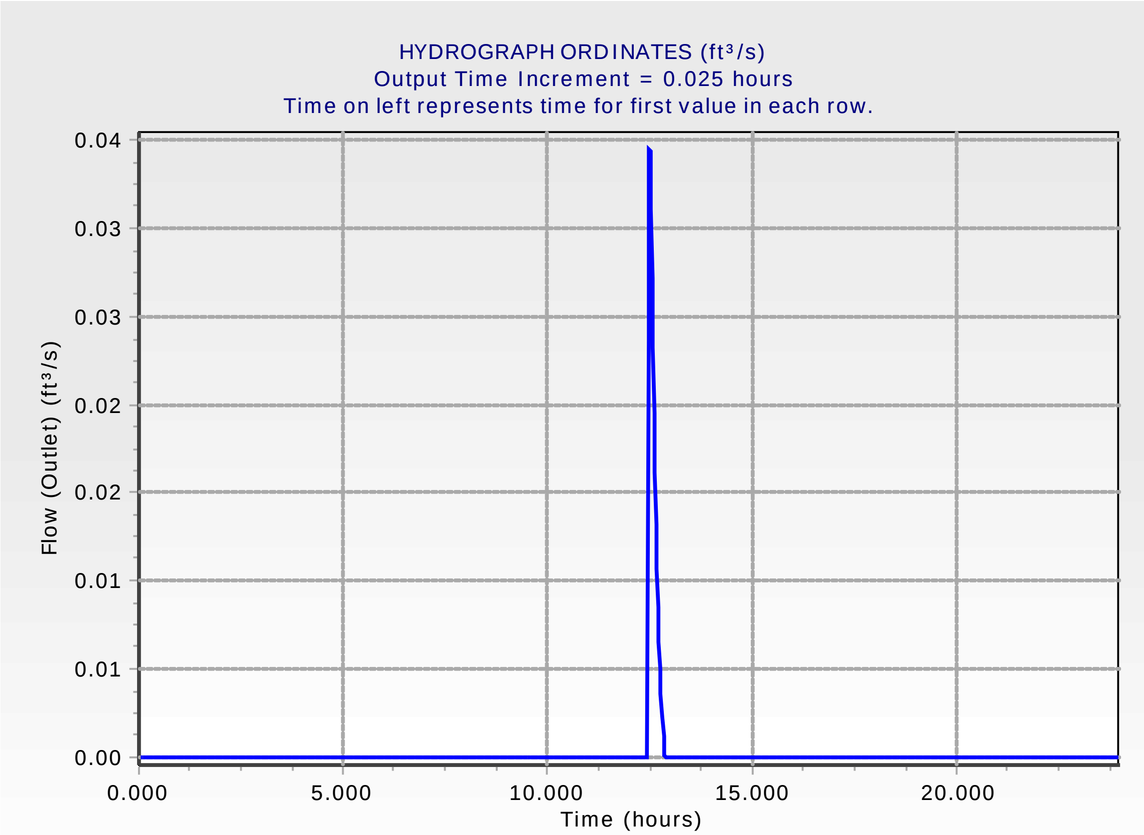
Time (hours)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
19.825	0.06	0.06	0.05	0.05	0.05
19.950	0.05	0.05	0.05	0.05	0.05
20.075	0.05	0.05	0.05	0.05	0.05
20.200	0.05	0.05	0.05	0.05	0.05
20.325	0.05	0.05	0.05	0.05	0.05
20.450	0.05	0.05	0.05	0.05	0.05
20.575	0.05	0.05	0.05	0.05	0.05
20.700	0.05	0.05	0.05	0.05	0.05
20.825	0.05	0.05	0.05	0.05	0.05
20.950	0.05	0.05	0.05	0.05	0.05
21.075	0.05	0.05	0.05	0.05	0.05
21.200	0.05	0.05	0.05	0.05	0.05
21.325	0.05	0.05	0.05	0.05	0.05
21.450	0.05	0.05	0.05	0.05	0.05
21.575	0.05	0.05	0.05	0.05	0.05
21.700	0.05	0.05	0.05	0.05	0.05
21.825	0.05	0.05	0.05	0.05	0.05
21.950	0.05	0.05	0.05	0.05	0.05
22.075	0.05	0.05	0.05	0.05	0.05
22.200	0.05	0.05	0.05	0.05	0.05
22.325	0.05	0.05	0.05	0.05	0.05
22.450	0.05	0.05	0.05	0.05	0.05
22.575	0.05	0.05	0.05	0.05	0.05
22.700	0.05	0.05	0.05	0.05	0.05
22.825	0.05	0.05	0.05	0.05	0.05
22.950	0.05	0.05	0.05	0.05	0.05
23.075	0.05	0.05	0.05	0.05	0.05
23.200	0.05	0.05	0.05	0.05	0.05
23.325	0.05	0.05	0.05	0.05	0.05
23.450	0.05	0.05	0.05	0.05	0.05
23.575	0.05	0.05	0.05	0.05	0.05
23.700	0.05	0.05	0.05	0.05	0.05
23.825	0.05	0.05	0.05	0.05	0.05
23.950	0.05	0.05	0.05	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Infiltration (ft³/s)
0.08
0.07
0.06
0.06
0.05
0.04
0.04
0.03
0.03
0.02
0.01
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	0.03 ft³/s
Time to Peak	12.475 hours
Hydrograph Volume	0.001 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

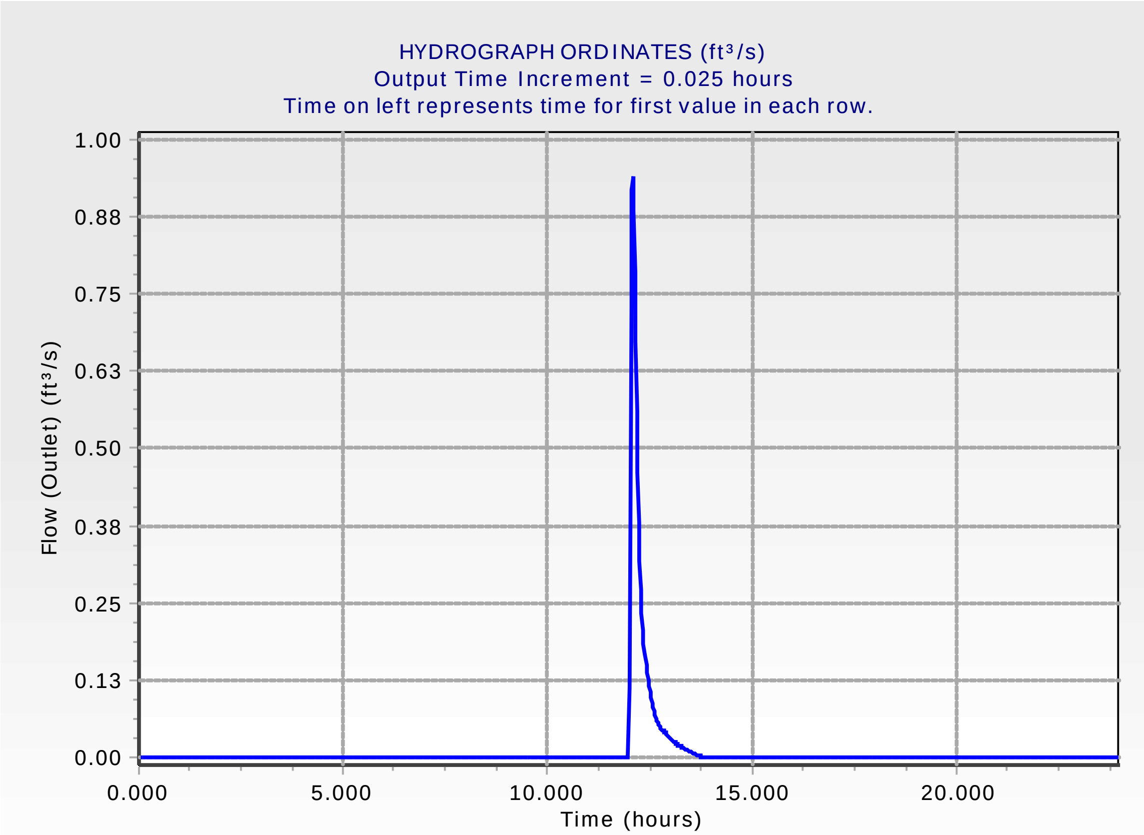
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.425	0.00	0.02	0.03	0.03	0.03
12.550	0.03	0.02	0.02	0.02	0.01
12.675	0.01	0.01	0.01	0.00	0.00
12.800	0.00	0.00	0.00	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Outlet) (ft³/s)
0.04
0.03
0.03
0.02
0.02
0.01
0.01
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	0.94 ft³/s
Time to Peak	12.075 hours
Hydrograph Volume	0.021 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

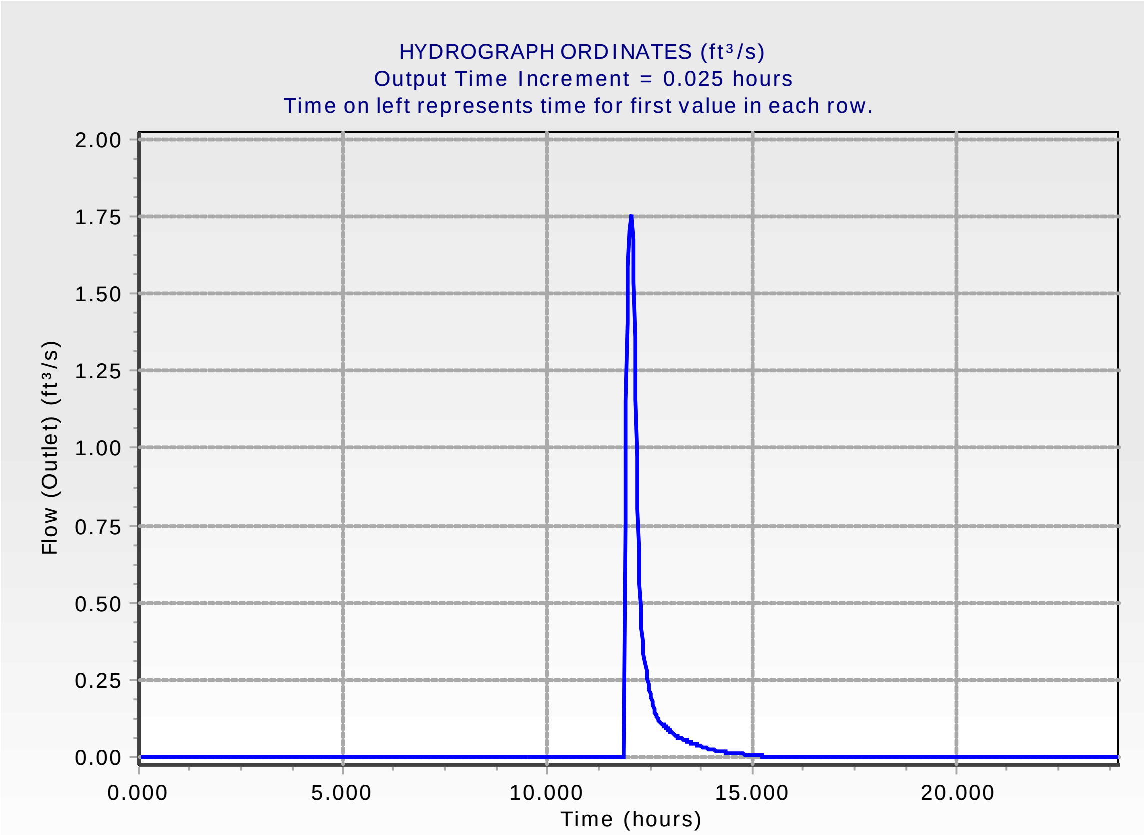
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.975	0.00	0.11	0.73	0.92	0.94
12.100	0.88	0.79	0.67	0.56	0.46
12.225	0.38	0.32	0.27	0.23	0.21
12.350	0.18	0.16	0.15	0.14	0.12
12.475	0.11	0.11	0.10	0.09	0.08
12.600	0.07	0.07	0.06	0.06	0.06
12.725	0.05	0.05	0.05	0.04	0.04
12.850	0.04	0.04	0.04	0.04	0.03
12.975	0.03	0.03	0.03	0.03	0.03
13.100	0.02	0.02	0.02	0.02	0.02
13.225	0.02	0.02	0.02	0.02	0.01
13.350	0.01	0.01	0.01	0.01	0.01
13.475	0.01	0.01	0.01	0.01	0.01
13.600	0.01	0.00	0.00	0.00	0.00
13.725	0.00	0.00	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
1.00
0.88
0.75
0.63
0.50
0.38
0.25
0.13
0.00
Flow (Outlet) (ft³/s)
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	1.76 ft³/s
Time to Peak	12.025 hours
Hydrograph Volume	0.056 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

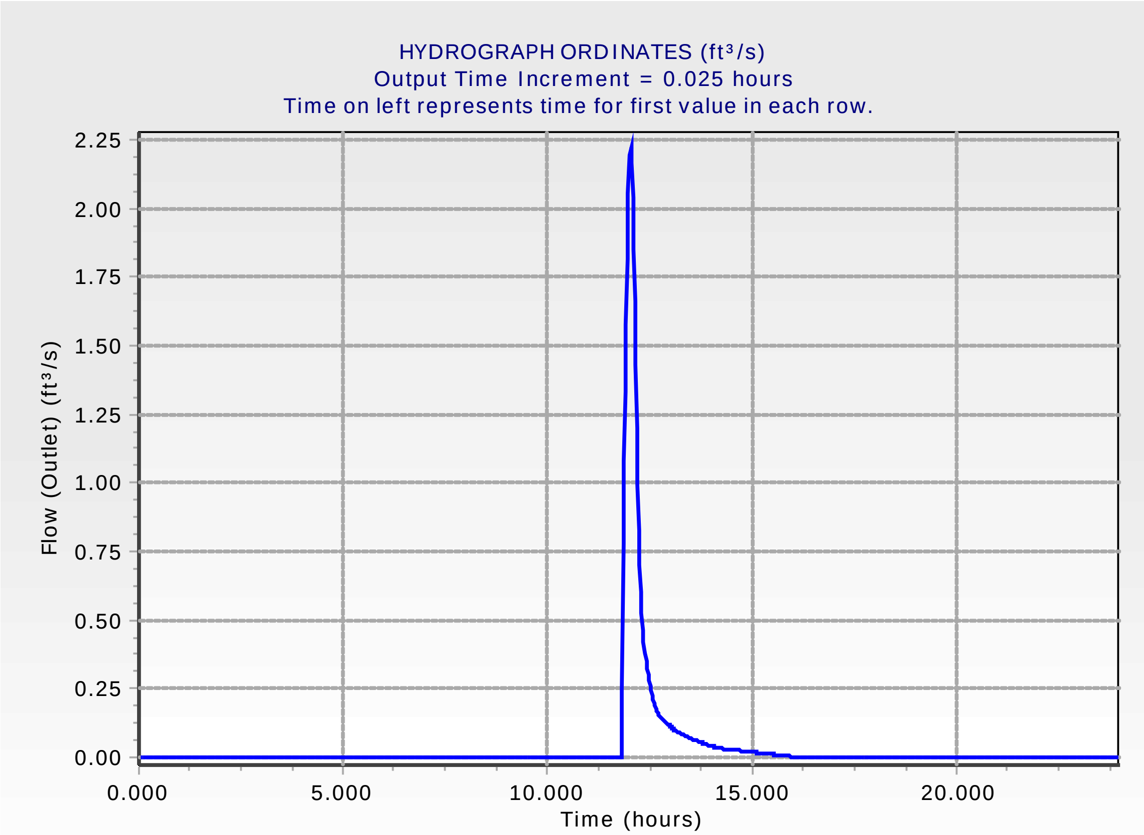
Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.875	0.00	0.76	1.15	1.41	1.59
12.000	1.71	1.76	1.75	1.68	1.54
12.125	1.36	1.16	0.97	0.80	0.67
12.250	0.56	0.48	0.42	0.37	0.33
12.375	0.30	0.28	0.26	0.24	0.22
12.500	0.20	0.19	0.18	0.17	0.16
12.625	0.15	0.14	0.13	0.12	0.12
12.750	0.11	0.11	0.11	0.10	0.10
12.875	0.10	0.09	0.09	0.09	0.09
13.000	0.08	0.08	0.08	0.08	0.07
13.125	0.07	0.07	0.07	0.07	0.06
13.250	0.06	0.06	0.06	0.06	0.06
13.375	0.05	0.05	0.05	0.05	0.05
13.500	0.05	0.05	0.04	0.04	0.04
13.625	0.04	0.04	0.04	0.04	0.04
13.750	0.04	0.03	0.03	0.03	0.03
13.875	0.03	0.03	0.03	0.03	0.03
14.000	0.03	0.02	0.02	0.02	0.02
14.125	0.02	0.02	0.02	0.02	0.02
14.250	0.02	0.02	0.02	0.02	0.02
14.375	0.02	0.01	0.01	0.01	0.01
14.500	0.01	0.01	0.01	0.01	0.01
14.625	0.01	0.01	0.01	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
14.875	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01
15.125	0.00	0.00	0.00	0.00	0.00
15.250	0.00	0.00	0.00	0.00	0.00
15.375	0.00	0.00	(N/A)	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Outlet) (ft³/s)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Peak Discharge	2.22 ft³/s
Time to Peak	12.025 hours
Hydrograph Volume	0.078 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.800	0.00	0.25	0.78	1.08	1.33
11.925	1.58	1.81	2.05	2.19	2.22
12.050	2.17	2.04	1.85	1.66	1.43
12.175	1.20	0.99	0.83	0.70	0.60
12.300	0.52	0.47	0.42	0.38	0.35
12.425	0.32	0.30	0.28	0.26	0.24
12.550	0.23	0.21	0.20	0.19	0.18
12.675	0.17	0.16	0.15	0.15	0.14
12.800	0.14	0.14	0.13	0.13	0.13
12.925	0.12	0.12	0.12	0.11	0.11
13.050	0.11	0.10	0.10	0.10	0.10
13.175	0.09	0.09	0.09	0.09	0.08
13.300	0.08	0.08	0.08	0.08	0.08
13.425	0.07	0.07	0.07	0.07	0.07
13.550	0.07	0.06	0.06	0.06	0.06
13.675	0.06	0.06	0.06	0.05	0.05
13.800	0.05	0.05	0.05	0.05	0.05
13.925	0.05	0.04	0.04	0.04	0.04
14.050	0.04	0.04	0.04	0.04	0.04
14.175	0.03	0.03	0.03	0.03	0.03
14.300	0.03	0.03	0.03	0.03	0.03
14.425	0.03	0.03	0.03	0.03	0.03
14.550	0.03	0.03	0.03	0.03	0.03
14.675	0.02	0.02	0.02	0.02	0.02
14.800	0.02	0.02	0.02	0.02	0.02
14.925	0.02	0.02	0.02	0.02	0.02
15.050	0.02	0.02	0.02	0.02	0.02
15.175	0.02	0.02	0.02	0.02	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.425	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.01	0.01	0.01
15.675	0.01	0.01	0.01	0.01	0.01
15.800	0.01	0.01	0.01	0.00	0.00
15.925	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	(N/A)	(N/A)


HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.025 hours
Time on left represents time for first value in each row.
Flow (Outlet) (ft³/s)
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.000
5.000
10.000
15.000
20.000
Time (hours)

Index

APPENDIX C – HYDRAULIC AND STABILITY CALCULATIONS

Worksheet for SW-1 10 YR

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.045	
Channel Slope	0.01100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	4.00	ft
Discharge	1.08	ft³/s

Results

Normal Depth	0.21	ft
Flow Area	0.97	ft²
Wetted Perimeter	5.33	ft
Hydraulic Radius	0.18	ft
Top Width	5.26	ft
Critical Depth	0.13	ft
Critical Slope	0.06107	ft/ft
Velocity	1.11	ft/s
Velocity Head	0.02	ft
Specific Energy	0.23	ft
Froude Number	0.46	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.21	ft
Critical Depth	0.13	ft
Channel Slope	0.01100	ft/ft
Critical Slope	0.06107	ft/ft

Worksheet for SW-1 100 YR

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.045	
Channel Slope	0.01100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	4.00	ft
Discharge	2.29	ft^3/s

Results

Normal Depth	0.32	ft
Flow Area	1.60	ft^2
Wetted Perimeter	6.04	ft
Hydraulic Radius	0.27	ft
Top Width	5.93	ft
Critical Depth	0.21	ft
Critical Slope	0.05303	ft/ft
Velocity	1.43	ft/s
Velocity Head	0.03	ft
Specific Energy	0.35	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.32	ft
Critical Depth	0.21	ft
Channel Slope	0.01100	ft/ft
Critical Slope	0.05303	ft/ft

Worksheet for SW-2 10 YR

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.045	
Channel Slope	0.00500	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	6.00	ft
Discharge	36.76	ft^3/s

Results

Normal Depth	1.49	ft
Flow Area	15.62	ft^2
Wetted Perimeter	15.43	ft
Hydraulic Radius	1.01	ft
Top Width	14.95	ft
Critical Depth	0.90	ft
Critical Slope	0.03460	ft/ft
Velocity	2.35	ft/s
Velocity Head	0.09	ft
Specific Energy	1.58	ft
Froude Number	0.41	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.49	ft
Critical Depth	0.90	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.03460	ft/ft

Worksheet for SW-2 100 YR

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.045	
Channel Slope	0.00500	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	6.00	ft
Discharge	121.86	ft^3/s

Results

Normal Depth	2.68	ft
Flow Area	37.56	ft^2
Wetted Perimeter	22.93	ft
Hydraulic Radius	1.64	ft
Top Width	22.06	ft
Critical Depth	1.75	ft
Critical Slope	0.02911	ft/ft
Velocity	3.24	ft/s
Velocity Head	0.16	ft
Specific Energy	2.84	ft
Froude Number	0.44	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.68	ft
Critical Depth	1.75	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.02911	ft/ft

Tensar International Corporation
5401 St. Wendel-Cynthiana Road
Poseyville, Indiana 47633
Tel. 800.772.2040
Fax 812.867.0247
www.nagreen.com

Erosion Control Materials Design Software
Version 5.0

Project Name: NPT-TS2
Project Number: 104911
Project Location: Clarksville, New Hampshire
Channel Name: SW-1 (10-yr)

Discharge	1.08
Peak Flow Period	0
Channel Slope	0.011
Channel Bottom Width	4
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardance Class	C
Vegtation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Silt Loam

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	1.08 cfs	0.36 ft/s	0.54 ft	0.238	4.2 lbs/ft2	0.37 lbs/ft2	11.43	STABLE	--
Underlying Substrate	Straight	1.08 cfs	0.36 ft/s	0.54 ft	--	0.04 lbs/ft2	0 lbs/ft2	88.41	STABLE	--

Tensar International Corporation
5401 St. Wendel-Cynthiana Road
Poseyville, Indiana 47633
Tel. 800.772.2040
Fax 812.867.0247
www.nagreen.com

Erosion Control Materials Design Software
Version 5.0

Project Name: NPT-TS2
Project Number: 104915
Project Location: Clarksville, New Hampshire
Channel Name: SW-2 (10-yr)

Discharge	36.76
Peak Flow Period	0
Channel Slope	0.005
Channel Bottom Width	6
Left Side Slope	3
Right Side Slope	3
Low Flow Liner	
Retardance Class	B
Vegtation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Silt Loam

Unreinforced Vegetation - Class B - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	36.76 cfs	1.24 ft/s	2.29 ft	0.108	5.73 lbs/ft2	0.72 lbs/ft2	8.01	STABLE	--
Underlying Substrate	Straight	36.76 cfs	1.24 ft/s	2.29 ft	--	0.04 lbs/ft2	0.004 lbs/ft2	9.33	STABLE	--

Tensar International Corporation
5401 St. Wendel-Cynthiana Road
Poseyville, Indiana 47633
Tel. 800.772.2040
Fax 812.867.0247
www.nagreen.com

Erosion Control Materials Design Software
Version 5.0

Project Name: NPT-TS2
Project Number: 104906
Project Location: Clarksville, New Hampshire
Spillway Name: Basin Spillway (100-yr)

Discharge	2.29
Peak Flow Period	0
Channel Slope	0.05
Channel Bottom Width	9
Left Side Slope	
Right Side Slope	
Low Flow Liner	
Retardance Class	C
Vegtation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Silt Loam

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	2.29 cfs	0.83 ft/s	0.31 ft	0.174	4.2 lbs/ft2	0.96 lbs/ft2	4.39	STABLE	--
Underlying Substrate	Straight	2.29 cfs	0.83 ft/s	0.31 ft	--	0.04 lbs/ft2	0.002 lbs/ft2	18.25	STABLE	--

APPENDIX D – NH DES WORKSHEETS

INFILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.05)

Type/Node Name: **Infiltration Basin**

Enter the type of infiltration practice (e.g., trench) and the node name in the drainage analysis, if applicable

yes		Have you reviewed Env-Wq 1508.05(a) to ensure that infiltration is allowed?	
0.57	ac	A = Area draining to the practice	
0.01	ac	A_I = Impervious area draining to the practice	
0.02	decimal	I = percent impervious area draining to the practice, in decimal form	
0.07	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.04	ac-in	WQV= 1" x Rv x A	
140	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
35	cf	25% x WQV (check calc for sediment forebay volume)	
pretreatment swale		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← **≥ 25%WQV**
659	cf	V = volume[1] (attach a stage-storage table)	← **≥ WQV**
664	sf	A_{SA} = surface area of the bottom of the pond	
2.70	iph	I_{DESIGN} = design infiltration rate[2]	
4.4	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← **≤ 72-hrs**
1,303.00	feet	E_{BTM} = elevation of the bottom of the practice	
1,298.00	feet	E_{SHWT} = elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
1,292.10	feet	E_{ROCK} = elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
5.00	feet	D_{SHWT} = separation from SHWT[3]	← **≥ *** [3]
10.9	feet	D_{ROCK} = separation from bedrock[3]	← **≥ *** [3]
	ft	D_T = depth of trench, if trench proposed	← **4 - 10 ft**
N/A	Yes/No	If a trench or underground system is proposed, observation well provided	
		If a trench is proposed, material in trench	
Sand or Pea Gravel		If a basin is proposed, basin floor material	
yes	Yes/No	If a basin is proposed, the perimeter should be curvilinear.	
3.0	:1	If a basin is proposed, pond side slopes	← **≥3:1**
1,303.91	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
1,303.99	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
1,305.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. See NH Stormwater Manual, Vol.2, Ch.2-4, for guidance on determining the infiltration rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.

Designer's Notes: ______________________________

Groundwater Recharge Volume (GRV) Calculation

	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.01	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.25	inches	Rd = weighted groundwater recharge depth	
0.0025	ac-in	GRV = AI * Rd	
9	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

Refer to Infiltration Basin Calculation Sheet for storage (recharge) volume.

BMP: Infiltration Basin

A_I = Impervious area draining to the practice = 0.01 ac

(Contributing watershed: Area 1B)

0.01 ac Station (roof tops and concrete foundation)

0.01 ac **TOTAL Impervious Area Contributing to BMP: Infiltration Basin**

APPENDIX E – OPERATIONS AND MAINTENANCE PLAN

Northern Pass Transmission Project
Transition Station #2

Stormwater System Operations and Maintenance Plan

General Overview
Eversource has established an operations and maintenance (O&M) plan for the station post-construction stormwater management system in accordance with the New Hampshire Department of Environmental Services Stormwater Manual (2008) and will be implemented upon completion of construction as outlined below. Any required post construction stormwater management permits will be obtained and implemented by Eversource.

The station is located on Eversource owned property on US-3 (45.018593 latitude and -71.462250 longitude) in Clarksville, Coos County, NH (Site). The Site is part of an active gravel pit operation on the western slope of a hill overlooking the Connecticut River. Access to the Site is from US Route 3 along a gravel road.

Purpose & Goals
The purpose of this O&M Plan is to provide guidance for the implementation and documentation process of the station site stormwater management system to help conform with the corresponding regulatory agency approvals and permits. The guidance provided herein is the minimum required. The primary goal is to inform all the property managers about how the system operates and what maintenance items are necessary to protect the downstream storm drain system and waters. The secondary goal is to provide a practical, efficient means of maintenance planning and record keeping to verify permit compliance.

Responsible Parties
Eversource will be responsible for implementing the O&M Plan.

Eversource
13 Legends Drive
Hooksett, NH 03106

Maintenance Logs and Checklists
Eversource will keep a record of all maintenance procedures performed, date of inspection/ cleanings, etc. Copies of inspection reports and maintenance records shall be kept on site.

Forms
The following forms will be developed for annual maintenance. Copies of the forms will be kept on-site as part of the Post-Construction Stormwater Management Plan.

- Annual Checklist
- Quarterly Checklist
- Monthly Checklist

Training

Responsible operations and maintenance workers and contractors will be trained with a basic description of the purpose and function of the onsite stormwater management system as well as safety protocol and procedures, with annual up-dates, to provide that the workers tasked with maintaining the station site do so in accordance with the approved permit conditions. All workers that have maintenance duties will be adequately informed of their responsibilities. All sub-contractors (Vactor, landscaping, snowplowing, etc.) will be informed of special requirements and responsibilities.

Stormwater Management System

The onsite stormwater management system has several components that are shown on the Site Development Plans and they perform various functions in conveying and treating stormwater runoff. Refer to the Site Development Plans for locations and details for each of the stormwater system components. Regular operations and maintenance is critical to the long term success of the stormwater management system components. The stormwater system components are:

Stormwater Swales:

Onsite stormwater swales collect and convey stormwater runoff and are lined with vegetation. The following is recommended for regular maintenance twice annually unless otherwise noted:

- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.
- Perform periodic mowing; frequency depends on location and type of grass. Do not cut shorter than Water Quality Flow depth (maximum 4-inches).
- Remove debris and accumulated sediment, based on inspection.
- Removal of woody vegetation from embankments.
- Repair eroded areas, remove invasive species and dead vegetation, and reseed with applicable grass mix as warranted by inspection.
- Periodic mowing of vegetated swales.

Infiltration Basin:

The infiltration basin attenuates stormwater, provides water quality and groundwater recharge and consists of numerous components including embankments and a vegetated spillway. The following is recommended for regular maintenance twice annually unless otherwise noted:

- Remove any trash and debris.
- Periodic mowing of embankments.
- Removal of woody vegetation from embankments.
- Removal of debris from spillway. Removal of accumulated sediment.
- Inspection and repair of embankments and spillway.
- Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species
- Inspection of infiltration components at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.

- Inspection of pretreatment measures (vegetated swale) at least twice annually and removal of accumulated sediment as warranted by inspection, but no less than once annually.
- If an infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore the condition of the facility to determine measures requires to restore infiltration function, including but not limited to removal of accumulates sediments or reconstruction.

Station Yard Stone:

The station yard stone within the station yard, on access roads, and in parking areas can become compacted and eroded over time. The following is recommended for regular maintenance twice annually unless otherwise noted:

- Inspect for and repair any erosion in the yard, on access roads, and at the perimeter of the gravel areas.
- As the gravel areas become compacted, scrape off top layer to subgrade elevation and install new gravel surfacing layer at design elevation and pitch.

Spill Control

Eversource will have a spill control program. That program will be updated annually and incorporated into the employee-training program.

Disposal:

For all removed sediment, debris, trash, etc. from the stormwater management system during operations and maintenance shall be disposed of properly and legally by a New Hampshire Licensed hauler. Road sand may be reused for winter sanding, but may not be stored on-site.

Pesticides:

Northern Pass anticipates that vegetation management activities will be performed by Eversource. Work will be performed in accordance with Eversource's vegetation management program, which currently employs only mechanical means for controlling vegetation within the Eversource rights of way. Eversource does not currently plan to use herbicides as part of its vegetation management program, and as indicated in the Northern Pass application for a Presidential Permit (at page 52), all vegetation management and maintenance will be carried out in accordance with the New Hampshire Division of Forest and Lands Best Management Practice for utility maintenance. Herbicides will not be used before or during construction of the Northern Pass.

* * * * *

APPENDIX F – FEMA FLOOD INSURANCE RATE MAP

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was New Hampshire State Plane Zone (FIPS zone 2800). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

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

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

Base map information shown on this FIRM was provided in digital format by the National Agriculture Imagery Program. This information was photogrammetrically compiled at a scale of 1:12,000 from aerial photography dated 2009.

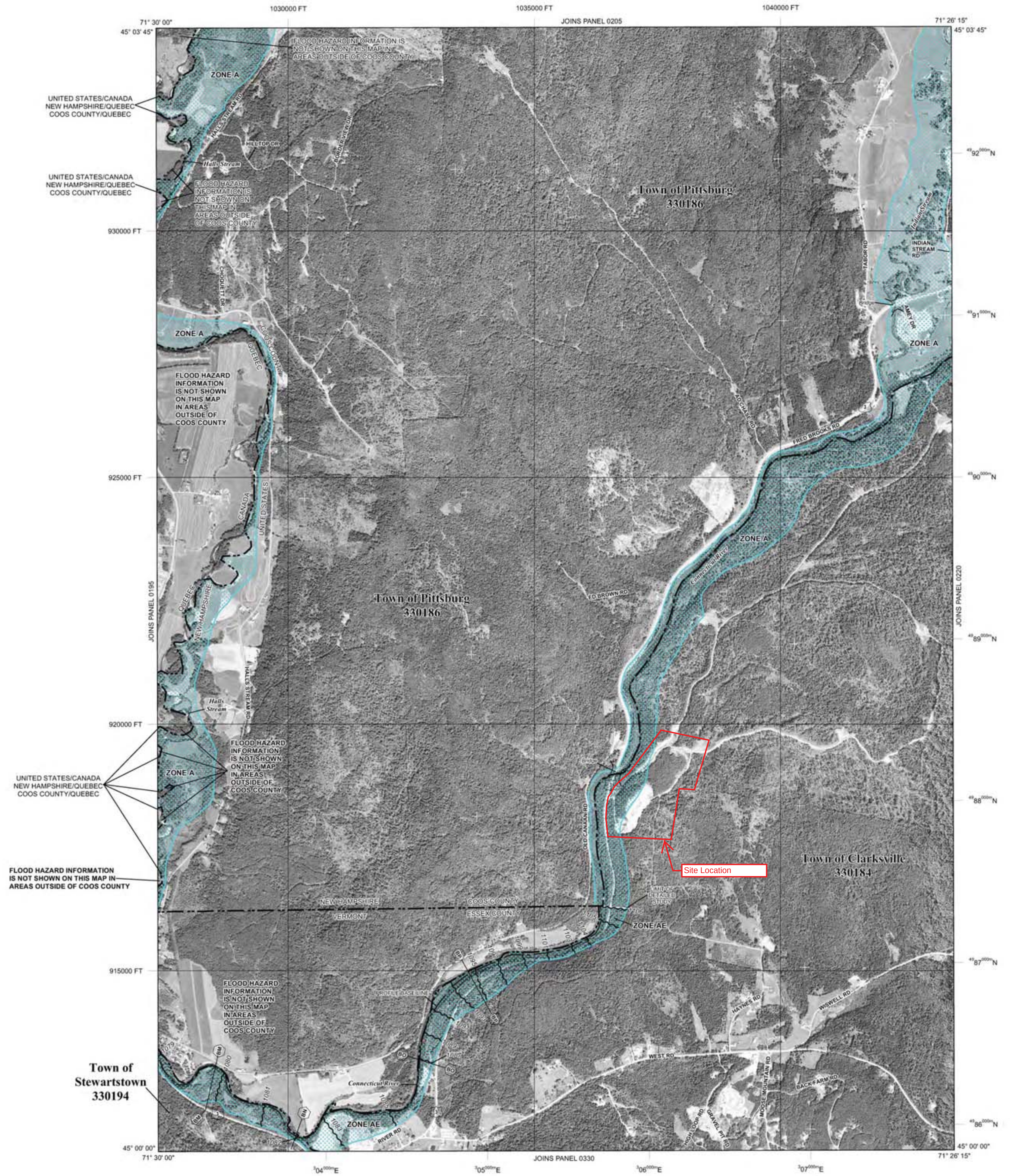
The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

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

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

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

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

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

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: New Hampshire State Plane Zone (FIPS Zone 2800), Transverse Mercator projection
$^{48}89^{000m}$ N	1000-meter Universal Transverse Mercator grid values, zone 19
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
February 20, 2013

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

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

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

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0215D

FIRM
FLOOD INSURANCE RATE MAP
COOS COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS)

PANEL 215 OF 1300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARKSVILLE, TOWN OF	330184	0215	D
PITTSBURG, TOWN OF	330186	0215	D
STEWARTSTOWN, TOWN OF	330194	0215	D

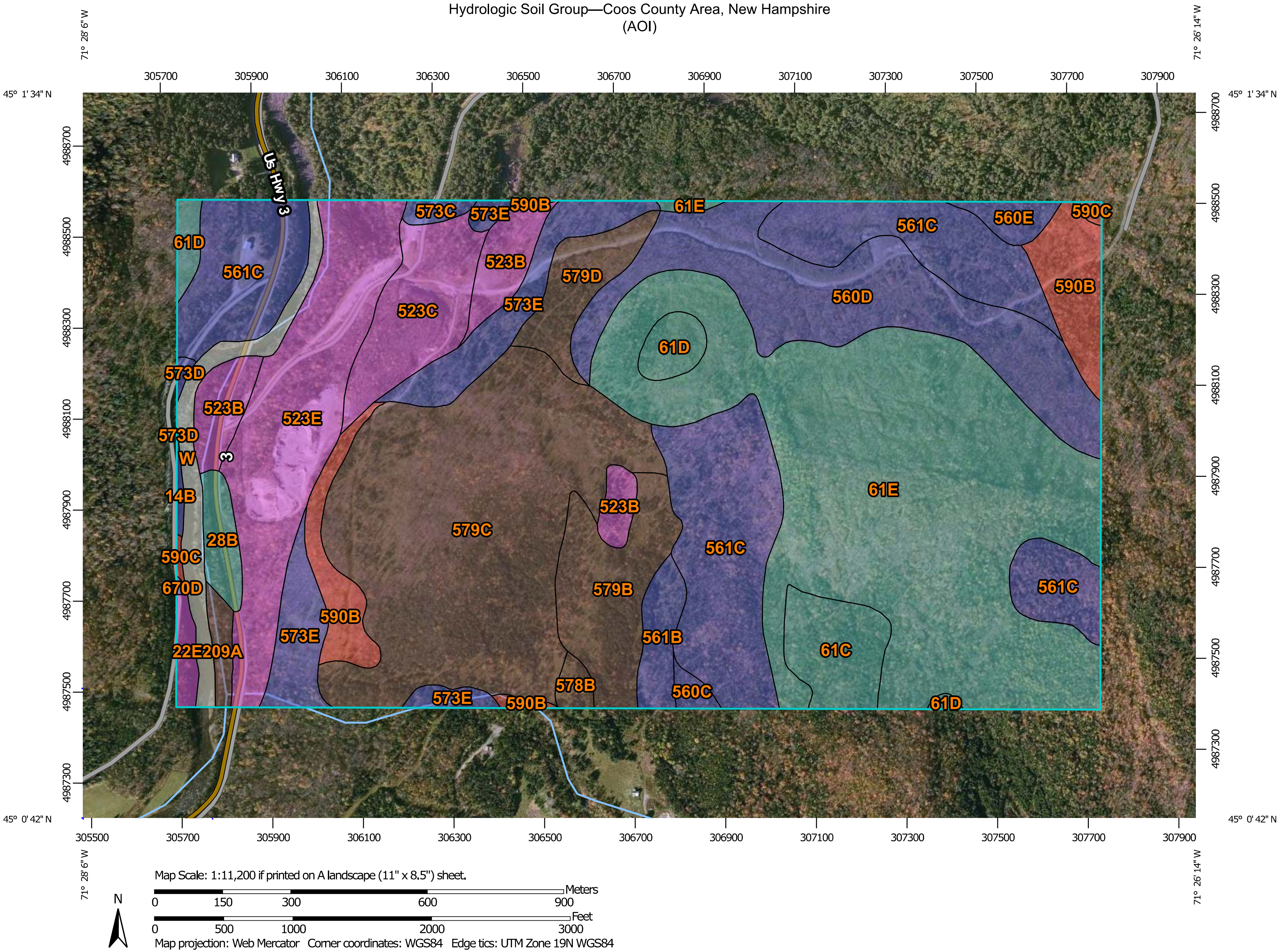
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33007C0215D

EFFECTIVE DATE
FEBRUARY 20, 2013

Federal Emergency Management Agency

APPENDIX G – SOIL SURVEY REPORTS (BY OTHERS)



71° 28' 6" W
71° 26' 14" W
45° 1' 34" N
45° 0' 42" N
305700
305900
306100
306300
306500
306700
306900
307100
307300
307500
307700
307900
305500
4988700
4988500
4988300
4988100
4987900
4987700
4987500
4987300
Us Hwy 3
3
61D
561C
573C
573E
590B
61E
560E
590C
523B
579D
560D
523C
61D
573D
523E
W
14B
579C
28B
590C
670D
579B
561C
61E
561C
22E209A
573E
561B
61C
578B
560C
61D
Map Scale: 1:11,200 if printed on A landscape (11" x 8.5") sheet.
Meters
0
150
300
600
900
N
Feet
0
500
1000
2000
3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N 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 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: Coos County Area, New Hampshire
Survey Area Data: Version 20, Sep 15, 2014

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

Date(s) aerial images were photographed: Aug 19, 2010—Jul 16, 2011

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

Hydrologic Soil Group— Summary by Map Unit — Coos County Area, New Hampshire (NH607)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes	B	0.7	0.1%
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	A	2.6	0.5%
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	C	5.0	0.9%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	C	12.1	2.1%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	C	7.1	1.2%
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	C	136.7	24.2%
209A	Charles silt loam, 0 to 2 percent slopes, frequently flooded	B/D	2.8	0.5%
523B	Stetson fine sandy loam, 3 to 8 percent slopes	A	15.2	2.7%
523C	Stetson fine sandy loam, 8 to 15 percent slopes	A	18.1	3.2%
523E	Stetson fine sandy loam, 15 to 60 percent slopes	A	43.2	7.7%
560C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes	B	1.6	0.3%
560D	Tunbridge-Plaisted-Lyman complex, 15 to 25 percent slopes	B	47.0	8.3%
560E	Tunbridge-Plaisted-Lyman complex, 25 to 35 percent slopes	B	3.4	0.6%
561B	Tunbridge-Plaisted-Lyman complex, 3 to 8 percent slopes, very stony	B	6.1	1.1%
561C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes, very stony	B	80.7	14.3%

Hydrologic Soil Group— Summary by Map Unit — Coos County Area, New Hampshire (NH607)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
573C	Bangor silt loam, 8 to 15 percent slopes, very stony	B	1.7	0.3%
573D	Bangor silt loam, 15 to 25 percent slopes, very stony	B	0.5	0.1%
573E	Bangor silt loam, 25 to 35 percent slopes, very stony	B	24.4	4.3%
578B	Dixmont very fine sandy loam, 3 to 8 percent slopes	B/D	1.9	0.3%
579B	Dixmont very fine sandy loam, 3 to 8 percent slopes, very stony	B/D	20.5	3.6%
579C	Dixmont very fine sandy loam, 8 to 15 percent slopes, very stony	B/D	91.6	16.2%
579D	Dixmont very fine sandy loam, 15 to 25 percent slopes, very stony	B/D	10.3	1.8%
590B	Cabot silt loam, 0 to 8 percent slopes, very stony	D	19.6	3.5%
590C	Cabot silt loam, 8 to 15 percent slopes, very stony	D	0.9	0.2%
670D	Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes	B	0.2	0.0%
W	Water		11.3	2.0%
Totals for Area of Interest			**564.8**	**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.

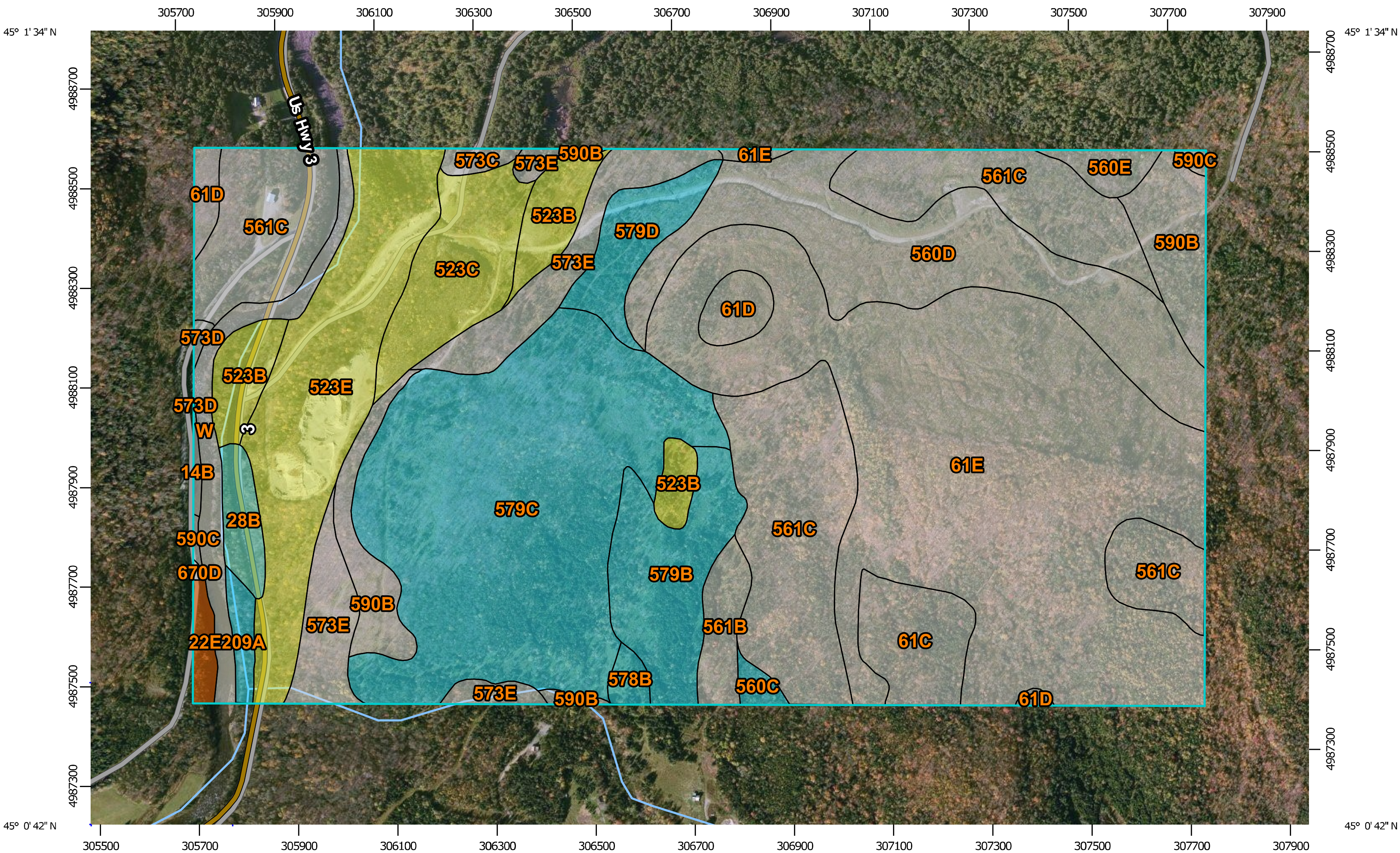
Rating Options

Aggregation Method: Dominant Condition

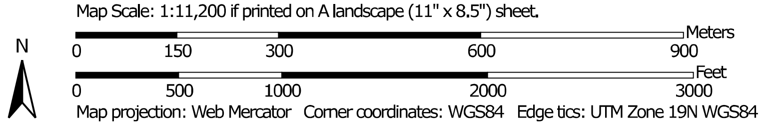
Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

K Factor, Whole Soil—Coos County Area, New Hampshire
(AOI)



Map Scale: 1:11,200 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
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 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: Coos County Area, New Hampshire
Survey Area Data: Version 20, Sep 15, 2014

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

Date(s) aerial images were photographed: Aug 19, 2010—Jul 16, 2011

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.

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Coos County Area, New Hampshire (NH607)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes		0.7	0.1%
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	.05	2.6	0.5%
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	.32	5.0	0.9%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes		12.1	2.1%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes		7.1	1.2%
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes		136.7	24.2%
209A	Charles silt loam, 0 to 2 percent slopes, frequently flooded	.37	2.8	0.5%
523B	Stetson fine sandy loam, 3 to 8 percent slopes	.20	15.2	2.7%
523C	Stetson fine sandy loam, 8 to 15 percent slopes	.20	18.1	3.2%
523E	Stetson fine sandy loam, 15 to 60 percent slopes	.20	43.2	7.7%
560C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes	.37	1.6	0.3%
560D	Tunbridge-Plaisted-Lyman complex, 15 to 25 percent slopes		47.0	8.3%
560E	Tunbridge-Plaisted-Lyman complex, 25 to 35 percent slopes		3.4	0.6%
561B	Tunbridge-Plaisted-Lyman complex, 3 to 8 percent slopes, very stony		6.1	1.1%
561C	Tunbridge-Plaisted-Lyman complex, 8 to 15 percent slopes, very stony		80.7	14.3%

K Factor, Whole Soil— Summary by Map Unit — Coos County Area, New Hampshire (NH607)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
573C	Bangor silt loam, 8 to 15 percent slopes, very stony		1.7	0.3%
573D	Bangor silt loam, 15 to 25 percent slopes, very stony		0.5	0.1%
573E	Bangor silt loam, 25 to 35 percent slopes, very stony		24.4	4.3%
578B	Dixmont very fine sandy loam, 3 to 8 percent slopes	.37	1.9	0.3%
579B	Dixmont very fine sandy loam, 3 to 8 percent slopes, very stony	.37	20.5	3.6%
579C	Dixmont very fine sandy loam, 8 to 15 percent slopes, very stony	.37	91.6	16.2%
579D	Dixmont very fine sandy loam, 15 to 25 percent slopes, very stony	.37	10.3	1.8%
590B	Cabot silt loam, 0 to 8 percent slopes, very stony		19.6	3.5%
590C	Cabot silt loam, 8 to 15 percent slopes, very stony		0.9	0.2%
670D	Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes		0.2	0.0%
W	Water		11.3	2.0%
Totals for Area of Interest			**564.8**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Northern Pass Transmission Project

Soil Survey Report for Transition Stations, Substation Expansions, and Converter Terminal

Prepared For:
Northern Pass Transmission, LLC

Submitted On:
February 6, 2015

Prepared By:
Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

www.normandeau.com

with bedrock within 20 inches of the soil surface. Bedrock outcrops were mapped within the vicinity of this map unit.

Plaisted silt loam is well drained with a seasonal water table greater than 40 inches from the soil surface. Chesuncook silt loam is moderately well drained with a seasonal water table within 15 to 40 inches of the soil surface. Telos silt loam is somewhat poorly drained with a seasonal water table within 15 inches of the soil surface due to the presence of dense lodgement till.

Cabot, very stony, silt loam is poorly drained with dense lodgement till in the substratum. Free water is commonly at or near the surface to result in hydric conditions.

Summary

Limitations to development within the site include wetlands, steep slopes, shallow to bedrock conditions and shallow to moderately shallow dense lodgement till. The eastern side of the site is more gently sloping with deeper soils compared to the bedrock controlled western portion of the site. Proposed access routes should be designed to ensure sheet flow drainage across the route to minimize concentration of spring runoff.

4.2 Station 2, Clarksville North

Overview

The site is located within the Connecticut River Valley and is within ¼ mile of the Connecticut River, which is a Designated River, managed and protected in accordance with RSA 483, The Rivers Management and Protection Act. The proposed site is part of an active gravel pit operation on the western slope of a hill overlooking the Connecticut River. At the time of a site visit in July 2014 material was being excavated and sorted. Access to the site is from US Route 3 along a gravel road. The site is on a steep hillside; Route 3 is at an elevation of approximately 1260 feet and the eastern edge of the site is at an elevation of approximately 1300 feet. The proposed site is bordered by undisturbed forest.

Soil Mapping Results

Normandeau conducted an examination of soils within the western half of the site on July 9, 2014. A second site visit was conducted to review the eastern half of the site on December 23, 2014. The final survey area is approximately 9 acres in size. Sixteen test pits were dug throughout the site. Eight map units have been identified within the site. Madawaska and Stetson are formed within glacial fluvial parent material. Dixmont and Cabot are formed within glacial till. Table 4-2a summarizes the map units and their physical characteristics identified within the project site. Slope phases are not provided but are included in the detailed summary on each map unit provided in Appendix A.

Table 4-2a. Station 2, Clarksville, Summary of Soil Physical Characteristics

Map Unit	Hydrologic Group	Seasonal Water Table Depth[1] (Inches)	Depth to Bedrock (Inches)	Drainage Class[2]	Ksat (in/hr)	Limitations
28- Madawaska	B	>15 to <40	>60	MW	0.6-20	
300/cbaab[3]	B	>40	>60	W	0.6-20	
400/cbaab[3]	B	>40	>60	W	0.6-6.0	
500/cbaab[3]	B	>40	>60	W	0.6-6.0	
523-Stetson	B	>40	>60	W	0.6-6.0	
579-Dixmont	C	>15 to <40	>60	MW	0.06-2.0	
590/P-Cabot	D	Surface to 12	>60	P	0.06-0.2	P[2]
727/Rubble land	unknown	unknown	unknown	unknown	unknown	

1. Seasonal water table ranges are provided from the NRCS. On-site conditions are expected to fall within these ranges based on test pit observations.
2. Drainage Classes:
   P- poorly drained; SP- somewhat poorly drained; MW- moderately well drained
   W- well drained; SE- somewhat excessively drained; E- excessively drained.
3. Physical characteristics of disturbed land estimated.

Stetson fine sandy loam is well drained. Madawaska fine sandy loam and Dixmont, very stony, silt loam are moderately well drained. Cabot, very stony, gravelly silt loam is poorly drained with dense lodgement till in the substratum. Free water is commonly at or near the surface to result in hydric conditions.

Four of the map units are disturbed soils from excavation for sand and gravel, Udipsamments, (300); Udorthents, sandy or gravelly (400); Udorthents, loamy (500) and Rubble land (727). Rubble land indicates areas where material has been sorted and stored. As the site is actively worked, these areas may change in size and location. The soils are deep (>60 inches) within the site with the exception of Test Pit 7, where weathered bedrock was encountered at 36". Table 4-2b provides a summary of the estimated physical characteristics of these map units based on adjacent soil series.

Table 4-2b. Station2. Clarksville, Summary of Made Land Estimated Physical Characteristics[1].

Characteristic	300/cbaab-Udipsamments	400/cbaab-Udorthents, sandy or gravelly	500/cbaab-Udorthents, loamy
Drainage Class	c- estimated to be well drained.	c- estimated to be well drained.	c- estimated to be well drained.
Parent Material	b-glacial fluvial deposits	b-glacial fluvial deposits	b-glacial fluvial deposits
Restrictive/Impervious layer	a- none	a- none, except TP 7	a- none
Estimated ksat	a- high	a- high	a-high
Hydrologic Group	b-Group B	b-Group B	b-Group B

1 Society of Soil Scientists of Northern New England. 2011. Site-Specific Soil Mapping Standards for New Hampshire and Vermont. Version 4.0. SSSNNNE Special Publication No. 3. Durham, NH.

Summary

Limitations to development within the Station 2 site include steep slopes and wetlands. Generally the soils are deep within the site with the exception of Test Pit 7 where weathered bedrock was encountered at 36 inches. Proposed access routes should be designed to ensure sheet flow drainage across the route to minimize concentration of spring runoff.

4.3 Station 3, Clarksville South

Overview

The review included Transition Station 3, a wooded parcel located off Wiswell Road, and a proposed 2,300 foot underground route from the Transition Station southeast to Route 145, where the corridor would then be located within the road right-of-way.

The Transition Station site is wooded with evidence that selective cutting has occurred within the last 5-10 years. The underground corridor is dominated by early successional forest, except in the vicinity of Route 145, which is an old hayfield.

The field review of the Transition Station site was conducted on July 22, 2014. Field observations were made using borings dug by hand with an auger and tile spade and test pits dug by an excavator. Detailed observations were made to either bedrock or to 60 inches, where feasible. A total of 27 test pits dug by an excavator were evenly distributed across the site and located with a Trimble® GPS.

The review of the underground corridor focused on confirming the NRCS medium intensity soil survey (Soil Survey Staff 2014) and locating shallow to bedrock soils (Appendix C). Three wetland crossings, previously delineated by Normandeau, were reviewed to provide more detail on the soils in these areas. Shallow test pits with a spade and probes for bedrock were completed along the proposed corridor on September 10, 2014. The results of the survey are provided on a base map in Appendix D. Observations were recorded and located with a Trimble® GPS.

Soil Mapping Results

Transition Station

The proposed site is located on the south side slope of a hill (See Appendix D). The final survey area was about 5 acres in size. Approaching from Wiswell Road, the site is initially moderately steep, slopes of 15 to 25%, with small sections of steeper slopes ranging from of 25 to 35% that extend to the east and west. The site becomes gently sloping (slopes 3 to 8%) as one progresses south. The site has been cutover in the past with small clearings dominated by a mix of shrubs and grasses. Tree cover is moderately dense in areas of bedrock and steep slopes.

Seven map units were identified within the site with a range of slope phases. All are formed within glacial till parent material. Table 4-3 summarizes the map units and their physical characteristics identified within the project site. Detailed information on each map unit, including slope phase, is provided in Appendix A.

STATE OF MAINE
JENNIFER WEST
NO. 215
CERTIFIED
SOIL SCIENTIST

NH Numeric Soil Code	Soil Unit Name	Soil Slope %	Hyd. Group
300B/cbaab	Udipsamments	3–8	B
300E/cbaab	Udipsamments	25–50	B
400A/cbaab	Udorthents, sandy or gravely	0–3	B
400B/cbaab	Udorthents, sandy or gravely	3–8	B
400E/cbaab	Udorthents, sandy or gravely	25–50	B
500A/cbaab	Udorthents, loamy	0–3	B
523E	Stetson fine sandy loam	25–50	B
579B	Dixmont, very stony (moderately well)	3–8	C
590B/P	Cabot gravelly silt loam, very stony	0–8	D
727	Rubble land	1–50	unknown

50 0 50 100 200

LOCUS MAP
1:10,000

NOTES

1. BASEMAP PROVIDED BY COLER & COLANTONIO INC.; LOCUS BASEMAP PROVIDED BY USGS & ESRI.

2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

3. PREPARED FOR NORTHERN PASS TRANSMISSION PROJECT. PREPARED BY NORMANDEAU ASSOCIATES INC.

4. FIELD WORK COMPLETED BY NORMANDEAU ASSOCIATES INC., IAN BROADWATER (MECSS 305) & JOHN HAYES (NHCSS 87), CERTIFIED SOIL SCIENTIST ON JULY 9 & DECEMBER 23, 2014.

LEGEND

—Soil Survey Boundary
—Soil Boundary
345 —Index Contour
343 —Intermediate Contour
—Road

Transition Station #2
Clarksville, NH

SOIL SURVEY OVERVIEW

Date: 02.02.15 Project No.: 21812.204 Scale: 1"=100'

NORMANDEAU environmental consultants

THE NORTHERN PASS | NORTHERN PASS LLC

No.	Document/Draft Name	Ini.	Date
1	C:\Npass\DWG\NP_TransitionSites_SOIL_020215	JCB	02.02.15

SHEET 1 OF 1

APPENDIX H – GEOTECHNICAL REPORT (BY OTHERS)

Geotechnical Engineering Report

Transition Station #2 Project
Northern Pass Transmission Line
Clarksville, New Hampshire

December 9, 2016
QS Project No. 16004

Prepared for:
PAR Electrical Contractors, Inc.
60 Fuller Road
Chicopee, Massachusetts 01020

Prepared by:
Quanta Subsurface
307 W. Main Street
Radford, Virginia 24141

QUANTA SUBSURFACE
Engineering + Construction

December 9, 2016

PAR Electrical Contractors, Inc.
60 Fuller Road
Chicopee, Massachusetts 01020

Attention: Ms. Stephanie Labbe
Project Manager

Re: Geotechnical Engineering Report
Transition Station #2 Project – Northern Pass Transmission Line
Clarksville, New Hampshire
QS Project No. 16004

Dear Ms. Labbe,

The purpose of this report is to present the results of the subsurface exploration program and geotechnical engineering analyses undertaken by Quanta Subsurface (QS) associated with the above referenced project. Our services were provided in general accordance with QS's proposal dated August 22, 2016 as approved by PAR Electrical Contractors' (PAR) Limited Notice to Proceed (LNTP) #4 dated August 26, 2016. The attached report presents our understanding of the project, the findings of the subsurface exploration program, and our geotechnical conclusions and recommendations.

Sincerely,

Quanta Subsurface

STATE OF NEW HAMPSHIRE
JAY T. McGINNIS
No. 14656
LICENSED
PROFESSIONAL ENGINEER

12/9/16

Sean Kearney, P.G.
Project Engineering Geologist

J.T. McGinnis, P.E.
Geotechnical Department Manager

307 W. Main Street • Radford, VA 24141 • P 866.278.9782

TABLE OF CONTENTS

FIGURES

APPENDICES

EXECUTIVE SUMMARY

This Executive Summary is provided as a brief overview of our geotechnical engineering conclusions and recommendations for the project and is not intended to replace more detailed information contained elsewhere in this report. As an overview, this summary inherently omits details that could be very important to the proper application of the provided geotechnical design recommendations. This report should be read in its entirety.

- QS's geotechnical field exploration program consisted of eight (8) Standard Penetration Test (SPT) borings, drilled to a maximum depth of approximately 50 feet.
- Two infiltration (INF) test borings were conducted to characterize the subsurface conditions to a depth of approximately 5 feet below the planned basin bottom. Following completion of each INF test boring, field infiltration tests were performed at each location.
- The subsurface conditions encountered at the site generally included a layer of topsoil in the portion of the site covered by tress and vegetation, isolated amounts of existing fill material, glaciofluvial deposits and glacial till (ablation till). Test borings performed by others in the vicinity of the project site reported similar conditions to those encountered during the exploration program presented herein.
- Bedrock was not encountered in the test borings performed by Quanta Subsurface.
- Groundwater was encountered in three (3) of the test borings. We anticipate that the groundwater encountered is representative of perched conditions above the glacial till.
- In general, the subsurface conditions encountered at the site are suitable for the proposed construction with considerations presented herein.
- Due to the very dense/hard till soils encountered at shallow depths in the area of the planned structures and the presence of cobbles/boulders at shallow depths in other areas of the project site, drilled shafts are recommended for support of the bus support/pole structures.
- Controlled structural fill and/or the onsite soils will provide suitable support for the transformer pad designed to transmit an approximate uniform bearing pressure of up to 500 psf and structures supported by shallow foundation designed with a maximum allowable bearing pressure of 3,000 psf.
- Frost depth should be anticipated to be 4 feet below the lowest adjacent grade.
- A Seismic Site Class Definition of "C" is recommended for design.
- We anticipate that the planned fill slopes will exhibit a factor of safety (FoS) of 1.5 or greater for global stability.
- The cut slope constructed as part of the adjacent "active excavation work area" is anticipate to have a FoS for global stability between 1.0 and 1.1 and does not exhibit the recommend minimum FoS of 1.3 for slopes adjacent to or on the project site.

1.0 PROJECT INFORMATION

The Northern Pass project consists of a 192-mile long transmission line that will convey 1,090 megawatts of energy from hydroelectric facilities in Canada to New England via a corridor than traverses north-to-south through New Hampshire (see Site Vicinity Map – Figure 1). In addition to construction of new transmission line, the project also includes the construction of three (3) new substations and six (6) new transition stations along the corridor. In general, the new transition stations (designated Transition Stations #1 through #6) are located along the northern and central portions of the corridor while the three new substations (designated Franklin Substation, Deerfield Substation and Scobie Pond Substation) are located along the southern portion of the corridor. The information presented herein is for the Transition Station #2 located approximately 1 mile north-northwest of Clarksville, New Hampshire (see Site Location Map - Figure 2).

The Transition Station #2 site is located along the eastern extent of an “active excavation work area” that is separated from the transition station area by an existing cut slope with a maximum height of about 20 feet. The western portion of the transition station area is developed as a result of activities associated with the nearby excavation area; however, the eastern portion of the site is undeveloped and wooded. Within the transition station footprint, the ground surface elevations generally range from 1302 feet to 1309 feet. Maximum cuts and fills of approximately 1 foot and 6 feet, respectively, will be required to develop the planned finished grade elevations of approximately 1308 feet. Development will include construction of fill slopes with a planned configuration of 3 (Horizontal) to 1 (Vertical) along the south and east sides of the site and an infiltration basin in the northeast corner of the project site. No retaining walls are planned.

New structures within the transition station footprint are anticipated to consist of a transformer pad, a bus support structure, and possibly single-story structures designed to house electrical equipment. Quanta Subsurface (QS) has assumed the following regarding loading and foundation support of the new structures: 1) the bus structure will require deep foundation support to resist shear and overturning loads, 2) the transformer pad will consist of slab-on-grade support designed for a maximum bearing pressure of 500 psf, and 3) single-story structures designed to house equipment will be lightly loaded with shallow foundation support.

2.0 PROVIDED DOCUMENTS AND PREVIOUS EXPLORATION DATA

Multiple documents were provided to QS by PAR Electrical Contractors (PAR) for consideration during our geotechnical exploration and engineering evaluation. The provided geotechnical report documents were developed by others and presented information at various locations along the transmission line corridor. Upon review of the provided data, no test borings originating from these reports were performed within the Transition Station #2 footprint; however, two documents provided either GIS information or test boring data in the area of the Transition Station #2 site. The specific documents included as reference by QS herein are listed below.

- Haley & Aldrich, Inc.; *Geotechnical Data Report - Route 3/Connector River Crossing: Northern Pass Transmission Project*; February 21, 2014.
- Terracon Consultants, Inc.; *Report of Expected Geotechnical Conditions*: Northern Pass Project; July 10, 2015.

Although data from these two reports was not specifically used in development of the recommendations presented in Section 6.0 of this report, selected information was used as reference in support of the site specific data obtained by QS. Specific citations are noted below.

3.0 PURPOSE AND SCOPE OF SERVICE

QS's scope of work was developed based on information provided by PAR that included requested field investigations for civil works from Burns & McDonnell (*Subsurface Exploration and Geotechnical Engineering Report: Technical Guidelines*; Northern Pass Transmission Stations, New Hampshire, provided to QS on July 11, 2016) as well as requested investigations for planned structures from others. The purposes of our involvement on Transition Station #2 phase of the project were as follows: 1) provide general descriptions of the subsurface conditions encountered at the transition station site; 2) provide geotechnical design parameters for use by others in analysis and design of site grading and permanent slopes; 3) provide geotechnical foundation design recommendations for support of the transition station structures; and 4) comment on geotechnical aspects of the proposed construction. In order to accomplish the above objectives, QS undertook the following scope of services:

1) reviewed available subsurface and geologic information relative to the project site;
2) supervised a subsurface exploration program consisting of eight (8) geotechnical borings within the area of the proposed transition station;
3) procured field infiltration testing services at two (2) locations within the proposed infiltration basin;
4) supervised a laboratory testing program on selected soil samples obtained during the drilling program;
5) evaluated the findings of the test borings and laboratory tests relative to foundation support of planned structures and other geotechnical aspects of the project;
6) and prepared this written report summarizing our services for the project, providing descriptions of the subsurface conditions encountered, laboratory test results, and design recommendations, as well as geotechnical considerations for construction. Copies of the QS boring logs, laboratory test results, infiltration test results, summary of geotechnical design parameters, and slope stability analysis outputs are provided in Appendices A through E.

QS's scope of services did not include a survey of boring locations and elevations, quantity estimates, preparation of plans or specifications, pavement design, infiltration/retention basin design, blasting recommendations, identification of environmental impacts or aspects related to the project and/or site, or other services not specified above.

4.0 EXPLORATION AND TESTING PROCEDURES

4.1 SUBSURFACE EXPLORATION

QS's geotechnical field exploration program consisted of eight (8) Standard Penetration Test (SPT) borings performed at the approximate locations shown on the attached Boring Location Plan (see Figure 3) and summarized in Table 1 below. The test boring locations were staked in the field by others using surveying methods; ground surface elevations at the boring locations were derived from topographic data included within an ACAD site plan document (labeled *NPTT204-C101-Geotech.dwg*) using latitude and longitude data provided by PAR.

Table 1 - As-Drilled SPT Borehole Depths and Coordinates

Boring Designation	Total Depth (ft)	Ground Surface Elevation (ft)	Latitude	Longitude
BH 201	50.3	1309.4	45.01893889	-71.46191111
BH 202	20.8	1303.0	45.01891944	-71.46135278
BH 203	9.8	1303.0	45.01904444	-71.46154722
BH 204	22.0	1305.1	45.01926944	-71.46147500
BH 205	50.4	1307.7	45.01926667	-71.46174722
BH 206	50.8	1287.1	45.01919167	-71.46203333
INF 201	12.0	1304.1	45.01934167	-71.46138611
INF 202	12.0	1303.9	45.01938889	-71.46140556

Note: Elevations information is NAVD88

Test borings were performed by S.W. Cole Engineering, Inc. (S.W. Cole) utilizing a CME 850 drill rig equipped with a 140-lb automatic drop hammer falling 30 inches. The drilling methods utilized for this investigation consisted of solid stem augers, hollow stem augers, and rotary drive and wash. Standard penetration testing was performed in general accordance with ASTM D1586 and pocket penetrometer testing (where applicable) was conducted at approximate 2-foot intervals to a depth of 10 feet and at 5-foot intervals thereafter. The number of hammer blows required to advance the sample for successive 6-inch intervals is recorded, and the total number of blows required to drive the sampler from 6 to 18 inches is referred to as the SPT "N-value". The N-value provides a general indication of in-situ soil density/consistency and has been correlated with certain engineering properties of soils. Soil samples were collected with a standard split-spoon sampler (2-in OD) and in bulk samples from auger cuttings for laboratory testing.

In some soils it is not always practical to drive a split-spoon sampler the full four consecutive 6-inch increments. Whenever more than 50 blows are required to drive the sampler over a 6-inch increment, or the sampler is observed not to penetrate after 50 blows, the condition is referred to as split-spoon refusal. The SPT N-value for split-spoon refusal conditions is typically estimated as greater than 100 blows per foot (bpf). Where the sampler is observed not to penetrate after 50 blows, the N-value is reported as 50/0. Otherwise, the depth of penetration after 50 blows is reported in inches (i.e. 50/5, 50/2, etc.).

The test borings were extended to the planned termination depth or auger refusal, whichever was encountered first; no rock coring was performed as part of the Transition Station #2 drilling program. The subsurface materials encountered at each boring location were visually classified by QS personnel in the field in accordance with ASTM D2488. In addition to visual classification of the materials in the field, the boring logs incorporate both driller and field inspector observations and comments as well as modifications based on laboratory test results. QS's boring logs are presented in Appendix A. SPT samples were collected in Ziploc bags and bulk samples were collected in 5-gallon buckets.

4.2 LABORATORY TESTING

QS selected various bulk and SPT samples for laboratory testing. Laboratory testing on soil samples was performed by S.W. Cole in their Londonderry and Manchester laboratories or via subcontract with Absolute Resource Associates (sulfate and chloride testing). Table 2 provides a summary of the laboratory testing performed for the Transition Station #2 site. A summary of the laboratory testing results and accompanying laboratory test data reports are provided in Appendix B.

Table 2 – Laboratory Test Summary

Test	ASTM/AASHTO	No. of Test Performed
Moisture Content	D2216	19
Sieve Analysis	D422	3
Percent Passing No. 200 Sieve	D1140	8
Atterberg Limits	D4318	3
pH of Soil	G51	2
Soluble Chloride	--	2
Soluble Sulfate	--	2
Resistivity	T188	2

4.3 FIELD INFILTRATION TESTING

Two infiltration (INF) test borings were conducted (designated INF 201 and INF 202) to characterize the subsurface conditions to a depth of approximately 5 feet below the planned basin bottom. Each boring was sampled continuously (every 2 feet) from ground surface to termination depth. Following completion of each INF test boring, an offset borehole was drilled and PVC casing was installed to the approximate planned bottom of the basin for field infiltration testing. At some time following completion of drilling, field infiltration tests were performed by S.W. Cole. The results of S.W. Cole's field infiltration tests are provided in Appendix C. The installation, preparation, and testing procedures followed were in general accordance with Table 2-3 of the *New Hampshire Department of Environmental Services Stormwater Manual*, Volume 2 (2008).

5.0 GEOLOGY AND SUBSURFACE CONDITIONS

5.1 GENERAL

The overburden soils at the project site are derived from several episodes of advancing and retreating glacial ice. Subsurface materials encountered within the borings are consistent with the geologic setting of the area. The following sections describe the regional geology and site specific subsurface conditions.

5.2 REGIONAL GEOLOGY

The surficial geology of the White Mountains in New Hampshire is derived from the erosional and depositional processes of the continental and mountain glaciers of the Wisconsin Glacial Episode during the late Pleistocene Epoch. The dominant glacial soils that are found in this region are glacial till, glaciofluvial/outwash deposits, and glacio-lacustrine deposits. Younger post glacial deposits formed from the numerous rivers, streams and lakes that dominate the landscape; these include alluvium and stream terrace deposits. The surficial soil in the area of the Transition Station #2 site is mapped as ablation till (Figure 3; Terracon, 2015).

Bedrock in the White Mountains are comprised of folded and faulted Paleozoic sedimentary and volcanic rocks that have been regionally metamorphosed and intruded by large and small bodies of plutonic rocks. The grade of metamorphism ranges from the chlorite zone at one extreme to the sillimanite zone at the other (Billings, 1980). The majority of the rocks mapped in this region consist of schist, phyllites, limestone, and quartzite. As shown in Figure 4 (Regional Geology Map), extrapolation of information provided in the *Geologic Map and Structure Sections of the Dixville Quadrangle* (1963) indicates that bedrock underlying the Transition Station #2 site consist of the Gile Mountain Formation described as phyllite and micaceous quartzite.

5.3 SITE SUBSURFACE CONDITIONS

The subsurface conditions encountered in the test borings generally included a layer of topsoil in vegetated portions, isolated amounts of existing fill material, glaciofluvial deposits, and glacial till (ablation till). Test borings performed by Haley & Aldrich in the vicinity of the Transition Station #2 site reported similar conditions of glaciofluvial deposits consisting of medium dense to dense sands and gravels underlain by bedrock described as metasandstone and phyllite (Haley & Aldrich, 2014). A summary of the subsurface materials encountered in the exploration described herein is provided below and in Table 3, and specific data are shown on the boring logs provided in Appendix A.

<u>Topsoil</u>

Material described as topsoil was encountered at the ground surface in two test borings (BH 202 and BH 203) and below existing fill where encountered (i.e. BH 204, INF 201, and INF 202). The thickness of the topsoil ranged from 1 to 2 feet in borings BH 202 and BH 203 (at the ground surface) and 0.5 to 1.5 feet where encountered below existing fill. The sampled topsoil was described as lean CLAY (CL) with trace organics and varying amounts of sand. Laboratory testing was not performed to determine the organic content or horticultural properties of the topsoil. Therefore, the term “topsoil” is not intended to indicate suitability for landscaping and/or other purposes.

Existing Fill

Existing fill material was encountered in boring BH 204 and both infiltration test borings (INF 201 and INF 202) to a depth of about 2 feet below the existing ground surface. The sampled fill material was described as sandy SILT (ML) and silty SAND (SM) with varying amounts of gravel and was underlain by the original topsoil layer at all three locations. Field N-values obtained within the existing fill material ranged from 10 to 15 blows per foot (bpf) indicting that the material exhibited a density that ranged from loose to medium dense (or stiff).

Glaciofluvial Deposits

The glaciofluvial deposits are described as sands and gravels with minor amounts of silt and clay that were deposited within high energy meltwater channels draining into the valleys. Glaciofluvial materials were encountered in each test boring and were generally described as SAND with silt (SP-SM), silty SAND (SM), and sandy SILT (ML) with varying amounts gravel. Field N-values obtained within the glaciofluvial material ranged from 7 bpf to 50 blows per 2 inches of penetration (i.e. 50/2") with a typical N-value of greater than 15 bpf.

Glacial Till

Glacial till deposits consist of material that has been transported and deposited by glacial ice. The glacial till encountered was characterized as ablation till (melt-out till) indicating the material was carried on or near the surface of the glacier. Till was encountered in each test boring below the glaciofluvial deposits. Boulders of varying size are common within till deposits. Sampled till was generally described as sandy SILT (ML) and silty SAND (SM) with varying amounts of gravel. Field N-values obtained within the glaciofluvial material ranged from 43 bpf to 50 blows per 3 inches of penetration (i.e. 50/3").

Refusal Conditions/Bedrock

Auger refusal was encountered in boring BH 203 at a depth of 9.8 feet. Auger refusal occurs when materials are encountered that cannot be penetrated by a soil auger or roller bit and is normally indicative of hard or very dense material, such as debris within fill, boulders, rock lenses, pinnacles, or the bedrock surface. Based on the soil conditions encountered in boring BH 203 and the depths achieved in adjacent borings, QS anticipates that the refusal conditions encountered in boring BH 203 are the result of very dense till or a boulder within the till and not the bedrock surface. Therefore, bedrock was not encountered in the test borings.

Groundwater

Groundwater levels were measured using a water level meter at the completion of each boring. Groundwater was encountered in borings BH 202, BH 204, and BH 205 at depths of 7.5, 14, and 18.5 feet, respectively. Although the groundwater depth measured in BH 202 was well above the interface between glaciofluvial deposits and till, in general groundwater in the area of the site is anticipated to represent perched conditions directly above till or on less pervious layers above the till. Fluctuations in subsurface water levels and soil moisture should be anticipated with changes in precipitation, run-off, and moisture.

Table 3 – Encountered Subsurface Conditions Summary

Boring No.	Ground Elevation (ft)	Depth to Groundwater[1] (ft)	Boring Termination Condition	Depth (ft)	Material Origin	Encountered Material	Field N-Value[2]
BH 201	1309.4	N.E.	BT	0 - 18	Glaciofluvial Deposits	SM/SP-SM	11 - 39
				18 - 23		GP-GM	74
				23 - 50.3	Till	ML	84 - 50/3"
BH 202	1303.0	7.5	BT	0 - 2	Topsoil	CL	3
				2 - 7	Glaciofluvial Deposits	ML	50/6" - 50/4"
				7 - 17		SM	20 - 50/2"
				17 - 20.8	Till	ML	50/3"
BH 203	1303.0	N.E.	AR	0 - 1	Topsoil	CL	-
				1 - 2.5	Glaciofluvial Deposits	SP-SM	18
				2.5 - 9.8	Till	ML	50 - 50/3"
BH 204	1305.1	14.0	BT	0 - 2	Fill	ML	15
				2 - 4	Topsoil	CL	5
				4 - 16	Glaciofluvial Deposits	ML/SM/SP-SM	47 - 50/6"
				16 - 22	Till	ML	53 - 71
BH 205	1307.7	18.5	BT	0 - 2.5	Glaciofluvial Deposits	GM	20
				2.5 - 4		SM	7
				4 - 22		SM/ML	27 - 50/5"
				22 - 50.4	Till	ML	43 - 50/4"
BH 206	1287.1	N.E.	BT	0 - 4	Glaciofluvial Deposits	SP-SM/GP-GM	24 - 39
				4 - 14	Till	ML/SM	34 - 51
				14 - 50.8		SM	58 - 50/4"
INF 201	1304.1	N.E.	BT	0 - 2	Fill	SM	10
				2 – 3.5	Topsoil/ Glaciofluvial Deposits	CL/GM	7
				3.5 - 9	Glaciofluvial Deposits	SM/ML/GM	22 - 50/2"
				9 - 12	Till	ML	49
INF 202	1303.9	N.E.	BT	0 - 2	Fill	SM	10
				2 – 3	Topsoil	CL	-
				3 - 9	Glaciofluvial Deposits	SM	15+ - 50/5"
				9 - 12	Till	ML	70

[1] Reported groundwater levels were measured at the completion of drilling.
[2] Field N-Value is an uncorrected blow count value measured in the field.
BT = Boring Termination (at or near the planned depth)
AR = Auger or Roller Bit Refusal

6.0 DESIGN AND CONSTRUCTION RECOMMENDATIONS

6.1 GENERAL

The following sections present our geotechnical recommendations for design and construction of the transition station. In general, the subsurface conditions encountered at the site are suitable for the proposed construction with considerations presented in the following subsections.

6.2 SITE PREPARATION

Before proceeding with construction, any topsoil, roots, foundation remnants, pavements, and any other deleterious non-soil materials should be stripped or removed from the proposed construction area. During the clearing and stripping operations, positive surface drainage should be maintained to prevent the accumulation of water.

After stripping, areas intended to support new fill, gravel roadways, slabs, and foundations should be carefully evaluated by an experienced geotechnical engineer or engineering geologist. Where noted on the borings logs and where located within 3 to 4 feet of new fill, roadways, slabs, and foundations, soils that exhibit SPT N-values of 6 bpf or less should be removed and replaced with controlled structural fill placed in accordance with recommendations presented in Section 6.3. The geotechnical engineer/geologist may also require scarification and compaction (per Section 6.3) of the upper 6 inches of the exposed surface and/or proofrolling of the subgrade with a 20- to 30-ton loaded dump truck or other pneumatic tired vehicle of similar size and weight. Proofrolling should be performed during a time of good weather and not while the site is wet, frozen, or severely desiccated. The purpose of the proofrolling is to locate soft, weak, or excessively wet soils present at the time of construction and provide an opportunity for the geotechnical engineer/geologist to locate inconsistencies intermediate of the boring locations.

Depending on how the near surface materials respond during proofrolling operations, some in-place densification, undercutting, or in-place stabilization may be required. The extent of densification, undercutting and/or in-place stabilization required across the site can best be determined by a geotechnical engineer/geologist at the time of construction. Once the site has been properly prepared, at-grade construction may proceed.

6.3 CONTROLLED STRUCTURAL FILL

Controlled structural fill required to develop the station pad and access road areas may consist of the non-organic, on-site soils (including glaciofluvial and till soils). Based on laboratory testing on bulk samples obtained from other transition stations and substations sites along the transmission line corridor, we anticipate that off-site borrow material will consist of sandy silt, silty sand, or sand with a USCS classification of ML, SM, or SP. Other materials may be suitable for use as controlled structural fill and should be individually evaluated by the geotechnical engineer; in general, the structural fill should have a USCS classification of CL, ML, SM, or SC. Controlled structural fill should be free of boulders, organic matter, debris, or other deleterious materials and should have a maximum particle size no greater than 3 inches.

Fill materials should be placed in horizontal lifts with a maximum height of 8 inches loose measure. New fill should be adequately keyed into stripped and scarified subgrade soils and should, where applicable, be benched into the existing slopes. During fill operations, positive surface drainage should be maintained to prevent the accumulation of water. We recommend that structural fill (soil and crushed stone) be compacted to a minimum of 95 percent of the maximum dry density and within two (2) percentage points of the optimum moisture content determined by the modified Proctor density test (ASTM D1557). In confined areas such as utility trenches, portable compaction equipment and thin lifts of 3 to 4 inches may be required to achieve specified degrees of compaction. Each lift of fill should be tested in order to confirm that the recommended degree of compaction is attained.

6.4 SLOPE STABILITY

6.4.1 General

We recommend that cut and fill slopes have a minimum factor of safety of 1.3 for global stability. Proposed structures on the Transition Station #2 site should be located a minimum distance of 10 feet and 15 feet from the crest and toe of slopes, respectively. In addition, we recommend that roadways be designed with a minimum setback of 5 feet from both the crest and toe of slopes.

Drainage from nearby structures and/or surface runoff should be directed away from the crest and toe of both planned cut and fill slopes. We note that diversion of surface water away from the slope crest and face is critical to reducing the potential of surface erosion and shallow failures. For erosion protection, a protective cover of grass or other vegetation should be established on permanent soil slopes as soon as possible.

6.4.2 New Slope Stability

New slopes constructed to develop the planned finished grade of the transition station pad will generally consist of fill slopes with a configuration of 3 (Horizontal) to 1 (Vertical) and a maximum height of less than 10 feet. We anticipate that the planned fill slopes will exhibit a factor of safety (FoS) of 1.5 or greater for global stability if constructed in accordance with the recommendations presented herein.

6.4.3 Existing Cut Slope Stability

As previously noted, the Transition Station #2 site is located along the eastern extent of an "active excavation work area"; an existing cut slope separates the station pad from the work area. The existing cut slope has a configuration of approximately 1 (H) to 1 (V) and a maximum height of about 23 feet along most of its length. The cut slope's configuration flattens to approximately 1.5 (H) to 1 (V) in the vicinity of boring BH 201. The slope was excavated within glaciofluvial silty sands that generally exhibited densities ranging from medium dense to very dense in borings BH 201 and BH 205.

Using the computer program SLIDE 7.0 (RocScience), stability analyses were performed on the cut slope considering its current configuration as well as configurations corresponding to 1.5 (H) to 1 (V) and 2 (H) to 1 (V) to evaluate the associated FoS for global stability. A summary of anticipated FoS values for different cut slope configurations is presented in Table 4 below; the SLIDE output figures referenced in the table are provided in Appendix E. Associated recommendations pertaining to the cut slope are provided after the table.

Table 4 – Encountered Subsurface Conditions Summary

Configuration	Boring Location at Crest	FoS	Figure Designation
1.5H to 1V (current)	BH 201	1.3	App E – Output 1
2H to 1V		>1.5	App E – Output 2
1H to 1V (current)	BH 205	1.0 to 1.1	See Note 1
1.5H to 1V		1.3	App E – Output 3
2H to 1V		>1.5	App E – Output 4

Note 1: Stability analyses using parameters for boring BH 205 in Appendix D indicates that the existing slope's FoS is just below 1.0; however, given observations of its current condition, the slope appears stable. Therefore, bases on stability evaluations at flatter configurations and its current condition, the assumed FoS is estimated to be between 1.0 and 1.1.

- Based on the results of the stability evaluations presented above and given that the slope appears stable in its current state, we anticipate that its current FoS for global stability is between 1.0 and 1.1 and thus it does not exhibit the recommend minimum FoS of 1.3.
- If the activities within the excavation work area require equipment or personnel working within 15 feet of the cut slope's toe, we recommend that the cut slope be regraded to a maximum configuration of 1.5(H) to 1(V).
- If personnel are not required to work within 15 feet of the cut slope's toe and it is desired to leave the cut slope in its current configuration, we recommend that procedures and/or barriers be established to prevent equipment and personnel from working within 15 feet of the slope's toe and that facilities and/or structures for the new transition station be located a minimum lateral distance equal to the cut slope's height times 1.5 plus 10 feet (i.e. $(1.5*H_{cut})$+10 feet) from the cut slope's toe.
- If future operation of the borrow area is anticipate and the cut slope height is expected to increase beyond its cutting height, we recommend that additional evaluation of the slope considering its future configuration and stability be performed to evaluate the impact to the Transition Station #2 site and possible remediation measures.

6.5 GROUNDWATER CONDITIONS

6.5.1 General

Based on the data obtained during our exploration program, we generally anticipate that groundwater will not be encountered during expected earthwork or shallow foundation excavations at the site. However, we do anticipate perched groundwater existing in limited areas across the site will be encountered at elevations below approximately 1295 feet; isolated seepage should be expected when excavations exceed a depth of about 10 to 15 feet.

6.5.2 Infiltration Basin Estimated Seasonal High Water Table (ESHWT)

Borings INF 201 and INF 202 were performed to characterize the subsurface conditions to a depth of approximately 5 feet below the planned infiltration basin bottom and provide information necessary to estimate the seasonal high water table within the basin footprint. Subsurface data recorded in the infiltration test borings are shown on the respective logs included in Appendix A, and the results of infiltration tests performed immediately adjacent to each boring are provided in Appendix C. Table 5 below presents a summary of the interpreted ESHWT at each boring location as well as pertinent information required for design of the infiltration basins.

Table 5 – Infiltration Basin Summary Information

Description	Boring INF 201	Boring INF 202
Infiltration Planned Bottom Elev. (ft)	1303	1303
Encountered Very Dense/Very Hard Soil Elev. (ft)	1299	1298
Encountered Bedrock Elev. (ft)	N.E.	N.E.
Encountered Groundwater Elev. (ft)	N.E.	N.E.
Highest Elevation of Observed Redox Features	N.E.	N.E.
USDA Textural Class (within 5 ft of Basin Bottom)	Sandy Loam	Loamy Sand
Estimated Seasonal High Water Table (ESHWT) Elev. (ft)	Below 1298	Below 1298
Infiltration Test Elevation (ft)	1301	1300
Average Infiltration Rate at Test Elevation (in/hr)	5.4	13.2

Notes:
1) Borings generally extended about 5 feet below the planned depth of each respective basin unless where refusal and/or bedrock was encountered.
2) N.E. = Not Encountered
3) Very Dense/Very Hard Soil is defined as material exhibiting an SPT N-Value of greater than 50 blows per foot (bpf).
4) Noted elevations are estimates and should be considered approximate.
5) The average infiltration rate presented is based on field measurements; a factor of safety has not been applied.

6.6 GEOTECHNICAL DESIGN STRENGTH PARAMETERS

Recommended geotechnical strength parameters are provided for the subsurface conditions encountered in each test boring (not including infiltration test borings) in Appendix D. The recommended soil strength parameters were developed based on consideration of lab test results and established correlations with SPT data.

6.7 BUS SUPPORT STRUCTURE/POLE FOUNDATION DESIGN AND CONSTRUCTION

6.7.1 General

Foundation support for the bus support structure (including ancillary pole structures) is anticipated to require deep foundations to resist shear and overturning loads. Driven pile, helical pile, and drilled shaft foundation options were considered for support of the bus structure. We anticipate that very dense/hard soil and cobbles/boulders encountered at shallow depths at the site will result in inadequate pile embedment and possible damage during installation of both driven and helical piles; pre-drilling would be required to facilitate installation of driven and helical piles. Therefore, considering the very dense/hard till soils at shallow depths in the area of boring BH 203 as well as the presence of cobbles/boulders at shallow depths in other areas of the project site, we recommend that support for the bus support/pole structures consist of drilled shafts at the Transition Station #2 site.

6.7.2 Drilled Shaft Foundations

Based on the subsurface conditions encountered in the area of BH 203, a top of finished grade elevation of about 1308 feet, and the general site preparation recommendations presented in previous sections of this report, we recommend the allowable axial values and the associated LPILE (lateral) parameters shown in Tables 6 and 7, respectively, be used for design of drilled shaft foundations. Total settlement of drilled shaft foundations designed per the recommendations provided below is estimated to be less than 1 inch.

Table 6 – Recommended Drilled Shaft Axial Design Parameters

Sublayer Description	Sublayer Depth (ft)		Material USCS Description	Allowable Skin Friction (Comp.) (psf)	Allowable Skin Friction (Uplift) (psf)	Allowable End Bearing (psf)
	Top	Bottom				
New Controlled Fill	0	4	SM/ML	IGNORE		
	4	6	SM/ML	175	150	-
Glaciofluvial/ Till	6	7.5	SP-SM	375	315	-
	7.5	13	ML	1,050	900	-
	13	15	ML	600	500	-
	15+	-	ML	1,650	1,400	20,000

Notes:

1) Approximately 6 feet of controlled structural fill is anticipated in the area of BH 203 (1 foot of undercut and replacement of topsoil and 5 additional feet to bring the area to the planned finished grade of 1308 feet).
2) Ultimate skin friction and end bearing capacities determined per methods prescribed in FHWA GEC 10: *Drilled Shaft: Construction Procedures and LRFD Design Methods* (2010).
3) Allowable capacities for skin (comp), skin (uplift), and end-bearing determined by applying a factor of safety of 2.5, 3.0 and 3.0, respectively.

Table 7 – Recommended Drilled Shaft Lateral (LPILE) Design Parameters

Sublayer Description	Sublayer Depth (ft) Top	Sublayer Depth (ft) Bot.	Material USCS Description	Effective Unit Weight (pcf)	Effective Friction Angle (deg)	Soil Modulus Constant (k) (pci)	Unconfined Comp. Strength (psi)	m_i	Poisson's Ratio	Geologic Strength Index (GSI)	Rock Mass Modulus (psi)
New Controlled Fill	0	4	SM/ML	120	30	48	-	-	-	-	-
	4	6	SM/ML	120	30	48	-	-	-	-	-
Glaciofluvial/ Till	6	7.5	SP-SM	120	32	83	-	-	-	-	-
	7.5	13	ML	130	39	233	-	-	-	-	-
	13	15	ML	115	31	65	-	-	-	-	-
	15+	-	ML	135	40	258	-	-	-	-	-

Note:
1) Use of the Reese (Sand) constitutive model is recommended for each sublayer.

Additional Drilled Shaft Design Recommendations

- Due to strain incompatibilities, drilled shaft design based entirely on skin friction or end bearing is recommended.
- A minimum shaft length (below the ground surface) of 12 feet is recommended to adequately resist uplift created due to adfreeze forces within the frost zone.
- A minimum shaft diameter of 30 inches is recommended.
- Should multiple shaft foundations be required, the minimum center-to-center spacing should be three (3) times the shaft diameter.

6.7.3 Drilled Shaft Construction

Temporary wall support through the use of temporary casing may be required to prevent loss of sidewall support. The use of slurry for side wall support is not recommended. We recommend that the proposed drilled shaft construction equipment, methods, procedures, and planned quality control testing and inspection during construction be reviewed by a qualified geotechnical engineer prior to the start of shaft construction.

The ability of a drilled shaft to provide the end bearing resistances and associated settlements described herein is directly related to the construction methods and procedures used to provide a clean shaft bottom condition. Drilled shaft excavation and clean out methods shall result in bases/bottoms that are free of loose, soft, or disturbed material. Cleaning of the shaft excavations shall result in a maximum of 1 inch of loose, soft, or disturbed material on the shaft bottom at the time of concrete placement. Should concrete placement within the shaft not occur immediately following excavation and clean out, the condition of the excavation bottom shall be verified to confirm that no more than 1 inch of loose, soft, or disturbed material is present in the bottom of the excavation prior to concrete placement. Inspection of the installation methods and materials by an individual qualified and experienced in drilled shaft construction is recommended.

Placement of concrete via free-fall methods is acceptable assuming placement is directed vertically downward avoiding impact with reinforcement and that the height of groundwater on the bottom of the shaft does not exceed 3 inches at the time of placement. Should the level of water at the bottom of the excavation not be maintained at less than 3 inches, concrete placement via tremmie methods will be required.

6.8 SHALLOW FOUNDATION DESIGN AND CONSTRUCTION

6.8.1 Transformer Pad

Where planned (vicinity of BH 203), we anticipate that approximately 5 feet of controlled structural fill will be required to develop the planned finished grades in the area of the transformer pad. Therefore, we expect the transformer pad to be supported on newly placed controlled structural fill. The source of the new fill was unknown at the time this report was prepared. However, testing of materials from other transition/substation locations indicates that the fill material will likely be susceptible to frost action. If the transformer equipment and ancillary connections are susceptible to vertical movement resulting from frost action, then the new fill material below the transformer pad (and to a distance of 2 feet laterally beyond the pad edges) should consist of clean sand or gravel meeting the requirements of NHDOT Standard Specification Section 209.

Controlled structural fill material placed in accordance with recommendations provided in herein will provide suitable support for transformer pads design to impart an approximate uniform bearing pressure of up to 500 pounds per square foot (psf). The soils encountered at the site should react elastically to structure loads; settlements induced by foundation loads should occur soon after the load is applied. Maximum total settlement induced by the transformer slab loads are anticipated to be about ½ inch.

6.8.2 Single-Story Equipment Structures

Should single-story buildings be required to house equipment operated at the transition station, they may be supported on shallow foundations bearing on approved glaciofluvial sands and gravels or newly placed controlled structural fill material placed in accordance with recommendations provided herein. We recommend that building foundations be designed for a maximum allowable bearing pressure of 3,000 psf for foundations bearing on approved subgrades. To reduce the possibility of localized shear failures, spread and strip footings should be a minimum of 3 feet and 1.5 feet wide, respectively.

For single-story structures designed for a maximum allowable bearing pressure of 3,000 psf on approved glaciofluvial soils or newly controlled structural fill, total settlements of about ½ inch with differential settlements of 1/2 to 2/3 the total estimated settlement are anticipated. As stated previously, settlements induced by foundation loads should occur soon after the load is applied.

6.8.3 Shrink-Swell and Frost Depth Considerations

Based on the soil materials observed in the test boring samples and the laboratory test results, the on-site soils will generally have a low shrink-swell potential. Accordingly, we do not recommend any foundation design modifications relative to the potential for shrink-swell soils.

Frost depth should be anticipated to be 4 feet below the lowest adjacent grade. Therefore, utilities that are susceptible to frost action and building foundations should bear a minimum of 4 feet below adjacent grades.

6.8.4 Shallow Foundation Construction

All foundation subgrades should be observed, evaluated, and verified for the design bearing pressure by a representative of the geotechnical engineer after excavation and prior to reinforcement steel placement. Should building or equipment pads be planned in the areas of borings BH 202, BH 203 and BH 204, limited undercutting and replacement with controlled structural fill is recommended to remove existing topsoil or topsoil underlying existing fill encountered to depths of 1 to 4 feet. If low density/consistency soils are encountered at the foundation subgrade during construction, localized undercutting and/or in-place stabilization of foundation subgrades may be required. The actual need for, and extent of, undercutting or in-place stabilization should be based on field observations made by a representative of the geotechnical engineer at the time of construction.

Excavations for footings should be made in such a way as to provide bearing surfaces that are firm and free of loose, soft, wet, or otherwise disturbed soils. Foundation concrete should not be placed on frozen or saturated subgrades. If such materials are allowed to remain below foundations, settlements will increase. Foundation excavations should be concreted as soon as practical after they are excavated. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom of the excavation to minimize damage to the bearing surface from weather or construction activities. Water should not be allowed to pond in any excavation.

6.9 EARTHQUAKE CONSIDERATIONS

6.9.1 Seismic Site Class Definition

The following recommendations are based Chapter 20 of the ASCE 7-10. ASCE 7-10 provides a methodology for interpretation of SPT resistance values (N-values) to determine a Site Class Definition; however, this method requires averaging N-values over the top 100 feet of the subsurface profile. We note that the test borings for this project were extended to a maximum depth of about 50 feet below existing site grades.

The available subsurface data from our exploration indicates an N-value range of about 3 to greater than 100 bpf within the upper 50 feet below existing site grades. In general accordance with ASCE 7-10 and considering the boring data and planned grading, we recommend that a Site Class Definition “C” be used for design.

6.9.2 Liquefaction

Liquefaction of saturated, fine grained sands and silty sands is not anticipated to be a design concern for the Transition Station #2 site.

6.10 KARST GEOLOGY

Karst topography occurs from the dissolution of soluble bedrock (such as limestone, dolomite, or gypsum) which creates karst features (sinkholes and caves) within the subsurface. Karst conditions were not encountered during the exploration reported herein. Karst features/conditions are not anticipated to be a design or construction concern for the Transition Station #2 site.

6.11 CORROSION CONSIDERATIONS

Two bulk samples obtained in borings BH 204 and INF 201 were tested in the laboratory to determine pH, water soluble sulfate and chloride, and resistivity. The results of the lab tests are summarized in Table 7 below.

Table 7 – Laboratory Corrosivity Test Results

Boring No.	Sample Type & Depth (ft)	pH	Chloride (ug/g)	Sulfate (ug/g)	Electrical Resistivity (ohm-cm)
BH 204	BULK (5 - 10)	6.3	< 5.5	8.7	24,000
INF 201	BULK (5 - 10)	7.0	< 5.5	21	13,000

In general, soils that exhibit a resistivity of greater than 5,000 ohm-cm are considered non-aggressive (FHWA, 2010). Therefore, based on the results of the laboratory test performed on samples collected from the Transition Station #2, the onsite soil should be considered as non-aggressive. Laboratory tests performed on samples collected at other transition and substation sites to date have yielded similar non-aggressive results. However, should the borrow source used to develop the Transition Station #2 site originate from a location other than one of the transition or substation sites, corrosivity testing on representative soil samples from the source is recommended prior to onsite delivery to confirm that the soil is non-aggressive.

7.0 LIMITATIONS

This report has been prepared for the exclusive use of PAR Electrical Contractors, Inc. or their agent, for specific application to the Transition Station #2 project near Clarksville, New Hampshire. The conclusions and recommendations presented herein are based on design information furnished to us, the data obtained from the previously described subsurface exploration programs, and generally accepted geotechnical engineering practice. The conclusions and recommendations do not reflect variations in subsurface conditions which could exist intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon on-site observations of the conditions.

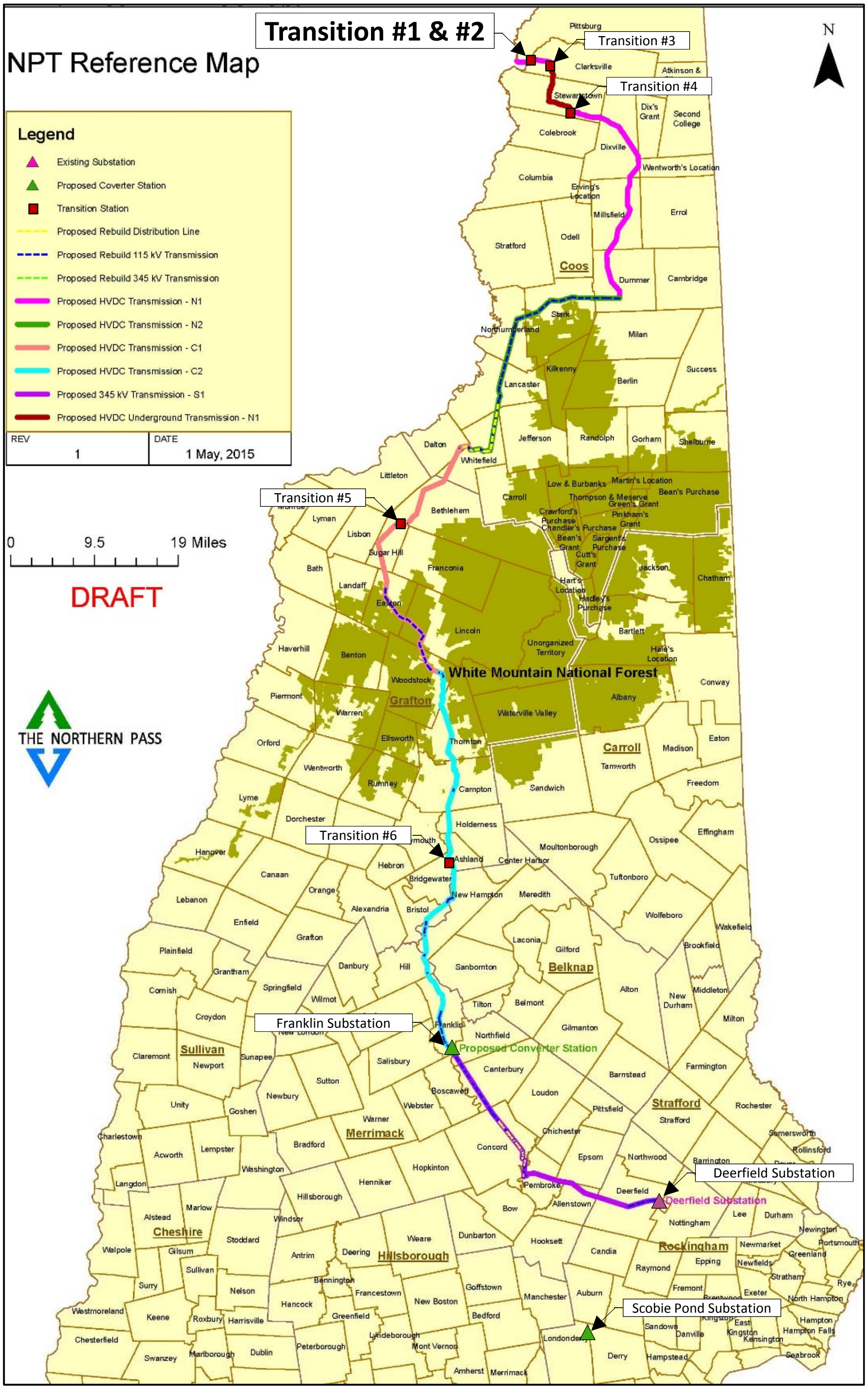
The soil and rock descriptions/classifications and the strata breaks shown on the boring logs attached to this report are based primarily on visual observation and should be considered approximate. Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers or engineering geologists should evaluate earthwork and foundation construction to verify that the conditions anticipated in design actually exist.

In the event that changes are made in the design or location of the project, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by Quanta Subsurface and conclusions of this report modified and/or verified in writing. If this report is copied or transmitted to a third party, it must be copied or transmitted in its entirety, including text, attachments, and enclosures. Interpretations based on only a part of this report may not be valid.

8.0 REFERENCES

- Haley & Aldrich, Inc.; *Geotechnical Data Report - Route 3/Connector River Crossing: Northern Pass Transmission Project*; February 21, 2014.
- New Hampshire Department of Environmental Services: New Hampshire Stormwater Manual; *Post-Construction Best Management Practices Selection & Design*; Volume 2; December 2008.
- New Hampshire Department of Resources and Economic Development; *Geologic Map and Structure Sections of the Dixville Quadrangle New Hampshire*, Plate 1; Scale 1:62,500; 1963.
- New Hampshire Department of Transportation; *Standard Specifications for Road and Bridge Construction*; Section 209 Granular Backfill; 2016
- Terracon Consultants' Inc.; *Report of Expected Geotechnical Conditions*: Northern Pass Project; July 10, 2015.
- U.S Department of Transportation Federal Highway Administration (FHWA); *Drilled Shafts: Construction Procedures and LRFD Design Methods*; FHWA-NHI-10-016; May 2010.
- McGregor, J and J.M. Duncan; Virginia Polytechnic Institute and State University - Center for Geotechnical Practice and Research; *Performance and Use of the Standard Penetration Test in Geotechnical Engineering Practice*; October 1998

Figures



Project No.: 16004 Date: December 2016

Figure 1
Site Vicinity Location Plan

QUANTA SUBSURFACE Engineering – Construction

Northern Pass TL – Transition Station #2
Geotechnical Investigation

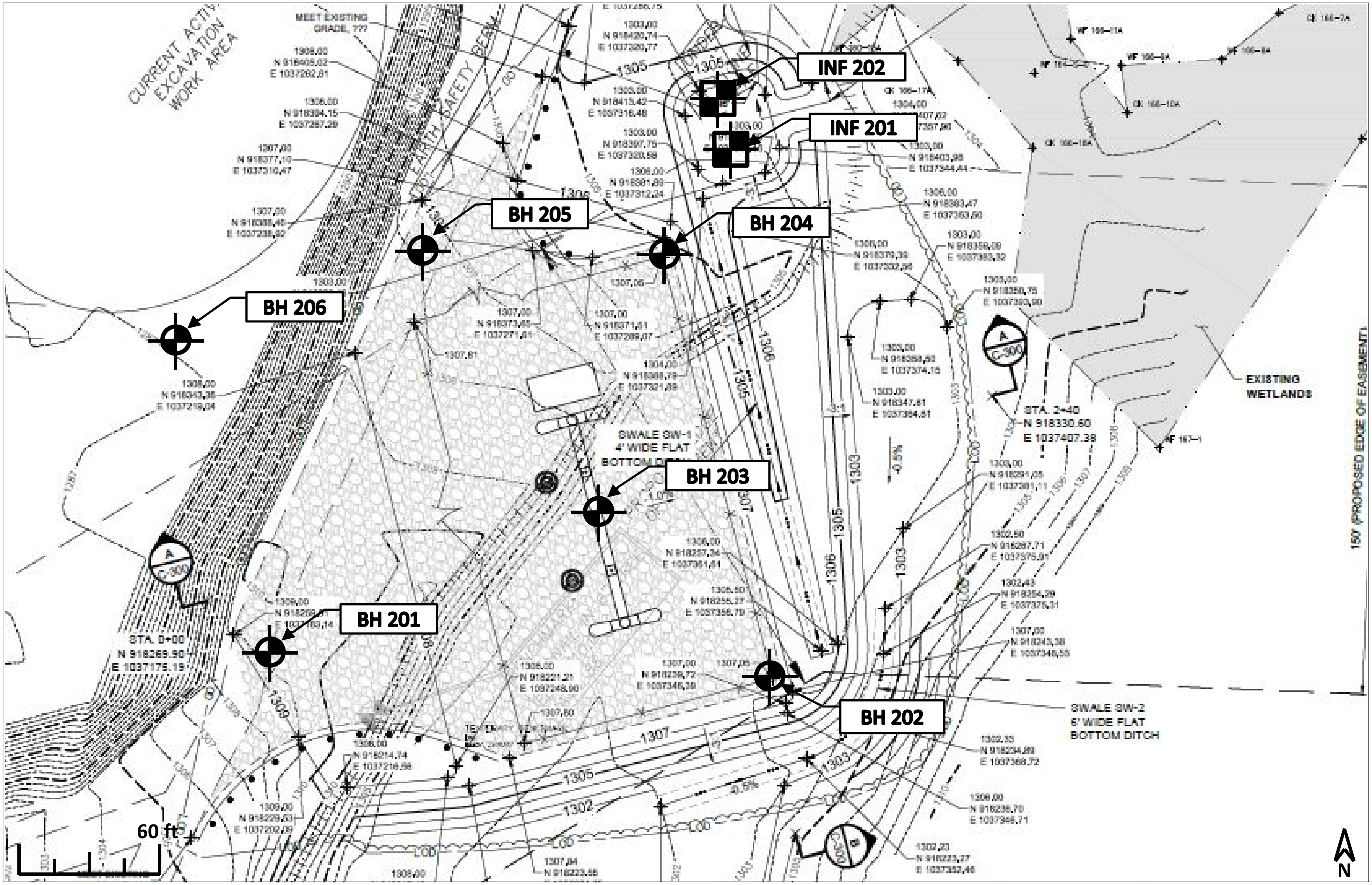
Base Map: Google Earth, 2016.

Project No.: 16004 Date: December 2016

Figure 2
Site Vicinity Map

QUANTA SUBSURFACE Engineering – Construction

Northern Pass TL – Transition Station #2
Geotechnical Investigation



Base Map: Transition Station #2: NPTT204-C101-Geotech.dwg

Quanta Subsurface Boring Location, August/September 2016

Quanta Subsurface Infiltration Location, August/September 2016

Figure 3

Boring Location Map

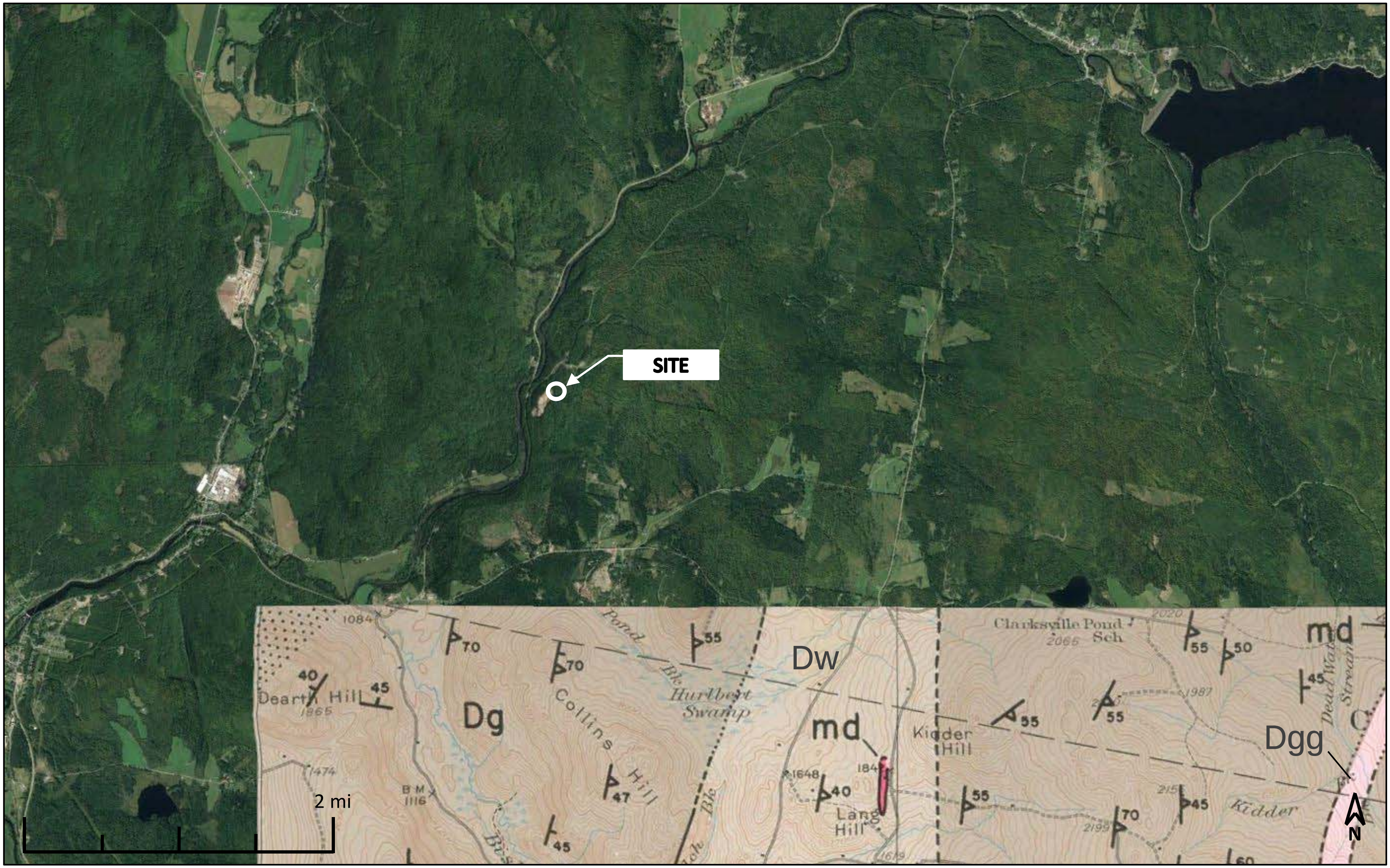
Project No.: 16004

Date: December 2016

QUANTA SUBSURFACE

Engineering – Construction

Northern Pass TL – Transition Station #2
Geotechnical Investigation



Base Map: New Hampshire Department of Resources and Economic Development, *Geologic Map and Structure Sections of the Dixville Quadrangle New Hampshire (Plate 1)*

Legend:

Dg	**Gile Mountain Formation – Phyllite/Micaceous Quartzite/Schist**
Dw	**Waits River Formation – Phyllite/Micaceous Quartzite**
Dgg	**Gile Mountain Formation – Greenstone and Amphibolite Lenses**
md	**Epidote Amphibolite/Amphibolite**

Figure 4

Bedrock Geologic Map

Project No.: 16004

Date: December 2016

QUANTA SUBSURFACE

Northern Pass TL – Transition Station #2
Geotechnical Investigation

Appendix A
QS Boring Logs

BORING NUMBER BH 201

QUANTA SUBSURFACE
Engineering + Construction
Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire
DATE STARTED 8/31/16 **COMPLETED** 9/1/16
GROUND ELEVATION 1309.4 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01893889 **LONGITUDE** -71.46191111
DRILLING METHOD Solid Stem Auger/Wet Rotary
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
AT END OF DRILLING Not Encountered

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	79	5-6-6-8 (12)			GLACIOFLUVIAL: Silty SAND with gravel (SM), yellowish brown, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded	9.4			14.3	
		SPT 2	54	8-8-9-5 (17)			Poorly Graded SAND with silt and gravel (SP-SM), yellowish brown, moist, medium dense to dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded	4.1			11.4	
1305	5	SPT 3	63	6-5-6-9 (11)				4.7				
		SPT 4	67	9-16-10-5 (26)				4.2				
1300	10	SPT 5	75	5-6-11-46 (17)				5.6				
		SPT 6	63	13-7-14-18 (21)				5.7				
1295	15	SPT 7	100	17-19-20-18 (39)								
							Poorly Graded GRAVEL with silt and sand (GP-GM), yellowish brown, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded, with cobbles and boulders					
1290	20	SPT 8	75	13-21-53-36 (74)								
							TILL: Sandy SILT with gravel (ML), trace clay, yellowish brown and olive gray, moist, very hard, fine to coarse grained gravel, fine grained sand, subangular					
1285	25	SPT 9	100	17-42-42-48 (84)								Set 4-in casing and began mud rotary at 27 feet.
1280	30											

(Continued Next Page)

Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

BORING NUMBER BH 201

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	30	SPT 10	89	29-35-50/6"			TILL: Sandy SILT with gravel (ML), trace clay, yellowish brown and olive gray, moist, very hard, fine to coarse grained gravel, fine grained sand, subangular *(continued)*					
1275	35	SPT 11	100	50/6"								
1270	40	SPT 12	100	36-50/6"								
1265	45	SPT 13	64	33-50/5"								
1260	50	SPT 14	33	50/3"								

Bottom of Borehole at 50.3 feet

QUANTA SUBSURFACE Engineering + Construction
Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1303.0 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01891944 **LONGITUDE** -71.46135278
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
∇ **AT TIME OF DRILLING** 7.5ft / Elev 1295.5ft

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0	SPT 1	46	1-1-2-5 (3)			TOPSOIL: Lean CLAY with sand (CL), trace organics, little fine gravel, pale brown, moist, soft, fine sand grained sand	20.6			
1300		SPT 2	55	4-12-22-50/4"			GLACIOFLUVIAL: Sandy SILT with gravel (ML), dark yellowish brown, moist, very hard, fine to coarse grained gravel, fine grained sand, angular	17.1			
	5	SPT 3	80	32-50/4"							
		SPT 4	100	50/6"							
1295							∇ Silty SAND with gravel (SM), dark yellowish brown, wet, medium dense, fine to coarse grained gravel, fine to medium grained sand, subangular				
	10	SPT 5	63	14-15-12-9 (27)							
		SPT 6	92	8-10-10-11 (20)				12.9			
1290											
	15	SPT 7	100	12-50/2"			- very dense with a boulder encountered from 15.5 to 17 feet				
1285							TILL: Sandy SILT with gravel (ML), moderate yellowish brown and light olive gray, moist, very hard, fine to coarse grained gravel, fine to coarse grained sand, angular				
	20	SPT 8	67	30-50/3"							

Bottom of Borehole at 20.8 feet

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Spokane Valley, WA 99027
Telephone: 509-892-9409

BORING NUMBER BH 203

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1303.0 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01904444 **LONGITUDE** -71.46154722
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
AT END OF DRILLING Not Encountered

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT	ATTERBERG LIMITS PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	33	4-11-7-12 (18)			TOPSOIL: Lean CLAY with sand (CL), trace organics, yellowish brown, moist, stiff, fine grained sand	20.9				Auger refusal at 2 feet. The boring was offset 3 feet and drilling continued to auger refusal at 9.75 feet.
		SPT 2	76	20-50/6"			GLACIOFLUVIAL: Poorly Graded SAND with silt (SP-SM), yellowish brown, moist, medium dense, fine to medium grained sand, subangular					
1300							TILL: Sandy SILT with gravel (ML), dark yellowish brown, moist, very hard to hard, fine to coarse grained gravel, fine to coarse grained sand, subangular					
	5	SPT 3	88	20-26-33-38 (59)								
		SPT 4	79	24-26-24-20 (50)			- moderate yellow brown to light olive gray from 6 to 8 feet					
1295		SPT 5	52	13-11-11-50/3"								

Auger Refusal at 9.8 feet
Bottom of Borehole at 9.8 feet

BORING NUMBER BH 204

QUANTA SUBSURFACE Engineering + Construction
Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1305.1 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01926944 **LONGITUDE** -71.461475
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
▽ **AT TIME OF DRILLING** 14.0ft / Elev 1291.1ft

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS LIQUID LIMIT	ATTERBERG LIMITS PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
1305	0	SPT 1	54	5-7-8-3 (15)			FILL: Sandy SILT with gravel (ML), trace organics, moderate brown, moist, stiff, fine to coarse grained gravel, fine to medium grained sand, subangular					
		SPT 2	63	3-2-3-4 (5)			TOPSOIL: Lean CLAY (CL), little silt, trace organics, light brown, moist, medium stiff					
							GLACIOFLUVIAL: Silty SAND with gravel (SM), dark yellowish brown, moist, stiff, fine grained gravel, fine grained sand, subrounded	26.3	30	NP	25.8	
1300	5	SPT 3		7-22-25-40 (47)			Silty SAND with gravel (SM), light yellowish brown, moist, very dense to dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded					A bulk sample was obtained from 5 to 10 feet. % fines = 25.4% Resistivity = 24,000 ohm-cm pH = 6.3
		SPT 4	85	50/6"								
1295	10	SPT 5	79	37-32-41-30 (73)								
		SPT 6	71	14-15-22-24 (37)								
1290	15						▽ Poorly Graded SAND with silt (SP-SM), little fine gravel, light yellowish brown, wet, dense, fine to coarse grained sand, subangular					
		SPT 7	75	16-24-29-32 (53)			TILL: Sandy SILT with gravel (ML), light olive gray, moist, very hard, fine to coarse grained gravel, fine to coarse grained sand, subangular					
1285	20	SPT 8	67	12-35-36-42 (71)								

Bottom of Borehole at 22.0 feet

BORING NUMBER BH 205

QUANTA SUBSURFACE Engineering + Construction
Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire
DATE STARTED 9/1/16 **COMPLETED** 9/1/16
GROUND ELEVATION 1307.7 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01926667 **LONGITUDE** -71.46174722
DRILLING METHOD Hollow Stem Auger/Wet Rotary
DRILLING EQUIPMENT CME850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
▽ **AT TIME OF DRILLING** 18.5ft / Elev 1289.2ft

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	46	7-5-15-6 (20)			GLACIOFLUVIAL: Silty GRAVEL with sand (GP-GM), dark yellowish brown, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded	11.8			12.3	
1305		SPT 2	46	3-3-4-12 (7)			Silty SAND with gravel (SM), dark yellowish brown, moist, loose to medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded	10.8			15.3	
	5	SPT 3	100	9-14-13-15 (27)								
		SPT 4	100	15-20-50/5"								
1300							- boulders encountered from 7.5 to 10 feet					
	10	SPT 5	75	15-13-17-18 (30)			Sandy SILT with gravel (ML), dark yellowish brown, moist, medium stiff, fine to coarse grained gravel, subrounded					
1295							Silty SAND (SM), little fine to coarse gravel, dark yellowish brown, wet, medium dense to very dense, fine to coarse grained gravel, fine grained sand, subrounded					
	15	SPT 6	75	13-30-30-22 (60)								
1290						▽	- medium dense from 19 to 22 feet					
	20	SPT 7	88	18-15-15-17 (30)			TILL: Sandy SILT with gravel (ML), dark yellowish brown, moist, hard to very hard, fine to coarse grained gravel, fine grained sand, subrounded					
1285							- dark yellowish brown and light olive gray from 24 to 34 feet.					
	25	SPT 8	92	10-23-20-21 (43)								Set 4-in casing and began mud rotary at 27 feet.
1280												
	30											

(Continued Next Page)

CLIENT PAR Electrical Contractors

PROJECT NAME Northern Pass TL - Transition Station #2

PROJECT NUMBER 16004

PROJECT LOCATION Clarksville, New Hampshire

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	30	SPT 9	100	33-50/5"			TILL: Sandy SILT with gravel (ML), dark yellowish brown, moist, hard to very hard, fine to coarse grained gravel, fine grained sand, subrounded *(continued)*					
1275												
	35	SPT 10	100	27-50/6"								
1270							- cobbles encountered from 37 to 39 feet					
	40	SPT 11	100	50/6"								
1265												
	45	SPT 12	100	50/4"								
1260												
	50	SPT 13	100	50/5"								

Bottom of Borehole at 50.4 feet

Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

BORING NUMBER BH 206

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire
DATE STARTED 9/1/16 **COMPLETED** 9/1/16
GROUND ELEVATION 1287.1 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01919167 **LONGITUDE** -71.46203333
DRILLING METHOD Hollow Stem Auger/Wet Rotary
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
AT END OF DRILLING Not Encountered

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	0	SPT 1	50	3-10-14-20 (24)			GLACIOFLUVIAL: Poorly Graded SAND with silt (SP-SM), little fine to coarse gravel, dark yellowish brown, moist, medium dense, fine to coarse grained sand, subrounded	10.6			
1285		SPT 2	71	34-15-24-14 (39)			Poorly Graded GRAVEL with silt and sand (GP-GM), light brown, moist, dense, fine to coarse grained gravel, fine to medium grained sand, subrounded				
	5	SPT 3	75	11-17-34-30 (51)			TILL: Sandy SILT with gravel (ML), dark yellowish brown, moist to wet, hard, fine to coarse grained gravel, fine to coarse grained sand, subangular	7.5			
1280		SPT 4	79	20-19-22-25 (41)			Silty SAND with gravel (SM), dark yellowish brown, wet, dense, fine to coarse grained gravel, fine to coarse grained sand, angular	10.1			16.8
		SPT 5	83	13-17-18-20 (35)			Silty SAND with gravel (SM), dark yellowish brown and olive gray, moist, dense, fine to coarse grained gravel, fine grained sand, subangular	11.8	20	NP	45.8
	10						- dark yellowish brown from 10 to 14 feet				
1275		SPT 6	75	8-19-15-13 (34)							
							- very dense from 14 to 50.8 feet				
	15	SPT 7	73	32-50/5"							
1270											
	20	SPT 8	82	37-50/5"							
1265											
	25	SPT 9	67	21-31-27-42 (58)							
1260											
	30						- dark yellowish brown from 29 to 39 feet				

(Continued Next Page)

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Spokane Valley, WA 99027
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BORING NUMBER BH 206

CLIENT PAR Electrical Contractors

PROJECT NAME Northern Pass TL - Transition Station #2

PROJECT NUMBER 16004

PROJECT LOCATION Clarksville, New Hampshire

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
	30	SPT 10	87	27-50/6"			Silty SAND with gravel (SM), dark yellowish brown and olive gray, moist, dense, fine to coarse grained gravel, fine grained sand, subangular *(continued)*				
1255											
	35	SPT 11	71	19-37-50/5"							
1250											
	40	SPT 12	70	30-50/4"							
1245											
	45	SPT 13	38	50/4"							
1240							- dark yellowish brown from 49 to 50.8 feet				
	50	SPT 14	5	29-50/4"							

Bottom of Borehole at 50.8 feet

BORING NUMBER INF 201

QUANTA SUBSURFACE
Engineering + Construction

Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1304.1 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01934167 **LONGITUDE** -71.46138611
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
AT END OF DRILLING Not Encountered

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	50	3-4-6-11 (10)			FILL: Silty SAND (SM), little fine to coarse gravel, dark yellowish brown, moist, loose, fine to coarse grained sand, subrounded					Infiltration test casing installed in an adjacent borehole to a depth of approximately 4 feet.
		SPT 2	63	3-4-3-7 (7)			TOPSOIL: Lean CLAY with sand (CL), trace organics, moderate brown, moist, medium stiff, fine grained sand, (original topsoil layer) GLACIOFLUVIAL: Silty GRAVEL with sand (GM), yellowish brown, wet, loose, fine grained gravel, fine to medium grained sand	29.0	26	NP	43.3	
1300	5	SPT 3	83	17-9-13-29 (22)			Silty SAND with gravel (SM), light olive gray to dark yellowish brown, moist, medium dense to very dense, fine to coarse grained gravel, fine to medium grained sand, subangular					A bulk sample was obtained from 5 to 10 feet. % fines = 32.6% Resistivity = 13,000 ohm-cm pH = 7.0
		SPT 4	100	33-50/2"								
							Silty GRAVEL with sand (GM), dark yellowish brown, moist, dense, fine to coarse grained sand, subangular					
1295	10	SPT 5	83	16-15-21-22 (36)			TILL: SILT with gravel (ML), dark yellowish brown, moist, hard, fine to coarse grained gravel, subangular					
		SPT 6		26-26-23-21 (49)								The ESHWT is at a depth below 12 feet.

Bottom of Borehole at 12.0 feet

Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

BORING NUMBER INF 202

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire
DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1303.9 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01938889 **LONGITUDE** -71.46140556
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	58	4-6-4-2 (10)			FILL: Silty SAND (SM), little fine to coarse gravel, moderate brown, moist, loose, fine and coarse grained sand, subrounded					Infiltration test casing installed in an adjacent borehole to a depth of approximately 4 feet.
		SPT 2	75	3-4-5-10 (9)			TOPSOIL: Lean CLAY with sand (CL), trace organics, moderate brown, moist, medium stiff, fine to medium grained sand, subrounded, (original topsoil layer)					
1300	5						GLACIOFLUVIAL: Silty SAND (SM), little fine gravel, dark yellowish brown, moist, loose to medium dense, fine to medium grained sand, subrounded - boulders and cobbles from 4 to 6 feet	14.3			22.5	
		SPT 3	55	23-50/5"			Silty SAND with gravel (SM), moderate yellowish brown, moist, very dense to dense, fine to coarse grained gravel, fine to coarse grained sand, subangular, with cobbles					
1295		SPT 4	75	18-20-27-49 (47)			TILL: Sandy SILT with gravel (ML), moderate yellowish brown, moist, very hard, fine to coarse grained gravel, fine to coarse grained sand, subrounded					
	10	SPT 5	75	30-33-37-32 (70)								The ESHWT is at a depth below 12 feet.

Bottom of Borehole at 12.0 feet

Appendix B
QS Laboratory Test Results

SUMMARY OF LAB TESTING RESULTS

NORTHERN PASS TRANSMISSION LINE PROJECT

TRANSITION STATION #2

PROJECT NO.: 16004

SAMPLE INFORMATION			LAB TEST RESULTS																
BOREHOLE No.	FIELD SAMPLE ID	DEPTH (ft)	MOISTURE CONTENT (ASTM D2216) (%)	ORGANIC CONTENT OF SOIL (ASTM D2794) (%)	Sieve Analysis (ASTM D422)				% PASSING NO. 200 SEIVE (ASTM D1140)	ATTERBERG LIMITS (ASTM D4318)			MODIFIED PROCTOR (ASTM D1557)		UNCONFINED COMPRESSIVE STRENGTH OF ROCK (ASTM D7102) (psi)	SOIL CHEMISTRY			
					% Gravel	% Sand	% Silt	% Clay		LL	PL	PI	Max. Dry Density (pcf)	Optimum Moisture Content (%)		SO_4 (ASTM D516) (ug/g)	CHLORIDE (ASTM D512) (ug/g)	pH (ASTM G51)	RESISTIVITY (AASHTO T288) (ohm-cm)
BH 201	S1	0-2	9.4						14.3										
BH 201	S2	2-4	4.1		42.2	46.5	11.4												
BH 201	S3	4-6	4.7																
BH 201	S4	6-8	4.2																
BH 201	S5	8-10	5.6																
BH 201	S6	10-12	5.7																
BH 202	S1	0-2	20.6																
BH 202	S2	2-4	17.1																
BH 202	S6	10-12	12.9																
BH 203	S1	0-2	20.9																
BH 204	S2	2-4	26.3						25.8	30	NP	NP							
BH 204	BULK	5-10							25.4							7.8[A]	< 5.5[A]	6.3	24,000
BH 205	S1	0-2	11.8						12.3										
BH 205	S2	2-4	10.8						15.3										
BH 206	S1	0-2	10.6																
BH 206	S3	4-6	7.5																
BH 206	S4	6-8	10.1						16.8										
BH 206	S5	8-10	11.8		27.3	26.9	45.8			20	NP	NP							
INF 201	S2	2-4	29.0		7.0	49.6	43.3			26	NP	NP							
INF 201	BULK	5-10							32.6							21[A]	< 5.5[A]	7.0	13,000
INF 202	S2	2-4	14.3						22.5										

NOTES:

General - Testing performed by S.W. Cole unless otherwise noted.

A - Testing performed by Absolute Resource Associates as a subcontractor to S.W. Cole.

Report of Moisture Content of Soil and Rock

ASTM D2216-10

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various, NH	**Lab ID:**	Multiple
Client:	Quanta Subsurface	**Date Received:**	09/13/16
Material Description:	Multiple	**Date Completed:**	09/15/16
Material Source:	Transition Station 2	**Tested By:**	BLG

Lab ID	Nominal Maximum Aggregate Size	Material Description	Moisture Content
15056S	⅜"	TS-2, BH-201, S1, 0-2'	9.4%
15057S	⅜"	TS-2, BH-201, S2, 2-4'	4.1%
15058S	⅜"	TS-2, BH-201, S3, 4-6'	4.7%
15059S	⅜"	TS-2, BH-201, S4, 6-8'	4.2%
15060S	⅜"	TS-2, BH-201, S5, 8-10'	5.6%
15061S	⅜"	TS-2, BH-201, S6, 10-12'	5.7%
15062S	⅜"	TS-2, BH-202, S1, 0-2'	20.6%
15063S	⅜"	TS-2, BH-202, S2, 2-4'	17.1%
15064S	⅜"	TS-2, BH-202, S6, 10-12'	12.9%
15065S	⅜"	TS-2, BH-203, S1, 0-2'	20.9%

Comments:

Reviewed By: CBM

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Report of Moisture Content of Soil and Rock

ASTM D2216-10

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various, NH	**Lab ID:**	Multiple
Client:	Quanta Subsurface	**Date Received:**	09/13/16
Material Description:	Multiple	**Date Completed:**	09/15/16
Material Source:	Transition Station 2	**Tested By:**	BLG

Lab ID	Nominal Maximum Aggregate Size	Material Description	Moisture Content
15066S	⅜"	TS-2, BH-204, S2, 2-4'	26.3%
15067S	⅜"	TS-2, BH-205, S1, 0-2'	11.8%
15068S	⅜"	TS-2, BH-205, S2, 2-4'	10.8%
15069S	⅜"	TS-2, BH-206, S1, 0-2'	10.6%
15070S	⅜"	TS-2, BH-206, S3, 4-6'	7.5%
15071S	⅜"	TS-2, BH-206, S4, 6-8'	10.1%
15072S	⅜"	TS-2, BH-206, S5, 8-10'	11.8%
15073S	⅜"	TS-2, INF-201, S2, 2-4'	29.0%
15074S	⅜"	TS-2, INF-202, S2, 2-4'	14.3%

Comments:

Reviewed By: CBM

S.W.COLE ENGINEERING, INC.

Percent Finer than No. 200 ASTM D1140

Project Number: 16-0600
Project Name: Northern Pass Transmission

Sample ID:	15056S
Sample Source:	TS-2, BH-201, S1, 0-2'
Client Sample Description:	SM
% Passing # 200:	14.3
Sample ID:	15066S
Sample Source:	TS-2, BH-204, S2, 2-4'
Client Sample Description:	SM
% Passing # 200:	25.8
Sample ID:	15067S
Sample Source:	TS-2, BH-205, S1, 0-2'
Client Sample Description:	GM
% Passing # 200:	12.3
Sample ID:	15068S
Sample Source:	TS-2, BH-205, S2, 2-4'
Client Sample Description:	SM
% Passing # 200:	15.3
Sample ID:	15071S
Sample Source:	TS-2, BH-206, S4, 6-8'
Client Sample Description:	SM
% Passing # 200:	16.8

S.W.COLE ENGINEERING, INC.

Percent Finer than No. 200 ASTM D1140

Project Number:	16-0600
Project Name:	Northern Pass Transmission

Sample ID:	15074S
Sample Source:	TS-2, INF-202, S2, 2-4'
Client Sample Description:	SM
% Passing # 200:	22.5

S.W.COLE ENGINEERING, INC.

Percent Finer than No. 200 ASTM D1143

Project Number: 16-0600
Project Name: Northern Pass Transmission Line

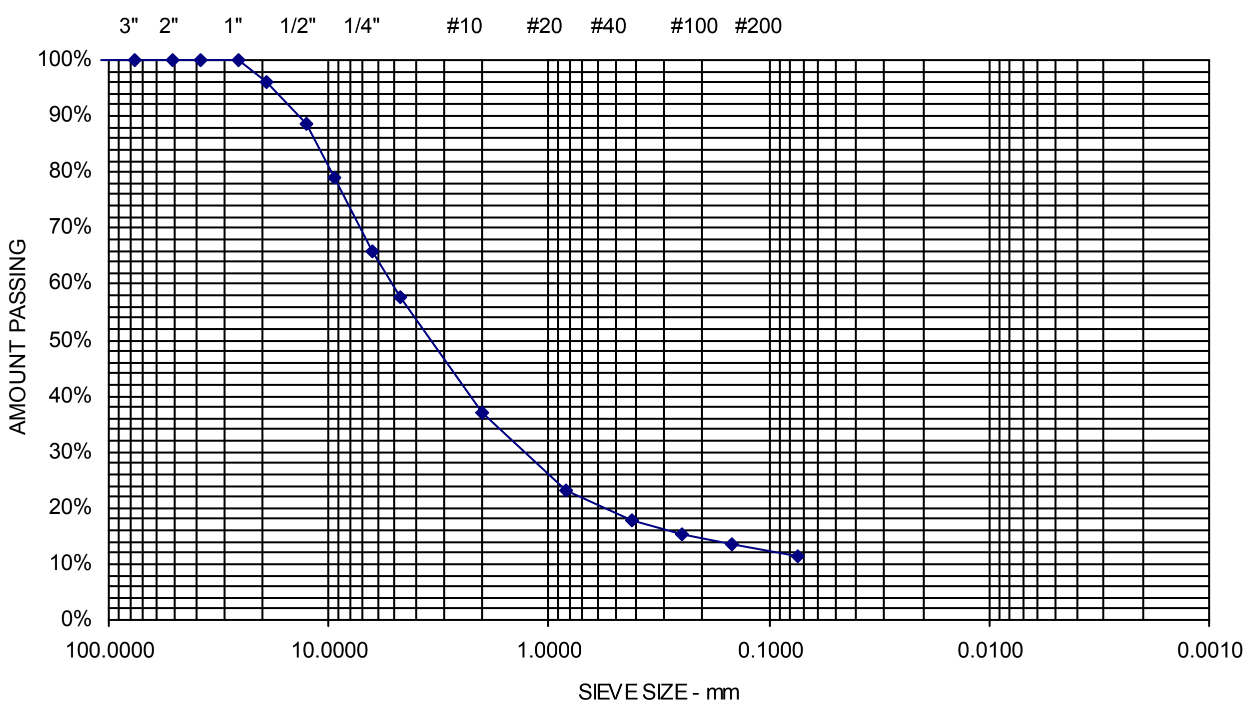
Sample ID:	15212S
Sample Source:	TS-2, BH-204, BULK, 5-10'
Client Sample Description:	SM
% Passing # 200:	25.4
Sample ID:	15213S
Sample Source:	TS-2, INF-201, BULK, 5-10'
Client Sample Description:	SM
% Passing # 200:	32.6

Report of Gradation

ASTM C-117 & C-136

Project Name	VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES	Project Number	16-0600
Client	QUANTA SUBSURFACE	Lab ID	15057S
		Date Received	9/13/2016
		Date Completed	9/16/2016
Material Source	**TS-2, BH-201, S2, 2-4'**	Tested By	ANTONIO SANTIAGO

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**96**	
12.5 mm	**1/2"**	**89**	
9.5 mm	**3/8"**	**79**	
6.3 mm	**1/4"**	**66**	
4.75 mm	**No. 4**	**58**	42.2% Gravel
2.00 mm	**No. 10**	**37**	
850 um	**No. 20**	**23**	
425 um	**No. 40**	**18**	46.5% Sand
250 um	**No. 60**	**15**	
150 um	**No. 100**	**14**	
75 um	**No. 200**	**11.4**	11.4% Fines



CBM

Comments: Moisture Content = 4.0

Sheet

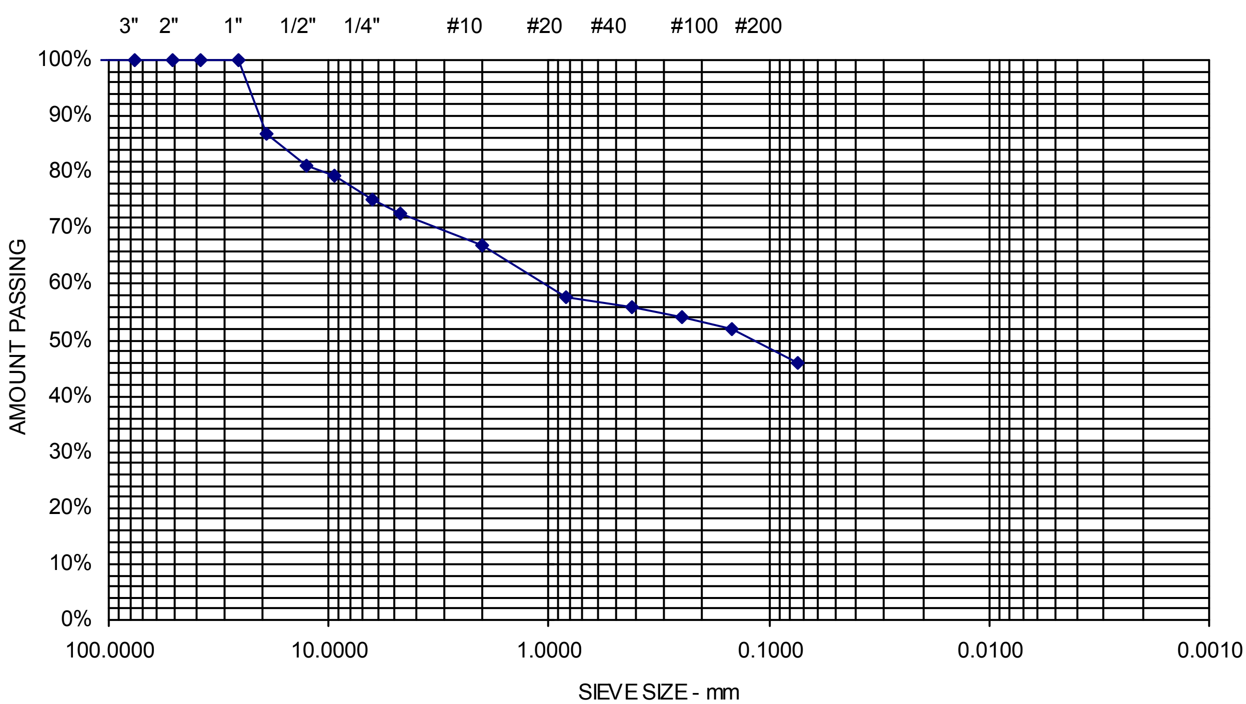
Report of Gradation

ASTM C-117 & C-136

S.W.COLE ENGINEERING, INC.

Project Name	VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES	Project Number	16-0600
Client	QUANTA SUBSURFACE	Lab ID	15072S
		Date Received	9/13/2016
		Date Completed	9/16/2016
Material Source	**TS-2, BH-206, S5, 8-10'**	Tested By	

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**87**	
12.5 mm	**1/2"**	**81**	
9.5 mm	**3/8"**	**79**	
6.3 mm	**1/4"**	**75**	
4.75 mm	**No. 4**	**73**	27.3% Gravel
2.00 mm	**No. 10**	**67**	
850 um	**No. 20**	**58**	
425 um	**No. 40**	**56**	26.9% Sand
250 um	**No. 60**	**54**	
150 um	**No. 100**	**52**	
75 um	**No. 200**	**45.8**	45.8% Fines



CBM

Comments: Moisture Content = 11.8%

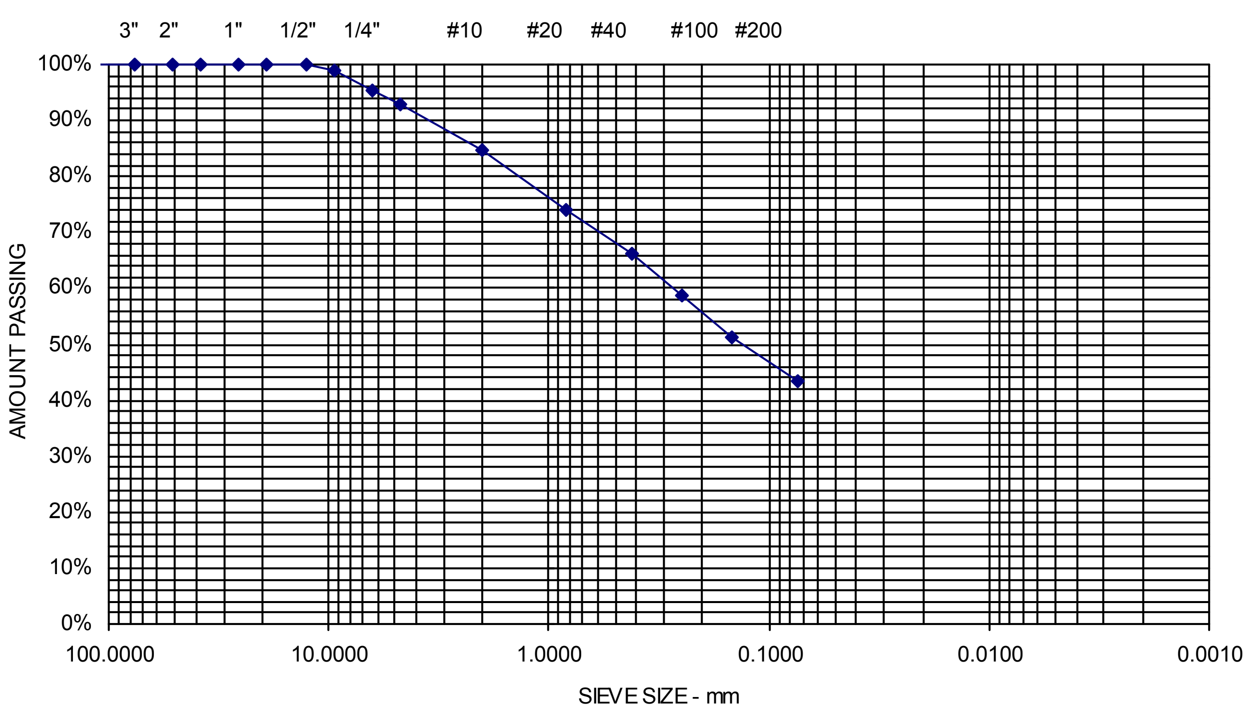
Sheet

Report of Gradation

ASTM C-117 & C-136

Project Name	VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES	Project Number	16-0600
Client	QUANTA SUBSURFACE	Lab ID	15073S
		Date Received	9/13/2016
		Date Completed	9/16/2016
Material Source	**TS-2, INF-201, S2, 2-4'**	Tested By	ANTONIO SANTIAGO

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**99**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**93**	7% Gravel
2.00 mm	**No. 10**	**85**	
850 um	**No. 20**	**74**	
425 um	**No. 40**	**66**	49.6% Sand
250 um	**No. 60**	**59**	
150 um	**No. 100**	**51**	
75 um	**No. 200**	**43.3**	43.3% Fines



CBM

Comments: Moisture Content = 29%

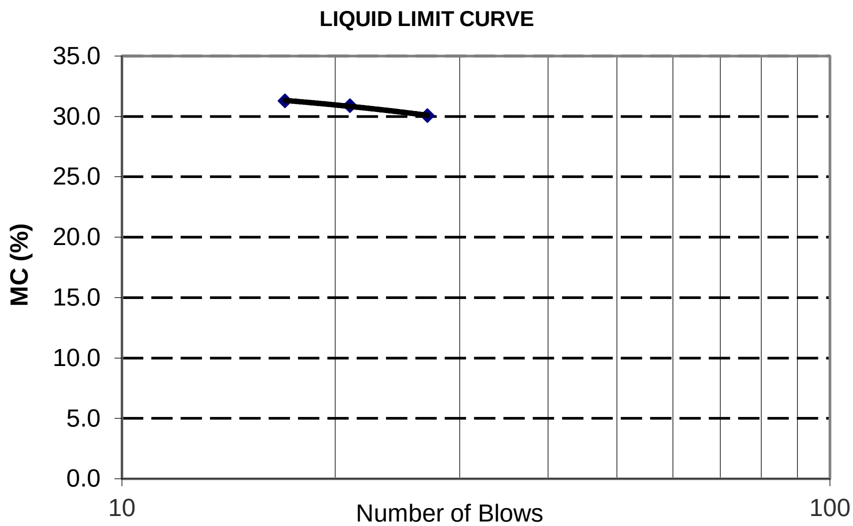
Sheet

Report of Atterberg Limits

ASTM D4318-10 - Method A

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various NH	**Lab ID:**	15066S
Client:	Quanta Subsurface	**Date Received:**	09/13/16
Material Description:	SM	**Date Completed:**	09/20/16
Material Source:	TS-2, BH-204, S2, 2-4'	**Tested By:**	BLG

Liquid Limit	**30**
Plastic Limit	
Plasticity Index	**Non-Plastic**



Material Retained On the No. 40 Sieve: 48%

As-received Moisture Content: 27%

Comments:

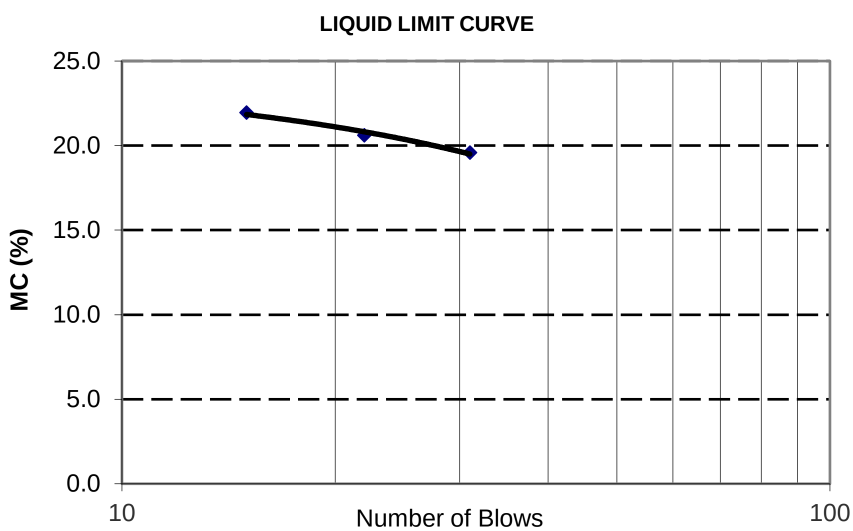
Reviewed By: CBM

Report of Atterberg Limits

ASTM D4318-10 - Method A

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various NH	**Lab ID:**	15072S
Client:	Quanta Subsurface	**Date Received:**	09/13/16
Material Description:	GM	**Date Completed:**	09/20/16
Material Source:	TS-2, BH-206, S5, 8-10'	**Tested By:**	BLG

Liquid Limit	**20**
Plastic Limit	
Plasticity Index	**Non-Plastic**



Material Retained On the No. 40 Sieve: 38%

As-received Moisture Content: 13%

Comments:

Reviewed By: CBM

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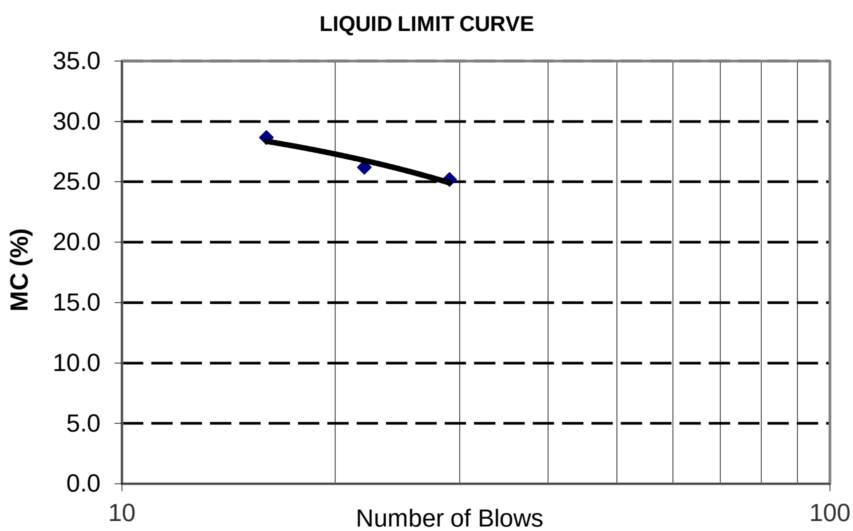
Report of Atterberg Limits

ASTM D4318-10 - Method A

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various NH	**Lab ID:**	15073S
Client:	Quanta Subsurface	**Date Received:**	09/13/16
Material Description:	SM	**Date Completed:**	09/20/16
Material Source:	TS-2, INF-201, S2, 2-4'	**Tested By:**	BLG

Liquid Limit	**26**
Plastic Limit	
Plasticity Index	**Non-Plastic**



Material Retained On the No. 40 Sieve: 38%

As-received Moisture Content: 13%

Comments:

Reviewed By: CBM

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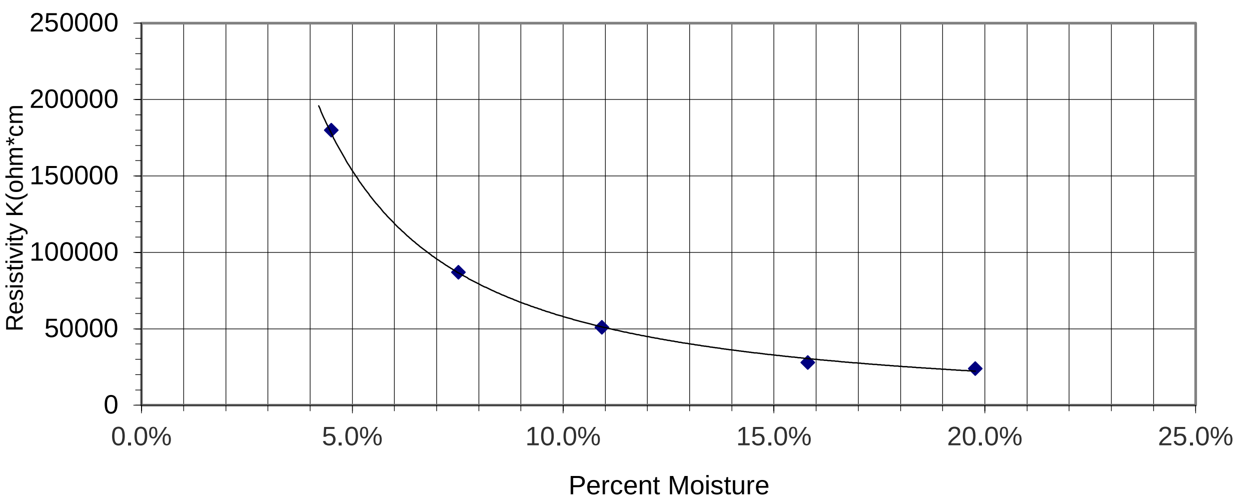
Report of Soil Resistivity

AASHTO T288

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various, NH	**Lab ID:**	15212S
Client:	SWCOLE Explorations, LLC	**Date Received:**	10/17/16
Material Description:	SM	**Date Completed:**	10/27/16
Material Source:	TS-2, BH-204, BULK, 5-10'	**Tested By:**	BLG

Minimum Soil Resistivity 24,000 ohm-cm

Soil Temperature 20.5 °C



Comments:

Reviewed By: CBM

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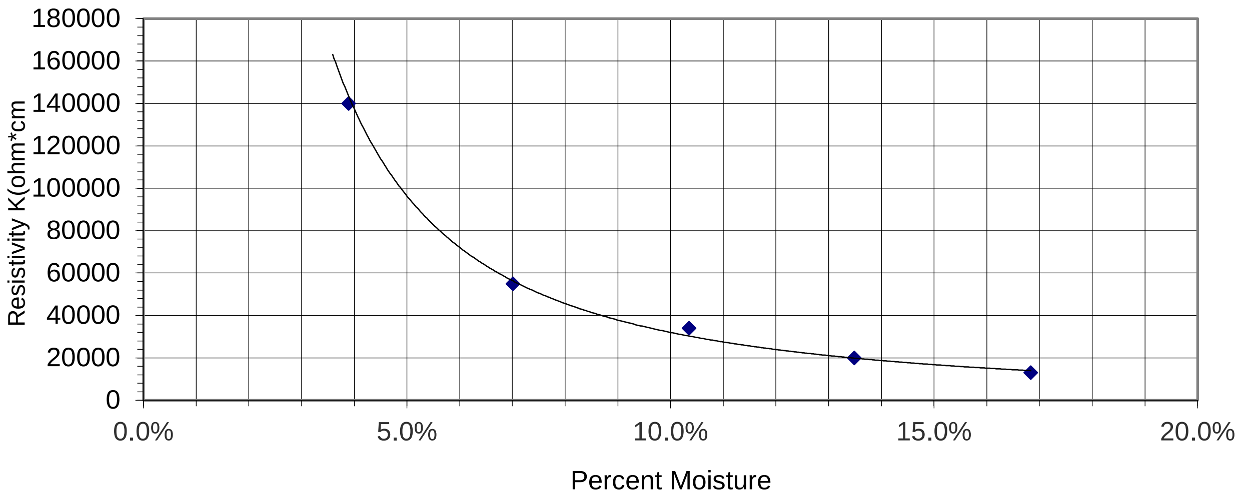
Report of Soil Resistivity

AASHTO T288

Project Name:	Northern Pass Transmission Line	**Project Number:**	16-0600
Project Location:	Various, NH	**Lab ID:**	15213S
Client:	SWCOLE Explorations, LLC	**Date Received:**	10/17/16
Material Description:	SM	**Date Completed:**	10/27/16
Material Source:	TS-2, INF-201, BULK, 5-10'	**Tested By:**	BLG

Minimum Soil Resistivity 13,000 ohm-cm

Soil Temperature 20.5 °C



Comments:

Reviewed By: CBM

Project ID: NPT 16-0600
Job ID: 38207

Sample#: 38207-001
Sample ID: BH-204, 5-10'
Matrix: Solid   Percent Dry: 90.9% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.5	5.5	ug/g	1	JZL		1602921	10/25/16	15:21	E300.0A
Sulfate	**7.8**	5.5	ug/g	1	JZL		1602921	10/25/16	15:21	E300.0A
pH	**6.3**		pH	1	APA		1602861	10/21/16	4:15	SW9045C

Sample#: 38207-002
Sample ID: MF-201, 5-10'
Matrix: Solid   Percent Dry: 91.8% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.5	5.5	ug/g	1	JZL		1602921	10/25/16	15:38	E300.0A
Sulfate	**21**	5.5	ug/g	1	JZL		1602921	10/25/16	15:38	E300.0A
pH	**7.0**		pH	1	APA		1602861	10/21/16	4:20	SW9045C

Sample#: 38207-003
Sample ID: BH-309, 1-6'
Matrix: Solid   Percent Dry: 92.9% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.4	5.4	ug/g	1	JZL		1602921	10/25/16	15:54	E300.0A
Sulfate	**20**	5.4	ug/g	1	JZL		1602921	10/25/16	15:54	E300.0A
pH	**7.5**		pH	1	APA		1602861	10/21/16	4:25	SW9045C

Sample#: 38207-004
Sample ID: BH-304, 4-6.5'
Matrix: Solid   Percent Dry: 91.4% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.5	5.5	ug/g	1	JZL		1602921	10/25/16	16:11	E300.0A
Sulfate	**11**	5.5	ug/g	1	JZL		1602921	10/25/16	16:11	E300.0A
pH	**6.0**		pH	1	APA		1602861	10/21/16	4:30	SW9045C

Sample#: 38207-005
Sample ID: BH-404, 1-10'
Matrix: Solid   Percent Dry: 92.9% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.4	5.4	ug/g	1	JZL		1602921	10/25/16	16:27	E300.0A
Sulfate	< 5.4	5.4	ug/g	1	JZL		1602921	10/25/16	16:27	E300.0A
pH	**6.2**		pH	1	APA		1602861	10/21/16	4:35	SW9045C

Project ID: NPT 16-0600
Job ID: 38207

Sample#: 38207-006
Sample ID: BH-405, 2-4.75'
Matrix: Solid Percent Dry: 91% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.5	5.5	ug/g	1	JZL		1602921	10/25/16	16:44	E300.0A
Sulfate	**13**	5.5	ug/g	1	JZL		1602921	10/25/16	16:44	E300.0A
pH	**5.3**		pH	1	APA		1602861	10/21/16	4:40	SW9045C

Sample#: 38207-007
Sample ID: BH-902, 5-10'
Matrix: Solid Percent Dry: 96.9% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.2	5.2	ug/g	1	JZL		1602921	10/25/16	17:00	E300.0A
Sulfate	**11**	5.2	ug/g	1	JZL		1602921	10/25/16	17:00	E300.0A
pH	**5.6**		pH	1	APA		1602861	10/21/16	4:45	SW9045C

Sample#: 38207-008
Sample ID: BH-905, 5-10'
Matrix: Solid Percent Dry: 97.1% Results expressed on a dry weight basis.
Sampled: 10/17/16 11:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
Chloride	< 5.2	5.2	ug/g	1	JZL		1602921	10/25/16	17:16	E300.0A
Sulfate	**8.1**	5.2	ug/g	1	JZL		1602921	10/25/16	17:16	E300.0A
pH	**5.4**		pH	1	APA		1602861	10/21/16	4:50	SW9045C

Appendix C
Infiltration Field Test Results

S.W.COLE ENGINEERING, INC.

Borehole Infiltration Test

Project Name:	Northern Pass	Test Date:	9/21/2016
Project No.:	16-0600	Tested By:	NMC
Client:	Quanta Subsurface	Reviewed By:	CBM
Test Location:	INF-201, Transition Station #2		

Trial #1		Trial #2		Trial #3		Trial #4	
Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)
0	1.4	0	2.3	0	2.5	0	2.5
2	2.3	2	2.5	2	2.6	2	2.6
4	2.4	4	2.6	4	2.6	4	2.6
6	2.5	6	2.7	6	2.6	6	2.6
8	2.7	8	2.8	8	2.6	8	2.6
10	2.7	10	2.8	10	2.6	10	2.6
15	2.8	15	2.8	15	2.6	15	2.6
20	2.8	20	2.8	20	2.6	20	2.7
25	2.8	25	2.9	25	2.7	25	2.7
30	2.9	30	2.9	30	2.7	30	2.7
35	2.9	35	2.9	35	2.7	35	2.7
40	2.9	40	2.9	40	2.7	40	2.7
45	2.9	45	3.0	45	2.7	45	2.7
50	3.0	50	3.0	50	2.7	50	2.8
55	3.0	55	3.0	55	2.8	55	2.8
60	3.0	60	3.0	60	2.8	60	2.8
(ft/hr)	1.6	(ft/hr)	0.7	(ft/hr)	0.3	(ft/hr)	0.4
(in/hr)	19.2	(in/hr)	8.4	(in/hr)	3.6	(in/hr)	4.2

Test Summary

Average Infiltration Rate (in/hr)	**5.4**	discarded Trial #1, likely stil saturating
Pre-Soak Performed 9/19/2016 6:33 pm		
Hole Depth from Top of Casing (ft)	4.6	
Casing Stick-up from Ground Surface (ft)	1.0	
Pre-Infiltration Test Water Depth (ft)	no water	

Notes:

1) Testing was performed in accordance with guidelines presented in the Nhew Hampshire Stormwater Manual (Vol 2; Table 2-3).

2) The Average Infiltration Rate (in/hr) presented is based on field measurements; a safety factor has not been applied.

Borehole Infiltration Test

Project Name:	Northern Pass	Test Date:	9/21/2016
Project No.:	16-0600	Tested By:	NMC
Client:	Quanta Subsurface	Reviewed By:	CBM
Test Location:	INF-202, Transition Station #2		

Trial #1		Trial #2		Trial #3		Trial #4	
Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)
0	2.2	0	2.5	0	2.9	0	2.6
2	2.2	2	2.5	2	2.9	2	2.6
4	2.3	4	2.6	4	2.9	4	2.7
6	2.3	6	2.7	6	3.0	6	2.8
8	2.4	8	2.8	8	3.0	8	2.9
10	2.4	10	2.9	10	3.0	10	2.9
15	2.5	15	3.0	15	3.1	15	3.0
20	2.6	20	3.1	20	3.2	20	3.1
25	2.7	25	3.2	25	3.3	25	3.2
30	2.8	30	3.3	30	3.3	30	3.3
35	2.8	35	3.4	35	3.4	35	3.4
40	2.9	40	3.5	40	3.5	40	3.5
45	3.0	45	3.6	45	3.5	45	3.5
50	3.1	50	3.6	50	3.6	50	3.6
55	3.1	55	3.8	55	3.7	55	3.7
60	3.2	60	3.9	60	3.7	60	3.8
(ft/hr)	1.0	(ft/hr)	1.4	(ft/hr)	0.8	(ft/hr)	1.2
(in/hr)	12.0	(in/hr)	16.8	(in/hr)	9.6	(in/hr)	14.4

Test Summary

Average Infiltration Rate (in/hr)	**13.2**
Pre-Soak Performed 9/19/2016 6:38 pm	
Hole Depth from Top of Casing (ft)	4.8
Casing Stick-up from Ground Surface (ft)	1.0
Pre-Infiltration Test Water Depth (ft)	no water

Notes:

1) Testing was performed in accordance with guidelines presented in the Nhew Hampshire Stormwater Manual (Vol 2; Table 2-3).

2) The Average Infiltration Rate (in/hr) presented is based on field measurements; a safety factor has not been applied.

Appendix D
Summary of Geotechnical Design Parameters

Summary of Geotechnical Design Parameters
Transition Station #2

Boring BH 201

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Glaciofluvial Deposits	0	13	SM/SP-SM	20	115	32	-	-	-
	13	18	SP-SM	49	125	38	-	-	-
	18	23	GP-GM	93	140	43	-	-	-
Till	23	50	ML	100+	135	40	-	-	-

Boring BH 202

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Topsoil	0	2	REMOVE AND REPLACE WITH CONTROLLED STRUCTURAL FILL						
Glaciofluvial Deposits	2	3.5	ML	43	125	34	-	-	-
	3.5	7	ML	100+	135	40	-	-	-
	7	17	SM	29	125	34	-	-	-
Till	17	21	ML	100+	135	40	-	-	-

Boring BH 203

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Topsoil	0	1	REMOVE AND REPLACE WITH CONTROLLED STRUCTURAL FILL						
Glaciofluvial Deposits	1	2.5	SP-SM	23	120	32			
Till	2.5	8	ML	68	130	39			
	8	9.5	ML	28	115	31			
	9.5	10	ML	100+	135	40	-	-	-

Summary of Geotechnical Design Parameters (cont)
Transition Station #2

Boring BH 204

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Existing Fill	0	2	REMOVE AND REPLACE WITH CONTROLLED STRUCTURAL FILL						
Original Topsoil	2	3.5							
Glaciofluvial Deposits	3.5	16	SM/SP-SM	66	135	40	-	-	-
Till	16	22	ML	89	135	40	-	-	-

Boring BH 205

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Glaciofluvial Deposits	0	4	GM/SM	9	115	29	-	-	-
	4	22	SM/ML	36	125	36	-	-	-
Till	22	28	ML	54	125	36	-	-	-
	28	50	ML	100+	135	40	-	-	-

Boring BH 206

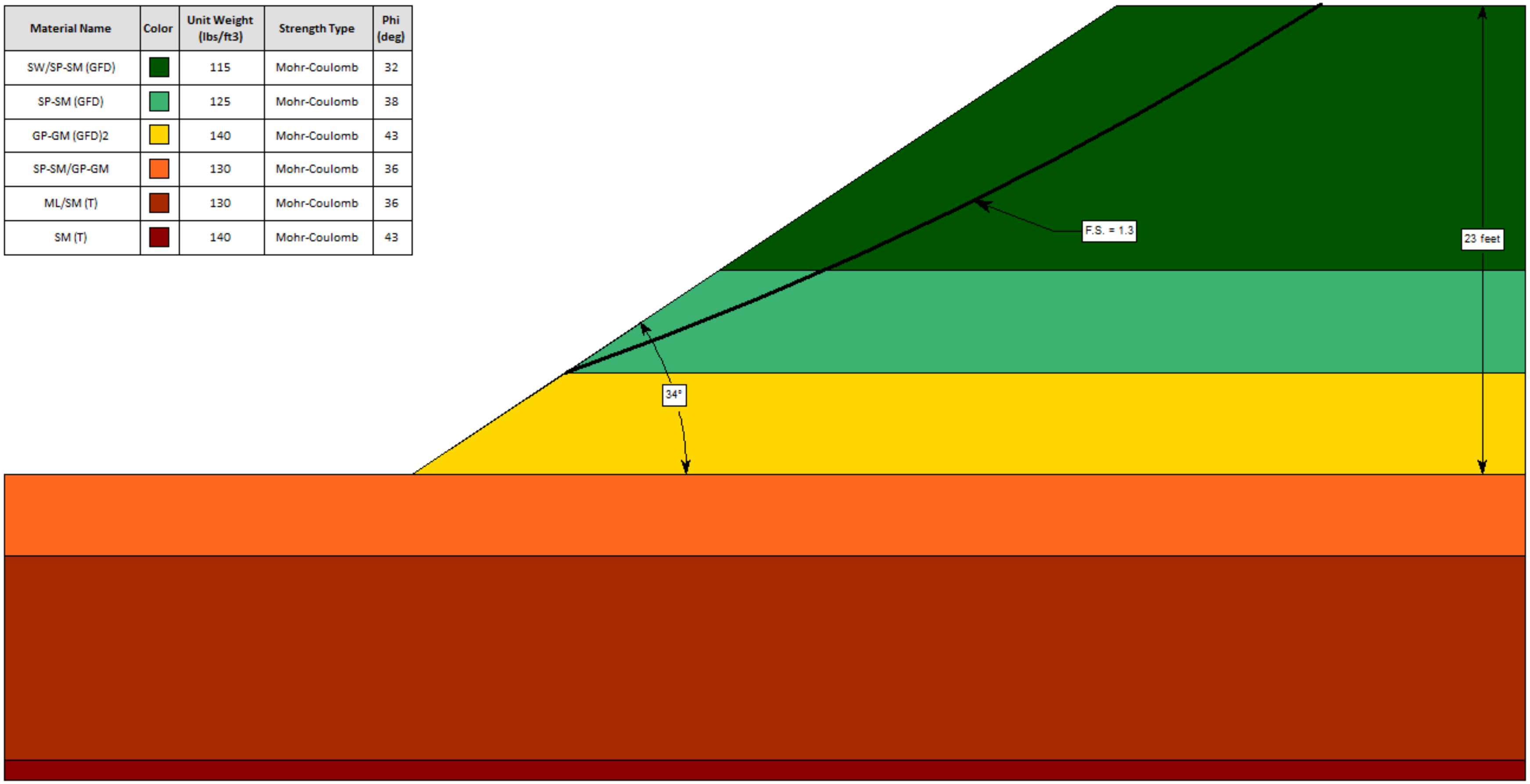
Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Soil Friction Angle (deg)	Soil Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Glaciofluvial Deposits	0	4	SP-SM/ GP-GM	39	130	36	-	-	-
Till	4	14	ML/SM	50	130	36	-	-	-
	14	50	SM	100+	140	43	-	-	-

Controlled Structural Fill

Sublayer Description	Sublayer Depth (ft)		Material Description	Average N_{60}	Effective Unit Weight (pcf)	Friction Angle (deg)	Undrained Strength (psf)	Bedrock (Rock Mass Equivalent Mohr-Coulomb Fit)	
	Top	Bot.						Friction Angle (deg)	Cohesion (psf)
Structural Fill	-	-	SM/ML	-	125	30	-	-	-

Appendix E
SLIDE 7.0 Stability Outputs

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
SW/SP-SM (GFD)		115	Mohr-Coulomb	32
SP-SM (GFD)		125	Mohr-Coulomb	38
GP-GM (GFD)2		140	Mohr-Coulomb	43
SP-SM/GP-GM		130	Mohr-Coulomb	36
ML/SM (T)		130	Mohr-Coulomb	36
SM (T)		140	Mohr-Coulomb	43



Base Map: Slide 7.0.

Date: December 2016

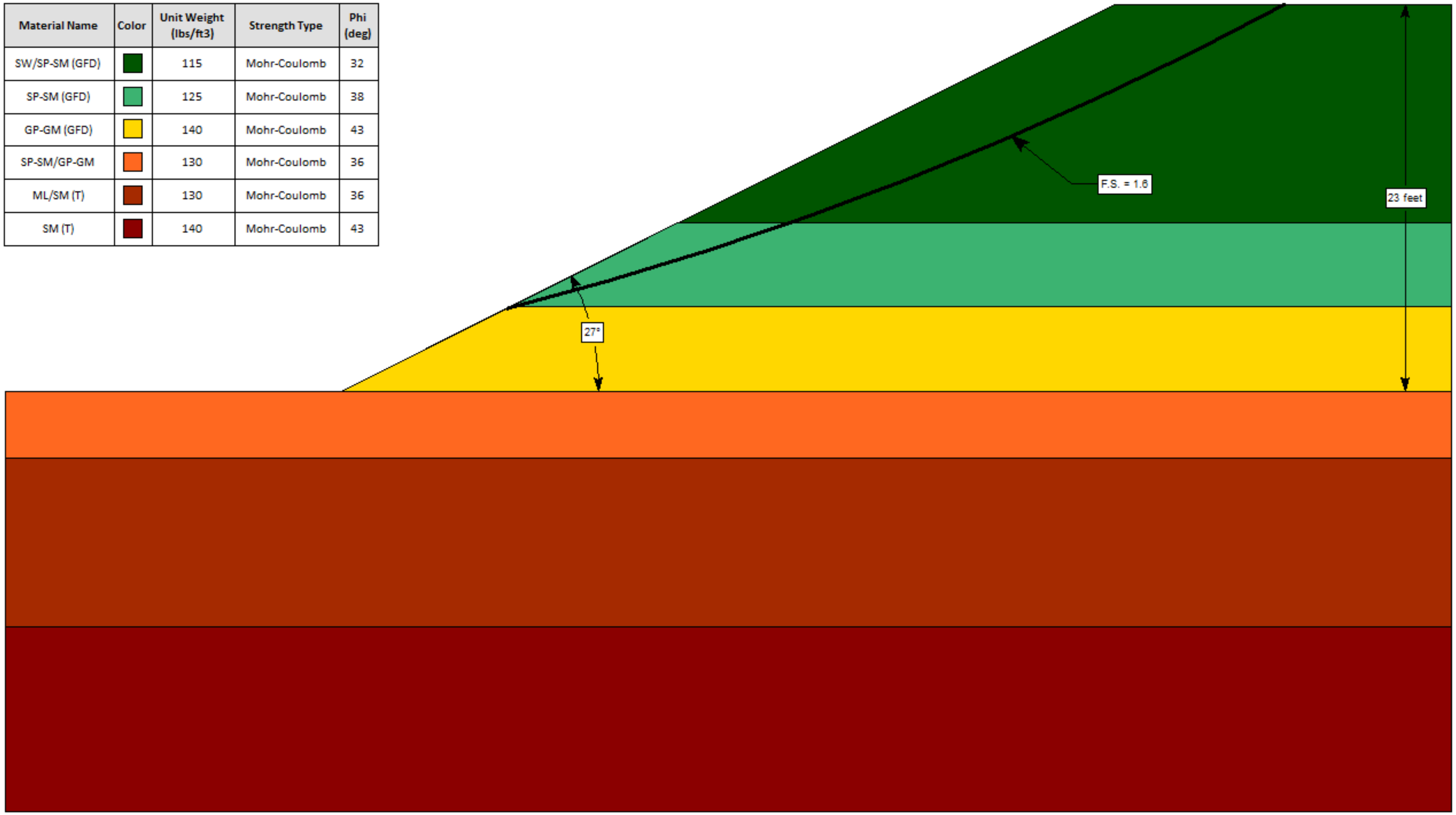
Project No.: 16004

Output 1 - BH 201/BH 206 1.5 (H) to 1 (V)

QUANTA SUBSURFACE
Engineering – Construction

Northern Pass TL – Transition Station #2
Slope Stability Analysis

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
SW/SP-SM (GFD)		115	Mohr-Coulomb	32
SP-SM (GFD)		125	Mohr-Coulomb	38
GP-GM (GFD)		140	Mohr-Coulomb	43
SP-SM/GP-GM		130	Mohr-Coulomb	36
ML/SM (T)		130	Mohr-Coulomb	36
SM (T)		140	Mohr-Coulomb	43



Base Map: Slide 7.0.

Date: December 2016

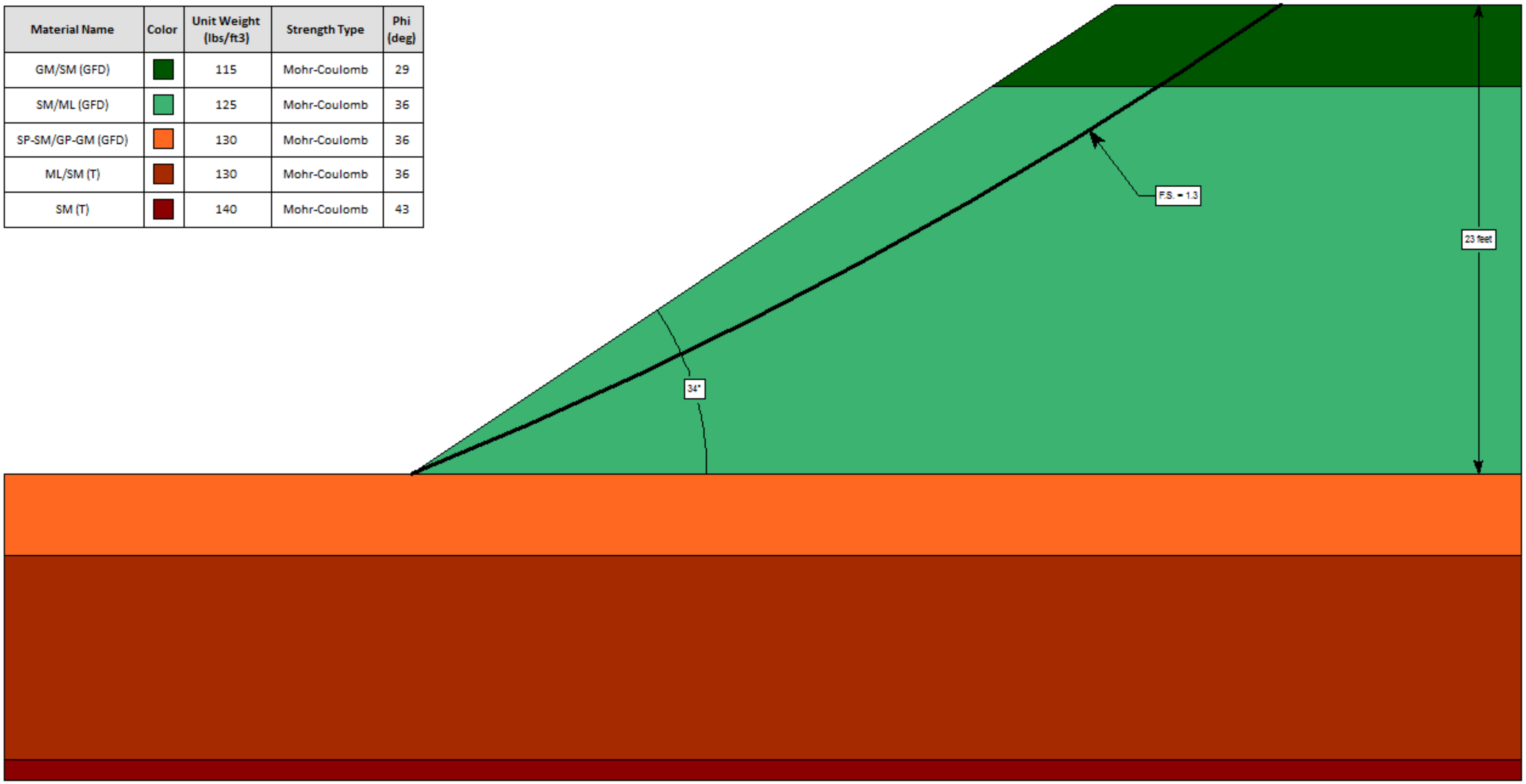
Project No.: 16004

Output 2 - BH 201/BH 206 2 (H) to 1 (V)

QUANTA SUBSURFACE
Engineering – Construction

Northern Pass TL – Transition Station #2
Slope Stability Analysis

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
GM/SM (GFD)		115	Mohr-Coulomb	29
SM/ML (GFD)		125	Mohr-Coulomb	36
SP-SM/GP-GM (GFD)		130	Mohr-Coulomb	36
ML/SM (T)		130	Mohr-Coulomb	36
SM (T)		140	Mohr-Coulomb	43



Base Map: Slide 7.0.

Date: December 2016

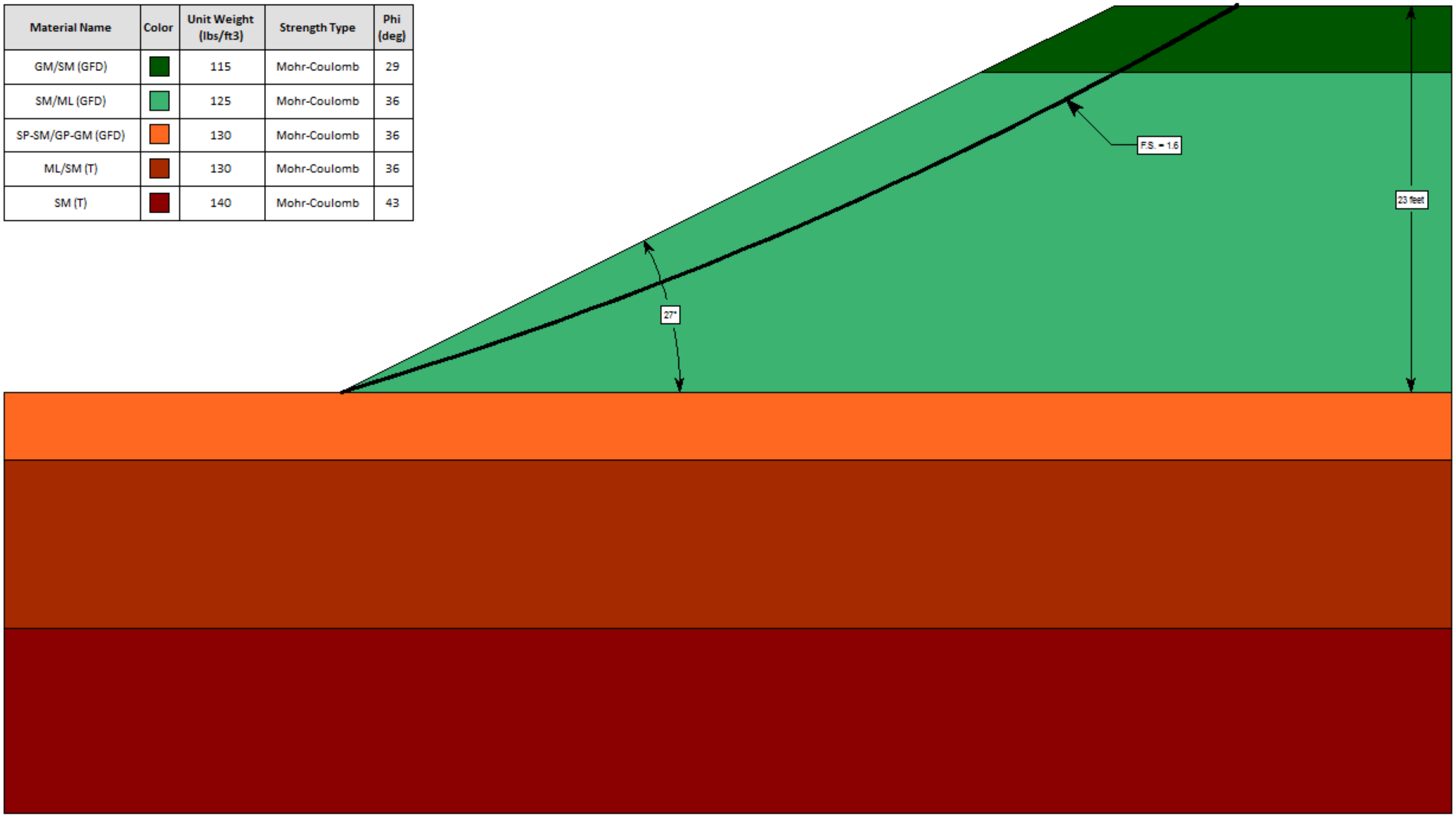
Project No.: 16004

Output 3 - BH 205/BH 206 1.5 (H) to 1 (V)

QUANTA SUBSURFACE
Engineering – Construction

Northern Pass TL – Transition Station #2
Slope Stability Analysis

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
GM/SM (GFD)		115	Mohr-Coulomb	29
SM/ML (GFD)		125	Mohr-Coulomb	36
SP-SM/GP-GM (GFD)		130	Mohr-Coulomb	36
ML/SM (T)		130	Mohr-Coulomb	36
SM (T)		140	Mohr-Coulomb	43



Base Map: Slide 7.0.

Date: December 2016

Project No.: 16004

Output 4 - BH 205/BH 206 2 (H) to 1 (V)

INFILTRATION FEASIBILITY REPORT

Transition Station #2
Clarksville, NH
December 15, 2016

TABLE OF CONTENTS:

The project proposes one system that requires infiltration to function property. This system is identified on the plans as Infiltration Basin.

I. Location of the practice

Infiltration Basin 1 is located at the northeastern side of the proposed transition station yard.

II. Existing topography at the location of the practice

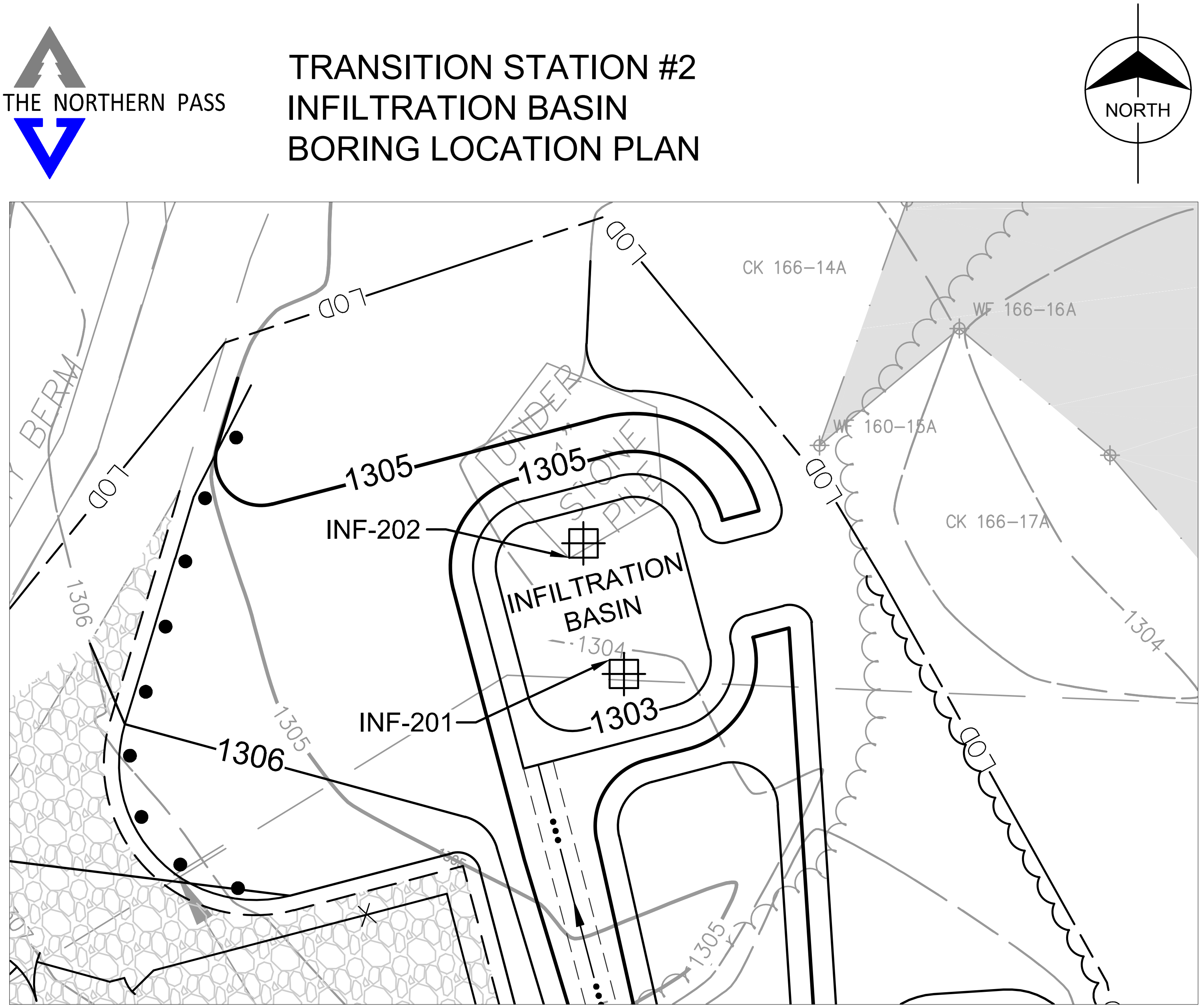
The existing topography within the area of the infiltration basin is relatively flat with gravel cover.

III. Test pit or boring locations

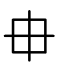
In accordance with Env-Wq 1504.12(c), NHDES requires that a minimum number of test pits or borings be dug or drilled in the location of the system, depending on the size of the proposed system.

Infiltration Basin is 670 square feet in area. Two borehole infiltration tests were performed in the location of this practice. The test locations, identified as INF-201 and INF-202, are shown on the attached boring location plan.

TRANSITION STATION #2
INFILTRATION BASIN
BORING LOCATION PLAN



PROPOSED LEGEND:

385	MAJOR CONTOUR
381	MINOR CONTOUR
	BOREHOLE INFILTRATION TEST LOCATION

EXISTING LEGEND:

385	MAJOR CONTOUR
381	MINOR CONTOUR

0 10' 20' 40'

SCALE IN FEET

NOTES:

1. BACKGROUND INFORMATION TAKEN FROM "EXISTING CONDITIONS PLAN" FOR TRANSITION STATION #2, ROUTE 3, CLARKSVILLE, NH. PREPARED BY CHA, CONSULTING, INC. DATED NOVEMBER 14, 2013. LAST REVISED DECEMBER 1, 2014. WETLAND FLAGS SHOWN ARE BASED ON LOCATIONS PROVIDED BY NORMANDEAU, WETLAND FLAGS WERE DELINEATED BY NORMANDEAU IN 2013.

2. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM
   HORIZONTAL DATUM - NAD83
   VERTICAL DATUM - NAVD88

3. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.

4. ALL FILL AND CUT SLOPES ARE 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1) UNLESS NOTED OTHERWISE.

IV. Seasonal high water table (SHWT) and bedrock elevations

The following borehole test data was collected on August 31, 2016.

Infiltration Basin:

Bottom of Basin Elevation = 1303.0

INF-201: Existing Surface Elevation of Borehole = 1304.1
SHWT = Below 1298.0
BEDROCK = not found
Deepest Elevation of Borehole = 1292.1

INF-202: Existing Surface Elevation of Borehole = 1303.9
SHWT = Below 1298.0
BEDROCK = not found
Deepest Elevation of Borehole = 1291.9

V. Profile descriptions

Refer to attached boring logs for soil profile descriptions at INF-201 and INF-202 boreholes.

BORING NUMBER INF 201

QUANTA SUBSURFACE Engineering + Construction
Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire

DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1304.1 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01934167 **LONGITUDE** -71.46138611
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES
AT END OF DRILLING Not Encountered

ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	50	3-4-6-11 (10)			FILL: Silty SAND (SM), little fine to coarse gravel, dark yellowish brown, moist, loose, fine to coarse grained sand, subrounded					Infiltration test casing installed in an adjacent borehole to a depth of approximately 4 feet.
		SPT 2	63	3-4-3-7 (7)			TOPSOIL: Lean CLAY with sand (CL), trace organics, moderate brown, moist, medium stiff, fine grained sand, (original topsoil layer)	29.0	26	NP	43.3	
							GLACIOFLUVIAL: Silty GRAVEL with sand (GM), yellowish brown, wet, loose, fine grained gravel, fine to medium grained sand					
1300	5	SPT 3	83	17-9-13-29 (22)			Silty SAND with gravel (SM), light olive gray to dark yellowish brown, moist, medium dense to very dense, fine to coarse grained gravel, fine to medium grained sand, subangular					A bulk sample was obtained from 5 to 10 feet. % fines = 32.6% Resistivity = 13,000 ohm-cm pH = 7.0
		SPT 4	100	33-50/2"								
							Silty GRAVEL with sand (GM), dark yellowish brown, moist, dense, fine to coarse grained sand, subangular					
1295	10	SPT 5	83	16-15-21-22 (36)			TILL: SILT with gravel (ML), dark yellowish brown, moist, hard, fine to coarse grained gravel, subangular					
		SPT 6		26-26-23-21 (49)								The ESHWT is at a depth below 12 feet.

Bottom of Borehole at 12.0 feet

BORING NUMBER INF 202

Quanta Subsurface
4308 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409

CLIENT PAR Electrical Contractors
PROJECT NAME Northern Pass TL - Transition Station #2
PROJECT NUMBER 16004
PROJECT LOCATION Clarksville, New Hampshire
DATE STARTED 8/31/16 **COMPLETED** 8/31/16
GROUND ELEVATION 1303.9 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR SW Cole
LATITUDE 45.01938889 **LONGITUDE** -71.46140556
DRILLING METHOD Solid Stem Auger
DRILLING EQUIPMENT CME 850 **SPT HAMMER** Automatic
LOGGED BY S. Laing **CHECKED BY** J.T. McGinnis
GROUND WATER LEVEL:
NOTES

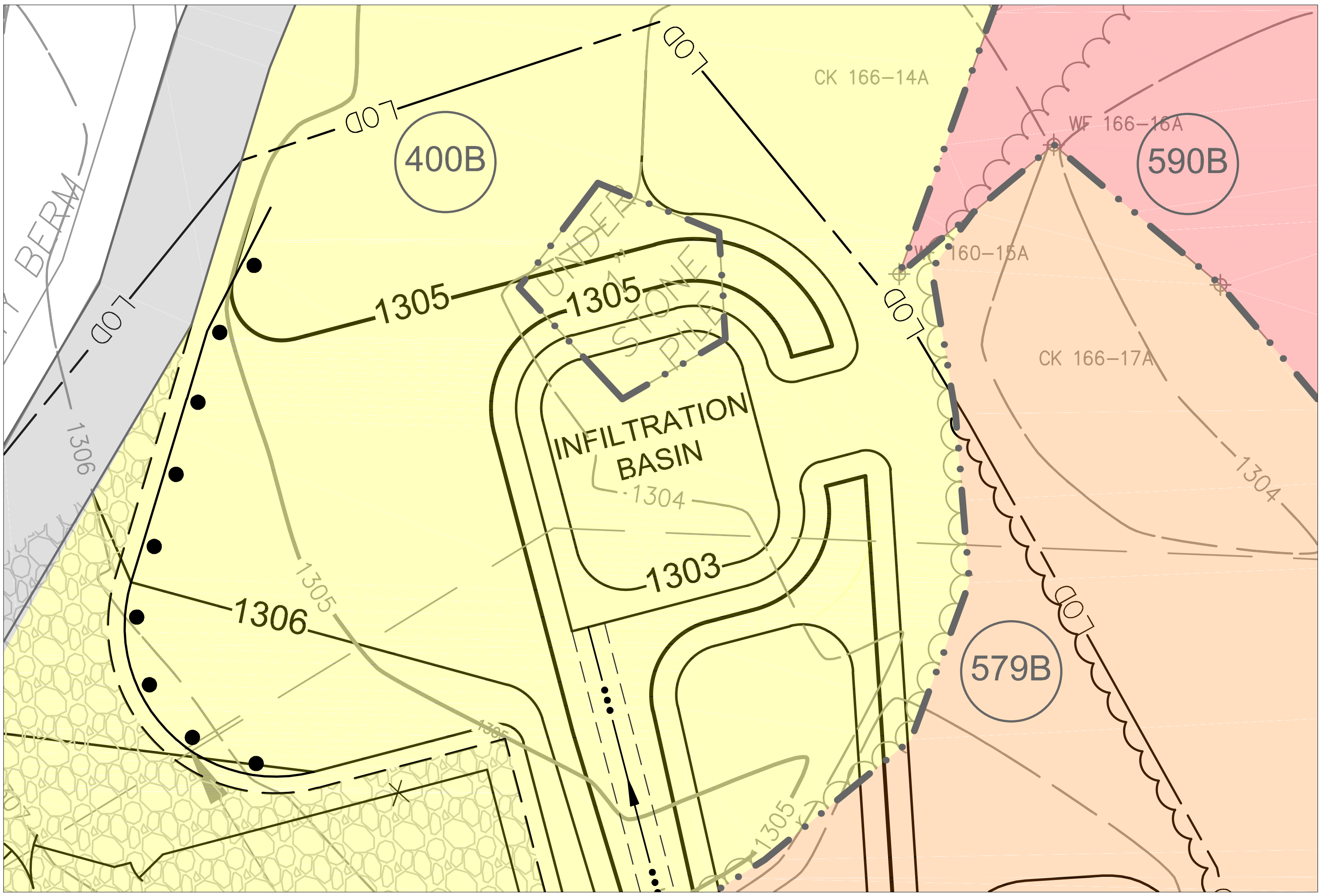
ELEV (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	REMARKS
	0	SPT 1	58	4-6-4-2 (10)			FILL: Silty SAND (SM), little fine to coarse gravel, moderate brown, moist, loose, fine and coarse grained sand, subrounded					Infiltration test casing installed in an adjacent borehole to a depth of approximately 4 feet.
		SPT 2	75	3-4-5-10 (9)			TOPSOIL: Lean CLAY with sand (CL), trace organics, moderate brown, moist, medium stiff, fine to medium grained sand, subrounded, (original topsoil layer)					
1300							GLACIOFLUVIAL: Silty SAND (SM), little fine gravel, dark yellowish brown, moist, loose to medium dense, fine to medium grained sand, subrounded - boulders and cobbles from 4 to 6 feet	14.3			22.5	
	5	SPT 3	55	23-50/5"			Silty SAND with gravel (SM), moderate yellowish brown, moist, very dense to dense, fine to coarse grained gravel, fine to coarse grained sand, subangular, with cobbles					
1295		SPT 4	75	18-20-27-49 (47)			TILL: Sandy SILT with gravel (ML), moderate yellowish brown, moist, very hard, fine to coarse grained gravel, fine to coarse grained sand, subrounded					
	10	SPT 5	75	30-33-37-32 (70)								The ESHWT is at a depth below 12 feet.

Bottom of Borehole at 12.0 feet

VI. Soil plan in the area of the proposed practice

Refer to attached plan for a delineation of soil series near Infiltration Basin, as determined by a soil survey report prepared by Normandeau Associates, Inc. The report is entitled "Northern Pass Transmission Project, Soil Survey Report for Transition Stations, Substation Expansions and Converter Terminal" dated February 6, 2015.

TRANSITION STATION #2
INFILTRATION BASIN
SOIL SERIES PLAN



SOIL LEGEND:

- APPROXIMATE SOIL BOUNDARY
- 400B — UDORTHENTS, SANDY OR GRAVELY 3 TO 8 PERCENT SLOPES, HSG B
- 579B — DIXMONT VERY FINE SANDY LOAM 3 TO 8 PERCENT SLOPES, VERY STONY, HSG C
- 590B — CABOT SILT LOAM 0 TO 8 PERCENT SLOPES, VERY STONY, HSG D

0 10' 20' 40'

SCALE IN FEET

NOTES:

1. SOIL INFORMATION TAKEN FROM "NORTHERN PASS TRANSMISSION PROJECT, SOIL SURVEY REPORT FOR TRANSITION STATIONS, SUBSTATION EXPANSIONS, AND CONVERTER TERMINAL" PREPARED BY NORMANDEAU ENVIRONMENTAL CONSULTANTS, DATED FEBRUARY 6, 2015.
2. NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM
   HORIZONTAL DATUM - NAD83
   VERTICAL DATUM - NAVD88
3. PROPOSED CONTOURS AND SPOT ELEVATIONS INDICATED REFER TO TOP OF FINISH SURFACE.
4. ALL FILL AND CUT SLOPES ARE 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1) UNLESS NOTED OTHERWISE.

VII. Summary of Field Testing data used to determine the infiltration rate

The infiltration rate for Infiltration Basin was determined using the Field Measurement method described in Env-Wq 1504.13.

The Ksat was measured with a Borehole Infiltration Test.

INF-201: The average Ksat of the tests was 5.4 inches per hour.
INF-202: The average Ksat of the tests was 13.2 inches per hour.

After applying a factor of safety, the design rate used in the drainage analysis is 2.7 inches per hour.

Borehole Infiltration Test

S.W.COLE ENGINEERING, INC.

Project Name:	Northern Pass	Test Date:	9/21/2016
Project No.:	16-0600	Tested By:	NMC
Client:	Quanta Subsurface	Reviewed By:	CBM
Test Location:	INF-201, Transition Station #2		

Trial #1		Trial #2		Trial #3		Trial #4	
Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)
0	1.4	0	2.3	0	2.5	0	2.5
2	2.3	2	2.5	2	2.6	2	2.6
4	2.4	4	2.6	4	2.6	4	2.6
6	2.5	6	2.7	6	2.6	6	2.6
8	2.7	8	2.8	8	2.6	8	2.6
10	2.7	10	2.8	10	2.6	10	2.6
15	2.8	15	2.8	15	2.6	15	2.6
20	2.8	20	2.8	20	2.6	20	2.7
25	2.8	25	2.9	25	2.7	25	2.7
30	2.9	30	2.9	30	2.7	30	2.7
35	2.9	35	2.9	35	2.7	35	2.7
40	2.9	40	2.9	40	2.7	40	2.7
45	2.9	45	3.0	45	2.7	45	2.7
50	3.0	50	3.0	50	2.7	50	2.8
55	3.0	55	3.0	55	2.8	55	2.8
60	3.0	60	3.0	60	2.8	60	2.8
(ft/hr)	1.6	(ft/hr)	0.7	(ft/hr)	0.3	(ft/hr)	0.4
(in/hr)	19.2	(in/hr)	8.4	(in/hr)	3.6	(in/hr)	4.2

Test Summary

Average Infiltration Rate (in/hr)	**5.4**	discarded Trial #1, likely stil saturating
Pre-Soak Performed 9/19/2016 6:33 pm		
Hole Depth from Top of Casing (ft)	4.6	
Casing Stick-up from Ground Surface (ft)	1.0	
Pre-Infiltration Test Water Depth (ft)	no water	

Notes:

1) Testing was performed in accordance with guidelines presented in the Nhew Hampshire Stormwater Manual (Vol 2; Table 2-3).

2) The Average Infiltration Rate (in/hr) presented is based on field measurements; a safety factor has not been applied.

Borehole Infiltration Test

S.W.COLE ENGINEERING, INC.

Project Name:	Northern Pass	Test Date:	9/21/2016
Project No.:	16-0600	Tested By:	NMC
Client:	Quanta Subsurface	Reviewed By:	CBM
Test Location:	INF-202, Transition Station #2		

Trial #1		Trial #2		Trial #3		Trial #4	
Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)	Time Elapsed (min)	Depth to Water (ft)
0	2.2	0	2.5	0	2.9	0	2.6
2	2.2	2	2.5	2	2.9	2	2.6
4	2.3	4	2.6	4	2.9	4	2.7
6	2.3	6	2.7	6	3.0	6	2.8
8	2.4	8	2.8	8	3.0	8	2.9
10	2.4	10	2.9	10	3.0	10	2.9
15	2.5	15	3.0	15	3.1	15	3.0
20	2.6	20	3.1	20	3.2	20	3.1
25	2.7	25	3.2	25	3.3	25	3.2
30	2.8	30	3.3	30	3.3	30	3.3
35	2.8	35	3.4	35	3.4	35	3.4
40	2.9	40	3.5	40	3.5	40	3.5
45	3.0	45	3.6	45	3.5	45	3.5
50	3.1	50	3.6	50	3.6	50	3.6
55	3.1	55	3.8	55	3.7	55	3.7
60	3.2	60	3.9	60	3.7	60	3.8
(ft/hr)	1.0	(ft/hr)	1.4	(ft/hr)	0.8	(ft/hr)	1.2
(in/hr)	12.0	(in/hr)	16.8	(in/hr)	9.6	(in/hr)	14.4

Test Summary

Average Infiltration Rate (in/hr)	**13.2**
Pre-Soak Performed 9/19/2016 6:38 pm	
Hole Depth from Top of Casing (ft)	4.8
Casing Stick-up from Ground Surface (ft)	1.0
Pre-Infiltration Test Water Depth (ft)	no water

Notes:

1) Testing was performed in accordance with guidelines presented in the Nhew Hampshire Stormwater Manual (Vol 2; Table 2-3).

2) The Average Infiltration Rate (in/hr) presented is based on field measurements; a safety factor has not been applied.

APPENDIX I – WETLAND DELINEATION REPORT (BY OTHERS)

WETLANDS REPORT INFORMATION INCLUDED UNDER SEPARATE COVER

APPENDIX J - POLLUTANT LOADING CALCULATIONS

Condition	Point of Analysis (PoA) Number	Sub-Area Number	Area Description	Land Use	BMP	Is the Impervious Area Disconnected in accordance with Chapter 6, Volume 1 of the NH Stormwater Manual or is the BMP an Infiltration BMP designed in accordance with Alteration of Terrain regulations (Env-Wq 1500)?	Pervious Undisturbed (i.e, forest, meadow, etc.)	Pervious Disturbed (i.e. lawn or other area that will be fertilized regularly)	Pervious Pavement that filters and infiltrates all stormwater (no underdrains)	Pervious Disturbed Other	Description of Pervious Disturbed Other	Pervious Total	Pervious Pavement that filters but does not infiltrate all stormwater (has underdrains)	Impervious Roof	Impervious Road	Impervious Parking and Drives	Impervious Sidewalks	Impervious Surface Water	Impervious Other	Description of Impervious Other	Impervious Total (prior to Disconnection or Infiltration BMP Credit)	Total Area	Composite % Impervious (without disconnection or Infiltration credit)	Composite % Impervious (with disconnection or Infiltration credit)
							Acres	Acres	Acres	Acres		Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres		Acres	Acres		
Pre-Development	Pre-1	Pre-1	Pre-Dev Watershed Map Area 1	Forest/Rural Open		NO	111.69	0.00	0.00	0.00		111.69	0.00	0.00	2.47	0.00	0.00	0.00	0.00		2.47	114.16	2.17%	2.17%
Pre-Development	Pre-2	Pre-2	Pre-Dev Watershed Map Area 2	Forest/Rural Open		NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00		0.12	0.12	100.00%	100.00%
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Pre-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		

Condition	Point of Analysis (PoA) Number	Sub-Area Number	Area Description	Land Use	BMP	Is the Impervious Area Disconnected in accordance with Chapter 6, Volume 1 of the NH Stormwater Manual or is the BMP an Infiltration BMP designed in accordance with Alteration of Terrain regulations (Env-Wq 1500)?	Pervious Undisturbed (i.e, forest, meadow, etc.)	Pervious Disturbed (i.e. lawn or other area that will be fertilized annually)	Pervious Pavement that filters and infiltrates all stormwater (no underdrains)	Pervious Disturbed Other	Description of Pervious Disturbed Other	Pervious Total	Pervious Pavement that filters but does not infiltrate all stormwater (has underdrains)	Impervious Roof	Impervious Road	Impervious Parking and Drives	Impervious Sidewalks	Impervious Surface Water	Impervious Other	Description of Impervious Other	Impervious Total (Prior to Disconnection or Infiltration BMP Credit)	Total Area	Composite % Impervious (without disconnection or Infiltration credit)	Composite % Impervious (with disconnection or Infiltration credit)
							Acres	Acres	Acres	Acres		Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres		Acres	Acres		
Post-Development	Post-1	Post-1A	Post-Dev Watershed Map Area 1A	Forest/Rural Open		NO	111.09	0.00	0.00	0.37	grass/meadow, not fertilized	111.46	0.00	0.00	2.19	0.00	0.00	0.00	0.00		2.19	113.65	1.93%	1.93%
Post-Development	Post-1	Post-1B	Post-Dev Watershed Map Area 1B	Forest/Rural Open	Infiltration Basin	YES	0.00	0.00	0.41	0.13	grass/meadow, not fertilized	0.54	0.00	0.00	0.01	0.00	0.00	0.02	0.00		0.03	0.57	5.58%	0.00%
Post-Development	Post-2	Post-2	Post-Dev Watershed Map Area 2	Forest/Rural Open		NO	0.00	0.00	0.00	0.02	grass/meadow, not fertilized	0.02	0.00	0.00	0.04	0.00	0.00	0.00	0.00		0.04	0.06	63.49%	63.49%
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		
Post-Development						NO	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00		

Date (MM/DD/YYYY):	**11/16/2016**	
Project Name:	**Transition Station #2**	
Town/City:	**Clarksville, Coos County**	
Impacted Surface Waters:	**Upper Connecticut**	
Applicant:	**Northern Pass Transmission, LLC.**	
DES File #:		
Average Annual Precipitation P	**40.20**	**inches**
Fraction of Annual Runoff events that produce runoff	**0.90**	**(usually 0.9)**

ONLY INPUT VALUES IN BLUE SHADED CELLS

Credit for Using Low Nutrient Fertilizer: If there are managed turf areas under post development conditions that are to be fertilized annually, reductions in post development nutrient (TP and TN) loadings can be realized by by providing enforceable documents (i.e., deed restrictions) requiring land owners to use low nutrient fertilizer. To get low nutrient fertilizer pollutant reductions input the proposed reduced fertilizer application rates for post development development for TP and TN in the table below. Low nutrient fertilizers must have application rates less than the standard fertilizer application rate shown in the table. Then input the percent of each land use in each post development sub-area that is managed turf that is fertilzed annually.

Fertilizer Reduction Calculator	TP	TN
STANDARD FERTILIZER APPLICATION RATE (lbs/acre/year)	15.0	150.0
PROPOSED REDUCED FERTILIZER APPLICATION RATES FOR POST-DEVELOPMENT (lbs/acre/year)	**0.0**	**44.0**
INITIAL PERCENT REDUCTION	100.0%	70.7%
PERCENT OF CITIZENS THAT WILL COMPLY WITH REDUCED APPLICATION RATES	50%	50%
PERCENT OF APPLIED FERTILIZER THAT IS LOST TO RUNOFF OR PERCOLATION	10%	10%
FINAL PERCENT FERTILIZER REDUCTION WITH COMPLIANCE AND RUNOFF RATES APPLIED (%FR)	**5.0%**	**3.5%**
MINIMUM ASSUMED EMC = EMC_{MIN} (mg/L)	0.11	1.74

Used to reduce EMCs for Post TP and Post TN for each land use in each Sub Area depending on perce of area that is managed turf that is fertilized annually

PRE-DEVELOPMENT CONDITIONS

	Area	Impervious Area
Total Area (All Sub-Areas) (acres)	**114.28**	**2.59**

Insert information for 1st sub-area below

Sub_Area_ID	**Pre-1**	
Point of Analysis (PoA) Number	**Pre-1**	
Total Area for Sub-Area (acres)	**114.16**	**2.47**

Land Use	Area (acres)	Ia (% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	114.16	2.17%
Highway	0.00	0.00%
Industrial	0.00	0.00%

POST-DEVELOPMENT CONDITIONS

	Area	Impervious Area	Area Fertilized Annually
	114.29	**2.23**	**0.00**

Sub_Area_ID	**Post-1A**		
Point of Analysis (PoA) Number	**Post-1**		
Total Area in Sub-Area (acres)	**113.65**	**2.19**	**0.00**

Land Use	Total Area for each Land Use (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	113.65	1.93%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97

Land Use	Area (acres)	Ia (% Impervious)
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 2nd sub-area below

Sub_Area_ID	**Pre-2**	
Point of Analysis (PoA) Number	**Pre-2**	
Total Area for Sub-Area (acres)	**0.12**	**0.12**

Land Use	**Area** (acres)	**Ia** (% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.12	100.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Sub_Area_ID	**Post-1B**		
Point of Analysis (PoA) Number	**Post-1**		
Total Area in Sub-Area (acres)	**0.57**	**0.00**	**0.00**

Land Use	**Area** (acres)	**Ia** (% Impervious)	**Percent of Area that is managed turf (i.e., fertilized annually)** %	**Post-TP EMC** mg/L	**Post-TN EMC** mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.57	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 3rd sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	**0.00**	**0.00**

Land Use	**Area** (acres)	**Ia** (% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%

Sub_Area_ID	**Post-2**		
Point of Analysis (PoA) Number	**Post-2**		
Total Area in Sub-Area (acres)	**0.06**	**0.04**	**0.00**

Land Use	**Area** (acres)	**Ia** (% Impervious)	**Percent of Area that is managed turf (i.e., fertilized annually)** %	**Post-TP EMC** mg/L	**Post-TN EMC** mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.06	63.49%	0.0%	0.11	1.74

Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 4th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	**0.00**	**0.00**

Sub_Area_ID			
Point of Analysis (PoA) Number			
Total Area in Sub-Area (acres)	**0.00**	**0.00**	**0.00**

Land Use	**Area**	**Ia**
	(acres)	(% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	**Area**	**Ia**	**Percent of Area that is managed turf (i.e., fertilized annually)**	**Post-TP EMC**	**Post-TN EMC**
	(acres)	(% Impervious)	%	mg/L	mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 5th sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	**0.00**	**0.00**

Sub_Area_ID			
Point of Analysis (PoA) Number			
Total Area in Sub-Area (acres)	**0.00**	**0.00**	**0.00**

Land Use	**Area**	**Ia**
	(acres)	(% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%

Land Use	**Area**	**Ia**	**Percent of Area that is managed turf (i.e., fertilized annually)**	**Post-TP EMC**	**Post-TN EMC**
	(acres)	(% Impervious)	%	mg/L	mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98

Date (MM/DD/YYYY):	**11/16/2016**
Project Name:	**Transition Station #2**
Town/City:	**Clarksville, Coos County**
Impacted Surface Waters:	**Upper Connecticut**
Applicant:	**Northern Pass Transmission, LLC.**
DES File #:	

ONLY CHANGE VALUES SHADED IN BLUE

PRE DEVELOPMENT — **INPUT BMP DESCRIPTIONS** — **INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS**

Sub-Area			TSS	TP	TN
Pre-1			0%	0%	0%
Pre-2			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%

POST DEVELOPMENT — **INPUT BMP DESCRIPTIONS** — **INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS**

Sub-Area			TSS	TP	TN
Post-1A			0%	0%	0%
Post-1B	Infiltration Basin (> 75ft from surface water)		90%	65%	60%
Post-2			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%
0.00			0%	0%	0%

OVERALL SUMMARY

Date (MM/DD/YYYY):	**11/16/2016**
Project Name:	**Transition Station #2**
Town/City:	**Clarksville, Coos County**
Impacted Surface Waters:	**Upper Connecticut**
Applicant:	**Northern Pass Transmission, LLC.**
DES File #:	

TOTAL PRE -DEVELOPMENT (PRE-DEV) AREA (ACRES) =	114.28
TOTAL PRE-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	2.59
TOTAL PRE-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	2.3%
TOTAL POST DEVELOPMENT (POST-DEV) AREA (ACRES) =	114.29
TOTAL POST-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	2.23
TOTAL POST-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	2.0%
TOTAL POST-DEV AREA THAT IS FERTILIZED ANNUALLY (ACRES) =	0.00
TOTAL POST-DEV PERCENT OF AREA THAT IS FERTILIZED ANNUALLY (%) =	0.0%

	TSS (LBS/YR)	TP (LBS/YR)	TN (LBS/YR)
PRE DEVELOPMENT LOADS (NO BMPS)	3355.2	7.2	114.5
PRE DEVELOPMENT LOADS (WITH BMPS)	3355.2	7.2	114.5
PRE DEVELOPMENT LOAD REDUCTION DUE TO BMPS	0.0	0.0	0.0
PROPOSED PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	NA	5.0%	3.5%
POST DEVELOPMENT LOADS (NO BMPS)	3219.9	6.9	109.9
POST DEVELOPMENT LOADS (WITH BMPS)	3209.1	6.9	109.6
POST DEVELOPMENT LOAD REDUCTION DUE TO BMPS	10.8	0.0	0.2
POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE)	-146.1	-0.3	-4.9
% DIFFERENCE FROM PRE DEVELOMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-4.4%	-4.3%	-4.2%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-4.2%	-4.2%	-4.2%

Date (MM/DD/YYYY): 11/16/2016
Project Name: Transition Station #2
Town/City: Clarksville, Coos County
Impacted Surface Waters: Upper Connecticut
Applicant: Northern Pass Transmission, LLC.
DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-146.1
% DIFFERENCE FROM PRE DEVELOMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-4.4%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-4.2%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	0.3%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-4.5%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Pre-1	Pre-1	114.16	2.47	NA	TSS	NA		3308.8	3308.8	0.0	0.0%
PRE	Pre-2	Pre-2	0.12	0.12	NA	TSS	NA		46.4	46.4	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
		TOTAL	114.28	2.59				TOTAL	3355.2	3355.2	0.0	0.0%

Date (MM/DD/YYYY):	**11/16/2016**
Project Name:	**Transition Station #2**
Town/City:	**Clarksville, Coos County**
Impacted Surface Waters:	**Upper Connecticut**
Applicant:	**Northern Pass Transmission, LLC.**
DES File #:	

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-146.1
% DIFFERENCE FROM PRE DEVELOMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-4.4%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-4.2%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	0.3%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-4.5%

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Post-1A	Post-1	113.65	2.19	0.00	TSS	NA		3191.6	3191.6	0.0	0.0%
POST	Post-1B	Post-1	0.57	0.00	0.00	TSS	NA	Infiltration Basin (> 75ft from surface water)	11.9	1.2	10.8	90.0%
POST	Post-2	Post-2	0.06	0.04	0.00	TSS	NA		16.3	16.3	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TSS	NA		0.0	0.0	0.0	0.0%
		TOTAL	114.29	2.23	0.00			TOTAL	3219.9	3209.1	10.8	0.3%

Date (MM/DD/YYYY): 11/16/2016
Project Name: Transition Station #2
Town/City: Clarksville, Coos County
Impacted Surface Waters: Upper Connecticut
Applicant: Northern Pass Transmission, LLC.
DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-0.3
% DIFFERENCE FROM PRE DEVELOMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-4.3%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-4.2%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	0.2%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-4.4%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Pre-1	Pre-1	114.16	2.47	NA	TP	NA		7.1	7.1	0.0	0.0%
PRE	Pre-2	Pre-2	0.12	0.12	NA	TP	NA		0.1	0.1	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
		TOTAL	114.28	2.59				TOTAL	7.2	7.2	0.0	0.0%

Date (MM/DD/YYYY): 11/16/2016
Project Name: Transition Station #2
Town/City: Clarksville, Coos County
Impacted Surface Waters: Upper Connecticut
Applicant: Northern Pass Transmission, LLC.
DES File #:

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Post-1A	Post-1	113.65	2.19	0.00	TP	5.0%		6.9	6.9	0.0	0.0%
POST	Post-1B	Post-1	0.57	0.00	0.00	TP	5.0%	Infiltration Basin (> 75ft from surface water)	0.0	0.0	0.0	65.0%
POST	Post-2	Post-2	0.06	0.04	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	5.0%		0.0	0.0	0.0	0.0%
		TOTAL	114.29	2.23	0.00			TOTAL	6.9	6.9	0.0	0.2%

Date (MM/DD/YYYY): 11/16/2016
Project Name: Transition Station #2
Town/City: Clarksville, Coos County
Impacted Surface Waters: Upper Connecticut
Applicant: Northern Pass Transmission, LLC.
DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-4.9
% DIFFERENCE FROM PRE DEVELOMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-4.2%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	-4.2%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	0.2%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-4.4%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	Pre-1	Pre-1	114.16	2.47	NA	TN	NA		112.9	112.9	0.0	0.0%
PRE	Pre-2	Pre-2	0.12	0.12	NA	TN	NA		1.6	1.6	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
		TOTAL	114.28	2.59				TOTAL	114.5	114.5	0.0	0.0%

Date (MM/DD/YYYY): 11/16/2016
Project Name: Transition Station #2
Town/City: Clarksville, Coos County
Impacted Surface Waters: Upper Connecticut
Applicant: Northern Pass Transmission, LLC.
DES File #:

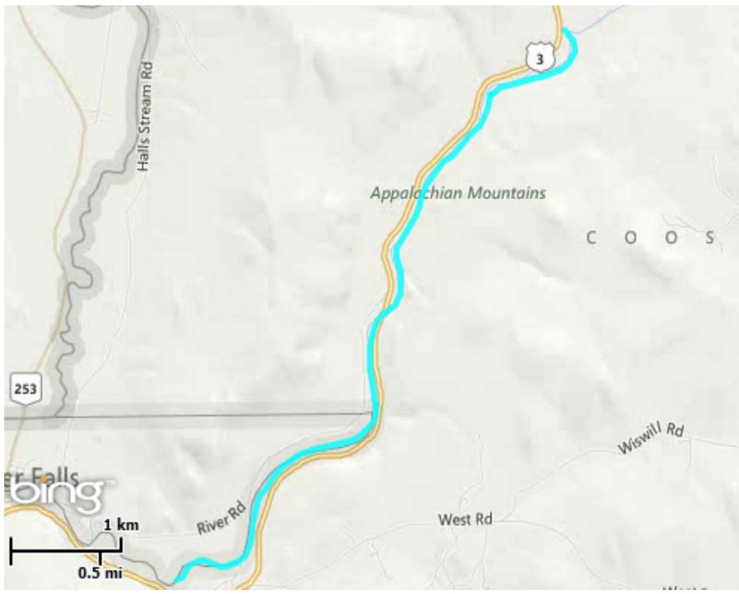
POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	Post-1A	Post-1	113.65	2.19	0.00	TN	3.5%		108.9	108.9	0.0	0.0%
POST	Post-1B	Post-1	0.57	0.00	0.00	TN	3.5%	Infiltration Basin (> 75ft from surface water)	0.4	0.2	0.2	60.0%
POST	Post-2	Post-2	0.06	0.04	0.00	TN	3.5%		0.6	0.6	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	3.5%		0.0	0.0	0.0	0.0%
		TOTAL	114.29	2.23	0.00			TOTAL	109.9	109.6	0.2	0.2%

Return to home page

On This Page
- Water Quality Assessment Status
- Causes of Impairment
- Probable Sources Contributing to Impairments
- TMDLs That Apply to This Waterbody
- Previous Causes of Impairment Now Attaining All Uses

2008 Waterbody Report for Connecticut River



Click on the waterbody for an interactive map

Features
- About This Database (Integrated Report)
- Assessing Water Quality (Questions and Answers)
- Integrated Reporting Guidance
- Previous National Water Quality Reports
- EnviroMapper for Water
- AskWATERS
- EPA WATERS Homepage
- Exchange Network
- Assessment Database
- Statewide Statistical Surveys
- *How's My Waterway* Local Search tool
- Pollution Categories Summary Document
- Nitrogen and Phosphorus Pollution Data Access Tool (NPDAT)

State: New Hampshire
Waterbody ID: NHRIV801010203-07
Location: 010801010203, Connecticut River, Unknown Fishery
State Waterbody Type: River
EPA Waterbody Type: Rivers and Streams
Water Size: 4.17
Units: miles
Watershed Name: Upper Connecticut

Waterbody History Report

Data are also available for these years: 2010 2006 2004 2002

Water Quality Assessment Status for Reporting Year 2008

The overall status of this waterbody is Impaired.

Description of this table

Designated Use	Designated Use Group	Status
Aquatic Life		Impaired

	Fish, Shellfish, And Wildlife Protection And Propagation	
Drinking Water After Adequate Treatment	Public Water Supply	Good
Fish Consumption	Aquatic Life Harvesting	Impaired
Primary Contact Recreation	Recreation	Not Assessed
Secondary Contact Recreation	Recreation	Good
Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Not Assessed

Causes of Impairment for Reporting Year 2008

Description of this table

Cause of Impairment	Cause of Impairment Group	Designated Use (s)	State TMDL Development Status
Lead	Metals (other than Mercury)	Aquatic Life	TMDL needed
Mercury	Mercury	Fish Consumption	TMDL completed
pH	pH/Acidity/Caustic Conditions	Aquatic Life	TMDL needed

Probable Sources Contributing to Impairment for Reporting Year 2008

Description of this table

Probable Source	Probable Source Group	Cause(s) of Impairment
Atmospheric Deposition - Toxics	Atmospheric Deposition	Mercury
Source Unknown	Unknown	Lead; pH

TMDLs That Apply to this waterbody

Description of this table

TMDL Document Name	TMDL Date	TMDL Pollutant Description	TMDL Pollutant Source Type	Cause(s) of Impairment Addressed
Ne Regional Mercury Tmdl	Dec-20-2007	Mercury	Nonpoint Source	Mercury

Previous Causes of Impairments Now Attaining All Uses

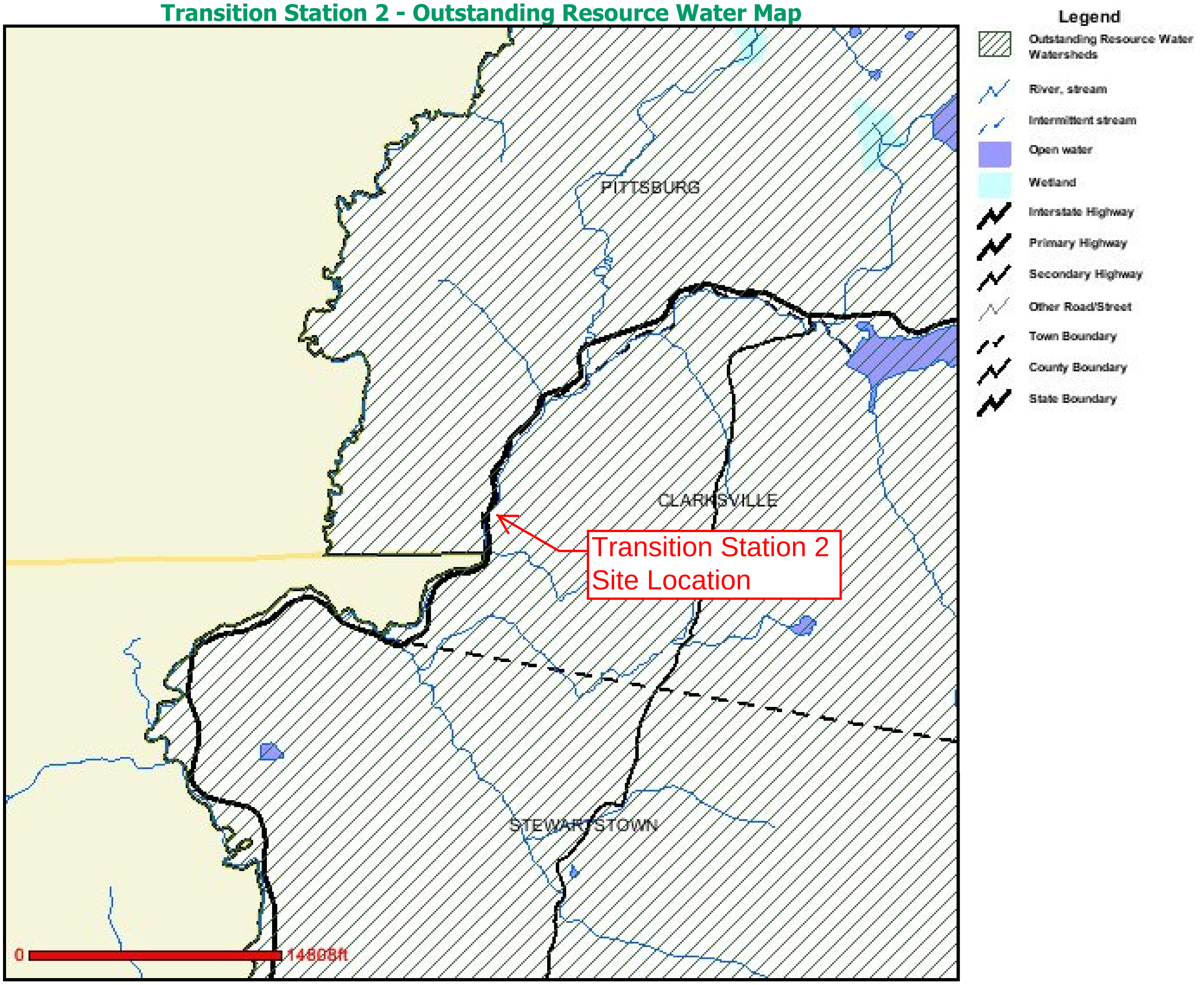
Description of this table

Cause of Impairment	Cycles Listed	WQS Attainment Date	WQS Attainment Reason	WQS Attainment Comments
Polychlorinated Biphenyls (PCBs)	2002, 2004, 2006	Sep-30-2009	Applicable WQS attained, due to change in WQS.	

New Hampshire Department of Environmental Services

OneStop Program GIS

Transition Station 2 - Outstanding Resource Water Map



Map Scale = 1 : 188156 (1" = 3 miles or 15680 feet)

Map prepared 7/15/2015 9:07:00 AM

Developed in cooperation with NH GRANIT

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