DEIS Appendix
VOLUME 2

- Appendix H: Stormwater Pollution Prevention Plan (“SWPPP”)
- Appendix I: Water Supply & Sanitary Sewer
- Appendix J: Car Wash Operations Guideline Document
- Appendix K: Noise Study

Appendix H

Stormwater Pollution Prevention Plan (SWPPP)

STONEFIELD

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

PROPOSED CAR WASH
SECTION 182.05, BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

PREPARED FOR:

HUTTON ST 21, LLC

PREPARED BY:

STONEFIELD ENGINEERING & DESIGN, LLC

DATED DECEMBER 30, 2022

SED RUT-220250

JEFFREY A. MARTELL, PE
NEW YORK PROFESSIONAL ENGINEER LICENSE # 86502

REPORT CONTENTS

APPENDICIES

1.0 PROJECT DESCRIPTION

Hutton ST 21, LLC is proposing the development of a carwash on the subject property designated as Section 182.05, Block 1, Lot 9.2, located along the southern side of Southwestern Boulevard in the Town of Hamburg, Erie County, New York. The project proposes the creation of a 4,562 SF car wash with additional improvements including the construction of a parking lot, utilities, lighting, landscaping, and stormwater management systems.

The total project area is 80,083 SF (1.84 AC), the total area of impervious surfaces is 29,447 SF (0.68 AC), and the total area of disturbance is 82,077 SF (1.88 AC). Project Figures can be found in **Appendix A** of this Report.

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared to inform the landowner and contractor of the measures to be implemented for controlling runoff and pollutants from the site during and after construction activities. This plan proposes to conform to the requirements set forth by the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-20-001, the New York State Standards and Specifications for Erosion and Sediment Control (November 2016) and other published NYSDEC guidance documents.

It is the responsibility of the owner, operator, and contractor to know and understand all permits required for the proposed development. Any conflicts between this plan and any other construction documents shall be brought to the attention of the design professional.

The Owner/Operator must keep this document 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/operator shall amend the SWPPP, including construction drawings:

a) Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;
b) Whenever there is a change in design, construction, or operation of the construction site that has or could have an effect on the discharge of pollutants;

c) To address issues or deficiencies identified during an inspection by the qualified inspects or, the Department or other regulatory authority; and
d) To document the final construction conditions.

The owner/operator at the time of completion of this iteration of the document is:

Hutton ST 21, LLC
736 Cherry Street
Chattanooga TN, 37402

2.0 SITE ASSESSMENT

2.1 EXISTING CONDITIONS

The project site is currently an undeveloped lot which is almost entirely tall grasses. The site has slopes throughout with localized high and low points. Existing slopes range from 2% to greater than 30%.

2.2 PROJECT TYPE

The project is a new development. The project will treat a minimum of 25 percent of the water quality volume from the disturbed, existing impervious area and 100 percent of the water quality volume from the new impervious area through the implementation of standard stormwater management practices with runoff reduction capacity. In addition, the project will maintain existing drainage patterns as much as practical from the previously approved application, control the rate of stormwater runoff resulting from the development, and mitigate potential impacts on water quality and erosion generated during and after construction.

2.3 PROJECT SCOPE

The project site is located within the General Commercial District (C-2) where car washes require a special permit. The applicant is proposing a 4,562 SF car wash on the lot and the development complies with the Town's bulk zoning requirements. Access to the proposed facility will be maintained via the existing driveway along Southwestern Boulevard, which would provide shared access to the proposed development and the easterly adjacent property.

2.4 RECEIVING WATERS

The proposed development is designed to outfall into an existing pond on the abutting Mavis property. The subject site was previously included within the Mavis application, accounting for a proposed future development. Two (2) approved swale systems have been constructed within the subject site, which ultimately outfall into the basin on the Mavis property. The development has been designed to reduce the flow rates from the previously approved application, reutilizing the existing swale systems to the maximum extent practicable, and shall outfall to the existing pond as previously designed. The existing pond had previously been designed to accommodate the flows from the subject site, and the rates will be further reduced, improving upon the function of the existing receiving pond.

2.5 WATERSHED DESIGNATION

As the site is not located in a restricted watershed, enhanced phosphorous removal standards are not required.

2.6 FLOOD PLAINS

Based on the FEMA flood insurance rate mapping and flood study for the site (FEMA Map # 36029C0476H, effective June 7, 2019, no portion of the subject site is located within the floodplain.

2.7 PROJECT SOILS

A Geotechnical Investigation was performed by Terracon Consultants dated July 1, 2022. A total of 9 soil boring logs were performed on site. No groundwater was encountered during the site investigation, but bedrock was encountered along the western and southwestern portions of the project site ranging from 0.3 to 5.5 feet below ground surface. Additional information can be found in **Appendix E** of this report.

A Custom Soil Report was also obtained from the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey. There are three (3) soil types on site Farnham channery silt loam (FbB), Manlius channery silt loam (MaB), and Niagara silt loam (Nh). Refer to **Appendix F** of this report for Custom Soil Report.

2.8 GROUNDWATER

In the Geotechnical Investigation performed by Terracon Consultants dated July 1, 2022 groundwater was not encountered. The full Geotechnical Report may be found in **Appendix E** of this report.

2.9 WETLANDS

Based on NYSDEC mapping no wetlands or watercourses are located on the subject parcel.

2.10 HISTORICAL AND ARCHAEOLOGICAL AREAS

Per the NYS Cultural Resources Information System mapper, there are no historical or archaeological areas of note on the subject property.

2.11 ENDANGERED OR THREATENED SPECIES

Per the NYSDEC EAF Mapper, there is no evidence of endangered or threated species of note on the subject property.

3.0 EROSION AND SEDIMENT CONTROL

3.1 TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

Under proposed conditions, erosion and sediment controls will be utilized to limit the potential effects due to construction of the proposed development. Refer to the Erosion and Sediment Control Plans in **Appendix I** of this report. The following includes the temporary sediment controls proposed for this project:

- **Stabilized Construction Access** - Before construction, the stabilized construction access shall be installed to reduce the tracking of sediment onto adjacent roadways. Construction traffic must enter and exit the site at the stabilized construction access. The stabilized construction access shall be maintained in good condition to control tracking of sediment onto rights-of-way or streets. When necessary, the placement of additional aggregate atop the filter fabric shall be done to maintain the minimum thickness. Sediments and soils spilled, dropped, or washed onto the public rights-of-way shall be removed immediately. Qualified inspectors shall perform weekly inspections to ensure that the stone is clean enough to effectively remove sediment from vehicles. Decompaction and replacement of the stone shall be performed as needed. Stone shall be replaced based on the qualified inspector's judgement.

- **Dust Control** - Water trucks or other approved water sources shall be used, as needed, during construction to reduce the dust generated on the site. Dust control shall be provided by the general contractor to a degree acceptable to the owner/operator, and in compliance with the applicable local and state dust control requirements. The qualified inspectors shall perform weekly inspections to ensure dust is controlled on site. It is the responsibility of the contractor to control dust as needed so it does not adversely affect adjacent lots.

- **Temporary Soil Stockpile** - Materials, such as topsoil, shall be temporarily stockpiled (if necessary) on site during construction. Stockpiles shall be located away from storm drainage, water bodies or courses, and shall be properly protected from erosion in accordance with the NYSDEC standard detail. The qualified inspectors shall perform weekly inspections to ensure that the soil stockpile areas are stabilized, and that sediment control is installed at the toe of the slope of the stockpile.

- **Silt Fencing** - Before initiation of and during construction, silt fencing shall be established along the perimeter of areas to be disturbed as a result of the construction up gradient of water courses or adjacent properties. These barriers may extend into non-impact areas to adequately protect adjacent lands. Clearing and grubbing shall be performed only as necessary for the installation of the sediment control barrier. To maximize effectiveness of the silt fencing, daily inspections shall be performed by the contractor. The qualified inspectors shall also perform weekly inspections to ensure that the silt fencing is installed downstream of runoff and to ensure that the silt fencing is working properly. Fencing shall be replaced as determined by the qualified inspection where fabric is torn or damaged.

- **Temporary Seeding** - Within seven days after construction ceases on any particular area of the site, all disturbed areas where there shall be no construction for longer than 14 days shall be temporarily seeded and mulched to minimize erosion and sediment loss. The Qualified Inspector shall perform weekly inspections to ensure that disturbed areas are not exposed for longer than 14 days and that these areas are stabilized.

- **Drop Inlet Protection** – Inlet protection shall be installed around existing and proposed catch basins (once installed) to keep sediment from entering the storm-sewer system. During construction, the inlet protection measures shall be replaced as needed to ensure proper function of the structure. The Qualified Inspector shall perform weekly inspections to ensure that inlet protection is working properly to block sediment from entering the storm-sewer system. The inlet protection shall be replaced as determined by the qualified inspector once sediment buildup reaches the capacity per the manufacture's

specifications.

- **Erosion Control Matting** – Erosion control matting shall be installed on all slopes exceeding 3:1. Erosion control matting shall provide protection from temporary erosion, establishment of rapid vegetation, and long-term resistance of erosion to shear stresses associated with high runoff flow velocities associated with steep slopes. The Qualified Inspector shall perform weekly inspections to ensure that the erosion control matting is installed per the manufacture's specifications and replaced as directed by the qualified inspector as needed.

- **Truck Washout** – Washout facilities shall be constructed in areas that allow for the washing of trucks and equipment that are exposed to concrete to prevent alkaline runoff from damaging drainage systems or leaching into soil. Washouts shall be inspected daily for damage or leaks. Any damage to the facility must be repaired or replaced immediately. The Qualified Inspector shall perform weekly inspections to ensure the truck washout area is being used as per the NYSDEC recommendations. The truck washout area shall be replaced as requested by the qualified inspector and per NYSDEC recommendations.

3.2 PERMANENT EROSION AND SEDIMENT CONTROL MEASURES

Permanent erosion and sediment control measures to be used after construction generally include the following:

- **Establish Permanent Vegetation** - Disturbed areas not covered by impervious surfaces shall be seeded in accordance with the accompanying plans. The type of seed, mulch, and maintenance measures shall be followed. All areas at final grade shall be seeded and mulched within 14 days after completion of the major construction. All seeded areas shall be protected with mulch or hay. Final site stabilization is achieved when soil-disturbing activities have been completed and a uniform, perennial vegetative cover with a density of 80 percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on the disturbed unpaved areas and areas not covered by permanent structures.

- **Rock Outlet Protection** - Rock outlet protection shall be installed at the locations as shown on the accompanying plans. The installation of rock outlet protection will reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving water course or water body.

Specific erosion and sediment control measures, inspection frequency, and remediation procedures are provided in the subsequent sections and on the accompanying project plans.

3.3 CONSTRUCTION PHASING PLAN AND SEQUENCE OF OPERATIONS

The Soil Erosion & Sediment Control Plans have been phased in order to maintain disturbance areas of less than 5 AC at any given time. Please refer to **Appendix I** for full size phased Soil Erosion & Sediment Control Plans for detailed construction sequencing.

3.4 SOIL STABILIZATION AND RESTORATION

STABILIZATION

In areas where soil disturbance has temporarily or permanently ceased, the application of soil stabilization measures shall be initiated by the end of the next business day and completed within 14 days from the date the current soil disturbance ceased. The soil-stabilization measures shall be in conformance with the *New York State Standards and Specifications for Erosion and Sediment Control*, latest edition.

RESTORATION

Soil restoration shall be performed in the disturbed areas. The soils shall be restored in accordance with the table below.

Soil Restoration Table

Type of Soil Disturbance	Soil Restoration Requirement	
No Soil Disturbance (e.g., preservation of natural features)	Restoration not required.	
Minimal Soil Disturbance (e.g., clearing and grubbing)	Restoration not required.	
Areas where top soil is stripped only (e.g., no change in grade)	Apply 6 inches of topsoil in Type A and B soils	Aerate and apply 6 inches of topsoil in Type C and D soils
Areas of cut or fill	Aerate and apply 6 inches of topsoil in Type A and B soils	Apply full soil restoration in Type C and D soils
Heavy traffic areas on site (especially in 5 to 25 feet around buildings, but not within a 5-foot perimeter around foundation walls)	Apply full soil restoration (see below).	

FULL SOIL RESTORATION

Before applying full soil restoration, all construction, including construction equipment and material storage, site cleanup and trafficking, should be finished and the site closed to further disturbance. Full soil restoration should be performed with a heavy-duty agricultural-grade deep ripper, deep angled-leg subsoiler, or equivalent machinery to achieve de-compaction.

Full soil restoration is implemented in a two-phase process:

1. Deep rip the affected thickness of exposed subsoil, aggressively fracturing it before the protected topsoil is reapplied on the site.
2. De-compact simultaneously through the restored topsoil layer and upper half of the affected subsoil.

LOW TO MODERATE SUBSOIL MOISTURE

The disturbed soils are returned to rough grade and the following is applied:

1. Apply 3 inches of compost over the subsoil.
2. Till compost a minimum of 12 inches into the subsoil using a cat-mounted ripper, tractor-mounted disc, or tiller mixing and circulating air and compost into subsoils.
3. Rock-pick until uplifted stone and rock of 4 inches or larger size are cleaned off the site. All construction material and foreign debris and existing root masses shall be removed from proposed planting areas.
4. Apply 6 inches of topsoil. Newly installed planting soils shall be mixed with existing soils where they meet in order to create a transitional gradient to allow for proper drainage.
5. Install plants and vegetation in accordance with the Landscaping Plan.

4.0 POST CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

4.1 STORMWATER MANAGEMENT CONTROLS

The following post construction stormwater management controls are proposed:

1. Aboveground Basin:

   One aboveground basin is proposed to attenuate the 1, 10, and 100-year design storms and provide water quality treatment of stormwater runoff. The basin is outfitted with a forebay and an outlet control structure. The proposed outlet control structures have been sized and designed to best attenuate stormwater outflow generated by the water quality storm event.

2. Swale

   A dry swale is proposed to provide water quality treatment of stormwater runoff. The proposed swale was designed, approved, and constructed through the previously approved development. The proposed swale was modified and still achieves water quality and meets reduction requirements.

These measures are shown in detail in the Grading & Drainage Plan and Construction Details in the Site Plan that accompanies this report. Refer to **Appendix D** for detailed calculations for the stormwater management controls.

4.2 POST CONSTRUCTION STORMWATER MANAGEMENT DRAWINGS

Post construction stormwater management drawings along with post construction stormwater management control details can be found in **Appendix I** of this report.

4.3 POST CONSTRUCTION WATER QUALITY VOLUME (WQV)

The water quality volumes have been determined based on the methodology described in the Design Manual. The total water quality volume is provided below and detailed calculations can be found in **Appendix D** of this report.

REQUIRED WATER QUALITY VOLUME: 2,507 CUBIC-FEET

4.4 POST CONSTRUCTION RUNOFF REDUCTION VOLUME (RRV)

Runoff reduction is achieved by infiltration, groundwater recharge, reuse, recycle, evaporation and evapotranspiration of 100 percent of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, and minimizing concentrated flow by using runoff-control techniques to provide treatment in a distributed manner before runoff

reaches the collection system. The runoff-reduction-volume techniques that were used to reduce the total required water quality volume are in the table below.

Techniques/ Practices	RRv Reduction Method	Reduction Amount
Detention Pond	Standard SMP with RRv capacity	25% of the WQv provided by practice

After applying the runoff-reduction-volume techniques, the total required water quality volume was not reduced 100 percent. The minimum required runoff reduction volume was determined to confirm that at least the minimum percent of the total water quality volume has been reduced. The total provided runoff reduction volume was greater than the minimum required runoff reduction volume. Therefore, the minimum required runoff- reduction volume has been met. Detailed design calculations have been provided in **Appendix D** of this report.

4.5 POST CONSTRUCTION STREAM PROTECTION VOLUME (CPV)

Per Section 4.4 of the New York State Stormwater Management Design Manual (January 2015), the stream protection volume is achieved via reducing the post-construction runoff volume through the proposed basins. A comparison of the required and provided channel protection volume is provided in the table below.

Water Quantity Parameter	Required (cf)	Provided (cf)
Channel Protection Volume	2,559	3,229

Supporting calculations can be found in **Appendix D** of this report.

4.6 POST CONSTRUCTION OVERBANK FLOOD CONTROL CRITERIA (QP)

Per Section 4.5 of the New York State Stormwater Management Design Manual (January 2015), the overbank flood control criterion has been achieved via attenuating the 10-year, 24-hour post-development peak discharge rate to below the previously approved design rates at this location. Supporting calculations can be found in **Appendix D** of this report.

4.7 POST CONSTRUCTION EXTREME FLOOD CONTROL CRITERIA (QF)

Per Section 4.5 of the New York State Stormwater Management Design Manual (January 2015), the overbank flood control criteria have been achieved via attenuating the 100-year, 24-hour post-development peak discharge rate to below the previously approved design rates at this location. Supporting calculations can be found in **Appendix D** of this report.

4.8 POST CONSTRUCTION QUANTITY CONTROL SUMMARY

Runoff is controlled through the implementation of one (1) swale and one (1) aboveground basin. The following table summarizes the results for the 1-year, 10-year, and 100-year storm events for the project:

TABLE 2: PEAK DISCHARGE

Drainage Area	Storm Event	Pre-Development Peak Discharge	Post-Development Peak Discharge	Reduction Achieved (%)
D40	CPv (1-Year, 24-hour)	1.69	0.70	58.58
	Qp (10-Year, 24-hour)	3.85	1.05	72.73
	Qf (100-Year, 24-hour)	5.79	1.39	76.00
D30	CPv (1-Year, 24-hour)	0.72	0.19	73.61
	Qp (10-Year, 24-hour)	1.92	0.28	85.42
	Qf (100-Year, 24-hour)	3.05	0.36	88.20

5.0 POST CONSTRUCTION OPERATION AND MAINTENANCE

5.1 CERTIFICATION STATEMENTS

Before starting construction, the owner/operator, contractors, and subcontractors are required to sign the certification statements provided in **Appendix C.**

The owner/operator must sign a copy of the Owner's/Operator's certification before submitting the Notice of Intent. The owner/operator acknowledges that the SWPPP has been developed and will be implemented as the first element of construction and agrees to comply with the terms and conditions of the general permit for which the Notice of Intent is being submitted.

The owner/operator must identify the contractors and subcontractors that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices; and constructing the post-construction stormwater management practices included in the SWPPP. The contractors and subcontractors must identify at least one trained individual from their company who will be responsible for implementation of the SWPPP. This person will be known as the trained contractor. At least one trained contractor will be on site daily when soil disturbing activities are being performed. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has begun, they must also sign the certification statement and identify their responsibilities.

5.1 PRE-CONSTRUCTION MEETING

Before beginning construction, the owner/operator must set up a pre-construction meeting with the Town representative, qualified professional, qualified inspector, contractors, and subcontractors. The primary purpose of the pre-construction meeting is to discuss the responsibilities of each party as they relate to the implementation of the SWPPP and to clarify any questions.

5.3 CONSTRUCTION SITE LOG

The owner/operator must maintain a copy of the following, including but not limited to: General Permit, signed NOI, signed MS4 Acceptance form, NOI Acknowledgement Letter, SWPPP, signed certification statements, and inspections reports. The documents must be maintained in a secure location on site. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

5.4 CONSTRUCTION INSPECTIONS AND MAINTENANCE

CONTRACTOR MAINTENANCE INSPECTION REQUIREMENTS

The trained contractor must inspect the erosion and sediment control practices and pollution-prevention measures to verify that they are being maintained in effective operating condition. The inspections will be conducted as follows:

- For construction sites where soil disturbance is on-going, the trained contractor must inspect the measures within the active work area daily. If deficiencies are identified, the contractor will begin

implementing corrective actions within one business day and must complete the corrective actions by the end of the day.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the trained contractor can stop conducting the maintenance inspections. The trained contractor must conduct the daily maintenance inspections as soil disturbance resumes.
- For construction sites where soil disturbance has been shut down with partial project completion, the trained contractor can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed part of the project have been constructed in conformance with the SWPPP and are operational.

QUALIFIED INSPECTOR INSPECTION REQUIREMENTS

The owner/operator must have a Qualified Inspector conduct site inspections to verify the stability and effectiveness of protective measures and practices employed during construction. The site inspections will be conducted as follows:

- For construction sites where soil disturbance is ongoing, the Qualified Inspector must conduct a site inspection at least once every seven days.
- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the Qualified Inspector must conduct a site inspection at least once every 30 days. The owner/operator must notify the NYSDEC or MS4 in writing before reducing the frequency of the inspections.
- For construction sites where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices are operational. The owner/operator must notify the NYSDEC or the MS4 in writing before the shutdown.

All erosion and sediment control inspections shall be performed in accordance with this SWPPP, accompanying project plans, latest revision of *New York State Standards and Specifications for Erosion and Sediment Control,* and procedures outlined in **Appendix H** of the latest revision of the *New York State Stormwater Management Design Manual*. Inspection reports must identify and document the maintenance of the erosion and sediment control measures. An example inspection report has been provided in **Appendix G.**

Specific maintenance components, schedule frequency, inspection parameters and remediation procedures are provided on the accompanying project plans. Any adjustments or modifications to the maintenance plan shall be noted in the inspection reports and submitted to the Town for approval.

The current responsible agent shall ensure that adequate equipment and training is provided to maintenance personnel to perform the required maintenance tasks. Confined Space Entry Certification shall be required by personnel entering underground structures and pipes. The material and equipment necessary for inspection and maintenance activities shall include, but not be limited to, the following:

- *Above Ground Basin:* Instruments to perform visual inspection of underground pipes and outlet structures, equipment to pump stormwater from the basin in the event of maintenance, vacuum truck and hose for removal of sediment from basin bottom, and necessary safety equipment

- *Stormwater Conveyance Pipes & Structures:* Instruments to perform visual inspection of underground pies, catch basins, and manholes, and equipment to pump stormwater from these facilities in the event of maintenance.

5.5 SPILL CONTROL AND PREVENTION

Hazardous spills shall be immediately contained to prevent pollutants from entering the surrounding habitat or water supply. Spill Kits shall be provided on site and shall be displayed in a prominent location for ease of access and use. Spills greater than 5 gallons shall be reported to the NYSDEC Response Unit at 1-800-457-7362. In addition, a record of the incidents or notifications shall be documented and attached to the SWPPP.

6.0 CONSTRUCTION WASTE

All waste materials generated during construction will be disposed of at a suitable landfill or transfer station. It is not anticipated that the project will generate hazardous waste. If there are any materials generated, a licensed hazardous waste carrier will be contracted to dispose of the hazardous material at a suitable disposal site. If hazardous materials are discovered during construction, a qualified professional shall be contacted to determine the appropriate course of action.

APPENDIX A
PROJECT FIGURES

INVENTORY

AERIAL MAP

SOILS MAP

CULTURAL RESOURCES

EXHIBIT:

DATE PREPARED:
12/05/2022

100' 0' 100' 200'
GRAPHIC SCALE IN FEET
1" = 100'

ISSUE	DATE	BY	DESCRIPTION
1	12/05/2022	NP	FOR MUNICIPAL SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design

Rutherford, NJ · New York, NY · Boston, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com

Headquarters: 92 Park Avenue, Rutherford, NJ 07070
Phone 201.340.4468 · Fax 201.340.4472

PRELIMINARY & FINAL MAJOR SITE PLAN

HUTTON ST. 21, LLC
PROPOSED CAR WASH

SECTION 182.05 BLOCK 1, LOT 9.2
3363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

CHARLES D. OLIVO, P.E.
NEW YORK LICENSE No. 87356
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 100' | PROJECT ID: RUT-220250

TITLE:
AERIAL EXHIBIT

DRAWING:
1 OF 1

Z:\RUT\PROJ\RUT2202\RUT2202501-HUTTON GROUP - 3363 SOUTHWESTERN BOULEVARD, HAMBURG, NY\CAD\EXHIBITS\2022.12.05 - AERIAL EXHIBIT_HAMBURG, NY.DWG

SOIL MAP

200' 0' 200' 400'

GRAPHIC SCALE IN FEET

1" = 200'

SOURCE: USDA WEB SOIL SURVEY, RETRIEVED 12/28/2022

PROPOSED CAR WASH
HUTTON ST 21, LLC

SECTION 182.05, BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

DRAWN BY:	PK
CHECKED BY:	JA
DATE:	12/28/2022
SCALE:	1" = 200'
PROJECT ID:	RUT-220250

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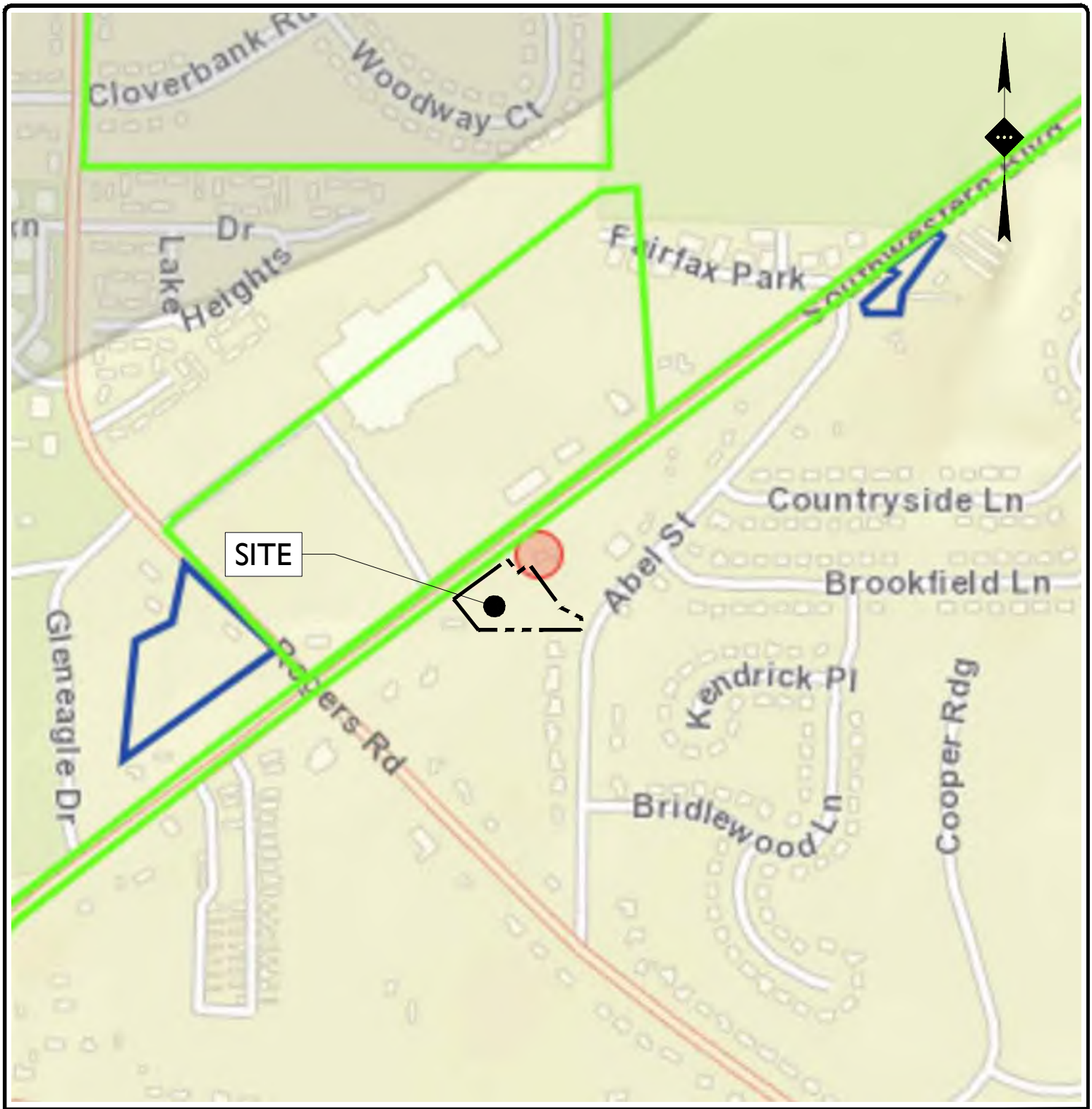
Z:\Rutherford\RUT\2022\RUT-220250 Hutton Group - 5363 Southwestern Boulevard, Hamburg, NY\CADD\Exhibits\2022-12-28_(FS)-Cultural Resource Map.dwg



CULTURAL RESOURCES MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: CULTURAL RESOURCE INFORMATION SYSTEM, RETRIEVED 12/28/2022

PROPOSED CAR WASH
HUTTON ST 21, LLC

SECTION 182.05, BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

DRAWN BY:	PK
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Phone 201.340.4468 · Fax 201.340.4472

APPENDIX B
NOTICE OF INTENT (NOI) FORM

0644089821

NOTICE OF INTENT

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

NYR _____
(for DEC use only)

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

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

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
HUTTON ST 21, LLC

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

Owner/Operator Contact Person First Name
DON

Owner/Operator Mailing Address
736 CHERRY STREET

City
CHATTANOOGA

State
TN

Zip
37402 -

Phone (Owner/Operator)
6096684611

Fax (Owner/Operator)
- -

Email (Owner/Operator)
DYOUNG@HUTTON.BUILD

FED TAX ID
- (not required for individuals)

Project Site Information

Project/Site Name
Proposed CAR WASH

Street Address (NOT P.O. BOX)
SOUTHWESTERN BOULEVARD

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

City/Town/Village (THAT ISSUES BUILDING PERMIT)
TOWN OF HAMBURG

State: NY
Zip: 14075-
County: ERIE COUNTY
DEC Region: 9

Name of Nearest Cross Street
ROGERS ROAD

Distance to Nearest Cross Street (Feet)
550

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

Tax Map Numbers
Section-Block-Parcel
182.05-1-9.2

Tax Map Numbers

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

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

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

X Coordinates (Easting): 184046

Y Coordinates (Northing): 4773997766000

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

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

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

Pre-Development Existing Land Use

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

Post-Development Future Land Use

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

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

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

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
1.81.8	1.81.8	0.60.6	0.70.7

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

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

A	B	C	D
0 %	0 %	100 %	0 %

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

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

Start Date	End Date
09/01/2023	06/01/2024

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

Name: Freshwater Emergent Wetland - PEME

9a. Type of waterbody identified in Question 9?

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

9b. How was the wetland identified?

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

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

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

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

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

.

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

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

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

The Town of Hamburg

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

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

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

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

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

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

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

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

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

SWPPP Preparer
STONEFIELD ENGINEERING & DESIGN, LLC

Contact Name (Last, Space, First)
Martell, Jeffrey

Mailing Address
584 Broadway, Suite 310

City
New York

State NY Zip 10012-

Phone 718-606-8305

Fax 201-404-4272

Email
jmartell@stonefieldeng.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name Jeffrey **MI** A

Last Name Martell

Signature

Date 12/28/2022

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

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

Temporary Structural

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

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

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

Permanent Structural

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

Other

Post-construction Stormwater Management Practice (SMP) Requirements

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

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

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

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

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

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

Total WQv Required

0.002202 **acre-feet**

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

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

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

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

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
✓ Bioretention (F-5)	0.50		0.59
● Dry Swale (O-1)	0.00		0.00
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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

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

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

Name

Manufacturer

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

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

Total RRv provided

0.402422 **acre-feet**

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

● **Yes** ○ **No**

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

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

Minimum RRv Required

0.00.0 **acre-feet**

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

● **Yes** ○ **No**

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

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

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

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

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

WQv Provided

0.003303 **acre-feet**

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

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

0.405455

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

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

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

CPv Required

0.006066 **acre-feet**

CPv Provided

0.007474 **acre-feet**

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

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

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

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

Total Overbank Flood Control Criteria (Qp)

Pre-Development

3.835855 **CFS**

Post-development

1.015055 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

5.759799 **CFS**

Post-development

1.319399 **CFS**

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

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

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

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

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

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

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

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

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

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

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

Owner/Operator Certification

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

Print First Name: DON

MI:

Print Last Name: YOUNG

Owner/Operator Signature:

Date: 12/28/2022

APPENDIX C
CERTIFICATIONS

INVENTORY

C-1: PREPARER'S CERTIFICATION
C-2: OWNER'S CERTIFICATION
C-3: NOTICE OF TERMINATION
C-4: MS4 ACCEPTANCE FORM

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

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

Project Site Information

Project/Site Name

Proposed Car Wash - Hamburg, NY

Owner/Operator Information

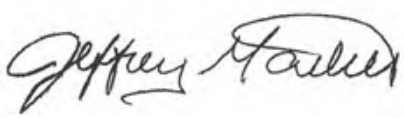
Owner/Operator (Company Name/Private Owner/Municipality Name)

Hutton ST 21, LLC

Certification Statement – SWPPP Preparer

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

Jeffrey	A	Martell
First name	MI	Last Name



Signature

Date December 28, 2022

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

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

Project/Site Name: Proposed Car Wash - Hamburg, NY

eNOI Submission Number: _____

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

Certification Statement - Owner/Operator

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

Owner/Operator First Name M.I. Last Name

_____ _____

Signature

12/28/2022

Date

STORM WATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION

CONSTRUCTION SITE -
MAVIS DISCOUNT TIRE
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTRY, NEW YORK

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Stormwater Pollution Prevention Plan. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards."

"I certify under penalty of law that I will coordinate, either through the Owner or directly with the Subcontractor(s) identified in the Pollution Prevention Plan having responsibility for implementing storm water measures to minimize any impact my actions may have on the effectiveness of these storm water control measures."

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Date: _____

Received by: _____
[Name]

STORM WATER POLLUTION PREVENTION PLAN
SUBCONTRACTOR'S CERTIFICATION

CONSTRUCTION SITE -
MAVIS DISCOUNT TIRE
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTRY, NEW YORK

SUBCONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Stormwater Pollution Prevention Plan. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards."

"I certify under penalty of law that I will coordinate, either through the Owner or directly with the Subcontractor(s) identified in the Pollution Prevention Plan having responsibility for implementing storm water measures to minimize any impact my actions may have on the effectiveness of these storm water control measures."

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

Telephone Number: _____

Date: _____

Scope of Services: _____

Date: _____

Received by: _____
[Name]

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

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

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

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

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

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

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

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

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

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

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

V. Additional Information/Explanation:

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

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

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

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

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:	
2. Contact Person:	Don Young
3. Street Address:	736 Cherry Street
4. City/State/Zip:	Chattanooga, Tennessee, 37402
II. Project Site Information	
5. Project/Site Name:	
6. Street Address:	
7. City/State/Zip:	Hamburg, New York, 14075
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification 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)

APPENDIX D
DESIGN CALCULATIONS

INVENTORY

D-1: STORWMATER CALCUAITONS
D-2: EXISTING AND PROPOSED HYDROCAD ROUTINGS

Total Required Water Quality Volume Calculation Worksheet
(Redevelopment Projects)

Is this project subject to Chapter 9 of the NYS Design Manual ?.....					*yes*
Design Point(s):			*Manually enter the information below to calculate the total required water quality volume.*		
P=	1.00	*inch*			

Site Conditions			
Existing impervious area to be disturbed	0.61	acres	
Proposed impervious area	0.68	acres	
Is there an increase in impervious area?	0.07	yes	*New impervious area has to be directed to runoff reduction practice.*
Does the plan propose a reduction of existing impervious cover by a minimum of 25% of the total disturbed, impervious area?	--	--	

Water Quality Volume for the Existing Impervious Area to be Disturbed					
Item	**Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*
Existing impervious area to be disturbed	0.61	0.61	100%	0.95	2,091
Will a standard stormwater practice be used?		*yes*	Treat 25% of existing WQv		
Existing Conditions Water Quality Volume to be Treated		**523**	**cf**		

Water Quality Volume for Proposed Increase in Impervious Area					
Item	**Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*
Proposed Increase in Impervious Area	0.07	0.07	100%	0.95	240

Identify Runoff Reduction Techniques By Area			
Technique	**Total Contributing Area** *(Acre)*	**Contributing Impervious Area** *(Acre)*	**Notes**
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques					
	Total Area *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient Rv**	**WQv** *(ft^3)*
Initial WQv	0.07	0.07	100%	0.95	240
Subtract Area	0.00	0.00	--	--	--
WQv adjusted after Area Reductions	**0.07**	**0.07**	100%	0.95	0
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	0.07	0.07	100%	0.95	**240**
WQv reduced by Area Reduction techniques					0

Total Required Water Quality Volume		
Existing Conditions Water Quality Volume to be Treated	523	cf
Proposed Conditions Water Quality Volume for Increase in Impervious Area	240	cf
Total Required Water Quality Volume	**763**	**cf**

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

where:

Af	Required Surface Area (ft^2)
WQv	Water Quality Volume (ft^3)
df	Depth of the Soil Medium (ft)
hf	Average height of water above the planter bed (ft)
tf	The Design Time to Filter the Treatment Volume Through the Filter Media (days)
k	Hydraulic conductivity (ft/day)

Design Point(s):	**0**

Enter Site Data For Drainage Area to be Treated by Practice								
Subcatchment Number	**Subcatchment Model Number**	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	D40A	1.35	0.59	0.43	0.44	2,160	1.00	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops				43%	0.44	2,160	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.							*ft^3*	

Soil Information		
Soil Group	C	
Using Underdrains?	*yes*	*Okay*

Pretreatment			
WQv	2,160	*ft^3*	
Pretreatment Sizing	25%	*of WQv*	
Required Pretreatment Volume	540	*ft^3*	
Pretreatment Provided	639	*ft^3*	
Pretreatment techniques utilized	*Sediment Basin/Forebay*		

Calculate the Minimum Filter Area				
WQv		2,160	*ft^3*	
Media Type	--	Bioretention Soil		
Depth of Soil Media	*df*	2.5	*ft*	*2.5 ft to 4 ft*
Hydraulic Conductivity	*k*	0.5	*ft/day*	
Average Height of Ponding	*hf*	0.5	*ft*	*typically 0.25 ft*
Filter Time	*tf*	2.00	*days*	
Required Filter Area	***Af***	**1,800**	***ft^2***	

Determine Actual Bioretention Area			
Filter Width	28	*ft*	
Filter Length	80	*ft*	
Filter Area	1,949	*ft^2*	*OK*
Actual Volume Provided	2,339	*ft^3*	

Determine Underdrain			
Underdrain Gravel Bed With	3	*ft*	
Required length of underdrain	65	*ft*	
Provided length of underdain	70	*ft*	*OK*

Determine Runoff Reduction			
Percent Reduction	40%		
Runoff Reduction	**864**	***ft^3***	***This is 40% of the storage provided or WQv, whichever is smaller.***
Volume Treated	**1,296**	***ft^3***	***This is the portion of the WQv that is not reduced in the practice.***

Is the Bioretention contributing flow to another practice?		*no*	Select Practice	N/A
Volume Directed to Another Practice	0	*ft^3*	This volume is directed another practice	

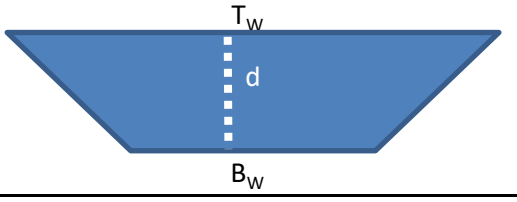
Dry Swale Worksheet

Design Point(s):	0

Enter Site Data For Drainage Area to be Treated by Practice								
Subcatchment Number	**Subcatchment Model Number**	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	D30	0.30	0.09	0.30	0.32	347	1.00	Dry Swale
Enter Impervious Area Reduced by Disconnection of Rooftops				30%	0.32	347	<<WQv after adjusting for Disconnected Rooftops	

Soil Information		
Soil Group (HSG)	C	

Pretreatment			
Pretreatment (10% of WQv)	35	ft^3	
Pretreatment Method	Grass Channel		

Calculate Available Storage Capacity			
Bottom Width	13	*ft*	*Design with a bottom width no greater than 8 feet to avoid potential gullying and channel braiding, but no less than 2 feet*
Side Slope (X:1)	4	*Okay*	*Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope*
Longitudinal Slope	2%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	0.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	17	*ft*	
Area	7.50	*sf*	
Minimum Length	42	*ft*	
Actual Length	114	*ft*	
Mid Point Depth check	0.50	*ft*	*A maximum depth of 12" at the mid point of the channel (for storage of the WQv)*
End Point Depth check	1.00	*ft*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	890	ft^3	*Okay*

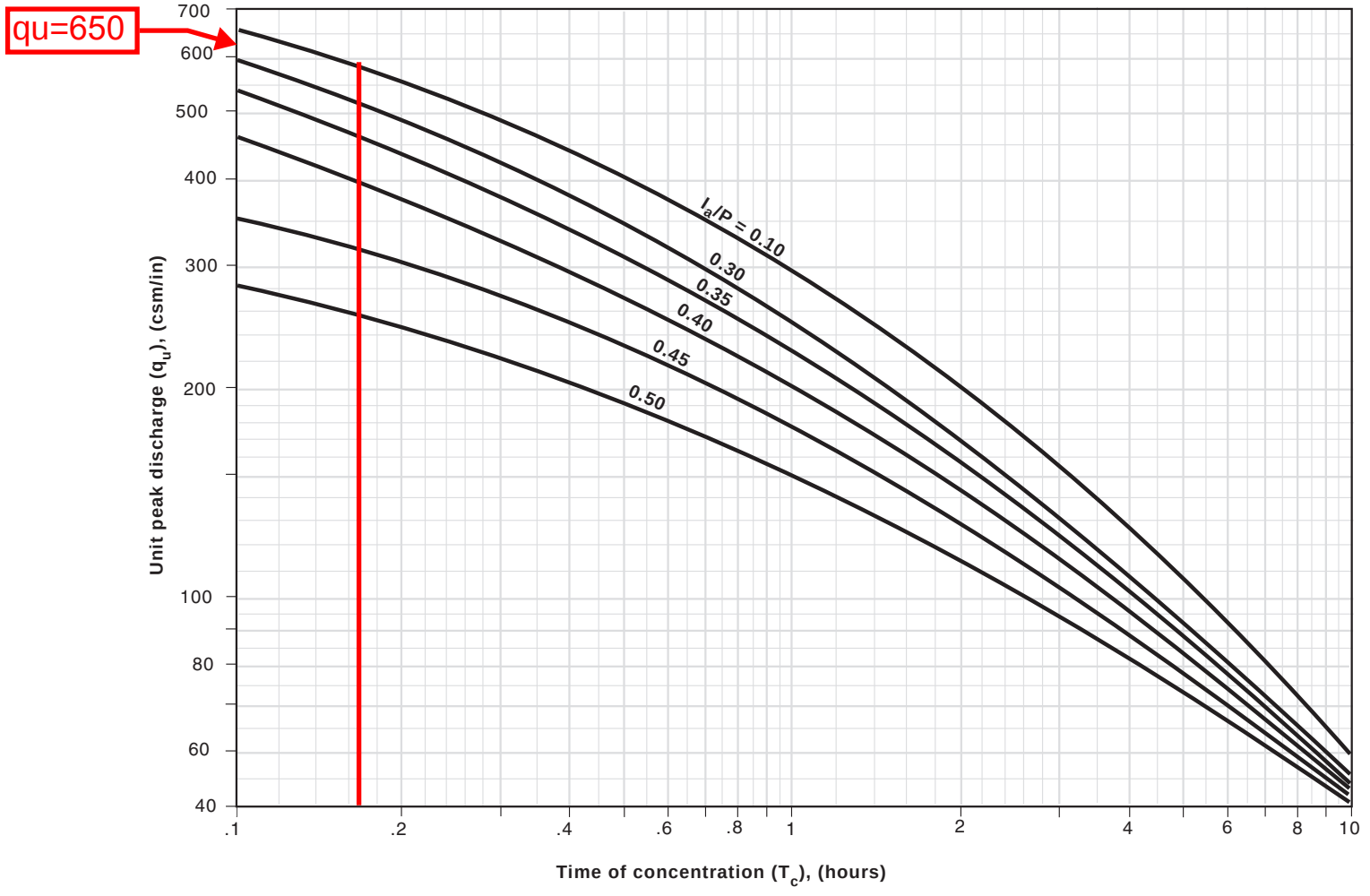
Conveyance			
Velocity for 2-yr storm	4.1	*fps*	*Peak velocity must be non-erosive (i.e., 3.5 to 5.0 fps)*
Flow Depth for 10-yr storm	0.1	*ft*	*Must Safely convey the 10-yr storm with a minimum of 6" of freeboard*
Flow Depth for 10-yr storm with 6" of freeboard	0.60	*ft*	*Okay*

Runoff Reduction			
Percent Reduction	20%		
Runoff Reduction	**69**	ft^3	**Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**

Channel Protection Volume Worksheet

Design Point(s):			
Channel Protection Volume			
Area	1.65	*ac*	*0.003 sq. miles*
Curve Number (CN)	84		
Precipitation for 1 yr storm ($P_{1\ yr\ storm}$)	1.87	*in*	
Ia (200 / CN - 2)	0.38		
Ia / $P_{1\ yr\ storm}$	0.20		
S (Ia / 0.2)	1.90		
Time of Concentration	10.00	*min*	*0.167 hours*
Unit peak discharge (q_u)	650	*csm/in*	*from Exhibit 4-III of TR-55*
Ratio of Outflow to Inflow (q_o/q_i)	0.020		*from Figure B.1 of Design Manual*
Unit Volume (V_S/V_r)	0.66		*$0.683 - 1.43*(q_o/q_i) + 1.64*(q_o/q_i)^2 - 0.804*(q_o/q_i)^3$*
Runoff for 1 yr storm ($Q_{1\ yr\ runoff}$)	0.65	*in*	*$(P_{1\ yr\ storm} - 0.2*S)^2/(P_{1\ yr\ storm} + 0.8*S)$*
Channel Protection Volume	**2,559**	***cf***	*$[((V_s/V_r) * (Q_{1\ yr\ runoff}) * A)/12]*43560$*
Average Release Rate over 24 hours	**0.03**	***cfs***	

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



While the TR-55 short-cut method reports to incorporate multiple stage structures, experience has shown that an additional 10-15% storage is required when multiple levels of extended detention are provided.

Figure B.1 Detention Time vs. Discharge Ratios (Source: MDE, 2000)

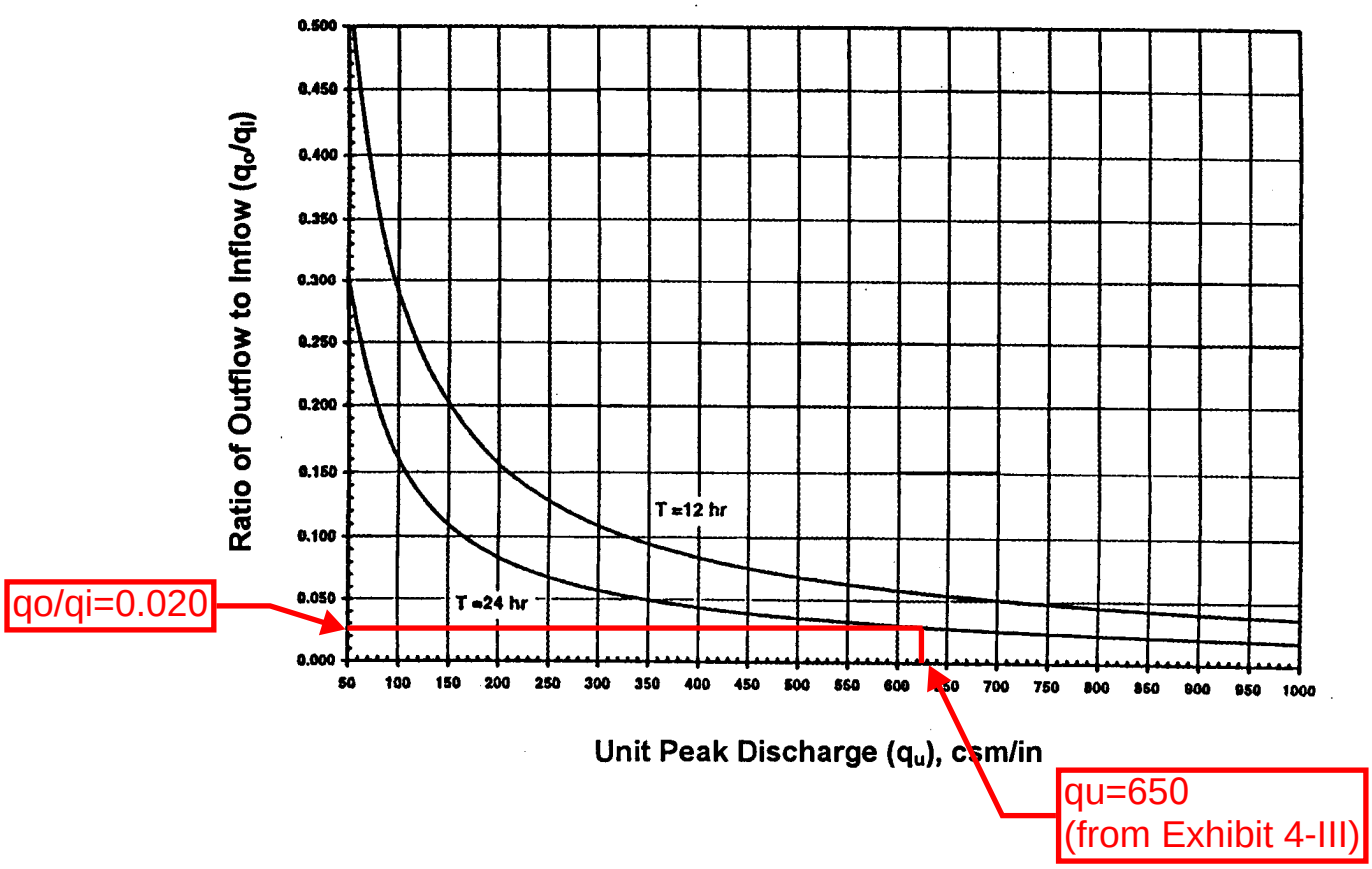
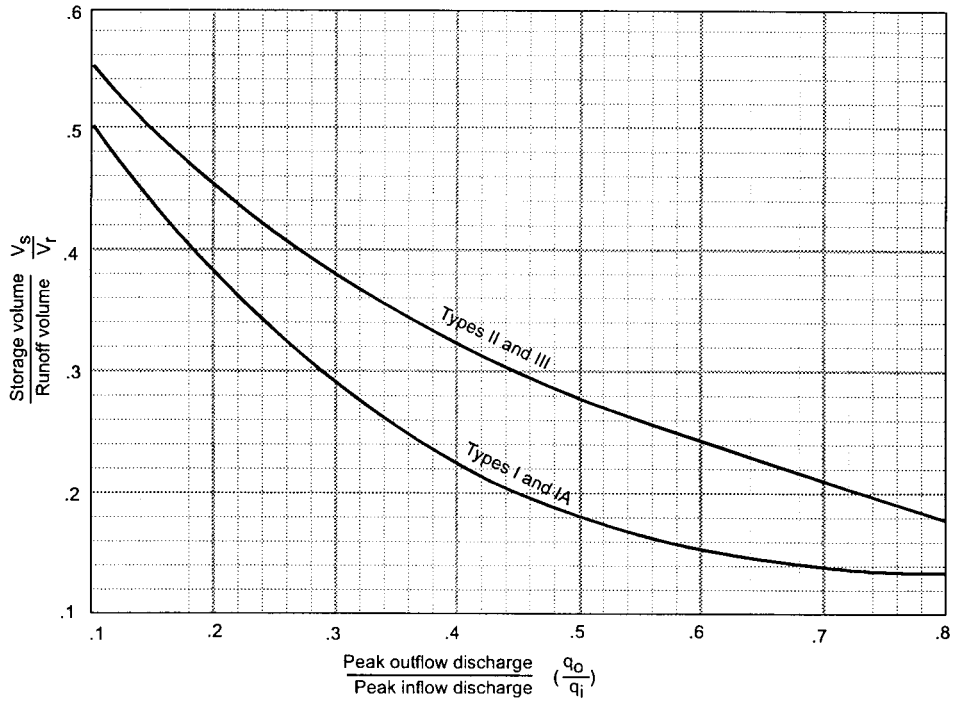


Figure B.2 Approximate Detention Basin Routing For Rainfall Types I, IA, II, and III (Source: NRCS, 1986)



Minimum Runoff Reduction Volume Worksheet

Minimum Runoff Reduction Volume

1. Construction activities that cannot achieve 100% reduction of the total water quality volume due to site limitation shall direct runoff from all newly constructed impervious areas to a runoff reduction technique or standard stormwater management practice with runoff reduction volume capacity unless infeasible.
2. In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the minimum runoff reduction (RRv_{min}).
3. The minimum runoff reduction volume is calculated as follows:

$$RRv_{min} = \frac{P * \bar{R}v * Aic * S}{12}$$

Where:

RRv_{min} = Minimum runoff reduction required from impervious area

$\bar{R}v$ = 0.05 + 0.009 (I), where I is 100% impervious

Aic = Total area of new impervious cover

S = Hydrologic Soil Group Specific Reduction Factor

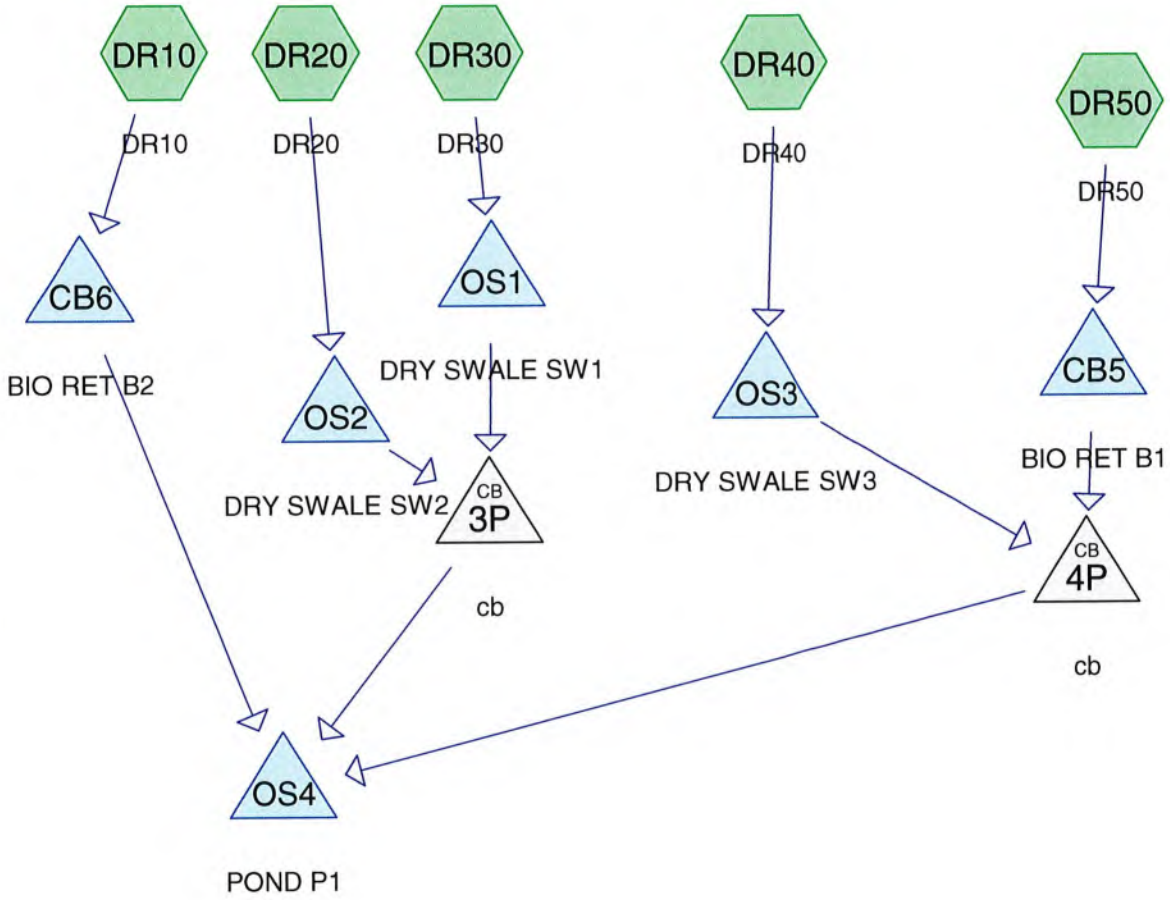
Enter the Soils Data for the site

Soil Group	Acres	S	
A	0.00	55%	*(new impervious area in Type A Soils)*
B	0.00	40%	*(new impervious area in Type B Soils)*
C	0.68	30%	*(new impervious area in Type C Soils)*
D	0.00	20%	*(new impervious area in Type D Soils)*
Total Area	**0.68**		

Calculate the Minimum RRv

Soil Group Speific Reduction Factor (S)	**0.30**		*(weighted average)*
Total Area of New Impervious Cover (Aic)	0.07	*acre*	
Precipitation (P)	1.00	*in*	
Rv	0.95		
Minimum RRv	**72**	***ft3***	*(P * Rv x Aic * S)/12*
	0.00	af	

PREVIOUSLY APPROVED HYDROCAD ROUTINGS



Subcat Reach Pond Link

Routing Diagram for proposed - 5
Prepared by VRTHOR, Printed 5/10/2017
HydroCAD® 10.00-12 s/n 03498 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.309	74	>75% Grass cover, Good, HSG C (DR10, DR20, DR30, DR40, DR50)
1.422	98	Paved parking, HSG C (DR10, DR20, DR30, DR40, DR50)
0.221	70	Woods, Good, HSG C (DR10, DR30, DR40)
2.952	**85**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3P	711.82	711.50	58.0	0.0055	0.013	12.0	0.0	0.0
2	4P	713.00	711.50	104.0	0.0144	0.013	12.0	0.0	0.0
3	CB5	713.00	713.00	1.0	0.0000	0.013	12.0	0.0	1.0
4	CB6	713.50	711.50	28.0	0.0714	0.013	12.0	0.0	1.0
5	OS1	713.20	711.82	250.0	0.0055	0.013	12.0	0.0	0.0
6	OS2	711.92	711.82	1.0	0.1000	0.013	12.0	0.0	0.0
7	OS3	713.70	713.08	110.0	0.0056	0.013	12.0	0.0	0.0
8	OS4	711.20	710.00	42.0	0.0286	0.013	15.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DR10: DR10 Runoff Area=16,633 sf 21.51% Impervious Runoff Depth>0.52"
Tc=10.0 min CN=79 Runoff=0.32 cfs 0.017 af

Subcatchment DR20: DR20 Runoff Area=23,845 sf 68.84% Impervious Runoff Depth>1.16"
Tc=10.0 min CN=91 Runoff=1.03 cfs 0.053 af

Subcatchment DR30: DR30 Runoff Area=29,641 sf 37.37% Impervious Runoff Depth>0.65"
Tc=10.0 min CN=82 Runoff=0.72 cfs 0.037 af

Subcatchment DR40: DR40 Runoff Area=49,381 sf 54.52% Impervious Runoff Depth>0.90"
Tc=10.0 min CN=87 Runoff=1.69 cfs 0.085 af

Subcatchment DR50: DR50 Runoff Area=9,089 sf 43.53% Impervious Runoff Depth>0.74"
Tc=10.0 min CN=84 Runoff=0.26 cfs 0.013 af

Pond 3P: cb Peak Elev=712.43' Inflow=0.97 cfs 0.089 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0055 '/' Outflow=0.97 cfs 0.089 af

Pond 4P: cb Peak Elev=713.62' Inflow=1.09 cfs 0.098 af
12.0" Round Culvert n=0.013 L=104.0' S=0.0144 '/' Outflow=1.09 cfs 0.098 af

Pond CB5: BIO RET B1 Peak Elev=717.40' Storage=0 cf Inflow=0.26 cfs 0.013 af
Outflow=0.26 cfs 0.013 af

Pond CB6: BIO RET B2 Peak Elev=718.40' Storage=0 cf Inflow=0.32 cfs 0.017 af
Outflow=0.32 cfs 0.017 af

Pond OS1: DRY SWALE SW1 Peak Elev=718.00' Storage=359 cf Inflow=0.72 cfs 0.037 af
Outflow=0.27 cfs 0.037 af

Pond OS2: DRY SWALE SW2 Peak Elev=714.31' Storage=298 cf Inflow=1.03 cfs 0.053 af
Outflow=0.71 cfs 0.053 af

Pond OS3: DRY SWALE SW3 Peak Elev=717.63' Storage=656 cf Inflow=1.69 cfs 0.085 af
Outflow=0.89 cfs 0.085 af

Pond OS4: POND P1 Peak Elev=712.62' Storage=2,596 cf Inflow=2.34 cfs 0.204 af
Outflow=1.25 cfs 0.199 af

Total Runoff Area = 2.952 ac Runoff Volume = 0.204 af Average Runoff Depth = 0.83"
51.82% Pervious = 1.530 ac 48.18% Impervious = 1.422 ac

Summary for Subcatchment DR10: DR10

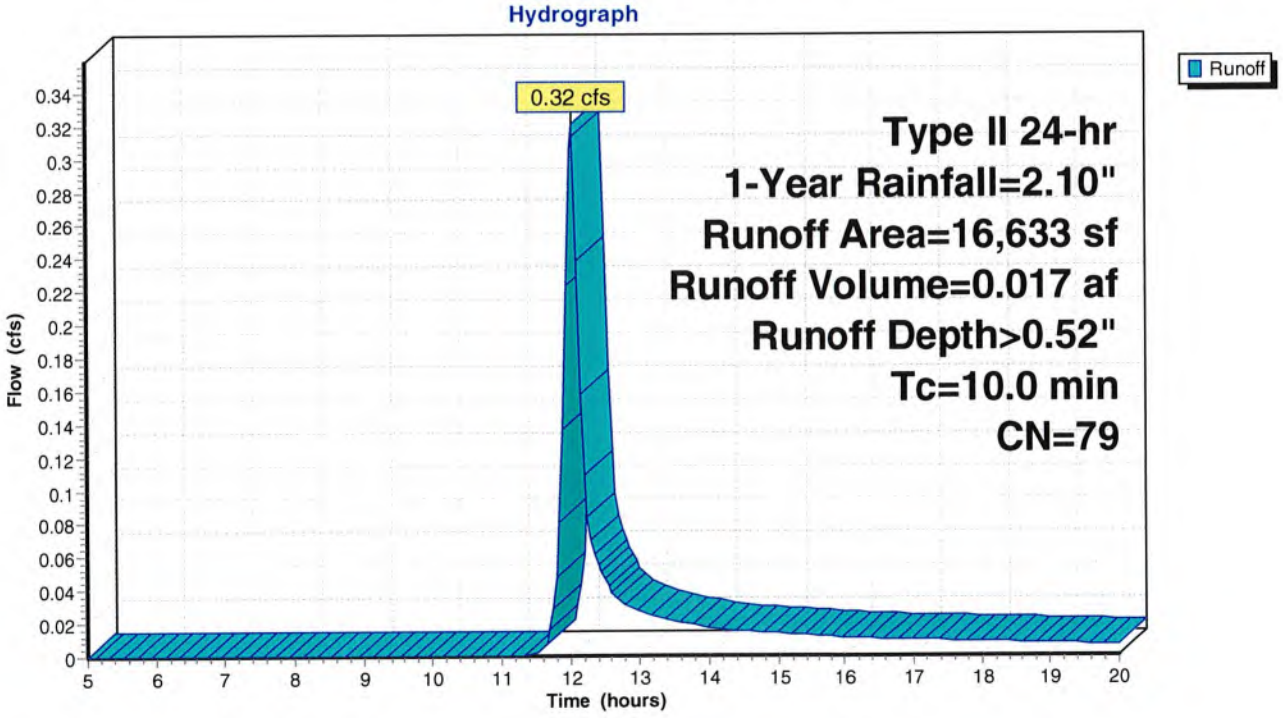
Runoff = 0.32 cfs @ 12.03 hrs, Volume= 0.017 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (sf)	CN	Description
3,578	98	Paved parking, HSG C
12,465	74	>75% Grass cover, Good, HSG C
590	70	Woods, Good, HSG C
16,633	79	Weighted Average
13,055		78.49% Pervious Area
3,578		21.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR10: DR10



Summary for Subcatchment DR20: DR20

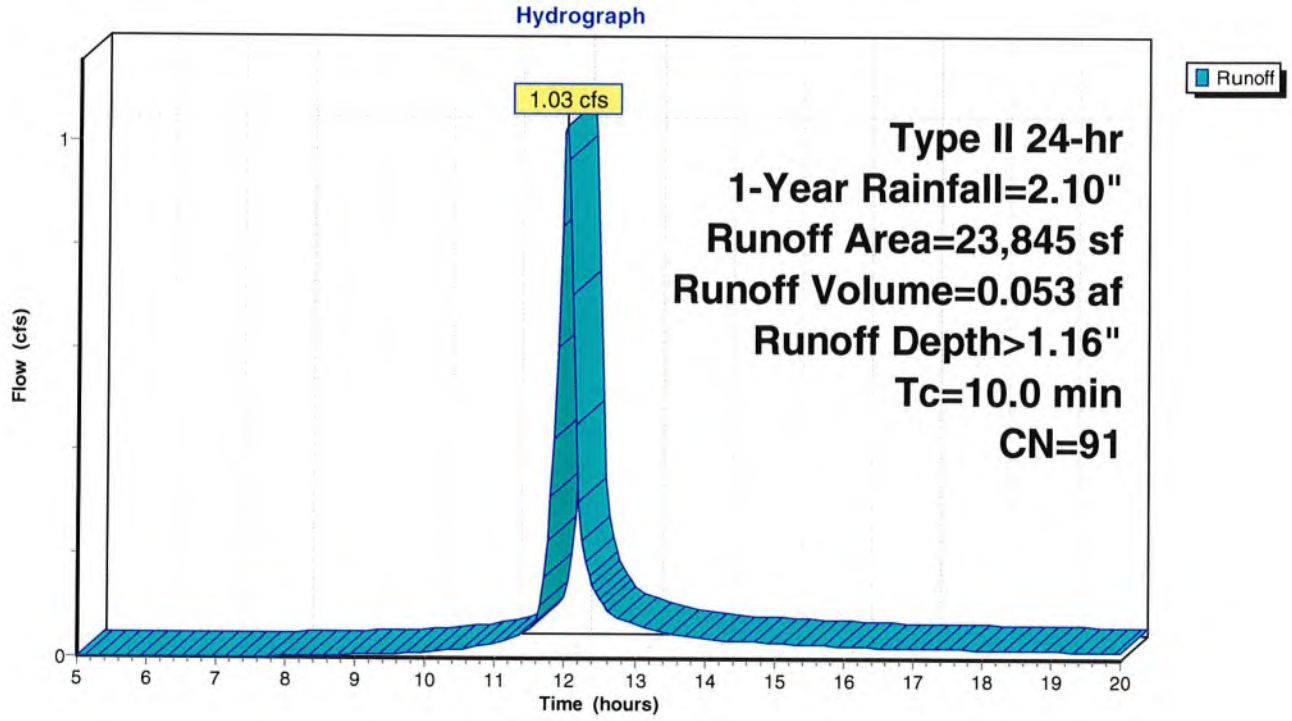
Runoff = 1.03 cfs @ 12.01 hrs, Volume= 0.053 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (sf)	CN	Description
16,416	98	Paved parking, HSG C
7,429	74	>75% Grass cover, Good, HSG C
23,845	91	Weighted Average
7,429		31.16% Pervious Area
16,416		68.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR20: DR20



Summary for Subcatchment DR30: DR30

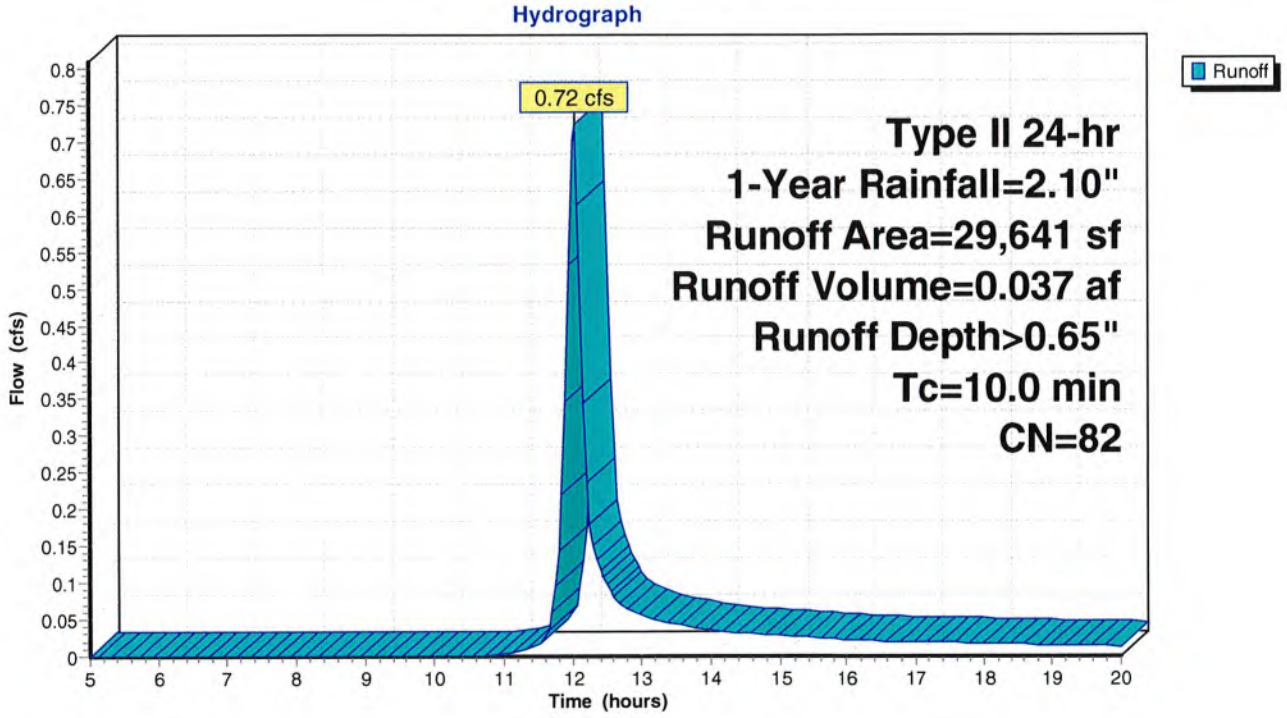
Runoff = 0.72 cfs @ 12.02 hrs, Volume= 0.037 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (sf)	CN	Description
11,076	98	Paved parking, HSG C
12,999	74	>75% Grass cover, Good, HSG C
5,566	70	Woods, Good, HSG C
29,641	82	Weighted Average
18,565		62.63% Pervious Area
11,076		37.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR30: DR30



Summary for Subcatchment DR40: DR40

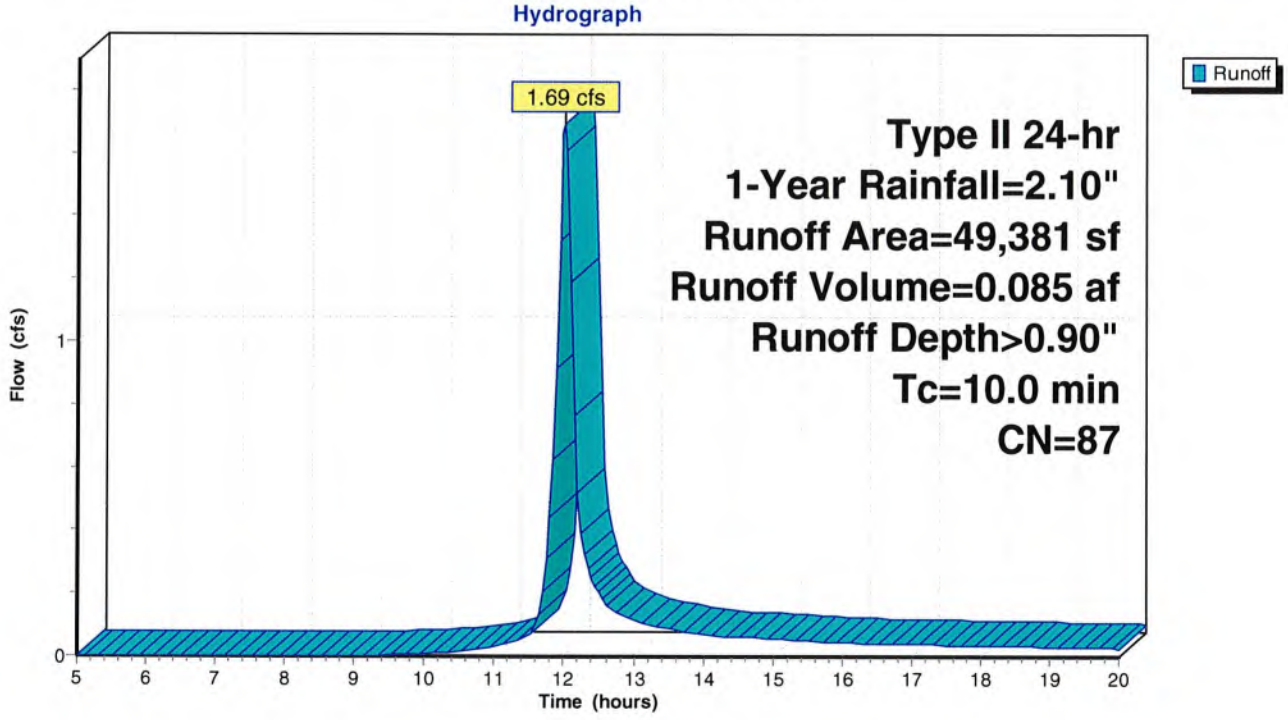
Runoff = 1.69 cfs @ 12.02 hrs, Volume= 0.085 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (sf)	CN	Description
26,924	98	Paved parking, HSG C
18,981	74	>75% Grass cover, Good, HSG C
3,476	70	Woods, Good, HSG C
49,381	87	Weighted Average
22,457		45.48% Pervious Area
26,924		54.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR40: DR40



Summary for Subcatchment DR50: DR50

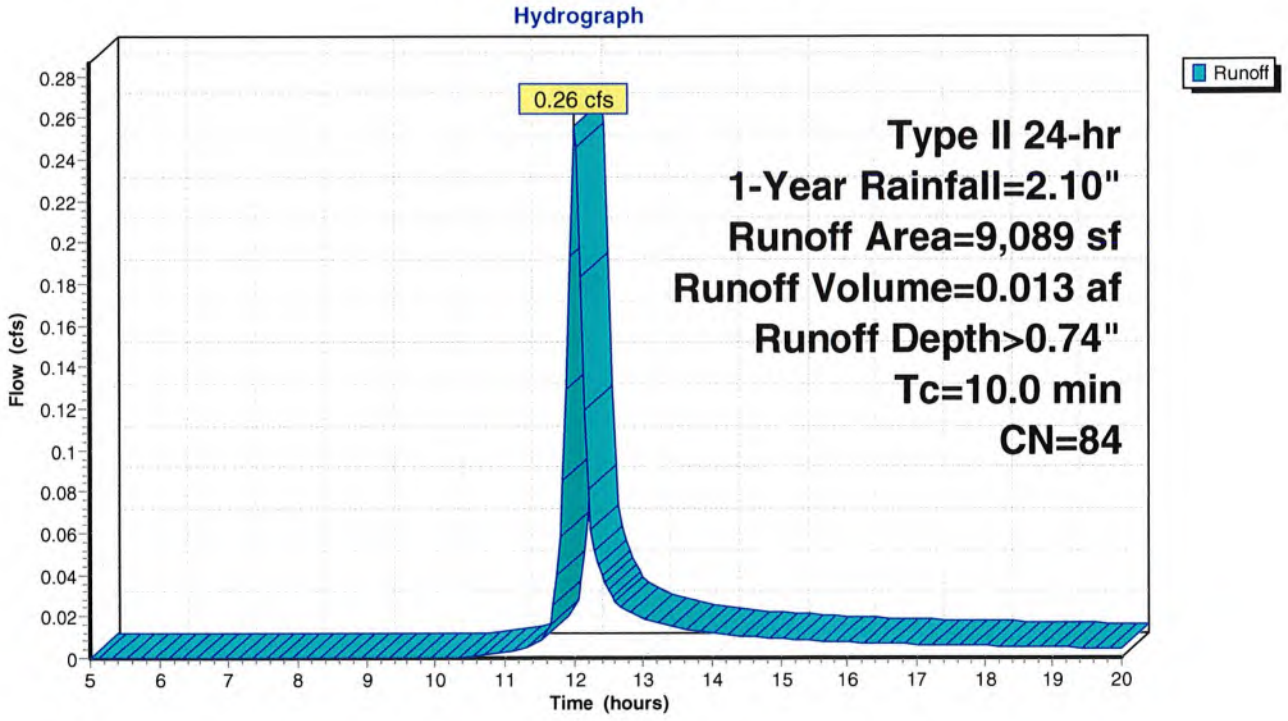
Runoff = 0.26 cfs @ 12.02 hrs, Volume= 0.013 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (sf)	CN	Description
3,956	98	Paved parking, HSG C
5,133	74	>75% Grass cover, Good, HSG C
9,089	84	Weighted Average
5,133		56.47% Pervious Area
3,956		43.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR50: DR50



Summary for Pond 3P: cb

[57] Hint: Peaked at 712.43' (Flood elevation advised)
[79] Warning: Submerged Pond OS1 Primary device # 1 OUTLET by 0.61'
[79] Warning: Submerged Pond OS2 Primary device # 1 INLET by 0.51'

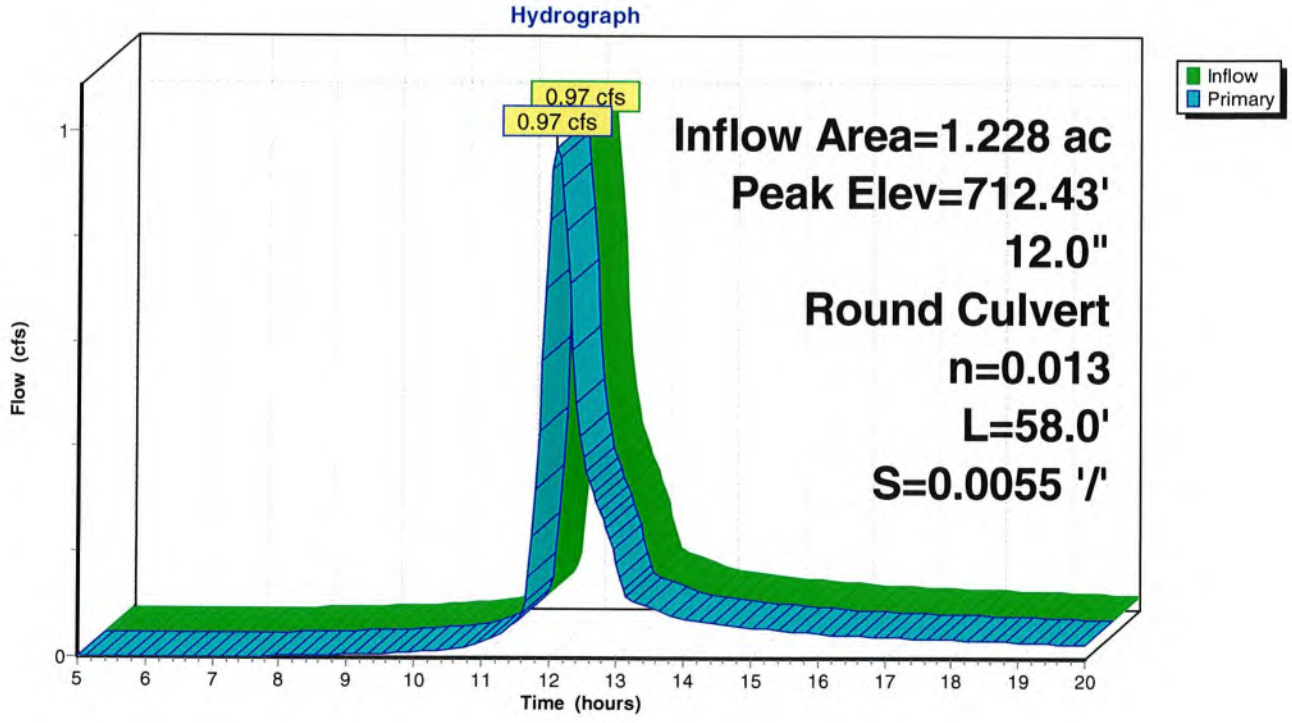
Inflow Area = 1.228 ac, 51.40% Impervious, Inflow Depth > 0.87" for 1-Year event
Inflow = 0.97 cfs @ 12.11 hrs, Volume= 0.089 af
Outflow = 0.97 cfs @ 12.11 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.11 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 712.43' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	711.82'	**12.0" Round Culvert** L= 58.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.82' / 711.50' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.97 cfs @ 12.11 hrs HW=712.42' (Free Discharge)
1=Culvert (Barrel Controls 0.97 cfs @ 2.79 fps)

Pond 3P: cb



Summary for Pond 4P: cb

[57] Hint: Peaked at 713.62' (Flood elevation advised)
[79] Warning: Submerged Pond CB5 Primary device # 2 by 0.54'
[79] Warning: Submerged Pond OS3 Primary device # 1 OUTLET by 0.54'

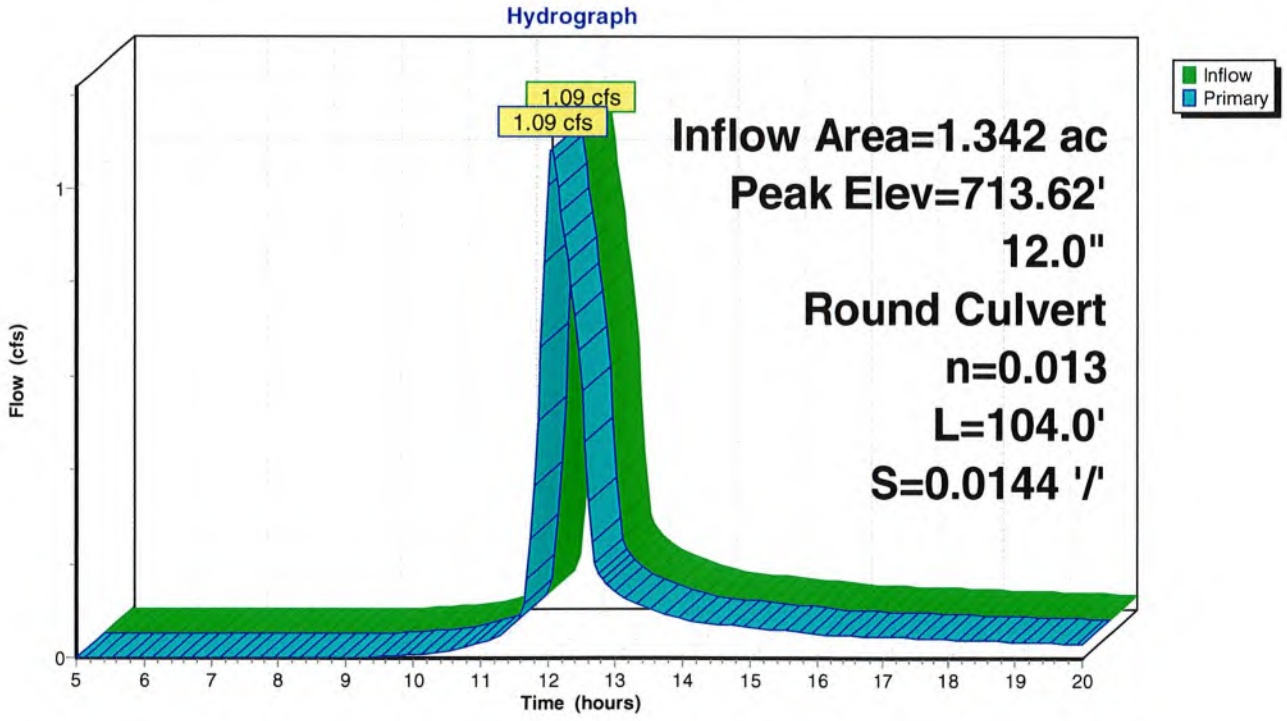
Inflow Area = 1.342 ac, 52.81% Impervious, Inflow Depth > 0.88" for 1-Year event
Inflow = 1.09 cfs @ 12.06 hrs, Volume= 0.098 af
Outflow = 1.09 cfs @ 12.06 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min
Primary = 1.09 cfs @ 12.06 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 713.62' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	713.00'	**12.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 713.00' / 711.50' S= 0.0144 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.06 hrs HW=713.62' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 2.11 fps)

Pond 4P: cb



Summary for Pond CB5: BIO RET B1

Inflow Area = 0.209 ac, 43.53% Impervious, Inflow Depth > 0.74" for 1-Year event
Inflow = 0.26 cfs @ 12.02 hrs, Volume= 0.013 af
Outflow = 0.26 cfs @ 12.02 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.26 cfs @ 12.02 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 717.40' @ 12.02 hrs Surf.Area= 1,020 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (803.6 - 803.6)

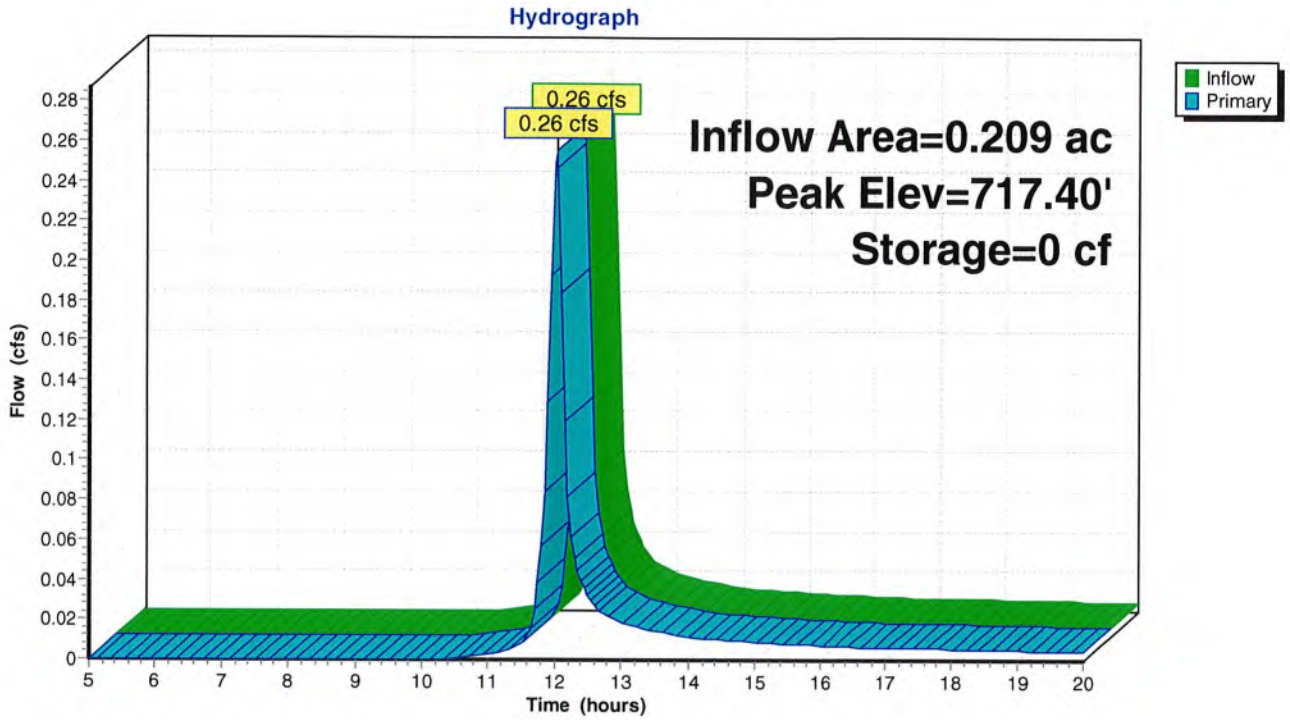
Volume	Invert	Avail.Storage	Storage Description
#1	717.40'	1,211 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
717.40	1,020	0	0
717.90	1,020	510	510
718.50	1,316	701	1,211

Device	Routing	Invert	Outlet Devices
#1	Primary	717.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.08'	**12.0" Round Culvert w/ 1.0" inside fill** L= 1.0' Ke= 0.600 Inlet / Outlet Invert= 713.00' / 713.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=6.70 cfs @ 12.02 hrs HW=717.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 6.70 cfs @ 8.89 fps)

Pond CB5: BIO RET B1



Summary for Pond CB6: BIO RET B2

Inflow Area = 0.382 ac, 21.51% Impervious, Inflow Depth > 0.52" for 1-Year event
Inflow = 0.32 cfs @ 12.03 hrs, Volume= 0.017 af
Outflow = 0.32 cfs @ 12.03 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.03 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.40' @ 12.03 hrs Surf.Area= 754 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (818.4 - 818.3)

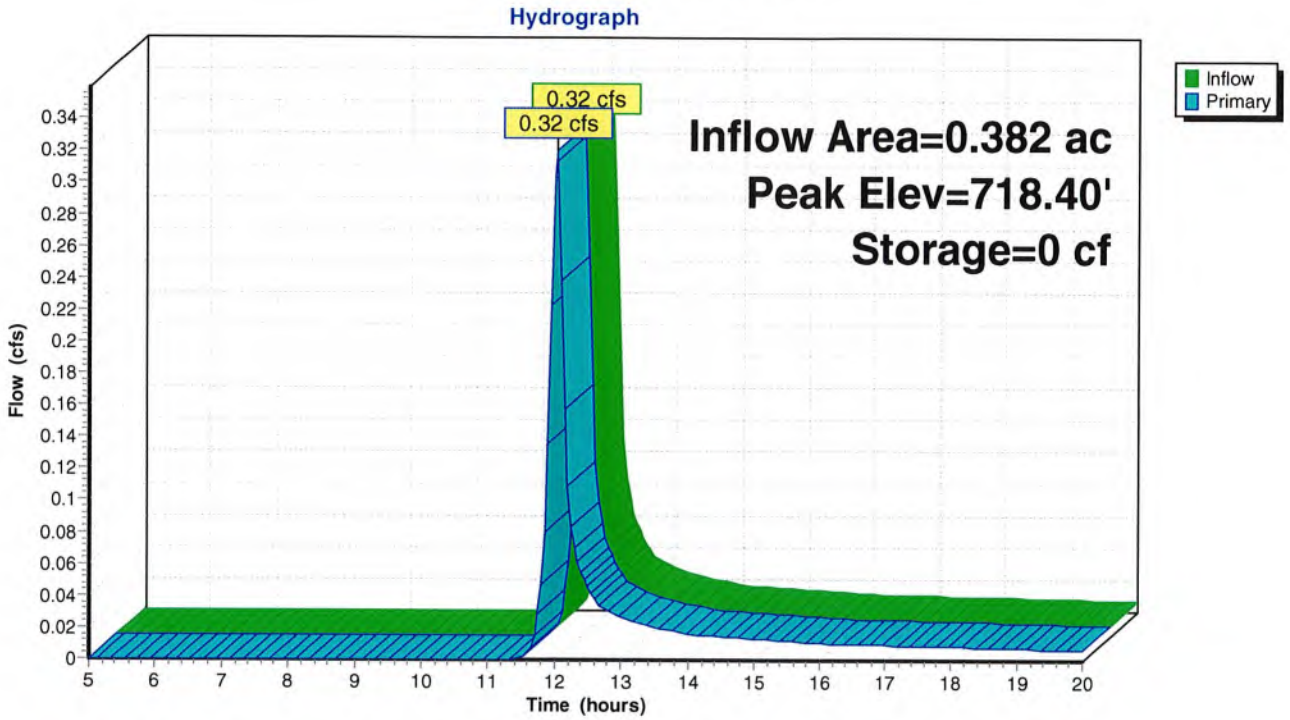
Volume	Invert	Avail.Storage	Storage Description
#1	718.40'	963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
718.40	754	0	0
718.90	754	377	377
719.50	1,200	586	963

Device	Routing	Invert	Outlet Devices
#1	Primary	718.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.58'	**12.0" Round Culvert w/ 1.0" inside fill** L= 28.0' Ke= 0.600 Inlet / Outlet Invert= 713.50' / 711.50' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=7.12 cfs @ 12.03 hrs HW=718.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 7.12 cfs @ 9.45 fps)

Pond CB6: BIO RET B2



Summary for Pond OS1: DRY SWALE SW1

Inflow Area = 0.680 ac, 37.37% Impervious, Inflow Depth > 0.65" for 1-Year event
Inflow = 0.72 cfs @ 12.02 hrs, Volume= 0.037 af
Outflow = 0.27 cfs @ 12.19 hrs, Volume= 0.037 af, Atten= 63%, Lag= 9.9 min
Primary = 0.27 cfs @ 12.19 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.00' @ 12.19 hrs Surf.Area= 558 sf Storage= 359 cf

Plug-Flow detention time= 9.5 min calculated for 0.036 af (100% of inflow)
Center-of-Mass det. time= 8.9 min (818.4 - 809.5)

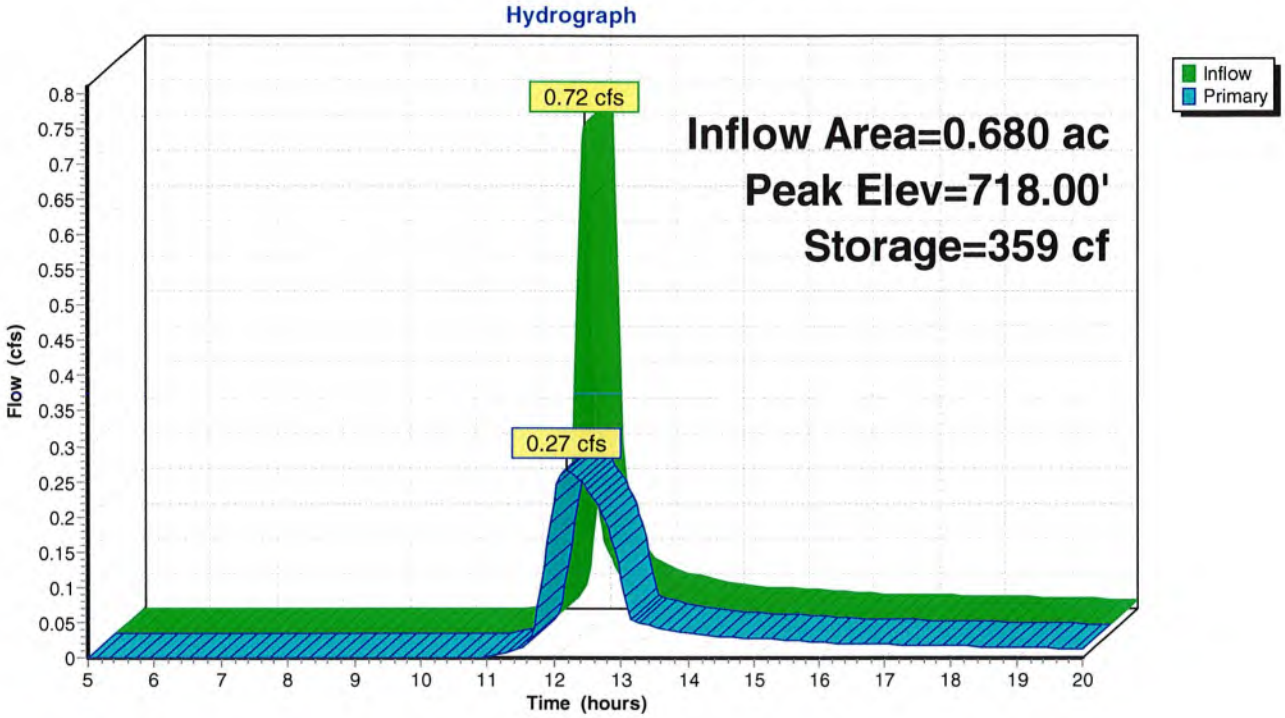
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	3,738 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	108	26	26
718.00	556	332	358
719.00	1,488	1,022	1,380
720.00	3,228	2,358	3,738

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.27 cfs @ 12.19 hrs HW=718.00' (Free Discharge)
↑└**1=Culvert** (Passes 0.27 cfs of 4.72 cfs potential flow)
↑ ├**2=Orifice/Grate** (Controls 0.00 cfs)
 └**3=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.44 fps)

Pond OS1: DRY SWALE SW1



Summary for Pond OS2: DRY SWALE SW2

Inflow Area = 0.547 ac, 68.84% Impervious, Inflow Depth > 1.16" for 1-Year event
Inflow = 1.03 cfs @ 12.01 hrs, Volume= 0.053 af
Outflow = 0.71 cfs @ 12.10 hrs, Volume= 0.053 af, Atten= 31%, Lag= 5.3 min
Primary = 0.71 cfs @ 12.10 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 714.31' @ 12.10 hrs Surf.Area= 652 sf Storage= 298 cf

Plug-Flow detention time= 5.1 min calculated for 0.053 af (99% of inflow)
Center-of-Mass det. time= 4.2 min (784.4 - 780.1)

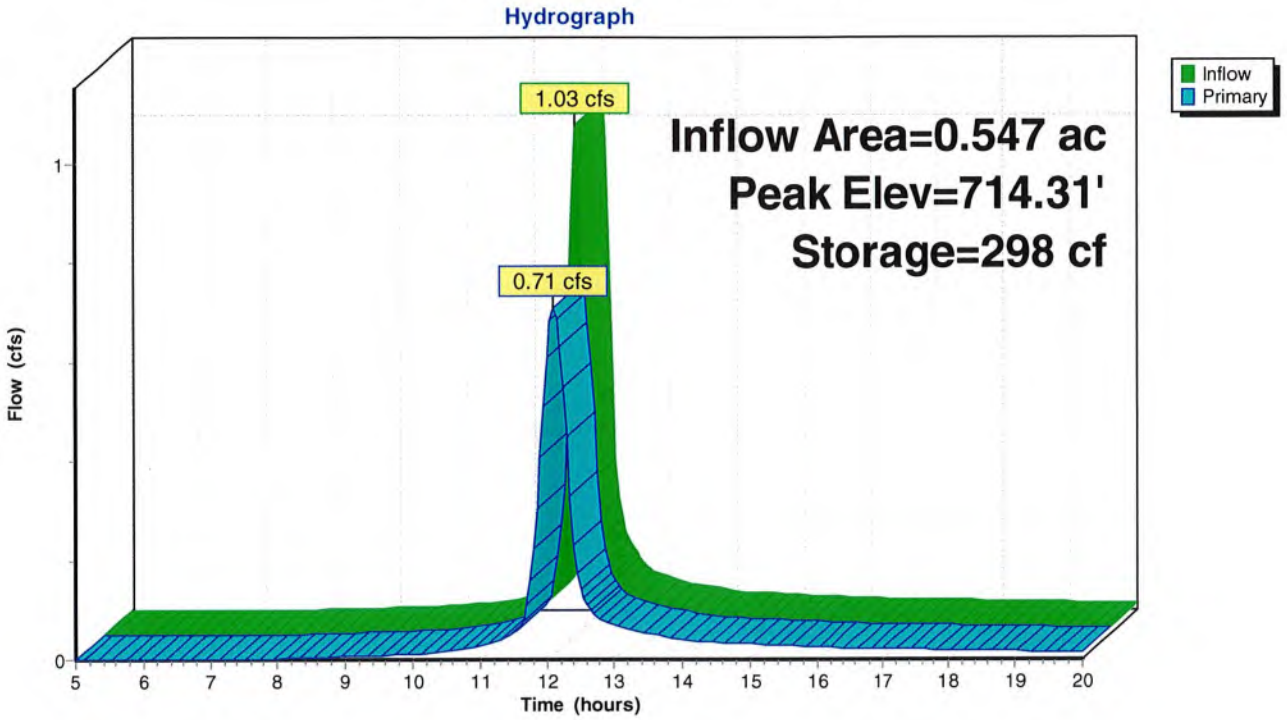
Volume	Invert	Avail.Storage	Storage Description
#1	713.50'	1,359 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
713.50	50	0	0
714.00	450	125	125
715.00	1,093	772	897
715.40	1,220	463	1,359

Device	Routing	Invert	Outlet Devices
#1	Primary	711.92'	**12.0" Round Culvert** L= 1.0' Ke= 0.400 Inlet / Outlet Invert= 711.92' / 711.82' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	715.20'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	713.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.71 cfs @ 12.10 hrs HW=714.31' (Free Discharge)
↑—**1=Culvert** (Passes 0.71 cfs of 5.57 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)
—**3=Orifice/Grate** (Orifice Controls 0.71 cfs @ 3.61 fps)

Pond OS2: DRY SWALE SW2



Summary for Pond OS3: DRY SWALE SW3

Inflow Area = 1.134 ac, 54.52% Impervious, Inflow Depth > 0.90" for 1-Year event
Inflow = 1.69 cfs @ 12.02 hrs, Volume= 0.085 af
Outflow = 0.89 cfs @ 12.14 hrs, Volume= 0.085 af, Atten= 48%, Lag= 7.3 min
Primary = 0.89 cfs @ 12.14 hrs, Volume= 0.085 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 717.63' @ 12.14 hrs Surf.Area= 1,285 sf Storage= 656 cf

Plug-Flow detention time= 6.5 min calculated for 0.085 af (100% of inflow)
Center-of-Mass det. time= 5.6 min (800.1 - 794.4)

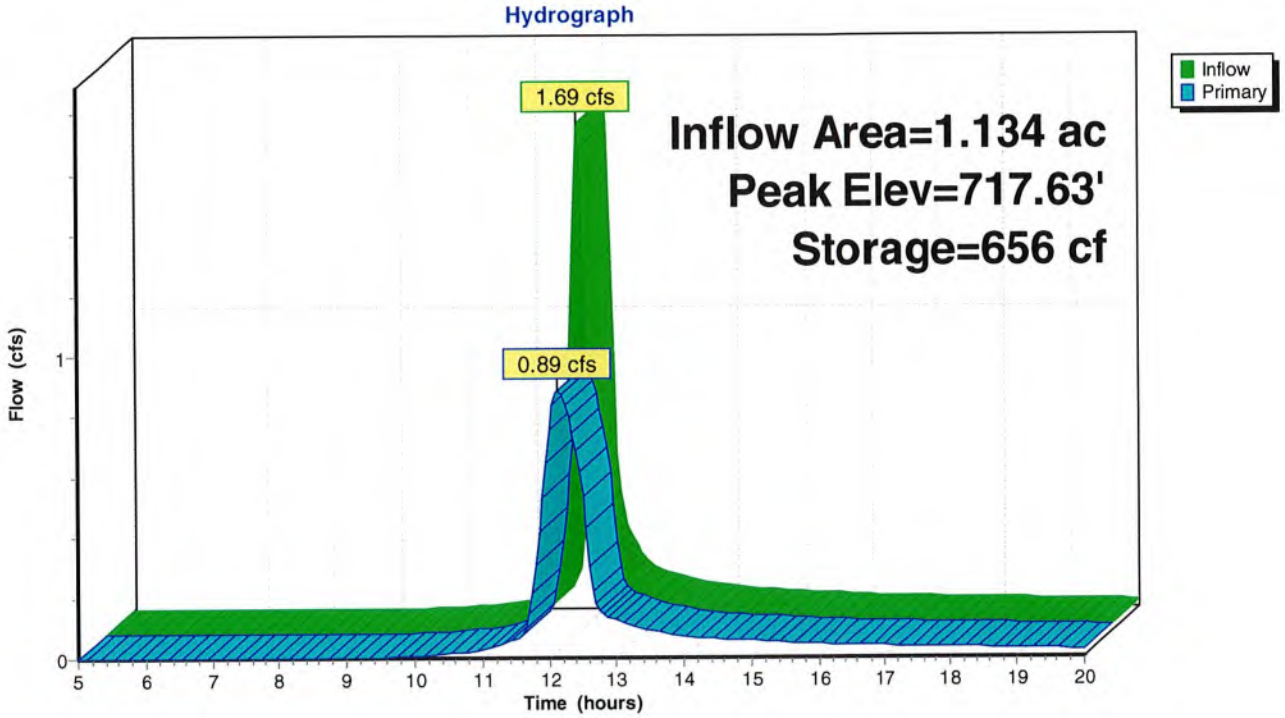
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	4,830 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	425	119	119
718.00	1,796	1,111	1,229
719.00	3,805	2,801	4,030
719.20	4,200	801	4,830

Device	Routing	Invert	Outlet Devices
#1	Primary	713.70'	**12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.70' / 713.08' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.88 cfs @ 12.14 hrs HW=717.62' (Free Discharge)
└**1=Culvert** (Passes 0.88 cfs of 5.39 cfs potential flow)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.88 cfs @ 4.50 fps)

Pond OS3: DRY SWALE SW3



Summary for Pond OS4: POND P1

[81] Warning: Exceeded Pond 3P by 0.42' @ 12.50 hrs
[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 1.12'
[79] Warning: Submerged Pond CB6 Primary device # 2 OUTLET by 1.03'

Inflow Area = 2.952 ac, 48.18% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.34 cfs @ 12.06 hrs, Volume= 0.204 af
Outflow = 1.25 cfs @ 12.41 hrs, Volume= 0.199 af, Atten= 47%, Lag= 20.8 min
Primary = 1.25 cfs @ 12.41 hrs, Volume= 0.199 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 712.62' @ 12.41 hrs Surf.Area= 2,625 sf Storage= 2,596 cf

Plug-Flow detention time= 55.6 min calculated for 0.198 af (97% of inflow)
Center-of-Mass det. time= 46.1 min (847.1 - 801.0)

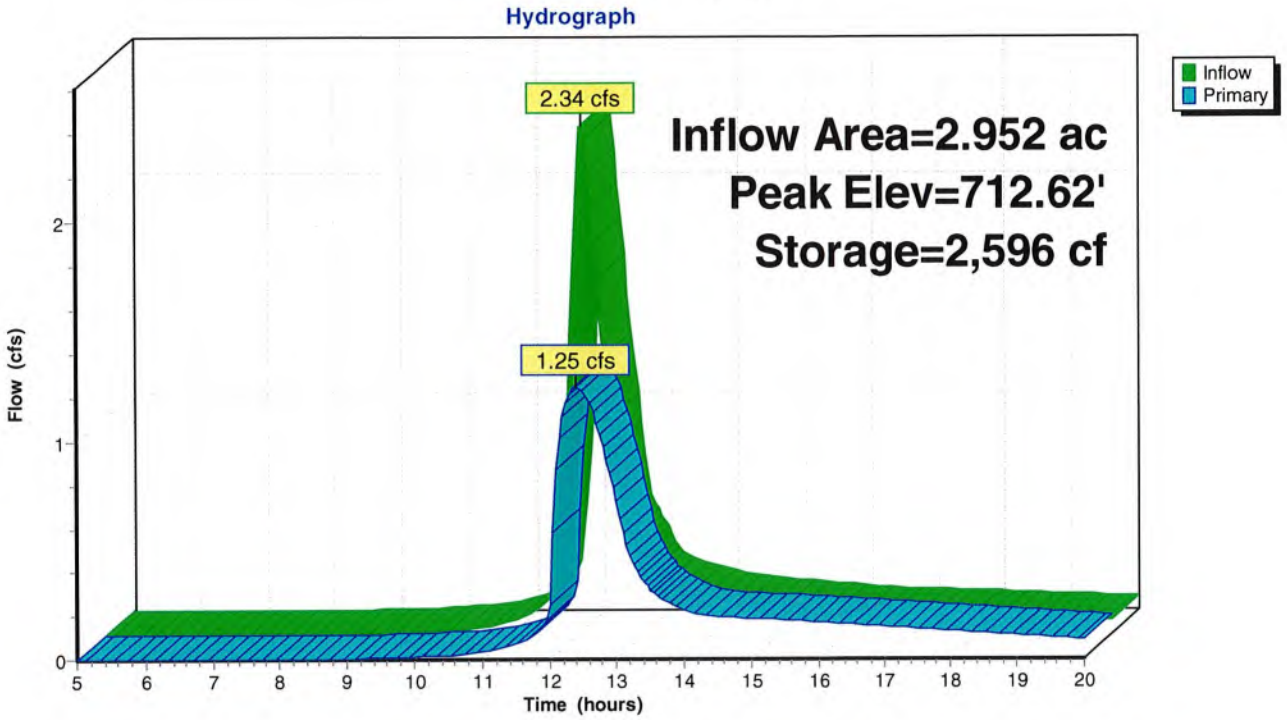
Volume	Invert	Avail.Storage	Storage Description
#1	711.20'	5,321 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.20	250	0	0
711.50	1,591	276	276
712.00	1,998	897	1,173
713.00	3,016	2,507	3,680
713.50	3,546	1,641	5,321

Device	Routing	Invert	Outlet Devices
#1	Primary	711.20'	**15.0" Round Culvert** L= 42.0' Ke= 0.400 Inlet / Outlet Invert= 711.20' / 710.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	713.30'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	711.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	712.80'	**14.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	712.00'	**14.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.25 cfs @ 12.41 hrs HW=712.61' (Free Discharge)
└**1=Culvert** (Passes 1.25 cfs of 5.63 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.47 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Orifice Controls 0.98 cfs @ 3.36 fps)

Pond OS4: POND P1



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DR10: DR10 Runoff Area=16,633 sf 21.51% Impervious Runoff Depth>1.50"
Tc=10.0 min CN=79 Runoff=0.95 cfs 0.048 af

Subcatchment DR20: DR20 Runoff Area=23,845 sf 68.84% Impervious Runoff Depth>2.47"
Tc=10.0 min CN=91 Runoff=2.11 cfs 0.112 af

Subcatchment DR30: DR30 Runoff Area=29,641 sf 37.37% Impervious Runoff Depth>1.72"
Tc=10.0 min CN=82 Runoff=1.92 cfs 0.097 af

Subcatchment DR40: DR40 Runoff Area=49,381 sf 54.52% Impervious Runoff Depth>2.11"
Tc=10.0 min CN=87 Runoff=3.85 cfs 0.199 af

Subcatchment DR50: DR50 Runoff Area=9,089 sf 43.53% Impervious Runoff Depth>1.87"
Tc=10.0 min CN=84 Runoff=0.64 cfs 0.032 af

Pond 3P: cb Peak Elev=712.59' Inflow=1.42 cfs 0.210 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0055 '/' Outflow=1.42 cfs 0.210 af

Pond 4P: cb Peak Elev=713.85' Inflow=1.77 cfs 0.232 af
12.0" Round Culvert n=0.013 L=104.0' S=0.0144 '/' Outflow=1.77 cfs 0.232 af

Pond CB5: BIO RET B1 Peak Elev=717.40' Storage=1 cf Inflow=0.64 cfs 0.032 af
Outflow=0.64 cfs 0.032 af

Pond CB6: BIO RET B2 Peak Elev=718.40' Storage=1 cf Inflow=0.95 cfs 0.048 af
Outflow=0.95 cfs 0.048 af

Pond OS1: DRY SWALE SW1 Peak Elev=719.07' Storage=1,484 cf Inflow=1.92 cfs 0.097 af
Outflow=0.36 cfs 0.097 af

Pond OS2: DRY SWALE SW2 Peak Elev=715.03' Storage=927 cf Inflow=2.11 cfs 0.112 af
Outflow=1.07 cfs 0.112 af

Pond OS3: DRY SWALE SW3 Peak Elev=718.49' Storage=2,346 cf Inflow=3.85 cfs 0.199 af
Outflow=1.25 cfs 0.199 af

Pond OS4: POND P1 Peak Elev=713.19' Storage=4,272 cf Inflow=4.03 cfs 0.489 af
Outflow=2.68 cfs 0.469 af

Total Runoff Area = 2.952 ac Runoff Volume = 0.490 af Average Runoff Depth = 1.99"
51.82% Pervious = 1.530 ac 48.18% Impervious = 1.422 ac

Summary for Subcatchment DR10: DR10

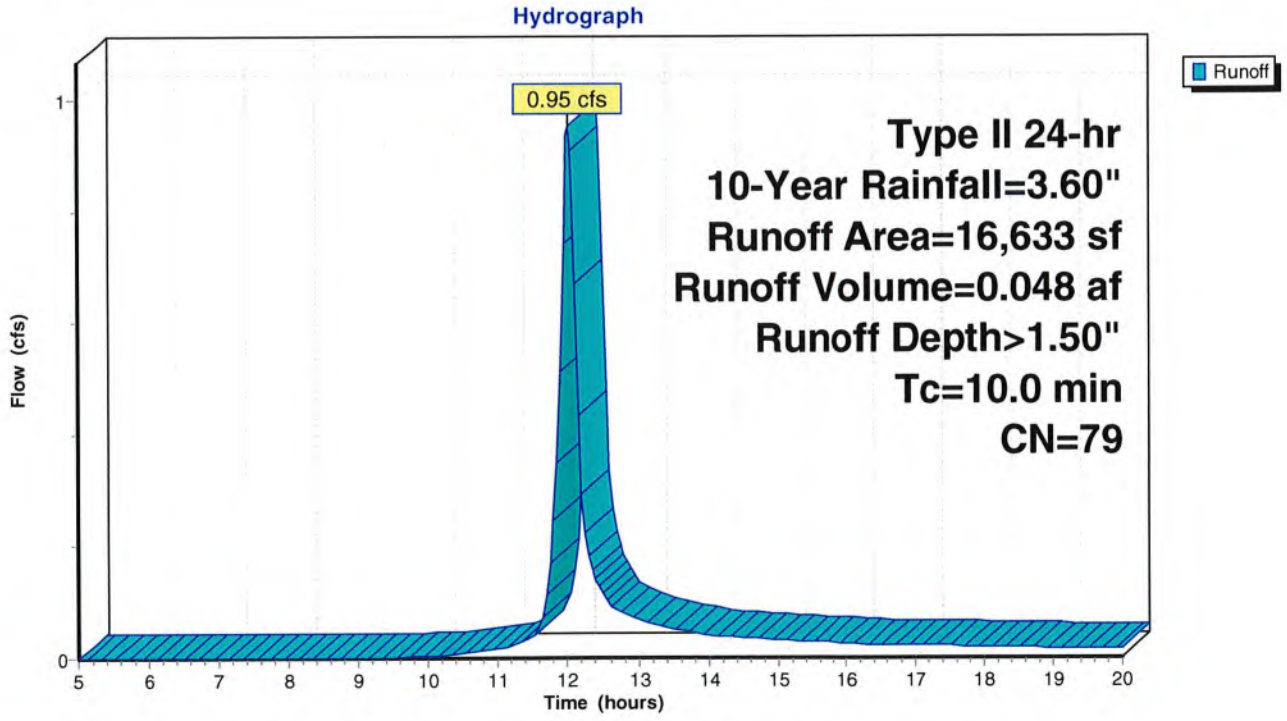
Runoff = 0.95 cfs @ 12.02 hrs, Volume= 0.048 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.60"

Area (sf)	CN	Description
3,578	98	Paved parking, HSG C
12,465	74	>75% Grass cover, Good, HSG C
590	70	Woods, Good, HSG C
16,633	79	Weighted Average
13,055		78.49% Pervious Area
3,578		21.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR10: DR10



Summary for Subcatchment DR20: DR20

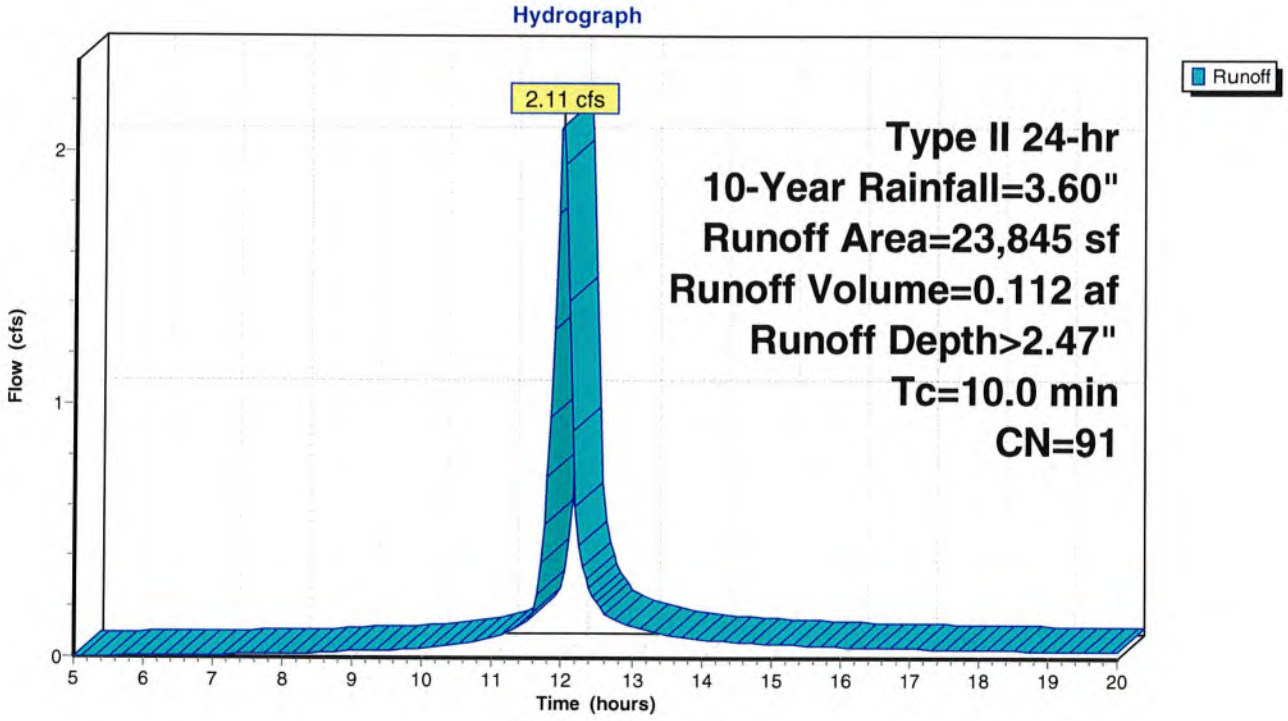
Runoff = 2.11 cfs @ 12.01 hrs, Volume= 0.112 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.60"

Area (sf)	CN	Description
16,416	98	Paved parking, HSG C
7,429	74	>75% Grass cover, Good, HSG C
23,845	91	Weighted Average
7,429		31.16% Pervious Area
16,416		68.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR20: DR20



Summary for Subcatchment DR30: DR30

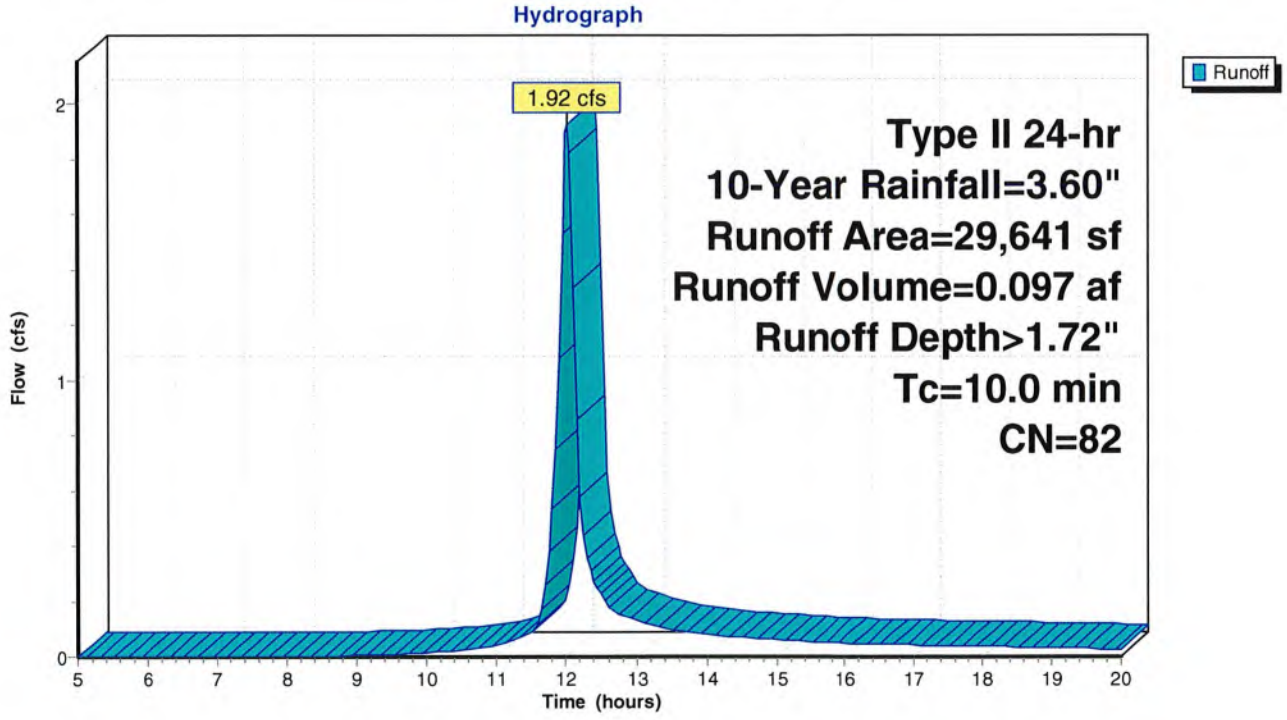
Runoff = 1.92 cfs @ 12.02 hrs, Volume= 0.097 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.60"

Area (sf)	CN	Description
11,076	98	Paved parking, HSG C
12,999	74	>75% Grass cover, Good, HSG C
5,566	70	Woods, Good, HSG C
29,641	82	Weighted Average
18,565		62.63% Pervious Area
11,076		37.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR30: DR30



Summary for Subcatchment DR40: DR40

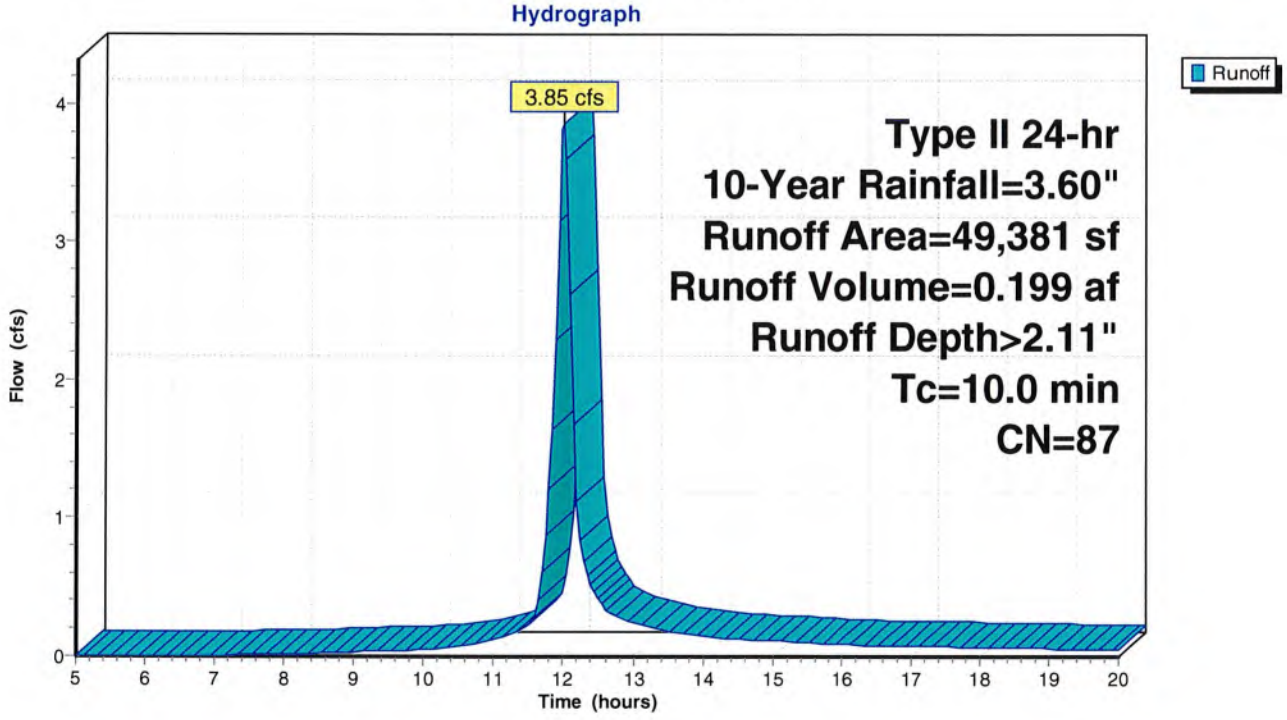
Runoff = 3.85 cfs @ 12.01 hrs, Volume= 0.199 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.60"

Area (sf)	CN	Description
26,924	98	Paved parking, HSG C
18,981	74	>75% Grass cover, Good, HSG C
3,476	70	Woods, Good, HSG C
49,381	87	Weighted Average
22,457		45.48% Pervious Area
26,924		54.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR40: DR40



Summary for Subcatchment DR50: DR50

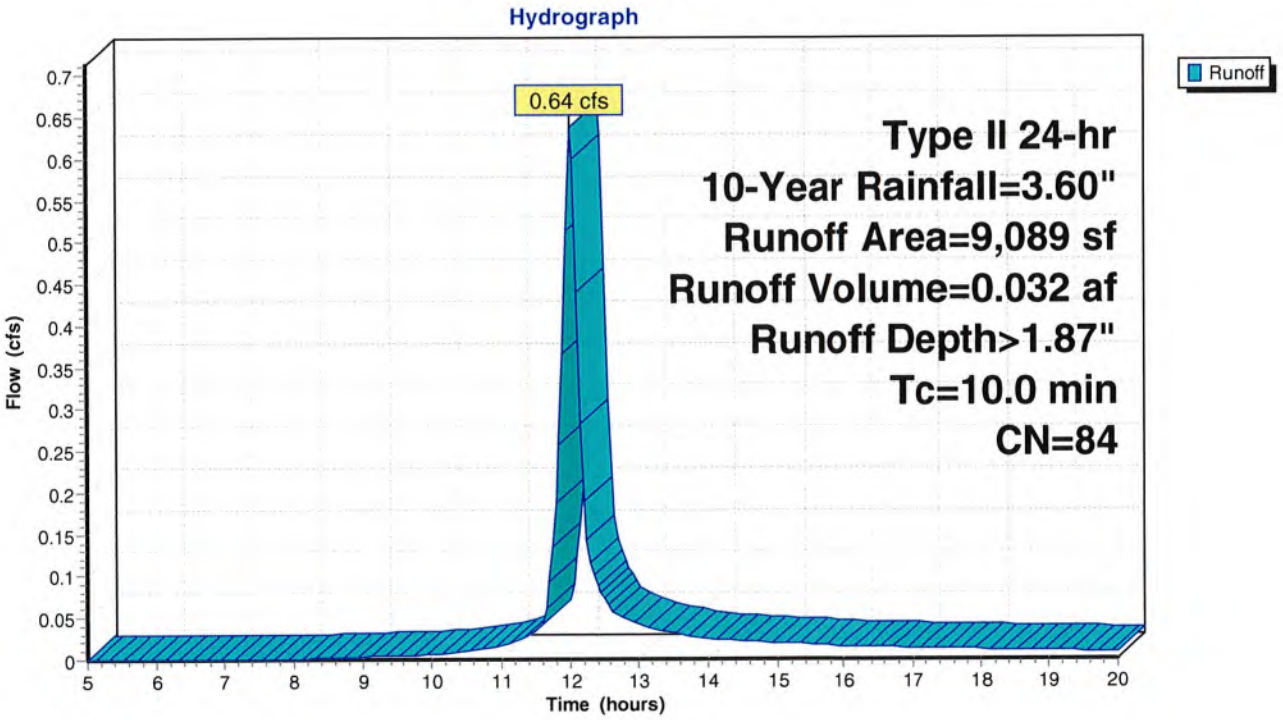
Runoff = 0.64 cfs @ 12.01 hrs, Volume= 0.032 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.60"

Area (sf)	CN	Description
3,956	98	Paved parking, HSG C
5,133	74	>75% Grass cover, Good, HSG C
9,089	84	Weighted Average
5,133		56.47% Pervious Area
3,956		43.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment DR50: DR50



Summary for Pond 3P: cb

[57] Hint: Peaked at 712.59' (Flood elevation advised)
[79] Warning: Submerged Pond OS1 Primary device # 1 OUTLET by 0.77'
[79] Warning: Submerged Pond OS2 Primary device # 1 INLET by 0.67'

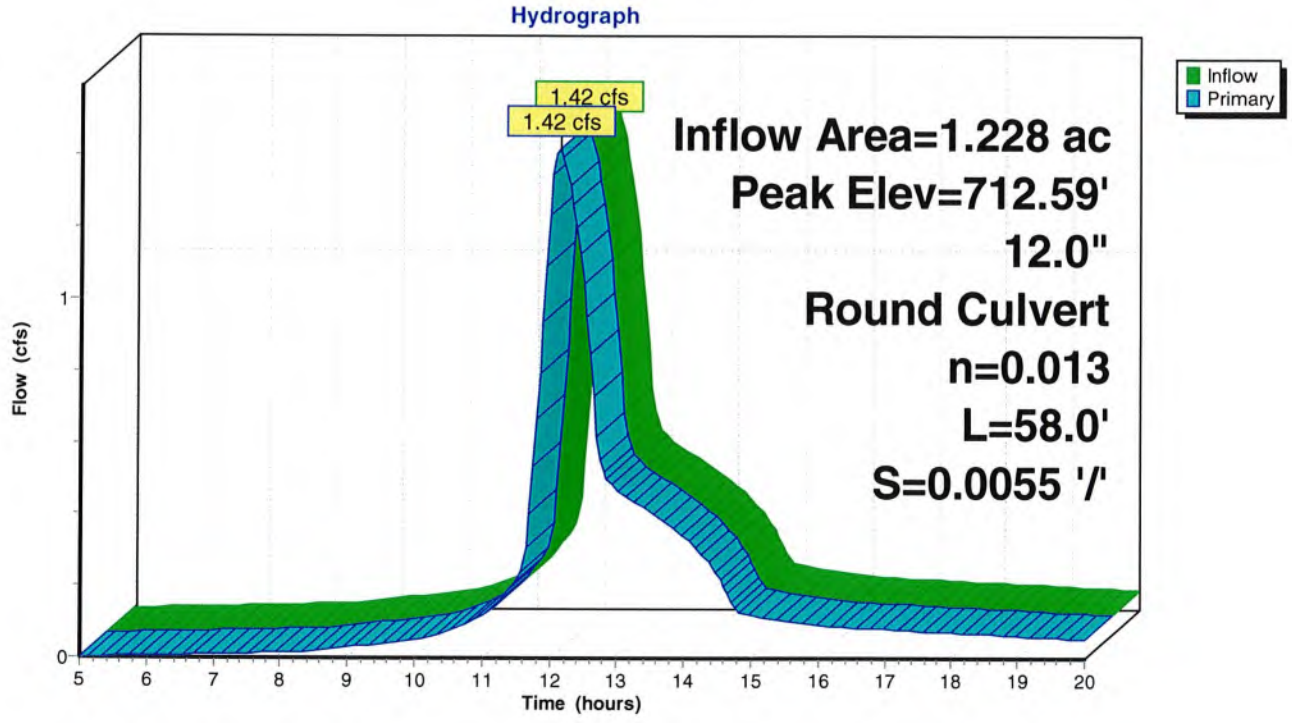
Inflow Area =	1.228 ac,	51.40% Impervious,	Inflow Depth >	2.05"	for 10-Year event
Inflow =	1.42 cfs @	12.15 hrs, Volume=	0.210 af		
Outflow =	1.42 cfs @	12.15 hrs, Volume=	0.210 af,	Atten= 0%,	Lag= 0.0 min
Primary =	1.42 cfs @	12.15 hrs, Volume=	0.210 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 712.59' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	711.82'	**12.0" Round Culvert** L= 58.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.82' / 711.50' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.42 cfs @ 12.15 hrs HW=712.59' (Free Discharge)
1=Culvert (Barrel Controls 1.42 cfs @ 3.05 fps)

Pond 3P: cb



Summary for Pond 4P: cb

[57] Hint: Peaked at 713.85' (Flood elevation advised)
[79] Warning: Submerged Pond CB5 Primary device # 2 by 0.77'
[79] Warning: Submerged Pond OS3 Primary device # 1 INLET by 0.15'

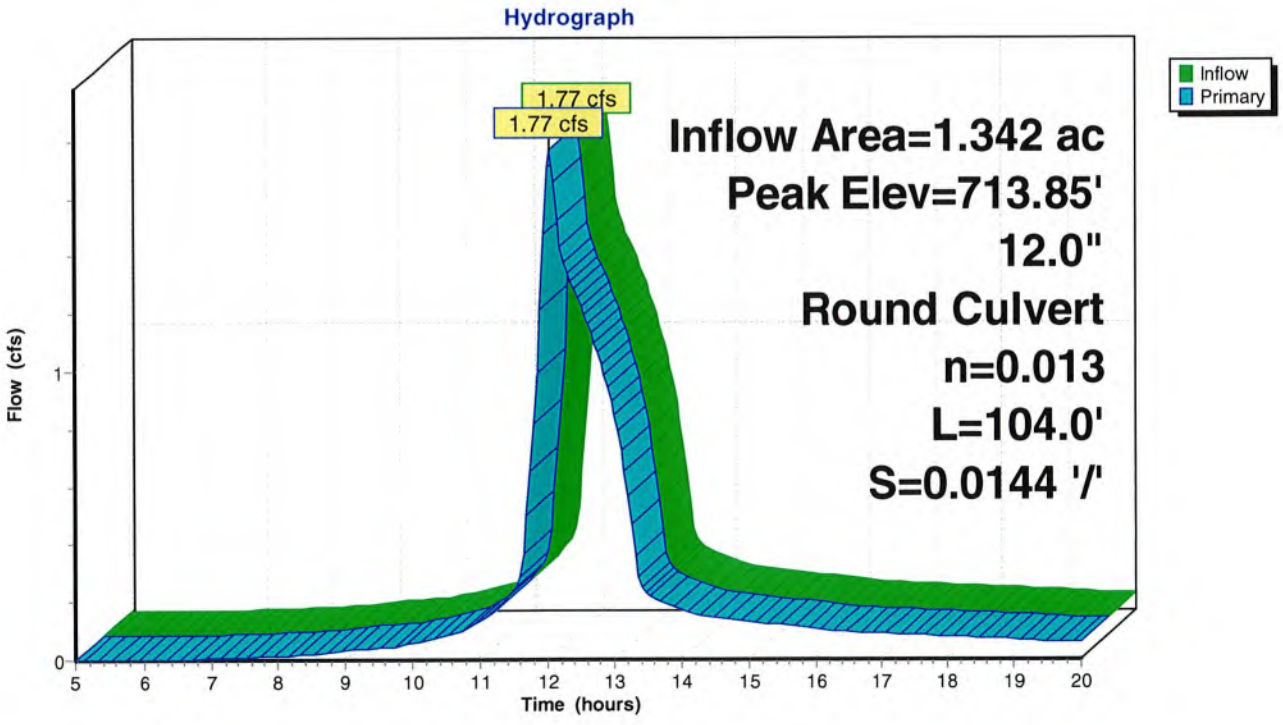
Inflow Area = 1.342 ac, 52.81% Impervious, Inflow Depth > 2.07" for 10-Year event
Inflow = 1.77 cfs @ 12.04 hrs, Volume= 0.232 af
Outflow = 1.77 cfs @ 12.04 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.04 hrs, Volume= 0.232 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 713.85' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	713.00'	**12.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 713.00' / 711.50' S= 0.0144 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.76 cfs @ 12.04 hrs HW=713.85' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.76 cfs @ 2.48 fps)

Pond 4P: cb



Summary for Pond CB5: BIO RET B1

Inflow Area = 0.209 ac, 43.53% Impervious, Inflow Depth > 1.87" for 10-Year event
Inflow = 0.64 cfs @ 12.01 hrs, Volume= 0.032 af
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 717.40' @ 12.02 hrs Surf.Area= 1,020 sf Storage= 1 cf

Plug-Flow detention time= 0.0 min calculated for 0.032 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (784.1 - 784.1)

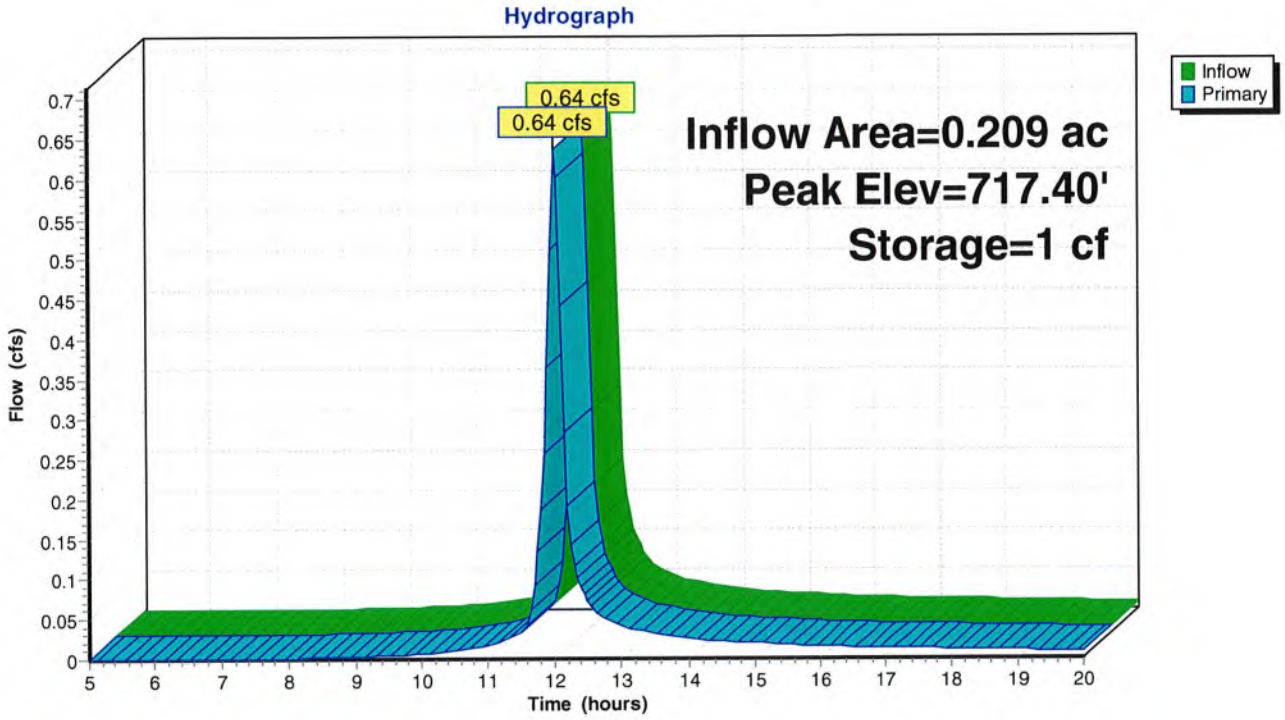
Volume	Invert	Avail.Storage	Storage Description
#1	717.40'	1,211 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
717.40	1,020	0	0
717.90	1,020	510	510
718.50	1,316	701	1,211

Device	Routing	Invert	Outlet Devices
#1	Primary	717.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.08'	**12.0" Round Culvert w/ 1.0" inside fill** L= 1.0' Ke= 0.600 Inlet / Outlet Invert= 713.00' / 713.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=6.70 cfs @ 12.02 hrs HW=717.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 6.70 cfs @ 8.89 fps)

Pond CB5: BIO RET B1



Summary for Pond CB6: BIO RET B2

Inflow Area = 0.382 ac, 21.51% Impervious, Inflow Depth > 1.50" for 10-Year event
Inflow = 0.95 cfs @ 12.02 hrs, Volume= 0.048 af
Outflow = 0.95 cfs @ 12.02 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.02 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.40' @ 12.02 hrs Surf.Area= 754 sf Storage= 1 cf

Plug-Flow detention time= 0.0 min calculated for 0.048 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (795.8 - 795.8)

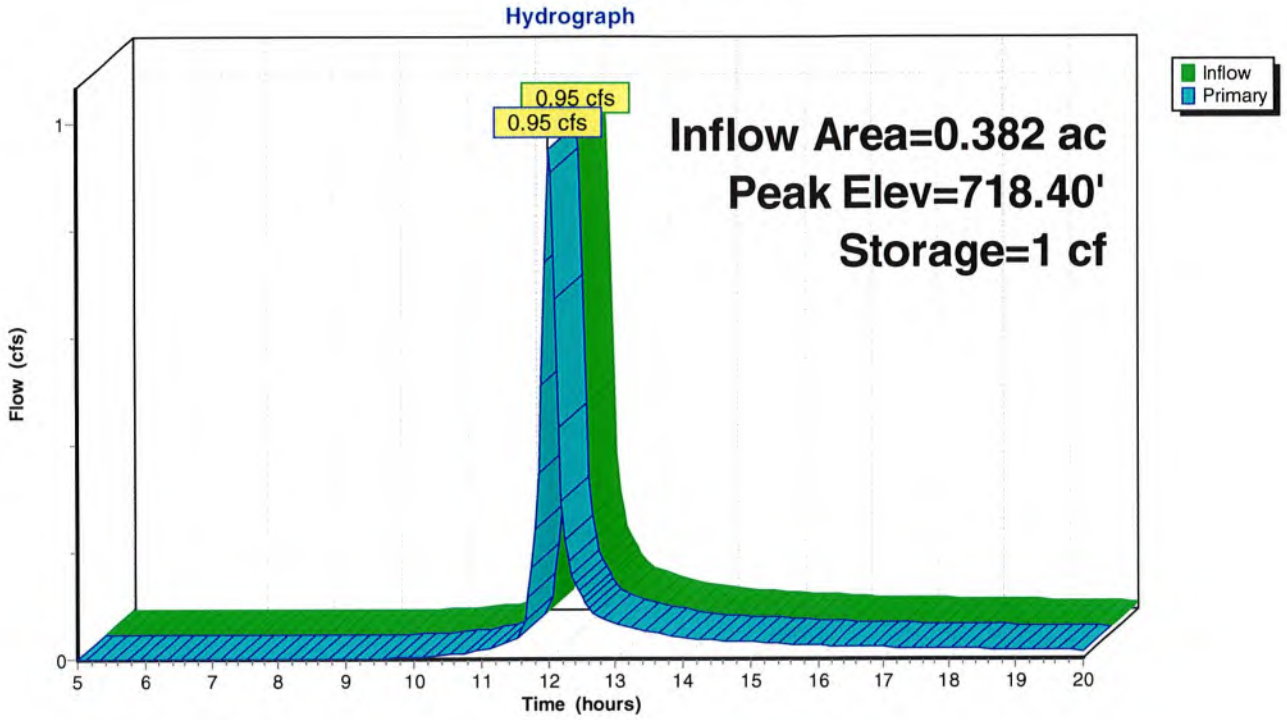
Volume	Invert	Avail.Storage	Storage Description
#1	718.40'	963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
718.40	754	0	0
718.90	754	377	377
719.50	1,200	586	963

Device	Routing	Invert	Outlet Devices
#1	Primary	718.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.58'	**12.0" Round Culvert w/ 1.0" inside fill** L= 28.0' Ke= 0.600 Inlet / Outlet Invert= 713.50' / 711.50' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=7.12 cfs @ 12.02 hrs HW=718.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 7.12 cfs @ 9.45 fps)

Pond CB6: BIO RET B2



Summary for Pond OS1: DRY SWALE SW1

Inflow Area = 0.680 ac, 37.37% Impervious, Inflow Depth > 1.72" for 10-Year event
Inflow = 1.92 cfs @ 12.02 hrs, Volume= 0.097 af
Outflow = 0.36 cfs @ 12.30 hrs, Volume= 0.097 af, Atten= 81%, Lag= 17.2 min
Primary = 0.36 cfs @ 12.30 hrs, Volume= 0.097 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 719.07' @ 12.30 hrs Surf.Area= 1,605 sf Storage= 1,484 cf

Plug-Flow detention time= 31.8 min calculated for 0.097 af (100% of inflow)
Center-of-Mass det. time= 31.4 min (820.4 - 789.0)

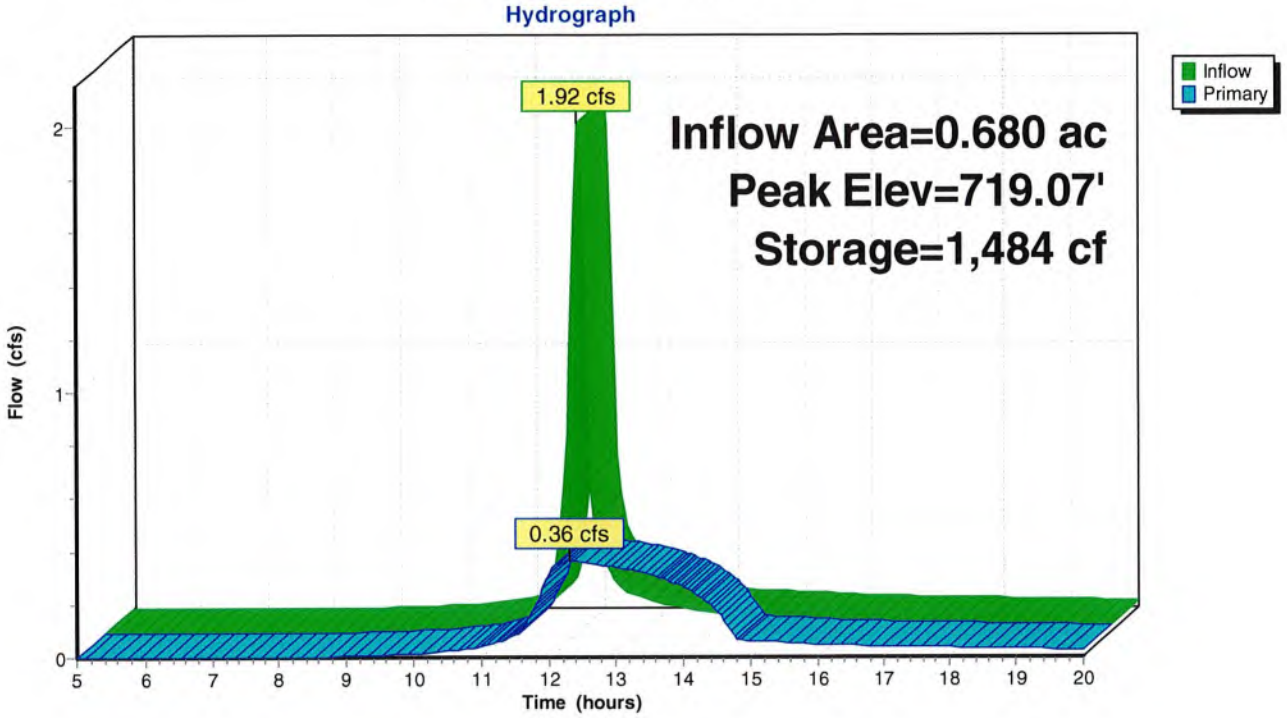
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	3,738 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	108	26	26
718.00	556	332	358
719.00	1,488	1,022	1,380
720.00	3,228	2,358	3,738

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.36 cfs @ 12.30 hrs HW=719.07' (Free Discharge)
└**1=Culvert** (Passes 0.36 cfs of 5.18 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.37 fps)

Pond OS1: DRY SWALE SW1



Summary for Pond OS2: DRY SWALE SW2

Inflow Area = 0.547 ac, 68.84% Impervious, Inflow Depth > 2.47" for 10-Year event
Inflow = 2.11 cfs @ 12.01 hrs, Volume= 0.112 af
Outflow = 1.07 cfs @ 12.14 hrs, Volume= 0.112 af, Atten= 49%, Lag= 7.6 min
Primary = 1.07 cfs @ 12.14 hrs, Volume= 0.112 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 715.03' @ 12.14 hrs Surf.Area= 1,102 sf Storage= 927 cf

Plug-Flow detention time= 7.4 min calculated for 0.112 af (100% of inflow)
Center-of-Mass det. time= 6.7 min (769.5 - 762.8)

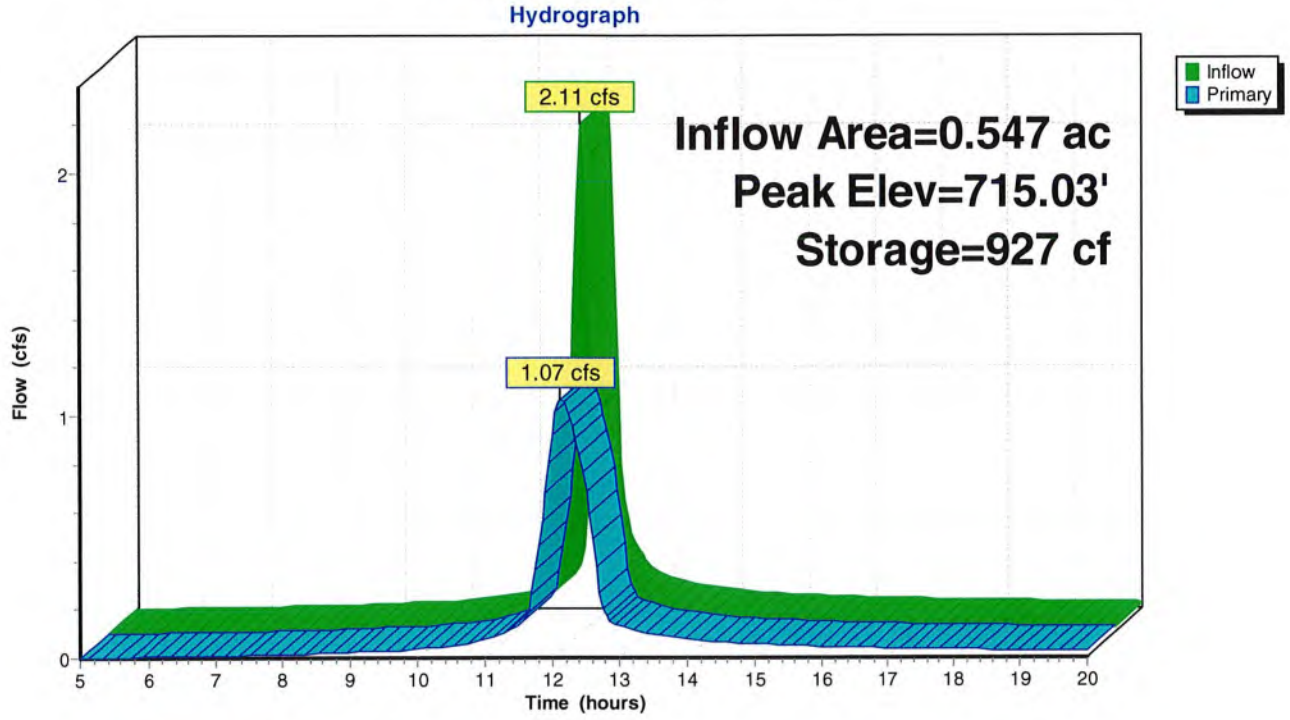
Volume	Invert	Avail.Storage	Storage Description
#1	713.50'	1,359 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
713.50	50	0	0
714.00	450	125	125
715.00	1,093	772	897
715.40	1,220	463	1,359

Device	Routing	Invert	Outlet Devices
#1	Primary	711.92'	**12.0" Round Culvert** L= 1.0' Ke= 0.400 Inlet / Outlet Invert= 711.92' / 711.82' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	715.20'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	713.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.07 cfs @ 12.14 hrs HW=715.02' (Free Discharge)
↑—**1=Culvert** (Passes 1.07 cfs of 6.53 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)
—**3=Orifice/Grate** (Orifice Controls 1.07 cfs @ 5.43 fps)

Pond OS2: DRY SWALE SW2



Summary for Pond OS3: DRY SWALE SW3

Inflow Area = 1.134 ac, 54.52% Impervious, Inflow Depth > 2.11" for 10-Year event
Inflow = 3.85 cfs @ 12.01 hrs, Volume= 0.199 af
Outflow = 1.25 cfs @ 12.19 hrs, Volume= 0.199 af, Atten= 68%, Lag= 10.9 min
Primary = 1.25 cfs @ 12.19 hrs, Volume= 0.199 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.49' @ 12.19 hrs Surf.Area= 2,777 sf Storage= 2,346 cf

Plug-Flow detention time= 13.9 min calculated for 0.199 af (100% of inflow)
Center-of-Mass det. time= 13.2 min (789.2 - 776.0)

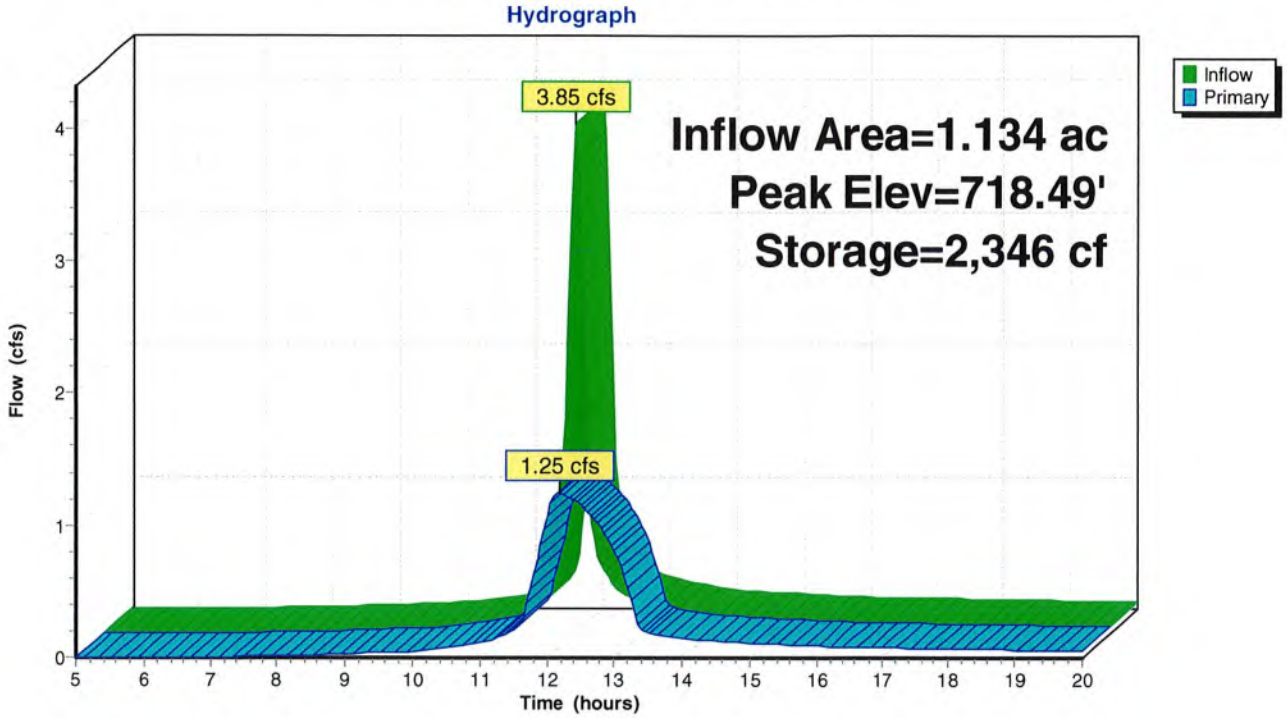
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	4,830 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	425	119	119
718.00	1,796	1,111	1,229
719.00	3,805	2,801	4,030
719.20	4,200	801	4,830

Device	Routing	Invert	Outlet Devices
#1	Primary	713.70'	**12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.70' / 713.08' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.25 cfs @ 12.19 hrs HW=718.49' (Free Discharge)
└**1=Culvert** (Passes 1.25 cfs of 6.01 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 1.25 cfs @ 6.35 fps)

Pond OS3: DRY SWALE SW3



Summary for Pond OS4: POND P1

[81] Warning: Exceeded Pond 3P by 0.80' @ 12.75 hrs
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.19'
[79] Warning: Submerged Pond CB6 Primary device # 2 OUTLET by 1.61'

Inflow Area = 2.952 ac, 48.18% Impervious, Inflow Depth > 1.99" for 10-Year event
Inflow = 4.03 cfs @ 12.04 hrs, Volume= 0.489 af
Outflow = 2.68 cfs @ 12.38 hrs, Volume= 0.469 af, Atten= 34%, Lag= 20.1 min
Primary = 2.68 cfs @ 12.38 hrs, Volume= 0.469 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 713.19' @ 12.38 hrs Surf.Area= 3,217 sf Storage= 4,272 cf

Plug-Flow detention time= 43.2 min calculated for 0.467 af (96% of inflow)
Center-of-Mass det. time= 27.9 min (819.0 - 791.2)

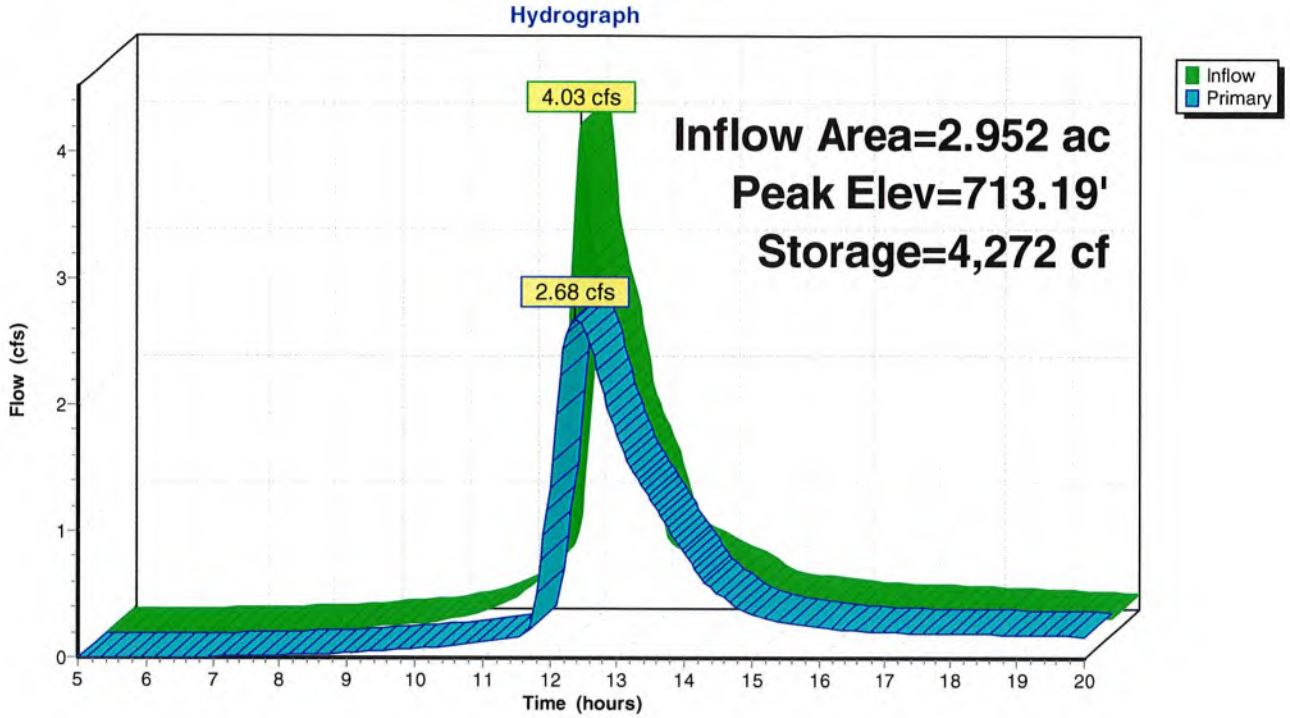
Volume	Invert	Avail.Storage	Storage Description
#1	711.20'	5,321 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.20	250	0	0
711.50	1,591	276	276
712.00	1,998	897	1,173
713.00	3,016	2,507	3,680
713.50	3,546	1,641	5,321

Device	Routing	Invert	Outlet Devices
#1	Primary	711.20'	**15.0" Round Culvert** L= 42.0' Ke= 0.400 Inlet / Outlet Invert= 711.20' / 710.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	713.30'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	711.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	712.80'	**14.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	712.00'	**14.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.68 cfs @ 12.38 hrs HW=713.19' (Free Discharge)
└**1=Culvert** (Passes 2.68 cfs of 7.39 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.57 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.91 cfs @ 2.00 fps)
  └**5=Orifice/Grate** (Orifice Controls 1.45 cfs @ 4.96 fps)

Pond OS4: POND P1



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DR10: DR10 Runoff Area=16,633 sf 21.51% Impervious Runoff Depth>2.51"
Tc=10.0 min CN=79 Runoff=1.57 cfs 0.080 af

Subcatchment DR20: DR20 Runoff Area=23,845 sf 68.84% Impervious Runoff Depth>3.64"
Tc=10.0 min CN=91 Runoff=3.04 cfs 0.166 af

Subcatchment DR30: DR30 Runoff Area=29,641 sf 37.37% Impervious Runoff Depth>2.77"
Tc=10.0 min CN=82 Runoff=3.05 cfs 0.157 af

Subcatchment DR40: DR40 Runoff Area=49,381 sf 54.52% Impervious Runoff Depth>3.24"
Tc=10.0 min CN=87 Runoff=5.79 cfs 0.307 af

Subcatchment DR50: DR50 Runoff Area=9,089 sf 43.53% Impervious Runoff Depth>2.96"
Tc=10.0 min CN=84 Runoff=0.99 cfs 0.051 af

Pond 3P: cb Peak Elev=713.22' Inflow=2.78 cfs 0.323 af
12.0" Round Culvert n=0.013 L=58.0' S=0.0055 '/' Outflow=2.78 cfs 0.323 af

Pond 4P: cb Peak Elev=714.48' Inflow=2.96 cfs 0.358 af
12.0" Round Culvert n=0.013 L=104.0' S=0.0144 '/' Outflow=2.96 cfs 0.358 af

Pond CB5: BIO RET B1 Peak Elev=717.40' Storage=2 cf Inflow=0.99 cfs 0.051 af
Outflow=0.99 cfs 0.051 af

Pond CB6: BIO RET B2 Peak Elev=718.40' Storage=2 cf Inflow=1.57 cfs 0.080 af
Outflow=1.57 cfs 0.080 af

Pond OS1: DRY SWALE SW1 Peak Elev=719.64' Storage=2,683 cf Inflow=3.05 cfs 0.157 af
Outflow=0.56 cfs 0.157 af

Pond OS2: DRY SWALE SW2 Peak Elev=715.35' Storage=1,304 cf Inflow=3.04 cfs 0.166 af
Outflow=2.39 cfs 0.166 af

Pond OS3: DRY SWALE SW3 Peak Elev=718.95' Storage=3,841 cf Inflow=5.79 cfs 0.307 af
Outflow=2.54 cfs 0.306 af

Pond OS4: POND P1 Peak Elev=713.48' Storage=5,249 cf Inflow=6.59 cfs 0.760 af
Outflow=5.29 cfs 0.733 af

Total Runoff Area = 2.952 ac Runoff Volume = 0.761 af Average Runoff Depth = 3.09"
51.82% Pervious = 1.530 ac 48.18% Impervious = 1.422 ac

Summary for Subcatchment DR10: DR10

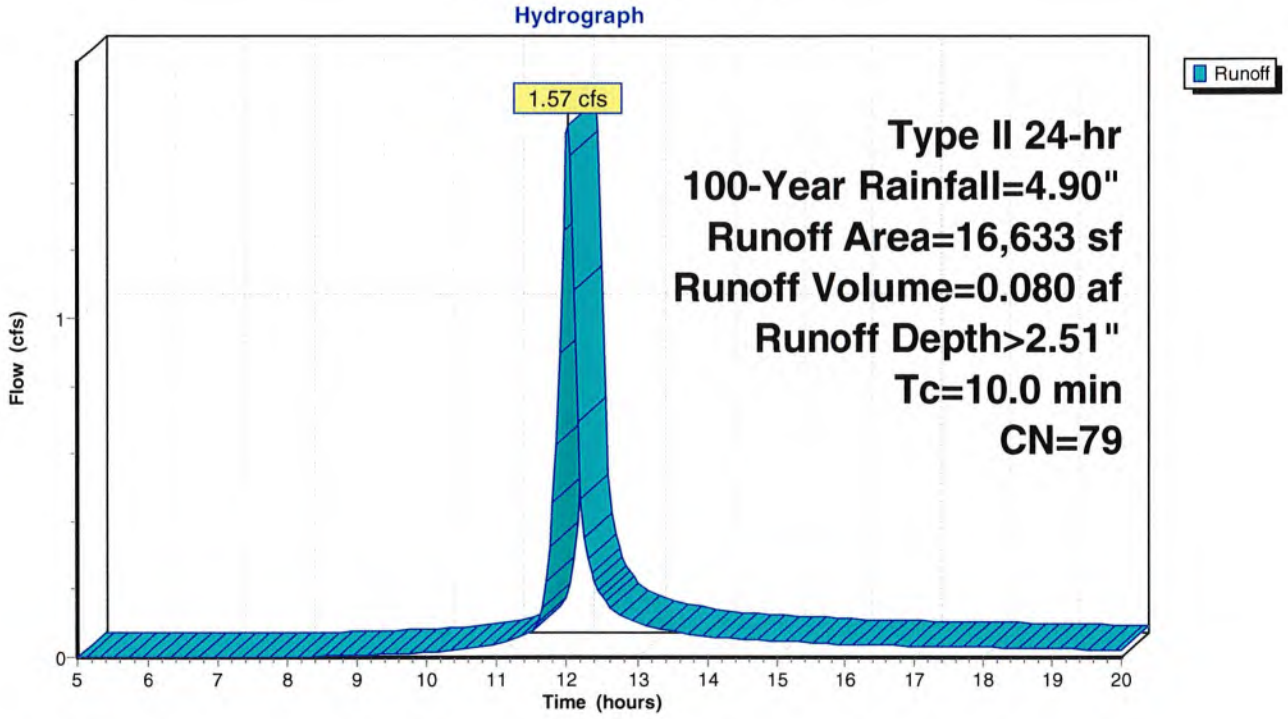
Runoff = 1.57 cfs @ 12.02 hrs, Volume= 0.080 af, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.90"

Area (sf)	CN	Description
3,578	98	Paved parking, HSG C
12,465	74	>75% Grass cover, Good, HSG C
590	70	Woods, Good, HSG C
16,633	79	Weighted Average
13,055		78.49% Pervious Area
3,578		21.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR10: DR10



Summary for Subcatchment DR20: DR20

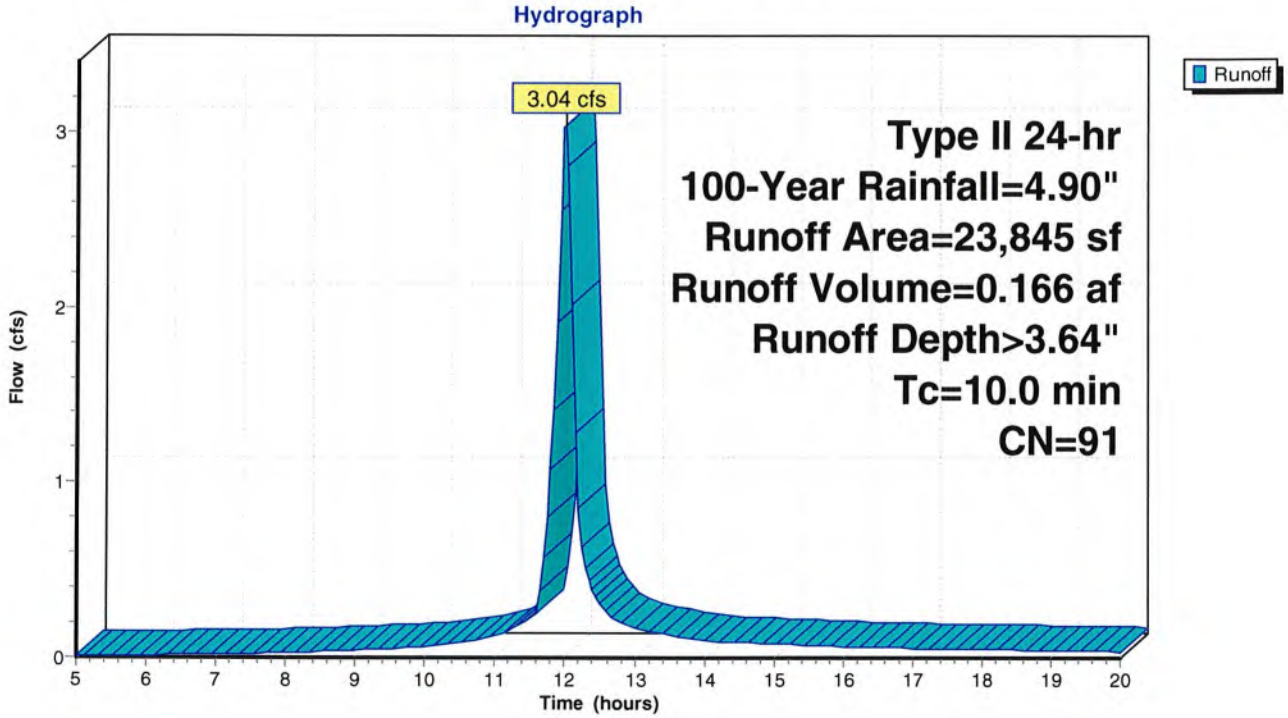
Runoff = 3.04 cfs @ 12.01 hrs, Volume= 0.166 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.90"

Area (sf)	CN	Description
16,416	98	Paved parking, HSG C
7,429	74	>75% Grass cover, Good, HSG C
23,845	91	Weighted Average
7,429		31.16% Pervious Area
16,416		68.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR20: DR20



Summary for Subcatchment DR30: DR30

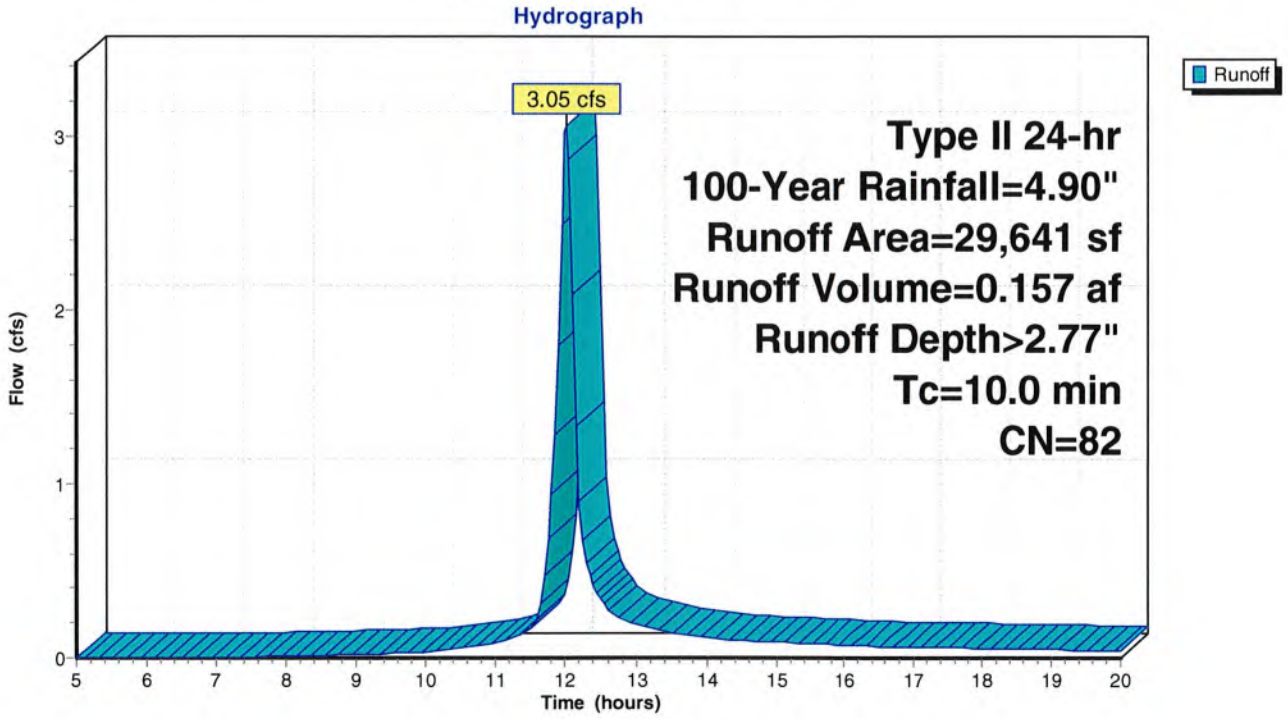
Runoff = 3.05 cfs @ 12.01 hrs, Volume= 0.157 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.90"

Area (sf)	CN	Description
11,076	98	Paved parking, HSG C
12,999	74	>75% Grass cover, Good, HSG C
5,566	70	Woods, Good, HSG C
29,641	82	Weighted Average
18,565		62.63% Pervious Area
11,076		37.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR30: DR30



Summary for Subcatchment DR40: DR40

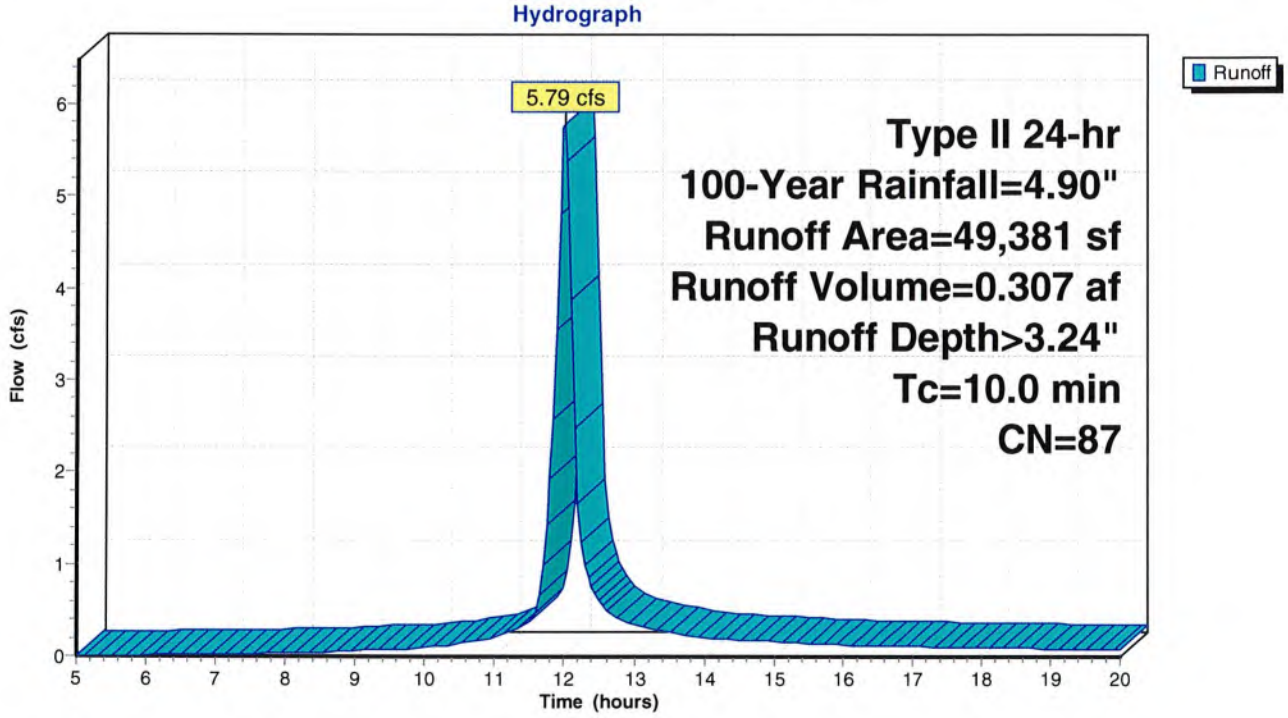
Runoff = 5.79 cfs @ 12.01 hrs, Volume= 0.307 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.90"

Area (sf)	CN	Description
26,924	98	Paved parking, HSG C
18,981	74	>75% Grass cover, Good, HSG C
3,476	70	Woods, Good, HSG C
49,381	87	Weighted Average
22,457		45.48% Pervious Area
26,924		54.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR40: DR40



Summary for Subcatchment DR50: DR50

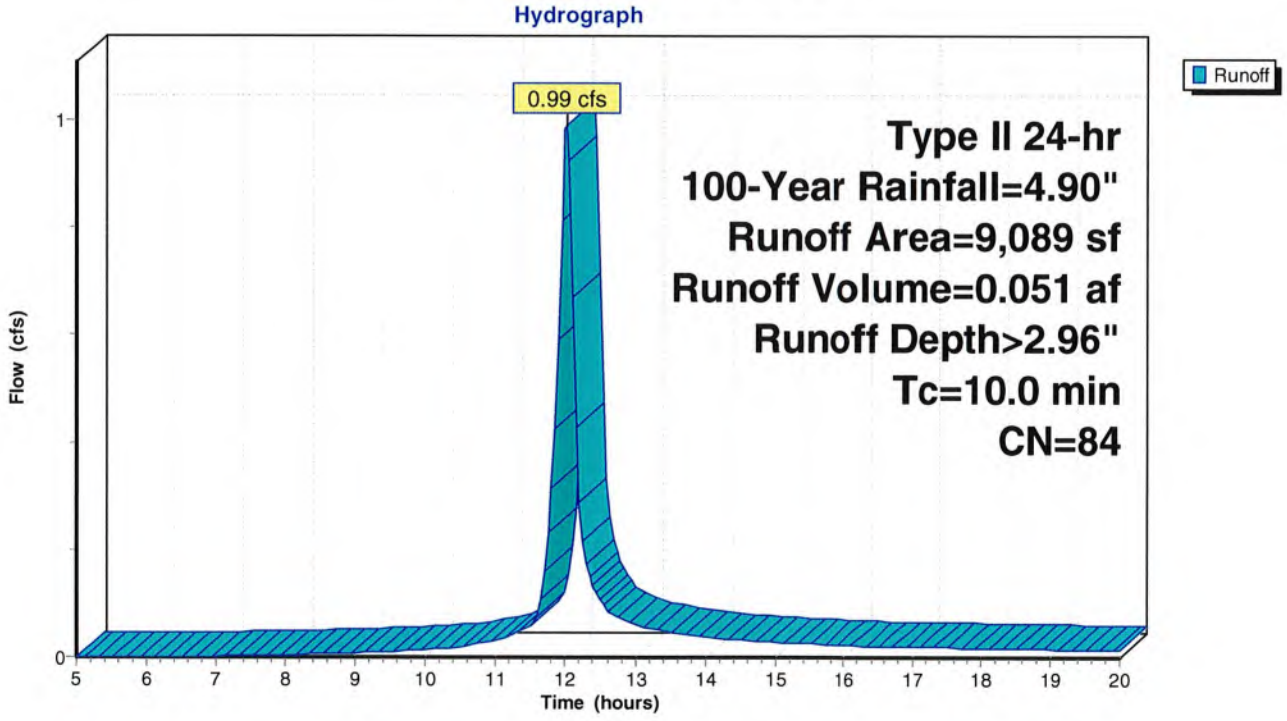
Runoff = 0.99 cfs @ 12.01 hrs, Volume= 0.051 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.90"

Area (sf)	CN	Description
3,956	98	Paved parking, HSG C
5,133	74	>75% Grass cover, Good, HSG C
9,089	84	Weighted Average
5,133		56.47% Pervious Area
3,956		43.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment DR50: DR50



Summary for Pond 3P: cb

[57] Hint: Peaked at 713.22' (Flood elevation advised)
[79] Warning: Submerged Pond OS1 Primary device # 1 INLET by 0.02'
[79] Warning: Submerged Pond OS2 Primary device # 1 INLET by 1.30'

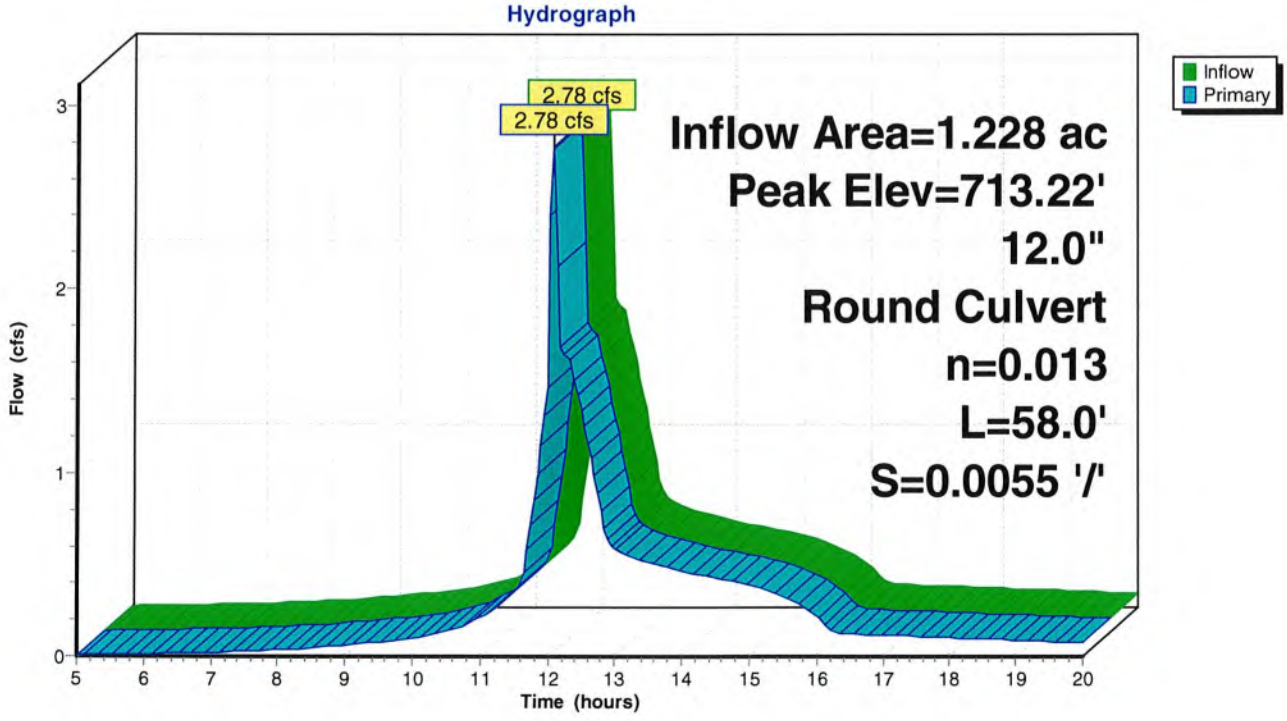
Inflow Area = 1.228 ac, 51.40% Impervious, Inflow Depth > 3.16" for 100-Year event
Inflow = 2.78 cfs @ 12.09 hrs, Volume= 0.323 af
Outflow = 2.78 cfs @ 12.09 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min
Primary = 2.78 cfs @ 12.09 hrs, Volume= 0.323 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 713.22' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	711.82'	**12.0" Round Culvert** L= 58.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.82' / 711.50' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.70 cfs @ 12.09 hrs HW=713.18' (Free Discharge)
↑**1=Culvert** (Barrel Controls 2.70 cfs @ 3.44 fps)

Pond 3P: cb



Summary for Pond 4P: cb

[57] Hint: Peaked at 714.48' (Flood elevation advised)
[79] Warning: Submerged Pond CB5 Primary device # 2 by 1.40'
[79] Warning: Submerged Pond OS3 Primary device # 1 INLET by 0.78'

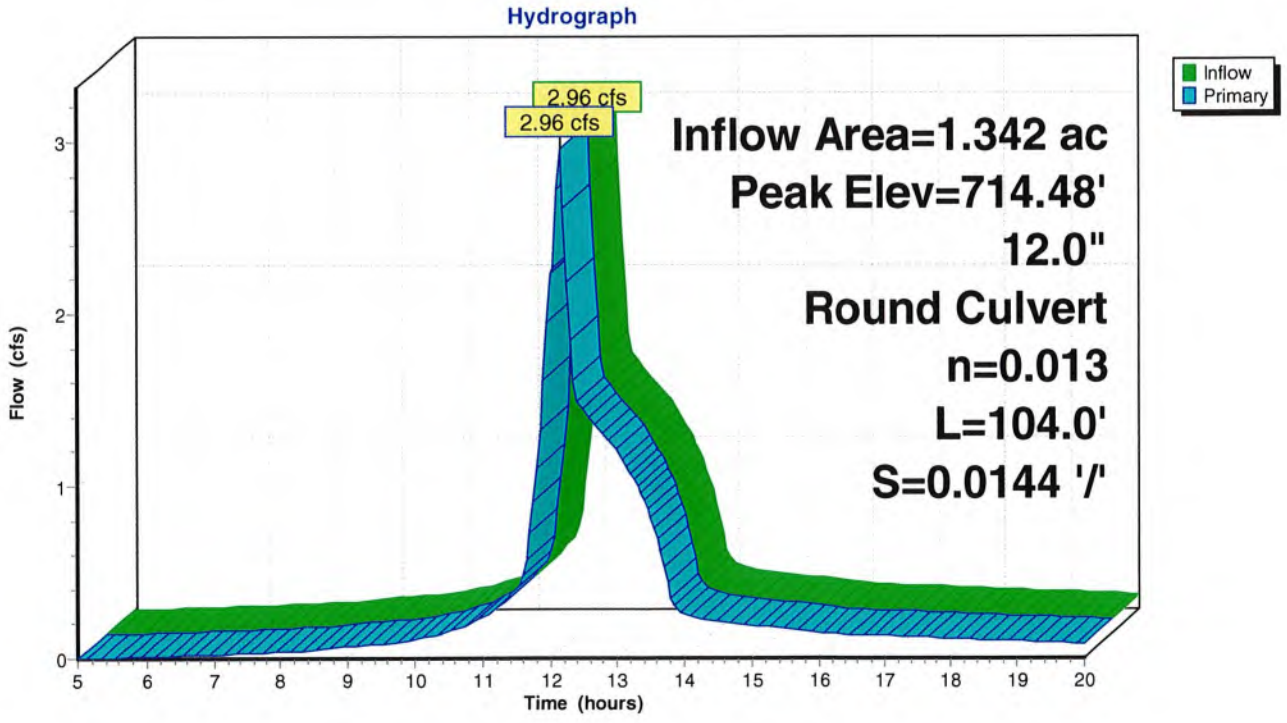
Inflow Area = 1.342 ac, 52.81% Impervious, Inflow Depth > 3.20" for 100-Year event
Inflow = 2.96 cfs @ 12.15 hrs, Volume= 0.358 af
Outflow = 2.96 cfs @ 12.15 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min
Primary = 2.96 cfs @ 12.15 hrs, Volume= 0.358 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 714.48' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	713.00'	**12.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 713.00' / 711.50' S= 0.0144 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.93 cfs @ 12.15 hrs HW=714.47' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.93 cfs @ 3.74 fps)

Pond 4P: cb



Summary for Pond CB5: BIO RET B1

Inflow Area = 0.209 ac, 43.53% Impervious, Inflow Depth > 2.96" for 100-Year event
Inflow = 0.99 cfs @ 12.01 hrs, Volume= 0.051 af
Outflow = 0.99 cfs @ 12.01 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.01 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 717.40' @ 12.01 hrs Surf.Area= 1,020 sf Storage= 2 cf

Plug-Flow detention time= 0.0 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (773.8 - 773.8)

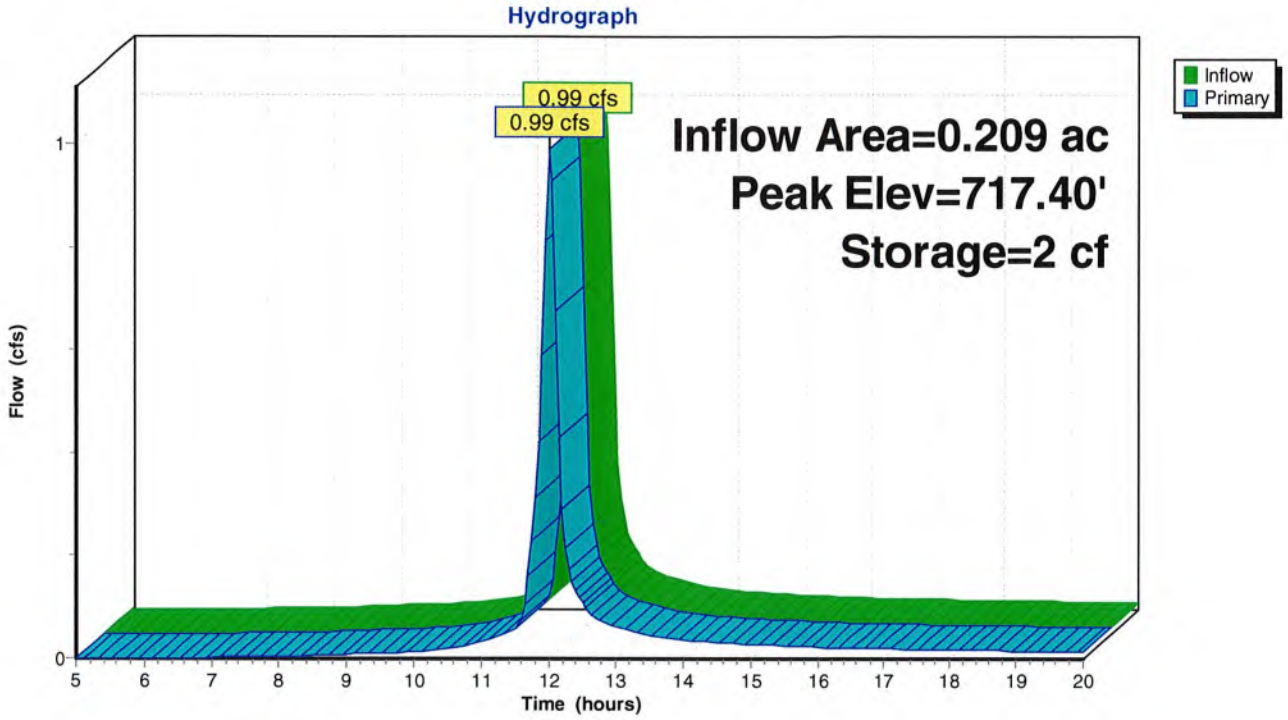
Volume	Invert	Avail.Storage	Storage Description
#1	717.40'	1,211 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
717.40	1,020	0	0
717.90	1,020	510	510
718.50	1,316	701	1,211

Device	Routing	Invert	Outlet Devices
#1	Primary	717.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.08'	**12.0" Round Culvert w/ 1.0" inside fill** L= 1.0' Ke= 0.600 Inlet / Outlet Invert= 713.00' / 713.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=6.70 cfs @ 12.01 hrs HW=717.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 6.70 cfs @ 8.89 fps)

Pond CB5: BIO RET B1



Summary for Pond CB6: BIO RET B2

Inflow Area = 0.382 ac, 21.51% Impervious, Inflow Depth > 2.51" for 100-Year event
Inflow = 1.57 cfs @ 12.02 hrs, Volume= 0.080 af
Outflow = 1.57 cfs @ 12.02 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 1.57 cfs @ 12.02 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.40' @ 12.02 hrs Surf.Area= 754 sf Storage= 2 cf

Plug-Flow detention time= 0.0 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (784.9 - 784.9)

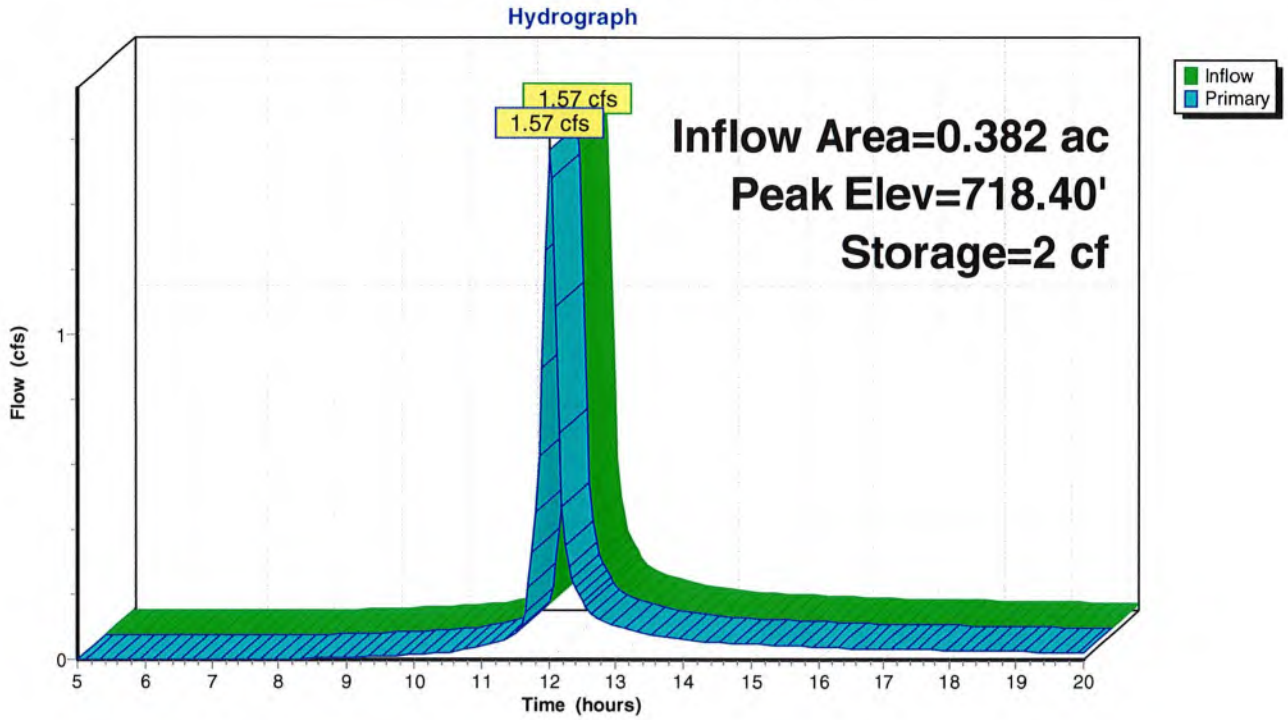
Volume	Invert	Avail.Storage	Storage Description
#1	718.40'	963 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
718.40	754	0	0
718.90	754	377	377
719.50	1,200	586	963

Device	Routing	Invert	Outlet Devices
#1	Primary	718.90'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	713.58'	**12.0" Round Culvert w/ 1.0" inside fill** L= 28.0' Ke= 0.600 Inlet / Outlet Invert= 713.50' / 711.50' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.75 sf

Primary OutFlow Max=7.12 cfs @ 12.02 hrs HW=718.40' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)
└—**2=Culvert** (Inlet Controls 7.12 cfs @ 9.45 fps)

Pond CB6: BIO RET B2



Summary for Pond OS1: DRY SWALE SW1

Inflow Area = 0.680 ac, 37.37% Impervious, Inflow Depth > 2.77" for 100-Year event
Inflow = 3.05 cfs @ 12.01 hrs, Volume= 0.157 af
Outflow = 0.56 cfs @ 12.31 hrs, Volume= 0.157 af, Atten= 82%, Lag= 17.6 min
Primary = 0.56 cfs @ 12.31 hrs, Volume= 0.157 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 719.64' @ 12.31 hrs Surf.Area= 2,598 sf Storage= 2,683 cf

Plug-Flow detention time= 52.9 min calculated for 0.157 af (100% of inflow)
Center-of-Mass det. time= 52.6 min (831.1 - 778.5)

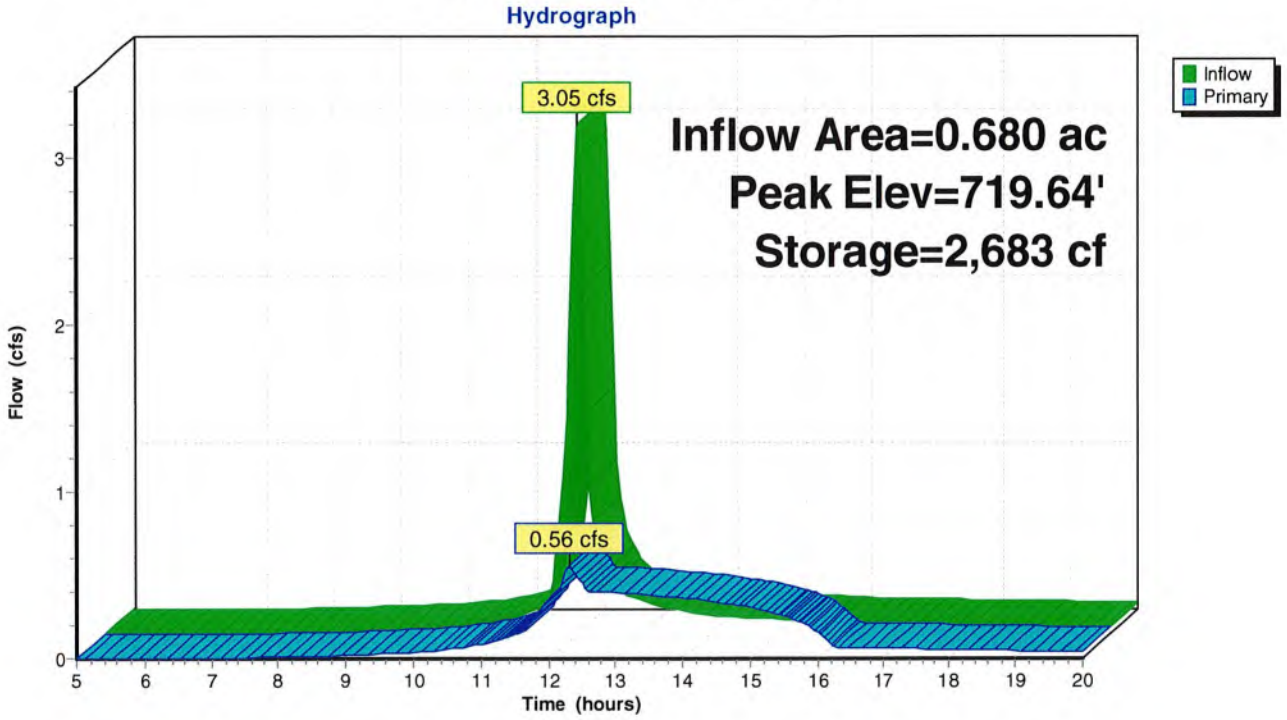
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	3,738 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	108	26	26
718.00	556	332	358
719.00	1,488	1,022	1,380
720.00	3,228	2,358	3,738

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.55 cfs @ 12.31 hrs HW=719.64' (Free Discharge)
└**1=Culvert** (Passes 0.55 cfs of 5.41 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 0.14 cfs @ 0.63 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.22 fps)

Pond OS1: DRY SWALE SW1



Summary for Pond OS2: DRY SWALE SW2

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.547 ac, 68.84% Impervious, Inflow Depth > 3.64" for 100-Year event
Inflow = 3.04 cfs @ 12.01 hrs, Volume= 0.166 af
Outflow = 2.39 cfs @ 12.09 hrs, Volume= 0.166 af, Atten= 21%, Lag= 5.0 min
Primary = 2.39 cfs @ 12.09 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 715.35' @ 12.09 hrs Surf.Area= 1,206 sf Storage= 1,304 cf

Plug-Flow detention time= 7.8 min calculated for 0.166 af (100% of inflow)
Center-of-Mass det. time= 7.2 min (761.7 - 754.6)

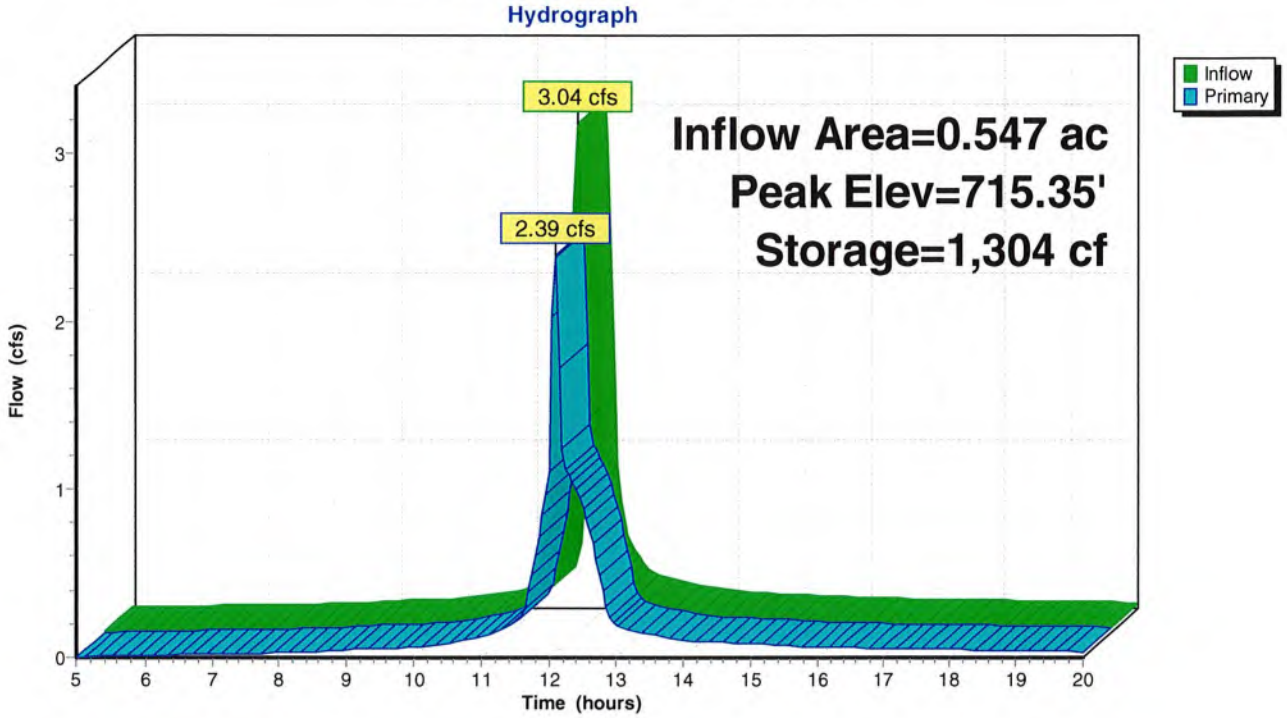
Volume	Invert	Avail.Storage	Storage Description
#1	713.50'	1,359 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
713.50	50	0	0
714.00	450	125	125
715.00	1,093	772	897
715.40	1,220	463	1,359

Device	Routing	Invert	Outlet Devices
#1	Primary	711.92'	**12.0" Round Culvert** L= 1.0' Ke= 0.400 Inlet / Outlet Invert= 711.92' / 711.82' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	715.20'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	713.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.32 cfs @ 12.09 hrs HW=715.35' (Free Discharge)
└**1=Culvert** (Passes 2.32 cfs of 6.93 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 1.13 cfs @ 1.26 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.20 cfs @ 6.09 fps)

Pond OS2: DRY SWALE SW2



Summary for Pond OS3: DRY SWALE SW3

Inflow Area = 1.134 ac, 54.52% Impervious, Inflow Depth > 3.24" for 100-Year event
Inflow = 5.79 cfs @ 12.01 hrs, Volume= 0.307 af
Outflow = 2.54 cfs @ 12.16 hrs, Volume= 0.306 af, Atten= 56%, Lag= 9.0 min
Primary = 2.54 cfs @ 12.16 hrs, Volume= 0.306 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 718.95' @ 12.16 hrs Surf.Area= 3,704 sf Storage= 3,841 cf

Plug-Flow detention time= 18.0 min calculated for 0.306 af (100% of inflow)
Center-of-Mass det. time= 17.4 min (783.5 - 766.0)

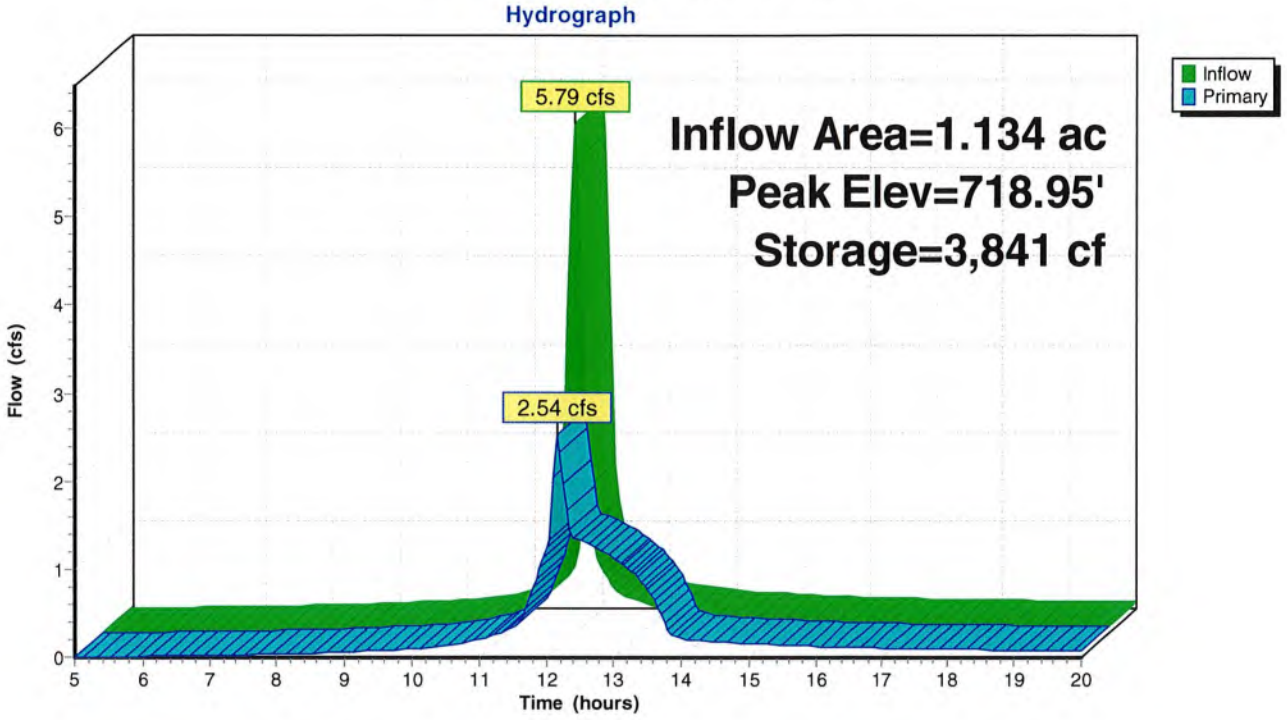
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	4,830 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	425	119	119
718.00	1,796	1,111	1,229
719.00	3,805	2,801	4,030
719.20	4,200	801	4,830

Device	Routing	Invert	Outlet Devices
#1	Primary	713.70'	**12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.70' / 713.08' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.48 cfs @ 12.16 hrs HW=718.94' (Free Discharge)
└**1=Culvert** (Passes 2.48 cfs of 6.31 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 1.08 cfs @ 1.24 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.40 cfs @ 7.13 fps)

Pond OS3: DRY SWALE SW3



Summary for Pond OS4: POND P1

[81] Warning: Exceeded Pond 3P by 0.84' @ 12.85 hrs
[79] Warning: Submerged Pond 4P Primary device # 1 INLET by 0.48'
[79] Warning: Submerged Pond CB6 Primary device # 2 OUTLET by 1.89'

Inflow Area = 2.952 ac, 48.18% Impervious, Inflow Depth > 3.09" for 100-Year event
Inflow = 6.59 cfs @ 12.09 hrs, Volume= 0.760 af
Outflow = 5.29 cfs @ 12.18 hrs, Volume= 0.733 af, Atten= 20%, Lag= 5.2 min
Primary = 5.29 cfs @ 12.18 hrs, Volume= 0.733 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 713.48' @ 12.18 hrs Surf.Area= 3,524 sf Storage= 5,249 cf

Plug-Flow detention time= 35.9 min calculated for 0.733 af (96% of inflow)
Center-of-Mass det. time= 22.5 min (810.5 - 788.1)

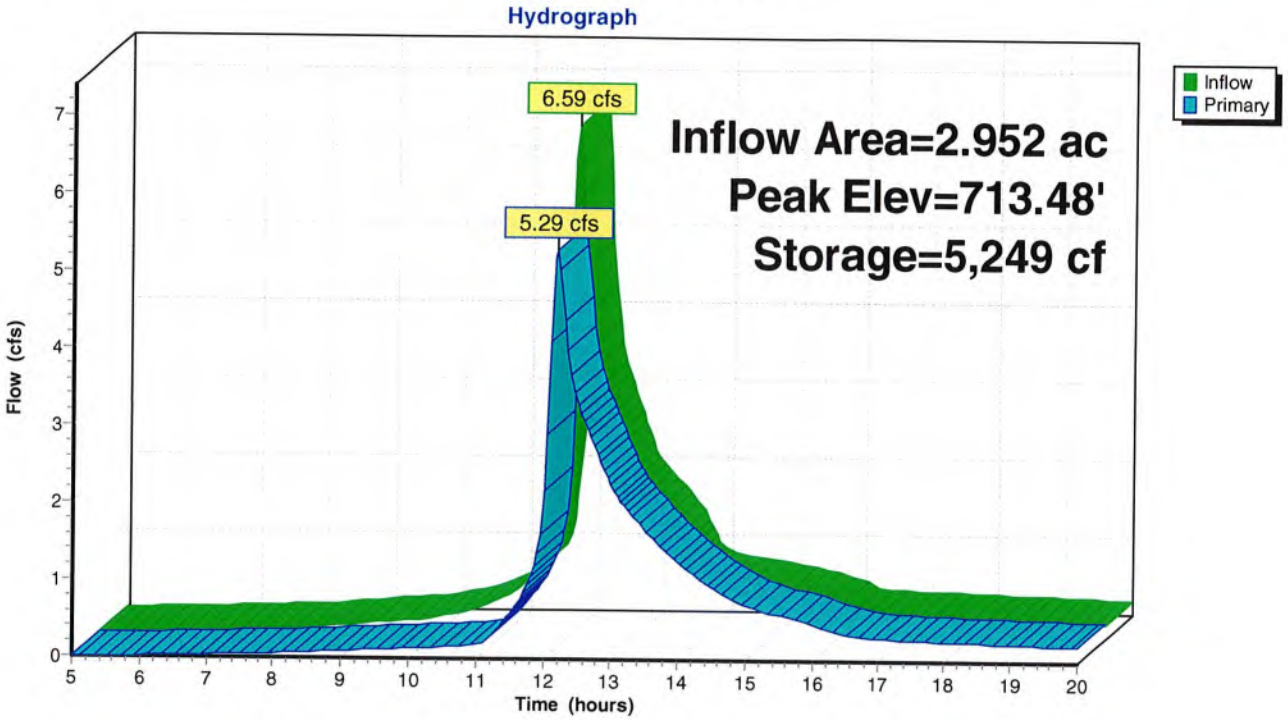
Volume	Invert	Avail.Storage	Storage Description
#1	711.20'	5,321 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.20	250	0	0
711.50	1,591	276	276
712.00	1,998	897	1,173
713.00	3,016	2,507	3,680
713.50	3,546	1,641	5,321

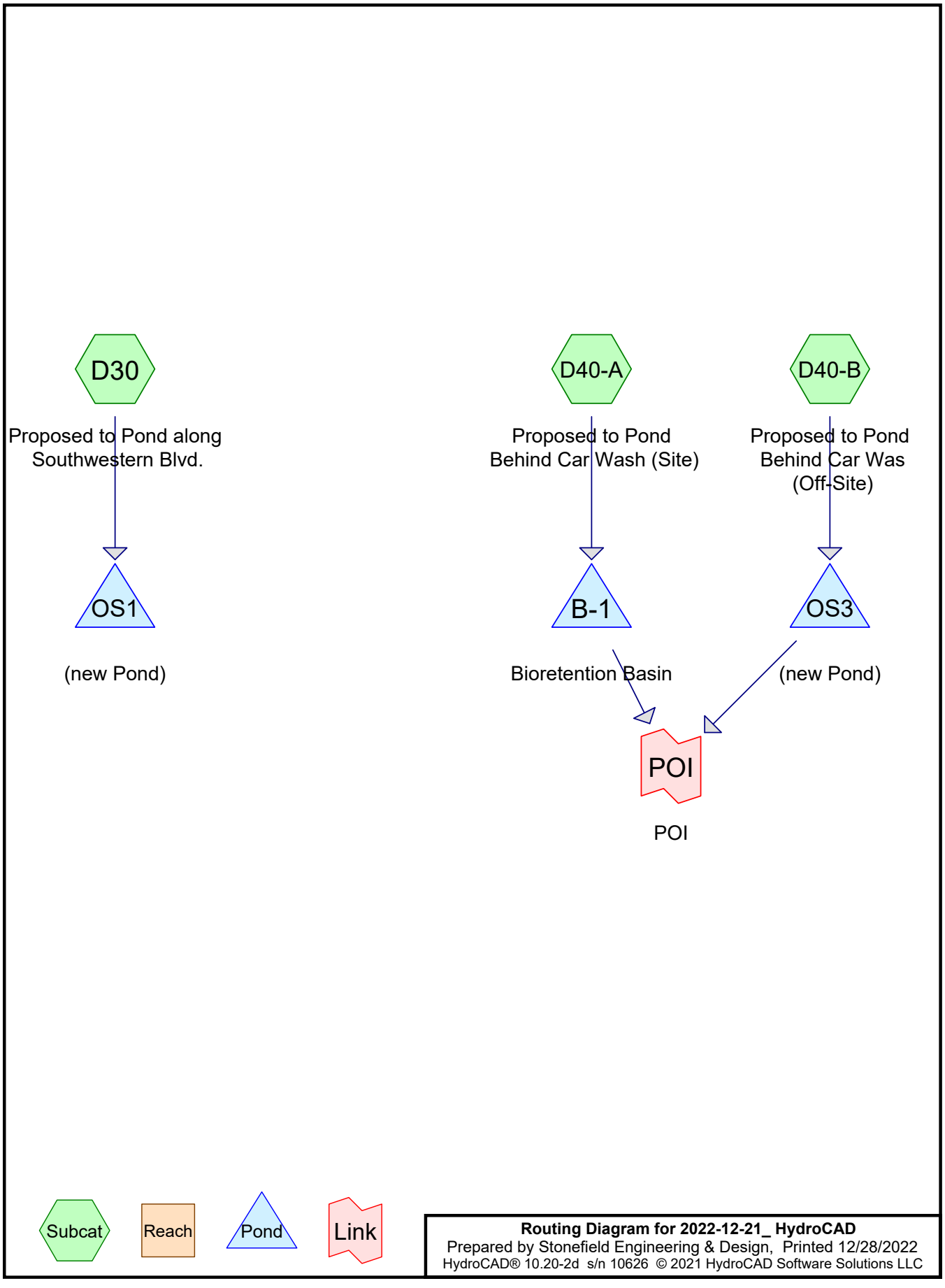
Device	Routing	Invert	Outlet Devices
#1	Primary	711.20'	**15.0" Round Culvert** L= 42.0' Ke= 0.400 Inlet / Outlet Invert= 711.20' / 710.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	713.30'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	711.20'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	712.80'	**14.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 1	712.00'	**14.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.23 cfs @ 12.18 hrs HW=713.48' (Free Discharge)
└**1=Culvert** (Passes 5.23 cfs of 8.13 cfs potential flow)
├**2=Orifice/Grate** (Weir Controls 1.45 cfs @ 1.37 fps)
├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 7.06 fps)
├**4=Orifice/Grate** (Orifice Controls 1.80 cfs @ 3.09 fps)
└**5=Orifice/Grate** (Orifice Controls 1.63 cfs @ 5.59 fps)

Pond OS4: POND P1



PROPOSED HYDROCAD ROUTINGS



Routing Diagram for 2022-12-21_ HydroCAD
Prepared by Stonefield Engineering & Design, Printed 12/28/2022

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7041 NY Erie

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NRCC 24-hr	A	Default	24.00	1	1.87	2
2	10-Year	NRCC 24-hr	A	Default	24.00	1	3.14	2
3	100-Year	NRCC 24-hr	A	Default	24.00	1	5.23	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
45,147	74	>75% Grass cover, Good, HSG C (D30, D40-A, D40-B)
41,035	98	Impervious (D30, D40-A, D40-B)
86,182	**85**	**TOTAL AREA**

Summary for Subcatchment D30: Proposed to Pond along Southwestern Blvd.

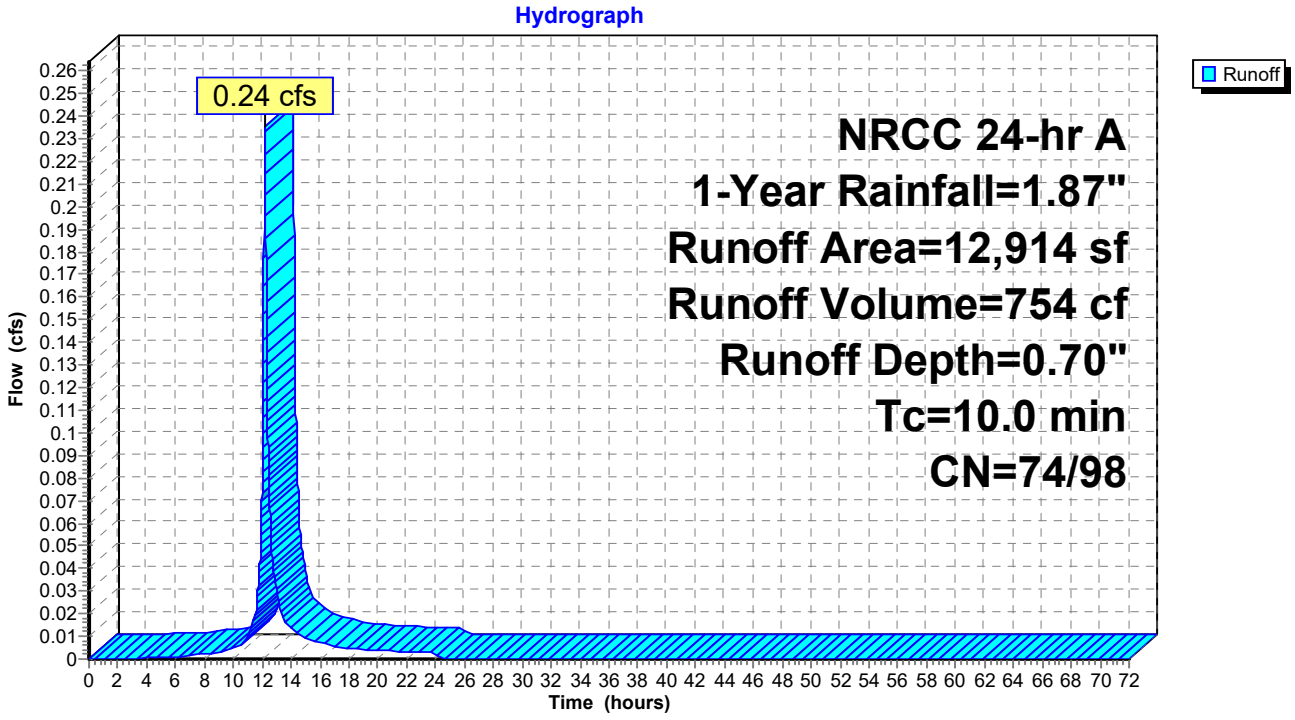
Runoff = 0.24 cfs @ 12.18 hrs, Volume= 754 cf, Depth= 0.70"
Routed to Pond OS1 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 1-Year Rainfall=1.87"

	Area (sf)	CN	Description
*	3,909	98	Impervious
	9,005	74	>75% Grass cover, Good, HSG C
	12,914	81	Weighted Average
	9,005	74	69.73% Pervious Area
	3,909	98	30.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D30: Proposed to Pond along Southwestern Blvd.



Summary for Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)

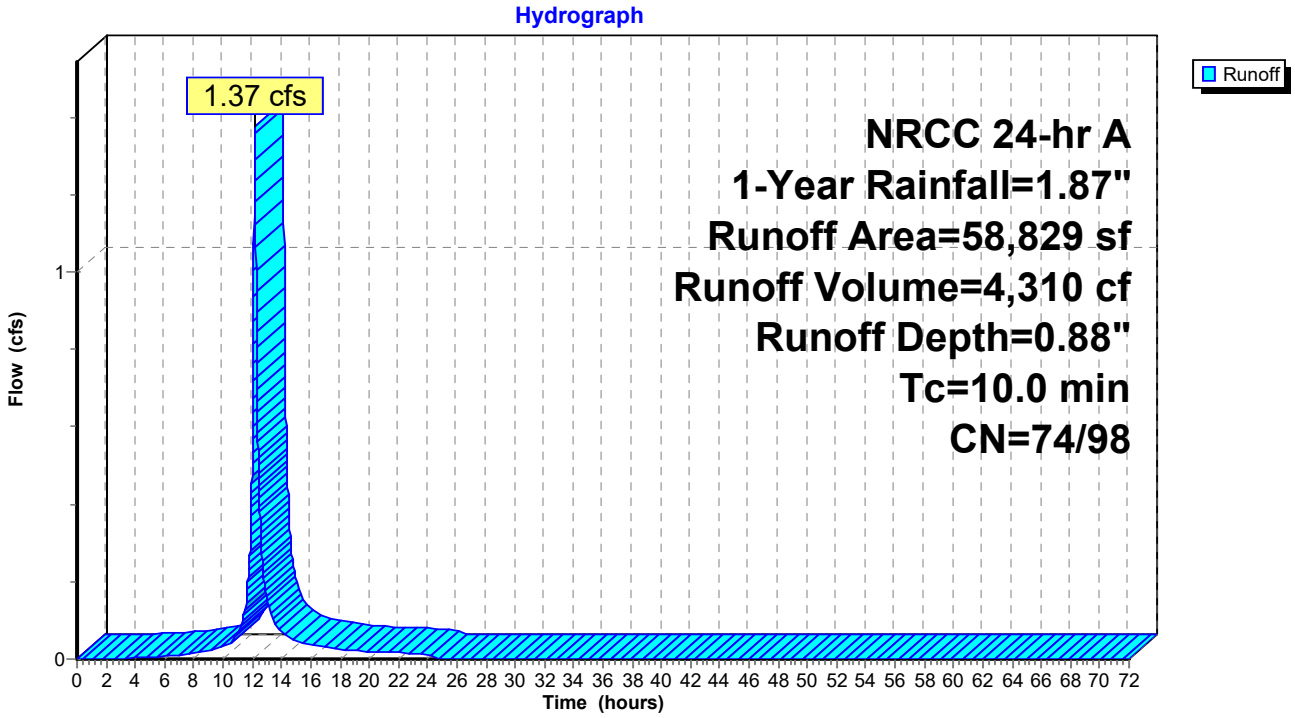
Runoff = 1.37 cfs @ 12.18 hrs, Volume= 4,310 cf, Depth= 0.88"
Routed to Pond B-1 : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 1-Year Rainfall=1.87"

	Area (sf)	CN	Description
*	25,538	98	Impervious
	33,291	74	>75% Grass cover, Good, HSG C
	58,829	84	Weighted Average
	33,291	74	56.59% Pervious Area
	25,538	98	43.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)



Summary for Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)

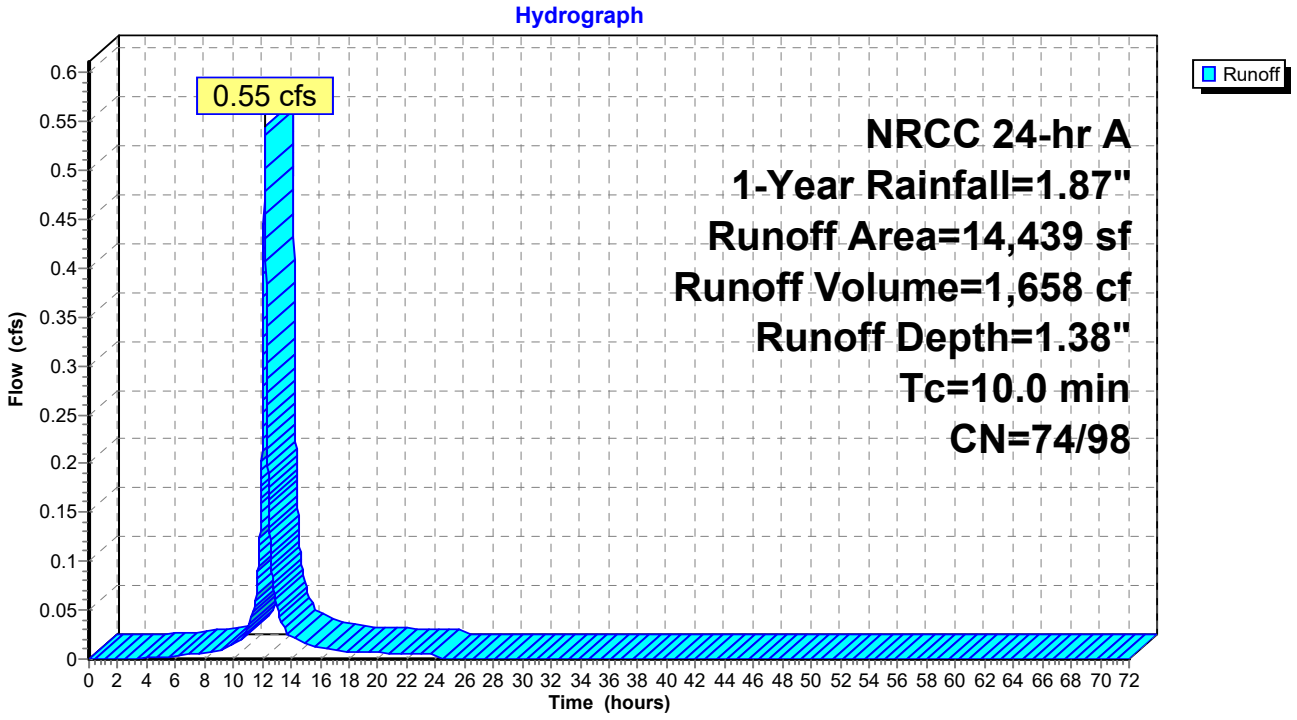
Runoff = 0.55 cfs @ 12.17 hrs, Volume= 1,658 cf, Depth= 1.38"
Routed to Pond OS3 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 1-Year Rainfall=1.87"

	Area (sf)	CN	Description
*	11,588	98	Impervious
	2,851	74	>75% Grass cover, Good, HSG C
	14,439	93	Weighted Average
	2,851	74	19.75% Pervious Area
	11,588	98	80.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)



Summary for Pond B-1: Bioretention Basin

Inflow Area = 58,829 sf, 43.41% Impervious, Inflow Depth = 0.88" for 1-Year event
Inflow = 1.37 cfs @ 12.18 hrs, Volume= 4,310 cf
Outflow = 0.22 cfs @ 12.73 hrs, Volume= 3,339 cf, Atten= 84%, Lag= 33.2 min
Primary = 0.22 cfs @ 12.73 hrs, Volume= 3,339 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 715.86' @ 12.73 hrs Surf.Area= 1,854 sf Storage= 2,311 cf

Plug-Flow detention time= 198.8 min calculated for 3,338 cf (77% of inflow)
Center-of-Mass det. time= 118.8 min (911.7 - 792.9)

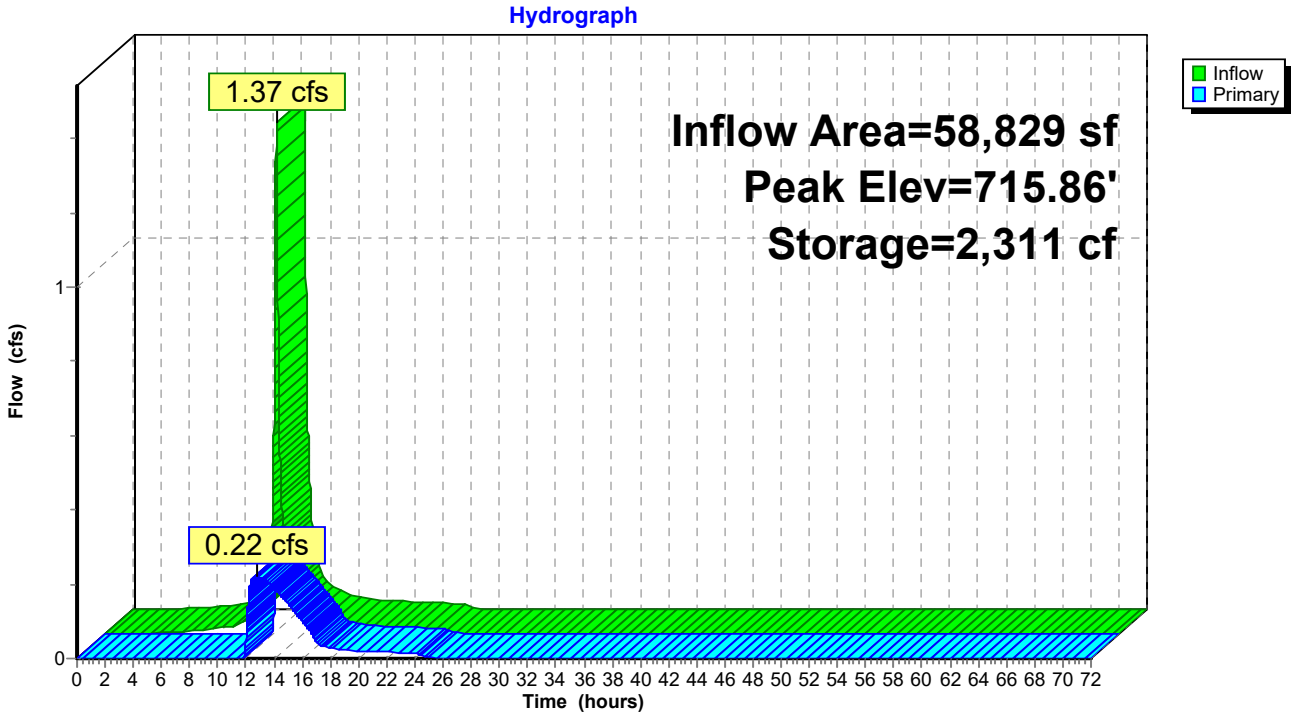
Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	11,986 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	695	0	0
715.00	1,247	971	971
716.00	1,949	1,598	2,569
717.00	2,745	2,347	4,916
718.00	3,521	3,133	8,049
719.00	4,352	3,937	11,986

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	715.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	718.50'	**1.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.22 cfs @ 12.73 hrs HW=715.86' TW=0.00' (Dynamic Tailwater)
↑**1=12.0" Round Culvert** (Passes 0.22 cfs of 3.82 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.48 fps)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B-1: Bioretention Basin



Summary for Pond OS1: (new Pond)

Inflow Area = 12,914 sf, 30.27% Impervious, Inflow Depth = 0.70" for 1-Year event
Inflow = 0.24 cfs @ 12.18 hrs, Volume= 754 cf
Outflow = 0.19 cfs @ 12.25 hrs, Volume= 754 cf, Atten= 21%, Lag= 4.3 min
Primary = 0.19 cfs @ 12.25 hrs, Volume= 754 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 717.34' @ 12.25 hrs Surf.Area= 129 sf Storage= 33 cf

Plug-Flow detention time= 2.3 min calculated for 754 cf (100% of inflow)
Center-of-Mass det. time= 2.3 min (807.4 - 805.1)

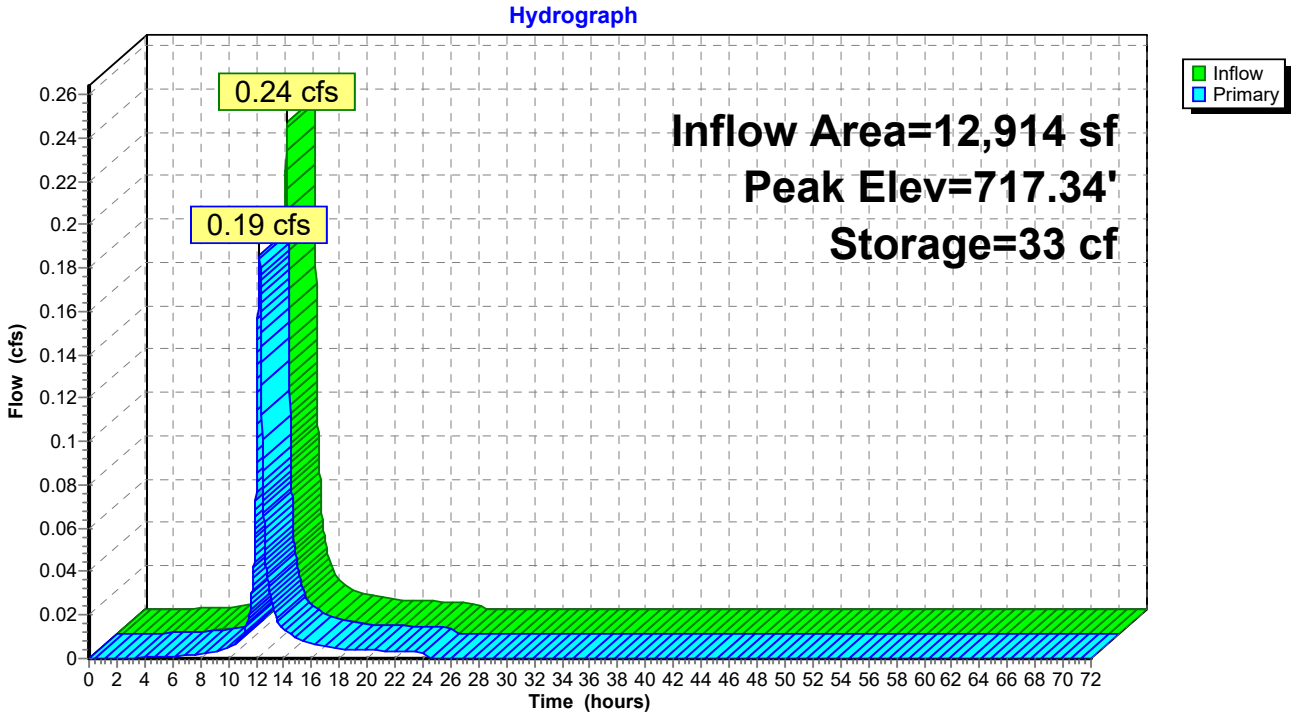
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	1,975 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	20	8	8
718.00	342	181	189
719.00	811	577	765
720.00	1,608	1,210	1,975

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round 12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 12.25 hrs HW=717.34' (Free Discharge)
└**1=12.0" Round Culvert** (Passes 0.19 cfs of 4.41 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.19 cfs @ 3.78 fps)

Pond OS1: (new Pond)



Summary for Pond OS3: (new Pond)

Inflow Area = 14,439 sf, 80.25% Impervious, Inflow Depth = 1.38" for 1-Year event
Inflow = 0.55 cfs @ 12.17 hrs, Volume= 1,658 cf
Outflow = 0.53 cfs @ 12.20 hrs, Volume= 1,658 cf, Atten= 4%, Lag= 1.4 min
Primary = 0.53 cfs @ 12.20 hrs, Volume= 1,658 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 717.06' @ 12.20 hrs Surf.Area= 137 sf Storage= 31 cf

Plug-Flow detention time= 2.8 min calculated for 1,658 cf (100% of inflow)
Center-of-Mass det. time= 2.6 min (778.0 - 775.4)

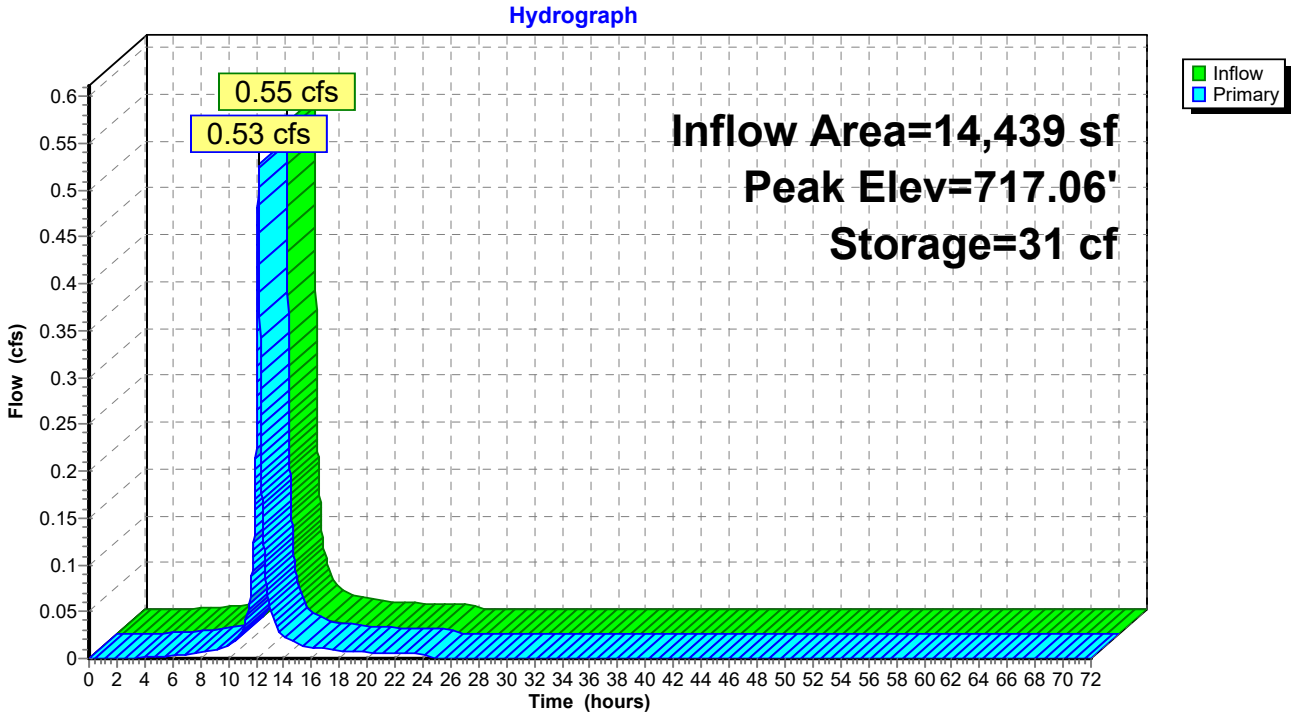
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	2,689 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	50	25	25
718.00	1,488	769	794
719.00	2,302	1,895	2,689

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 12.20 hrs HW=717.06' TW=0.00' (Dynamic Tailwater)
↑**1=12.0" Round Culvert** (Passes 0.53 cfs of 4.94 cfs potential flow)
↑**2=Orifice/Grate** (Controls 0.00 cfs)
3=Orifice/Grate (Orifice Controls 0.53 cfs @ 2.68 fps)

Pond OS3: (new Pond)

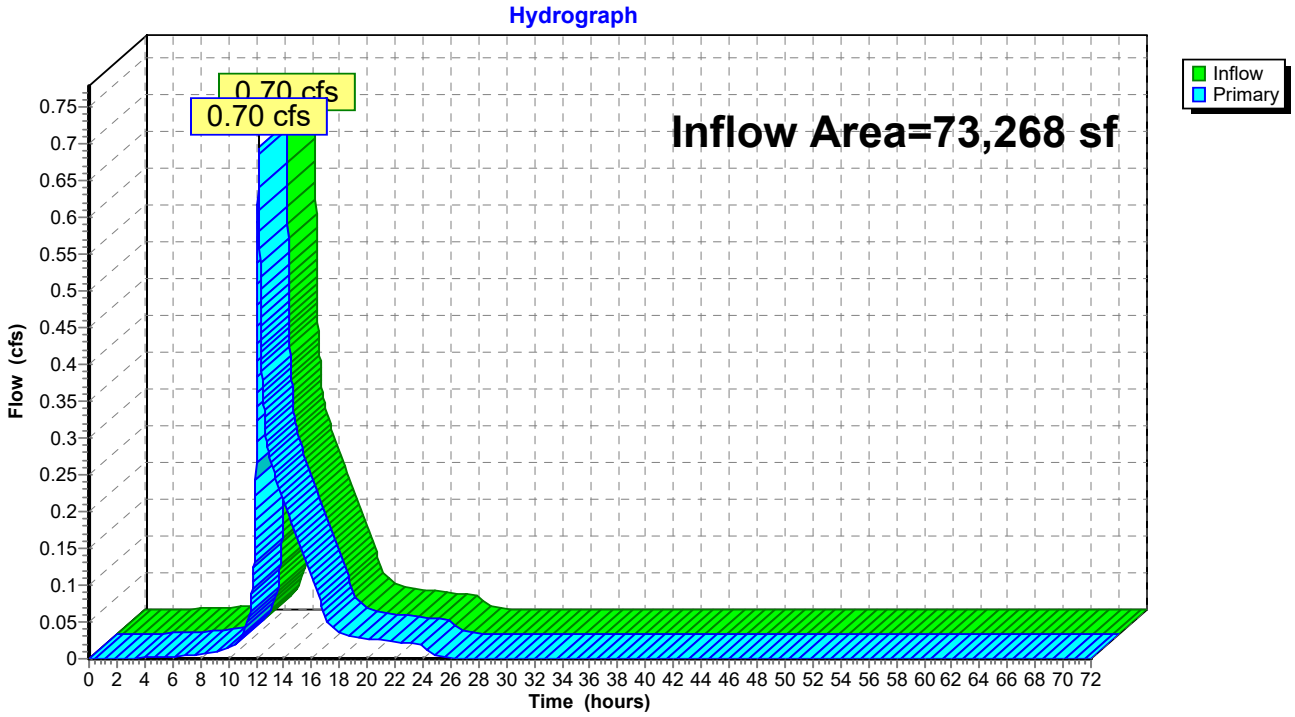


Summary for Link POI: POI

Inflow Area = 73,268 sf, 50.67% Impervious, Inflow Depth = 0.82" for 1-Year event
Inflow = 0.70 cfs @ 12.21 hrs, Volume= 4,997 cf
Primary = 0.70 cfs @ 12.21 hrs, Volume= 4,997 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: POI



Summary for Subcatchment D30: Proposed to Pond along Southwestern Blvd.

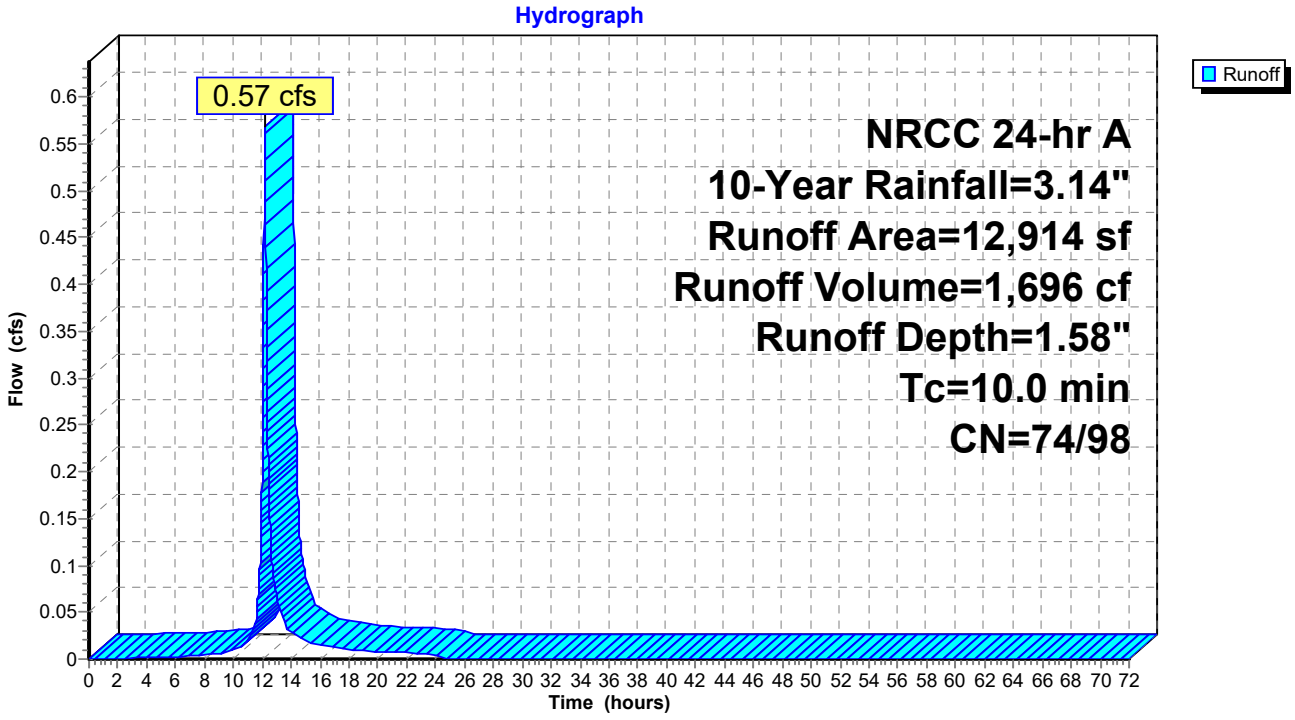
Runoff = 0.57 cfs @ 12.18 hrs, Volume= 1,696 cf, Depth= 1.58"
Routed to Pond OS1 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

	Area (sf)	CN	Description
*	3,909	98	Impervious
	9,005	74	>75% Grass cover, Good, HSG C
	12,914	81	Weighted Average
	9,005	74	69.73% Pervious Area
	3,909	98	30.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D30: Proposed to Pond along Southwestern Blvd.



Summary for Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)

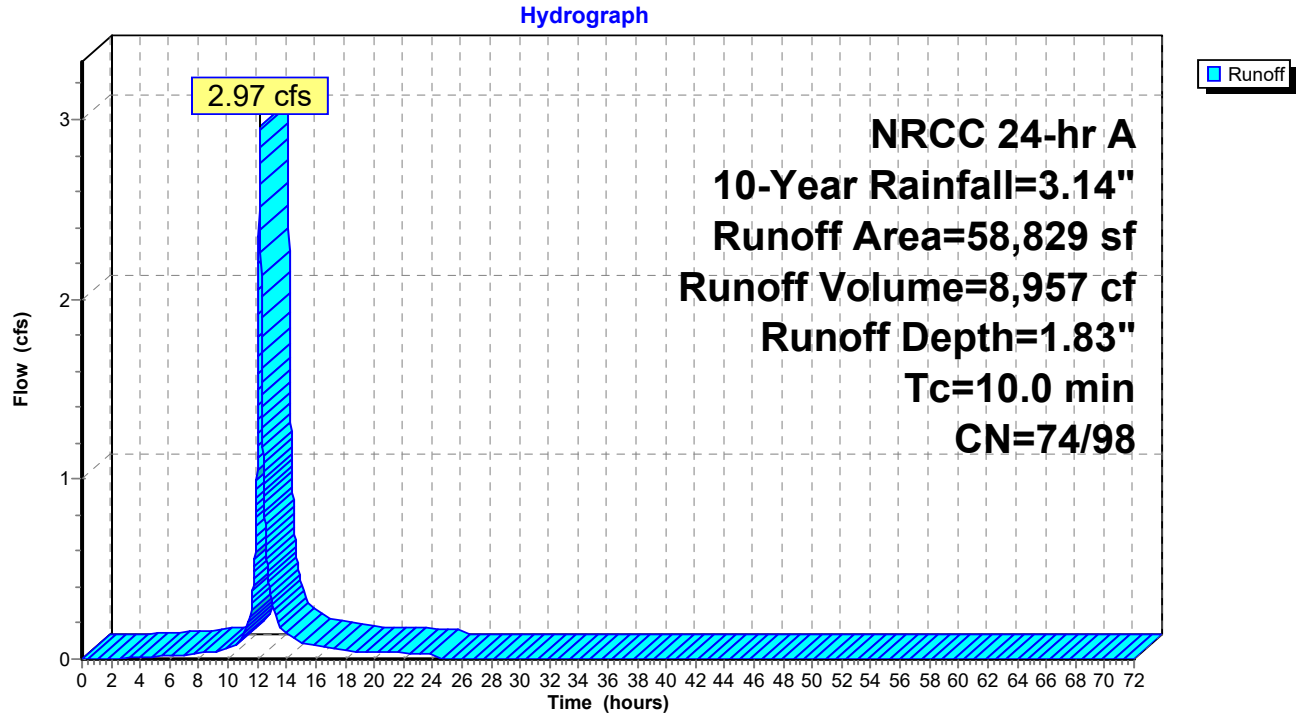
Runoff = 2.97 cfs @ 12.17 hrs, Volume= 8,957 cf, Depth= 1.83"
Routed to Pond B-1 : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

	Area (sf)	CN	Description
*	25,538	98	Impervious
	33,291	74	>75% Grass cover, Good, HSG C
	58,829	84	Weighted Average
	33,291	74	56.59% Pervious Area
	25,538	98	43.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)



Summary for Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)

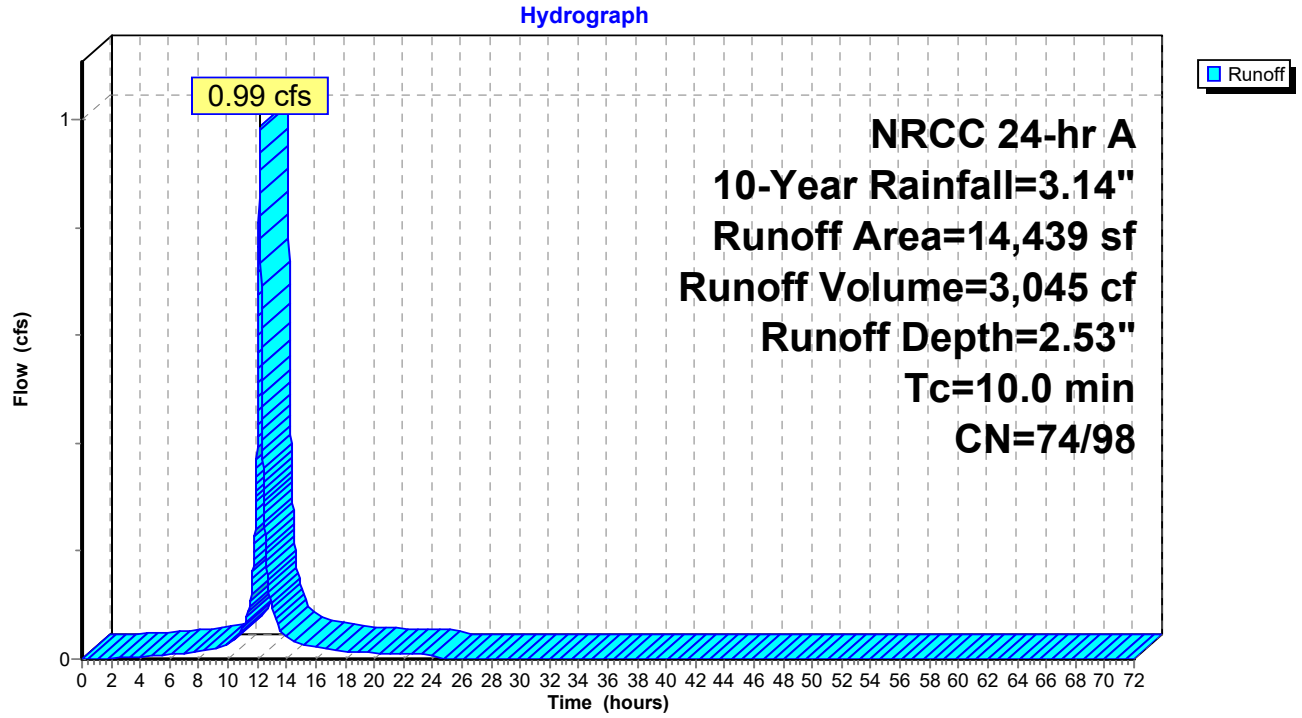
Runoff = 0.99 cfs @ 12.17 hrs, Volume= 3,045 cf, Depth= 2.53"
Routed to Pond OS3 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

	Area (sf)	CN	Description
*	11,588	98	Impervious
	2,851	74	>75% Grass cover, Good, HSG C
	14,439	93	Weighted Average
	2,851	74	19.75% Pervious Area
	11,588	98	80.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)



Summary for Pond B-1: Bioretention Basin

Inflow Area = 58,829 sf, 43.41% Impervious, Inflow Depth = 1.83" for 10-Year event
Inflow = 2.97 cfs @ 12.17 hrs, Volume= 8,957 cf
Outflow = 0.33 cfs @ 12.99 hrs, Volume= 7,986 cf, Atten= 89%, Lag= 48.9 min
Primary = 0.33 cfs @ 12.99 hrs, Volume= 7,986 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 716.98' @ 12.99 hrs Surf.Area= 2,731 sf Storage= 4,868 cf

Plug-Flow detention time= 212.2 min calculated for 7,986 cf (89% of inflow)
Center-of-Mass det. time= 160.0 min (947.6 - 787.6)

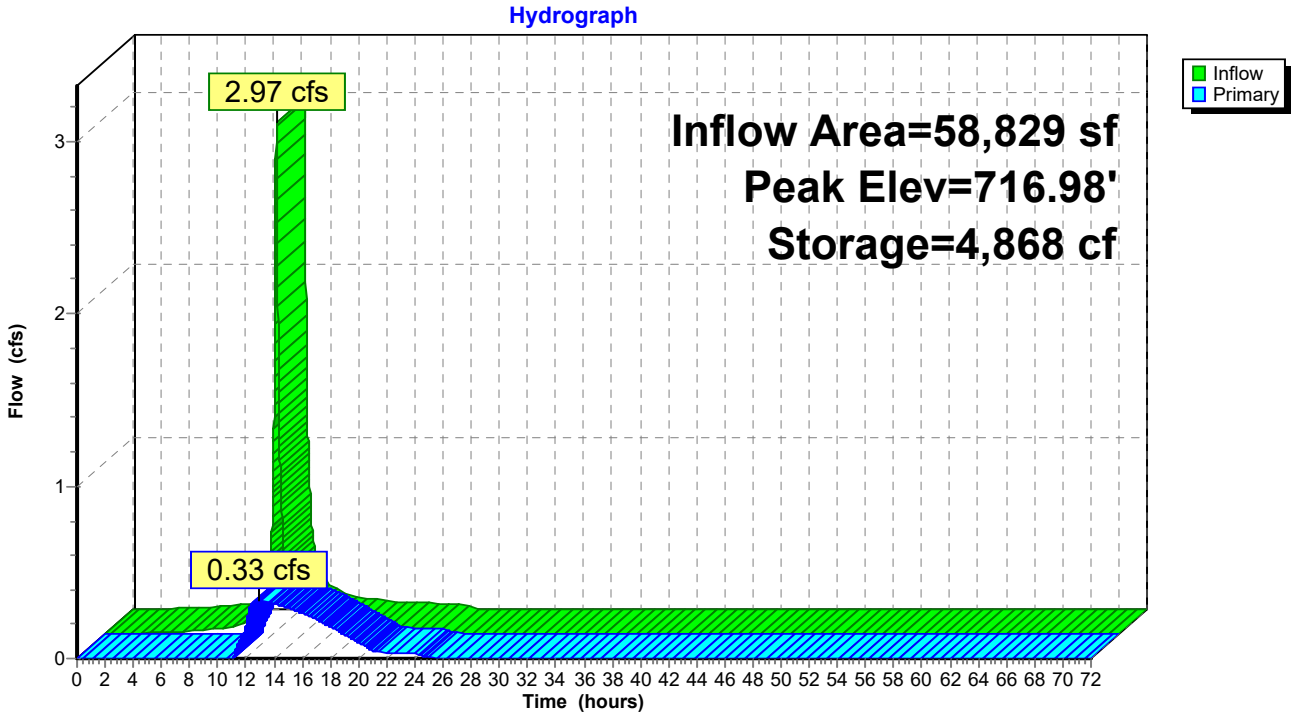
Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	11,986 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	695	0	0
715.00	1,247	971	971
716.00	1,949	1,598	2,569
717.00	2,745	2,347	4,916
718.00	3,521	3,133	8,049
719.00	4,352	3,937	11,986

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	715.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	718.50'	**1.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.33 cfs @ 12.99 hrs HW=716.98' TW=0.00' (Dynamic Tailwater)
↑**1=12.0" Round Culvert** (Passes 0.33 cfs of 4.87 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.78 fps)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B-1: Bioretention Basin



Summary for Pond OS1: (new Pond)

Inflow Area = 12,914 sf, 30.27% Impervious, Inflow Depth = 1.58" for 10-Year event
Inflow = 0.57 cfs @ 12.18 hrs, Volume= 1,696 cf
Outflow = 0.28 cfs @ 12.34 hrs, Volume= 1,696 cf, Atten= 51%, Lag= 9.7 min
Primary = 0.28 cfs @ 12.34 hrs, Volume= 1,696 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 718.10' @ 12.34 hrs Surf.Area= 391 sf Storage= 227 cf

Plug-Flow detention time= 5.2 min calculated for 1,696 cf (100% of inflow)
Center-of-Mass det. time= 5.2 min (804.9 - 799.7)

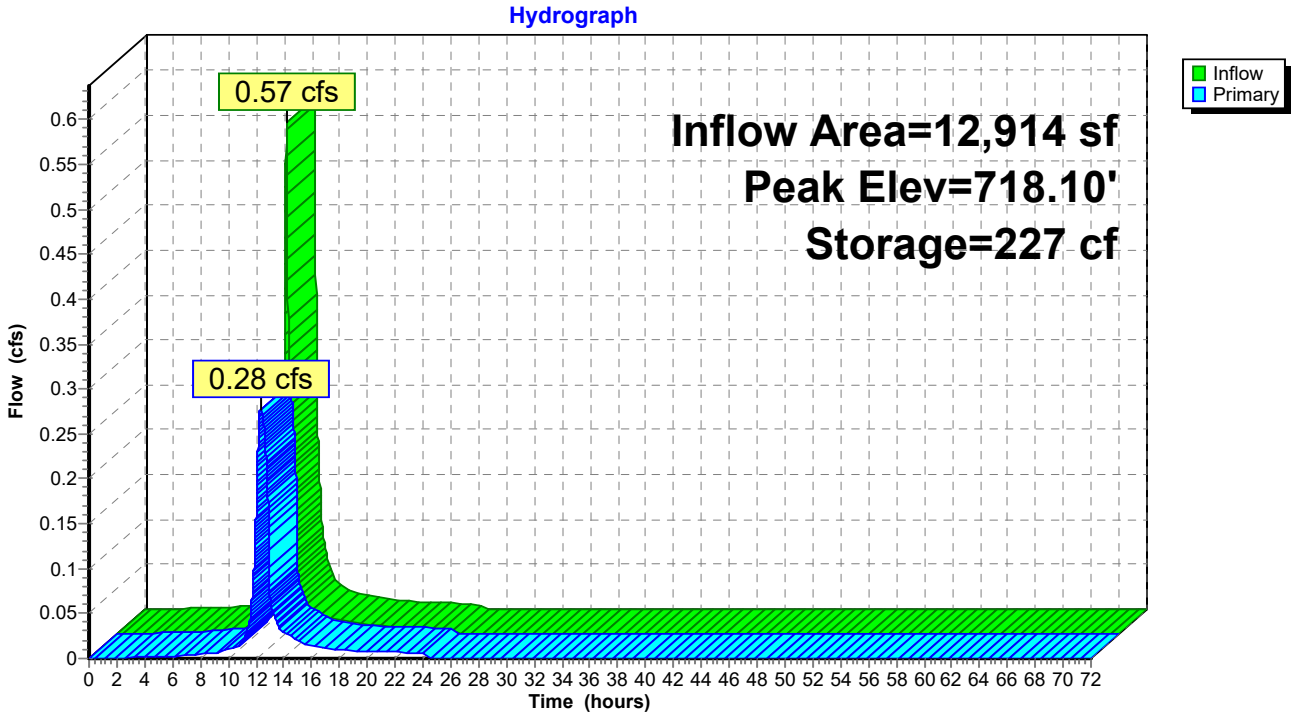
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	1,975 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	20	8	8
718.00	342	181	189
719.00	811	577	765
720.00	1,608	1,210	1,975

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round 12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.28 cfs @ 12.34 hrs HW=718.10' (Free Discharge)
└**1=12.0" Round Culvert** (Passes 0.28 cfs of 4.76 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.65 fps)

Pond OS1: (new Pond)



Summary for Pond OS3: (new Pond)

Inflow Area = 14,439 sf, 80.25% Impervious, Inflow Depth = 2.53" for 10-Year event
Inflow = 0.99 cfs @ 12.17 hrs, Volume= 3,045 cf
Outflow = 0.76 cfs @ 12.25 hrs, Volume= 3,045 cf, Atten= 24%, Lag= 4.4 min
Primary = 0.76 cfs @ 12.25 hrs, Volume= 3,045 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 717.39' @ 12.25 hrs Surf.Area= 609 sf Storage= 153 cf

Plug-Flow detention time= 2.4 min calculated for 3,045 cf (100% of inflow)
Center-of-Mass det. time= 2.5 min (768.9 - 766.4)

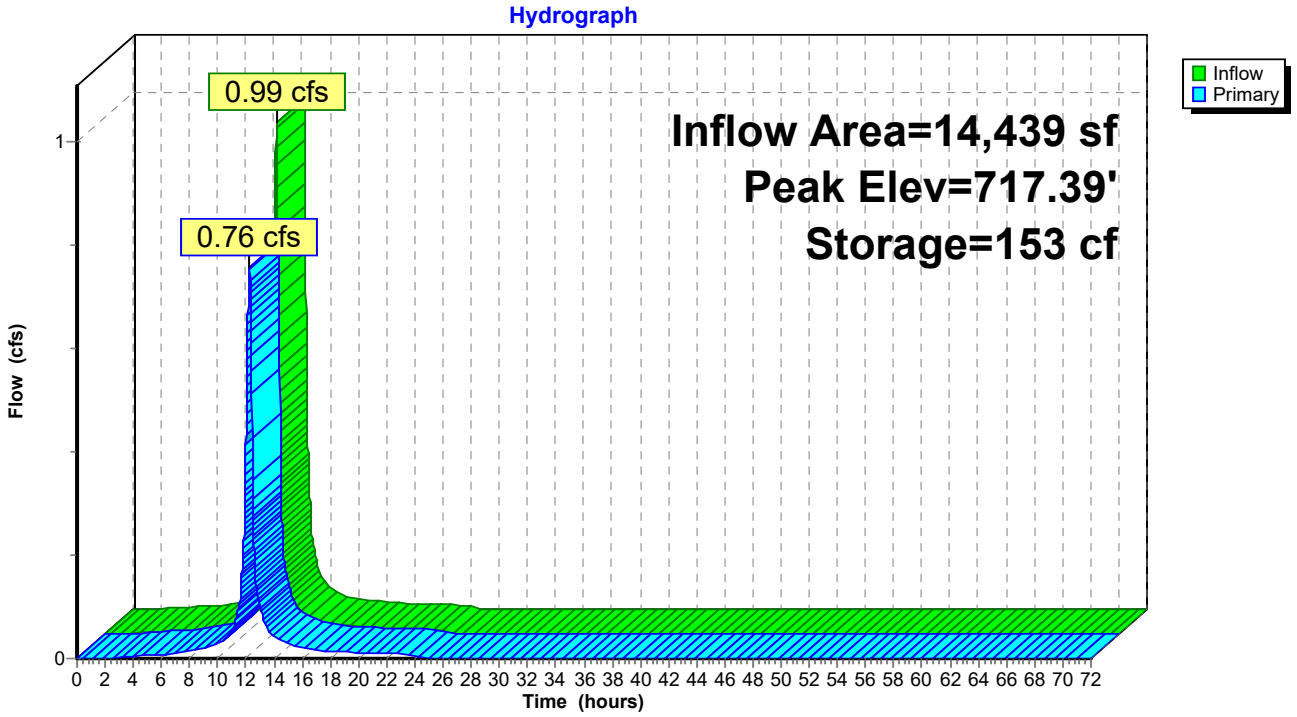
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	2,689 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	50	25	25
718.00	1,488	769	794
719.00	2,302	1,895	2,689

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.25 hrs HW=717.39' TW=0.00' (Dynamic Tailwater)
└**1=12.0" Round Culvert** (Passes 0.76 cfs of 5.20 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.76 cfs @ 3.85 fps)

Pond OS3: (new Pond)

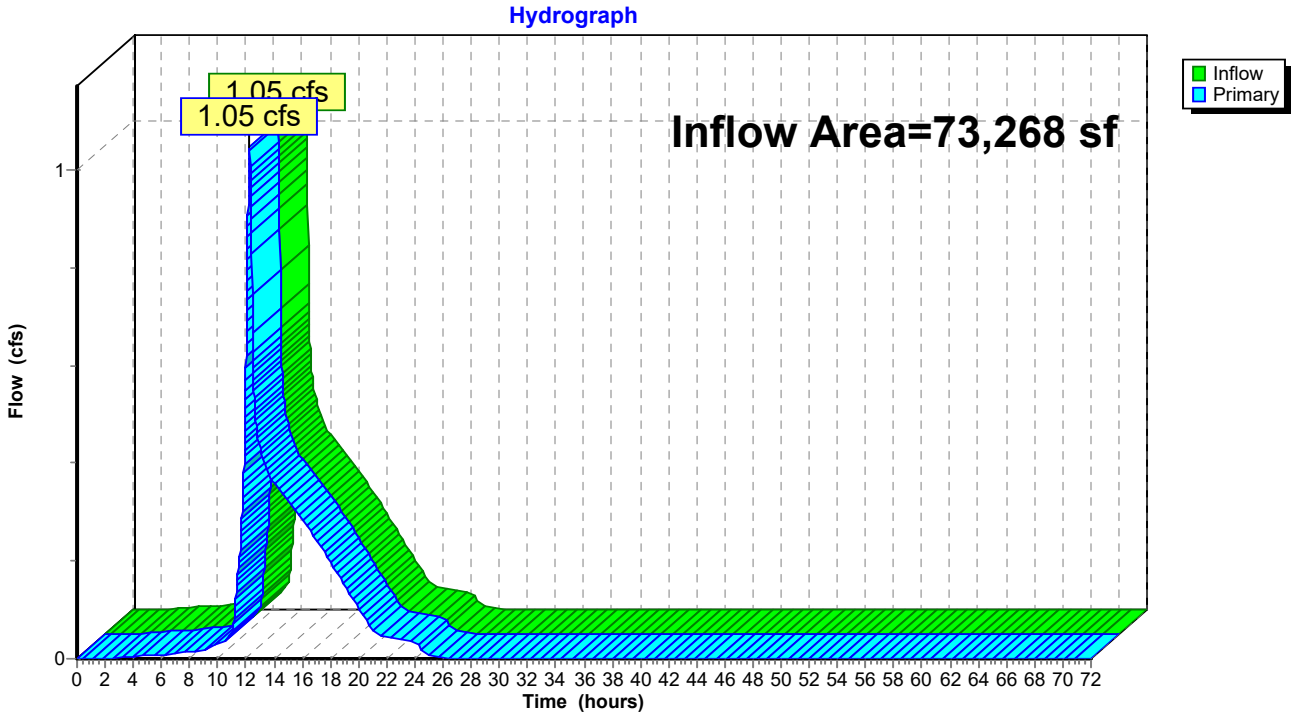


Summary for Link POI: POI

Inflow Area = 73,268 sf, 50.67% Impervious, Inflow Depth = 1.81" for 10-Year event
Inflow = 1.05 cfs @ 12.26 hrs, Volume= 11,032 cf
Primary = 1.05 cfs @ 12.26 hrs, Volume= 11,032 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: POI



Summary for Subcatchment D30: Proposed to Pond along Southwestern Blvd.

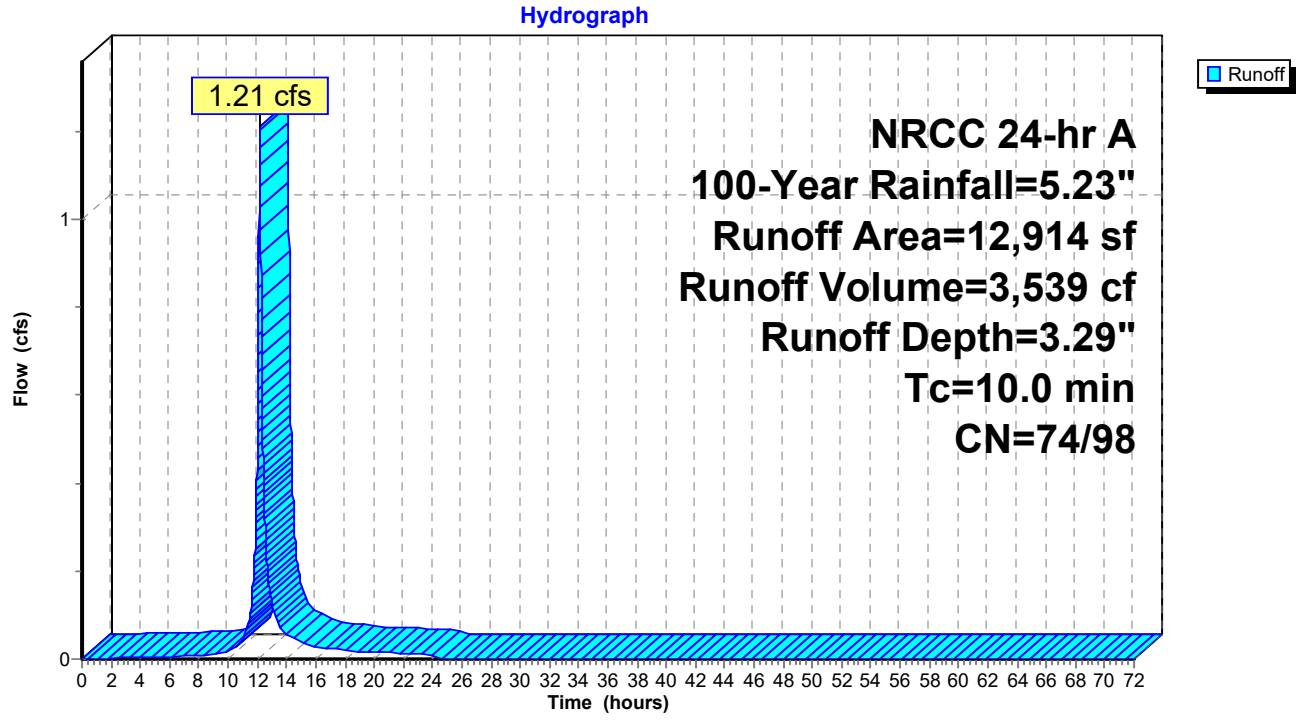
Runoff = 1.21 cfs @ 12.17 hrs, Volume= 3,539 cf, Depth= 3.29"
Routed to Pond OS1 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 100-Year Rainfall=5.23"

	Area (sf)	CN	Description
*	3,909	98	Impervious
	9,005	74	>75% Grass cover, Good, HSG C
	12,914	81	Weighted Average
	9,005	74	69.73% Pervious Area
	3,909	98	30.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D30: Proposed to Pond along Southwestern Blvd.



Summary for Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)

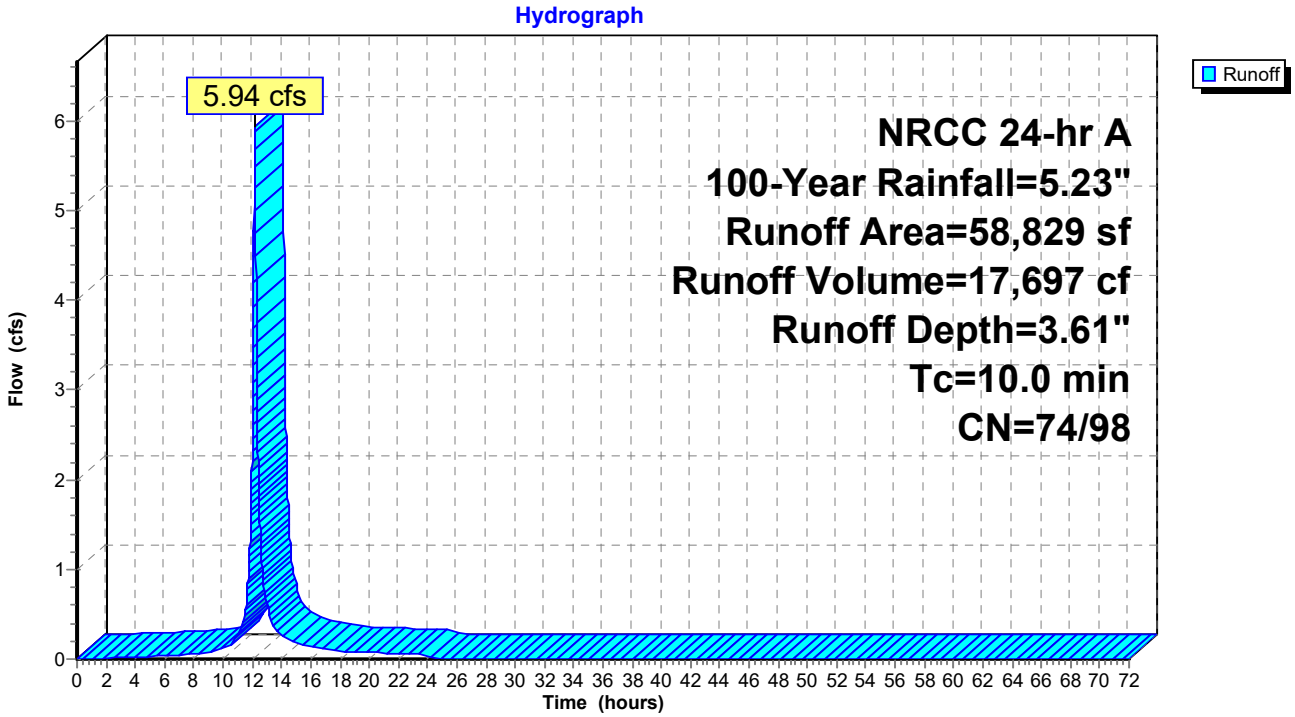
Runoff = 5.94 cfs @ 12.17 hrs, Volume= 17,697 cf, Depth= 3.61"
Routed to Pond B-1 : Bioretention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 100-Year Rainfall=5.23"

	Area (sf)	CN	Description
*	25,538	98	Impervious
	33,291	74	>75% Grass cover, Good, HSG C
	58,829	84	Weighted Average
	33,291	74	56.59% Pervious Area
	25,538	98	43.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-A: Proposed to Pond Behind Car Wash (Site)



Summary for Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)

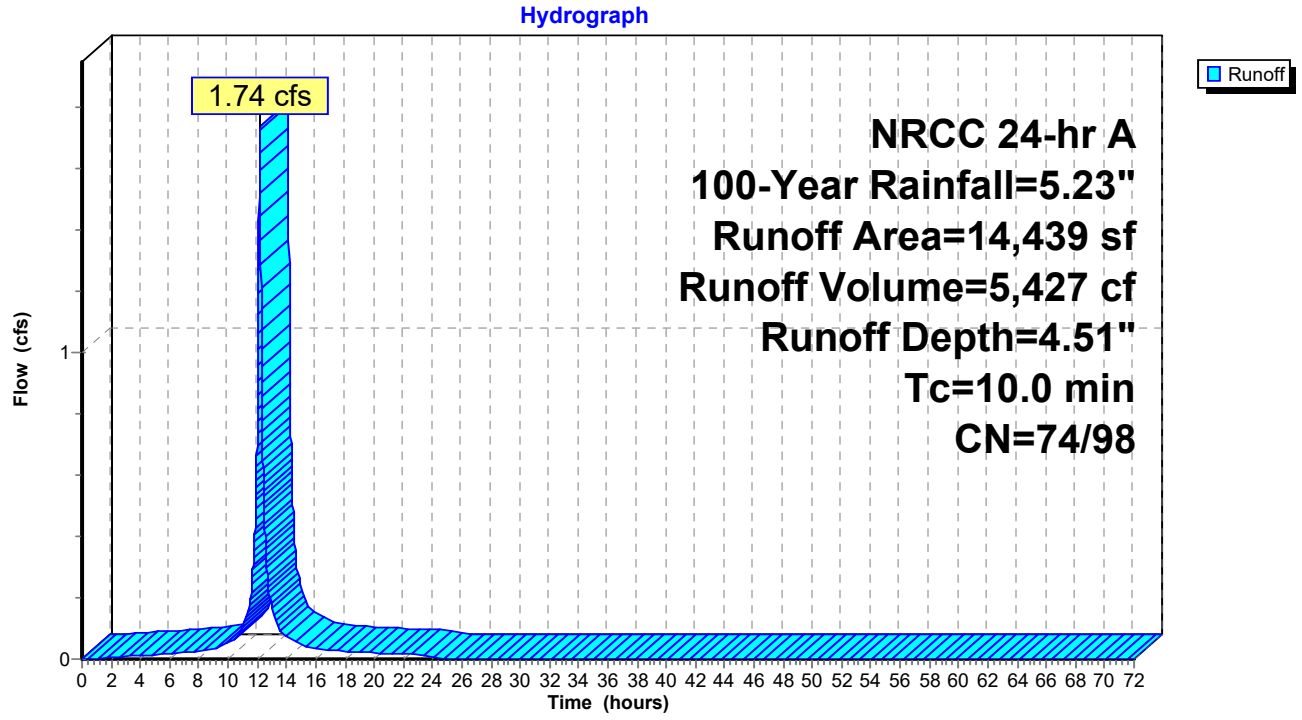
Runoff = 1.74 cfs @ 12.17 hrs, Volume= 5,427 cf, Depth= 4.51"
Routed to Pond OS3 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 100-Year Rainfall=5.23"

	Area (sf)	CN	Description
*	11,588	98	Impervious
	2,851	74	>75% Grass cover, Good, HSG C
	14,439	93	Weighted Average
	2,851	74	19.75% Pervious Area
	11,588	98	80.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment D40-B: Proposed to Pond Behind Car Was (Off-Site)



Summary for Pond B-1: Bioretention Basin

Inflow Area = 58,829 sf, 43.41% Impervious, Inflow Depth = 3.61" for 100-Year event
Inflow = 5.94 cfs @ 12.17 hrs, Volume= 17,697 cf
Outflow = 0.47 cfs @ 13.24 hrs, Volume= 16,726 cf, Atten= 92%, Lag= 64.1 min
Primary = 0.47 cfs @ 13.24 hrs, Volume= 16,726 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 718.54' @ 13.24 hrs Surf.Area= 3,972 sf Storage= 10,085 cf

Plug-Flow detention time= 275.0 min calculated for 16,726 cf (95% of inflow)
Center-of-Mass det. time= 244.1 min (1,025.1 - 781.0)

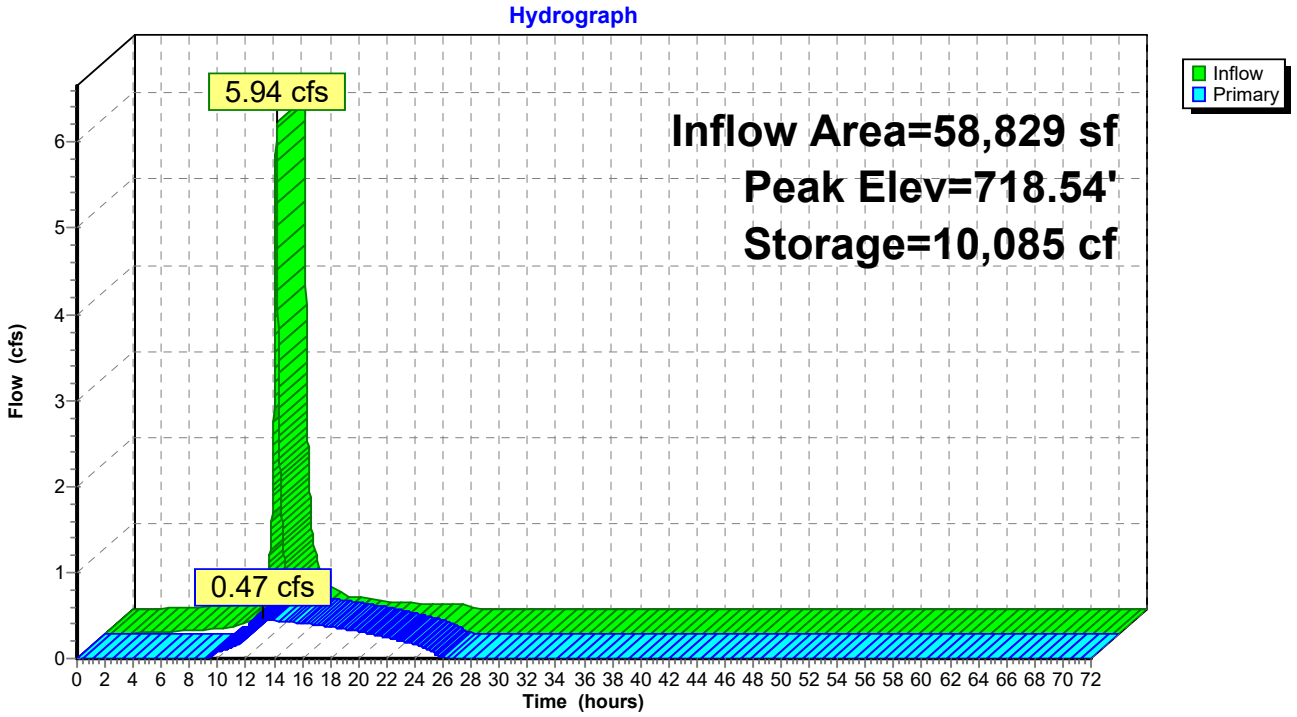
Volume	Invert	Avail.Storage	Storage Description
#1	714.00'	11,986 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
714.00	695	0	0
715.00	1,247	971	971
716.00	1,949	1,598	2,569
717.00	2,745	2,347	4,916
718.00	3,521	3,133	8,049
719.00	4,352	3,937	11,986

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	715.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	718.50'	**1.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.47 cfs @ 13.24 hrs HW=718.54' TW=0.00' (Dynamic Tailwater)
↑**1=12.0" Round Culvert** (Passes 0.47 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 9.06 fps)
3=Broad-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.58 fps)

Pond B-1: Bioretention Basin



Summary for Pond OS1: (new Pond)

Inflow Area = 12,914 sf, 30.27% Impervious, Inflow Depth = 3.29" for 100-Year event
Inflow = 1.21 cfs @ 12.17 hrs, Volume= 3,539 cf
Outflow = 0.36 cfs @ 12.45 hrs, Volume= 3,539 cf, Atten= 70%, Lag= 16.8 min
Primary = 0.36 cfs @ 12.45 hrs, Volume= 3,539 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 719.08' @ 12.45 hrs Surf.Area= 872 sf Storage= 830 cf

Plug-Flow detention time= 15.5 min calculated for 3,539 cf (100% of inflow)
Center-of-Mass det. time= 15.3 min (807.0 - 791.8)

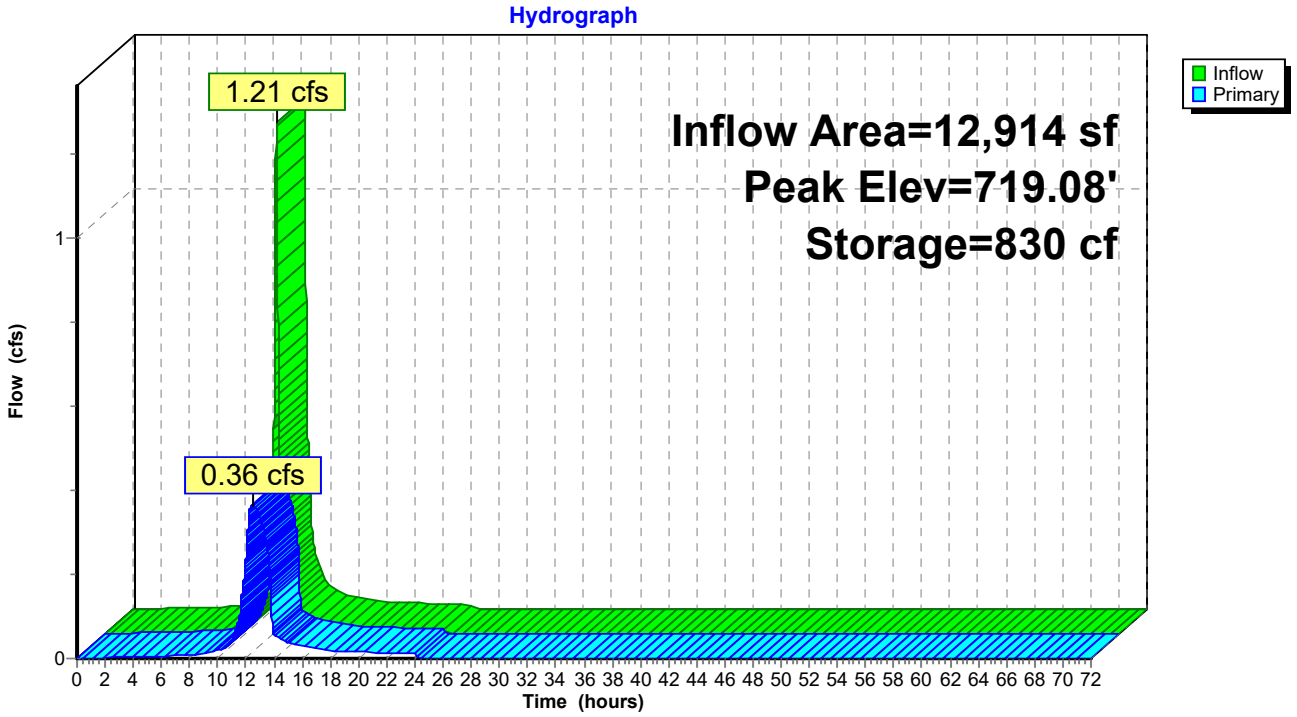
Volume	Invert	Avail.Storage	Storage Description
#1	716.60'	1,975 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.60	20	0	0
717.00	20	8	8
718.00	342	181	189
719.00	811	577	765
720.00	1,608	1,210	1,975

Device	Routing	Invert	Outlet Devices
#1	Primary	713.20'	**12.0" Round 12.0" Round Culvert** L= 250.0' Ke= 0.400 Inlet / Outlet Invert= 713.20' / 711.82' S= 0.0055 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	719.60'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.60'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 12.45 hrs HW=719.08' (Free Discharge)
└**1=12.0" Round Culvert** (Passes 0.36 cfs of 5.18 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.38 fps)

Pond OS1: (new Pond)



Summary for Pond OS3: (new Pond)

Inflow Area = 14,439 sf, 80.25% Impervious, Inflow Depth = 4.51" for 100-Year event
Inflow = 1.74 cfs @ 12.17 hrs, Volume= 5,427 cf
Outflow = 0.98 cfs @ 12.29 hrs, Volume= 5,427 cf, Atten= 43%, Lag= 7.4 min
Primary = 0.98 cfs @ 12.29 hrs, Volume= 5,427 cf
Routed to Link POI : POI

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 717.83' @ 12.29 hrs Surf.Area= 1,250 sf Storage= 568 cf

Plug-Flow detention time= 3.8 min calculated for 5,426 cf (100% of inflow)
Center-of-Mass det. time= 3.8 min (762.8 - 759.0)

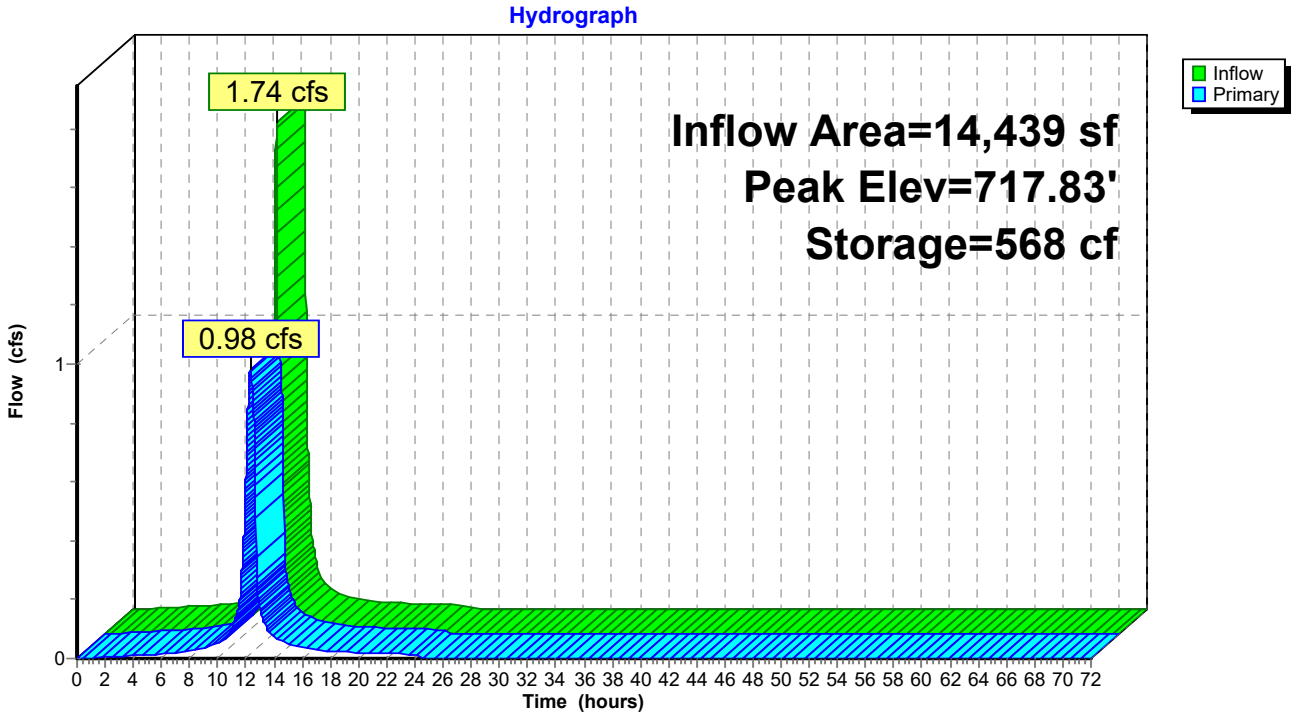
Volume	Invert	Avail.Storage	Storage Description
#1	716.50'	2,689 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
716.50	50	0	0
717.00	50	25	25
718.00	1,488	769	794
719.00	2,302	1,895	2,689

Device	Routing	Invert	Outlet Devices
#1	Primary	713.60'	**12.0" Round 12.0" Round Culvert** L= 110.0' Ke= 0.400 Inlet / Outlet Invert= 713.60' / 713.08' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	718.80'	**18.0" x 18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	716.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.98 cfs @ 12.29 hrs HW=717.83' TW=0.00' (Dynamic Tailwater)
└─**1=12.0" Round Culvert** (Passes 0.98 cfs of 5.54 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.98 cfs @ 5.01 fps)

Pond OS3: (new Pond)

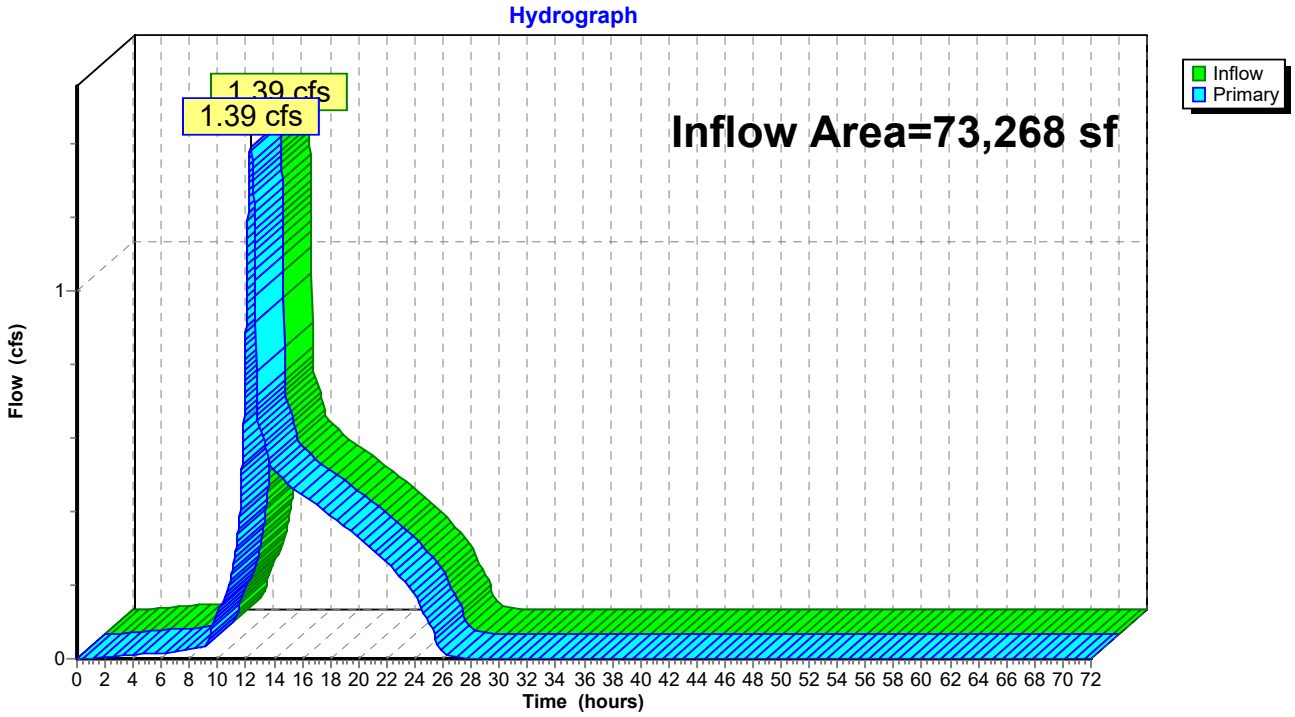


Summary for Link POI: POI

Inflow Area = 73,268 sf, 50.67% Impervious, Inflow Depth = 3.63" for 100-Year event
Inflow = 1.39 cfs @ 12.32 hrs, Volume= 22,153 cf
Primary = 1.39 cfs @ 12.32 hrs, Volume= 22,153 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI: POI



APPENDIX E
GEOTECHNICAL INVESTIGATION

Geotechnical Engineering Report

ModWash – Southwestern Blvd. (Hutton Project No. 20089D)
Hamburg, New York
July 1, 2022
Terracon Project No. J5225155

Prepared for:
Hutton Real Estate Holdings, LLC
Chattanooga, Tennessee

Prepared by:
Terracon Consultants – NY, Inc.
Buffalo, New York

July 1, 2022

Hutton Real Estate Holdings, LLC
736 Cherry Street
Chattanooga, Tennessee 37402

Attn: Mr. Nicholas Plummer
E: nplummer@hutton.build

Re: Geotechnical Engineering Report
ModWash – Southwestern Blvd. (Hutton Project No. 20089D)
5363 Southwestern Boulevard
Hamburg, New York
Terracon Project No. J5225155

Dear Mr. Plummer:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Master Agreement Reference Number 9917MSA258 dated May 20, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, pavements, and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants - NY, Inc.

For Blake J. Pilarski, E.I.T.
Staff Engineer

Michele A. Fiorillo, P.E.
Geotechnical Department Manager

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

REPORT SUMMARY

Topic [1]	Overview Statement [2]
Project Description	■ An approximately 4,460 square-foot car wash with an underground reclaim system will be constructed on the southern side of the 1.85 acres parcel ■ Maximum assumed structural loads: Columns: 50 kips, Walls: 2.5 kips per linear foot, Floors: 150 pounds per square foot ■ Finished floor elevation is expected to be located in proximity to existing grades to minimize earthwork cut and fill operations ■ Assumed traffic for pavement areas: o 500 autos/light trucks per day o Up to five delivery/trash trucks per week o Incidental use only Tractor Trailer trucks/emergency vehicles (less than one vehicle per week)
Geotechnical Characterization	■ Approximately 3 to 6 inches of topsoil was encountered across the site at the ground surface ■ We encountered existing fill in three of the nine borings to depths ranging from of approximately 2 to 4 feet below the existing ground surface ■ Native soil was present below the fill materials and generally consisted of mixtures of silt, sand, and clay ■ Bedrock was encountered at depths ranging from 0.3 feet to greater than 10 feet below the ground surface. In general, the bedrock was encountered at shallower depths within the western and southwestern portions of the site. ■ Groundwater was not encountered during drilling or upon completion of sampling at any of the boring locations
Earthwork	■ Effective site drainage should be established early and maintained throughout earthwork phases of the project to minimize delays ■ We do not expect groundwater will impact grading operations ■ Excavations for the building foundations and utilities extending within the bedrock will be difficult and will likely require very high capacity excavating equipment, in conjunction with use of pneumatic breakers to shatter the bedrock prior to removal. Refer to the **Earthwork** Section for additional details ■ A seismic site class of C can be used for structural design ■ Excavated native soils and/or existing fill materials may be considered for reuse outside the proposed building area if approved by the Geotechnical Engineer and pending the conditions encountered at the time of construction, as recommended in the **Earthwork** Section
Shallow Foundations	■ Shallow foundations will be suitable to support the planned structure ■ Recommended maximum net allowable bearing pressure = 2,500 psf ■ Expected settlements: less than 1-inch total, differential settlement up to 2/3 of total ■ Evaluate and address areas of existing fill as noted in **Earthwork**

Topic [1]	Overview Statement [2]
Below-Grade Structures	■ An underground reclaim system including a tank with a suction line will be installed to a depth of approximately 8 feet below finished grade elevation
Pavements	■ With subgrade prepared as noted in **Earthwork** ■ Concrete: o 5.0 inches Portland cement concrete over 12.0 inches of Aggregate Base in light-duty areas (automobiles and light trucks only) o 7.0 inches Portland cement concrete over 12.0 inches of Aggregate Base in heavy-duty areas ■ Asphalt: o 1.5 inches Surface Asphaltic Concrete (AC) over 2.5 Binder AC and 12.0 inches Aggregate Base in light-duty areas (automobiles and light trucks only) o 1.5 inches Surface AC over 3.5 inches Binder AC and 12.0 inches Aggregate Base in heavy-duty areas
General Comments	■ This section contains important information about the limitations of this geotechnical engineering report

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by clicking on the topic itself
2. This summary is for convenience only and should be used in conjunction with the entire report for design purposes.

Geotechnical Engineering Report

ModWash – Southwestern Blvd. (Hutton Project No. 20089D)

5363 Southwestern Boulevard

Hamburg, New York

Terracon Project No. J5225155

July 1, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed carwash to be located at 5363 Southwestern Boulevard in Hamburg, New York. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil and rock conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Dewatering considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC
- Pavement design and construction
- Frost considerations

The geotechnical engineering Scope of Services for this project included the advancement of nine test borings within the proposed building area, proposed pavement area and proposed stormwater management areas (B-1, B-2, P-1, P-2, IT-1 through IT-4 and IT-ALT) to depths ranging from approximately 1.5 to 11.5 feet below existing site grades. PVC pipes were installed at depths ranging from 4 to 4.5 feet below existing site grade in proximity to borings IT-3, IT-4 and IT-ALT.

Maps indicating the site location and approximate test boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The exploration logs and infiltration results are included in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 5363 Southwestern Boulevard in Hamburg, New York. The center of the site is located at approximately Latitude 42.7405° N and Longitude 78.8701° W. Based on a review of available historical information, the site was primarily agricultural land as early as 1926 until approximately 1948 when the construction of Southwestern Boulevard/US-20 passed through the plot of farmland that contained the site. Following construction, the site appeared as undeveloped land without structures. The site became partially wooded and then densely wooded over time until 2019 when the site was razed and graded for future development, appearing as it presently exists today. The orange line in the aerial image below shows the limits of the project site. See also **Site Location**.  (from Bing Maps accessed on June 28, 2022)
Existing Improvements	The site is undeveloped and is currently vacant
Current Ground Cover	Grass field
Existing Topography	Site topography appears generally level, with ground surface elevations (El.) ranging from about EL. 717 to 719 feet (Google Earth).
Geology[1]	The project is located within the Erie-Ontario physiographic province. Geological maps indicate surficial soils to consists of glacial till and lacustrine silt and clay. Bedrock is mapped as shale of the Angola and Rhinestreet Shales Group (Upper Devonian).

1. References: Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1: 250,000.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project is as follows:

Item	Description
Information Provided	The following information was provided to Terracon: ■ Site Plan with Boring Locations dated April 26, 2022
Project Description	The project consists of an approximately 4,460 square-foot car wash with an underground reclaim system to approximately 8 feet below finished grades. The remainder of the project will consist of parking lots, drive lanes, and a stormwater management area. The location of the stormwater management area has not been determined at this time
Building Construction	The structure will consist of light-gauge metal framing and concrete slab-on-grade floor system
Finished Floor Elevation (FFE)	The finished floor elevation and proposed grading was not available at the time of this report but is expected to be located in proximity to existing grades to minimize earthwork cut and fill operations.
Maximum Loads (Based on recent Hutton projects)	Columns: 50 kips Continuous Load-Bearing Walls: 2.5 kips per linear foot (klf) Max. Uniform Slabs: less than 150 pounds per square foot (psf)
Grading/Slopes	The proposed grading was not available at the time of this report but is expected to be located in proximity to existing grades to minimize earthwork cut and fill operations.
Pavements	■ We understand both rigid (concrete) and flexible (asphalt), pavement sections will be utilized for the project considered. Recommendations for each of these options are included in this report ■ Anticipated traffic is as follows: o Autos/light trucks: Up to 500 vehicles per day o Delivery and trash collection vehicles: five vehicles per week (heavy-duty) o Tractor-trailer trucks/emergency vehicles: incidental use only (less than one vehicle per week) The pavement design period is 20 years

If any of the above information is incorrect, please let us know so we can review the conclusions and recommendations provided in this report for applicability to the actual design and update the report as appropriate.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analysis, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Surface**	Topsoil
2	**Fill**[1]	Mixtures of Silt, Sand, Clay and Gravel; trace organic matter; trace shale; brown, brown black
3	**Native Soils**	Mixtures of Silt, Sand and Clay (SP-SM, SM, CL-ML, ML); trace gravel; trace shale fragments; gray, gray-black, brown; loose to very dense or medium stiff to hard
4	**Weathered Bedrock**[2]	Shale; highly weathered; brown-gray, black
5	**Bedrock**[3]	Shale; slightly weathered; medium strong; thin bedded to bedded

1. Fill was encountered in borings B-1, P-1, and IT-ALT to depths ranging from approximately 2 to 4 feet below existing grades.
2. Shale bedrock was encountered in borings B-1, B-2, P-2, IT-1, IT-2, IT-3, and IT-ALT at depths ranging from about 0.3 to 8 feet below existing grade.
3. At the location of B-2, rock cores were obtained in two runs: run #1 from 2.0 – 6.5 feet and run #2 from 6.5 to 11.5 feet. The two runs had recoveries of 65 and 100 percent and RQD values of 42 and 75 percent, respectively, indicating rock of poor to fair quality

It should be noted that as the soil/bedrock interface was generally transitional from residual soil to highly weathered rock, sampling of this softer bedrock was achieved by over-driving the sampling spoon. The dimensions of the sampling equipment may preclude sampling particles larger than 2-inch in any dimension.

In general, it appears that the bedrock surface is encountered at higher elevations along the western and southwestern portions of the project site (with top of bedrock encountered at depths ranging from 0.3 to 5.5 feet below ground surface) and sloping down toward the eastern and northeastern portions of the project site (with bedrock not encountered in IT-4 and P-1, which were completed at depths of 8 and 10 feet respectively).

Please note that ground surface elevations at each boring location are approximate and based upon Google Earth. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork. It should be noted that some variations in the depths/elevations and the quality of the bedrock were noted. This could result in encountering bedrock in localized areas which may be slightly shallower or deeper, or sounder, than the trend.

Groundwater Conditions

The boreholes were observed while drilling and after completion for the presence and level of groundwater. Groundwater was generally not observed within the borings at the completion of sampling.

The soils encountered in the borings appear to contain a high percentage of low permeability silt/clay/bedrock that may release water very slowly, and it may take several days for the groundwater levels to rise within the borings. Therefore, the groundwater levels recorded during our subsurface exploration may not be representative of long-term levels. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Water may also become temporarily perched over low permeability layers, such as the bedrock. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project. Additionally, grade adjustments on and around the site may affect the water table, as may drainage improvements on the site and surrounding properties.

GEOTECHNICAL OVERVIEW

The project site is considered suitable for support of the proposed buildings using conventional shallow spread foundations and slab-on-grade design. As discussed in **Geotechnical Characterization**, some variations in the depths/elevations and the quality of the bedrock were noted, which could result in encountering bedrock in localized areas which may be slightly shallower or deeper, or sounder, than the trend. Based on the conditions disclosed by our investigation, we offer the following general conclusions.

- The key geotechnical consideration impacting the proposed construction is the presence of shallow bedrock, particularly on the western and southwestern portions of the site. Within the building footprint we anticipate that bedrock may be encountered at depths ranging from about 0.3 to 8 feet below site grades. Excavations advanced into the bedrock will likely require very high capacity excavating equipment, in conjunction with use of pneumatic breakers to shatter the bedrock prior to removal. This will be particularly important for the recycling tank that is anticipated to be installed at a depth of 8 feet below final grade in the northwest corner of the proposed building.

- The proposed building may then be supported on a shallow foundation system bearing upon compacted Structural Fill placed over stable native soil and/or bedrock after all existing fill is removed along with any otherwise unsuitable materials, such as organic material, which may be found. Existing fills, if encountered, should not be relied upon for new foundation support. The **Shallow Foundations** section addresses foundation recommendations.

- If existing fills throughout the site are similar in composition to those found in the test borings, consideration may be given to support of new floor slabs and pavements over existing fills provided the subgrade surfaces are proof-rolled and stabilized as may be required. It should be understood the proof-rolling will lessen, but not eliminate, the possibility that settlement of floor slabs and pavements constructed over the existing fills may occur over time and require periodic maintenance.

- Consideration may be given to the reuse of excavated non-organic on-site soils for general grade increases outside the building area, once cleansed of any oversize particles, unsuitable debris or organics, and subject to the approval of the Geotechnical Engineer based upon the conditions encountered at the time of construction. Project plans and budgeting should include an imported granular material for this purpose.

- In general, groundwater is expected to be below foundation excavation depths and should not be a significant factor in planning for design and construction of the building. If perched water is encountered during construction, it is expected to be limited in volume and standard sump and pump methods should be sufficient for its removal. Dewatering is a means and methods consideration for the contractor.

The following sections of this report provide more detailed recommendations to assist in planning for the geotechnical aspects of the project. We should be provided with the opportunity to review plans and specifications prior to their release for bidding to confirm that our recommendations were properly understood and implemented, and to allow us to refine our recommendations, if warranted, based upon the final design. The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include removal of topsoil and unsuitable fill, stabilization of subgrade surfaces as necessary, foundation excavation and associated site fill and backfill. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered suitable in our geotechnical engineering evaluation for foundations, floor slabs and pavements.

Construction site safety is the sole responsibility of the contractor, who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities. Such responsibility is neither implied nor shall it be inferred.

Site Preparation

Site preparation should begin with stripping of topsoil as applicable from the building and pavement areas.

Prior to placing fills to raise site grades (if necessary) and/or after cuts are made to the plan subgrade elevations (if required), the subgrades should be proof-rolled using a steel drum roller with a static weight of at least 10 tons. The roller should operate in its static (non-vibratory) mode, unless requested otherwise by the Geotechnical Engineer observing the work, and travel at a speed not exceeding three feet per second (two miles per hour). The roller should complete at least two passes over all subgrade surfaces. The method of proof-rolling may be modified by the Geotechnical Engineer based upon the conditions disclosed at the time of construction.

Soft areas identified by the proof-rolling should be investigated to determine the cause and stabilized accordingly. These investigations may include the excavation of test pits. If existing fills are found and determined by to be unsuitable by the Geotechnical Engineer, they should be removed and replaced as deemed necessary.

Although the subgrade materials may be relatively stable upon initial exposure, unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. Should unstable subgrade conditions develop, stabilization measures will need to be employed.

Construction traffic over completed subgrades should be avoided to the extent practical. The subgrade surface should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to placement of additional fill lifts, and on-grade mats.

Fill Material Types

Structural Fill should be used as fill/backfill within the proposed structure areas. The fill should consist of imported sand and crushed gravel or crushed stone material which meets the limits of gradation given below. Any imported materials should be free of recycled concrete, asphalt, bricks, glass, and pyritic shale rock.

IMPORTED STRUCTURAL FILL

Sieve Size	Percent Finer
3”	100
¼”	30 to 75
No. 40	5 to 40
No. 200	0 to 10

Non-Frost Susceptible (NFS) material may consist of a free-draining granular material such as NYSDOT Item 203.21 Select Structural Fill; however, we recommend less than 5% passing the No. 200 sieve.

Excavated native soils and/or existing fill materials may be considered for reuse outside the proposed building area if approved by the Geotechnical Engineer and pending the conditions encountered at the time of construction. Any reuse of the existing fill would require that all organics, oversize particles, and unsuitable foreign matter found therein be separated and wasted off-site.

We recommend that at the time of construction the Geotechnical Engineer be consulted for approval of the excavated soils as fill material. We anticipate that additional testing consisting of grain-size distributions, Atterberg limits, organic content, and Proctor testing obtained from bulk samples representative of the on-site excavated material may be required to confirm the suitability of excavated material as Structural Fill.

If construction is performed during the wet season, it is possible the moisture content of the excavated soils is in excess of the optimum moisture content required to achieve proper compaction, and that proper compaction of the on-site soils may be very difficult to achieve. Saturated soils which cannot achieve compaction should be removed or used in non-structural areas where significant post construction settlement is acceptable. The contractor is ultimately responsible for moisture conditioning of fill/backfill materials to achieve proper compaction.

Fill Compaction Requirements

New fills beneath the building pad and pavements should be placed in uniform loose layers no more than about one-foot thick where heavy vibratory compaction equipment is used. Smaller lifts should be used where hand operated equipment is required for compaction. Each lift should be compacted to no less than 95 percent of its maximum dry density as determined by the Modified Proctor Compaction Test, ASTM D1557. In landscape areas, the compaction requirement may be relaxed to 90 percent of maximum dry density.

Onsite soil reused as fill should have a moisture content within +/-2 percent of its optimum moisture content when it is placed and compacted.

Along fill slopes, the subgrade fill should be placed and compacted horizontally about two to three feet beyond the final slope surface, and then trimmed back to establish the final slope surface to ensure that adequate compaction is achieved.

Utility Trench Backfill

Trench excavations should be wide enough to permit construction including backfill placement and compaction. Trenches should be backfilled with material that approximately matches the permeability characteristics of the surrounding soil to reduce the infiltration and preferential conveyance of surface water through the trench backfill. Fill placed as backfill for utilities located below the slab should consist of compacted Structural Fill or suitable bedding material.

Utility trenches are a common source of water infiltration and migration. All utility trenches that penetrate beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench backfill should incorporate an effective trench plug that extends at least 5 feet out from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for Structural Fill stated previously in this report.

Grading and Drainage

Grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation settlements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts discharging onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5 percent away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After buildings construction and landscaping, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary as part of the structure's maintenance program. Where paving or flatwork abuts the structure a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Based upon the subsurface conditions encountered in the boring logs, we anticipate top of bedrock to be encountered at shallow depths, especially within the western and southwestern

portions of the site. Excavations advanced into the highly weathered to unweathered bedrock will likely require very high capacity excavating equipment, in conjunction with use of pneumatic breakers to shatter the bedrock prior to removal. Variations in rock conditions should be expected from the elevations presented in the boring logs, since the rock surface can vary over the site. Also, the extent of rock excavation will depend on Contractor's methods, rock jointing, and rock foliation/bedding.

The contractor shall assure himself by site investigation or other necessary means that he is familiar with the type, quantity, quality, and character of excavation to be performed. We strongly recommend that the contractor be provided the opportunity to review the boring logs and data presented in our geotechnical report to determine the most efficient means and methods for excavation at the project site.

Rock excavation should be advanced to form level bearing grades at the bottom of the utilities and foundations excavation. Loose or shattered rock layers should be removed to provide a sound and unshattered base for utilities and foundations. Where the top of bedrock is uneven, it would be acceptable to use a minus ¾-inch crushed stone or lean concrete to create a level working surface for the new utilities and foundation.

Although groundwater was generally not encountered in the borings at the time of our investigation, groundwater level fluctuations due to seasonal variations in the amount of rainfall, runoff and other factors should be anticipated. Bedrock was encountered at shallow depths at several boring locations and would be considered to be relatively impermeable layers. Therefore, perched groundwater conditions could be encountered in excavations particularly after rainfall events. If perched water is encountered during construction, it is expected to be limited in volume and standard sump and pump methods should be sufficient for its removal. Dewatering is a means and methods consideration for the contractor.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed OSHA guidelines. OSHA guidelines are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties.

The contractor must evaluate soil conditions during excavations since variations in the soil can occur across the site. We recommend that the excavations be monitored continuously for signs of deterioration such as seepage of water or sloughing of soil into the excavation. Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information and recommendations provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of topsoil, proofrolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

Based upon the subsurface conditions encountered in the boring logs, we anticipate top of bedrock to be encountered at depths ranging from 0.5 to 8 feet below existing site grades. A grading plan was not available at the time of the preparation of the report. We anticipate that excavations for the building foundations and utilities extending within the bedrock may be difficult and will likely require very high capacity excavating equipment, in conjunction with use of pneumatic breakers to shatter the bedrock prior to removal.

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section of this report, the following design parameters are applicable for shallow foundations.

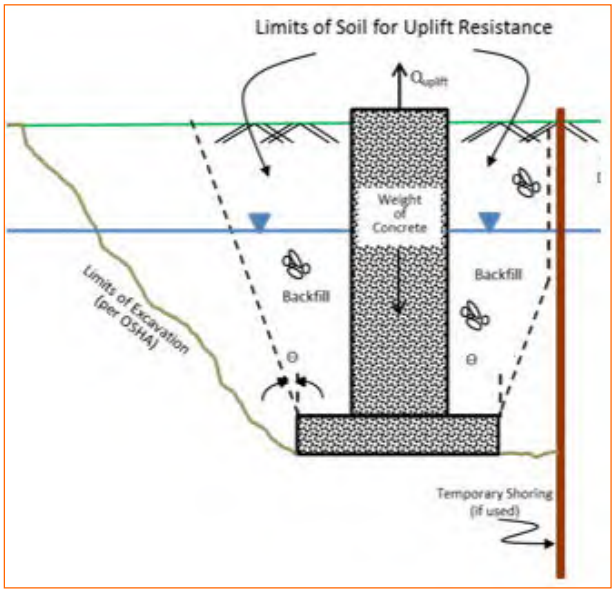
Design Parameters – Compressive Loads

Item	Description
Maximum Net Allowable Bearing Pressure [1, 2]	2,500 psf
Required Bearing Stratum [3]	Minimum 6 inches of compacted Structural Fill placed over stable native soil or bedrock.
Minimum Foundation Dimensions	Columns: 30 inches Continuous: 18 inches
Ultimate Passive Resistance [4] **(equivalent fluid pressures)**	390 pcf (compacted Structural Fill)
Ultimate Coefficient of Sliding Friction [5]	0.45 (Concrete on compacted Structural Fill)
Minimum Embedment below Finished Grade [6]	Exterior footings in unheated areas: 48 inches Exterior footings in heated areas: 48 inches Interior footings in heated areas: 18 inches
Estimated Total Settlement from Structural Loads [2]	Less than about 1 inch
Estimated Differential Settlement [2, 7]	About 2/3 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. These bearing pressures can be increased by 1/3 for transient loads unless those loads have been factored to account for transient conditions. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**. The settlements should occur relatively quickly as construction is completed and each load increment is applied.
3. The bearing grades should be prepared per the recommendations presented below in the **Foundation Construction Considerations**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted Structural Fill be placed against the vertical footing face. The Structural Fill must extend out and up from the base of the foundation at an angle of at least 60 degrees from vertical for the passive case.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of pad foundations can be developed from the effective weight of the foundation and the overlying soils. As illustrated on the figure to the right, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 110 pcf should be used for the backfill. This unit weight should be reduced to 50 pcf for portions of the backfill or natural soils below the groundwater elevation.



Foundation Construction Considerations

The foundations may be constructed on compacted Structural Fill placed upon stable native soils and/or bedrock after removal of any fill material or otherwise unsuitable materials that may be found. If over-excavation is required beneath the foundations to remove fill material or otherwise unsuitable material, the excavation should extend horizontally beyond each side of the foundation a distance equal to at least one-half the depth of the undercut below the final bearing grade elevation. Replacement material should meet the specification and compaction guidelines for structural fill as outlined herein.

All final bearing grades should be relatively firm, stable, and free of loose soil, mud, water and frost. The Geotechnical Engineer should approve the condition of the foundation bearing grades immediately prior to placement of reinforcing steel and concrete.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile and defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC).

Based on the soil properties encountered at the site and as described on the subsurface logs, the **Seismic Site Class** is **C**, in our estimation. Subsurface explorations at this site were extended to a maximum depth of 11.5 feet. Properties of the strata below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions in the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth, if desired.

FLOOR SLABS

Exposed subgrades beneath proposed floor slab areas should be proof-rolled as discussed in **Site Preparation**. Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Special attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 12 inches of Aggregate Base[3] material compacted to at least 95% of Modified Proctor (ASTM D 1557) placed directly upon proofrolled stable on-site subgrade soils.
Estimated Modulus of Subgrade Reaction [2]	150 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
3. Aggregate Base Course – NYSDOT Standard Specifications for Type 2 Subbase Course, Item No. 304.12

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Floor Slab Construction Considerations

Finished subgrade within and for at least 10 feet beyond the floor slab should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and Structural Fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs, noted in this section, must be applied to the site, which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Pavement designs were based on *AASHTO Guide for Design of Pavement Structures (1993)* and our experience with similar projects. The thickness of each course is a function of subgrade strength, traffic, design life, serviceability factors, and frost susceptibility.

A subgrade CBR of 3 was used for the AC pavement designs, and a modulus of subgrade reaction of 100 pci was use for the PCC pavement designs. The values were empirically derived based upon our experience with the on-site soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**.

Pavement Section Thicknesses

Frost susceptibility is a major factor in the overall pavement section thickness. The total pavement structural sections presented in this report are based also upon the expected depth of freeze.

Because of the fine-grained nature of the in-situ soil, and possible variations across the site of subgrade material (i.e., native soils, and compacted Structural Fill), we recommend a separation high-strength woven geotextile (such as HP270 or approved equivalent), be placed upon all new approved flexible pavement subgrades prior to placing the subbase course materials. All underground utilities should be installed prior to geotextile placement. The geotextile will provide separation (i.e., mitigate migration of fines into the overlying subbase course material, which may contribute to its degradation and loss of strength), filtration (i.e., allow for movement of water across the plane of the geotextile with limited soil loss), confinement (i.e., restrain lateral movement of the aggregate), and reinforcement.

The following tables provide options for Asphaltic Concrete and for Portland Cement Sections:

Asphaltic Concrete Design		
Layer	**Thickness (inches)**	
	Light Duty [1]	**Heavy Duty** [1]
Asphalt Top Course [2]	1.5	1.5
Asphalt Binder Course [2]	2.5	3.5
Aggregate Base Course [2]	12.0	12.0

1. See **Project Description** for more specifics regarding pavement type.
2. All materials should meet the current NYSDOT Department of Transportation (NYSDOT) Standard Specifications.
   - Asphalt Top Course – NYSDOT Standard Specification Section 402 for Type 9.5 mm
   - Asphalt Binder Course – NYSDOT Standard Specifications for Type 19 mm Binder Course
   - Aggregate Base Course – NYSDOT Standard Specifications for Type 2 Subbase Course, Item No. 304.12

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [2,3]	Heavy Duty [2,3,4]
PCC [1]	5.0	7.0
Aggregate Base [1]	12.0	12.0

1. All materials should meet the current State, County, and City Department of Transportation (NYSDOT) Standard Specifications for Highway and Bridge Construction.
   - The concrete should be air entrained and have a minimum compressive strength of 4,000 psi after 28 days of laboratory curing per ASTM C-31. Refer to NYSDOT Section 501 – Portland Cement Concrete for material specifications.
   - Aggregate Base Course, NYSDOT Section 304 for Type 2 Subbase Course, Item No. 304.12
2. Proper joint spacing will be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer.
3. Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.
4. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

The estimated pavement sections provided in this report are minimums for the assumed design criteria, and as such, periodic maintenance should be expected. Areas for parking of heavy vehicles, concentrated turn areas, and start/stop maneuvers could require thicker pavement sections. Edge restraints (i.e. concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles. A maintenance program that includes surface sealing, joint cleaning and sealing, and timely repair of cracks and deteriorated areas will increase the pavement's service life. As an option, thicker sections could be constructed to decrease future maintenance.

Temporary Construction Access Roadways

The recommended pavement sections are not designed to support heavy construction traffic which may require thicker sections. The contractor should construct temporary haul routes and construction roadways onsite as appropriate for the weather conditions and the equipment in use, with consideration to the soil conditions encountered in specific areas.

Pavement Drainage

Accumulation of water on pavement subgrades should be avoided by grading the subgrade to a slope of at least two percent, and/or by providing underdrains. Swales should be provided at the

pavement edges for drainage relief. Failure to provide adequate drainage will shorten pavement life.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. This is especially applicable for islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils. The civil design for the pavements with these conditions should include features to restrict or to collect and discharge excess water from the islands. Examples of features are edge drains connected to the storm water collection system, longitudinal subdrains, or other suitable outlet and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Pavement Maintenance

All pavements require periodic care, and preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Settlement of pavements due to consolidation of the existing fills may also occur and require periodic maintenance.

FROST CONSIDERATIONS

Frost may penetrate beneath sidewalks and pavements and cause them to heave, and resulting displacements may be differential, particularly where sidewalks and pavements meet building doorways and along curbs. To limit heave and the creation of such uneven joints to generally tolerable magnitudes for most winters, a 16-inch thick base of ASTM C33 Blend 57 crushed stone should be placed beneath sensitive sidewalk or pavement areas, along with an underdrain to relieve any collected waters.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

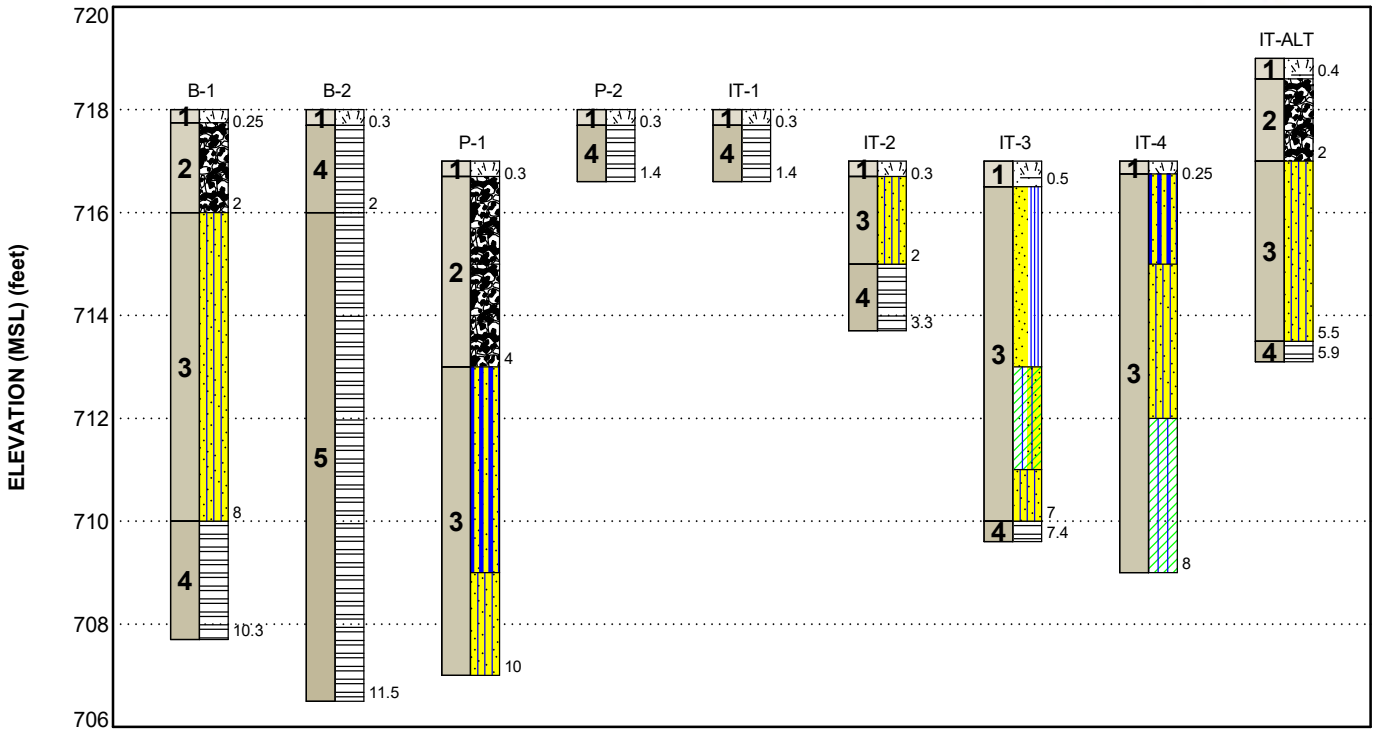
Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:

GEOMODEL

ModWash Southwestern Blvd-Hutton Project 20089D ■ Hamburg, New York
Terracon Project No. J5225155



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surface	Topsoil
2	Fill	Mixtures of Silt, Sand, Clay and Gravel; trace organic matter; trace shale; brown, brown-black
3	Native Soil	Mixtures of Silt, Sand and Clay (SP-SM, SM, CL-ML, ML); trace gravel; trace shale fragments; gray, gray-black, brown; loose to very dense or medium stiff to hard
4	Weathered Bedrock	Shale; highly weathered; brown-gray, black
5	Bedrock	Shale; slightly weathered; medium strong; thin bedded to bedded

LEGEND

- Topsoil
- Fill
- Silty Sand
- Highly Weathered Shale
- Shale
- Sandy Silt
- Poorly-graded Sand with Silt
- Silty Clay with Sand
- Silty Clay

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet) [1]	Planned Location
2 (B-1 and B-2)	10 to 11.5	Proposed Building Area
2 (P-1 and P-2)	1.5 to 10	Proposed Parking and Drive Areas
5 (IT-1 through IT-4 and IT-ALT) [2]	1.5 to 8	Proposed Stormwater Areas

1. Below ground surface.
2. PVC pipes were installed near the locations of IT-3, IT-4 and IT-ALT for infiltration testing.

Boring Layout and Elevations: Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained by interpolation from Google Earth. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with a track-mounted rotary drill rig using continuous hollow stem flight augers. Split-spoon samples were obtained at depths as shown in the boring logs. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings upon their completion.

Upon encountering bedrock in test boring B-2, rock coring was performed using a NQ rock core barrel. Water was used as a drilling fluid for rock coring and the spent water was discharged on site. The percent recovery and the Rock Quality Designation (RQD) for the recovered sample were recorded. The percent recovery is the ratio of the length of rock recovered over the length of coring. The RQD is the ratio of the sum of the length of recovered rock core 4 inches or greater in length, over the length of rock core recovered. The RQD is useful is providing a qualitative and quantitative evaluation of the engineering quality of bedrock. Representative portions of the soil samples and rock cores recovered from the test borings were transported to our office for visual classification by a geotechnical engineer.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory

for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Infiltration Testing

Three, 4-inch diameter PCV pipes were installed for infiltration testing. The tests were performed in general accordance with NYDEC Stormwater Management Design Manual - **Appendix D:** Infiltration Testing Requirements. The infiltration testing was performed as follow:

- Upon reaching the planned depth, a solid, 4-inch diameter PVC pipe was firmly seated into the bottom of the borehole.
- The pipe was filled with water to a depth of 24 inches above the bottom of the borehole and allowed to pre-soak for 24 hours to simulate saturated conditions.
- After 24 hours, water was added to the casing, as necessary, to bring the water level to a depth of 24 inches above the bottom of the borehole and the drop in the water level was monitored and measured after 1 hour.
- The monitoring process was repeated a total of four times.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Note: All attachments are one page unless noted above.

SITE LOCATION

ModWash – Southwestern Blvd. (Hutton Project No. 20089D) ■ Hamburg, New York
July 1, 2022 ■ Terracon Project No. J5225155

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY USGS

EXPLORATION PLAN WITH AERIAL IMAGE

ModWash – Southwestern Blvd. (Hutton Project No. 20089D) ■ Hamburg, New York
July 1, 2022 ■ Terracon Project No. J5225155

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN WITH PROJECT OVERLAY

ModWash – Southwestern Blvd. (Hutton Project No. 20089D) ■ Hamburg, New York
July 1, 2022 ■ Terracon Project No. J5225155

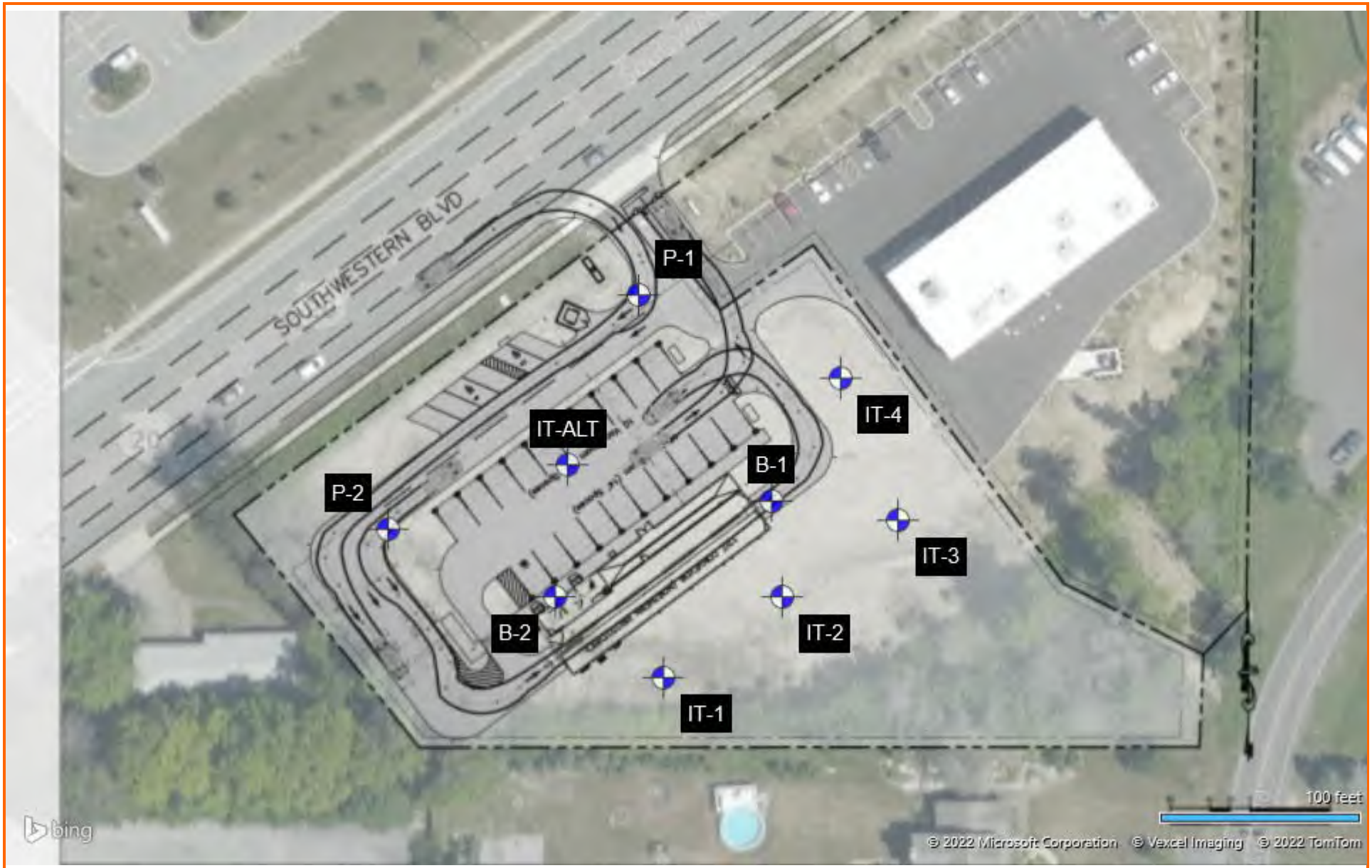


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY HUTTON

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7406° Longitude: -78.8700°

Approximate Surface Elev.: 718 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	718+/-						
		TOPSOIL							
2		**FILL - SILTY CLAY WITH SAND**, trace gravel, trace shale, brown-black					12	2-3-6-6 N=9	
		2.0	716+/-						
3		**SILTY SAND (SM)**, trace clay, trace gravel, gray, medium dense to dense					17	5-10-10-11 N=20	
				5			18	5-11-10-14 N=21	
							18	19-19-16-13 N=35	
		8.0	710+/-						
4		**SHALE**, brown gray, highly weathered					5	38-49-50/2"	
				10					
		10.3	707.5+/-				4	50/4"	
		Sample Spoon penetration refusal encountered at 10.3 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. B-2

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7405° Longitude: -78.8704°

Approximate Surface Elev.: 718 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	717.5+/-						
			TOPSOIL						
4			**SHALE**, black, highly weathered				8	1-2-48-50/4"	
		2.0	716+/-						
			SHALE, brown-black, fine-grained, upper 2.5' vertically fractured, remainder sound, thin bedded to bedded, slightly weathered, medium strong	5			35	RUN # 1 2.0' - 6.5'	42
5				10			60	RUN # 2 6.5' - 11.5'	75
		11.5	706.5+/-						
			Boring Terminated at 11.5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler to 2.0' BGS.
NQ-2 size rock core barrel 2.0' - 11.5' BGS

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered prior to coring

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. P-1

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7409° Longitude: -78.8702°

Approximate Surface Elev.: 717 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	716.5+/-						
			TOPSOIL						
			FILL - SILT WITH SAND, trace gravel, trace organic matter, brown-black				8	2-4-3-2 N=7	
2		2.0	715+/-						
			FILL - SILTY SAND, trace gravel, brown				18	3-3-5-10 N=8	
		4.0	713+/-						
			SANDY SILT (ML), trace gravel, gray, very stiff to hard	5			20	7-8-10-10 N=18	
3							18	10-15-25-26 N=40	
		8.0	709+/-						
			SILTY SAND (SM), trace gravel, trace shale fragments, gray-black, very dense				20	38-32-43-40 N=75	
		10.0	707+/-	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. P-2

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7405° Longitude: -78.8707°

Approximate Surface Elev.: 718 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3 **TOPSOIL**	717.5+/-						
4		**SHALE**, brown-black, highly weathered				X	14	2-42-50/5"	
		1.4	716.5+/-						
		Sample Spoon penetration refusal encountered at 1.4 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. IT-1

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7403° Longitude: -78.8702°

Approximate Surface Elev.: 718 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	717.5+/-						
4			**SHALE**, black, highly weathered			X	6	WOH-1-50/.4 N = REF	
		1.4	716.5+/-						
			Sample Spoon penetration refusal encountered at 1.4 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:
WOH = Weight of Hammer and Rod

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. IT-2

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7405° Longitude: -78.8699°

Approximate Surface Elev.: 717 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	716.5+/-						
			TOPSOIL						
3			**SILTY SAND (SM)**, trace gravel, trace shale fragments, gray and black, medium dense				18	3-6-10-14 N=16	
		2.0	715+/-						
4			**SHALE**, black-brown, highly weathered				7	45-50-50/4"	
		3.3	713.5+/-						
			Sample Spoon penetration refusal encountered at 3.3 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. IT-3

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7406° Longitude: -78.8697°

Approximate Surface Elev.: 717 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1	0.5	716.5+/-	**TOPSOIL**						
3	4.0	713+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, occasional silt partings, occasional clay partings, fine grained, brown gray, loose				18	1-2-3-3 N=5	
							18	2-2-3-3 N=5	
	6.0	711+/-	**SILTY CLAY WITH SAND (CL-ML)**, trace gravel, brown gray, medium stiff	5			16	2-2-4-6 N=6	
	7.0	710+/-	**SILTY SAND (SM)**, trace gravel, trace shale fragments, gray, very dense				12	7-11-50/5"	
4	7.4	709.5+/-	**SHALE**, highly weathered						
			Sample Spoon penetration refusal encountered at 7.4 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

Driller notes moving over slightly , augering to approximately 4.5' BGS and setting a 4" ID PVC infiltration test pipe.

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. IT-4

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7408° Longitude: -78.8698°

Approximate Surface Elev.: 717 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.3	717+/-						
			TOPSOIL						
			SANDY SILT (ML), trace gravel, orange brown, stiff				20	4-6-8-8 N=14	
		2.0	715+/-						
3			**SILTY SAND (SM)**, trace clay, brown gray, medium dense				18	7-8-8-7 N=16	
		5.0	712+/-	5			15	7-4-3-6 N=7	
			SILTY CLAY (CL-ML), trace sand, occasional fine sand lenses, brown, hard				0	11-16-17-17 N=33	
		8.0	709+/-						
			Boring Terminated at 8 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

Driller notes moving over slightly , augering to approximately 4.0' BGS and setting a 4" ID PVC infiltration test pipe.

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

BORING LOG NO. IT-ALT

PROJECT: ModWash Southwestern Blvd-Hutton Project 20089D

CLIENT: Hutton Real Estate Holdings, LLC Chattanooga, TN

SITE: 5363 Southwestern Blvd Hamburg, New York

LOCATION See Exploration Plan

Latitude: 42.7406° Longitude: -78.8703°

Approximate Surface Elev.: 719 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)
1		0.4	718.5+/-						
		TOPSOIL							
2		**FILL - SILTY SAND WITH GRAVEL**, trace organic matter, brown					18	2-3-5-8 N=8	
		2.0	717+/-						
3		**SILTY SAND (SM)**, trace gravel, trace shale, brown gray, dense					18	16-14-16-18 N=30	
				5			14	20-18-26-50/5" N=44	
		5.5	713.5+/-						
4		5.9 **SHALE**, black, highly weathered	713+/-						
		Sample Spoon penetration refusal encountered at 5.9 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from Google Earth

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of sampling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 06-15-2022 | Boring Completed: 06-15-2022

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5225155

ROCK CORE PHOTOS

ModWash – Southwestern Blvd. ■ Hamburg, New York
Terracon Project No. J5225155

Rock cores extracted at borings: B-5

Boring:	Run #:	Depth (ft)	Recovery (%)	RQD (%)
B-2	1	2-6.5	65	42
B-2	2	6.5-11.5	100	75

Notes:
The ruler presented in the photographs is intended to provide a reference scale only. Therefore, the dimensions of the cores may not be accurately reflected in the photographs. Please refer to the boring logs for accurate core measurements.

INFILTRATION TEST DATA SUMMARY

Project:	Hamburg - Modwash	Project No.:	J5225155
Weather:	Clear	Tester :	Blake Pilarski
Presoak Date:	6/17/2022	Test Date:	6/21/2022

Test Location	Test Depth (ft)	Soil Classification	Trial Number	Water Drop (inches)	Elapsed Time (hours)	Infiltration Rate (inches/hour)
near IT-03	4.5	Silty Clay with Sand	1	0	1	0
			2	0	1	0
			3	0	1	0
			4	0	1	0
			Average infiltration rate for the four trials was 0 inches per hour. Infiltration rate of the final trial was 0 inches per hour.			
near IT-04	4.0	Silty Sand	1	0	1	0
			2	0	1	0
			3	0	1	0
			4	0	1	0
			Average infiltration rate for the four trials was 0 inches per hour. Infiltration rate of the final trial was 0 inches per hour.			
near IT-ALT	4.0	Silty Sand	1	0	1	0
			2	0	1	0
			3	0	1	0
			4	0	1	0
			Average infiltration rate for the four trials was 0 inches per hour. Infiltration rate of the final trial was 0 inches per hour.			
Testing was conducted in general accordance with Appendix D of the New York State Storm Water Management Design Manual.						

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

Hamburg(5363 Southwestern Blvd)-Modwash 20089D ■ Hamburg, NY

Terracon Project No. J5225155

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Rock Core Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Terracon GeoReport

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

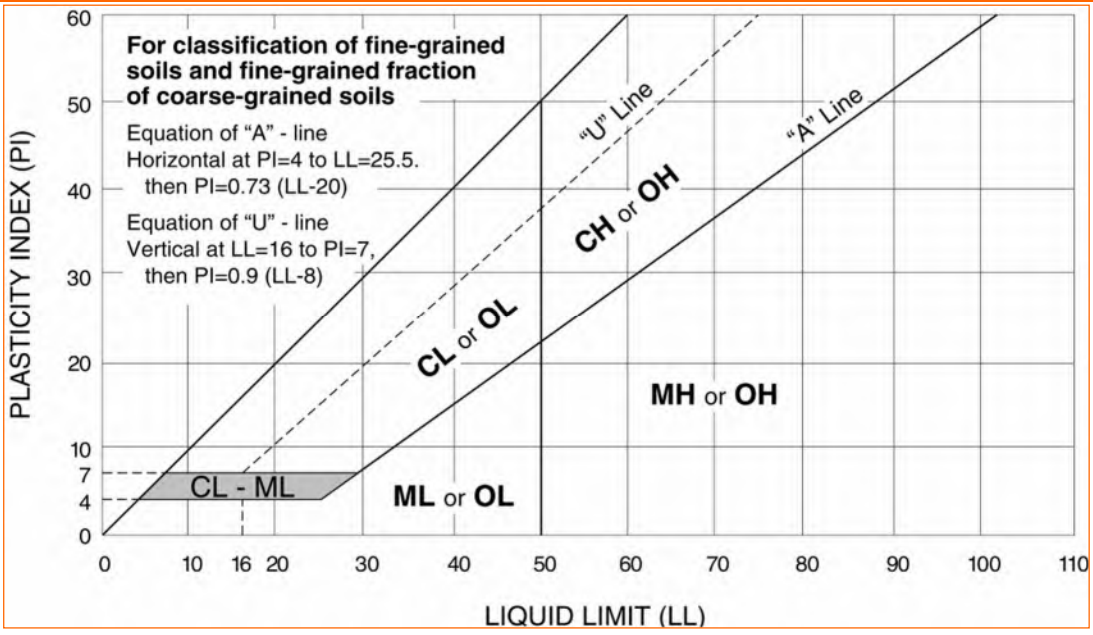
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



DESCRIPTION OF ROCK PROPERTIES

WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009
Technical Manual for Design and Construction of Road Tunnels – Civil Elements

APPENDIX F
CUSTOM SOIL REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Erie County, New York

May 24, 2022

Custom Soil Resource Report
Soil Map

Map Scale: 1:815 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Erie County, New York
Survey Area Data: Version 21, Aug 29, 2021

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

Date(s) aerial images were photographed: Jul 14, 2019—Jul 27, 2019

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
FbB	Farnham channery silt loam, 3 to 8 percent slopes	0.4	21.8%
MaB	Manlius channery silt loam, 3 to 8 percent slopes	0.4	19.3%
Nh	Niagara silt loam, till substratum	1.1	58.9%
Totals for Area of Interest		**1.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Erie County, New York

FbB—Farnham channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9rly
Elevation: 570 to 1,770 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Farnham and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Farnham

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits dominated by shale fragments

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 38 inches: very channery loam
H3 - 38 to 60 inches: very channery loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Castile
Percent of map unit: 5 percent
Hydric soil rating: No

Chenango
Percent of map unit: 5 percent
Hydric soil rating: No

Blasdell
Percent of map unit: 5 percent
Hydric soil rating: No

MaB—Manlius channery silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9rn5
Elevation: 200 to 1,800 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Manlius and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manlius

Setting
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from local acid shale bedrock

Typical profile
H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 21 inches: very channery silt loam
H3 - 21 to 31 inches: very channery silt loam
H4 - 31 to 35 inches: unweathered bedrock

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY026PA - Dry Till Uplands
Hydric soil rating: No

Minor Components

Farnham

Percent of map unit: 5 percent
Hydric soil rating: No

Hornell

Percent of map unit: 5 percent
Hydric soil rating: No

Marilla

Percent of map unit: 5 percent
Hydric soil rating: No

Schuyler

Percent of map unit: 5 percent
Hydric soil rating: No

Orpark

Percent of map unit: 5 percent
Hydric soil rating: No

Nh—Niagara silt loam, till substratum

Map Unit Setting

National map unit symbol: 9rnt
Elevation: 570 to 1,530 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Niagara, till substratum, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niagara, Till Substratum

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 26 inches: silt loam
H3 - 26 to 40 inches: silt loam
H4 - 40 to 60 inches: channery silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Odessa

Percent of map unit: 5 percent
Hydric soil rating: No

Collamer

Percent of map unit: 5 percent
Hydric soil rating: No

Raynham

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

APPENDIX G
SWPPP INSPECTION REPORT

EXAMPLE EROSION CONTROL REPORT

PROJECT NO: _____ PROJECT NAME: _____ DATE: _____

MUNICIPALITY: _____ LOCATION: _____

CONTRACTOR: _____ OWNER: _____

DATE OF PREVIOUS INSPECTION: _____ INSPECTOR'S NAME: _____

DATE OF MOST RECENT STORM 0.5" OR GREATER: _____ DATE OF INSPECTION: _____

LAST RAIN EVENT: _____ DEPTH: _____

WEATHER: _____ TEMPERATURE: _____ °F

SPECIAL NOTES: _____

EROSION CONTROL CHECKLIST

ADDITIONAL ACTION REQUIRED BY PROJECT MANAGER OR PROJECT ENGINEER ☐ YES ☐ NO

PHOTOS OR SKETCHES ATTACHED ☐ ADDITIONAL REMARKS ATTACHED ☐

_____ _____

Inspector (print name) **Inspection Date**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

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

Maintaining Water Quality

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

Housekeeping

1. General Site Conditions

Yes	No	NA	
☐	☐	☐	Is construction site litter and debris appropriately managed?
☐	☐	☐	Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
☐	☐	☐	Is construction impacting the adjacent properties?
☐	☐	☐	Is dust adequately controlled?

2. Temporary Stream Crossing

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

Runoff Control Practices

1. Excavation Dewatering

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

2. Level Spreader

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

3. Interceptor Dikes and Swales

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

4. Stone Check Dam

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

5. Rock Outlet Protection

Yes	No	NA	
☐	☐	☐	Installed per plan.
☐	☐	☐	Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes	No	NA	
☐	☐	☐	Stockpiles are stabilized with vegetation and/or mulch.
☐	☐	☐	Sediment control is installed at the toe of the slope.

2. Revegetation

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

Sediment Control Practices

1. Stabilized Construction Entrance

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

2. Silt Fence

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

Sediment accumulation is ____% of design capacity.

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

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

Sediment accumulation is ____% of design capacity.

4. Temporary Sediment Trap

Yes	No	NA	
☐	☐	☐	Outlet structure is constructed per the approved plan or drawing.
☐	☐	☐	Geotextile fabric has been placed beneath rock fill.

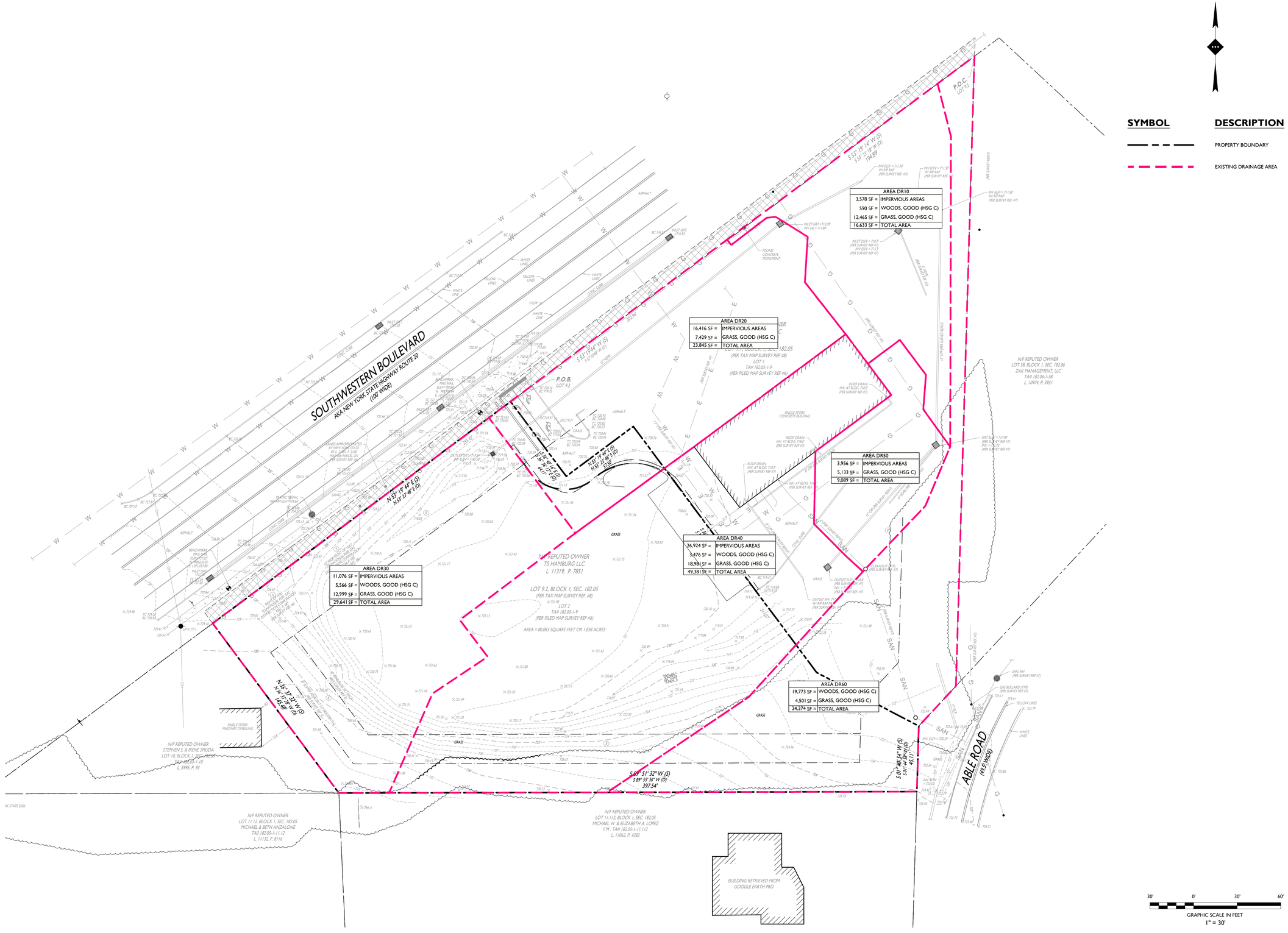
Sediment accumulation is ____% of design capacity.

5. Temporary Sediment Basin

Yes	No	NA	
☐	☐	☐	Basin and outlet structure constructed per the approved plan.
☐	☐	☐	Basin side slopes are stablized with seed/mulch.
☐	☐	☐	Drainage structure is flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ____% of design capacity.

APPENDIX H
DRAINAGE AREA MAPS



ISSUE	DATE	BY	DESCRIPTION
1	12/27/2022	PK	FOR MUNICIPAL SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design

Rutherford, NJ · New York, NY · Boston, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com

Headquarters: 92 Park Avenue, Rutherford, NJ 07070
Phone 201.340.4468 · Fax 201.340.4472

SWPPP

HUTTON ST 21, LLC
PROPOSED CAR WASH

SECTION 182.05 BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

JEFFREY A. MARTELL, P.E.
NEW YORK LICENSE No. 86502
LICENSED PROFESSIONAL ENGINEER

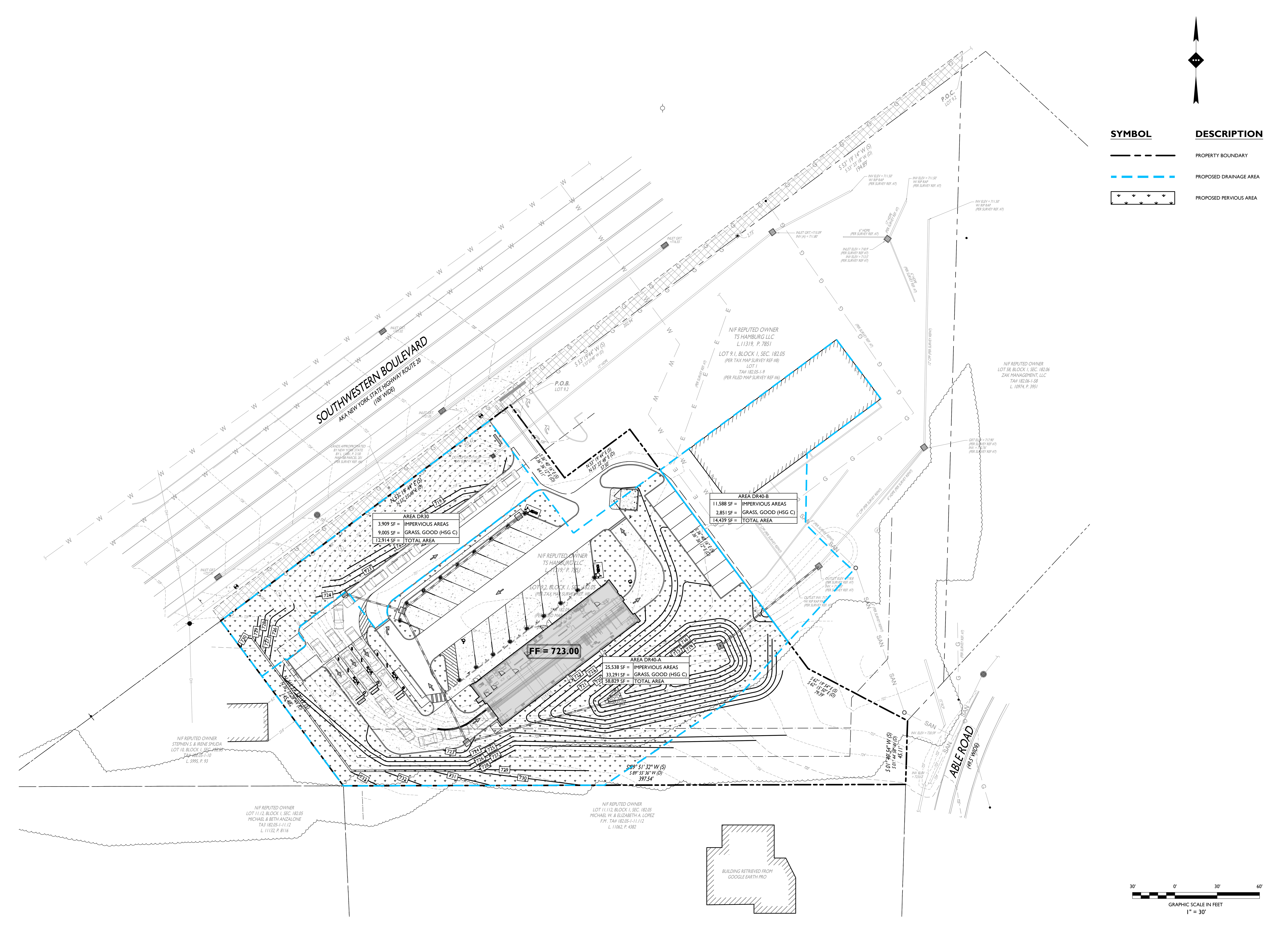
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220250

TITLE:
EXISTING DRAINAGE AREA MAP

DRAWING:
1 OF 2

Z:\AUTHDESK\DRAWINGS\2022\RUT-220250 HUTTON GROUP - 5363 SOUTHWESTERN BOULEVARD, HAMBURG, NY\CAD\EXHIBITS\2022-12-27_DRAINAGE AREA MAP.DWG



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NEW YORK LICENSE No. 86502
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220250

TITLE:

PROPOSED DRAINAGE AREA MAP

DRAWING:

APPENDIX I
FULL SIZE PLANS

INVENTORY

SITE PLAN

GRADING & DRAINAGE PLAN

SOIL EROSION AND SEDIMENT CONTROL PLAN

LAND USE AND ZONING

MAP 182.05, BLOCK 1, LOT 9.2

GENERAL COMMERCIAL DISTRICT (C-2)

PROPOSED USE

CAR WASH — SPECIAL PERMIT

ZONING REQUIREMENT	REQUIRED	PROPOSED
MINIMUM LOT WIDTH	100 FT	310 FT
MAXIMUM BUILDING HEIGHT	35 FT	< 35 FT
MAXIMUM LOT COVERAGE	85% (68,434 SF)	40.0% (32,012 SF)
MINIMUM FRONT YARD SETBACK	40 FT	139.5 FT
MINIMUM SIDE YARD SETBACK (RESIDENTIAL)	20 FT	114.4 FT
MINIMUM SIDE YARD SETBACK (NON-RESIDENTIAL)	5 FT	42.7 FT

SPECIAL PERMIT CONDITIONS

CODE SECTION	REQUIRED	PROPOSED
§ 280-323. A.	THESE FACILITIES SHALL NOT BE LOCATED WITHIN 200 FT OF ANY RESIDENTIAL STRUCTURE OR WITHIN 500 FEET OF ANOTHER SUCH FACILITY	48.1 FT (*) 150.8 FT (*)
§ 280-323. B.	ARCHITECTURAL FEATURES OF THE CAR WASH BUILDINGS AND OTHER BUILDINGS ON THE PROPERTY IN HARMONY WITH THE SURROUNDING USES	COMPLIES
§ 280-323. C.	VISIBILITY FROM THE ROAD SHALL BE MINIMIZED THROUGH PROPER SITING, SETBACKS, EXISTING TOPOGRAPHIC FEATURES, BERMING AND LANDSCAPING FEATURES.	COMPLIES

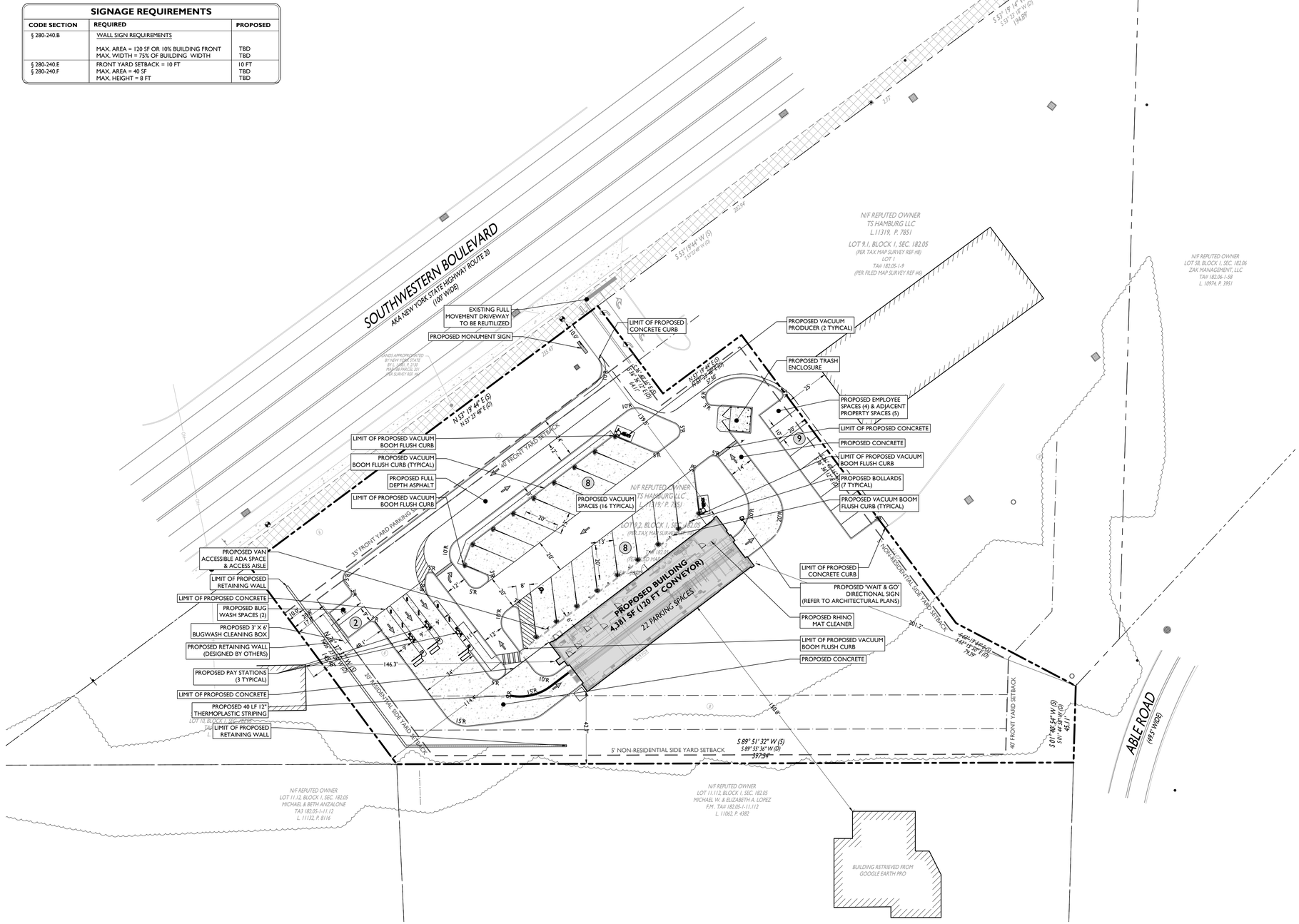
(*) VARIANCES APPROVED AT 12/6/22 ZONING BOARD MEETING

OFF-STREET PARKING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 280-215. A.	TO BE DETERMINED BY PLANNING BOARD	22 SPACES
§ 280-229. B.	NO OFF STREET PARKING SHALL BE PERMITTED WITHIN 35 FT OF ANY STREET LINE, OR 10 FT OF ANY SIDE OR REAR LOT LINE	COMPLIES 20.8 FT

SIGNAGE REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 280-240.B	WALL SIGN REQUIREMENTS	
	MAX. AREA = 120 SF OR 10% BUILDING FRONT	TBD
	MAX. WIDTH = 75% OF BUILDING WIDTH	TBD
§ 280-240.E	FRONT YARD SETBACK = 10 FT	10 FT
§ 280-240.F	MAX. AREA = 40 SF	TBD
	MAX. HEIGHT = 8 FT	TBD



SYMBOL / DESCRIPTION

- PROPERTY LINE
- SETBACK LINE
- SAWCUT LINE
- PROPOSED CURB
- PROPOSED FLUSH CURB
- PROPOSED SIGNS / BOLLARDS
- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED BUILDING DOORS

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

30' 0' 30' 60'

GRAPHIC SCALE IN FEET

1" = 30'

ISSUE	DATE	BY	DESCRIPTION
1	12/23/2022	AWVA	FOR SITE PLAN/SPECIAL PERMIT SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design

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Princeton, NJ · Tampa, FL · Detroit, MI
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Phone 201.340.4468 · Fax 201.340.4472

SITE PLAN SET

HUTTON ST 21, LLC

PROPOSED CAR WASH

SECTION 182.05, BLOCK 1, LOT 9.2
5361 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

DRAFT

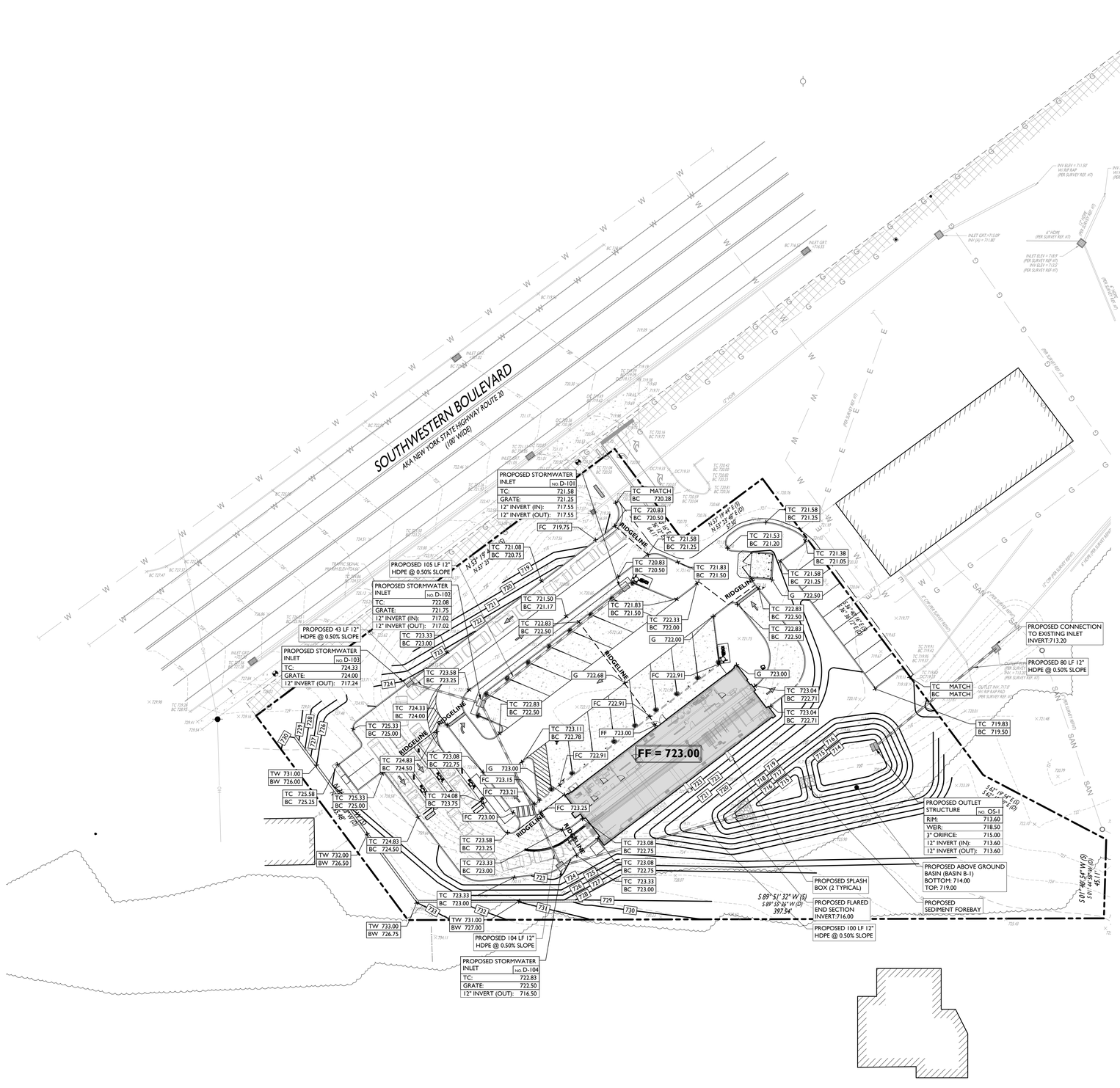
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220250

TITLE: SITE PLAN

DRAWING: C-3

Z:\RUTHERFORD\RUT-220250\RUT-220250 HUTTON GROUP - 5361 SOUTHWESTERN BOULEVARD, HAMBURG, NY\CAD\RUT-PLOT-XXX-A3 SITE.DWG



SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FC 100.00	PROPOSED FLUSH CURB SPOT SHOT
TW 102.00 / BW 100.00	PROPOSED TOP OF WALL / BOTTOM OF WALL SPOT SHOT
	PROPOSED STORMWATER PIPE
	PROPOSED STORMWATER INLET
	PROPOSED OUTLET STRUCTURE

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
9. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
10. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
5. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
6. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00%. IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP, FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
1	12/23/2022	AWVA	FOR SITE PLAN/SPECIAL PERMIT SUBMISSION

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STONEFIELD engineering & design
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Phone 201.340.4468 · Fax 201.340.4472

SITE PLAN SET

HUTTON ST 21, LLC

PROPOSED CAR WASH

SECTION 120.05, BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

Mod Wash

DRAFT

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220250

TITLE: GRADING & DRAINAGE PLAN

DRAWING: C-4

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SOIL CHARACTERISTICS CHART

TYPE OF SOIL	FARNHAM CHANNERY SILT LOAM (FbB)	MANLIUS CHANNERY SILT LOAM (MaB)	NIAGARA SILT LOAM (Nh)
PERCENT OF SITE COVERAGE	21.8%	19.3%	**58.9%**
HYDROLOGIC SOIL GROUP	A/D	C	C/D
DEPTH TO RESTRICTIVE LAYER	> 80 INCHES	20 TO 40 INCHES	> 80 INCHES
SOIL PERMEABILITY	1.98 TO 5.95 IN/HR	0.00 TO 0.00 IN/HR	0.06 TO 0.20 IN/HR
DEPTH TO WATER TABLE	18 TO 24 INCHES	> 80 INCHES	6 TO 18 INCHES

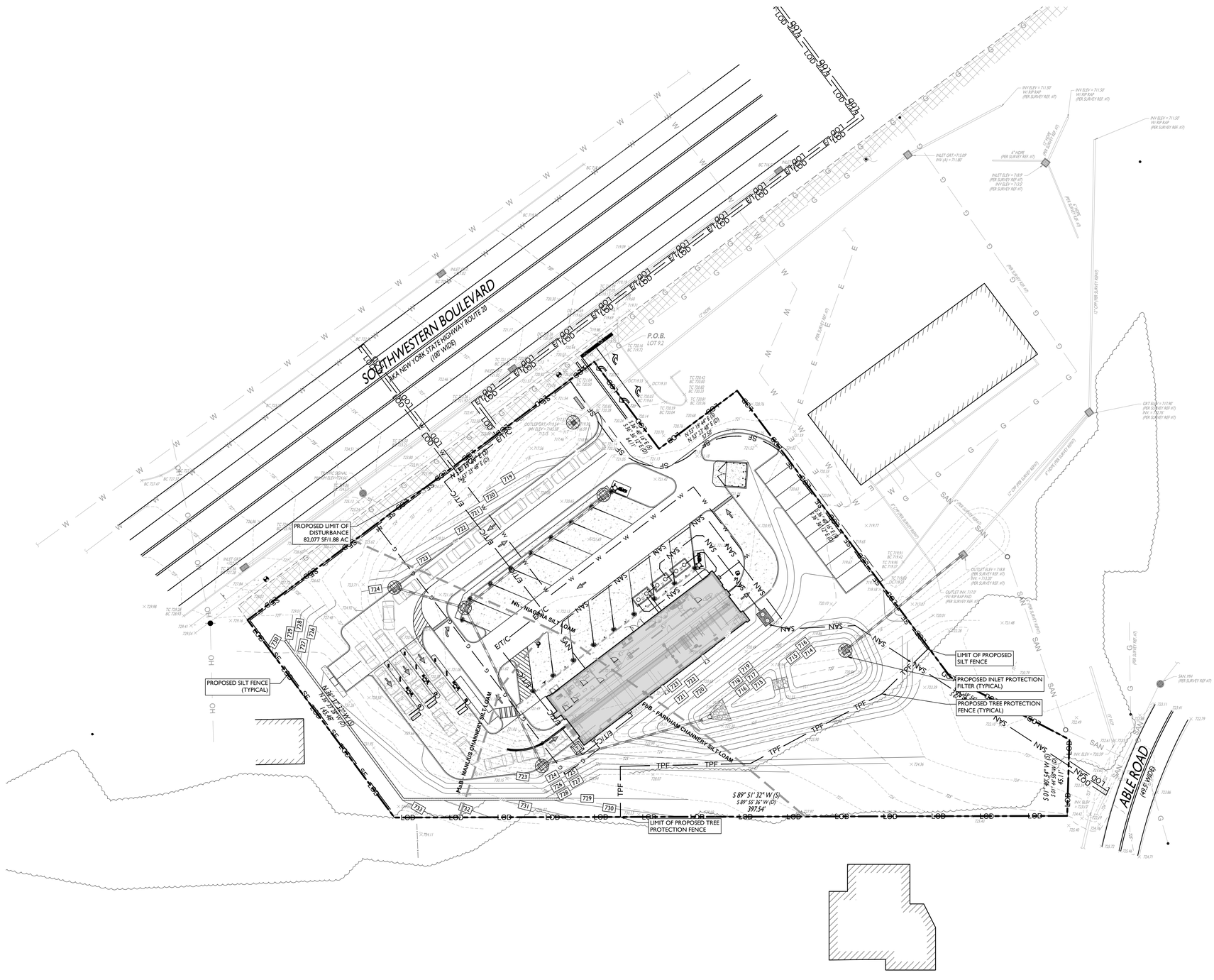
SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL SOIL EROSION MEASURES.
3. DEMOLISH EXISTING STRUCTURES. ALL EXPOSED SOIL AREAS FOR DEMOLITION SHALL BE STABILIZED TEMPORARILY UNTIL NEXT PHASE OF CONSTRUCTION BEGINS.
4. ROUGH GRADING AND TEMPORARY SEEDING.
5. INSTALL INLET FILTERS.
6. COMMENCE BUILDING CONSTRUCTION AND SITE IMPROVEMENTS.
7. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING.
8. REMOVE SOIL EROSION MEASURES.

SOIL EROSION & SEDIMENTATION INSPECTION SCHEDULE

TASK	SILT FENCE	CATCH BASIN INLET FILTER	TRUCK WASH AREA	CONSTRUCTION ENTRANCE	SCHEDULE
INSPECT FOR FAILURE OR REQUIRED MAINTENANCE	X	X	X	X	EVERY 7 DAYS*
REMOVAL OF SEDIMENT ACCUMULATION	X	X	X	X	EVERY 7 DAYS
INSPECTION FOLLOWING 24-HOUR STORM THAT DROPS 0.5 IN OF RAIN	X	X		X	IMMEDIATELY THEREAFTER
SWEEPING			X	X	AS NEEDED

(*) WHEN A PRACTICE IS IN NEED OF REPAIR IT MUST BE COMPLETED WITHIN 3 DAYS OF RECOGNITION



SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
LOD	PROPOSED LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
TPF	PROPOSED TREE PROTECTION FENCE
	PROPOSED STOCKPILE & EQUIPMENT STORAGE
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED INLET PROTECTION FILTER
	SOIL BOUNDARY LINE

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.

ISSUE	DATE	BY	DESCRIPTION
1	12/23/2022	AWA	FOR SITE PLAN/SPECIAL PERMIT SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
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Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com
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Phone 201.340.4468 · Fax 201.340.4472

SITE PLAN SET

HUTTON ST 21, LLC

PROPOSED CAR WASH

SECTION 183.05, BLOCK 1, LOT 9.2
5363 SOUTHWESTERN BOULEVARD
TOWN OF HAMBURG
ERIE COUNTY, NEW YORK

DRAFT

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220250

TITLE: SOIL EROSION & SEDIMENT CONTROL PLAN

DRAWING: C-7

Z:\RUT\PROPDRAWT\2022\RUT-220250 HUTTON GROUP - 5363 SOUTHWESTERN BOULEVARD, HAMBURG, NY\CAD\PLOTS\XXX-ST SESC.DWG

APPENDIX J
GP-0-20-001

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

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

of the Environmental Conservation Law

Effective Date: January 29, 2020 Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature Date

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

PREFACE

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

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

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

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

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

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

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

c. Sizing Criteria for Redevelopment Activity

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

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

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

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

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

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

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

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

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

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

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

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

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

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

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

B. Notice of Intent (NOI) Submittal

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

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

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

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

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

C. Permit Authorization

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

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

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

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

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

c. the final SWPPP has been prepared, and

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

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

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

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

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

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

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

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

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

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

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

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

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

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

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

d. to document the final construction conditions.

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

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

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

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

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

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

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

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

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

C. Qualified Inspector Inspection Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Date and time of inspection;

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

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

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

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

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

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

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

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

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

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

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

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

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

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

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

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

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

G. Other Information

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

H. Signatory Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

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

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

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

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

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

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

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

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

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

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

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

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

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

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

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

Table 2 (Continued)

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

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

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

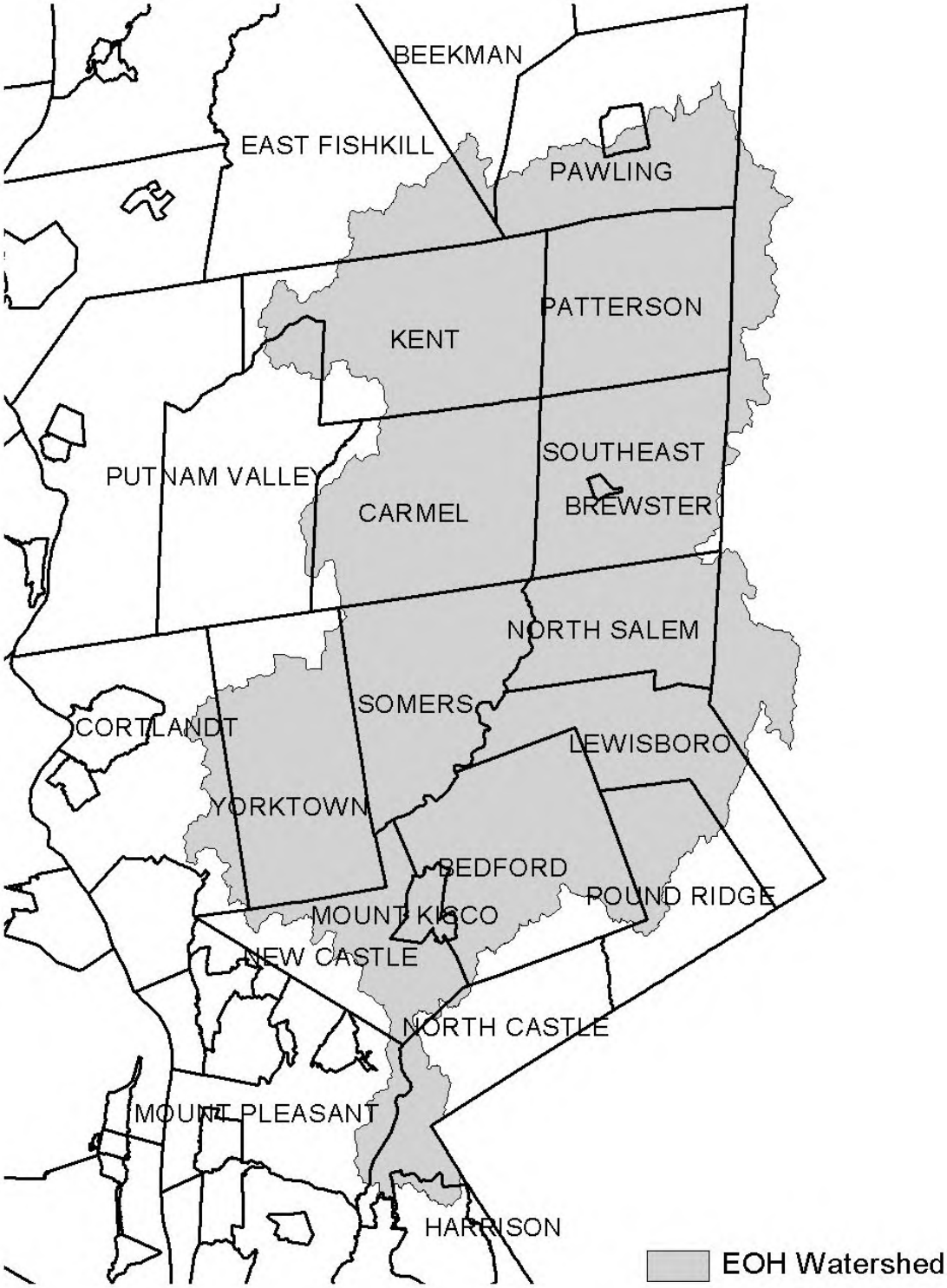


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

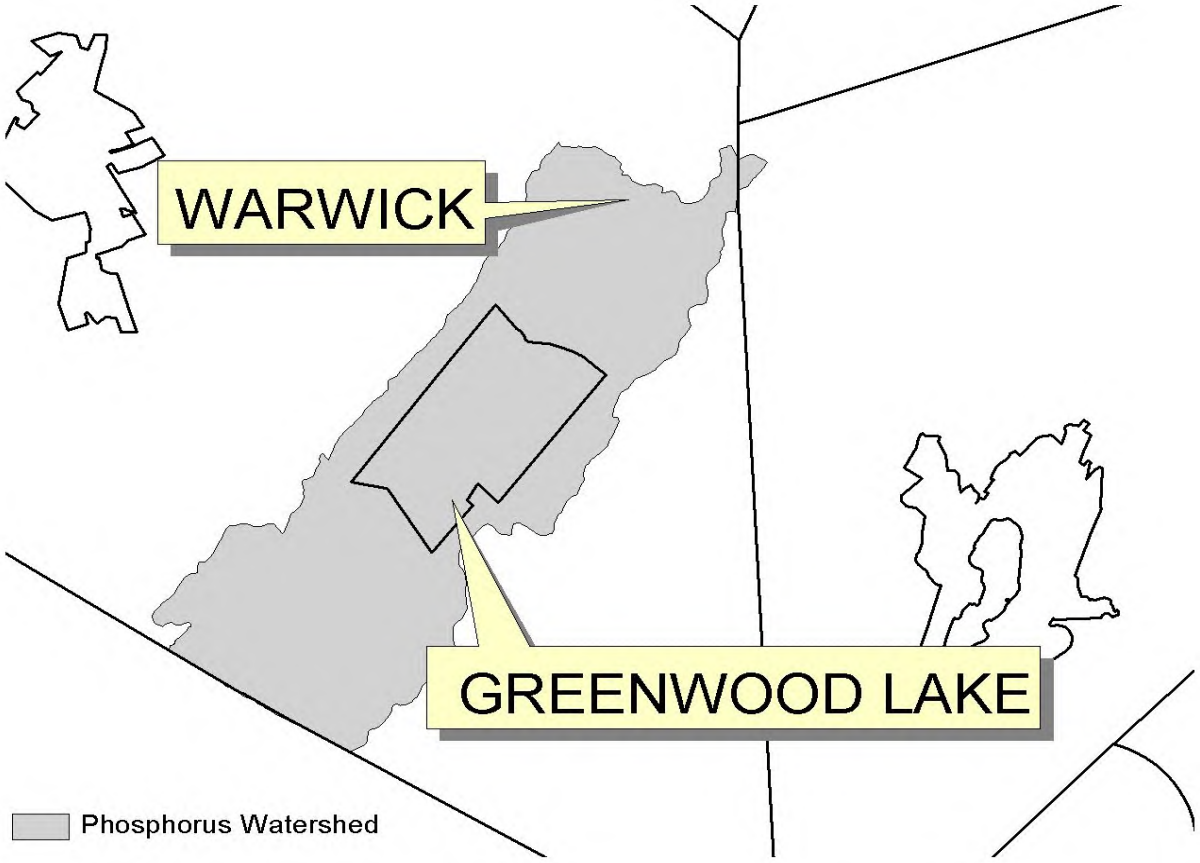


Figure 4 - Oscawana Lake Watershed

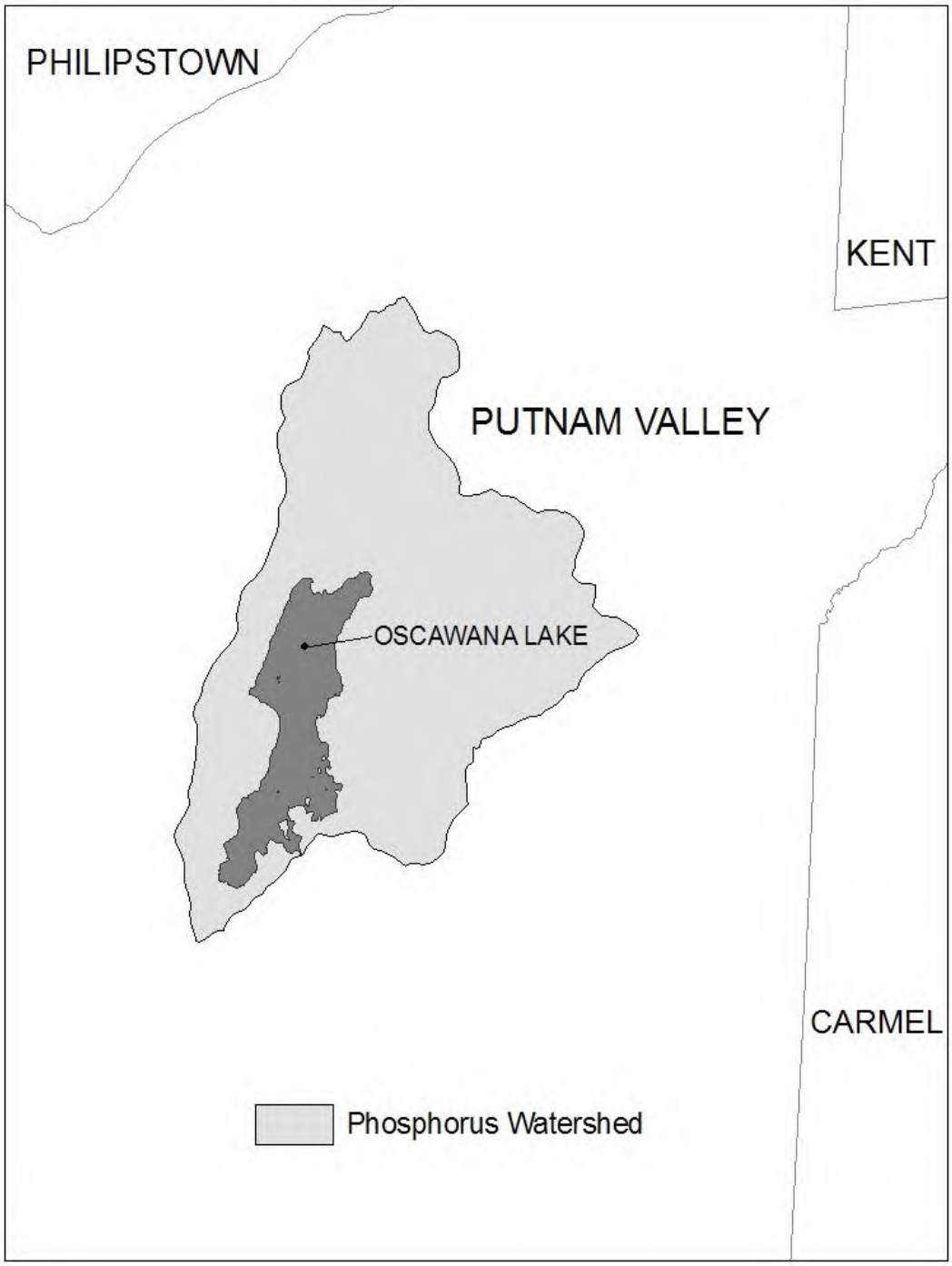
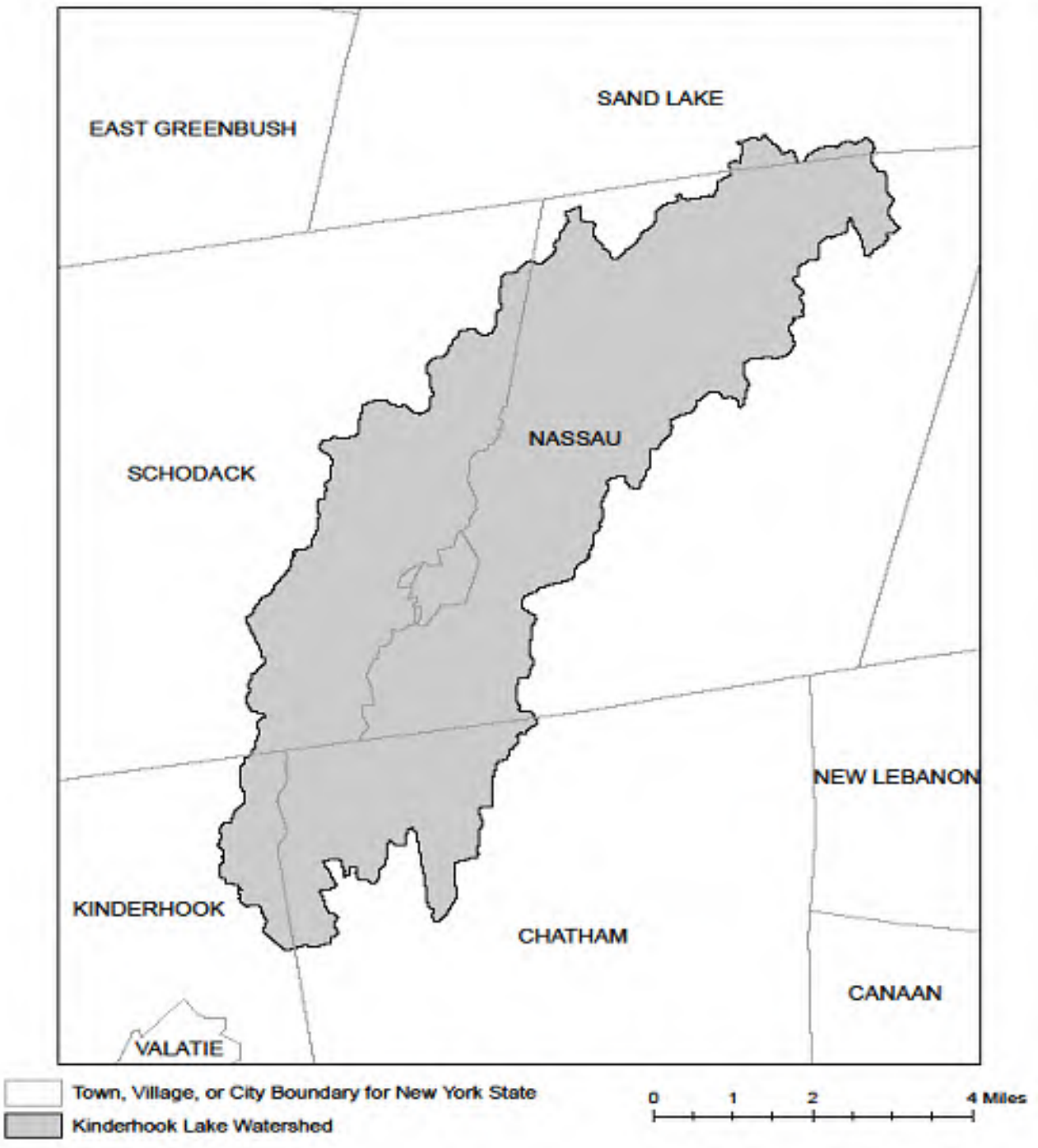


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K
POST CONSTRUCTION OPERATIONS & MAINTENANCE CHECKLISTS

Post Construction Inspection and Maintenance Checklist Underground Detention System

	Yes	No	NA
1. Inlet and Outlet Structures			
(Frequency: Annual)			
a. Concrete structure	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement.	☐	☐	☐
<u>Maintenance</u>: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.			
b. Minor spalling (<1”).	☐	☐	☐
<u>Maintenance</u>: Repair any minor spalling.			
c. Major spalling (rebars exposed).	☐	☐	☐
<u>Maintenance</u>: Replace structure.			
d. Joint failures.	☐	☐	☐
<u>Maintenance</u>: Replace structure.			
e. Water tightness.	☐	☐	☐
<u>Maintenance</u>: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.			
ii. Clear of sediment.	☐	☐	☐
<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when at 50% of sump height.			
iii. Clear of debris and trash.	☐	☐	☐
<u>Maintenance</u>: Remove and properly dispose of any debris and trash.			
iv. Pipes free from damage, corrosion, and sediment.	☐	☐	☐
<u>Maintenance</u>: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.			

	Yes	No	NA
2. Header System			
(Frequency: Annual)			
a. Clear of debris and litter.	☐	☐	☐
<u>Maintenance</u>: Use a high pressure nozzle with rear facing jets to wash the sediment and debris into the upstream structure. Remove sediment and debris from the sump of the upstream structure.			
b. Clear of sediment.	☐	☐	☐
<u>Maintenance</u>: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.			
3. Underground Chambers			
(Frequency: Annual)			
a. Chambers are in good condition.	☐	☐	☐

Maintenance: Inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.

b. Clear of debris and litter. ☐ ☐ ☐
Maintenance: Remove and properly dispose of any debris and trash. Use a high pressure nozzle with rear facing jets to wash the debris into the upstream structure. Remove debris from the sump of the upstream structure.

c. Clear of sediment. ☐ ☐ ☐
Maintenance: Remove and properly dispose of sediment when accumulated over 4 inches. Use a high pressure nozzle with rear facing jets to wash the sediment into the upstream structure. Remove sediment from the sump of the upstream structure.

d. Dewaters between storms. ☐ ☐ ☐
Maintenance: If standing water during inspection, recheck after 48 hours. If standing water is still present, contact a NYS licensed Professional Engineer.

4. Surrounding Site

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐
b. Area free from depressions. *Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.*	☐	☐	☐
	Yes	**No**	**NA**
c. Unauthorized plants over system. *Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
d. Unauthorized structures over system. *Maintenance: Remove any unauthorized structures. Immediately inspect the interior of the chambers using a CCTV or comparable inspection method through the inspection port. If deficiencies are noted immediately contact a NYS licensed Professional Engineer.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.

Comments:

Actions to be taken:

Post Construction Inspection and Maintenance Checklist
Aboveground Pond Basin

1. Embankment

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover.	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas. Replace dead and dying plants.			
ii. Excessively tall grass (greater than 6" in height)	☐	☐	☐
Maintenance: Mow grass to have a height of 4" to 6". Increase mowing frequency as necessary.			
iii. Unauthorized plants.	☐	☐	☐
Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.			
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet).	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas.			
ii. Ruts less than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.			
iii. Ruts greater than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.			
c. Uneven settling	☐	☐	☐
Maintenance: Install permanent benchmarks or other permanent reference point in each practice to be used with as-built elevations to measure uneven settling.			
i. Greater than 0" but less than 2" of settling.	☐	☐	☐
Maintenance: No immediate action required. Re-inspect in 6 months.			
ii. Greater than 2" but less than 4" of settling.	☐	☐	☐
Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.			

	Yes	**No**	**NA**
iii. Greater than 4" of settling.	☐	☐	☐

<u>Maintenance</u>: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.

d.	Animal burrows. *<u>Maintenance</u>: Fill animal burrows with similar material to the existing material and compact. Topsoil, rake and seed the area.*	☐	☐	☐
e.	Cracking, bulging, or sliding of slope.	☐	☐	☐
	i. Upstream face.	☐	☐	☐
	ii. Downstream face.	☐	☐	☐
	iii. At or beyond downstream toe.	☐	☐	☐
	iv. At or beyond upstream toe.	☐	☐	☐
	v. Emergency spillway.	☐	☐	☐
	<u>Maintenance</u>: Immediately stabilize the slope and consult an NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.			
f.	Seeps/leaks at downstream face. *<u>Maintenance</u>: Look for changes in the color of the vegetation, plant species and their density to help locate the leak source.*	☐	☐	☐
g.	Rip rap slope protection failure. *<u>Maintenance</u>: Stabilize slope, re-grade and compact the soil. Replace stone, as necessary.*	☐	☐	☐
i.	Emergency spillway clear of any obstructions or debris. *<u>Maintenance</u>: Remove and properly dispose of any trash and debris. Remove any unauthorized plants, or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐

2. Inflow Points

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate. *<u>Maintenance</u>: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
b. Free from erosion/undercutting. *<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion around has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Rip rap in good condition. *<u>Maintenance</u>: Replace stone, as necessary.*	☐	☐	☐
d. Pipes free from damage, corrosion, and sediment. *<u>Maintenance</u>: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐

3. Outlet Structure/Overflow Spillway

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Riser pipe	☐	☐	☐

i.	In good condition, no need for repairs. *<u>Maintenance</u>: Repair any minor damages. Replace structure if significant damages are observed.*	☐	☐	☐
ii.	Clear of sediment. *<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii.	Clear of debris and trash. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐
b.	Concrete outlet structure	☐	☐	☐
i.	In good condition, no need for repairs.	☐	☐	☐
a.	Cracks or displacement. *<u>Maintenance</u>: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months.* *Replace structure if major cracks or significant displacement is observed.*	☐	☐	☐
b.	Minor spalling (<1”). *<u>Maintenance</u>: Repair any minor spalling.*	☐	☐	☐
c.	Major spalling (rebars exposed). *<u>Maintenance</u>: Replace structure.*	☐	☐	☐
d.	Joint failures. *<u>Maintenance</u>: Replace structure.*	☐	☐	☐
e.	Water tightness. *<u>Maintenance</u>: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.*	☐	☐	☐
ii.	Clear of sediment. *<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii.	Clear of debris and trash. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv.	Pipes free from damage, corrosion, and sediment. *<u>Maintenance</u>: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes.* *Remove and properly dispose of any sediment.*	☐	☐	☐
c.	Low flow orifice is unobstructed. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐

		Yes	**No**	**NA**
d.	Low flow trash rack.	☐	☐	☐
i.	Clear of debris and trash. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐
ii.	Clear of any corrosion.	☐	☐	☐

Maintenance: If significant corrosion is observed, replace trash rack.

e. Weir trash rack. ☐ ☐ ☐
   i. Clear of debris and trash. ☐ ☐ ☐
   Maintenance: Remove and properly dispose of any debris and trash.
   ii. Clear of any corrosion. ☐ ☐ ☐
   Maintenance: If significant corrosion is observed, replace trash rack.
f. Control valve operational. ☐ ☐ ☐
   Maintenance: Replace if not functioning or operational.
g. Pond valve operational, chained and locked. ☐ ☐ ☐
   Maintenance: Replace valve if not functioning or operational.
h. Overflow spillway ☐ ☐ ☐
   i. In good condition, no need for repairs. ☐ ☐ ☐
   Maintenance: Replace any dislodged stone with the same stone type.
   ii. Clear of sediment. ☐ ☐ ☐
   Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.
   iii. Clear of debris and trash. ☐ ☐ ☐
   Maintenance: Remove and properly dispose of any debris and trash.
   iv. No evidence of erosion. ☐ ☐ ☐
   Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.
   v. No evidence of erosion at downstream toe of drop structure or weir spillway. ☐ ☐ ☐
   Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.

4. Sediment Forebay

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Free of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.*	☐	☐	☐

	Yes	**No**	**NA**
b. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Overflow Spillway.	☐	☐	☐
i. In good working condition, no need for repairs. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
ii. Clear of sediment.	☐	☐	☐

<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when half of the void space is filled.

iii. Clear of trash and debris. ☐ ☐ ☐
<u>Maintenance</u>: Remove and properly dispose of any debris and trash.

iv. No evidence of erosion. ☐ ☐ ☐
<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.

v. No evidence of erosion at downstream toe of drop structure or weir spillway. ☐ ☐ ☐
<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.

5. Dry Pond Areas

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Vegetation adequate. *<u>Maintenance</u>: Topsoil, rake and seed the area.*	☐	☐	☐
b. Undesirable vegetative growth. *<u>Maintenance</u>: Mow grass to have a height of 4" to 6". Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
c. Undesirable woody vegetation. *<u>Maintenance</u>: Remove any undesirable woody vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
d. Low flow channels clear of obstructions. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐
e. Standing water or wet spots. *<u>Maintenance</u>: Re-grade areas to ensure positive drainage. Topsoil, rake and seed the area.*	☐	☐	☐
f. Sediment and trash accumulation. *<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment and trash.*	☐	☐	☐

6. Vegetation

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation health and growing. *<u>Maintenance</u>: Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.*	☐	☐	☐
b. Evidence of invasive species. *<u>Maintenance</u>: Remove invasive species, including roots. Do not use herbicides. Install additional wetland plants as necessary.*	☐	☐	☐
c. Accumulated sediment reducing volume significantly.	☐	☐	☐

<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.

7. Miscellaneous

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Encroachment on pond or easement area. *<u>Maintenance</u>: Remove any encroachments into the pond or easement area.*	☐	☐	☐
b. Maintenance access routes in good condition. *<u>Maintenance</u>: Repair any minor damage or erosion to the maintenance access routes. If significant damage or erosion is noted, stabilize, re-grade and re-establish the maintenance access routes in accordance with the plans.*	☐	☐	☐
c. Signs of hydrocarbon build-up. *<u>Maintenance</u>: Coordinate removal/cleanup of any oil, gas, or contaminants with the appropriate clean-up personnel.*	☐	☐	☐
d. Fence in good condition. *<u>Maintenance</u>: Replace any damaged sections of fence.*	☐	☐	☐
e. Safety signs are installed. *<u>Maintenance</u>: Replace any missing signs.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.
5. Replaced stone shall meet the stone requirements specified on the approved plans.

Comments:

Actions to be taken:

Post Construction Inspection and Maintenance Site Checklist

1. Steep Slopes (any slope 3:1 or steeper)
(Frequency: Annual)

	Yes	No	NA
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover.	☐	☐	☐
<u>Maintenance</u>: Topsoil, rake and seed bare areas. Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.			
ii. Excessively tall grass (greater than 6" in height)	☐	☐	☐
<u>Maintenance</u>: Mow slopes 3:1 or flatter to have a grass height of 4" to 6". Increase mowing frequency as necessary. Steep slopes planted with meadow mix as shown on the approved plans do not have to be mowed.			
iii. Unauthorized plants.	☐	☐	☐
<u>Maintenance</u>: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.			
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet).	☐	☐	☐
<u>Maintenance</u>: Topsoil, rake and seed bare areas.			
ii. Ruts less than 12" wide.	☐	☐	☐
<u>Maintenance</u>: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.			
iii. Ruts greater than 12" wide.	☐	☐	☐
<u>Maintenance</u>: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.			
c. Uneven settling	☐	☐	☐
<u>Maintenance</u>: Visually inspect for uneven settling. Classify the settling based upon the categories below.			
i. Greater than 0" but less than 2" of settling.	☐	☐	☐
<u>Maintenance</u>: No immediate action required. Re-inspect in 6 months.			
ii. Greater than 2" but less than 4" of settling.	☐	☐	☐
<u>Maintenance</u>: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.			

	Yes	No	NA
iii. Greater than 4" of settling.	☐	☐	☐

Maintenance: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.

2. Culverts (Frequency: Annual)	**Yes**	**No**	**NA**
a. Headwalls or End sections	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement. *Maintenance: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.*	☐	☐	☐
b. Minor spalling (<1”). *Maintenance: Repair any minor spalling.*	☐	☐	☐
c. Major spalling (rebars exposed). *Maintenance: Replace structure.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
b. Rip rap in good condition. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
c. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.

Comments:

_____

_____

_____

_____

Actions to be taken:

_____

_____

Appendix I

Water Supply & Sanitary Sewer

COUNTY OF ERIE
DEPARTMENT OF ENVIRONMENT & PLANNING
DIVISION OF SEWERAGE MANAGEMENT

MEMORANDUM

FROM: Lorenzo Quebral, Assistant Project Engineer
TO: David Hojnacki, Sewer District Manager
DATE: March 2, 2023
SUBJECT: Car Wash (5363 Southwestern Blvd) — 2 – Apprv'd Sets
(T) HAMBURG — ECSD #3

Ind. Waste Survey:

Received: Yes X No _____
Complete: Yes X No _____

Permit Required: N/A No _____

Plans:

Received: Yes X No _____
Complete: Yes X No _____

Permit to connect may be issued Yes X No _____

Signature

Date: March 2, 2023

SBL#: **182.05-1-9.2**

Fees and Comments:

6 Inch Building Sewer Lateral	$700.00
G/O Separator	$100.00
Connection Permit	$ 2.00
	$802.00

LQ:
cc: D. Millar/M. Salah/A. Horton/ 3.2.5.Commercial
C. Scozzaro/W. Lardo(w/encl.)
J. Modestow

ARM Hydrant Flow Test Inquiry -- Hydrant: G17F43 Test Date/Time: 4/05/2022 16:15 CHI095-B

Address: 5458 SOUTHWESTERN BLVD Side: NW Location: 1ST HYD SW/O ROGERS RD
HAMBURG @ RASARIA RESTAURANT

Size of Main/Branch: 8"/6" Fire District: 48026 LAKE SHORE FIRE PROT Water District: 012 ECWA AREA IN HAMBURG

Performed By: MES/DWP

Comments: HYDRANT FLOW TEST REQUESTED BY JON BARNIAK, CARMINA-WOOD-MORRIS
EMAIL: JBARNIAK@CWM-AE.COM
CW #68663

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 45 Residual(psi): 34 Required Residual Pressure(psi): 20
Gallons Used..: 3,900 Total Flow(gpm): 1,300 Flow at Reqd Resid Pressure: 2,025

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	G17 F49	5502 SOUTHWESTERN BL 2ND HYD SW/O ROGERS RD	8"/6"	1: 2: 3:	2.50 2.50	15.0 15.0	650 650 Tot Flow: 1,300	

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

From:	Carter D. Bates
To:	Aktas, Jason
Subject:	RE: [EXTERNAL] RE: 5363 Southwestern Blvd
Date:	Thursday, May 11, 2023 10:51:33 AM
Attachments:	image001.jpg image002.png NEW PLUMBING PLAN 1.pdf NEW PLUMBING PLAN 2.pdf NEW SITE PLAN.pdf NEW DEVICE DETAIL.pdf NEW DOH.pdf NEW ENGINEERS REPORT.pdf

---

CAUTION: External Email

Jason,

Attached are a few revisions we will need to move forward.
The site plan & Engineers Report will need a Stamp/ signature.
I also left a few notes on the drawings itself we would like to see.
Let me know if you have any questions!

Thank You,

Carter D. Bates
Assistant Engineering Draftsworker

Erie County Water Authority
3030 Union Road
Buffalo, New York 14227-1097
Direct (716) 685-8252
Email: cbates@ecwa.org

See the source image

Providing Water You Can Trust.

From: Aktas, Jason <jaktas@stonefieldeng.com>
Sent: Tuesday, May 9, 2023 4:57 PM
To: Carter D. Bates <cbates@ecwa.org>
Subject: [EXTERNAL] RE: 5363 Southwestern Blvd

Carter – See the following LINK that contains the engineer's report, revised site plan set, revised water/sewer drawings & backflow preventor application.

Please let me know if there are any questions or comments.

Thanks,
Jason Aktas
STONEFIELD
92 Park Avenue, Rutherford, NJ 07070
M 862.220.7973
jaktas@stonefieldeng.com | stonefieldeng.com

From: Carter D. Bates <cbates@ecwa.org>
Sent: Thursday, March 9, 2023 1:45 PM
To: Martell, Jeffrey <jmartell@stonefieldeng.com>
Subject: 5363 Southwestern Blvd

Jeffery,

Attached are revisions we need to continue on the Backflow approval process.
We also need a Engineers Report, I attached a blank one you can fill out.
Also if you would like to email revisions compared to mailing them feel free.
Let me know if you have any questions.

Thank You,
Carter D. Bates
Assistant Engineering Draftsworker

Erie County Water Authority
3030 Union Road
Buffalo, New York 14227-1097
Direct (716) 685-8252
Email: cbates@ecwa.com

See the source image

Providing Water You Can Trust.

Confidentiality Notice: This electronic mail transmission is intended for the use of the individual or entity to which it is addressed and may contain confidential information belonging to the sender which is protected by the attorney-client privilege/or otherwise. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this information is strictly prohibited. If you have received this transmission in error, please notify the sender immediately by e-mail and delete the original message. Thank you for your cooperation.

No. CP0318929

Erie County Sewer District No. 3
Building Sewer Connection Permit

SBL # 182.05-1-9.2

Mini System 18 In District Yes

Permit Date: 6/26/2023

Address: 5363 Southwestern Blvd Car Wash

Town: Hamburg

Owner: Ts Hamburg Llc

TO SCHEDULE AN INSPECTION:
CALL (716) 823-8188
24 HOURS IN ADVANCE

Prop. Type: Non-Residential Single Unit
Sump Pump:
Construction Date: 2023
Inspection Fee: $700.00
Permit Fee: $2.00
Other Fees: $100.00
Payment Type: Check

Sewer Installer: Berry Construction Co Of Tn

Applicant: Berry Construction Co Of Tn

Applicant Signature: On application

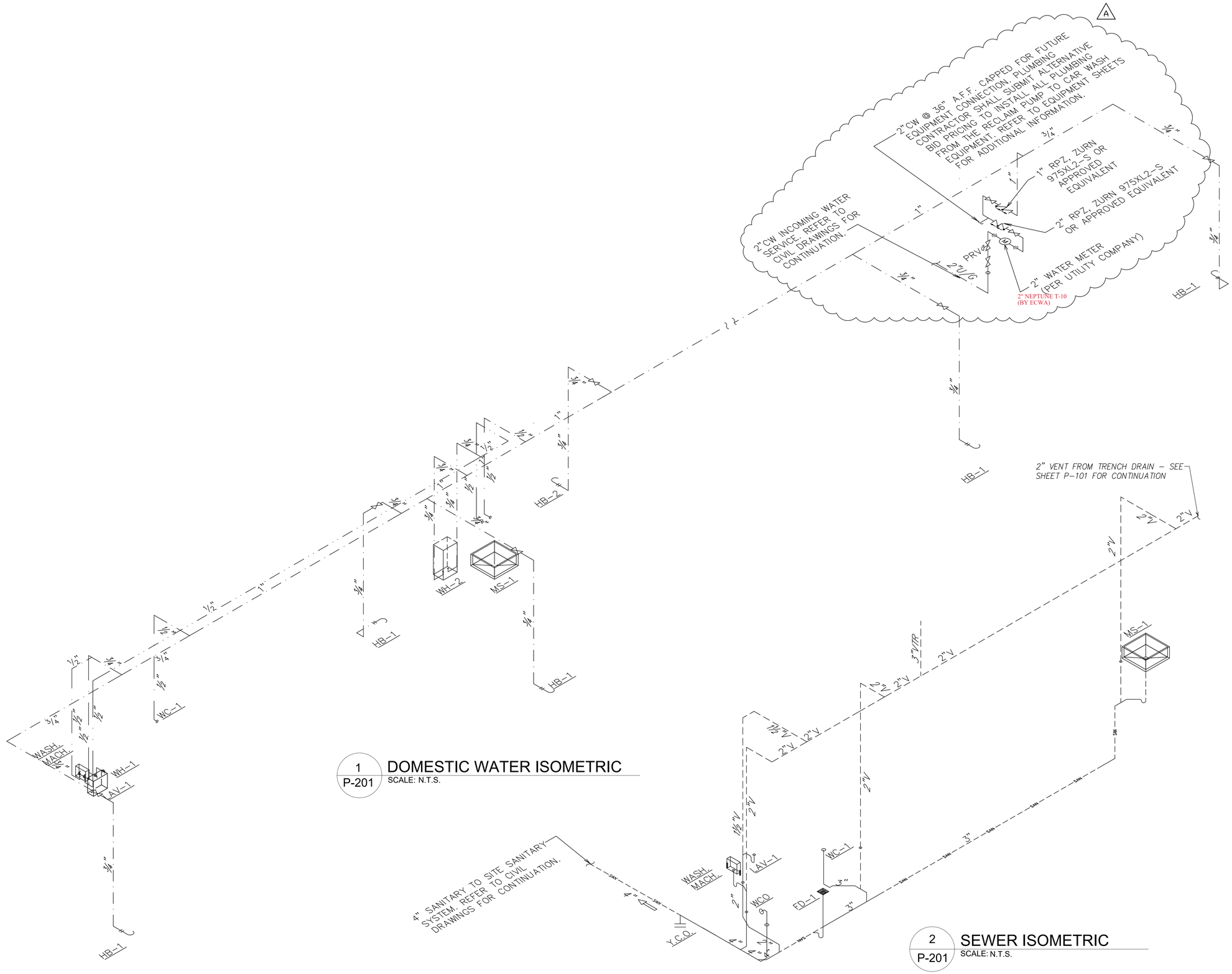
District Representative Signature: JK

PERMIT EXPIRES 180 DAYS AFTER DATE OF ISSUE ON 12/23/2023

COUNTY USE ONLY:

Inspection Date	Approval (Y/N)	Remarks (Final or Partial)	EC Inspector

*****Prior to any Erie County Sewer personnel entering any trench, excavation must be in full compliance with OSHA standards (29 CFR 1926, Subpart P)*****



1 P-201 DOMESTIC WATER ISOMETRIC
SCALE: N.T.S.

2 P-201 SEWER ISOMETRIC
SCALE: N.T.S.

REV	DATE	DESCRIPTION	BY
A	03/13/23	REVISIONS PER ECW COMMENTS	DOK

STATE OF NEW YORK
DANIEL OWEN KEFFER
093161
LICENSED PROFESSIONAL ENGINEER

03/13/2023
DATE

PREPARED BY:

AXIS INFRASTRUCTURE
70 Mansell Ct., Ste. 200
Roswell, Georgia 30076
Phone: 678.395.4920

PREPARED FOR:

SITE Hutton
REAL ESTATE DEVELOPMENT CONSTRUCTION

DRAWN BY: TRD
REVIEWED BY: DOK
PROJ. MGR.
DATE ISSUED: 02/10/23

TITLE: MODWASH EXPRESS CARWASH
DESCRIPTION: 8" CMU BEARING WALLS
WOOD TRUSS ROOF FRAMING
E.I.F.S. ON WOOD STUDS @ DECORATIVE WALLS & PARAPET WALL
124' NORTHERN PROTOTYPE W/120' CONVEYOR
FIN. AT ENTRANCE
SITE ID: 20068BD
SITE ADDRESS: 5363 SOUTHWESTERN BOULEVARD
HAMBURG, NY

SHEET NO. P-201
ISOMETRICS

NEW YORK STATE DEPARTMENT OF HEALTH

Bureau of Public Water Supply Protection

Application for Approval of Backflow Prevention Devices

PRINT OR TYPE ALL ENTRIES EXCEPT SIGNATURES
Please completed items 1 through 12a + Block and Lot Numbers

Block #	Lot #	FOR DEPARTMENT USE ONLY
1	9.2	Log No.

1. Name of Facility	2. City, Village, Town	3. County
Proposed Car Wash	Town of Hamburg	Erie County

4. Location of Facility (Street)	City	state	zip
5363 Southwestern Boulevard	Town of Hamburg	NY	14075

4a. Phone Numbers	5. Contact Person
423-647-6822	Devin Baker

5. Approx. Location of Device(s)	6. Mfg. Model #	Size of Device(s)
Internally at the north elevations	WILKINS 975XL2-~~S~~ RPZ	2"

# of Fire Services	# of Domestic Services	# of Combined Services	Total # of Services	Total # of Buildings
	1		1	1

7. Name of Owner	Title	Phone Number
TS Hamburg, LLC		

8. Nature of works
- [X] Initial Device Installation
- [ ] Replace Existing Device

Full Mailing Address
Address (street): 21 South Streeet

City: Morristown | state: NJ | zip: 07960

Owner's Signature: Kristin Lynn, Manager

Date: 1 / 25 / 2023 (M / D / Y)

8a.
- [X] New Service
- [ ] Existing Service

8b.
- [X] New Building
- [ ] Existing Building
- [ ] Major Renovations

9. Name of Design Engineer or Architect: Jeffrey Martell

Address (Street): 92 Park Avenue

City: Rutherford

State: NJ | Zip: 07070

Signature

Original Ink signature and seal required on all copies

10. NYS License # 86502

[X] PE [ ] RA [ ] Other

10a. Telephone Number(s)

201-340-4472

Date: 5 / 9 / 2023 (M / D / Y)

11. Water System Pressure (psi) at Point of Connection	12. Estimate Installation Cost	12a. Estimate Design Cost
Max 1,300 gpm Avg _____ Min _____	$3,000	

13. Degree of Hazard
- [X] Hazardous
- [ ] Aesthetically Objectionable

List of processes or reasons that lead to degree of hazard checked:
ECWA Requirement

14. Public water supply name: Erie County Water Authority

Mailing Address
3030 Union Road
(street)
Cheektowaga, NY 14227-1097
(City) (state) (zip)

Telephone No. (716) 684-1510

Name of supplier's designate representative

Title: Russel J. Stoll P.E.
Executive Director

Signature _____ Date: ____/____/____ (M / D / Y)

Note: All applicants must be accompanied by plans, specifications and an engineer's report describing the project in detail. The project must first be submitted to the water supplier, who will forward it to the local public health engineer. This form must be prepared in quadruplicate with four copies of all plans, specifications and descriptive literature.

DOH-347 (5/91)

ENGINEERS REPORT
FOR APPROVAL OF
BACKFLOW PREVENTION DEVICES

ERIE COUNTY WATER AUTHORITY
3030 UNION ROAD
CHEEKTOWAGA, NY 14227-1097
(716) 684-1510 (Phone
(716) 684-3937 (Fax)

A. Facility/Project

Name: Proposed Car Wash

Mailing Address: 5363 Southwestern Boulevard

Town/Village/City: Town of Hamburg

B. Customer/Owner

Contact Person: Devin Baker

Company: Hutton ST 21, LLC

Mailing Address: 736 Cherry Street

Chattanooga, TN 37402

C. Engineer/Architect

Contact Person: Jason Aktas

Company: Stonefield Engineering & Design, LLC

Mailing Address: 92 Park Avenue

Rutherford, NJ 07070

D. **Facility/Project Type**
(Check all that apply)

[ ]	Apartments	[ ]	Funeral Home
[ ]	Retail Stores(s)	[ ]	Public School
[ ]	Professional/Office	[ ]	Private School
[ ]	Restaurant	[ ]	Church
[ ]	Laundromat/Dry Cleaner	[ ]	Automotive Sales/Service
[ ]	Hotel/Model	[ ]	Patio Homes
[X]	Car Wash	[ ]	Condominiums
[ ]	Medical/Dental	[ ]	Nursery
[ ]	Hospital	[ ]	Veterinarian

[ ] Warehouse/describe: _____

[ ] Manufacturing/describe: _____

[ ] Industrial/describe: _____

[ ] Agricultural/describe: _____

[ ] Other/describe: _____

E. **Number of Buildings** 1 Number of Floors 1

Square Footage per Floor 4,381 Basement Yes ___ No X

First Floor Elevation 723.00

F. **List all Uses of Public Water** Domestic water service for commercial automated car wash with 3 reclamation tanks for water re-use.

G. List all water services to the site. Describe the size, type (domestic, private fire protection, combination), location, and whether the service is proposed or exiting. The Engineer's Report must address all water serves.

Proposed 2" Type K Copper domestic water service line that connects to an existing 8" water main located along Southwestern Boulevard.

H. **Domestic Service** _____ Check if none

Service Connection

Size	2	inch
Existing or Proposed	Proposed	
Maximum Demand	4.83	gpm

Backflow Preventer

Describe Location Internal RPZ

Device Type	RPZ	
Size	2	inch
Make and model	ZURN 975XL2	
Included in USC FCCCHR Approved Devices List *	Yes X	No _____
Upstream Pressure please list upstream/ downstream pressure	_____	psi
Downstream Pressure	_____	psi

I. **Private Fire Protection Service** X Check if none

Service Connection

Size	_____	inch
Existing or Proposed	_____	
Maximum Demand	_____	gpm

Backflow Preventer

Describe Location _____

Device Type (RPDA, RPZ, DCDA, DCVA)
Size _____ inch
Make and Model _____
Included in USC FCCCHR Approved Devices List * Yes _____ No _____
Upstream Pressure _____ psi
Downstream Pressure _____ psi

J. **Combination Service** x Check if none

Service Connection
- Size _____ inch
- Existing or Proposed _____
- Maximum Demand _____ gpm

Backflow Preventer

Describe Location _____

_____

_____

Device Type RPZ
Size _____ inch
Make and Model _____
Included in USC FCCCHR Approved Devices List * Yes _____ No _____
Upstream Pressure _____ psi
Downstream Pressure _____ psi

* List of Approved Backflow Prevention Assemblies University of Southern California Foundation For Cross Connection Control and Hydraulic Research

K. Will the facility/project receive water supply from an auxiliary water source such as a well, cistern, spring, or other municipal water supply? Yes _____ No x

L. Does the facility/project require dual backflow preventers to allow for a continuous water supply? Yes _____ No x

M. Is the facility located within the 100 year flood plan? Yes _____ No x

N. Will the area where the backflow preventer is located be adequately heated to prevent freezing? Yes X No _____

O. Will the area where the backflow preventer is located be adequately lighted to allow for maintenance and testing? Yes X No _____

P. RPZs and RPDAs _____ Check if none

Where does the discharge for the relief port drain to? (Check all that apply)

- [x] Sanitary Sewer
- [x] Floor
- [ ] Storm Sewer
- [ ] Outside Grade
- [ ] Sump Pump
- [ ] Septic System
- [ ] Other/describe _____

Is the drain system adequately sized to accommodate the maximum discharge without flooding the area: Yes X No _____

Is the relief port provided with a suitable air gap" Yes X No _____

Is the relief port at least 12 inches above the 100 year flood elevation? (X check if not applicable) Yes X No _____

If the relief port drains to a storm sewer, is the connection equipped with a backwater valve? (X check if not applicable) Yes _____ No _____

If the relief port drains to a sanitary sewer, is the connection equipped with a trap and a backwater valve? (X check if not applicable) Yes _____ No _____

If the relief port drains to a sump pump, is it provided with emergency power and a water level alarm? (X check if not applicable) Yes _____ No _____

If the RPZ/RPDA is located in a basement, is there sufficient volume below the relief port? (X check if not applicable) Yes _____ No _____

Q. **Private Fire Protection Services** X Check if none

Fire Suppression System

_____ Dry Pipe

_____ Wet Pipe

Provision for Chemical Addition
(fire retardants, corrosion, inhibitors, antifreeze, etc.) Yes _____ No _____

Private fire hydrants Yes _____ No _____

Connections to a secondary water supply? Yes _____ No _____

If the facility within 1,700 feet of an alternative source of water such as a pond, lake, river, or retention pond, are there provisions to "draft" this water for fire fighting purposes?
(_____check if not applicable) Yes _____ No _____

R. Booster Pump System X Check if none

_____ Domestic Service

_____ Private Fire Protection Service

_____ Combination Service

Include a separate sheet with the Engineers Report describing all existing and proposed booster pump systems which addresses net positive suction head for the booster pumps, pressure cutoff switch settings, and operating pressures in both, the public water distribution system and in the facility internal plumbing. Refer to NYS DOH "Guidelines for Designing Backflow Prevention Assembly Installations", Supplement to the 1981 Cross Connection Control Manual.

S. **Comments**

T. Signatures

need stamp/ signature

Engineer/Architect Seal and Signature	Date

GENERAL PLUMBING NOTES

GENERAL:

1. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH ALL LOCAL CODES AND ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
2. ALL PLUMBING WORK SHALL BE PERFORMED BY A LICENSED PLUMBER.
3. ALL DIMENSIONS, CLEARANCES AND TOLERANCES SHALL BE VERIFIED PRIOR TO INSTALLATION. ALL ROUGH-IN LOCATIONS SHALL BE COORDINATED WITH THE MANUFACTURER'S SUBMITTAL INFORMATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
5. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE, ALL LOCAL CODES, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
6. THE CONTRACTOR SHALL BEFORE SUBMITTING AND PROPOSAL EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
7. ALL DIMENSIONAL INFORMATION IS AS FOLLOWS (UNLESS NOTED OTHERWISE):
   A. UNDERGROUND PIPE IS TO FOUNDATION
   B. OVERHEAD PIPE IS TO FINISHED WALL
   C. ELEVATIONS ARE TO FINISHED FLOOR
8. ALL MATERIALS, FIXTURES AND EQUIPMENT USED SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ANY VARIANCE FROM THE PROJECT SPECIFICATIONS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER-OF-RECORD.
9. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT/FIXTURES TO THE ARCHITECT OR ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT THREE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.
10. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ITS LISTING AND/OR THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
11. WHERE POOR SOIL CONDITIONS EXIST OR WHERE SUBSTANTIAL SETTLEMENT OF EITHER THE PIPING, THE BUILDING OR ADJACENT WALKS, PLANTERS, ETC., MAY OCCUR, THE CONTRACTOR SHALL PROVIDE ADEQUATE UNDERSLAB STAINLESS STEEL PIPE HANGERS OR APPROVED OTHER SUPPORT.
12. ALL PIPE SLEEVES SHALL BE PROPERLY SEALED AND INSULATED TO PREVENT HEAT LOSS AND SEEPAGE.
13. ALL PIPE INSULATION SHALL BE PROTECTED FROM DAMAGE FROM PIPE HANGERS. PROTECTION SHALL BE LIGHT GAUGE GALVANIZED STEEL OR EQUAL.
14. ALL PENETRATIONS OF FIRE-RATED WALLS SHALL BE FIRESTOPPED WITH AN APPROVED AND LISTED FIRESTOPPING SYSTEM.
15. THE PLUMBING PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.
16. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTORS EXPENSE.
17. FOR THE SAME PERIOD, THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

SANITARY AND VENT SYSTEMS:

1. THE BUILDING SANITARY PIPE SHALL BE LOCATED A MINIMUM OF 5 FT. FROM THE INCOMING WATER SERVICE. WHERE A 5 FT. SEPARATION IS NOT POSSIBLE, THE BOTTOM OF THE WATER SERVICE PIPE SHALL BE A MINIMUM OF 12 IN. ABOVE THE TOP OF THE HIGHEST POINT OF THE SANITARY PIPE.
2. ALL SANITARY AND VENT PIPE SHALL BE PVC SCHEDULE 40 OR CAST-IRON WHERE REQUIRED BY CODE.
3. DRAINAGE PIPING SHALL BE RUN AS STRAIGHT AS POSSIBLE AND SHALL HAVE LONG TURN FITTINGS.
4. ALL HORIZONTAL SANITARY PIPE SHALL BE INSTALLED WITH A MINIMUM PITCH AS FOLLOWS:

PIPE SIZE	MIN. SLOPE
2½" OR LESS	¼" PER FT.
3" TO 6"	⅛" PER FT.
8" OR LARGER	⅛" PER FT.

5. CLEANOUTS SHALL BE INSTALLED IN ALL HORIZONTAL DRAINAGE PIPE AND SHALL BE LOCATED NOT MORE THAN 100 FT. APART.
6. CLEANOUTS SHALL BE INSTALLED AT ALL CHANGES OF DIRECTION GREATER THAN 45 DEGREES. WHERE MORE THAN ONE CHANGE OF DIRECTION OCCURS IN A SINGLE PIPE RUN, ONLY ONE (1) CLEANOUT SHALL BE REQUIRED FOR EVERY 40 FEET OF DEVELOPED LENGTH.
7. CLEANOUTS SHALL BE INSTALLED ON PIPES PRIOR TO ANY SLAB PENETRATION.
8. WHERE PIPING IS LOCATED WITHIN WALL CAVITIES, ACCESS TO THE CLEANOUTS SHALL BE PROVIDED.
9. CLEANOUTS ON 6-IN. AND SMALLER PIPES SHALL BE PROVIDED WITH A CLEARANCE OF NOT LESS THAN 18 IN. CLEANOUTS ON 8-IN. AND LARGER PIPE SHALL BE PROVIDED WITH A CLEARANCE OF NOT LESS THAN 36 IN.
10. ALL SUSPENDED SANITARY AND VENT PIPE SHALL BE SUPPORTED AS FOLLOWS:

MATERIAL	MAX. HORIZ. SPACING	MAX. VERT. SPACING
ABS	4 FT.	10 FT.
PVC (TYPE DWV)	4 FT.	10 FT.
CAST-IRON (<10 FT. PIPE SECTIONS)	5 FT.	15 FT.
CAST-IRON (10 FT. PIPE SECTIONS)	10 FT.	15 FT.

11. ALL PLUMBING FIXTURES SHALL BE VENTED AND THE MAXIMUM DISTANCE FROM THE FIXTURE TRAP TO THE VENT SHALL BE AS FOLLOWS:

TRAP SIZE	SLOPE	DISTANCE
1¼"	¼" PER FT.	2'-6"
1½"	¼" PER FT.	3'-6"
2"	¼" PER FT.	5'-0"
3"	⅛" PER FT.	6'-0"
4" & LARGER	⅛" PER FT.	10'-0"

12. ALL VENT PIPING SHALL BE SLOPED TO DRAIN BACK TO FIXTURES.
13. ALL PLUMBING VENTS THROUGH THE ROOF SHALL TERMINATE A MINIMUM OF 12 INCHES ABOVE THE ROOF AND SHALL BE LOCATED A MINIMUM OF 8 FT. FROM ANY PARAPET WALL. WHERE A VENT TERMINATES WITHIN 8 FT. OF A PARAPET WALL, THE VENT SHALL TERMINATE A MINIMUM OF 6 INCHES ABOVE THE PARAPET.
14. ALL PLUMBING VENTS SHALL TERMINATE A MINIMUM OF 10 FT. HORIZONTALLY FROM ANY OUTDOOR AIR INTAKE. WHERE A PLUMBING VENT IS LOCATED WITHIN 10 FT. OF AN INTAKE, THE VENT SHALL TERMINATE A MINIMUM OF 2 FT. ABOVE THE INTAKE.
15. ALL SIDE WALL VENT TERMINATIONS SHALL BE PROTECTED TO PREVENT BIRDS OR RODENTS FROM ENTERING OR BLOCKING THE VENT OPENING.
16. ALL FLOOR DRAINS THAT DO NOT SERVE EQUIPMENT SHALL BE PROTECTED AGAINST DRYING OUT EITHER THROUGH THE INSTALLATION OF A TRAP PRIMER, DEEP SEAL TRAP OR PROSET TRAP GUARD.

DOMESTIC SUPPLY SYSTEMS:

1. THE INCOMING WATER SERVICE PIPE SHALL BE LOCATED A MINIMUM OF 5 FT. FROM THE EXITING SANITARY PIPE. WHERE A 5 FT. SEPARATION IS NOT POSSIBLE, THE BOTTOM OF THE WATER SERVICE PIPE SHALL BE A MINIMUM OF 12 IN. ABOVE THE TOP OF THE HIGHEST POINT OF THE SANITARY PIPE.
2. ALL UNDERGROUND SITE PLUMBING SHALL CONFORM TO NSF 61, SHALL BE TYPE K SOFT DRAWN COPPER TUBING WITH BRAZED CONNECTIONS.
3. INCOMING WATER SERVICE PRESSURE SHOULD BE BETWEEN 45 AND 55 PSI STATIC. WHERE WATER PRESSURE SERVICE EXCEEDS 80 PSI STATIC, AN APPROVED WATER-PRESSURE REDUCING VALVE WITH STRAINER CONFORMING TO ASSE 1003 SHALL BE INSTALLED. WHERE INCOMING WATER PRESSURE IS BELOW 45 PSI STATIC, A PRESSURE BOOSTER SYSTEM SHALL BE INSTALLED.
4. PROVIDE A MINIMUM ½" ANNULAR CLEARANCE AROUND ALL PIPE SLAB PENETRATIONS.
5. A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER (RPZ) SHALL BE INSTALLED AT THE INCOMING SERVICE WHERE REQUIRED BY CODE. REFER TO CIVIL PLANS FOR LOCATION.
6. ALL WATER SUPPLY PIPE WITHIN THE BUILDING SHALL COMPLY WITH NSF 61 AND SHALL BE TYPE L HARD DRAWN COPPER PIPE WITH 125 PSI SOLDER JOINTS, COPPER OR BRASS FITTINGS. ALL SOLDER TO BE "NO LEAD" TYPE.
7. ALL SUSPENDED PIPE SHALL BE SUPPORTED AS FOLLOWS:

MATERIAL	MAX. HORIZ. SPACING	MAX. VERT. SPACING
COPPER PIPE	12 FT.	10 FT.

8. ALL WATER SUPPLY LINES SHALL BE PROVIDED WITH A QUARTER-TURN SHUT-OFF VALVE BEFORE FINAL CONNECTION TO EQUIPMENT.
9. QUARTER-TURN SHUT-OFF VALVES SHALL BE INSTALLED UPSTREAM OF ANY INLINE BACKFLOW PREVENTION DEVICE.
10. ALL VALVES AND BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED WITH FITTINGS THAT FACILITATE REMOVAL IN CASE OF FAILURE.
11. ALL OVERHEAD WATER LINES SHALL BE INSULATED WITH 1" THICK EXTERNAL JACKETED INSULATION AND A MINIMUM INSTALLED R-VALUE OF 3.7 (ARMACELL OR EQUIVALENT).
12. PRIOR TO BUILDING TURNOVER, THE DOMESTIC WATER SUPPLY SYSTEM SHALL BE PURGED OF DELETERIOUS MATERIAL AND DISINFECTED. DISINFECTION SHALL BE DONE IN ACCORDANCE WITH THE LOCAL HEALTH CODE, PLUMBING CODE OR IN ACCORDANCE WITH AWWA C651 OR AWWA C652.

STORM DRAINAGE SYSTEMS:

1. ALL ROOF DRAINS SHALL BE SIZED IN ACCORDANCE WITH LOCAL CODES AND SHALL CONFORM TO ASME A112.21.2M OR A112.3.1.
2. ALL STORM DRAINAGE PIPING SHALL BE PVC TYPE DWV OR CAST-IRON WHERE REQUIRED BY CODE.
3. ALL SUSPENDED STORM DRAINAGE PIPE SUPPORT REQUIREMENTS SHALL BE THE SAME AS THE SANITARY AND VENT REQUIREMENTS.
4. ALL HORIZONTAL STORM DRAINAGE PIPE SHALL BE INSTALLED WITH A MINIMUM PITCH OF ¼" PER FOOT OF DEVELOPED LENGTH.
5. CLEANOUTS SHALL BE INSTALLED IN ALL HORIZONTAL DRAINAGE PIPE AND SHALL BE LOCATED NOT MORE THAN 100 FT. APART.
6. CLEANOUTS SHALL BE INSTALLED AT ALL CHANGES OF DIRECTION GREATER THAN 45 DEGREES. WHERE MORE THAN ONE CHANGE OF DIRECTION OCCURS IN A SINGLE PIPE RUN, ONLY ONE (1) CLEANOUT SHALL BE REQUIRED FOR EVERY 40 FEET OF DEVELOPED LENGTH.
7. CLEANOUTS SHALL BE INSTALLED ON PIPES PRIOR TO ANY SLAB PENETRATION.
8. WHERE PIPING IS LOCATED WITHIN WALL CAVITIES, ACCESS TO THE CLEANOUTS SHALL BE PROVIDED.
9. ROOF DRAINS AND OVERFLOW ROOF DRAINS SHALL BE PIPED INDEPENDENTLY. OVERFLOW ROOF DRAINS SHALL NOT BE CONNECTED TO THE PRIMARY ROOF DRAINAGE SYSTEM.

LEGEND

— · — · — · —	COLD WATER PIPING
— - - - - - - -	TEMPERED WATER PIPING (110°F)
— — —SAN— — —	UNDERGROUND SANITARY PIPING
- - - - - - - - - - - -	VENT PIPING
HB	HOSE BIBB
	CHECK VALVE
	BALL VALVE
	FLOOR DRAIN
PRV	PRESSURE REDUCING VALVE (PRV)

ABBREVIATIONS

AVB	ATMOSPHERIC VACUUM BREAKER
CO	CLEAN-OUT
DFU	DRAINAGE FIXTURE UNIT(S)
EC	ELECTRICAL CONTRACTOR
FCO	FLOOR CLEAN-OUT
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
GPF	GALLONS PER FLUSH
GPM	GALLONS PER MINUTE
GW	GREASE WASTE
I.P.S.	IRON PIPE SIZE (ALSO NPS)
LAV	LAVATORY
MC	MECHANICAL CONTRACTOR
MHT	MALE HOSE THREADS
MS	MOP SINK
NPS	NATIONAL PIPE THREAD STANDARD
NPT	NATIONAL PIPE THREAD TAPERED
OH	OVERHEAD
ORD	OVERFLOW ROOF DRAIN (EMEREGENCY)
P	PUMP
PC	PLUMBING CONTRACTOR
PRD	PRIMARY ROOF DRAIN
SAN	SANITARY SEWER
ST	STORM SEWER
UG	UNDERGROUND
UR	URINAL
V	VENT
WC	WATER CLOSET
WCO	WALL CLEAN-OUT
WSFU	WATER SUPPLY FIXTURE UNIT(S)
YCO	YARD CLEAN-OUT

PLUMBING FIXTURE SCHEDULE

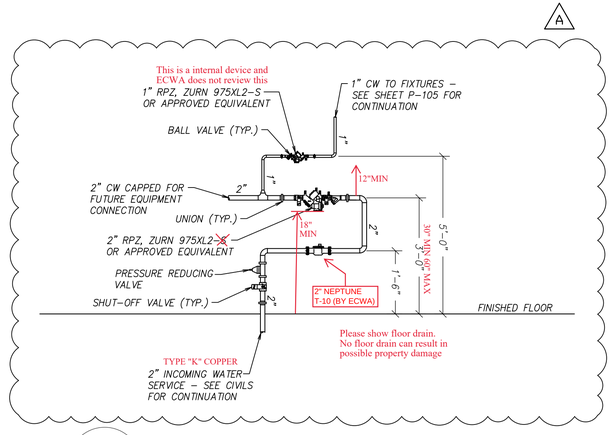
TAG	DESCRIPTION	MANUFACTURER	MODEL	WATER USE	ACCESSORIES/COMMENTS	
FCO	6x6 FLOOR CLEAN OUT	ZURN	Z1400-SZ		SEE DRAWINGS FOR PIPE SIZES SEE NOTE 2	
F-1	FAUCET FOR LAV-1	DELTA FAUCETS	501LF-HGMHDF	0.5 GPM	CHROME PLATED, SOLID BRASS BODY, SINGLE LEVER HANDLE OPERATION, 4" CENTERSET FAUCET FAUCET OPERATION: MANUAL	
F-2	FAUCET/EYEWASH FOR MS-1	SPEAKMAN	SC-5811-RCP (FAUCET)	4.0 GPM	ROUGH POLISHED CHROME PLATED, SOLID BRASS BODY, INTEGRAL STOPS, BRASS VACUUM BREAKER, ¾" HOSE THREAD OUTLET WITH PAIL HOOK. EYEWASH COMES COMPLETE WITH INTEGRAL VACUUM BREAKER, CHECK VALVE AND THERMOSTATIC MIXING VALVE. SEE NOTE 4.	
		SPEAKMAN	SEF-9000-TW (EYEWASH)			
FD-2	6x6 FLOOR DRAIN	ZURN	Z415-SZ		PIPE SIZE: 3" STRAINER SIZE: 6" NICKEL BRONZE	FUNNEL: NONE SEE NOTE 2
HB-1	WALL HYDRANT	WOODFORD	MODEL 25		ANTI-SIPHON VACUUM BREAKER & SELF-DRAINING DESIGN WALL THICKNESS: 8"	
LAV-1	LAVATORY	KOHLER	K-2196-4		"PENNINGTON" WHITE VITREOUS CHINA DROP-IN LAVATORY – SEE NOTES 1, 3 & 6 FAUCET: F-1 FURNISH COMPLETE WITH TRUEBRO LAVGUARD2 #102-E-Z COVERS, MCGUIRE #155A GRID DRAIN W/ TAILPIECE, MCGUIRE #8872 P-TRAP, MCGUIRE #170 SUPPLIES W/ WHEEL HANDLE STOPS AND ESCUTCHEONS.	
MS-1	MOP SINK	ZURN	Z1996-24-WG		FAUCET: F-2 24"x24"x10" WITH 3" INTEGRAL STRAINER AND DRAIN. FURNISH MOP SINK WITH (2) 24"Wx36"H STAINLESS WALL GUARDS	
TD-1	TRENCH DRAIN	ZURN	Z886-E1-U4-SVF-BG		HDPF MODULAR CHANNEL TRENCH DRAIN SYSTEM, 1½" RADIUSED BOTTOM WITH 0.75% BUILT-IN SLOPE. GALVANIZED DUCTILE IRON BAR GRATES, TOP LOAD CLASS C	
WC-1	ADA WATER CLOSET	AMERICAN STANDARD	2835.128	1.28 GPF	"CADET 3 FLOWISE" SIPHON ACTION FLUSH TANK FLUSH OPERATION: MANUAL (LEVER ON WIDE SIDE OF TOILET) OPEN FRONT SEAT LESS COVER, SOFT CLOSE, ANTI-MICROBIAL COATING.	
WASH. MACH.	WASHING MACHINE WALL BOX	SIOUX CHIEF	696-2313MF		HAMMER ARRESTERS INCLUDED WITH BOX FILTROL LINT TRAP	
WCO	WALL CLEANOUT	ZURN	Z1441		PIPE SIZE: 4" COVER MATERIAL: STAINLESS STEEL	SEE NOTE 2

NOTES:
1. PLUMBING CONTRACTOR SHALL COORDINATE WITH G.C. TO PROVIDE BLOCKING FOR PROPER SINK SUPPORT
2. PLUMBING CONTRACTOR SHALL SPECIFY CONNECTION MATERIAL/TYPE WHEN ORDERING
3. PLUMBING CONTRACTOR SHALL PROVIDE GRID DRAIN, P-TRAP AND VALVE STOPS FOR ALL SINKS & LAVS
4. MOP SINK/EYE WASH IS ASME A112.18.1/CSA B125 CERTIFIED, ANSI/ISEA Z358.1 CERTIFIED AND ASSE-1001 COMPLIANT.
5. PREFERRED VENDOR IS MECHANICAL ELECTRICAL GROUP
6. PLUMBING CONTRACTOR SHALL FURNISH LAVATORY COMPLETE WITH ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE

WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	HEATING LOW	HEATING HIGH	RECOV. 80°F ΔT GPH	ELECTRICAL VOLTS	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL F.L.A.	ELECTRICAL MOCP	ACCESSORIES
WH-1	RHEEM	RTEX-06	5.5 KW		0.5	240	1	60	25	30	–
WH-2	RHEEM	RTGH-84-DVLP-2	11.0 MBH	157.0 MBH	3.8	120	1	60	2	20	1,2

ACCESSORIES:
1. SERVICE VALVE KIT
2. VERTICAL CONCENTRIC VENT TERMINATION KIT



1 / P-301 BACKFLOW PREVENTER DETAIL
SCALE: N.T.S.

REV	DATE	DESCRIPTION	BY
A	03/13/23	REVISIONS PER ECW COMMENTS	DOK

STATE OF NEW YORK – MICHEL OWEN KEFFER – 093161 – LICENSED PROFESSIONAL ENGINEER

03/13/2023
DATE

PREPARED BY:

AIS INFRASTRUCTURE
70 Mansell Ct., Ste 200
Roswell, Georgia 30076
Phone: 678.395.4920

PREPARED FOR:

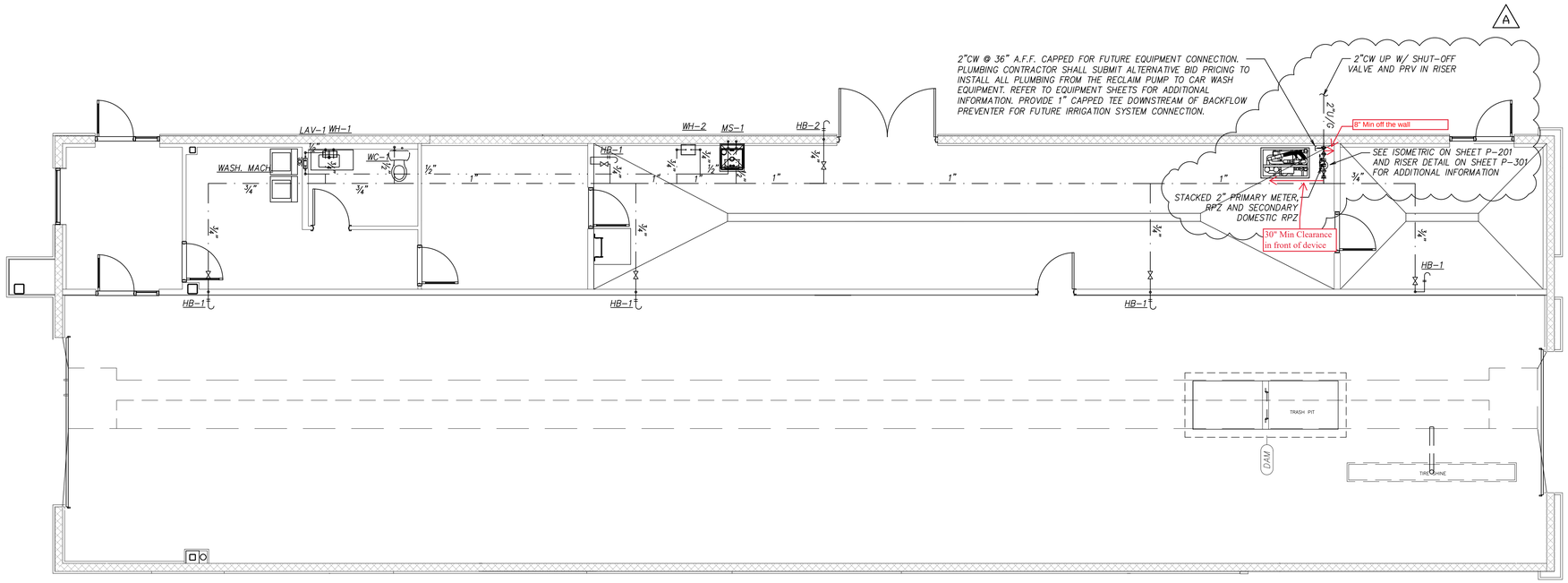
SITE Hutton REAL ESTATE DEVELOPMENT CONSTRUCTION

DRAWN BY	REVIEWED BY	DATE ISSUED
TRD	DOK	02/10/23

PROJ. MGR.

TITLE: MODWASH EXPRESS CARWASH
DESCRIPTION: 8" CMU BEARING WALLS WOOD TRUSS ROOF FRAMING E.I.F.I.S ON WOOD STUDS @ DECORATIVE WALLS FLAT TPO MEMBRANE 124' NORTHERN PROTOTYPE W/120' CONVEYOR FIN. AT ENTRANCE
SITE ADDRESS: 5383 SOUTHWESTERN BOULEVARD HAMBURG, NY
SITE ID: 20089D

SHEET NO. P-301
DETAILS & SCHEDULES



1 P-105 DOMESTIC WATER FLOOR PLAN
SCALE: 3/16" = 1'-0"

REV	DATE	DESCRIPTION	BY
A	03/13/23	REVISIONS PER ECW COMMENTS	DOK

STATE OF NEW YORK · RACHEL OWEN KEFFER · 093161 · PROFESSIONAL ENGINEER

03/13/2023
DATE

PREPARED BY:

AXIS INFRASTRUCTURE
70 Mansell Ct., Ste 200
Roswell, Georgia 30076
Phone: 678.395.4920

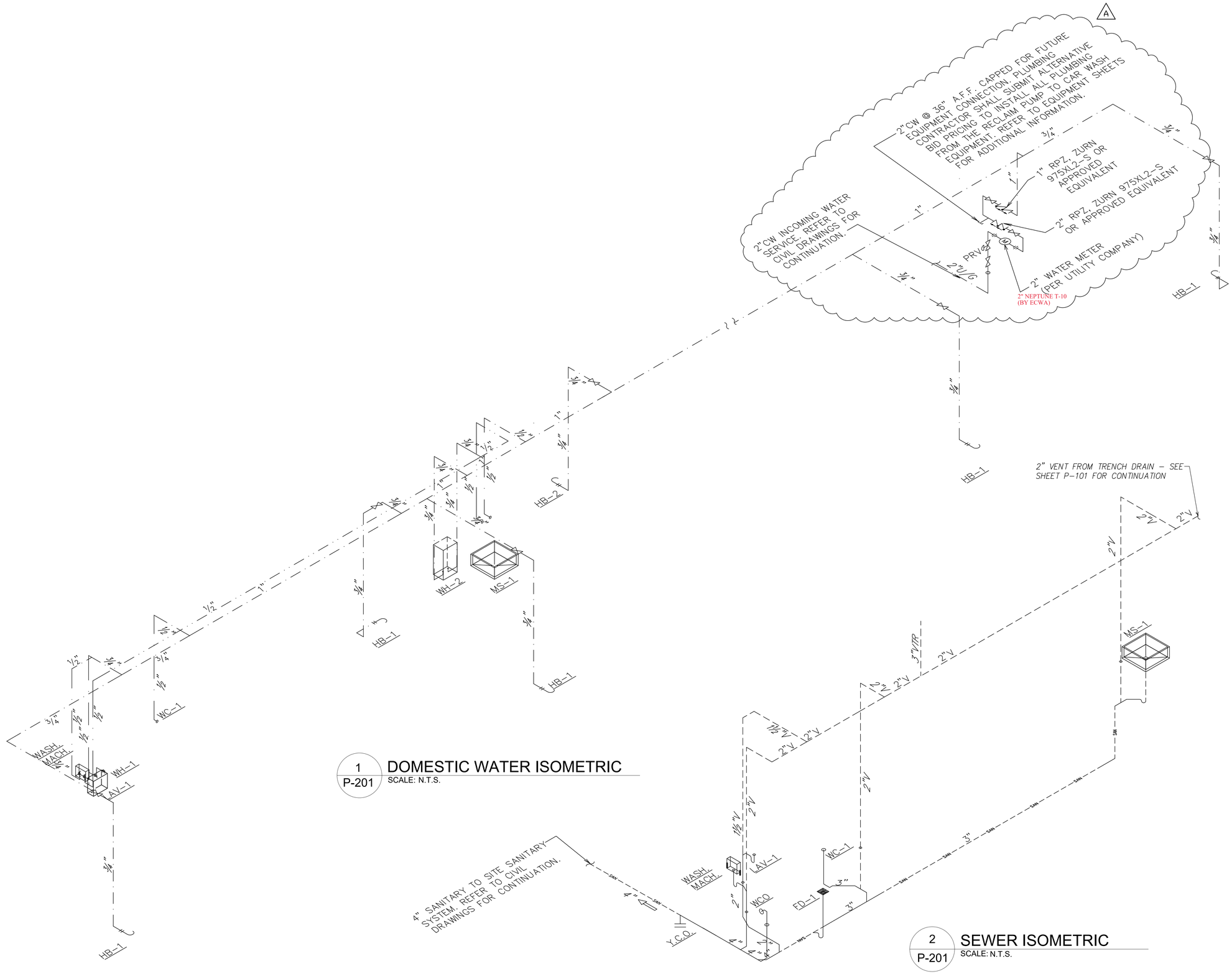
PREPARED FOR:

SITE Hutton
REAL ESTATE DEVELOPMENT CONSTRUCTION

DRAWN BY: TRD
REVIEWED BY: DOK
PROJ. MGR.
DATE ISSUED: 02/10/23

TITLE: MODWASH EXPRESS CARWASH
DESCRIPTION: 8" CMU BEARING WALLS WOOD TRUSS ROOF FRAMING E.I.F.S ON WOOD STUDS @ DECORATIVE WALLS & FIN. WALL 124' NORTHERN PROTOTYPE W/120' CONVEYOR FIN. AT ENTRANCE
SITE ID: 200890
SITE ADDRESS: 5363 SOUTHWESTERN BOULEVARD HAMBURG, NY

SHEET NO. P-105
DOMESTIC WATER PLAN



1 P-201 DOMESTIC WATER ISOMETRIC
SCALE: N.T.S.

2 P-201 SEWER ISOMETRIC
SCALE: N.T.S.

REV	DATE	DESCRIPTION	BY
A	03/13/23	REVISIONS PER ECW COMMENTS	DOK

STATE OF NEW YORK
DANIEL OWEN KEFFER
093161
LICENSED PROFESSIONAL ENGINEER

03/13/2023
DATE

PREPARED BY:

AXIS INFRASTRUCTURE
70 Mansell Ct., Ste. 200
Roswell, Georgia 30076
Phone: 678.395.4920

PREPARED FOR:

SITE Hutton
REAL ESTATE DEVELOPMENT CONSTRUCTION

DRAWN BY: TRD
REVIEWED BY: DOK
PROJ. MGR.
DATE ISSUED: 02/10/23

TITLE: MODWASH EXPRESS CARWASH
DESCRIPTION: 8" CMU BEARING WALLS
WOOD TRUSS ROOF FRAMING
E.I.F.S. ON WOOD STUDS @ DECORATIVE WALLS & PARAPET WALL
124' NORTHERN PROTOTYPE W/120' CONVEYOR
FIN. AT ENTRANCE
SITE ID: 20068BD
SITE ADDRESS: 5363 SOUTHWESTERN BOULEVARD
HAMBURG, NY

SHEET NO. P-201
ISOMETRICS

Appendix J

Car Wash Operations Guideline Document

MODWASH GUIDELINES

OPERATIONS

1. The carwash hours of operations will be from 8AM-8PM Seven (7) days a week.

2. Peak hours are typically 11:00-1:00, and 4:00-7:00 weekdays. Peak day is Saturday.

3. The site will consist of 1 Site Leader, an assistant site leader & one or two key holders depending on how busy the location is expected to be.

4. 2 min. - 5 max. employees will be on site at anytime depending on how busy the location is expected to be.

5. ModWash always keeps the lot clean and have hourly sweeps of the premises to make sure everything is clean.

6. Trash cans are located at every vacuum parking stall. One per car and are constantly being emptied by ModWash staff.

7. ModWash staff clean the entire site (inside and outside) nightly before leaving.

8. ModWash will have the trash dumpster picked up once per week, and more often as necessary.

9. ModWash typically requests the waste management company to service the dumpster around 7:30AM on a weekday whenever possible. This depends on the waste managements schedule site by site.

10. All payments are controlled electronically at the pay station islands

11. ModWash offers 3 different wash packages for the paying customer. Customer cannot mix & match.
    i. MustWash – Clean Only (always including automatic bug prep)
    ii. MoreWash – Adds Wax & Tire Shine
    iii. ModWash – Adds Ceramic Coating
    iv. ModMax – Adds RainX Graphene

12. Customer can select their wash at any pay station or purchase a monthly membership.

13. Monthly membership customers may approach any pay station lane and the gate will automatically open for these customers as there is a license plate reader that associates members with License Plate Numbers

14. When space allows for a 3rd pay station lane, the outermost lane in dedicated to monthly members. This lane in called the "VIP Lane".

SITE LIGHTING

1. Outdoor site lighting poles/fixtures will come on 1 hour before dark and will stay on all night. Individual lights at the vacuum booms will only be on during operating hours.

WATER AND SEWER

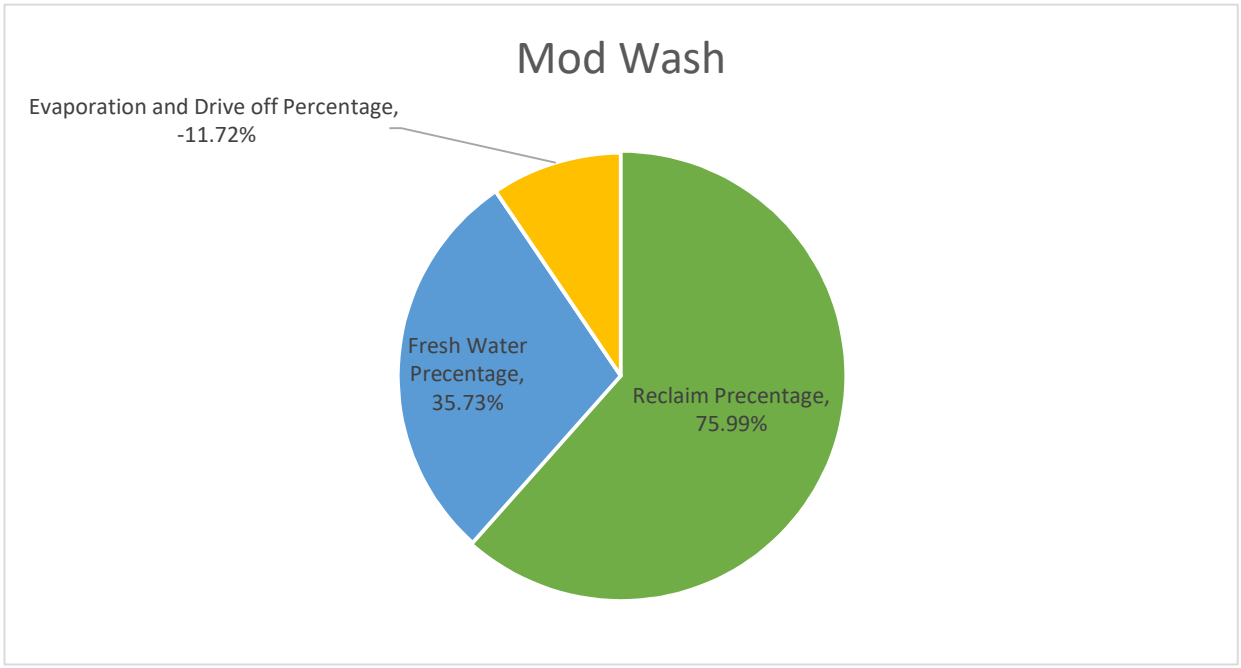
1. While cars being washed in the tunnel, all water drains to a central trench and eventually into a trash pit located in the central area of the tunnel. Everything in the pit flows to into the first of three reclaim tanks via a pair of 6" schedule 80 PVC pipes. The reclaim tanks are located underneath the parking lot next to the building.

2. ModWash uses three (3 ea) 2,000 gallon reclaim tanks and process the water for recycling.

3. There is an oil/water separator at the end of the three tanks prior to draining into the municipal sanitary sewer system.

4. Reclaim tanks are cleaned with a septic-pumping truck once every quarter, or more often as needed based on carwash volume capacity.

5. The ModWash system recycles approximately 75% of the water used to wash cars.



Gallons of water	Total	38.9
Evaporation and Drive Off Gallons		-6.0
Fresh Water Usage Gallons		13.90
Reclaim Water Usage Gallons		25.0
Reclaim Percentage		75.99%
Fresh Water Percentage		35.73%
Evaporation and Drive off Percentage		-11.72%
		100.00%

6. Any water not recycled will be sent to the sanitary sewer system, no car wash water is sent to the storm sewer system and the environment.

CHEMICALS

1. All chemicals used for washing cars are bio-degradable, OSHA approved.

DELIVERIES

1. Deliveries are typically once per week, and are typically done by box truck or van, typically during business hours and are most always Mon-Fri. No semi-trucks are allowed through the wash.

SITE PLAN FLOW

1. Customers enter the site and maneuver their vehicle to pay station kiosk where an attendant will assist them through the payment process.

2. If available at the specific site, ModWash will have installed bug prep stations in parking spaces prior to pay station kiosk. If the customer chooses, they can apply a high PH formula to the front bumper, hood and windshield of their car that will dissolve bug residue.

3. A VIP lane will be provided at most washes with three pay station kiosks, that will be allow monthly members to speed through the line.

4. An escape lane is provided between the kiosk and the tunnel entrance if someone chooses no to move forward with the wash.

5. As the customer enters the wash tunnel, an employee will guide the car onto the conveyor and provide instructions to the customer.

6. The customer will sit in the car (car in neutral) during the wash as the conveyor pushes the car through the wash tunnel.

7. Once wash is complete, the customer can choose to leave the wash, or use our free vacuums to vacuum out the interior of their car.

8. Micro-fiber towels and glass cleaner will be provided to our customers free of charge to assist them in cleaning the interior of their car.

STORMWATER

1. STORMWATER IMPACTS. (MS4)
   Untreated and uncontrolled stormwater is the number one cause of impairments in our waterways. Polluted runoff is transported through municipal drainage systems until it discharges into the waterways. Many people do not realize that washing vehicles can be a form of pollution. (soap, scum, oily grit). If you wash your car in your driveway or other impervious area these pollutants could enter the storm drainage system, then into the waterways. Commercial car washes reuse water several times prior to discharging to the sanitary system which undergoes treatment prior to discharging to the drainage ways.

2. EPA Fact sheets states: Most commercial car washes use 60% less water than a homeowner uses just to rinse a car.

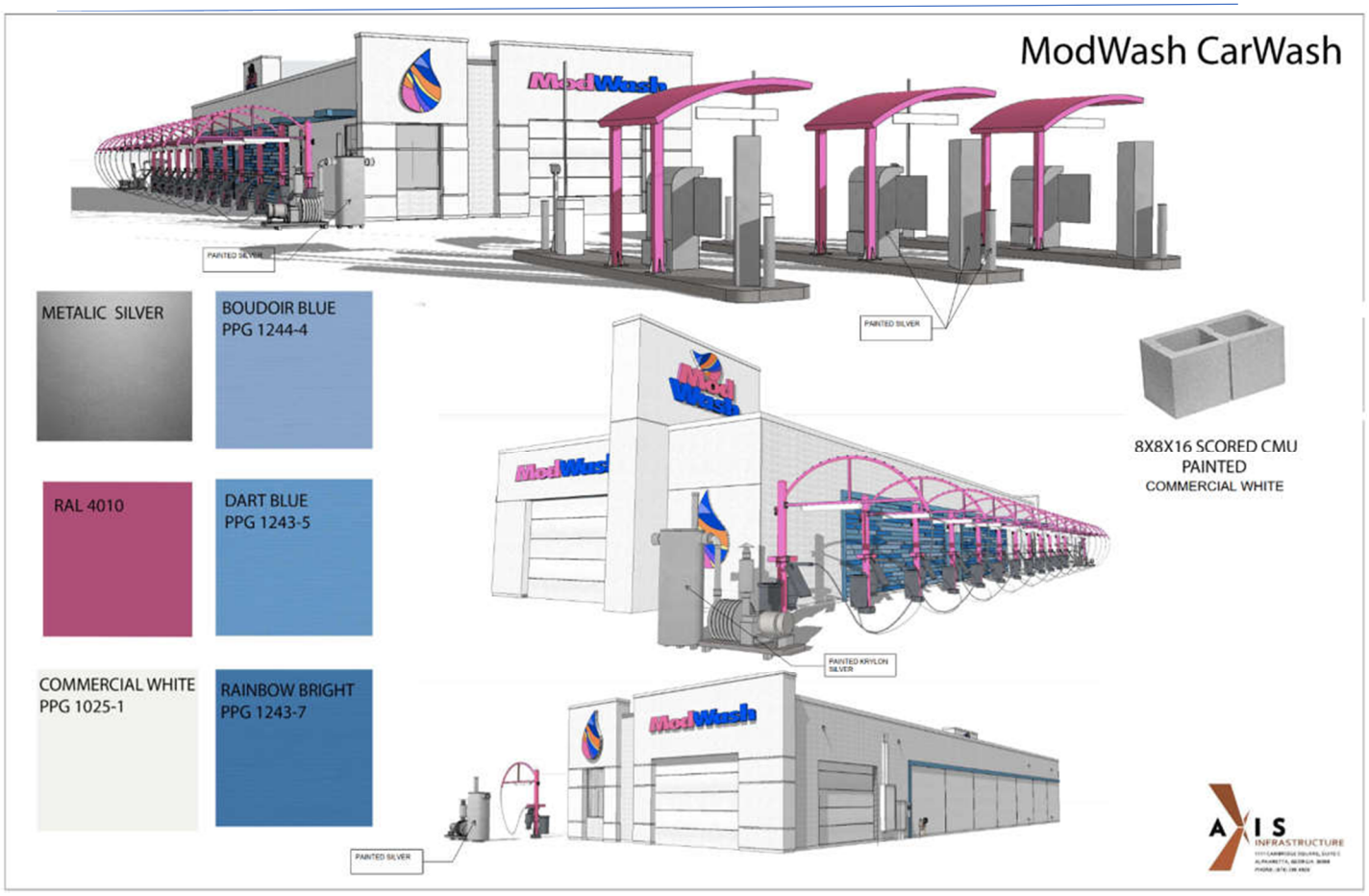
MODWASH CHARITIES

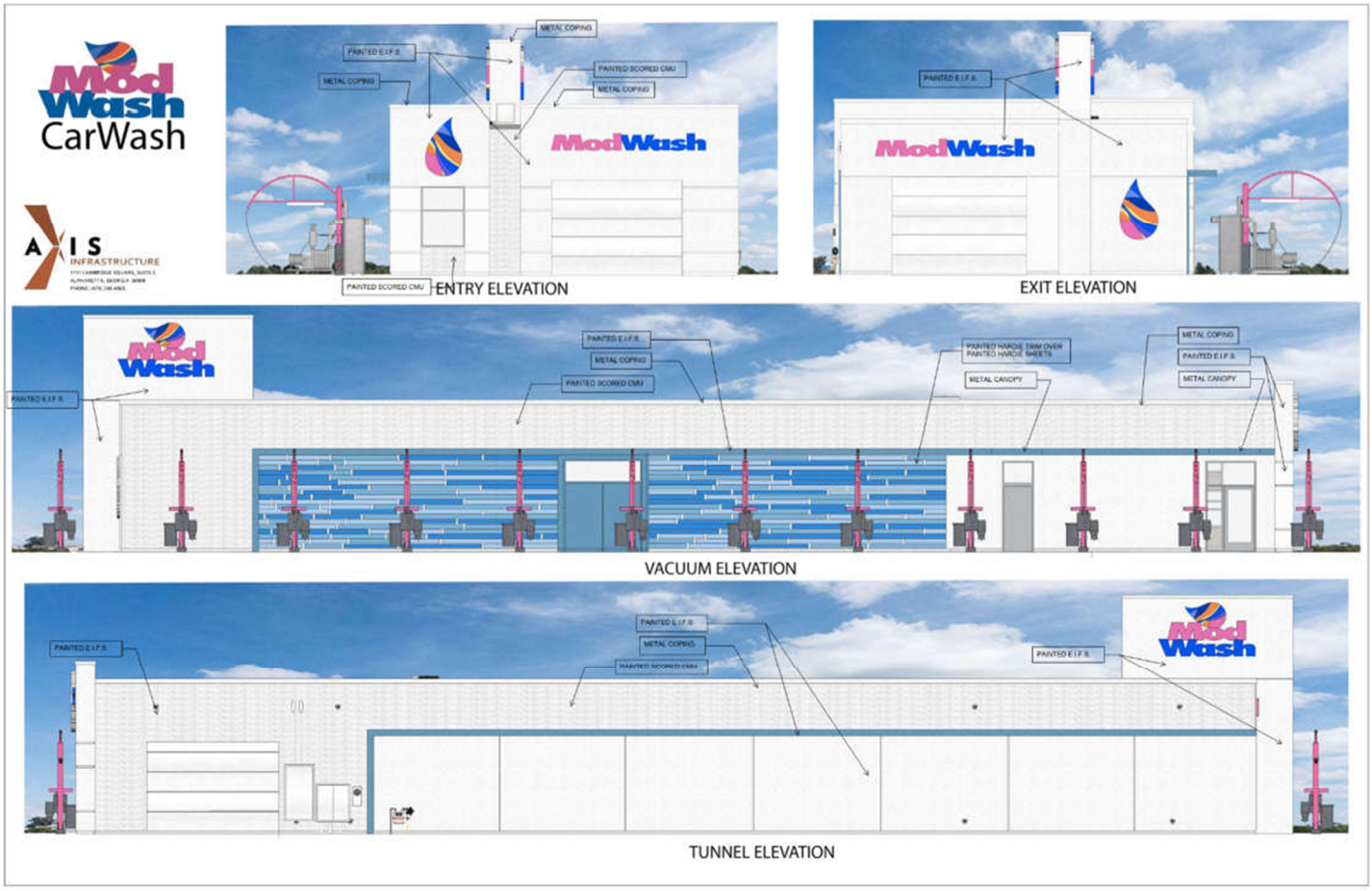
1. ModWash seeks to become involved in the community and will provide sponsorships to local youth athlectic programs and other community programs.

MODWASH BUILDING RENDERINGS

1. SharePoint Link: ModWash Proto Bulletin #3 (USE PAGES 5 & 6)

MODWASH GUIDELINES




ModWash CarWash
AXIS INFRASTRUCTURE
METAL COPING
PAINTED E.I.F.S.
PAINTED SCORED CMU
ENTRY ELEVATION
EXIT ELEVATION
METAL CANOPY
VACUUM ELEVATION
TUNNEL ELEVATION

Appendix K

Noise Study

Lewis S. Goodfriend & Associates
CONSULTING ENGINEERS IN ACOUSTICS
415 Route 24, 2nd Floor
Chester, NJ 07930
908-955-7763 (o)
www.lsga.com

21 March 2024

Hutton
c/o Mr. Rob Spiak
736 Cherry Street
Chattanooga, Tennessee 37402
rspiak@hutton.build

Re: Updated Acoustical Evaluation of Dryers and Vacuum Producers
Proposed Modwash Facility
5363 Southwestern Boulevard, Hamburg, New York
LSG&A File 2023050

Dear Mr. Spiak:

Lewis S. Goodfriend & Associates (LSG&A) has completed an updated evaluation of the expected outdoor sound pressure levels due to the dryers and vacuum producers for the proposed Modwash facility to be located in Hamburg, New York. This letter summarizes the results of our evaluation, including a summary of the expected sound levels at the adjacent residential properties due to the proposed dryers and vacuum producers.

1.0 SITE LAYOUT

The proposed car wash is to be located at 5363 Southwestern Boulevard, Hamburg, New York. The nearest residential properties are located to the south of the site, and commercial properties are located to the east of the site. Figure 1, at the end of this letter, shows the site and surrounding areas.

2.0 BASELINE MEASUREMENTS

On Thursday, 7 March 2024, Jack Zybura of LSG&A visited the proposed site to measure the baseline sound levels at the adjacent residential property at 5436 Abel Street. Figure 1, at the end of this letter, shows the measurement locations. The sound levels were monitored for a 24-hour period beginning at 5:00 P.M. on 7 March 2024. Sound sources contributing to the baseline sound levels included traffic, wildlife, and aircraft. Meteorological conditions during the measurement period were acceptable for acoustical measurements.

2.1 Measurement Results

Three statistical metrics were used to assess the collected sound levels. The L_{90} sound level represents the continuous sound such as that from distant traffic and wildlife, while the L_{10} sound level represents the transient sound such as that from traffic surges on nearby roads. The L_{eq} sound level represents the average sound considering all sources in a given time period. The arithmetic average of each of these statistics during the proposed operational hours of 8:00 A.M. to 8:00 P.M. is presented below in Table 1. The previous results from the 2023 measurement are also included for comparison, and show that the 2023 measurements at the residential property line are consistent with the 2024 measurements at the nearby pool deck location.

Table 1 – Measured Baseline A-weighted Sound Levels, 5436 Abel Street, Hamburg, New York, 7-8 March 2024.

Measurement Location	Sound Level, dB(A)		
	L_{90}	L_{eq}	L_{10}
A: Main Deck (2024)	49	55	58
B: Pool Deck (2024)	51	58	60
C: Property Line (2023)	51	58	61
D: Sidewalk Near Road (2023)	62	72	76

Figures 2 and 3, at the end of this letter, show the 24-hour results of the 2024 sound level measurements at each location.

2.2 Measurement Equipment

Measurements of the airborne sound pressure levels were performed using two Rion Type NL-52 precision sound pressure level analyzers, each equipped with a Rion Type UC-59 microphone. Each analyzer automatically recorded statistical A-weighted[1] sound pressure levels and stored the results in memory for later retrieval. Each microphone was mounted on a tripod at a height of approximately 5 feet above grade, and equipped with the manufacturer's windscreen. Each system's calibration was verified in the field before and after the measurements using a Brüel and Kjær Type 4231 acoustical calibrator. The stored data was later downloaded and transferred to a spreadsheet for evaluation. Copies of the NIST traceable calibration certificates for the sound level measurement equipment are available upon request.

[1] A-Weighting, noted as dB(A), is a standardized sound level meter setting having a frequency characteristic similar to the human ear/brain frequency sensitivity.

3.0 EVALUATION AND RECOMMENDATIONS

To calculate the expected sound pressure levels, the acoustical model considered the propagation of sound over distance, the shielding and reflection of sound due to buildings and barriers, the effect of topography, and the effect of air absorption. The calculations were performed using SoundPLAN software, based on the ISO Standard 9613-2. The input sound data was based on sound level data provided by the manufacturer of the IDC 135HP Predator dryers and VacuTech FT-DD-T3-40HP vacuum producers. It should be noted that these proposed dryers and vacuum producers are quieter models than those previously presented in the original acoustical evaluation. Evaluation points were positioned in the model at the following locations:

1. South Residential Property Line
2. South Residential Elevated Pool Deck
3. South Residential Main Deck
4. South Residence 1st Story Windows
5. South Residence 2nd Story Windows
6. East Commercial Property Line (Mavis Discount Tire)
7. Outside Mavis Customer Lobby Door

These evaluation locations are also shown in Figure 1, at the end of this letter. LSG&A understands that a 6 foot tall, solid wood fence is proposed along a portion of the south residential property line. The acoustical model was configured to generate results with and without this fence, to illustrate the acoustical benefit of the fence.

LSG&A understands that the vacuum producers will run continuously while the facility is open, while the dryers will only operate during the car wash process. Based on conversations with the design team, the tunnel can process up to 100 cars in an hour, and the dryer time for each vehicle is up to 15 seconds. This equates to a worst-case hourly dryer operation of approximately 42%. In order to compare the expected sound levels to the measured baseline sound levels, the acoustical model was configured with the following equipment operations:

- Vacuum producers, for comparison to L_{90} baseline
- Vacuum producers and 42% dryers for comparison to L_{eq} baseline
- Vacuum producers and 100% dryers for comparison to L_{10} baseline

4.0 RESULTS

Table 2 and Table 3, below, show the expected A-weighted sound levels at the nearest properties due to the operation the proposed equipment, with and without the 6 foot tall solid fence. The results are compared to the measured baseline sound levels.

Table 2 – Expected A-weighted Sound Levels due to Modwash at South Residential Property with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
1: Property Line	31	58	62	26	49	53
2: Pool Deck	31	49	53	31	44	48
3: Main Deck	28	40	44	27	36	39
4: 1st Story Window	25	40	43	25	35	39
5: 2nd Story Window	29	41	44	29	40	43
Baseline	49-51	55-58	58-61	49-51	55-58	58-60

Table 3 – Expected A-weighted Sound Levels due to Modwash at East Commercial Property with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
6: Property Line	49	58	62	49	58	62
7: Mavis Door	46	50	53	46	50	53
Baseline	62	72	76	62	72	76

The results of the evaluation indicate that the sound levels due to the proposed equipment are expected to be below the typical existing sound levels with the proposed low-noise dryer and vacuum systems. The implementation of the solid fence along the south property line is also expected to provide additional sound mitigation to the residential property.

I trust that this information is sufficient for your present needs. Please call if you have any questions regarding this letter.

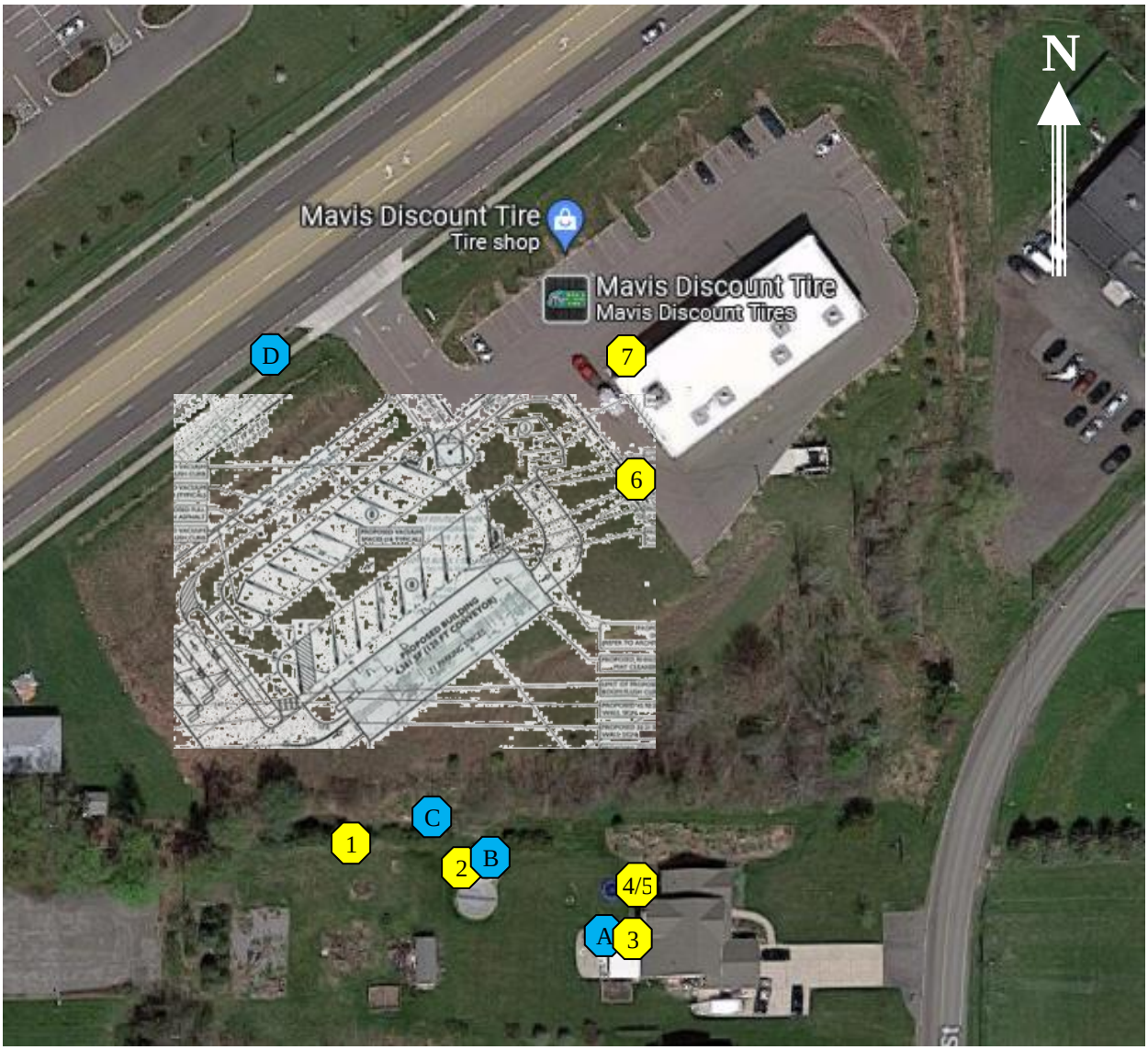
Very truly yours,

LEWIS S. GOODFRIEND & ASSOCIATES

Jack A. Zybura, INCE Bd. Cert.
Associate Principal

JAZ:jaz
Enclosures F:\JOB_DIR\2023\2023050\Documents\L2023050B.docx

Figure 1 – Aerial View with Partial Site Plan Overlay Showing the Baseline Measurement and Evaluation Locations, Modwash, Hamburg, New York.



All Locations Approximate
Not to Scale
Not for Construction

X Measurement Locations

Evaluation Location

Figure 2 – Measured Ambient A-weighted Sound Levels at Location A (Main Deck), 5436 Abel Street, Hamburg, New York, 7-8 March 2024.

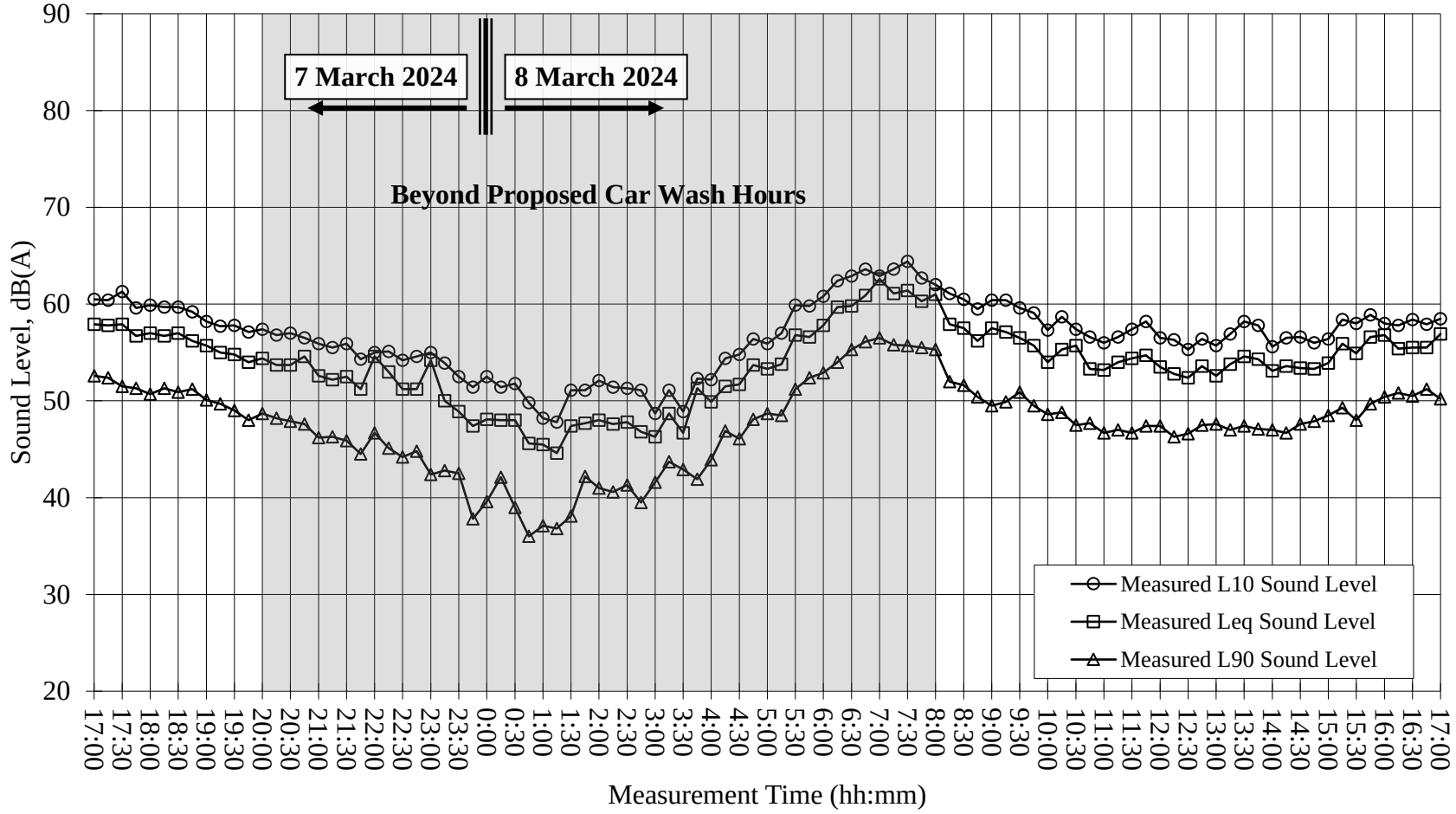
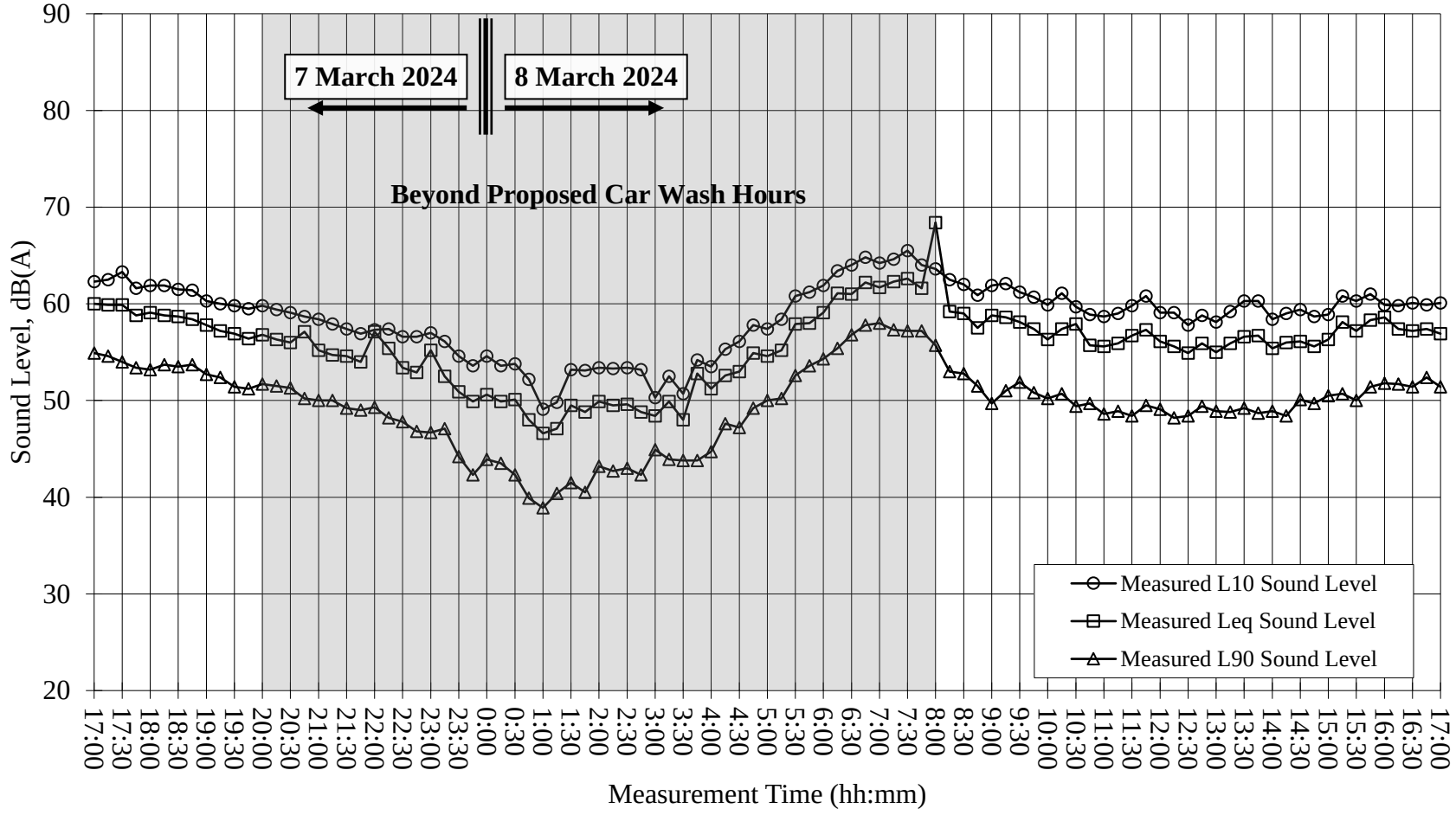


Figure 3 – Measured Ambient A-weighted Sound Levels at Location B (Pool Deck), 5436 Abel Street, Hamburg, New York, 7-8 March 2024.



Lewis S. Goodfriend & Associates
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908-955-7763 (o)
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25 May 2023

Mr. Devin Baker
Hutton
736 Cherry Street
Chattanooga, Tennessee 37402
dbaker@hutton.build

Re: Acoustical Evaluation of Dryers and Vacuum Producers
Proposed Modwash Facility
5363 Southwestern Boulevard, Hamburg, New York
LSG&A File 2023050

Dear Mr. Baker:

Lewis S. Goodfriend & Associates (LSG&A) has completed an evaluation of the expected outdoor sound pressure levels due to the dryers and vacuum producers for the proposed Modwash facility to be located in Hamburg, New York. This letter summarizes the results of our evaluation, including a summary of the expected sound levels at the adjacent residential properties due to the proposed dryers and vacuum producers.

1.0 SITE LAYOUT

The proposed car wash is to be located at 5363 Southwestern Boulevard, Hamburg, New York. The nearest residential properties are located to the south of the site, and commercial properties are located to the east of the site. Figure 1, at the end of this letter, shows the site and surrounding areas.

2.0 BASELINE MEASUREMENTS

On Friday, 5 May 2023, Jack Zybura of LSG&A visited the proposed site to measure the baseline sound levels on site. Figure 1, at the end of this letter, shows the measurement locations. The sound levels were monitored at the south residential property line continuously from 8:00 A.M. to 8:00 P.M. Additional short-duration measurements were performed along the sidewalk of Route 20 (Southwestern Boulevard). Sound sources contributing to the baseline sound levels included traffic, wildlife, and aircraft. Meteorological conditions during the measurement period were acceptable for acoustical measurements.

2.1 Measurement Results

Three statistical metrics were used to assess the collected sound levels. The L_{90} sound level represents the continuous sound such as that from distant traffic and wildlife, while the L_{10} sound level represents the transient sound such as that from traffic surges on nearby roads. The L_{eq} sound level represents the average sound considering all sources in a given time period. The arithmetic average of each of these statistics for the monitoring period is presented below in Table 1.

Table 1 – Measured Baseline A-weighted Sound Levels, 5363 Southwestern Boulevard, Hamburg, New York, 5 May 2023.

Measurement Location	Sound Level, dB(A)		
	L_{90}	**L_{eq}**	**L_{10}**
S: South Property Line	51	58	61
N: Sidewalk Near Road	62	72	76

2.2 Measurement Equipment

Measurements of the airborne sound pressure levels were performed using two Rion Type NL-52 precision sound pressure level analyzers, each equipped with a Rion Type UC-59 microphone. Each analyzer automatically recorded statistical A-weighted[1] sound pressure levels and stored the results in memory for later retrieval. Each microphone was mounted on a tripod at a height of approximately 5 feet above grade, and equipped with the manufacturer's windscreen. Each system's calibration was verified in the field before and after the measurements using a Brüel and Kjær Type 4231 acoustical calibrator. The stored data was later downloaded and transferred to a spreadsheet for evaluation. Copies of the NIST traceable calibration certificates for the sound level measurement equipment are available upon request.

[1] A-Weighting, noted as dB(A), is a standardized sound level meter setting having a frequency characteristic similar to the human ear/brain frequency sensitivity.

3.0 EVALUATION AND RECOMMENDATIONS

To calculate the expected sound pressure levels, the acoustical model considered the propagation of sound over distance, the shielding and reflection of sound due to buildings and barriers, the effect of topography, and the effect of air absorption. The calculations were performed using SoundPLAN software, based on the ISO Standard 9613-2. The input sound data was based on sound level data provided by the manufacturer of the IDC 135HP Black Widow dryers and VacuTech 40HP vacuum producers. Evaluation points were positioned in the model at the following locations:

1. South Residential Property Line
2. South Residential Elevated Pool Deck
3. South Residence 1st Story Windows
4. South Residence 2nd Story Windows
5. East Commercial Property Line (Mavis Discount Tire)
6. Outside Mavis Customer Lobby Door

These evaluation locations are also shown in Figure 1, at the end of this letter. LSG&A understands that a 6 foot tall, solid wood fence is proposed along a portion of the south residential property line. The acoustical model was configured to generate results with and without this fence, to illustrate the acoustical benefit of the fence.

LSG&A understands that the vacuum producers will run continuously while the facility is open, while the dryers will only operate during the car wash process. Based on conversations with the design team, the tunnel can process up to 100 cars in an hour, and the dryer time for each vehicle is up to 15 seconds. This equates to a worst-case hourly dryer operation of approximately 42%. In order to compare the expected sound levels to the measured baseline sound levels, the acoustical model was configured with the following equipment operations:

- Vacuum producers, for comparison to L_{90} baseline
- Vacuum producers and 42% dryers for comparison to L_{eq} baseline
- Vacuum producers and 100% dryers for comparison to L_{10} baseline

4.0 RESULTS

Table 2 and Table 3, below, show the expected A-weighted sound levels at the nearest properties due to the operation the proposed equipment, with and without the 6 foot tall solid fence. The results are compared to the measured baseline sound levels.

Table 2 – Expected A-weighted Sound Levels due to Modwash at South Residential Property, with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
1: Property Line	33	67	71	30	59	62
2: Pool Deck	34	64	68	34	61	64
3: 1st Story Window	28	49	53	28	45	48
4: 2nd Story Window	33	50	54	33	49	53
Baseline	51	58	61	51	58	61

Table 3 – Expected A-weighted Sound Levels due to Modwash at East Commercial Property, with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
5: Property Line	52	67	71	52	67	71
6: Customer Lobby	49	58	61	49	58	61
Baseline	62	72	76	62	72	76

The results of the evaluation indicate that the sound levels due to the proposed equipment are expected to be below or comparable to the existing sound levels with the implementation of the solid fence along the south property line.

I trust that this information is sufficient for your present needs. Please call if you have any questions regarding this letter.

Very truly yours,

LEWIS S. GOODFRIEND & ASSOCIATES

Jack A. Zybura, INCE Bd. Cert.
Associate Principal

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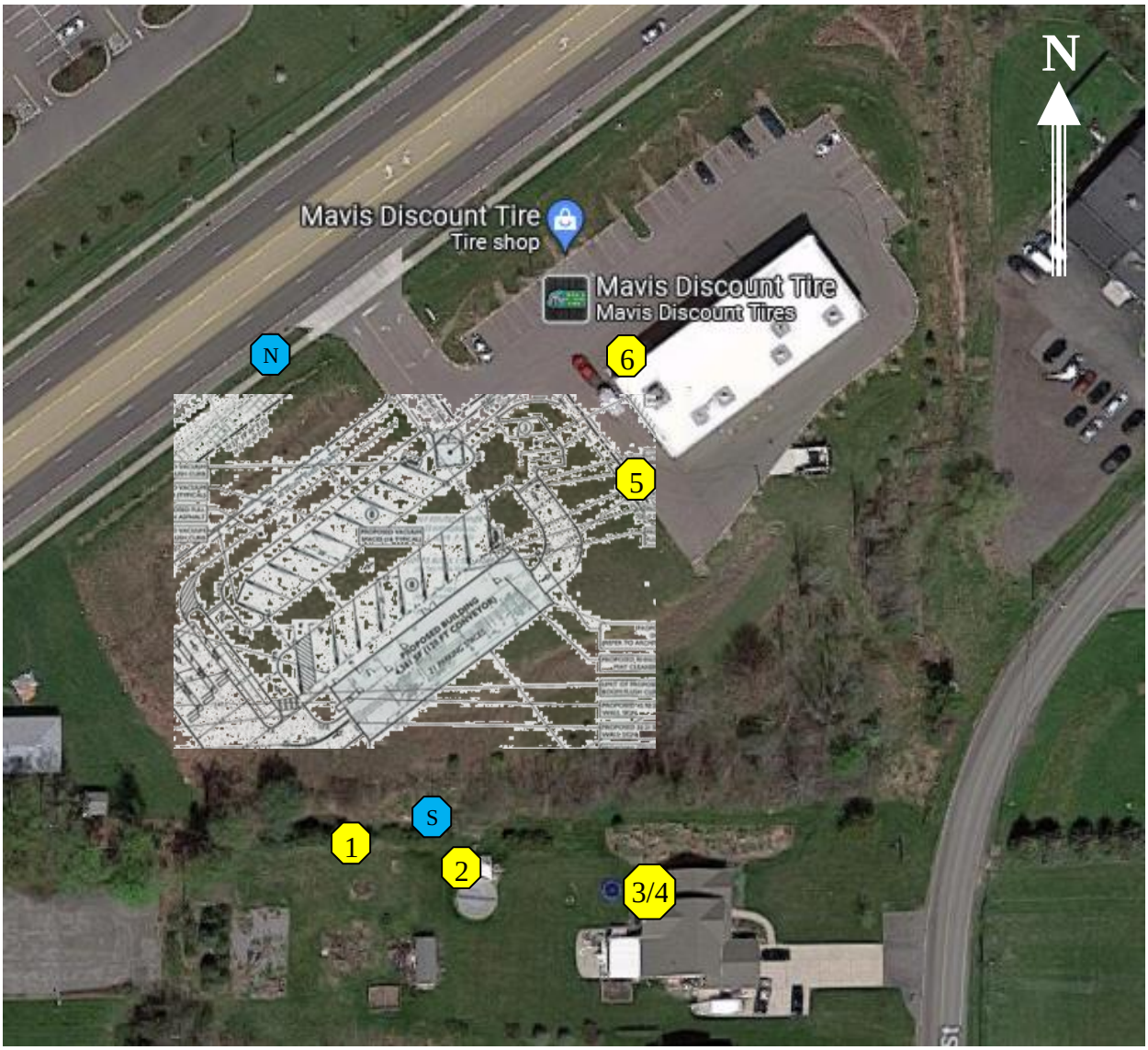
Figure 1 – Aerial View with Partial Site Plan Overlay Showing the Baseline Measurement and Evaluation Locations, 5363 Southwestern Boulevard, Hamburg, New York.



All Locations Approximate
Not to Scale
Not for Construction

X Measurement Locations

Evaluation Location

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RESULTS WITH IDC 135HP PREDATOR DRYER SYSTEM

Table 2a and Table 3a, below, show the expected A-weighted sound levels at the nearest properties due to the operation the proposed equipment, with and without the 6 foot tall solid fence. The results are compared to the measured baseline sound levels.

Table 2a –Expected A-weighted Sound Levels due to Modwash at South Residential Property, with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level with Predator Dryers, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
1: Property Line	33	58	62	30	50	53
2: Pool Deck	34	55	59	34	52	55
3: 1st Story Window	28	40	44	28	36	40
4: 2nd Story Window	33	42	45	33	41	44
Baseline	51	58	61	51	58	61

Table 3a –Expected A-weighted Sound Levels due to Modwash at East Commercial Property, with and without Solid Fence, Modwash, Hamburg, New York.

Evaluation Location	Sound Level with Predator Dryers, dB(A)					
	Without Fence			With Fence		
	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers	Vacuum Producers	Vacuum Producers and 42% Dryers	Vacuum Producers and 100% Dryers
5: Property Line	52	59	62	52	59	62
6: Customer Lobby	49	52	54	49	52	54
Baseline	62	72	76	62	72	76