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Information prepared for

NYSDEC – New York State Department of Environmental Conservation Division of Water

AND

Village of Nyack Planning Board

Project Name: Proposed Community Mausoleum
Oak Hill Cemetery
140 North Highland Avenue
Nyack, New York



STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Documentation

October 12, 2020 Revised November 11, 2020 Revised November 30, 2020 Revised February 15, 2021

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By: Atlantic Consulting & Engineering, LLC
Dated: December 12, 2019

REFERENCE DOCUMENTS

- NYS-SMDM New York State Stormwater Management Design Manual January 2015, NYSDEC – New York State Department of Environmental Conservation
- NYS_CMP New York State Coastal Management Program and Final Environmental Impact Statement – Updated through 2017, Prepared by: Office of Coastal Zone Management National Oceanic and Atmospheric Administration (NOAA) Department of Commerce and New York Department of State
- Blue Book New York State Standards and Specifications for Erosion and Sediment Control, November 2016, NYSDEC – New York State Department of Environmental Conservation
- LWRP Local Waterfront Revitalization Program Village of Nyack, New York, July 2019, by: Waterfront Advisory Committee
- NYSDEC Construction Stormwater Inspection Manual, August, 2007.

1.0 INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared in support of the New York State Department of Environmental Conservation *General Permit for the Discharge of Stormwater Associated with Construction Activities* for the proposed development of a ±4,242 square-foot Community Mausoleum with associated, site improvements and utilities, located at Oak Hill Cemetery, 140 North Highland Avenue Nyack, New York. The developed area of the project consists of less than 1 acre of the total site's 49.2434± acres. Approximately 11.24 acres of the burial grounds are located in the Town of Clarkston. The proposed Mausoleum is located in the ±38.002 acres of Oak Hill Cemetery in the Town of Orangetown. The proposed development does not result in any direct wetland impacts. The design is intended to be in compliance with all applicable County of Rockland, State of New York codes and regulations as well as all other applicable state and federal requirements and regulations.

The SWPPP is prepared pursuant to the requirements of the NYSDEC to establish the plan for the management of the site for the ongoing construction activities at 140 North Highland Avenue Nyack, New York.

1.1 Conservation Considerations

All of the following Conservation Methods were considered and at least 2 of the 3 were utilized in this project.

- 1. Avoiding the Impacts Avoid or minimize disturbance by preserving natural features and using conservation design techniques
- 2. Reducing the Impacts Reducing the impacts of development by reducing impervious cover
- 3. Managing the Impacts Manage the impacts by using natural features and runoff reduction practices to slow down the runoff, promote infiltration and evapotranspiration, and consequently minimizing the need for the structural "end-of-pipe" practices.

2.0 SITE ACTIVITY DESCRIPTION

2.1 Site Description

The project site is currently zoned Single Family Residential SFR-1, and is bounded by the Village Gate Way to the north, Clarkston, County of, to the west, a combination of manufacturing, multifamily residential, and mixed use residential to the south, and Route 9W (North Highland Street) Hospital zoning to the east. The site is located on the west side of State Route 9W and is accessed from North Highland Street (9W) via its intersection with Sickles Avenue. The property is privately owned by Oak Hill Cemetery and is currently developed land. Land Use category is Open urban land. The total disturbed area due to construction activities is 33,258 square feet or 0.7635 Acres.

Oak Hill Cemetery dates back to the early 1800's and has history dating back 300 years in the Village of Nyack. The cemetery has scenic views of the Hudson River and the Tappan Zee Bridge. The site is well maintained with steep slopes. Mausoleums currently line the hill top at the cemetery. The proposed Community Mausoleum will be centrally located on the site, hidden from view built into the steep slopes of the cemetery.

2.2 Area of Coastal Management on-site

Per the Local Waterfront Revitalization Program Village of Nyack prepared by the Waterfront Advisory Committee, dated July 2019, the entire parcel of land located in Orangetown lies within the New York State Coastal Boundary. This encompasses 38.002 acres of land and lies approximately 4,100 to 6,500 feet horizontally from the shoreline of the Hudson River. (Refer to Figure A-1). This is rare in comparison with the majority of New York States Coastal boundary, which typically lies 1000 feet from the shoreline. The reason for the increase in distance is due to the historic relationship to the coastal waters, the significant steepness of slopes from the shoreline to the boundary of Oak Hill Cemetery and this area is exceptionally scenic; therefore, the coastal boundary is situated to encompass the Cemetery.

2.3 Receiving Waters

The site is located within the Sparkill Creek-Hudson River Watershed, (HUC12 #020301010404), which is approx. 28% of the larger (HUC10#0203010104) Saw Mill River-Hudson River Watershed; which is approx. 8% of the (HUC8#02030101), Lower Hudson Watershed boundary dataset. The Upper Hackensack River and Sparta Brook-Hudson River Watersheds are in close proximity to the west and north respectfully. Oak Hill Cemetery makes up 0.1% of the Sparkill Creek-Hudson River Watersheds' 37,212 acres.

3.0 FACILITY DESCRIPTION

3.1 Community Mausoleum

The proposed development consists of the construction of a $\pm 4,200$ square-foot one story concrete building. The building will be accessed from the existing drive and two (2) retaining walls constructed at the rear will allow the building to be built into the hillside. The proposed construction will be providing an additional $\pm 4,856$ square-foot of impervious area. The proposed building will be serviced by its own new, proposed septic system, new water, electric and gas service will serve the Community Mausoleum through an underground trench which has been designed to minimize site disturbance.

The project owners are proposing the construction to be an Accessory Structure or Building; defined as the following per Village of Nyack Zoning Regulations:

ACCESSORY BUILDING or ACCESSORY STRUCTURE

Applies to a building or structure which is detached from and clearly incidental or subordinate to and customary in connection with the principal building and which is located on the same tax lot with such principal building. No residential building or dwelling shall be considered or allowed as accessory to any other residential building or dwelling. An accessory building attached to the principal building shall be considered part of the principal building. Accessory structures include garages, reviewing stands, tennis courts, platforms, gasoline pumps, standpipes, outside bins, swimming pools, pergolas, walks, fences, gate posts, signs, driveways and paved walks. The word "structure" or "building" shall be construed as though followed by the words "or part thereof."

The proposed development results in an increase in impervious area of approximately 0.1115± acres when compared to existing conditions. The proposed development includes the construction of Stormwater Planters connected to one another with an underground infiltration pipe, directed to a Storm Sewer Pipe system with deep sump catch basins and approximately 850 linear feet of underground utilities. The proposed building will be serviced by its own septic system to be constructed underground on the east end of the Mausoleum. Refer to sheet C-1 Septic and Grading Plan for details. As a viable SMP – (Stormwater Management Practice), an underground infiltration pipe system encased in stone will serve as an initial or primary water quality and water quantity control parameter and is considered in the RRV (Runoff Reduction Volume) Calculation & LID (Low Impact Development) techniques. Stormwater Planters and the connecting infiltration pipe will treat and detain the increase in runoff by the proposed development. The volume of water generated by the impervious surfaces, which equates approximately to the runoff generated by one and a half inches of rainfall; is the volume of water quality to be treated. [Refer to Figure 4.1: 90th Percentile Rainfall in New York State (NYSDEC 2013]. The water quality will be treated once released from the roof leaders into Stormwater Planters located at the base of the roof leaders, as an infiltration basin, the stormwater planters will recharge the groundwater at a rate of 4 ft./day. The underlying soils have not been incorporated into the sizing calculations. The actual infiltration rate for these basins based on field infiltration tests are anticipated to be (on average) five (5) to ten (10) inches per hour, which will result in a significant amount of groundwater recharge, further enhancing the water quality measures associated with the proposed development. Refer to Sheet C-4.1 and C-5.1 for more detail.

In addition to the construction of water quality measures, and the proposed LID, the project proposes a re-grading of a grassed waterway, or diversion trench at the upper slopes of the disturbance, and grading of the utilities trench location which will replicate the existing conditions. This stormwater treatment system has been designed in accordance with New

York States Stormwater Management Design Manual, requirements of the MS4 and local ordinance, and is intended to pre-treat and attenuate stormwater runoff to the maximum extent practical. Demonstrating that all reasonable opportunities for preserving natural conditions of the site are employed to minimize the runoff and maintain the preconstruction hydrology.

3.2 Pollution Prevention Team

The members of the Stormwater Pollution Prevention Team (PPT) shall include the representative of the project's owner Oak Hill Cemetery (Lou Deluise 845-358-0012), Principal of Atlantic Consulting & Engineering, LLC (James E. Quill) or his designee, and Construction Managing representatives (Tom Mullen and Kerry Ann Mullen), also from the Construction Company / permittee is (James Mullen 203-948-2502). The team will be formed with the understanding that at least one team member shall be available and present at the site or on call during all operational hours.

The responsibility of the team members are as follows:

Project Owner: Ensure that all team members are meeting their individual job requirements and have been trained to perform inspections as scheduled as well as be aware of any changes or situations that arise where potential pollutants or spills can occur.

Engineer: Ensure that all team members are meeting their individual job requirements and have been trained to perform inspections as scheduled as well as be aware of any changes or situations that arise where potential pollutants or spills can occur. The engineer will also ensure that all inspection reports are prepared accurately and submitted on time.

Construction Representatives: The construction representatives will be familiar with the "Overall Soil Erosion and Sediment Control Plan and Notes" Drawing Numbers C-4, C-4.1 and C-5 (See Drawing List). They will also be familiar with all aspects of this document and the many checklists which will be used to complete the inspections and monitoring of the plan.

3.3 Pollution Prevention Team Training

Training in stormwater management is required for the members of the Pollution Prevention Team *and* for all employees who work in areas where construction materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of the general permit. Training shall commence within 90 days of employment and at least once per year thereafter. Training shall be conducted or supervised by a member of the Pollution Prevention Team or other qualified person. A

written record of items covered during training including familiarization with the SWPPP, inspection requirements, monitoring requirements, review of SMPs as well, location of all outfall locations. A sign in/sign out sheet will be used to document that employees have participated, and a written record will be kept.

Monitoring requirements for the facility include a visual inspection of all Soil Erosion & Sediment Control measures, all water quality controls, all stormwater SMPs, and all potential pollutant sources. (Construction staging area, storage area). Additional Monitoring requirements are discussed in Section 9.0 of this SWPPP.

4.0 STORMWATER RUNOFF

The stormwater management plan and design for the proposed Site Plan Improvements are intended to be in compliance with the Village of Nyack, Rockland County Zoning and Subdivision Regulations, 2015 New York Stormwater Management Design Manual, November 2016 Blue Book, and the New York State Guidelines for Urban Erosion and Sediment Control, while taking prevailing site conditions and practical considerations into account.

4.1 Methodology

Runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100 percent of the post-development water quality volume to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system. This requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance.

Stormwater runoff analyses, for both current and proposed conditions, was performed using the SCS – TR-55 methodology to compute volumes and rates of runoff. The watershed area, rainfall depths and intensity, curve number and time of concentration are factors that influence the computed results. Rainfall depths for Rockland County were used for calculating the volumes and rates of runoff for this particular project.

NRCS (SCS) uses the runoff curve number (CN) method to estimate runoff from storm rainfall. The major factors that determine CN are the watershed's soil and cover conditions, cover type, treatment and hydrologic condition. The higher percentage of impervious cover within a watershed will result in a higher curve number. A composite curve number was calculated for each analyzed watershed. Refer to Appendix C for the calculations used in determining the curve numbers for the individual drainage areas.

The time of concentration is the time it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. The time of concentration is calculated by adding the travel times of sheet flow, shallow concentrated flow and open channel flow, or some combination of these depending of the watershed and its features. Refer to Appendix C for the calculations used in determining the time of concentrations for the individual drainage areas.

4.2 Stormwater Analysis for Proposed Condition

The proposed development consists of drainage areas that are of similar patterns to existing contributing areas, within the 38.002 acres analyzed. Based on the proposed drainage patterns, the 38.002-acre area was divided into four (4) contributing drainage areas, labeled Drainage Area 1S (DA-1S), Drainage Area 2S (DA-2S), Drainage Area 3S (DA-3S), and Drainage Area 4S (DA-4S). The approximate location and delineation of these drainage areas can be seen on Sheets DA-EX & DA-PRO, Existing & Proposed Drainage Area Maps, found in List of Figures, Figure 5 & Figure 6.

DA-1S has a contributing area of approximately 7.698 acres. This encompasses an area along the majority of the site's southern border. The majority of runoff from DA-1S flows south east, overland, into an existing tree-line buffer. Run-off will infiltrate and recharge the groundwater otherwise outfall into existing storm drainage along Cemetery & Sickles Ave. Proposed condition will improve this Drainage Area by regrading and replanting of new grass seed in the utility trench location.

DA-2S has a contributing area of approximately 16.585 acres. This area is comprised of the proposed development area and encompasses a major portion of the site's western border to Town of Clarkston. Runoff from DA-2S will travel southeast over impervious and grassy surfaces, graves and tombs act as energy dissipators for extreme runoff, eventually reaching Green Infrastructure techniques used to mitigate the stormwater runoff impacts derived from the development of the proposed Community Mausoleum. Stormwater planters on the property defined as: Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality. The next stretch in the drainage path will flow to the proposed underground Storm Sewer pipe system to be constructed at the base of the proposed Mausoleum area and discharge directed to the existing Open Channel and Water Quality Basins which currently exist south east of the proposed development in the southern portion of drainage area DA-3S.. The approximate location and delineation of these drainage areas can be seen on Sheet DA-PRO, Proposed Drainage Area Map, found in List of Figures, Figure 6.

DA-1S and DA-2S have been combined through stormwater conveyance contributing a decrease in runoff and volume to the existing stormwater drainage system (MS4) at the south east limit of the site, (The intersection of the property line with the proposed utilities).

DA-2S and DA-3S have been combined through stormwater conveyance also contributing to a decrease in runoff and volume to the existing Open Channel and Water Quality Basins and the existing stormwater drainage system (MS4) at the intersection of North Highland Ave. with Fifth Avenue. The catch basin on the north side of N. Highland Ave. is considered "P.O.C.- A" (Point of Concern – A; Link 1L in HydroCAD)

Comparison Table of Peak Flow Rates and Volume Between PRE & POST Development

STORM						
EVENT	LINK/POC	FLOW/VOLUME	EXISTING	PROPOSED	Δ	Δ (%)
1 Year Storm	LINK 1 (A)	q (ft³/s)	8.65	7.43	-1.22	-14.1
1 rear Storm		v (ft³)	52712	47575	-5137	-9.7
2 Year Storm	LINK 1 (A)	q (ft³/s)	13.28	11.58	-1.7	-12.8
2 real Storm		v (ft³)	79199	72756	-6443	-8.1
5 Year Storm	LINK 1 (A)	q (ft³/s)	21.69	19.05	-2.64	-12.2
3 Teal Storin		v (ft³)	127610	119320	-8290	-6.5
10 Year Storm	LINK 1 (A)	q (ft³/s)	29.09	26.34	-2.75	-9.5
10 fear Storm		v (ft³)	170754	161178	-9576	-5.6
25 Year Storm	LINK 1	q (ft³/s)	39.71	36.29	-3.42	-8.6
23 fear Storm	(A)	v (ft³)	233622	222550	-11072	-4.7
50 Year Storm	rm LINK 1 (A)	q (ft³/s)	47.83	43.94	-3.89	-8.1
Jo real Storill		v (ft³)	282405	270387	-12018	-4.3
100 Year	LINK 1 (A)	q (ft³/s)	56.62	52.24	-4.38	-7.7
Storm		v (ft³)	335584	322688	-12896	-3.8

As shown in the above comparison table, there is a decrease in peak run-off (cfs) and volume (C.F.) for the Type III - 24-Hour storm events used in the analysis. (1-year through 100-year storm frequencies)

4.3 Stormwater Management Planning

The first step in planning for stormwater management by using green infrastructure is the preservation of natural features and conservation design. (Section 5.1 NYS SWMDM) The following is a list of practices used during the design stage of the Mausoleum.

Reduction of Clearing and Grading – Clearing and grading limit was
delineated to be the minimum required for utility and Mausoleum
construction. This disturbed area will be restored as in the existing
conditions, with improved topsoil and establishment of new grass
surfaces. Site foot-printing was conducted to disturb the smallest possible
land area on the site, refer to Geophysical Investigation Survey conducted
by GEOD Corporation Dated 6/12/13. (Figure 4)

A Limit of Disturbance (LOD) is delineated and established based on the maximum disturbance zone, shown on the Overall Site Plan, Sheet C-3, Site Utility Plan, Sheet C-3.1, and Stormwater Management Plan, Sheet C-4.1.

- Locating Development in less sensitive areas The utility trench location was located as to create the least impact possible on the terrain.
- Soil restoration original properties of soil will be restored to the best of
 the contractor's abilities, in most cases, soil properties will be improved
 by using soils in the HSG A, to replace HSG B, or C soils. In areas of cut
 or fill in the HSG A & B, the Soil Restoration Requirement per Table 5.3
 NYS-SMDM requires disturbed areas to be aerated and to apply 6 inches
 of topsoil. See Operation and Maintenance for specific procedures
 required for soil restoration maintenance.
- Reduction of Impervious Cover by locating the Mausoleum adjacent and within close proximity of the exiting roadway, driveway reduction has been implemented by minimizing driveway area to reduce site impervious area.

The Green infrastructure techniques described above utilize the natural features of the site and promote runoff reduction.

Another Green Infrastructure technique well suited for the Mausoleum site are Stormwater Planters locations to be under roof top drains at each corner of the proposed Mausoleum, and/or by each side of the building entrance. These planters create an aesthetic landscape, as well as provide treatment of water pollutants.

5.0 CONSTRUCTION SEQUENCING

5.1 Phase I Sequence and Estimated Timetable of Major Activities

- 1. Construction begins April 2021
- 2. Contact Village of Nyack Building Dept., Rockland County Water Division Agent, Zoning Official and Building Inspector at least forty-eight (48) hours prior to commencement of any demolition, construction or regulated activity on this project.
- 3. Clearing limits shall be physically marked in the field and approved by the Village of Nyack Building Dept. and Rockland County's Public Works Agent, Zoning Official and Building Inspector prior to the start of work on the site. Install tree protection, silt-sack or hay-bales around drainage inlets, perimeter silt fence, and create the diversion trench up slope of the silt fence. (4-1-2021 thru 6-1-21)
- 4. Install stabilized construction entrance/exit. (4-1-2021 thru 6-1-21)
- 5. Silt fence to be installed around the site along the limit of disturbance as specified (clear only those areas necessary to install silt fence).
- 6. Prepare temporary parking and storage areas.
- 7. Halt all activities and contact the engineer of record to perform inspection and certification of best management practices (BMP's). (6-1-2021 thru 12-31-2021)

- 8. General contractor shall schedule and conduct the stormwater pre-construction meeting with the engineer, agencies and ground-disturbing contractor before proceeding with construction. (6-1-2021 thru 12-31-2021)
- 9. Construct and stabilized diversion trench or grassed swale with appropriate outfalls structures (clear only those areas necessary to install swale and culvert).
- 10. The site will be cleared and grubbed. (6-1-2021 thru 12-31-2021)
- 11. Excavate all stumps located in the structural area and remove to a disposal site or stockpile area to be chipped. No stumps are to be buried within 50' of wetland or 100' from a watercourse. Stumps are to be disposed of in accordance with current state law.
- 12. Begin grading the site. Install new utilities to Community Mausoleum. (6-15-2021 thru 10-15-21)
- 13. Start construction of building pad and structures. (10-15-2021 thru 5-15-2022)

5.2 Phase II Sequence and Estimated Timetable of Major Activities

- 1. Temporarily seed, throughout construction, denuded areas that will be inactive for 14 days or more. (4-1-2021 thru 5-15-2021)
- 2. Install utilities, underdrains, storm sewers, curbs, and gutters. (10-15-2021 thru 4-15-22)
- 3. Install inlet protection at all MS4 storm sewer structures and at each inlet structure on the premises. (4-1-2021 thru 5-15-2021)
- 4. Permanently stabilize areas to be vegetated as they are brought to final grade. (8-15-2021 thru 4-15-2022)
- 5. Prepare for site landscaping. (8-15-2021 thru 4-15-2022)
- 6. Landscape site. (8-15-21 thru 4-15-2022)
- 7. Install appropriate inlet protection devices for construction areas as work progresses. (8-15-21 thru 4-15-2022)
- 8. Complete grading and installation of permanent stabilization over all areas including out lots. (8-15-21 thru 4-15-2022)
- 9. Obtain concurrence with the construction manager that the site has been fully stabilized. (5-2022)
- 10. Remove all remaining temporary erosion and sediment control devices. (5-2022)
- 11. Stabilize any areas disturbed by the removal of BMP's / SMP's (5-2022)
- 12. Ask the Construction Manager to contact the engineer to complete the engineer's on-site inspection and report. (5-2022)
- 13. Continue daily inspection reports until the final daily inspection report is signed by the construction manager and submitted. (8-15-21 thru 4-15-2022)

6.0 STORMWATER POLLUTION PREVENTION CONTROL MEASURES

6.1 Soil Erosion and Sediment Control Measures

The soil erosion and sediment control measures that will be proposed as part of this project include geotextile silt fences, a construction entrance, a grassed swale / or diversion trench, dust control measures and inlet protection for existing and proposed drainage features. The stabilization practices, structural practices and maintenance procedures are specified in detail on the Septic and Grading Plan (C-1), Drainage and Grading Plan (C-1.1), Site Grading Plan (C-3.2), the Sediment & Erosion Control Plans (C-4, C-4.1 and C-5), which can be found in the List of Drawings section. The location of these controls is shown on the above referenced plans. The proposed plans for soil erosion and sediment control prepared for this project have been developed in accordance with the November 2016 Blue Book - New York State Standards and Specifications for Erosion and Sediment Control, the New York Guidelines for Urban Erosion and Sediment Control, and sound engineering judgment.

6.2 Soil Stabilization and Protection

During the grading of the site, six stabilization practices will be employed: (1) A construction entrance will be installed to service the site in order to maintain soil stability in this area and to prevent tracking soil onto adjacent roads; (2) silt fences will be installed at all down gradient areas the perimeter of the site to prevent sediment from leaving the site; (3) inlet filter protection will be deployed at all existing catch basins/inlets; (4) new grassed waterway or diversion trench; (5) wash out areas will be equipped with hay bale check dams and silt-fence to trap debris and filter run-off; and (6) pursuant to the Soil Erosion & Sedimentation Control plans; disturbed areas will be temporarily stabilized where necessary and final stabilization provided as soon as practical.

6.3 Structural Measures

Structural practices included in the Soil Erosion & Sedimentation Control Plans that are intended to divert flows away from exposed soils, store flows and limit runoff and discharge of pollutants from the site include a diversion trench or grassed waterway swale at the up-hill slopes, silt-fence and hay-bales around all stockpiles, and silt fence around the perimeter of the disturbed areas. For additional detail regarding structural practices refer to the Sediment & Erosion Control Plan & Misc. Details (C-4), Stormwater Management Plan (C-4.1) and the Soil Erosion & Sediment Control Plan Notes and Details (C-5) which can be found in the List of Drawings section.

6.4 Maintenance

The contractor shall be responsible for the proper construction and stabilization, and maintenance of all temporary erosion and sediment control measures and related items, and shall also be responsible for the proper construction and stabilization of all pertinent erosion and sedimentation control measures and related items.

The diversion trench (grassed swale), silt fence and hay bale check dams shall be inspected once every seven (7) calendar days or once every 14 days and after every storm event producing 0.25 inches of rainfall or greater. Any necessary repairs shall be made immediately. Accumulated sediments shall be removed as required to keep the fence functional. Deposits shall be removed when accumulations reach one-half the above ground height of the fence. Undercutting or erosion of the toe anchor shall be replaced immediately with rock filters.

The stabilized construction entrances shall be inspected at the end of each workday. The thickness shall be constantly maintained to the specified thickness by adding additional rock. A stockpile of rock material shall be maintained on-site for this purpose. At the end of each workday, any sediment deposited on the public roadways shall be removed and returned to the construction site. Washing of the roadway with water shall not be permitted.

Inlet filters shall be inspected once a week or after every major storm event, whichever comes first. Any necessary repairs shall be made immediately. Accumulated sediments shall be removed as required to keep the filter functional.

6.5 Additional Control Measures

6.5.1 Sediment and Erosion Controls

The permittee must implement erosion and sediment control measures for any areas with the potential to impact surface waters or wetlands or the potential for off-site impacts by following the Guidelines and the Stormwater Quality Manual in accordance with the narrative and plans included herein.

6.5.2 Dust Suppression

The permittee must ensure that off-site vehicle tracking of sediments and the generation of dust shall be minimized. Dust suppression measures shall be utilized on any activity that causes airborne particles, in accordance with the Regulations of New York State Agencies. The volume of water sprayed to control dust shall be minimized to prevent runoff to the surface waters of the State.

6.5.3 Run-off Diversion

The site has been designed to ensure that grading diverts uncontaminated stormwater runoff from entering the site, and away from any potential pollutant sources. The grassed waterway shall remain in-place therefore limiting the runoff from higher ground to infiltrate the proposed building and area.

6.6 Non-Stormwater Discharges

Possible sources of non-stormwater discharges associated with the construction activity that will contribute to water being discharged from the site are identified below. This SWPPP includes stormwater pollution prevention measures for the discharges.

- 1. Groundwater encountered within excavations is to be diverted to temporary sediment basins and thence to dewatering pits. Discharge to the storm sewer system shall only be allowed in the following circumstances:
 - a) that the water stored in the dewatering pits are free from contamination:
 - b) Water removal is by means of pump-and-sump methods that feature a filter to minimize sediment transport; and,
- 2. Cleaning water for construction vehicles and equipment is to be diverted to the temporary sediment basins and thence to the dewatering pits. Chemicals and detergents are not to be used. The contractor is to coordinate with the Site Superintendent for identifying areas on-site for construction vehicle transit (i.e. haul roads, contractor trailers and parking and wash down areas, etc.) or equipment staging which are to be monitored and where runoff can be controlled.
- 3. Water used for dust control measures is to be applied using proper quantities and equipment. No chemical additives are to be used.
- 4. Water main flushing's, hydrostatic test water, fire test water, and chlorination test water are to be directed to the control measures on the site. Turbid water is to be detained to allow sufficient sedimentation time (minimum of 24 hours). Chlorinated water is to be detained until the water is de-chlorinated (minimum of 24 hours).
- 5. Concrete trucks are to only be washed out or to discharge surplus concrete or drum wash water in such a manner as to prevent pollution laden water/stormwater from being discharged to the swale.

7.0 RUNOFF REDUCTION AND LOW IMPACT DEVELOPMENT (LID) INFORMATION

The stormwater management plan and design for 140 North Highland Avenue is intended to be in compliance with the Village of Nyack Zoning and Subdivision Regulations Chapter 295, Section 4, Chapter 360 and the 2015 New York State Stormwater Management Design Manual, while taking prevailing site conditions and practical considerations into account.

7.1 Runoff Reduction Techniques

To reduce the WQv (Water Quality Volume) required storage volume, Runoff reduction volume (RRv) was used based on the following methods:

- Reduction of the practice contributing area in WQv computation (as defined in Chapter 5 of NYS Stormwater Management Design Manual)
- Reduction of runoff volume by storage capacity of the practice (as defined in Chapter 5)
- Redevelopment project enables reduction of WQv to 75% (as defined in Chapter 9 of NYS-SMDM)
- Reduction using standards SMPs with runoff reduction capacity (as defined in Chapter 3)

Above ground systems Dry detention basins and dry extended detention basins (Diversion Trench) are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts.

Stormwater management proprietary practice of an underground stormwater infiltration system composed of pre-fabricated pipe encased in stone, for example (ADS – Advanced Drainage Systems) Stormwater Retention / Detention Pipe Storage System.

8.0 INSPECTION PROCEDURES

8.1 Inspection by Qualified Personnel

8.1.1 Contractor Maintenance Inspection Requirements

The owner or operator shall have a trained contractor inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

8.1.2 Qualified Inspector Inspection Requirements

Unless otherwise notified by the NYSDEC, the owner or operator shall have a qualified inspector conduct site inspection in accordance with the permit requirements; for site with on-going soil disturbance activities, a qualified inspector shall conduct a site inspection at least once every seven (7) calendar days. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- 1. Date and time of inspection;
- 2. Name and title of person(s) performing inspection;
- 3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of inspection;
- 4. A description of the condition of the runoff at all points of discharge from

the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

- 5. Identification of all erosion and sediment control practices that need repair or maintenance;
- 6. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- 7. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- 8. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- 9. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- 10. Identification and status of all corrective actions that were required by previous inspection; and
- 11. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

The contractor shall maintain a record of all inspection reports in a site log book (See Appendix E – Inspection Reports). The site log book shall be maintained on site and be made available to the permitting authority upon request. The contractor shall post at the site in a publicly-accessible location, a summary of the site inspection activities on a monthly basis. The contractor shall prepare a written summary confirming its compliance with the SWPPP at a minimum frequency of every month.

Prior to filing of the Notice of Termination or the end of permit term, the contractor shall have the qualified inspector perform a final site inspection. The qualified inspector shall certify that all disturbed areas have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT (Notice of Termination).

All activities registered under this general permit have been or will be inspected initially for Plan implementation, weekly routine inspections, and semi-annual and annual inspections. Inspectors from the NYS-DEC and the appropriate District may inspect the site for compliance with this general permit at any time construction activities are ongoing and upon completion of construction activities to verify the final stabilization of the site and/or the installation of post-construction stormwater management measures pursuant to Section 6(a) of the general permit.

The inspector shall electronically submit all weekly inspection reports to the offices of Brooker Engineering and the Village of Nyack Building Department within (7) calendar days of completing the inspection.

8.1.3 Semi-Annual Inspections in Accordance with Construction General Permit

At least one member of the PPT will be involved in site inspections. Semi-annual inspections will take place in the months of July and January each year. Inspections should be made during rainfall events, if possible. Prior to the semi-annual inspection, the inspection team will review:

- The current plan
- The current site map
- All routine inspection reports for the year
- All visual monitoring reports for the year
- All analytical stormwater monitoring for the year
- Other documentation such as maintenance records, spill reports, etc.

As part of the semi-annual inspections, the inspector shall evaluate the following:

- Visual inspection of all material handling areas and other potential sources of pollution including:
 - o Stormwater outfalls
 - Truck loading areas
 - o Truck parking areas
 - Outdoor trash compaction area
 - Exterior fuel and/or storage areas
 - An evaluation of all SEC measures, including off-site sediment tracking areas.

8.2 Inspection Report and Qualified Personnel Statement of Compliance.

A report shall be prepared and retained as part of the Plan. This report shall summarize: the scope of the inspection; name(s) and qualifications of personnel making the inspection;

the date(s) of the inspection; weather conditions including precipitation information; major observations relating to erosion and sediment controls and the implementation of the Plan; a description of the stormwater discharges from the site; and any water quality monitoring performed during the inspection. The report shall be signed by the person making the inspection and the member of the PPT reviewing the report in accordance with the "Inspection and Maintenance Requirements" section of the general permit.

The report shall include a statement that, in the judgment of the qualified personnel conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the Plan and permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance. Non-engineered corrective actions (as identified in the Guidelines) shall be implemented on site within 24 hours and incorporated into a revised Plan within three calendar days of the date of inspection unless another schedule is specified in the Guidelines. Engineered corrective actions (as identified in the Guidelines) shall be implemented on site within seven days and incorporated into a revised plan within ten days of the date of inspection, unless another schedule is specified in the Guidelines or is approved by the commissioner. During the period in which any corrective actions are being developed and have not yet been fully implemented, interim measures shall be implemented to minimize the potential for the discharge of pollutants from the site.

8.3 RETENTION OF RECORDS

The owner/ operator Oak Hill Cemetery/Mullen Construction Company Inc., must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the owner or operator shall amend the SWPPP:

- 1. Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;
- 2. Whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and
- 3. To address issues or deficiencies identified during an inspection by the qualified inspector, the Department or other regulatory authority.

The owner/operator, Oak Hill Cemetery/ Mullen Construction Company Inc, shall retain a copy of the most current SWPPP at the construction site from the date construction is initiated at the site until the date construction at the site is completed and the Notice of Termination is submitted. The owner/operator, Oak Hill Cemetery/Mullen Construction Co. Inc., shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the site achieves final stabilization unless NYSDEC

specifies another time period in writing. Once work is completed, Oak Hill Cemetery / Mullen Construction Company Inc., shall submit to NYSDEC a Notice of Termination (NOT) See Appendix F.

Division of Environmental Permits (DEP) Permit Administrators 21 South Putt Corners Road New Platz, New York 12561-1696 Tel. (845) 256-3059

Division of Water (DOW) Water (SPDES) Program 100 Hillside Avenue, Suite 1W White Plains, New York 10603 Tel. (914) 428-2505

9 CONTRACTORS

Contained in Appendix D is a copy of the certification statement required for all contractors and subcontractors that will perform action on this site.

9.1 Certification Statement

Copies of the certification statement have been included in Appendix D which is required for all contractors and subcontractors that will perform action on this site. This certification shall be signed by each contractor and subcontractor identified in the Plan and will include the name and title of the person providing the signature, the name, address and telephone number of the contracting firm; the address of the site; and the date of the certification.

10 IMPAIRED WATERS

Construction activities from this project do not discharge into impaired waters.

11 OTHER CONTROLS

11.1 Waste Disposal

Best management practices shall be implemented to minimize the discharge of litter, debris, building materials, hardened concrete waste, or similar materials to waters of the

State. These include periodic inspections by the contractor and removal of all debris within 24 hours of inspection.

11.2 Washout Areas

Washout of applicators, containers, vehicles and equipment for concrete, paint and other materials shall be conducted in a designated washout area. There shall be no surface discharge of washout wastewaters from this area. Such washout shall be conducted: (1) outside of any buffers and at least 50 feet from any stream, wetland or other sensitive resource; or (2) in an entirely self-contained washout system. The permittee shall clearly flag off and designate areas to be used for washing and conduct such activities only in these areas. The permittee shall direct all wash water into a container or pit designed such that no overflows can occur during rainfall or after snowmelt.

In addition, dumping of liquid wastes in storm sewers is prohibited. The permittee shall move and dispose of hardened concrete waste consistent with practices developed for the "Waste Disposal" section (subparagraph 11.1 above). At least once per week, the permittee must inspect any containers or pits used for washout to ensure structural integrity, adequate holding capacity, and to check for leaks or overflows. If there are signs of leaks, holes or overflows in the containers or pits that could lead to a discharge, the permittee shall repair them prior to further use. For concrete washout areas, the permittee shall remove hardened concrete waste whenever the hardened concrete has accumulated to a height of half of the container or pit or as necessary to avoid overflows.

11.3 Vehicle Tracking

Off-site vehicle tracking of sediments and the generation of dust shall be minimized. Wet dust suppression shall be used, in accordance with New York State General Statutes, for any construction activity that causes airborne particulates. The volume of water sprayed for controlling dust shall be minimized so as to prevent the runoff of water. No discharge of dust control water shall contain or cause visible oil sheen, floating solids, visible discoloration, or foaming in the receiving stream.

A construction entrance has been installed and is continuously maintained at the site entrance from the site.

A second construction entrance may be installed as deemed necessary, location to be determined and documented accordingly.

11.4 Post-Construction

All chemical and petroleum product containers stored on the site (excluding those contained within vehicles and equipment) shall be provided with impermeable containment which will hold at least 110% of the volume of the largest container, or 10% of the total

volume of all containers in the area, whichever is larger, without overflow from the containment area. All chemicals and their containers shall be stored under a roofed area except for those chemicals stored in containers of 100 gallon capacity or more, in which case a roof is not required. Double-walled tanks satisfy this requirement.

12 POST-CONSTRUCTION

12.1 Runoff Reduction and Low Impact Development Practices

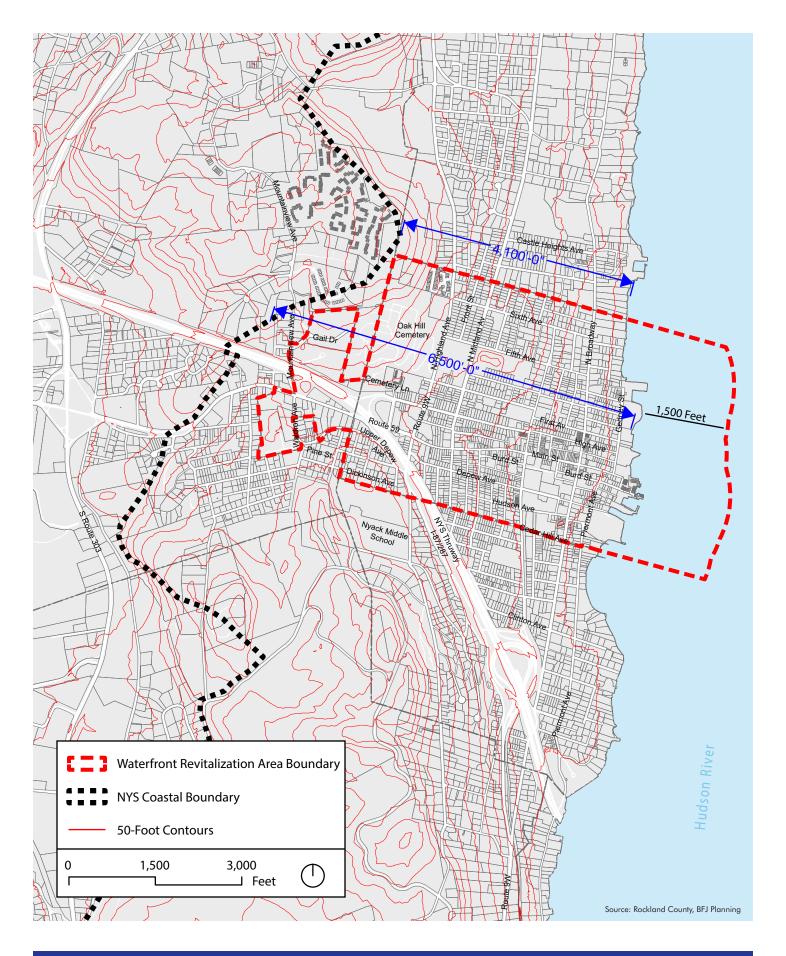
Methods for runoff reduction and low impact development for the future development on site will include a variety of measures, including, but not limited to grassed waterway/ diversion trench, stormwater planters, underground stormwater storage pipe infiltration system, underground storm sewer pipe system with deep sump catch basins, and the water quality basins in the open rip-rap channel as shown on the contract documents.

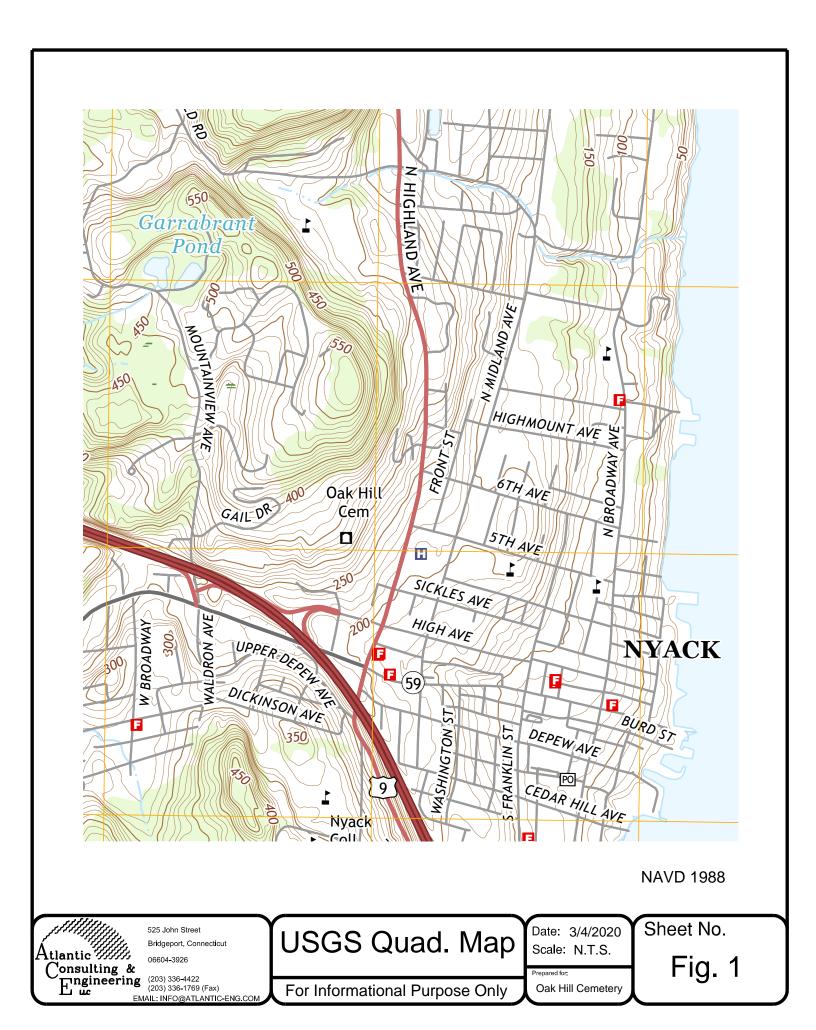
12.2 Velocity Dissipation

The stormwater management system has been designed with a diversion trench, on-site discharge location; therefore, velocity dissipation is included in the site plan design. Natural physical and biological characteristics and functions of the site are maintained and protected.

LIST OF FIGURES

Coastal Area Map (Figure A-1)
Site Location Map (Figure 1)
FEMA Flood Map (Figure 2)
Soil Survey Map (Figure 3)
Geophysical Investigation Survey (Figure 4)

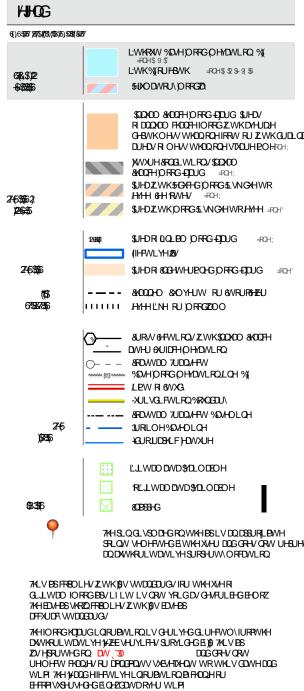




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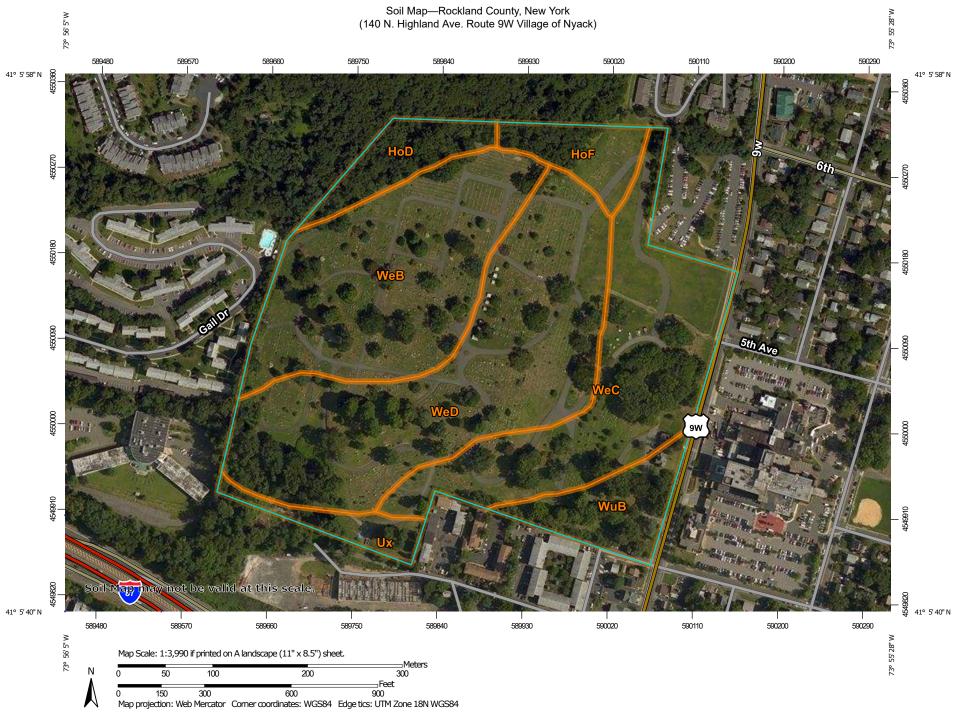


Figure 2



Town of Clarkstown 360679 AREA OF M36087 00181G)D HAZARD Village of Nyack 360685 36087 CO183 COMPLETON DE DWARLEHUNDWOUHUHVAGSEUTEShee

7/LV PSLPJHLV YRLGLI WKHROHRU RUHRI WKHIROORZQJPS HOHPOWY CRORW DSSHOU, EDWH26LP2HU\ IORRG POHODEHOV OHHOG VEDOHEDU PSFÜHDWLRQEDWH FRROLIWLGHOWLILHUV)55800HO QXEHU DQG)56HIHFWLYHGDWH D6LE9HVIRU XCPSS+GDCGXCRC+UCL+GDUHDVFDCCRW EHXHGIRU UHJYO DWRU\ SYUSRAHY



MAP LEGEND

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Water Features

Transportation

Background

Spoil Area

Stony Spot

Wet Spot

Other

Rails

US Routes

Major Roads

Local Roads

Very Stony Spot

Special Line Features

Streams and Canals

Interstate Highways

Aerial Photography

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons



Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

▲ Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Rockland County, New York Survey Area Data: Version 18, Jun 11, 2020

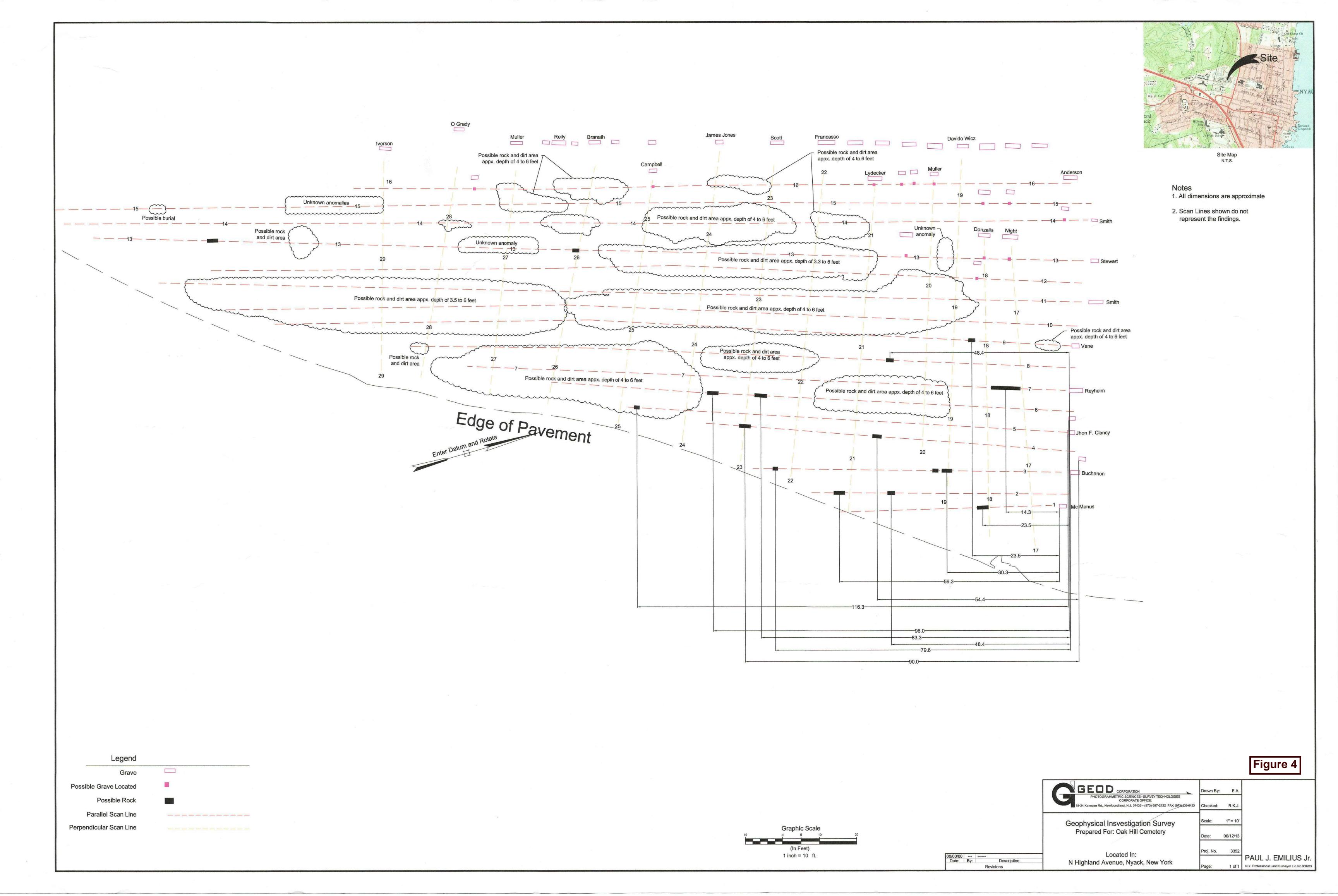
Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Jul 21, 2014—Aug 27, 2014

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HoD	Holyoke-Rock outcrop complex, hilly	2.2	4.8%
HoF	Holyoke-Rock outcrop complex, very steep	2.1	4.4%
Ux Urban land		1.4	2.9%
WeB Wethersfield gravelly silt loam, 3 to 8 percent slopes		11.8	25.3%
WeC	Wethersfield gravelly silt loam, 8 to 15 percent slopes	10.7	22.9%
WeD	Wethersfield gravelly silt loam, 15 to 25 percent slope s	15.6	33.5%
WuB Wethersfield-Urban land complex, 2 to 8 percent slopes		2.9	6.2%
Totals for Area of Interest		46.5	100.0%



LIST OF TABLES

- Table 2 Construction Activities that require the preparation of a SWPPP
- Table 3.2 Acceptable Runoff Reduction Techniques
- Table 3.3 Stormwater Management Practices Acceptable for Water Quality
- Table 3.4 Stormwater Management Practices Acceptable for Water Quantity Control
- Table 5.3 Soil Restoration Requirements (NYSSWDM)

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or directly discharging to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- · Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or alter the hydrology from pre to post development conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- · Institutional development; includes hospitals, prisons, schools and colleges
- · Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- · Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

New York State Stormwater Management Design Manual

Chapter 3: Stormwater Management Planning

Section 3.2 Green Infrastructure for Stormwater Management

	Table 3.2 Acceptable Runoff Reduction Techniques				
Group	Practice	Description			
	Conservation of natural areas	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.			
	Sheetflow to riparian buffers or filter strips Vegetated open swale	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.			
		The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.			
	Tree planting / tree box	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.			
Runoff Reduction	Stream daylighting for redevelopment projects	Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.			
Techniques	Rain garden	Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.			
	Green roof	Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.			
	Stormwater planter	Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.			
	Rain tank/Cistern	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.			
	Porous Pavement	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.			

New York State Stormwater Management Design Manual

Chapter 3: Stormwater Management Planning

Section 3.3 Standard Stormwater Management Practices for Treatment

C	Table 3.3 Stormwater Management Practices Acceptable for Water Quality				
Group	Practice	Description			
	Micropool Extended Detention Pond (P-1)	Pond that treats the majority of the water quality volume through extended detention, and incorporates a micropool at the outlet of the pond to prevent sediment resuspension.			
	Wet Pond (P-2)	Pond that provides storage for the entire water quality volume in the permanent pool.			
Pond	Wet Extended Detention Pond	Pond that treats a portion of the water quality volume by detaining storm			
	(P-3)	flows above a permanent pool for a specified minimum detention time.			
	Multiple Pond System (P-4)	A group of ponds that collectively treat the water quality volume.			
	Pocket Pond (P-5)	A stormwater wetland design adapted for the treatment of runoff from small drainage areas that has little or no baseflow available to maintain water elevations and relies on ground water to maintain a permanent pool.			
	Shallow Wetland (W-1)	A wetland that provides water quality treatment entirely in a wet shallow marsh.			
	Extended Detention Wetland (W-2)	A wetland system that provides some fraction of the water quality volume by detaining storm flows above the marsh surface.			
Wetland	Pond/ Wetland System (W-3)	A wetland system that provides a portion of the water quality volume in the permanent pool of a wet pond that precedes the marsh for a specified minimum detention time.			
	Pocket Wetland (W-4)	A shallow wetland design adapted for the treatment of runoff from small drainage areas that has variable water levels and relies on groundwater for its permanent pool.			
	Infiltration Trench (I-1)	An infiltration practice that stores the water quality volume in the void spaces of a gravel trench before it is infiltrated into the ground.			
Infiltration	Infiltration Basin (I-2)	An infiltration practice that stores the water quality volume in a shallow depression, before it is infiltrated it into the ground.			
	Dry Well (I-3)	An infiltration practice similar in design to the infiltration trench, and best suited for treatment of rooftop runoff.			
	Surface Sand Filter (F-1)	A filtering practice that treats stormwater by settling out larger particles in a sediment chamber, and then filtering stormwater through a sand matrix.			
	Underground Sand Filter (F-2)	A filtering practice that treats stormwater as it flows through underground settling and filtering chambers.			
Filtering Practices	Perimeter Sand Filter (F-3)	A filter that incorporates a sediment chamber and filer bed as parallel vaults adjacent to a parking lot.			
	Organic Filter (F-4)	A filtering practice that uses an organic medium such as compost in the filter, in the place of sand.			
	Bioretention (F-5)	A shallow depression that treats stormwater as it flows through a soil matrix, and is returned to the storm drain system.			
Open	Dry Swale (O-1)	An open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff into the soil media.			
Channels	Wet Swale (O-2)	An open drainage channel or depression designed to retain water or intercept groundwater for water quality treatment.			

New York State Stormwater Management Design Manual

Chapter 3: Stormwater Management Planning

Section 3.5 Maintenance Requirements

an infiltration basin with a proper outlet design. This allows a designer to meet all the quantity control sizing criteria in Chapter 4 (Cpv, Qp, Qf).

Flood controls are primarily managed through detention structures. Examples of quantity control facilities are presented in Table 3.4.

	Table 3.4 Stormwater Ma	nagement Practices for Stormwater Quantity Control				
Group	Practice	Description				
	Dry Detention	Dry detention basins and dry extended detention basins are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts.				
Above ground systems	Blue Roofs	Blue roofs (rooftop detention systems) are constructed by installing slotted flow restriction devices known as collars or restrictors around the roof drains of flat, structurally sound, waterproof roofs. By this mechanism, stormwater is detained on the roof and the peak rate of discharge is reduced.				
Underground systems	Underground Storage Vaults (chambers, pipes)	An underground storage system is a subsurface stormwater system suitable for sites within high-density urban areas. Such systems are designed as an arched structure, a vault or large diameter pipe and function in both permeable and non-permeable soils for subsurface detention of stormwater runoff or infiltration. Chambers, vaults or pipes can decrease the peak flow when used with a controlled flow orifice at the outlet.				
Infiltration Systems	Infiltration Basin	Practices that capture and temporarily store runoff before allowing it to either infiltrate into the soil (Infiltration rate > 5 in/hr) or be released by a controlled outlet. (*See EPA Class V injection well language in Chapter 4)				

This Design Manual does not provide design specifications for the quantity control practices. However, example technical drawings and examples of outlet structure sizing (orifices and weir), and determination of detention time are presented in Chapters 4 and 8 of this Design manual.

Section 3.5 Maintenance Requirements

The responsibility for implementation of long term operation and maintenance of a post-construction stormwater management practice shall be vested with a responsible party by means of a legally binding and enforceable mechanism such as a maintenance agreement, deed covenant or other legal measure. This

New York State Stormwater Management Design Manual

Chapter 5: Green Infrastructure Practices

Section 5.1 Planning for Green Infrastructure: Preservation of Natural Features and Conservation Design

Table 5.3 Soil Restoration Requirements									
Type of Soil Disturbance	Comments/Examples								
No soil disturbance	Restoration not	permitted	Preservation of Natural Features						
Minimal soil disturbance	Restoration not	required	Clearing and grubbing						
Areas where topsoil is	HSG A &B	HSG C&D	Protect area from any ongoing						
stripped only - no change in grade	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	construction activities.						
	HSG A &B	HSG C & D							
Areas of cut or fill	Aerate and apply 6 inches of topsoil Apply full Soil Restoration **								
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil compaction and enhancement)	Restoration (de- compost							
Areas where Runoff Reduction and/or Infiltration practices are applied	applied to enhar	required, but may be nee the reduction propriate practices.	Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area						
Redevelopment projects		projects in areas mpervious area will							

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

Using this Practice

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1) Apply 3 inches of compost over subsoil

^{**} Per "Deep Ripping and De-compaction, DEC 2008".

Appendix B

NOI – Notice of Intent (To Be Filed Electronically once MS4 approval obtained) Owner / Operator Certification Form



Owner/Operator Certification Form

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

Project/Site Name: Oak Hill Cemetery 140 N. Highland Ave.										
eNOI Submission Number: HP2-Z1YN-61E7V										
eNOI Submitted by:	er/Operator	✓ SWPPP Preparer	Other							
Certification Statement - Owr	ner/Operator									
I have read or been advised of the per that, under the terms of the permit, the and the corresponding documents wer significant penalties for submitting fals knowing violations. I further understantacknowledgment that I will receive as a days as provided for in the general per that the SWPPP has been developed agreeing to comply with all the terms a submitted.	ere may be reporting the prepared under the information, including that coverage underseased in a result of submitting the implement of the implement in the im	ng requirements. I hereby only direction or supervision uding the possibility of fine ander the general permit willing this NOI and can be astand that, by submitting this nented as the first element of	ertify that this document I am aware that there are and imprisonment for be identified in the long as sixty (60) business NOI, I am acknowledging of construction, and							
Owner/Operator First Name	M.I.	Last Name								
Signature										
09/29/2020										
Date										



Owner/Operator Certification Form

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

Project/Site Name: Oak Hill Cemetery 140 N. Highland Ave.									
eNOI Submission Number: HP2-Z1YN-61E7V									
eNOI Submitted by: Owner/Operator SWPPP Preparer Other									
Certification Statement - Owner/Operator									
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.									
Owner/Operator First Name M.I. Last Name									
Lecto									
Signature									
09/29/2020									
Date									

Appendix C

Stormwater Management and Soil Erosion & Sediment Control Calculations

- Precipitation Frequency & Other Rainfall Data
- HydroCAD PRE Development 25-year storm
- HydroCAD POST Development 25-year storm
- WQv Water Quality Volume Calculation



NOAA Atlas 14, Volume 10, Version 3 Location name: Nyack, New York, USA* Latitude: 41.096°, Longitude: -73.9274° Elevation: 219.81 ft**

vation: 219.81 ft**
source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
Burution	1	2	5	10	25	50	100	200	500	1000
5-min	0.365 (0.288-0.459)	0.429 (0.337-0.540)	0.533 (0.418-0.673)	0.619 (0.483-0.786)	0.738 (0.555-0.974)	0.829 (0.609-1.11)	0.921 (0.654-1.28)	1.02 (0.689-1.46)	1.15 (0.750-1.71)	1.26 (0.797-1.90)
10-min	0.517 (0.408-0.650)	0.608 (0.478-0.764)	0.756 (0.593-0.954)	0.878 (0.685-1.12)	1.05 (0.786-1.38)	1.17 (0.863-1.58)	1.31 (0.927-1.81)	1.44 (0.976-2.06)	1.63 (1.06-2.42)	1.78 (1.13-2.69)
15-min	0.609 (0.479-0.765)	0.715 (0.562-0.899)	0.888 (0.696-1.12)	1.03 (0.805-1.31)	1.23 (0.925-1.62)	1.38 (1.01-1.86)	1.54 (1.09-2.13)	1.70 (1.15-2.43)	1.92 (1.25-2.84)	2.10 (1.33-3.16)
30-min	0.844 (0.665-1.06)	0.989 (0.779-1.25)	1.23 (0.962-1.55)	1.42 (1.11-1.81)	1.69 (1.27-2.23)	1.90 (1.40-2.55)	2.11 (1.50-2.93)	2.33 (1.58-3.33)	2.63 (1.71-3.88)	2.86 (1.81-4.31)
60-min	1.08 (0.851-1.36)	1.26 (0.995-1.59)	1.57 (1.23-1.97)	1.81 (1.41-2.30)	2.16 (1.62-2.84)	2.42 (1.78-3.25)	2.69 (1.90-3.72)	2.96 (2.01-4.23)	3.33 (2.17-4.92)	3.62 (2.29-5.45)
2-hr	1.44 (1.14-1.80)	1.67 (1.32-2.08)	2.04 (1.61-2.55)	2.35 (1.84-2.96)	2.77 (2.10-3.63)	3.10 (2.29-4.13)	3.43 (2.44-4.72)	3.78 (2.57-5.36)	4.25 (2.77-6.24)	4.62 (2.93-6.92)
3-hr	1.67 (1.33-2.07)	1.93 (1.54-2.41)	2.37 (1.88-2.96)	2.73 (2.15-3.43)	3.23 (2.45-4.21)	3.60 (2.67-4.80)	3.99 (2.86-5.49)	4.41 (3.00-6.23)	4.98 (3.26-7.29)	5.44 (3.46-8.12)
6-hr	2.07 (1.66-2.56)	2.44 (1.95-3.01)	3.04 (2.43-3.77)	3.53 (2.81-4.41)	4.22 (3.23-5.49)	4.74 (3.54-6.28)	5.28 (3.82-7.25)	5.88 (4.02-8.26)	6.74 (4.42-9.80)	7.44 (4.75-11.0)
12-hr	2.47 (2.00-3.03)	2.98 (2.41-3.66)	3.82 (3.08-4.71)	4.52 (3.62-5.61)	5.49 (4.23-7.10)	6.21 (4.68-8.21)	6.97 (5.09-9.57)	7.85 (5.38-11.0)	9.14 (6.00-13.2)	10.2 (6.54-15.0)
24-hr	2.85 (2.32-3.48)	3.51 (2.86-4.28)	4.59 (3.72-5.62)	5.48 (4.41-6.75)	6.71 (5.21-8.65)	7.63 (5.79-10.0)	8.61 (6.34-11.8)	9.76 (6.72-13.5)	11.5 (7.55-16.5)	12.9 (8.28-18.9)
2-day	3.26 (2.67-3.94)	4.01 (3.29-4.86)	5.24 (4.28-6.37)	6.26 (5.08-7.66)	7.67 (6.00-9.82)	8.72 (6.66-11.4)	9.84 (7.29-13.4)	11.2 (7.72-15.4)	13.2 (8.70-18.8)	14.8 (9.55-21.5)
3-day	3.56 (2.94-4.30)	4.36 (3.59-5.27)	5.67 (4.65-6.87)	6.75 (5.50-8.22)	8.25 (6.48-10.5)	9.36 (7.18-12.2)	10.5 (7.84-14.3)	12.0 (8.29-16.4)	14.1 (9.35-20.0)	15.9 (10.3-23.0)
4-day	3.83 (3.17-4.60)	4.66 (3.85-5.61)	6.02 (4.96-7.28)	7.15 (5.85-8.69)	8.71 (6.86-11.1)	9.86 (7.59-12.8)	11.1 (8.28-15.0)	12.6 (8.74-17.2)	14.8 (9.84-21.0)	16.7 (10.8-24.1)
7-day	4.54 (3.78-5.43)	5.44 (4.53-6.52)	6.92 (5.73-8.31)	8.15 (6.70-9.84)	9.83 (7.78-12.4)	11.1 (8.57-14.3)	12.4 (9.30-16.7)	14.0 (9.78-19.1)	16.4 (10.9-23.1)	18.4 (11.9-26.4)
10-day	5.23 (4.37-6.23)	6.18 (5.16-7.37)	7.74 (6.44-9.27)	9.04 (7.46-10.9)	10.8 (8.59-13.6)	12.2 (9.42-15.6)	13.6 (10.2-18.1)	15.2 (10.6-20.7)	17.7 (11.8-24.8)	19.7 (12.8-28.1)
20-day	7.33 (6.17-8.67)	8.41 (7.07-9.97)	10.2 (8.53-12.1)	11.7 (9.69-13.9)	13.7 (10.9-17.0)	15.2 (11.8-19.3)	16.8 (12.5-22.0)	18.5 (13.0-24.9)	20.9 (14.0-29.1)	22.8 (14.8-32.4)
30-day	9.11 (7.71-10.7)	10.3 (8.69-12.1)	12.2 (10.3-14.4)	13.8 (11.5-16.4)	16.0 (12.8-19.7)	17.7 (13.7-22.2)	19.4 (14.4-25.1)	21.1 (14.9-28.2)	23.4 (15.8-32.4)	25.2 (16.4-35.6)
45-day	11.3 (9.64-13.3)	12.6 (10.7-14.8)	14.7 (12.4-17.3)	16.4 (13.8-19.5)	18.8 (15.1-23.1)	20.7 (16.1-25.8)	22.5 (16.8-28.9)	24.3 (17.2-32.3)	26.5 (17.9-36.6)	28.2 (18.4-39.7)
60-day	13.2 (11.3-15.5)	14.6 (12.4-17.1)	16.8 (14.2-19.8)	18.6 (15.7-22.0)	21.2 (17.0-25.8)	23.2 (18.1-28.8)	25.1 (18.7-32.0)	26.9 (19.1-35.7)	29.1 (19.7-40.0)	30.7 (20.1-43.1)

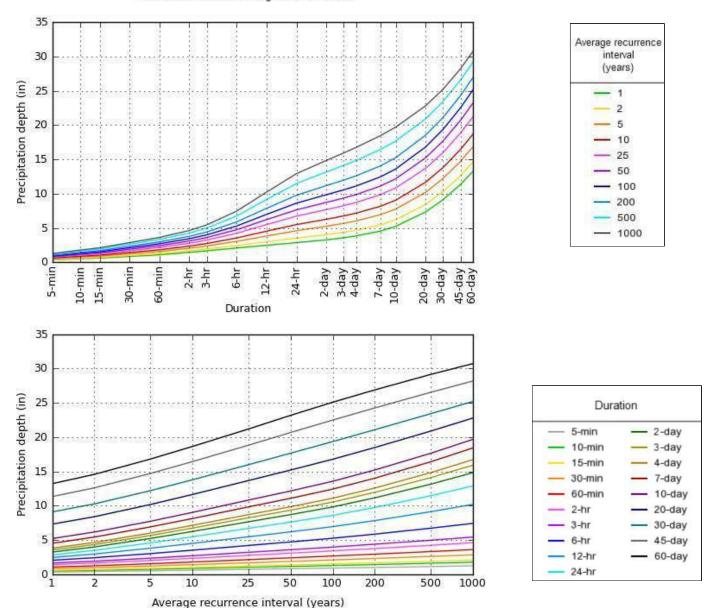
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves Latitude: 41.0960°, Longitude: -73.9274°



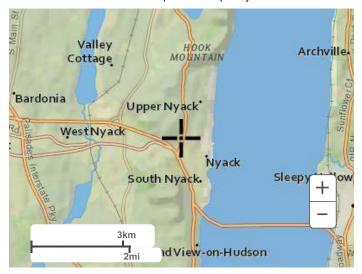
NOAA Atlas 14, Volume 10, Version 3

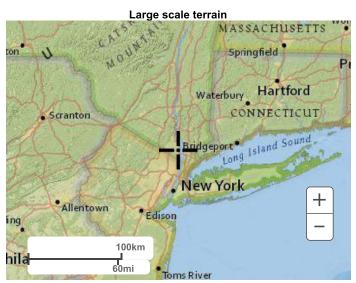
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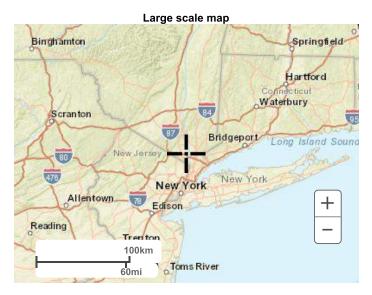
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Maps & aerials

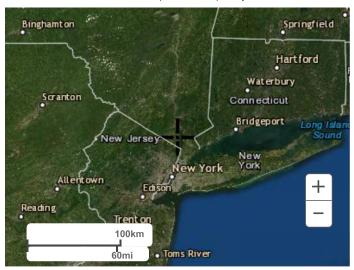
Small scale terrain







Large scale aerial



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National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

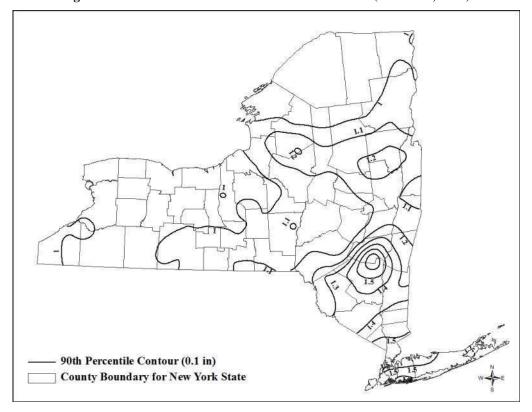
Disclaimer

New York State Stormwater Management Design Manual

Chapter 4: Unified Stormwater Sizing Criteria

Section 4.2 Water Quality Volume (WQv)

Figure 4.1: 90th Percentile Rainfall in New York State (NYSDEC, 2013)



Basis of Design for Water Quality

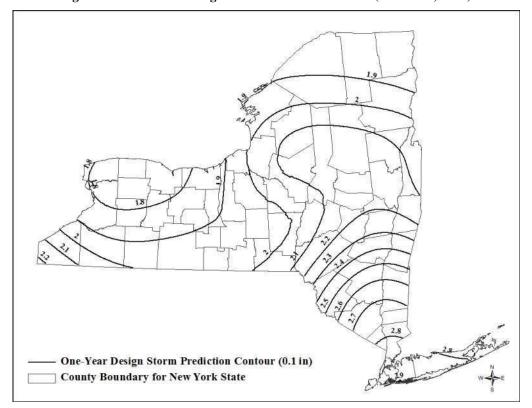
As a basis for design, the following assumptions may be made:

Measuring Impervious Cover: the measured area of a site plan that does not have permanent vegetative or permeable cover shall be considered total impervious cover. Impervious cover is defined as all impermeable surfaces and includes: paved and gravel road surfaces, paved and gravel parking lots, paved driveways, building structures, paved sidewalks, and miscellaneous impermeable structures such as patios, pools, and sheds. Where site size makes direct measurement of impervious cover impractical, the land use/impervious cover relationships presented in Table 4.2 can be used to initially estimate impervious cover. In site specific planning impervious cover must be calculated based the specific proposed impervious cover.

New York State Stormwater Management Design Manual

Chapter 4: Unified Stormwater Sizing Criteria Section 4.5 Overbank Flood Control Criteria (Qp)

Figure 4.2: One-Year Design Storm in New York State (NYSDEC, 2013)



Section 4.5 Overbank Flood Control Criteria (Q_p)

The primary purpose of the overbank flood control sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development (i.e., flow events that exceed the bankfull capacity of the channel, and therefore must spill over into the floodplain).

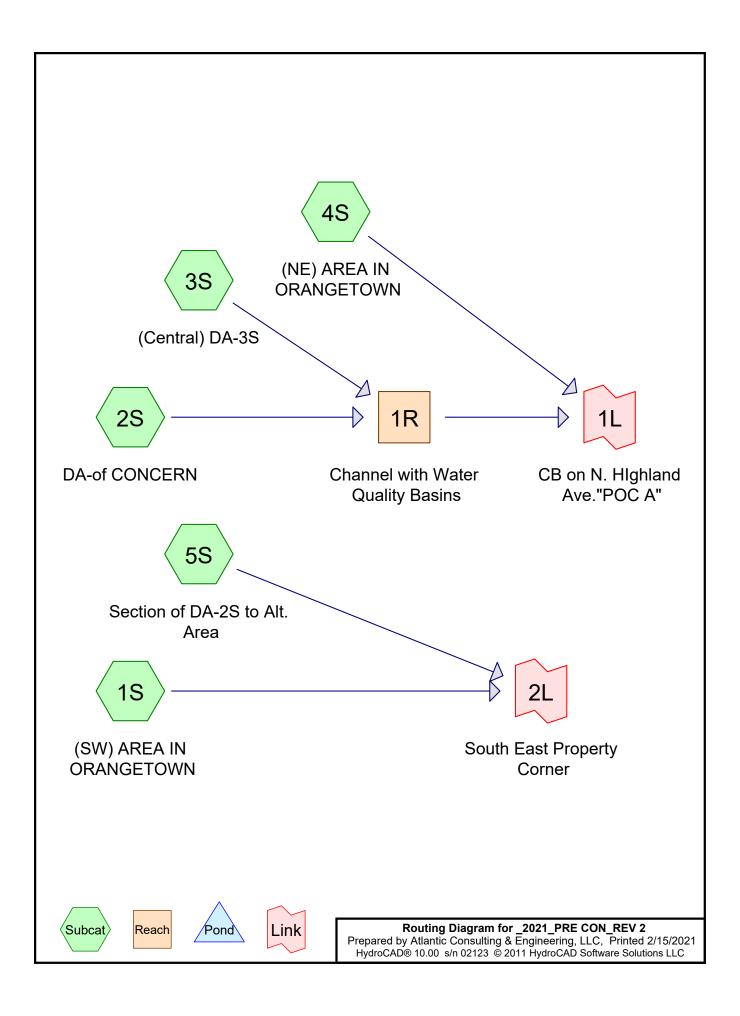
Overbank control requires storage to attenuate the post development 10-year, 24-hour peak discharge rate (Q_p) to predevelopment rates.

The overbank flood control requirement (Q_p) does not apply in certain conditions, including:

- The site discharges directly tidal waters or fifth order (fifth downstream) or larger streams. Refer to Section 4.3 for instructions.
- A downstream analysis reveals that overbank control is not needed (see section 4.10).

Basis for Design of Overbank Flood Control

When addressing the overbank flooding design criteria, the following represent the minimum basis for design:



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Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
129,525	61	>75% Grass cover, Good, HSG B (2S)
858,698	74	>75% Grass cover, Good, HSG C (3S, 5S)
661,502	80	>75% Grass cover, Good, HSG D (1S, 4S)
5,663	98	Unconnected roofs, HSG C (2S)
1,655,388	75	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
129,525	HSG B	2S
864,361	HSG C	2S, 3S, 5S
661,502	HSG D	1S, 4S
0	Other	
1,655,388		TOTAL
		AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	129,525	858,698	661,502	0	1,649,725	>75% Grass cover, Good	1S,
							2S,
							3S,
							4S,
							5S
0	0	5,663	0	0	5,663	Unconnected roofs	2S
0	129,525	864,361	661,502	0	1,655,388	TOTAL AREA	

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: (SW) AREA IN ORANGETOWN Runoff Area=7.698 ac 0.00% Impervious Runoff Depth>4.39" Flow Length=1,339' Slope=0.1200 '/' Tc=41.6 min CN=80 Runoff=19.18 cfs 122,773 cf

Subcatchment 2S: DA-of CONCERNRunoff Area=135,188 sf 4.19% Impervious Runoff Depth>2.55"
Flow Length=2,236' Slope=0.1500 '/' Tc=55.0 min UI Adjusted CN=62 Runoff=3.78 cfs 28,769 cf

Subcatchment3S: (Central) DA-3S Runoff Area=6.231 ac 0.00% Impervious Runoff Depth>3.77" Flow Length=1,261' Slope=0.2100'/' Tc=30.0 min CN=74 Runoff=15.63 cfs 85,227 cf

Subcatchment 4S: (NE) AREA IN ORANGETOWN Runoff Area=7.488 ac 0.00% Impervious Runoff Depth>4.40" Flow Length=1,438' Slope=0.2200 '/' Tc=29.1 min CN=80 Runoff=22.15 cfs 119,722 cf

Subcatchment 5S: Section of DA-2S to Alt. Area

Runoff Area=13.482 ac 0.00% Impervious Runoff Depth>3.73"

Tc=70.0 min CN=74 Runoff=21.43 cfs 182,735 cf

Reach 1R: Channel with Water QualityAvg. Flow Depth=1.03' Max Vel=9.03 fps Inflow=18.06 cfs 113,995 cf

n=0.040 L=480.0' S=0.1347'/ Capacity=155.91 cfs Outflow=17.99 cfs 113,900 cf

Link 1L: CB on N. HIghland Ave."POC A"

Inflow=39.71 cfs 233,622 cf
Primary=39.71 cfs 233,622 cf

Link 2L: South East Property Corner

Inflow=36.63 cfs 305,508 cf
Primary=36.63 cfs 305,508 cf

Total Runoff Area = 1,655,388 sf Runoff Volume = 539,226 cf Average Runoff Depth = 3.91" 99.66% Pervious = 1,649,725 sf 0.34% Impervious = 5,663 sf

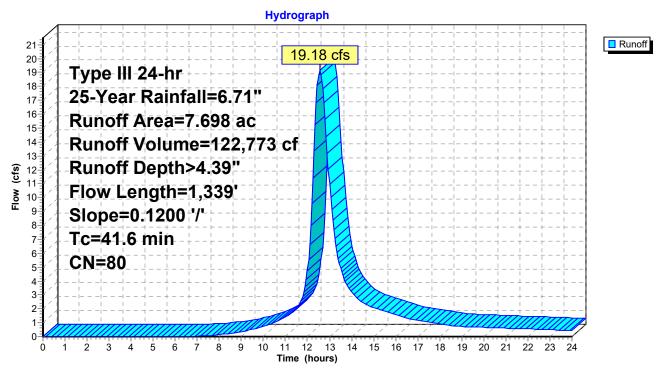
Summary for Subcatchment 1S: (SW) AREA IN ORANGETOWN

Runoff = 19.18 cfs @ 12.56 hrs, Volume= 122,773 cf, Depth> 4.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

Area	(ac) C	N Des	cription						
7.	698 8	30 >75	% Grass co	ver, Good,	HSG D				
7.	7.698 100.00% Pervious Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
30.0				•	Direct Entry, Overland Flow				
11.6	1,339	0.1200	1.93		Lag/CN Method, Burial Grounds C-D Soil				
41.6	1,339	Total							

Subcatchment 1S: (SW) AREA IN ORANGETOWN



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Hydrograph for Subcatchment 1S: (SW) AREA IN ORANGETOWN

		_		ı <u> </u>		_	
Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	2.92	10.99
0.25	0.02	0.00	0.00	13.25	5.15	3.02	7.06
0.50	0.03	0.00	0.00	13.50	5.26	3.12	4.94
0.75	0.05	0.00	0.00	13.75	5.35	3.20	3.82
1.00	0.07	0.00	0.00	14.00	5.44	3.28	3.20
1.25	0.08	0.00	0.00	14.25	5.52	3.35	2.78
1.50	0.10	0.00	0.00	14.50	5.60	3.42	2.47
1.75	0.12	0.00	0.00	14.75	5.67	3.48	2.26
2.00	0.13	0.00	0.00	15.00	5.73	3.54	2.10
2.25 2.50	0.15	0.00	0.00	15.25	5.79	3.59	1.96
2.75	0.17	$0.00 \\ 0.00$	0.00	15.50 15.75	5.85 5.90	3.64 3.69	1.83 1.69
3.00	0.19		0.00	16.00			
3.00	0.21 0.23	$0.00 \\ 0.00$	$0.00 \\ 0.00$	16.00	5.95 5.99	3.73 3.77	1.56 1.43
3.23	0.25	0.00	0.00	16.23	6.03	3.77	1.43
3.75	0.23	0.00	0.00	16.75	6.07	3.84	1.31
4.00	0.27	0.00	0.00	17.00	6.10	3.87	1.15
4.25	0.29	0.00	0.00	17.00	6.14	3.91	1.13
4.50	0.31	0.00	0.00	17.23	6.17	3.93	1.03
4.75	0.36	0.00	0.00	17.75	6.20	3.96	0.96
5.00	0.38	0.00	0.00	18.00	6.23	3.99	0.90
5.25	0.38	0.00	0.00	18.25	6.25	4.01	0.85
5.50	0.41	0.00	0.00	18.50	6.28	4.03	0.80
5.75	0.46	0.00	0.00	18.75	6.30	4.06	0.76
6.00	0.48	0.00	0.00	19.00	6.33	4.08	0.74
6.25	0.51	0.00	0.00	19.25	6.35	4.10	0.72
6.50	0.54	0.00	0.00	19.50	6.38	4.12	0.70
6.75	0.57	0.00	0.01	19.75	6.40	4.14	0.68
7.00	0.61	0.00	0.02	20.00	6.42	4.16	0.66
7.25	0.64	0.01	0.05	20.25	6.44	4.18	0.64
7.50	0.68	0.01	0.07	20.50	6.46	4.20	0.63
7.75	0.72	0.02	0.11	20.75	6.48	4.22	0.61
8.00	0.76	0.03	0.14	21.00	6.50	4.24	0.60
8.25	0.81	0.03	0.18	21.25	6.52	4.26	0.59
8.50	0.86	0.05	0.23	21.50	6.54	4.28	0.57
8.75	0.92	0.06	0.29	21.75	6.56	4.29	0.56
9.00	0.98	0.08	0.36	22.00	6.58	4.31	0.55
9.25	1.04	0.10	0.44	22.25	6.60	4.33	0.53
9.50	1.11	0.12	0.53	22.50	6.62	4.34	0.52
9.75	1.19	0.15	0.63	22.75	6.63	4.36	0.51
10.00	1.27	0.18	0.74	23.00	6.65	4.37	0.49
10.25	1.36	0.22	0.86	23.25	6.67	4.39	0.48
10.50	1.45	0.26	1.00	23.50	6.68	4.40	0.47
10.75	1.56	0.32	1.18	23.75	6.70	4.41	0.45
11.00	1.68	0.38	1.40	24.00	6.71	4.43	0.44
11.25	1.82	0.46	1.64				
11.50	2.00	0.56	2.00				
11.75	2.38	0.81	2.66				
12.00	3.35	1.52	4.73				
12.25	4.33	2.31	11.41				
12.50	4.71	2.64	18.83				
12.75	4.89	2.80	16.80				

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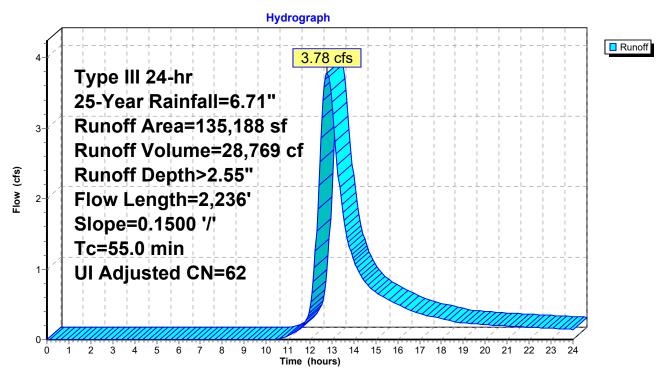
Summary for Subcatchment 2S: DA-of CONCERN

Runoff = 3.78 cfs @ 12.78 hrs, Volume= 28,769 cf, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

	A	rea (sf)	CN	Description		
		5,663	98	Unconnecte	d roofs, HS	GC
	1	29,525	61	>75% Grass	cover, Goo	od, HSG B
	1	35,188	63	Weighted A	verage, UI	Adjusted $CN = 62$
	1	29,525		95.81% Per	vious Area	
		5,663		4.19% Impe	rvious Area	1
		5,663		100.00% Uı	nconnected	
	Tc	Length	Slope	•	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	25.0	2,236	0.1500	1.49		Lag/CN Method, Overland Flow B-D-C Soils
_	30.0					Direct Entry, Overland Flow
	55.0	2 236	Total			

Subcatchment 2S: DA-of CONCERN



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Hydrograph for Subcatchment 2S: DA-of CONCERN

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	1.46	3.37
0.25	0.02	0.00	0.00	13.25	5.15	1.53	2.47
0.50	0.03	0.00	0.00	13.50	5.26	1.60	1.80
0.75	0.05	0.00	0.00	13.75	5.35	1.66	1.38
1.00	0.07	0.00	0.00	14.00	5.44	1.72	1.11
1.25	0.08	0.00	0.00	14.25	5.52	1.77	0.95
1.50	0.10	0.00	0.00	14.50	5.60	1.82	0.83
1.75	0.12	0.00	0.00	14.75	5.67	1.87	0.74
2.00	0.13	0.00	0.00	15.00	5.73	1.91	0.68
2.25	0.15	0.00	0.00	15.25	5.79	1.95	0.62
2.50	0.17	0.00	0.00	15.50	5.85	1.99	0.58
2.75	0.19	0.00	0.00	15.75	5.90	2.02	0.54
3.00	0.21	0.00	0.00	16.00	5.95	2.05	0.50
3.25	0.23	0.00	0.00	16.25	5.99	2.08	0.46
3.50	0.25	0.00	0.00	16.50	6.03	2.11	0.43
3.75	0.27	0.00	0.00	16.75	6.07	2.14	0.40
4.00	0.29	0.00	0.00	17.00	6.10	2.16	0.37
4.25	0.31	0.00	0.00	17.25	6.14	2.18	0.35
4.50	0.33	0.00	0.00	17.50	6.17	2.21	0.33
4.75	0.36	0.00	0.00	17.75	6.20	2.23	0.31
5.00	0.38	0.00	0.00	18.00	6.23	2.25	0.29
5.25	0.41	0.00	0.00	18.25	6.25	2.27	0.28
5.50	0.43	0.00	0.00	18.50	6.28	2.28	0.26
5.75	0.46	0.00	0.00	18.75	6.30	2.30	0.25
6.00	0.48	0.00	0.00	19.00	6.33	2.32	0.24
6.25	0.51	0.00	0.00	19.25	6.35	2.34	0.23
6.50	0.54	0.00	0.00	19.50	6.38	2.35	0.22
6.75	0.57	0.00	0.00	19.75	6.40	2.37	0.22
7.00	0.61	0.00	0.00	20.00	6.42	2.38	0.21
7.25	0.64	0.00	0.00	20.25	6.44	2.40	0.21
7.50	0.68	0.00	0.00	20.50	6.46	2.41	0.20
7.75	0.72	0.00	0.00	20.75	6.48	2.43	0.20
8.00	0.76	0.00	0.00	21.00	6.50	2.44	0.19
8.25	0.81	0.00	0.00	21.25	6.52	2.46	0.19
8.50	0.86	0.00	0.00	21.50	6.54	2.47	0.18
8.75	0.92	0.00	0.00	21.75	6.56	2.48	0.18
9.00	0.98	0.00	0.00	22.00	6.58	2.50	0.17
9.25	1.04	0.00	0.00	22.25	6.60	2.51	0.17
9.50	1.11	0.00	0.00	22.50	6.62	2.52	0.17
9.75	1.19	0.00	0.00	22.75	6.63	2.53	0.16
10.00	1.27	0.00	0.00	23.00	6.65	2.55	0.16
10.25	1.36	0.00	0.00	23.25	6.67	2.56	0.15
10.50	1.45	0.01	0.01	23.50	6.68	2.57	0.15
10.75	1.56	0.02	0.02	23.75	6.70	2.58	0.15
11.00	1.68	0.03	0.05	24.00	6.71	2.59	0.14
11.25	1.82	0.05	0.09				
11.50	2.00	0.09	0.14				
11.75	2.38	0.18	0.22				
12.00	3.35	0.55	0.45				
12.25	4.33	1.04	1.26				
12.50	4.71	1.26	2.85				
12.75	4.89	1.37	3.77				

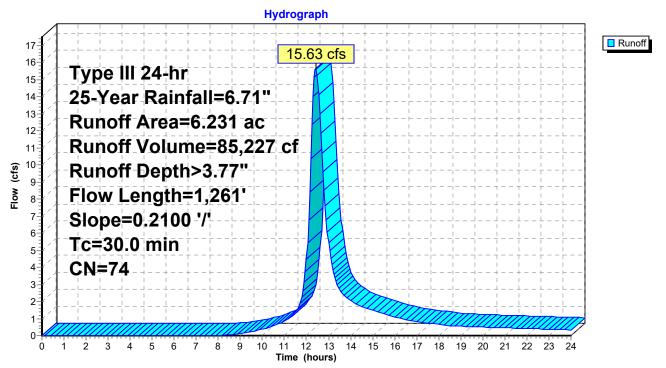
Summary for Subcatchment 3S: (Central) DA-3S

Runoff = 15.63 cfs @ 12.42 hrs, Volume= 85,227 cf, Depth> 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

_	Area	(ac) C	N Des	cription		
	6.	231 7	74 >75	% Grass co	ver, Good,	HSG C
	6.	231	100.	00% Pervio	ous Area	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
•	10.0	1,261	0.2100	2.11		Lag/CN Method, Burial Grounds B-D-C Soils
_	20.0					Direct Entry, Overland Flow
	30.0	1 261	Total			

Subcatchment 3S: (Central) DA-3S



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Hydrograph for Subcatchment 3S: (Central) DA-3S

		_		ı <u> </u>		_	
Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	2.39	5.46
0.25	0.02	0.00	0.00	13.25	5.15	2.48	3.60
0.50	0.03	0.00	0.00	13.50	5.26	2.57	2.73
0.75	0.05	0.00	0.00	13.75	5.35	2.65	2.32
1.00	0.07	0.00	0.00	14.00	5.44	2.72	2.07
1.25	0.08	0.00	0.00	14.25	5.52	2.79	1.87
1.50	0.10	0.00	0.00	14.50	5.60	2.85	1.71
1.75	0.12	0.00	0.00	14.75	5.67	2.91	1.59
2.00	0.13	0.00	0.00	15.00	5.73	2.96	1.49
2.25 2.50	0.15	0.00	0.00	15.25	5.79	3.01	1.40 1.30
2.75	0.17	0.00	0.00	15.50	5.85	3.06	
3.00	0.19	0.00	0.00	15.75	5.90	3.10	1.20 1.10
3.00	0.21 0.23	$0.00 \\ 0.00$	$0.00 \\ 0.00$	16.00 16.25	5.95 5.99	3.14 3.17	1.10
3.50	0.25	0.00	0.00	16.23	6.03	3.17	0.93
3.75	0.23	0.00	0.00	16.75	6.07	3.24	0.93
4.00	0.27	0.00	0.00	17.00	6.10	3.24	0.83
4.00	0.29	0.00	0.00	17.00	6.14	3.27	0.83
4.50	0.31	0.00	0.00	17.23	6.17	3.33	0.78
4.75	0.36	0.00	0.00	17.75	6.20	3.35	0.74
5.00	0.38	0.00	0.00	18.00	6.23	3.38	0.70
5.25	0.38	0.00	0.00	18.25	6.25	3.40	0.61
5.50	0.41	0.00	0.00	18.50	6.28	3.42	0.58
5.75	0.46	0.00	0.00	18.75	6.30	3.44	0.56
6.00	0.48	0.00	0.00	19.00	6.33	3.46	0.55
6.25	0.51	0.00	0.00	19.25	6.35	3.48	0.53
6.50	0.54	0.00	0.00	19.50	6.38	3.50	0.52
6.75	0.57	0.00	0.00	19.75	6.40	3.52	0.51
7.00	0.61	0.00	0.00	20.00	6.42	3.54	0.49
7.25	0.64	0.00	0.00	20.25	6.44	3.56	0.48
7.50	0.68	0.00	0.00	20.50	6.46	3.58	0.47
7.75	0.72	0.00	0.00	20.75	6.48	3.60	0.46
8.00	0.76	0.00	0.00	21.00	6.50	3.61	0.45
8.25	0.81	0.00	0.02	21.25	6.52	3.63	0.44
8.50	0.86	0.01	0.05	21.50	6.54	3.65	0.43
8.75	0.92	0.01	0.08	21.75	6.56	3.66	0.42
9.00	0.98	0.02	0.12	22.00	6.58	3.68	0.41
9.25	1.04	0.03	0.17	22.25	6.60	3.69	0.40
9.50	1.11	0.04	0.23	22.50	6.62	3.71	0.39
9.75	1.19	0.06	0.30	22.75	6.63	3.72	0.38
10.00	1.27	0.08	0.38	23.00	6.65	3.74	0.37
10.25	1.36	0.10	0.46	23.25	6.67	3.75	0.36
10.50	1.45	0.13	0.57	23.50	6.68	3.76	0.35
10.75	1.56	0.17	0.70	23.75	6.70	3.78	0.34
11.00	1.68	0.21	0.86	24.00	6.71	3.79	0.33
11.25	1.82	0.27	1.04				
11.50	2.00	0.35	1.36				
11.75	2.38	0.54	1.99				
12.00 12.25	3.35	1.14	4.48				
12.25	4.33 4.71	1.84 2.14	12.37				
12.30	4.71	2.14	14.99 9.59				
14.73	7.07	2.20	7.33	l			

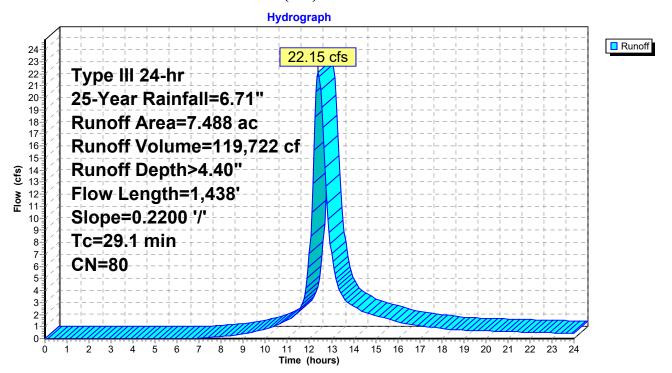
Summary for Subcatchment 4S: (NE) AREA IN ORANGETOWN

Runoff = 22.15 cfs @ 12.40 hrs, Volume= 119,722 cf, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

_	Area	(ac) C	N Des	cription		
	7.	488 8	30 >75	% Grass co	ver, Good,	HSG D
	7.	488	100	00% Pervi	ous Area	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	9.1	1,438	0.2200	2.65	•	Lag/CN Method, Forest/Burial Grounds D-C Soils
_	20.0					Direct Entry, Overland Flow
	29.1	1 438	Total			

Subcatchment 4S: (NE) AREA IN ORANGETOWN



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Hydrograph for Subcatchment 4S: (NE) AREA IN ORANGETOWN

(hours) (inches) (inches) (cfs) (hours) (inches) (inches) (cfs) (0.00	Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
0.25 0.02 0.00 0.00 13.25 5.15 3.02 4.63 0.50 0.03 0.00 0.00 13.50 5.26 3.12 3.53 0.75 0.05 0.00 0.00 14.00 5.44 3.28 2.69 1.25 0.08 0.00 0.00 14.50 5.60 3.42 2.21 1.50 0.10 0.00 0.00 14.50 5.60 3.42 2.21 1.75 0.12 0.00 0.00 14.50 5.60 3.42 2.21 1.75 0.12 0.00 0.00 15.00 5.60 3.42 2.21 1.75 0.12 0.00 0.00 15.05 5.67 3.48 2.06 2.00 0.13 0.00 0.00 15.25 5.79 3.59 1.80 2.25 0.17 0.00 0.00 15.25 5.79 3.59 1.80 2.50 0.17 0.00 <	(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.50 0.03 0.00 0.00 13.50 5.26 3.12 3.53 0.75 0.05 0.00 0.00 13.75 5.35 3.20 3.00 1.00 0.07 0.00 0.00 14.00 5.44 3.28 2.69 1.25 0.08 0.00 0.00 14.05 5.60 3.42 2.21 1.75 0.12 0.00 0.00 14.75 5.67 3.48 2.06 2.00 0.13 0.00 0.00 15.00 5.73 3.54 1.93 2.25 0.15 0.00 0.00 15.50 5.85 3.64 1.68 2.75 0.19 0.00 0.00 15.50 5.85 3.64 1.68 2.75 0.19 0.00 0.00 16.00 5.95 3.73 1.42 3.25 0.23 0.00 0.00 16.02 5.99 3.77 1.29 3.50 0.25 0.00 <								
0.75								
1.00								
1.25								
1.50 0.10 0.00 0.00 14.50 5.60 3.42 2.21 1.75 0.12 0.00 0.00 14.75 5.67 3.48 2.06 2.00 0.13 0.00 0.00 15.00 5.73 3.54 1.93 2.25 0.15 0.00 0.00 15.25 5.79 3.59 1.80 2.50 0.17 0.00 0.00 15.75 5.90 3.64 1.68 2.75 0.19 0.00 0.00 16.00 5.95 3.73 1.42 3.25 0.23 0.00 0.00 16.25 5.99 3.77 1.29 3.75 0.27 0.00 0.00 16.50 6.03 3.81 1.19 3.75 0.27 0.00 0.00 17.00 6.10 3.87 1.06 4.25 0.31 0.00 0.00 17.55 6.07 3.84 1.12 4.00 0.29 0.00 <								
1.75 0.12 0.00 0.00 14.75 5.67 3.48 2.06 2.00 0.13 0.00 0.00 15.00 5.73 3.54 1.93 2.25 0.17 0.00 0.00 15.25 5.79 3.59 1.80 2.75 0.19 0.00 0.00 15.75 5.90 3.69 1.55 3.00 0.21 0.00 0.00 16.00 5.95 3.73 1.42 3.25 0.23 0.00 0.00 16.50 6.03 3.81 1.19 3.50 0.25 0.00 0.00 16.55 6.07 3.84 1.12 4.00 0.29 0.00 0.00 16.75 6.07 3.84 1.12 4.00 0.29 0.00 0.00 17.00 6.10 3.87 1.06 4.25 0.31 0.00 0.00 17.25 6.14 3.91 1.01 4.75 0.36 0.00 <								
2.00 0.13 0.00 0.00 15.00 5.73 3.54 1.93 2.25 0.15 0.00 0.00 15.25 5.79 3.59 1.80 2.50 0.17 0.00 0.00 15.55 5.85 3.64 1.68 2.75 0.19 0.00 0.00 15.75 5.90 3.69 1.55 3.00 0.21 0.00 0.00 16.00 5.95 3.73 1.42 3.25 0.23 0.00 0.00 16.25 5.99 3.77 1.29 3.50 0.27 0.00 0.00 16.55 6.07 3.84 1.12 4.00 0.29 0.00 0.00 17.00 6.10 3.87 1.06 4.25 0.31 0.00 0.00 17.25 6.14 3.91 1.01 4.50 0.33 0.00 0.00 17.75 6.20 3.96 0.89 5.00 0.38 0.00 <								
2.25 0.15 0.00 0.00 15.25 5.79 3.59 1.80 2.50 0.17 0.00 0.00 15.50 5.85 3.64 1.68 2.75 0.19 0.00 0.00 15.75 5.90 3.69 1.55 3.00 0.21 0.00 0.00 16.00 5.95 3.73 1.42 3.25 0.23 0.00 0.00 16.50 6.03 3.81 1.19 3.75 0.27 0.00 0.00 16.55 6.07 3.84 1.12 4.00 0.29 0.00 0.00 17.00 6.10 3.87 1.06 4.25 0.31 0.00 0.00 17.25 6.14 3.91 1.01 4.50 0.33 0.00 0.00 17.75 6.20 3.96 0.89 5.00 0.38 0.00 0.00 18.00 6.23 3.99 0.84 5.25 0.41 0.00 <					14.75			
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11.50 2.00 0.56 2.28 11.75 2.38 0.81 3.25 12.00 3.35 1.52 7.06 12.25 4.33 2.31 18.39 12.50 4.71 2.64 20.67					24.00	6.71	4.43	0.42
11.75 2.38 0.81 3.25 12.00 3.35 1.52 7.06 12.25 4.33 2.31 18.39 12.50 4.71 2.64 20.67								
12.00 3.35 1.52 7.06 12.25 4.33 2.31 18.39 12.50 4.71 2.64 20.67								
12.25								
12.50 4.71 2.64 20.67								
12./5 4.89 2.80 12.04								
	12./5	4.89	2.80	12.64				

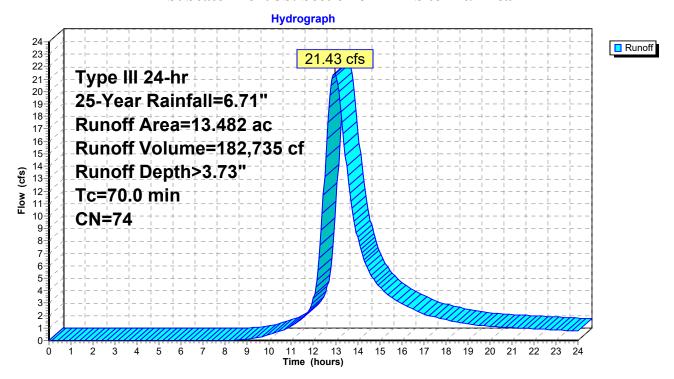
Summary for Subcatchment 5S: Section of DA-2S to Alt. Area

Runoff = 21.43 cfs @ 12.95 hrs, Volume= 182,735 cf, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

Area	(ac)	CN	Desc	cription		
13.	.482	74	>759	% Grass co	ver, Good,	HSG C
13.	.482		100.	00% Pervi	ous Area	
Tc (min)	Lengt (fee		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
70.0						Direct Entry, Overland Flow

Subcatchment 5S: Section of DA-2S to Alt. Area



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Prepared by Atlantic Consulting & Engineering, LLC
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Hydrograph for Subcatchment 5S: Section of DA-2S to Alt. Area

Time	Dragin	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	Precip. (inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	2.39	21.36
0.00	0.00	0.00	0.00	13.00	5.15	2.39	18.40
0.23	0.02	0.00	0.00	13.23	5.13	2.48	13.99
0.30	0.05	0.00	0.00	13.75	5.35	2.65	10.60
1.00	0.03	0.00	0.00	14.00	5.44	2.72	8.29
1.25	0.07	0.00	0.00	14.25	5.52	2.72	6.74
1.50	0.10	0.00	0.00	14.23	5.60	2.79	5.64
1.75	0.10	0.00	0.00	14.75	5.67	2.83	4.86
2.00	0.12	0.00	0.00	15.00	5.73	2.96	4.29
2.25	0.15	0.00	0.00	15.25	5.79	3.01	3.85
2.50	0.13	0.00	0.00	15.50	5.85	3.06	3.52
2.75	0.17	0.00	0.00	15.75	5.90	3.10	3.22
3.00	0.21	0.00	0.00	16.00	5.95	3.14	2.95
3.25	0.23	0.00	0.00	16.25	5.99	3.17	2.72
3.50	0.25	0.00	0.00	16.50	6.03	3.21	2.50
3.75	0.27	0.00	0.00	16.75	6.07	3.24	2.30
4.00	0.29	0.00	0.00	17.00	6.10	3.27	2.13
4.25	0.31	0.00	0.00	17.25	6.14	3.30	1.99
4.50	0.33	0.00	0.00	17.50	6.17	3.33	1.87
4.75	0.36	0.00	0.00	17.75	6.20	3.35	1.76
5.00	0.38	0.00	0.00	18.00	6.23	3.38	1.66
5.25	0.41	0.00	0.00	18.25	6.25	3.40	1.56
5.50	0.43	0.00	0.00	18.50	6.28	3.42	1.47
5.75	0.46	0.00	0.00	18.75	6.30	3.44	1.38
6.00	0.48	0.00	0.00	19.00	6.33	3.46	1.31
6.25	0.51	0.00	0.00	19.25	6.35	3.48	1.26
6.50	0.54	0.00	0.00	19.50	6.38	3.50	1.21
6.75	0.57	0.00	0.00	19.75	6.40	3.52	1.18
7.00	0.61	0.00	0.00	20.00	6.42	3.54	1.14
7.25	0.64	0.00	0.00	20.25	6.44	3.56	1.11
7.50	0.68	0.00	0.00	20.50	6.46	3.58	1.08
7.75	0.72	0.00	0.00	20.75	6.48	3.60	1.05
8.00	0.76	0.00	0.00	21.00	6.50	3.61	1.03
8.25	0.81	0.00	0.01	21.25	6.52	3.63	1.00
8.50	0.86	0.01	0.02	21.50	6.54	3.65	0.98
8.75	0.92	0.01	0.05	21.75	6.56	3.66	0.96
9.00	0.98	0.02	0.10	22.00	6.58	3.68	0.94
9.25	1.04	0.03	0.17	22.25	6.60	3.69	0.91
9.50	1.11	0.04	0.25	22.50	6.62	3.71	0.89
9.75	1.19	0.06	0.35	22.75	6.63	3.72	0.87
10.00	1.27	0.08	0.47	23.00	6.65	3.74	0.85
10.25	1.36	0.10	0.61	23.25	6.67	3.75	0.83
10.50	1.45	0.13	0.77	23.50	6.68	3.76	0.81
10.75	1.56	0.17	0.95	23.75	6.70	3.78	0.79
11.00	1.68	0.21	1.18	24.00	6.71	3.79	0.76
11.25	1.82	0.27	1.45				
11.50	2.00	0.35	1.79				
11.75	2.38	0.54	2.29				
12.00	3.35	1.14 1.84	3.37				
12.25 12.50	4.33 4.71	2.14	6.58 13.17				
12.30	4.71	2.14	13.17 19.73				
12.73	4.09	2.28	19./3				

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Summary for Reach 1R: Channel with Water Quality Basins

Inflow Area = 406,610 sf, 1.39% Impervious, Inflow Depth > 3.36" for 25-Year event

Inflow 18.06 cfs @ 12.45 hrs, Volume= 113,995 cf

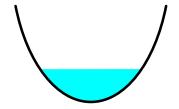
Outflow 17.99 cfs @ 12.48 hrs, Volume= 113,900 cf, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Max. Velocity= 9.03 fps, Min. Travel Time= 0.9 min

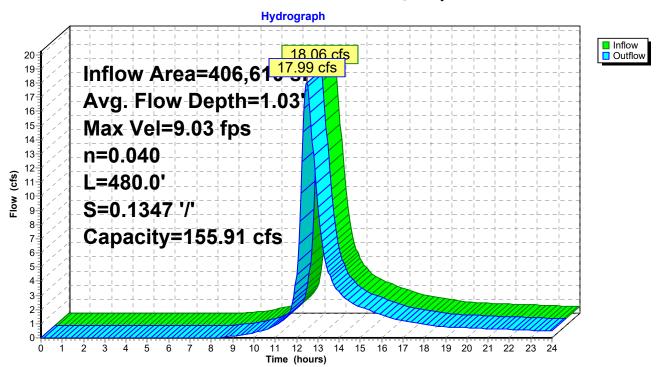
Avg. Velocity = 4.11 fps, Avg. Travel Time= 1.9 min

Peak Storage= 959 cf @ 12.46 hrs Average Depth at Peak Storage= 1.03' Bank-Full Depth= 3.00' Flow Area= 10.0 sf, Capacity= 155.91 cfs

5.00' x 3.00' deep Parabolic Channel, n= 0.040 Earth, cobble bottom, clean sides Length= 480.0' Slope= 0.1347 '/' Inlet Invert= 290.00', Outlet Invert= 225.36'

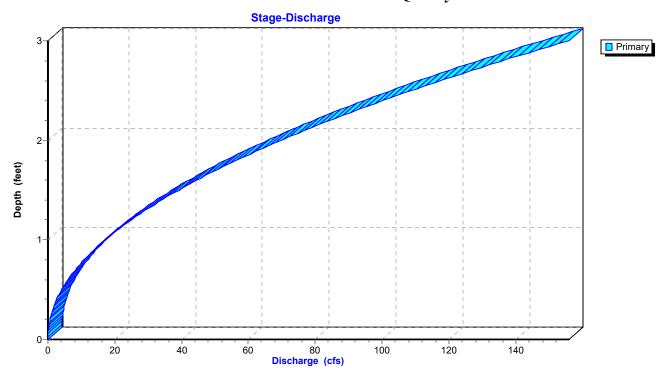


Reach 1R: Channel with Water Quality Basins



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Reach 1R: Channel with Water Quality Basins



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Hydrograph for Reach 1R: Channel with Water Quality Basins

Time	Inflow	Storage	Elevation	Outflow
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)
0.00	0.00	0	290.00	0.00
0.50	0.00	0	290.00	0.00
1.00	0.00	0	290.00	0.00
1.50	0.00	0	290.00	0.00
2.00	0.00	0	290.00	0.00
2.50	0.00	0	290.00	0.00
3.00	0.00	0	290.00	0.00
3.50	0.00	0	290.00	0.00
4.00	0.00	0	290.00	0.00
4.50	0.00	0	290.00	0.00
5.00	0.00	0	290.00	0.00
5.50	0.00	0	290.00	0.00
6.00	0.00	0	290.00	0.00
6.50	0.00	0	290.00	0.00
7.00	0.00	0	290.00	0.00
7.50	0.00	0	290.00	0.00
8.00	0.00	1	290.00	0.00
8.50	0.05	12	290.05	0.04
9.00	0.12	26	290.09	0.11
9.50	0.23	42	290.13	0.22
10.00	0.38	59	290.16	0.36
10.50	0.57	79	290.19	0.55
11.00	0.91	110	290.24	0.87
11.50	1.50	157	290.31	1.43
12.00	4.92	359	290.53	4.43
12.50	17.85	954	291.02	17.95
13.00	8.83	578	290.73	9.24
13.50	4.53	356	290.53	4.67
14.00	3.18	275	290.45	3.24
14.50	2.54	233	290.40	2.57
15.00	2.17	209	290.37	2.19
15.50	1.88	188	290.35	1.90
16.00	1.61	169	290.32	1.63
16.50	1.36	150	290.30	1.37
17.00	1.20	137	290.28	1.21
17.50	1.07	126	290.27	1.08
18.00	0.95	116	290.25	0.96
18.50	0.84	106	290.24	0.85
19.00	0.78	101	290.23	0.79
19.50	0.74	97	290.22	0.74
20.00	0.70	94	290.22	0.71
20.50	0.67	90	290.21	0.67
21.00	0.64	88	290.21	0.64
21.50	0.61	85	290.20	0.61
22.00	0.58	82	290.20	0.59
22.50	0.56	79	290.19	0.56
23.00	0.53	76	290.19	0.53
23.50	0.50	74	290.18	0.50
24.00	0.47	71	290.18	0.47

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Stage-Discharge for Reach 1R: Channel with Water Quality Basins

			•					
Elevation		Discharge	Elevation		Discharge	Elevation		Discharge
(feet)	(ft/sec)	(cfs)	(feet)	(ft/sec)	(cfs)	(feet)	(ft/sec)	(cfs)
290.00	0.00	0.00	291.04	9.10	18.58	292.08	13.06	75.42
290.02	0.67	0.01	291.06	9.20	19.32	292.10	13.13	76.87
290.04	1.19	0.02	291.08	9.29	20.07	292.12	13.19	78.34
290.06	1.57	0.04	291.10	9.38	20.84	292.14	13.25	79.82
290.08	1.89	0.09	291.12	9.48	21.62	292.16	13.31	81.31
290.10	2.19	0.14	291.14	9.57	22.41	292.18	13.37	82.82
290.12	2.47	0.20	291.16	9.66	23.22	292.20	13.43	84.35
290.14	2.72	0.28	291.18	9.75	24.05	292.22	13.49	85.88
290.16	2.97	0.37	291.20	9.83	24.88	292.24	13.55	87.43
290.18	3.20	0.47	291.22	9.92	25.73	292.26	13.61	88.99
290.20	3.42	0.59	291.24	10.01	26.60	292.28	13.67	90.56
290.22	3.63	0.72	291.26	10.09	27.48	292.30	13.73	92.15
290.24	3.84	0.87	291.28	10.18	28.37	292.32	13.78	93.75
290.26	4.03	1.03	291.30	10.26	29.28	292.34	13.84	95.36
290.28	4.22	1.21	291.32	10.35	30.20	292.36	13.90	96.99
290.30	4.40	1.39	291.34	10.43	31.14	292.38	13.96	98.63
290.32	4.58	1.60	291.36	10.51	32.09	292.40	14.01	100.28
290.34	4.75	1.82	291.38	10.59	33.05	292.42	14.07	101.95
290.36	4.92	2.05	291.40	10.67	34.03	292.44	14.13	103.63
290.38	5.09	2.30	291.42	10.75	35.02	292.46	14.18	105.31
290.40	5.25	2.56	291.44	10.83	36.02	292.48	14.24	107.02
290.42	5.41	2.83	291.46	10.91	37.04	292.50	14.29	108.74
290.44	5.56	3.13	291.48	10.99	38.08	292.52	14.35	110.47
290.46	5.71	3.43	291.50	11.06	39.12	292.54	14.40	112.22
290.48	5.85	3.75	291.52	11.14	40.18	292.56	14.46	113.97
290.50	6.00	4.08	291.54	11.22	41.26	292.58	14.51	115.74
290.52	6.14	4.43	291.56	11.29	42.34	292.60	14.57	117.53
290.54	6.28	4.79	291.58	11.37	43.45	292.62	14.62	119.33
290.56	6.41	5.17	291.60	11.44	44.56	292.64	14.67	121.13
290.58	6.54	5.57	291.62	11.51	45.69	292.66	14.73	122.96
290.60	6.67	5.97	291.64	11.59	46.83	292.68	14.78	124.79
290.62	6.80	6.39	291.66	11.66	47.99	292.70	14.83	126.64
290.64	6.93	6.83	291.68	11.73	49.16	292.72	14.88	128.50
290.66	7.05	7.28	291.70	11.80	50.35	292.74	14.94	130.38
290.68	7.17	7.75	291.72	11.87	51.54	292.76	14.99	132.26
290.70	7.29	8.23	291.74	11.94	52.75	292.78	15.04	134.16
290.72	7.41	8.72	291.76	12.01	53.98	292.80	15.09	136.08
290.74	7.53	9.23	291.78	12.08	55.22	292.82	15.14	138.00
290.76	7.64	9.75	291.80	12.15	56.47	292.84	15.19	139.94
290.78	7.76	10.28	291.82	12.22	57.74	292.86	15.24	141.89
290.80	7.87	10.84	291.84	12.29	59.02	292.88	15.29	143.86
290.82	7.98	11.41	291.86	12.35	60.31	292.90	15.34	145.84
290.84	8.09	11.98	291.88	12.42	61.62	292.92	15.39	147.83
290.86	8.19	12.58	291.90	12.49	62.94	292.94	15.44	149.83
290.88	8.30	13.19	291.92	12.55	64.27	292.96	15.49	151.84
290.90	8.41	13.81	291.94	12.62	65.62	292.98	15.54	153.87
290.92	8.51	14.45	291.96	12.68	66.98	293.00	15.59	155.91
290.94	8.61	15.11	291.98	12.75	68.35			
290.96	8.71	15.77	292.00	12.81	69.74			
290.98 291.00	8.81 8.91	16.45 17.15	292.02 292.04	12.87 12.94	71.14 72.55			
291.02	9.01	17.85	292.06	13.00	73.98			

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Summary for Link 1L: CB on N. HIghland Ave. "POC A"

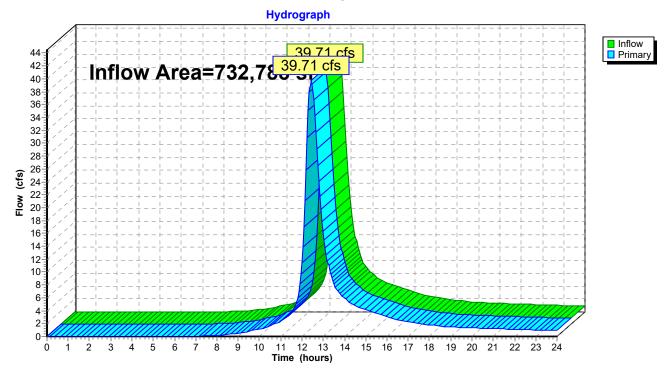
Inflow Area = 732,788 sf, 0.77% Impervious, Inflow Depth > 3.83" for 25-Year event

Inflow = 39.71 cfs @ 12.43 hrs, Volume= 233,622 cf

Primary = 39.71 cfs @ 12.43 hrs, Volume= 233,622 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: CB on N. HIghland Ave. "POC A"



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Hydrograph for Link 1L: CB on N. HIghland Ave."POC A"

Time	Inflow	Elevation	Primary	Time	Inflow	Elevation	Primary
(hours)	(cfs)	(feet)	(cfs)	(hours)	(cfs)	(feet)	(cfs)
0.00	0.00	0.00	0.00	13.00	16.30	0.00	16.30
0.25	0.00	0.00	0.00	13.25	10.95	0.00	10.95
0.50	0.00	0.00	0.00	13.50	8.20	0.00	8.20
0.75	0.00	0.00	0.00	13.75	6.78	0.00	6.78
1.00	0.00	0.00	0.00	14.00	5.92	0.00	5.92
1.25	0.00	0.00	0.00	14.25	5.27	0.00	5.27
1.50	0.00	0.00	0.00	14.50	4.78	0.00	4.78
1.75	0.00	0.00	0.00	14.75	4.42	0.00	4.42
2.00	0.00	0.00	0.00	15.00	4.12	0.00	4.12
2.25	0.00	0.00	0.00	15.25	3.84	0.00	3.84
2.50	0.00	0.00	0.00	15.50	3.57	0.00	3.57
2.75	0.00	0.00	0.00	15.75	3.31	0.00	3.31
3.00	0.00	0.00	0.00	16.00	3.05	0.00	3.05
3.25	0.00	0.00	0.00	16.25	2.78	0.00	2.78
3.50	0.00	0.00	0.00	16.50	2.57	0.00	2.57
3.75	0.00	0.00	0.00	16.75	2.41	0.00	2.41
4.00	0.00	0.00	0.00	17.00	2.27	0.00	2.27
4.25	0.00	0.00	0.00	17.25	2.15	0.00	2.15
4.50	0.00	0.00	0.00	17.50	2.03	0.00	2.03
4.75	0.00	0.00	0.00	17.75	1.91	0.00	1.91
5.00	0.00	0.00	0.00	18.00	1.80	0.00	1.80
5.25	0.00	0.00	0.00	18.25	1.68	0.00	1.68
5.50	0.00	0.00	0.00	18.50	1.59	0.00	1.59
5.75	0.00	0.00	0.00	18.75	1.53	0.00	1.53
6.00	0.00	0.00	0.00	19.00	1.48	0.00	1.48
6.25	0.00	0.00	0.00	19.25	1.45	0.00	1.45
6.50	0.00	0.00	0.00	19.50	1.41	0.00	1.41
6.75	0.02	0.00	0.02	19.75	1.37	0.00	1.37
7.00	0.04	0.00	0.04	20.00	1.34	0.00	1.34
7.25	0.06	0.00	0.06	20.25	1.30	0.00	1.30
7.50	0.09	0.00	0.09	20.50	1.27	0.00	1.27
7.75	0.13	0.00	0.13	20.75	1.24	0.00	1.24
8.00	0.17	0.00	0.17	21.00	1.21	0.00	1.21
8.25	0.22	0.00	0.22	21.25	1.19	0.00	1.19
8.50	0.30	0.00	0.30	21.50	1.16	0.00	1.16
8.75	0.40	0.00	0.40	21.75	1.13	0.00	1.13
9.00	0.51	0.00	0.51	22.00	1.11	0.00	1.11
9.25	0.65	0.00	0.65	22.25	1.08	0.00	1.08
9.50	0.81	0.00	0.81	22.50	1.05	0.00	1.05
9.75	0.98	0.00	0.98	22.75	1.03 1.00	0.00	1.03
10.00 10.25	1.17 1.38	$0.00 \\ 0.00$	1.17	23.00 23.25	0.97	$0.00 \\ 0.00$	1.00 0.97
10.23	1.58	$0.00 \\ 0.00$	1.38 1.64	23.23	0.97	0.00	0.97
10.30	1.04	0.00	1.04	23.75	0.93	0.00	0.93
11.00	2.40	0.00	2.40	24.00	0.92	0.00	0.92
11.00	2.40	0.00	2.40	24.00	0.89	0.00	0.89
11.23	3.71	0.00	3.71				
11.75	5.32	0.00	5.32				
12.00	11.49	0.00	11.49				
12.00	30.83	0.00	30.83				
12.23	38.62	0.00	38.62				
12.75	26.54	0.00	26.54				
12.75	20.54	0.00	20.54	I			

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Summary for Link 2L: South East Property Corner

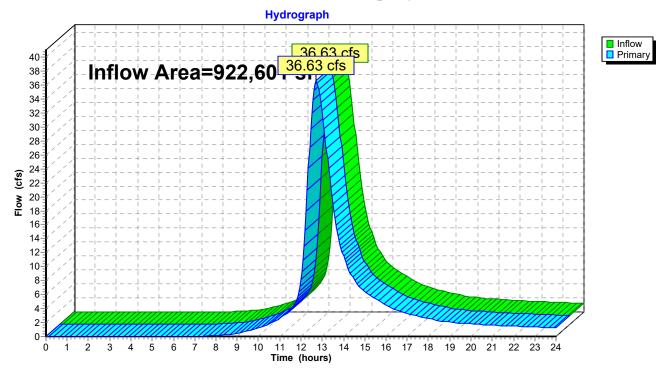
Inflow Area = 922,601 sf, 0.00% Impervious, Inflow Depth > 3.97" for 25-Year event

Inflow = 36.63 cfs @ 12.72 hrs, Volume= 305,508 cf

Primary = 36.63 cfs @ 12.72 hrs, Volume= 305,508 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2L: South East Property Corner



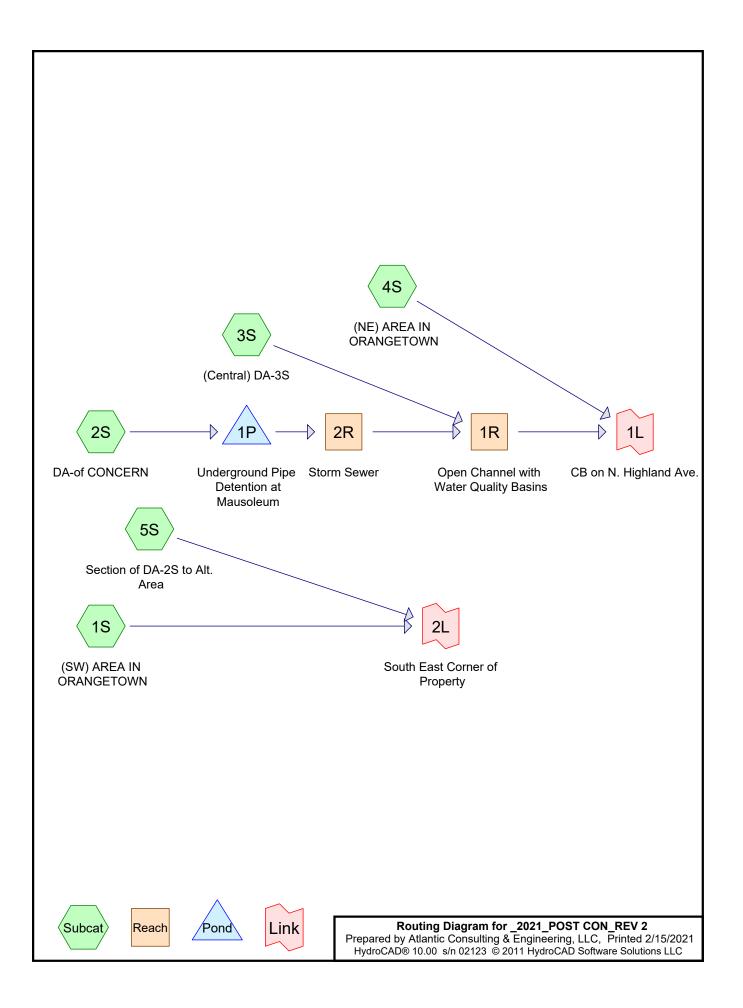
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Hydrograph for Link 2L: South East Property Corner

Time	Inflow	Elevation	Primary	Time	Inflow	Elevation	Primary
(hours)	(cfs)	(feet)	(cfs)	(hours)	(cfs)	(feet)	(cfs)
0.00	0.00	0.00	0.00	13.00	32.35	0.00	32.35
0.25	0.00	0.00	0.00	13.25	25.46	0.00	25.46
0.50	0.00	0.00	0.00	13.50	18.93	0.00	18.93
0.75	0.00	0.00	0.00	13.75	14.42	0.00	14.42
1.00	0.00	0.00	0.00	14.00	11.50	0.00	11.50
1.25	0.00	0.00	0.00	14.25	9.52	0.00	9.52
1.50	0.00	0.00	0.00	14.50	8.11	0.00	8.11
1.75	0.00	0.00	0.00	14.75	7.12	0.00	7.12
2.00	0.00	0.00	0.00	15.00	6.39	0.00	6.39
2.25	0.00	0.00	0.00	15.25	5.81	0.00	5.81
2.50	0.00	0.00	0.00	15.50	5.34	0.00	5.34
2.75	0.00	0.00	0.00	15.75	4.91	0.00	4.91
3.00	0.00	0.00	0.00	16.00	4.51	0.00	4.51
3.25	0.00	0.00	0.00	16.25	4.15	0.00	4.15
3.50	0.00	0.00	0.00	16.50	3.81	0.00	3.81
3.75	0.00	0.00	0.00	16.75	3.52	0.00	3.52
4.00	0.00	0.00	0.00	17.00	3.28	0.00	3.28
4.25	0.00	0.00	0.00	17.25	3.08	0.00	3.08
4.50	0.00	0.00	0.00	17.50	2.90	0.00	2.90
4.75	0.00	0.00	0.00	17.75	2.73	0.00	2.73
5.00	0.00	0.00	0.00	18.00	2.57	0.00	2.57
5.25	0.00	0.00	0.00	18.25	2.41	0.00	2.41
5.50	0.00	0.00	0.00	18.50	2.26	0.00	2.26
5.75	0.00	0.00	0.00	18.75	2.14	0.00	2.14
6.00	0.00	0.00	0.00	19.00	2.05	0.00	2.05
6.25	0.00	0.00	0.00	19.25	1.97	0.00	1.97
6.50	0.00	0.00	0.00	19.50	1.91	0.00	1.91
6.75	0.01	0.00	0.01	19.75	1.86	0.00	1.86
7.00	0.02	0.00	0.02	20.00	1.81	0.00	1.81
7.25	0.05	0.00	0.05	20.25	1.76	0.00	1.76
7.50	0.07	0.00	0.07	20.50	1.71	0.00	1.71
7.75	0.11	0.00	0.11	20.75	1.67	0.00	1.67
8.00	0.14	0.00	0.14	21.00	1.63	0.00	1.63
8.25	0.19	0.00	0.19	21.25	1.59	0.00	1.59
8.50	0.25	0.00	0.25	21.50	1.55	0.00	1.55
8.75	0.34	0.00	0.34	21.75	1.52	0.00	1.52
9.00	0.46	0.00	0.46	22.00	1.48	0.00	1.48
9.25	0.60	0.00	0.60	22.25	1.45	0.00	1.45
9.50	0.78	0.00	0.78	22.50	1.41	0.00	1.41
9.75	0.98	0.00	0.98	22.75	1.38	0.00	1.38
10.00	1.21	0.00	1.21	23.00	1.34	0.00	1.34
10.25	1.47	0.00	1.47	23.25	1.31	0.00	1.31
10.50	1.77	0.00	1.77	23.50	1.27	0.00	1.27
10.75	2.14	0.00	2.14	23.75	1.24	0.00	1.24
11.00	2.58	0.00	2.58	24.00	1.20	0.00	1.20
11.25	3.10	0.00	3.10				
11.50	3.79	0.00	3.79				
11.75	4.95	0.00	4.95				
12.00	8.09	0.00	8.09				
12.25	17.99	0.00	17.99				
12.50	32.00	0.00	32.00				
12.75	36.52	0.00	36.52				



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Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
711,945	61	>75% Grass cover, Good, HSG B (2S, 5S)
271,422	69	50-75% Grass cover, Fair, HSG B (3S)
661,502	80	>75% Grass cover, Good, HSG D (1S, 4S)
4,856	98	Roofs, HSG B (2S)
5,663	98	Unconnected roofs, HSG C (2S)
1,655,388	70	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
	HSG A	- Trainious
988,223	HSG B	2S, 3S, 5S
5,663	HSG C	2S, 3S, 3S 2S
661,502	HSG D	1S, 4S
001,302	Other	13, 43
1,655,388	Other	TOTAL
1,033,300		AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
 0	271,422	0	0	0	271,422	50-75% Grass cover, Fair	3S
0	711,945	0	661,502	0	1,373,447	>75% Grass cover, Good	1S,
							2S,
							4S,
							5S
0	4,856	0	0	0	4,856	Roofs	2S
0	0	5,663	0	0	5,663	Unconnected roofs	2S
0	988,223	5,663	661,502	0	1,655,388	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node	In-Invert	Out-Invert	Length	Slope	n	Diam/Width	Height	Inside-Fill
	Number	(feet)	(feet)	(feet)	(ft/ft)		(inches)	(inches)	(inches)
1	2R	271.00	250.00	300.0	0.0700	0.020	10.0	0.0	0.0

2021_POST CON REV 2

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: (SW) AREA IN ORANGETOWN Runoff Area=7.698 ac 0.00% Impervious Runoff Depth>4.38" Flow Length=1,339' Slope=0.1200 '/' Tc=61.6 min CN=80 Runoff=15.45 cfs 122,265 cf

Subcatchment 2S: DA-of CONCERNRunoff Area=135,188 sf 7.78% Impervious Runoff Depth>2.64"
Flow Length=2,236' Slope=0.1500 '/' Tc=72.4 min UI Adjusted CN=63 Runoff=3.32 cfs 29,696 cf

Subcatchment 3S: (Central) DA-3S Runoff Area=6.231 ac 0.00% Impervious Runoff Depth>3.26" Flow Length=1,261' Slope=0.2100'/ Tc=31.4 min CN=69 Runoff=13.18 cfs 73,635 cf

Subcatchment 4S: (NE) AREA IN ORANGETOWN Runoff Area=7.488 ac 0.00% Impervious Runoff Depth>4.40" Flow Length=1,438' Slope=0.2200'/' Tc=29.1 min CN=80 Runoff=22.15 cfs 119,722 cf

Subcatchment 5S: Section of DA-2S to Alt. AreaRunoff Area=13.482 ac 0.00% Impervious Runoff Depth>2.46"
Tc=50.0 min CN=61 Runoff=16.62 cfs 120,525 cf

Reach 1R: Open Channel with Water Quality Avg. Flow Depth=0.86' Max Vel=9.57 fps Inflow=14.61 cfs 102,870 cf n=0.030 L=237.0' S=0.1040 '/' Capacity=182.66 cfs Outflow=14.59 cfs 102,828 cf

Reach 2R: Storm SewerAvg. Flow Depth=0.61' Max Vel=7.79 fps Inflow=3.31 cfs 29,254 cf
10.0" Round Pipe n=0.020 L=300.0' S=0.0700 '/' Capacity=3.77 cfs Outflow=3.31 cfs 29,234 cf

Pond 1P: Underground Pipe Detention at Mausoleum Peak Elev=274.09' Storage=578 cf Inflow=3.32 cfs 29,696 cf Outflow=3.31 cfs 29,254 cf

Link 1L: CB on N. Highland Ave.

Inflow=36.29 cfs 222,550 cf
Primary=36.29 cfs 222,550 cf

Link 2L: South East Corner of Property

Inflow=31.83 cfs 242,789 cf
Primary=31.83 cfs 242,789 cf

Total Runoff Area = 1,655,388 sf Runoff Volume = 465,843 cf Average Runoff Depth = 3.38" 99.36% Pervious = 1,644,869 sf 0.64% Impervious = 10,519 sf

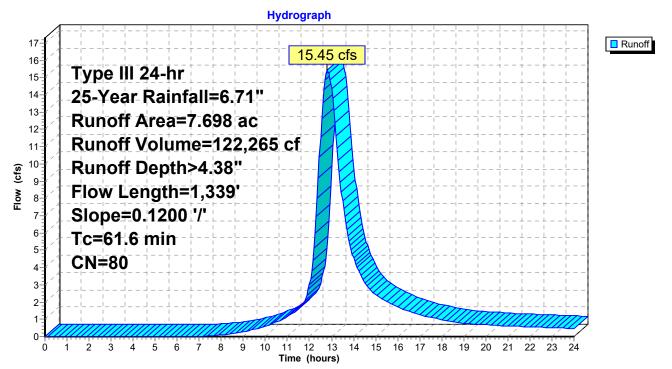
Summary for Subcatchment 1S: (SW) AREA IN ORANGETOWN

Runoff = 15.45 cfs @ 12.81 hrs, Volume= 122,265 cf, Depth> 4.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

Area	(ac) C	N Des	cription							
7.698 80 >75% Grass cover, Good, HSG D										
7.698 100.00% Pervious Area										
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
50.0				•	Direct Entry, Overland Flow					
11.6	1,339	0.1200	1.93		Lag/CN Method, Burial Grounds C-D Soil					
61.6	1,339	Total								

Subcatchment 1S: (SW) AREA IN ORANGETOWN



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Hydrograph for Subcatchment 1S: (SW) AREA IN ORANGETOWN

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	2.92	14.37
0.25	0.02	0.00	0.00	13.25	5.15	3.02	10.90
0.50	0.03	0.00	0.00	13.50	5.26	3.12	7.87
0.75	0.05	0.00	0.00	13.75	5.35	3.20	5.84
1.00	0.07	0.00	0.00	14.00	5.44	3.28	4.55
1.25	0.08	0.00	0.00	14.25	5.52	3.35	3.71
1.50	0.10	0.00	0.00	14.50	5.60	3.42	3.14
1.75	0.12	0.00	0.00	14.75	5.67	3.48	2.74
2.00	0.13	0.00	0.00	15.00	5.73	3.54	2.45
2.25	0.15	0.00	0.00	15.25	5.79	3.59	2.22
2.50	0.17	0.00	0.00	15.50	5.85	3.64	2.03
2.75	0.19	0.00	0.00	15.75	5.90	3.69	1.87
3.00	0.21	0.00	0.00	16.00	5.95	3.73	1.73
3.25	0.23	0.00	0.00	16.25	5.99	3.77	1.60
3.50	0.25	0.00	0.00	16.50	6.03	3.81	1.47
3.75	0.27	0.00	0.00	16.75	6.07	3.84	1.35
4.00	0.29	0.00	0.00	17.00	6.10	3.87	1.26
4.25	0.31	0.00	0.00	17.25	6.14	3.91	1.18
4.50	0.33	0.00	0.00	17.50	6.17	3.93	1.11
4.75	0.36	0.00	0.00	17.75	6.20	3.96	1.04
5.00	0.38	0.00	0.00	18.00	6.23	3.99	0.98
5.25	0.41	0.00	0.00	18.25	6.25	4.01	0.92
5.50	0.43	0.00	0.00	18.50	6.28	4.03	0.86
5.75	0.46	0.00	0.00	18.75	6.30	4.06	0.82
6.00	0.48	0.00	0.00	19.00	6.33	4.08	0.78
6.25	0.51	0.00	0.00	19.25	6.35	4.10	0.75
6.50	0.54	0.00	0.00	19.50	6.38	4.12	0.73
6.75	0.57	0.00	0.00	19.75	6.40	4.14	0.71
7.00	0.61	0.00	0.01	20.00	6.42	4.16	0.69
7.25	0.64	0.01	0.02	20.25	6.44	4.18	0.67
7.50	0.68	0.01	0.05	20.50	6.46	4.20	0.65
7.75	0.72	0.02	0.07	20.75	6.48	4.22	0.63
8.00	0.76	0.03	0.10	21.00	6.50	4.24	0.62
8.25	0.81	0.03	0.14	21.25	6.52	4.26	0.60
8.50	0.86	0.05	0.18	21.50	6.54	4.28	0.59
8.75	0.92	0.06	0.22	21.75	6.56	4.29	0.58
9.00	0.98	0.08	0.28	22.00	6.58	4.31	0.56
9.25	1.04	0.10	0.35	22.25	6.60	4.33	0.55
9.50	1.11	0.12	0.43	22.50	6.62	4.34	0.54
9.75	1.19	0.15	0.51	22.75	6.63	4.36	0.52
10.00	1.27	0.18	0.61	23.00	6.65	4.37	0.51
10.25	1.36	0.22	0.72	23.25	6.67	4.39	0.50
10.50	1.45	0.26	0.84	23.50	6.68	4.40	0.48
10.75	1.56	0.32	0.99	23.75	6.70	4.41	0.47
11.00	1.68	0.38	1.16	24.00	6.71	4.43	0.46
11.25	1.82	0.46	1.37				
11.50	2.00	0.56	1.63				
11.75	2.38	0.81	2.04				
12.00	3.35	1.52	2.99				
12.25	4.33	2.31	5.97				
12.50	4.71	2.64	11.55				
12.75	4.89	2.80	15.23				

Summary for Subcatchment 2S: DA-of CONCERN

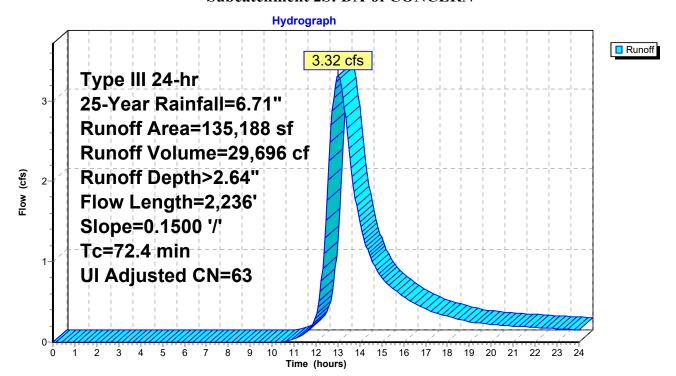
Runoff = 3.32 cfs @ 13.00 hrs, Volume= 29,696 cf, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

	A:	rea (sf)	CN	Description			
		5,663	98	Unconnecte	d roofs, HS	GC	
		4,856	98	Roofs, HSG	В		
_	1	24,669	61	>75% Grass	cover, Goo	od, HSG B	
	1	35,188	64	Weighted A	verage, UI	Adjusted $CN = 63$	
	1	24,669		92.22% Per	vious Area	·	
	10,519 7.78% Impervious Area					a	
	5,663 53.84% Unconnected						
		w .d	G1	** 1	G		
	Tc	Length	Slope		Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	24.4	2,236	0.1500	1.53		Lag/CN Method, Overland Flow B-D-C Soils	
_	48.0					Direct Entry, Overland Flow	
	=	2 22 6			•		

72.4 2,236 Total

Subcatchment 2S: DA-of CONCERN



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Hydrograph for Subcatchment 2S: DA-of CONCERN

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	1.53	3.32
0.00	0.02	0.00	0.00	13.25	5.15	1.60	3.04
0.50	0.02	0.00	0.00	13.50	5.26	1.67	2.41
0.75	0.05	0.00	0.00	13.75	5.35	1.74	1.87
1.00	0.07	0.00	0.00	14.00	5.44	1.80	1.49
1.25	0.08	0.00	0.00	14.25	5.52	1.85	1.23
1.50	0.10	0.00	0.00	14.50	5.60	1.90	1.04
1.75	0.12	0.00	0.00	14.75	5.67	1.95	0.91
2.00	0.13	0.00	0.00	15.00	5.73	1.99	0.81
2.25	0.15	0.00	0.00	15.25	5.79	2.03	0.73
2.50	0.17	0.00	0.00	15.50	5.85	2.07	0.67
2.75	0.19	0.00	0.00	15.75	5.90	2.11	0.61
3.00	0.21	0.00	0.00	16.00	5.95	2.14	0.57
3.25	0.23	0.00	0.00	16.25	5.99	2.17	0.52
3.50	0.25	0.00	0.00	16.50	6.03	2.20	0.48
3.75	0.27	0.00	0.00	16.75	6.07	2.22	0.44
4.00	0.29	0.00	0.00	17.00	6.10	2.25	0.41
4.25	0.31	0.00	0.00	17.25	6.14	2.27	0.38
4.50 4.75	0.33 0.36	$0.00 \\ 0.00$	$0.00 \\ 0.00$	17.50 17.75	6.17 6.20	2.30 2.32	0.36 0.34
5.00	0.38	0.00	0.00	18.00	6.23	2.34	0.34
5.25	0.38	0.00	0.00	18.25	6.25	2.34	0.32
5.50	0.41	0.00	0.00	18.50	6.28	2.37	0.28
5.75	0.46	0.00	0.00	18.75	6.30	2.39	0.27
6.00	0.48	0.00	0.00	19.00	6.33	2.41	0.25
6.25	0.51	0.00	0.00	19.25	6.35	2.43	0.24
6.50	0.54	0.00	0.00	19.50	6.38	2.44	0.24
6.75	0.57	0.00	0.00	19.75	6.40	2.46	0.23
7.00	0.61	0.00	0.00	20.00	6.42	2.48	0.22
7.25	0.64	0.00	0.00	20.25	6.44	2.49	0.22
7.50	0.68	0.00	0.00	20.50	6.46	2.51	0.21
7.75	0.72	0.00	0.00	20.75	6.48	2.52	0.21
8.00	0.76	0.00	0.00	21.00	6.50	2.54	0.20
8.25	0.81	0.00	0.00	21.25	6.52	2.55	0.20
8.50	0.86	0.00	0.00	21.50	6.54	2.56	0.19
8.75	0.92	0.00	0.00	21.75 22.00	6.56	2.58 2.59	0.19
9.00 9.25	0.98 1.04	$0.00 \\ 0.00$	$0.00 \\ 0.00$	22.00	6.58 6.60	2.39	0.18 0.18
9.23	1.04	0.00	0.00	22.23	6.62	2.62	0.18
9.75	1.11	0.00	0.00	22.75	6.63	2.63	0.17
10.00	1.17	0.00	0.00	23.00	6.65	2.64	0.17
10.25	1.36	0.01	0.00	23.25	6.67	2.65	0.16
10.50	1.45	0.01	0.01	23.50	6.68	2.66	0.16
10.75	1.56	0.02	0.02	23.75	6.70	2.68	0.15
11.00	1.68	0.04	0.04	24.00	6.71	2.69	0.15
11.25	1.82	0.06	0.07				
11.50	2.00	0.10	0.12				
11.75	2.38	0.21	0.18				
12.00	3.35	0.59	0.32				
12.25	4.33	1.10	0.76				
12.50	4.71	1.33	1.76				
12.75	4.89	1.44	2.88				

2021 POST CON REV 2

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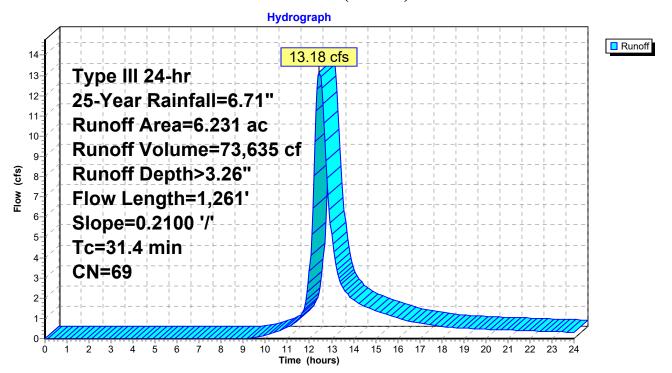
Summary for Subcatchment 3S: (Central) DA-3S

Runoff = 13.18 cfs @ 12.45 hrs, Volume= 73,635 cf, Depth> 3.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

_	Area	(ac) C	N Des	cription							
	6.231 69 50-75% Grass cover, Fair, HSG B										
6.231 100.00% Pervious Area											
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
Ī	11.4	1,261	0.2100	1.84		Lag/CN Method, Burial Grounds B-D-C Soils					
_	20.0					Direct Entry, Overland Flow					
	314	1 261	Total								

Subcatchment 3S: (Central) DA-3S



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Hydrograph for Subcatchment 3S: (Central) DA-3S

		_		ı <u> </u>		_	
Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	1.98	5.14
0.25	0.02	0.00	0.00	13.25	5.15	2.07	3.39
0.50	0.03	0.00	0.00	13.50	5.26	2.15	2.56
0.75	0.05	0.00	0.00	13.75	5.35	2.22	2.16
1.00	0.07	0.00	0.00	14.00	5.44	2.28	1.92
1.25	0.08	0.00	0.00	14.25	5.52	2.34	1.73
1.50	0.10	0.00	0.00	14.50	5.60	2.40	1.58
1.75	0.12	0.00	0.00	14.75	5.67	2.45	1.48
2.00	0.13	0.00	0.00	15.00	5.73	2.51	1.38
2.25	0.15	0.00	0.00	15.25	5.79	2.55	1.30
2.50	0.17	0.00	0.00	15.50	5.85	2.59	1.21
2.75	0.19	0.00	0.00	15.75	5.90	2.63	1.12
3.00	0.21	0.00	0.00	16.00	5.95	2.67	1.03
3.25	0.23	0.00	0.00	16.25	5.99	2.70	0.94
3.50	0.25	0.00	0.00	16.50	6.03	2.73	0.87
3.75	0.27	0.00	0.00	16.75	6.07	2.76	0.82
4.00	0.29	0.00	0.00	17.00	6.10	2.79	0.77
4.25	0.31	0.00	0.00	17.25	6.14	2.82	0.73
4.50	0.33	0.00	0.00	17.50	6.17	2.85	0.69
4.75	0.36	0.00	0.00	17.75	6.20	2.87	0.65
5.00	0.38	0.00	0.00	18.00	6.23	2.89	0.61
5.25	0.41	0.00	0.00	18.25	6.25	2.91	0.57
5.50	0.43	0.00	0.00	18.50	6.28	2.93	0.54
5.75	0.46	0.00	0.00	18.75	6.30	2.95	0.52
6.00	0.48	0.00	0.00	19.00	6.33	2.97	0.51
6.25	0.51	0.00	0.00	19.25	6.35	2.99	0.50
6.50	0.54	0.00	0.00	19.50	6.38	3.01	0.49
6.75	0.57	0.00	0.00	19.75	6.40	3.03	0.47
7.00	0.61	0.00	0.00	20.00	6.42	3.05	0.46
7.25	0.64	0.00	0.00	20.25	6.44	3.06	0.45
7.50	0.68	0.00	0.00	20.50	6.46	3.08	0.44
7.75	0.72	0.00	0.00	20.75	6.48	3.10	0.43
8.00	0.76	0.00	0.00	21.00	6.50	3.11	0.42
8.25	0.81	0.00	0.00	21.25	6.52	3.13	0.41
8.50	0.86	0.00	0.00	21.50	6.54	3.14	0.40
8.75	0.92	0.00	0.00	21.75	6.56	3.16	0.39
9.00	0.98	0.00	0.00	22.00	6.58	3.17	0.38
9.25	1.04	0.00	0.02	22.25	6.60	3.19	0.37
9.50	1.11	0.01	0.06	22.50	6.62	3.20	0.36
9.75	1.19	0.02	0.11	22.75	6.63	3.22	0.35
10.00	1.27	0.03	0.17	23.00	6.65	3.23	0.35
10.25	1.36	0.04	0.24	23.25	6.67	3.24	0.34
10.50	1.45	0.06	0.32	23.50	6.68	3.25	0.33
10.75	1.56	0.08	0.42	23.75	6.70	3.27	0.32
11.00	1.68	0.12	0.55	24.00	6.71	3.28	0.31
11.25	1.82	0.16	0.70				
11.50	2.00	0.22	0.95				
11.75	2.38	0.37	1.44				
12.00	3.35	0.87	3.32				
12.25	4.33	1.48	9.73				
12.50	4.71	1.75	12.95				
12.75	4.89	1.88	8.80				
				I			

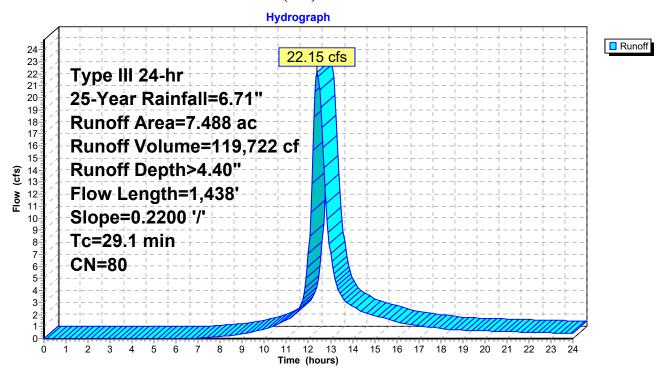
Summary for Subcatchment 4S: (NE) AREA IN ORANGETOWN

Runoff = 22.15 cfs @ 12.40 hrs, Volume= 119,722 cf, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

Area	(ac) C	N Des	cription								
7.	7.488 80 >75% Grass cover, Good, HSG D										
7.	7.488 100.00% Pervious Area										
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description						
9.1	1,438	0.2200	2.65		Lag/CN Method, Forest/Burial Grounds D-C Soils						
20.0					Direct Entry, Overland Flow						
29.1	1.438	Total									

Subcatchment 4S: (NE) AREA IN ORANGETOWN



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Hydrograph for Subcatchment 4S: (NE) AREA IN ORANGETOWN

		_		ı <u> </u>		_	
Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	2.92	7.05
0.25	0.02	0.00	0.00	13.25	5.15	3.02	4.63
0.50	0.03	0.00	0.00	13.50	5.26	3.12	3.53
0.75	0.05	0.00	0.00	13.75	5.35	3.20	3.00
1.00	0.07	0.00	0.00	14.00	5.44	3.28	2.69
1.25	0.08	0.00	0.00	14.25	5.52	3.35	2.42
1.50	0.10	0.00	0.00	14.50	5.60	3.42	2.21
1.75	0.12	0.00	0.00	14.75	5.67	3.48	2.06
2.00	0.13	0.00	0.00	15.00	5.73	3.54	1.93
2.25 2.50	0.15	0.00	0.00	15.25	5.79	3.59	1.80
2.75	0.17	$0.00 \\ 0.00$	0.00	15.50 15.75	5.85 5.90	3.64 3.69	1.68 1.55
3.00	0.19		0.00	16.00			1.33
3.00	0.21 0.23	$0.00 \\ 0.00$	$0.00 \\ 0.00$	16.00	5.95 5.99	3.73 3.77	1.42
3.50	0.25	0.00	0.00	16.23	6.03	3.77	1.29
3.75	0.23	0.00	0.00	16.75	6.07	3.84	1.19
4.00	0.27	0.00	0.00	17.00	6.10	3.87	1.12
4.00	0.29	0.00	0.00	17.00	6.14	3.91	1.00
4.50	0.31	0.00	0.00	17.23	6.17	3.93	0.95
4.75	0.36	0.00	0.00	17.75	6.20	3.96	0.93
5.00	0.38	0.00	0.00	18.00	6.23	3.99	0.84
5.25	0.38	0.00	0.00	18.25	6.25	4.01	0.34
5.50	0.41	0.00	0.00	18.50	6.28	4.03	0.74
5.75	0.46	0.00	0.00	18.75	6.30	4.06	0.72
6.00	0.48	0.00	0.00	19.00	6.33	4.08	0.70
6.25	0.51	0.00	0.00	19.25	6.35	4.10	0.68
6.50	0.54	0.00	0.00	19.50	6.38	4.12	0.67
6.75	0.57	0.00	0.02	19.75	6.40	4.14	0.65
7.00	0.61	0.00	0.04	20.00	6.42	4.16	0.63
7.25	0.64	0.01	0.06	20.25	6.44	4.18	0.61
7.50	0.68	0.01	0.09	20.50	6.46	4.20	0.60
7.75	0.72	0.02	0.13	20.75	6.48	4.22	0.59
8.00	0.76	0.03	0.17	21.00	6.50	4.24	0.57
8.25	0.81	0.03	0.21	21.25	6.52	4.26	0.56
8.50	0.86	0.05	0.26	21.50	6.54	4.28	0.55
8.75	0.92	0.06	0.32	21.75	6.56	4.29	0.53
9.00	0.98	0.08	0.40	22.00	6.58	4.31	0.52
9.25	1.04	0.10	0.49	22.25	6.60	4.33	0.51
9.50	1.11	0.12	0.58	22.50	6.62	4.34	0.50
9.75	1.19	0.15	0.69	22.75	6.63	4.36	0.48
10.00	1.27	0.18	0.81	23.00	6.65	4.37	0.47
10.25	1.36	0.22	0.93	23.25	6.67	4.39	0.46
10.50	1.45	0.26	1.09	23.50	6.68	4.40	0.44
10.75	1.56	0.32	1.30	23.75	6.70	4.41	0.43
11.00	1.68	0.38	1.53	24.00	6.71	4.43	0.42
11.25	1.82	0.46	1.80				
11.50	2.00	0.56	2.28				
11.75	2.38	0.81	3.25				
12.00 12.25	3.35	1.52	7.06				
12.25	4.33 4.71	2.31 2.64	18.39				
12.75	4.71	2.80	20.67 12.64				
14.73	7.07	2.00	12.04	l			

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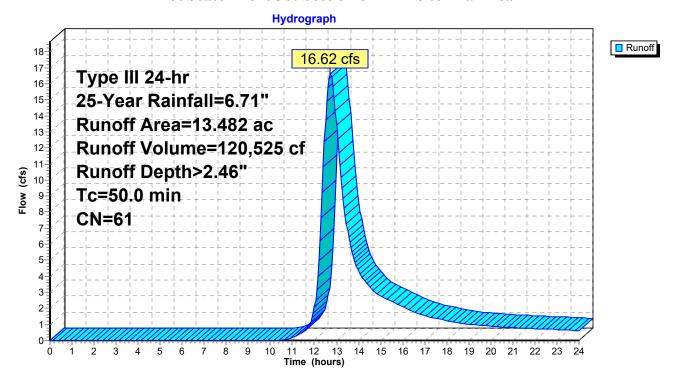
Summary for Subcatchment 5S: Section of DA-2S to Alt. Area

Runoff = 16.62 cfs @ 12.72 hrs, Volume= 120,525 cf, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.71"

_	Area	(ac)	CN	Desc	cription		
	13.	.482	61	>759	% Grass co	ver, Good,	HSG B
	13.	.482		100.	00% Pervio	ous Area	
	Tc (min)	Leng		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	50.0				//		Direct Entry, Overland Flow

Subcatchment 5S: Section of DA-2S to Alt. Area



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Hydrograph for Subcatchment 5S: Section of DA-2S to Alt. Area

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	13.00	5.03	1.39	13.42
0.25	0.02	0.00	0.00	13.25	5.15	1.46	9.48
0.50	0.03	0.00	0.00	13.50	5.26	1.53	6.84
0.75	0.05	0.00	0.00	13.75	5.35	1.59	5.28
1.00	0.07	0.00	0.00	14.00	5.44	1.64	4.35
1.25 1.50	0.08 0.10	$0.00 \\ 0.00$	0.00 0.00	14.25 14.50	5.52 5.60	1.69 1.74	3.76 3.32
1.75	0.10	0.00	0.00	14.75	5.67	1.74	3.32
2.00	0.12	0.00	0.00	15.00	5.73	1.79	2.76
2.25	0.15	0.00	0.00	15.25	5.79	1.83	2.70
2.50	0.13	0.00	0.00	15.25	5.85	1.90	2.37
2.75	0.17	0.00	0.00	15.75	5.90	1.94	2.25
3.00	0.13	0.00	0.00	16.00	5.95	1.97	2.08
3.25	0.23	0.00	0.00	16.25	5.99	2.00	1.92
3.50	0.25	0.00	0.00	16.50	6.03	2.02	1.77
3.75	0.27	0.00	0.00	16.75	6.07	2.05	1.64
4.00	0.29	0.00	0.00	17.00	6.10	2.07	1.54
4.25	0.31	0.00	0.00	17.25	6.14	2.10	1.46
4.50	0.33	0.00	0.00	17.50	6.17	2.12	1.38
4.75	0.36	0.00	0.00	17.75	6.20	2.14	1.30
5.00	0.38	0.00	0.00	18.00	6.23	2.16	1.23
5.25	0.41	0.00	0.00	18.25	6.25	2.18	1.15
5.50	0.43	0.00	0.00	18.50	6.28	2.19	1.08
5.75	0.46	0.00	0.00	18.75	6.30	2.21	1.03
6.00	0.48	0.00	0.00	19.00	6.33	2.23	0.99
6.25	0.51	0.00	0.00	19.25	6.35	2.25	0.96
6.50	0.54	0.00	0.00	19.50	6.38	2.26	0.94
6.75	0.57	0.00	0.00	19.75	6.40	2.28	0.91
7.00	0.61	0.00	0.00	20.00	6.42	2.29	0.89
7.25	0.64	0.00	0.00	20.25	6.44	2.31	0.87
7.50	0.68	0.00	0.00	20.50	6.46	2.32	0.85
7.75	0.72	0.00	0.00	20.75	6.48	2.34	0.83
8.00	0.76	0.00	0.00	21.00	6.50	2.35	0.81
8.25	0.81	0.00	0.00	21.25	6.52	2.36	0.79
8.50	0.86	0.00	0.00	21.50	6.54	2.38	0.77
8.75	0.92	0.00	0.00	21.75	6.56	2.39	0.76
9.00	0.98	0.00	0.00	22.00	6.58	2.40	0.74
9.25	1.04	0.00	0.00	22.25	6.60	2.42	0.72
9.50	1.11	0.00	0.00	22.50	6.62	2.43	0.71
9.75	1.19	0.00	0.00	22.75	6.63	2.44	0.69
10.00	1.27	0.00	0.00	23.00	6.65	2.45 2.46	0.67
10.25	1.36 1.45	$0.00 \\ 0.00$	0.00	23.25	6.67 6.68	2.46	0.65
10.50 10.75	1.43	0.00	0.01 0.06	23.50 23.75	6.70	2.47	0.64 0.62
11.00	1.68	0.01	0.00	24.00	6.70	2.49	0.62
11.00	1.82	0.02	0.17	24.00	0.71	2.43	0.00
11.50	2.00	0.07	0.56				
11.75	2.38	0.07	0.95				
12.00	3.35	0.10	2.05				
12.25	4.33	0.98	6.23				
12.50	4.71	1.20	13.77				
12.75	4.89	1.30	16.58				

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Summary for Reach 1R: Open Channel with Water Quality Basins

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.52' @ 12.35 hrs

Inflow Area = 406,610 sf, 2.59% Impervious, Inflow Depth > 3.04" for 25-Year event

Inflow = 14.61 cfs @ 12.48 hrs, Volume= 102,870 cf

Outflow = 14.59 cfs (a) 12.49 hrs, Volume= 102,828 cf, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

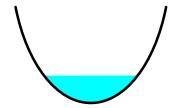
Max. Velocity= 9.57 fps, Min. Travel Time= 0.4 min Avg. Velocity = 4.61 fps, Avg. Travel Time= 0.9 min

Peak Storage= 361 cf @ 12.48 hrs Average Depth at Peak Storage= 0.86' Bank-Full Depth= 3.00' Flow Area= 10.0 sf, Capacity= 182.66 cfs

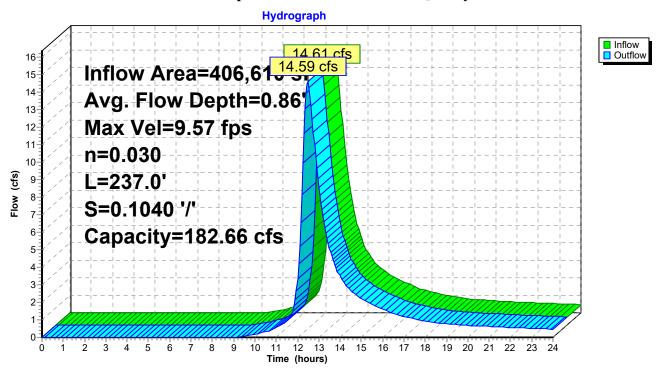
5.00' x 3.00' deep Parabolic Channel, n= 0.030 Earth, cobble bottom, clean sides

Length= 237.0' Slope= 0.1040 '/'

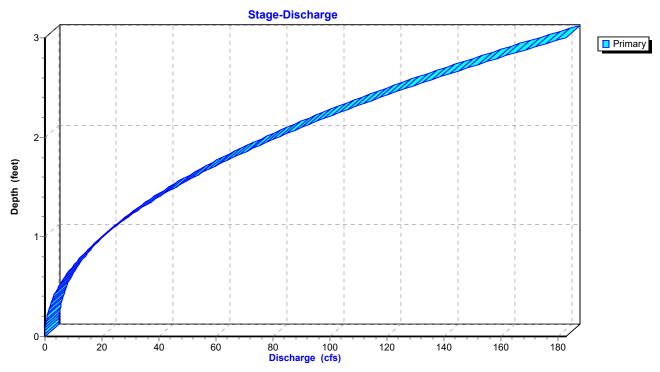
Inlet Invert= 250.00', Outlet Invert= 225.36'



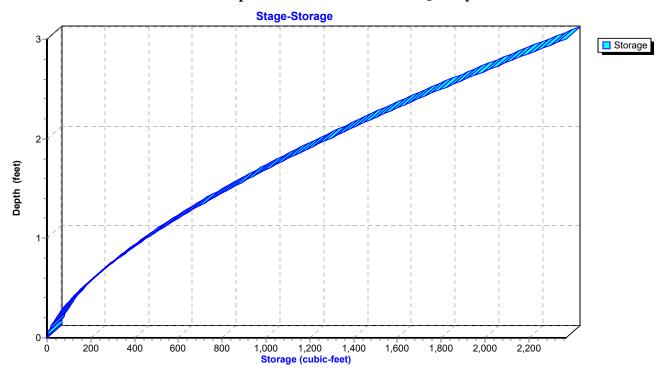
Reach 1R: Open Channel with Water Quality Basins



Reach 1R: Open Channel with Water Quality Basins



Reach 1R: Open Channel with Water Quality Basins



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Hydrograph for Reach 1R: Open Channel with Water Quality Basins

Time	Inflow	Storage	Elevation	Outflow
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)
0.00	0.00	0	250.00	0.00
0.50	0.00	0	250.00	0.00
1.00	0.00	0	250.00	0.00
1.50	0.00	0	250.00	0.00
2.00	0.00	0	250.00	0.00
2.50	0.00	0	250.00	0.00
3.00	0.00	0	250.00	0.00
3.50	0.00	0	250.00	0.00
4.00	0.00	0	250.00	0.00
4.50	0.00	0	250.00	0.00
5.00	0.00	0	250.00	0.00
5.50	0.00	0	250.00	0.00
6.00	0.00	0	250.00	0.00
6.50	0.00	0	250.00	0.00
7.00	0.00	0	250.00	0.00
7.50	0.00	0	250.00	0.00
8.00	0.00	0	250.00	0.00
8.50	0.00	0	250.00	0.00
9.00	0.00	0	250.01	0.00
9.50	0.06	7	250.06	0.06
10.00	0.17	15	250.10	0.16
10.50	0.32	23	250.14	0.31
11.00	0.55	34	250.18	0.54
11.50	0.95	51	250.23	0.93
12.00	3.58	128	250.43	3.36
12.50	14.57	361	250.86	14.58
13.00	8.44	244	250.66	8.56
13.50	5.03	168	250.51	5.10
14.00	3.45	128	250.43	3.48
14.50	2.65	106	250.38	2.66
15.00	2.20	93	250.35	2.21
15.50	1.88	83	250.32	1.89
16.00	1.60	74	250.30	1.61
16.50	1.35	66	250.27	1.36
17.00	1.19	60	250.26	1.19
17.50	1.06	55	250.24	1.06
18.00	0.94	51	250.23	0.94
18.50	0.83	46	250.22	0.83
19.00	0.77	44	250.21	0.77
19.50	0.72	42	250.20	0.72
20.00	0.68	41	250.20	0.69
20.50	0.65	39	250.19	0.65
21.00	0.62	38	250.19	0.62
21.50	0.59	37	250.19	0.59
22.00	0.57	36	250.18	0.57
22.50	0.54	34	250.18	0.54
23.00	0.51	33	250.17	0.51
23.50	0.49	32	250.17	0.49
24.00	0.46	31	250.16	0.46

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Stage-Discharge for Reach 1R: Open Channel with Water Quality Basins

Elevation		Discharge	Elevation		Discharge	Elevation		Discharge
(feet)	(ft/sec)	(cfs)	(feet)	(ft/sec)	(cfs)	(feet)	(ft/sec)	(cfs)
250.00	0.00	0.00	251.04	10.66	21.77	252.08	15.30	88.36
250.02	0.78	0.01	251.06	10.77	22.63	252.10	15.38	90.06
250.04	1.39	0.03	251.08	10.88	23.51	252.12	15.45	91.78
250.06	1.84	0.05	251.10	10.99	24.41	252.14	15.52	93.51
250.08	2.22	0.10	251.12	11.10	25.33	252.16	15.59	95.26
250.10	2.57	0.16	251.14	11.21	26.26	252.18	15.66	97.03
250.12	2.89	0.23	251.16	11.31	27.21	252.20	15.73	98.81
250.14	3.19	0.33	251.18	11.42	28.17	252.22	15.80	100.61
250.16	3.48	0.43	251.20	11.52	29.15	252.24	15.87	102.42
250.18	3.75	0.55	251.22	11.62	30.15	252.26	15.94	104.25
250.20	4.01	0.69	251.24	11.73	31.16	252.28	16.01	106.09
250.22	4.25	0.85	251.26	11.83	32.19	252.30	16.08	107.95
250.24	4.49	1.02	251.28	11.93	33.24	252.32	16.15	109.83
250.26	4.72	1.21	251.30	12.02	34.30	252.34	16.22	111.72
250.28	4.94	1.41	251.32	12.12	35.38	252.36	16.28	113.62
250.30	5.16	1.63	251.34	12.22	36.48	252.38	16.35	115.55
250.32	5.37	1.87	251.36	12.31	37.59	252.40	16.42	117.48
250.34	5.57	2.13	251.38	12.41	38.72	252.42	16.48	119.43
250.36	5.77	2.40	251.40	12.50	39.86	252.44	16.55	121.40
250.38	5.96	2.69	251.42	12.60	41.03	252.46	16.62	123.38
250.40	6.15	3.00	251.44	12.69	42.20	252.48	16.68	125.38
250.42	6.33	3.32	251.46	12.78	43.40	252.50	16.75	127.39
250.44	6.51	3.66	251.48	12.87	44.61	252.52	16.81	129.42
250.46	6.69	4.02	251.50	12.96	45.83	252.54	16.87	131.47
250.48	6.86	4.39	251.52	13.05	47.08	252.56	16.94	133.53
250.50	7.03	4.78	251.54	13.14	48.33	252.58	17.00	135.60
250.52	7.19	5.19	251.56	13.23	49.60	252.60	17.07	137.69
250.54	7.35	5.61	251.58	13.32	50.90	252.62	17.13	139.79
250.56	7.51	6.06	251.60	13.40	52.21	252.64	17.19	141.91
250.58	7.67	6.52	251.62	13.49	53.53	252.66	17.25	144.05
250.60	7.82	6.99	251.64	13.57	54.87	252.68	17.31	146.20
250.62	7.97	7.49	251.66	13.66	56.22	252.70	17.38	148.36
250.64	8.12	8.00	251.68	13.74	57.59	252.72	17.44	150.55
250.66	8.26	8.53	251.70	13.83	58.98	252.74	17.50	152.74
250.68	8.40	9.07	251.72	13.91	60.39	252.76	17.56	154.95
250.70	8.55	9.64	251.74	13.99	61.80	252.78	17.62	157.18
250.72	8.68	10.21	251.76	14.07	63.24	252.80	17.68	159.42
250.74	8.82	10.81	251.78	14.15	64.69	252.82	17.74	161.67
250.76	8.95	11.42	251.80	14.23	66.15	252.84	17.80	163.95
250.78	9.09	12.05	251.82	14.31	67.64	252.86	17.86	166.23
250.80	9.22	12.70	251.84	14.39	69.14	252.88	17.92	168.53
250.82	9.35	13.36	251.86	14.47	70.65	252.90	17.98	170.85
250.84	9.48	14.04	251.88	14.55	72.18	252.92	18.03	173.18
250.86	9.60	14.74	251.90	14.63	73.73	252.94	18.09	175.53
250.88	9.72	15.45	251.92	14.70	75.29	252.96	18.15	177.89
250.90	9.85	16.18	251.94	14.78	76.87	252.98	18.21	180.27
250.92	9.97	16.93	251.96	14.86	78.46	253.00	18.27	182.66
250.94	10.09	17.70	251.98	14.93	80.07			
250.96	10.21	18.47	252.00	15.01	81.70			
250.98	10.32	19.28	252.02	15.08	83.34			
251.00	10.44	20.09	252.04	15.16	84.99			
251.02	10.55	20.92	252.06	15.23	86.67			

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Stage-Area-Storage for Reach 1R: Open Channel with Water Quality Basins

Tell	Elevation	End-Area	Storage	Elevation	End-Area	Storage	Elevation	End-Area	Storage
250.02 0.0 2 251.06 2.1 498 252.10 5.9 1.388 250.06 0.0 7 251.10 2.2 526 252.14 6.0 1.428 250.08 0.0 10 251.12 2.3 341 252.16 6.1 1.448 250.10 0.1 15 251.14 2.3 555 252.18 6.2 1.468 250.12 0.1 19 251.16 2.4 570 252.20 6.3 1.488 250.14 0.1 24 251.18 2.5 585 252.20 6.4 1.509 250.18 0.1 29 251.20 2.5 600 252.24 6.5 1.529 250.18 0.1 35 251.22 2.6 615 252.20 6.5 1.550 250.20 0.2 41 251.28 2.8 661 252.34 6.5 1.570 250.24 0.2 54 <t< td=""><td>(feet)</td><td>(sq-ft)</td><td>(cubic-feet)</td><td>(feet)</td><td>(sq-ft)</td><td>(cubic-feet)</td><td>(feet)</td><td>(sq-ft)</td><td>(cubic-feet)</td></t<>	(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
250.04 0.0 4 251.08 2.2 512 252.12 5.9 1,408 250.08 0.0 10 251.10 2.2 356 252.14 6.0 1,428 250.08 0.0 10 251.12 2.3 341 252.16 6.1 1,448 250.12 0.1 19 251.16 2.4 570 252.20 6.3 1,488 250.14 0.1 24 251.18 2.5 585 252.22 6.4 1,509 250.16 0.1 29 251.20 2.5 600 252.24 6.5 1,529 250.18 0.1 35 251.22 2.6 615 252.26 6.5 1,550 250.20 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.24 0.2 54 251.28 2.8 661 1,570 250.26 0.3 61 251.30 2.9 <	250.00	0.0	0	251.04	2.0	484	252.08	5.8	1,368
250.04 0.0 4 251.08 2.2 512 252.12 5.9 1,408 250.08 0.0 10 251.10 2.2 356 252.14 6.0 1,428 250.08 0.0 10 251.12 2.3 341 252.16 6.1 1,448 250.12 0.1 19 251.16 2.4 570 252.20 6.3 1,488 250.14 0.1 24 251.18 2.5 585 252.22 6.4 1,509 250.16 0.1 29 251.20 2.5 600 252.24 6.5 1,529 250.18 0.1 35 251.22 2.6 615 252.26 6.5 1,550 250.20 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.24 0.2 54 251.28 2.8 661 1,570 250.26 0.3 61 251.30 2.9 <	250.02	0.0	2	251.06	2.1	498	252.10	5.9	1,388
250.08 0.0 10 251.12 2.3 541 252.16 6.1 1.448 250.12 0.1 15 251.14 2.3 555 252.18 6.2 1.468 250.14 0.1 24 251.18 2.5 585 252.22 6.4 1.509 250.16 0.1 29 251.20 2.5 600 252.24 6.5 1.529 250.18 0.1 35 251.22 2.6 615 252.26 6.5 1.550 250.20 0.2 41 251.26 2.7 645 252.26 6.5 1.550 250.22 0.2 47 251.26 2.7 645 252.32 6.8 1.612 250.24 0.2 54 251.36 2.9 692 252.32 6.8 1.612 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1.654 250.34 0.4 90	250.04	0.0	4	251.08	2.2	512	252.12	5.9	1,408
250.10 0.1 15 251.14 2.3 555 252.18 6.2 1,468 250.14 0.1 24 251.18 2.5 585 252.22 6.4 1,509 250.16 0.1 29 251.20 2.5 600 252.24 6.5 1,529 250.18 0.1 35 251.22 2.6 615 252.24 6.5 1,529 250.18 0.1 35 251.22 2.6 615 252.24 6.5 1,529 250.20 0.2 41 251.24 2.7 630 252.28 6.6 1,570 250.24 0.2 54 251.28 2.8 661 252.32 6.8 1,613 250.26 0.3 61 251.30 2.9 676 252.34 6.9 1,633 250.32 0.3 83 251.34 3.0 708 252.34 7.0 1,654 250.34 0.4 99	250.06	0.0	7		2.2			6.0	
250.12 0.1 19 251.16 2.4 570 252.20 6.3 1,488 250.16 0.1 29 251.20 2.5 680 252.24 6.5 1,509 250.16 0.1 35 251.22 2.6 615 252.26 6.5 1,550 250.20 0.2 41 251.24 2.7 645 252.26 6.6 1,570 250.20 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.26 0.3 61 251.30 2.9 676 252.34 6.9 1.633 250.26 0.3 68 251.30 2.9 676 252.34 6.9 1.633 250.30 0.3 75 251.34 3.0 708 252.38 7.0 1,654 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,675 250.32 0.3 83	250.08	0.0	10	251.12	2.3	541	252.16	6.1	1,448
250.12 0.1 19 251.16 2.4 570 252.20 6.3 1,488 250.16 0.1 29 251.20 2.5 680 252.24 6.5 1,509 250.16 0.1 35 251.22 2.6 615 252.26 6.5 1,550 250.20 0.2 41 251.24 2.7 645 252.26 6.6 1,570 250.20 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.26 0.3 61 251.30 2.9 676 252.34 6.9 1.633 250.26 0.3 68 251.30 2.9 676 252.34 6.9 1.633 250.30 0.3 75 251.34 3.0 708 252.38 7.0 1,654 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,675 250.32 0.3 83	250.10	0.1	15	251.14				6.2	
250.14 0.1 24 251.18 2.5 585 252.22 6.4 1,509 250.18 0.1 35 251.22 2.6 615 252.26 6.5 1,559 250.20 0.2 41 251.24 2.7 630 252.28 6.6 1,570 250.24 0.2 54 251.28 2.8 661 252.30 6.7 1,591 250.24 0.2 54 251.28 2.8 661 252.34 6.9 1,633 250.28 0.3 68 251.32 2.9 672 252.34 6.9 1,633 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.34 7.9 1,673 250.34 0.4 90 251.38 3.1 733 252.40 7.2 1,676 250.38 0.5 107	250.12	0.1	19	251.16		570	252.20		
250.18 0.1 35 251.24 2.6 615 252.26 6.5 1.550 250.20 0.2 41 251.24 2.7 645 252.30 6.7 1.591 250.24 0.2 54 251.28 2.8 661 252.32 6.8 1.612 250.26 0.3 61 251.30 2.9 676 252.34 6.9 1.633 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1.654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1.675 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1.696 250.34 0.4 90 251.38 3.1 739 252.42 7.2 1,717 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 115	250.14	0.1	24	251.18	2.5	585	252.22	6.4	1,509
250.18 0.1 35 251.24 2.7 630 252.26 6.5 1,550 250.20 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.24 0.2 54 251.28 2.8 661 252.32 6.8 1,612 250.28 0.3 68 251.32 2.9 676 252.34 6.9 1,633 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,675 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,696 250.34 0.4 90 251.38 3.1 739 252.42 7.2 1,717 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 124	250.16	0.1	29	251.20	2.5	600	252.24	6.5	1,529
250.20 0.2 41 251.24 2.7 630 252.28 6.6 1,570 250.22 0.2 47 251.26 2.7 645 252.30 6.7 1,591 250.24 0.2 54 251.28 2.8 661 252.32 6.8 1,612 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,654 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,696 250.34 0.4 90 251.38 3.1 739 252.42 7.2 1,717 250.36 0.4 99 251.42 3.3 772 252.46 7.4 1,760 250.40 0.5 115 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 124	250.18	0.1	35	251.22	2.6		252.26	6.5	
250.24 0.2 54 251.28 2.8 661 252.32 6.8 1,612 250.26 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,675 250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,696 250.34 0.4 90 251.38 3.1 739 252.42 7.2 1,717 250.36 0.4 99 251.40 3.2 756 252.44 7.3 1,738 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 114 251.46 3.4 805 252.50 7.6 1,803 250.42 0.5 124 251.48 3.5 821 252.52 7.7 1,825 250.42 0.5 124	250.20	0.2	41	251.24	2.7	630	252.28	6.6	
250.26 0.3 61 251.30 2.9 676 252.34 6.9 1,633 250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,675 250.34 0.4 90 251.38 3.1 723 252.42 7.2 1,696 250.34 0.4 90 251.40 3.2 756 252.44 7.3 1,738 250.36 0.4 99 251.40 3.2 756 252.44 7.3 1,738 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 124 251.44 3.3 788 252.50 7.6 1,803 250.44 0.6 133 251.48 3.5 821 252.50 7.7 1,825 250.48 0.6 152	250.22		47	251.26	2.7	645	252.30	6.7	
250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,675 250.32 0.3 83 251.38 3.1 723 252.40 7.2 1,696 250.34 0.4 90 251.40 3.2 756 252.44 7.3 1,738 250.36 0.4 99 251.40 3.2 756 252.44 7.3 1,738 250.40 0.5 115 251.42 3.3 772 252.46 7.4 1,760 250.42 0.5 124 251.46 3.4 805 252.50 7.6 1,803 250.42 0.5 124 251.46 3.4 805 252.50 7.6 1,803 250.44 0.6 133 251.48 3.5 821 252.50 7.6 1,803 250.48 0.6 152	250.24	0.2	54	251.28		661	252.32	6.8	
250.28 0.3 68 251.32 2.9 692 252.36 7.0 1,654 250.30 0.3 75 251.34 3.0 708 252.38 7.1 1,675 250.34 0.4 90 251.38 3.1 739 252.42 7.2 1,696 250.36 0.4 99 251.40 3.2 756 252.44 7.3 1,738 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.40 0.5 115 251.44 3.3 788 252.48 7.5 1,781 250.42 0.5 124 251.46 3.4 805 252.50 7.6 1,803 250.42 0.5 124 251.46 3.4 805 252.50 7.6 1,803 250.44 0.6 133 251.48 3.5 821 252.50 7.6 1,803 250.46 0.6 152	250.26	0.3	61	251.30			252.34		
250,30 0.3 75 251,34 3.0 708 252,38 7.1 1,675 250,32 0.3 83 251,36 3.1 723 252,40 7.2 1,696 250,34 0.4 90 251,38 3.1 739 252,44 7.3 1,717 250,36 0.4 99 251,40 3.2 756 252,44 7.3 1,738 250,38 0.5 107 251,42 3.3 772 252,46 7.4 1,760 250,40 0.5 115 251,44 3.3 788 252,48 7.5 1,781 250,42 0.5 124 251,46 3.4 805 252,50 7.6 1,803 250,42 0.6 133 251,48 3.5 821 252,52 7.7 1,825 250,44 0.6 133 251,58 3.5 831 252,50 7.6 1,803 250,46 0.6 152									
250.32 0.3 83 251.36 3.1 723 252.40 7.2 1,696 250.34 0.4 99 251.83 3.1 739 252.42 7.2 1,717 250.36 0.4 99 251.40 3.2 756 252.44 7.3 1,738 250.38 0.5 107 251.42 3.3 772 252.46 7.4 1,760 250.40 0.5 1124 251.44 3.3 788 252.48 7.5 1,781 250.42 0.5 124 251.46 3.4 805 252.50 7.6 1,803 250.44 0.6 133 251.48 3.5 821 252.52 7.7 1,825 250.46 0.6 152 251.50 3.5 838 252.54 7.8 1,846 250.50 0.7 161 251.54 3.7 872 252.56 7.9 1,868 250.50 0.7 171									
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_2021_POST CON_REV 2

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Summary for Reach 2R: Storm Sewer

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 135,188 sf, 7.78% Impervious, Inflow Depth > 2.60" for 25-Year event

Inflow = 3.31 cfs @ 13.03 hrs, Volume= 29,254 cf

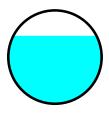
Outflow = 3.31 cfs @ 13.05 hrs, Volume= 29,234 cf, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.79 fps, Min. Travel Time= 0.6 min Avg. Velocity = 4.68 fps, Avg. Travel Time= 1.1 min

Peak Storage= 128 cf @ 13.04 hrs Average Depth at Peak Storage= 0.61' Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 3.77 cfs

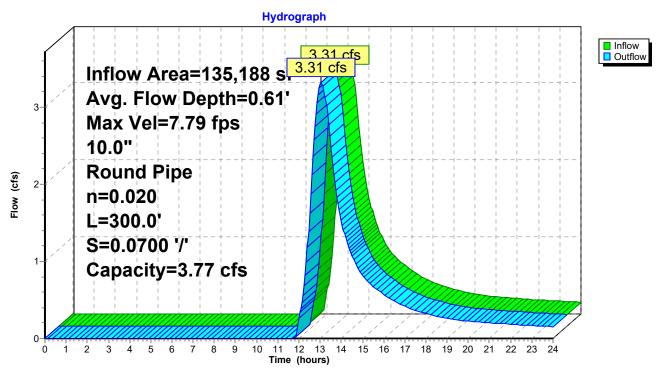
10.0" Round Pipe n= 0.020 Corrugated PE, corrugated interior Length= 300.0' Slope= 0.0700 '/' Inlet Invert= 271.00', Outlet Invert= 250.00'



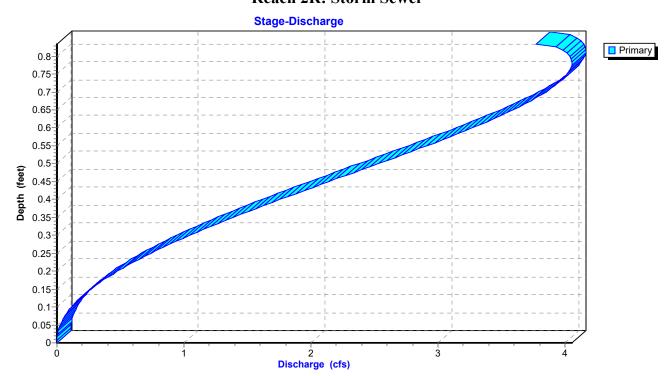
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Reach 2R: Storm Sewer

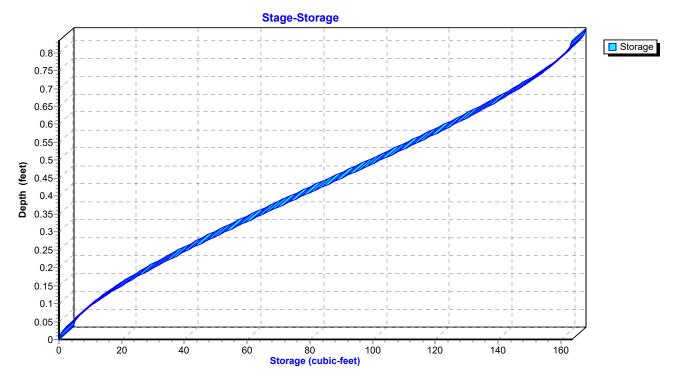


Reach 2R: Storm Sewer



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Reach 2R: Storm Sewer



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_2021_POST CON_REV 2
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Hydrograph for Reach 2R: Storm Sewer

Time	Inflow	Storage	Elevation	Outflow
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)
0.00	0.00	0	271.00	0.00
0.50	0.00	0	271.00	0.00
1.00	0.00	0	271.00	0.00
1.50	0.00	0	271.00	0.00
2.00	0.00	0	271.00	0.00
2.50	0.00	0	271.00	0.00
3.00	0.00	0	271.00	0.00
3.50	0.00	0	271.00	0.00
4.00	0.00	0	271.00	0.00
4.50	0.00	0	271.00	0.00
5.00	0.00	0	271.00	0.00
5.50	0.00	0	271.00	0.00
6.00	0.00	0	271.00	0.00
6.50	0.00	0	271.00	0.00
7.00	0.00	0	271.00	0.00
7.50	0.00	0	271.00	0.00
8.00	0.00	0	271.00	0.00
8.50	0.00	0	271.00	0.00
9.00	0.00	0	271.00	0.00
9.50	0.00	0	271.00	0.00
10.00	0.00	0	271.00	0.00
10.50	0.00	0	271.00	0.00
11.00	0.00	0	271.00	0.00
11.50	0.00	0	271.00	0.00
12.00	0.32	22	271.16	0.26
12.50	1.72	75	271.39	1.62
13.00	3.31	127	271.61	3.30
13.50	2.42	100	271.49	2.48
14.00	1.50	70	271.37	1.53
14.50	1.05	53	271.30	1.06
15.00	0.81	44	271.26	0.82
15.50	0.67	39	271.24	0.67
16.00	0.57	34	271.22	0.57
16.50	0.48	31	271.20	0.49
17.00	0.41	27	271.19	0.42
17.50	0.36	25	271.17	0.37
18.00	0.32	23	271.17	0.32
18.50	0.29	21	271.16	0.29
19.00	0.26	19	271.15	0.26
19.50	0.24	18	271.14	0.24
20.00	0.22	18	271.14	0.22
20.50	0.21	17	271.13	0.21
21.00	0.20	16	271.13	0.20
21.50	0.19	16	271.13	0.19
22.00	0.18	15	271.13	0.18
22.50	0.17	15	271.12	0.18
23.00	0.17	14	271.12	0.17
23.50	0.16	14	271.12	0.16
24.00	0.15	13	271.11	0.15

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Stage-Discharge for Reach 2R: Storm Sewer

Elevation	Velocity	Discharge	Elevation	Velocity	Discharge
(feet)	(ft/sec)	(cfs)	(feet)	(ft/sec)	(cfs)
271.00	0.00	0.00	271.52	7.50	2.69
271.01	0.69	0.00	271.53	7.55	2.76
271.02	1.09	0.00	271.54	7.59	2.84
271.03	1.43	0.01	271.55	7.63	2.91
271.04	1.73	0.02	271.56	7.66	2.99
271.05	2.00	0.03	271.57	7.70	3.06
271.06	2.25	0.04	271.58	7.73	3.13
271.07	2.48	0.05	271.59	7.75	3.20
271.08	2.70	0.07	271.60	7.78	3.27
271.09	2.91	0.09	271.61	7.80	3.34
271.10	3.11	0.12	271.62	7.82	3.40
271.11	3.30	0.14	271.63	7.84	3.47
271.12	3.48	0.17	271.64	7.85	3.53
271.13	3.66	0.20	271.65	7.86	3.59
271.14	3.83	0.23	271.66	7.87	3.65
271.15	3.99	0.27	271.67	7.87	3.70
271.16	4.15	0.30	271.68	7.88	3.75
271.17	4.30	0.34	271.69	7.87	3.80
271.17	4.45	0.39	271.70	7.87	3.85
271.19	4.59	0.33	271.70	7.86	3.89
271.19	4.73	0.43	271.71	7.84	3.93
271.20	4.73	0.48	271.72	7.84	3.96
271.21	4.99	0.52	271.73	7.82	3.99
271.22	5.12		271.74	7.77	
271.23	5.12	0.63	271.73		4.02
		0.68		7.73	4.03
271.25	5.36	0.74	271.77	7.69	4.05
271.26	5.48	0.80	271.78	7.64	4.05
271.27	5.59	0.86	271.79	7.58	4.05
271.28	5.70	0.92	271.80	7.50	4.04
271.29	5.81	0.98	271.81	7.41	4.01
271.30	5.91	1.04	271.82	7.29	3.96
271.31	6.01	1.11	271.83	7.03	3.83
271.32	6.11	1.18			
271.33	6.20	1.25			
271.34	6.29	1.32			
271.35	6.38	1.39			
271.36	6.47	1.46			
271.37	6.55	1.53			
271.38	6.63	1.61			
271.39	6.71	1.68			
271.40	6.79	1.76			
271.41	6.86	1.83			
271.42	6.93	1.91			
271.43	7.00	1.99			
271.44	7.07	2.06			
271.45	7.13	2.14			
271.46	7.19	2.22			
271.47	7.25	2.30			
271.48	7.30	2.38			
271.49	7.36	2.45			
271.50	7.41	2.53			
271.51	7.46	2.61			

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Stage-Area-Storage for Reach 2R: Storm Sewer

		Í	,		
	End-Area	Storage		End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
271.00	0.0	0	271.52	0.4	107
271.01	0.0	0	271.53	0.4	110
271.02	0.0	1	271.54	0.4	112
271.03	0.0	2 3	271.55	0.4	115
271.04	0.0	3 4	271.56	0.4	117
271.05	$0.0 \\ 0.0$	5	271.57	$0.4 \\ 0.4$	119 122
271.06		3 7	271.58	0.4	124
271.07 271.08	$0.0 \\ 0.0$	8	271.59 271.60	0.4	124
271.08	0.0	10	271.60	0.4	128
271.09	0.0	11	271.61	0.4	131
271.10	0.0	13	271.62	0.4	133
271.11	0.0	15	271.63	0.4	135
271.12	0.0	16	271.65	0.4	137
271.13	0.1	18	271.65	0.5	139
271.14	0.1	20	271.67	0.5	141
271.13	0.1	22	271.68	0.5	143
271.10	0.1	24	271.69	0.5	145
271.17	0.1	26	271.70	0.5	147
271.19	0.1	28	271.70	0.5	149
271.19	0.1	30	271.72	0.5	150
271.21	0.1	32	271.73	0.5	152
271.22	0.1	35	271.74	0.5	154
271.23	0.1	37	271.75	0.5	155
271.24	0.1	39	271.76	0.5	157
271.25	0.1	41	271.77	0.5	158
271.26	0.1	44	271.78	0.5	159
271.27	0.2	46	271.79	0.5	160
271.28	0.2	48	271.80	0.5	161
271.29	0.2	51	271.81	0.5	162
271.30	0.2	53	271.82	0.5	163
271.31	0.2	55	271.83	0.5	164
271.32	0.2	58			
271.33	0.2	60			
271.34	0.2	63			
271.35	0.2	65			
271.36	0.2	68			
271.37	0.2	70			
271.38	0.2	73			
271.39	0.3	75			
271.40	0.3	78			
271.41	0.3	80			
271.42	0.3	83			
271.43	0.3	85			
271.44	0.3	88			
271.45	0.3	90			
271.46	0.3	93			
271.47	0.3	95			
271.48	0.3	98			
271.49	0.3	100			
271.50	0.3	103			
271.51	0.3	105			

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Summary for Pond 1P: Underground Pipe Detention at Mausoleum

Inflow Area = 135,188 sf, 7.78% Impervious, Inflow Depth > 2.64" for 25-Year event Inflow = 3.32 cfs @ 13.00 hrs, Volume= 29,696 cf

Outflow = 3.31 cfs @ 13.03 hrs, Volume= 29,254 cf, Atten= 0%, Lag= 1.5 min

Primary = 3.31 cfs @ 13.03 hrs, Volume= 29,254 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 274.09' @ 13.03 hrs Surf.Area= 633 sf Storage= 578 cf

Plug-Flow detention time= 11.4 min calculated for 29,254 cf (99% of inflow) Center-of-Mass det. time= 3.7 min (903.2 - 899.5)

Volume	Invert	Avail.Storage	Storage Description
#1	273.50'	26 cf	4.00'W x 4.00'L x 4.00'H Stormwater Planter 1
			64 cf Overall x 40.0% Voids
#2	273.50'	26 cf	4.00'W x 4.00'L x 4.00'H Stormwater Planter 2
			64 cf Overall x 40.0% Voids
#3	273.50'	26 cf	4.00'W x 4.00'L x 4.00'H Stormwater Planter 3
			64 cf Overall x 40.0% Voids
#4	273.50'	26 cf	4.00'W x 4.00'L x 4.00'H Stormwater Planter 4
			64 cf Overall x 40.0% Voids
#5A	272.00'	331 cf	2.54'W x 141.33'L x 2.71'H Field A
			973 cf Overall - 147 cf Embedded = 827 cf x 40.0% Voids
#6A	272.50'	113 cf	ADS N-12 12 x 7 Inside #5
			Inside= 12.2 "W x 12.2 "H => 0.81 sf x 20.00 'L = 16.2 cf
			Outside= 14.5 "W x 14.5 "H => 1.05 sf x 20.00 'L = 20.9 cf
#7B	272.00'	194 cf	5.08'W x 41.33'L x 2.71'H Field B
			569 cf Overall - 84 cf Embedded = 486 cf x 40.0% Voids
#8B	272.50'	65 cf	ADS N-12 12 x 4 Inside #7
			Inside= 12.2 "W x 12.2 "H => 0.81 sf x 20.00 'L = 16.2 cf
			Outside= 14.5 "W x 14.5 "H => 1.05 sf x 20.00 'L = 20.9 cf
		006 6	T - 1 - 111 G

806 cf Total Available Storage

Storage Group A created with Chamber Wizard Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	273.50'	12.0" Horiz. Orifice/Grate C= 0.600 in 3.5" x 4.5" Grate
			Limited to weir flow at low heads
#2	Primary	273.50'	12.0" Horiz. Orifice/Grate CB-1 C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.31 cfs @ 13.03 hrs HW=274.09' (Free Discharge)

-1=Orifice/Grate (Orifice Controls 0.40 cfs @ 3.70 fps)

—2=Orifice/Grate CB-1 (Orifice Controls 2.91 cfs @ 3.70 fps)

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Pond 1P: Underground Pipe Detention at Mausoleum - Chamber Wizard Field A

Chamber Model = ADS N-12 12

Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

14.5" Wide = 14.5" C-C Row Spacing

7 Chambers/Row x 20.00' Long = 140.00' Row Length +8.0" End Stone x 2 = 141.33' Base Length 1 Rows x 14.5" Wide +8.0" Side Stone x 2 = 2.54' Base Width 6.0" Base + 14.5" Chamber Height + 12.0" Cover = 2.71' Field Height

7 Chambers x 16.2 cf = 113.4 cf Chamber Storage 7 Chambers x 20.9 cf = 146.5 cf Displacement

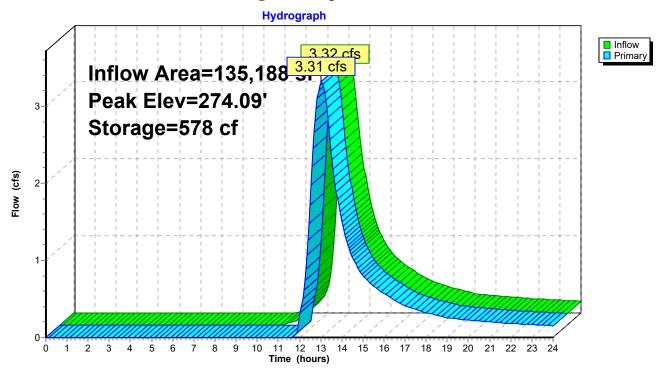
973.3 cf Field - 146.5 cf Chambers = 826.8 cf Stone x 40.0% Voids = 330.7 cf Stone Storage

Stone + Chamber Storage = 444.1 cf = 0.010 af Overall Storage Efficiency = 45.6%

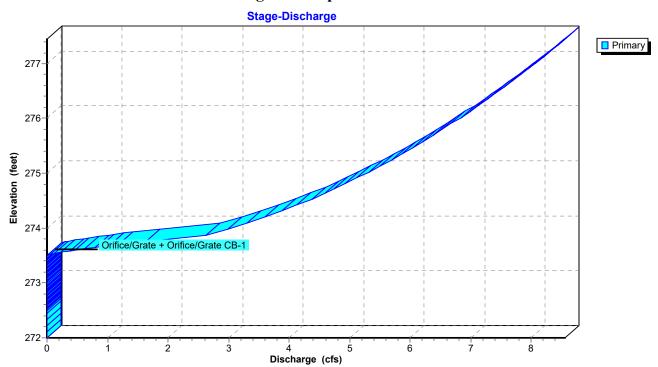
7 Chambers 36.0 cy Field 30.6 cy Stone

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Pond 1P: Underground Pipe Detention at Mausoleum



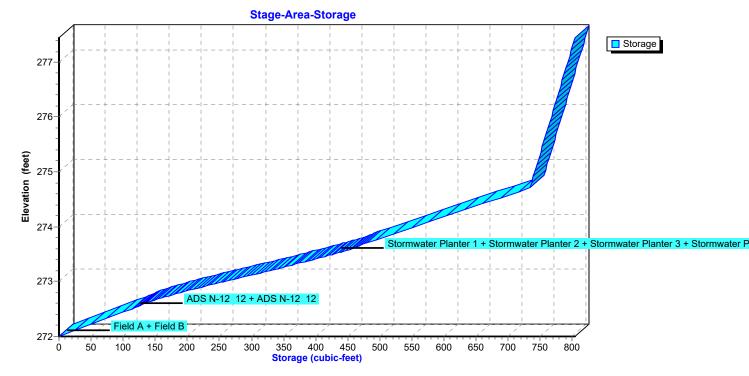
Pond 1P: Underground Pipe Detention at Mausoleum



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Pond 1P: Underground Pipe Detention at Mausoleum



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Hydrograph for Pond 1P: Underground Pipe Detention at Mausoleum

Time	Inflow	Storage	Elevation	Primary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)
0.00	0.00	0	272.00	0.00
0.50	0.00	0	272.00	0.00
1.00	0.00	0	272.00	0.00
1.50	0.00	0	272.00	0.00
2.00	0.00	0	272.00	0.00
2.50	0.00	0	272.00	0.00
3.00	0.00	0	272.00	0.00
3.50	0.00	0	272.00	0.00
4.00	0.00	0	272.00	0.00
4.50	0.00	0	272.00	0.00
5.00	0.00	0	272.00	0.00
5.50	0.00	0	272.00	0.00
6.00	0.00	0	272.00	0.00
6.50	0.00	0	272.00	0.00
7.00	0.00	0	272.00	0.00
7.50	0.00	0	272.00	0.00
8.00	0.00	0	272.00	0.00
8.50	0.00	0	272.00	0.00
9.00	0.00	0	272.00	0.00
9.50	0.00	0	272.00	0.00
10.00	0.00	0	272.00	0.00
10.50	0.01	4	272.02	0.00
11.00	0.04	41	272.18	0.00
11.50	0.12	175	272.75	0.00
12.00	0.32	451	273.58	0.32
12.50	1.76	496	273.77	1.72
13.00	3.32	577	274.09	3.31
13.50	2.41	516	273.85	2.42
14.00	1.49	490	273.74	1.50
14.50	1.04	475	273.69	1.05
15.00	0.81	468	273.65	0.81
15.50	0.67	463	273.63	0.67
16.00	0.57	460	273.61	0.57
16.50	0.48	457	273.60	0.48
17.00	0.41	455	273.59	0.41
17.50	0.36	453	273.58	0.36
18.00	0.32	451	273.58	0.32
18.50	0.28	449	273.57	0.29
19.00	0.25	448	273.57	0.26
19.50	0.24	447	273.56	0.24
20.00	0.22	446	273.56	0.22
20.50	0.21	446	273.56	0.21
21.00	0.20	445	273.56	0.20
21.50	0.19	445	273.56	0.19
22.00	0.18	444	273.55	0.18
22.50	0.17	444	273.55	0.17
23.00	0.17	443	273.55	0.17
23.50	0.16	443	273.55	0.16
24.00	0.15	442	273.55	0.15
	-	_		

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Stage-Discharge for Pond 1P: Underground Pipe Detention at Mausoleum

				_	
Elevation	Primary	Elevation	Primary	Elevation	Primary
(feet)	(cfs)	(feet)	(cfs)	(feet)	(cfs)
272.00	0.00	274.08	3.28	276.16	7.03
272.04	0.00	274.12	3.39	276.20	7.08
272.08	0.00	274.16	3.50	276.24	7.13
272.12	0.00	274.20	3.60	276.28	7.18
272.16	0.00	274.24	3.71	276.32	7.23
272.20	0.00	274.28	3.80	276.36	7.29
272.24	0.00	274.32	3.90	276.40	7.34
272.28	0.00	274.36	4.00	276.44	7.39
272.32	0.00	274.40	4.09	276.48	7.44
272.36	0.00	274.44	4.18	276.52	7.49
272.40	0.00	274.48	4.27	276.56	7.54
272.44	0.00	274.52	4.35	276.60	7.59
272.48	0.00	274.56	4.44	276.64	7.63
272.52	0.00	274.60	4.52	276.68	7.68
272.56 272.60	$0.00 \\ 0.00$	274.64	4.60 4.68	276.72 276.76	7.73 7.78
272.64	0.00	274.68 274.72	4.08 4.76	276.76	7.78
272.68	0.00	274.72	4.76	276.84	7.83 7.87
272.72	0.00	274.70	4.91	276.88	7.92
272.72	0.00	274.84	4.99	276.92	7.97
272.70	0.00	274.84	5.06	276.96	8.01
272.84	0.00	274.92	5.13	277.00	8.06
272.88	0.00	274.96	5.21	277.04	8.11
272.92	0.00	275.00	5.28	277.08	8.15
272.96	0.00	275.04	5.35	277.12	8.20
273.00	0.00	275.08	5.42	277.16	8.24
273.04	0.00	275.12	5.48	277.20	8.29
273.08	0.00	275.16	5.55	277.24	8.33
273.12	0.00	275.20	5.62	277.28	8.38
273.16	0.00	275.24	5.68	277.32	8.42
273.20	0.00	275.28	5.75	277.36	8.46
273.24	0.00	275.32	5.81	277.40	8.51
273.28	0.00	275.36	5.88	277.44	8.55
273.32	0.00	275.40	5.94	277.48	8.60
273.36	0.00	275.44	6.00		
273.40	0.00	275.48	6.06		
273.44	0.00	275.52	6.12		
273.48	0.00	275.56	6.18		
273.52	0.04	275.60	6.24		
273.56	0.22	275.64	6.30		
273.60	0.46	275.68	6.36		
273.64	0.74	275.72	6.42		
273.68	1.01	275.76	6.48		
273.72	1.31	275.80	6.53		
273.76	1.63	275.84	6.59		
273.80	1.98 2.34	275.88 275.92	6.65		
273.84 273.88	2.34	275.92 275.96	6.70 6.76		
273.88	2.79	275.96	6.81		
273.92	2.79	276.00	6.87		
273.90	3.05	276.04	6.92		
274.00	3.03	276.12	6.97		
2/ T. UT	3.17	2/0.12	0.97	I	

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Stage-Area-Storage for Pond 1P: Underground Pipe Detention at Mausoleum

E1	G.	E1	G. I	l 121 41	C.
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
272.00	(cubic-feet)	274.08	575	276.16	771
272.00	9	274.08	585	276.10	772
272.04	18	274.12	595	276.24	773
272.08	27	274.10	605	276.24	774
272.16	36	274.24	615	276.32	775
272.20	46	274.28	625	276.36	776
272.24	55	274.32	636	276.40	777
272.28	64	274.36	646	276.44	778
272.32	73	274.40	656	276.48	779
272.36	82	274.44	666	276.52	780
272.40	91	274.48	676	276.56	781
272.44	100	274.52	686	276.60	782
272.48	109	274.56	696	276.64	784
272.52	118	274.60	706	276.68	785
272.56	126	274.64	717	276.72	786
272.60	133	274.68	727	276.76	787
272.64	142	274.72	734	276.80	788
272.68	153	274.76	735	276.84	789
272.72	165	274.80	736	276.88	790
272.76	177	274.84	737	276.92	791
272.80	190	274.88	738	276.96	792
272.84	203	274.92	739	277.00	793
272.88	216	274.96	740	277.04	794
272.92	230	275.00	742	277.08	795
272.96	244	275.04	743	277.12	796 797
273.00 273.04	258 272	275.08 275.12	744 745	277.16 277.20	797 798
273.04	286	275.12	743 746	277.20	798 799
273.08	300	275.10	740 747	277.24	800
273.16	314	275.24	748	277.32	801
273.20	328	275.28	749	277.36	802
273.24	342	275.32	750	277.40	803
273.28	356	275.36	751	277.44	804
273.32	370	275.40	752	277.48	805
273.36	383	275.44	753	_,,,,,	
273.40	397	275.48	754		
273.44	409	275.52	755		
273.48	422	275.56	756		
273.52	434	275.60	757		
273.56	446	275.64	758		
273.60	457	275.68	759		
273.64	465	275.72	760		
273.68	474	275.76	761		
273.72	484	275.80	762		
273.76	494	275.84	763		
273.80	504	275.88	764		
273.84	514	275.92	765		
273.88	524	275.96	766		
273.92	534	276.00	767		
273.96	544	276.04	768 760		
274.00	554 565	276.08	769		
274.04	565	276.12	770		

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Summary for Link 1L: CB on N. Highland Ave.

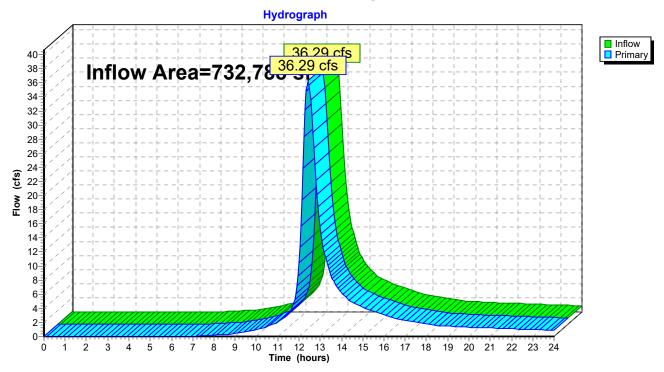
Inflow Area = 732,788 sf, 1.44% Impervious, Inflow Depth > 3.64" for 25-Year event

Inflow = 36.29 cfs @ 12.43 hrs, Volume= 222,550 cf

Primary = 36.29 cfs @ 12.43 hrs, Volume= 222,550 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: CB on N. Highland Ave.



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		Н	ydrograpl	n for Link	1L: CB o	on N. High	land Ave.
Time	Inflow	Elevation	Primary	Time	Inflow	Elevation	Primary
(hours)	(cfs)	(feet)	(cfs)	(hours)	(cfs)	(feet)	(cfs)
0.00	0.00	0.00	0.00	13.00	15.62	0.00	15.62
0.25	0.00	0.00	0.00	13.25	11.23	0.00	11.23
0.50	0.00	0.00	0.00	13.50	8.63	0.00	8.63
0.75	0.00	0.00	0.00	13.75	7.13	0.00	7.13
1.00	0.00	0.00	0.00	14.00	6.16	0.00	6.16
1.25	0.00	0.00	0.00	14.25	5.43	0.00	5.43
1.50	0.00	0.00	0.00	14.50	4.88	0.00	4.88
1.75	0.00	0.00	0.00	14.75	4.47	0.00	4.47
2.00	0.00	0.00	0.00	15.00	4.14	0.00	4.14
2.25	0.00	0.00	0.00	15.25	3.85	0.00	3.85
2.50	0.00	0.00	0.00	15.50	3.57	0.00	3.57
2.75	0.00	0.00	0.00	15.75	3.30	0.00	3.30
3.00	0.00	0.00	0.00	16.00	3.03	0.00	3.03
3.25	0.00	0.00	0.00	16.25	2.77	0.00	2.77
3.50	0.00	0.00	0.00	16.50	2.55	0.00	2.55
3.75	0.00	0.00	0.00	16.75	2.39	0.00	2.39
4.00	0.00	0.00	0.00	17.00	2.26	0.00	2.26
4.25	0.00	0.00	0.00	17.25	2.13	0.00	2.13
4.50	0.00	0.00	0.00	17.50	2.01	0.00	2.01
4.75	0.00	0.00	0.00	17.75	1.90	0.00	1.90
5.00	0.00	0.00	0.00	18.00	1.78	0.00	1.78
5.25	0.00	0.00	0.00	18.25	1.66	0.00	1.66
5.50	0.00	0.00	0.00	18.50	1.57	0.00	1.57
5.75	0.00	0.00	0.00	18.75	1.51	0.00	1.51
6.00	0.00	0.00	0.00	19.00	1.47	0.00	1.47
6.25	0.00	0.00	0.00	19.25	1.43	0.00	1.43
6.50	0.00	0.00	0.00	19.50	1.39	0.00	1.39
6.75	0.02	0.00	0.02	19.75	1.35	0.00	1.35
7.00	0.04	0.00	0.04	20.00	1.32	0.00	1.32
7.25	0.06	0.00	0.06	20.25	1.28	0.00	1.28
7.50	0.09	0.00	0.09	20.50	1.25	0.00	1.25
7.75	0.13	0.00	0.13	20.75	1.22	0.00	1.22
8.00	0.17	0.00	0.17	21.00	1.19	0.00	1.19
8.25	0.21	0.00	0.21	21.25	1.17	0.00	1.17
8.50	0.26	0.00	0.26	21.50	1.14	0.00	1.14
8.75	0.32	0.00	0.32	21.75	1.11	0.00	1.11
9.00	0.40	0.00	0.40	22.00	1.09	0.00	1.09
9.25	0.51	0.00	0.51	22.25	1.06	0.00	1.06
9.50	0.64	0.00	0.64	22.50	1.04	0.00	1.04
9.75	0.80	0.00	0.80	22.75	1.01	0.00	1.01
10.00	0.97	0.00	0.97	23.00	0.98	0.00	0.98
10.25	1.16	0.00	1.16	23.25	0.96	0.00	0.96
10.50	1.40	0.00	1.40	23.50	0.93	0.00	0.93
10.75	1.71 2.07	0.00	1.71	23.75	0.91	0.00	0.91
11.00 11.25		0.00	2.07	24.00	0.88	0.00	0.88
11.23	2.49 3.21	$0.00 \\ 0.00$	2.49				
11.30	3.21 4.64	0.00	3.21 4.64				
12.00	10.42	0.00	10.42				
12.00	28.36	0.00	28.36				
12.23	35.25	0.00	35.25				
12.50	33.43	0.00	33.43				

24.36

12.75

24.36

0.00

Summary for Link 2L: South East Corner of Property

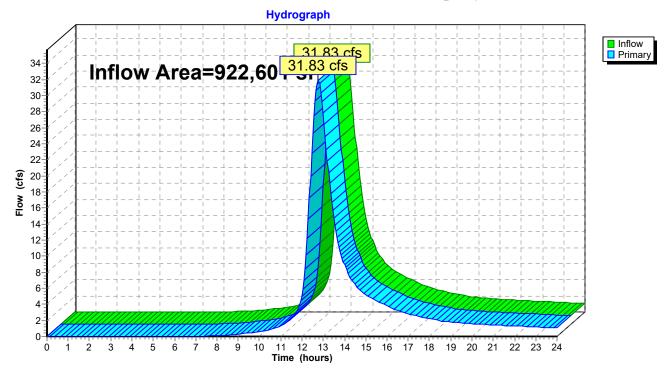
Inflow Area = 922,601 sf, 0.00% Impervious, Inflow Depth > 3.16" for 25-Year event

Inflow = 31.83 cfs @ 12.77 hrs, Volume= 242,789 cf

Primary = 31.83 cfs @ 12.77 hrs, Volume= 242,789 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2L: South East Corner of Property



Printed 2/15/2021

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Hydrograph for Link 2L: South East Corner of Property

Time					•			
0.00 0.00 0.00 0.00 13.00 27.79 0.00 27.79 0.25 0.00 0.00 0.00 13.25 20.38 0.00 20.38 0.50 0.00 0.00 0.00 13.50 14.71 0.00 14.71 0.75 0.00 0.00 0.00 14.00 8.91 0.00 11.12 1.00 0.00 0.00 0.00 14.00 8.91 0.00 8.91 1.55 0.00 0.00 0.00 14.20 8.91 0.00 7.47 1.50 0.00 0.00 0.00 14.25 7.47 0.00 5.00 1.75 0.00 0.00 0.00 14.25 7.47 0.00 5.74 2.00 0.00 0.00 0.00 15.00 5.20 0.00 5.74 2.50 0.00 0.00 0.00 15.50 4.44 0.00 4.42 2.75 0.00 0.00	Time	Inflow	Elevation	Primary	Time	Inflow	Elevation	Primary
0.25 0.00 0.00 0.00 13.25 20.38 0.00 20.38 0.50 0.00 0.00 0.00 13.75 11.12 0.00 14.71 0.00 14.71 1.00 0.00 0.00 0.00 13.75 11.12 0.00 11.12 1.00 0.00 0.00 0.00 14.00 8.91 0.00 8.91 1.50 0.00 0.00 0.00 14.50 6.47 0.00 6.47 1.75 0.00 0.00 0.00 14.55 6.47 0.00 6.47 1.75 0.00 0.00 0.00 15.00 5.20 0.00 5.74 2.00 0.00 0.00 0.00 15.00 5.20 0.00 5.20 2.25 0.00 0.00 0.00 15.75 4.12 0.00 4.79 2.50 0.00 0.00 0.00 15.75 4.12 0.00 4.12 3.00								
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	12.75	31.81	0.00	31.81				

Atlantic Consulting and Engineering

525 John Street • Second Floor Bridgeport, CT 06604

(203) 333-9465 (203) 336-1769 FAX

Note: Calculation considers Total Contributing surface

area in Orangetown. Sheet No. 1 of 1

Project: Oak Hill Cemetery - Proposed Mausoleum

 140 North Highland Ave.
 Date:
 9/23/20

 Nyack, NY
 Revised:
 11/23/20

 Revised:
 2/12/21

Subject: Water Quality Volume Calc

New York Stormwater Management Design Manual Methodology

Complete d By: SDU

Drainage Checked

Area: Contributing Disturbed Area By:

Step 1: Calculate Water Quality Volume, (WQv)

Step 1: Calculate Water Quality Volume, (WQv) using the 90% Rule: (Table 4.1 New York Stormwater Sizing Criterial)

WQv(acre-feet) =(P x Rv x A) / 12

Where:

Rv = Runoff Coefficient for Impervious Cover = 0.05+0.009(I)

%I = Percent of Site in Impervious Cover (14.6 Percent)

P = (Inch)= 90 Percent Rainfall event number (See Figure 4.1)2

A = Site Area or Tributary Drainage Area (Acres) Total Contributing surface Area used

	Design Pa	Water Quality		
P (in)	A (acre)	%I	Volume	
				(Acre. Ft.)
1.5	0.7635	0.1814	14.600	0.01731

WQv = 0.01731 acre-ft or 754.02 Cu.Ft.

Considering the site a redevelopment per Chapter 9 - Sect. 9.2.1.B(III) of NYSWMDM 2015
The plan proposes the use of alternative SMPs to treat 75% of the WQv from the disturbed, impervious area

as well as additional runoff from tributary areas not within the disturbed, impervious area

Volume Required to Store On-Site for Cleaning: (0.75 x 754.02 = 565.52 Cu.ft.)

565.52 cu.ft. 0.0130 acre-ft.

*NOTE:Volume provided by each Stormwater planter = (4' x 4' x 4')0.40 = 25.6 cu.ft. x # of planters (4) = 1024 cu.ft.

Volume provided by 140 If of underground infiltration pipe detention = 444.1 cu.ft.

Volume provided by (2) - 40 If underground pipe detention = 259.0 cu.ft. (for a total of 220 l.f. of trench)

102.4 + 444.1 + 259.0 Cu. ft. = 805.5 cu.ft. > 754 cu.ft. (100% WQv) therefore WQv standard is met.

4 UNITS 4' x 4' x 4' STORMWATER PLANTER CONNECTED BY 12" SLOTTED ADS N-12 STORM SEWER PIPE ENCASED IN 28" wide X 30" deep GRAVEL BED 220 L.F. LONG WILL PROVIDE STORAGE FOR THE WATER QUALITY VOLUME (FIRST FLUSH) ONLY. PEAK FLOW ATTENUATION IS NOT YET INCLUDED IN THIS CALCULATION / COUNT.

RRv (acre-feet)=Reduction of the total WQv by application of green infrastructure techniques and SMPs to replicate pre-development hydrology.

100% of the total Water Quality Volume has been provided by use of the Underground Infiltration ADS (Advanced Drainage System) Pipe Storage and Detention System as a Standard SMP (Stormwater Management Practice) and Green Infrastructure technique by use of Stormwater Planters.

Appendix D

Certifications

- 1) Responsible Contractor's or Subcontractor's Certification Statement.
 - 2) MS4 Acceptance Form
 - 3) SWPPP Preparer Certificate

CONTRACTORS CERTIFICATION STATEMENT

Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

Name and Title of Signee
Name and Title of trained contractor
Name, address and telephone number of contracting firm
Site Address (or other identifying description)
Date Signed:



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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit *(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

· ·								
I. Project Owner/Operator Information								
1. Owner/Operator Name:	Mullen Construction Co. Inc.							
2. Contact Person:	Kerry Mullen							
3. Street Address:	P.O. Box 148							
4. City/State/Zip:	Gaylordsville, CT 06755							
II. Project Site Information	วท							
5. Project/Site Name:	Oak Hill Cemetery / Community Mausoleum							
6. Street Address:	140 North Highland Avenue							
7. City/State/Zip:	Orangetown/Nyack, New York, 10960							
III. Stormwater Pollution	Prevention Plan (SWPPP) Review and Acceptance Information							
8. SWPPP Reviewed by:								
9. Title/Position:								
10. Date Final SWPPP Rev	riewed and Accepted:							
IV. Regulated MS4 Inform	ation							
11. Name of MS4:								
12. MS4 SPDES Permit Ide	entification Number: NYR20A							
13. Contact Person:								
14. Street Address:								
15. City/State/Zip:								
16. Telephone Number:								

MS4 SWPPP Acceptance Form - continued
V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative
I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.
Printed Name:
Title/Position:
Signature:
Date:
VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)



SWPPP Preparer Certification Form

Discharges From Construction (GP-0-20-001)		F1.07	
Project Site Information Project/Site Name			
Oak Hill Cemetery - Community Mausol	eum		
Owner/Operator Information Owner/Operator (Company I	Name/Pr	ivate Owner/Municipality Name)	
Mullen Construction Company, Inc.			
I hereby certify that the Stormwater F project has been prepared in accorda GP-0-20-001. Furthermore, I underst information is a violation of this perm could subject me to criminal, civil and	ance with and that it and the	the terms and conditions of the certifying false, incorrect or inaccurate laws of the State of New York and	
James	E.	Quill	
First name	MI	Last Name	
		3	
Jun & Jule		9/23/2020	
Signature		Date	

Revised: January 2020

Appendix E

Inspection Reports

Appendix F

Copy of Notice of Termination Form

New York State Department of Environmental Conservation

Division of Water 625 Broadway, 4th Floor

Albany, New York 12233-3505

(NOTE: Submit completed form to address above)

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

Please indicate your permit identification number: NYF	₹
I. Owner or Operator Information	
1. Owner/Operator Name:	
2. Street Address:	
3. City/State/Zip:	
4. Contact Person:	4a.Telephone:
4b. Contact Person E-Mail:	
II. Project Site Information	
5. Project/Site Name:	
6. Street Address:	
7. City/Zip:	
8. County:	
III. Reason for Termination	
9a. □ All disturbed areas have achieved final stabilization in acco SWPPP. *Date final stabilization completed (month/year): _	rdance with the general permit and
9b. Permit coverage has been transferred to new owner/operare permit identification number: NYR (Note: Permit coverage can not be terminated by owner/operator obtains coverage under the general permit)	<u> </u>
9c. □ Other (Explain on Page 2)	
IV. Final Site Information:	
10a. Did this construction activity require the development of a S stormwater management practices? □ yes □ no (If no,	WPPP that includes post-construction go to question 10f.)
10b. Have all post-construction stormwater management practic constructed? □ yes □ no (If no, explain on Page 2)	es included in the final SWPPP been
10c. Identify the entity responsible for long-term operation and m	aintenance of practice(s)?

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the **SPDES General Permit for Construction Activity - continued** 10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes 10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s): □ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality. □ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s). □ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record. □ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan. 10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? (acres) 11. Is this project subject to the requirements of a regulated, traditional land use control MS4? (If Yes, complete section VI - "MS4 Acceptance" statement V. Additional Information/Explanation: (Use this section to answer questions 9c. and 10b., if applicable) VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage) I have determined that it is acceptable for the owner or operator of the construction project identified in

Date:

question 5 to submit the Notice of Termination at this time.

Printed Name:
Title/Position:

Signature:

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

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as of the general permit, and that all temporary, structural erosion and sedim been removed. Furthermore, I understand that certifying false, incorrect of violation of the referenced permit and the laws of the State of New York a criminal, civil and/or administrative proceedings.	nent control measures have or inaccurate information is a	
Printed Name:		
Title/Position:		
Signature:	Date:	
VIII. Qualified Inspector Certification - Post-construction Stormwat	er Management Practice(s):	
I hereby certify that all post-construction stormwater management practic conformance with the SWPPP. Furthermore, I understand that certifying information is a violation of the referenced permit and the laws of the Starsubject me to criminal, civil and/or administrative proceedings.	false, incorrect or inaccurate	
Printed Name:		
Title/Position:		
Signature:	Date:	
IX. Owner or Operator Certification		
I hereby certify that this document was prepared by me or under my direct determination, based upon my inquiry of the person(s) who managed the persons directly responsible for gathering the information, is that the infordocument is true, accurate and complete. Furthermore, I understand that inaccurate information is a violation of the referenced permit and the laws could subject me to criminal, civil and/or administrative proceedings.	construction activity, or those mation provided in this certifying false, incorrect or	
Printed Name:		
Title/Position:		
Signature:	Date:	

(NYS DEC Notice of Termination - January 2015)

Appendix G

Geotechnical Engineering Report By: Atlantic Consulting & Engineering, LLC Dated: December 12, 2019

Geotechnical Engineering Report For Proposed Construction of:

Mausoleum
Oak Hill Cemetery
140 North Highland Avenue
Nyack, NY

Prepared for:
Mullen Construction
PO Box 148
Gaylordsville, CT 06755

Atlantic Consulting &

Prepared by:
Atlantic Consulting & Engineering, LLC
525 John Street
Bridgeport, CT 06604

December 12, 2019

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1.00 GENERAL SUMMARY

Based on the studies performed as discussed herein, we have prepared the following conclusions and recommendations.

- 1.) Variable density fill, organic silt, glacial till, rock and weathered rock deposits are present in the portions of the proposed construction area that were investigated. Liquefaction potential is extremely low based on density and gradation of soils and rock depth.
- 2.) Unsuitable materials (fill and organic silt) must be removed below footings and slabs. The existing naturally deposited inorganic sand and gravel materials or rock can be used beneath the bottom of footing, floor slabs and pavements. If required, raises in grade materials beneath the pavement and floor slabs should consist of structural fill, which these materials appear to qualify as, and materials specified herein.
- Replacement fills for slab and footing support as required should consist of "structural fill" as defined in paragraph 7.30 and be placed and compacted to 95 percent of the optimum dry density per ASTM D-1557.
- Groundwater and rock is expected to impact the excavation or cut areas of the proposed project if basements are proposed.
- 5.) Footings may be excavated to naturally deposited inorganic materials or rock as defined herein and the grade can be raised to bottom of footing elevation using structural fill. Bearing surfaces within the proposed building area are at least 3.5 feet below the existing grade.
- 6.) Provided bearing surfaces are prepared as described herein, an allowable soil bearing capacity of 6,000 pounds per square foot may be used for design purposes in sizing the footings and foundations. If structural fill is used to raise the grade, 6,000 pounds per square foot can be used in the design.
- 7.) Footing drains are required in the project due to the classification of the soils that will be used to raise the grade if founded on rock; if the granular structural fill is used as specified, drainage characteristics of the replacement material should negate the requirement for footing drains.
- 8.) Rock encountered during the excavation can be rock hammered or scraped depending on what field conditions are encountered when the rock is exposed. The rock appears to be soft enough to assuage blasting; hoe ramming should be able to be accomplished for any hard rock encountered. Bearing capacity of bedrock can be assumed to be 12,000 pounds per square foot for the weathered rock to be determined by the geotechnical engineer in the field.
- 9.) All work to prepare in-place materials and to construct foundation systems should be performed under the observation of the geotechnical engineer. Specific important details of our geotechnical engineering study and recommendations are enclosed herein.

2.00 INTRODUCTION

This report presents the results of an engineering study performed by Atlantic Consulting & Engineering (ACE), at the site of the proposed Mausoleum at the Oak Hill Cemetery in Nyack, NY. Included in this report are a summary of subsurface conditions observed and the implications of these conditions with respect to the design and construction of the proposed structure. Please note that this report is subject to the limitations contained in Section 8.00.

2.10 OBJECTIVE OF STUDY

The objective of our scope of services was to explore subsurface conditions within the proposed structure and develop geotechnical recommendations for the design of spread footing foundation and floor slab support for the proposed structure. Included are design criteria for proposed pavement sections.

2.20 GEOTECHNICAL SCOPE OF SERVICES

The scope of services performed by ACE to meet the above stated objectives for geotechnical services included the following:

- 1. Inspection of the test borings conducted by Soiltesting, Inc. on November 15, 2019
- 2. Evaluation of the fill samples and the underlying rock and alluvial deposits.
- 3. Recommendations were prepared for foundation and slab support for the proposed structure.
- 4. Recommendations for pavement section design have been prepared.
- 5. General recommendations have been made as to earthwork and foundation construction procedures to be followed during the construction phase of this project.

2.30 SITE AND PROJECT DESCRIPTION

The site is located in the Oak Hill Cemetery in Nyack, NY. Typical gravestones and access roads surround the proposed area of construction. The subject site is steeply graded from the road and increases in grade away from the road. The grade at the road is elevation 272 and the rear of the mausoleum is elevation 290. The finish floor is elevation 279 which is 5 to 7 feet higher than the road.

3.00 SUBSURFACE EXPLORATIONS

Subsurface explorations performed for this project consisted of hollow stem augured borings. Borings were terminated in naturally deposited inorganic materials or on bedrock.

Test borings were located by this office. Approximate locations of borings are shown on the Boring Location Plan. Five (5) test borings were advanced throughout the site. Copies of the test boring logs are included in Appendix A, along with a boring location plan. Test boring locations should be considered accurate only to the degree implied by measuring method used to determine them. Test borings were conducted at the base of the incline. Access was limited due to graves surrounding the area as well as the steepness of the slope.

The test borings were conducted using a truck mounted drill rig. Soil samples from the test borings were classified both on site and in the lab and on site by a geotechnical engineer.

4.00 SUBSURFACE CONDITIONS

All explorations revealed fill and organics beneath the topsoil layers. Medium dense to very dense gravel silts and sands underlain by rock were predominant throughout the exploratory effort. This material is well draining and stable to work on and is desirable as bearing material and should be prepared as outlined below. Shallow rock was encountered in the northwestern portion of the site. Water may affect the excavation.

5.00 IMPLICATIONS OF SUBSURFACE CONDITIONS

5.10 FILL/TOPSOIL

Each of the explorations revealed a damp moist fill made up of sand, gravel and cobbles; some fill contained silt and mulch. The fill and/or organic materials extend to depths of 0.5 to 1.5 feet below the existing grade.

5.20 ALLUVIAL DEPOSTS

Throughout the site beginning immediately beneath the fill an alluvial deposit was encountered. The material is a brown silt and fine to coarse sand with gravel and some clay in most cases. The alluvial material overlies the rock and ranges in depth from 6 to 27 feet deep. The characteristics of this material make it suitable for footing support, and this could be the design bearing material for the project. Some of this material **may** meet the structural fill requirements outlined in section 7.30 and therefore could be reused as structural fill for raises in grade beneath footings and slabs, furthermore it appears to be suitable to raise the grade in paved areas provided the final 8 to 12 inches area prepared in accordance with Paragraph 7.30 below.

5.30 ROCK

Rock was encountered in each of the borings as auger refusal occurred between 6 and 27 feet below grade. The rock is a soft sandstone which was easily drilled. The rock appears to be boulders overlying a more consistent or homogeneous formation.

5.40 GROUNDWATER

Groundwater was NOT encountered in the explorations; typically, the water table is "perched" above many rock formations. Because of the severe weathering, it appears water may run through the surface of the rock contributing to the decomposition, but possibly storm water and not the water table.

6.00 DESIGN OBSERVATIONS

Spread footings are recommended for this building foundation provided that the site is improved as outlined herein. It is our recommendation that the bottom of slabs and footings or construction of the footings directly on the Rock, structural fill or Alluvial Stratum. If in-place material is determined by the Geotechical Engineer in the field to be acceptable after proofrolling and visual observations, then areas beneath the slabs can be prepared as described in Section 7.10. Where bearing surfaces require a raise in grade, structural fill can be placed above the existing silt and sandy deposits as described in Section 7.30. The soft sandstone probably will not be able to be fully excavated using a backhoe and rock hammering or ho ramming may need to take place

6.10 SPREAD FOOTINGS

Excavation to naturally deposited inorganic materials, including rock, is the most cost-effective approach for this project due to the relatively shallow depth of the unsuitable materials in the major portion of the building pad. Spread footings can bear directly on alluvial deposits, weathered rock, bedrock or structural fill can be used to raise the grade to a minimum of 42 inches below finish grade. Footings bearing partially on soils and partially on the rock may create a differential settlement most likely would occur cracking the footing and/ or wall at the rock-to- soil transition, therefore a 12 inch cushion is recommended to be placed between top of rock and bottom of footing in areas over rock to create a transition buffer to relieve stress points; an alternative would be to extend additional reinforcing steel 48 inches (8 feet total) either side of the rock-to-soil interface. If the rock is weathered then this would not be necessary, since the weathering gives the rock some natural cushion.

6.20 SLAB ON GRADE

It is recommended that a 4" to 6" thick slab on grade be used to support floor loads. The slab should over-lie free draining sand and gravel. Any additional fill needed to bring the slab to grade should be installed as directly shown in section 7.30.

6.30 PAVED AREAS

The subgrade soil for pavement will generally consist of the existing sandy materials currently in place at the site, which are free draining. Our standard pavement cross section consists of the following:

Roadways and Auto Parking Areas

3 - inch Two 1 1/2" Bituminous Concrete Courses (Class 1 and 2)

4 - inch Process Aggregate Base

8 - inch Structural fill placed on compacted subgrade proofrolled prior to lift placement with a fully loaded 10-wheel dump truck or a 10-ton vibratory roller.

The above cross section is considered acceptable provided the existing materials are proofrolled. All subsequent replacement fills required beneath the subbase should consist of compacted structural fill. Any areas where weaving is observed should be locally excavated and replaced using structural fill.

6.40 SEISMIC CHARACTERISTICS and LIQUEFACTION POTENTIAL

For structural design, the IBC Seismic Site Soil Classification is considered to be "B". The site classification is reduced to "A" if the bottom of all the footings were less than 10 feet from the rock surface which may be the case. The mapped spectral response acceleration for 1 second period is S1=0.072 and for short periods Ss=0.271. For transfer of ground shear into the naturally deposited inorganic sands, a factor of 0.35 can be assumed. (See Appendix B for Seismic Charting)

Based on the results of the borings and the SPT sampling, the subsurface conditions at the site should be considered as having a **negligible potential** for liquefaction due to the density and gradation of the silt and sand coupled with the shallow depth of the rock.

6.50 SOIL LATERAL LOADS

Foundation walls and retaining walls should be designed to resist lateral loading. At optimum densities and in moist conditions, the design lateral loads in pounds per square foot per foot of depth shall be 40. Submerged or saturated soil pressure used in design shall include the weight of buoyant soil plus hydrostatic loading.

7.00 CONSTRUCTION AND EARTHWORK CONSIDERATIONS

Development of the proposed site may entail some soil and foundation-oriented problems especially with respect to the existing fill and potential groundwater within the footprint of the proposed building. Grading problems may also occur if the work is carried out in wet weather due to the relatively high silt content of some of the on-site materials. The recommendations presented in this report are predicated upon site preparations, foundation wall construction, floor slabs and pavement construction monitored under controlled conditions and the direction of the geotechnical consultant.

It is recommended that placement of the concrete for footings and slabs take place shortly following the preparation of the design bearing surface, since the introduction of water may adversely affect its structural characteristics. Dewatering should take place throughout the operation if excavation near the water table takes place. To ensure minimum disturbance to bearing surfaces, the water table should be 24 inches below all working areas.

7.10 FLOOR SLABS

Prior to placement of new structural fill, or free-draining sand, gravel base course materials, all deleterious materials, including topsoil and fill should be removed from within the limits of the building to the minimum depth below finish floor as determined by the structural engineer. The exposed subgrade materials should then be proofrolled with a minimum of 4 passes of a loaded 10-wheel dump truck or 10-ton roller. Any observed soft or weaving areas should be locally excavated and replaced with compacted structural fill. The final 8 inches of free draining sand and gravel shall be placed as defined in section 7.30. A 4 to 6-inch slab on grade is recommended for the use described herein.

7.20 PAVEMENTS

Prior to placement of new pavement section materials, the in-place fill materials should be removed to a minimum depth of below the bottom of finish pavement grades. Existing bearing surfaces should be proofrolled and subgrade should then be prepared as outlined under Section 7.10 and 7.30. Raises in grade below pavement section materials should be performed using structural fill, acceptable on-site material and processed base as described in section 6.30

7.30 MATERIALS, PLACEMENT AND COMPACTION

Structural fill to be used in backfilling within the building areas below footings and floor slabs, below the recommended 8-inch sand-gravel floor slab base course, and beneath the recommended pavement section, should be free from ice, snow, roots, stumps, and other deleterious materials. Structural fill should consist of a sandy GRAVEL or gravely SAND material, and conform to the following gradation requirements:

Sieve Size	Percent Finer by Weight			
3.5 inch	100			
No. 4	30 - 65			
No. 10	20 - 50			
No. 40	5 - 30			
No. 100	0 - 10			

Free draining sand and gravel for the floor slab base course, whether existing or to be placed, should be free of ice, snow, roots, stumps, rubbish, and other deleterious materials and should consist of hard durable sand and gravel conforming to the following gradation requirements:

Sieve Size	Percent Finer by Weight
1 inch	100
1/2 inch	50 - 85
No. 4	40 - 75
No. 50	8 - 28
No. 100	0 - 10

All building areas, structural fill, floor slab base course free draining sand-gravel fill, pavement base course and pavement subbase material, should be placed in lifts not exceeding 8 inches in loose lift thickness and should be compacted to at least 95 percent of maximum dry density per ASTM D-1557. New structural fill required exterior to structural element (footings, foundation or retaining walls, floor slabs, and pavements) zone of bearing should be compacted to at least 93 percent of the maximum dry density per ASTM D-1557.

If it is necessary to re-use existing acceptable on-site materials in areas below the SLAB and in PAVED areas, compaction can be carried out by placing the material in lifts not exceeding 6 inches and should be compacted to a minimum of 95 percent of maximum dry density per ASTM D-1557. This cannot be conducted in wet weather, nor if the moisture content of the material is at a level where the desired compaction cannot be physically achieved. Proctor tests, ASTM D-1557, will have to be conducted on samples of any fill desired to be reused. All reused material shall be free of roots, stumps, ice, snow, organic and any other deleterious materials.

7.40 CONSTRUCTION MONITORING SERVICES

It is recommended that Atlantic Consulting & Engineering and Fairfield Testing Laboratory be retained to provide geotechnical engineering and construction monitoring services during the excavation, foundation, and construction phases of the project. The purpose of these services is to observe compliance with the design concepts, contract documents, and geotechnical recommendations and to allow orderly design changes during construction in the event that subsurface conditions differ from those anticipated prior to the start of construction.

During construction, the Atlantic Consulting & Engineering and Fairfield Testing field representatives would be present to provide controlled inspections including with the following:

- Observe the general progress of site work.
- 2. Perform the required field control tests for earthwork, including placement of structural fill.
- 3. Observe earthwork operations to ensure that the minimum compactive effort and maximum lift height restrictions are enforced.
- 4. Observe, evaluate, and judge the suitability of prepared bearing surfaces including the possibility of using existing fill materials below slabs.
- 5. Observe and evaluate unanticipated subsurface conditions, when and where encountered and alternate procedures, which are proposed to address those unanticipated subsurface conditions.
- 6. Conduct inspections of concrete and masonry, reinforcing steel, and structural steel and framing inspections required by the city and state and directed by The Statement of Special Inspections.

8.00 FINAL COMMENTS

This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event that any changes in the nature, design or location of structures are planned, the conclusions and recommendations contained in the report should not be considered valid, unless the changes are reviewed and conclusions of this report modified or verified in writing. The analyses and recommendations submitted in this report are based in part upon the data obtained from the referenced test borings. The nature and extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendation of this report.

Atlantic Consulting & Engineering should perform a general review of final design and specifications in order to determine that earthwork and foundation recommendations have been properly interpreted and implemented in the design specifications.

Respectfully Submitted by

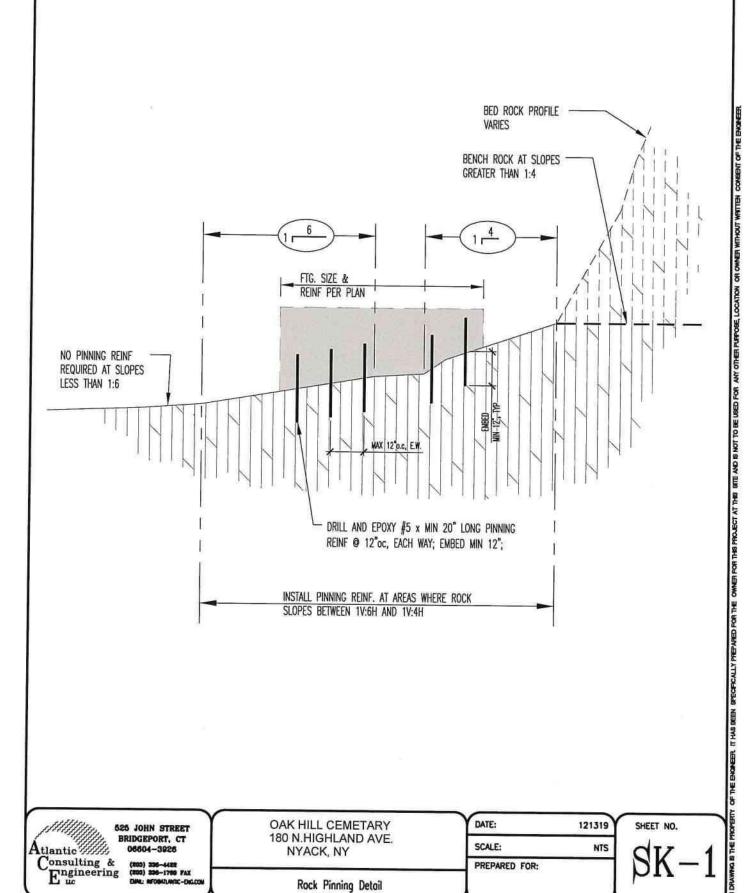
James E. Quill

James E. Quill. NYS PE# 078809

<u>SK-1</u> ROCK PINNING DETAIL

Figure 1

Boring Location Plan



Atlantic Consulting & Engineering

525 JOHN STREET BRIDGEPORT, CT 06604-3926

(200) 236-4422 (200) 236-1760 PAX DBM: RFORMARC-DIGCOM

OAK HILL CEMETARY 180 N.HIGHLAND AVE. NYACK, NY

Rock Pinning Detail

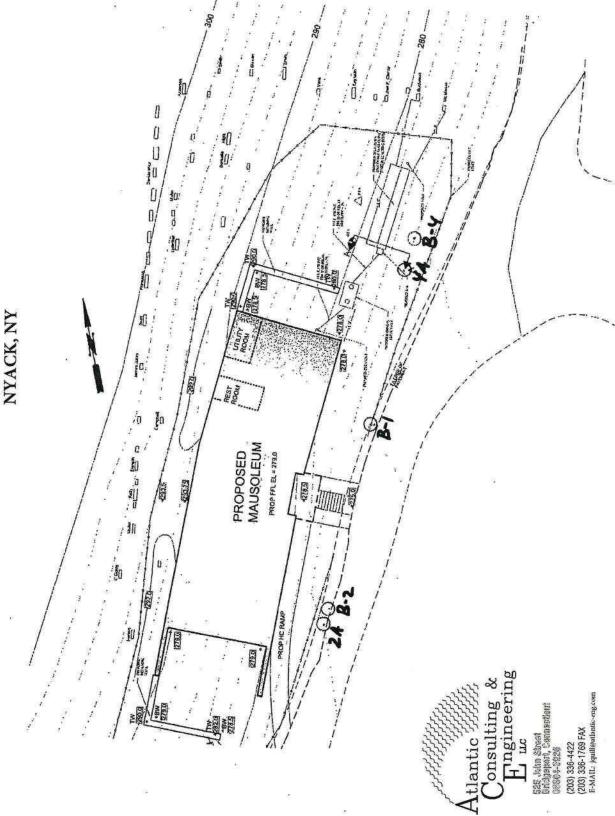
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PREPARED FOR:

SHEET NO.

BORING LOCATION PLAN

MAUSOLEUM OAK HILL CEMETERY 140 NORTH HIGHLAND AVENUE NYACK, NY



<u>APPENDIX A</u>

Boring Logs 1 through 5

Conducted on November 15, 2019

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10000	none FT				00000	3			I.D. IER W	Γ.	3 74	140#	BIT	SURFACE ELEV.		
AT_FT AFTER_HOURS									MER FA		30"			GROUND WATER ELEV.		
				SAM	PLE					T						
ОЕРТН	CASING BLOWS PER	NO	Туре	PEN	REC	DEPTH	ON (FOR	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6 6 - 12 12-18			DENSITY OR CONSIST	CHANGE INCL. COL		ENTIFICATION OF SOIL REMA OR, LOSS OF WASH WATER, S IN ROCK, ETC.		
-	FOOT	1	SS	24"	20"	@ BOT 2'0"	2	6	1	(MIN)	MOIST moist	ELEV	Pro E CAND o	m silt, tr F gravel		
		-	33	24	20	20	19	17			compact	ē.	DIII F SAND, S	III Sili, ii F glavei		
		2	SS	24"	16"	4'0"	14	20			moist		RedBm FM SA	ND, sm silt, F gravel		
5		3	SS	24"	10"	6'0"	18 15	14 31		-	dense moist		PadPra M CAN	ND, lit silt, sm C gravel		
١			33		10	00	46	38			v dense		possible partly	decomposed BEDROCK from 5'		
												6'6"	cobbles, bould	ers, &/or fractured BEDROCK from 6'0"		
											1			E.O.B 6'6"		
10											1					
			-						10000							
											1					
15																
15				_							1					
AT_	OUND WA	AFI	ER_C	HOL										B-2A		
0	B-2A									-				**************************************		
5													cobbles, boulde	ers, &/or fractured BEDROCK from 6'0"		
1				-	-							6'10"	Auger refusal			
1														E.O.B 6'10"		
10												ĺ				
1				55			-			-		20				
				2003 PP												
15			_	2000 L/TC												
13			-													
1																
-		-	_				_							* CME Autohammer		
20																
	con	ditio	ns a	t spe	cific	locatio	ons an	id ma	estig y not	ation repres	represent sent		A LO COMPANIA	3		
GRO	CON DUND SU					cations T. US	or tir			CASING	3 THEN	CA	SING TO	FT. HOLE NO. B-27		
A =	AUGER	UP =	UNDI	STUR	BED	PISTON		T = TH	INWAL	L	V = VANE T		V-135.04 (#1004, 13940.00 A. (# 10041 #1002			
	R = WEIG = SPLIT T					WOH = V					OS			C = COARSE M = MEDIUM		
											20 - 35% A	ND =35 - 50		M = MEDIUM F = FINE		

	SOI			11110		5.	CLIEN	IT:	Atla	ntic Co	onsulting	& Engine	eering	SHEET_1_0F_1		
90 DONOVAN RD. OXFORD, CT 06478									-			HOLE NO. B-1				
							11-12-20-20-20-20-20-20-20-20-20-20-20-20-20	ECT N	PC1000	G181	-1392-19					
			03) 2 14) 9				PROJ	ECT N	AME	140 1	North High	BORING LOCATIONS per Plan				
FO	REMAN -	_					LOCA	TION	-	Nyac		nuna / tr	ondo	por rich		
	JK/ak									NY						
INS	PECTOR							-			CASING	SAMPLER	CORE BAR	OFFSET		
20	OUND W	ATCO	ODC	CDVA	TION		1	TYPE			HSA 234"	SS		DATE START 11/15/19		
	none_FT					5	1	SIZE	I.D. VER W	г	3 ¾"	1 3/8"	BIT	DATE FINISH 11/15/19 SURFACE ELEV.		
	_FT AF			- 300					IER FA					GROUND WATER ELEV.		
	1	Г		SAM	PLE		<u> </u>			T T	Γ	Ι	T			
DEPTH	CASING BLOWS PER			T	EN REC.	DEPTH	(FOR	WS PER 6 IN SAMPLER CE ON TUBE) 6 - 12 12-18		CORE TIME PER FT	DENSITY OR CONSIST			ITIFICATION OF SOIL REMARKS INC LOSS OF WASH WATER, SEAMS IN ROCK, ETC.		
	FOOT.	-	-			@ ВОТ		1	1	(MIN)	MOIST	ELEV				
							-	1			1		0-5' Brn F SAN	ID, sm silt, tr gravel		
]					
5													fractured BED	ROCK or boulders 5-7'		
													5-10' SAME; c	obbles, boulders		
74																
10		1	SS	24"	16"	12'0"	24	28	_		moist		Brn F SAND II	it silt, F gravel (possible partly decomposed rock)		
			- 55	27	ļ.	120	17	35			dense			tom, i graver (possione party accomposed to		
		_	_						-					1.85		
15		-	\vdash							-						
		2	SS	24"	18"	17'0"	32	37			dry			C gravel, tr silt, cobbles		
				_	-		34	52	-		v dense		(possible partly	decomposed rock)		
											1					
20				0.41	0.411	00101	- 11	- 00								
		3	SS	24"	24"	22'0"	14 46	32 75	-		dry v dense		SAME	1.0627		
							10	70			Vacine	t				
25		4	SS	24"	18"	27'0"	18	24		-	dry		SAME			
			50				34	78			v dense	27'0"	G. MILE			
1		_		-	-					-				E.O.B 27'0"		
30																
														Boring grouted on completion		
ł					-				-	-						
35		_		_	-				-	-						
ı																
-																
40		(01)05-3		-			-			-						
	TE: Sul	osoil	con	ditio	ns r	evealed	by th	nis in	vestig	ation	represent					
	con	ditio	ns a	t oth	er lo	cations	s or ti									
	OUND SU AUGER						SED	T - TL	IINWAL	CASIN	G THEN_ V = VANE T		ASING TO	FT. HOLE NO. B-1		
VOI	R = WEIG SPLIT T	нт о	FRO	DS		WOH = 1 H.S.A. =	WEIGH	T OF H	AMMEI	R & ROI		LOI		C = COARSE M = MEDIUM		
											20 - 35% A	ND =35 - 5	0%	F = FINE		

APPENDIX B Seismic Summary

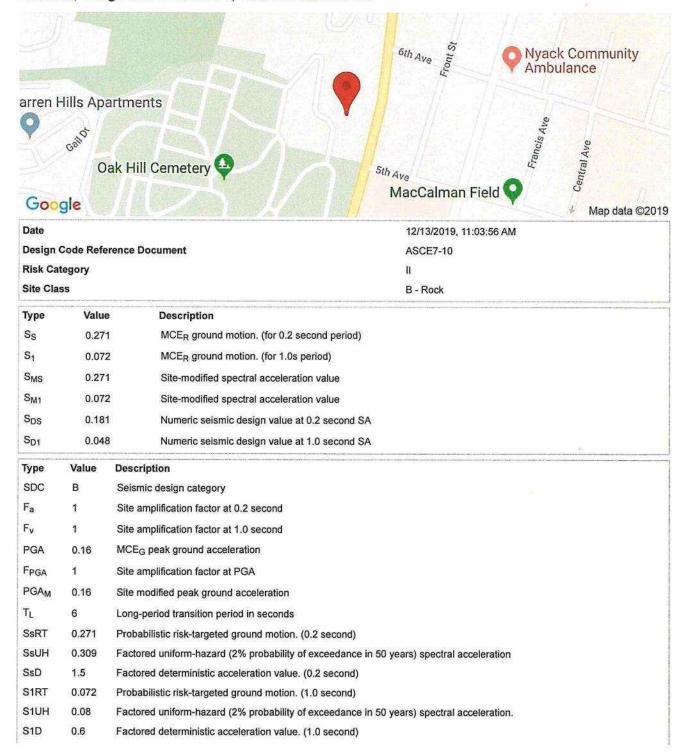




Oak Hill Cemetery

180 N Highland Ave, Nyack, NY 10960, USA

Latitude, Longitude: 41.0979271, -73.92709300000001



Туре	Value	Description
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
CRS	0.877	Mapped value of the risk coefficient at short periods
C _{R1}	0.905	Mapped value of the risk coefficient at a period of 1 s

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