Erosion & Sediment Control /Storm Water Pollution Prevention Plan

Orchards on Hudson - Residential

PREPARED FOR

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September 10, 2024

VHB Project #: 20578.01

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Forms.....

Certification of Project Construction Contractors
Notice of Intent
Blank Notice of Intent
MS4 Acceptance Form
Blank MS4 Acceptance Form
Spill Response Procedure
Hazardous Waste/Oil Spill Report
Emergency Response Equipment Inventory
Emergency Notification Phone Numbers
Pre-construction Site Assessment Checklist
Construction Duration Inspections
Monthly Summary of Site Inspection Activities
Notice of Termination
Blank Notice of Termination

Introduction and Instruction to Owner/Operator

On behalf of the Owner/Operator, this Erosion and Sedimentation Control / Storm Water Pollution Prevention Plan (SWPPP) has been developed for the project, as required under New York's State Pollutant Discharge Elimination System (SPDES) Permit for Construction Activites (GP-0-20-001). the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with the majority of the property situated on the north side of the roadway and a small portion on the south side (see the attached Site Location Map). The Proposed Project would involve the removal of two existing single-family residences and extensive grading of the site, the majority of which was formerly used for gravel pit operations, to accommodate the development of up to 103 single-family townhomes and cottages. All requirements outlined herein shall be adhered to throughout construction.

The GP-0-20-001 permit authorizes storm water discharges to surface waters of the state for construction projects involving soil disturbances of one or more acres; including disturbance of less than one acre but part of a larger common plan of development.

This manual provides the following information, as required for the SWPPP by the SPDES Permit when applicable to the project:

- Site Description
- Development Description
- Wetland Characteristics
- Drainage Characteristics
- Soil Characteristics
- Rare and Endangered Species Data
- Construction Phasing Information
- Pollution Prevention Practices
- Erosion and Sedimentation Control BMPs
- Operations and Maintenance Plans
- Grading, Drainage and Erosion Control Plans
- SPDES Permit and Fact Sheet
- Notice of Intent (NOI) Form (to be finalized and Certified by the Owner/Operator)
- Notice of Termination (NOT) Form
- Inspection Forms, Monitoring and Reporting Requirements
- Contractor Certification Form

The general requirements (Part II. C. 1-5) for Owners/Operators with permit coverage include the following:

- Ensure all 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.
- Maintain a copy of the General Permit (GP-0-20-001), NOI, NOI Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance Form (if applicable) and inspection reports at the consruction site.
- Written authorization from NYSDEC or the regulated, traditional land use control (MS4) must be received prior to construction activity that will disturb greater than five acres of soil at one time.
- Notify the regulated traditonal land use control MS4, in writing, of any amendments or modifications to the post construction management practice component of the SWPPP, if applicable.

The NYSDEC has the right to suspend or revoke an Owner/Operator coverage under this permit at any time if the NYSDEC determines that the SWPPP does not meet the permit requirements.

Prior to construction, the Owner/Operator (under the supervision of a licensed Engineer/Landscape Architect or NYSDEC Certified Inspector), must complete the following:

- Certify that they have read and understand the terms of the SPDES Permit.
- Review this manual and coordinate any revisions with the Licensed Engineer who prepared the SWPPP.
- Review location and types of sedimentation and erosion control materials as shown on the approved Soil Erosion and Sedimentation Control Plans.
- Designate areas for stockpiles, sanitary facilities, dumpsters, wash-down, lay-down and construction trailers and appropriate erosion and sedimentation control features, which shall be approved by the Licensed Engineer, Landscape Architect, or the NYSDEC Certified Inspector.
- Identify the trained demolition contractors, site contractors and subcontractors that will be responsible for the implementation of the SWPPP and any post construction storm water management practices, if exists. A trained contractor should be on site on a daily basis when soil disturbance activities are being performed. (See the Forms section at the end of this manual.)
- Designate project contact person(s) and include contact information.

The SWPPP is a dynamic document, and must be continually updated by the Owner/Operator, under the supervision of a licensed Engineer/Landscape Architect or NYSDEC Certified Inspector, throughout construction. It is the responsibility of the Owner/Operator, under the supervision of a Licensed Engineer/Landscape

Architect or NYSDEC Certified Inspector, to update this manual and perform the activities herein, including, but not limited to:

- Perform inspections and maintenance as designated in this manual, and as required as the project phases change.
- Prepare and certify inspection reports and include reports in the SWPPP.
- Request revisions to plans, as necessary, to denote major site changes and/or changes in the site BMPs.
- Request revisions to plans to reflect changes in stockpile, sanitary facility, lay-down and other site areas.
- Maintain schedule of dates of major earthwork, stabilization and/or erosion control installations.
- Document any spills.
- Document off-site sedimentation resulting from this construction.

The following documents will need to be inserted prior to the submission to the NYSDEC:

- Signed Certification form from Contractors and Subcontractors (See Forms Section).
- Signed Notice of Intent (See NOI Forms Section).
- Signed MS4 SWPPP Acceptance Form, if applicable (See Forms Section).
- Final approved site plans including the Erosion Control Plan (See Attachment B)
- Phasing or construction schedule (See Construction Schedule and Sequence, Section IV).

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect, or NYSDEC Certified Inspector, must update the SWPPP throughout construction, until a Notice of Termination (NOT) Form has been submitted to the NYSDEC. From the date of submital of the NOT form, the SWPPP documents must be maintained by the site operator for a period of five years from the date of final stabilization of the site. Any changes to the approved Erosion Control Plan must be coordinated with a Licensed Engineer.

I

Notice of Intent (NOI) Form

The Notice of Intent (NOI) is to be submitted once a SWPPP has been developed according to all applicable requirements of the GP-0-20-001 Permit. On behalf of the Owner/Operator, VHB has prepared a majority of the NOI Form, based on the existing conditions of the site, proposed work on the site, and water quality calculations. The NOI form must be reviewed and signed by the Owner/Operator and submitted to the New York State Department of Environmental Conservation (NYSDEC) for their review. The Owner/Operator shall also advise VHB of any additional information that may not have been filled in the NOI form. The NOI does require the Local Municipality to sign an MS4 SWPPP Acceptance Form.

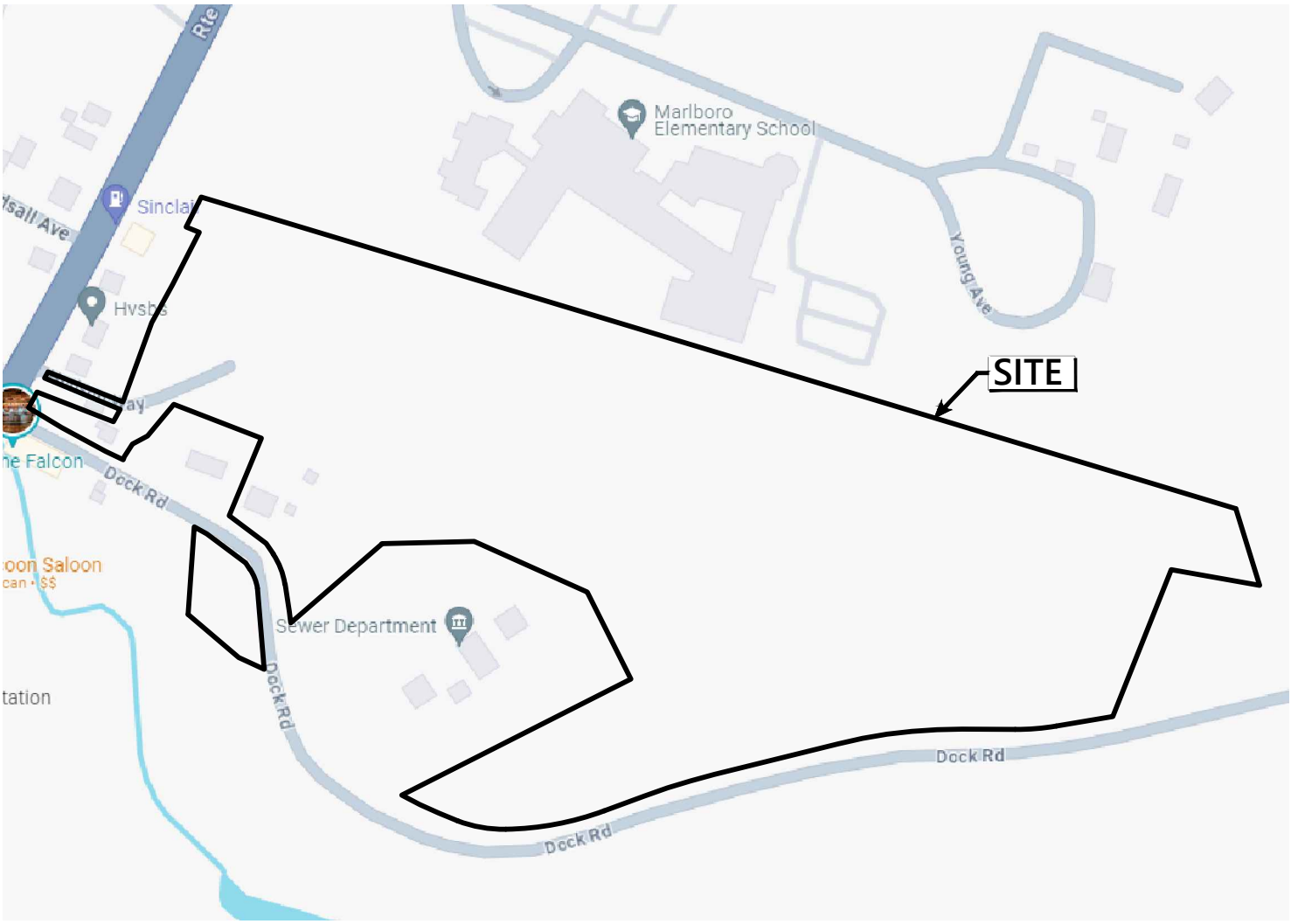
As per the requirements of the NYSDEC, this SWPPP document has been prepared, and approved by the MS4, prior to filing of the Notice of Intent (NOI). If the SWPPP conforms to the Department's technical standards and the activities will not discharge a pollutant of concern to an impaired water or a TMDL watershed, authorization to discharge under this permit may occur five (5) business days after the date on which the NOI is received electronically or ten (10) business days after the date on which a complete paper version of the NOI is received by the Department. Any activities which do not comply with the technical standards or for construction site activities subject to a TMDL, authorization to discharge begins no sooner than sixty (60) business days from receipt of the NOI by the DEC unless notified otherwise.

The completed NOI forms can be found in the Forms Section, of this report, and blank forms also can be found on the NYS DEC website (http://www.dec.ny.gov/). The completed NOI form and MS4 Acceptance Form must be mailed to the NYSDEC Central Office in Albany (Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, NY 12233-3505). The completed NOI Form and MS4 Acceptance Form must be certified and submitted by the Owner/Operator in order for it to take effect.

II
Project Figures

The following pages contain figures that will help establish the location and existing conditions of the site. These figures are:

- Figure 1 – Site Location Map
- Figure 2 – Site Aerial Map
- Figure 3 – Survey
- Figure 4 – FEMA Flood Map



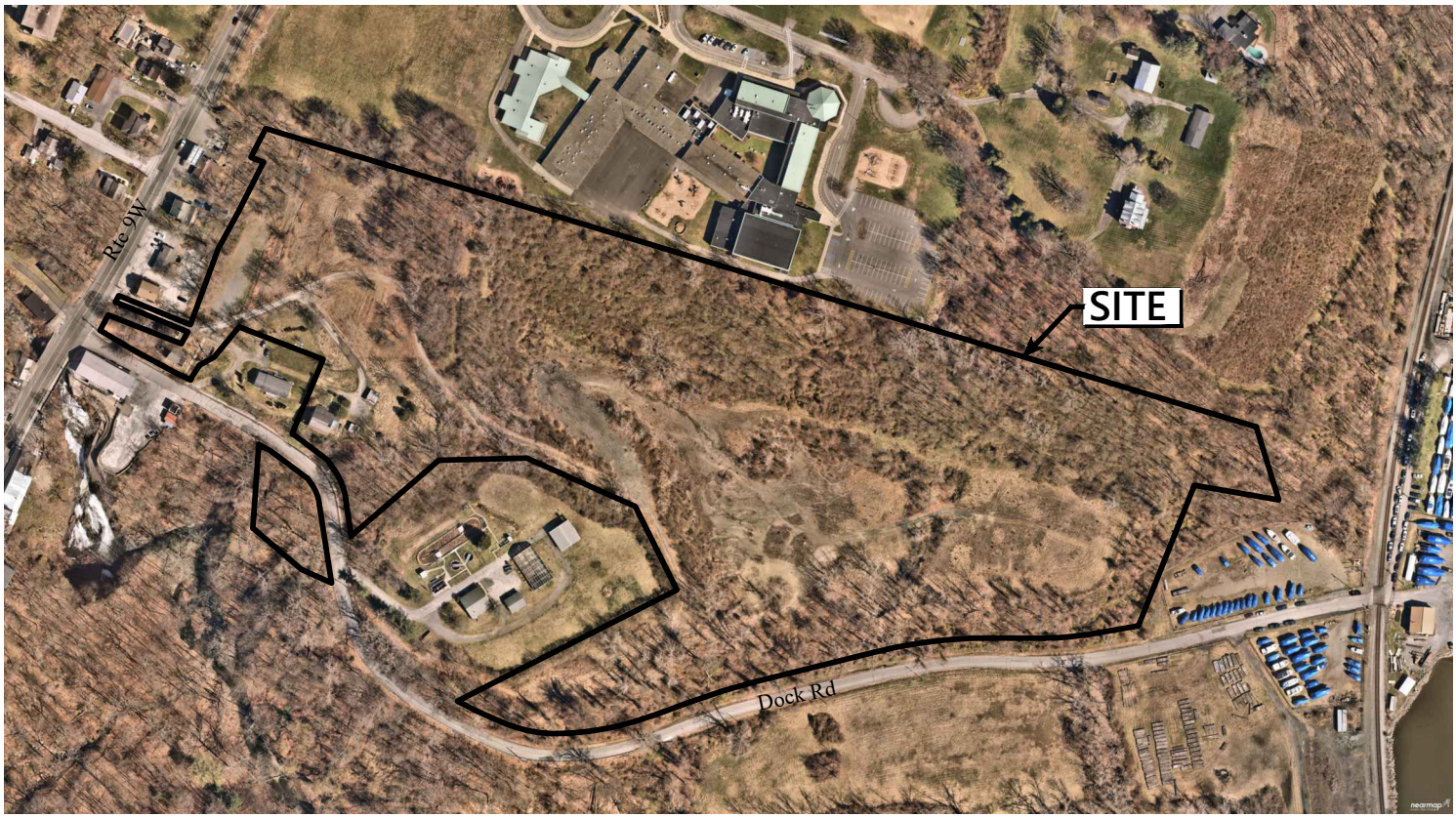
Site Location Map
Orchards on Hudson - Residential

Figure 1
September 2024

Dock Rd
Marlboro, NY 12542

.\VHB Logo.jpg

0 200 400 Feet



0 175 350 Feet

Site Aerial Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 2
September 2024

.\VHB Logo.jpg

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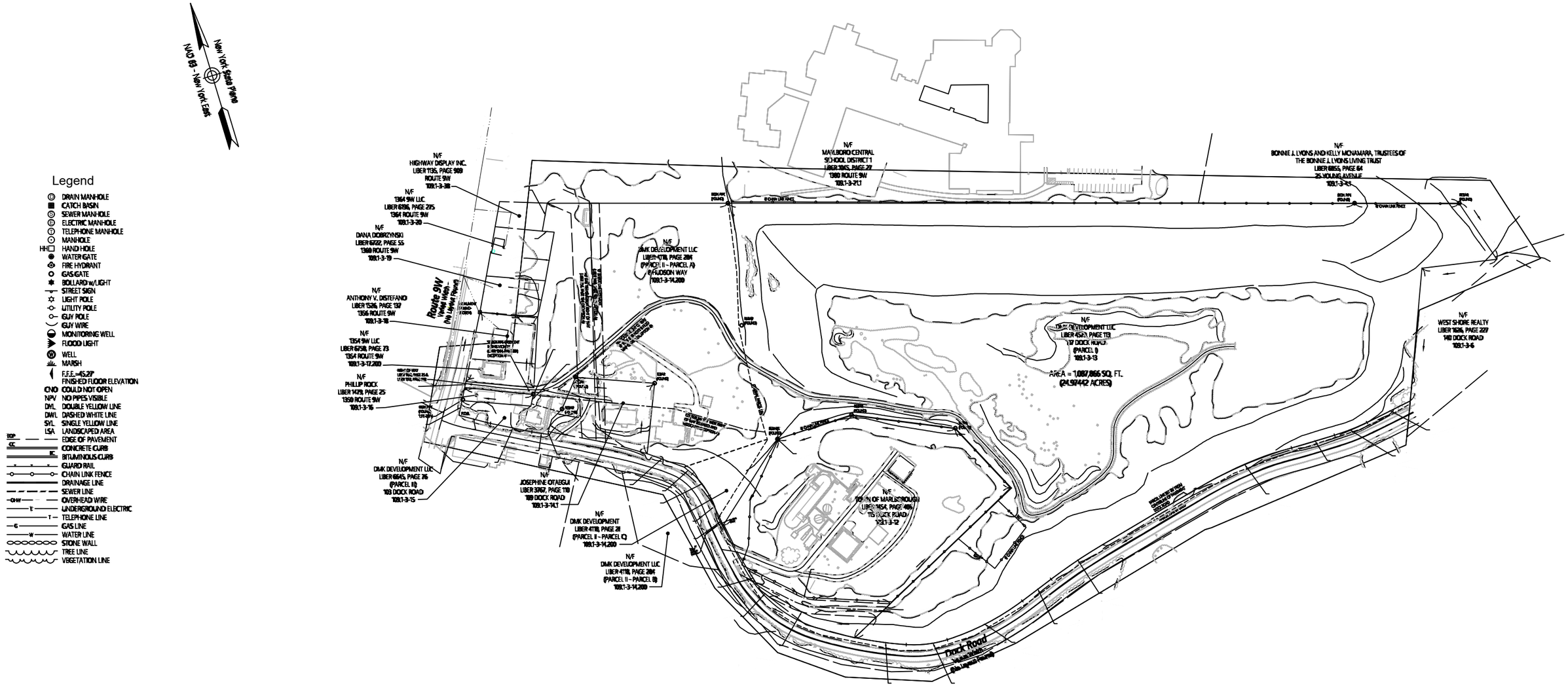
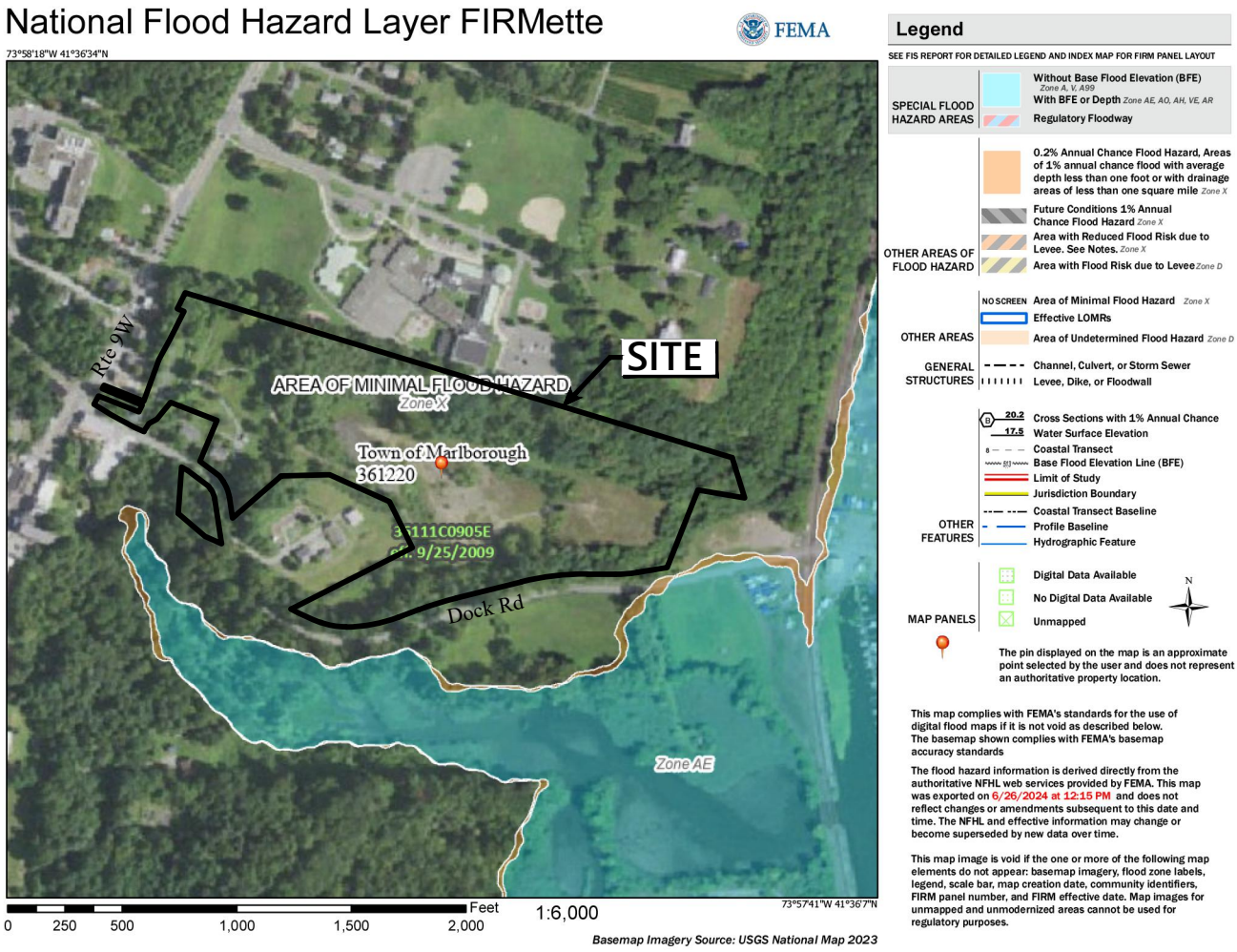


Existing Conditions Plan
Orchards on Hudson - Residential

Figure 3
September 2024

Dock Rd
Marlboro, NY 12542

.\VHB Logo.jpg



FEMA Flood Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 4
September 2024

Map #: 36111C0905E
(Revised 09/24/2009)

0 400 800 Feet

VHB Logo.jpg

III
Project Description

Site Location

The Proposed Action involves an application for special permit, site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with the majority of the property situated on the north side of the roadway and a small portion on the south side. Ulster County Tax Map #: Section 109.1 - Block 3 - Lots 13, 14.2 and 15 and Section 108.4 - Block 3 - Lot 29.1.

Surrounding Zoning
North: R-1 Residential
East: R-1 Residential
South: R-1 Residential/ IND Industrial
West: R-1 Residential/ IND Industrial

The project site is bounded by the campus of Marlboro Elementary School to the north; A marina located at 140 Dock Road to the east; Dock Road to the south; The Hamlet of Marlboro Wastewater Treatment Facility to the southwest; Residential properties and commercial structures fronting Route 9W to the west. Section II of this report includes Figures 1 and 2 which depict the Site Location Map and Aerial Map, respectively.

Existing Conditions

The site is currently occupied by two single-family residences however is mostly vacant land that was formerly used as a quarry. Currently, the site is not serviced by an existing on-site drainage system and all runoff either ponds on site or runs off to neighboring properties.

Section II, Figure 3 displays an existing conditions and topography plan for the project site.

Floodplains

According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), no portion of the site is located within the 100-year floodplain. The site is in an area of minimal flood hazard. Information obtained from the FEMA website states that the site location is within FEMA Map Number 36111C0905E.

Figure 4 in Section II of this report shows the limits of the flood plains.

Soil Conditions

According to the NRCS soil survey for Ulster County, obtained from the USDA website, the soil is classified as 41.5 % Hoosic soils, very steep(HSF), 29.8% Riverhead fine sandy loam, 0-3% slopes(RvA), 12.1 % Chenango gravelly silt loam, 3-8 % slopes(CnB), 7.8% Raynham silt loam (Ra), 6.3% Hoosic gravelly loam 15-25% slopes (HgD) and the rest of the site is made up of Made Land(ML), , fresh water marsh(FW), and cut and fill land(CF). The surface soils on-site are within Hydrologic Soil Group A, B and D. Soil data can be found in Attachment C).

Subsurface exploration was performed by Tectonic on April 2, 2024 throughout the site. During the exploration, 27 soil borings were drilled to depths of 32 feet below existing ground surface. The site is generally underlain by native soils, consisting of coarse to fine sand with varying amounts of coarse to fine gravel and fines, and predominantly fine-grained soils with varying amounts of fine sand and gravel. Groundwater was encountered at different depths across the site at an average of nine feet below grade at the northwestern portion of the site and an average of 27 feet below grade at the southern portion of the site. See geotechnical report in Attachment C for more detail.

Topography

The existing topography is a series of terraces with surface elevations stepping downwards from the northwest to the southeast. The site has areas of very steep slopes. In the areas of proposed developments, the surface areas range from +/- 145 feet on the western end of the site, down to +/- 63 feet at the eastern end of the site.

Topographical information is shown on the Survey plan located in Section II of this report.

Endangered Species and Critical Habitat

The New York Natural Heritage Program's "Environmental Resource Mapper" indicates that the site in the vicinity of a rare animal. However, based on correspondence with the New York Natural Heritage Program (NYNHP), non-breeding sightings of Bald Eagle have been reported along the Hudson River in the area of Cedar Cliff, located approximately 1.2 miles to the south of the Subject Property. The NYNHP correspondence further indicates that there are no breeding records for Bald Eagle within 660-feet of the Subject Property, which is the U.S. Fish and Wildlife Service's distance threshold for determining the potential for adverse impacts to Bald Eagle nesting sites. The fish species Shortnose Sturgeon and Atlantic Sturgeon have been documented in the Lower Hudson River and therefore, could occur in the Hudson River in the vicinity of the Subject Property. The terrestrial communities of the Subject Property do not represent habitat for the two fish species and the Proposed Project would not result in adverse impacts to species habitat.

Historic Places

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) map does not identify any archeological sensitive areas overlapping or within close proximity to the project site. According to the New York State Cultural Resource Information System (CRIS) online database, the subject property is not located within any historic districts and does not contain any designated historical buildings. See Attachment D, for the OPRHP Map.

Proposed Project

The Proposed Action involves an application for special permit, site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Proposed Project would involve the removal of two existing single-family residences and extensive grading of the site, the majority of which was formerly used for gravel pit operations, to accommodate the development of up to 103 single-family townhomes and cottages. Each residential unit would have a garage, and visitor parking will be made available throughout the site. A clubhouse with amenities including a pool is proposed on the site towards the eastern property boundary for the use by the residents. Entry to the Subject Property would be provided from 9W in accordance with the NYS DOT requirements, with an emergency access drive off of Dock Road for emergency vehicles only. This emergency access would require an easement across the Sewer Treatment Plant property.

Sanitary waste generated by the proposed development would be handled via connection to the municipal sewer district and potable water would be provided via

connection to the Marlborough Water District. The development is proposed to utilize natural gas and electric, both to be provided by Central Hudson Gas & Electric Corp. Stormwater runoff generated at the Subject Property is proposed to be captured via two major catchment areas – the western (upper) and the eastern (lower). Stormwater runoff from each area will be collected via a system of catch basins and an on-site bioretention swale and directed to a proposed on-site underground detention chamber system which will be designed to store and infiltrate runoff.

General Storm Water Management

All stormwater management information can be referenced in the in-depth drainage report in attachment E.

The stormwater management design for the project site will ensure that post-development peak discharge rates will not be increased from pre-development rates following construction of the proposed project. Attachment B includes site plans and details relative to the project for reference.

Permanent Stabilization and Landscaping

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 ceased to eliminate exposed soils and potential sources of erosion. All areas to be planted or vegetated are to follow the approved planting plan details. Areas to be paved will be covered by bituminous pavement after final subgrades are established. Any areas disturbed as a result of construction and that are not to be planted or re-vegetated shall receive minimum 6 inches of loam and seed. All litter, as well as debris generated by construction activities, will be removed by hand from the site and adjacent undeveloped areas.

Project Materials

The materials or substances below are expected to be present on-site during the construction period of the proposed project:

Bituminous Asphalt	Landscape Materials (Trees and Shrubs)
Portland Cement Concrete	Petroleum-Based Products
Lumber	Storm Water Structures
Cleaning Solvents	Erosion and Sediment Control Materials
Detergents	
Welding Supplies	

The contractor, prior to and during the construction process, shall update this material list when necessary.

Non-Industrial Discharges

The following non-storm water discharges may occur on this construction site:

- Fire hydrant flushing;
- Potable water including uncontaminated water line flushing;
- Pavement wash water where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
- Uncontaminated air conditioning or compressor condensate;
- Uncontaminated ground water or spring water;
- Foundation or footing drains where flows are not contaminated with process materials such as solvents; and
- Uncontaminated excavation dewatering

IV
Construction Schedule and Sequence

The following attachment is the Owner/Operator's prepared construction schedule and sequence. If revisions to the schedule and sequence are needed the Owner/Operator shall coordinate the changes with the Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector. The Owner/Operator will update this construction schedule and sequence as needed and maintain a list of construction milestones.

The Site Contractor shall follow construction sequence scheduling. The sequence of actions in an Erosion and Sedimentation Control (E&SC) plan is runoff control, stabilization, and then sediment control. The management practices used in each phase of the plan must be identified on the Construction Sequence Schedule and on appropriate maps.

Erosion and sediment control provisions should be included for all construction activities as shown on the plans or as directed by the Engineer.

General Project Phasing

Site development for the project will occur in three overlapping stages:

1. Site Preparation,
2. Construction, and
3. Final grading and Stabilization.

This project will be constructed in one single phase and will not disturb more than five acres of land.

Site Preparation Stage

Prior to beginning any demolition or construction activities, the contractor shall install all erosion and sediment control practices as outlined in this report and on the project plans. A stabilized construction entrance will be installed, and silt fencing will be placed around the perimeter of all work areas (see the Erosion and Sediment Control plan located in Attachment B for exact locations). The silt fence will be entrenched to eliminate sediment underflow as detailed in the construction drawings. The erosion control measures will be inspected and maintained routinely throughout the duration of the project. Following the installation of erosion and sedimentation controls, the site demolition, grading and excavation may occur.

As determined by the Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, temporary berms and swales may be used to direct runoff on the site during construction. No sediment-laden water will be allowed to discharge to resource or off-site areas.

The Contractor, under the observation of a Licensed Engineer, Landscape Architect, or NYSDEC Certified Inspector, shall ensure that the erosion controls are installed correctly and will be effective. They shall be responsible to maintain and clean out any erosion control measures and add any additional measures as determined by the Licensed Engineer, Landscape Architect, NYSDEC Certified Inspector, or determined by Local Municipality.

Construction Stage

Throughout the construction stage of the project, the contractor is required to maintain the condition of all erosion and sediment control practices. These measures should be maintained in accordance with the project plans and weekly inspections.

Final Grading and Stabilization Phase

Upon completion of an area, the contractor shall perform all final grading and stabilization to prevent sediment runoff from leaving the site. Paved areas shall be swept clean of all sediment and debris; landscaped areas shall be permanently stabilized with vegetation in accordance with the approved landscape plan and all disturbed soil shall be restored per Table 5.3 – Soil Restoration Requirements from the New York State Storm Water Management Design Manual below. When the site is completely stabilized, a Notice of Termination will be issued to the Town and DEC.

New York State Stormwater Management Design Manual

Chapter 5: Green Infrastructure Practices

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

Table 5.3 Soil Restoration Requirements

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

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

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

Source: New York State Storm Water Management Design Manual, January 2015

CONSTRUCTION SCHEDULE

(Owner/Operator to insert prepared construction schedule and sequence here)

V

Spill Prevention Plan and Response Procedures

All construction personnel will be instructed regarding spill prevention practices and procedures. Notices stating these practices will be posted in the office trailer, and the site construction supervisor will be responsible for seeing that these procedures are followed.

Material Management Practices

The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. These include good housekeeping practices and guidelines for the handling of hazardous products.

The following good housekeeping practices will be followed on-site during the construction period.

- Contractor/Owner to designate material storage and stockpile areas which will not interfere with site operations and erosion and sediment control measures.
- An effort will be made to store only enough products required to do the job.
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers, and (if possible) under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, the entire product will be used before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The site superintendent will inspect the storage area daily to ensure proper use and disposal of materials on-site.

The following practices will reduce the risks associated with hazardous materials (e.g., petroleum products, solvents):

- A copy of all Material Safety Data Sheets (MSDS) for materials or products used during construction will be kept in the office trailer.
- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data (MSD sheets) containing important product information will be retained on site by the contractor in the construction trailer.
- If surplus product must be disposed, manufacturer's or local- and state-recommended methods for proper disposal will be followed.

Product-Specific Practices

The following product-specific practices will be followed on-site. Recommendations are provided for petroleum products, solvents, paints, and other hazardous substances, and concrete. Please note that the following are general recommendations, and the Owner/Operator and Contractor are responsible for compliance with NYSDEC regulations as per the handling of the following materials.

Petroleum Products

All on-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. No vehicle maintenance or handling of petroleum products will occur within 100 feet of a wetland or waterway. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used on-site will be applied according to manufacturer's recommendations. No petroleum-based or asphalt substances will be stored within 100 feet of a wetland or waterway.

Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered shed; and the contents of any partially used bags will be transferred to a sealable, plastic bin to avoid spills. No fertilizer storage will occur within 100 feet of a wetland or waterway.

Solvents, Paints, Stucco and other Hazardous Substances

All containers will be tightly sealed and stored when not required for use. Excess materials will not be discharged to the storm sewer system but will be properly disposed according to manufacturer's instructions or state and local regulations. No storage will occur within 100 feet of a wetland or waterway.

Concrete Trucks

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water within 100 feet of wetland resources or into catch basins that are already in place.

Concrete Truck Washout

A temporary designated concrete washout area shall be provided where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil. These areas shall be either excavated or above ground construction pits. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

The washout facility shall be sized to contain solids, wash water and rainfall and must also allow for the evaporation of wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the sides shall be 2 feet horizontal to 1 vertical.

The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Surface water shall be prevented from entering the facility except through the access road. An appropriate gravel access road will be provided and will be sloped down to the structure. All washout facilities shall be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears and shall be anchored beyond the top of the pit with an earthen berm, sandbags, stone, or other structural appurtenance except at the access point. If prefabricated washouts are used, they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours.

All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip. Accumulated hard material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off-site. Hardened material shall be disposed of off-site in a construction/demolition landfill. The plastic liner shall be replaced with each cleaning of the washout facility. The site is to be inspected frequently to ensure that no concrete discharges are taking place in non-designated areas.

Spill Control/Notification Practices

In addition to the good housekeeping and material management practices discussed above, the following practices will be followed for spill control, notification and cleanup.

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be informed of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but will not be limited to, shovels, wheelbarrows, brooms, dustpans, mops, rags, gloves, goggles, kitty litter or Speedi-Dry, sand, sawdust, and plastic and metal trash containers specifically designated for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material in excess of reportable quantities, as established by the New York State Department of Environmental Conservation (NYSDEC), will be reported to the NYSDEC Spill Hotline: 1-800-457-7362 (within NYS) or 1-518 457-7362 (from outside NYS) or to the National Response Center: 1-800-424-8802. The Emergency Spill Response Procedure is attached.
- The Construction Superintendent responsible for the daily operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel to receive spill prevention and cleanup training. The names of the responsible spill personnel will be posted in the material storage area and in the on-site office trailer.

Source Control

Trash removal, designated trash storage areas, pavement sweeping and the controlled use of deicing agents on the site will reduce the pollutant load in the site's storm water management system.

Dust Control

Fugitive dust from large areas of unstabilized soil can be a problem during construction. On dry and windy days when dust generation is a concern or when construction activities have the potential to produce dust, a water truck will traverse the site and spray water as necessary to prevent dust from forming. Vegetative cover will also be implemented for disturbed areas that are not subject to traffic.

Construction Trash Removal

Daily loose trash removal will prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges. All loose trash will be placed in appropriate storage containers until disposed of properly off-site.

Covered Trash/Storage Areas

Areas to be used for storing dumpsters, compactors or other raw or waste materials will be covered to prevent contact with storm water.

Pavement Sweeping

Pavement sweeping may be required daily or even more frequently during construction where sediment tracking from construction equipment is a problem.

Fertilizer

Fertilizer will be utilized to aid in establishing landscaping. It will be placed only in turf areas ~~a~~nd will be applied at a rate of 4 lbs. per 1,000 SF, three times per year totaling approximately 36 lbs. of fertilizer per year. It is estimated that the landscaping will be fully established after 12 months. This project will utilize slow-release fertilizer in order to limit the amount of potential nutrients that enter surrounding water systems and fertilizer use will be reduced as needed once the proposed landscaping is established and will never exceed the amounts placed during the initial establishment period.

Waste Disposal

All waste materials will be collected and stored in securely lidded metal dumpsters leased from a licensed solid waste management company and the dumpster will be emptied as necessary. Trash will be hauled by a licensed contractor and disposed in accordance with federal, state, and local environmental regulations. No trash or construction waste will be buried on-site, and all personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the site construction supervisor will be responsible for seeing that these procedures are followed.

Hazardous Waste

All hazardous waste materials (e.g., petroleum products, solvents, curing compounds) will be disposed in the manner specified by local and state regulation, or by the manufacturer. Site personnel will be instructed in these practices, and the

site construction supervisor will be responsible for seeing that these procedures are followed.

Sanitary Waste

All sanitary waste will be collected from the portable units by a licensed contractor a minimum of three times weekly and disposed in compliance with state and local regulation.

VI

Required Erosion and Sedimentation Control

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect, or NYSDEC certified inspector, will be responsible for ensuring that the specified storm water pollution control measures are installed, maintained, relocated and added to as necessary. Details of recommended storm water pollution control techniques are provided below.

Erosion and Sedimentation Controls

The purpose of an erosion and sedimentation control program is to minimize temporary impacts to down gradient properties during the construction phase of the project by retaining sediment on site to the maximum extent practicable. The program incorporates BMPs specified in guidelines developed by the NYSDEC[1] and complies with the requirements of the SPDES General Permit for Storm Water Discharges from Construction Activities. All erosion and sediment control practices and all post-construction water quality and water quantity control practices are to be installed, inspected, and maintained as per the NYSDEC Storm Water Management Design Manual (2015) and the NYSDEC Standards and Specifications for Erosion and Sediment Control Practices (2016).

Proper implementation of the erosion and sedimentation control program will:

- Minimize exposed soil areas through temporary seeding and construction sequencing.
- Place structures to manage storm water runoff and erosion.
- Establish a permanent vegetative cover or other forms of stabilization as soon as practicable.

1 New York State Department of Environmental Conservation (DEC). *New York Storm Water Management Design Manual*, January 2015 and *New York Standards and Specifications for Erosion and Sediment Control*, November 2016.

All manufactured control measures must be installed and maintained in accordance with the manufacturer's specifications. The following sections describe the erosion and sedimentation controls that will be used on this site. The Owner/Operator, under the observation of a licensed Engineer, Landscape Architect or NYSDEC certified inspector, will implement and add to these site conditions, when required.

Temporary Erosion Control Practices

During construction, the contractor is required to install and maintain temporary erosion and sediment control measures to prevent sediment and debris from washing into the drainage systems and/or leaving the site. At such time that all the restoration of the construction area is completed, and the areas of disturbance are permanently stabilized, the contractor will then be permitted to remove the temporary erosion and sediment control devices.

The temporary erosion and sediment control devices will be installed prior to the start of any disturbance of the existing ground surface and will remain in place until all disturbed areas are properly stabilized. In addition to the temporary erosion and sediment control devices indicated on the Erosion and Sediment Control Details plan, the contractor shall be responsible to install any additional measures that may be needed. These additional erosion preventative measures will be installed in accordance with the "New York State Standards and Specifications for Erosion and Sediment Control."

Stabilization Measures (Vegetative Measures)

Stabilization practices to be used on this site include mulching and temporary seeding. Stabilization practices 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 temporarily or permanently ceased. The project has been designed to preserve existing vegetation where possible.

Mulching

Straw mulching will be employed on all inactive and disturbed areas that will remain un-stabilized for more than fourteen (14) days. Mulch materials will be spread uniformly by hand or machine at a rate of approximately 90 pounds per 1,000 square feet. Mulch will be spread such that at least 90 percent of the ground surface is covered. The mulch shall be anchored with wood fiber mulch (hydromulch) at 500-750 lbs./acre. The wood fiber mulch must be applied through a hydroseeder immediately after mulching. Mulching may be used with temporary or permanent seeding, or with slope stabilization techniques. Hydromulch may also be used for temporary soil stabilization.

Temporary Seeding

A temporary vegetative cover will be established on areas of exposed soils (including stockpiles) that remain inactive and un-stabilized for a period of more than fourteen (14) days for slope stabilization. The seeded surfaces will be covered with a layer of straw mulch or hydro mulch as described above.

Vegetative Slope Stabilization

Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation. Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro-seeding or sodding. A suitable topsoil, good seedbed preparation, and adequate lime, fertilizer and water will be provided for effective establishment of these vegetative stabilization methods. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

Erosion Control Slope Blankets

Upon completion of final grading, any areas not covered by pavement, other forms of stabilization or landscaping and which are on slopes of 3:1 and greater will be protected with erosion control slope blankets and seeded with an erosion control seed mix. The blanket will be installed from the top of the slope, with the upper edge of the blanket secured in a trench. Blankets shall be unrolled down the slope or swale in the direction of the water flow. Edges of blanket shall be stapled with approximately four inches of overlap where two or more strip widths are required. The end of an upper blanket shall overlap the end of a lower blanket by at least six inches and both ends shall be stapled in place. The blankets will be staked and/or stapled into place as per manufacturer's recommendations. This protective measure should be inspected during installation and also before, during and after significant rain events. All damaged materials should be repaired or replaced immediately.

Structural Practices

Structural erosion and sedimentation controls to be used throughout the project's site during construction. They include the following:

Silt Fence Barriers

Prior to any ground disturbance the silt fence is to be put in place at the down gradient limit of work in accordance with the plan filed with the Town of Brookhaven (see relevant plans located in Attachment B). When necessary, additional straw bale and silt fence barriers will be installed immediately down gradient of erosion-prone areas, such as the base of steep exposed slopes and around the base of stockpiles, throughout the construction phase of the project. The barriers will be entrenched into the substrate to prevent underflow.

The erosion control barriers will be inspected in accordance with the inspection requirements of the project. Any sediment that collects behind the barriers will be removed and will be either reused at the site or disposed of at a suitable offsite location. Any damaged sections of silt fence or straw bales will be repaired or replaced.

Inlet Protection

The inlets of proposed and existing catch basins will be protected from sediment inflow throughout the construction period through the installation of Excavated Drop Inlet Protection or approved equal. Off-site catch basins will be protected from sediment inflow through the installation of Dandy Bags or approved equal**.** It should be noted that filter fabric is not an approved means of inlet protection for this project.

Installation of Dandy Bags will conform to the following:

Empty dandy bag should be placed over the grate as the grate stands on end. If using optional oil absorbents, place absorbent pillow in pouch on bottom of the unit. Attach absorbent to tether loop. Holding the lifting device (do not rely on lifting device to support entire weight of grate) place the grate into its frame.

Maintenance:

Remove all accumulated sediment and debris from the surface and vicinity of the unit after each storm event. Remove the sediment that has accumulated within the containment area of the dandy bag as needed. If using optional oil absorbents, remove and replace absorbent pillow near saturation.

Siltsacks™ may be used by surrounding them with a barrier of staked straw bales. In the latter case, a layer of filter fabric will be installed beneath the grates of the catch basins. These protection measures will be inspected in accordance with the inspection requirements of the project and will be routinely maintained until the drainage area tributary to each inlet has been vegetative stabilized and/or covered by pavement. Any sediment that collects behind the barrier or in the sacks will be removed and will be either reused onsite or disposed of at a suitable off-site location.

Stabilized Construction Exits

A stone anti-tracking pads will be installed at each access point to the work area to prevent the off-site transport of sediment by construction vehicles. The stabilized construction exits will be at least fifty feet long and will consist of a 6-inch thick layer of crushed stone (1.5 to 2.5 inches in diameter). The stone will be placed over a layer of non-woven filter fabric. The anti-tracking pads will remain in place until a binder coat of pavement has been established in areas to be paved.

Temporary Sediment Trap

The temporary sediment trap is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation. Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Sediment shall be removed, and the trap restored to the original dimensions when the sediment has accumulated to half of the design depth of the trap. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Additional Erosion Control Measures (If Applicable)

The following controls may be implemented if directed by the Licensed Engineer/Landscape Architect, or NYSDEC Certified Inspector.

Interior Site Erosion Controls

Additional erosion controls may be used in the central portions of the site in the event that excessive erosion occurs. Placement of temporary silt fence, straw bales or earthen berms may be used to control the movement of material within the site. If such controls are deemed necessary for adequate protection, they will be installed perpendicular to the flow direction to contain sediment. These measures will be installed to prevent perimeter erosion controls and diversion swales from becoming compromised.

The following steps will be followed to ensure that the controls are installed correctly and will be effective.

Resource Protection

- Evaluate, mark and protect important trees and associated rooting zones, on-site septic systems absorption fields, etc.
- Temporary construction fencing will be placed around trees to remain and will be at a minimum at the drip line of the longest branch.

- Protect existing vegetated areas, by fencing off, suitable for filter strips, especially in perimeter areas.

Surface Water Protection

- Divert off site runoff from entering disturbed areas.
- Identify bodies of water located either on site or in the vicinity of the site.
- Plan appropriate practices to protect on-site or downstream surface water. In addition, inlet protection shall be installed on proposed catch basins on site.

Stabilized Construction Exit

- Establish a temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway.
- Stabilize bare areas (entrances, construction routes, equipment parking areas) immediately as work takes place. Top these areas with gravel or maintain vegetative cover.
- Provide wash down facilities where necessary.
- Remove sediment tracked onto public streets on a daily basis.

A description of the Stabilized Construction Exit is included in this Section and detailed on the plans located in Attachement B.

Concrete Washout Area

- Concrete washout area to be installed as specified in Section V of this report.

Soil Stockpiles

- Stockpile existing topsoil and other soils for future use on site if not contaminated.
- Stockpiles should be protected, stabilized and sited in a location away from the storm drains and waterbodies that is dry and stable with the surrounding area sloped at a minimum of 2 percent away from the stockpile.
- Side slopes of the stockpile shall not exceed 2H:1V.
- Upon completion of soil stockpiling, each pile shall be surrounded with silt fencing (refer to description of silt fence for details).
- Stockpile may be relocated throughout the duration of construction in order to accommodate phasing as necessary.
- Stockpile shall be covered or temporary seeded when construction ceases for more than fourteen (14) days.

Perimeter Sediment Controls

- Silt fence material and installation must comply with the NYSDEC standard drawings and specifications. They shall also comply with the Erosion and Sedimentation Control Plan.

- Silt fencing and straw bale barriers will be entrenched to eliminate sediment underflow.
- Silt fences will be installed based on appropriate spacing intervals. This interval will decrease as the slope increases. Silt fence should be placed on or parallel to contours where there is no concentration of water flowing to the silt fence and where erosion occurs in the form of sheet erosion. On sloped areas, the area below the final silt fence shall be undisturbed ground.
- Principal sediment basins, if utilized, will be installed after construction site is assessed.
- Additional sediment traps and barriers will be installed as needed during grading.
- Erosion control blankets will be stapled and/or staked into place on slopes 3:1 or greater after disturbing area.
- The erosion control barriers will be inspected and maintained routinely throughout the duration of the project.

Runoff Control

- Install runoff control after sediment traps are installed and before land grading starts.
- Control the runoff in each small drainage area before flow reaches runoff from entire site.
- Divert offsite or clean runoff from disturbed areas.
- Convey surface flows from highly erodible soil and steep slopes to more suitable stable areas.
- Redirect runoff from existing or proposed cut and fill slopes to reduce water velocity without causing erosion.
- Design final site drainage to prevent erosion, concentrated flows to adjacent properties, uncontrolled overflow and ponding.

Runoff Conveyance System

- Stabilize conveyance system.
- Seed channels and streambanks at the outlet points, if exists.
- Install check dams to slow down the velocity of concentrated flow.
- Protect existing natural drainage systems and streams by maintaining vegetative buffers and by implementing other appropriate practices.

Groundwater Recharge Measures

- Install practices to infiltrate the runoff on the site as much as possible.
- Provide groundwater recharge to maintain the hydrologic regime of the downstream water bodies and simulate predevelopment hydrology.
- Use infiltration practices to prevent concentrated flows.

Construction Stage

The construction of the buildings, parking lot, and site appurtenances will occur during this stage. Temporary sediment traps consisting of swales and berms with stone outlet points will be constructed and maintained throughout construction as needed, in order to retain runoff on site during the construction process.

Grading

- Limit the initial clearing and earth disturbance to that necessary to install sediment control measures. Excavation for footings, clearing, or other earth disturbance may only take place after the sediment and erosion controls are installed.
- Stockpile the existing topsoil and other soils for future use on site. The stockpiles should be protected, stabilized and sited in a location away from the storm drains and waterbodies. It should be saved on site for reuse if not contaminated. The stockpile shall be covered or temporary seeded when construction ceases for more than fourteen (14) days.
- Changes in grade or removal of vegetation should not disturb established buffers and should not be allowed within any regulated distance from wetlands, the high water line of a body of water affected by tidal action, or other such protected zones.
- Avoid disturbance of steep slopes.
- Maintain undisturbed buffer to control runoff from steep slopes within sensitive areas.
- Proposed grading should not impair existing surface drainage resulting in a potential erosion hazard impacting adjacent land or waterbodies.

Permanent Erosion Control Measures

Permanent Seeding

Upon completion of final grading, any areas not covered by pavement, other forms of stabilization, or other methods of landscaping will be seeded with an erosion control seed mix. On slopes 4:1 and greater, loamed and seeded areas will be mulched with hay to prevent erosion prior to germination of the seed.

Permanent Drainage Construction

- Install all proposed drainage structures.
- Install inlet protection at the newly installed drainage structures.
- Maintain the inlets free of any debris or sediment build up.

Erosion Control (Stabilization)

- Implement erosion control practices to keep the soil in place.
- Complete stabilization for the surface of all perimeter controls and perimeter slopes.

- When activities temporarily or permanetly cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures. The areas where soil distubance temporarily ceased, the soil stazblization 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.
- Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or completed.
- Where the initiation of stabilization measures by the seventh day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.
- Where construction activity on a portion of the site is temporarily ceased, for a period of longer than fourteen (14) days, temporary stabilization measures shall be provided to ensure continued stabilization.
- Consult the local Soil and Water Conservation District for proper timing and application rate of seed and mulch.

Sediment Control

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

Final Grading and Stabilization Stage

Finalize Grading & Landscaping

- Final grading and stabilization as per the construction documents.
- All open areas, including borrow and spoil areas must be stabilized as per construction plans.
- Plan to install permanent top soil, seed, sod, mulch, riprap or other stabilization practices in the remaining disturbed areas as appropriate.
- Stabilization 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 except as noted in the GP-0-20-001.
- Remove the temporary control measures.
- StormTrap System and catch basins to be properly cleaned of sedimentation from construction activities.

Post-construction Controls

- Catch basins, StormTrap and drain basins shall be cleaned on a regular basis to maintain the design infiltration rates.
- Identify the permanent structural or non-structural practices that will remain on the site as described in the Permanent Erosion Control Measures section above.
- Ensure that the permanent structural or non-structural practices utilized during construction are properly designed to suit the post-construction site conditions.
- In finalizing the plan, evaluate the post-construction runoff condition on the site.
- Minimize the risk of concentrated flow and erosion.

On-site runoff controls help reduce the risk of increased runoff velocity, erosion and point source discharge. In addition to the standard runoff and erosion control practices identified in NY Standards for Erosion and Sediment Control, some of the techniques discussed under on-site runoff control in the discussion of Site Preparation may be applied.

The details for the above meaures and for any additional measures that may be required can be located in the NYSDEC Specifications book.

VII

Inspections, Maintenance and Project Documentation

The SPDES Construction General Permit requires that the Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, be responsible for implementing, inspecting and maintaining each of the storm water controls described in the plan. In addition, the Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, must document compliance with the Permit throughout construction.

Inspections

Prior to the commencement of construction activity, the Owner/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 storm water management practices included in the SWPPP. Per Part III.A.6 of the General Permit, the Owner/Operator shall have each of the Contractor(s) and Subcontractor(s) 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/Operator shall ensure that at least one Trained Contractor is on site daily when soil disturbance activities are being performed.

The Owner/Operator shall have each of the Contractors and Subcontractors identified above sign a copy of the Certification of Project Construction Contractors, enclosed in the Forms section of this Manual.

As described in Part IV, of the GP-0-20-001 Storm Water Permit, the operator shall have a Qualified Professional (Inspector) conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by Part IV.C., of this permit, have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Following the commencement of construction, for construction sites where soil disturbance activities are on-going, the Qualified Professional (Inspector) shall conduct a site inspection at least twice every seven (7) calendar days as required for site disturbances greater than 5 acres at once. It is noted that Town Board approval granting a waiver to permit disturbance of greater than 5 acres of land is required prior to starting construction. During each inspection, the Qualified Professional (Inspector) shall record the information required by Part IV.C, of the Permit.

Inspections shall include all areas of the site disturbed by construction activity and areas used for materials storage that are exposed to precipitation. The Inspector must look for evidence of, or the potential for, pollutants entering the storm water system, inspect the BMPs installed as part of the Plan, inspect the site drainage outfalls and inspect the site egress points for tracking. If, in the course of the inspection, the inspector identifies an eroded area or an area impacted by sedimentation, digital photos are required of the areas. Additional erosion and sedimentation controls will be implemented, and the SWPPP will be revised to include these changes. A digital photograph, with date stamp, will be taken after the corrective action has been completed.

For each inspection, the Inspector must complete a written inspection report in accordance with Part IV.C.4 of the Permit. A sample inspection form has been included in the Forms section of this manual. The Operator shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on site and be made available to the permitting authority upon request.

Prior to the commencement of construction, the Operator shall certify in the site logbook that the SWPPP, prepared in accordance with Part III, of this permit, meets all Federal, State and local erosion and sediment control requirements. The Owner/Operator will maintain a copy of the General Permit (GP-0-20-001), NOI, NOI Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance form, and inspection reports on the construction site until final stabilization and the NOT has been submitted to the NYSDEC. The Operator must make available for review and copying by any person within five business days of the owner or operator receiving a written request to review the NOI, SWPPP or inspection reports. Any copying of documents will be done at the requester's expense.

Maintenance

All erosion and sedimentation controls and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections identify BMPs that are not operating effectively, maintenance, modification or replacement with an alternative or additional BMPs must be initiated. The qualified inspector shall notify the owner/operator and the contractor or subcontractor within one business day of the completion of an inspection 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.
The following maintenance program is proposed to ensure the effectiveness of the structural controls during the construction phase of this project:

- The on-site representative will inspect all sediment and erosion control structures and records of the inspections will be prepared and maintained on-site by the Owner/Operator.
- Silt shall be removed from behind barriers if greater than 6-inches deep or as needed.
- Paved areas of the site will be swept on an as needed basis during the site construction.
- Damaged or deteriorated items will be repaired immediately after identification.
- The underside of straw bales should be kept in close contact with the earth and reset as necessary, if applicable.
- Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.
- Sediment that is collected in structures shall be disposed of properly and covered if stored on-site.
- Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be re-graded and stabilized as necessary.

If, in the course of the inspection, the Inspector identifies an eroded area or an area impacted by sedimentation, additional erosion and sedimentation controls, will be coordinated with the Licensed Engineer or Landscape Architect, who prepared the SWPPP. The SWPPP will then be revised to include these changes.

Coordination with local Storm Water Management Officer may be required which may include additional inspections or requirements.

Documentation

In some cases, as-builts may be required for submission.

The following records must be maintained as part of the Owner/Operator's SWPPP:

- Dates when major grading activities occur;
- Dates when construction activities temporarily or permanently cease on a portion of the site;
- Dates when stabilization measures are initiated;
- Inspection dates and proceses;
- SWPPP Amendment Log.

The forms in the Forms Section have been prepared by NYSDEC to collect information from Construction Storm Water Inspections and to report Quarterly Summary SWPPP Status with Permit Compliance.

VIII

Project Storm Water Management Practices

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, will be responsible for ensuring that the specified water quality and water quantity control measures are installed and maintained as necessary. Details of recommended storm water pollution control techniques are provided below.

6-Step Storm Water Site Planning Process

As per the latest New York State Storm Water Management Design Manual, Planners and Designers must apply runoff reduction techniques as part of a comprehensive storm water management planning process. This process is intended to help maintain the pre-construction hydrologic conditions of the site using green infrastructure practices to reduce the post construction runoff from the site and reduce the need for treatment.

The proposed project has been designed to improve the existing site conditions such that total runoff potential within the designated area of disturbance is reduced. It is assumed that overbank flood (10-year storm) and extreme flood (100-year storm) requirements will be reduced in post development conditions. The Stormwater Management Report provided in Attachment E of this document outlines how this is accomplished.

The following constitutes the six-step planning process detailed in the NYS Storm Water Management Design Manual.

Step 1 – Site Planning to Preserve Natural Features and Reduce Impervious Cover

During the site planning process of this project, consideration was given to reducing the impervious cover and preservation of buffers. The site will be improved with landscaped areas, and it is the intent of this project to install standard SMP's to ensure that the storm water is contained and treated within the site as described

throughout this report both during and post development.

Step 2 – Determine Water Quality Treatment Volume (WQv)

The proposed drainage system for the proposed site compiles with state and local storm water management requirements. The New York State DEC Storm Water Management Design Manual requires the project to store the water quality volume (WQv) which is defined as the volume of runoff generated from the entire 90% rainfall event (Figure 4.1 – Attachment E). As such, the proposed storm water practices shall be sized to meet or exceed the volume of the 90%, or 24-hour rain event. The 90% rainfall event for this region is 1.5 inches. As outlined in the Stormwater Management Report referenced above, the proposed drainage systems provide enough storage to capture the water quality volume.

Step 3 – Apply Runoff Reduction Techniques and Standard SMP's with RRv Capacity to Reduce Total WQv

During the design phase, this project considered the potential use of green infrastructure and SMP's with Runoff Reduction Volume (RRv) capacity techniques. As NYSDEC recognizes the use of the StormTrap system in New York as an acceptable runoff reduction technique, all runoff from the designated area of disturbance will be directed to catch basins and area drains in connection with the StormTrap System in that area.

The RRv capacity of each individual system is shown in the New York State Water Quality and Quantity spreadsheet found in Attachment E, the RRv capacity is achieved to reduce the total WQv.

Step 4 – Determine the Minimum RRv Required

As shown in the Stormwater Management Report in Attachment E, the proposed drainage systems achieve the Runoff Reduction Volume (RRv) requirements with storage and infiltration which exceeds the required WQv as noted above.

Step 5 – Apply Standard Storm Water Management Practices to Address Remaining Water Quality Volume

This step is not applicable since the proposed drainage system provides storage for runoff in excess of the RRv (See Step 2-4 above).

Step 6 – Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

An analysis of the post-development hydrology for the subject property was performed in order to demonstrate the functionality of the proposed storm water system during the Overbank Flood and the Extreme Storm conditions (10-year and 100-year storms). Analytical results are outlined in the below section.

Hydrologic Analysis Results

In order to demonstrate that the proposed storm water management system for the project is capable of accommodating post-development runoff for the Overbank Flood and Extreme Storm conditions (10-year and 100-year storm events), a model was developed using HydroCAD software to analyze these conditions.

In accordance with the NYSDEC requirements, the HydroCAD model uses the TR-20 methodology to calculate peak runoff rates for a specific design area. The program is then used to model storage over time along with infiltration through the proposed drainage systems to determine the discharge from each system during the specific rain events.

For the purpose of this model, based on the findings stated in the geotechnical report provided by Tectonic Engineering Consultants, Geologists and Land Surveyors, D.P.C, an infiltration rate of 5 inches per hour was used to model recharge rates of water leaving the structures.

The in-depth Drainage analysis report can be used to reference all pre-development and post development conditions for the site. See Attachment E for the HydroCAD model and further analysis.

The following summarizes the results of the analysis:

- The total Runoff Reduction Volume is achieved at 100% of the Water Quality Volume through available storage.
- Based on required storage and recharging of runoff and the on-site soil infiltration, the peak runoff rates for the Channel Protection, Overbank Flood and Extreme Storm Protection (2, 10- and 100-year storms respectively); all drainage area systems meet the requirement to capture, store, and decrease runoff offsite.

Water Quality Controls

Water quality control measures are designed to minimize impact to receiving water bodies from storm water pollution. As storm water runoff travels across impervious surfaces, it collects pollutants such as sediments, oil, and trash and carries them to a receiving water body. Properly installed and maintained storm water best management practices (BMPs) can capture these pollutants and reduce the impact that the proposed development has on the environment. The BMPs selected for this project were designed based on guidelines developed in the New York State Storm Water Management Design Manual[2].

Proper implementation of the water quality control measures will:

- reduce post-construction sediment impacts; and
- promote infiltration of storm water to maintain pre-construction hydrology

All manufactured control measures must be installed and maintained in accordance with the manufacturer's specifications. The following sections describe the water quality controls that will be used on this site. The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, will implement and add to these site conditions, when required.

Non-structural Practices

Pavement Sweeping

The sweeping program will remove sediments and contaminants directly from paved surfaces before their release into storm water runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into storm water[3].

Catch Basin Cleaning

Sediments and other contaminants that are not removed by pavement sweeping are transported by storm water runoff to the site's catch basin systems. Once in the catch basin, they settle to the bottom of the system. This material will be removed on a regular basis to prevent contaminants from migrating out of the drainage system during high flow events or reducing the infiltration capacity of the devices.

2 New York State Department of Environmental Conservation (DEC). *New York Storm Water Management Design Manual*, January 2015

3 U.S. Environmental Protection Agency, 1979. *Demonstration of Nonpoint Pollution Abatement Through Improved Street Cleaning Practices.*

StormTrap Cleaning

Material will be removed on a regular basis to prevent contaminants from migrating out of the drainage system during high flow events or reducing the infiltration capacity of the devices.

Structural Practices

Structural erosion and sedimentation controls to be used on the site include the following:

Landscaping

Wherever possible, existing vegetation is maintained on the site. Landscape materials installed in new planting beds and lawn areas shall be planted with native and drought-tolerant species that do not require intensive applications of fertilizer or water. When required, fertilizer and pesticide applications will be managed to prevent storm water runoff from coming in contact with these products.

Infiltration Practices

The following infiltration practices have been selected and approved for installation at this site.

Storm Trap System

Storm Trap System is a network of precast concrete structures with open section in the bottom slab that allow stormwater to recharge into the suitable leaching material below. Additional detail for the storm trap systems can be seen on the site plans in Attachment B. Where required, backfill under and around the structures shall be of granular material containing less than 15% fine sand, silt, and clay. An inspection and cleaning port shall be provided at the ground surface so that the drainage leaching

IX
Project Termination

An Owner/Operator must terminate coverage under the SPDES permit by submitting a completed Notice of Termination (NOT). The Notice of Termination may be filed if there is a completion of all construction activity identified in the SWPPP, all areas of disturbance have achieved final stabilization, all temporary structural erosion and sediment control measures have been removed and that all post construction storm water management practices have been constructed and are operational in conformance with the SWPPP. Per Part V.A.2, a NOT may also be filed if one or more of the following applies:

- 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 storm water management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
- A new Owner/Operator has obtained coverage under GP-0-20-001 in accordance with Part II.F of this permit; and/or
- The Owner/Operator obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

A final inspection by a qualified inspector is required. The qualified inspector is required to sign the "Final Stabilization" and "Post Construction Storm Water Management Practice" sections of the NOT. A regulated traditional land use control MS4 is required to sign the MS4 Acceptance Statement on the NOT Form, if applicable.

If there are any post-construction storm water management practices, the Owner/Operator must ensure that post-construction storm water practices are properly maintained in accordance with an operations and maintenance manual to be prepared in conjunction with the NOT.

- Any post-construction storm water management practices and right of ways have been deeded to the Local Municipality, where applicable.
- There is an executed maintenance agreement with the Local Municipality that will maintain any post-construction storm water management practices, where applicable.

- If privately owned, the Owner/Operator modified the deed to include a deed covenant that requires operation and maintenance of the practices.
- If post-construction storm water management practices that are owned by a public or private institution, the Owner/Operator must have policy and procedures in place to ensure the operation and maintenance of the practices are carried out as per the operation and maintenance plan.

On behalf of the Owner/Operator VHB has prepared a majority of the NOT Form. The NOT form must be reviewed and signed by the Owner/Operator, the certified licensed inspector, and the regulated traditional land use control MS4 and submitted to the NYSDEC, when the project is to be terminated. The Owner/Operator shall also advise VHB of any additional information that may not have been filled in the NOT form. The completed NOT Form must be certified and submitted by the Owner/Operator in order for the permit to be closed.

Attachment A
SPDES Permit for Storm Water Discharges 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

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

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

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

c. Sizing Criteria for Redevelopment Activity

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

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

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

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

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

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

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

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

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

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

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

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

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

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

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

B. Notice of Intent (NOI) Submittal

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

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

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

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

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

C. Permit Authorization

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

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

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

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

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

c. the final SWPPP has been prepared, and

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

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

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

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

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

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

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

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

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

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

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

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

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

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

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

d. to document the final construction conditions.

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

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

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

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

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

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

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

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

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

C. Qualified Inspector Inspection Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Date and time of inspection;

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

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

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

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

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

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

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

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

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

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

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

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

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

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

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

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

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

G. Other Information

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

H. Signatory Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

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

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

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

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

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

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

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

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

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

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

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

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

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

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

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

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

Table 2 (Continued)

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

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

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

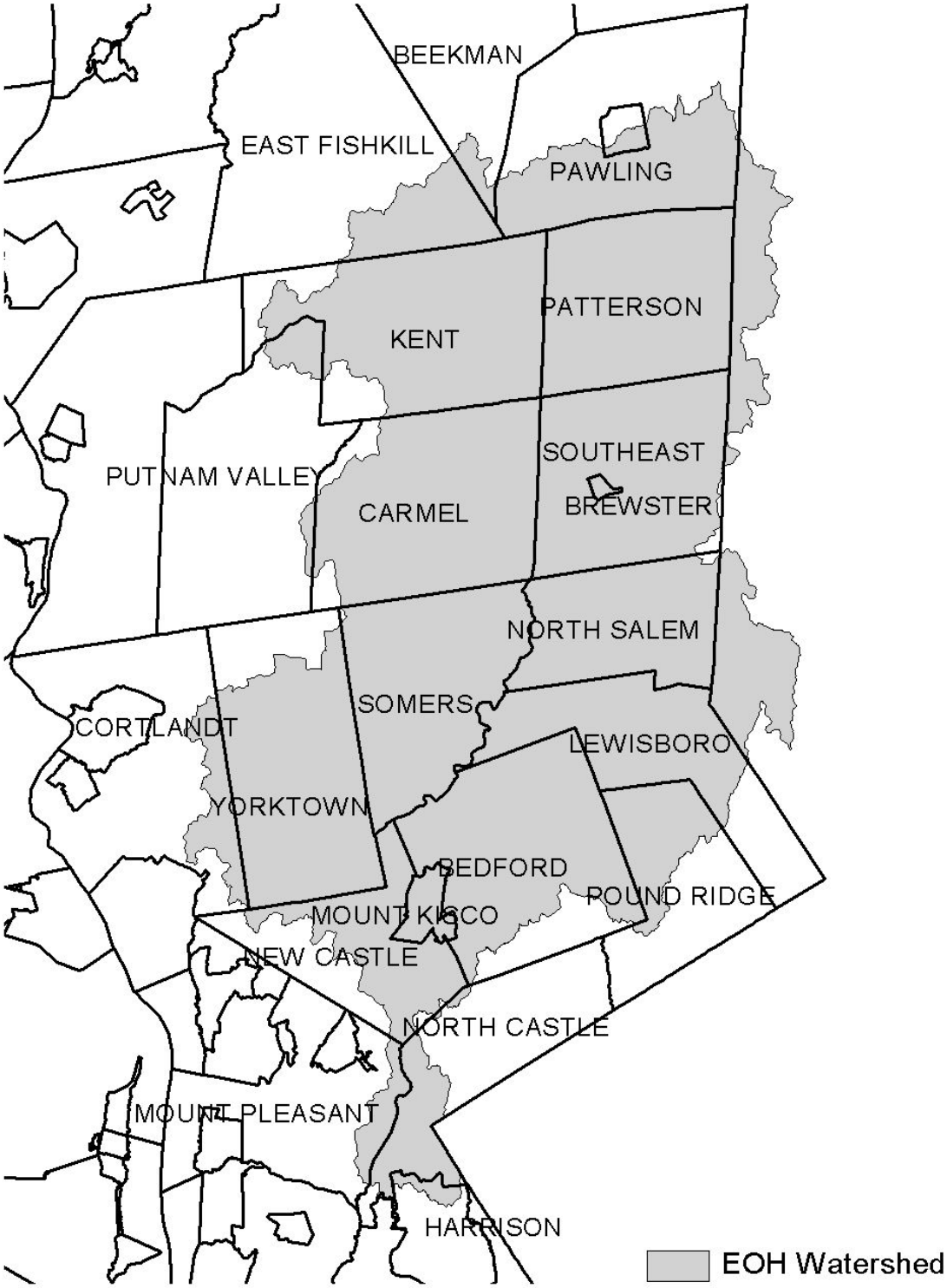


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

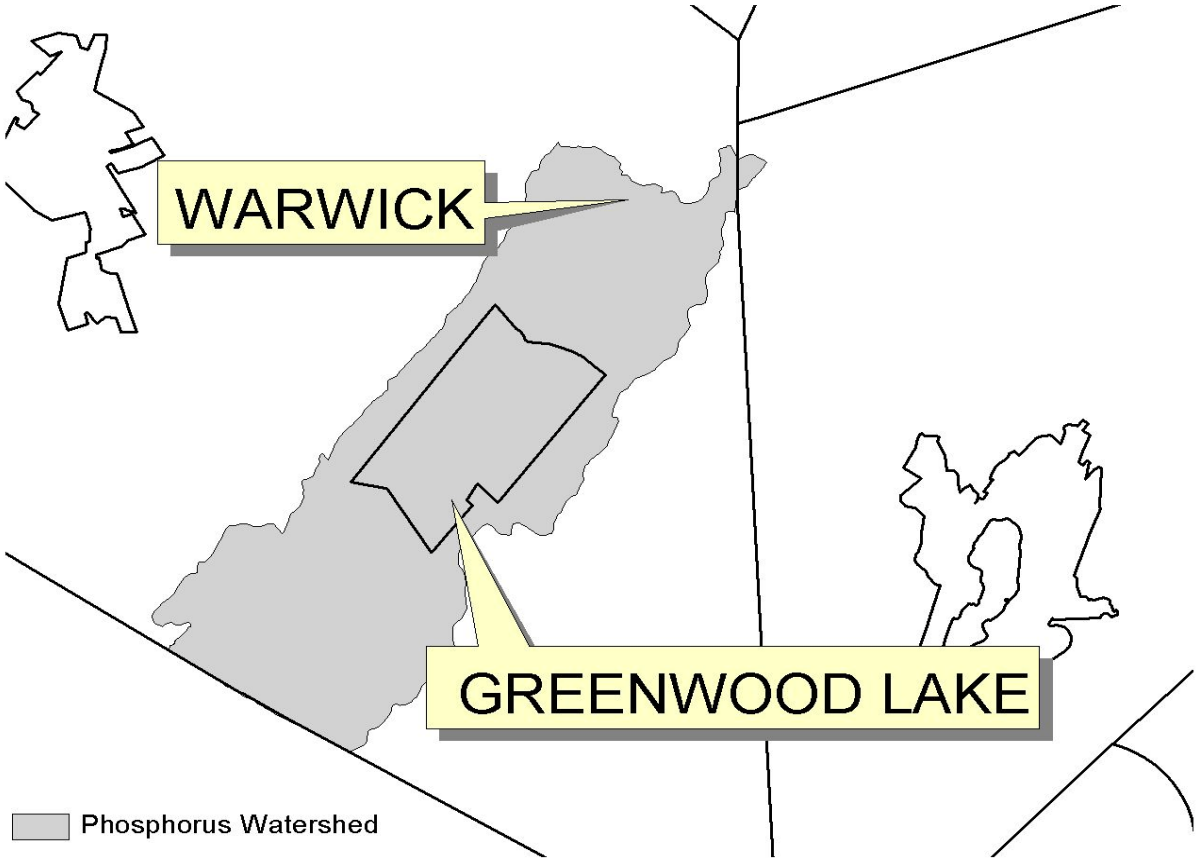


Figure 4 - Oscawana Lake Watershed

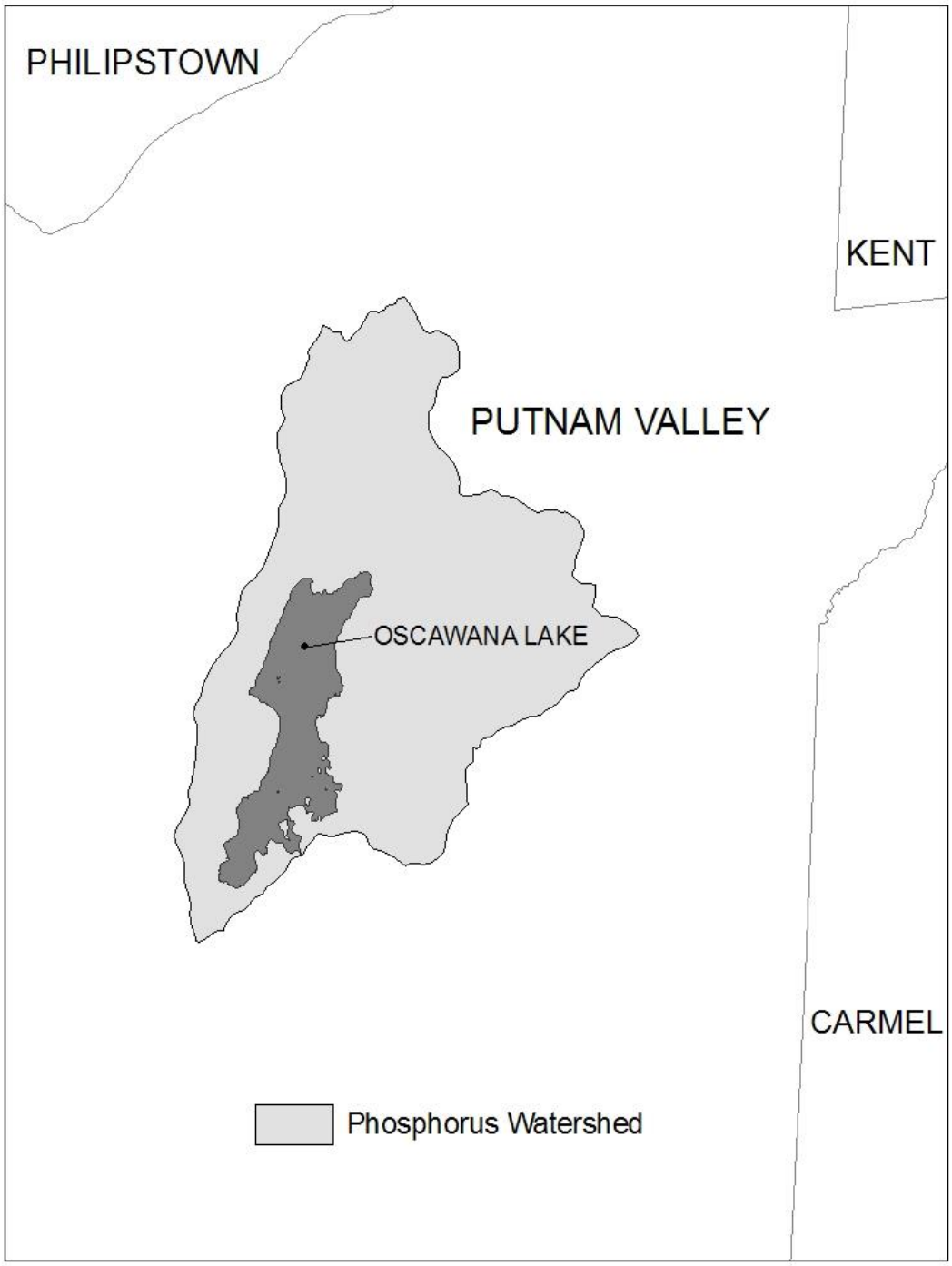
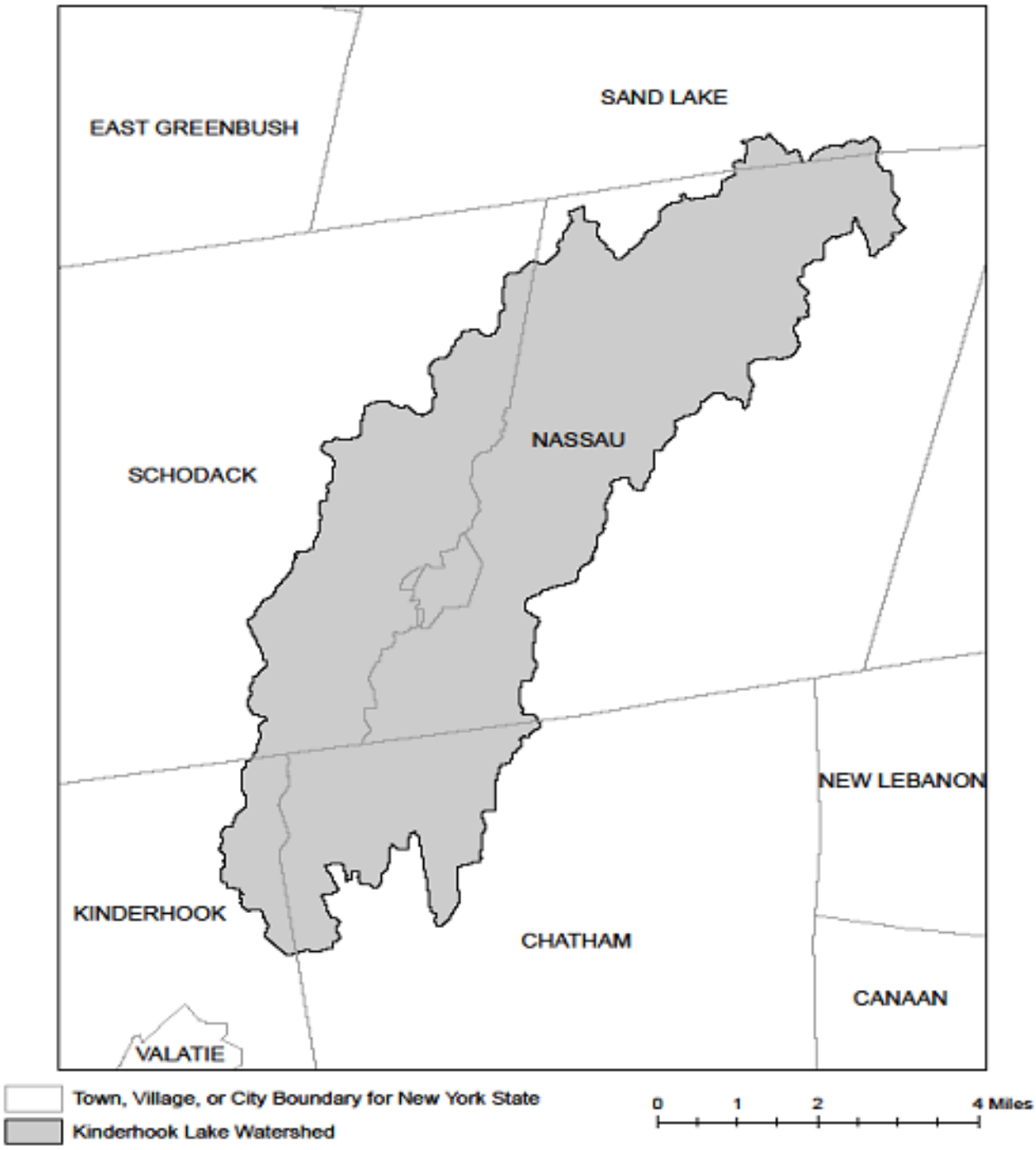


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

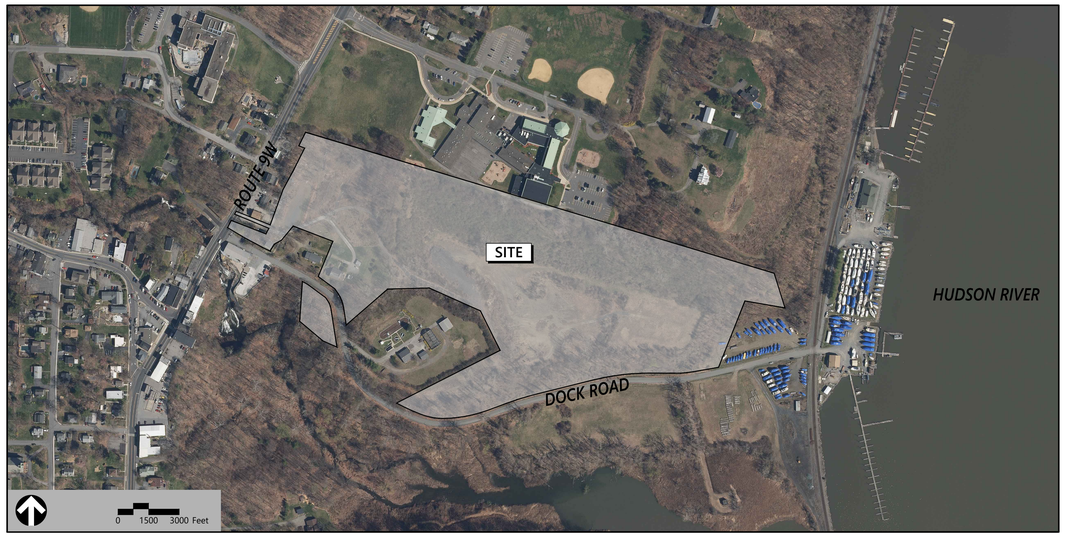
Attachment B
Approved Site Plans

Site Plans

Issued for	**Site Plan Application**
Date Issued	**August 9, 2024**
Latest Issue	**October 25,2024**

Orchards on Hudson Residential Development

103-107 Dock Road
Marlboro, New York 12542



Owner/Applicant

SDL Marlboro, LLC
561 Seventh Avenue
Suite 903
New York, New York 10018

Assessor's Map: Section 109.1 Block 3 Lots 13, 14.2 and 15
Section 108.4 Block 3 Lots 29.1

School District

Marlboro Central School District

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Reference Drawings

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SV 2	Boundary and Topographic Plan	June 3, 2024
SV 3	Boundary and Topographic Plan	June 3, 2024

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Consultants, Geologists &
Land Surveyors, D.P.C.
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VHB Project : 20578.01
Issued for : Site Plan Application

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Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BB	BBC	BELGIUM BLOCK CURB
BC	MBBC	MOUNTED BELGIUM BLOCK CURB
CC	CC	CONCRETE CURB
		SAWCUT
		BUILDING
		BUILDING OVERHANG
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D		DUMPSTER ENCLOSURE
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	STOP	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING
		CONCRETE
		ASPHALT PAVEMENT
		DRIVEWAY ASPHALT PAVEMENT
		CONCRETE SIDEWALK
		CONSTRUCTION ENTRANCE
		PAVERS / PERMEABLE PAVERS
Matchline	Matchline	MATCHLINE

Exist.	Prop.	
27.35 TC ×	27.35 TC ×	TOP OF CURB ELEVATION
26.85 BC ×	26.85 BC ×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW 38.5 BW	45.0 TW 38.5 BW	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
		FLOW ARROW
UD	UD	UNDERDRAIN
12"D		DRAIN
6"RD	RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
3"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN
		AREA DRAIN
		DOUBLE CATCH BASIN
		GUTTER INLET
		DRAIN MANHOLE
TD		TRENCH DRAIN
		PLUG OR CAP
	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
		DRYWELL
		DRYWELL W/ INLET COVER
		DRYWELL W/ MANHOLE COVER
		DIFFUSION WELL W/ INLET COVER
		STORM TRAP UNIT
S		SANITARY MANHOLE
CO	CO	SANITARY CLEANOUT
LP	LP	SANITARY LEACHING POOL
	EXP	EXPANSION LEACHING POOL
ST/GT	ST/GT	SANITARY SEPTIC TANK/GREASE TRAP
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		SIAMESE CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
		THRUST BLOCKS
GG	GG	GAS GATE
GM	GM	GAS METER
	CMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
		LIGHT BOLLARD
	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EXIST	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

AD	AREA DRAIN
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CPP	CORRUGATED POLYETHYLENE PIPE
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
|=	INVERT ELEVATION
LCS	LEVEL CONTROL STRUCTURE
LP	LIGHT POLE
MES	METAL END SECTION
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
PIV	POST INDICATOR VALVE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
R=	RIM ELEVATION
SMH	SEWER MANHOLE
ST	SEPTIC TANK
TSV	TAPPING SLEEVE, VALVE AND BOX
UD	UNDER DRAIN
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. CONTRACTOR SHALL NOTIFY NEW YORK 811 (DIAL 811) AT LEAST 48 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE [##] INCHES TOPSOIL AND SEED UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLANS.
5. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
6. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES & NYS SUPPLEMENT.
9. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
11. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
12. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
14. THE CONTRACTOR IS ADVISED THAT A COMPLETE STORM WATER POLLUTION PREVENTION PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIRED LATEST SPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY, WHICH INCLUDES REQUIREMENTS FOR THE CONTRACTOR TO COMPLETE CERTAIN CERTIFICATIONS, SCHEDULES AND OTHER DOCUMENTATION, WHICH MUST BE MAINTAINED ON SITE THROUGHOUT CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF WITH ALL ASPECTS OF THE SWPPP AND COORDINATE HIS/HER WORK WITH THE REQUIREMENTS, INCLUDING THE REGULARLY SCHEDULED INSPECTIONS.

Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
2. CONTRACTOR TO NOTE UTILITY EASEMENT RUNNING THROUGH SITE. THE CONTRACTOR SHALL TAKE CARE TO NOT DISPOSE EXISTING UTILITIES DURING CONSTRUCTION. EXISTING UTILITIES ARE TO REMAIN ACTIVE AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO REOPEN TEST PITS, BY HAND, IF NECESSARY TO LOCATE UTILITIES PRIOR TO COMMERCIAL WORK.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, TOPSOIL AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS NOTED ON THE PLANS.
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE FIVE FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE CAST IN PLACE CONCRETE WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS, GRADES, BENCHMARKS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
7. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY VHB ENGINEERING, SURVEYING, LANDSCAPE, ARCHITECTURE AND GEOLOGY, P.C.,. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY VHB ENGINEERING, SURVEYING, LANDSCAPE, ARCHITECTURE AND GEOLOGY, P.C., ON OCTOBER 21ST, 2021 AND UPDATED ON MAY 1, 2024.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD DATUM.
3. GEOTECHNICAL DATA INCLUDING TEST PIT AND BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C..

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by: DB
Checked by: AL

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Legend and General Notes

Drawing Number: C1.00

Sheet 1 of 47

Project Number: 20578.01

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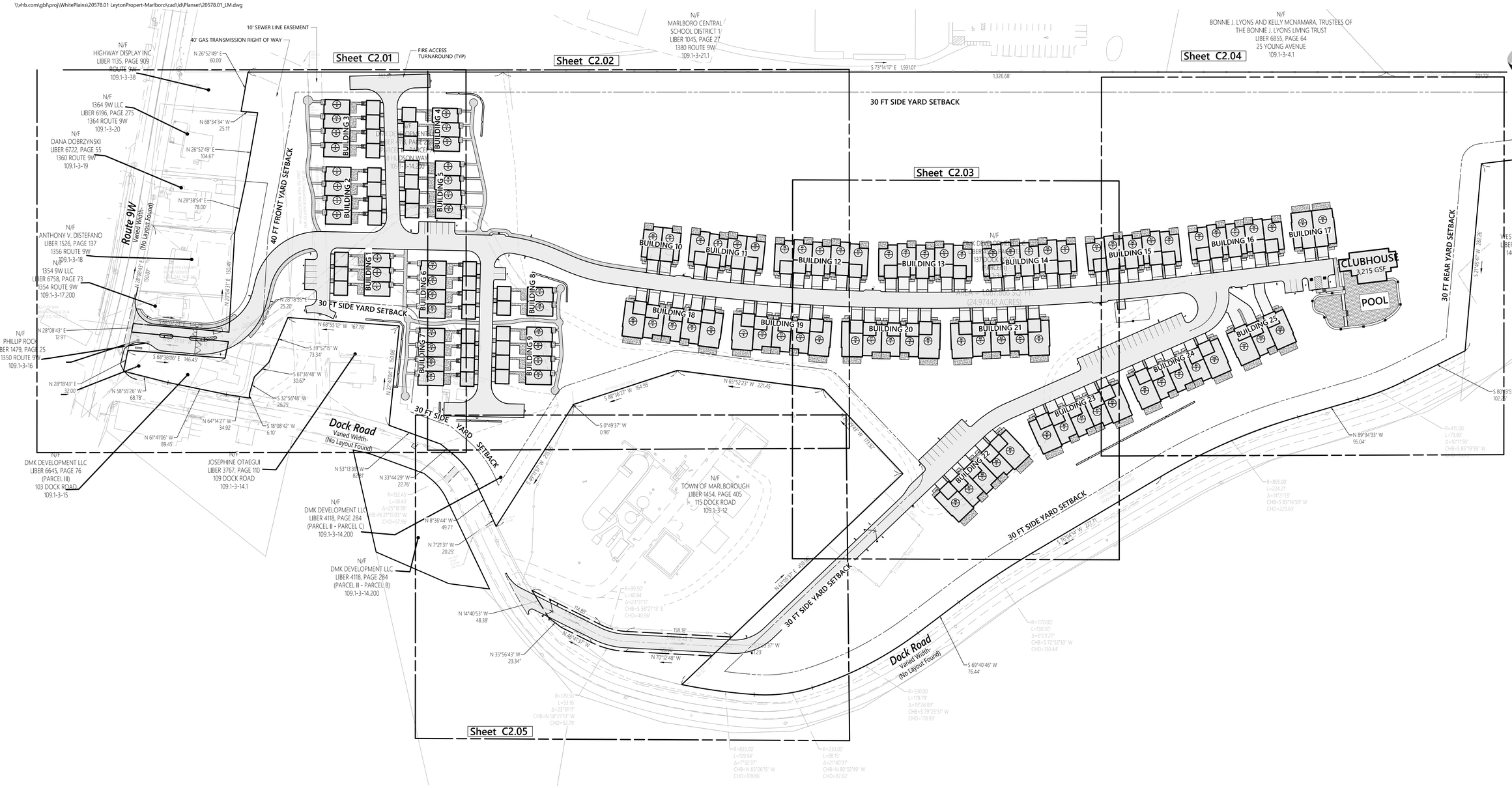

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Hauppauge, NY 11788
631.787.3400

Zoning Summary Chart

Zoning District(S):	Residential (R)
Proposed Use(S):	Multiple Dwelling
Existing Use(S):	Vacant / Residences
School District:	Marlboro Central School District

Zoning Regulation Requirements	Required[1]	Provided
MINIMUM LOT AREA[2]	3 Acres	25.0 Acres
FRONT YARD SETBACK	40 Feet	98.90 Feet
SIDE YARD SETBACK (ONE/BOTH)	30 Feet	18.30 Feet
REAR YARD SETBACK	30 Feet	50.50 Feet
MINIMUM LOT WIDTH	200 Feet	1,839 Feet
MINIMUM LOT DEPTH	100 Feet	559 Feet
MAXIMUM BUILDING HEIGHT	2 ½ Stories / 35 Feet [3]	2 ½ Stories / 26.25 Feet [3]
MAXIMUM BUILDING COVERAGE	15.0 %	14.0 %

[1] Zoning regulation requirements as specified in "Code of the Town of Marlborough" adopted through April 12, 2021.

[2] Minimum lot area with public water and sewer and natural gas.

[3] Per the Town of Marlborough Code the height of a structure is defined as the distance measured from the mean level of ground surrounding the building to a point midway between the highest and lowest point of the roof. In accordance with that definition the maximum height of a proposed structure is 26.25 feet. In accordance with the NYS Fire Code, aerial apparatus access roads are required if a building is 30' or higher. The NYS Fire Code defines the height of the building from grade to the eave of the roof. The proposed maximum height of a proposed structure is 20.5 feet. Therefore an aerial apparatus access road is not proposed.

UNIT SUMMARY

Unit	Provided
A	32
B	18
C	53
TOTAL	103

Unit Symbol Legend

UNIT OUTLINE

27 — UNIT NUMBER
A — UNIT TYPE

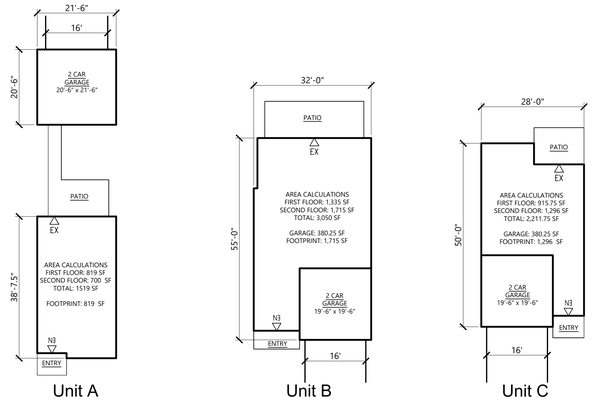
Parking Summary Chart

	Size		Spaces	
Description	Required	Provided	Required	Provided
STANDARD SPACES	162 SF (MIN.)	9x18 (162 SF)	154*	206**
VISITOR PARKING SPACES *	162 SF (MIN.)	9x18 (162 SF)	15	45
STANDARD ACCESSIBLE SPACES ***	8x19 (MIN.)	10x19	2	2
TOTAL SPACES			171**	253

* BASED ON SECTION 155-27 (TABLE 1) OF THE TOWN CODE, RESIDENTIAL CLUSTER USES ARE REQUIRED TO PROVIDE 1.5 SPACES FOR EACH DWELLING UNIT (ROUNDED DOWN TO A WHOLE NUMBER), PLUS 10% OF ALL OFF-STREET PARKING FOR VISITOR PARKING.

** EACH DWELLING UNIT HAS A DEDICATED ENCLOSED GARAGE PROVIDING TWO STANDARD PARKING SPACES

*** 2 ADA STALLS REQUIRED FOR 26-50 TOTAL PARKING STALLS PROVIDED (ONLY APPLIED TO SURFACE VISITOR PARKING)



Density Calculations

PROPOSED DENSITY:
103 UNITS / 25 ACRES = 4.12 UNITS / ACRE

4.12 UNITS / ACRE < 6 UNITS / ACRE OK

*SECTION 155-30 STATES MAXIMUM DENSITY SHALL BE SIX DWELLING UNITS PER ACRE

Notes

General

1. MAIL FOR ALL UNITS TO BE IN LOCATED IN THE CLUBHOUSE
2. PRIVATE TRASH PICKUP FOR EACH UNIT

Sign Summary

M.U.T.C.D. Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	STOP
R2-1	18"	24"	SPEED LIMIT 20
R5-1	30"	30"	DO NOT ENTER
R7-1	12"	18"	NO PARKING ANY TIME
R7-8	12"	18"	RESERVED PARKING

0 30 60 120Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DB — Checked by AL

Issued for: Site Plan Approval — Date: August 9, 2024

Not Approved for Construction

Drawing Title: Overall Layout and Materials Plan

Drawing Number: C2.00

Sheet 2 of 47

Project Number: 20578.01

STATE OF NEW YORK · ANDREW J. LANG · 098418 · LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT UNLESS THE SIGNED AND SEALED PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

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Route 9W
Varied Width
(No Layout Found)

Dock Road
Varied Width
(No Layout Found)

40 FT FRONT YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

BUILDING 1
BUILDING 2
BUILDING 3
BUILDING 4
BUILDING 5
BUILDING 6
BUILDING 7

10' SEWER LINE EASEMENT

40' GAS TRANSMISSION RIGHT OF WAY

GAS WITNESS POST

PROPOSED CONC. SIDEWALK (TYP).

PROPOSED CONCRETE PATIO (TYP.)

PROPOSED PAVER BAND BETWEEN DRIVEWAYS (TYP.)

TRANSITION CURB BACK UP TO 6" (EACH END TYP.)

PROPOSED ASPHALT PAVEMENT

PROPOSED STREET LIGHT (TYP.)

PROPOSED BOLLARD LIGHT (TYP.)

6' DRIVEWAY DEPTH (TYP.)

PROPOSED RETAINING WALL DESIGN BY OTHERS (TYP.)

PROPOSED LOT LINE MODIFICATION BOUNDARY; A 3,940 SF OF PROPERTY TO BE TRANSFERRED TO PROPERTY OWNER OF LOTS 109.1-3-16,17.2, & 18

PROPOSED LOT LINE MODIFICATION BOUNDARY; A 3,870.50 SF OF PROPERTY TO BE TRANSFERRED TO SUBJECT PROPERTY

POTENTIAL BUS STOP FOR SCHOOL CHILDREN OFF OF 9W

TRAFFIC LOOP

PROPOSED 15' WIDE AUTOMATIC ENTRANCE GATE

PROPOSED 22' WIDE AUTOMATIC ENTRANCE GATE

PROPOSED CALL BOX

PROPOSED LICENSE PLATE READER

PROPOSED MONUMENT SIGN

PROPOSED CONCRETE PATIO (TYP.)

PROPOSED CONC. SIDEWALK (TYP).

PROPOSED ASPHALT PAVEMENT

See Sheet C2.02

Match Line

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Sheet 3 of 47

Project Number: 20578.01

STATE OF NEW YORK
CHARLES V. LAMB
088418
LICENSED PROFESSIONAL ENGINEER

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Sheet 4 of 47

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AREA OF STEEP SLOPES
(SEE GRADING AND DRAINAGE PLANS
FOR LIMIT OF DISTURBANCE)

BUILDING 12
BUILDING 13
BUILDING 14
BUILDING 15
BUILDING 20
BUILDING 21
BUILDING 22
BUILDING 23

ROADWAY TO BE
WIDENED TO 26 FT AT
HYDRANT (TYP.)

PROPOSED
CONC. SIDEWALK
(TYP.)

PROPOSED
ASPHALT PAVEMENT

PROPOSED
ASPHALT PAVEMENT

SANITARY PUMPSTATION
ENCLOSURE 6 FT. HIGH
BLACK VINYL CLF WITH
ACCESS GATE

PROPOSED
STREET LIGHT
(TYP.)

PROPOSED
BOLLARD LIGHT
(TYP.)

PROPOSED
STREET LIGHT
(TYP.)

PROPOSED CONC.
SIDEWALK (TYP.)

PROPOSED CONC.
SIDEWALK (TYP.)

TRANSITION UP TO 6"
CURB AT BOTH ENDS (TYP.)

PROPOSED
BOLLARD LIGHT
(TYP.)

PROPOSED
STREET LIGHT
(TYP.)

PROPOSED RETAINING
WALL DESIGN BY
OTHERS (TYP.)

PROPOSED
RETAINING WALL
DESIGN BY OTHERS
(TYP.)

AREA OF STEEP SLOPES
(SEE GRADING AND DRAINAGE PLANS
FOR LIMIT OF DISTURBANCE)

30 FT SIDE YARD SETBACK

Match Line
See Sheet C4.04 Sheet

Match Line
See Sheet C4.04 Sheet

R174'
R150'
R53.61'
R50'

N 20°29'43" W 173.52'

S 76°16'44" W 227.7'

R5-1

PROPOSED 6'
HIGH BLACK
VINYL CHAIN
LINK FENCE
EMERGENCY
ACCESS GATE

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0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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C2.03

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ANGELO LANZA
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Match Line

See Sheet C2.03

AREA OF STEEP SLOPES
(SEE GRADING AND DRAINAGE PLANS
FOR LIMIT OF DISTURBANCE)

BUILDING 15

BUILDING 16

BUILDING 17

BUILDING 24

BUILDING 25

CLUBHOUSE
3,215 GSF

POOL

TRANSITION CURB BACK UP TO 6" (TYP.)

TRANSITION CURB BACK UP TO 6" BOTH SIDES OF DRIVEWAY (TYP.)

PROPOSED ASPHALT PAVEMENT

SANITARY PUMPSTATION ENCLOSURE; 6 FT. HIGH BLACK VINYL CLF WITH ACCESS GATE

PROPOSED STREET LIGHT (TYP.)

PROPOSED BOLLARD LIGHT (TYP.)

PROPOSED CONC. SIDEWALK (TYP).

6' HIGH DECORATIVE ESTATE FENCING OR APPROVED EQUAL

PROPOSED RETAINING WALL DESIGN BY OTHERS (TYP.)

30 FT REAR YARD SETBACK

S 80°13'51" W
102.25'

N 89°34'33" W
95.04'

R=415.00'
L=73.83'
Δ=10°11'36"
CHB=S 85°19'39" W
CHD=73.73'

Dock Road
Varied Width
(No Layout Found)

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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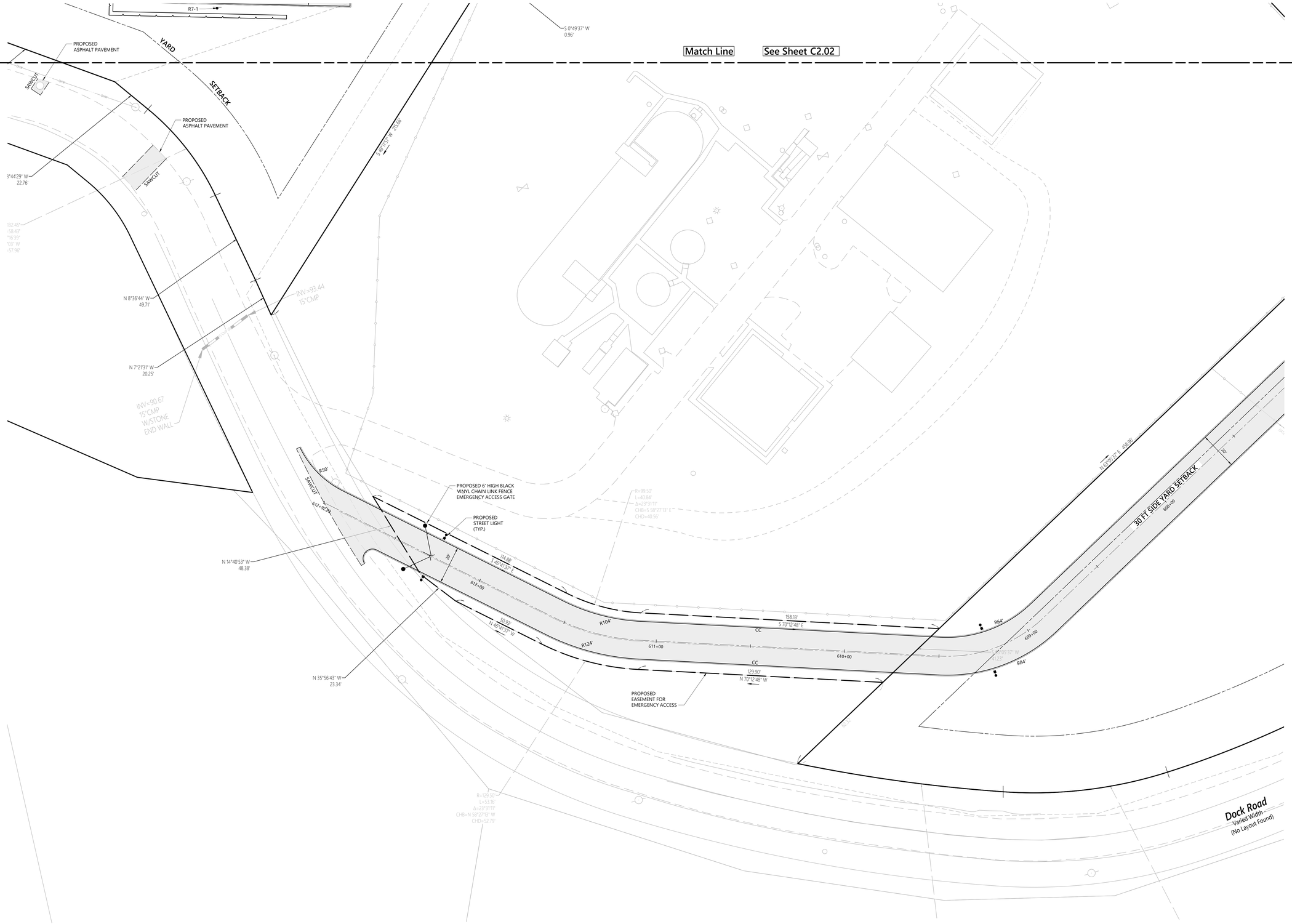

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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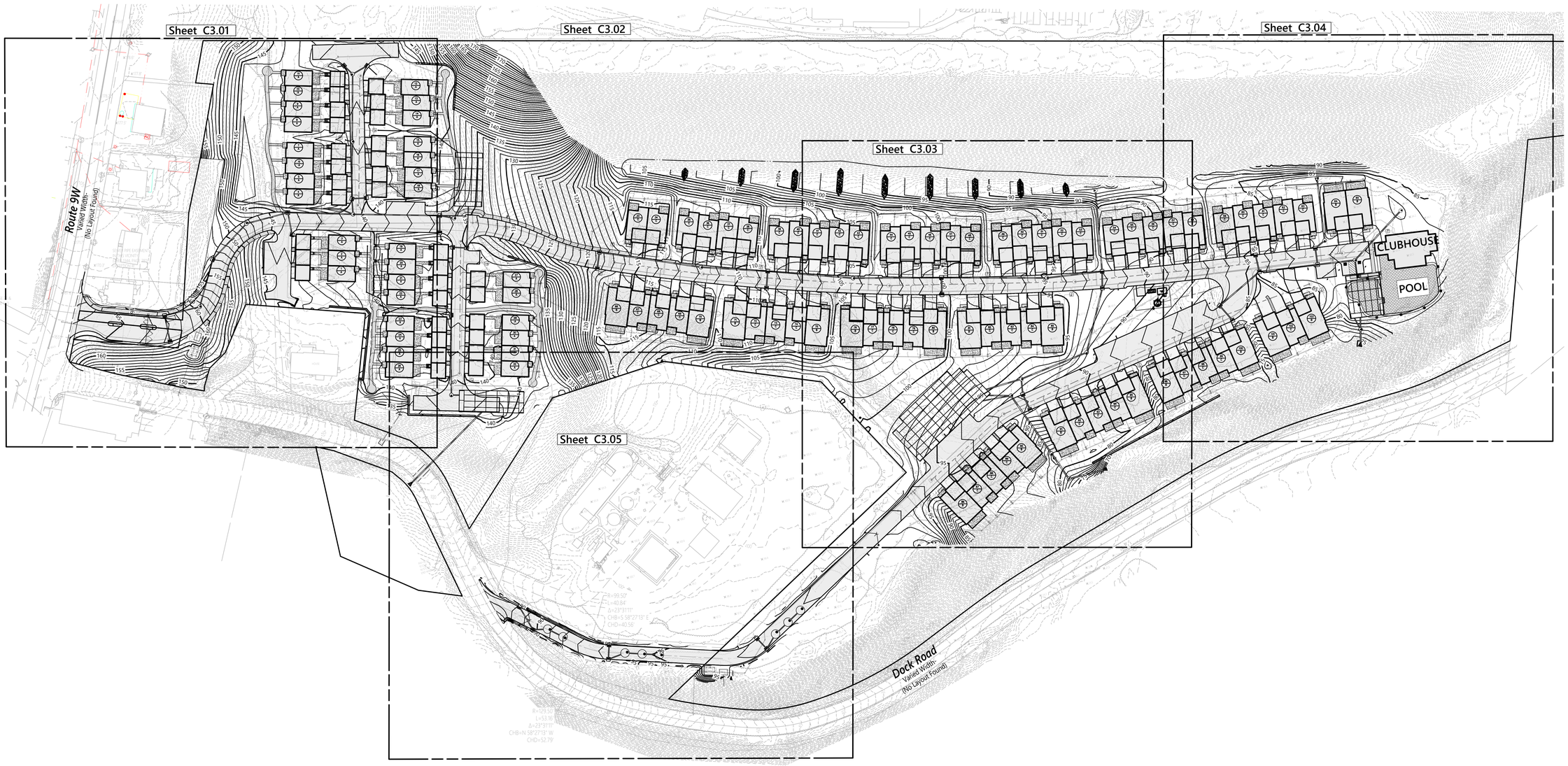

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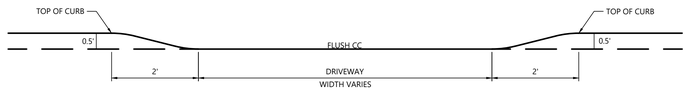
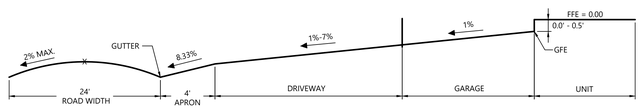


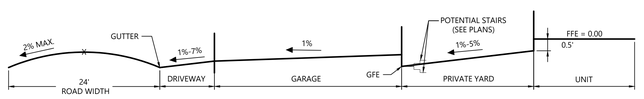
Typical Curb Transition Section

N.T.S.



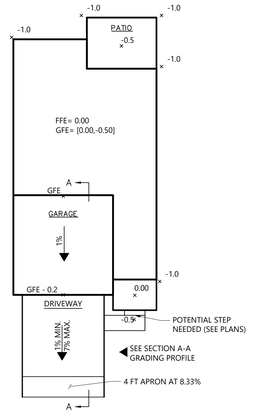
Typical Driveway Grading Profile (Townhouse) - Secion A-A

N.T.S.



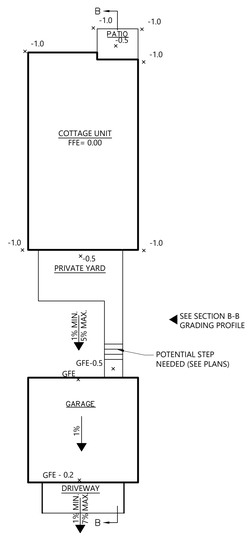
Typical Driveway Grading Profile (Cottages) - Secion B-B

N.T.S.



Typical Driveway Grading Scheme (Townhouse)

N.T.S.



Typical Driveway Grading Scheme (Cottages)

N.T.S.

Grading and Drainage Notes

1. ELEVATIONS ARE BASED ON NAVD88.
2. THE CONTRACTOR SHALL MEET LINES AND GRADES DEPICTED ON THIS PLAN OR AS DIRECTED BY THE ENGINEER. GRADE SHALL PITCH AWAY FROM BUILDINGS AND WHERE APPLICABLE SWALES SHALL BE INCORPORATED BETWEEN BUILDINGS TO TAKE WATER AWAY FROM FOUNDATIONS.
3. GRADES IN ALONG ADA WALKWAYS SHALL NOT EXCEED 5% IN THE DIRECTION OF TRAVEL AND 2% CROSS SLOPE.
4. ALL ADA ACCESS AISLES AND PARKING SPACES SHALL BE AT THE SAME LEVEL, WITH MAXIMUM SLOPES NOT GREATER THAN 2% IN ANY DIRECTION.
5. CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN THE ADA ACCESS ASISLES/PARKING SPACES AND THE EXISTING PAVEMENT AT THE WORK LIMITS.
6. GRADES IN LANDSCAPED AREAS SHALL NOT EXCEED A SLOPE OF 3H:1V UNLESS OTHERWISE NOTED ON THE PLANS.
7. CONTRACTOR RESPONSIBLE TO PROVIDE POSITIVE DRAINAGE FLOW OVER THE SITE. BIRD BATHS AND PONDING AREAS (OTHER THAN AS DESIGNED) ARE NOT PERMITTED AND SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. DRAINAGE PIPE TO BE AS FOLLOWS UNLESS OTHERWISE NOTED:
   - UNDER PAVEMENT: HDPE, SIZE AS NOTED ON PLANS
   - UNDER LANDSCAPING: HDPE, SIZE AS NOTED ON PLANS
   - ROOF DRAIN HEADERS: 6" DR-18 PVC MIN. SLOPE 1%
9. ROOF DRAIN HEADERS AND DOWN SPOUT LOCATIONS PENDING FINAL ARCHITECTURAL DESIGN.

Earthwork Notes

1. THE CONTRACTOR SHALL PERFORM THEIR OWN CUT/FILL ANALYSIS BASED ON THE APPROVED SITE PLANS TO DETERMINE IF FILL IS NEEDED TO BE IMPORTED TO CONSTRUCT THE PROJECT.
2. THE CONTRACTOR IS PERMITTED TO UTILIZE NATIVE SOILS EXCAVATED FROM THE SITE FOR USE AS FILL MATERIAL IN OTHER AREAS OF THE SITE, NATIVE SOILS SHALL BE EXCAVATED TO A DEPTH DETERMINED BY THE GEOTECHNICAL ENGINEER FOR TESTING TO DETERMINE MAXIMUM ALLOWABLE DENSITY.
3. CUT AND REMOVE TREES, REMOVE STUMPS AND BRUSH. LEGALLY DISPOSE OF OFF-SITE. WOOD WASTES MAY BE CHIPPED AND SHREDDED ON-SITE AND REUSED ON-SITE WITH PRIOR APPROVAL OF THE ENGINEER. STRIP ALL TOPSOIL, SUBSOIL AND OTHER UNSUITABLE MATERIALS TO ITS FULL DEPTH WITHIN THE CONTRACT LIMITS. TOPSOIL FREE OF ROOTS, STUMPS AND DELETERIOUS MATERIAL CAN BE STOCKPILED FOR REUSE IN LANDSCAPED AREAS
4. FILL SHALL BE PLACED ON LIFTS NOT GREATER THAN EIGHTEEN INCHES THICK AND COMPACTED TO A MINIMUM COMPACTION OF 95% OF THE MODIFIED PROCTOR DENSITY.
5. FILL BROUGHT TO THE SITE SHALL BE COMPRISED OF MAINLY SAND AND GRAVEL AND SHALL BE CLEAN, INERT, HARD, DURABLE GRAINS OF QUARTZ OR OTHER HARD, DURABLE ROCK, FREE FROM LOAM OR CLAY, SURFACE COATINGS AND DELETERIOUS MATERIALS. THE ALLOWABLE AMOUNT OF MATERIAL PASSING A NO. 200 SIEVE AS DETERMINED BY AASHTO-T11 OR ASTM D422 SHALL NOT EXCEED 10 PERCENT BY WEIGHT. THE MAXIMUM PARTICLE SIZE SHALL BE 1/4-INCH (I.E., 100 PERCENT PASSING THE NO. 4 SIEVE).
6. FILL MATERIAL SHALL BE FREE OF TRASH, ICE SNOW, TREE STUMPS, ROOTS, AND ORGANIC MATERIALS.
7. THE ENGINEER/OWNER RESERVES THE RIGHT TO REJECT MATERIAL BROUGHT TO THE SITE BASED ON VISUAL INSPECTION OF THE SUITABILITY OF ALL MATERIALS. RE-TESTING OF THE MATERIALS DURING EARTHWORK OPERATIONS WOULD BE PERFORMED AT THE COST OF THE CONTRACTOR.
8. BASED ON THE GEOTECHNICAL REPORT, BED ROCK IS NOT ANTICIPATED DURING EXCAVATION OPERATIONS. SHOULD ROCK BE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING AND ADVISE OF THE PLAN TO EXCAVATE IF NECESSARY.

0 30 60 120Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
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Drawing Title
Overall Grading and Drainage Plan

Drawing Number
C3.00

Sheet 8 of 47

Project Number
20578.01

STATE OF NEW YORK
CHRISTOPHER J. LANG
086718
LICENSED PROFESSIONAL ENGINEER

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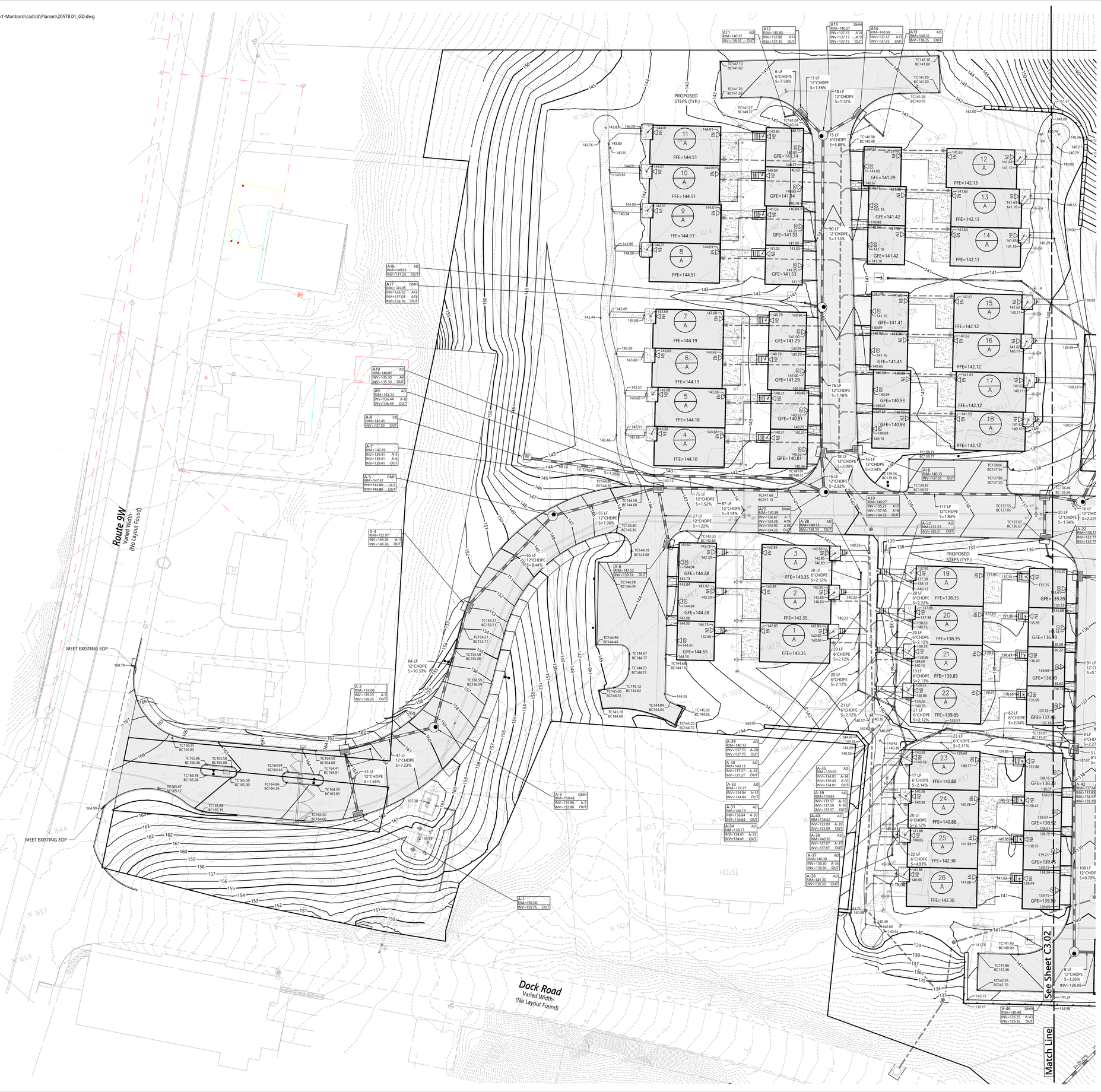
Route 9W
Varied Width-
(No Layout Found)
Dock Road
Varied Width-
(No Layout Found)
PROPOSED STEPS (TYP.)
PROPOSED STEPS (TYP.)
MEET EXISTING EOP
MEET EXISTING EOP
HOUSE
See Sheet C3.02
Match Line
A-1 RIM=163.00 INV=159.75 OUT
A-2 RIM=163.00 INV=159.23 A-1 INV=159.23 OUT
A-3 DMH RIM=159.48 INV=155.86 A-2 INV=155.86 OUT
A-4 RIM=152.97 INV=149.26 A-3 INV=149.26 OUT
A-5 DMH RIM=147.41 INV=143.80 A-4 INV=143.80 OUT
A-6 RIM=143.52 INV=139.74 OUT
A-7 RIM=143.59 INV=139.41 A-5 INV=139.41 A-6 INV=139.41 OUT
A-8 CB RIM=142.45 INV=137.50 OUT
A9 RIM=143.13 INV=136.44 A-8 INV=136.44 OUT
A10 AD RIM=140.01 INV=135.30 A9 INV=135.30 OUT
A11 AD RIM=140.32 INV=136.32 OUT
A12 RIM=140.60 INV=137.88 A11 INV=137.35 OUT
A13 AD RIM=140.35 INV=136.35 OUT
A14 RIM=140.59 INV=137.47 A11 INV=137.35 OUT
A15 DMH RIM=140.57 INV=137.15 A14 INV=137.17 A12 INV=137.15 OUT
A16 AD RIM=140.53 INV=137.23 OUT
A17 DMH RIM=141.05 INV=136.10 A15 INV=137.04 A16 INV=136.10 OUT
A18 RIM=140.13 INV=137.65 OUT
A19 RIM=140.27 INV=135.23 A17 INV=137.50 A18 INV=134.75 OUT
A20 DMH RIM=140.39 INV=136.67 A-7 INV=134.38 A19 INV=134.92 A10 INV=134.23 OUT
A-22 RIM=136.51 INV=132.77 INV=132.77
A-28 AD RIM=140.13 INV=138.13 OUT
A-29 AD RIM=140.13 INV=137.70 A-28 INV=137.70 OUT
A-30 AD RIM=140.13 INV=137.27 A-29 INV=137.27 OUT
A-31 AD RIM=140.13 INV=136.84 A-30 INV=136.84 OUT
A-32 AD RIM=137.22 INV=135.31 OUT
A-33 AD RIM=137.27 INV=134.84 A-32 INV=134.84 OUT
A-34 AD RIM=138.77 INV=134.41 A-33 INV=134.41 OUT
A-35 AD RIM=138.69 INV=134.01 A-34 INV=136.40 A-35 INV=134.01 OUT
A-36 AD RIM=141.30 INV=139.30 OUT
A-37 AD RIM=140.30 INV=138.30 A-36 INV=138.30 OUT
A-38 AD RIM=140.30 INV=137.87 A-37 INV=137.87 OUT
A-39 AD RIM=139.83 INV=133.57 A-35 INV=137.50 A-38 INV=133.57 OUT
A-40 AD RIM=138.62 INV=133.09 A-37 INV=133.09 OUT
A-46 DMH RIM=140.40 INV=126.35 A-43 INV=126.35 OUT
6 LF 6"CHDPE S=7.58%
13 LF 12"CHDPE S=1.36%
18 LF 12"CHDPE S=1.12%
15 LF 6"CHDPE S=5.88%
90 LF 12"CHDPE S=1.16%
76 LF 12"CHDPE S=1.16%
18 LF 12"CHDPE S=2.09%
16 LF 12"CHDPE S=0.94%
16 LF 12"CHDPE S=2.32%
68 LF 12"CHDPE S=1.56%
75 LF 12"CHDPE S=1.52%
87 LF 12"CHDPE S=3.14%
55 LF 12"CHDPE S=7.96%
27 LF 12"CHDPE S=1.22%
65 LF 12"CHDPE S=8.44%
64 LF 12"CHDPE S=10.30%
47 LF 12"CHDPE S=7.23%
33 LF 12"CHDPE S=1.56%
117 LF 12"CHDPE S=1.84%
20 LF 12"CHDPE S=1.94%
16 LF 12"CHDPE S=2.22%
91 LF 12"CHDPE S=0.7%
108 LF 12"CHDPE S=0.70%
9 LF 12"CHDPE S=3.26% INV=126.08
20 LF 6"CHDPE S=2.32%
20 LF 6"CHDPE S=2.12%
19 LF 6"CHDPE S=2.13%
21 LF 6"CHDPE S=2.12%
62 LF 6"CHDPE S=2.04%
23 LF 6"CHDPE S=2.11%
17 LF 6"CHDPE S=2.14%
20 LF 6"CHDPE S=2.12%
20 LF 6"CHDPE S=4.93%
9 LF 6"CHDPE S=2.27%
5 LF 6"CHDPE S=
11 A FFE=144.51
10 A FFE=144.51
9 A FFE=144.51
8 A FFE=144.51
7 A FFE=144.19
6 A FFE=144.19
5 A FFE=144.18
4 A FFE=144.18
3 A FFE=143.35
2 A FFE=143.35
1 A FFE=143.35
GFE=141.14
GFE=141.14
GFE=141.53
GFE=141.53
GFE=141.29
GFE=141.29
GFE=140.81
GFE=140.81
GFE=144.28
GFE=144.28
GFE=144.65
12 A FFE=142.13
13 A FFE=142.13
14 A FFE=142.13
15 A FFE=142.12
16 A FFE=142.12
17 A FFE=142.12
18 A FFE=142.12
GFE=141.29
GFE=141.42
GFE=141.42
GFE=141.41
GFE=141.41
GFE=140.93
GFE=140.93
19 A FFE=138.35
20 A FFE=138.35
21 A FFE=139.85
22 A FFE=139.85
23 A FFE=140.88
24 A FFE=140.88
25 A FFE=142.38
26 A FFE=142.38
GFE=135.85
GFE=136.89
GFE=136.93
GFE=137.40
GFE=138.39
GFE=138.92
GFE=139.45
GFE=139.90
TC142.10 BC141.60
TC141.70 BC141.20
TC141.26 BC140.76
TC140.98 BC140.48
TC139.77 BC139.27
TC139.56 BC139.06
TC139.47 BC138.97
TC138.06 BC137.56
TC137.80 BC137.30
TC137.55 BC137.05
TC137.07 BC136.57
TC136.46 BC135.96
TC137.17 BC137.47
TC141.01 BC140.51
TC144.01 BC144.39
TC144.58 BC144.08
TC145.80 BC145.30
TC144.18 BC143.68
TC144.59 BC144.09
TC144.98 BC144.48
TC145.12 BC144.62
TC145.05 BC144.55
TC145.18 BC144.68
TC145.20 BC144.70
TC144.67 BC144.17
TC144.73 BC144.23
TC144.94 BC144.44
TC143.33 BC142.83
TC144.68 BC141.18
TC141.86 BC141.36
TC142.26 BC141.76
TC141.40 BC140.90
TC154.21 BC153.71
TC154.21 BC153.71
TC155.58 BC155.08
TC156.59 BC156.09
TC166.35 BC165.85
TC165.86 BC165.36
TC165.58 BC165.08
TC165.78 BC165.28
TC165.67 BC165.17
TC165.89 BC165.39
TC165.50 BC165.00
TC164.94 BC164.44
TC164.86 BC164.36
TC164.50 BC164.00
TC164.41 BC163.91
TC164.33 BC163.83
TC164.50 BC164.00
TC159.98
TC163.38
TC163.7
TC163.8
TC164.4
TC164.5
TC147.5
TC142.15
TC141.75
TC132.11
TC134.98
TC141.34
TC142.15
TC140.49
TC140.60
TC140.54
TC140.42
TC140.38
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TC140.36
TC140.23
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TC140.59
TC140.55
TC140.53
TC140.47
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TC140.38
TC140.37
TC140.41
TC140.38
TC140.38
TC140.38

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LIMITS OF DISTURBANCE (TYP.)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

CHECK DAM (TYP.)

STORM TRAP A1
TOS = 132.56
BOS = 124.06
INV. IN = 130.25
INV. OUT = 126.11

STORM TRAP A2
TOS = 132.56
BOS = 124.06
INV. IN = 126.08
INV. OUT = 130.00

PROPOSED STEPS (TYP.)

See Sheet C3.01
See Sheet C3.03
See Sheet C3.05
Match Line
Match Line
Match Line

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Apprvd.
1	Town Resubmission	10/25/2025	AL

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Checked by AL

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Drawing Title
Grading and Drainage Plan

Drawing Number
C3.02

Sheet 10 of 47

Project Number
20578.01

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LIMITS OF DISTURBANCE (TYP.)

CHECK DAM (TYP.)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

STORM TRAP B
TOS = 86.00
BOS = 71.00
INV. IN = 79.16
INV. OUT = 79

OUTFALL
INV = 72.84

Dock Road
Varied Width-
(No Layout Found)

Match Line
See Sheet C3.02

Match Line
See Sheet C3.04

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0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Number: C3.03

Sheet 11 of 47

Project Number: 20578.01

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DANIELA BALSANO
085918
LICENSED PROFESSIONAL ENGINEER

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See Sheet C3.03

Match Line

LIMITS OF DISTURBANCE (TYP.)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

C-11 CB
RIM=83.94
INV=79.15 OUT

C-9 CB
RIM=82.50
INV=79.00 OUT

C-7 DMH
RIM=83.45
INV=77.10 C-6
INV=77.97 C-9
INV=77.10 OUT

C-10 DMH
RIM=83.64
INV=78.09 C-11
INV=78.09 OUT

C-6 CB
RIM=82.56
INV=77.94 C-5
INV=77.78 C-9
INV=77.71 OUT

C-5 CB
RIM=82.75
INV=77.71 C-9
INV=77.71 OUT

C-4 CB
RIM=84.47
INV=80.45 OUT

C-3
RIM=84.33
INV=80.18 C-4
INV=80.00 C-2
INV=80.00 OUT

C-2
RIM=85.90
INV=81.98 C-1
INV=81.98 OUT

C-1
RIM=85.20
INV=82.65 OUT

83 LF 15"CHDPE S=1.28%

90 LF 15"CHDPE S=1.14%

12 LF 15"CHDPE S=1.21%

19 LF 15"CHDPE S=1.23%

78 LF 15"CHDPE S=2.85%

19 LF 15"CHDPE S=1.18%

68 LF 15"CHDPE S=2.89%

23 LF 15"CHDPE S=2.90%

49 LF 15"CHDPE S=1.26%

23 LF 15"CHDPE S=1.26%

15 LF 15"CHDPE S=2.46%

18 LF 12"CHDPE S=2.00%

16 LF 18"CHDPE S=2.75%

OUTFALL INV = 75.17

STORM TRAP C
TOS = 80.00
BOS = 66.00
INV. IN = 76.8
INV. OUT = 76

CLUBHOUSE
FFE = 84.73

POOL

INV=78.14
INV=76.00

INV=76.80

56 C FFE=90.98 GFE=90.48
57 C FFE=89.36 GFE=89.17
58 C FFE=89.36 GFE=88.86
59 C FFE=86.96 GFE=86.61
60 C FFE=86.96 GFE=86.46
61 C FFE=85.46 GFE=84.96
62 C FFE=83.84 GFE=83.75
63 C FFE=83.84 GFE=83.36
64 B FFE=84.98 GFE=84.49
65 B FFE=84.98 GFE=84.49
96 B FFE=88.30 GFE=88.21
97 C FFE=88.30 GFE=88.21
98 C FFE=88.30 GFE=87.80
99 C FFE=86.80 GFE=86.42
100 B FFE=86.80 GFE=86.30
101 B FFE=86.45 GFE=85.95
102 C FFE=86.45 GFE=85.95
103 B FFE=86.45 GFE=85.95

FFE=90.30
GFE=89.80

Dock Road
Varied Width
(No Layout Found)

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

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August 9, 2024

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Drawing Title
Grading and Drainage Plan

Drawing Number
C3.04

Sheet 12 of 47

Project Number
20578.01

STATE OF NEW YORK
DANIELLE A. BALSANO
090718
LICENSED PROFESSIONAL ENGINEER

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Match Line See Sheet C3.01
Match Line See Sheet C3.02
Match Line See Sheet C3.03

STORM TRAP A2
TOS = 132.56
BOS = 124.06
INV. IN = 126.08
INV. OUT = 130.00

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

20 LF 6"CHDPE S=4.93%
8 LF 12"CHDPE S=5.26% INV=126.08
108 LF 12"CHDPE S=0.70%
INV=130.00
INSTALL PIPE ACROSS DOCK ROAD; SAWCUT EXISTING PAVEMENT AND REPLACE IN KIND
OUTFALL INV = 102.00
INV=99.61 15"CMP W/STONE END WALL
MEET EXISTING EOP
MEET EXISTING EOP

Dock Road
Varied Width
(No Layout Found)

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
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Drawing Title
Grading and Drainage Plan

Drawing Number
C3.05

Sheet 13 of 47

Project Number
20578.01

STATE OF NEW YORK
CHELSEY LAMB
086918
LICENSED PROFESSIONAL ENGINEER

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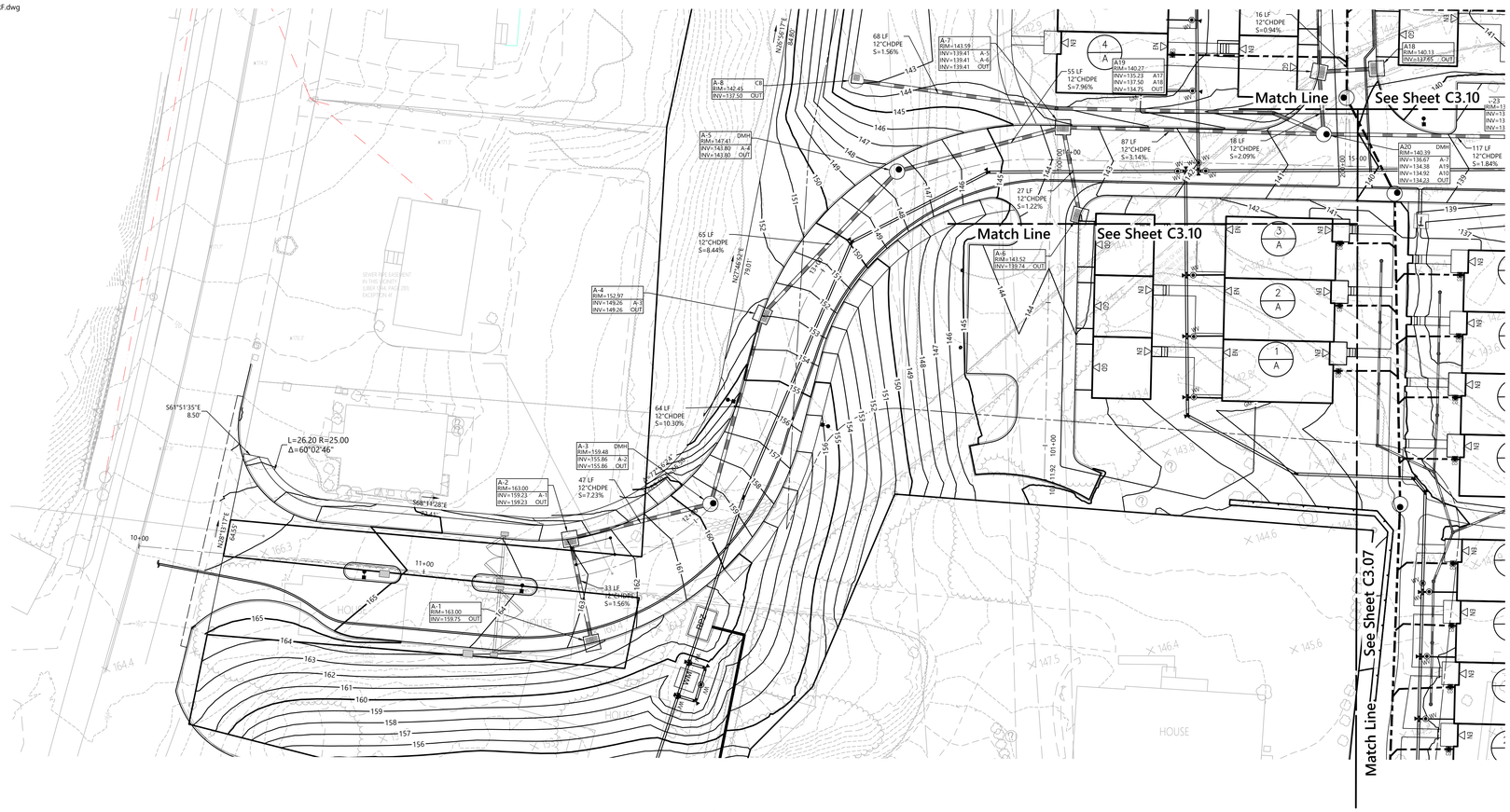
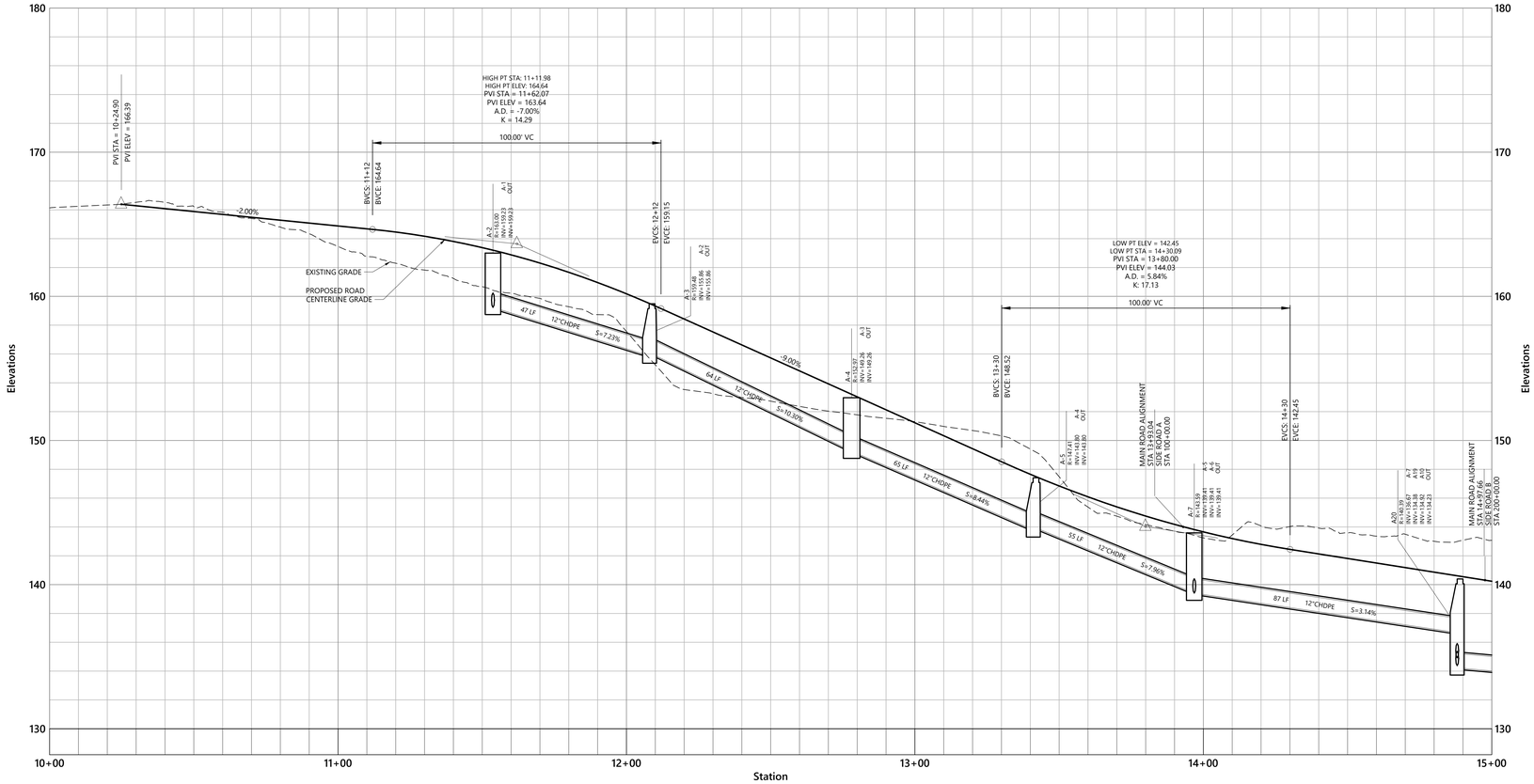


Station



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0 10 20 40 Feet

Leyton Properties Residences

Dock Road
Marlborough, NY

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Drawing Title
Main Road
Plan Over Profile
Station 10+00 to 15+00

Drawing Number
C3.06

Sheet 14 of 48

Project Number
20578.01

STATE OF NEW YORK
ANGELO V. LANDO
089718
LICENSED PROFESSIONAL ENGINEER

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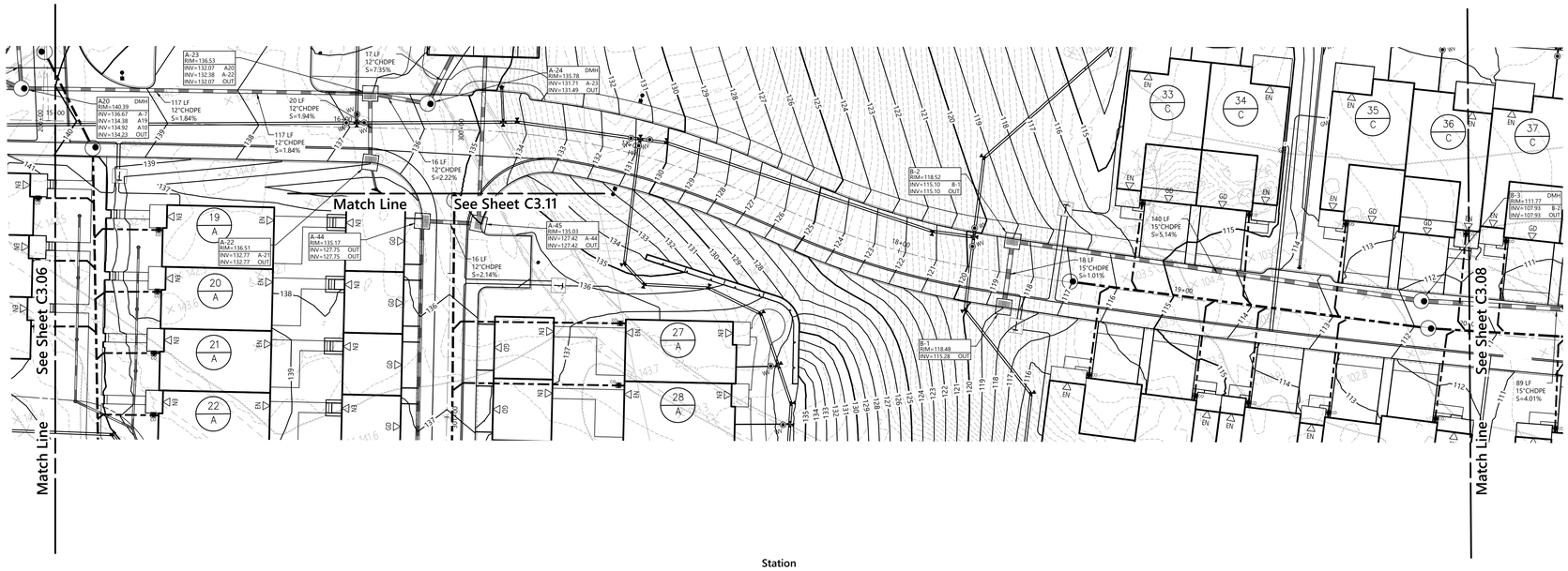
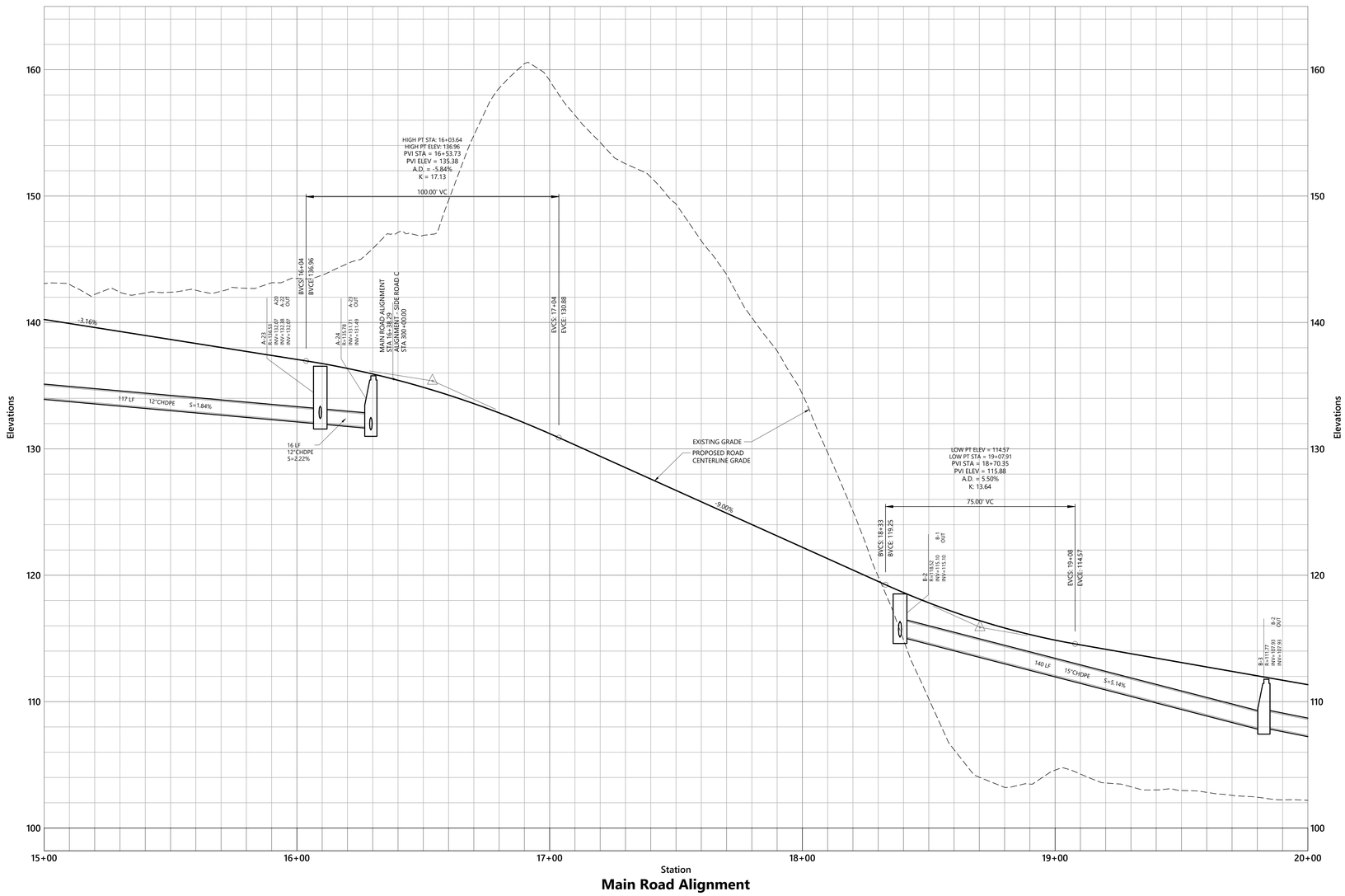


Station



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0 10 20 40 Feet

Leyton Properties Residences

Dock Road
Marlborough, NY

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Drawing Title
Main Road
Plan Over Profile
Station 15+00 to 20+00

Drawing Number
C3.07

Sheet 15 of 48

Project Number
20578.01

STATE OF NEW YORK
ANGELO V. LAGO
086419
LICENSED PROFESSIONAL ENGINEER

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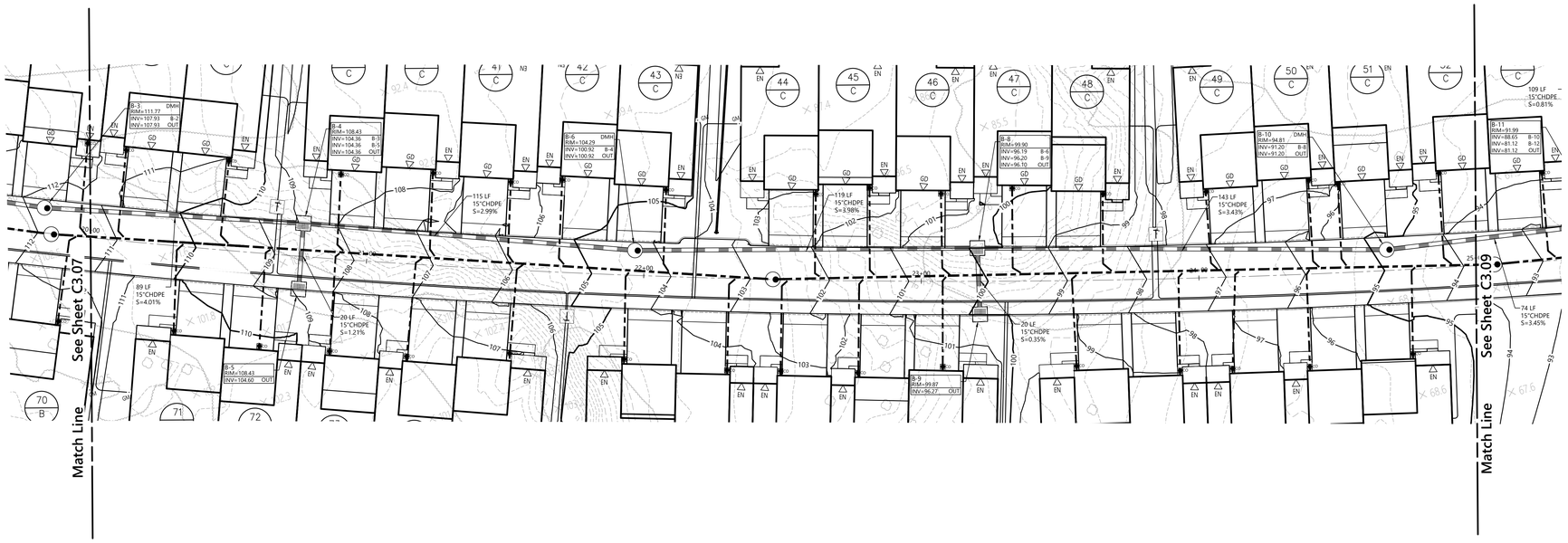

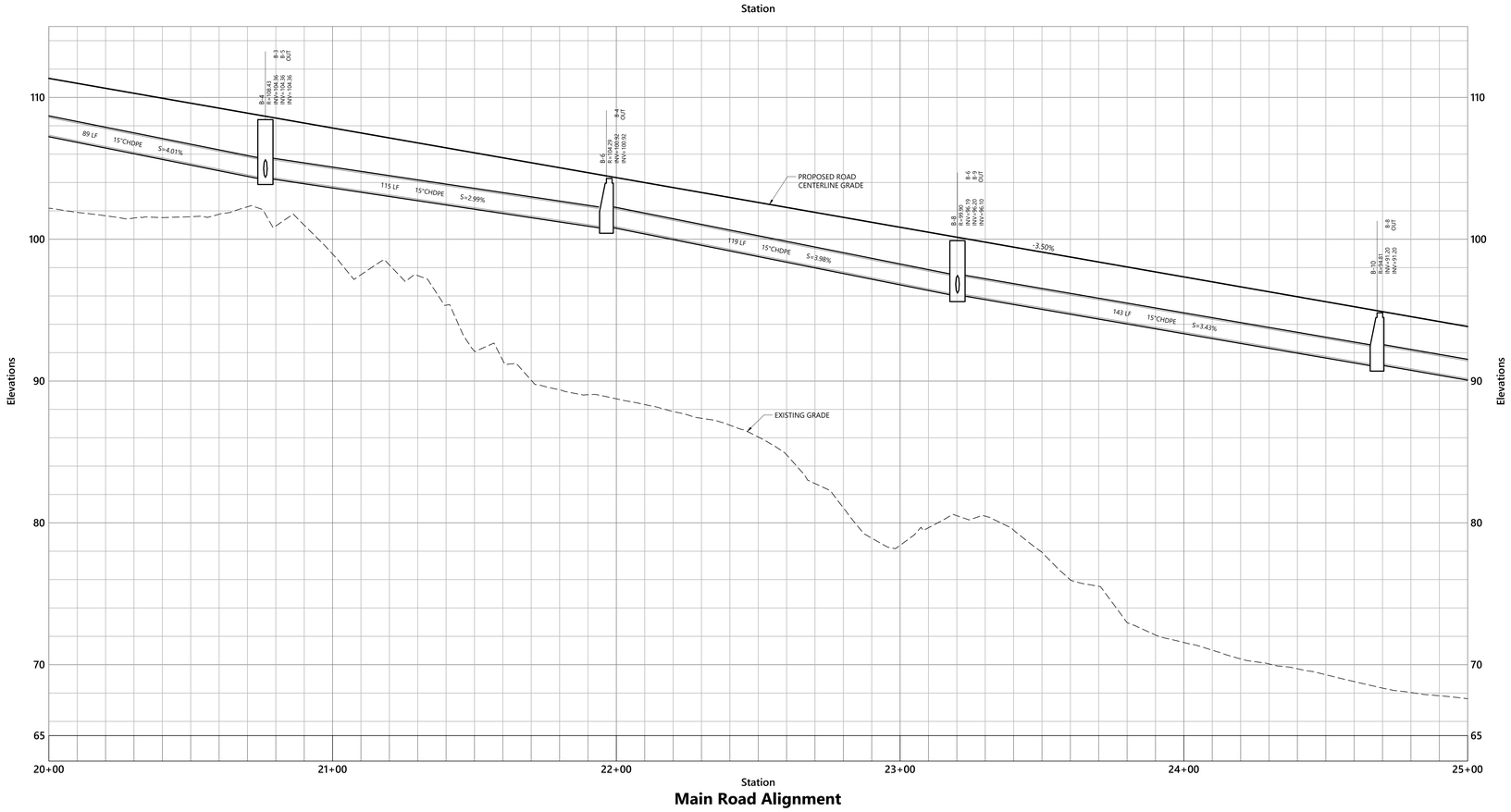

Main Road Alignment

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0 10 20 40 Feet

Leyton Properties Residences

Dock Road
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Drawing Title
Main Road
Plan Over Profile
Station 20+00 to 25+00

Drawing Number
C3.08

Sheet 16 of 48

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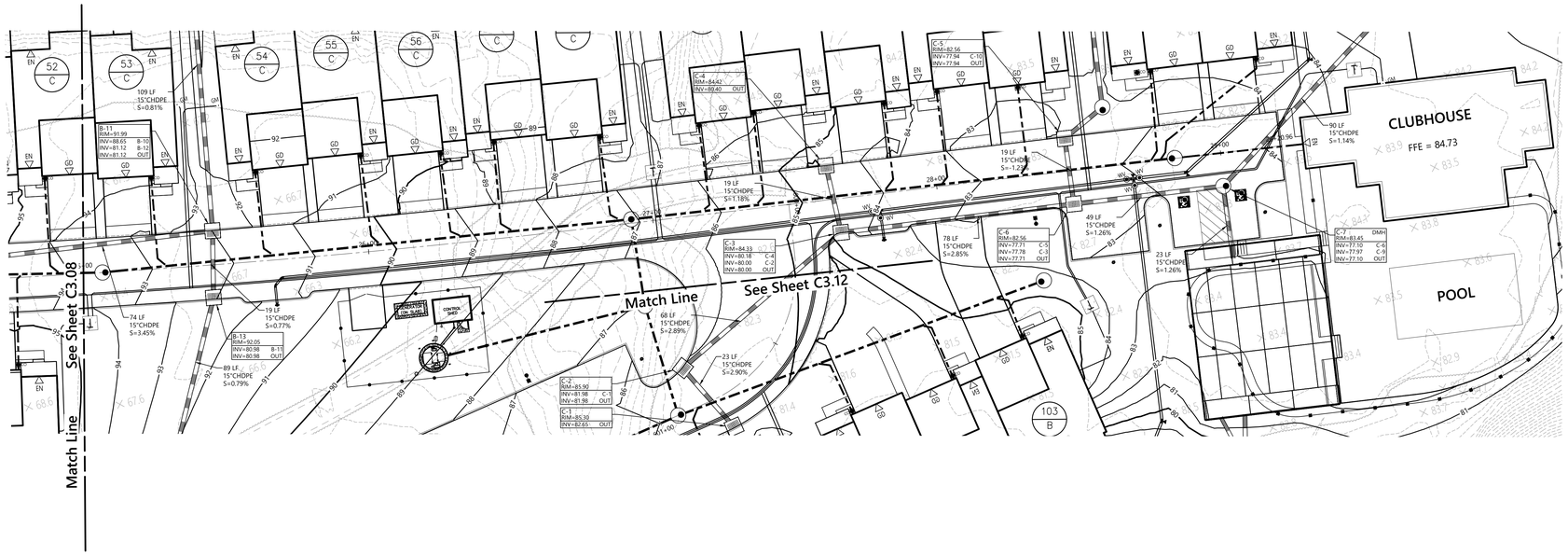

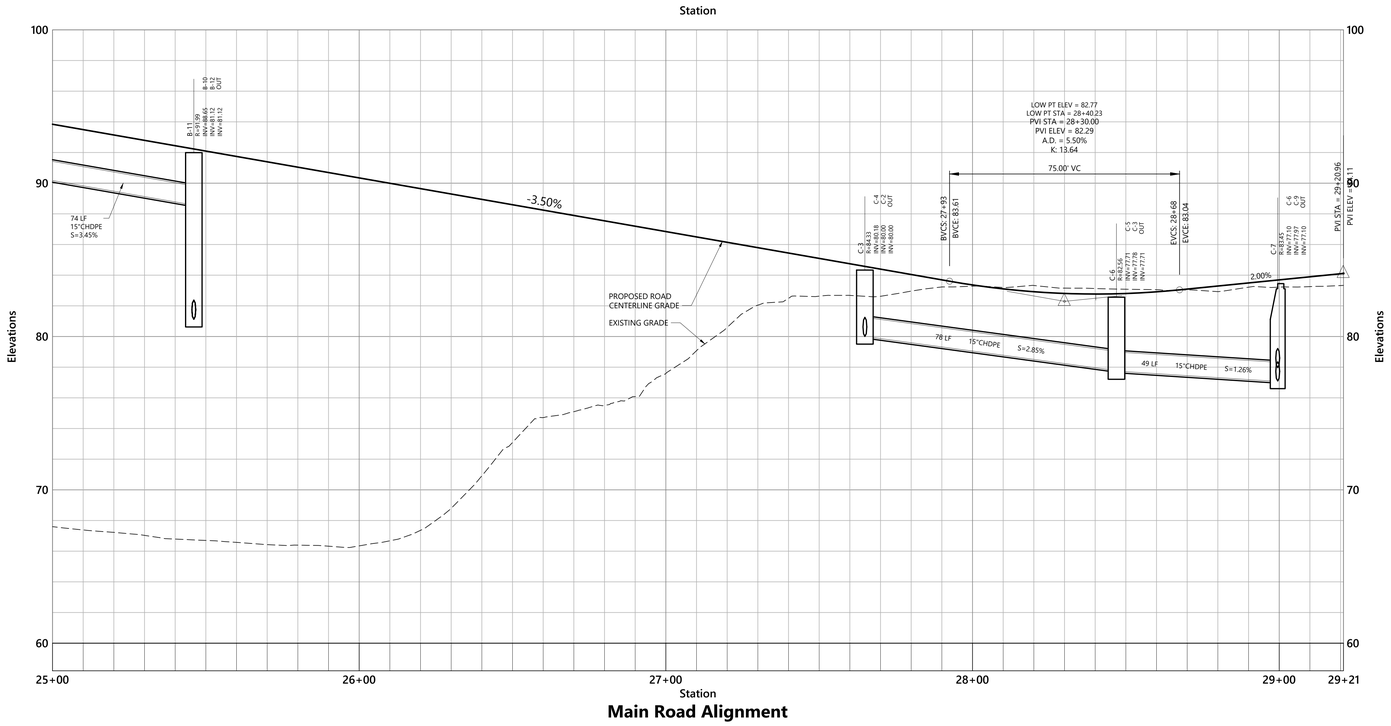

Main Road Alignment

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0 10 20 40 Feet

Leyton Properties Residences

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Drawing Title
Main Road
Plan Over Profile
Station 25+00 to 29+21

Drawing Number
C3.09

Sheet 17 of 48

Project Number
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STATE OF NEW YORK
ANGELO V. LANDO
089418
LICENSED PROFESSIONAL ENGINEER

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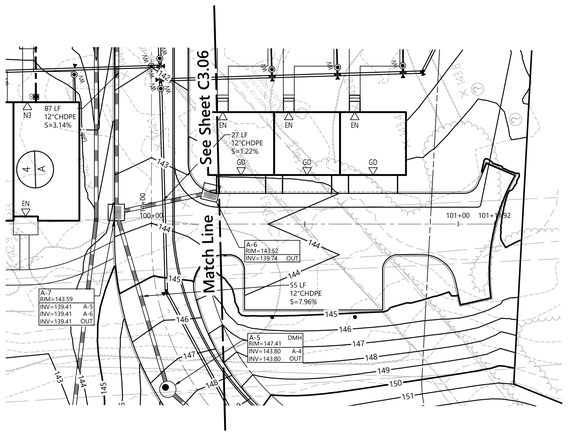
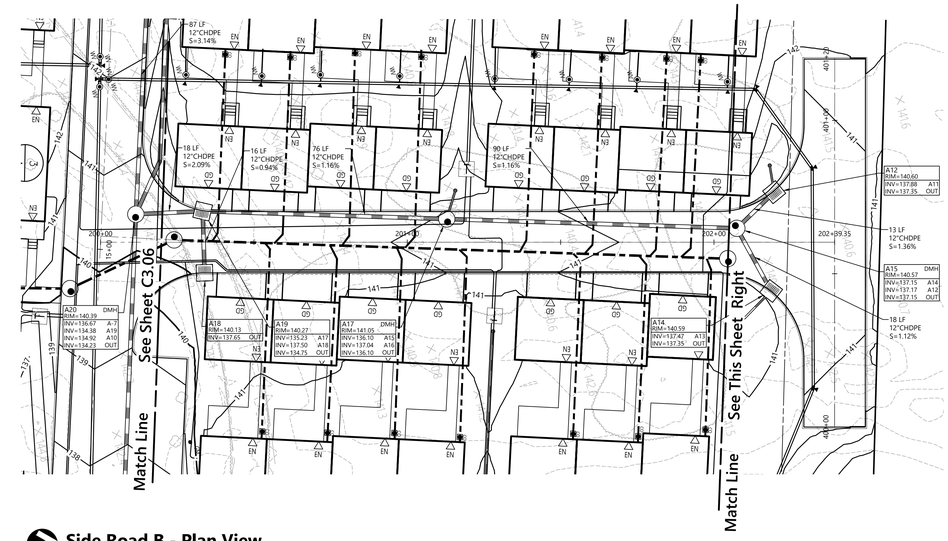


Side Road A - Plan View

1" = 20'

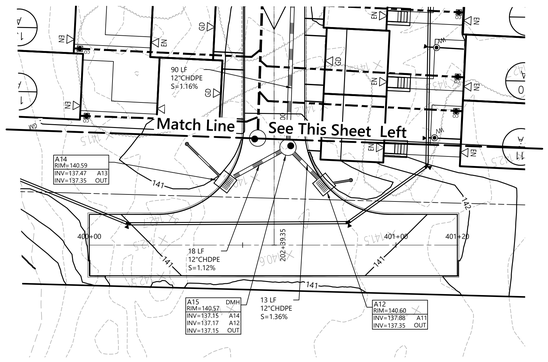
Source: VHB



Side Road B - Plan View

1" = 20'

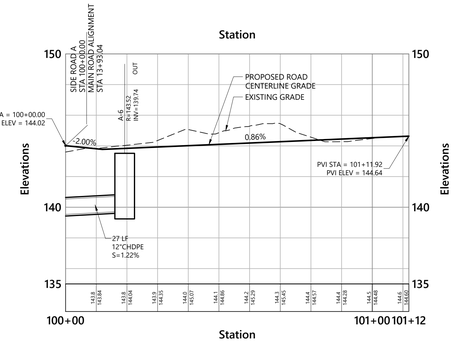
Source: VHB



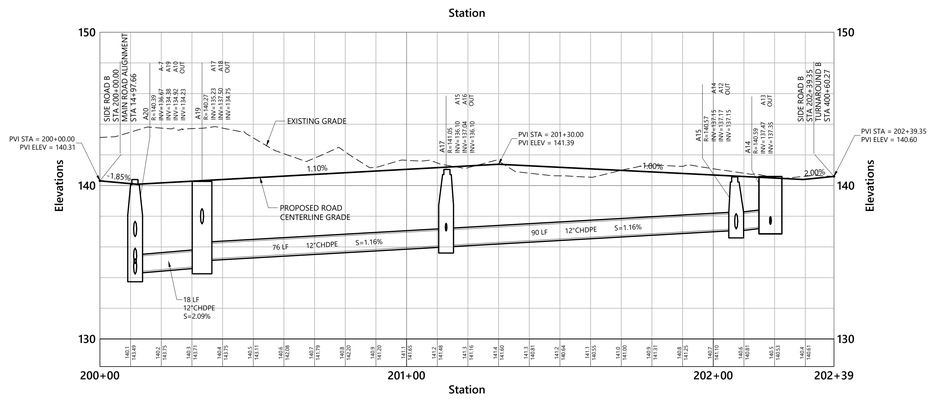
Turnaround B - Plan View

1" = 20'

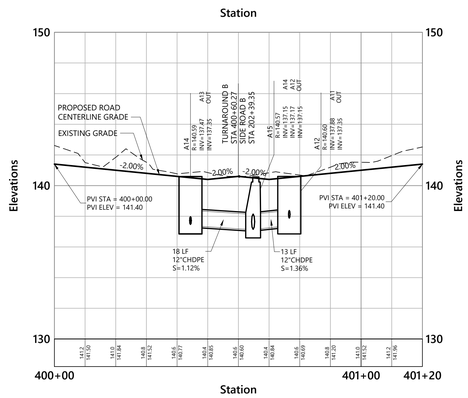
Source: VHB



Side Road A



Side Road B



Turnaround B

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0 10 20 40 Feet

Leyton Properties Residences

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

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Date: August 9, 2024

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Drawing Title:

Side Road A and B Plan Over Profile

Drawing Number: C3.10

Sheet 18 of 48

Project Number: 20578.01

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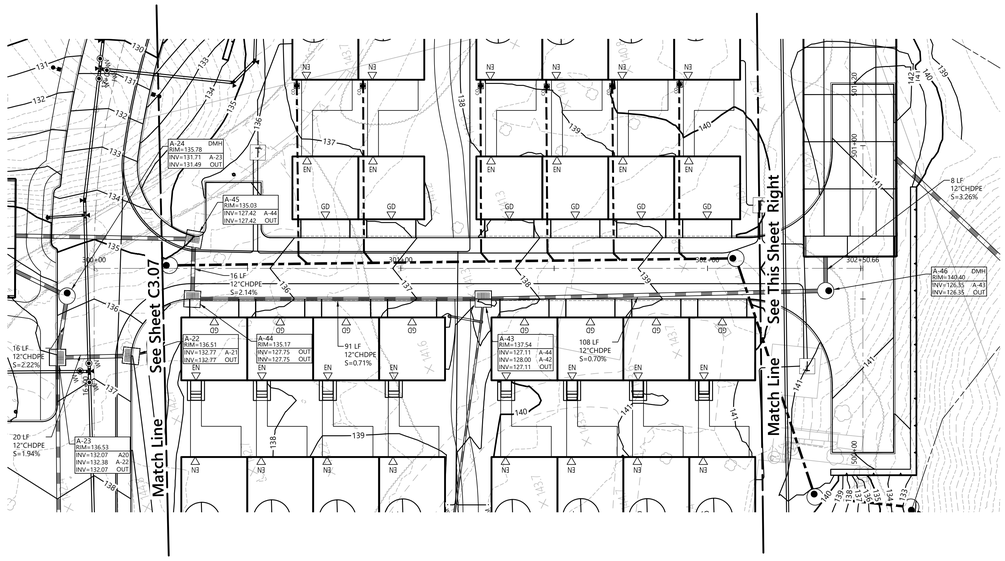
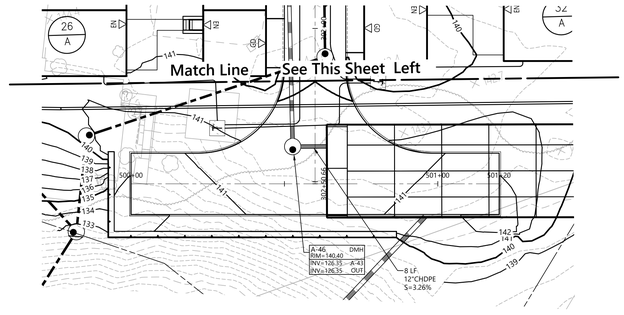


Side Road C - Plan View

1" = 20'

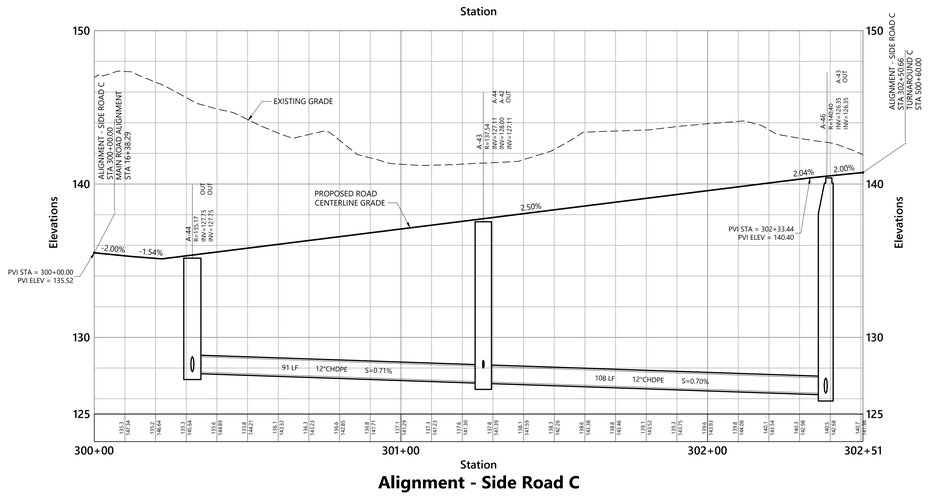
Source: VHB



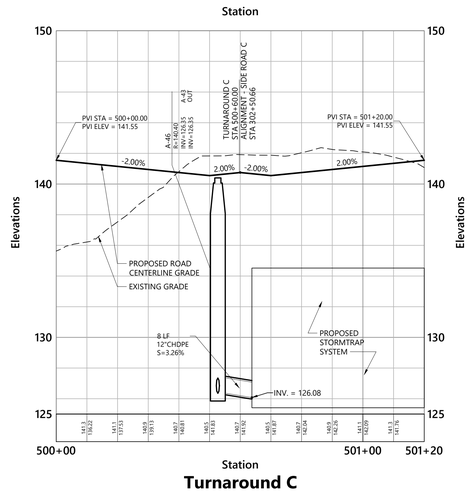
Turnaround C - Plan View

1" = 20'

Source: VHB



Alignment - Side Road C



Turnaround C

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0 10 20 40 Feet

Leyton Properties Residences

Dock Road
Marlborough, NY

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1	Town Resubmission	10/25/2025	AL

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Drawing Title
Side Road C
Plan Over Profile

Drawing Number
C3.11

Sheet 19 of 48

Project Number
20578.01

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KELLY V. LAND
086918
LICENSED PROFESSIONAL ENGINEER

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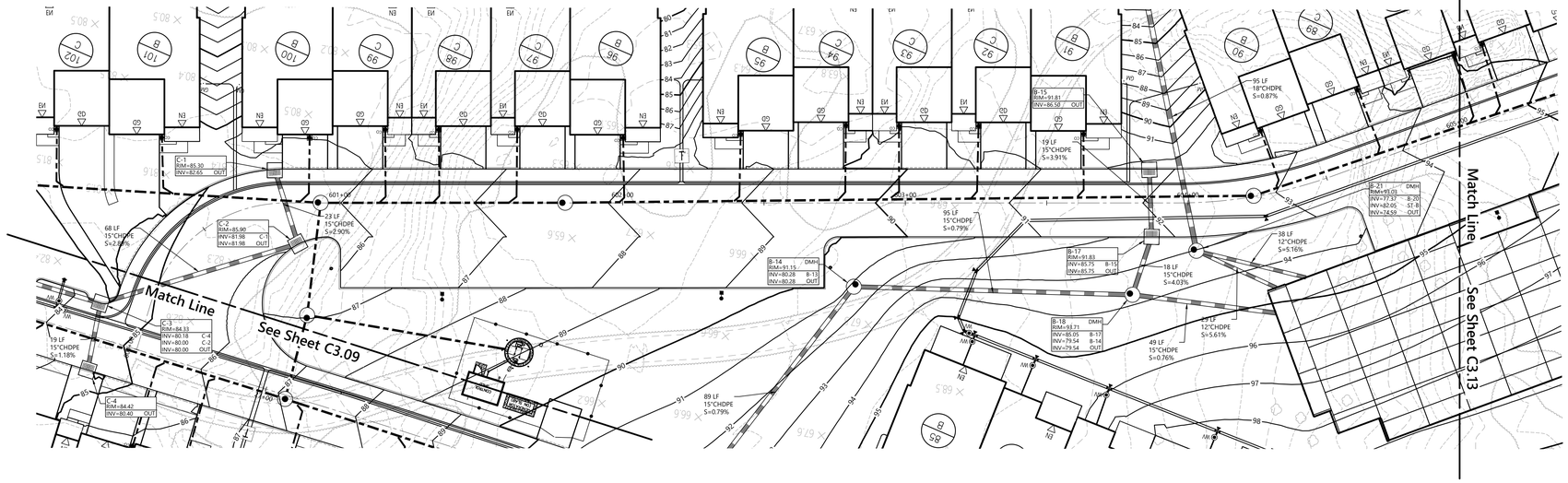

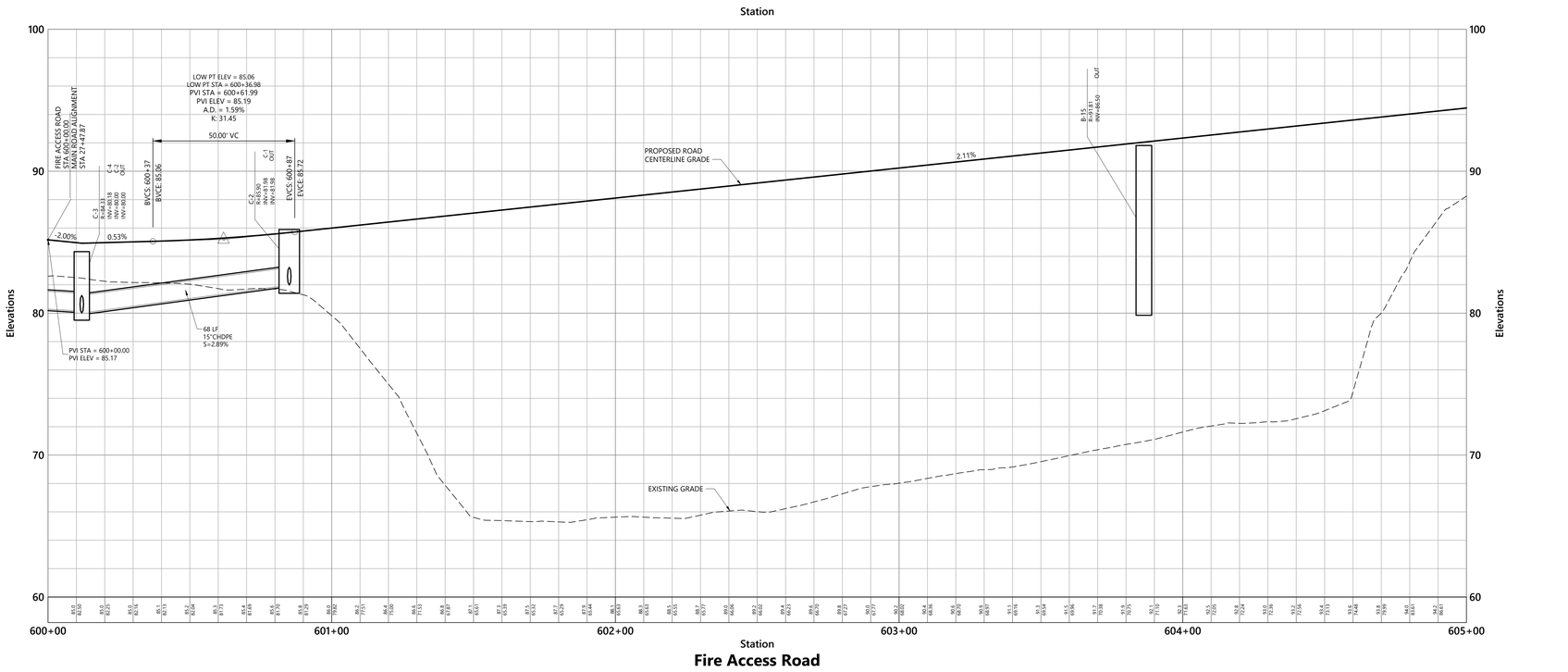

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Leyton Properties Residences

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

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Drawing Title
Fire Access Road Plan Over Profile Station 600+00 to 605+00

Drawing Number
C3.12

Sheet 20 of 48

Project Number
20578.01

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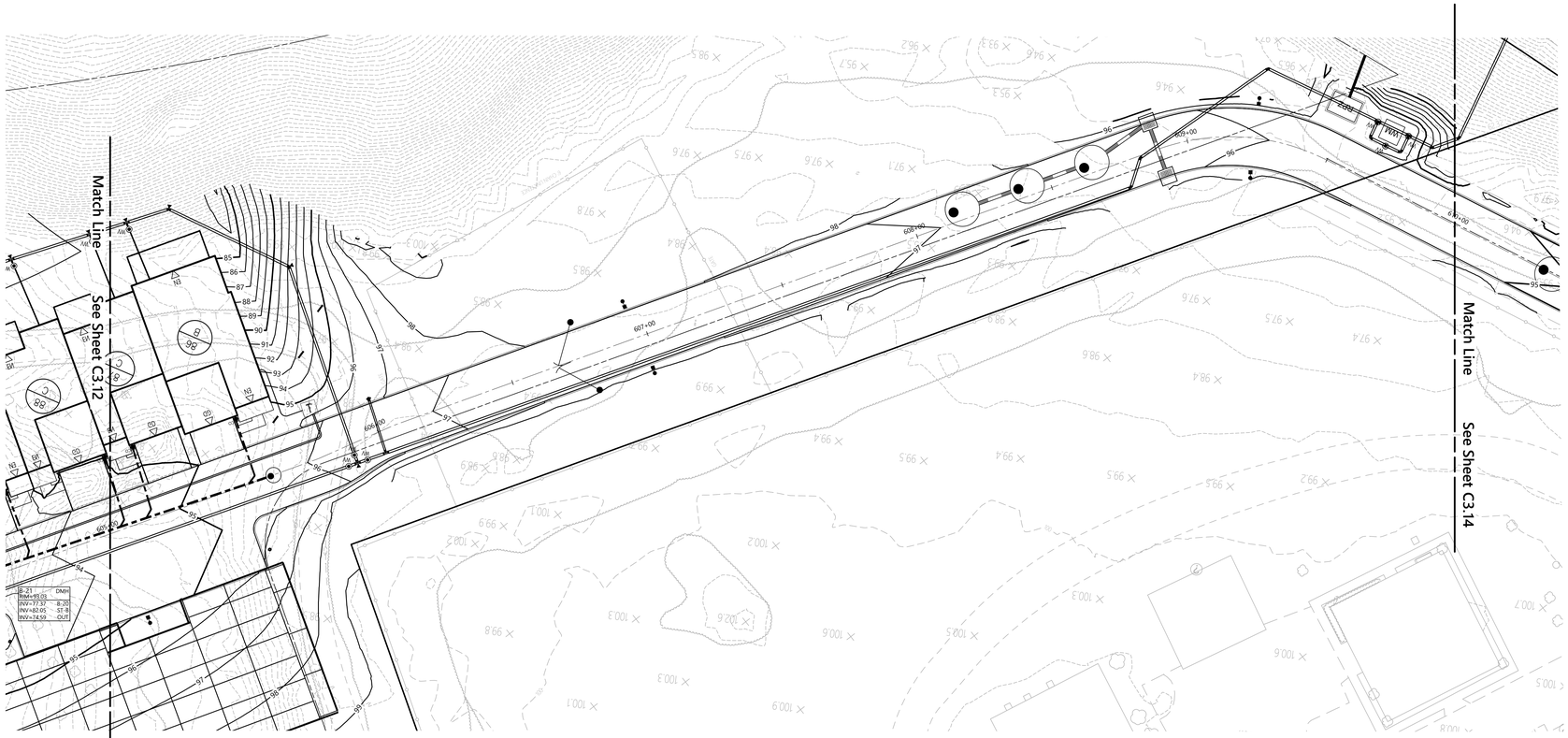

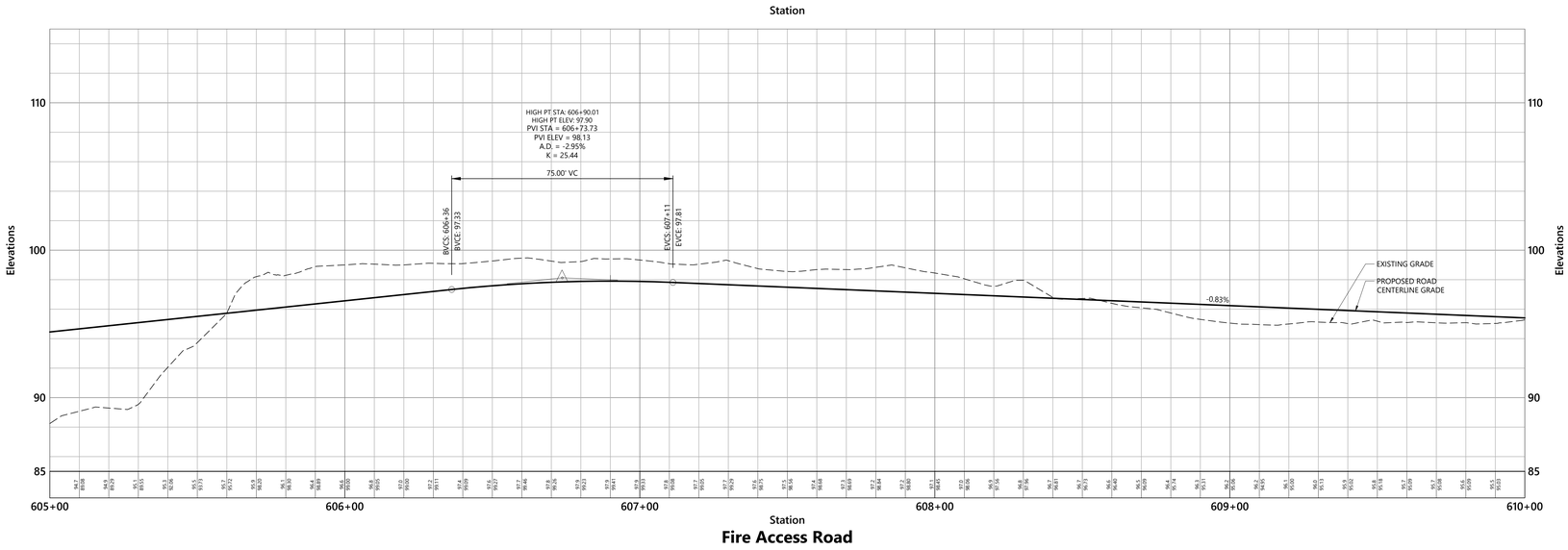

Fire Access Road

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Leyton Properties Residences

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

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Drawing Title:
Fire Access Road
Plan Over Profile
Station 605+00 to 610+00

Drawing Number: C3.13

Sheet 21 of 48

Project Number: 20578.01

STATE OF NEW YORK
DANIELLE V. LABRIOLA
086718
LICENSED PROFESSIONAL ENGINEER

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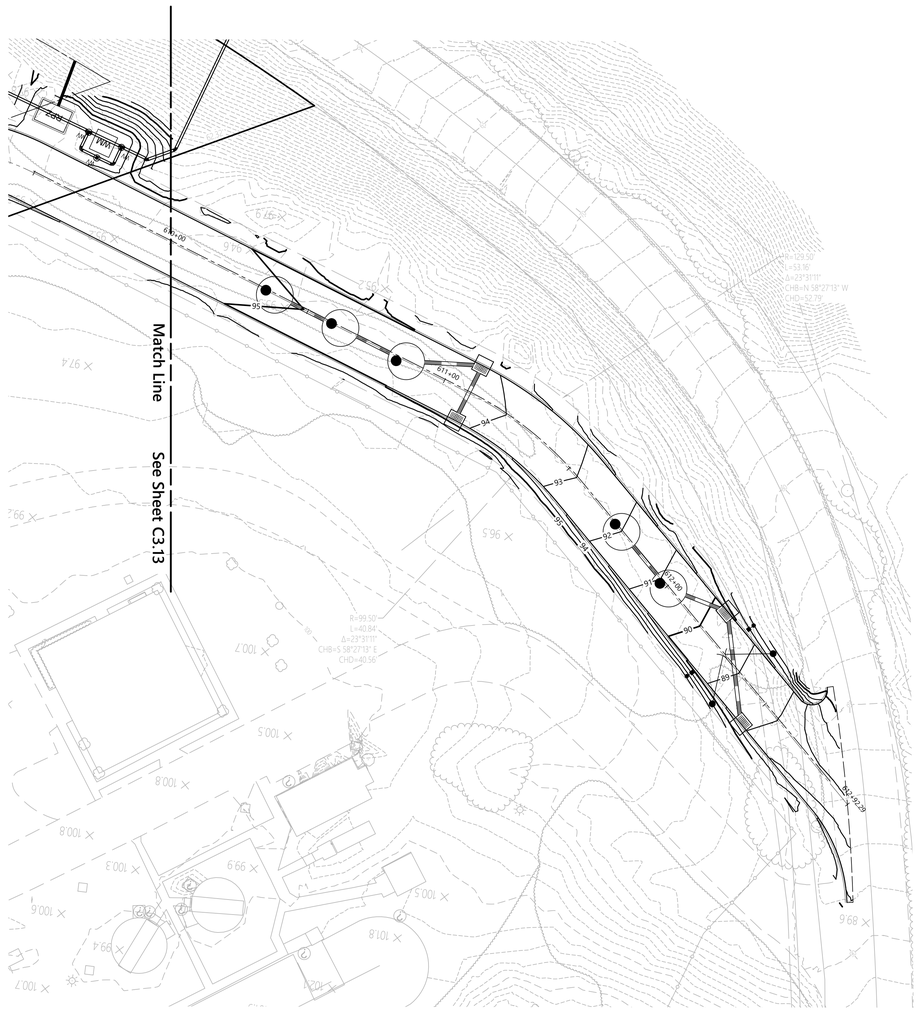

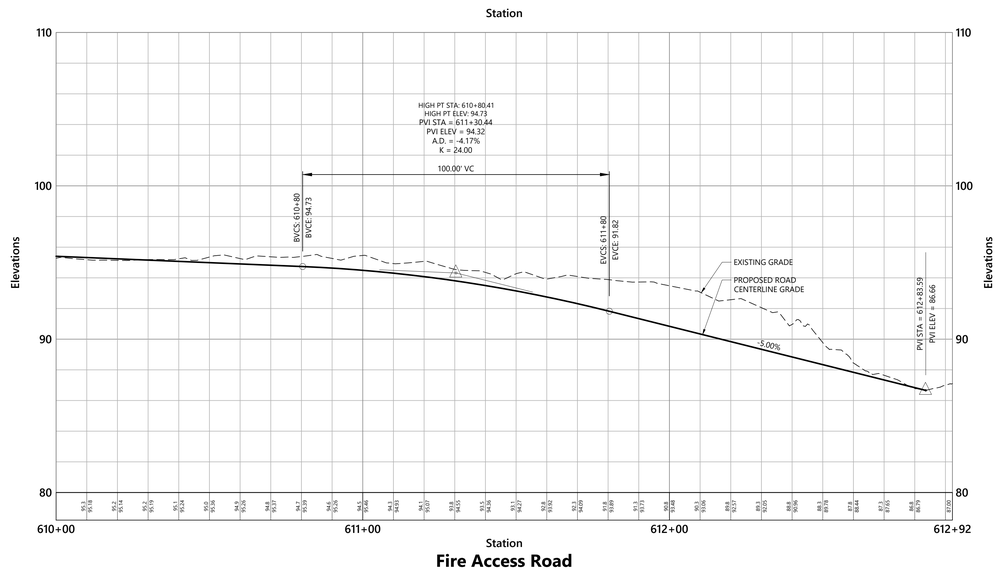

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Leyton Properties Residences

Dock Road
Marlborough, NY

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Drawing Title
Fire Access Road
Plan Over Profile
Station 610+00 to 612+92

Drawing Number
C3.14

Sheet 22 of 48

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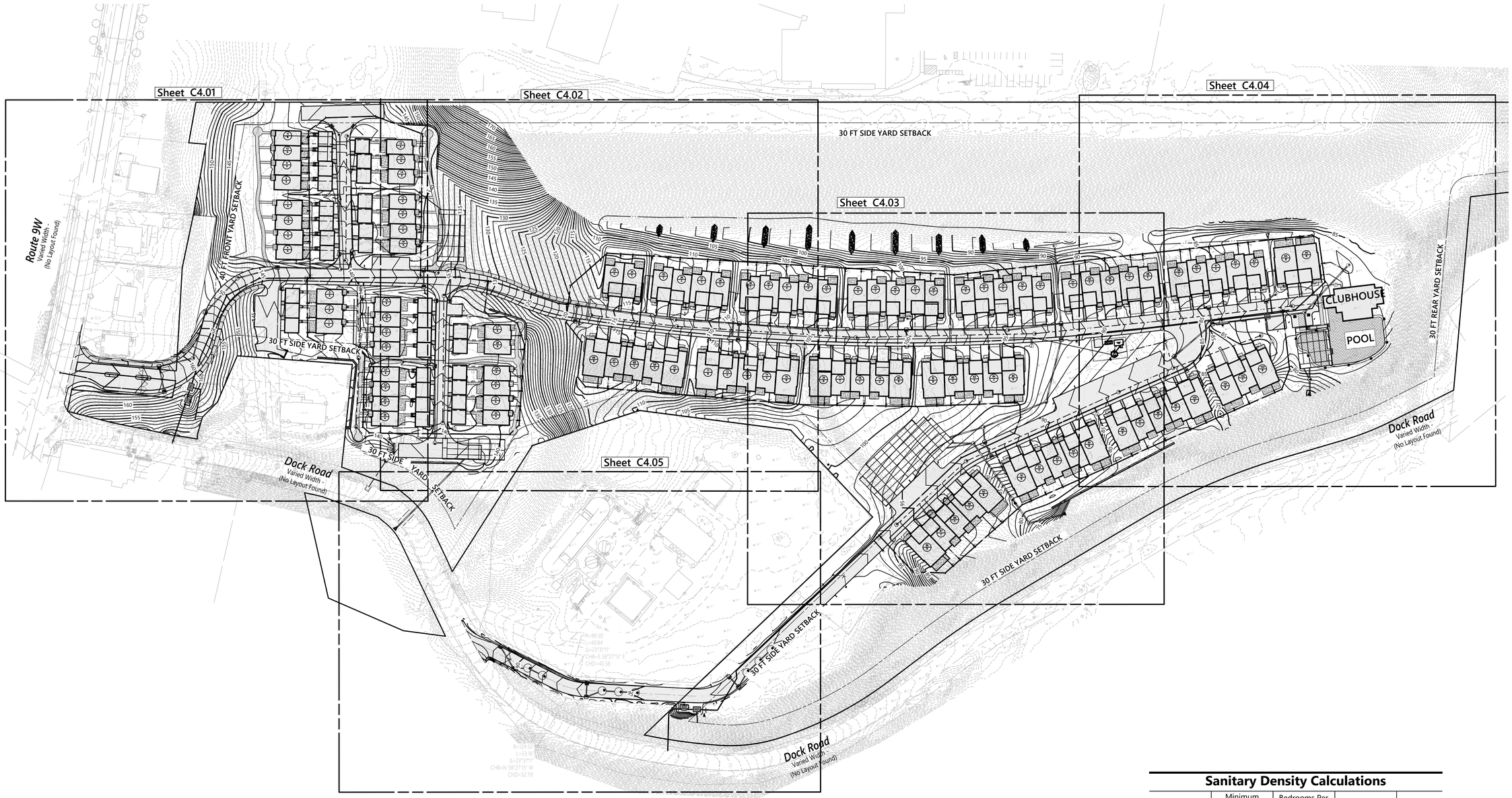

Sanitary Density Calculations

Structure Use	Minimum Design Flow	Bedrooms Per Unit	Unit Count	Flow
RESIDENTIAL	110 GPD/BEDROOM	3 BEDROOMS/UNIT	103 UNITS	33,990 GPD
TOTAL				33,990 GPD

Notes

1. ALL DRAINAGE PIPE TO BE 15"ø UNLESS OTHERWISE NOTED ON PLAN.
2. ALL WATER PIPE TO BE 8" UNLESS OTHERWISE NOTED ON PLAN. DOMESTIC HOUSE SERVICE LINES ARE 1 ¼".
3. TRANSFORMER LOCATIONS AS WELL AS ELECTRIC AND GAS SERVICES TO BE COORDINATED WITH CENTRAL HUDSON GAS & ELECTRIC.
4. ALL WATER AND SANITARY DESIGN SUBJECT TO APPROVAL BY TOWN OF MALBORO DEPARTMENT OF HEALTH SERVICES/WATER DEPARTMENT AND SHALL MEET ALL OF THE REQUIREMENTS OF THE SAME.
5. ALL SANITARY PIPES SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   - MINIMUM 2 FEET OF CAST IRON PIPE FROM THE FOUNDATION WALL.
   - SANITARY HOUSE CONNECTIONS TO BE 6" DR-18 WITH MINIMUM SLOPE OF 2%.
   - SANITARY MAINS TO BE MINIMUM 8" DR-18 PVC.
6. THERE SHALL BE A MINIMUM SEPARATION OF 10 FEET BETWEEN SANITARY LINES AND WATER/DRAINAGE LINES.
7. WATER AND SEWER CROSSINGS SHALL MAINTAIN MINIUM 18 INCHES VERTICAL SEPARATION.

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0 30 60 120Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
Utility Plan

Drawing Number
C4.00

Sheet 23 of 47

Project Number
20578.01

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088718
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8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

1 ½" DUCTILE IRON DOMESTIC WATER SERVICE TO UNITS (TYP.)

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

40 FT FRONT YARD SETBACK

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

6" PVC HOUSE CONNECTION 2% MINIMUM SLOPE (TYP.)

CLEANOUT (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

THRUST BLOCK (TYP.)

S-6 SMH
RIM=140.23
INV=131.38 S-7
INV=131.28 OUT

S-8 SMH
RIM=139.63
INV=130.26 S-6
INV=130.16 OUT

S-7 SMH
RIM=140.56
INV=131.48 S-8
INV=131.38 OUT

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

30 FT SIDE YARD SETBACK

Route 9W
Varied Width
(No Layout Found)

PROPOSED ELECTRIC AND GAS CONNECTION TO BE COORDINATED WITH CENTRAL HUDSON

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

1 ½" DUCTILE IRON DOMESTIC WATER SERVICE TO UNITS (TYP.)

INV = 153.38

PROPOSED RPZ DRAINPIPE

PROPOSED METER PIT AND 8" RPZ SEE DETAILS ON SHEET C6.04

INV = 153.38

APPROXIMATE LOCATION OF EXISTING 8" WATER MAIN

CONTRACTOR TO COORDINATE WATER MAIN TAPPING WITH THE TOWN OF MARLBORO WATER DEPARTMENT

SEWER MAIN TAP TO BE COORDINATED WITH THE TOWN OF MARLBORO SEWER DEPARTMENT. APPROXIMATE LOCATION OF SEWER MAIN BASED ON SEWER MAPS DATED NOVEMBER 1980 SHEET 4 OF 37.

S-10 SMH
RIM=140.56
INV=127.17 S-9
INV=127.17 OUT

S-2 SMH
RIM=140.56
INV=128.23 S-3
INV=128.25

S-1 SMH
RIM=133.40
INV=126.57 S-2
INV=127.46 S-2
INV=114.31 OUT

30 FT SIDE YARD

Dock Road
Varied Width
(No Layout Found)

INV = 108.4

See Sheet C4.02

Match Line

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
Overall Utility Plan

Drawing Number
C4.01

Sheet 24 of 47

Project Number
20578.01

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088418
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See Sheet C4.03

Match Line

See Sheet C4.01

Match Line

Match Line See Sheet C4.05

1 ½" DUCTILE IRON DOMESTIC WATER SERVICE TO UNITS (TYP.)

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

2" SANITARY FORCE MAIN

THRUST BLOCK (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

CLEANOUT (TYP.)

6" PVC HOUSE CONNECTION 2% MINIMUM SLOPE (TYP.)

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

PROPOSED GAS CONNECTION FOR CLUSTER OF BUILDINGS

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

S-1 RIM=117.64 INV=111.33 OUT

S-2 RIM=140.56 INV=128.23 INV=128.25

S-3 RIM=139.73 INV=130.57 S-4 INV=130.57 OUT

S-4 RIM=135.14 INV=132.49 INV=132.39 OUT

S-5 RIM=131.40 INV=126.57 S-6 INV=127.46 S-2 INV=114.31 OUT

S-6 RIM=140.23 INV=131.38 S-7 INV=131.28 OUT

S-8 RIM=139.63 INV=130.26 S-6 INV=130.16 OUT

YARD SETBACK

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title: **Utility Plan**

Drawing Number: **C4.02**

Sheet 25 of 47

Project Number: **20578.01**

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0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title: Utility Plan

Drawing Number: C4.03

Sheet 26 of 47

Project Number: 20578.01

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See Sheet C4.03

Match Line

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

THRUST BLOCK (TYP.)

CLEANOUT (TYP.)

6" PVC HOUSE CONNECTION 2% MINIMUM SLOPE(TYP.)

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

CLUBHOUSE

POOL

30 FT REAR YARD SETBACK

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

PROPOSED PUMP STATION SEE SEPARATE PLANS FOR DETAILS

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

1 ½" DUCTILE IRON DOMESTIC WATER SERVICE TO UNITS (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

S-15 SMH RIM=87.08 INV=78.43 S-14 INV=73.14 S-16 INV=73.04 OUT

S-16 SMH RIM=83.37 INV=75.01 OUT INV=4.52 OUT

S-17 SMH RIM=86.00 INV=72.78 S-18 INV=72.78 S-15 INV=72.68 OUT

S-18 SMH RIM=85.85 INV=74.72 S-20 INV=74.50 S-19 INV=74.50 OUT

S-19 SMH RIM=84.37 INV=80.21 OUT

Dock Road

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title: Utility Plan

Drawing Number: C4.04

Sheet 27 of 47

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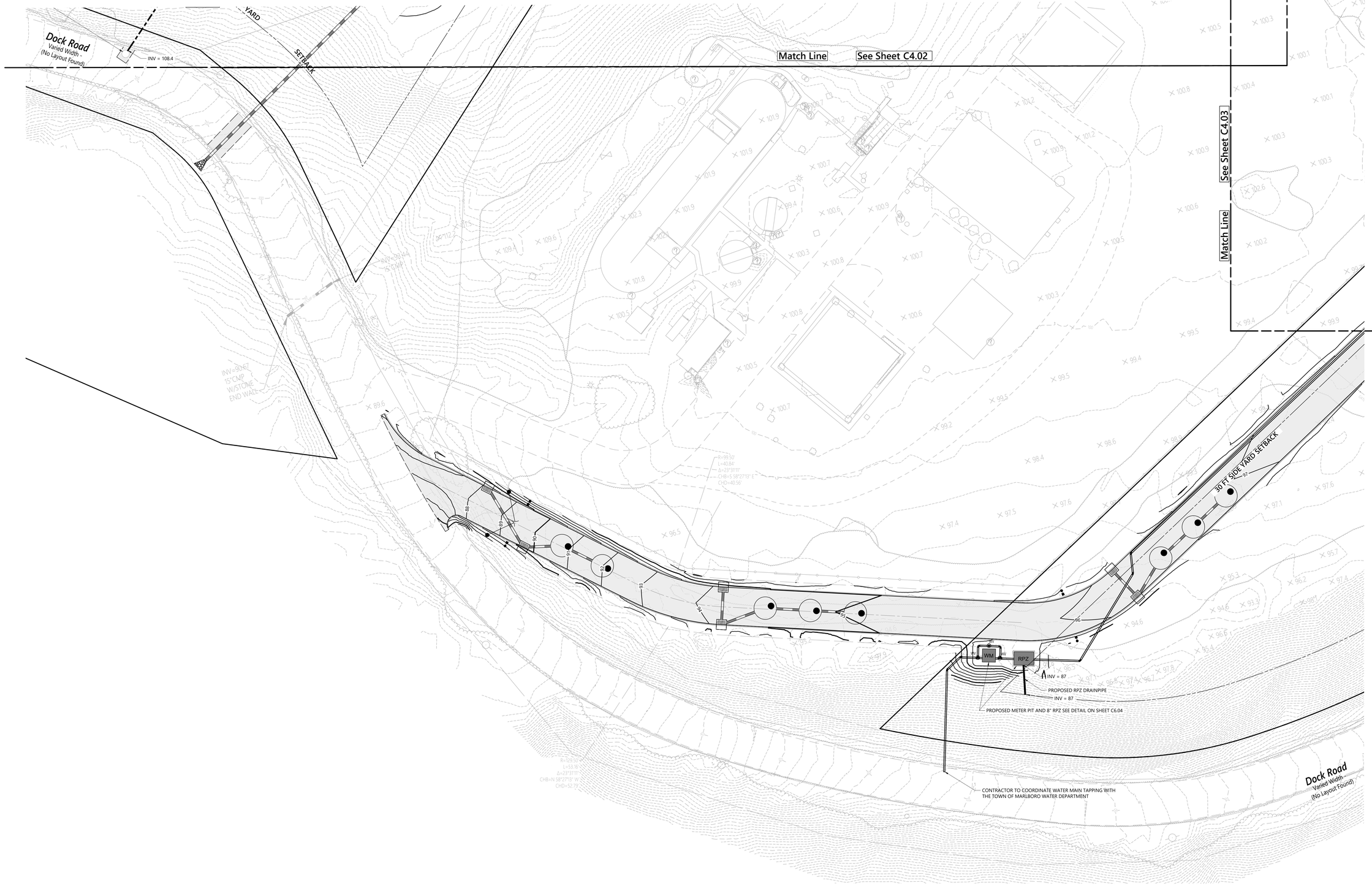

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DB | Checked by AL

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Drawing Title
Utility Plan

Drawing Number
C4.05

Sheet 28 of 47

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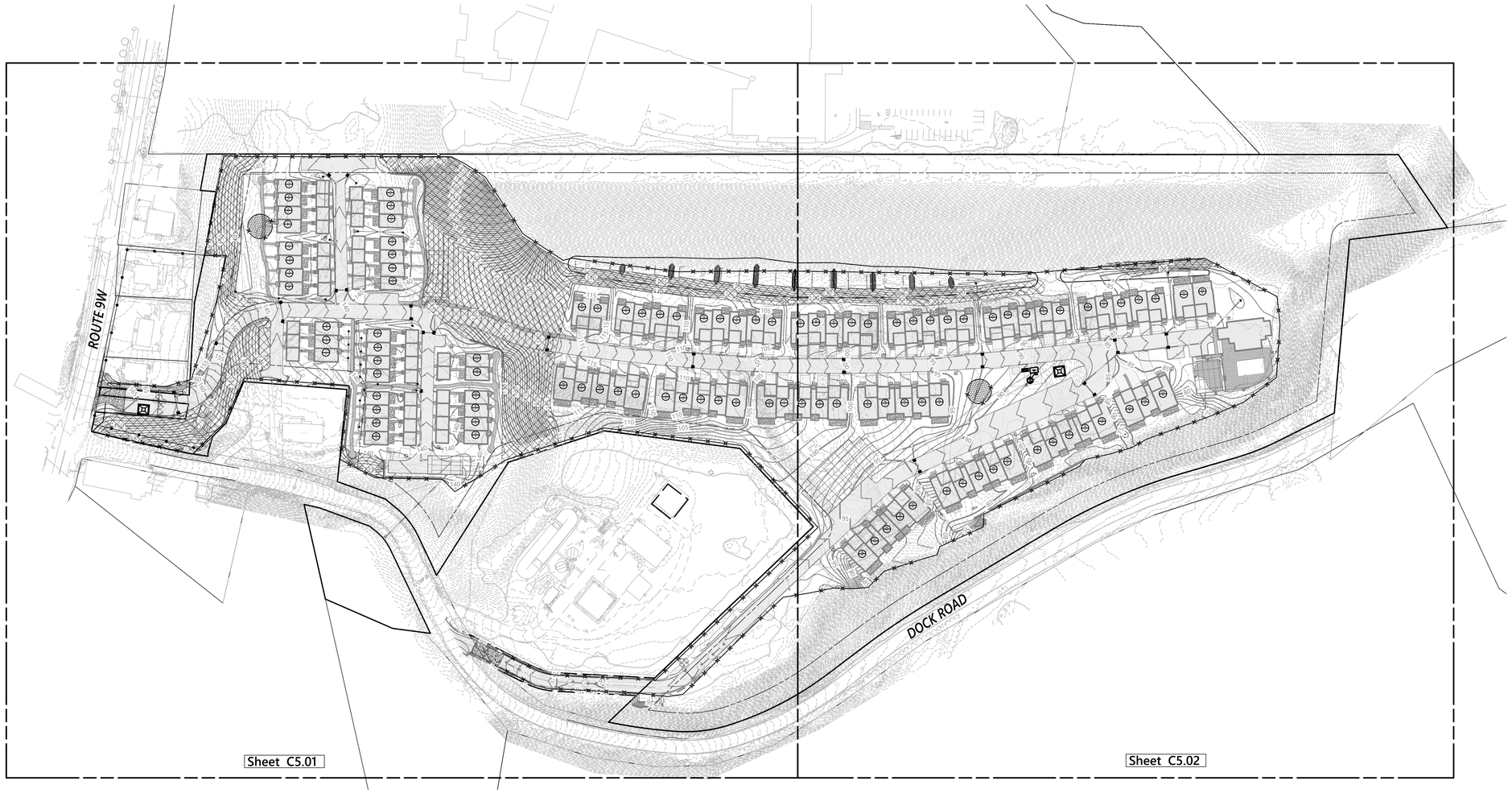

Erosion Control Notes

1. PRIOR TO STARTING WORK ON THE SITE, INCLUDING DEMOLITION, CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCIES AND INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS REQUIRED BY STATE & LOCAL AGENCIES. ACTUAL EROSION CONTROL MEASURES WILL BE DICTATED BY FIELD CONDITIONS AS CONSTRUCTION PROGRESSES. EROSION CONTROL MEASURES TO BE ADJUSTED AS CONSTRUCTION PROGRESSES AS NECESSARY TO ENSURE THAT SEDIMENT IS TRAPPED ON-SITE.
2. SPECIFIC METHODS AND MATERIALS EMPLOYED IN THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES SHALL CONFORM TO "THE NEW YORK GUIDELINES FOR EROSION AND SEDIMENT CONTROL".
3. SEDIMENT BARRIERS (SILT FENCE OR APPROVED EQUAL) SHALL BE INSTALLED AS REQUIRED ALONG THE LIMITS OF DISTURBANCE FOR THE DURATION OF THE WORK. NO SEDIMENT FROM THE SITE SHALL BE PERMITTED TO WASH ONTO ADJACENT PROPERTIES, WETLANDS OR ROADS.
4. DRAINAGE INLETS INSTALLED AS PART OF THE PROJECT SHALL BE PROTECTED FROM SEDIMENT BUILDUP THROUGH THE USE OF SEDIMENT BARRIERS, SEDIMENT TRAPS, DANDY BAGS, ETC., AS REQUIRED.
5. PROPER MAINTENANCE OF EROSION CONTROL MEASURES IS TO BE PERFORMED AS INDICATED BY PERIODIC INSPECTION AND AFTER HEAVY OR PROLONGED STORMS. MAINTENANCE MEASURES INCLUDE, BUT ARE NOT LIMITED TO, CLEANING OF SEDIMENT BASINS AND TRAPS, CLEANING OR REPAIR OF SEDIMENT BARRIERS, CLEANING AND REPAIR OF BERMS AND DIVERSIONS, AND CLEANING AND REPAIR OF INLET PROTECTION.
6. APPROPRIATE MEANS SHALL BE USED TO CONTROL DUST DURING CONSTRUCTION.
7. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED TO PREVENT SOIL AND LOOSE DEBRIS FORM BEING TRACKED ONTO LOCAL ROADS. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
8. SEDIMENT BARRIERS AND OTHER CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED. AFTER PERMANENT STABILIZATION, PAVED AREAS SHALL BE CLEANED AND DRAINAGE SYSTEMS CLEANED AND FLUSHED AS NECESSARY.
9. LOCATION AND EXTENT OF EROSION & SEDIMENT CONTROL MEASURES TO BE ADJUSTED AS NECESSARY DURING THE COURSE OF CONSTRUCTION AS CONSTRUCTION PROGRESS AND FIELD CONDITIONS DICTATE.
10. CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF 50 FT FROM ANY DRAINAGE INLET OR CONCENTRATED FLOW. ONCE CONCRETE WASTE HAS BEEN WASHED IN THE WASHOUT AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP AND REMOVED FROM THE SITE. CONTRACTOR SHALL REMOVE WASHED OUT CONCRETE ON A REGULAR BASIS. PLASTIC LINING SHALL BE A MINIMUM OF 10 MIL, POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES AND TEARS AND ALL OTHER DEFECTS THAT MAY COMPROMISE THE INTEGRITY OF THE LINER. CONCRETE WASHOUT FACILITIES SHALL BE CLEANED OUT ONCE 75% CAPACITY IS REACHED. STRAW BALES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCKS.

Concrete Washout Note

1. CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF 50 FT FROM ANY DRAINAGE INLET OR CONCENTRATED FLOW. ONCE CONCRETE WASTE HAS BEEN WASHED IN THE WASHOUT AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP AND REMOVED FROM THE SITE. CONTRACTOR SHALL REMOVE WASHED OUT CONCRETE ON A REGULAR BASIS. PLASTIC LINING SHALL BE A MINIMUM OF 10 MIL, POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES AND TEARS AND ALL OTHER DEFECTS THAT MAY COMPROMISE THE INTEGRITY OF THE LINER. CONCRETE WASHOUT FACILITIES SHALL BE CLEANED OUT ONCE 75% CAPACITY IS REACHED. STRAW BALES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCKS.

Dandy Bag Notes

INSTALLATION AND MAINTENANCE GUIDELINES (SEE DETAIL)

1. INSTALLATION:
   EMPTY DANDY BAG SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END. IF USING OPTIONAL OIL ABSORBENTS, PLACE ABSORBENT PILLOW IN POUCH ON BOTTOM OF THE UNIT. ATTACH ABSORBENT PILLOW TO TETHER LOOP. HOLDING THE LIFTING DEVICE (DO NOT RELY ON LIFTING DEVICE TO SUPPORT ENTIRE WEIGHT OF GRATE), PLACE THE GRATE INTO ITS FRAME.
2. MAINTENANCE:
   REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM THE SURFACE AND VICINITY OF THE UNIT AFTER EACH STORM EVENT. REMOVE THE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DANDY BAG AS NEEDED. IF USING OPTIONAL OIL ABSORBENTS, REMOVE AND REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.

Legend

- SF — SILT FENCE
- CONSTRUCTION FENCE
- CONCRETE WASHOUT AREA
- SOIL STABILIZATION BLANKETS AND OR MATTING
- STORM DRAIN INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Checked by: AL

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Drawing Title: Overall Erosion and Control Plan

Drawing Number: C5.00

Sheet 29 of 47

Project Number: 20578.01

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START TEMPORARY CONSTRUCTION FENCE (TYP)

STOCKPILE AREA TO BE RELOCATED AS NECESSARY THROUGHOUT THE DURATION OF CONSTRUCTION (TYP.)

PROVIDE SILT FENCE 10 FEET FROM TOE OF SLOPE ALONG STOCKPILE AREA (TYP.)

INLET PROTECTION TO BE INSTALLED AT ALL INLET STRUCTURES AND MAINTAINED DURING CONSTRUCTION

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

INLET PROTECTION TO BE INSTALLED AT ALL INLET STRUCTURES AND MAINTAINED DURING CONSTRUCTION

ROUTE 9W

START PROPOSED SILT FENCE (TYP.)

STABILIZED CONSTRUCTION ENTRANCE/EXIT

END PROPOSED SILT FENCE (TYP.)

PROPOSED CONCRETE TRUCK WASHOUT LOCATION TO BE MOVED AS NECESSARY THROUGHOUT CONSTRUCTION

END OF TEMPORARY CONSTRUCTION FENCE (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

START PROPOSED SILT FENCE (TYP.)

PROPOSED CONCRETE TRUCK WASHOUT LOCATION TO BE MOVED AS NECESSARY THROUGHOUT CONSTRUCTION

R=99.50'
L=40.84'
Δ=23°31'11"
CHB=S 58°27'13" E
CHD=40.56'

STABILIZED CONSTRUCTION ENTRANCE/EXIT

END PROPOSED SILT FENCE (TYP.)

R=129.50'
L=53.16'
Δ=23°31'11"
CHB=N 58°27'13" W
CHD=52.79'

DOCK ROAD

See Sheet C5.02 Sheet Match Line

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd
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Drawing Title
Erosion and Control Plan

Drawing Number
C5.01

Sheet 30 of 47

Project Number
20578.01

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ANGELO V. LEVO
089419
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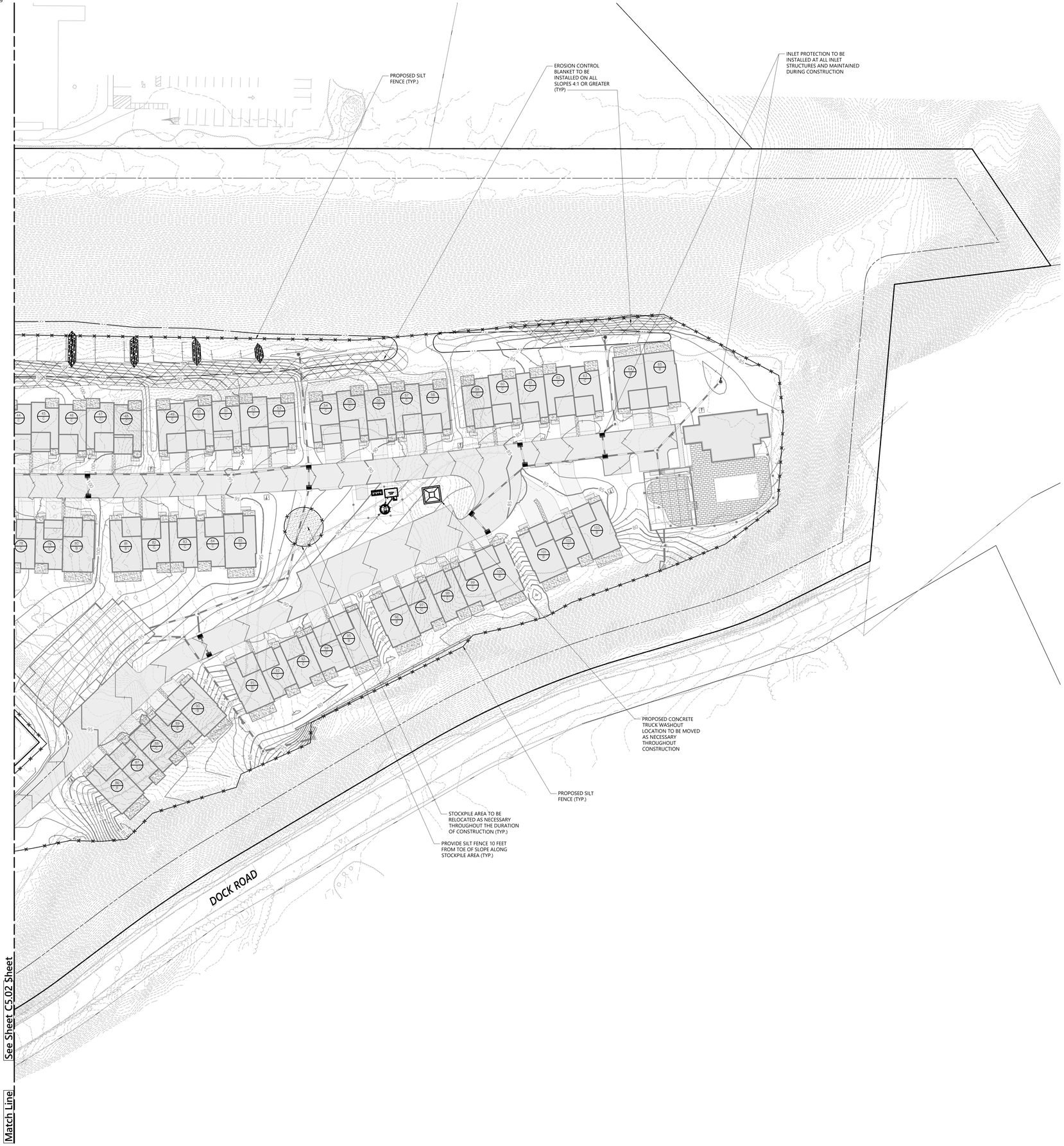

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Erosion and Residential Development

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Sheet 31 of 47

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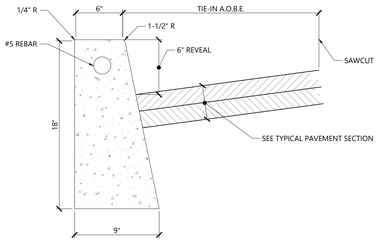


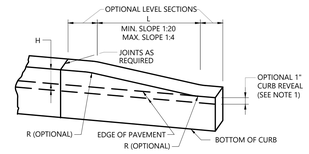
NOTES

1. ALL CONCRETE TO BE 4,000 PSI AIR ENTRAINED.
2. FOR LOCATION OF CURB FROM PROPERTY LINE, SEE STANDARD ROAD SECTION.
3. STEEL FORMS OR EQUAL SHALL BE USED.
4. EXPANSION JOINTS 1/2" THICK 20' O.C. SHALL BE USED.
5. ALL CONCRETE SHALL BE TAMPED IN PLACE, NO HONEYCOMB WILL BE ALLOWED. FINISH SHALL BE SMOOTH AND EVEN - RUBBED WITH A WOOD FLOAT.
6. ALL EDGES SHALL BE TOOL ROUNDED.
7. CYLINDER TESTING REQUIRED AS PER TOWN ENGINEER
8. ALL EXPANSION JOINTS SHALL BE PRE-CUT TO CURB PROFILE PRIOR TO INSTALLATION
9. ALL CONCRETE CURBS SHALL UTILIZE A #5 REBAR

Standard Concrete Curb

2004

N.T.S. Source: VHB



Curb Transition Lengths (L)

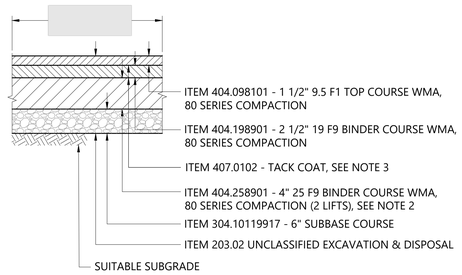
H / SLOPE	1:4	1:12	1:20
4"	16"	48"	80"
6"	24"	72"	120"

NOTES:

1. USE 1" REVEAL AND CONTINUE CURB ACROSS DRIVEWAY ENTRANCES ONLY IF SHOWN IN THE CONTRACT DOCUMENTS, OR DIRECTED BY THE ENGINEER AS A FIELD CONDITION.
2. TERMINATE CURB, CURB AND GUTTER AND ASPHALT CURB BY TRANSITIONING ON A MAXIUM SLOPE OF 1:12 TO PAVEMENT SURFACE, EXCEPT WHEN BEHIND GUIDE RAIL.

Cast-in-Place Concrete Curb Transition

N.T.S.

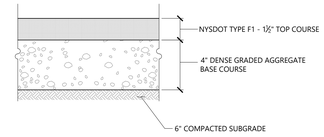


Asphalt Pavement Construction Detail

N.T.S.

PAVEMENT RESTORATION NOTES:

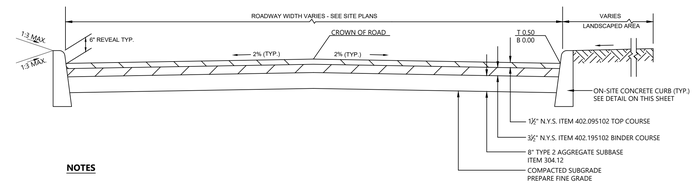
1. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING EXISTING FLOWLINE GRADES AND RE-ESTABLISHING THESE GRADES IN THE PROPOSED CURB/FLOWLINE WORK.
2. VARY DEPTH OF ASPHALT BINDER TO ENSURE PROPOSED PAVEMENT DEPTH MATCHES ADJACENT EXISTING PAVEMENT DEPTH.
3. PLACE TACK COAT BETWEEN EVERY ASPHALT LIFT REGARDLESS OF WHEN PLACED AND AT THE JOINTS BETWEEN NEW AND EXISTING ASPHALT PAVEMENT EDGES.
4. ALL COLD JOINTS SHALL BE SEALED AS PER ITEM 633.13 - CLEANING, SEALING AND/OR FILLING JOINTS.
5. THE REMOVAL OF THE EXISTING CONCRETE CURB SHOULD BE DONE FROM THE BACK SIDE OF THE EXISTING CURB TO MINIMIZE ANY DAMAGE TO THE EXISTING PAVEMENT. CONSIDER "FACE FORMING" THE NEW CURB WHERE THE EXISTING CURB WILL BE REMOVED. THIS INVOLVES PULLING THE CURB OUT FROM THE BACK AND POURING NEW CURB UP AGAINST THE EXISTING PAVEMENT. IF ANY DAMAGE TO THE EXISTING PAVEMENT OCCURS, THE PERMITTEE SHALL REPLACE THE EXISTING PAVEMENT PER THE DETAILS SHOWN ON MD-1 OR PER NYSDOT STANDARD SHEETS.
6. SHOULD THE CONTRACTOR ENCOUNTER COMPOSITE PAVEMENT DURING CONSTRUCTION, THE CONTRACTOR SHALL REFER TO THE NYSDOT REGION 10 PAVEMENT REPAIR DETAILS INCLUDED AT THE BACK OF THIS PLAN SET.



Bituminous Concrete Pavement Section (Driveway)

9/04

N.T.S. Source: VHB LD_430

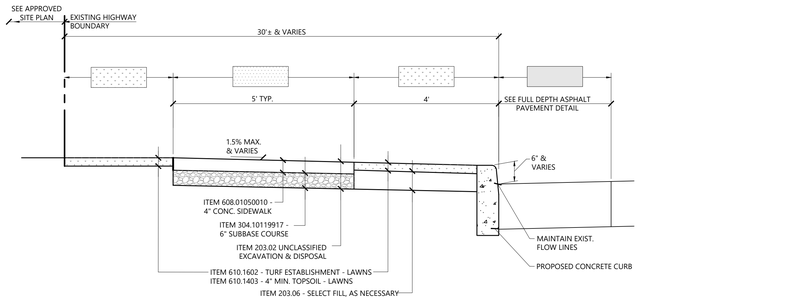


NOTES

1. ASPHALT SHALL BE PLACED IN ACCORDANCE WITH NYSDOT SPECIFICATIONS.
2. AGGREGATE BASE COURSE SHALL BE COMPACTED TO 95% OF THE PROCTOR DENSITY. MATERIAL SAMPLES SHALL BE PROVIDED TO 3RD PARTY INSPECTOR FOR TESTING.
3. SUBGRADE TO BE COMPACTED TO 95% OF THE MODIFIED PROCTOR DENSITY.

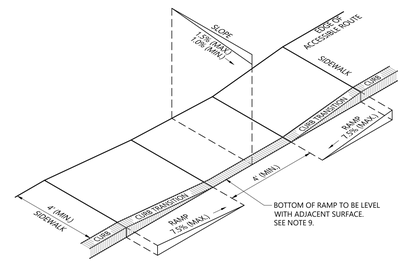
Pavement Section - On Site Roadways

N.T.S. Source:



Typical Sidewalk Section

N.T.S.



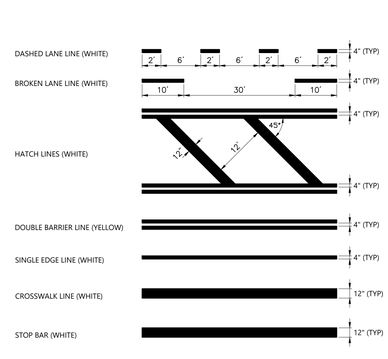
NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY.

Accessible Curb Ramp (ACR) Type 'A'

12/20

N.T.S. Source: VHB LD_500



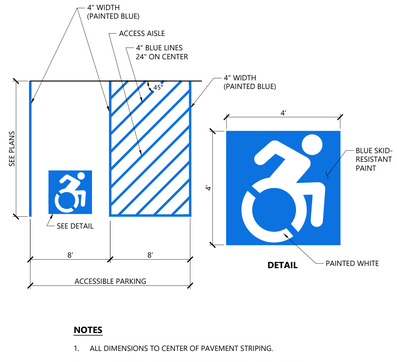
NOTES

1. ALL PAVEMENT MARKINGS (EXCEPT TRAFFIC ARROWS AND STOP BARS) SHALL BE SETFAST LOW VOC TRAFFIC MARKING PAINT OR APPROVED EQUAL AS PER NYSDOT REQUIREMENTS.

On-Site Pavement Markings

1/16

N.T.S. Source: VHB LD_553



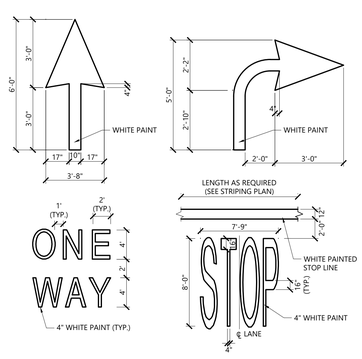
NOTES

1. ALL DIMENSIONS TO CENTER OF PAVEMENT STRIPING.
2. ALL SLOPES THROUGHOUT THE ACCESSIBLE PARKING AND AISLE AREAS SHALL NOT EXCEED 1.5%.
3. THE ACCESSIBLE SYMBOL DEPICTED ABOVE DOES NOT COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND IS SHOWN FOR COMPLIANCE WITH STATE AND LOCAL REGULATIONS ONLY.

Accessible Parking Space

12/19

N.T.S. Source: VHB LD_552C



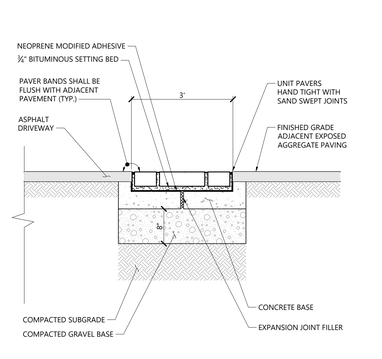
NOTES

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.

Painted Pavement Markings - On Site

1/16

N.T.S. Source: VHB LD_554



NOTES

1. PAVER BANDS TO BE NICOLOCK ON APPROVED EQUAL.
2. PAVERS TO BE RATE FOR VEHICLE LOADING.

Unit Paver Band

1/16

N.T.S. Source: VHB REV

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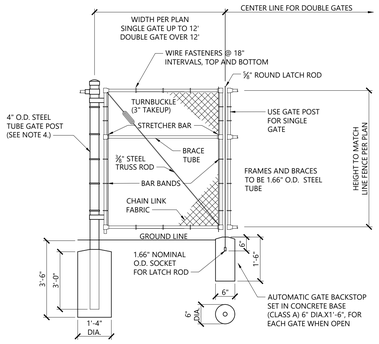


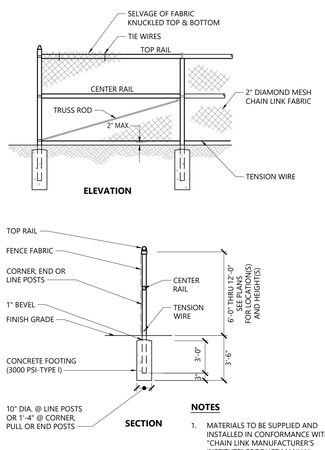
NOTES

1. CHAIN LINK FABRIC FOR GATES TO BE THE SAME AS REQUIRED FOR FENCE.
2. GATE POST BASE-PORTLAND CEMENT CONCRETE (3000 PSI).
3. FENCE FABRIC, POSTS, FRAMEWORKS, AND HARDWARE SHALL BE GALVANIZED STEEL PER SPECIFICATIONS.
4. GATE POSTS TO BE USED ON EACH SIDE OF SINGLE AND DOUBLE GATE OPENINGS.

6' Chain Link Fence Gate

12/19

N.T.S. | Source: VHB | REV | LD_482



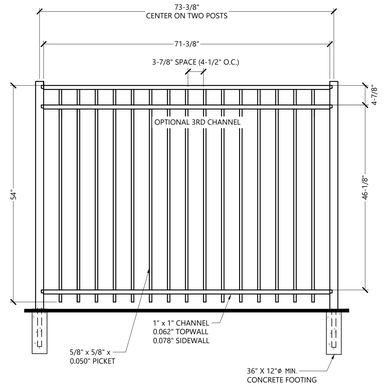
NOTES

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

6' Chain Link Fence

10/20

N.T.S. | Source: VHB | REV | LD_480



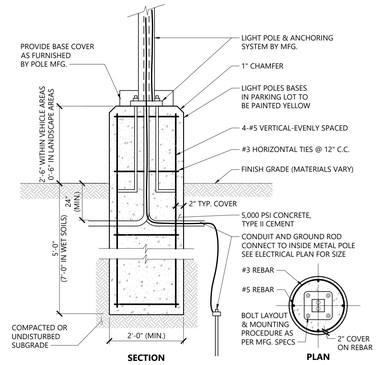
NOTES:

1. FENCING TO BE BLACK ALUMI-GUARD ALUMINUM FENCING OR APPROVED EQUAL.
2. FENCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ALL INDUSTRY STANDARDS.

4-6' High Aluminum Decorative Fence

7/17

N.T.S. | Source: VHB | LD_



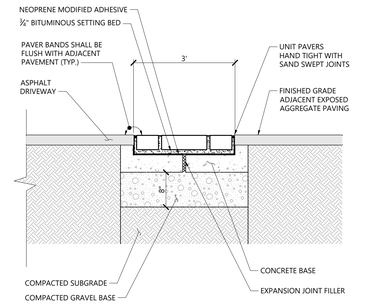
NOTES

IF THE CONTRACTOR PROPOSES TO USE A PRECAST BASE THAT DIFFERS FROM THIS DETAIL, SHOP DRAWINGS SHALL INCLUDE CERTIFICATION THAT THE PROPOSED BASE MEETS NYS BUILDING CODE REQUIREMENTS FOR THE LOADING AND SOIL CONDITIONS OF THIS PROJECT BY A LICENSED PROFESSIONAL ENGINEER.

Light Pole Foundation Detail (Up to 20' Pole)

3/23

N.T.S. | Source: VHB | LD_310B



NOTES

1. PAVER BANDS TO BE NICOLOCK ON APPROVED EQUAL.
2. PAVERS TO BE RATE FOR VEHICLE LOADING.

Unit Paver Band

1/16

N.T.S. | Source: VHB | REV

1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

Sign Post - Type 'A'

3/19

N.T.S. | Source: VHB | LD_701

1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

Bollard Mounted Sign

2/20

N.T.S. | Source: VHB | LD_703

NOTES

DETAIL PROVIDED FOR GENERAL INFORMATION ONLY. STAMPED FINAL DESIGN OF MODULAR WALL SYSTEM TO BE PROVIDED BY CONTRACTOR BASED ON GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

Modular Retaining Wall

10/20

N.T.S. | Source: VHB | LD_750

NOTES

1. ILLUMINATED BOLLARD LIGHTS SHALL BE HELIO SECURITY BOLLARD WITH EMBEDDED SECURITY CORE **(MODEL NO. LBHLO-603)** MANUFACTURED BY:

   FORMS+SURFACES
   30 PINE STREET
   PITTSBURGH, PA 15223
   P. 800.451.0410
   F. 412.781.7840
   OR APPROVED EQUAL
2. NON-ILLUMINATED BOLLARD SHALL BE HELIO SECURITY BOLLARD WITH EMBEDDED SECURITY CORE **(MODEL NO. LBHLO-603-N)** MANUFACTURED BY:

   FORMS+SURFACES
   30 PINE STREET
   PITTSBURGH, PA 15223
   P. 800.451.0410
   F. 412.781.7840
   OR APPROVED EQUAL
3. BOLLARDS SHALL ALTERNATE FROM ILLUMINATED TO NON-ILLUMINATED. SEE PLAN FOR PLACEMENT
4. SEE SHEET SITE LIGHTING PLAN FOR PHOTOMETRIC CALCULATIONS
5. HELIO SECURITY BOLLARD BY FORMS+SURFACES SHALL BE FURNISHED WITH THE FOLLOWING OPTIONS:
   5.1. EMBEDDED SECURITY CORE INSTALLED PER MANUFACTURER SPECIFICATIONS
   5.2. SERIES 600 (6" ø FIXTURE)
   5.3. 3000K LED, 40 WATT DRIVER, 424 LUMENS, 360° DISTRIBUTION LIGHT FIXTURE
   5.4. FINISH TO BE SELECTED BY OWNER
6. CONTRACTOR SHALL SUBMIT TO OWNERSHIP FOR APPROVAL, THE FOLLOWING PRIOR TO ORDERING:
   6.1. FINISH / POWDERCOAT COLOR AND FINISH SAMPLE
7. SEE MEP DRAWINGS AND SPECIFICATIONS FOR VOLTAGE, WIRING ROUTING, CONDUIT RUNS, ETC.
8. PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED FOLLOWING ALL RECOMMENDATIONS, GUIDELINES, & SPECIFICATIONS SET FORTH BY FORMS+SURFACES.
9. ALL PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED/ WIRED IN CONFORMANCE WITH ALL APPLICABLE LOCAL AND NYS ELECTRICAL CODE REQUIREMENTS.
10. ALL PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED BY A NYS LICENSED ELECTRICAL CONTRACTOR.

Decorative Bollard - Illuminated & Non-Illuminated

10/21

N.T.S. | Source: Forms+Surfaces | LD_CUSTOM

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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Apgvd.
1	Town Resubmission	10/25/2025	AL

Designed by: DB | Checked by: AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title: Site Details - 2

Drawing Number: C6.01

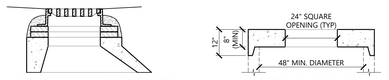
Sheet 33 of 47

Project Number: 20578.01

STATE OF NEW YORK
ANDREW J. LANG
088718
PROFESSIONAL ENGINEER

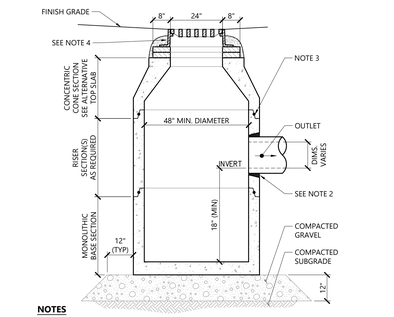
IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Thursday, October 24, 2024 2:12:38 PM | DBALSANO | Plotted Thursday, October 24, 2024 2:40:38 PM | Daniella Balsano



ALTERNATIVE ECCENTRIC CONE SECTION

ALTERNATIVE TOP SLAB

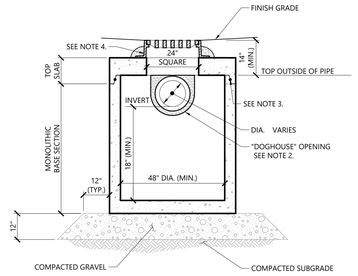


NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

Catch Basin (CB) 11/19

N.T.S. Source: VHB REV LD_100

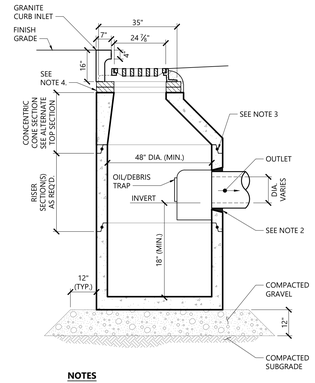


NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE (4"DEPTH) SHALL BE SET IN FULL MORTAR BED.
5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

Catch Basin (CB) Shallow Cover 1/16

N.T.S. Source: VHB REV LD_104

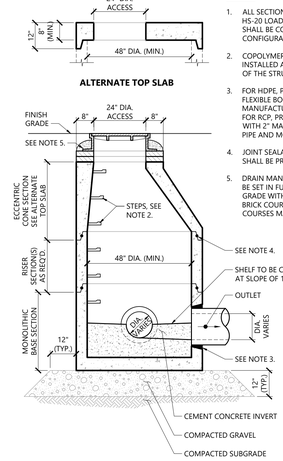


NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

Catch Basin With Curb Inlet (CBCI) 11/19

N.T.S. Source: VHB REV LD_110

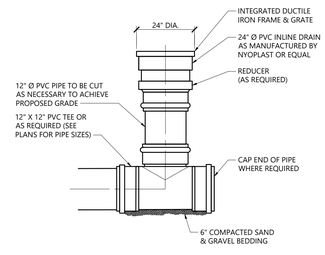


NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING, DIAMETER OF STRUCTURES SHALL BE COORDINATED WITH PIPE CONFIGURATIONS.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

Drain Manhole (DMH) 11/19

N.T.S. Source: VHB LD_115

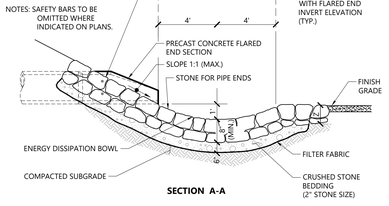


NOTES

1. AREA DRAINS TO BE INSTALLED IN LOCATIONS SHOWN ON PLANS AND SHALL BE SET LEVEL AND FLUSH WITH GRADE.

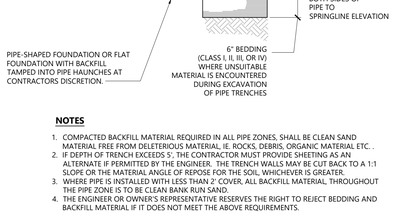
Area Drain Detail 3/23

N.T.S. Source: VHB



Flared End Section (FES) with Stone Protection 3/19

N.T.S. Source: VHB LD_134



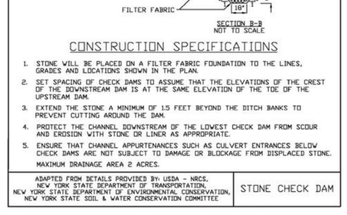
NOTES

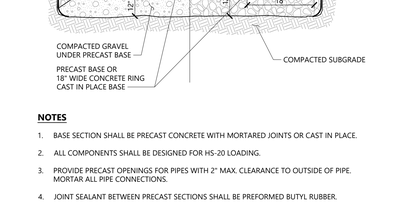
1. COMPACTED BACKFILL MATERIAL REQUIRED IN ALL PIPE ZONES, SHALL BE CLEAN SAND MATERIAL FREE FROM DELETERIOUS MATERIAL, IE. ROCKS, DEBRIS, ORGANIC MATERIAL ETC. .
2. IF DEPTH OF TRENCH EXCEEDS 5', THE CONTRACTOR MUST PROVIDE SHEETING AS AN ALTERNATE IF PERMITTED BY THE ENGINEER. THE TRENCH WALLS MAY BE CUT BACK TO A 1:1 SLOPE OR THE MATERIAL ANGLE OF REPOSE FOR THE SOIL, WHICHEVER IS GREATER.
3. WHERE PIPE IS INSTALLED WITH LESS THAN 2' COVER, ALL BACKFILL MATERIAL THROUGHOUT THE PIPE ZONE IS TO BE CLEAN BANK RUN SAND.
4. THE ENGINEER OR OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT BEDDING AND BACKFILL MATERIAL IF IT DOES NOT MEET THE ABOVE REQUIREMENTS.

Pipe Trench Detail 1/16

N.T.S. Source: VHB

Figure 3.1
Stone Check Dam Detail



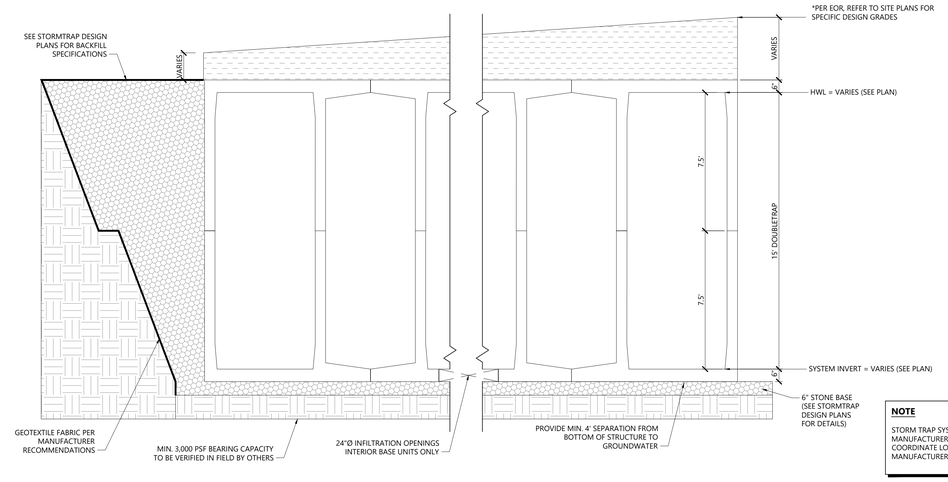


NOTES

1. BASE SECTION SHALL BE PRECAST CONCRETE WITH MORTARED JOINTS OR CAST IN PLACE.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. PROVIDE PRECAST OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. FRAME AND COVER OR GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSE MINIMUM, 5 BRICK COURSE MAXIMUM)

Leaching Chamber (LC) 12/19

N.T.S. Source: VHB LD_180



Stormtrap Doubletrap Section Detail 11/15

N.T.S. Source: Stormtrap LD_

STORMTRAP INSTALLATION SPECIFICATIONS

1. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES, THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
3. STORMTRAP MODULES CAN BE PLACED ON A LEVEL, 6" FOUNDATION OF ¾" AGGREGATE EXTENDING 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1) AND SHALL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS), AND IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRECAST UTILITY STRUCTURES.
4. THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED ¾" (SEE DETAIL 2). IF THE SPACE EXCEEDS ¾", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
5. STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
6. THE PERIMETER HORIZONTAL JOINT BETWEEN THE TOP AND BASE LEG CONNECTION OF THE STORMTRAP MODULES SHALL BE SEALED WITH PREFORMED MASTIC JOINT TAPE ACCORDING TO ASTM C891, 8.8 AND 8.12. (SEE DETAIL 3). THE MASTIC JOINT TAPE DOES NOT PROVIDE A WATERTIGHT SEAL.
7. ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN , HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL, THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
   - 7.1. USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE JOINT WRAP IS TO BE APPLIED.
   - 7.2. A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
8. IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
9. IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
10. STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.

NOTE

STORM TRAP SYSTEM FINAL DESIGN TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PROJECT SPECIFIC DESIGN PLANS AND CONTRACTOR TO COORDINATE LOCATIONS OF ALL INVERTS, ELEVATIONS AND HEIGHTS WITH MANUFACTURER PRIOR TO CONSTRUCTION.

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Suite 350
Hauppauge, NY 11788
631.787.3400

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DB Checked by AL

Issued for: Site Plan Approval — Date: August 9, 2024

Not Approved for Construction

Drawing Title: Drainage Details

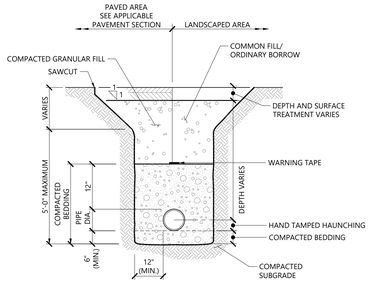
Drawing Number: C6.02

Sheet 34 of 47

Project Number: 20578.01

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY. BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Thursday, October 24, 2024 2:12:38 PM DBALSANO Plotted Thursday, October 24, 2024 2:40:44 PM Daniella Balsano



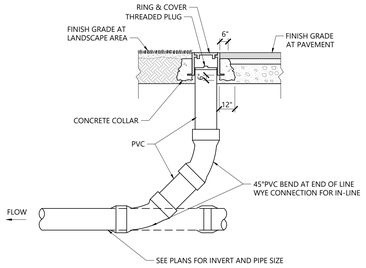
NOTES

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.
3. COMPACTED GRANULAR FILL MAY CONSIST OF GRAVEL, CRUSHED STONE, SAND, OR OTHER MATERIAL AS APPROVED BY ENGINEER.

Utility Trench

11/19

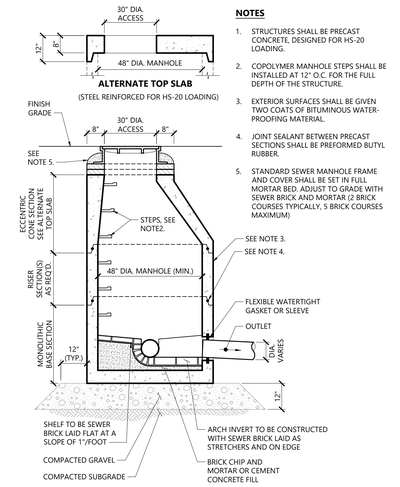
N.T.S. Source: VHB LD_300



Cleanout (CO)

12/19

N.T.S. Source: VHB LD_303



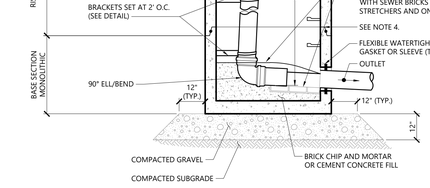
NOTES

1. STRUCTURES SHALL BE PRECAST CONCRETE, DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATER-PROOFING MATERIAL.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. STANDARD SEWER MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH SEWER BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

Sanitary Sewer Manhole (SMH)

1/16

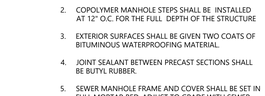
N.T.S. Source: VHB LD_200



Interior Drop Sewer Manhole (SMH)

1/16

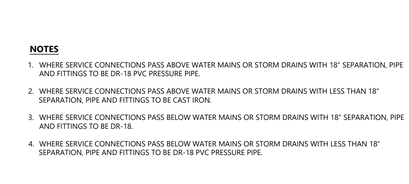
N.T.S. Source: VHB REV LD_205



BRACKET DETAIL

NOTES

1. STRUCTURE SHALL BE DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE
3. EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
5. SEWER MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH SEWER BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)
6. MANHOLE DIAMETER SHALL BE VERIFIED BY CONTRACTOR AND MANUFACTURER BASED ON PIPE GEOMETRICS AND SIZES



NOTES

1. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18 PVC PRESSURE PIPE.
2. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE CAST IRON.
3. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18.
4. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18 PVC PRESSURE PIPE.

Sewer Service Connection

1/16

N.T.S. Source: VHB

vhb.com

vhb

Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DB | Checked by AL

Issued for: **Site Plan Approval** | Date: **August 9, 2024**

Not Approved for Construction

Drawing Title
Sewer Details

Drawing Number
C6.03

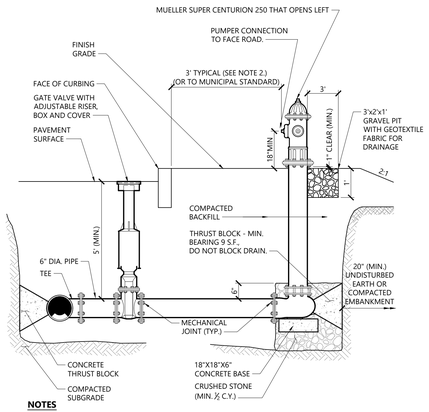
Sheet 35 of 47

Project Number
20578.01

STATE OF NEW YORK
ANDREW V. LAI
089716
LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Thursday, October 24, 2024 2:12:38 PM DBALSANO Plotted Thursday, October 24, 2024 3:46:12 PM Daniella Balsano



NOTES

1. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
2. HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.
3. A 36-INCH CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT UNLESS OTHERWISE APPROVED BY AUTHORITY HAVING JURISDICTION.

Hydrant Construction

12/19

N.T.S. Source: VHB REV LD_250

TABLE OF DIMENSIONS

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6° 11 ¼"	8"	15"	12"	24"	12"	6° 45"	8"	30"	12"	24"	14"
6° 22 ½"	"	19"	"	"	13"	6° 90"	"	30"	"	"	27"
8° 11 ¼"	"	20"	"	"	12"	8° 45"	"	30"	"	"	24"
8° 22 ½"	"	22"	"	"	17"	8° 90"	"	38"	"	"	36"
12° 11 ¼"	"	30"	"	"	15"	12° 45"	"	40"	"	"	40"
12° 22 ½"	"	35"	"	"	25"	12° 90"	"	60"	"	"	52"

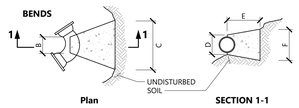
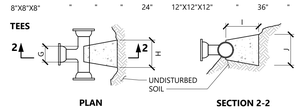


TABLE OF DIMENSIONS

TEES	G	H	I	J	TEES	G	H	I	J
6"X6"X6"	12"	24"	24"	18"	12"X12"X6"	12"	24"	24"	18"
8"X8"X6"	"	"	"	"	12"X12"X8"	"	"	"	24"
8"X8"X8"	"	"	"	24"	12"X12"X12"	"	36"	"	36"



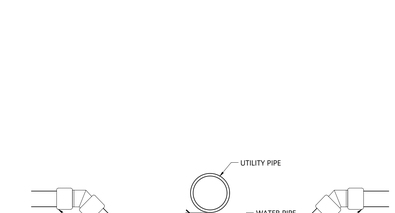
NOTES

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL BE 3,000 PSI-TYPE I.

Concrete Thrust Block

1/16

N.T.S. Source: VHB LD_260



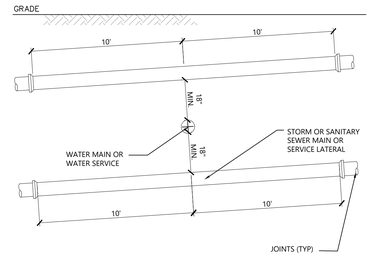
NOTES

WATER MAIN DROP CROSSING LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.

Water MainDrop Crossing Detail

1/16

N.T.S. Source: VHB



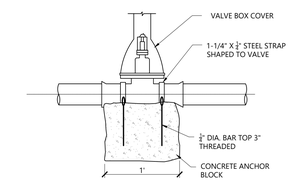
NOTES

1. ADEQUATE STRUCTURAL SUPPORT OF THE SEWER AND/OR WATER LINE MUST BE PROVIDED AT ALL CROSSINGS (BOTH UNDER AND OVER).
2. WHERE SEWER LINE CROSSES OVER WATER LINE, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER AND WATER LINE. SEWER LINE JOINTS SHALL BE 10 FEET FROM THE POINT OF CROSSING WHERE SEWER LINES CROSS OVER WATER LINES. IF 18 INCH SEPARATION CANNOT BE MAINTAINED, A VERTICAL SEPARATION OF AT LEAST 12 INCHES MAY BE ALLOWED ON A CASE BY CASE BASIS.
3. WHERE WATER LINE CROSSES OVER SEWER LINE AND 18 INCH SEPARATION CANNOT BE MAINTAINED, BOTH WATER AND SEWER LINES SHALL BE CONSTRUCTED OF PRESSURE PIPE AND A MINIMUM SEPARATION BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER LINE OF 12 INCHES SHALL BE MAINTAINED.
4. IN THE EVENT THAT A STORM SEWER CROSSES OVER A SANITARY SEWER, THE SANITARY SEWER MUST BE CONSTRUCTED OF CLASS 53 DIP UNLESS 18 INCH SEPARATION IS MAINTAINED. ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED AT STORM SEWER CROSSINGS.
5. ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED AT THE CROSSING OF STORM DRAIN PIPING. ADEQUATE STRUCTURAL SUPPORT SHALL BE CONCRETE CRADLE (SEE DETAIL).

Water/Drainage/ Sewer Service Crossing

1/16

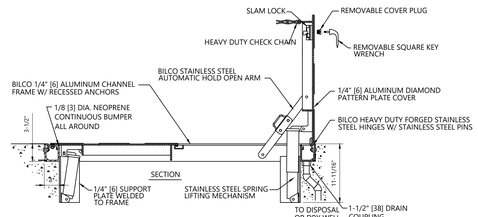
N.T.S. Source: VHB



Valve Anchor Detail

1/16

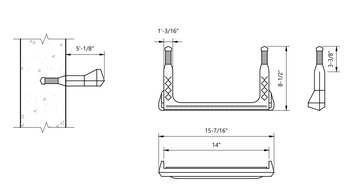
N.T.S. Source: VHB



Bilco Door Detail

1/16

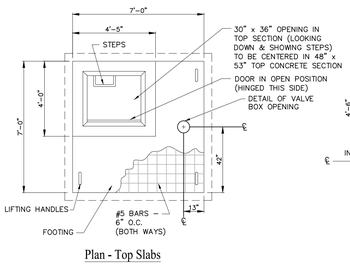
N.T.S. Source: VHB

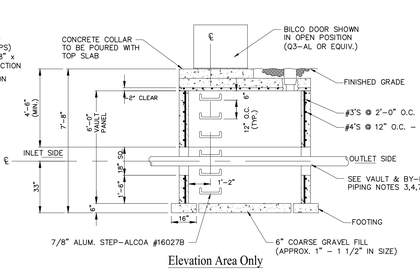


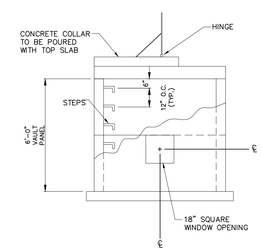
Vault Step Detail

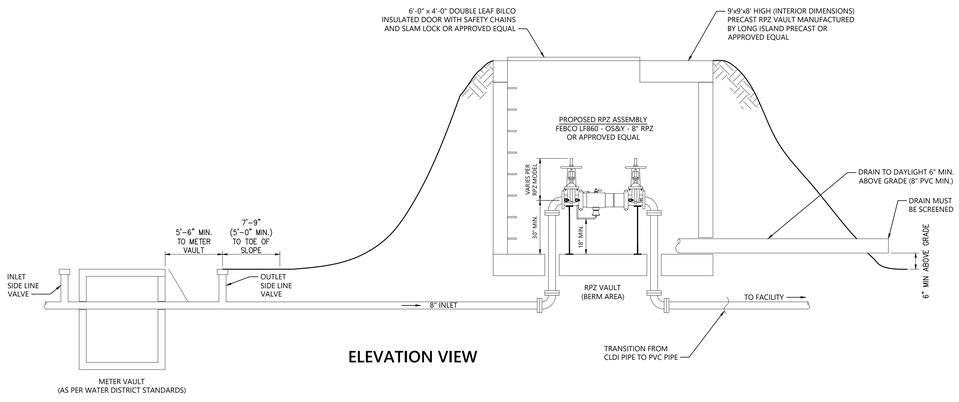
1/16

N.T.S. Source: VHB



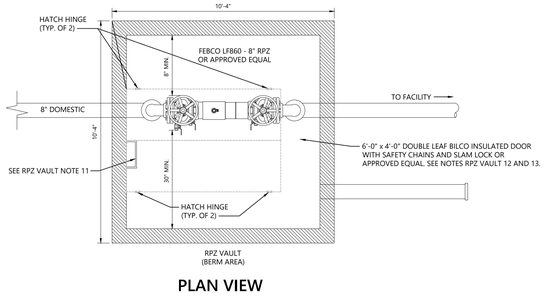






RPZ Vault Notes

1. THIS DEVICE MUST BE PROTECTED AGAINST FREEZING.
2. TEST COCKS MUST BE POSITIONED TO FACILITATE TESTING (30" MINIMUM CLEARANCE).
3. ALL CONNECTIONS T'S, HOSE BIBS, IRRIGATION ETC. MUST BE INSTALLED AFTER (DOWNSTREAM) OF DEVICE.
4. DRAIN(S) CANNOT BE SUBJECT TO FLOODING AND MUST HAVE EXTERIOR SCREEN(S).
5. DRAIN PIPE SHOULD BE SIZED ACCORDING TO MANUFACTURES FLOW CURVES TO DETERMINE MAXIMUM DISCHARGE RATES.
6. DESTINATION OF DRAINAGE MUST BE SHOWN.
7. EACH RPZ MUST BE ADEQUATELY SUPPORTED TO THE CONCRETE SLAB (FLOOR) WITH PIPE STANTIONS TO PREVENT LATERAL MOVEMENT.
8. SUPPORTS MUST BE PLACED WHERE THEY WILL NOT OBSTRUCT THE FUNCTION OR ACCESS TO RELIEF VALVE.
9. EACH RPZ MUST HAVE USC FOUNDATION OF CROSS CONNECTION APPROVAL.
10. EACH RPZ MUST BE TESTED ANNUALLY.
11. ACCESS LADDER TO BE PROVIDED.
12. FULL OPENING HATCH TO ENCOMPASS CENTERLINE OF DEVICE.
13. LENGTH OF HATCH SHOULD BE LONG ENOUGH TO LIFT DEVICE THRU OPENING.
14. RPZ MUST BE A LEAD FREE MODEL.
15. ALL ASSEMBLIES MUST BE INSTALLED WITH THE MANUFACTURER-SUPPLIED RESILIENT SEATED SHUT-OFF VALVES INTEGRAL TO THE ASSEMBLY.

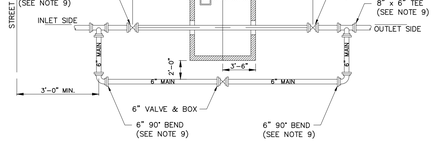


RPZ in Vault - Backflow Details

N.T.S. Source: VHB

Vault and By-Pass Piping Notes:

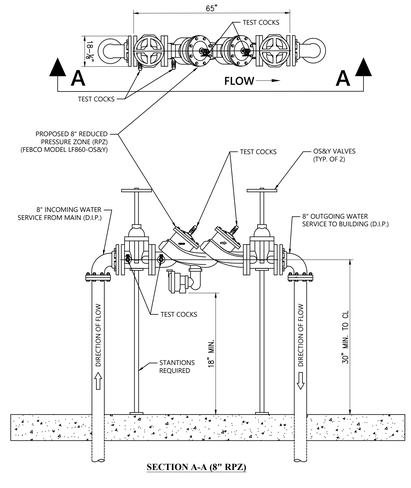
1. VAULT, VAULT PIPING AND BY-PASS TO BE INSTALLED BY SITE WORK CONTRACTOR AS SHOWN. (SEE TYPICAL VAULT AND BY-PASS PIPING.)
2. ALL MECHANICAL JOINT BENDS AND FITTINGS MUST BE RETAINED WITH RETAINING GLANDS, THREADED RODDING AND SUFFICIENT BLOCKING.
3. ALL PIPING MUST BE DUCTILE IRON CLASS 52 PIPING.
4. INLET AND OUTLET VALVES, PLUS PIPING BETWEEN VALVES, MUST EQUAL SIZE OF METER. IF REDUCTION IS REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ADEQUATE SPACE SAVER FLANGES TO ACCOMMODATE METER. METER SIZE IS TO BE DETERMINED BY THE WATER DEPARTMENT ALL VALVES TO OPEN COUNTERCLOCKWISE (RIGHT HANDED VALVES).
5. BY-PASS PIPING CAN BE ON EITHER SIDE OF VAULT DEPENDING ON FIELD CONDITIONS AND FIRE LINE LOCATION.
6. INLET AND OUTLET VALVES TO BE IN LINE WITH EACH OTHER AND AT THE SAME ELEVATION AS WINDOWS IN VAULT. IN ADDITION, PIPING MUST BE CENTERED THROUGH EIGHTEEN (18") INCH SQUARE WINDOW.
7. FIRE LINE TO BE INSTALLED ON OPPOSITE SIDE OF METER BY VAULT BY-PASS.
8. A SIX (6") INCH PIPING IS TO BE USED ON ALL BY-PASSES AND A FOUR (4") INCH BY-PASS WILL BE ACCEPTABLE ON A FOUR (4") INCH SERVICE.
9. AFTER INSTALLING PIPING THROUGH METER VAULT, THE CONTRACTOR IS REQUIRED TO BRICK UP AND CEMENT BOTH WINDOWS OF VAULT.



Vault and By-Pass Piping System

12/98

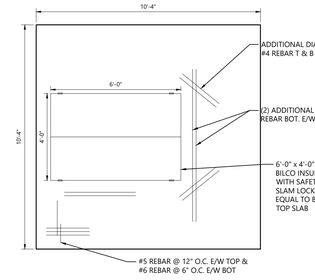
N.T.S. Source: SCWA



8" RPZ Device

1/16

N.T.S. Source: VHB



RPZ Vault Top Slab Detail

1/16

N.T.S. Source: VHB

vhb.com

vhb

Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DB Checked by AL

Issued for Date

Site Plan Approval August 9, 2024

Not Approved for Construction

Drawing Title

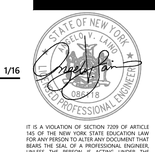
Water Details

Drawing Number

C6.04

Sheet 36 of 47

Project Number 20578.01



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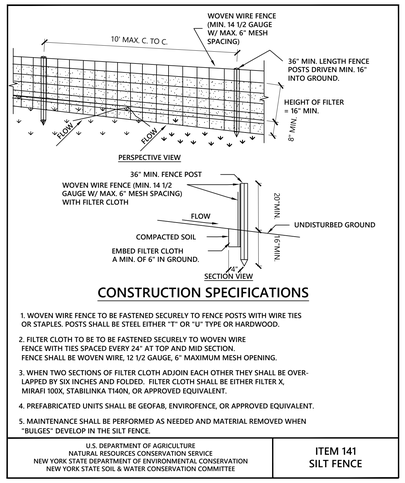
Saved Thursday, October 24, 2024 2:12:38 PM DBALSANO Plotted Thursday, October 24, 2024 2:40:54 PM Daniella Balsano



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.

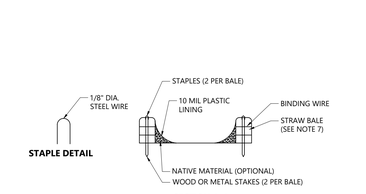
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.

5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	ITEM 141 SILT FENCE

Silt Fence

N.T.S. Source: VHB



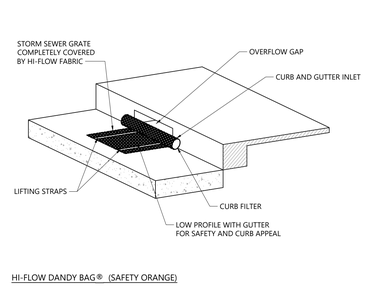
NOTES

1. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED AS SHOWN ON PLANS.
2. IN LIEU OF HAY BALES AND PLASTIC, CONTRACTOR MAY PROVIDE PREFABRICATED CONCRETE WASHOUT STRUCTURE. APPROVAL FROM ENGINEER REQUIRED PRIOR TO ON SITE ARRIVAL OF PREFABRICATED STRUCTURE.
3. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF OFF-SITE. CONTRACTOR TO DISPOSE OF HARDENED CONCRETE ON A REGULAR BASIS.
4. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED TO DESIGNATE THE TEMPORARY CONCRETE WASHOUT FACILITY.
5. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
6. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
7. STRAW BALE AND STAPLES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCK.
8. IF EXCAVATED, SIDE SLOPES SHALL BE 2 HORIZONTAL TO 1 VERTICAL.

Concrete Truck Washout

1/18

N.T.S. Source: VHB



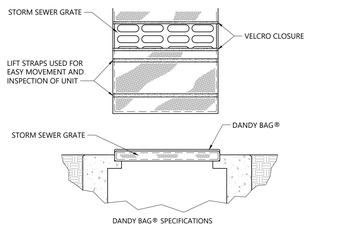
HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	l/min/ft (gal/min/ft²)	5907 (145)
Permittivity	ASTM D 4491	Sec-1	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

Detail of Curb Inlet Sediment Control Device with Curb Filter

N.T.S. Source: Dandy Products



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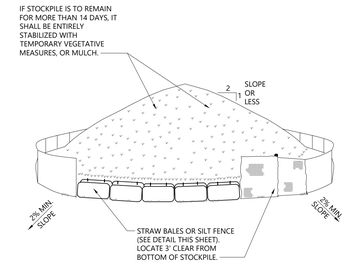
Trapezoid Tear Strength		kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance		%	90
Apparent Opening Size		Mm (US Std Sieve)	0.425 (40)
		l/min/m² (gal/min/ft²)	5907 (145)
		Sec	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

NOTE
THE DANDY BAG® WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

Inlet Sediment Control Device

N.T.S. Source: Dandy Products



NOTES

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAW BALES.
4. CONTRACTOR SHALL INSPECT INSTALLATIONS EVERY 7 DAYS MINIMUM AND/OR AS REQUIRED AND AFTER ANY RAINFALL EVENT OF 1/2" OR GREATER AND MAKE NECESSARY REPAIRS AS NEEDED.

Material Stockpile Area Detail

N.T.S.

NOTES

1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

1/16

N.T.S. Source: VHB LD_682

NOTES

1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN.) OVERLAP AND STAPLE BOTH TOGETHER.
5. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
6. EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1.

Erosion Control Blanket Slope Installation

1/16

N.T.S. Source: VHB LD_680

NOTES

1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence

1/16

N.T.S. Source: VHB LD_610

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

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Date: August 9, 2024

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Drawing Title
Erosion and Sediment Control Details

Drawing Number
C6.05

Sheet 37 of 47

Project Number
20578.01

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Sheet C7.01

Sheet C7.02

0 30 60 120Feet

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Calculation Summary

Region	CalcType/ Units	Illumination Levels		Uniformity	
		Prov. Avg	Max	Prov. Min	Provided Max/Min	Provided Avg/Min
Parking	Illuminance/Fc	2.4	8.8	0.1	14.9	4.8
Site Area	Illuminance/Fc	0.6	15.0	0.0	N/A	N/A

Proposed Luminaire Schedule

Symbol	Label	Qty	Description	Arrangement	LLF	Arr. Lumens	Arr. Watts	Mounting Height
●■	A	15	BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1	SINGLE	1.00	12000	79	15'
●■	B	2	BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1	SINGLE	1.00	12,000	79	12'
✪	C	12	M-PL PATH LIGHT 1LED DESIGNER PLUS	SINGLE	1.00	73	2	1.78'

Lighting Notes

1. LIGHTS TO BE PROVIDED AS SHOWN OR APPROVED EQUAL. IF CONTRACTOR PROPOSES DIFFERENT SITE LIGHTING THEY ARE REQUIRED TO PROVIDE PHOTOMETRICS BY MANUFACTURER WHICH DEMONSTRATES THAT IT MEETS THE REQUIREMENTS OF THE TOWN OF MARLBOROUGH.
2. MOUNTING HEIGHTS SHOWN ARE FROM GRADE OF THE SURROUNDING AREA. MOUNTING HEIGHTS FOR EACH LIGHT FIXTURE ARE SHOWN ON THE PROPOSED LUMINAIRE SCHEDULE CORRESPONDING TO THE LABELS DEPICTED ON THE PLAN.
3. ALL LIGHTING SHALL BE SHIELDED TO PREVENT SPILLAGE ON ALL RESIDENTIAL USES SURROUNDING THE SUBJECT PROPERTY AND MEET THE TOWN'S REQUIREMENTS FOR DARK SKY COMPLIANCE.
4. CONTRACTOR TO COORDINATE ALL CABLE/CONDUIT SIZES WITH ELECTRICAL ENGINEER AS WELL AS MANUFACTURER REQUIREMENTS.
5. CONTRACTOR SHALL COORDINATE WIRING OF LIGHTS PRIOR TO INSTALLATION. CARE MUST BE TAKEN TO NOT INTERFERE WITH OTHER UTILITY LINES. PULL BOXES TO BE INSTALLED AS NECESSARY TO ROUTE CABLE.
6. ALL ELECTRICAL FACILITIES SHALL MEET STANDARDS OF NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE REQUIREMENTS.
7. TIMING CONTROL OPTION SHALL BE USED TO SENSE LIGHT LEVELS.
8. NEW SITE LIGHT POLES SHALL BE LOCATED A MINIMUM OF 2.5 FEET FROM THE FACE OF CURBS.
9. AREAS BEYOND THE CALCULATED REGION DEPICTED ON THE PLANS WILL NOT RECEIVE PROPOSED SITE LIGHTING.

AREA & ROADWAY LIGHTING

COLONIAL® - PLED

4-SIDED TRADITIONAL LANTERN

PROJECT NAME:

PROJECT TYPE:

Luminaire
Heavy cast corrosion resistant low copper aluminum (A356 alloy, <0.2% copper) traditionally styled housing and top. Minimum wall thickness is .188". Top hinges for easy access. Silicone gasket between housing and hood. Four piece clear patterned acrylic lenses, or opal white acrylic lenses provided. All hardware is stainless steel.

Diffuser
No Lens Open Frame is standard. Option of Clear Patterned Acrylic (CPA) or White Acrylic (WA) Lens Panels. Lenses are mechanically fastened to the frame and sealed with closed cell silicone gasketing.

PLED™ Optics
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter coupled on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-reflector inside the refractor redirects the house side emitter output towards the street side, maximizing usable light. Optional house side shields are available that cover each individual optic. Refractors are injection molded H1.2 acrylic. Each LED refractor is sealed to the PCB panel with a one piece silicone gasket that also seals the PCB to the frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments. Quick-disconnects are provided above each panel for tool field replacement. No lens fixture option will provide "UO" no uplight optical package.

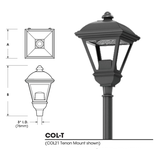
Ambiance Low Luminance Lens
Ambiance Low Luminance Lens: Lens provides low luminance reduced glare distribution. Lens diffuses the PLED Optics and provides a more uniform luminance across the aperture reducing glare at all angles. Lens is provided with an aluminum frame and is sealed to the housing with high temp gasketing.

LED Emitters
High Power White LED's are driven between 350mA and 875mA for a maximum output of 2.5 Watts nominal. LED's are available in: Cool/Bright White (5700K & 7000K), Neutral White (4000K), or Warm White (2700K & 3000K). All Standard LED's have a minimum of 70 CRI. Consult Factory for other LED options. Lumen Maintenance of L94 at 60,000 hours (TM-21 calculation at 6a Test Time).

True Amber LED's TRA-True Amber LED's emit light in the amber spectral bandwidth centered on 585-590nm. True Amber has negligible blue light and is suitable for wildlife.

LED Driver
Constant current electronic with a power factor of > 90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50/60Hz. (0 -10V dimmable driver is standard. Driver has a minimum of 3kV internal surge protection. Luminaire supplied with 20kV surge protector for field installation.)

Finish
Polyester powder coat incorporates four step iron phosphate process to pretreat metal surface for maximum adhesion. Top coat is baked at 400°F for maximum hardness and exterior durability.



COL-T
(COLO Tranon Mount shown)
Fitter supplied for B Vase 3"O.F. (Direct or Sway) Tenons

FIXTURE	A	B
COL21-T	21" (533mm)	120" (3048mm)
COL18-T	18" (457mm)	117" (2972mm)
COL12-T	12" (305mm)	111" (2819mm)

COL-P
(COL18 Pendant Mount shown)

FIXTURE	A	B
COL21-P	21" (533mm)	120" (3048mm)
COL18-P	18" (457mm)	117" (2972mm)
COL12-P	12" (305mm)	111" (2819mm)

UL Listed for Wet Location

2022238

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COL SERIES - PLED

PLED™ MODULES

ORDERING INFORMATION

Spec/Order Example: COL20T-PLED-B/20LED-535mA-16K/240-U-180/RSTE-S16A

Luminaire	Optics	LED Mode	Voltage	Mounting	Finish	Options
Luminaire: COL21 COL18 COL12	Optics: PLED™ Optics Type — For NL & CPA Lens Options: PLED-F, PLED-FR, PLED-III, PLED-III-W, PLED-IV, PLED-IVT, PLED-V-06A-N, PLED-V-06A-W, PLED-V-06A-W. For WPA Lens Options: PLED-A2F-W1, PLED-A2F-W2 (Ordered NB), PLED-A2F-N1, PLED-A2F-N2 (Ordered NB), PLED-DTM. Ambiance Lens Option*: AL-A2F, AL-AF1-W, AL-DTM	# of LEDs / Drive Current: 80LED* 875mA, 48LED 700mA, 36LED 535mA*, 20LED* 350mA, 175mA. Color Temp - CCI: 27K (2700K), 30K (3000K), 40K (4000K), 50K (5000K), 75A* True Amber. NOTES: 1 - 80LED available in COL21 only. 2 - 20 LED available in 20LED only. 3 - TRA available in 350mA & 350mA Drive Current only. 4 - 20 LED Max Drive Current is 525mA. 5 - 175mA and 700mA available in COL21, 80LED, and COL18. 20LED only. Consult factory for other CCT, CRI, & Drive Current options.	Voltage: 120, 208, 240, 277, 347, 480	Mounting: Post Top: P27 (3 or 5 3/4" O.D.), P23 (3 or 5 1/8" O.D.). Pendant Mount: PM. Arm Mount: 1, 2-180, 2-90, 3-90, 3-120, 4-90. Wall Mount: WM — qualifying part for all WM options.	Finish: Standard Textured Finish: White DAL-WHSG-T, Black DAL-BKSG-T, Dark Bronze DAL-BRTX-T, Green DAL-GRSG-T. Premium Finishes: Rust, Rubny Copper PC. For smooth finish replace suffix T with S (example: DAL-WHSG). Consult factory for custom colors.	Lens Options: Open Frame No Lens NL, Clear Patterned Acrylic CPA, White Acrylic WA. Colorway Mount (Specify Mounting Below): CC0. Stem Mount + Length (in) (8" max): SM-L. Drain Mount + Length (in) (8" max): DM-L. Internal House Side Shield: Int. LED Count (Example: HS-PLED): HS-PLED. Twist Lock Receptacle Only: TRT. Twist Lock Receptacle Only: SP67. High Low Dimming by Twist-to-Reveal Switch (Specify Switch Preset): HLSW. Photo Cell + Voltage (Example: PC-V): PC-V. Single Fuse (SF, 120V): SF. Double Fuse (DF, 240V): DF. Bird Guard+ Programmable Photo/Motion Sensor (Specify Mounting Ht. Prior To): MS-FI11.

Lighting

Luma gen2

BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1

LUMA GEN2 MINI, LED module 12000 lm, LED, 79 W, Power supply unit with DynaDimmer, Distribution medium 11, Glass, 70° x 37°, Programmable (via DALI or NFC) stand-alone dimming, Side-entry for diameter 42 to 60 mm

Luma gen2 is the next generation of the Luma LED luminaire family, fully optimized to become your long-term lighting and innovation partner. While keeping the distinctive design characteristics of the first generation, Luma gen2 gives you the benefits of the latest technologies thanks to its future-proof System Ready architecture, use of optimized Ledgine LED and optical platform ensuring best in class lighting performance in a broad range of applications. It also offers improved serviceability. Installation has also become easier and faster, and thanks to the Service tag, you have access to all relevant documentations onsite. Also, the cable feed-through has been redesigned and access to the gear components is easy thanks to top down tool-less access. Luma gen2 also offers all connectivity and dimming options available today and thanks to being System Ready, it can also to be paired with lighting management systems such as Interact City or existing and upcoming sensor innovations. The Luma gen2 has been developed to optimize and simplify spare part repair and maintenance work using a new plug & play GearFlex module containing all electrical components in an easy to handle and accessible box inside the housing. As a company conscious about the impact of light on the environment and biodiversity, we also equipped the Luma gen2 with dedicated light recipes that help with maintaining the optical ecosystems for bats or preserve a dark night sky.

Product data

General information	
Lamp family code	LED120 (LED module 12000 lm)
Light source replaceable	Yes
Number of gear units	1 unit

Luma gen2

Driver included	Yes
Light source engine type	LED
Service tag	Yes
Product family code	BGP703 [LUMA GEN2 MINI]
Lighting Technology	LED
Value ladder	Specification

Light Technical

Upward light output ratio	0
Luminous Flux	10,800 lm
Standard ES angle position	0°
Standard ES angle side entry	0°
Luminous Efficacy (rated) [lm/w]	137 lm/W
Correlated Color Temperature [Nom]	3000 K
Color rendering index (CRI)	>70
Light source color	730 warm white
Optical cover type	Glass
Luminaire light beam spread	70° x 37°
Optic type outdoor	Distribution medium 11

Operating and Electrical

Input Voltage	220 to 240 V
Line Frequency	50 to 60 Hz
Inrush current	47 A
Inrush time	0.25 ms
Power Consumption	79 W
Power Factor (Traction)	0.99
Connection	Connection unit 5-pole
Cable	
Number of products on MCB of 16 A type B	10

Temperature

Ambient temperature range	-40 to +50 °C

Controls and Dimming

Dimmable	Yes
Driver/power unit/transformer	Power supply unit with DynaDimmer
Control interface	Programmable (via DALI or NFC) stand-alone dimming
Constant light output	No

Mechanical and Housing

Housing Material	Aluminum die cast
Reflector material	
Optic material	Polymethyl methacrylate
Optical cover material	Glass
Fixation material	Aluminum
Housing Color	Gray
Mounting device	Side-entry for diameter 42 to 60 mm
Optical cover shape	Flat
Optical cover finish	Clear

Overall length	736 mm
Overall width	293 mm
Overall height	146 mm
Effective projected area	0.0998 m²
Dimensions (Height x Width x Depth)	146 x 293 x 736 mm

Approval and Application

Ingress protection code	IP66 (Dust penetration-protected, jet-proof)
Mech. impact protection code	IK10 (20 J vandal-resistant)
Surge Protection (Common/Differential)	Luminaire surge protection level until 10 kV differential mode and 10 kV common mode
Sustainability rating	Lighting for circularity
Protection class IEC	Safety class I
Flammability mark	
CE mark	Yes
ENEC mark	ENEC plus mark
Warranty period	5 years
EU RoHS compliant	Yes

Initial Performance (IEC Compliant)

Luminous flux tolerance	+/-7%
Initial chromaticity	
Power consumption tolerance	+/-10%
Init. Color Rendering Index Tolerance	+/-2

Over Time Performance (IEC Compliant)

Control gear failure rate at median useful life	5 %
life 100000 h	
Lumen maintenance at median useful life*	L96
50000 h	
Lumen maintenance at median useful life*	L88
100000 h	

Application Conditions

Performance ambient temperature Tq	25 °C
Maximum dim level	10%

Product Data

Order product name	BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1
Full product name	BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1
Full product code	871951493897400
Order code	911925968802
Material Nr. (12NC)	911925968802
Numerator - Quantity Per Pack	1
Net Weight (Piece)	9.090 kg
EAN/UPC - Product/Case	8719514958974

Datasheet, 2024, May 31 data subject to change

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by DR | Checked by AL

Issued for
Site Plan Approval
August 9, 2024

Not Approved for Construction

Drawing Title
Overall Photometric Plan

Drawing Number
C7.00

Sheet 38 of 47

Project Number
20578.01

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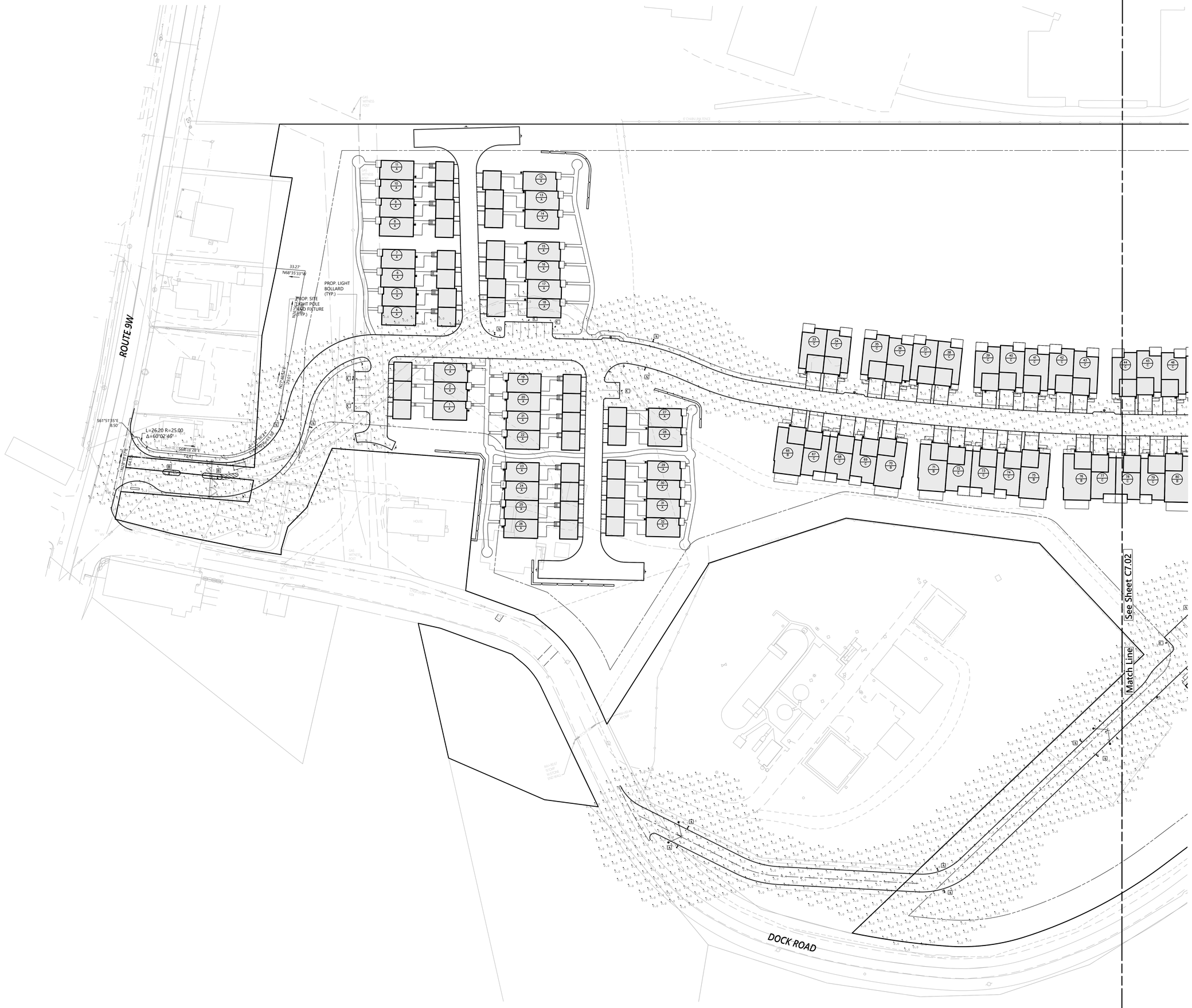

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Sheet 39 of 47

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Orchards on Hudson Residential

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Marlborough, NY

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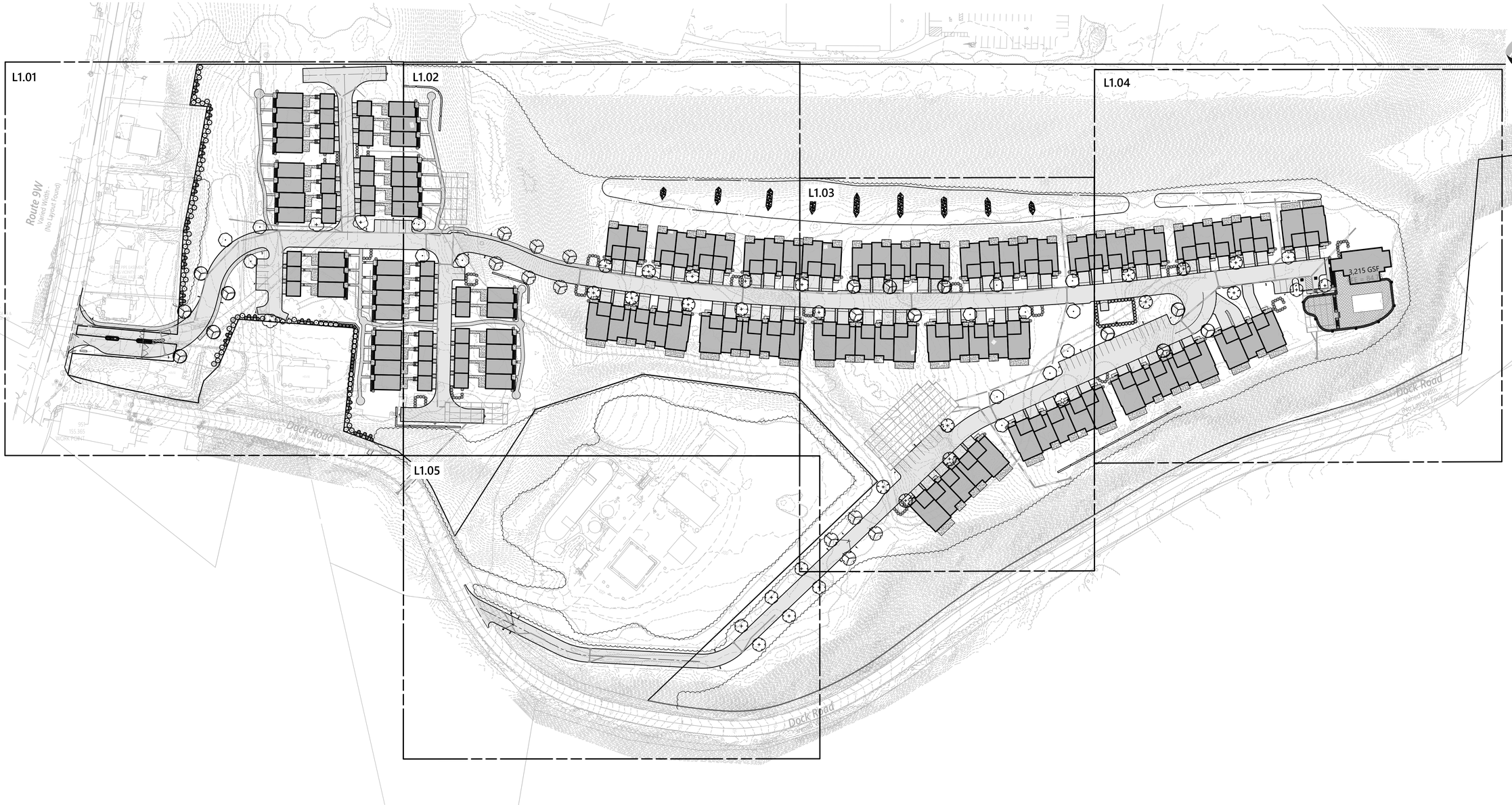

OVERALL PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
EVERGREEN TREES					
JVE	72	Juniperus virginiana `Emerald Sentinal`	Eastern Redcedar	6 - 7` HT.	
TPG	68	Thuja plicata `Green Giant`	Western Arborvitae	6 - 7` HT.	
SHADE TREES					
ARF	15	Acer rubrum `Frank Jr.`	Redpointe® Maple	2 1/2 - 3" CAL.	
GBA	14	Ginkgo biloba `Autumn Gold` TM	Maidenhair Tree	2 1/2 - 3" CAL.	
LS	16	Liquidambar styraciflua	Sweet Gum	2 1/2 - 3" CAL.	
PAM	10	Platanus x acerifolia 'Morton Circle'	Exclamation!™ London Plane Tree	2 1/2 - 3" CAL.	
QMC	3	Quercus muehlenbergii	Chinkapin Oak	2 1/2 - 3" CAL.	
UDJ	14	Ulmus davidiana japonica `Morton`	Accolade® Elm	2 1/2 - 3" CAL.	
SHRUBS					
HQ	56	Hydrangea quercifolia	Oakleaf Hydrangea	18 - 24" HT / SPD	
IGG	338	Ilex glabra 'SMNIGAB17'	Gem Box® Inkberry Holly	12 - 18" HT./SPD.	
PJM	164	Pieris japonica 'Mountain Fire'	Mountain Fire Japanese Pieris	18 - 24" HT / SPD	
PLS	35	Prunus laurocerasus `Schipkaensis`	Schipka Laurel	30 - 36" HT./SPD.	
ORNAMENTAL GRASSES					
CAK	213	Calamagrostis x acutiflora `Karl Foerster`	Feather Reed Grass	#1 CONT.	24" o.c.
DCN	1,498	Deschampsia cespitosa 'Northern Lights'	Northern Lights Tufted Hair Grass	5" Plug	12" o.c.
PERENNIALS					
CMI	456	Carex morrowii 'Ice Dance'	Ice Dance Japanese Sedge	5" Plug	12" o.c.
NJW	20	Nepeta x faassenii `Junior Walker`	Junior Walker Catmint	#1 CONT.	24" o.c.

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by: CN
Checked by: JCV

Issued for: Site Plan Approval
Date: August 9, 2024

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Drawing Title: Overall Planting Plan

GREGORY CREEN LANDSCAPE ARCHITECT 092183 STATE OF NEW YORK

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Drawing Number: L1.00

Sheet 41 of 47

Project Number: 20578.01

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PLANT SCHEDULE L1.01

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
EVERGREEN TREES				
JVE	72	Juniperus virginiana `Emerald Sentinal`	Eastern Redcedar	6 - 7` HT.
TPG	68	Thuja plicata `Green Giant`	Western Arborvitae	6 - 7` HT.
SHADE TREES				
ARF	5	Acer rubrum 'Frank Jr.'	Redpointe® Maple	2 1/2 - 3" CAL.
LS	3	Liquidambar styraciflua	Sweet Gum	2 1/2 - 3" CAL.
QMC	3	Quercus muehlenbergii	Chinkapin Oak	2 1/2 - 3" CAL.
SHRUBS				
HQ	10	Hydrangea quercifolia	Oakleaf Hydrangea	18 - 24" HT / SPD
IGG	133	Ilex glabra 'SMNIGAB17'	Gem Box® Inkberry Holly	12 - 18" HT./SPD.
PJM	22	Pieris japonica 'Mountain Fire'	Mountain Fire Japanese Pieris	18 - 24" HT / SPD

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
ORNAMENTAL GRASSES					
DCN	882	Deschampsia cespitosa 'Northern Lights'	Northern Lights Tufted Hair Grass	5" Plug	12" o.c.
PERENNIALS					
NJW	20	Nepeta x faassenii `Junior Walker`	Junior Walker Catmint	#1 CONT.	24" o.c.

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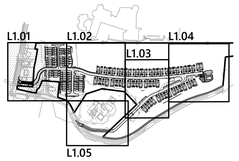

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Designed by CN | Checked by JCV

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Drawing Title: **Planting Plan**

Drawing Number: **L1.01**

Sheet 42 of 47

Project Number: **20578.01**

LICENSED LANDSCAPE ARCHITECT JOHN C. VALENTINE 002183 STATE OF NEW YORK

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PLANT SCHEDULE L1.02

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHADE TREES					
GBA	3	Ginkgo biloba `Autumn Gold` TM	Maidenhair Tree	2 1/2 - 3" CAL.	
LS	3	Liquidambar styraciflua	Sweet Gum	2 1/2 - 3" CAL.	
PAM	6	Platanus x acerifolia 'Morton Circle'	Exclamation!™ London Plane Tree	2 1/2 - 3" CAL.	
UDJ	5	Ulmus davidiana japonica `Morton`	Accolade® Elm	2 1/2 - 3" CAL.	
SHRUBS					
HQ	16	Hydrangea quercifolia	Oakleaf Hydrangea	18 - 24" HT / SPD	
IGG	110	Ilex glabra 'SMNIGAB17'	Gem Box® Inkberry Holly	12 - 18" HT./SPD.	
PJM	63	Pieris japonica 'Mountain Fire'	Mountain Fire Japanese Pieris	18 - 24" HT / SPD	
ORNAMENTAL GRASSES					
DCN	489	Deschampsia cespitosa 'Northern Lights'	Northern Lights Tufted Hair Grass	5" Plug	12" o.c.
PERENNIALS					
CMI	122	Carex morrowii 'Ice Dance'	Ice Dance Japanese Sedge	5" Plug	12" o.c.

See Sheet L1.01

Match Line

EXISTING VEGETATED WOODED AREA TO REMAIN, TYP.

TOPSOIL & SEED MIX, TYP.

See Sheet L1.03

Match Line

Match Line See Sheet L1.05

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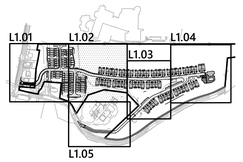

Key
Not To Scale

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by CN | Checked by JCV

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title: **Planting Plan**

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Drawing Number: **L1.02**

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Project Number: **20578.01**

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PLANT SCHEDULE L1.03

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHADE TREES					
ARF	5	Acer rubrum 'Frank Jr.'	Redpointe® Maple	2 1/2 - 3" CAL.	
GBA	2	Ginkgo biloba 'Autumn Gold' TM	Maidenhair Tree	2 1/2 - 3" CAL.	
LS	10	Liquidambar styraciflua	Sweet Gum	2 1/2 - 3" CAL.	
PAM	4	Platanus x acerifolia 'Morton Circle'	Exclamation!™ London Plane Tree	2 1/2 - 3" CAL.	
UDJ	4	Ulmus davidiana japonica 'Morton'	Accolade® Elm	2 1/2 - 3" CAL.	
SHRUBS					
HQ	14	Hydrangea quercifolia	Oakleaf Hydrangea	18 - 24" HT / SPD	
IGG	33	Ilex glabra 'SMNIGAB17'	Gem Box® Inkberry Holly	12 - 18" HT./SPD.	
PJM	38	Pieris japonica 'Mountain Fire'	Mountain Fire Japanese Pieris	18 - 24" HT / SPD	
CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
PERENNIALS					
CMI	213	Carex morrowii 'Ice Dance'	Ice Dance Japanese Sedge	5" Plug	12" o.c.

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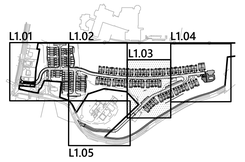

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by: CN
Checked by: JCV

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Drawing Title: Planting Plan

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Drawing Number: L1.03

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Project Number: 20578.01

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See Sheet L1.03

Match Line

EXISTING VEGETATED WOODED AREA TO REMAIN, TYP.

CLUBHOUSE
3,215 GSF
FFE = 84.73

POOL

Dock Road
Varied Width
(No Layout Found)

TOPSOIL & SEED MIX, TYP.

EXISTING VEGETATED WOODED AREA TO REMAIN, TYP.

PLANT SCHEDULE L1.04

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHADE TREES					
ARF	4	Acer rubrum 'Frank Jr.'	Redpointe® Maple	2 1/2 - 3" CAL.	
GBA	3	Ginkgo biloba `Autumn Gold` TM	Maidenhair Tree	2 1/2 - 3" CAL.	
UDJ	5	Ulmus davidiana japonica `Morton`	Accolade® Elm	2 1/2 - 3" CAL.	
SHRUBS					
HQ	16	Hydrangea quercifolia	Oakleaf Hydrangea	18 - 24" HT / SPD	
IGG	62	Ilex glabra 'SMNIGAB17'	Gem Box® Inkberry Holly	12 - 18" HT./SPD.	
PJM	41	Pieris japonica 'Mountain Fire'	Mountain Fire Japanese Pieris	18 - 24" HT / SPD	
PLS	34	Prunus laurocerasus `Schipkaensis`	Schipka Laurel	30 - 36" HT./SPD.	
CODE	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**SPACING**
ORNAMENTAL GRASSES					
CAK	213	Calamagrostis x acutiflora `Karl Foerster`	Feather Reed Grass	#1 CONT.	24" o.c.
DCN	127	Deschampsia cespitosa 'Northern Lights'	Northern Lights Tufted Hair Grass	5" Plug	12" o.c.
PERENNIALS					
CMI	121	Carex morrowii 'Ice Dance'	Ice Dance Japanese Sedge	5" Plug	12" o.c.

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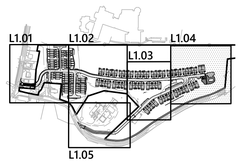

Key

Not To Scale

0 10 20 40 Feet

Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
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Issued for: Site Plan Approval | Date: August 9, 2024

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Drawing Title: Planting Plan

Drawing Number: L1.04

Sheet 45 of 47

Project Number: 20578.01

REGISTERED LANDSCAPE ARCHITECT
PRINCIPAL
COLOR OF SEAL MUST BE BLUE TO BE VALID COPY
002183
STATE OF NEW YORK

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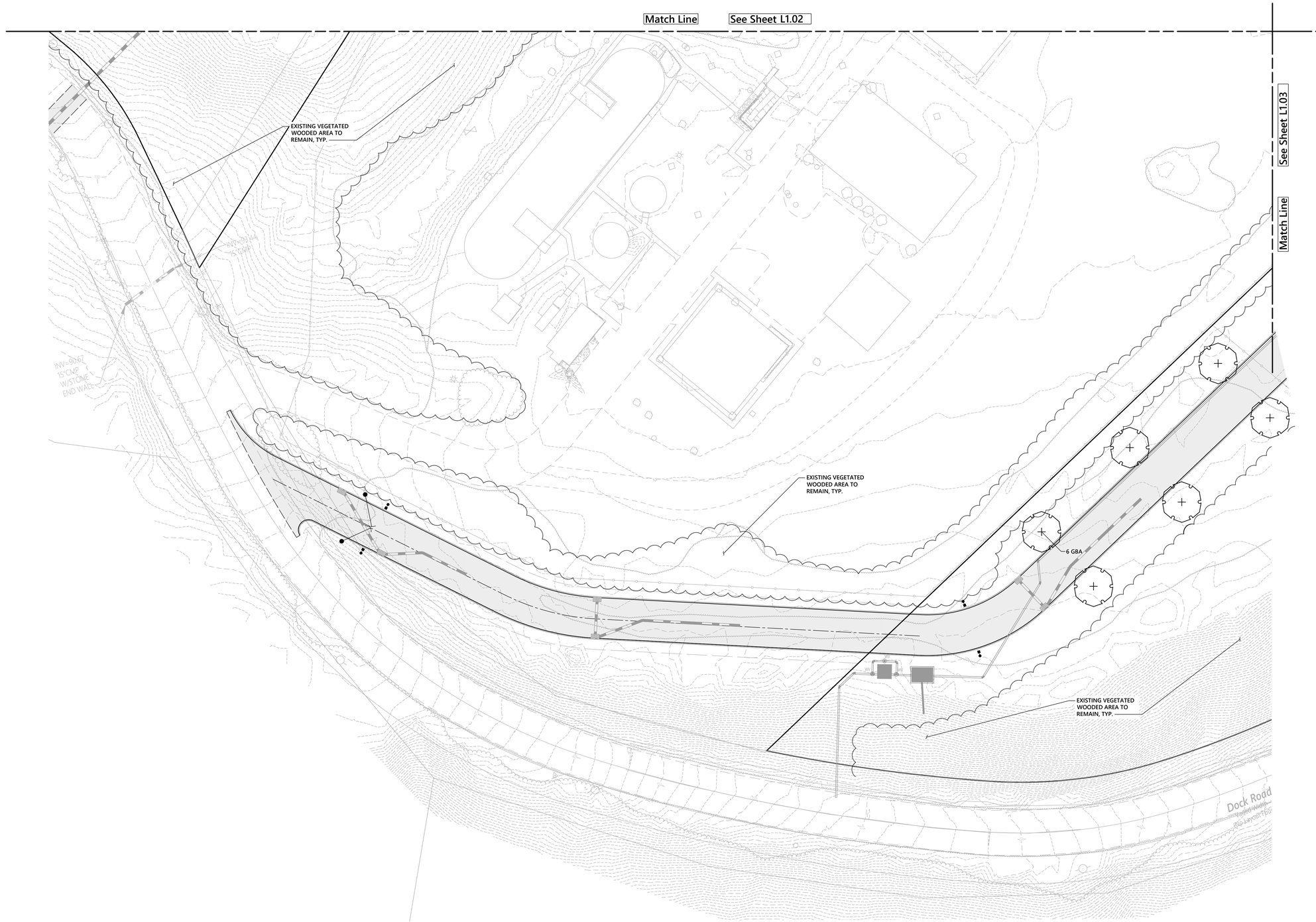

PLANT SCHEDULE L1.05

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
SHADE TREES				
GBA	6	Ginkgo biloba `Autumn Gold` TM	Maidenhair Tree	2 1/2 - 3" CAL.

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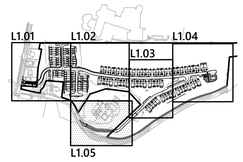

Key
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Sheet 46 of 47

Project Number
20578.01

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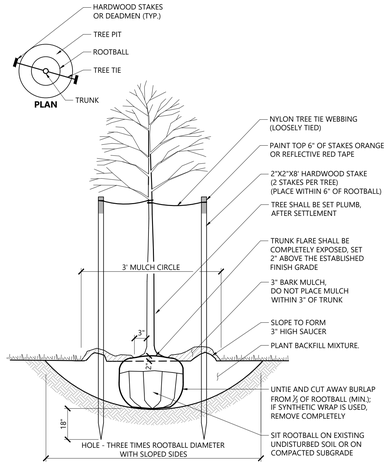
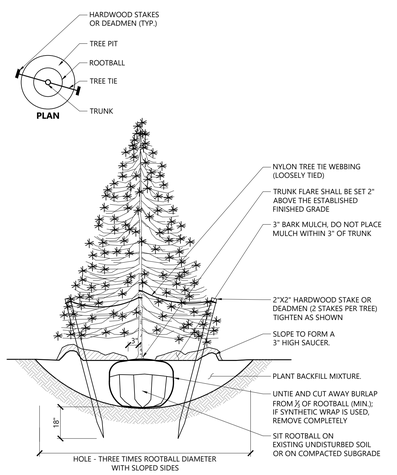


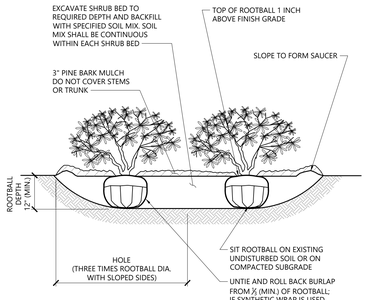
Tree Planting (For Trees Under 4" Caliber) 9/21

N.T.S. Source: VHB LD_602



Evergreen Tree Planting 9/21

N.T.S. Source: VHB LD_604



NOTES

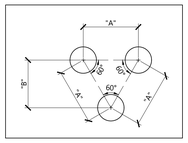
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

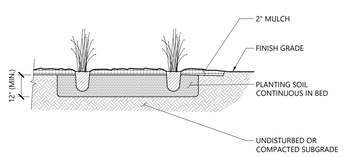
Shrub Bed Planting 1/16

N.T.S. Source: VHB LD_601

PLANT SPACING

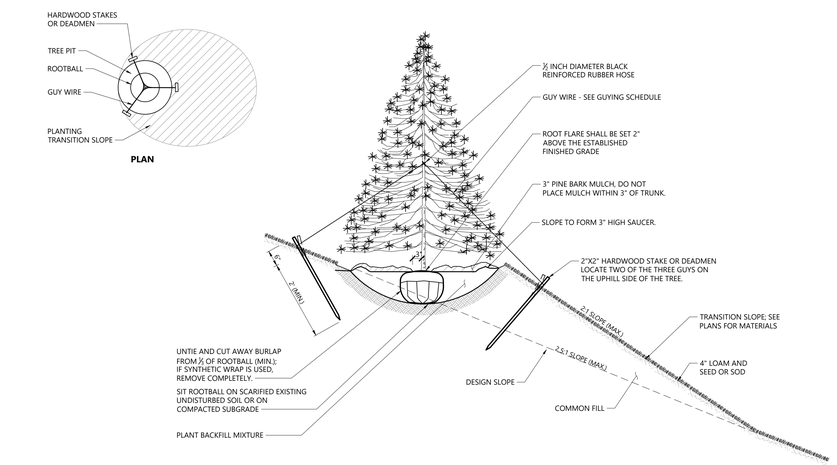
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8.5 IN. O.C.
12 IN. O.C.	10.5 IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.





Perennial and Ornamental Grass Planting 1/16

N.T.S. Source: VHB LD_618



Tree Planting on Slope 1/16

N.T.S. Source: VHB LD_605

Tree Protection

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.
4. NO UNAUTHORIZED TREE REMOVALS, UNLESS AS SPECIFIED ON CONTRACT DOCUMENTS, APPROVED BY LOCAL MUNICIPALITIES, AND LANDSCAPE ARCHITECT.

Edge of Woods Clearing

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY EROSION CONTROL FENCE AND HAY BALE BARRIER. ERECT BARRIER AT EDGE OF THE EARTHWORK CUT LINE PRIOR TO TREE CLEARING. LAY OUT THIS LINE BY FIELD SURVEY.

Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO PERMANENT IRRIGATION SYSTEM IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD PLANTS AND LESS THAN 75%-ALIVE PLANTS AT THE END OF THE PLANT GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

Turf Seeding Notes:

1. **SEED MIX 'A':** UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED, SHALL BE SEEDED WITH THE LATEST VERSION OF THE FOLLOWING SEED MIX:

   TURF-TYPE TALL FESCUE BLEND:

VARIETY	PURITY %	GERM %	ORIGIN
4TH MILLENNIUM SRP TALL FESCUE	33.13	94	OR
RAPTOR III TALL FESCUE	33.28	95	OR
AVENGER III TALL FESCUE	32.97	97	OR

   WEEDS %: 0.00 OTHER CROP %: 0.00 INERT %: 0.62

   OR, APPROVED EQUAL

   SEEDING RATE SHALL BE 8 LBS. PER 1,000.00 SQ. FT.

2. **SEED MIX 'A' - ALTERNATE BID** - UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED OR MULCHED, SHALL BE **SODDED** WITH A TURF-TYPE TALL FESCUE BLEND SOD PRODUCT.
3. ALL SEEDING SHALL BE HYDRO-SEEDED WITH THE FOLLOWING ENGINEERED WOOD FIBER HYDROMULCH AS PER MANUFACTURER'S SPECIFICATIONS. SUBMIT SAMPLE & PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.

   FLEXTERRA HP-FGM - AS MANUFACTURED BY:
   PROFILE PRODUCTS
   750 W. LAKE COOK RD
   SUITE 440
   BUFFALO GROVE, IL 60089
   1-800-207-6457

   OR, APPROVED EQUAL.

4. CONTRACTOR SHALL SUBMIT SEED; SOURCE, SAMPLE, AND CERTIFIED ANALYSIS; AND HYDRO-MULCH SAMPLE & PRODUCT DATA FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO ORDERING.
5. LAWNS SHALL EXHIBIT A UNIFORM, THICK, WELL-DEVELOPED STAND OF GRASS AND SHALL NOT HAVE BARE SPOTS IN EXCESS OF FOUR INCHES IN DIAMETER. BARE SPOTS SHALL COMPRISE NO MORE THAN TWO-PERCENT (2%) OF THE TOTAL AREA OF THE LAWN.

Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL PLANTING BACKFILL SOILS SHALL RECEIVE CERTIFIED WEED-FREE FULLY COMPOSTED LEAF MOLD SOIL AMENDMENT AT A RATE OF 33% (1 PART COMPOST TO 2 PARTS PLANTING SOIL). SUBMIT COMPOST CERTIFICATION & PRODUCT DATA PRIOR TO ORDERING FOR APPROVAL.
6. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
7. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
8. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
9. ALL PLANT MATERIALS INSTALLED SHALL MEET THE LATEST SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" PUBLISHED BY AMERICAN HORT AND CONTRACT DOCUMENTS.
10. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR TWO YEARS FOLLOWING DATE OF FINAL ACCEPTANCE. DEAD PLANTS, AND PLANTS LESS THAN 75% ALIVE SHALL BE REPLACED. PLANT GUARANTEE DATE STARTS UPON FINAL ACCEPTANCE IN WRITING FROM LANDSCAPE ARCHITECT ACKNOWLEDGING SUCCESSFUL COMPLETION OF PROPOSED LANDSCAPE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND PUNCH LISTS AND DEFICIENCIES HAVE BEEN RESOLVED.
11. AREAS DESIGNATED "TOPSOIL & SEED" SHALL RECEIVE MINIMUM 6" OF TOPSOIL AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC, SUBMIT PRODUCT DATA FOR APPROVAL.
12. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE TOPSOIL AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
13. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.
14. ALL SPECIFIED PLANT MATERIAL IS SUBJECT TO INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT AT BOTH THE NURSERY AND JOBSITE PRIOR TO INSTALLATION
15. CAREFULLY DISRUPT CIRCLING ROOTS FROM ALL CONTAINER-GROWN PLANTS, EXCEPT PLUGS, VIA TOOL SCARIFICATION OR BY HAND.
16. ALL B&B MATERIALS (I.E. BURLAP, TWINE, ETC) SHALL BE ALL BIO-DEGRADABLE MATERIALS.
17. ALL PLANTINGS SHALL RECEIVE BIOSTIMULANT (MYCORRHIZAL FUNGI) AS PER MANUFACTURER'S RECOMMENDED RATES. SUBMIT PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.
18. CONTRACTOR SHALL MAINTAIN (I.E. WEEDING, MULCHING, WATERING, CUT BEDS, REPLACEMENTS, ETC) ALL LANDSCAPE PLANTS AND AREAS WITHIN CONTRACT LIMITS DURING SPRING, SUMMER, AND FALL UNTIL EXPIRATION OF GUARANTEE PERIOD.
19. LANDSCAPE CONTRACTOR SHALL SUBMIT LETTER OF AGREEMENT TO THE PROPERTY OWNER ACKNOWLEDGING AND AGREEING TO FULFILLING THE SPECIFIED CONTRACTED GUARANTEE PERIOD AND MAINTENANCE AT NO-ADDITIONAL COST TO THE OWNER. SUBMIT LETTER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
20. CONTRACTOR SHALL REMOVE ALL TREE STAKING AND GUYING MATERIALS PRIOR TO THE EXPIRATION OF THE PLANT WARRANTY PERIOD, OR 1 YEAR FROM THE DATE OF INSTALLATION, WHICHEVER COMES FIRST.
21. ACCEPTABLE LANDSCAPE INSTALLATION WINDOWS SHALL BE FROM: APRIL 1ST TO MAY 31ST AND SEPTEMBER 15TH TO NOVEMBER 15TH. INSTALLATION OUTSIDE OF THESE WINDOWS WILL BE AT RISK.
22. ALL NURSERY PLANT IDENTIFICATION TAGS SHALL REMAIN ON PLANT MATERIALS UNTIL PUNCH LIST, CONTRACTOR SHALL REMOVE TAGS UPON FINAL ACCEPTANCE.

Irrigation Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE IRRIGATION SYSTEM DESIGN AND INSTALLATION FOR PLANTINGS AND LAWN AREAS. DESIGN SHALL BE CERTIFIED BY A PROFESSIONAL LANDSCAPE ARCHITECT, ENGINEER, OR CERTIFIED IRRIGATION DESIGNER. DESIGN PLANS SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL.
2. ALL LAWN AREAS SHALL BE ZONED SEPARATELY FROM PLANTING (MULCH) BEDS AREAS.
3. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF THE IRRIGATION SYSTEM.
4. ALL IRRIGATION PIPING SHALL BE PVC, SUBMIT PIPE SIZES AND TYPES FOR APPROVAL.
5. CONTRACTOR SHALL PROVIDE DRAWINGS, MATERIAL SPECIFICATIONS, SCHEMATICS, AND OTHER LITERATURE AS MAY BE REQUIRED, FOR ALL CONDUIT, CONTROLS,TIMERS, VALVES, SPRINKLER HEADS, CONNECTORS, WIRING, RAIN GAUGE, ETC. TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO INSTALLATION.
6. IRRIGATION CONTROLLER SHALL BE AN EPA WATERSENSE-LABELED WEATHER-BASED IRRIGATION CONTROLLER.
7. CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH THE GENERAL CONTRACTOR AND SUB CONTRACTORS.
8. (INSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS.

   (OUTSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS. LOCATE THIS EQUIPMENT IN A LOCKABLE 'HOT BOX'.

9. (INSIDE BUILDING) IRRIGATION CONTROL PANEL, BACKFLOW PREVENTER AND METER SHALL BE LOCATED IN THE BUILDING MECHANICAL ROOM. COORDINATE WITH THE GENERAL CONTRACTOR.

   (OUTSIDE BUILDING) IRRIGATION CONTROL PANEL SHALL BE LOCATED IN A LOCKABLE CABINET DESIGNED TO HOUSE THE CONTROL PANEL.

10. SITE CONTRACTOR SHALL PROVIDE 4" SCHEDULE 40 PVC SLEEVES & PVC CAPS, BOTH ENDS, UNDER PAVEMENT TO PROVIDE ACCESS FOR IRRIGATION LINES TO ALL IRRIGATED AREAS.
11. IRRIGATION CONTRACTOR SHALL DEMONSTRATE FULL FUNCTIONALITY AND ADEQUATE WATERING OF PLANTINGS TO OWNER AND LANDSCAPE CONTRACTOR. SUBMIT WRITTEN SIGN-OFF FROM LANDSCAPE CONTRACTOR TO LANDSCAPE ARCHITECT FOR APPROVAL.

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Orchards on Hudson Residential

Dock Road
Marlborough, NY

No.	Revision	Date	Appvd.
1	Town Resubmission	10/25/2025	AL

Designed by CN Checked by JCV

Issued for: **Site Plan Approval** Date: **August 9, 2024**

Not Approved for Construction

Drawing Title
Planting Notes and Details

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER. UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Drawing Number: **L2.00**

Sheet 47 of 47

Project Number: **20578.01**

Saved Thursday, October 24, 2024 3:13:40 PM CNAMAROFF Plotted Thursday, October 24, 2024 3:18:29 PM Claudia Namaroff

THE APPROVED PLANS BY THE TOWN OF BROOKHAVEN SHALL REPLACE THE PLANS WITHIN THIS SECTION PRIOR TO START OF CONSTRUCTION.

Attachment C
Soils Map

Tectonic

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GEOTECHNICAL EVALUATION
PROPOSED RESIDENTIAL DEVELOPMENT
137 DOCK ROAD
HAMLET OF MARLBORO, TOWN OF MARLBOROUGH, ULSTER COUNTY, NEW YORK

Submitted To:

SDL Marlboro LLC

561 Seventh Avenue – Suite 903
New York, New York 10018

April 2, 2024

W.O. 11207.01

Submitted By:

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.

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SDL Marlboro LLC
561 Seventh Avenue – Suite 903
New York, New York 10018

Attention: C/O: Mr. Patrick N. O'Leary – Senior Principal
VIA E-MAIL: (poleary@VHB.com)

April 2, 2024

RE: W.O. 11207.01
GEOTECHNICAL EVALUATION
PROPOSED RESIDENTIAL DEVELOPMENT
137 DOCK ROAD
HAMLET OF MARLBORO, TOWN OF MARLBOROUGH, ULSTER COUNTY, NEW YORK

Dear Mr. O'Leary;

Tectonic Engineering Consultants, Geologists, and Land Surveyors D.P.C. (Tectonic) has completed a subsurface investigation and geotechnical engineering evaluation for the proposed residential development to be located at 137 Dock Road, east of New York State Route 9W, in the Hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The purpose of the investigation was to evaluate the subsurface conditions within the areas of the proposed new buildings and site improvements, and to provide geotechnical recommendations for design and construction of the proposed site improvements. This report presents detailed information about the investigation, our findings, and recommendations.

We appreciate this opportunity to assist you with this project. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS, AND LAND SURVEYORS D.P.C.

STATE OF NEW YORK
CHRISTOPHER BURKE
LICENSED PROFESSIONAL ENGINEER
EXCELSIOR
078832

Christopher Burke, PhD., P.E., P.M.P.
Manager of Geotechnical Services

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GEOTECHNICAL EVALUATION
PROPOSED RESIDENTIAL DEVELOPMENT
137 DOCK ROAD
HAMLET OF MARLBORO, TOWN OF MARLBOROUGH, ULSTER COUNTY, NEW YORK

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FIGURE I BORING, TEST PIT, AND INFILTRATION TEST LOCATION PLAN

APPENDIX I BORING, TEST PIT AND INFILTRATION TEST LOGS
APPENDIX II LABORATORY TEST RESULTS

1.0 INTRODUCTION

In accordance with your request and authorization, Tectonic Engineering Consultants, Geologists, and Land Surveyors D.P.C. (Tectonic) has completed a subsurface investigation and geotechnical engineering evaluation for the proposed residential development to be located at 137 Dock Road, east of New York State Route 9W, in the Hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The purpose of the investigation was to evaluate the subsurface conditions within the areas of the proposed new buildings and site improvements, and to provide geotechnical recommendations for design and construction of the proposed site improvements. This report presents detailed information about the investigation, our findings, and recommendations.

2.0 SCOPE OF SERVICES

Our scope of services provided for SDL Marlboro LLC (Client), coordinated through VHB Engineering, Surveying, Landscape Architecture and Geology, PC (Client Agent) included:

- Review of geological information publicly available through the United States Geological Survey (USGS) and the National Resources Conservation Service (NRCS); as well as a Layout and Materials Plan, dated for review on May 12, 2023, provided by the Client Agent.

- Drilling, sampling, and logging of twenty-seven (27) borings, designated as B-1 through B-6, B-6A, B-6B, and B-7 through B-25, to depths of up to 32 feet below existing ground surface (bgs).

- Observation and logging of the excavation of one (1) test pit, designated as TP-1, to a depth of approximately 8 feet bgs.

- Field inspection of the borings and test pit by Tectonic representatives, working under the purview of a New York State licensed Professional Engineer, which included locating the borings and test pit, and logging and classifying all soil and rock samples.

- Installation of test wells for, and performance of, two infiltration tests, designated INF-1 and INF-2, at proposed stormwater management features.

- Laboratory testing of soil samples selected to help verify the field classifications of the soils and evaluate their engineering characteristics.

- Geotechnical engineering evaluation of the subsurface conditions as they relate to the design and construction of the proposed buildings, pavement sections, and site improvements.

- Preparation of this geotechnical report presenting the results of the subsurface investigation, engineering analyses, and recommendations for the design of the proposed building foundations, pavement sections, and other site improvements.

3.0 SITE AND PROJECT DESCRIPTIONS

The project is located on a 27-acre parcel located at 137 Dock Road, east of Route 9W in the Hamlet of Marlboro, Town of Marlborough, Ulster County, New York. According to Ulster County GIS records, the project site consists of the combination of four (4) smaller parcels (Parcel Numbers 109.1-3-13, 109.1-3-14.200, 108.4-3-29.100, and 109.1-3-15). Based on Ulster County records, the site has not been previously developed, but historic aerial photos and the New York State Department of Environmental Conservation (NYSDEC) records indicate that the site had been the location of a mine. The DECinfo Locator (https://gisservices.dec.ny.gov/gis/dil/) also shows that the mine, once operated by Orange & Ulster Shale Co. Inc., has been reclaimed. The site is bound by Dock Road to the south, a marina, located at 140 Dock Road to the east, the campus of Marlboro Elementary School to the north, the Hamlet of Marlboro Wastewater Treatment Facility to the southwest, and existing residential and commercial structures fronting Route 9W to the west.

Based on the existing topography shown on the "Layout and Materials Plan, provided by VHB, the site consists of a series of terraces, with surface elevations generally stepping and sloping downwards from northwest to southeast. In the areas proposed to be developed, surface elevations range from approximately +165 feet, on the western end of the site and on a ridge projecting into the site from the northern property line, down to approximately +80 feet at the eastern end of the site. Surface elevations slope steeply downwards from the parcel's northern property line towards the center of the site, and steeply downwards from the center of the site to the south and east, towards Dock Road. As this project is still in the preliminary stages, a proposed grading plan for the site was not available as of the writing of this report. All elevations referenced herein are per the North American Vertical Datum of 1988 (NAVD88).

The proposed project will reportedly consist of the construction of a new residential development, which will include a combination of 3- to 5-unit townhouses, duplexes and single-family structures, for a total of approximately 100 units. Current plans are to construct each structure with a full below-grade basement. The planned heights of the buildings were not provided to Tectonic but are expected to be less than 3-stories. Site improvements will also reportedly consist of new retaining walls, new asphalt paved roads, a 2,500 square foot (sf) clubhouse building and associated amenity areas. Structural loading values for the buildings were not available as of the writing of this report; however, foundations for residential structures can generally be considered lightly loaded.

Two new access roads off of Dock Road are proposed for the development. One will be located approximately 200 feet east of Route 9W, while the other will be located about 750 feet east of Route 9W. Anticipated traffic loading was not provided.

4.0 SUBSURFACE INVESTIGATION

The subsurface investigation was performed in two phases. The first phase (performed between November 19 and 24, 2021) consisted of the drilling, sampling, and logging of eighteen (18) test borings, designated as B-1 through B-6, B-6A, B-6B, and B-7 through B-16, plus the excavation of one (1) test pit, designated as TP-1. These borings were drilled at the originally proposed locations of the clubhouse building, townhouses, and within the western proposed access road. Borings B-6A and B-6B were advanced due to relatively shallow auger refusal encountered within boring B-6, and were offset 5 feet southwest, and 5 feet southeast of boring B-6, respectively. A second phase (performed between February 12 and 29, 2024) consisted of the drilling, sampling, and logging of nine (9) test borings, designated as B-17 through B-25, and the performance of two infiltration tests, designated INF-1 and INF-2, installed adjacent to borings B-24 and B-23, respectively.

The borings and infiltration test holes were drilled by Core Down Drilling, LLC, using a track-mounted CME 55LC drill rig, equipped with an automatic hammer. Core Down Drilling also excavated the test pit to a depth of approximately 8 feet bgs, using a Kubota mini-excavator. Boring depths ranged from 9.5 feet, in boring B-9 (where auger and split spoon refusal occurred), to 32 feet in borings B-17 through B-21 and B-25. The two infiltration tests were drilled to, and performed at, a depth of 10 feet bgs. The borings were advanced using 3-¼ inch inside-diameter hollow-stem augers. Standard Penetration Testing (SPT) was conducted with a split-spoon sampler continuously to depths of 12 feet, and at maximum 5-foot intervals, thereafter. SPT sampling was performed in general accordance with the requirements of ASTM Standard D1586 *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*. Field SPT N-values were counted for each soil sample taken and are recorded on the boring logs.

When auger refusal occurred in borings B-6B and B-9, rock core samples were collected. An NQ (2-inch) double-tube core barrel, equipped with diamond-impregnated bit, was used to collect samples of the competent bedrock. Samples of the soil obtained during the investigation were retained in glass jars, while rock cores have been retained in wooden core boxes. The samples are currently stored at our material testing laboratory. The boreholes were backfilled with drill cuttings to match existing conditions.

All drilling, sampling, and logging of the borings and test pit were observed on a full-time basis by Tectonic representatives, working under the supervision of a Professional Engineer licensed in the State of New York. One of our representatives also performed the infiltration tests. Our representatives observed the subsurface investigation, classified soil and rock samples as they were recovered, collected representative samples for laboratory testing, and prepared logs of the encountered soil, rock and groundwater conditions. The materials encountered were classified in accordance with the Burmister Soil Classification System, and the Unified Soil Classification System (USCS) (ASTM D2488). Copies of the boring, test pit and infiltration test logs are included in Appendix I, and the boring, test pit and infiltration test locations are shown on the attached Boring, Test Pit and Infiltration Test Location Plan, Figure 1.

5.0 LABORATORY TESTING

Laboratory testing was conducted on samples selected to assist in identifying the soils' engineering properties, and to verify field classifications. The laboratory testing is summarized in Table 5.0.1, below.

Table 5.0.1 – Laboratory Testing

Lab Test Description	ASTM Standard	Quantity
Gradation of Cohesionless Soils (gravels, sands & non-plastic silts)	D6913	12
Hydrometer Analysis (gradation of coarse- and fine-grained soils)	D422	2
Atterberg Limits Determination (plasticity of fine-grained soils)	D4318	4

The laboratory test results have been incorporated into the descriptions of the subsurface conditions presented below, in the boring logs included in Appendix I, and are included in Appendix II of this report.

6.0 SUBSURFACE CONDITIONS

A review of USGS and New York State geologic maps indicates that the site is largely underlain by lacustrine deposits, largely consisting of a mix of sands and gravels that were originally deposited along the shoreline of glacial lake Albany, which extended along the Hudson River from approximately Glens Falls to Cornwall. In general, the subsurface conditions consist of, in turn, a thin veneer of topsoil-like material; native sands and gravels, with interbedded layers of silts and clays; and shale bedrock. The following subsection provides

generalized descriptions of the soil, rock, and groundwater conditions. More detailed descriptions are provided in the attached boring logs.

As noted above, an automatic hammer was used in the SPT sampling of the borings. Given that an automatic hammer imparts more energy into the split spoon sampler than a safety hammer (N_{60}), the standard hammer used for most geotechnical engineering calculations, an energy correction factor of 1.3 is applied to the field N-values to obtain the N_{60}-values, which are reported below.

6.1 Native Soils

Underlying a relatively thin veneer of topsoil-like material (up to 4 inches), native soils were encountered to depths of between 8.5 and 32 feet bgs in the borings and test pit. The native soils generally consist of brown coarse-to-fine sand, with widely varying amounts of coarse-to-fine gravel, and widely varying percentage of fines (silt and/or clay). Field SPT N-values within the native sand soils ranged from 3 blows per foot (bpf) to split spoon refusal, which is defined as less than 6 inches of sampler penetration for at least 50 blows of the 140-pound hammer. Excluding the sampler refusals (which typically occurred when a cobble, boulder or bedrock was encountered), the maximum field SPT N-value was 81 bpf, and the overall average is 18 bpf. When corrected, SPT N_{60}-values ranged from approximately 4 bpf to 105 bpf, with an average of 24 bpf. These N_{60}-values indicate that the native sands and gravels range from loose to very dense, but are typically in a medium dense condition. The predominantly sand soils at the site typically have a USCS designation of SM, and to a lesser extent SP and SP-SM.

Fine-grained soils, identified as clay & silt, silt & clay, clayey silt and non-plastic silt (see the Legend for Soil Description in Appendix I), with up to 35 percent fine sand, was encountered within boring B-14 from 0 and 12 feet bgs, in boring B-15 between 6 and 12 feet, below 30 feet in B-17, below 20 feet in borings B-18 and B-19, and in thin layers interbedded within the sands in several other borings. When combined with the ground surface elevations at the various borings, these predominantly fine-grained soils appear to exist in layers within the sands, with their upper elevations at approximately +50, +60, +75 and +140 feet. Field SPT N-values within the fine-grained soils ranged from 2 to 32 bpf, and when corrected, SPT N_{60}-values ranged from approximately 3 to 42 bpf, and averaged 18 bpf. These N_{60}-values indicate that the fine-grained soils range from very soft to hard, and typically have a

very stiff consistency. Laboratory tests performed on samples of the native silt & clay indicate plasticity indices between 17 and 29, and liquid limits between 30 and 34, indicating that the tested soil is a lean clay, with a USCS designation of CL. Other predominantly fine-grained soils at the site have USCS designations of ML and CL-ML.

Less frequent layers of variable colored coarse-to-fine gravel, with varying amounts of coarse-to-fine sand and fines were encountered near the termination depths of borings B-8, B-10, B-11, B-13, and B-14 and may indicate that those borings were approaching the underlying bedrock surface. However, similar layers of coarse-to-fine gravel were also encountered between the depths of 4 and 6 feet in boring B-16 and at various depths throughout boring B-25. It is also noted that all of the borings with soil that was dominated by gravel-sized particles were encountered within the western half of the site. The gravels typically have USCS designations of GP and GM.

6.2 Bedrock

Auger and sampler refusal, likely indicating the presence of bedrock, were encountered in borings B-6, B-6A, B-6B, B-8, B-9, B-10, B-11, B-16, and B-23, at depths ranging from approximately 3.5 feet bgs (in boring B-9) to 21.8 feet bgs (in boring B-11). When the bedrock depths are combined with the ground surface elevations at the borings, bedrock elevations range from +57 feet (in boring B-7) to +146.6 feet (in boring B-16).

Bedrock was core sampled within boring B-6B between 15 and 20 feet bgs, and within boring B-9 between 3.5 to 8.5 feet bgs. The recovered cores generally consisted of black-gray slightly weathered, slightly to highly fractured, medium-to-fine grained, medium hard shale. The rock quality designation (RQD) of the core samples ranged from approximately 40 to 77 percent, with core recoveries (REC) of approximately 80 percent. The RQDs indicate poor to good rock mass quality.

6.3 Groundwater

As indicated on the boring logs, saturated (wet) soil conditions were encountered within boring B-14 below approximately 2 feet bgs, in B-24 below 8 feet bgs, in B-15 below 10 feet bgs, in B-10 below 15 feet bgs, in B-17 and B-18 below 25 feet bgs, and in boring B-19 below 30 feet bgs. Borings B-10, B-14 and B-15 were located in the northwestern portion of the project site, while borings B-17, B-

18 and B-19 were located along the southern side of the site. It is also noted that all of these wet samples were either above or within fine grained soils; except for boring B-10, where the wet soil was encountered immediately above bedrock. Saturated soil conditions were not observed elsewhere on the site, indicating that the encountered groundwater was likely in a perched condition over the fine-grained soils or bedrock. It is noted that groundwater levels fluctuate seasonally and with changing weather conditions. Consequently, groundwater may be encountered at other depths at other times.

6.4 Infiltration Test Results

Infiltration tests INF-1 and INF-2 were advanced adjacent to borings B-24 and B-23, respectively, for use in the design of proposed stormwater management features. Each test was performed in accordance with NYSDEC requirements for infiltration testing. Stable infiltration rates were measured to range from 3.6 to 5.7 inches per hour (in/hr). It should be noted that standing water was observed at a depth of 8.5 feet bgs (EL = +67.5 feet) within the pipe for INF-1, when the infiltration test was performed, indicating that perched groundwater may have been encountered during the test. The results of the individual infiltration tests are provided on the attached Infiltration Test logs, included in Appendix I.

7.0 SEISMIC SITE COEFFICIENTS AND LIQUEFACTION POTENTIAL

Using the criteria outlined in the current edition of the New York State Building Code (Code), the subsurface soils underlying the proposed buildings should be considered Site Class D with maximum spectral response acceleration at short periods (S_{MS}) equal to 0.339g and at 1-second periods (S_{M1}) equal to 0.133g. Based on the procedures outlined in the Code, the corresponding five-percent damped design spectral response acceleration at short periods, S_{DS}, is equal to 0.226g, and at 1-second, S_{D1}, is equal to 0.089g.

Liquefaction of soils can be caused by strong vibratory motion due to earthquakes. Both research and historical data indicate that loose, granular soils saturated by a shallow groundwater table are most susceptible to liquefaction. Liquefaction occurs when an earthquake and associated ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid increase in pore-water pressure, causing the soil to behave as a fluid for short periods.

A procedure recommended by Youd et al (2001) was used in evaluating the liquefaction potential at the site. This method estimates the stresses likely to be induced by an earthquake and the stresses likely to initiate liquefaction using the SPT blow counts, the effective overburden pressure, and the peak horizontal ground acceleration that would be caused by the design seismic event. For this site location, the USGS, using their 2014 dynamic model, anticipates an earthquake moment magnitude of 5.56, producing a rock surface Peak Ground Acceleration (PGA) of 0.118g. Combining the rock surface PGA with a PGA factor of 1.56, for a Class D site, results in a design PGA of 0.185g.

The factors of safety against liquefaction were computed by the ratio of cyclic shear strength of the soil to the cyclic shear stress induced by the seismic event. The liquefaction analysis indicates that the subsurface soils have a factor of safety against liquefaction greater than the generally accepted minimum of 1, indicating that liquefaction is unlikely.

8.0 DISCUSSION AND CONCLUSIONS

The proposed project consists of various improvements throughout the site, including the construction of new townhouses, duplexes and single-family residential buildings, new access roads, drive aisles and parking areas, retaining walls, a clubhouse, and other structures. The results of the subsurface investigation indicate that the site is generally underlain by native soils, consisting of coarse-to-fine sand with varying amounts of coarse-to-fine gravel and fines (silt, silt & clay, etc.), and predominately fine-grained soils, with varying amounts of fine sand and gravel. The main geotechnical issues associated with the proposed construction are the high fines content native soils encountered at various elevations across the site, isolated locations of relatively shallow perched groundwater, and pockets of loose soils, within the footprint of the proposed buildings. In general, the soil conditions are favorable for the support of building foundations; however, some local remedial subgrade improvements are expected to be necessary.

As of the writing of this report, a proposed grading plan was not available, but based on the existing topography of the site, it is expected that fills and cuts will be required throughout portions of the site. It is Tectonic's understanding that every structure is proposed to have a full below-grade basement. However, we have assumed that there will not be significant re-grading in the areas where borings were performed, for the purposes of this report, and the buildings are assumed to bear at a depth of about 10 feet below existing site grades.

Based on the soil conditions observed, the existing soils are suitable for building support. However, loose pockets of soil may be encountered at foundation subgrade elevations at some locations. In particular, weak soils (loose to very loose sands and very soft to medium stiff clays) were encountered above a depth of 10 feet in borings B-2, B-6 and B-17, between 10 and 15 feet in borings B12 and B-15, and between 10 and 20 feet in boring B-14 (excluding potentially disturbed samples collected from 0 to 2 feet). If foundations were constructed to bear upon or within these soils, excessive settlement resulting in cracked foundations and basement walls could occur. As a consequence, some remedial removal and replacement may be necessary beneath some foundations to provide for stable bearing conditions, depending upon the final grading.

As noted above, bedrock was encountered in several borings that are mainly concentrated in the central portion of the site and near the western site entrance. The bedrock depths are typically great enough that it may be possible to construct most of the buildings without encountering bedrock, if the central portion of the site will not be significantly cut. However, bedrock was encountered at a depth of 3.5 feet (EL = 99.5 feet) in boring B-9 and 9.4 feet (El = 146.6 feet) in boring B-16. Therefore, bedrock will likely need to be excavated to construct buildings with basements near boring B-9, and it will probably be necessary to excavate some rock to construct the western site entrance, near boring B-16. Furthermore, if more than a few feet of cut is required around buildings near borings B-6, B-7, B-8 and B-10, bedrock might be encountered at or above their foundation subgrade elevations. Consequently, we recommend that a line item for rock removal be included in the bid documents and the project specifications should include a rock removal section. Finally, it is generally not recommended that foundations bear upon both soil and bedrock, because cracks can occur at the transition, and consequently, rock should be undercut by approximately 1 foot and replaced with structural fill wherever it is encountered at foundation bearing elevation.

Boring B-11 was originally advanced within the footprint of proposed access road, but the latest site plan shows the roadway in a different location. However, due to the similar conditions encountered within the upper soils throughout the site, as well within test pit TP-1, they can be used to provide a general description of pavement subgrade conditions for roads, drives and parking areas. In general, beneath a few inches of topsoil-like material, the likely pavement subgrade soil will be similar to that for foundations, consisting of coarse to fine sand, with widely varying percentages of gravel and fines. SPT N_{60}-values within the top 2 feet of soils range from 3 to 46 bpf, with an average of 17 bpf. These N_{60}-values indicate that likely pavement subgrades range from very loose to dense and are typically medium dense. Very loose near-surface soils were encountered in

borings B-2, B-14, B-17, B-21, B-23 and B-24. As indicated above, very loose or very soft subgrade soils may also be encountered in some cut areas. Furthermore, relatively soft, fine-grained soils were encountered near the ground surface in borings B-2 and B-14. As a consequence, standard flexible pavement sections can typically be constructed, but some subgrade remediation will likely be required where very loose conditions are encountered during construction. This may include remedial removal and replacement, or subgrade reinforcement or stabilization, with materials like geogrid or lime stabilization, respectively.

Wet soil samples were observed within borings B-14, B-15 and B-24, and standing groundwater was observed in infiltration test well INF-1 at the time of the test. These observations indicate evidence of groundwater shallower than anticipated foundation and basement depths. The shallowest potential groundwater depth (2 feet) occurred in B-14, in the northwestern portion of the project site. Shallow groundwater was not observed elsewhere on the site; therefore, it is likely that the observed groundwater and wet samples indicate perched conditions within, or immediately above, the finer-grained soils. Groundwater is generally not expected to affect construction of the proposed structures, depending on final design elevations, but perched groundwater might be encountered in some locations during construction, resulting in the need for temporary and permanent dewatering, such as foundation drains and slab under-drains in some buildings near these boring locations.

As of the writing of this report, no foundation plans were available. However, for the purposes of this report, it is assumed that the residential buildings will be relatively lightly loaded. Based on the anticipated building loads for structures of similar size, conventional shallow spread footings are feasible for building support. If encountered, it is recommended that any soft and unsuitable soils encountered within the zone of influence of the building foundations be undercut, and replaced with properly compacted, granular fill soils. All foundations should bear on either medium dense native soils or on controlled fill, where site grades are to be raised, in areas with unsuitable soils, or where bedrock should be undercut.

The on-site native soils are generally not suitable for use as structural fill beneath foundations, and as backfill against foundation and retaining walls, because their relatively high silt content (between 11 and 45 percent) will impede proper drainage. The native soil may be suitable for use as general fill placed beneath pavement sections, at depths greater than 3 feet below building foundations and at least 5 feet away from basement walls, or as fill in landscaped areas, provided it is free of trash, debris, roots, vegetation, peat, or other deleterious materials, and proper compaction can be achieved. The exception to this generality is that some

of the sands and gravels encountered in the upper portions of boring B-25 (drilled on the ridge that projects southward from the northern property line) may be suitable for use as structural fill. Consequently, it might be prudent to separate the soils excavated from the ridge and perform additional laboratory testing to determine if these soils will be suitable for use a structural fill, which should be used beneath foundations and as foundation backfill.

Due to the relatively high fines content of the on-site soils, they should be considered to be sensitive to disturbance, when exposed to water during construction. Therefore, it is critical that care be taken during foundation and pavement subgrade preparation to prevent undue wetting of the soils. Additionally, many of the native soils (particularly the silts and clays) are expected to have a relatively low permeability, and will be difficult to dewater. Given the existing site grading, we anticipate that the primary source of wetting within excavations and pavement subgrades will be perched groundwater or exposure to the elements, particularly rain. Grading of subgrades to shed water and to prevent ponding will also be critical to prevent disturbance of the existing soils. Both of these conditions may require subgrade remediation during the construction of foundations and new pavement sections, if adequate protection cannot be maintained. Subgrade disturbance can be minimized by using proper subgrade preparation techniques, such as described in Section 10 of this report. In addition, frost heave susceptibility should be considered for pavement subgrades. The pavement subgrades can be prepared as discussed in Section 10.2, to provide partial frost heave protection.

Other conclusions that can be drawn from the results of the investigation are as follows:

- Excavations into the native soils should be feasible utilizing conventional heavy-duty construction equipment; however, cobbles and boulders should be expected within the native soils.

- Excavation of bedrock is anticipated to require heavy-duty, excavator mounted hydraulic hammers, or ripping techniques. Chemical methods, or rock blasting may also be feasible; however, due to the limited areas of rock removal, these methods may not be necessary. If large boulders are encountered, they might need to be broken into workable pieces to facilitate removal.

- The on-site soils may be used to raise site grades in the proposed roadways, drive aisles and parking lots. However, due to the soils having relatively high fines contents, frost heave protection should be considered for both undisturbed native subgrades, particularly where near-surface fine-grained soils were encountered.

- The results of our liquefaction analysis indicate that the soils underlying the site are unlikely to liquefy.

9.0 RECOMMENDATIONS

The following sections include our geotechnical recommendations for design and construction of the proposed buildings, asphalt pavement sections, and basement and retaining walls. The recommendations are based on our understanding of the proposed construction, the results of our subsurface investigation, and our experience with similar projects in the general vicinity of the project site.

9.1 Building Foundations

The proposed buildings can be supported on traditional shallow spread footings and continuous wall footings that bear on medium dense or medium stiff native soils, or properly placed and compacted structural fill. Within the buildings that will bear on the native soils, any pockets or layers of loose, soft, yielding, or otherwise unsuitable soils encountered below the proposed bearing depth should be removed and replaced with compacted, structural fill. See Section 9, above, for locations where these remedial removals and replacements may be necessary. Based on the anticipated structural loading, spread and continuous wall footings can be designed for a maximum allowable soil bearing pressure of 2 tons per square foot (tsf). Section 10 of this report provides the subgrade preparation procedures necessary to achieve the recommended bearing capacity.

Using the above design criteria, total settlement of the proposed buildings is estimated to be up to 1-inch and differential settlements are estimated to be less than 0.5 inch. The differential settlement is estimated between columns and over a distance of about 30 feet along continuous footings. Continuous wall footings should have a minimum width of 2.0 feet and isolated spread footing should have a minimum width of 3.0 feet.

All exterior building footings should bear at least 4 feet below the outside grade, for frost protection. Interior foundations (within heated sections of buildings) should bear at least 1.5 feet below the finished floor elevation. Foundation subgrades should be prepared as recommended in Section 10.

9.2 Slab-On-Grade Floors

Slab-on-grade floors should be supported on a minimum 6-inch-thick layer of free draining ½ to ¾ inch crushed stone placed over the undisturbed native soil, or structural fill subgrades. Any loose or soft soils encountered below the slab-on-grade elevation should be removed and replaced with

structural fill prior to the placement of any crushed stone. All moisture-sensitive floor slabs should be constructed above a vapor barrier, consisting of a polyethylene membrane with a minimum thickness of fifteen (15) mils. A coefficient of friction of 0.3 should be used between the slab and the vapor barrier. If concrete is cast directly against competent native soils, structural fill or existing fill, a coefficient of friction of 0.40 can be used.

A subgrade modulus of 150 pounds per cubic inch (pci) is recommended for design of slab-on-grade floors bearing on 6 inches of crushed stone base, placed above the native soils, or structural fill. It is noted that some remedial removal and replacement of unsuitable (very loose or very soft) slab subgrade soils may also be necessary at some locations. The design should be in accordance with the latest edition of the American Concrete Institute (ACI 360). The subgrade modulus is suitable for estimating distributions of bearing pressure beneath the slab and for estimating bending moments and shears within the slab. It is not intended for calculating total or differential settlements.

9.3 Retaining and Below Grade Walls

Below grade building walls and retaining walls should be backfilled with structural fill placed in accordance with recommendations provided in Section 10 and should be designed in accordance with the following criteria:

Table 9.3.1 – Lateral Design Parameters		
Soil Parameter	Structural Fill	Native Soils
Angle of Internal Friction	34˚	30°
Active Earth Pressure Coefficient (Ka) [1,2]	0.28	0.33
Passive Earth Pressure Coefficient (Kp) [2,3]	3.54	3.00
At-Rest Earth Pressure Coefficient (Ko) [2,4]	0.44	0.50
Coefficient of Base Friction [5]	0.40	0.35
Unit Weight of Soil (pounds per cubic foot)	130	125

Notes:

1) Use only for freestanding walls, where movement of up to 0.0025 X height of wall is both possible and tolerable. Otherwise, use at-rest coefficient.
2) The coefficients provided assume a level backfill and vertical foundation walls. The coefficients should be re-evaluated for other conditions.
3) Reduce the passive pressure above a depth of 4 feet below exterior grade by half to account for frost disturbance.
4) Use for walls restrained against lateral movement.
5) Coefficient of base friction applies to mass concrete placed directly against material indicated.
6) The use of on-site soils as retaining wall backfill is <u>not</u> recommended, because the high fines content could compromise the ability of the backfill to drain and could subsequently compromise the future stability of the wall, if used.

Analysis of the global stability of retaining walls was outside the scope of this report, and therefore, should be investigated as part of the design of any retaining walls greater than 4 feet in total height. Additional loading due to temporary and permanent surcharges, such as earthquake, automobiles and construction traffic, should be added to the lateral loading exerted by the backfill. Loads due to supported structures should be applied in appropriate combinations with the lateral loads.

Footings for all concrete cast-in-place retaining structures should be designed to bear a minimum of 4 feet below the finished grade in front of the wall for frost protection or deeper as required to reach suitable bearing. The minimum depth for foundations for flexible walls, such a segmental or modular block walls, should be set by the wall designer. All footings should bear on medium dense to dense native soils, or upon compacted structural fill. Retaining wall subgrades should be prepared and protected as described in this report and should be approved by the observing geotechnical engineer. Allowable net bearing pressures should be as indicated above, for building foundations.
Foundation and retaining walls should be backfilled in accordance with Section 10.6 of this report. Placement and compaction of backfill should be observed and tested by a geotechnical engineer to monitor that proper compaction is being achieved.

Measures should be taken to reduce the potential for moisture buildup behind retaining walls. Drainage measures should include a zone of granular non-expansive soil backfill immediately adjacent to the walls and installation of footing drains. The drains should consist of a 12-inch-wide layer of crushed stone or clean gravel behind the wall with a collector pipe at the footing elevation, drained to the stormwater management system, or to a positive outlet. The recommended gradation for the drainage material is provided in Section 10. The stone or gravel should be separated from the natural soils or controlled fill by a permeable geotextile having an apparent opening size (AOS) equal to or finer than the number 70 US sieve. The zone of granular soil backfill should extend at least a distance horizontally from the wall equal to half the height of the wall. Grading of the surface of the backfill and the surrounding topography and pavement should provide positive drainage away from the walls.

9.4 Segmental and Modular Block Retaining Walls

Proposed retaining wall plans were not available as of the writing of this report. Based on a review of preliminary project documents, in is anticipated that some retaining walls may be constructed at various locations across the project site. Segmental and/or modular block retaining walls may be used at the site. We recommend that the subgrade preparation recommendations provided below are followed as well as the following:

- All segmental or modular block retaining walls should be designed by a Professional Engineer licensed in the State of New York who has demonstrated familiarity with the design of these types of walls.

- The walls should be designed based on an approved wall methodology and must include analyses to verify appropriate factors of safety with respect to external stability, internal stability, facing connections, global stability, bearing capacity, et cetera.

- The zone of reinforced soil (for segmental block walls) or a zone equal to at least one-half the wall height (for modular block walls) should be backfilled with structural fill meeting the gradation and compaction requirements of Section 10. If additional fill placement outside these zones is required, the on-site soils may be used, provided the requirements of Section 10 are met.

9.5 Groundwater and Foundation Drainage

Based on the results of our subsurface investigation, groundwater may affect the construction of the foundations of some buildings, particularly near the center and northwest corner of the site (see Section 8). Rainwater and surface water may also become trapped in excavations. If necessary, dewatering can be performed with sump pumps and should be performed to allow work to be performed in the dry. Any dewatering should prevent loosening or migration of the subgrade soils. The dewatering system, if necessary, should be designed by a New York State licensed Professional Engineer.

Damproofing should be installed on all below-grade (basement) walls where the outside grade is higher than the slab elevation. Furthermore, the soils encountered near the foundation bearing elevation contain fines. If the foundation walls are backfilled with clean granular soil, infiltrating surface water may become temporarily trapped against the walls. To avoid potential perched water from building-up, the designers should install foundation drains around the perimeter of each building to be constructed in areas where shallow groundwater was observed, and should consider the merits of installing foundation drains around all buildings.

Foundation drains should consist of a minimum 12-inch-wide drainage layer of crushed stone or clean gravel placed against the full-height of the foundation walls, with a collector pipe at the footing bottom. Alternatively, a geocomposite drainage board, such as TenCate's G100 drainage composite, could be used in lieu of the crushed stone drainage layer. It is recommended that the collector pipe be 4-inch diameter perforated PVC or corrugated HDPE pipe. The gradation specification for the drainage material is provided in Section 10 of this report. The crushed stone should be completely separated from the soil backfill by a permeable geotextile having an AOS equal to or finer than the number 70 U.S. Sieve, such as TenCate's Mirafi 140N.

In addition to perimeter foundation drains, the designers should prepare details for basement slab underdrains to be installed in all buildings where high groundwater has been encountered in nearby borings or may be encountered during construction. The underdrains should consist of a minimum of 1 cubic foot of crushed stone per linear foot of pipe, placed in trenches spanning below the slab. The underdrains should have a minimum spacing of 10 feet on-center and should be prepared in the same manner as described above for the footing drains. The underdrains should be connected to the footing drains and piped away from the building.

All roof drains or gutters should be directed away from the buildings. Grading of the surface of the backfill and the surrounding topography should provide positive drainage away from the basement walls. Construction documents should specify that foundation drains should be utilized and directed to an appropriate outlet.

9.6 Pavement Sections

It is our understanding that the proposed site improvements will include the construction of new asphalt paved access roads, drive aisles and parking areas. Tectonic recommends that the site be initially graded to the design subgrade elevations and the exposed subgrade prepared as recommended in Section 10 of this report.

It is noted that the on-site fine-grained soil and some of the granular soils with high fines-contents are susceptible to frost heaving, which will likely reduce the longevity of the pavement. Full protection against frost heave would require placement of granular fill to the estimated depth of frost penetration

(4 feet), but is not typically done, because it can be cost prohibitive. Therefore, it is recommended that partial frost heave protection be provided, instead, to improve the durability of the pavement section. It is recommended that in areas where native fine-grained soils are encountered at the subgrade elevation, those soils should be undercut to a minimum of one (1) foot below subgrade elevation; the exposed subgrade should then be proofrolled, as recommended in Section 10; a separation fabric with an AOS equal to the number 70 U.S. sieve should be placed above the subgrade; and a 1-foot layer of non-expansive select granular fill should be placed and compacted before the pavement section is placed.

In areas where grades are to be raised along the access road, drive aisles, or parking lots, granular native soils that have been cut from other areas of the site may be used as fill. Light duty pavement should only be placed in areas that will primarily be used by passenger vehicles, such as parking areas and driveways. Heavy duty pavement should be placed in areas where delivery, plow and trash trucks, or emergency vehicles, will travel.

Subgrade preparation and proofrolling should be performed in accordance with the recommendations provided in Section 10 of this report. For this report, the pavement design parameters were estimated by Tectonic for heavy-duty traffic. The heavy-duty section was based upon a California Bearing Ratio (CBR) of 5, daily traffic of 500 vehicles, with 25 percent heavy trucks. This CBR was selected based on the soils encountered on the site, and the compacted native and fill soils that will likely underlie the pavement. An assumed twenty (20) year design life was used for each pavement section. These assumptions should be revisited, if additional data indicates significantly different loading. We recommend that the pavement sections consist of the layer materials and thicknesses presented in Table 9.6.1.

Table 9.6.1: Asphalt Concrete Pavement Sections

Pavement Section Type	Recommended Section
Light Duty	1 ½ inches Top Course HMA (Items 402.095102 or 402.125102) 2 ½ inches Binder Course HMA (Item 402.195102 or 402.255902) 4 inches Type 2 Aggregate Subbase (Item 304.12)
Heavy Duty	1 ½ inches Top Course HMA (Items 402.095102 or 402.125102) 3 ½ inches Binder Course HMA (Item 402.195102 or 402.255902) 8 inches Type 2 Aggregate Subbase (Item 304.12)

Note:

1) All Item Numbers are indicated in New York State Department of Transportation Standard Specifications.

10.0 EARTHWORK CONSTRUCTION CRITERIA

The following sections present our recommendations regarding earthwork, excavations, and construction monitoring.

10.1 General Site Preparation

Initially, the site should be cleared and grubbed, then stripped of all existing topsoil, surface obstructions, boulders, vegetation, and debris. The clearing and grubbing should extend at least 5 feet beyond the planned site improvements. Debris and vegetation from the clearing operations should be removed from the site and disposed of at a legal recycling or disposal facility. All loose, soft, or unsuitable materials and subsurface obstructions should be removed from the building footprints and the zones of influence of the slabs-on-grade and foundations. The zone of influence is defined by 1:1 (horizontal to vertical) planes sloping downward and outward from the bottom edges of the slab or footing.

Existing utilities within the project limits (if any) should be re-routed around the foundations, or removed. The resulting excavations should be backfilled with structural fill in accordance with the procedures outlined below. Trench excavations should be properly benched to allow for adequate compaction.

10.2 Subgrade Preparation

All foundation, slab-on-grade, retaining wall, and pavement subgrades should be inspected by the geotechnical engineer prior to the placement of structural fill, select granular fill, pavement subbase material, or concrete. Based on the subsurface conditions, remedial removals of some loose/soft native soils from within the footprints of the buildings, retaining walls, paved areas and floor slabs may be required, depending on final site grading and the locations of structures. Any areas of the site that are to be cut should be lowered to the planned subgrade elevation, and the exposed native soils should be proofrolled to observe for potentially yielding soils. In proposed fill areas, the surface should be cleared and grubbed, and the subgrade should also be proofrolled prior to fill placement.

Foundation, slab-on-grade floor and pavement subgrades, and any surfaces to receive fill should be proofrolled under the observation of the project geotechnical engineer. Proofrolling should be accomplished by making a minimum of four (4) passes in perpendicular directions with a 10-ton roller or fully-loaded dump truck, in open areas, or a 1.5-ton trench roller, where access is confined. Proofrolling should not be performed on saturated soils or in areas having freestanding surface water, until they are dewatered and allowed to dry. Proofrolling soils that exceed the optimum moisture content may disturb the soils, resulting in more unfavorable conditions. Unsuitable materials or areas identified to be soft and yielding by the geotechnical engineer, based on visual inspection and observation of proofrolling operations, should be removed and replaced with compacted structural fill, select granular fill, or general fill (depending on the location).

10.3 Rock Excavation

Bedrock was encountered within borings B-6, B-6A, B-6B, B-9, B-10, B-16 and B-23. Depending on the final design bearing elevations of the buildings and roadways, bedrock excavation may be required. Excavation of rock should proceed in a manner that will minimize damage to underlying bedrock and nearby structures. Where feasible, rock excavation should be performed by ripping techniques, or with heavy-duty, excavator-mounted hydraulic hammers. However, ripping techniques may only be feasible through the upper few feet of bedrock. Rock removals should be conducted in a manner that will minimize ground vibrations near adjacent structures.

Blasting of rock may also be employed as a method of rock removal; a study will have to be performed to determine whether blasting is a cost-efficient method of rock removal, based on the quantity of rock removal that will be required. If used, blasting should be performed by a qualified contractor licensed and insured for use of explosives, and it should be performed in a manner that will minimize damage to underlying bedrock that will serve as foundation subgrades. Blasting should also be conducted in a manner that will minimize ground vibrations at adjacent structures, and also limit the amount of air over-blast pressure and fly rock.

A blast monitoring program should be implemented to control blasting through limitations on peak particle velocity and air over-blast (sound level) at adjacent structures. In addition, blasting mats should be utilized to minimize the hazard of fly-rock to adjacent structure, and to personnel on site. Final and temporary cuts in bedrock should be thoroughly scaled to remove any loose rock blocks.

Cushion blasting consists of performing the production blasting in such a manner so as to minimize disturbance to the final rock cut surface, and then preparing the final rock cut surface by performing a careful "trim" blast back to the final cut line. This cushion blast procedure incorporates the use of closely space drill holes no more than 2 or 3 feet apart along the final cut line to facilitate the development of a clean, minimally disturbed cut. The incorporation of this blasting technique will minimize the disturbance to the rock and provide the most stable face over the long term. We recommend that test blasts be performed to determine the optimum production and cushion blasting procedures.

If the bid documents will include separate line items for soil and rock excavation, we recommend that rock be defined in the specifications as follows:

> Rock is defined for payment purposes as indurated material and boulders over one (1) cubic yard in volume that cannot be broken or removed by mechanical equipment such as power shovels, scoops, excavators, or heavy-duty ripping equipment at least as powerful as a Caterpillar D9L with a Kelly Ripper KR400D-1 single shank ripper attachment, and without the use of explosives or drills. The classification does not include materials that can be removed by means other than drilling and blasting or drilling and wedging but which, for reasons of economy in excavating, the Contractor prefers to remove by drilling and blasting.

A monitoring program should be implemented to document and verify that the peak particle velocity is within an acceptable limit at structures within 100 feet of operating hydraulic hammers or within 300 feet of blasting. Pre-construction and post-construction building condition surveys of adjacent structures should also be performed performed to document existing conditions which may be aggravated by the proposed rock removal, and to aid in the defense of spurious damage claims.

10.4 Rock Subgrade Preparation

All foundation subgrades that are found to consist of weathered or competent bedrock should be undercut by approximately 12 inches and the undercut material should be replaced with lightly tamped concrete sand meeting the requirements of ASTM C33. This will allow the foundations to settle slightly and minimize differential settlement between foundations bearing above rock and those bearing upon soil. Note, no more than 14 inches of the lightly tamped sand should be placed between the footing bearing elevation and the undercut rock. If the subgrade is over-blasted or otherwise cut to greater depths, the specifications should require the contractor to either lower the foundations, or make up the difference with concrete or flowable fill, at no additional cost to the Owner.

10.5 Construction Dewatering and Protection of Subgrades

Approved soil subgrades should be protected from the effects of frost, construction traffic, perched groundwater, surface water and precipitation. The necessary protection should be provided as soon after approval by the geotechnical engineer as is practicable and should be maintained until coverage with compacted fill or concrete. It is recommended that temporary surface drainage measures be installed to divert runoff away from the proposed construction limits.

If dewatering is required, it should be performed in a manner that will prevent loosening or migration of the subgrade soils and performed to maintain the water level at least 1-foot below the deepest excavation. Given the relatively high fines content of some of the on-site soils, it is anticipated that sump pits and pumps may be suitable for dewatering. The operation of sumps directly in the footing excavations should not be allowed. Sump pits should be placed at least 1-foot outside of foundation excavations for every foot below the adjacent foundation subgrade elevation. The dewatering system should be designed by a New York State Licensed Professional Engineer, and it should be designed to ensure that dewatering does not result in any loss of soil.

As has been previously noted, most of the on-site soils contain relatively high percentages of fines, and they will soften and experience a reduction in load-carrying capacity when exposed to moisture and disturbed. They may also become unworkable if allowed to get wet. These soils are also frost susceptible and could become disturbed if allowed to freeze during construction. Additional excavation and material

removal may be required if subgrades are allowed to be exposed for long durations without fill or concrete placement. Additionally, construction traffic could also disturb the native soils.

If maintaining subgrade stabilization during periods of wet weather is a concern, crushed stone may be placed on footing and/or floor subgrades after excavation and proofrolling. The crushed stone should be clean ½ to ¾ inch gravel, stone, or recycled concrete, and should not exceed 6 inches in thickness.

10.6 Fill and Backfill Materials

Structural fill should be well-graded granular soil that generally meets the gradation requirements for New York State Department of Transportation (NYSDOT) Type 2 Aggregate Subbase (Item 304.12), and as follows:

Sieve Size	Percent Finer by Weight
2 Inch	100
¼ Inch	25 to 60
No. 40	5 to 40
No. 200	0 to 10

Based on the results of our subsurface investigation and laboratory testing, the on-site fine-grained soils and most of the on-site granular soils are not suitable for use as structural fill, due to their relatively high fines contents (up to 95 percent for the fine-grained soils and up to 45 percent for the granular soils). However, some suitable soils were encountered in boring B-25, on the ridge that projects southward from the northern property line (but only two samples were laboratory tested). Any soils that are proposed to be used as structural fill should be tested and approved by the geotechnical engineer prior to use.

Select granular fill, to be placed in undercut fine-grained subgrades for asphalt pavement sections, should be a well-graded durable granular material that meets the gradation requirements for Select Granular Fill (Item 203.07) as specified in the NYSDOT Standard Specifications and as follows:

Sieve Size	Percent Finer by Weight
4 inch	100
No. 40	0 - 70
No. 200	0 – 15

On-site soils that meet the above-requirements for select granular fill were encountered in borings B-11, B-12 and B-25. However, the laboratory testing was limited and further testing should be performed on the soils from these areas, if they are to be used as select granular fill.

On-site native soils that do not meet the above requirements for structural fill, or select granular fill, may be suitable for use as general fill in landscaped areas and beneath the various pavement sections. General fill may also be placed beneath the heavy duty and light duty pavement sections and at depths greater than 3 feet below foundation elevations, if there are any areas that will receive considerable amounts of fill placement. General fill should be predominantly granular soil (a mix of sand and gravel) free of particles larger than 8 inches in diameter (boulders), trash, debris, roots, vegetation, or other deleterious materials. It should be noted that use of soils containing moderately high silt contents (such as those encountered at the site) will likely cause construction delays during the winter months, following periods of wet weather, or if the material is wet when excavated. Furthermore, the predominantly fine-grained soils taken from cut areas should only be used in open landscaped areas, or be removed from the site. It is also noted that these soils can be susceptible to frost disturbance (heave, et cetera).

Crushed stone placed below slabs-on-grade, and as drainage materials in underdrains and behind foundation and retaining walls should be Underdrain Filter Type I materials (Item No. 605.0901) as specified in the NYSDOT Standard Specifications and as follows:

Sieve Size	Percent Finer by Weight
1 inch	100
1/2 inch	30 - 100
1/4 inch	0 - 30
No. 10	0 - 10
No. 20	0 – 5

Material meeting the specifications for ASTM C33, No. 57 stone may also be used as free draining stone.

General fill placed for re-grading of the site should be compacted to at least 90 percent of the maximum dry density, at near optimum moisture contents, as determined by the modified Proctor test (ASTM D1557). All general fill to be placed at depths greater than 3 feet beneath buildings and within 3 feet of pavement subgrades, all select granular fill to be placed beneath pavement sections, and all structural fill should be compacted to at least 95 percent of the maximum dry density, at near optimum moisture contents, as determined by ASTM D1557. The degree of compaction should be tested and documented by a geotechnical engineer for each lift of fill.

The lift thickness for the fill soils will vary depending on the type of compaction equipment used. All fill should be placed in uniform horizontal lifts. The loose lift thickness for should not exceeding 12 inches when using a 10-ton roller. Thinner lift thicknesses should be placed when compacted with lighter compaction equipment. For example, in confined areas, the loose lift thickness should be 4 inches or less and each lift should be compacted with sufficient passes of hand operated vibratory or impact compaction equipment. A geotechnical engineer with appropriate field and laboratory support should inspect all subgrades, approve materials for use as fill, and test all fill materials for compliance with the recommended compaction.

10.7 General Excavation and Shoring

Temporary excavation slopes should conform to the latest OSHA standards, including slopes permitted for specified heights and soil conditions encountered. The presence of perched water, or other deleterious materials could require flatter slopes or temporary excavation support (e.g., shoring and bracing). Excavation support may also be necessary in areas where sufficient distance to provide adequate benching of slopes is not available. The majority of the on-site soils meet the description for OSHA Class C soils; therefore, we anticipate that the on-site soils are not capable of holding a temporary slope (up to 20 feet tall) that is steeper than approximately 1.5:1 (horizontal to vertical).

Excavations into the native soil should be feasible using standard construction equipment (i.e. hydraulic excavators). Cobbles and boulders should be expected within the undisturbed native soils. Excavator-mounted hoe-rams may be required to reduce the size of large boulders, so that they may be excavated. Design of dewatering and excavation support should conform to the latest OSHA and other applicable agency requirements. Design of all excavation slopes greater than 4 feet deep and design of sheeting, shoring, and bracing should be performed by a New York State licensed Professional Engineer. Adequate dewatering or surface-water runoff control should be provided to avoid instability and caving of soils.

11.0 SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

Slope stability analyses were outside the scope of this report. The large cut slope along the northern property line is roughly 75 to 80 feet tall, and ranges from about 1.7H:1V to 1.9H:1V. The apparently natural slope on the south and east sides of the site ranges from about 60 to 70 feet high and has slope angles between 1H:1V and 1.5H:1V. Failure of either of these slopes could damage buildings, and failure of the southern slope could damage or block Dock Road. Failure of either slope could also potentially lead to injury or loss of life. Upon finalization of the site grading plan, Tectonic recommends that a supplemental subsurface investigation and slope stability analyses be performed that will be targeted at evaluating these two slopes, and any other slopes that could also be potentially hazardous. We further recommend that Tectonic be retained to review the project plans and specifications prior to completion of the bid documents.

12.0 CONSTRUCTION MONITORING

A geotechnical engineer familiar with the existing subsurface conditions and having the appropriate laboratory and field-testing support should be engaged by the owner to observe that all earthwork is performed in accordance with the project specifications and the recommendations provided in this report.

The following work should be performed under the observation of the geotechnical engineer:

- Proofrolling
- Remedial removal and replacement of subsurface obstructions and unsuitable soils
- Foundation, slab-on-grade, asphalt pavement, and fill subgrade preparation
- Placement and compaction of all fills
- Dewatering (if required)
- Pavement construction

All materials proposed for use as soil fill should be tested and approved prior to use or delivery to the site. Additionally, all fill materials should be tested as they are being placed to verify that the required compaction is achieved.

13.0 LIMITATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers and geologists practicing in this or similar situations. The interpretation of the field data is based on good judgment and experience. However, no matter how qualified the geotechnical engineer or detailed the investigation, subsurface conditions cannot always be predicted beyond the points of actual sampling and testing. No other warranty, expressed or implied, is made as to the professional advice included in this report. The recommendations contained in this report are intended for design purposes only. Contractors and others involved in the construction of this project are advised to make an independent assessment of the soil and groundwater conditions for the purpose of establishing quantities, schedules and construction techniques.

This report has been prepared for the exclusive use of SDL Marlboro, LLC, for the specific application to the proposed construction detailed in this report. We recommend that prior to construction; Tectonic Engineering Consultants, Geologists, and Land Surveyors D.P.C. reviews the project plans and specifications. It should be noted that upon review of those documents, some recommendations presented herein might be revised or modified. In the event that any changes in the design or location of the proposed structures are planned, Tectonic shall not consider the conclusions and recommendations contained in this report valid unless reviewed and verified in writing. It is further recommended that Tectonic be retained to provide construction monitoring and inspection services to ensure proper implementation of the recommendations contained herein, which would otherwise limit our professional liability.

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FIGURE I

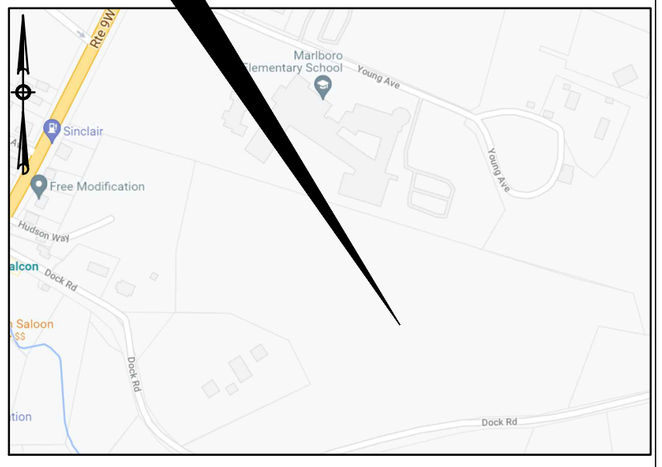
LEGEND

- B-25 — APPROXIMATE BORING LOCATION
- TP-1 — APPROXIMATE TEST PIT LOCATION
- INF-2 — APPROXIMATE INFILTRATION TEST LOCATION

NOTES

1. PLAN BASED ON A DRAWING PREPARED BY VHB ENGINEERING, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, PC, ENTITLED "LAYOUT AND MATERIALS PLAN" DRAWING NUMBER C2.01, DATED 05/12/2023.
2. BORING, TEST PIT, AND INFILTRATION TEST LOCATIONS WERE FIELD LOCATED BY TECTONIC AND SHOULD BE CONSIDERED APPROXIMATE.

SITE



0 1 2 3

ORIGINAL SIZE IN INCHES

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
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Newburgh, NY 12550
Phone: (845) 567-6656

BORING, TEST PIT, AND INFILTRATION TEST LOCATION PLAN

PROPOSED DOCK ROAD DEVELOPMENT
137 DOCK ROAD
HAMLET OF MARLBORO, ULSTER COUNTY, NEW YORK

Date	Work Order	Drawing No.	Rev
03/28/2024	11207.01	FIGURE 1	1
Scale 1" = 150'			

APPENDIX I

Tectonic

BORING No. B-1

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **40° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **78.0**
DATUM: **See Remarks**
DATE START: **11/19/21**
DATE FINISH: **11/19/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	12	3 5 7 9	S-1	12		M	SM	4" topsoil-like material Bwn f SAND, little Silt, trace organics (FILL)		
3	19	8 9 10 11	S-2	12		M	SP-SM	Bwn f SAND, little Silt (FILL)		
5	16	9 8 8 9	S-3	12		M	SP	Bwn f SAND, trace Silt		73.0
7	14	6 6 8 9	S-4	12		M	SP	Same		
9	17	6 7 10 10	S-5	6		M	SP	Same		
11	26	10 12 14 16	S-6	12		M	SM	Bwn f SAND, and Silt		68.0
16	31	11 14 17 16	S-7	12		M	SP-SM	Bwn f SAND, little Silt		63.0
21	30	13 14 16 18	S-8	12		M	SP-SM	Same		58.0
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

BORING No. B-2

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **40° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **80.0**
DATUM: **See Remarks**
DATE START: **11/19/21**
DATE FINISH: **11/19/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	6	1 3 3 4	S-1	14		M	ML	4" topsoil-like material Bwn SILT, some f Sand, trace f Gravel		
3	5	2 2 3 5	S-2	10		M	SM	Bwn SILT, and m-f Sand, little f Gravel		
5	4	1 2 2 2	S-3	0				No Recovery		75.0
7	5	3 3 2 3	S-4	0				No Recovery		
9	6	2 2 4 3	S-5	12		M	ML	Bwn CLAYEY SILT, trace f Sand, trace f Gravel		70.0
11	13	2 2 11 20	S-6	16		M	SM	Bwn f SAND, little Silt, trace f Gravel		
16	18	8 9 9 9	S-7	12		M	SP-SM	Bwn f SAND, little Silt		65.0
21	23	8 11 12 11	S-8	12		M	SP-SM	Same		60.0
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

BORING No. B-3

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **40° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **79.0**
DATUM: **See Remarks**
DATE START: **11/19/21**
DATE FINISH: **11/19/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	9	1 4 5 9	S-1	14		M	SM	2" topsoil-like material Bwn f SAND, and Silt, trace f Gravel		
3	20	6 9 11 13	S-2	12		M	SP-SM	Bwn f SAND, little Silt		
5	16	10 8 8 11	S-3	14		M	SM	Bwn-gy f SAND, some Silt, trace f Gravel		74.0
7	13	8 6 7 10	S-4	12		M	SP-SM	Bwn f SAND, little Silt		
9	17	7 8 9 9	S-5	12		M	SP-SM	Same		69.0
11	17	7 7 10 12	S-6	12		M	SP-SM	Same		
16	24	8 11 13 15	S-7	12		M	SM	Bwn f SAND, and Silt		64.0
20										59.0
21	26	11 12 14 14	S-8	12		M	SM	Bwn f SAND, some Silt		
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

BORING No. B-4

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **40° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **71.0**
DATUM: **See Remarks**
DATE START: **11/19/21**
DATE FINISH: **11/19/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	19	3 8 11 9	S-1	12		M	SM	2" topsoil-like material Bwn f SAND, some Silt, trace c-f Gravel		
3	19	7 9 10 10	S-2	12		M	SM	Bwn f SAND, little Silt		
5	18	8 9 9 9	S-3	12		M	SM	Same		66.0
7	17	7 8 9 11	S-4	16		M	SM	Same		
9	15	8 7 8 10	S-5	14		M	SM	Bwn f SAND, little Silt		61.0
11	25	8 11 14 11	S-6	12		M	SM	Same		
15										56.0
16	25	8 11 14 13	S-7	20		M	SM	Bwn f SAND, and Silt		
20										51.0
21	32	10 14 18 21	S-8			M	ML	Bwn SILT, and f Sand		
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-5

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Overcast** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **72.0**
DATUM: **See Remarks**
DATE START: **11/22/21**
DATE FINISH: **11/22/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × — WATER CONTENT % ⊗ — LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	ELEVATION (FT.)
1	8	1 4 4 6	S-1	12		M	SM	Bwn f SAND, some Silt	
3	15	5 6 9 9	S-2	12		M	SM	Bwn f SAND, and Silt	
5	17	8 9 8 11	S-3	20		M	SM ML	12" Bwn f SAND, and Silt 8" Bwn SILT, little f Sand	67.0
7	20	9 11 9 12	S-4	12		M	SM	Bwn f SAND, with occasional Silt partings	
9	22	8 11 11 13	S-5	16		M	SM	Bwn f SAND, with frequent Silt partings	62.0
11	24	10 12 12 15	S-6	16		M	SM ML	10" Bwn f SAND, and Silt 6" Bwn SILT, trace f Sand	
16	31	11 14 17 21	S-7	20		M	SM	Bwn f SAND, and Silt	57.0
21	23	6 12 11 12	S-8	20		M	SP-SM	Bwn f SAND, trace Silt	52.0
23								End of Boring at 22'	

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-6

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **12'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Overcast** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **73.0**
DATUM: **See Remarks**
DATE START: **11/22/21**
DATE FINISH: **11/22/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1-2	16	2 5 11 8	S-1	12		M	SM	Bwn f SAND, and c-f Gravel, little Silt		
3-4	6	4 3 3 3	S-2	14		M	SM	Bwn f SAND, little Silt, trace c-f Gravel		
5-6	6	2 2 4 3	S-3	5		M	SM	Bwn f SAND, little Silt, trace f Gravel		68.0
7-8	3	2 2 1 2	S-4	12		M	SM	Bwn f SAND, some Silt, trace f Gravel		
9-10	3	2 1 2 5	S-5	12		M	SM	Bwn f SAND, some Silt, little c-f Gravel		63.0
11	65+	5 15 50/1	S-6	12		M	SM	Bwn f SAND, some c-f Gravel, little Silt Spoon Refusal @ 11' 1" Auger refusal @ 12'		65
12								End of Boring at 12'		
15										58.0
20										53.0

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-6A

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **12'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Overcast** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **73.0**
DATUM: **See Remarks**
DATE START: **11/22/21**
DATE FINISH: **11/22/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓ — 1 2 3 4 5
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % — 10 20 30 40 50
● STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
5								Boring B-6A offset 5 feet southwest of boring B-6		68.0
								Augered to 12 feet bgs, grinding & chattering		
10										63.0
11								Auger refusal on apparent bedrock		
12								End of Boring at 12'		
15										58.0
20										53.0

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-6B

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **15'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | **2"** | **15** TO **20'**
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **73.0**
MON. WELL ☐ YES ☒ NO
DATUM: **See Remarks**
SCREEN DEPTH: **---** TO **---**
DATE START: **11/22/21**
WEATHER: **Overcast** TEMP: **45° F**
DATE FINISH: **11/22/21**
DEPTH TO ROCK: **15'**
*CHANGES IN STRATA ARE INFERRED

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1–4										
5										68.0
6–9								Boring B-6A offset 5 feet southeast of boring B-6 Augered to 15 feet bgs, grinding & chattering		
10										63.0
11–14										
15										58.0
16	3									
17	3									
18	3		C-1	48/60	76.6			Blk-gy, slightly weathered, slightly fractured, m-f grained, medium hard, SHALE, fractures 30 - 45 degrees from horizontal		
19	3									
20	3									53.0
20								End of Boring at 20'		
21–23										

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-7

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Overcast** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **73.0**
DATUM: **See Remarks**
DATE START: **11/22/21**
DATE FINISH: **11/22/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	11	4 4 7 6	S-1	14		M	SM	2" topsoil-like material Bwn f SAND, some c-f Gravel, some Silt		
3	11	6 5 6 6	S-2	12		M	SM	Bwn f SAND, and Silt		
5	16	6 7 9 15	S-3	18		M	SM	Same		68.0
7	14	6 7 7 9	S-4	14		M	ML	Bwn SILT, some f Sand		
9	19	7 9 10 12	S-5	14		M	SM	Bwn f SAND, and Silt		63.0
11	20	6 9 11 14	S-6	18		M	SM	Same		
15										58.0
16	21	10 10 11 14	S-7	20		M	SM ML	14" Bwn f SAND with occasional Silt partings 6" Bwn SILT, some f Sand		
20										53.0
21	29	10 13 16 21	S-8	16		M	SM	Bwn f SAND, and Silt		
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-8

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **10.5'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Overcast** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **87.0**
DATUM: **See Remarks**
DATE START: **11/22/21**
DATE FINISH: **11/22/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	35	5, 17, 18, 26	S-1	20		M	SM	Bwn m-f SAND, some f Gravel, little Silt, trace organics		
3	50	24, 24, 26, 22	S-2	18		M	SM	Bwn m-f SAND, some Silt, little c-f Gravel		
5	29	17, 14, 15, 14	S-3	20		M	SM	Same		82.0
7	55	15, 20, 35, 47	S-4	20		M	SM	Bwn m-f SAND, and Silt, some c-f Gravel		
9	92	43, 42, 50, 50/3	S-5	16		M	GP-GM	Bwn-blk c-f GRAVEL, and m-f Sand, little Silt (spoon refusal @ 9' 9")		92
10								Auger refusal @ 10.5'		77.0
								End of Boring at 10.5'		
15										72.0
20										67.0

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-9

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **3.5'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | **2"** | **3.5** TO **8.5'**
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **3.5'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **103.0**
DATUM: **See Remarks**
DATE START: **11/23/21**
DATE FINISH: **11/23/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	30	1 15 15 15	S-1	18		M	SM	Bwn m-f SAND, and Silt, little c-f Gravel		
2										
3	91+	23 31 60/4	S-2	12		M	SM	Bwn m-f SAND, and Silt, trace f Gravel		91
4										
5										98.0
6			C-1	48/60	40			Blk-gy, slightly weathered, moderately to highly fractured, m-f grained, medium hard, SHALE, fractures 30 - 45 degrees from horizontal		
7										
8										
9								End of Boring at 8.5'		
10										93.0
11										
12										
13										
14										
15										88.0
16										
17										
18										
19										
20										83.0
21										
22										
23										

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-10

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **16'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **101.0**
DATUM: **See Remarks**
DATE START: **11/23/21**
DATE FINISH: **11/23/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	30	12 14 16 16	S-1	14		M	SM	3" crushed stone surface Bwn m-f SAND, some Silt, little c-f Gravel		
3	21	12 10 11 12	S-2	20		M	SM	Bwn f SAND, little Silt		
5	19	10 10 9 11	S-3	12		M	SM	Bwn f SAND, some Silt		96.0
7	38	12 15 23 29	S-4	14		M	SM	Bwn f SAND, some Silt, trace c-f Gravel		
9	41	30 21 20 23	S-5	16		M	SM	Bwn m-f SAND, and c-f Gravel, little Silt		
11	36	16 16 20 16	S-6	14		M	GM	Bwn-blk c-f GRAVEL, and m-f Sand, little Silt		91.0
13								Auger grinding & chattering to 15'		
15	50+	50/6	S-7	6		W	SM	Bwn c-f SAND, some c-f Gravel, some Silt Spoon refusal @ 15' 6" Auger refusal @ 16'		86.0
								End of Boring at 16'		81.0

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-11

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **99.0**
DATUM: **See Remarks**
DATE START: **11/23/21**
DATE FINISH: **11/23/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1-2	17	13 8 9 8	S-1	14		M	SM	3" crushed stone surface Bwn m-f SAND, some Silt, some c-f Gravel		
3-4	16	7 6 10 13	S-2	12		M	SP-SM	Bwn f SAND, little Silt, trace c-f Gravel		
5-6	34	18 18 16 15	S-3	16		M	SP-SM	Bwn-gy c-f SAND, and c-f Gravel, little Silt		94.0
7-8	15	12 7 8 9	S-4	12		M	SM	Bwn f SAND, some Silt		
9-10	20	10 9 11 13	S-5	12		M	ML	Bwn SILT, and f Sand		89.0
11-12	25	10 10 15 14	S-6	12		M	ML	Same		
13-14										
15-16	31	15 17 14 11	S-7	12		M	SM	Bwn f SAND, and Silt		84.0
17-18										
19-20										79.0
21-22	81	30 34 47 50/3	S-8	24		M	SM	6" Same 18" Gy-bwn m-f SAND, and Silt, some c-f Gravel		81
23								End of Boring at 21.8'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

BORING No. B-12

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Ryan Villa**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **140.0**
DATUM: **See Remarks**
DATE START: **11/23/21**
DATE FINISH: **11/23/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	21	8 7 14 13	S-1	20		M	SM	3" topsoil-like material Bwn m-f SAND, and Silt, some c-f Gravel		
3	33	7 13 20 16	S-2	12		M	SM	Same		
5	19	10 11 8 8	S-3	12		M	SP-SM	Bwn c-f SAND, some c-f Gravel, little Silt		135.0
7	11	3 5 6 7	S-4	20		M	ML	Bwn SILT, and f Sand, trace Organics		
9	12	6 5 7 7	S-5	18		M	SM	Bwn f SAND, and Silt		
11	5	2 2 3 4	S-6	20		M	ML	Bwn SILT, and f Sand		130.0
13										
15										125.0
16	13	5 6 7 10	S-7	12		M	SM	Bwn f SAND, and Silt		
18										
20										120.0
21	37	8 17 20 20	S-8	14		M	SM GP	10" Same 4" Blk-gy c-f GRAVEL, little f Sand, trace Silt		
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-13

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Paul Gregory**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **142.0**
DATUM: **See Remarks**
DATE START: **11/24/21**
DATE FINISH: **11/24/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	ELEVATION (FT.)
1-2	16	3 8 8 8	S-1	12		M	SM	2" topsoil-like material Bwn m-f SAND, some c-f Gravel, some Silt	
3-4	10	6 6 4 6	S-2	16		M	SM	Bwn f SAND, and Silt, little f Gravel	
5-6	7	4 4 3 3	S-3	20		M	SM	Same	137.0
7-8	22	4 11 11 20	S-4	16		M	SM	Bwn c-f SAND, some c-f Gravel, some Silt	
9-10	24	11 12 12 10	S-5	16		M	SM	Same	132.0
11-12	27	9 12 15 15	S-6	16		M	SP-SM	Bwn c-f SAND, and c-f Gravel, trace Silt	
13-15									127.0
16-17	22	15 12 10 10	S-7	16		M	SP-SM	Bwn c-f SAND, some c-f Gravel, trace Silt	
18-20									122.0
21-22	21	14 10 11 10	S-8	6		M	GP	Gy c-f GRAVEL, trace f Sand, trace Silt	
23								End of Boring at 22'	

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-14

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **45° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Paul Gregory**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **142.0**
DATUM: **See Remarks**
DATE START: **11/24/21**
DATE FINISH: **11/24/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	2	WOH 1 1 2	S-1	18		M	CL	3" topsoil-like material Lgt bwn CLAY & SILT (PP=1.0 tsf)		
3	6	1 2 4 6	S-2	18		W	CL	Same (PP=1.5 tsf)		
5	12	5 5 7 7	S-3	22		W	CL	Lgt bwn CLAY & SILT (PP=2.0 tsf)		137.0
7	15	7 8 7 6	S-4	24		W	CL	Same (PP=2.0 tsf)		
9	8	3 3 5 5	S-5	18		W	CL	Lgt bwn CLAY & SILT, trace f Sand (PP=1.5 tsf)		132.0
11	7	2 3 4 4	S-6	22		W	CL	Gy-bwn CLAY & SILT, trace f Sand (PP= 1.0tsf)		
13										
15										127.0
16	7	2 3 4 6	S-7	22		W	CL	Bwn CLAYEY SILT, little f Sand		
18										
20										122.0
21	50	12 24 26 17	S-8	18		W	GP	Gy c-f GRAVEL, little c-f Sand, trace Silt		
22										
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-15

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **20'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
| | | |
| | | |

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **35° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Paul Gregory**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **144.0**
DATUM: **See Remarks**
DATE START: **11/24/21**
DATE FINISH: **11/24/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1		5						4" topsoil-like material		
1	13	7 6 3	S-1	18		M	SM	Bwn m-f SAND, some Silt, little c-f Gravel		
2										
3	10	4 5 5 8	S-2	18		M	SM	Bwn c-f SAND, and c-f Gravel, little Silt		
4										
5	15	6 9 6 3	S-3	14		M	SM	Bwn c-f SAND, and c-f Gravel, little Silt		139.0
6										
7	8	2 3 5 4	S-4	22		M	CL	Bwn CLAY & SILT, trace f Sand (PP= 3.0 tsf)		
8										
9	11	5 5 6 6	S-5	22		M	CL	Bwn CLAY & SILT, little f Sand (PP = 1.0 to 2.0 tsf)		
10										134.0
11	5	1 2 3 3	S-6	22		W	CL	Same (PP= 1.0tsf)		
12										
13										
14										
15										129.0
16	9	3 3 6 7	S-7	18		W	SM	Bwn f SAND, and Silt		
17										
18										
19										
20										124.0
21	24	3 14 10 16	S-8	16		W	SM	Bwn m-f SAND, some f Gravel, some Silt		
22										
23								End of Boring at 22'		

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-16

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **9.4'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **40° F**
DEPTH TO ROCK: **9.4'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Paul Gregory**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **156.0**
DATUM: **See Remarks**
DATE START: **11/24/21**
DATE FINISH: **11/24/21**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	15	6 9 6 6	S-1	18		M	SM	2" topsoil-like material Bwn c-f SAND, some Silt, little f Gravel		
3	16	5 6 10 13	S-2	12		M	SM	Bwn c-f SAND, and f Gravel, little Silt		
5	23	20 14 9 9	S-3	12		M	GM	Bwn c-f GRAVEL, and c-f Sand, little Silt		151.0
7	17	4 8 9 11	S-4	16		M	SM	Bwn c-f SAND, some f Gravel, little Silt		
9	74+	9 9 65/5	S-5	14		M	SM	Same Auger refusal @ 9.4'		74
10								End of Boring at 9.4'		146.0
15										141.0
20										136.0

REMARKS: Surface elevations are estimated based on a topographic survey by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated April 24, 2021.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No.	**11207.01**
PROJECT:	**Dock Hill Road**
LOCATION:	**Marlboro, NY**

BORING No. B-17

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**	GROUND WATER	DATE	TIME	DEPTH	INSPECTOR: **Drew Bugna**
CONTRACTOR: **Core Down Drilling LLC**					DRILLER: **Andrew Bellucci**
METHOD OF ADVANCING BORING / DIA. / DEPTH					SURFACE ELEVATION: **95.0**
POWER AUGER: **3 1/4"** **0** TO **30'**	MON. WELL ☐ YES ☒ NO				DATUM: **See Remarks**
ROT. DRILL: TO	SCREEN DEPTH: **---** TO **---**				DATE START: **2/12/24**
CASING: TO	WEATHER: **Overcast** TEMP: **30° F**				DATE FINISH: **2/12/24**
DIAMOND CORE: TO	DEPTH TO ROCK: **Not Encountered'**				
CME 55 Track Rig with Automatic Hammer	*CHANGES IN STRATA ARE INFERRED				

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5

PLASTIC LIMIT % × — WATER CONTENT % ⊗ — LIQUID LIMIT % △ 10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	7	1 3 4 5	S-1	5		M	SM	3" Topsoil-like material Bwn-lgt bwn m-f SAND, some Silt, trace tree roots		
3	10	4 5 5 4	S-2	5		M	SM	Lgt bwn m-f SAND, and Silt, trace c-f Gravel		
5	7	2 3 4 4	S-3	12		M	SM	Lgt bwn m-f SAND, some Silt		90.0
7	12	6 5 7 6	S-4	16		M	SM	Same		
9	11	6 5 6 6	S-5	24		M	SM	Same		
11	14	7 7 7 7	S-6	22		M	SM	Tn f SAND, some Silt, trace f Gravel		85.0
15										80.0
16	15	6 7 8 6	S-7	20		M	SM	Lgt Bwn m-f SAND, and Silt		
20										75.0
21	13	5 6 7 9	S-8	23		M	SM	Same		
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-17

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										70.0
26	15	8 7 8 7	S-9	19		W	SM-ML	Bwn m-f SAND, and Silt, with occasional Clay partings		
27										
28										
29										
30										65.0
31	16	6 8 8 11	S-10	22		W	CL-ML	Bwn CLAYEY SILT, little m-f Sand (in seams and partings) (PP=3.0 tsf)		
32										
33								End of Boring at 32'		
34										
35										60.0
36										
37										
38										
39										
40										55.0
41										
42										
43										
44										
45										50.0
46										
47										
48										
49										
50										45.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-18

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **30'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH
| | | |
| | | |

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Overcast** TEMP: **36° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Drew Bugna**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **72.0**
DATUM: **See Remarks**
DATE START: **2/12/24**
DATE FINISH: **2/12/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
0								4" Topsoil-like material		
1	9	2 3 6 6	S-1	15		M	SM	Bwn m-f SAND, and Silt, little c-f Gravel		
2										
3	12	6 6 6 7	S-2	16		M	SM	Bwn-tn m-f SAND, some Silt		
4										
5	11	6 5 6 6	S-3	15		M	SM	Same		67.0
6										
7	13	6 6 7 5	S-4	18		M	SM	Bwn m-f SAND, some Silt		
8										
9	12	5 5 7 6	S-5	24		M	SM	Same		
10										62.0
11	14	7 6 8 7	S-6	19		M	SM	Bwn m-f SAND, and Silt with occasional Clay partings		
12										
13										
14										
15										57.0
16	16	5 8 8 9	S-7	16		M	SM	Bwn m-f SAND, little Silt, with trace partings		
17										
18										
19										
20										52.0
21	9	4 3 6 3	S-8	19		M	CL	Bwn SILT & CLAY, with seams and layers of m-f Sand		
22										
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-18

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										47.0
26	14	8 7 7 10	S-9	14		W	CL	Same, lgt bwn		
27										
28										
29										
30										42.0
31	26	9 12 14 14	S-10	15		W	SM	Gy-bwn m-f SAND, little Silt		
32								End of Boring at 32'		
33										
34										
35										37.0
36										
37										
38										
39										
40										32.0
41										
42										
43										
44										
45										27.0
46										
47										
48										
49										
50										22.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-19

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Overcast** TEMP: **40° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Drew Bugna**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **70.0**
DATUM: **See Remarks**
DATE START: **2/12/24**
DATE FINISH: **2/12/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % ✕ WATER CONTENT % ⊗ LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
0								2" Topsoil-like material		
1	9	1 4 5 5	S-1	14		M	SM	Bwn-or m-f SAND, little Silt, trace tree roots		
2										
3	12	5 5 7 5	S-2	17		M	SM	Bwn-tn m-f SAND, little Silt		
4										
5	10	4 5 5 5	S-3	13		M	SM	Same		65.0
6										
7	11	6 6 5 7	S-4	22		M	SM	Same		
8										
9	10	5 4 6 5	S-5	14		M	SM	Bwn m-f SAND, little Silt		
10										60.0
11	12	7 6 6 7	S-6	18		M	SP-SM	Bwn m-f SAND, with occasional Silt partings		
12										
13										
14										
15										55.0
16	16	8 8 8 8	S-7	14		M	SP	Bwn-gy m-f SAND, trace Silt		
17										
18										
19										
20										50.0
21	15	8 8 7 9	S-8	24		M	CL	Bwn SILT & CLAY, with seams of m-f Sand, and occasional Clay partings (PP=4.5 tsf)		
22										
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**

PROJECT: **Dock Hill Road**

LOCATION: **Marlboro, NY**

BORING No. B-19

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**

CONTRACTOR: **Core Down Drilling LLC**

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										45.0
26	18	4 7 11 9	S-9	19		M	CL	Same		
27										
28										
29										
30										40.0
31	18	6 8 10 17	S-10	18		W	CL	Same		
32										
33								End of Boring at 32'		
34										
35										35.0
36										
37										
38										
39										
40										30.0
41										
42										
43										
44										
45										25.0
46										
47										
48										
49										
50										20.0

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-20

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **30'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **46° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **81.0**
DATUM: **See Remarks**
DATE START: **2/27/24**
DATE FINISH: **2/27/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % ✕ WATER CONTENT % ⊗ LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLE NUMBER	RECOV. LENGTH (IN.)	RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
0								3" Topsoil-like material		
1	10	1 3 7 6	S-1	10		M	SM	Tn c-f SAND, some c-f Gravel, little Silt		
2										
3	14	6 7 7 6	S-2	17		M	SP	Tn c-f SAND, little c-f Gravel, trace Silt		
4										
5	12	4 6 6 7	S-3	16		M	SM	Tn c-f SAND, little Silt		76.0
6										
7	12	6 6 6 5	S-4	16		M	SM	Same		
8										
9	11	4 5 6 5	S-5	20		M	SM	Same		
10										71.0
11	15	6 7 8 8	S-6	20		M	SM	Same		
12										
13										
14										
15										66.0
16	16	9 7 9 8	S-7	21		M	SM	Tn c-f SAND, little Silt		
17										
18										
19										
20										61.0
21	15	4 7 8 9	S-8	18		M	SM	Tn-bwn c-f SAND, some Silt		
22										
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-20

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										56.0
26	23	8 10 13 13	S-9			M	SM	Tn c-f SAND, little Silt		
27										
28										
29										
30										51.0
31	21	9 7 14 11	S-10	20		M	SM	Tn c-f SAND, little Silt		
32								End of Boring at 32'		
33										
34										
35										46.0
36										
37										
38										
39										
40										41.0
41										
42										
43										
44										
45										36.0
46										
47										
48										
49										
50										31.0

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

BORING No. B-21

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**
SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **48° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **84.0**
DATUM: **See Remarks**
DATE START: **2/27/24**
DATE FINISH: **2/27/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % ⊗ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1-2	5	2 2 3 5	S-1	14		M	SM	Tn c-f SAND, some Silt, trace c-f Gravel		
3-4	11	4 5 6 6	S-2	18		M	SM	Tn c-f SAND, and Silt		
5-6	13	5 5 8 7	S-3	14		M	SM	Tn c-f SAND, some Silt		79.0
7-8	15	6 7 8 6	S-4	18		M	SM	Tn-bwn c-f SAND, and Silt		
9-10	14	5 6 8 9	S-5	17		M	SM	Tn-bwn c-f SAND, and Silt		74.0
11-12	20	10 10 10 8	S-6	16		M	CL	Lgt Bwn SILT & CLAY, trace f Sand (frequently spaced seams)		
13-14										
15-16	21	5 9 12 11	S-7	16		M	SM	Tn-bwn c-f SAND, some Silt		69.0
17-18										
19-20										64.0
21-22	19	6 8 11 11	S-8	22		M	SM	Same		
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**

PROJECT: **Dock Hill Road**

LOCATION: **Marlboro, NY**

BORING No. B-21

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**

CONTRACTOR: **Core Down Drilling LLC**

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										59.0
26	23	7 11 12 13	S-9	24		M	SM	Same		
27										
28										
29										
30										54.0
31	19	7 8 11 11	S-10	24		M	SM	Tn-bwn c-f SAND, and Silt		
32								End of Boring at 32'		
33										
34										
35										49.0
36										
37										
38										
39										
40										44.0
41										
42										
43										
44										
45										39.0
46										
47										
48										
49										
50										34.0

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %
10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-22

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **30'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Clear** TEMP: **57° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **85.0**
DATUM: **See Remarks**
DATE START: **2/27/24**
DATE FINISH: **2/27/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ◓
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ●
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1		1						3" Topsoil-like material		
2	8	2 6 7	S-1	14		M	SM	Tn-bwn c-f SAND, some Silt, little c-f Gravel, trace roots		
3	12	6 6 6 8	S-2	22		M	ML	Bwn SILT, and c-f Sand		
4										
5	12	3 5 7 9	S-3	15		M	SM	Tn-bwn c-f SAND, and Silt		80.0
6										
7	16	7 7 9 8	S-4	19		M	SM	Same		
8										
9	15	6 6 9 8	S-5	20		M	SM	Tn-bwn c-f SAND, some Silt		
10										75.0
11	18	7 8 10 9	S-6	16		M		Tn c-f SAND, little Silt		
12										
13										
14										
15										70.0
16	18	6 8 10 10	S-7	18		M	SM	Tn-bwn c-f SAND, some Silt		
17										
18										
19										
20										65.0
21	25	4 10 15 14	S-8	24		M	ML	Lgt bwn SILT & CLAY, and c-f Sand (in interbedded layers)		
22										
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-22

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										60.0
26	22	7 10 12 13	S-9	18		M	SM	Tn c-f SAND, and Silt		
27										
28										
29										
30										55.0
31	24	8 12 12 14	S-10	22		M	SM	Tn c-f SAND, little Silt		
32								End of Boring at 32'		
33										
34										
35										50.0
36										
37										
38										
39										
40										45.0
41										
42										
43										
44										
45										40.0
46										
47										
48										
49										
50										35.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-23

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **15'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: --- TO ---
WEATHER: **Rain** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **81.0**
DATUM: **See Remarks**
DATE START: **2/28/24**
DATE FINISH: **2/28/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT)
1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT %
10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.)
10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV.: LENGTH (IN.)	RECOV.: RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	5	1 2 3 3	S-1	8		M	SM	Bwn c-f SAND, little Gravel, little Silt, trace roots		
3	14	4 6 8 9	S-2	17		M	SM	Bwn c-f SAND, little Gravel, little Silt		
5	26	6 11 15 11	S-3	24		M	SM	Bwn c-f SAND, some Silt, little c-f Gravel, trace roots		76.0
7	24	11 11 13 14	S-4	16		M	SM	Bwn c-f SAND, some Silt, little m-f Gravel		
9	19	6 9 10 11	S-5	17		M	SM	Bwn c-f SAND, and Silt, little c-f Gravel		
10										71.0
11	26	9 13 13 16	S-6	24		M	CL	Bwn CLAYEY SILT, trace f Sand		
15	50+	8 50/0	S-7	6		M	CL	Same (Auger refusal encountered at 15.5')		66.0
								End of Boring at 15.5'		
20										61.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-24

SHEET No. 1 of 1

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **15'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Rain** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **76.0**
DATUM: **See Remarks**
DATE START: **2/28/24**
DATE FINISH: **2/28/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	4	2 1 3 5	S-1	10		M	SM	Tn-bwn c-f SAND, some c Gravel, some Silt, trace roots		
3	15	4 6 9 9	S-2	14		M	SM	Tn-bwn c-f SAND, and Silt		
5	15	6 6 9 9	S-3	10		M	SM	Tn-bwn c-f SAND, some c Gravel, some Silt, trace roots		71.0
7	20	6 8 12 10	S-4	16		M	SM	Tn-bwn c-f SAND, and Silt		
9	19	6 9 10 14	S-5	22		W	SM	Tn c-f SAND, little Silt		
10										66.0
11	19	4 9 10 10	S-6	20		W	SM	Tn m-f SAND, some Silt, trace f Gravel		
15										61.0
16	18	6 7 11 10	S-7			W	CL-ML	Bwn CLAYEY SILT, some c-f Sand		
17								End of Boring at 17'		
20										56.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-25

SHEET No. 1 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**
METHOD OF ADVANCING BORING | DIA. | DEPTH
POWER AUGER: | **3 1/4"** | **0** TO **30'**
ROT. DRILL: | | TO
CASING: | | TO
DIAMOND CORE: | | TO
CME 55 Track Rig with Automatic Hammer

GROUND WATER | DATE | TIME | DEPTH

MON. WELL ☐ YES ☒ NO
SCREEN DEPTH: **---** TO **---**
WEATHER: **Rain** TEMP: **50° F**
DEPTH TO ROCK: **Not Encountered'**
*CHANGES IN STRATA ARE INFERRED

INSPECTOR: **Roland Lipscomb**
DRILLER: **Andrew Bellucci**
SURFACE ELEVATION: **165.0**
DATUM: **See Remarks**
DATE START: **2/28/24**
DATE FINISH: **2/28/24**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) ● 1 2 3 4 5
PLASTIC LIMIT % × | WATER CONTENT % ⊗ | LIQUID LIMIT % △ 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) ● 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	RECOV. LENGTH (IN.)	RECOV. RQD (%)	MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
1	12	WOH, 5, 7, 9	S-1	18		M	GM	Rd-bwn c-f GRAVEL, and c-f Sand, little Silt, trace roots		
3	30	9, 12, 18, 18	S-2	14		M	GM	Gy c-f GRAVEL, and c-f Sand, little Silt		
5	14	13, 8, 6, 9	S-3	18		M	SM	Tn-bwn c-f SAND, some c-f Gravel, some Silt		160.0
7	16	12, 11, 5, 4	S-4	13		M	GM	Tn c-f GRAVEL, and Sand, little Silt		
9	12	3, 6, 6, 8	S-5	15		M	SM	Tn c-f SAND, little Silt, trace f Gravel		155.0
11	25	10, 12, 13, 12	S-6	13		M	GW-GM	Tn-gy c-f GRAVEL, and c-f Sand, trace Silt		
13										
15										150.0
16	13	6, 7, 6, 11	S-7	18		M	SM	Tn-bwn c-f SAND, some Silt		
18										
20										145.0
21	16	8, 7, 9, 11	S-8	14		M	SM	Tn c-f SAND, some c-f Gravel, little Silt		
23										

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

BORING LOG 11207.01.GPJ TECTONIC ENG.GDT 3/29/24

Tectonic

PROJECT No. **11207.01**
PROJECT: **Dock Hill Road**
LOCATION: **Marlboro, NY**

BORING No. B-25

SHEET No. 2 of 2

CLIENT: **SDL Marlboro LLC**
CONTRACTOR: **Core Down Drilling LLC**

UNCONFINED COMPRESS. STRENGTH (TONS/FT) 1 2 3 4 5
PLASTIC LIMIT % | WATER CONTENT % | LIQUID LIMIT % 10 20 30 40 50
STANDARD PENETRATION (BLOWS/FT.) 10 20 30 40 50

DEPTH (FT.)	N OR MIN./FT.	PENETRATION RESISTANCE (BL/6 IN.)	SAMPLES: SAMPLE NUMBER	SAMPLES: RECOV. LENGTH (IN.)	SAMPLES: RECOV. RQD (%)	SAMPLES: MOISTURE	UNIFIED SOIL CLASS.	DESCRIPTION OF MATERIAL	LITHOLOGY*	ELEVATION (FT.)
24										
25										140.0
26	18	10 8 10 8	S-9	17		M	SM	Same		
27										
28										
29										
30										135.0
31	20	9 10 10 9	S-10	15		M	SP	Gy c-f Sand, and m-f Gravel, trace Silt		
32								End of Boring at 32'		
33										
34										
35										130.0
36										
37										
38										
39										
40										125.0
41										
42										
43										
44										
45										120.0
46										
47										
48										
49										
50										115.0

REMARKS: Surface elevations are estimated based on a Layout and Materials Plan, by VHB Engineering, Surveying, Landscape Architecture and Geology, PC, dated May 12, 2023.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

LEGEND FOR SOIL DESCRIPTION

COARSE GRAINED SOIL (Coarser then No. 200 Sieve)

DESCRIPTIVE TERM & GRAIN SIZE

TERM	SAND					GRAVEL
coarse - c	No.	4	Sieve to No.	10	Sieve	3" to 3/4"
medium - m	No.	10	Sieve to No.	40	Sieve	3/4" to 3/16"
fine - f	No,	40	Sieve to No.	200	Sieve	

COBBLES 3" to 10"

BOULDERS 10" +

GRADATION DESIGNATIONS	PROPORTIONS OF COMPONENT
fine, f	Less than 10% coarse to medium
medium to fine, m-f	Less than 10% coarse
medium, m	Less than 10% coarse and fine
coarse to medium, c-m	Less than 10% fine
coarse, c	Less than 10% medium and fine
coarse to fine, c-f	All greater than 10%

FINE GRAINED SOIL (Finer than No. 200 Sieve)

DESCRIPTION	PLASTICITY INDEX	PLASTICITY
Silt	0 - 1	none
Clayey Silt	2 - 5	slight
Silt & Clay	6 - 10	low
Clay & Silt	11 - 20	medium
Silty Clay	21 - 40	high
Clay	greater than 40	very high

PROPORTION

DESCRIPTIVE TERM	PERCENT OF SAMPLE WEIGHT
trace	1 - 10
little	10 - 20
some	20 - 35
and	35 - 50

The primary component is fully capitalized if >50% of sample

COLOR

Blue - blue	Gy - gray	Wh - white
Blk - black	Or - orange	Yl - yellow
Bwn - brown	Rd - red	Lgt - light
Gn - green	Tn - tan	Dk - dark

SAMPLE NOTATION

S - Split Spoon Soil Sample
U - Undisturbed Tube Sample
C - Core Sample
B - Bulk Soil Sample
NR - No Recovery of Sample

WOC - Weight of Casing
WOR - Weight of Rods
WOH - Weight of Hammer
PPR - Compressive Strength based on Pocket Penetrometer
TV - Shear Strength (tsf) based on Torvane

ADDITIONAL CLASSIFICATIONS

New York City Building Code soil classifications are given in parentheses at the end of each description of material, if applicable. See sections 1804.2 of the 2008 Building Code for further details.

Tectonic	W.O. No. 11207.01	Date: 11/24/2021	TEST PIT
	Project: Dock Road Development		TP- 1
(800) 829-6531	Location: Malboro, NY		

Client: SDL Malboro LLC	Depth to Seepage: NE	Inspector: P. Gregory	
Contractor: Core Down Drilling	Depth to Groundwater: NE	Surface Elevation: +97 ft	
Equipment: Kubota Excavator	Depth to Bedrock: NE	Datum:	

SAMPLES		Unified Soil Classification	DESCRIPTION OF MATERIAL	Strata Change (ft.)	REMARKS
Sample No.	Moisture				
			6" topsoil-like material	-0.5	
BS-1	M	SM	Bwn m-f SAND, some Silt, trace f Gravel	-8.0	
			End Test Pit at 8'		

PARTICLE SIZE		PROPORTION (exclusive of boulders & cobbles)	PROPORTION (boulders & cobbles)		MOISTURE
Boulder: 10"(+)	Sand: No.200 Sieve-3/16"	trace: 0-10%	sparse:	0-10%	D: dry
Cobble: 3-10"	Silt/Clay: No.200 Sieve (-)	little: 10-20%	few:	10-35%	M: moist
Gravel: 3/16"-3"		some: 20-35%	many:	35-65%	W: wet
		and: 35-50%			

Tectonic	W.O. No. 11207.01	Date: 11/24/2021	TEST PIT TP- 1
(800) 829-6531	Project: Dock Road Development		
	Location: Malboro, NY		

Client: SDL Malboro LLC	Depth to Seepage: NE	Inspector: P. Gregory
Contractor: Core Down Drilling	Depth to Groundwater: NE	Surface Elevation: +97 ft
Equipment: Kubota Excavator	Depth to Bedrock: NE	Datum:

SAMPLES		Unified Soil Classification	DESCRIPTION OF MATERIAL	Strata Change (ft.)	REMARKS
Sample No.	Moisture				

PARTICLE SIZE		PROPORTION (exclusive of boulders & cobbles)	PROPORTION (boulders & cobbles)		MOISTURE
Boulder: 10"(+)	Sand: No.200 Sieve-3/16"	trace: 0-10%	sparse:	0-10%	D: dry
Cobble: 3-10"	Silt/Clay: No.200 Sieve (-)	little: 10-20%	few:	10-35%	M: moist
Gravel: 3/16"-3"		some: 20-35%	many:	35-65%	W: wet
		and: 35-50%			

Tectonic

70 Pleasant Hill Rd
Mountainville, NY 10953
(845) 534-5959

NYSDEC INFILTRATION TEST DATA

W.O. No.: 11207.01 Lot No.: Date: 2/29/2024

Client: SDL Marlboro LLC

Project: Dock Road Development

Project Engineer: Ryan Villa

Inspector: Roland Lipscomb

Percolation Test Location: (see reverse) See the Boring, Test Pit and Infiltration Test Location Plan (Figure 1)

Weather Conditions: Partly Cloudy Temperature: 31˚ F

TEST HOLE No.	TEST HOLE DEPTH	TEST HOLE DIA.		INFILTRATION TEST RUNS Drop in water levels (inches) at 1 hour intervals						STABLE RATE (in/hr)
INF-1 (B-24)	10'	4"		Start	5.4	0.0	0.0	3.6		3.6
			TIME	10:13:00	1 hour	2 hours	3 hours	4 hours		

COMMENTS:
Presoak completed at 8:10 on 2/28/24.
Water level measured at 8.5' at 10:00 on 2/29/24, so 6" of water added to reach 24".
Stable rate based on last 1-hour drop. (Average rate = 2.25 in/hr)

INF-2 (B-23)	10'	4"		Start	6.0	1.2	9.6	6.0		5.7
			TIME	10:08:00	1 hour	2 hours	3 hours	4 hours		

COMMENTS:
Presoak completed at 10:00 on 2/28/24.
No water in pipe at 9:55 on 2/29/24. 24" of water added to start infiltration test.
Stable rate based on the average of the four 1-hour drops.

Sketch Requirements

(To Be Completed On Back of Sheet)

Indicate North

Indicate Nearest Roadway

Indicate Property Lines

Indicate Off-Sets from 2 Adjacent Property Lines

APPENDIX II

Boring #	Depth (Ft.)	Sample #	Specimen Description % Gravel : % Sand : % Fines	USCS	Water Content	Max. Dry Density (pcf)	Optimum W. C. (%)	Liquid Limit	Plastic Limit	Source of Material
B-10	2.0	S-2	Bwn f SAND, little Silt 0.0 : 80.1 : 19.9		7					Boring
B-11	4.0	S-3	Bwn-Gy c-f Sand, and c-f Gravel, little Silt 44.1 : 45.1 : 10.9		3					Boring
B-12	4.0	S-3	Bwn c-f SAND, some c-f Gravel, little Silt 33.4 : 55.4 : 11.2		10					Boring
B-13	2.0	S-2	Bwn f Sand, and Silt, little f Gravel 10.9 : 44.8 : 44.3		15					Boring
B-14	2.0	S-2	Bwn CLAY & SILT		23			34	19	Boring
B-15	6.0	S-4	Bwn CLAY & SILT		26			30	17	Boring
B-2	2.0	S-2	Bwn Silt, and m-f Sand, little f Gravel 13.2 : 41.3 : 45.5		15					Boring
B-3	4.0	S-3	Bwn-Gy f SAND, some Silt, trace f Gravel 7.7 : 65.2 : 27.1		15					Boring
B-4	6.0	S-4	Bwn f SAND, little Silt 0.0 : 84.5 : 15.5		8					Boring
B-5	4.0	S-3	Bwn SILT, little f Sand **NON PLASTIC-DOES NOT ROLL TO 1/8"**		25					Boring
B-7	6.0	S-4	Bwn SILT **NON PLASTIC-DOES NOT ROLL TO 1/8"**		27					Boring
B-8	0.0	S-1	Bwn m-f Sand, some f Gravel, little Silt 30.7 : 49.3 : 20.0		5					Boring

Tectonic

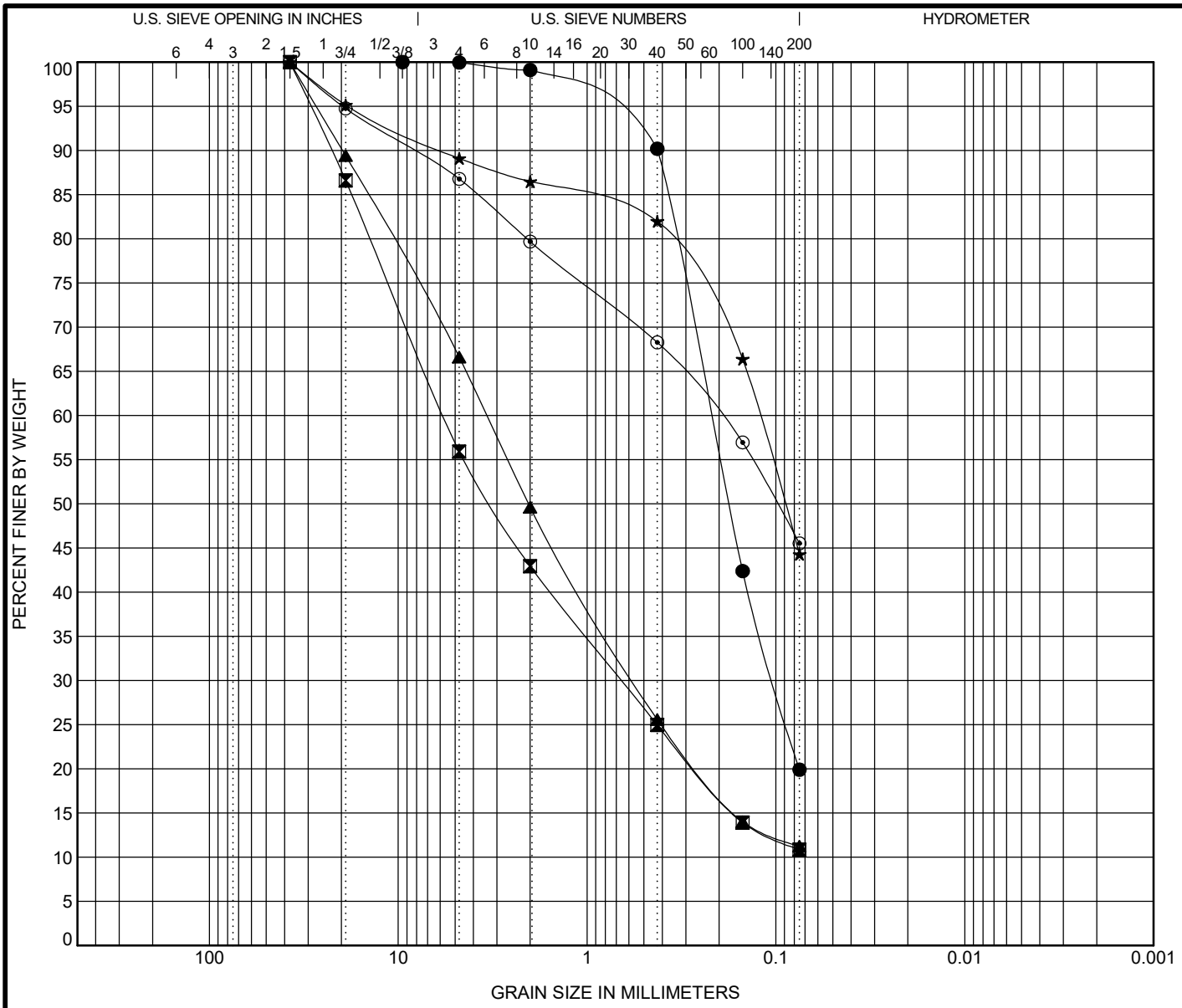
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

Summary of Laboratory Results

Project No: **11207.01** Date: **12/15/21**

Project: **Dock Road Development**

Location: **Marlboro, NY**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification			Classification	WC%	LL	PL	PI	Cc	Cu
●	B-10	2.0	S-2	Bwn f SAND, little Silt	7.0					
⊠	B-11	4.0	S-3	Bwn-Gy c-f Sand, and c-f Gravel, little Silt	3.3				1.22	92.67
▲	B-12	4.0	S-3	Bwn c-f SAND, some c-f Gravel, little Silt	9.7				1.71	61.83
★	B-13	2.0	S-2	Bwn f Sand, and Silt, little f Gravel	15.0					
⊙	B-2	2.0	S-2	Bwn Silt, and m-f Sand, little f Gravel	14.5					

	Sample Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	B-10	2.0	S-2	9.5	0.22	0.102		0.0	80.1	19.9		Boring
⊠	B-11	4.0	S-3	37.5	5.713	0.657		44.1	45.1	10.9		Boring
▲	B-12	4.0	S-3	37.5	3.394	0.565		33.4	55.4	11.2		Boring
★	B-13	2.0	S-2	37.5	0.123			10.9	44.8	44.3		Boring
⊙	B-2	2.0	S-2	37.5	0.199			13.2	41.3	45.5		Boring

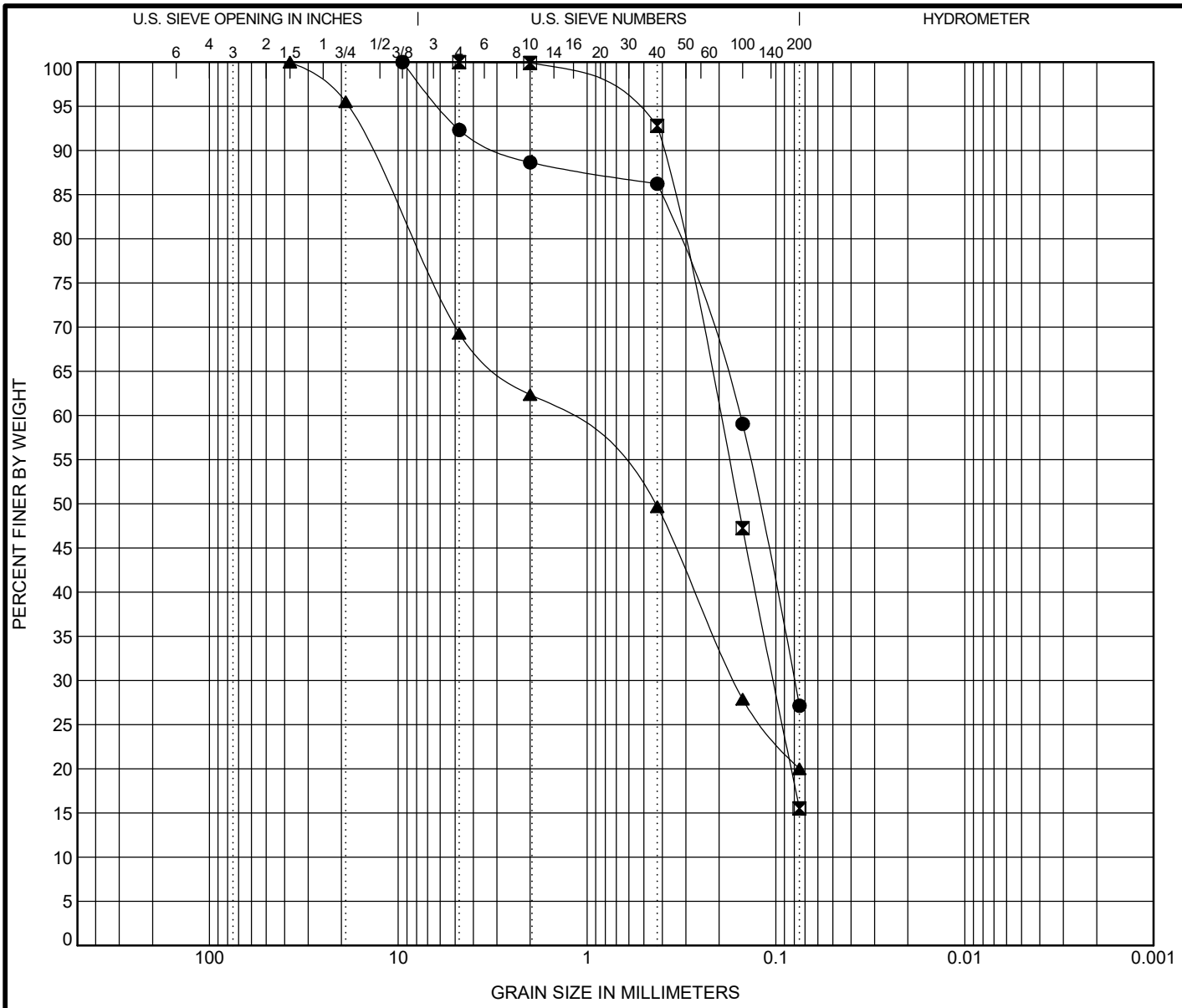
Tectonic
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

GRAIN SIZE DISTRIBUTION

Project No: **11207.01** Date: **12/15/21**

Project: **Dock Road Development**

Location: **Marlboro, NY**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification			Classification	WC%	LL	PL	PI	Cc	Cu
●	B-3	4.0	S-3	Bwn-Gy f SAND, some Silt, trace f Gravel	15.1					
⊠	B-4	6.0	S-4	Bwn f SAND, little Silt	8.0					
▲	B-8	0.0	S-1	Bwn m-f Sand, some f Gravel, little Silt	4.8					

	Sample Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	B-3	4.0	S-3	9.5	0.156	0.08		7.7	65.2	27.1		Boring
⊠	B-4	6.0	S-4	4.75	0.201	0.103		0.0	84.5	15.5		Boring
▲	B-8	0.0	S-1	37.5	1.501	0.166		30.7	49.3	20.0		Boring

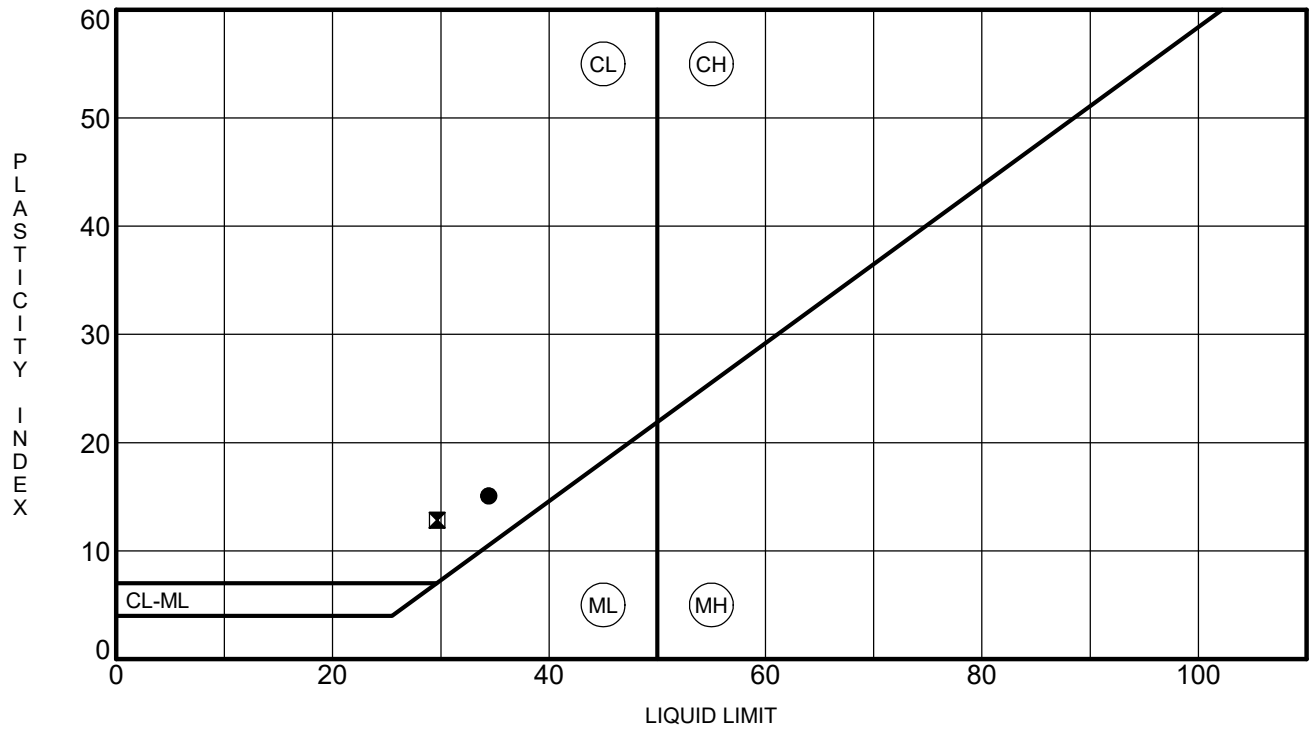
Tectonic
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

GRAIN SIZE DISTRIBUTION

Project No: **11207.01** Date: **12/15/21**

Project: **Dock Road Development**

Location: **Marlboro, NY**



	Sample Identification			LL	PL	PI	Fines %	WC %	Classification
●	**B-14**	**2.0**	**S-2**	**34**	**19**	**15**	**NA**	**23.3**	**Bwn CLAY & SILT**
⊠	**B-15**	**6.0**	**S-4**	**30**	**17**	**13**	**NA**	**26.0**	**Bwn CLAY & SILT**

Tectonic
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

ATTERBERG LIMITS' RESULTS

Project No: **11207.01** Date: **12/15/21**

Project: **Dock Road Development**

Location: **Marlboro, NY**

Boring #	Depth (Ft.)	Sample #	Specimen Description	% Gravel	% Sand	% Fines	USCS	Water Content	Liquid Limit	Plastic Limit	Plasticity Index	Penetro-meter (tsf)	Specific Gravity	Dry Density (pcf)	Organic Content (%)	pH
B-17	10.0	S-6	Tn f SAND, some Silt, trace f Gravel	4.1	64.7	31.3		12								
B-21	10.0	S-6	Lgt Bwn SILT & CLAY, trace f Sand	0.0	5.6	94.4		28								
B-23	10.0	S-6	Bwn CLAYEY SILT, trace f Sand	0.0	8.0	92.0		21								
B-24	10.0	S-6	Tn m-f SAND, some Silt, trace f Gravel	2.8	71.4	25.9		15								
B-25	10.0	S-6	Tn-Gy c-f GRAVEL, and c-f Sand, trace Silt	56.0	38.6	5.4		2								
B-25	25.0	S-9	Tn c-f SAND, some c-f Gravel, little Silt	25.2	61.8	13.0		6								

Tectonic

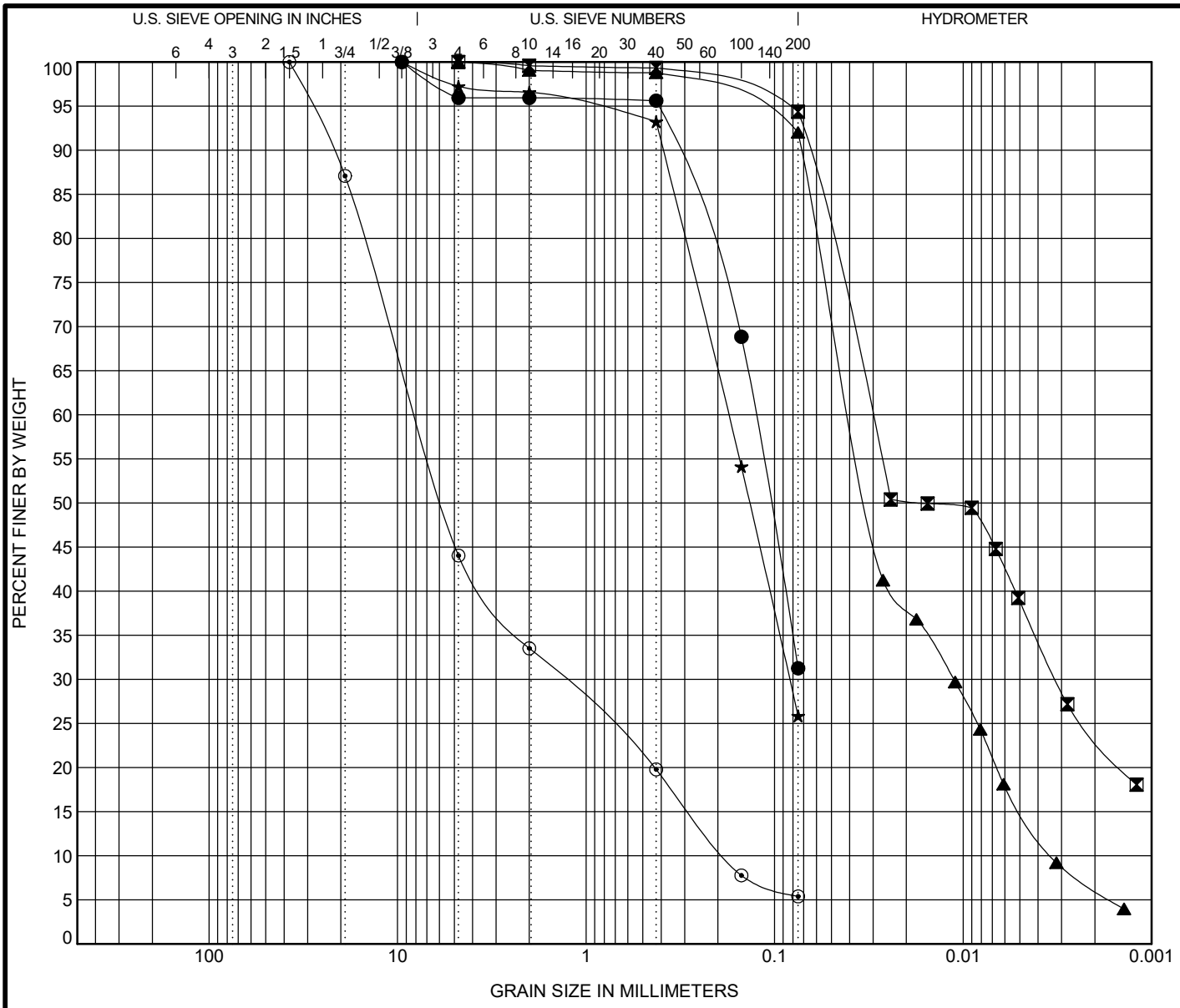
280 Little Britain Road, Bldg. 2
Newburgh, NY 12550
Telephone: (845) 563-9081 Fax: (845) 563-9085

Summary of Laboratory Results

Project No: **11207.01** Date: **3/28/24**

Project: **Dock Road Development**

Location: **Marlboro, NY**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification			Classification	WC%	LL	PL	PI	Cc	Cu
●	B-17	10.0	S-6	Tn f SAND, some Silt, trace f Gravel	12.1					
⊠	B-21	10.0	S-6	Lgt Bwn SILT & CLAY, trace f Sand	27.8					
▲	B-23	10.0	S-6	Bwn CLAYEY SILT, trace f Sand	20.5				0.95	11.51
★	B-24	10.0	S-6	Tn m-f SAND, some Silt, trace f Gravel	14.8					
⊙	B-25	10.0	S-6	Tn-Gy c-f GRAVEL, and c-f Sand, trace Silt	2.4				1.25	43.63

	Sample Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	B-17	10.0	S-6	9.5	0.127			4.1	64.7	31.3		Boring
⊠	B-21	10.0	S-6	4.75	0.031	0.003		0.0	5.6	55.5	38.8	Boring
▲	B-23	10.0	S-6	4.75	0.039	0.011	0.003	0.0	8.0	76.7	15.4	Boring
★	B-24	10.0	S-6	9.5	0.175	0.083		2.8	71.4	25.9		Boring
⊙	B-25	10.0	S-6	37.5	7.942	1.345	0.182	56.0	38.6	5.4		Boring

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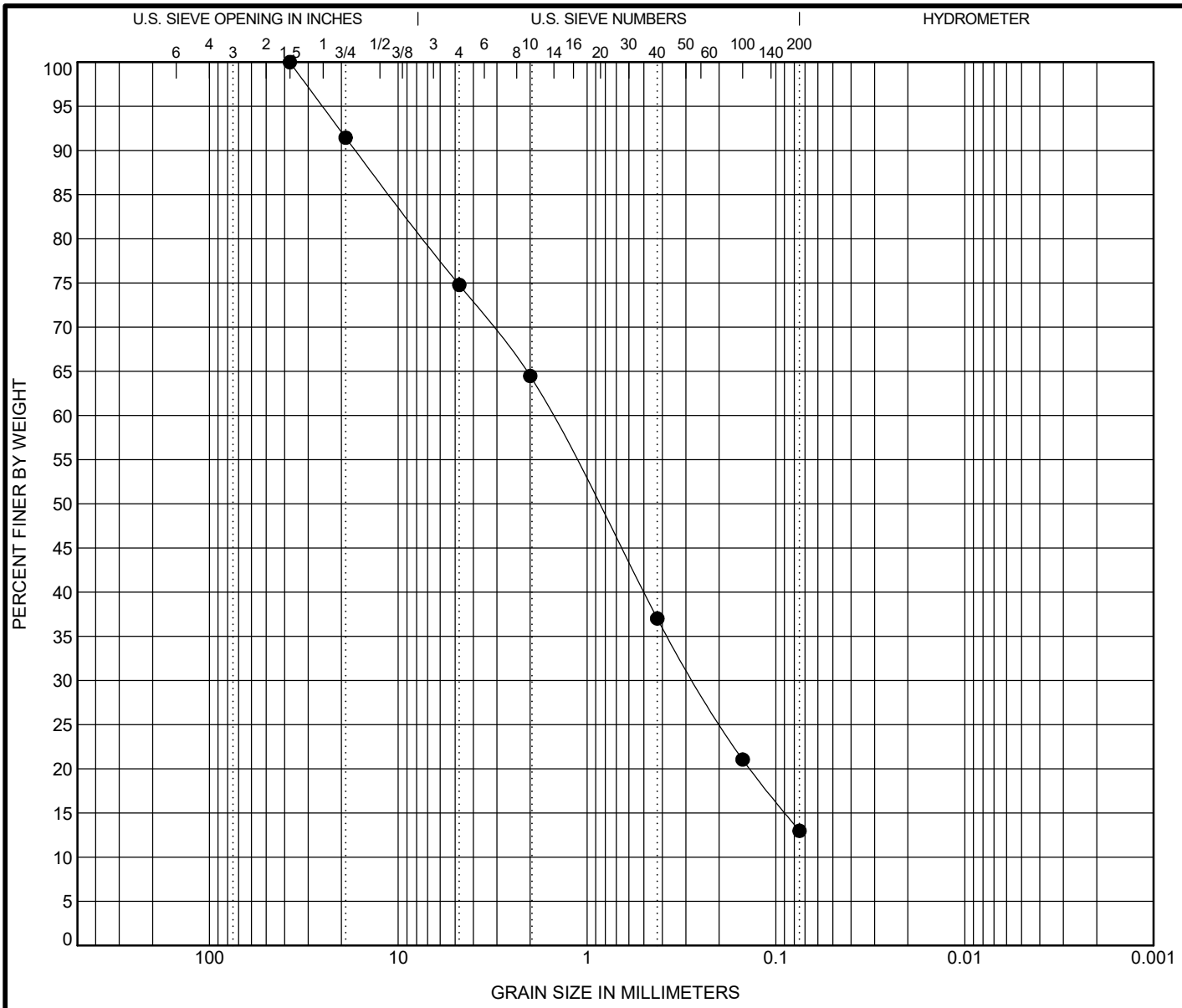
GRAIN SIZE DISTRIBUTION

Project No: **11207.01** Date: **3/19/24**

Project: **Dock Road Development**

Location: **Marlboro, NY**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample Identification	Classification	WC%	LL	PL	PI	Cc	Cu
●	**B-25 25.0 S-9**	**Tn c-f SAND, some c-f Gravel, little Silt**	**6.1**					

	Sample Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	Source of Material
●	**B-25 25.0 S-9**	**37.5**	**1.554**	**0.269**		**25.2**	**61.8**	**13.0**		**Boring**

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GRAIN SIZE DISTRIBUTION

Project No: **11207.01** Date: **3/19/24**

Project: **Dock Road Development**

Location: **Marlboro, NY**

Our Story

For the past 30 years, Tectonic has delivered quality professional services in a timely and cost effective manner by pooling its talented staff into project teams that think, act, and perform as one integral unit. By carefully listening and collaborating with its clients, the firm is able to identify the key issues and assure stakeholder objectives are met in the final deliverables. Through innovating and adopting technological advances, the firm is able to generate unique solutions to improve our nation's deteriorating infrastructure and build safe sustainable communities.

As the world evolves, and its challenges grow more complex, Tectonic continues to innovate and provide the practical solutions and exceptional customer service its clients have trusted since its founding.

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Tectonic

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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 Ulster County, New York

June 27, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

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: Ulster County, New York
Survey Area Data: Version 22, Sep 5, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
CF	Cut and fill land	0.2	0.9%
CnB	Chenango gravelly silt loam, 3 to 8 percent slopes	3.0	12.1%
FW	Fresh water marsh	0.3	1.1%
HgD	Hoosic gravelly loam, 15 to 25 percent slopes	1.6	6.3%
HSF	Hoosic soils, very steep	10.4	41.5%
ML	Made land	0.1	0.5%
Ra	Raynham silt loam	1.9	7.8%
RvA	Riverhead fine sandy loam, 0 to 3 percent slopes	7.5	29.8%
Totals for Area of Interest		**25.0**	**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.

Ulster County, New York

CF—Cut and fill land

Map Unit Setting

National map unit symbol: 9xg2
Elevation: 160 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: gravelly sandy loam
H2 - 4 to 70 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Cayuga

Percent of map unit: 5 percent
Hydric soil rating: No

Tunkhannock

Percent of map unit: 5 percent
Hydric soil rating: No

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

CnB—Chenango gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9xg8
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 35 inches: gravelly silt loam
H3 - 35 to 80 inches: extremely gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Hoosic
Percent of map unit: 5 percent
Hydric soil rating: No

Castile
Percent of map unit: 5 percent
Hydric soil rating: No

Valois
Percent of map unit: 5 percent
Hydric soil rating: No

FW—Fresh water marsh

Map Unit Setting
National map unit symbol: 9xgg
Elevation: 10 to 2,400 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Medisaprists and similar soils: 45 percent
Hydraquents and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Medisaprists

Setting
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material

Typical profile
H1 - 0 to 70 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.20 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 22.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Hydraquents

Setting

Landform: Marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 70 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Carlisle

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent

Landform: Flood plains
Hydric soil rating: Yes

Palms

Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

HgD—Hoosic gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9xgq
Elevation: 100 to 1,100 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Hoosic and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 14 inches: gravelly loam
H3 - 14 to 30 inches: very gravelly loamy sand
H4 - 30 to 80 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 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: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 5 percent
Hydric soil rating: No

Castile

Percent of map unit: 5 percent
Hydric soil rating: No

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

HSF—Hoosic soils, very steep

Map Unit Setting

National map unit symbol: 9xgr
Elevation: 100 to 1,100 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Hoosic and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly sandy loam
H2 - 8 to 14 inches: gravelly loam
H3 - 14 to 30 inches: very gravelly loamy sand
H4 - 30 to 80 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 25 to 55 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 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: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

Tunkhannock

Percent of map unit: 5 percent
Hydric soil rating: No

Valois

Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Hydric soil rating: No

ML—Made land

Map Unit Setting

National map unit symbol: 9xhb
Elevation: 160 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F

Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: channery loam
H2 - 4 to 70 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Middlebury

Percent of map unit: 5 percent
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Churchville

Percent of map unit: 5 percent
Hydric soil rating: No

Cambridge

Percent of map unit: 5 percent
Hydric soil rating: No

Ra—Raynham silt loam

Map Unit Setting

National map unit symbol: 9xj3
Elevation: 50 to 500 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Raynham and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 37 inches: silt loam
H3 - 37 to 56 inches: very fine sandy 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 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: No

Minor Components

Madalin
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Williamson
Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla
Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

RvA—Riverhead fine sandy loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9xj7
Elevation: 590 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Riverhead and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverhead

Setting
Landform: Terraces, deltas
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits overlying stratified sand and gravel

Typical profile
H1 - 0 to 8 inches: fine sandy loam

H2 - 8 to 26 inches: sandy loam
H3 - 26 to 49 inches: loamy sand
H4 - 49 to 62 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 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 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY023CT - Well Drained Outwash
Hydric soil rating: No

Minor Components

Hoosic

Percent of map unit: 5 percent
Hydric soil rating: No

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

Pompton

Percent of map unit: 5 percent
Hydric soil rating: No

Walpole

Percent of map unit: 5 percent
Hydric soil rating: No

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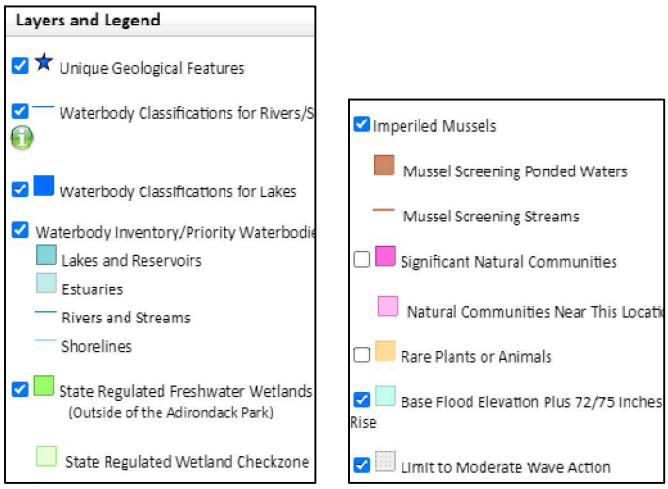
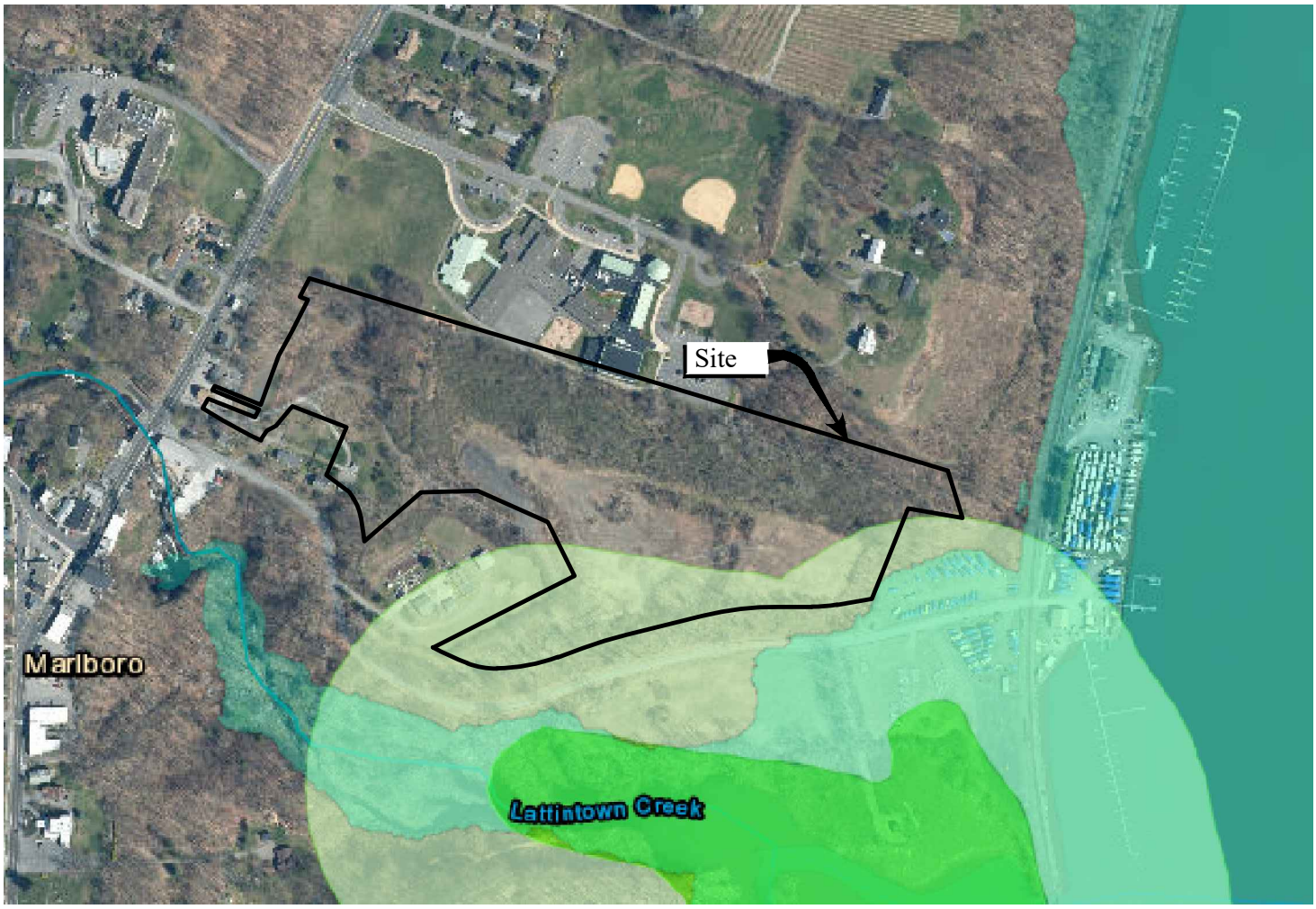
Attachment D
New York Natural Heritage Program Coordination





0 250 500 Feet

NYSDEC Environmental Map

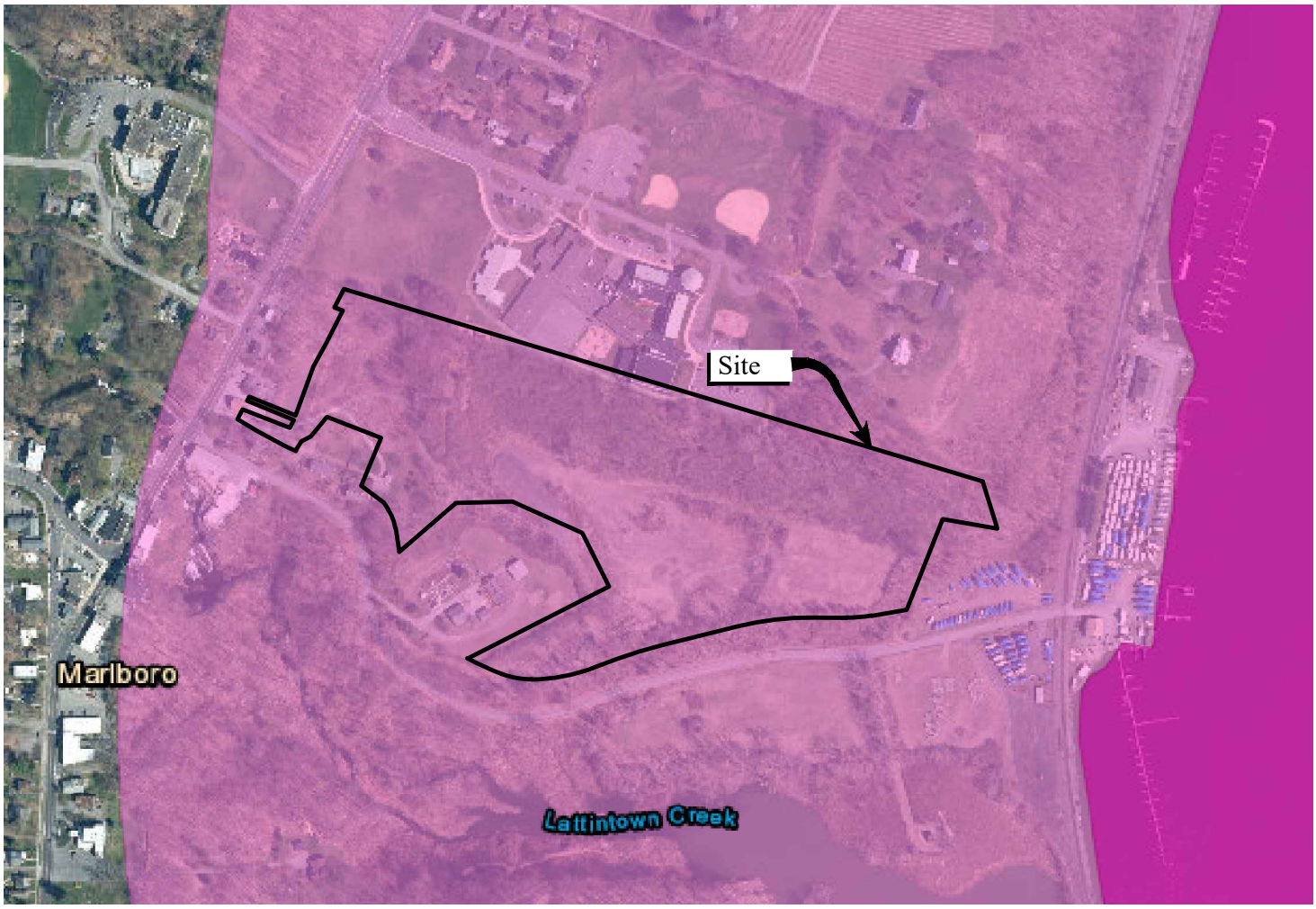
Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024

Layers and Legend

Significant Natural Communities

Natural Communities Near This Location



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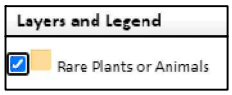
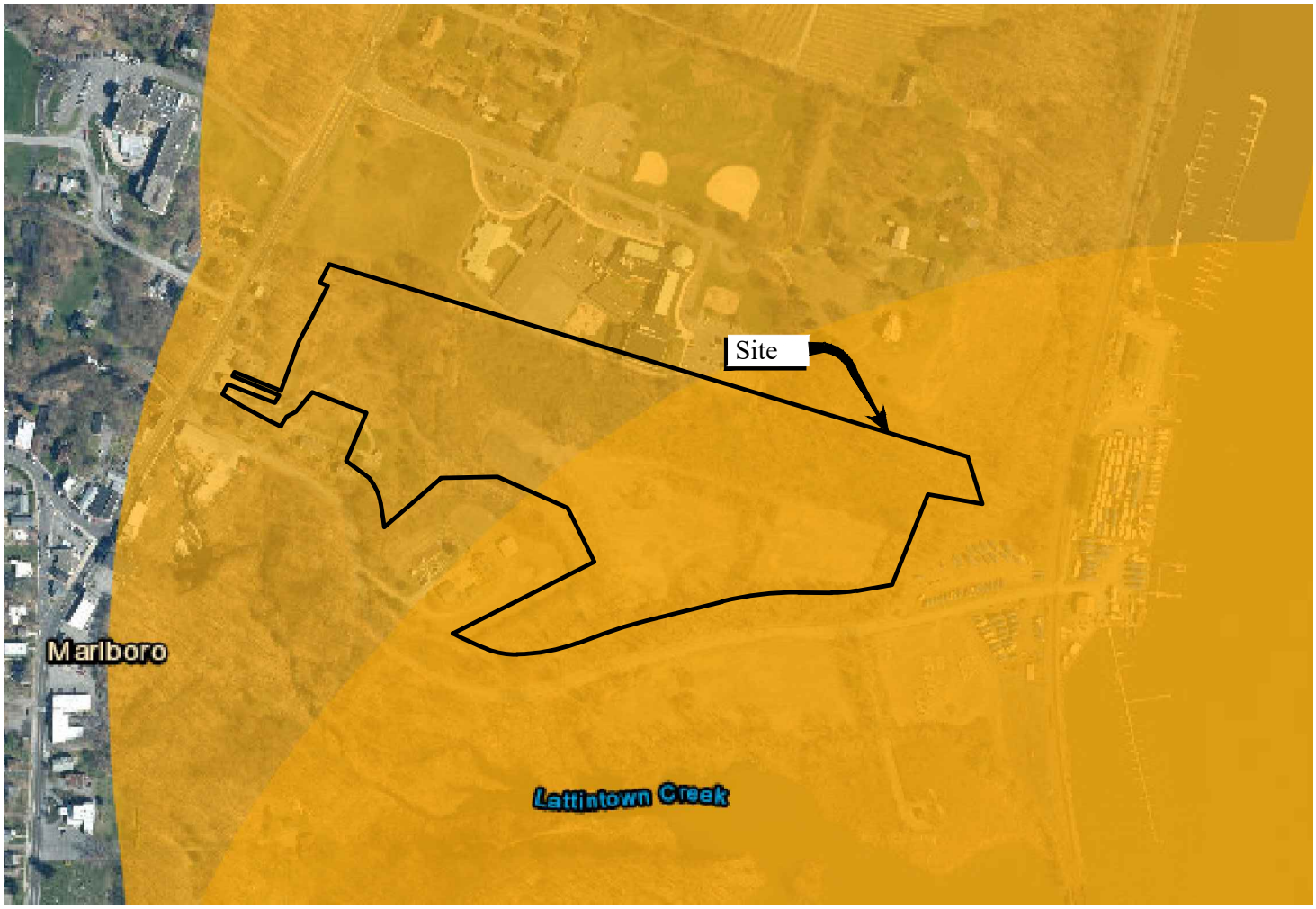
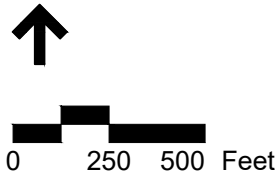
NYSDEC Environmental Map

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024







NYSDEC Environmental Map

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024

USN Building Points (View)

- Eligible
- Listed
- Not Eligible
- Not Eligible - Demolished
- Undetermined

National Register Building Sites (View)

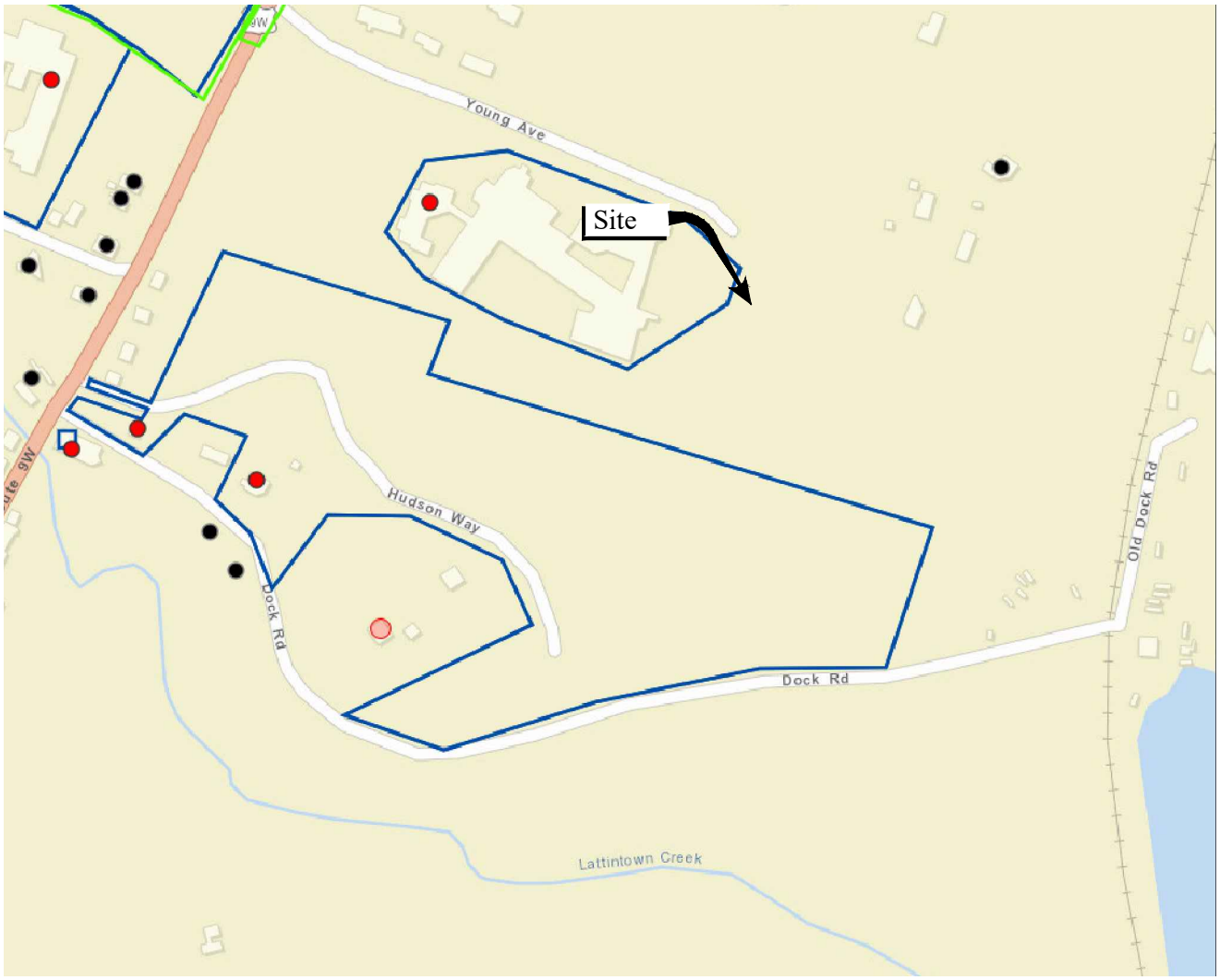
Survey Building Areas (View)

USN Building Districts (View)

- Eligible
- others

Survey Archaeology Areas (View)

Consultation Projects (View)



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NYS Cultural Resource Information System CRIS
July 2024

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

Attachment E
Storm Drainage Calculations

Orchards on Hudson – Residential

Dock Road
Marlboro, New York

PREPARED FOR

SDL Marlboro LLC

561 Seventh Ave Suite 903
New York, NY 10018

PREPARED BY

VHB Engineering, Surveying and Landscape Architecture, Geology, P.C.
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
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August 2024

VHB Project #: 20578.01

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Operations & Maintenance Plan 16

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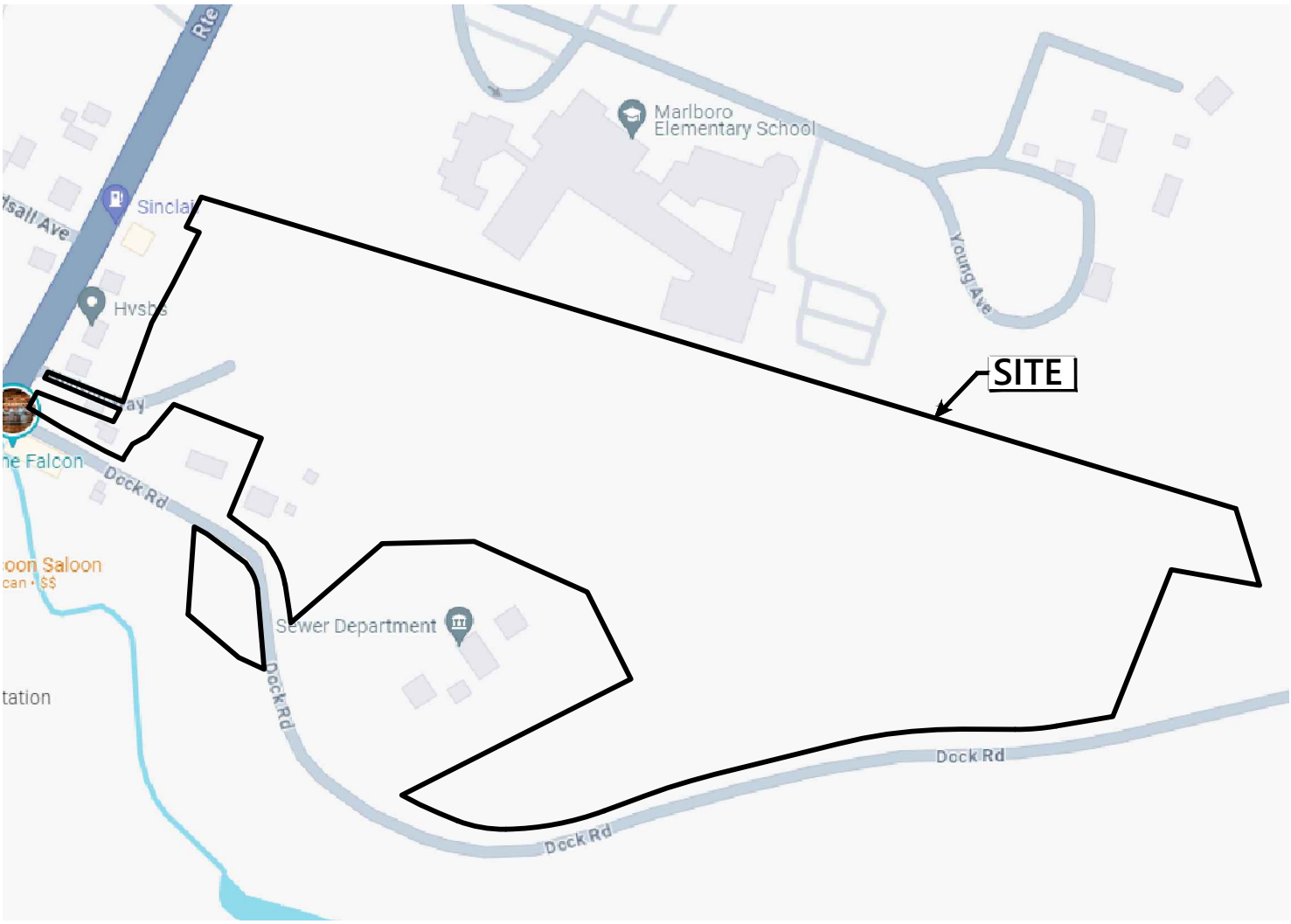
Project Figures

Figure 1: Site Location Map
Figure 2: FEMA Floodplain Map



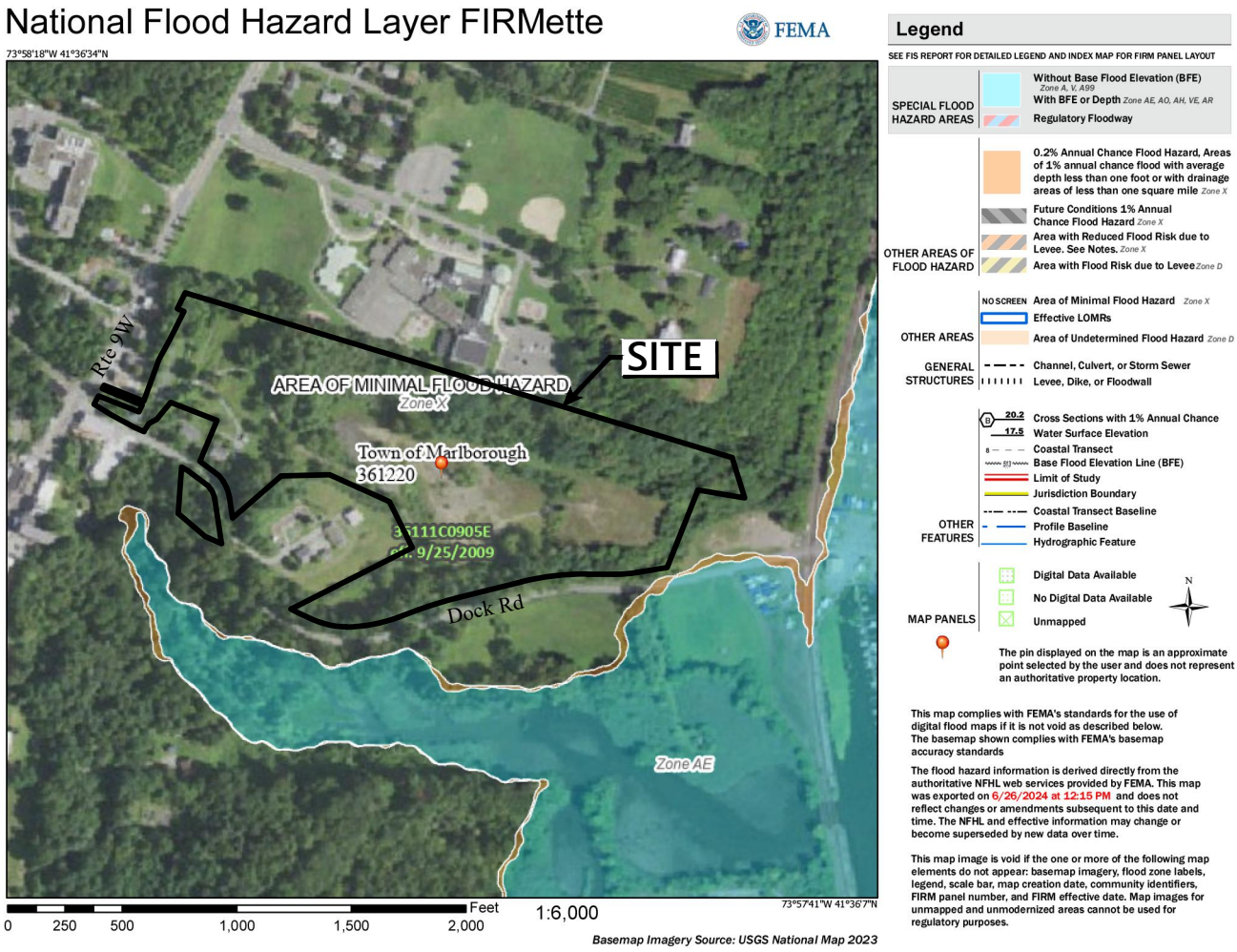
Site Location Map
Orchards on Hudson - Residential

Figure 1
September 2024

Dock Rd
Marlboro, NY 12542

.\VHB Logo.jpg

0 200 400 Feet



FEMA Flood Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 4
September 2024

Map #: 36111C0905E
(Revised 09/24/2009)

0 400 800 Feet

VHB Logo.jpg

2

Project Summary

Site Location and Summary

The Proposed Action involves an application for site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with most of the property situated on the north side of the roadway and a small portion on the south side. Ulster County Tax Map #: Section 109.1 - Block 3 - Lots 13, 14.2 and 15 and Section 108.4 - Block 3 - Lot 29.1. The project site is bounded by the campus of Marlboro Elementary School to the north; A marina located at 140 Dock Road to the east; Dock Road to the south; The Hamlet of Marlboro Wastewater Treatment Facility to the southwest; Residential properties and commercial structures fronting Route 9W to the west.

The site is mostly vacant and wooded with three single family residences located on the western portion. The middle portion of the site was previously mined creating a depression on the eastern side of the property. There are varying steep slopes across most of the site ranging from elevation +/-160 at the west side of Dock Road to elevation +/-11.0 at the east side.

According to the Flood Insurance Rate Map (FIRM) prepared by Federal Emergency Management Agency (FEMA), the project site is not located within a flood zone, however it is located next to a 1% Annual Chance Flood Hazard area. See the Flood map numbered 36111C0905E dated 9/25/2009 in the Project figures section, Figure two, of this report).

Existing Conditions

Subsurface Conditions:

According to the NRCS soil survey for Ulster County, NY, the site consists of hydrologic soil group A and B and is made up of mostly 'Riverhead fine sandy loam, 0-3 percent slopes'(RvA), 'Hoosic soils, very steep' (HgD) and 'Chenango Gravely silt loam, 3-8 percent slopes. USDA soils report is included in Attachment A.

A subsurface geotechnical study was performed by Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. dated April 2, 2024. Based on the information provided in the Geotechnical Report provided, generally there are sandy soils with traces of silt and gravel present at the site. There was bedrock/auger refusal at some of the boring locations, however elevations provided are outside limits of the proposed project excavation. Percolation tests were performed at various locations on the site and infiltration rates ranged from three to seven in/hr.

Pre-Development Hydrology:

From a hydrological perspective, the site is divided into seven distinct sub catchments as shown in Figure B-1 in Attachment B. The predominant flow of stormwater runoff from the site is directed towards Dock Road from Subcatchment Areas B and C and eventually discharges directly to the Hudson River via overland flow. Sub catchments D, E and F located on the west side of the site discharge to dock road and flow along a swale on the north side of the road to a culvert that runs across the road to a lot owned by the applicant, which contains the wetlands of a tributary to the Hudson River. In addition, two subcatchment areas, A and G, as shown on the figure, discharge off site to the north and east respectively via overland flow.

Table 1 summarizes the key hydrologic parameters for each drainage area used in the existing conditions analysis.

Table 1
Existing Conditions Hydrologic Data

Description (Drainage Area #)	Discharge Location	Study Point	Area (acres)	Curve Number	Time of Concentration (min)
SC-A	*Campus of Marlboro Elementary School*	B	*2.683*	60, 67 and 98	*64*

SC-B	*Bottom of Dock Road*	*A*	*13.46*	*65 and 67*	*113.9*
SC-C	*Bottom of Dock Road*	*A*	*3.5*	*65*	*66.4*
SC-D	*Gutter to Culvert on Dock Road*	*C*	*2.16*	*65*	*25.8*
SC-E	*Gutter to Culvert on Dock Road*	*C*	*.530*	*65 and 98*	*4.7*
SC-F	*Gutter to Culvert on Dock Road*	*C*	*.230*	*65*	*2.4*
SC-G	*Marina*	*D*	*1.130*	*58*	*18*

Proposed Conditions

The proposed action will construct a residential development consisting of 103 townhome and cottage style units. Every home is designed to include a garage, with additional parking for guests dispersed throughout the development. A community clubhouse and swimming pool are also planned on the eastern side of the property.

The post-development conditions divide the site into six subcatchment areas. Figure B-2 in Attachment B details the subcatchment areas and where they discharge from the site. Generally, stormwater runoff sheet flows from impervious and landscaped areas and is collected via a series of catch basins and area drains, and piped into underground detention system which are designed to hold enough runoff and discharge at rates equal to or less than predevelopment rates. Outfall pipes are connected to the detention systems and once the volume stored reaches the design elevation, runoff is piped to engineered outfalls consisting of concrete flared end sections with rip rap scour protection aprons.

In addition, drainage was provided along the emergency access road which utilizes a future easement on the neighboring Sewer Treatment Plan property. Runoff is collected and stored in drywell structures where it would infiltrate back into the ground.

Below is a summary of each of the post-development subcatchment areas:

Drainage Area A – approximately 4.26-acres in area on the western most portion of the site. This area consists of the majority of the cottage style units, the western access road and landscaped areas created from excavation operations. Prior to discharge from the site, runoff will be stored in two underground detention systems manufactured by StormTrap or approved equal. Area A will discharge via a culvert below dock road as shown on the project drainage plans. The discharge point from this area is shown as Study Point C (SPC) on Figure B-2.

Drainage Area B - is approximately 10.80 acres. It consists of the remainder o the cottage style units and over half of the proposed townhome units and access drives, as well as most of the steeply inclined land in the northern section of the site. Runoff from the northern portion of this area flows into a bioswale segmented by check dams to slow the velocity of the runoff and collected at the low point before being piped to a large underground detention system by StormTrap (or approved equal) designed to detain and infiltrate stormwater runoff before its controlled release to Study Point A (SPA) as depicted on Figure B-2.

Drainage Area C – is approximately 3.375 acres and includes additional townhome units and the proposed clubhouse as well as some access road, visitor parking and landscape areas. In addition, a portion of the northern sloped area also drains to this system. Runoff is collected and stored in an underground detention system by StormTrap (or approved equal) designed to detain and infiltrate stormwater runoff before its controlled release to SPA as depicted on Figure B-2.

Drainage Area D – is approximately 1.462 acres and includes the remainder of the proposed townhome units and the surrounding landscaped area. Runoff from this area sheet flows to Dock Road and discharges at SPA.

Drainage Area E – is approximately 3.086 acres and is comprised of wooded area that will remain undisturbed post development. Runoff from this area sheet flows overland to Dock Road and discharges ta SPA.

Drainage Area F – is approximately .950 acres in area. There is no proposed development in this drainage area and therefore peak discharges will not change from predevelopment conditions.

Drainage Area G – is approximately .091 acres in area. This area of pavement will be captured in catch basins and directed to three 12’ diameter drywells, resulting in 0.00 cfs of runoff.

Drainage Area H – is approximately .101 acres in area. This area of pavement will be captured in catch basins and directed to two 12’ diameter drywells, resulting in 0.00 cfs of runoff.

Drainage Area I – is approximately .064 acres in area. This area of pavement will be captured in catch basins and directed to two 12' drywells, resulting in 0.00 cfs of runoff.

Table 2 summarizes the key hydrologic parameters for each drainage area used in the proposed condition analysis.

Table 2
Proposed Condition Hydrologic Data

Description (Drainage Area #)	Discharge Location	Study Point	Area (acres)	Curve Number	Time of Concentration (min)
DA- A	*Outlet to wetland across dock road*	*C*	*4.260*	*98, 61, and 98*	*26.1*
DA-B	*Bottom of Dock Road*	*A*	*10.800*	*98, 61 and 60*	*10.3*
DA-C	*Bottom of Dock Road*	*A*	*3.375*	*98, 61 and 60*	*10.0*
DA-D	*Bottom of Dock Road*	*A*	*1.462*	*98 and 61*	*10.0*
DA-E	*Bottom of Dock Road*	*A*	*3.086*	*58*	*68.2*
DA-F	*Marina*	*D*	*.950*	*23.8*	*23.8*
DA-G	*No discharge*	*N/A*	*.091*	*98*	*10*
DA-H	*No discharge*	*N/A*	*.101*	*98*	*10*
DA-I	*No discharge*	*N/A*	*.064*	*98*	*10*

Post Development Hydrologic Analysis

In order to demonstrate that the proposed storm water management system for the project is capable of accommodating post-development runoff for the 2-year, 10-year and 100-year storm events, a model was developed using HydroCAD software to analyze each storm condition. The system was designed to limit peak discharge for the design storm events to pre-development rates or less. To establish these flows the following 2-, 10-, and 100-year, 24-hour storm precipitation values were used for the using Figures 4.1-4.4 in the New York State Stormwater Management Design Manul, January 2015.

Recurrence Interval	24-hour Rainfall Depth
2-Year	*3.5"*
10-Year	*4.75"*
100-Year	*8.8"*

In accordance with the NYSDEC requirements, the HydroCAD model uses the TR-20 methodology to calculate peak runoff rates for a specific design area. The program is then used to model storage over time in conjunction with infiltration through the proposed underground detention systems which contain controlled outlets which allow runoff below the pre-development peak discharge rate. The model also indicates the peak elevation of storage in the system during the storm.

As indicated above, the Geotechnical report indicated a range of infiltration rates between three and seven inches per hour throughout the site. An average infiltration rate of five inches per hour was used to model infiltration through the proposed detention systems.

Time of concentration and CN values were calculated under existing and proposed conditions by following TR-55 Handbook Guideline for each drainage area. Minimum time of concentration of 10 minutes is used.

Table 3 below shows the comparison of pre- and post-development peak discharge rates for the design storms. Attachment B of this report contains the hydrologic analysis for both pre- and post-development scenarios.

Table 3
Flows Comparison at Study Point A

Storm Frequency	Pre-Dev. Peak Discharge	Post-Dev. Peak Discharge	Percent Reduction
2-Year	*2.87 cfs*	*2.67 cfs*	*6.9%*
10-Year	*6.28 cfs*	*4.32 cfs*	*31.2%*
100-Year	*22.51cfs*	*20.61 cfs*	*8.4%*

Flows Comparison at Study Point B

Storm Frequency	Pre-Dev. Peak Discharge	Post-Dev. Peak Discharge	Percent Reduction
2-Year	*.01 cfs*	*0 cfs*	*100%*
10-Year	*1.02 cfs*	*0 cfs*	*100%*
100-Year	*4.67 cfs*	*0 cfs*	*100%*

Flows Comparison at Study Point C

Storm Frequency	Pre-Dev. Peak Discharge	Post-Dev. Peak Discharge	Percent Reduction
2-Year	*1.29 cfs*	*0 cfs*	*100%*
10-Year	*2.81 cfs*	*0 cfs*	*100%*
100-Year	*8.98 cfs*	*5.21 cfs*	*41.98%*

Flows Comparison at Study Point D

Storm Frequency	Pre-Dev. Peak Discharge	Post-Dev. Peak Discharge	Percent Reduction
2-Year	*.26 cfs*	*.20 cfs*	*23.00 %*
10-Year	*.80 cfs*	*.61 cfs*	*23.75%*
100-Year	*3.39 cfs*	*2.54 cfs*	*25.0 %*

As indicated above, there is no increase in peak discharge during the design storm events during post development conditions.

Attachment A:
NRCS Soil Survey Information

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 Ulster County, New York

June 27, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

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: Ulster County, New York
Survey Area Data: Version 22, Sep 5, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
CF	Cut and fill land	0.2	0.9%
CnB	Chenango gravelly silt loam, 3 to 8 percent slopes	3.0	12.1%
FW	Fresh water marsh	0.3	1.1%
HgD	Hoosic gravelly loam, 15 to 25 percent slopes	1.6	6.3%
HSF	Hoosic soils, very steep	10.4	41.5%
ML	Made land	0.1	0.5%
Ra	Raynham silt loam	1.9	7.8%
RvA	Riverhead fine sandy loam, 0 to 3 percent slopes	7.5	29.8%
Totals for Area of Interest		**25.0**	**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.

Ulster County, New York

CF—Cut and fill land

Map Unit Setting

National map unit symbol: 9xg2
Elevation: 160 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: gravelly sandy loam
H2 - 4 to 70 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Cayuga

Percent of map unit: 5 percent
Hydric soil rating: No

Tunkhannock

Percent of map unit: 5 percent
Hydric soil rating: No

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Bath

Percent of map unit: 5 percent
Hydric soil rating: No

CnB—Chenango gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9xg8
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chenango and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chenango

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 35 inches: gravelly silt loam
H3 - 35 to 80 inches: extremely gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Bath
Percent of map unit: 5 percent
Hydric soil rating: No

Hoosic
Percent of map unit: 5 percent
Hydric soil rating: No

Castile
Percent of map unit: 5 percent
Hydric soil rating: No

Valois
Percent of map unit: 5 percent
Hydric soil rating: No

FW—Fresh water marsh

Map Unit Setting
National map unit symbol: 9xgg
Elevation: 10 to 2,400 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Medisaprists and similar soils: 45 percent
Hydraquents and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Medisaprists

Setting
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material

Typical profile
H1 - 0 to 70 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.20 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 22.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Hydraquents

Setting

Landform: Marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 70 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Carlisle

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent

Landform: Flood plains
Hydric soil rating: Yes

Palms

Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

HgD—Hoosic gravelly loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9xgq
Elevation: 100 to 1,100 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Hoosic and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly loam
H2 - 8 to 14 inches: gravelly loam
H3 - 14 to 30 inches: very gravelly loamy sand
H4 - 30 to 80 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 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: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 5 percent
Hydric soil rating: No

Castile

Percent of map unit: 5 percent
Hydric soil rating: No

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

HSF—Hoosic soils, very steep

Map Unit Setting

National map unit symbol: 9xgr
Elevation: 100 to 1,100 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Hoosic and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly sandy loam
H2 - 8 to 14 inches: gravelly loam
H3 - 14 to 30 inches: very gravelly loamy sand
H4 - 30 to 80 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 25 to 55 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 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: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F140XY021NY - Dry Outwash
Hydric soil rating: No

Minor Components

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

Tunkhannock

Percent of map unit: 5 percent
Hydric soil rating: No

Valois

Percent of map unit: 5 percent
Hydric soil rating: No

Lordstown

Percent of map unit: 5 percent
Hydric soil rating: No

ML—Made land

Map Unit Setting

National map unit symbol: 9xhb
Elevation: 160 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F

Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: channery loam
H2 - 4 to 70 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Middlebury

Percent of map unit: 5 percent
Hydric soil rating: No

Red hook

Percent of map unit: 5 percent
Hydric soil rating: No

Churchville

Percent of map unit: 5 percent
Hydric soil rating: No

Cambridge

Percent of map unit: 5 percent
Hydric soil rating: No

Ra—Raynham silt loam

Map Unit Setting

National map unit symbol: 9xj3
Elevation: 50 to 500 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Raynham and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 37 inches: silt loam
H3 - 37 to 56 inches: very fine sandy 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 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: No

Minor Components

Madalin
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Williamson
Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla
Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

RvA—Riverhead fine sandy loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9xj7
Elevation: 590 to 1,970 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Riverhead and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverhead

Setting
Landform: Terraces, deltas
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits overlying stratified sand and gravel

Typical profile
H1 - 0 to 8 inches: fine sandy loam

H2 - 8 to 26 inches: sandy loam
H3 - 26 to 49 inches: loamy sand
H4 - 49 to 62 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 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 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY023CT - Well Drained Outwash
Hydric soil rating: No

Minor Components

Hoosic

Percent of map unit: 5 percent
Hydric soil rating: No

Plainfield

Percent of map unit: 5 percent
Hydric soil rating: No

Pompton

Percent of map unit: 5 percent
Hydric soil rating: No

Walpole

Percent of map unit: 5 percent
Hydric soil rating: No

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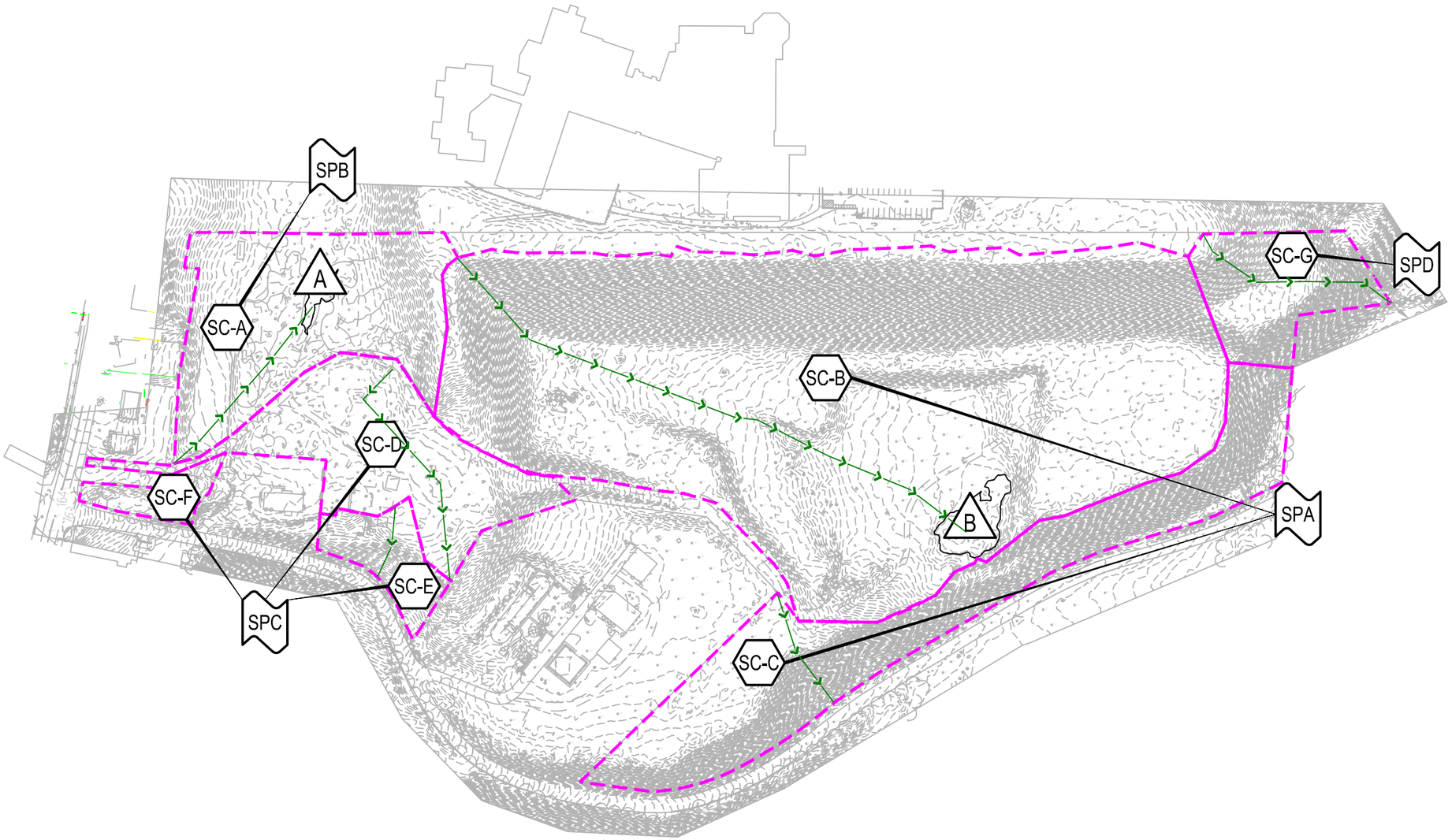
Attachment B:
HydroCAD Reports



Legend

SYMBOLS

X — **STUDY POINT**

X — **DRAINAGE AREA DESIGNATION**

X — **POND**

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

Existing Drainage Conditions
Orchards on Hudson Residential
103-107 Dock Road
Marlboro, NY

Figure B-1

August 2024

Legend

SYMBOLS

X — **STUDY POINT**

X — **DRAINAGE AREA DESIGNATION**

X — **POND**

LINETYPES

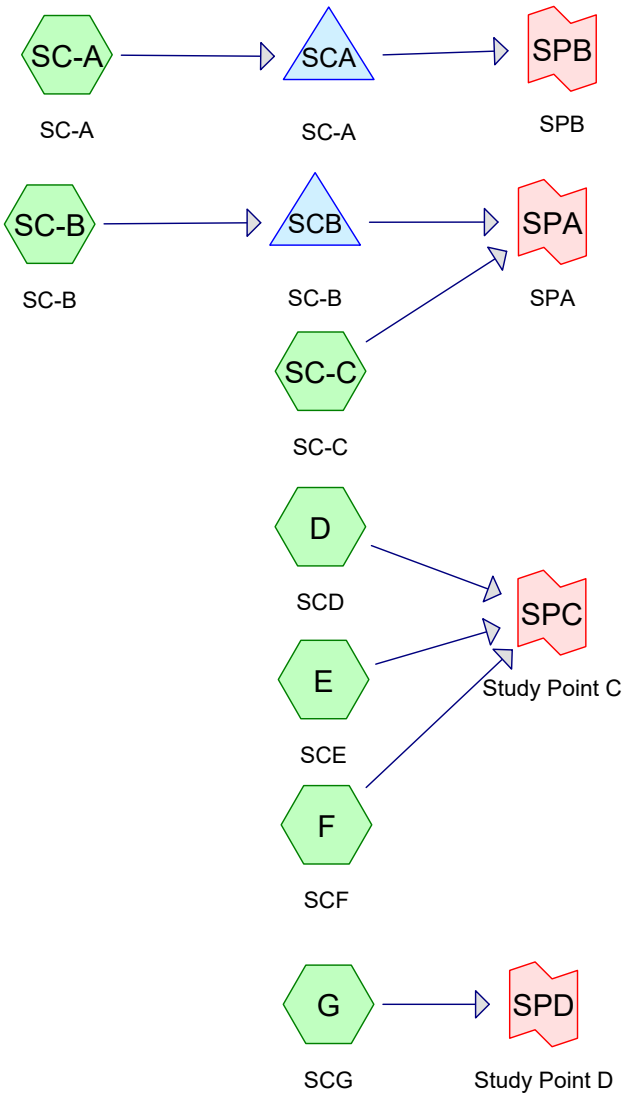
DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

Proposed Drainage Conditions
Orchards on Hudson Residential
103-107 Dock Road
Marlboro, NY

Figure B-2

August 2024



Subcat Reach Pond Link

Routing Diagram for 20578.01_ Pre and Post Hydro CAD
Prepared by VHB, Inc, Printed 8/2/2024
HydroCAD® 10.20-3c s/n 01038 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year	Type III 24-hr		Default	24.00	1	3.50	2
2	10 Year	Type III 24-hr		Default	24.00	1	4.75	2
3	100 Year	Type III 24-hr		Default	24.00	1	8.80	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.890	67	Brush, Poor, HSG B (SC-A, SC-B)
0.033	98	Paved parking, HSG B (SC-A)
0.060	98	Unconnected roofs, HSG A (E)
1.870	60	Woods, Fair, HSG B (SC-A)
15.710	65	Woods/grass comb., Fair, HSG B (D, E, F, SC-B, SC-C)
1.130	58	Woods/grass comb., Good, HSG B (G)
23.693	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.060	HSG A	E
23.633	HSG B	D, E, F, G, SC-A, SC-B, SC-C
0.000	HSG C	
0.000	HSG D	
0.000	Other	
23.693		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.890	0.000	0.000	0.000	4.890	Brush, Poor	SC-A, SC-B
0.000	0.033	0.000	0.000	0.000	0.033	Paved parking	SC-A
0.060	0.000	0.000	0.000	0.000	0.060	Unconnected roofs	E
0.000	1.870	0.000	0.000	0.000	1.870	Woods, Fair	SC-A
0.000	15.710	0.000	0.000	0.000	15.710	Woods/grass comb., Fair	D, E, F, SC-B, SC-C
0.000	1.130	0.000	0.000	0.000	1.130	Woods/grass comb., Good	G
0.060	**23.633**	**0.000**	**0.000**	**0.000**	**23.693**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 D: SCD Runoff Area=2.160 ac 0.00% Impervious Runoff Depth=0.75"
Flow Length=266' Tc=25.8 min CN=65 Runoff=0.97 cfs 0.135 af

Subcatchment E: SCE Runoff Area=0.530 ac 11.32% Impervious Runoff Depth=0.85"
Flow Length=112' Tc=10.0 min UI Adjusted CN=67 Runoff=0.40 cfs 0.038 af

Subcatchment F: SCF Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.75"
Flow Length=55' Slope=0.1900 '/' Tc=10.0 min CN=65 Runoff=0.15 cfs 0.014 af

Subcatchment G: SCG Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=320' Tc=18.0 min CN=58 Runoff=0.26 cfs 0.043 af

Subcatchment SC-A: SC-A Runoff Area=2.683 ac 1.23% Impervious Runoff Depth=0.66"
Flow Length=344' Tc=64.0 min CN=63 Runoff=0.62 cfs 0.147 af

Subcatchment SC-B: SC-B Runoff Area=13.460 ac 0.00% Impervious Runoff Depth=0.80"
Flow Length=813' Tc=91.9 min CN=66 Runoff=3.20 cfs 0.898 af

Subcatchment SC-C: SC-C Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=0.75"
Flow Length=213' Tc=66.4 min CN=65 Runoff=0.95 cfs 0.219 af

Pond SCA: SC-A Peak Elev=140.99' Storage=0.020 af Inflow=0.62 cfs 0.147 af
Discarded=0.43 cfs 0.147 af Primary=0.01 cfs 0.001 af Outflow=0.44 cfs 0.147 af

Pond SCB: SC-B Peak Elev=65.50' Storage=0.148 af Inflow=3.20 cfs 0.898 af
Discarded=1.01 cfs 0.876 af Primary=2.16 cfs 0.170 af Outflow=3.17 cfs 1.046 af

Link SPA: SPA Inflow=2.87 cfs 0.389 af
Primary=2.87 cfs 0.389 af

Link SPB: SPB Inflow=0.01 cfs 0.001 af
Primary=0.01 cfs 0.001 af

Link SPC: Study Point C

Inflow=1.29 cfs 0.187 af
Primary=1.29 cfs 0.187 af

Link SPD: Study Point D

Inflow=0.26 cfs 0.043 af
Primary=0.26 cfs 0.043 af

Total Runoff Area = 23.693 ac Runoff Volume = 1.494 af Average Runoff Depth = 0.76"
99.61% Pervious = 23.600 ac 0.39% Impervious = 0.093 ac

Summary for Subcatchment D: SCD

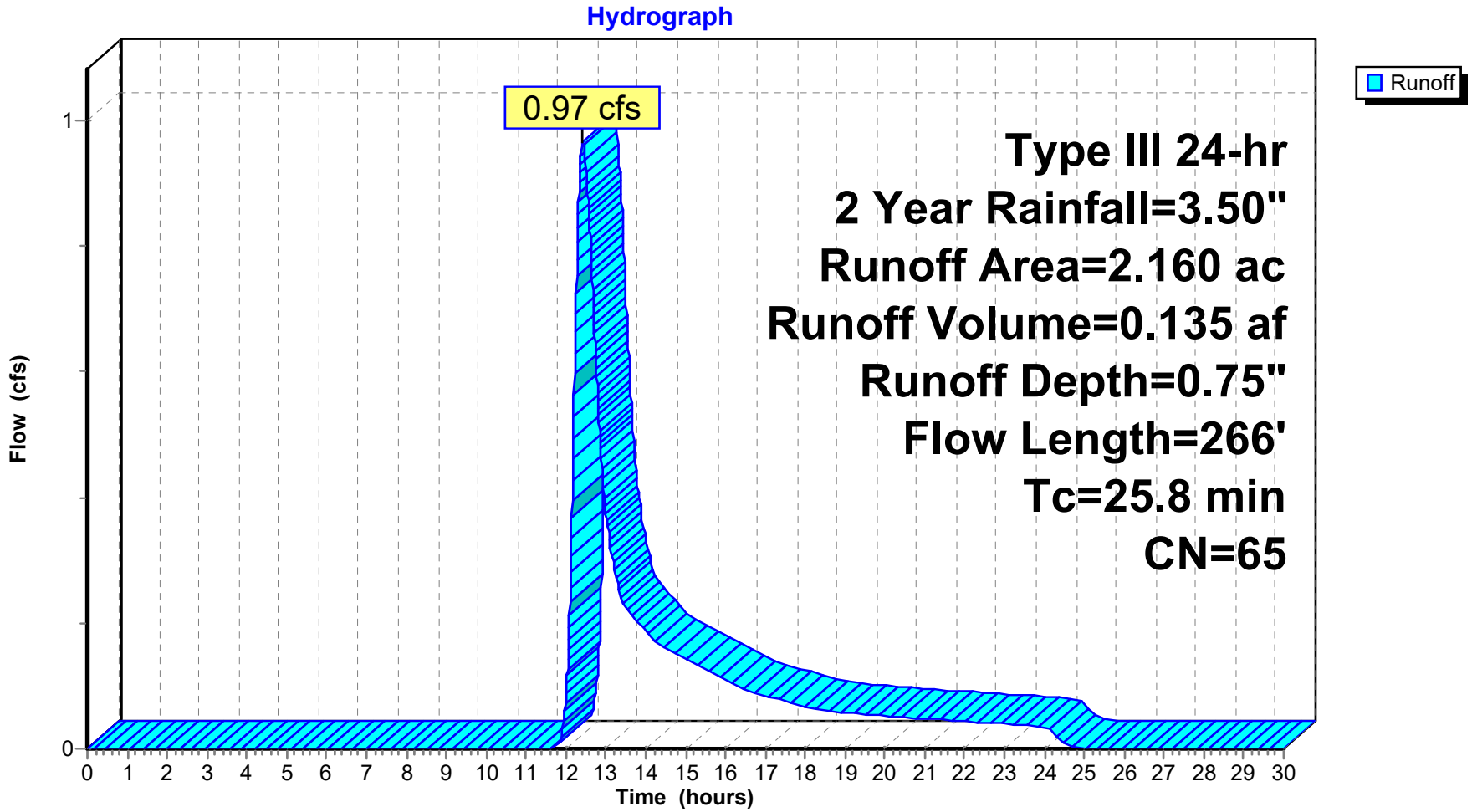
Runoff = 0.97 cfs @ 12.42 hrs, Volume= 0.135 af, Depth= 0.75"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
2.160	65	Woods/grass comb., Fair, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0258	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
19.4	196	0.0125	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
25.8	266	Total			

Subcatchment D: SCD



Summary for Subcatchment E: SCE

Runoff = 0.40 cfs @ 12.16 hrs, Volume= 0.038 af, Depth= 0.85"
Routed to Link SPC : Study Point C

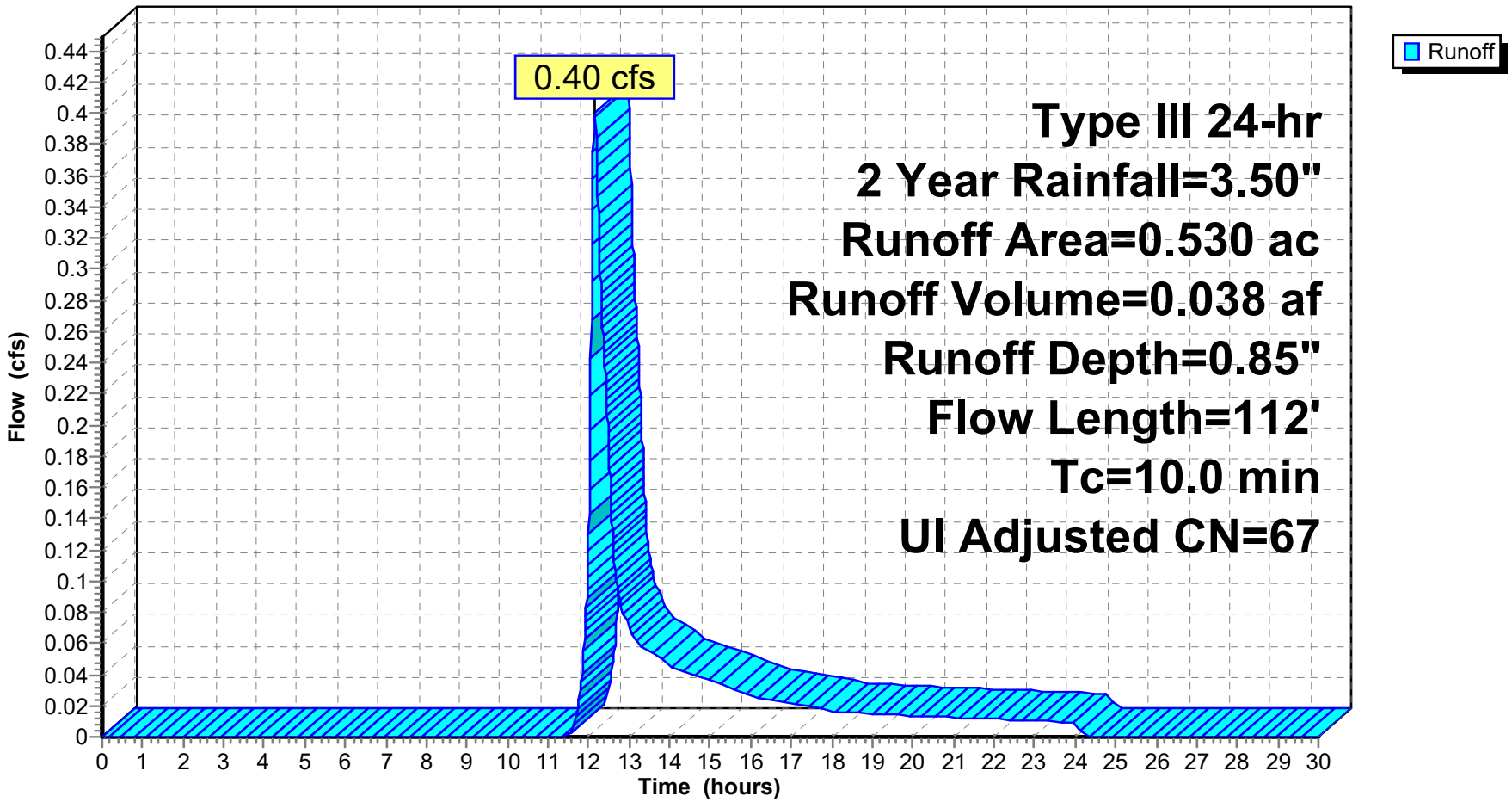
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Adj	Description
0.470	65		Woods/grass comb., Fair, HSG B
0.060	98		Unconnected roofs, HSG A
0.530	69	67	Weighted Average, UI Adjusted
0.470			88.68% Pervious Area
0.060			11.32% Impervious Area
0.060			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	40	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	72	0.4200	0.56		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	112	Total, Increased to minimum Tc = 10.0 min			

Subcatchment E: SCE

Hydrograph



Summary for Subcatchment F: SCF

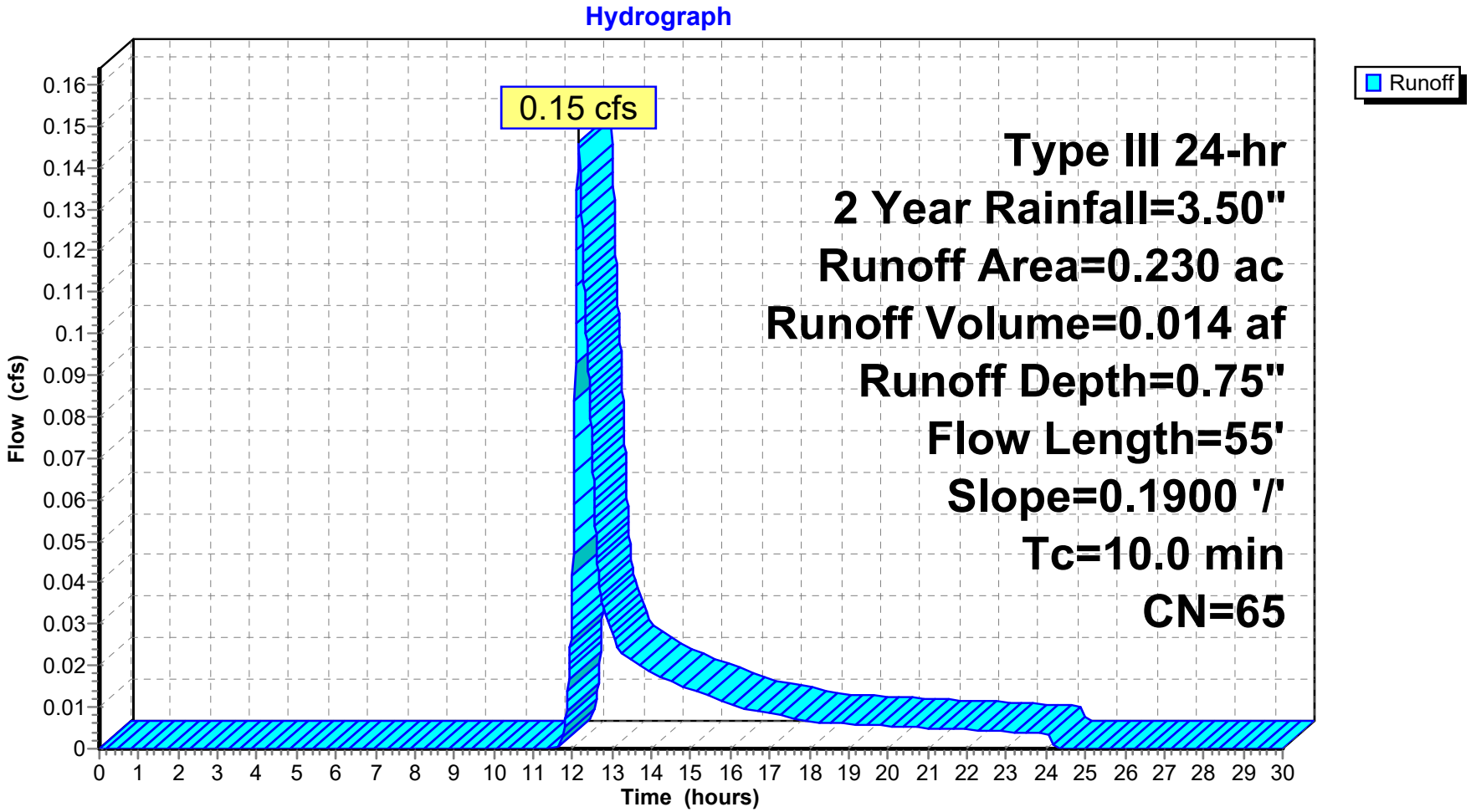
Runoff = 0.15 cfs @ 12.16 hrs, Volume= 0.014 af, Depth= 0.75"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
0.230	65	Woods/grass comb., Fair, HSG B
0.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	55	0.1900	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.4	55	Total, Increased to minimum Tc = 10.0 min			

Subcatchment F: SCF



Summary for Subcatchment G: SCG

Runoff = 0.26 cfs @ 12.38 hrs, Volume= 0.043 af, Depth= 0.45"
Routed to Link SPD : Study Point D

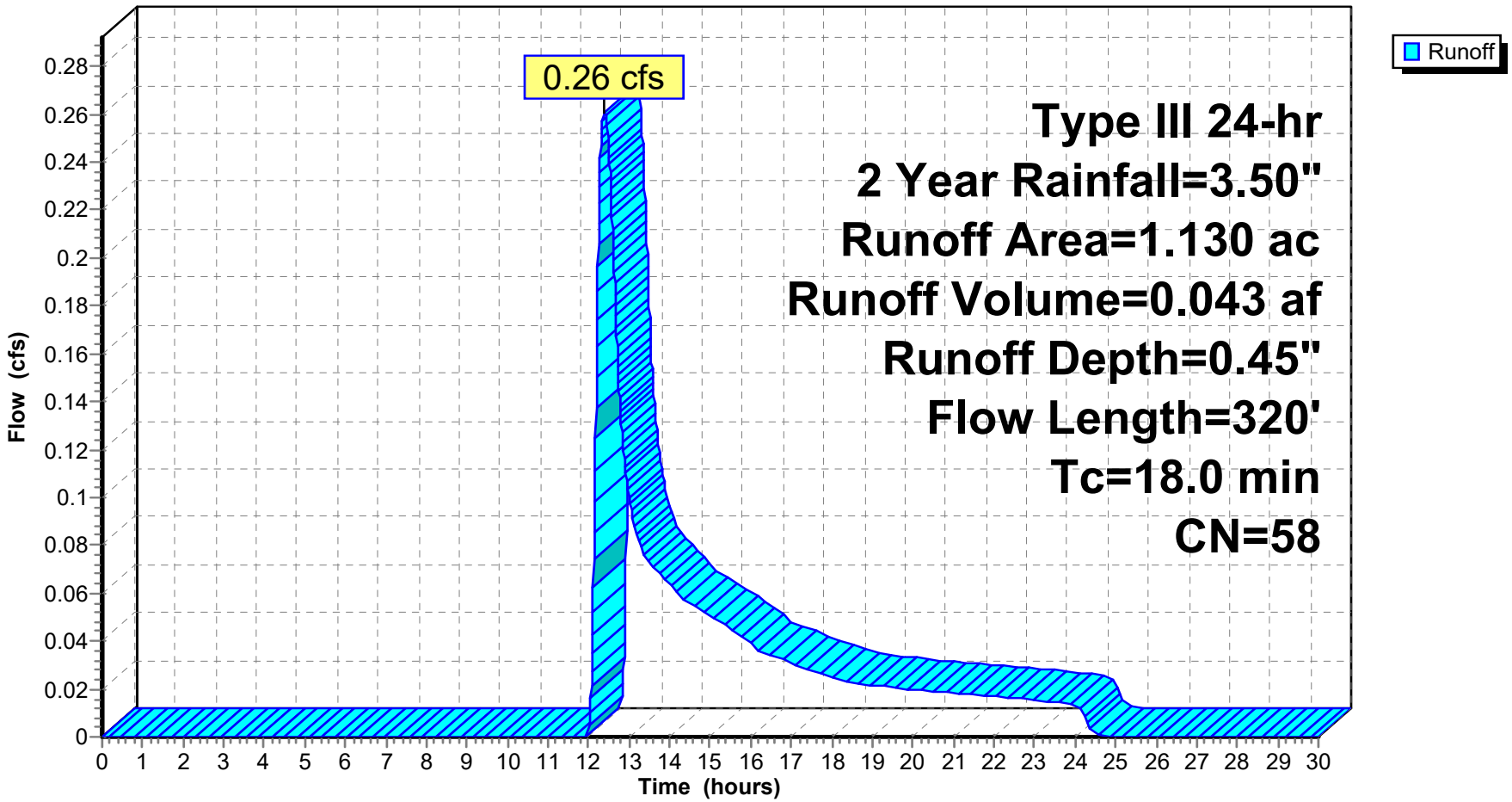
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
1.130	58	Woods/grass comb., Good, HSG B
1.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	95	0.4755	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.9	76	0.7573	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	95	0.5883	0.31		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.5	54	0.4811	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
18.0	320	Total			

Subcatchment G: SCG

Hydrograph



Summary for Subcatchment SC-A: SC-A

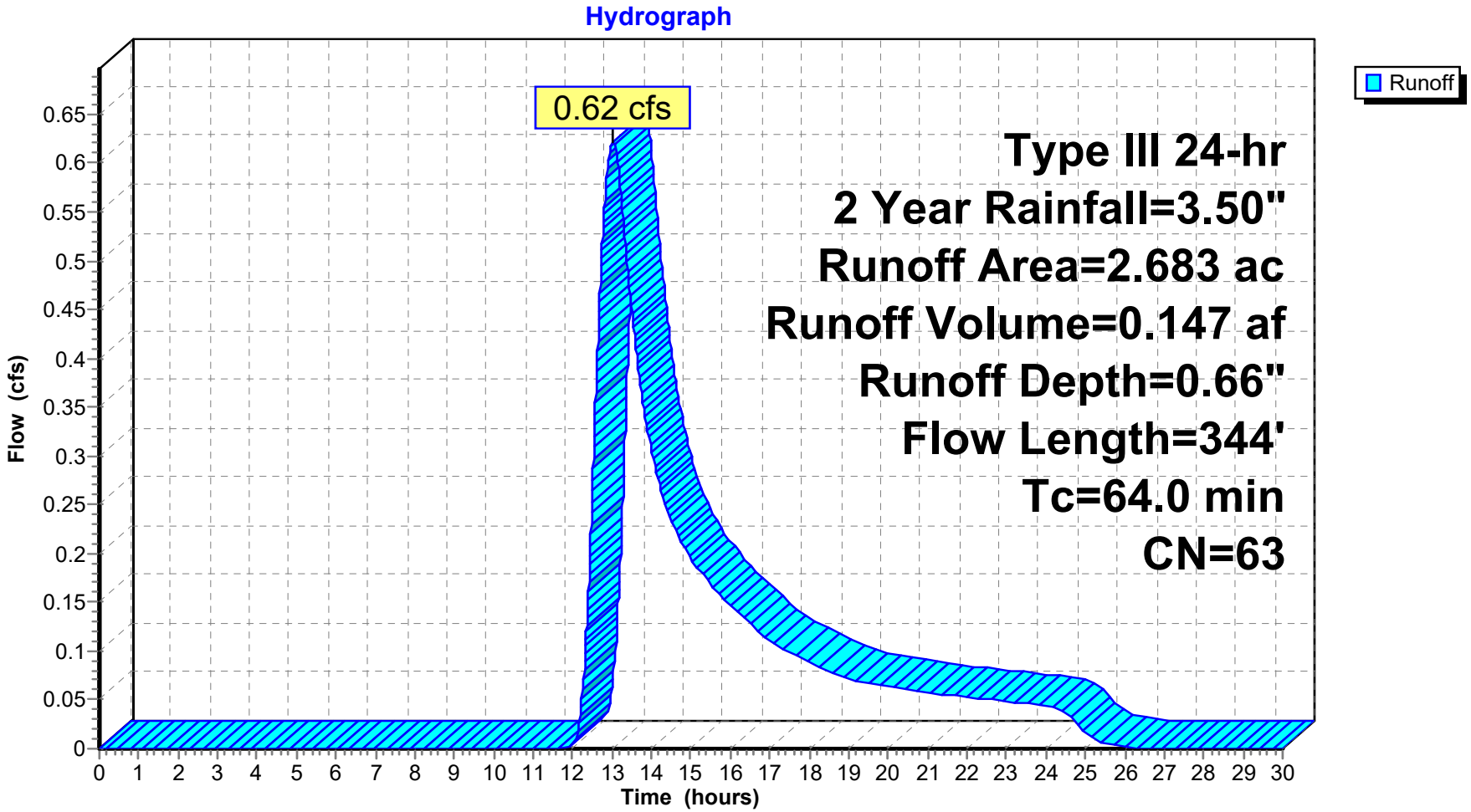
Runoff = 0.62 cfs @ 13.01 hrs, Volume= 0.147 af, Depth= 0.66"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
1.870	60	Woods, Fair, HSG B
0.780	67	Brush, Poor, HSG B
0.033	98	Paved parking, HSG B
2.683	63	Weighted Average
2.650		98.77% Pervious Area
0.033		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
30.7	177	0.0230	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
27.5	117	0.0132	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
64.0	344	Total			

Subcatchment SC-A: SC-A



Summary for Subcatchment SC-B: SC-B

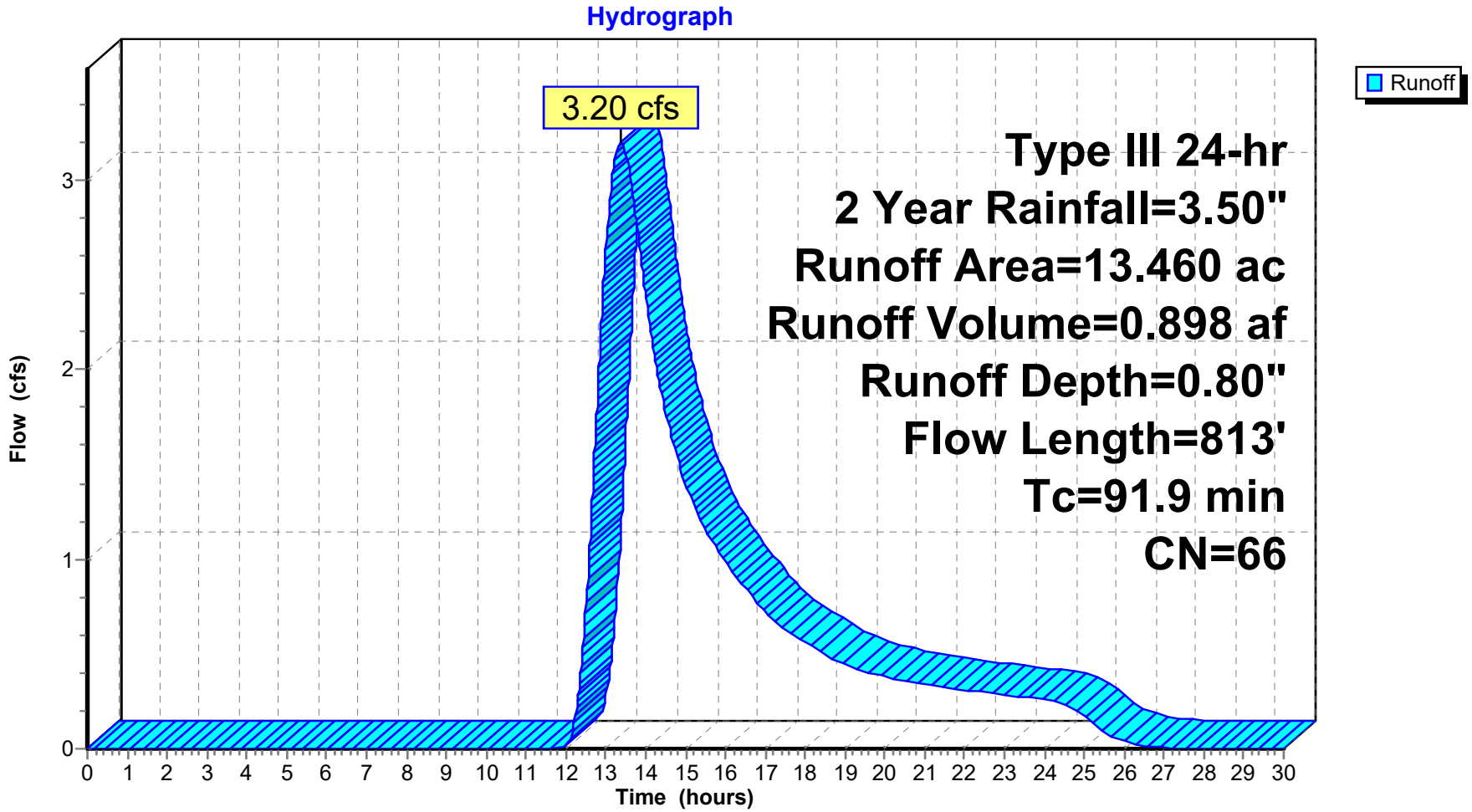
Runoff = 3.20 cfs @ 13.38 hrs, Volume= 0.898 af, Depth= 0.80"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
9.350	65	Woods/grass comb., Fair, HSG B
4.110	67	Brush, Poor, HSG B
13.460	66	Weighted Average
13.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	166	0.3100	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
31.2	284	0.0568	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	128	0.0541	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
11.8	104	0.0860	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.8	131	0.0297	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
91.9	813	Total			

Subcatchment SC-B: SC-B



Summary for Subcatchment SC-C: SC-C

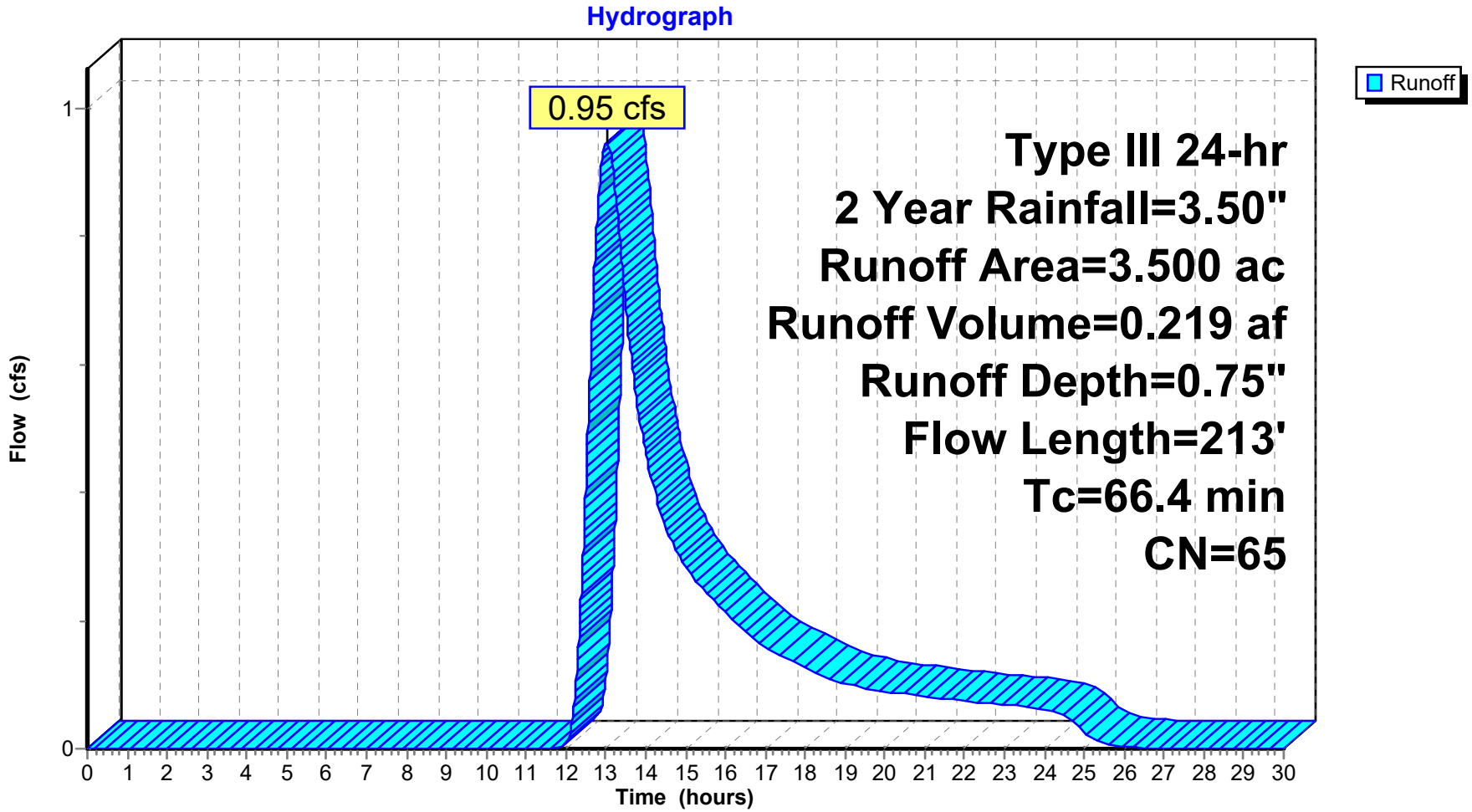
Runoff = 0.95 cfs @ 13.05 hrs, Volume= 0.219 af, Depth= 0.75"
Routed to Link SPA : SPA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.50"

Area (ac)	CN	Description
3.500	65	Woods/grass comb., Fair, HSG B
3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
3.7	109	0.6400	0.50		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
66.4	213	Total			

Subcatchment SC-C: SC-C



Summary for Pond SCA: SC-A

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 0.66" for 2 Year event
Inflow = 0.62 cfs @ 13.01 hrs, Volume= 0.147 af
Outflow = 0.44 cfs @ 13.52 hrs, Volume= 0.147 af, Atten= 29%, Lag= 30.5 min
Discarded = 0.43 cfs @ 13.52 hrs, Volume= 0.147 af
Primary = 0.01 cfs @ 13.52 hrs, Volume= 0.001 af
Routed to Link SPB : SPB

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 140.99' @ 13.52 hrs Surf.Area= 0.084 ac Storage= 0.020 af

Plug-Flow detention time= 27.3 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 27.3 min (976.2 - 948.9)

Volume	Invert	Avail.Storage	Storage Description
#1	140.30'	0.021 af	**Custom Stage Data (Conic)** Listed below (Recalc)

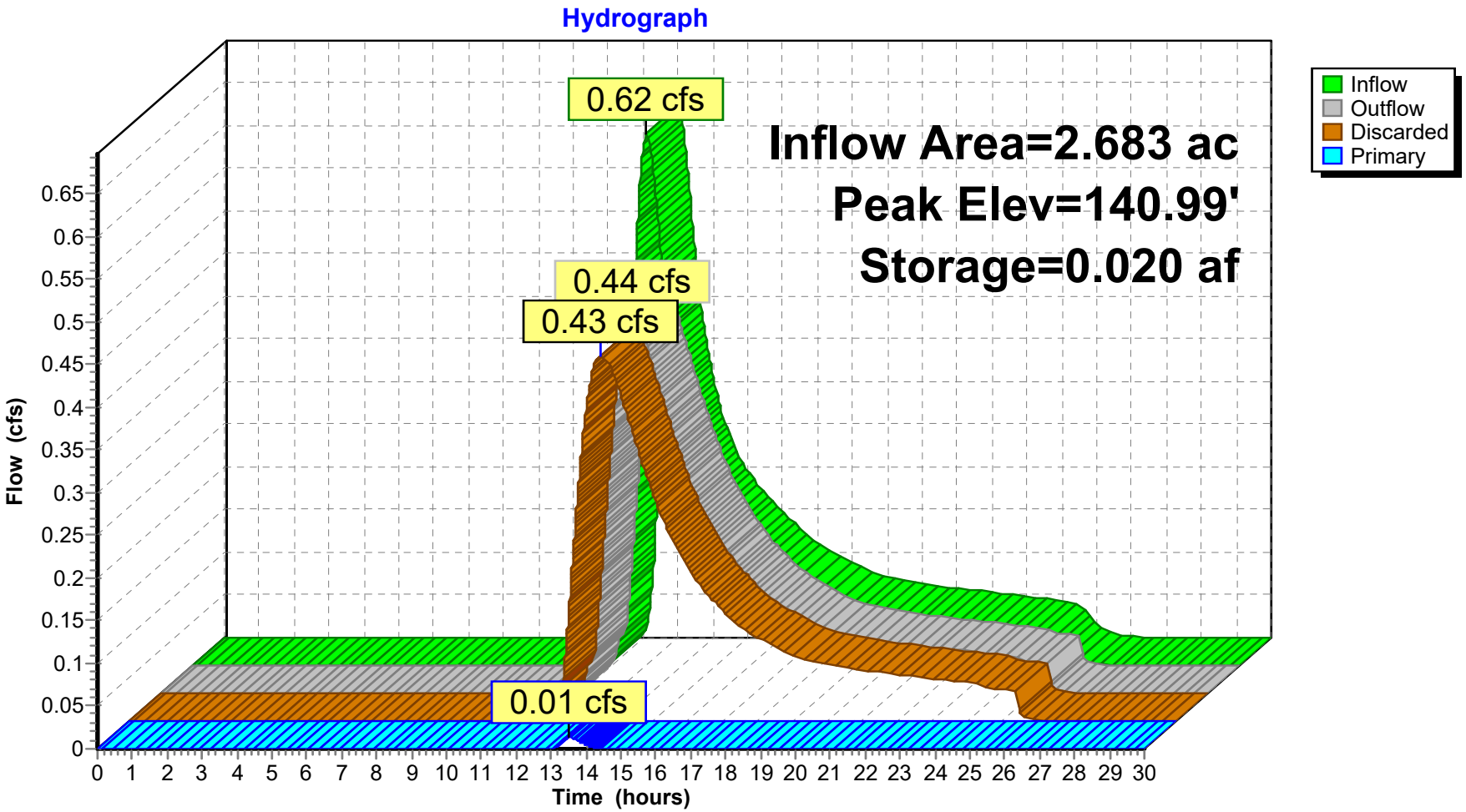
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
140.30	0.007	0.000	0.000	0.007
140.50	0.007	0.001	0.001	0.007
141.00	0.088	0.020	0.021	0.088

Device	Routing	Invert	Outlet Devices
#0	Primary	141.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	140.30'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	140.90'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=0.43 cfs @ 13.52 hrs HW=140.99' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=0.01 cfs @ 13.52 hrs HW=140.99' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.01 cfs @ 0.73 fps)

Pond SCA: SC-A


Hydrograph
Inflow Area=2.683 ac
Peak Elev=140.99'
Storage=0.020 af
0.62 cfs
0.44 cfs
0.43 cfs
0.01 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Summary for Pond SCB: SC-B

Inflow Area = 13.460 ac, 0.00% Impervious, Inflow Depth = 0.80" for 2 Year event
Inflow = 3.20 cfs @ 13.38 hrs, Volume= 0.898 af
Outflow = 3.17 cfs @ 13.47 hrs, Volume= 1.046 af, Atten= 1%, Lag= 5.5 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 0.876 af
Primary = 2.16 cfs @ 13.47 hrs, Volume= 0.170 af
Routed to Link SPA : SPA

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	0.148 af	**Custom Stage Data (Conic)** Listed below

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
63.60	0.001	0.000	0.000	0.001
65.00	0.130	0.066	0.066	0.130
65.50	0.200	0.082	0.148	0.200

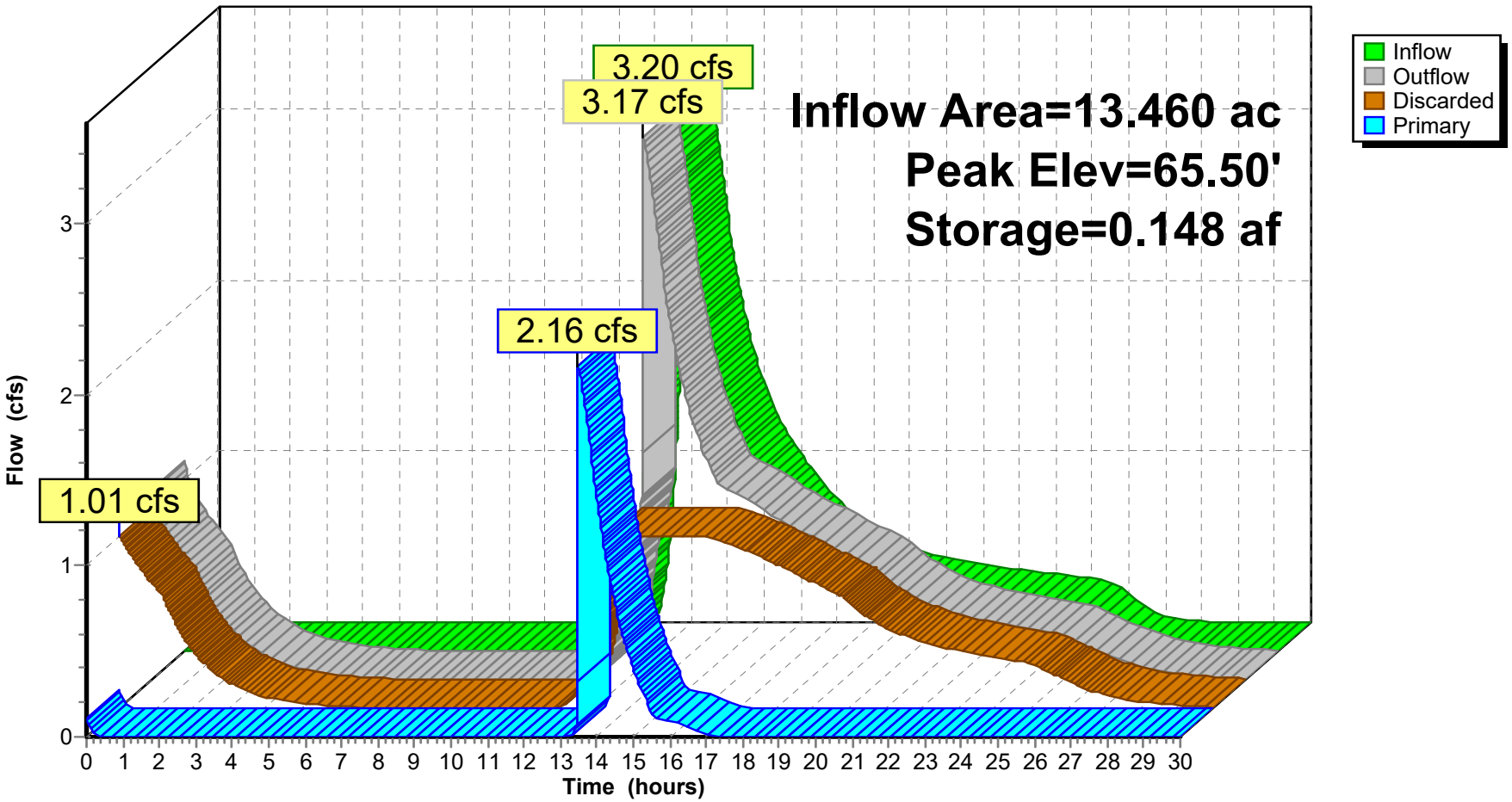
Device	Routing	Invert	Outlet Devices
#0	Primary	65.50'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	63.60'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	65.30'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

Primary OutFlow Max=0.11 cfs @ 13.47 hrs HW=65.50' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

Pond SCB: SC-B

Hydrograph

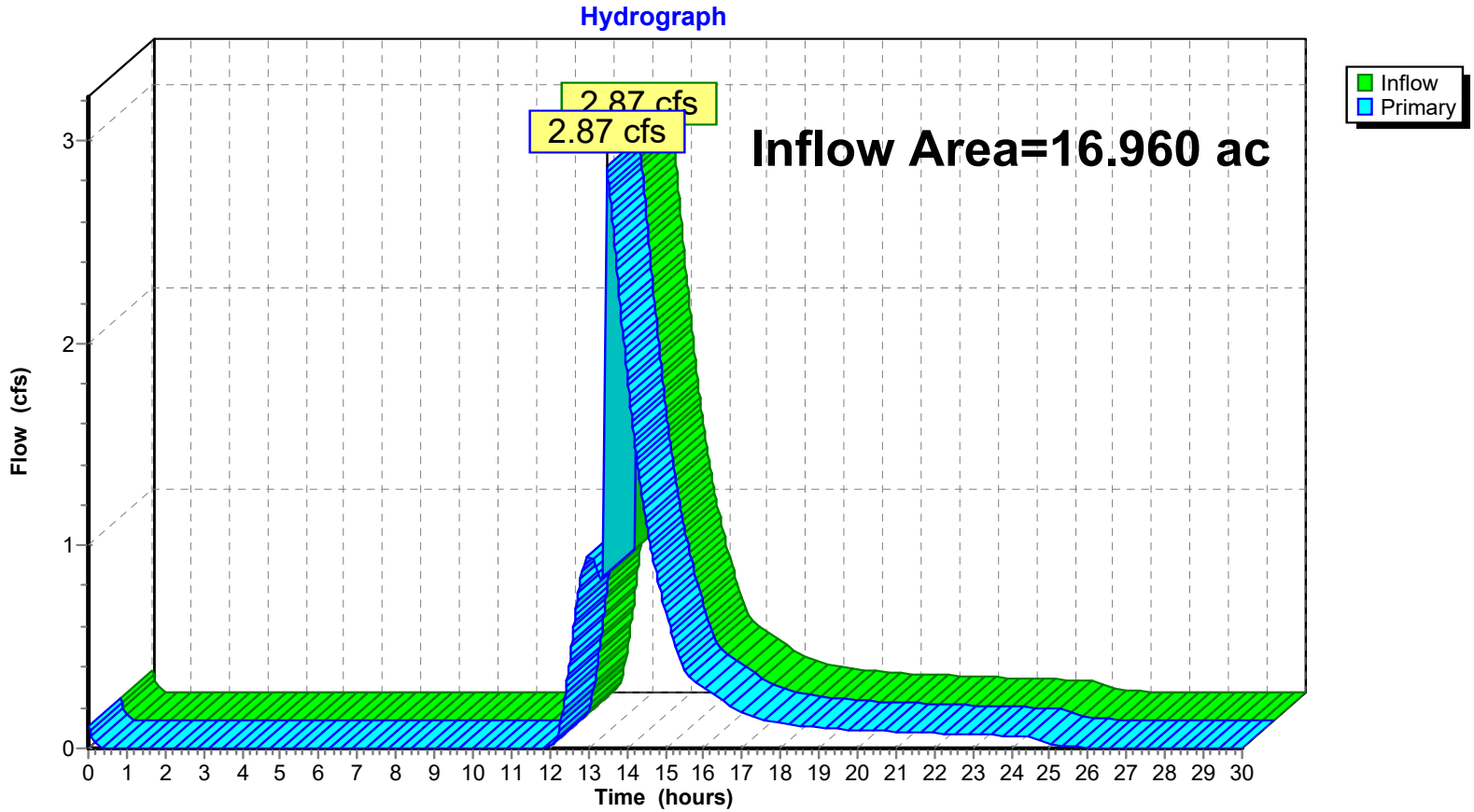


Summary for Link SPA: SPA

Inflow Area = 16.960 ac, 0.00% Impervious, Inflow Depth = 0.28" for 2 Year event
Inflow = 2.87 cfs @ 13.47 hrs, Volume= 0.389 af
Primary = 2.87 cfs @ 13.47 hrs, Volume= 0.389 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: SPA

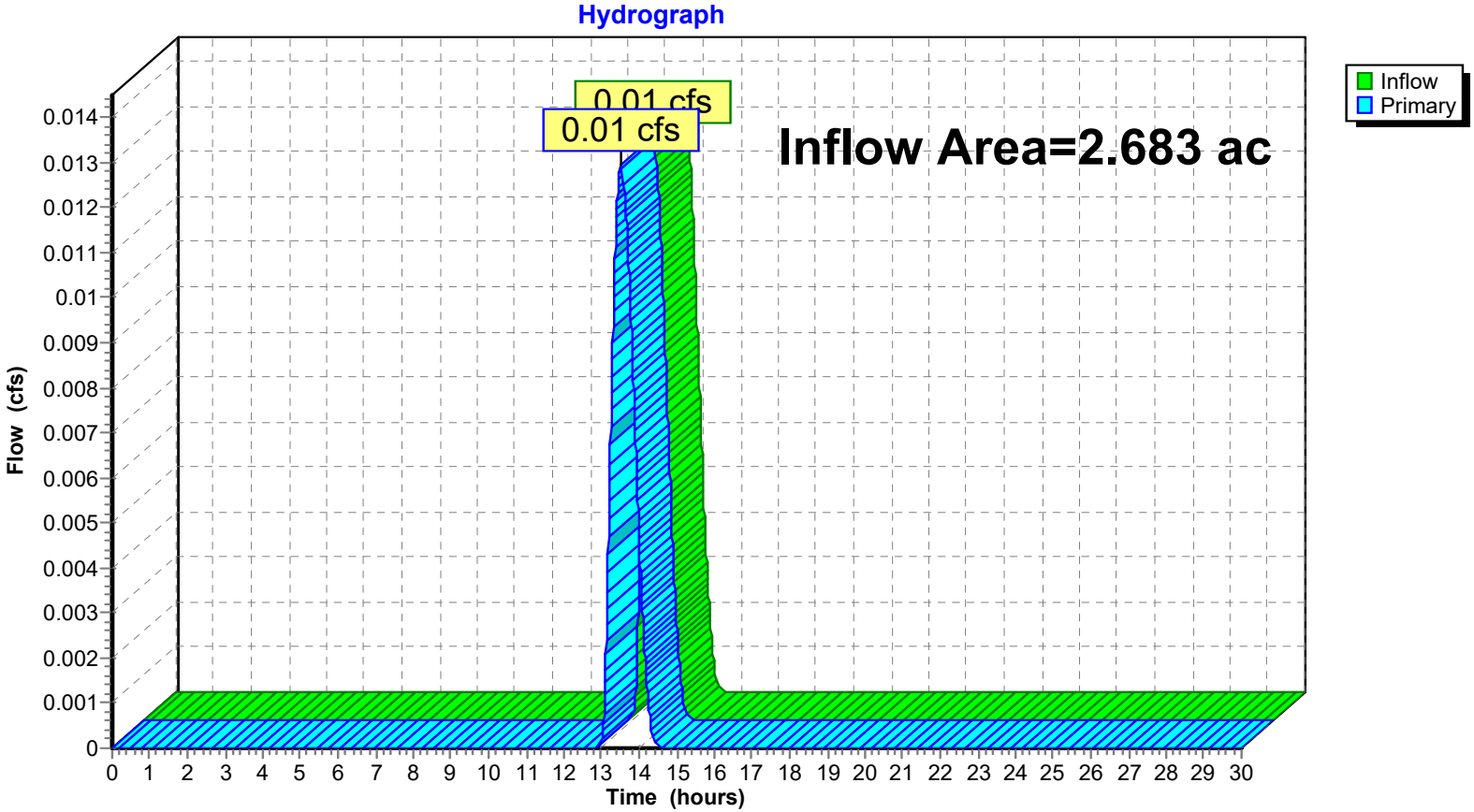


Summary for Link SPB: SPB

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 0.00" for 2 Year event
Inflow = 0.01 cfs @ 13.52 hrs, Volume= 0.001 af
Primary = 0.01 cfs @ 13.52 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPB: SPB

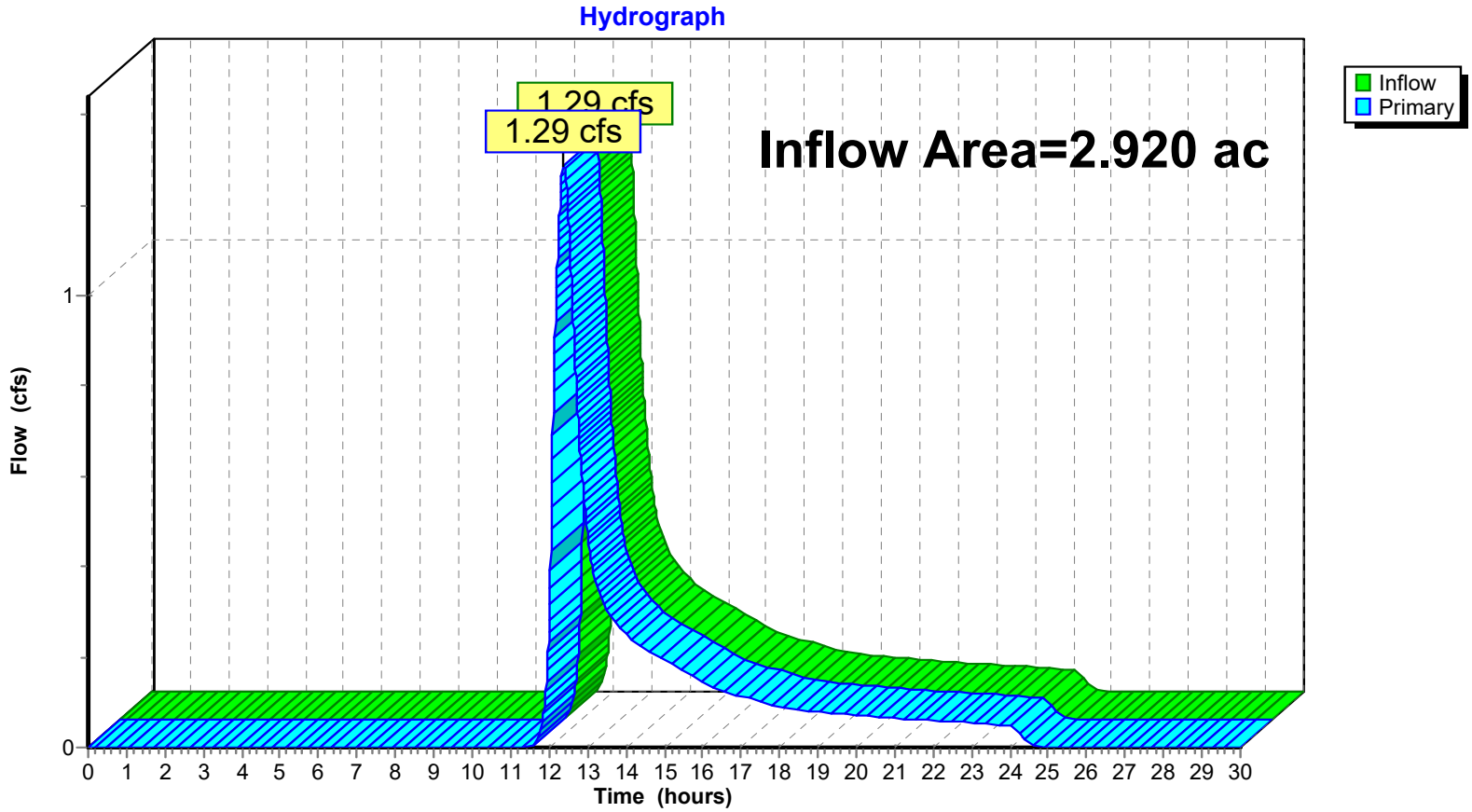


Summary for Link SPC: Study Point C

Inflow Area = 2.920 ac, 2.05% Impervious, Inflow Depth = 0.77" for 2 Year event
Inflow = 1.29 cfs @ 12.38 hrs, Volume= 0.187 af
Primary = 1.29 cfs @ 12.38 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

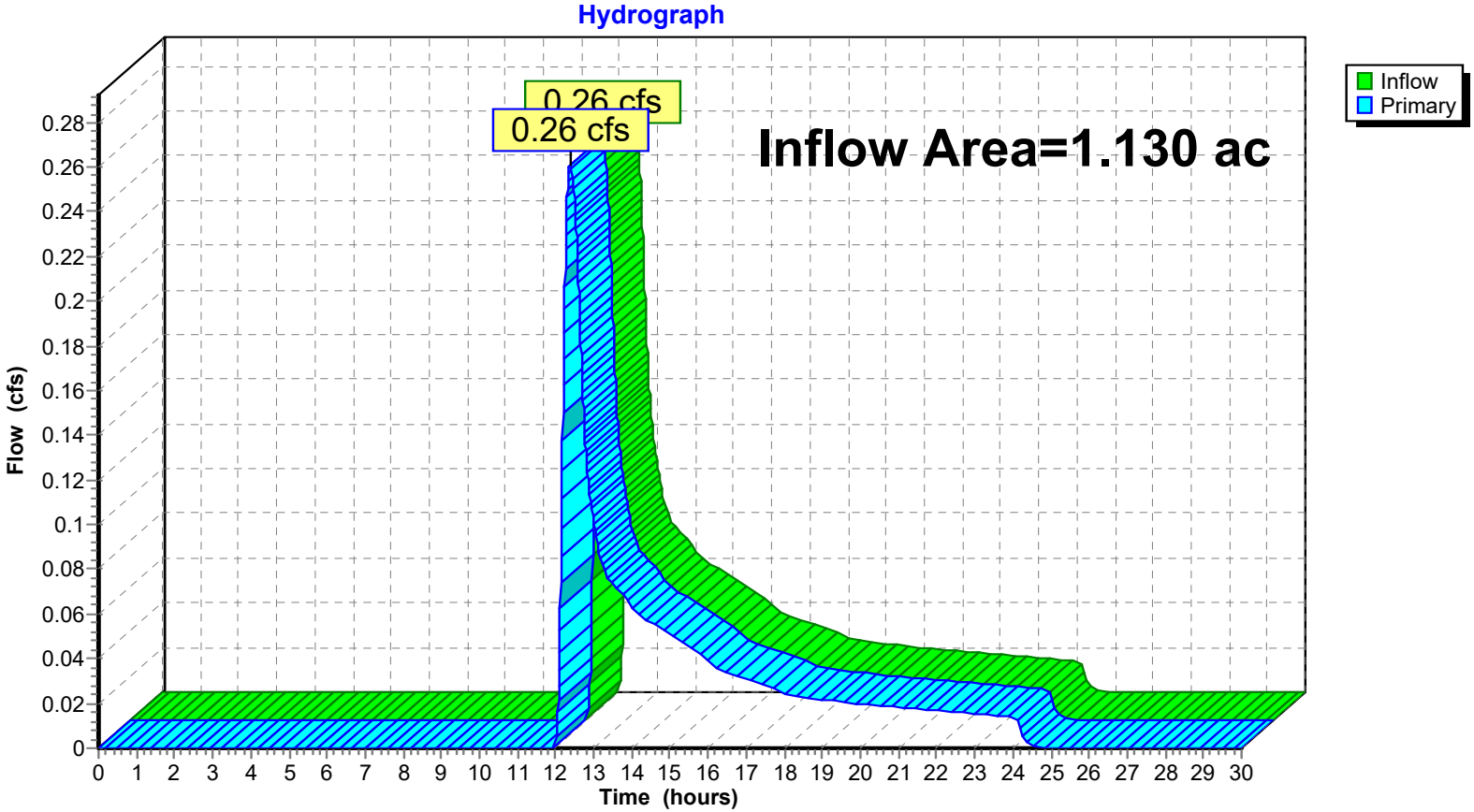


Summary for Link SPD: Study Point D

Inflow Area = 1.130 ac, 0.00% Impervious, Inflow Depth = 0.45" for 2 Year event
Inflow = 0.26 cfs @ 12.38 hrs, Volume= 0.043 af
Primary = 0.26 cfs @ 12.38 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 D: SCD Runoff Area=2.160 ac 0.00% Impervious Runoff Depth=1.49"
Flow Length=266' Tc=25.8 min CN=65 Runoff=2.14 cfs 0.268 af

Subcatchment E: SCE Runoff Area=0.530 ac 11.32% Impervious Runoff Depth=1.63"
Flow Length=112' Tc=10.0 min UI Adjusted CN=67 Runoff=0.84 cfs 0.072 af

Subcatchment F: SCF Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=1.49"
Flow Length=55' Slope=0.1900 '/' Tc=10.0 min CN=65 Runoff=0.33 cfs 0.029 af

Subcatchment G: SCG Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=1.03"
Flow Length=320' Tc=18.0 min CN=58 Runoff=0.80 cfs 0.097 af

Subcatchment SC-A: SC-A Runoff Area=2.683 ac 1.23% Impervious Runoff Depth=1.35"
Flow Length=344' Tc=64.0 min CN=63 Runoff=1.46 cfs 0.303 af

Subcatchment SC-B: SC-B Runoff Area=13.460 ac 0.00% Impervious Runoff Depth=1.56"
Flow Length=813' Tc=91.9 min CN=66 Runoff=6.86 cfs 1.749 af

Subcatchment SC-C: SC-C Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=1.49"
Flow Length=213' Tc=66.4 min CN=65 Runoff=2.10 cfs 0.434 af

Pond SCA: SC-A Peak Elev=141.00' Storage=0.021 af Inflow=1.46 cfs 0.303 af
Discarded=0.45 cfs 0.230 af Primary=1.02 cfs 0.073 af Outflow=1.46 cfs 0.303 af

Pond SCB: SC-B Peak Elev=65.50' Storage=0.148 af Inflow=6.86 cfs 1.749 af
Discarded=1.01 cfs 1.090 af Primary=5.85 cfs 0.808 af Outflow=6.86 cfs 1.897 af

Link SPA: SPA Inflow=7.68 cfs 1.242 af
Primary=7.68 cfs 1.242 af

Link SPB: SPB Inflow=1.02 cfs 0.073 af
Primary=1.02 cfs 0.073 af

Link SPC: Study Point C Inflow=2.81 cfs 0.369 af
Primary=2.81 cfs 0.369 af

Link SPD: Study Point D Inflow=0.80 cfs 0.097 af
Primary=0.80 cfs 0.097 af

Total Runoff Area = 23.693 ac Runoff Volume = 2.952 af Average Runoff Depth = 1.50"
99.61% Pervious = 23.600 ac 0.39% Impervious = 0.093 ac

Summary for Subcatchment D: SCD

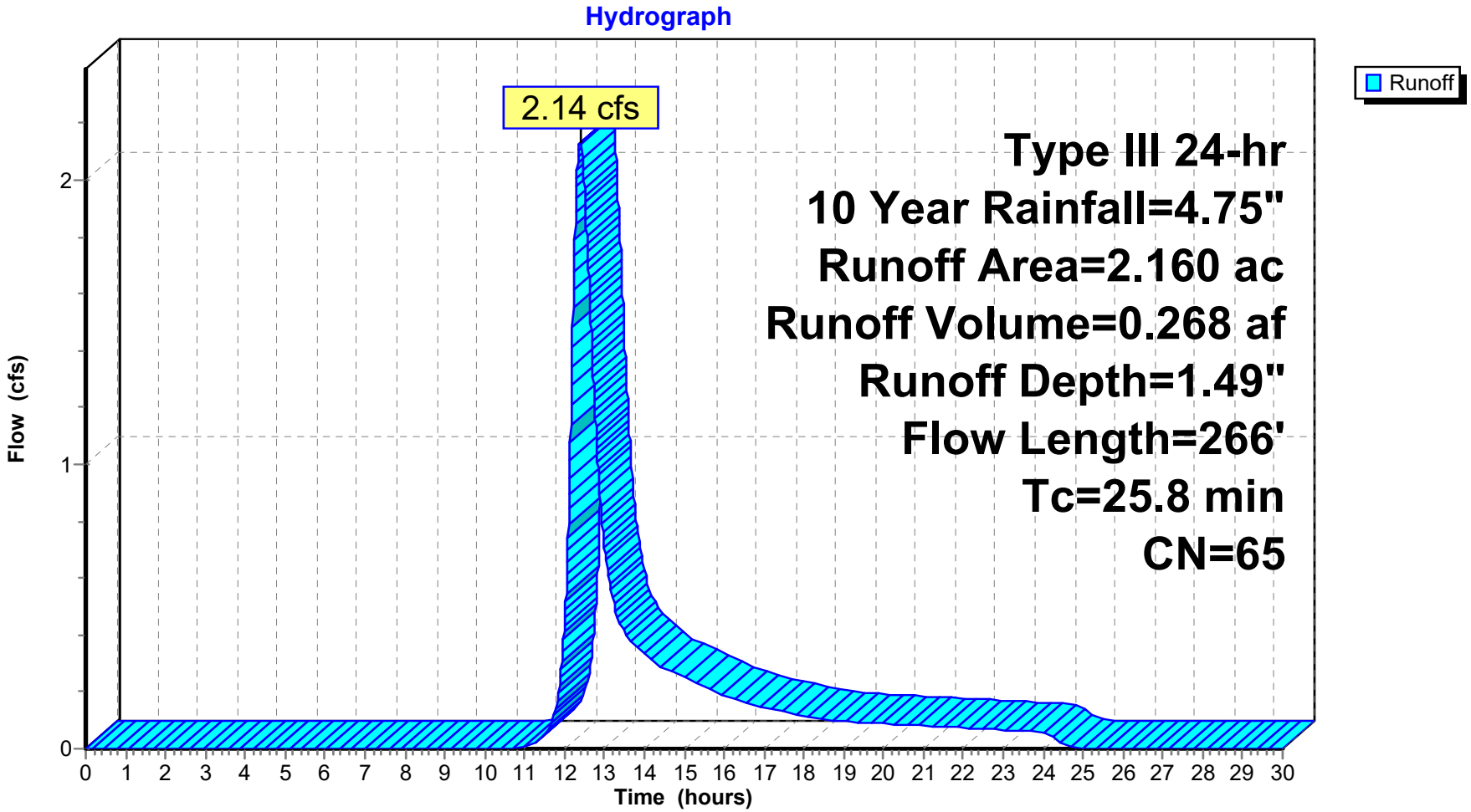
Runoff = 2.14 cfs @ 12.39 hrs, Volume= 0.268 af, Depth= 1.49"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
2.160	65	Woods/grass comb., Fair, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0258	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
19.4	196	0.0125	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
25.8	266	Total			

Subcatchment D: SCD



Summary for Subcatchment E: SCE

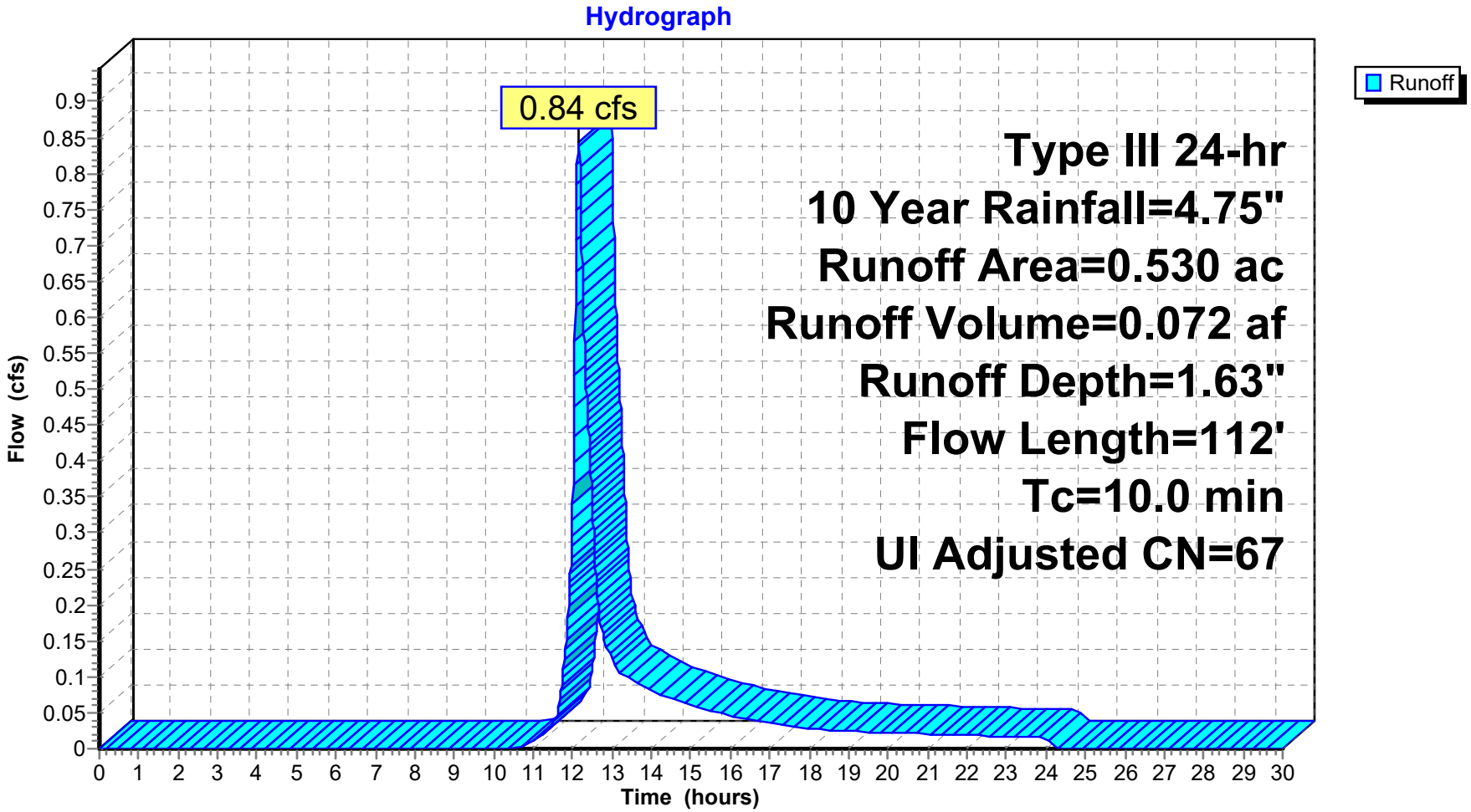
Runoff = 0.84 cfs @ 12.15 hrs, Volume= 0.072 af, Depth= 1.63"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Adj	Description
0.470	65		Woods/grass comb., Fair, HSG B
0.060	98		Unconnected roofs, HSG A
0.530	69	67	Weighted Average, UI Adjusted
0.470			88.68% Pervious Area
0.060			11.32% Impervious Area
0.060			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	40	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	72	0.4200	0.56		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	112	Total, Increased to minimum Tc = 10.0 min			

Subcatchment E: SCE



Summary for Subcatchment F: SCF

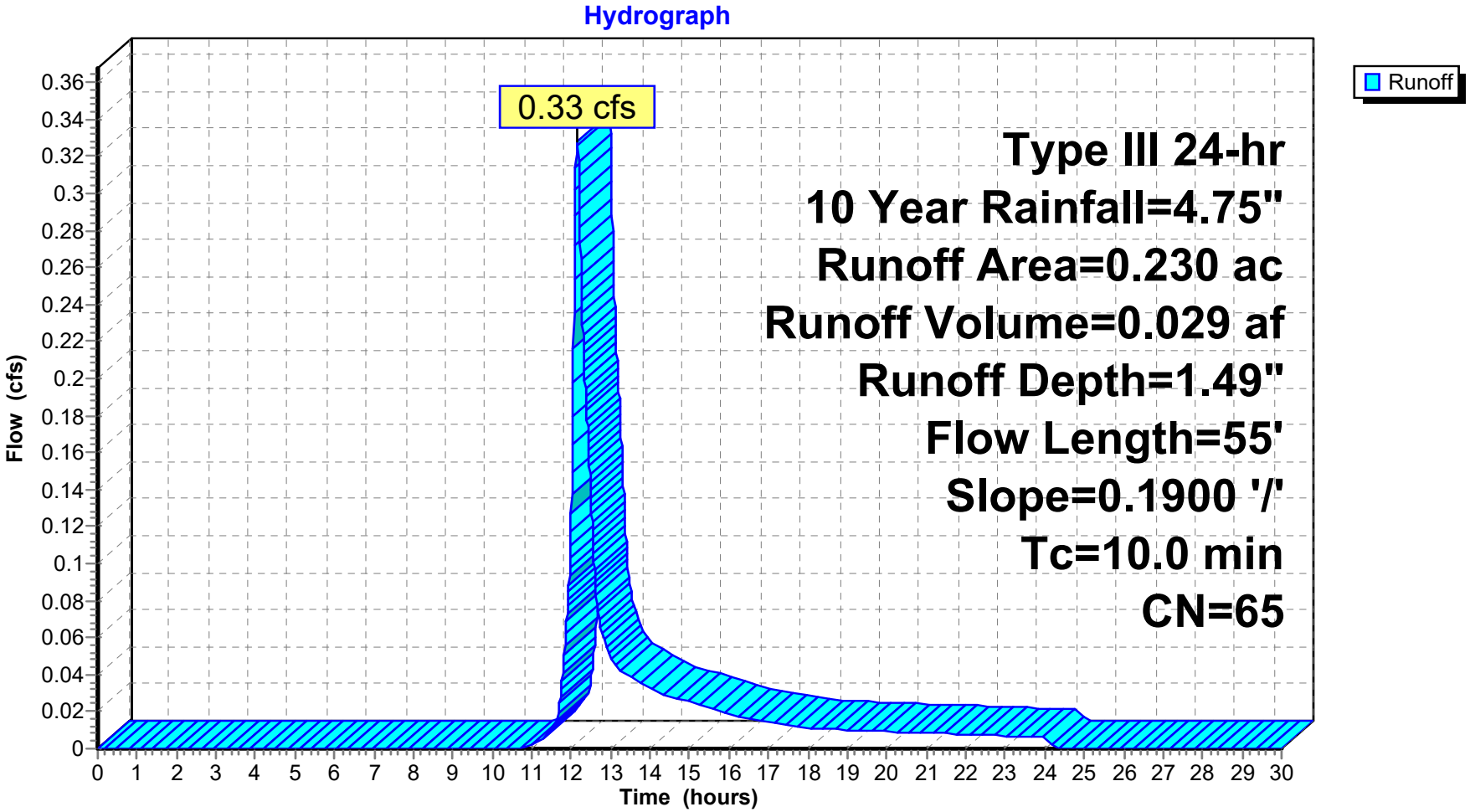
Runoff = 0.33 cfs @ 12.15 hrs, Volume= 0.029 af, Depth= 1.49"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
0.230	65	Woods/grass comb., Fair, HSG B
0.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	55	0.1900	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.4	55	Total, Increased to minimum Tc = 10.0 min			

Subcatchment F: SCF



Summary for Subcatchment G: SCG

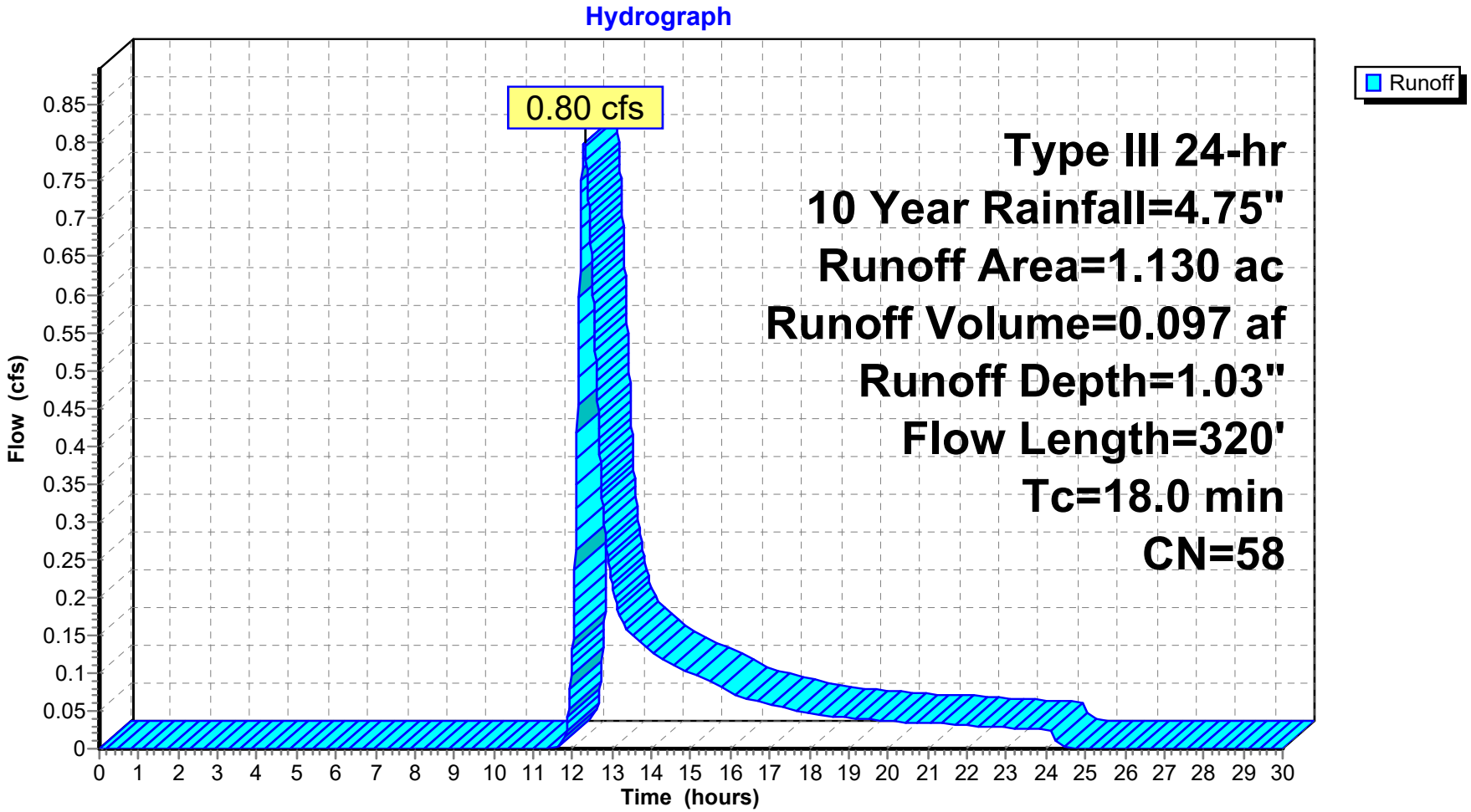
Runoff = 0.80 cfs @ 12.30 hrs, Volume= 0.097 af, Depth= 1.03"
Routed to Link SPD : Study Point D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
1.130	58	Woods/grass comb., Good, HSG B
1.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	95	0.4755	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.9	76	0.7573	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	95	0.5883	0.31		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.5	54	0.4811	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
18.0	320	Total			

Subcatchment G: SCG



Summary for Subcatchment SC-A: SC-A

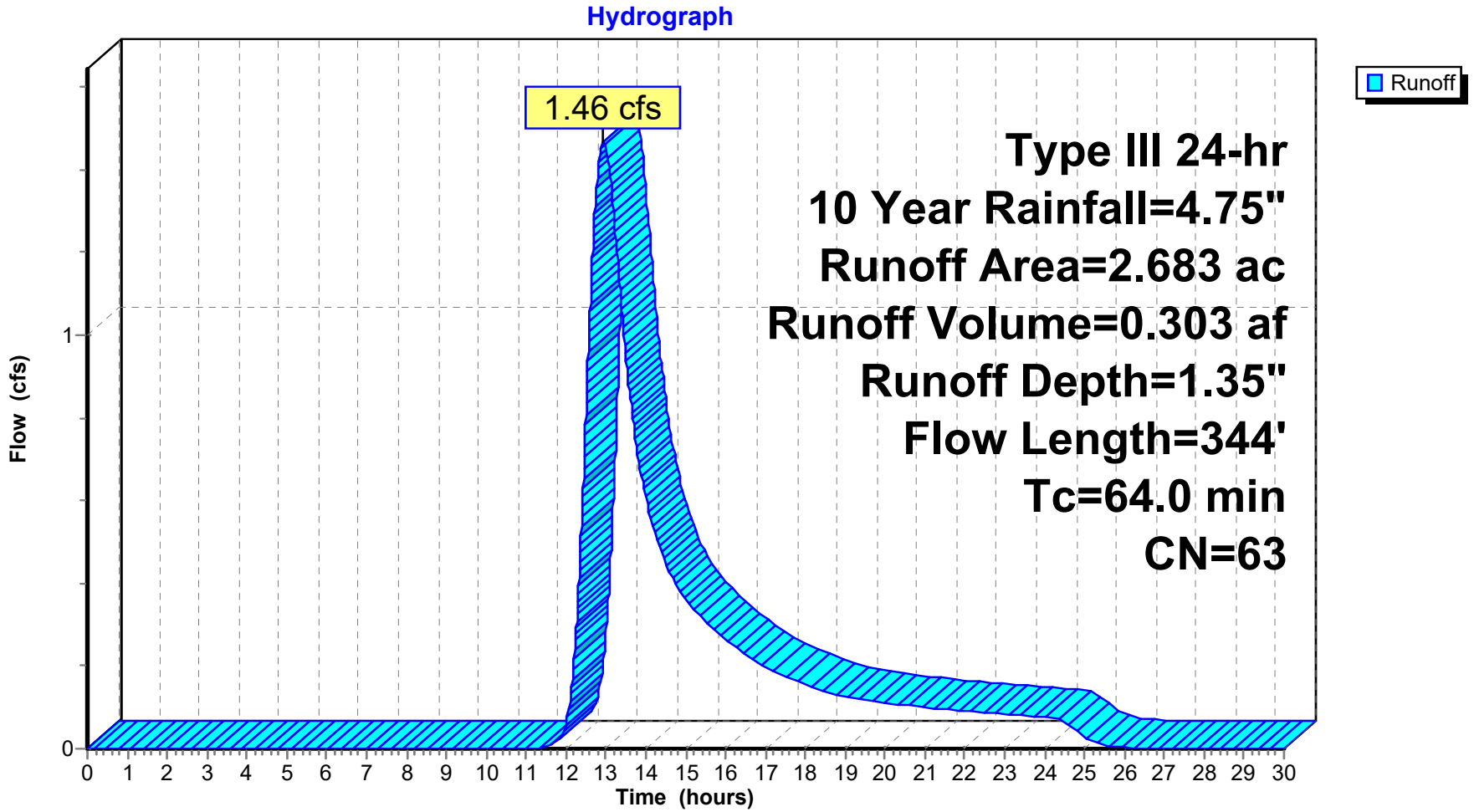
Runoff = 1.46 cfs @ 12.94 hrs, Volume= 0.303 af, Depth= 1.35"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
1.870	60	Woods, Fair, HSG B
0.780	67	Brush, Poor, HSG B
0.033	98	Paved parking, HSG B
2.683	63	Weighted Average
2.650		98.77% Pervious Area
0.033		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
30.7	177	0.0230	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
27.5	117	0.0132	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
64.0	344	Total			

Subcatchment SC-A: SC-A



Summary for Subcatchment SC-B: SC-B

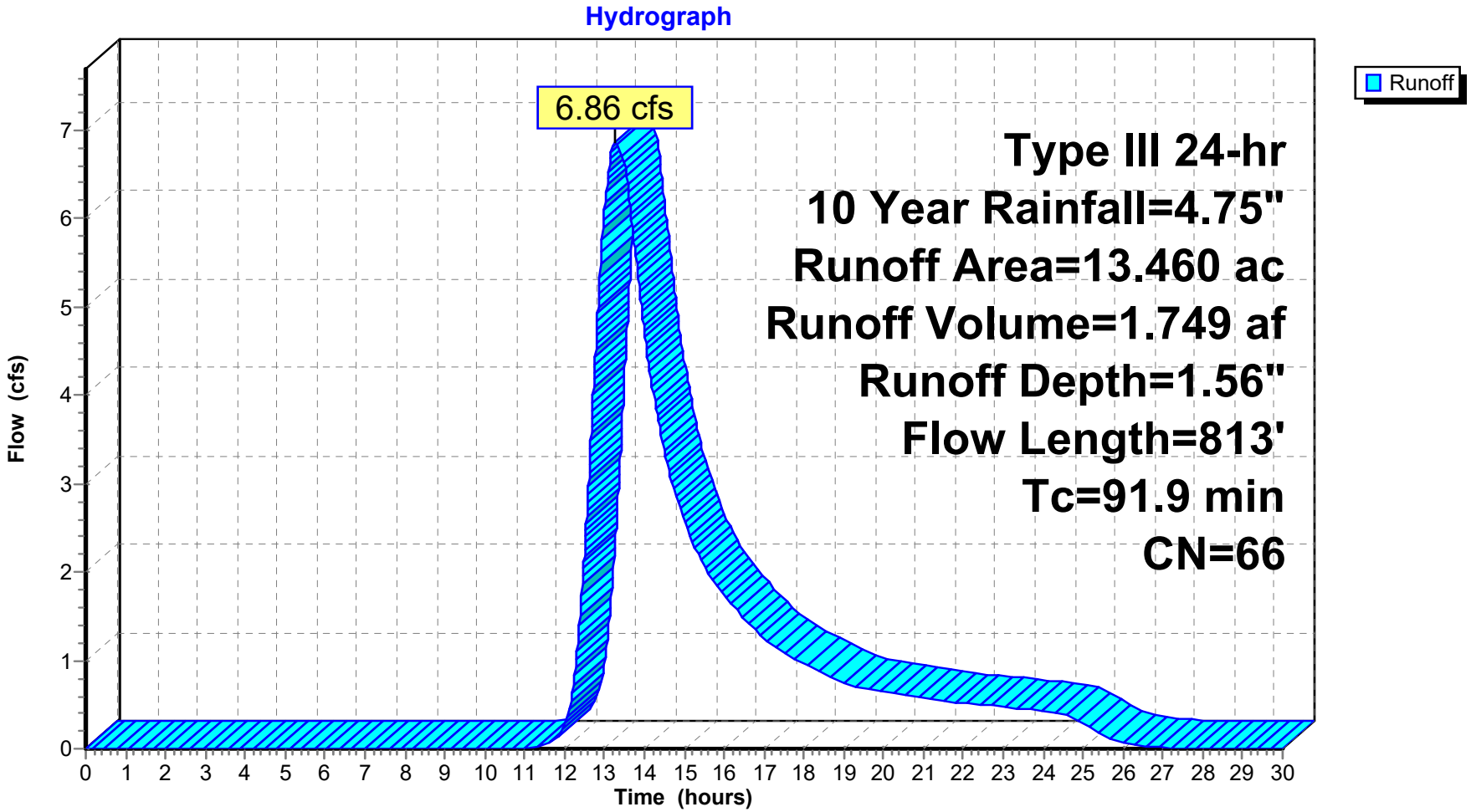
Runoff = 6.86 cfs @ 13.28 hrs, Volume= 1.749 af, Depth= 1.56"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
9.350	65	Woods/grass comb., Fair, HSG B
4.110	67	Brush, Poor, HSG B
13.460	66	Weighted Average
13.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	166	0.3100	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
31.2	284	0.0568	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	128	0.0541	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
11.8	104	0.0860	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.8	131	0.0297	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
91.9	813	Total			

Subcatchment SC-B: SC-B



Summary for Subcatchment SC-C: SC-C

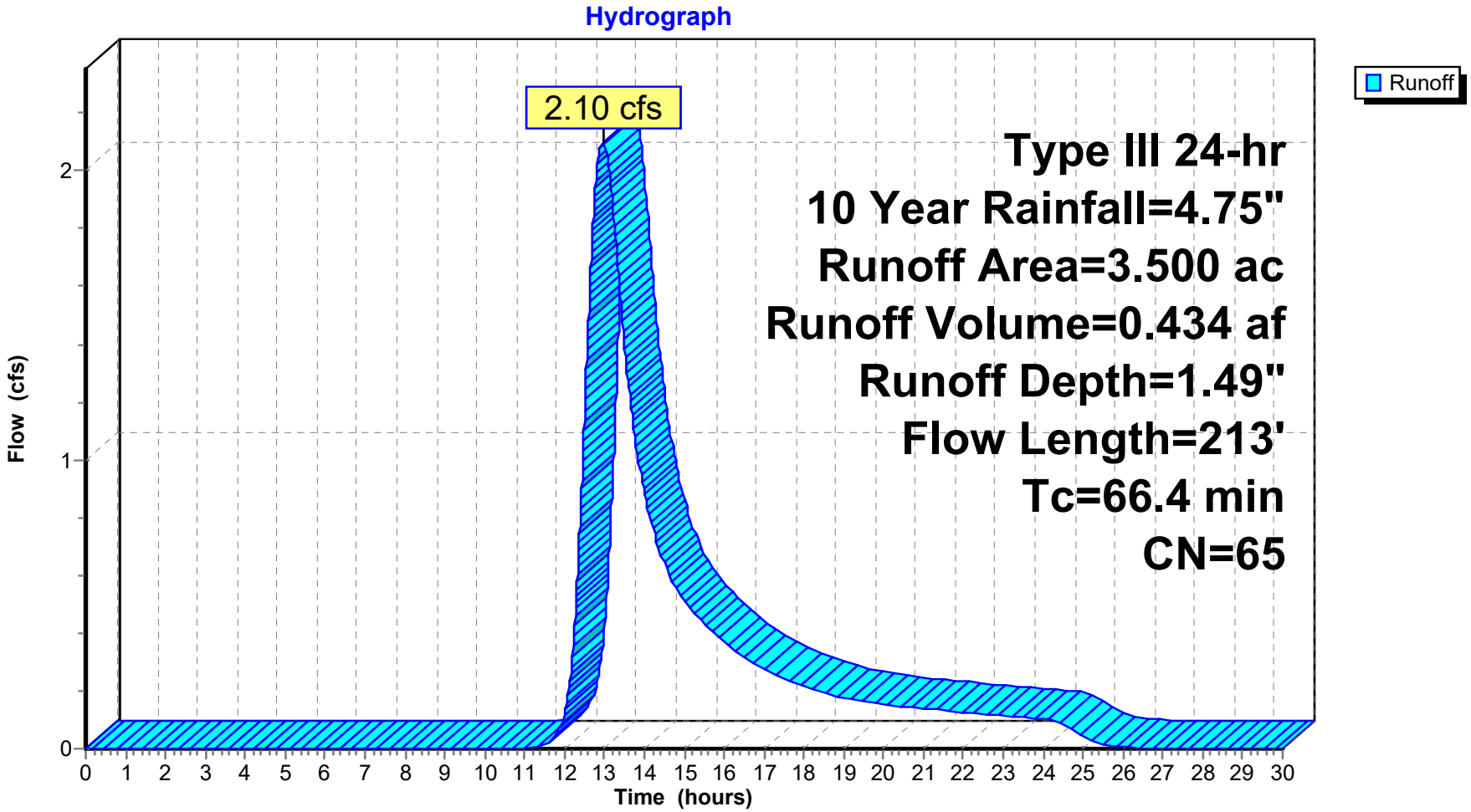
Runoff = 2.10 cfs @ 12.98 hrs, Volume= 0.434 af, Depth= 1.49"
Routed to Link SPA : SPA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.75"

Area (ac)	CN	Description
3.500	65	Woods/grass comb., Fair, HSG B
3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
3.7	109	0.6400	0.50		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
66.4	213	Total			

Subcatchment SC-C: SC-C



Summary for Pond SCA: SC-A

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 1.35" for 10 Year event
Inflow = 1.46 cfs @ 12.94 hrs, Volume= 0.303 af
Outflow = 1.46 cfs @ 12.95 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.45 cfs @ 12.71 hrs, Volume= 0.230 af
Primary = 1.02 cfs @ 12.95 hrs, Volume= 0.073 af
Routed to Link SPB : SPB

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 141.00' @ 12.71 hrs Surf.Area= 0.088 ac Storage= 0.021 af

Plug-Flow detention time= 22.4 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 22.4 min (946.2 - 923.7)

Volume	Invert	Avail.Storage	Storage Description
#1	140.30'	0.021 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
140.30	0.007	0.000	0.000	0.007
140.50	0.007	0.001	0.001	0.007
141.00	0.088	0.020	0.021	0.088

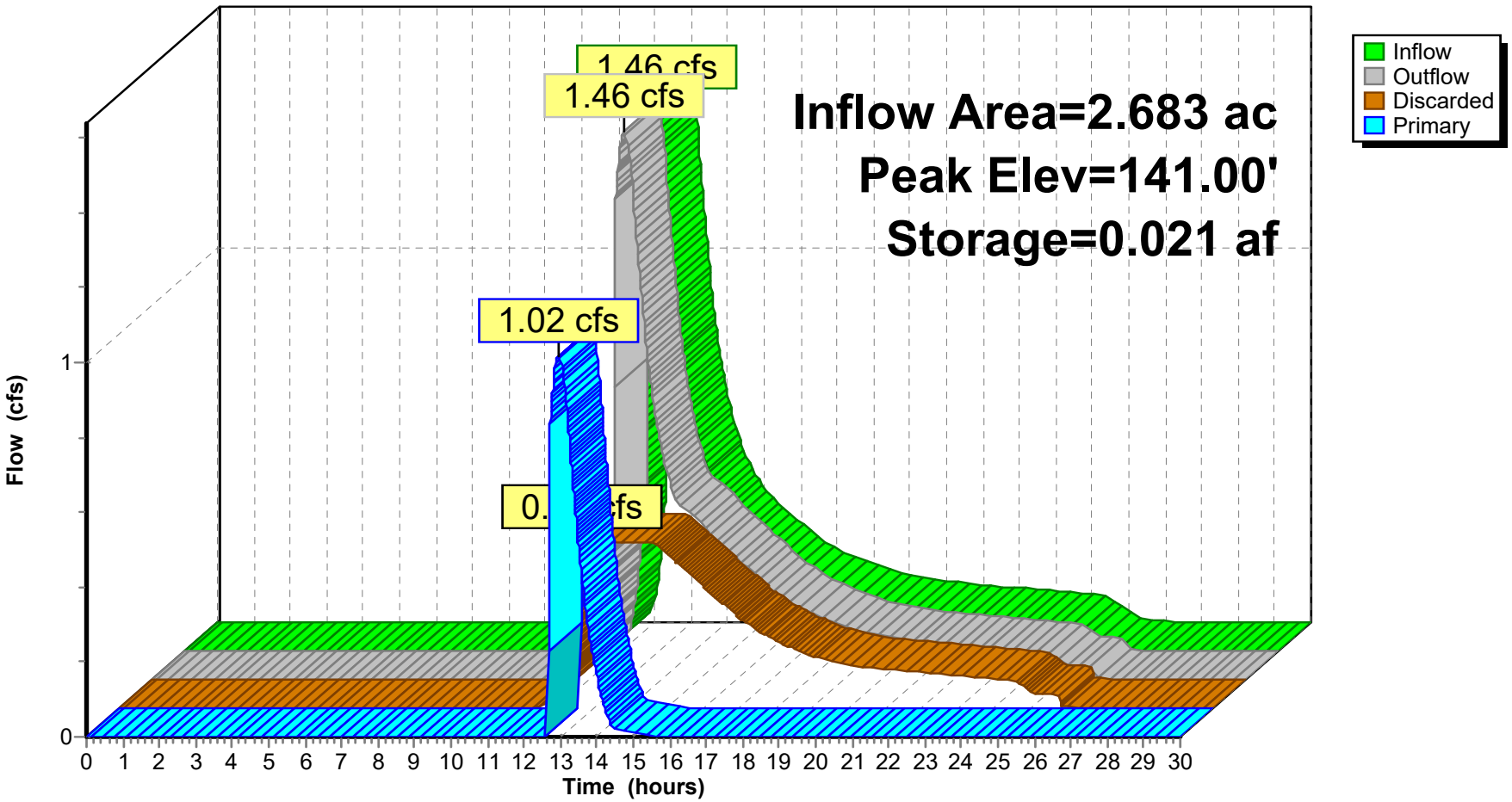
Device	Routing	Invert	Outlet Devices
#0	Primary	141.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	140.30'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	140.90'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=0.45 cfs @ 12.71 hrs HW=141.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

Primary OutFlow Max=0.02 cfs @ 12.95 hrs HW=141.00' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.02 cfs @ 0.78 fps)

Pond SCA: SC-A

Hydrograph



Summary for Pond SCB: SC-B

Inflow Area = 13.460 ac, 0.00% Impervious, Inflow Depth = 1.56" for 10 Year event
Inflow = 6.86 cfs @ 13.28 hrs, Volume= 1.749 af
Outflow = 6.86 cfs @ 13.29 hrs, Volume= 1.897 af, Atten= 0%, Lag= 0.5 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 1.090 af
Primary = 5.85 cfs @ 13.29 hrs, Volume= 0.808 af
Routed to Link SPA : SPA

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= 51.3 min calculated for 1.749 af (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	0.148 af	**Custom Stage Data (Conic)** Listed below

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
63.60	0.001	0.000	0.000	0.001
65.00	0.130	0.066	0.066	0.130
65.50	0.200	0.082	0.148	0.200

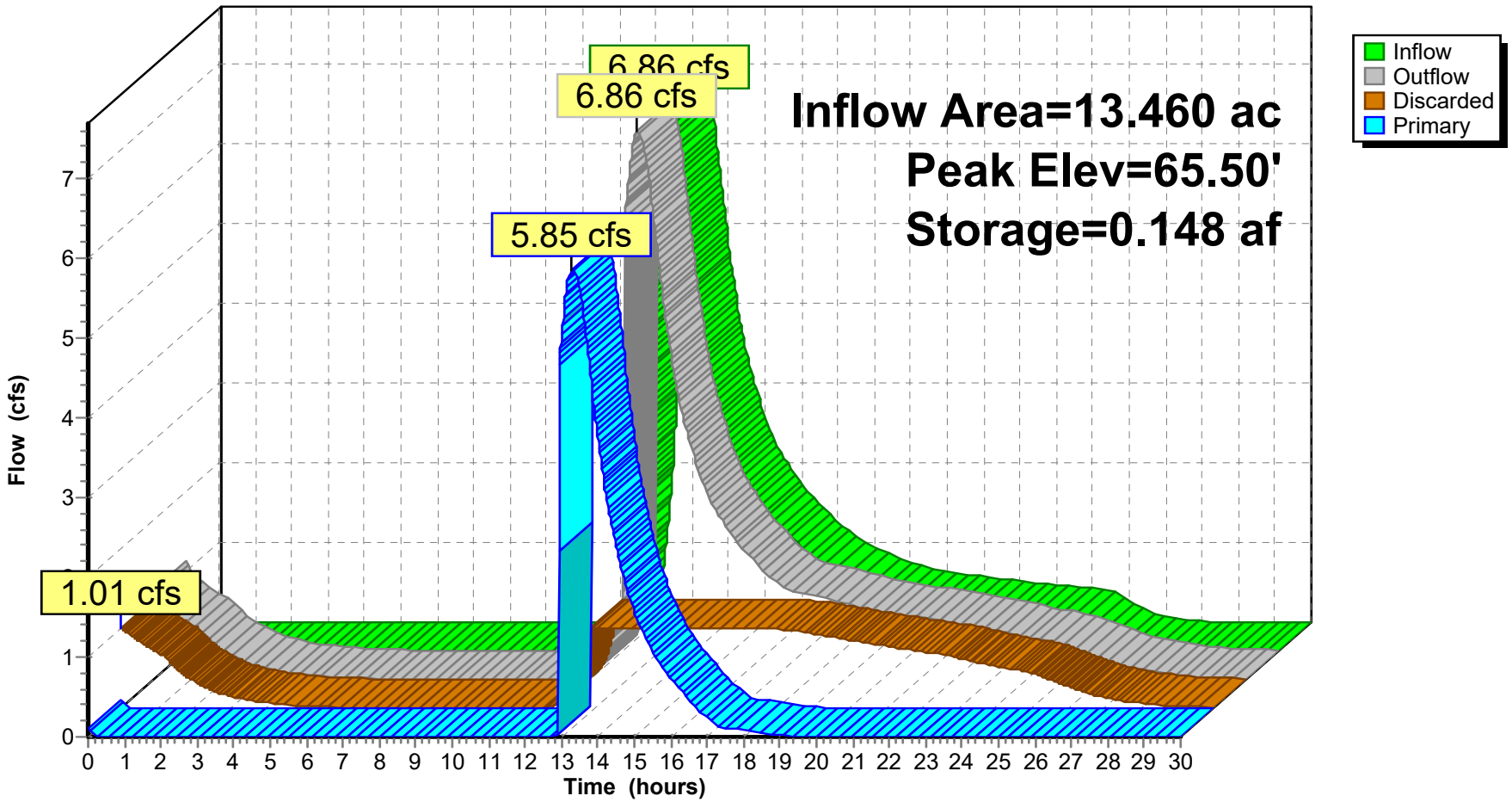
Device	Routing	Invert	Outlet Devices
#0	Primary	65.50'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	63.60'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	65.30'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

Primary OutFlow Max=0.11 cfs @ 13.29 hrs HW=65.50' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

Pond SCB: SC-B

Hydrograph

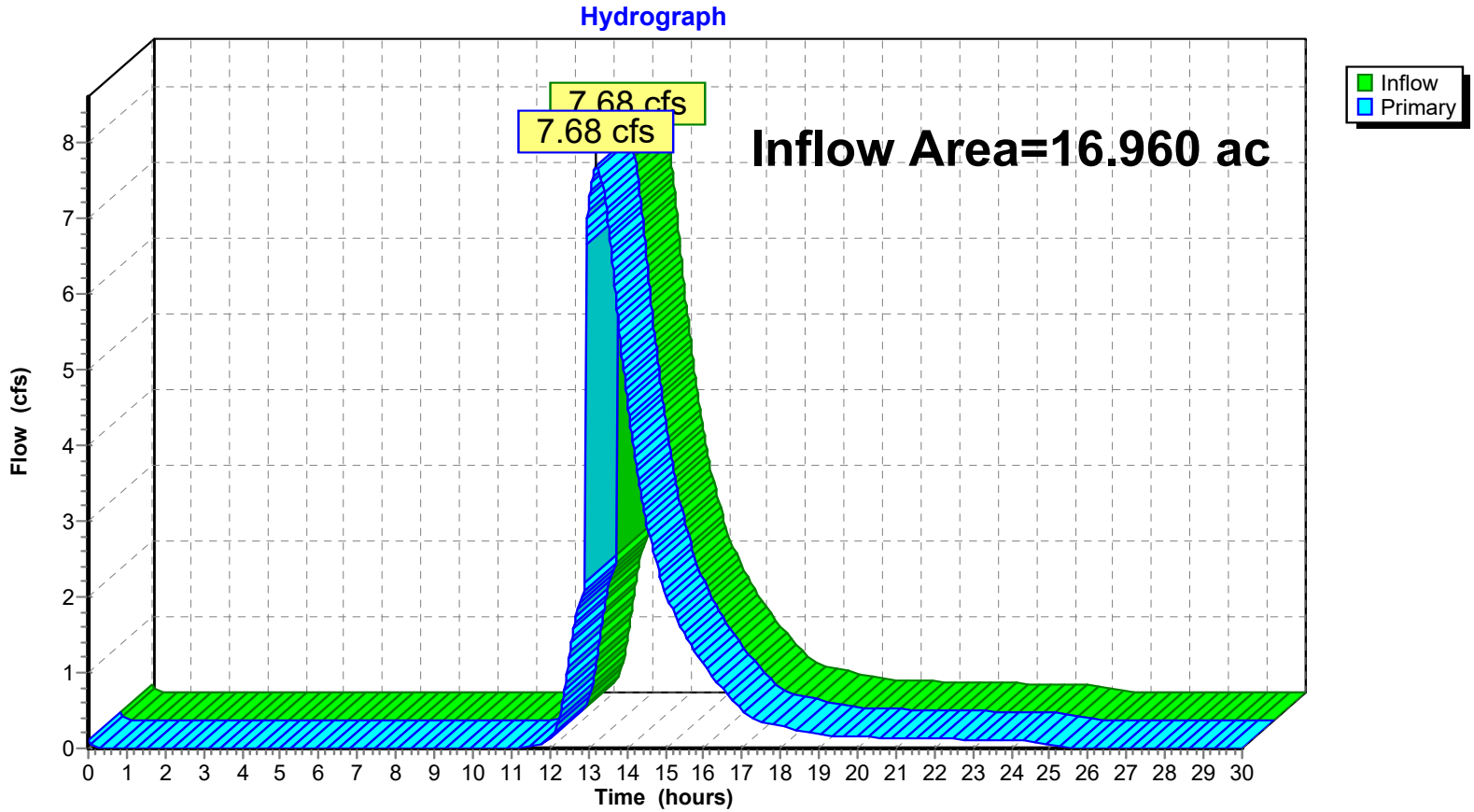


Summary for Link SPA: SPA

Inflow Area = 16.960 ac, 0.00% Impervious, Inflow Depth = 0.88" for 10 Year event
Inflow = 7.68 cfs @ 13.19 hrs, Volume= 1.242 af
Primary = 7.68 cfs @ 13.19 hrs, Volume= 1.242 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: SPA

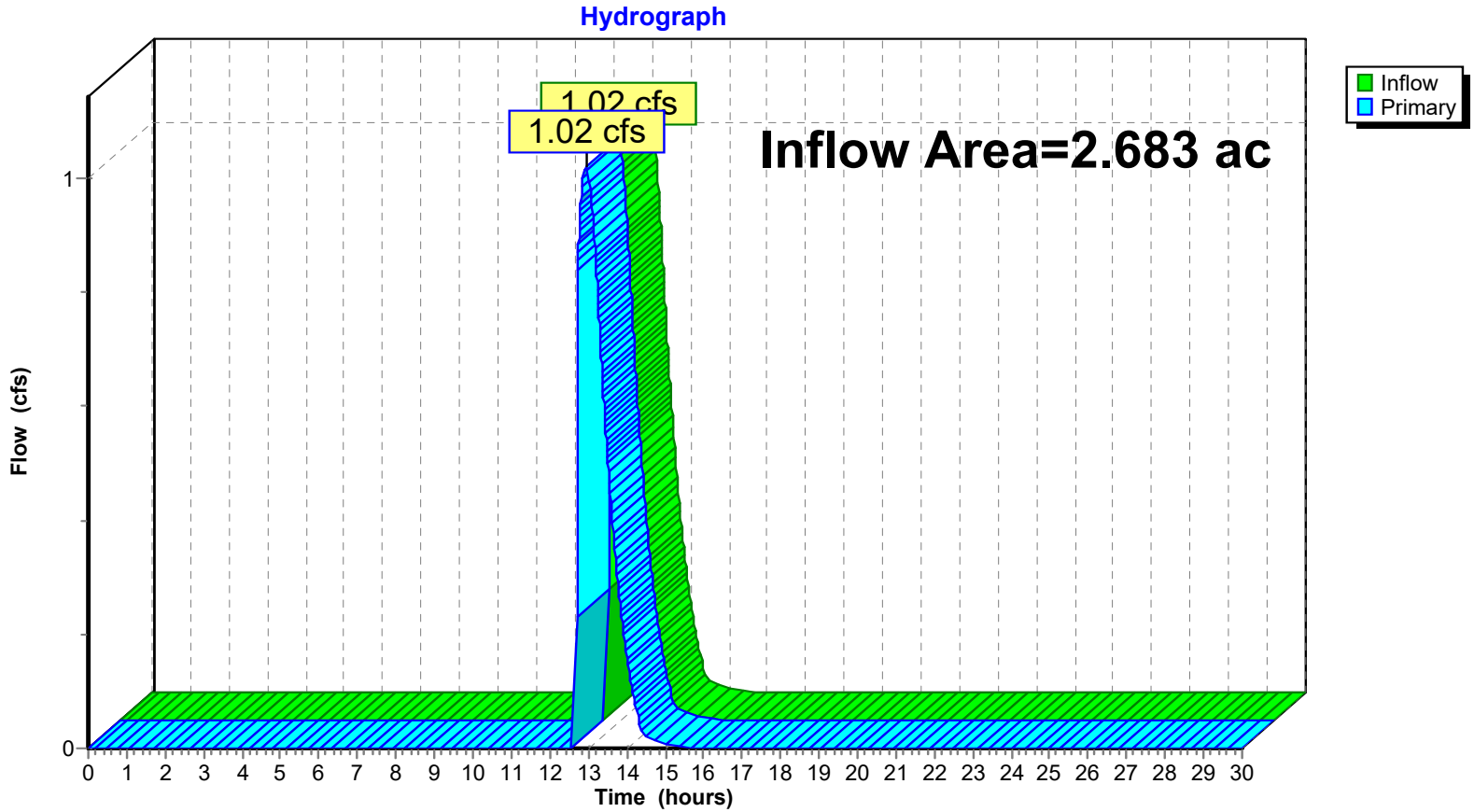


Summary for Link SPB: SPB

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 0.32" for 10 Year event
Inflow = 1.02 cfs @ 12.95 hrs, Volume= 0.073 af
Primary = 1.02 cfs @ 12.95 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPB: SPB

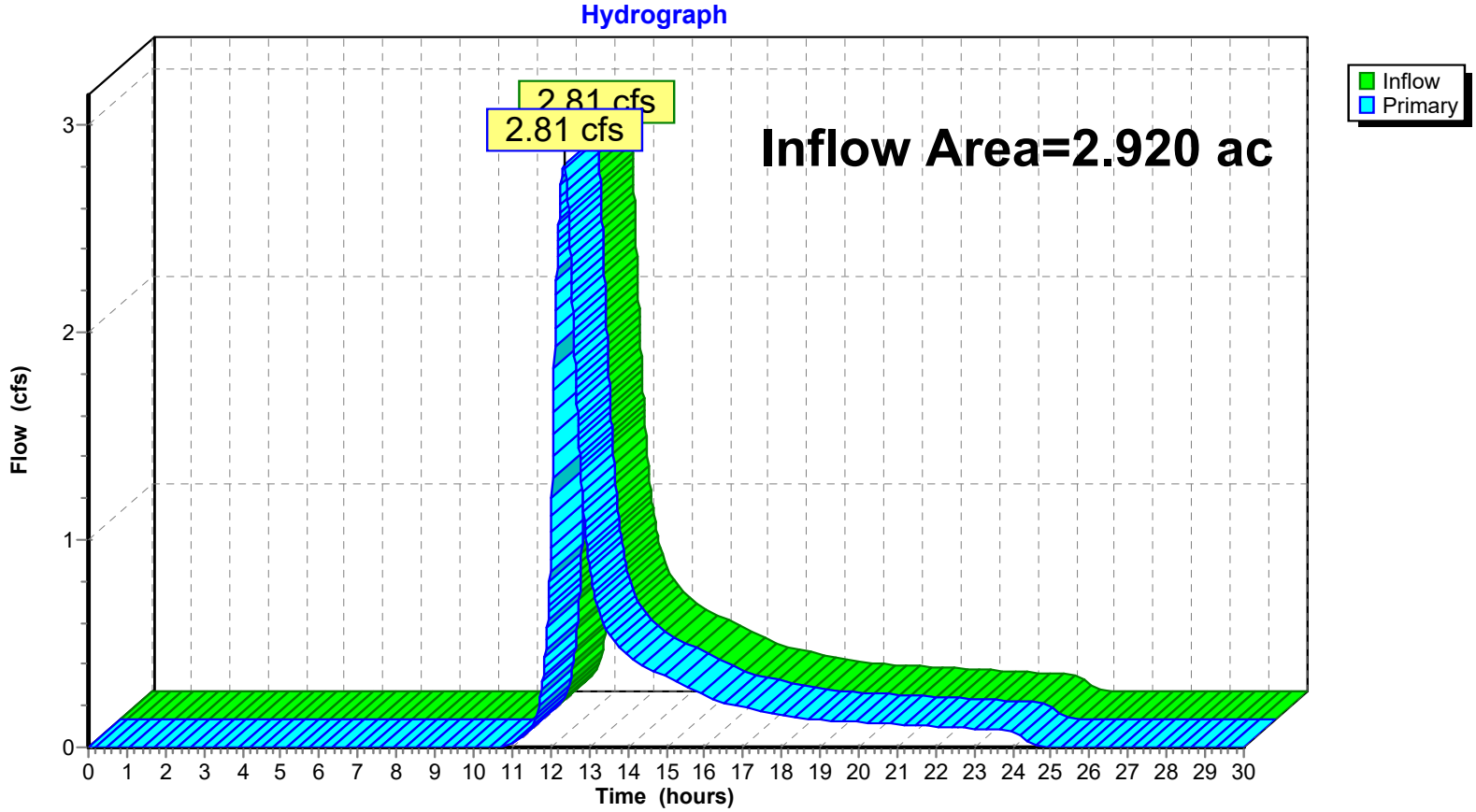


Summary for Link SPC: Study Point C

Inflow Area = 2.920 ac, 2.05% Impervious, Inflow Depth = 1.52" for 10 Year event
Inflow = 2.81 cfs @ 12.35 hrs, Volume= 0.369 af
Primary = 2.81 cfs @ 12.35 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

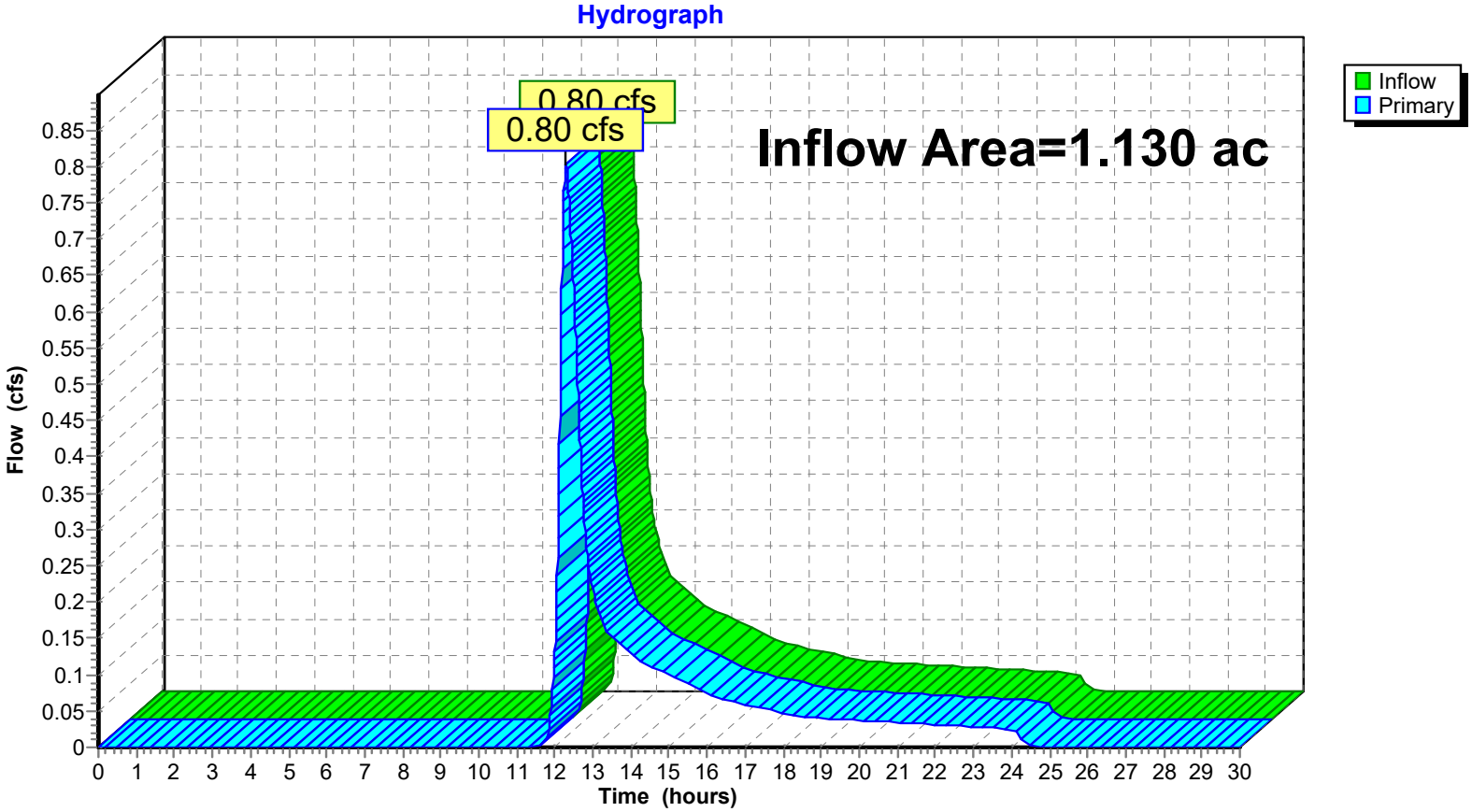


Summary for Link SPD: Study Point D

Inflow Area = 1.130 ac, 0.00% Impervious, Inflow Depth = 1.03" for 10 Year event
Inflow = 0.80 cfs @ 12.30 hrs, Volume= 0.097 af
Primary = 0.80 cfs @ 12.30 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 D: SCD Runoff Area=2.160 ac 0.00% Impervious Runoff Depth=4.55"
Flow Length=266' Tc=25.8 min CN=65 Runoff=6.97 cfs 0.819 af

Subcatchment E: SCE Runoff Area=0.530 ac 11.32% Impervious Runoff Depth=4.79"
Flow Length=112' Tc=10.0 min UI Adjusted CN=67 Runoff=2.60 cfs 0.212 af

Subcatchment F: SCF Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=4.55"
Flow Length=55' Slope=0.1900 '/' Tc=10.0 min CN=65 Runoff=1.07 cfs 0.087 af

Subcatchment G: SCG Runoff Area=1.130 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=320' Tc=18.0 min CN=58 Runoff=3.39 cfs 0.349 af

Subcatchment SC-A: SC-A Runoff Area=2.683 ac 1.23% Impervious Runoff Depth=4.31"
Flow Length=344' Tc=64.0 min CN=63 Runoff=5.11 cfs 0.963 af

Subcatchment SC-B: SC-B Runoff Area=13.460 ac 0.00% Impervious Runoff Depth=4.67"
Flow Length=813' Tc=91.9 min CN=66 Runoff=22.00 cfs 5.240 af

Subcatchment SC-C: SC-C Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=4.55"
Flow Length=213' Tc=66.4 min CN=65 Runoff=6.91 cfs 1.327 af

Pond SCA: SC-A Peak Elev=141.00' Storage=0.021 af Inflow=5.11 cfs 0.963 af
Discarded=0.45 cfs 0.407 af Primary=4.67 cfs 0.556 af Outflow=5.11 cfs 0.963 af

Pond SCB: SC-B Peak Elev=65.50' Storage=0.148 af Inflow=22.00 cfs 5.240 af
Discarded=1.01 cfs 1.466 af Primary=20.98 cfs 3.919 af Outflow=21.99 cfs 5.385 af

Link SPA: SPA Inflow=27.01 cfs 5.246 af
Primary=27.01 cfs 5.246 af

Link SPB: SPB Inflow=4.67 cfs 0.556 af
Primary=4.67 cfs 0.556 af

Link SPC: Study Point C

Inflow=8.98 cfs 1.118 af
Primary=8.98 cfs 1.118 af

Link SPD: Study Point D

Inflow=3.39 cfs 0.349 af
Primary=3.39 cfs 0.349 af

Total Runoff Area = 23.693 ac Runoff Volume = 8.998 af Average Runoff Depth = 4.56"
99.61% Pervious = 23.600 ac 0.39% Impervious = 0.093 ac

Summary for Subcatchment D: SCD

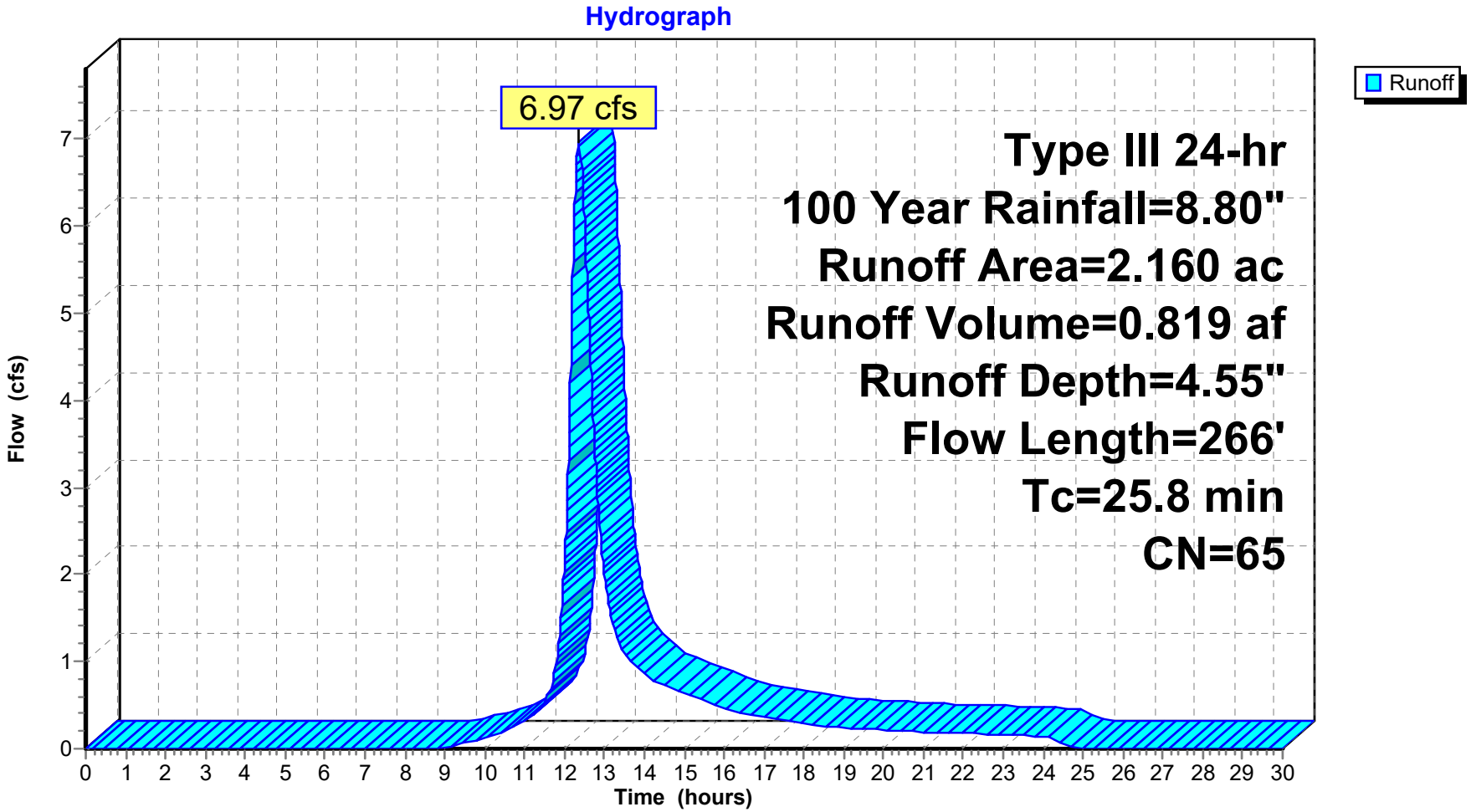
Runoff = 6.97 cfs @ 12.36 hrs, Volume= 0.819 af, Depth= 4.55"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
2.160	65	Woods/grass comb., Fair, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0258	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
19.4	196	0.0125	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
25.8	266	Total			

Subcatchment D: SCD



Summary for Subcatchment E: SCE

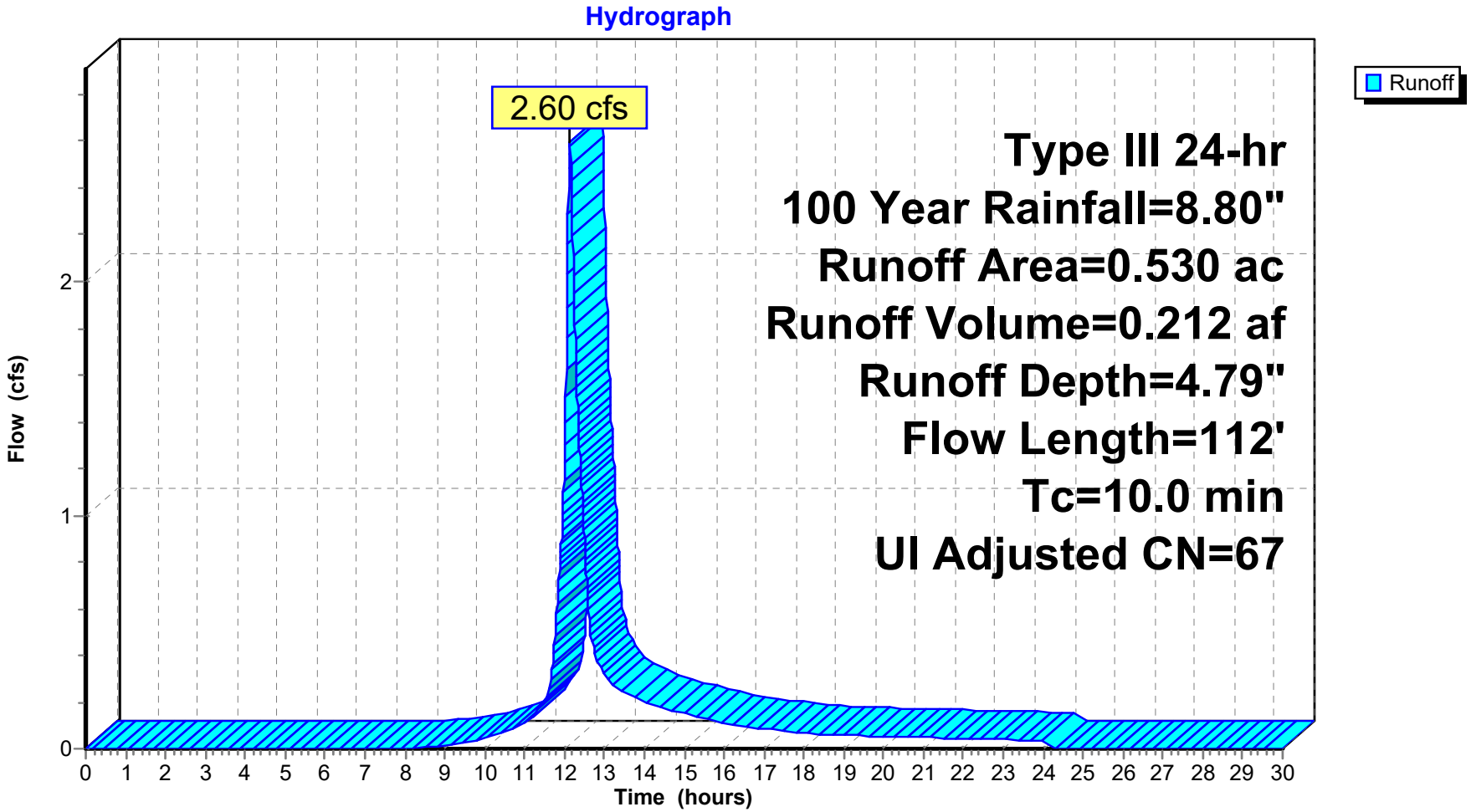
Runoff = 2.60 cfs @ 12.14 hrs, Volume= 0.212 af, Depth= 4.79"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Adj	Description
0.470	65		Woods/grass comb., Fair, HSG B
0.060	98		Unconnected roofs, HSG A
0.530	69	67	Weighted Average, UI Adjusted
0.470			88.68% Pervious Area
0.060			11.32% Impervious Area
0.060			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	40	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	72	0.4200	0.56		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
4.7	112	Total, Increased to minimum Tc = 10.0 min			

Subcatchment E: SCE



Summary for Subcatchment F: SCF

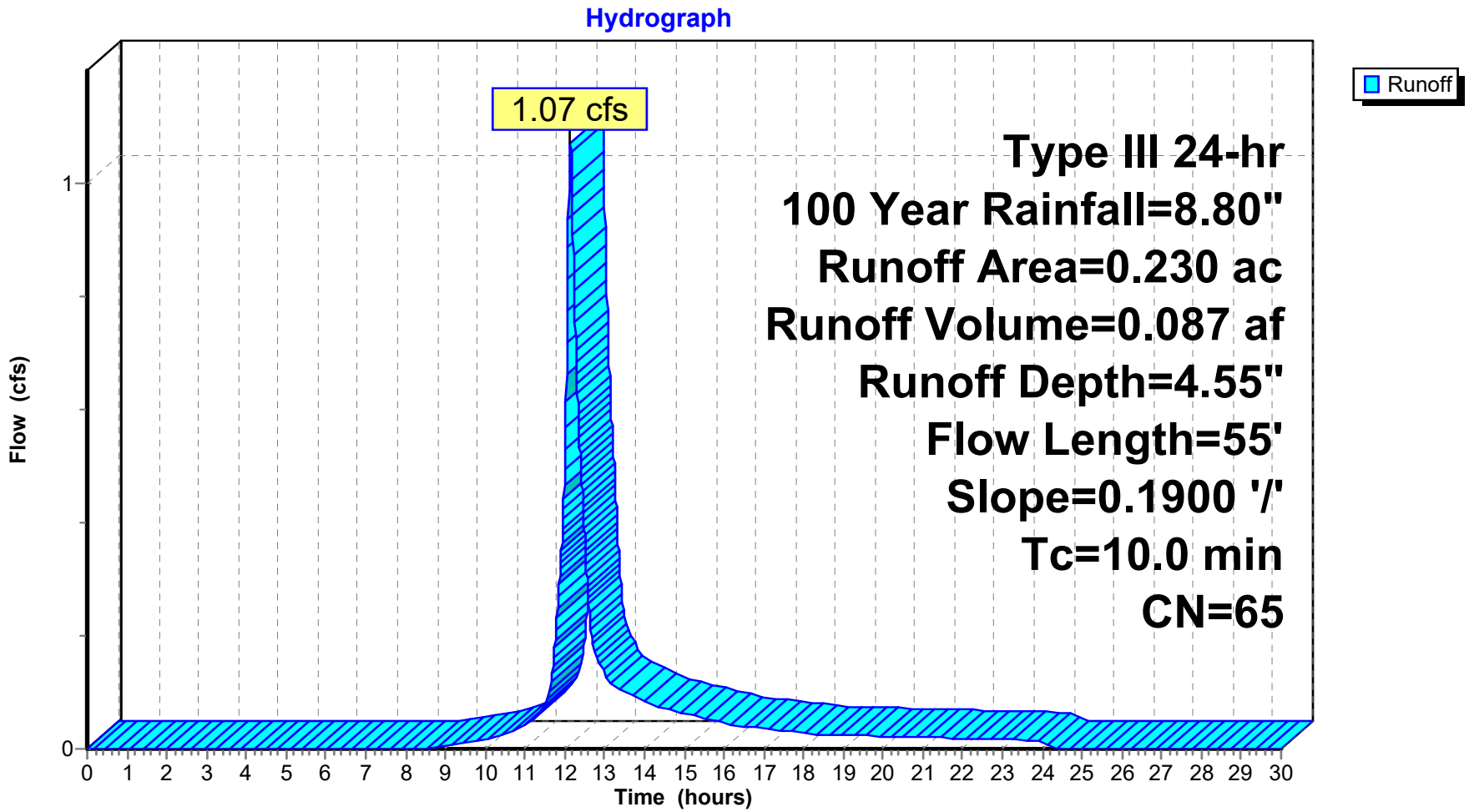
Runoff = 1.07 cfs @ 12.14 hrs, Volume= 0.087 af, Depth= 4.55"
Routed to Link SPC : Study Point C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
0.230	65	Woods/grass comb., Fair, HSG B
0.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	55	0.1900	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.4	55	Total, Increased to minimum Tc = 10.0 min			

Subcatchment F: SCF



Summary for Subcatchment G: SCG

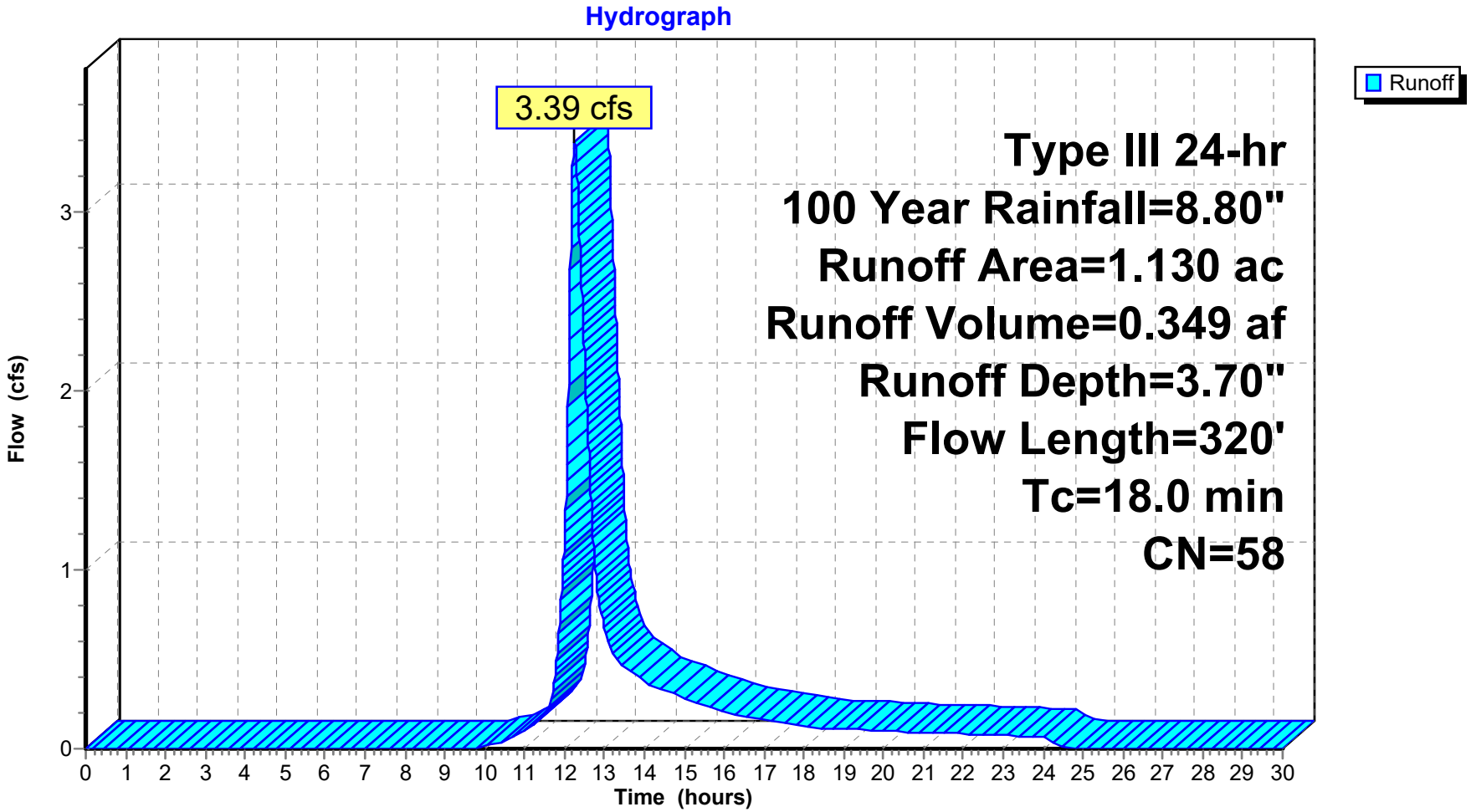
Runoff = 3.39 cfs @ 12.26 hrs, Volume= 0.349 af, Depth= 3.70"
Routed to Link SPD : Study Point D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
1.130	58	Woods/grass comb., Good, HSG B
1.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	95	0.4755	0.29		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.9	76	0.7573	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
5.1	95	0.5883	0.31		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.5	54	0.4811	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
18.0	320	Total			

Subcatchment G: SCG



Summary for Subcatchment SC-A: SC-A

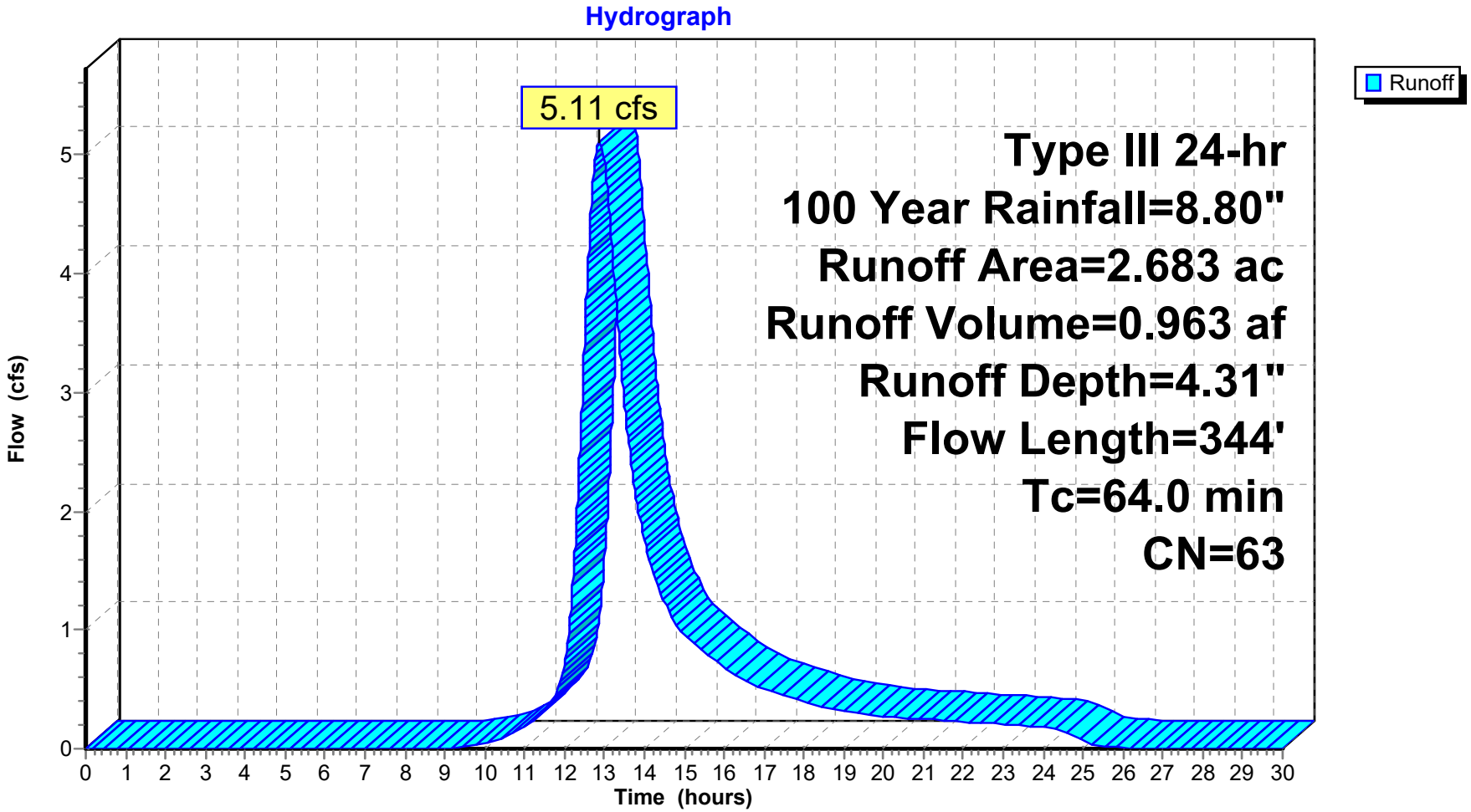
Runoff = 5.11 cfs @ 12.87 hrs, Volume= 0.963 af, Depth= 4.31"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
1.870	60	Woods, Fair, HSG B
0.780	67	Brush, Poor, HSG B
0.033	98	Paved parking, HSG B
2.683	63	Weighted Average
2.650		98.77% Pervious Area
0.033		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
30.7	177	0.0230	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
27.5	117	0.0132	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
64.0	344	Total			

Subcatchment SC-A: SC-A



Summary for Subcatchment SC-B: SC-B

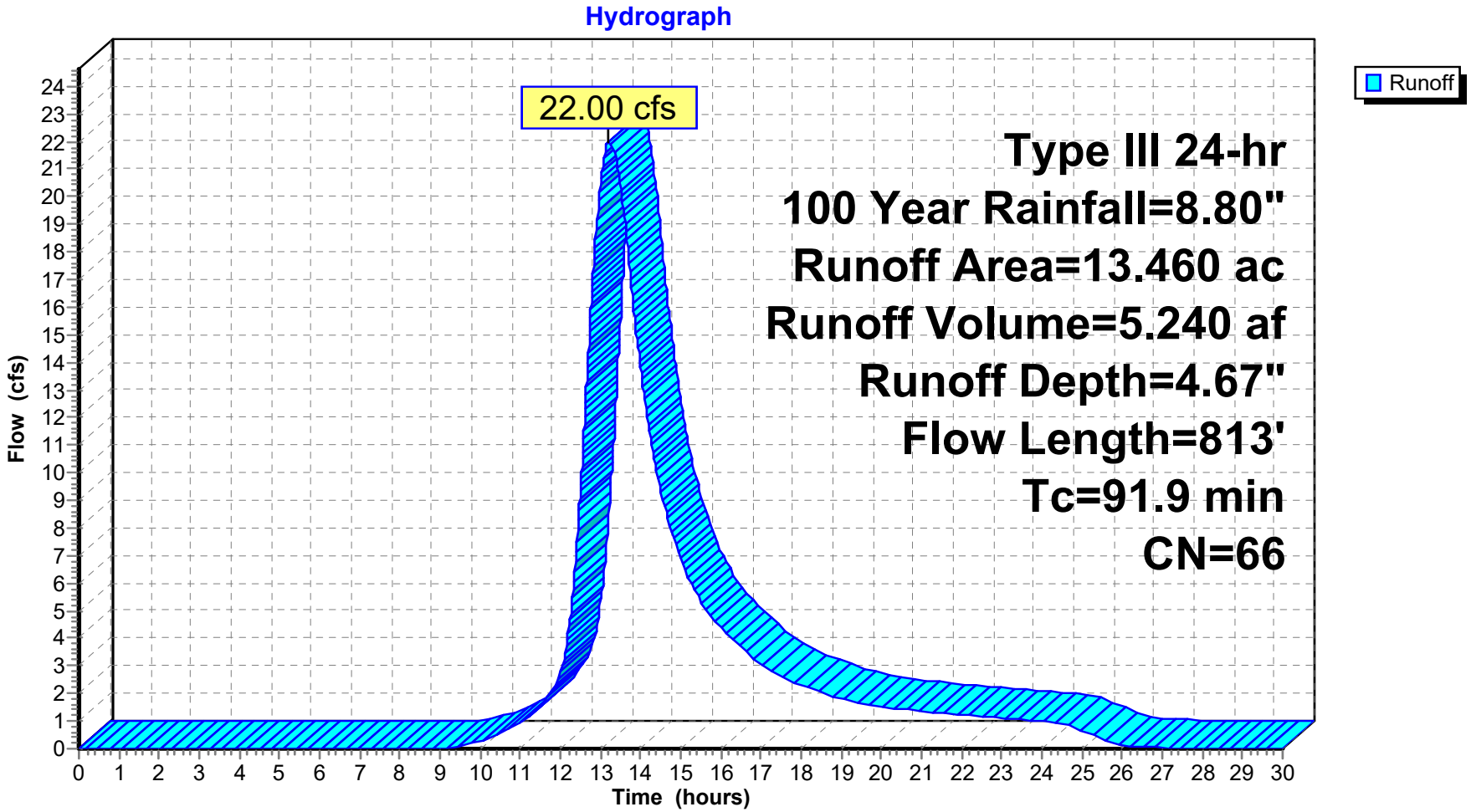
Runoff = 22.00 cfs @ 13.18 hrs, Volume= 5.240 af, Depth= 4.67"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
9.350	65	Woods/grass comb., Fair, HSG B
4.110	67	Brush, Poor, HSG B
13.460	66	Weighted Average
13.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	166	0.3100	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
31.2	284	0.0568	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	128	0.0541	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
11.8	104	0.0860	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.8	131	0.0297	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
91.9	813	Total			

Subcatchment SC-B: SC-B



Summary for Subcatchment SC-C: SC-C

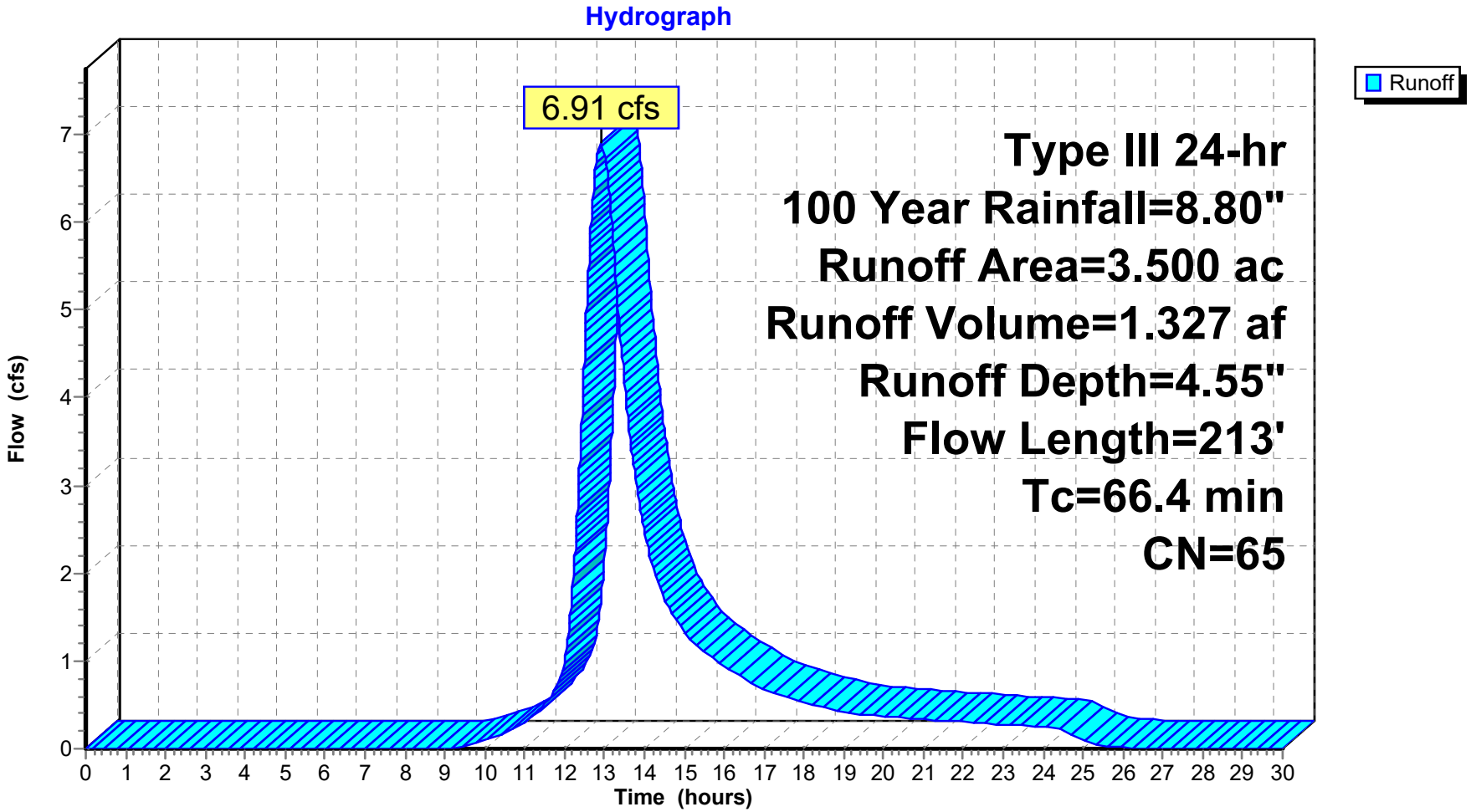
Runoff = 6.91 cfs @ 12.91 hrs, Volume= 1.327 af, Depth= 4.55"
Routed to Link SPA : SPA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.80"

Area (ac)	CN	Description
3.500	65	Woods/grass comb., Fair, HSG B
3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
3.7	109	0.6400	0.50		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
66.4	213	Total			

Subcatchment SC-C: SC-C



Summary for Pond SCA: SC-A

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 4.31" for 100 Year event
Inflow = 5.11 cfs @ 12.87 hrs, Volume= 0.963 af
Outflow = 5.11 cfs @ 12.88 hrs, Volume= 0.963 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.45 cfs @ 12.14 hrs, Volume= 0.407 af
Primary = 4.67 cfs @ 12.88 hrs, Volume= 0.556 af
Routed to Link SPB : SPB

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 141.00' @ 12.14 hrs Surf.Area= 0.088 ac Storage= 0.021 af

Plug-Flow detention time= 13.6 min calculated for 0.963 af (100% of inflow)
Center-of-Mass det. time= 13.6 min (902.3 - 888.7)

Volume	Invert	Avail.Storage	Storage Description
#1	140.30'	0.021 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
140.30	0.007	0.000	0.000	0.007
140.50	0.007	0.001	0.001	0.007
141.00	0.088	0.020	0.021	0.088

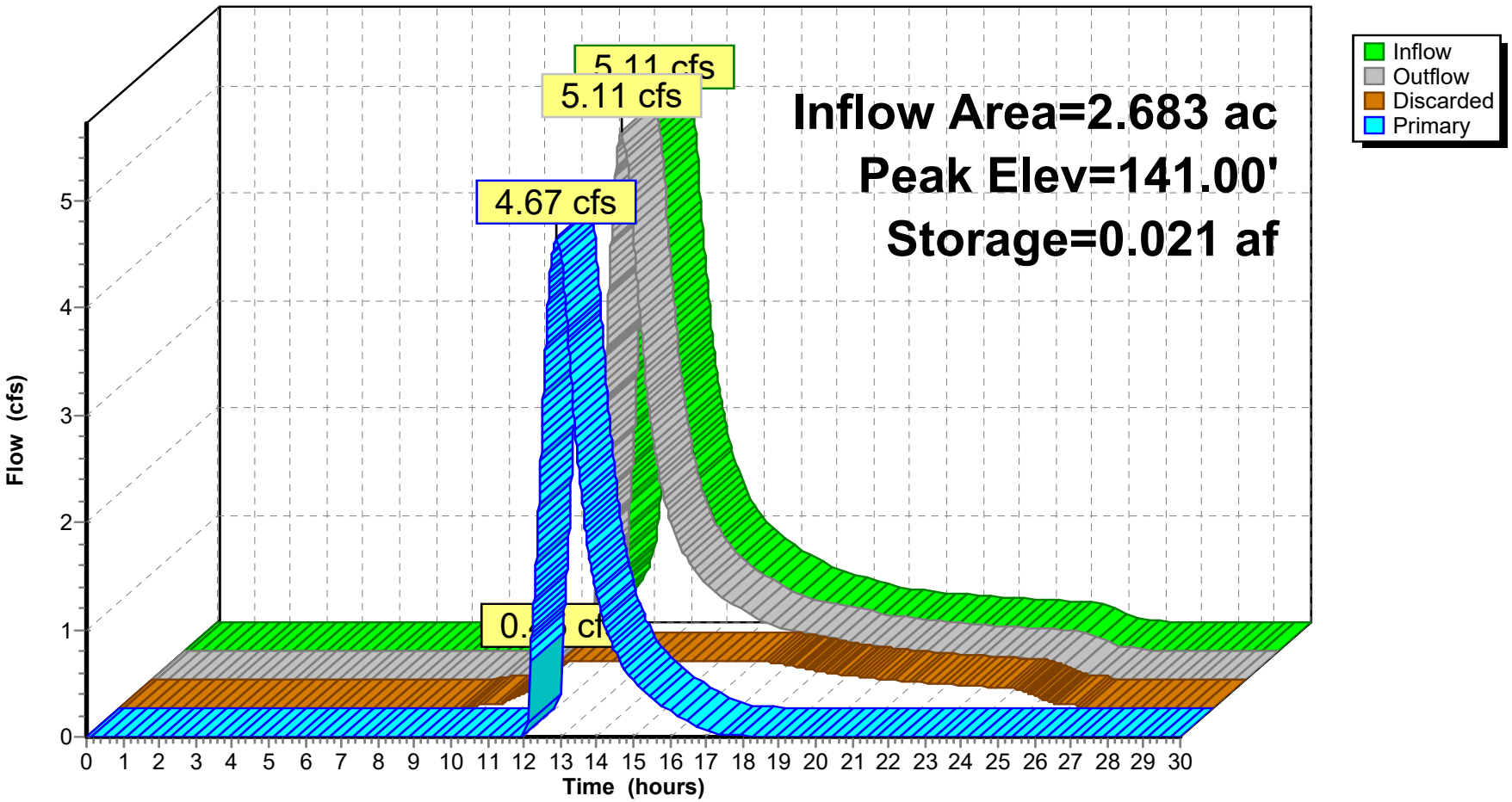
Device	Routing	Invert	Outlet Devices
#0	Primary	141.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	140.30'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	140.90'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=0.45 cfs @ 12.14 hrs HW=141.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

Primary OutFlow Max=0.02 cfs @ 12.88 hrs HW=141.00' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.02 cfs @ 0.78 fps)

Pond SCA: SC-A

Hydrograph



Summary for Pond SCB: SC-B

Inflow Area = 13.460 ac, 0.00% Impervious, Inflow Depth = 4.67" for 100 Year event
Inflow = 22.00 cfs @ 13.18 hrs, Volume= 5.240 af
Outflow = 21.99 cfs @ 13.19 hrs, Volume= 5.385 af, Atten= 0%, Lag= 0.4 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 1.466 af
Primary = 20.98 cfs @ 13.19 hrs, Volume= 3.919 af
Routed to Link SPA : SPA

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= 25.8 min calculated for 5.237 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (910.1 - 908.3)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	0.148 af	**Custom Stage Data (Conic)** Listed below

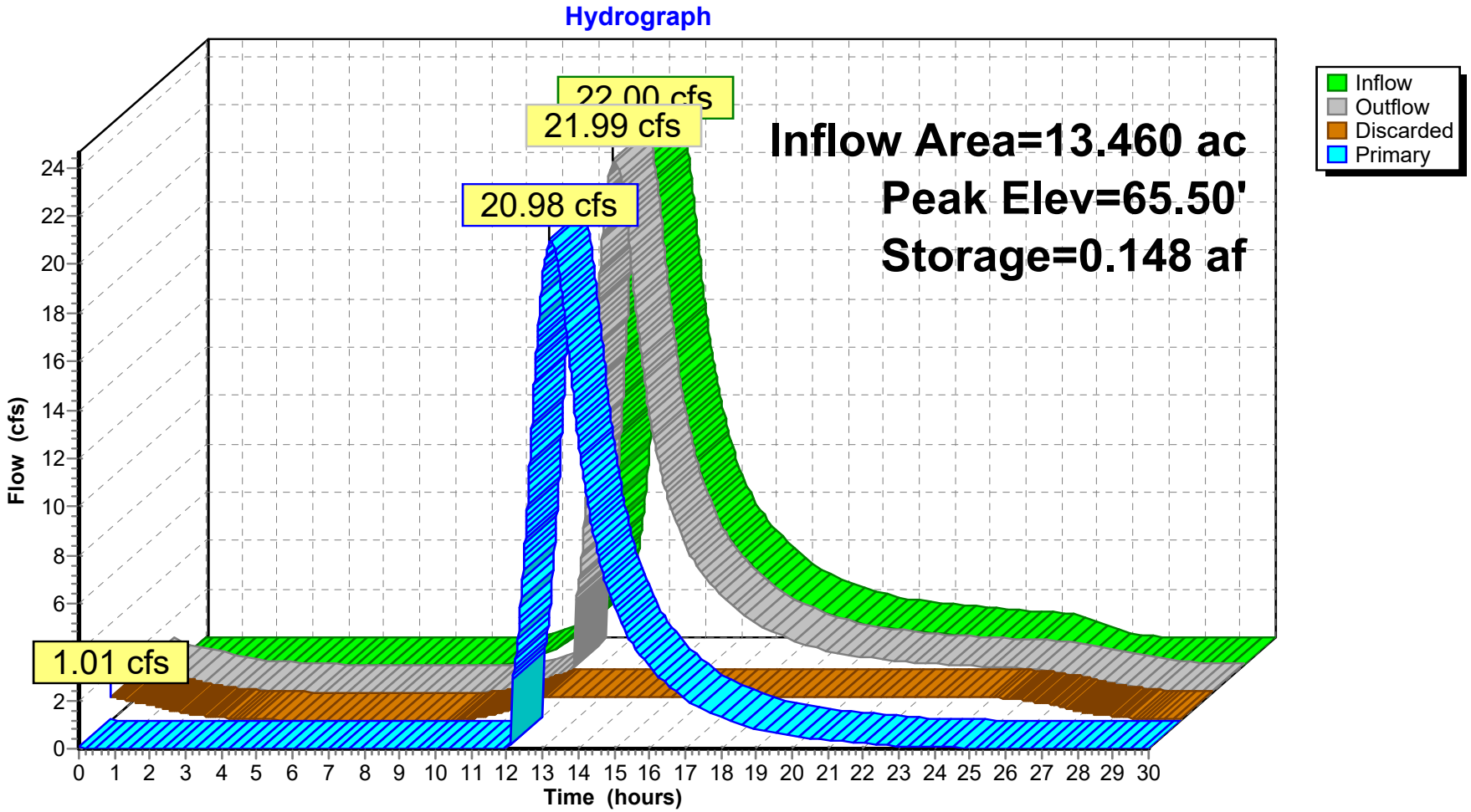
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
63.60	0.001	0.000	0.000	0.001
65.00	0.130	0.066	0.066	0.130
65.50	0.200	0.082	0.148	0.200

Device	Routing	Invert	Outlet Devices
#0	Primary	65.50'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	63.60'	**5.000 in/hr Exfiltration over Wetted area**
#2	Primary	65.30'	**135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10)

Discarded OutFlow Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

Primary OutFlow Max=0.11 cfs @ 13.19 hrs HW=65.50' (Free Discharge)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

Pond SCB: SC-B

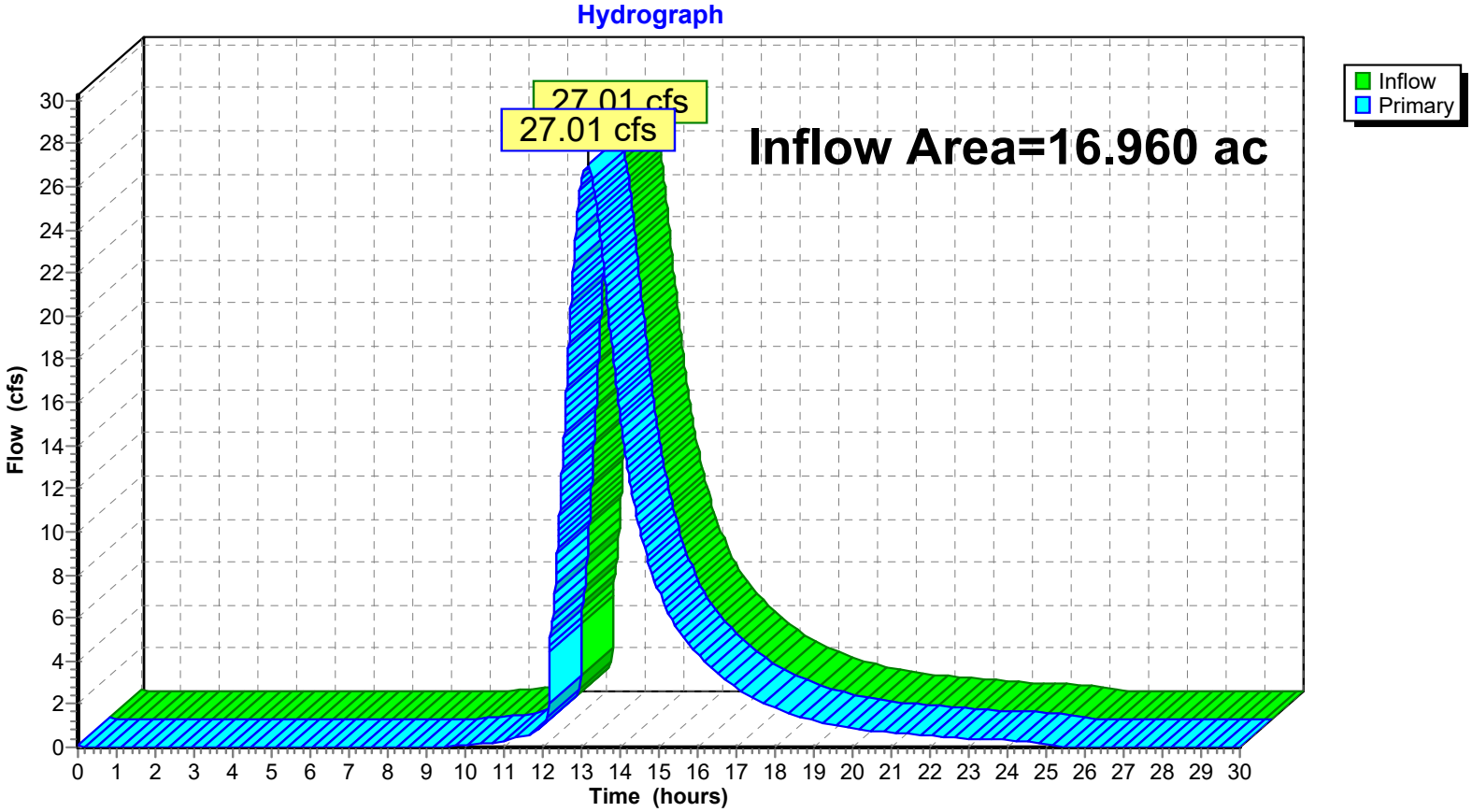

Hydrograph
22.00 cfs
21.99 cfs
20.98 cfs
1.01 cfs
Inflow Area=13.460 ac
Peak Elev=65.50'
Storage=0.148 af
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
0 2 6 8 10 12 14 16 18 20 22 24

Summary for Link SPA: SPA

Inflow Area = 16.960 ac, 0.00% Impervious, Inflow Depth = 3.71" for 100 Year event
Inflow = 27.01 cfs @ 13.17 hrs, Volume= 5.246 af
Primary = 27.01 cfs @ 13.17 hrs, Volume= 5.246 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: SPA

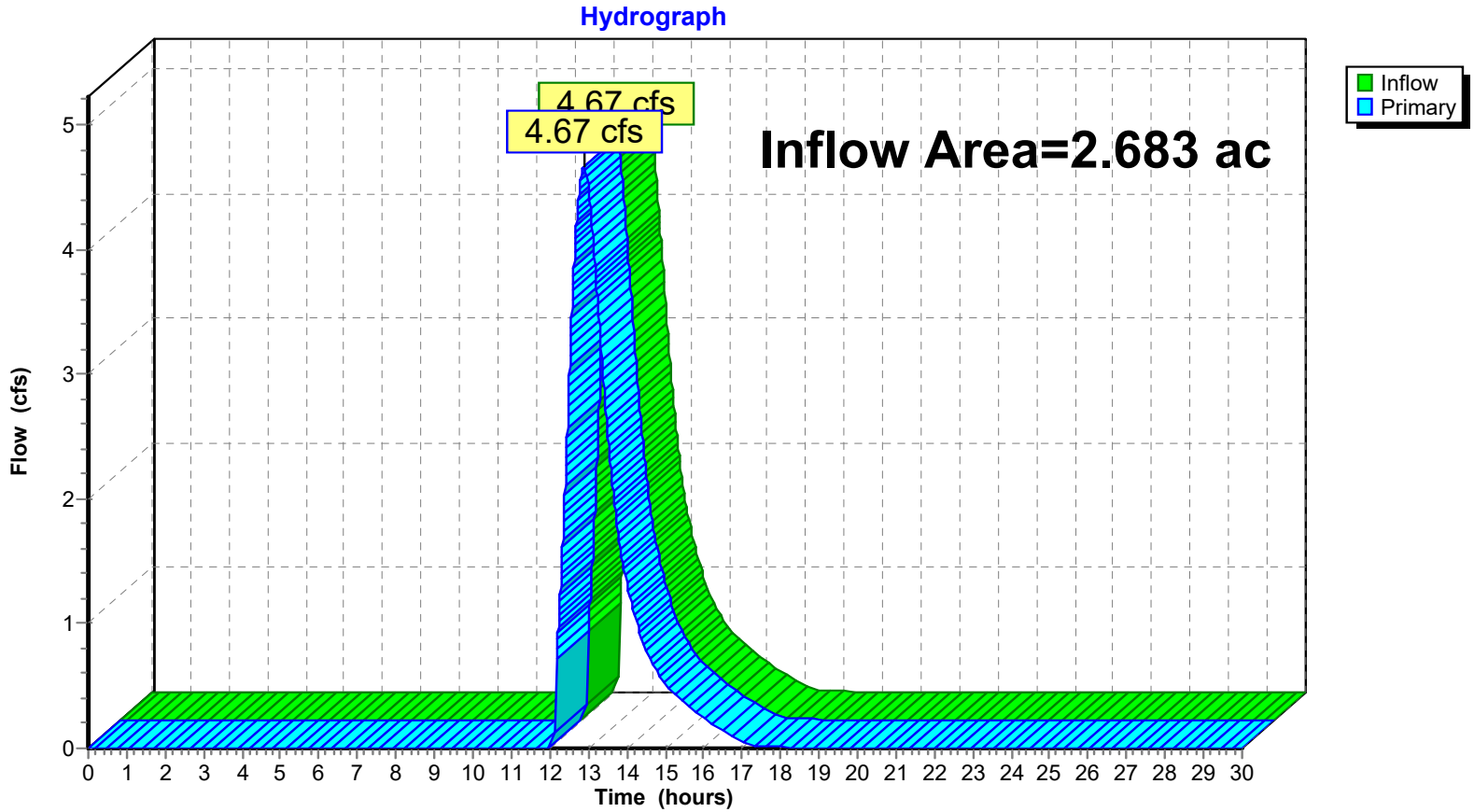


Summary for Link SPB: SPB

Inflow Area = 2.683 ac, 1.23% Impervious, Inflow Depth = 2.49" for 100 Year event
Inflow = 4.67 cfs @ 12.88 hrs, Volume= 0.556 af
Primary = 4.67 cfs @ 12.88 hrs, Volume= 0.556 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPB: SPB

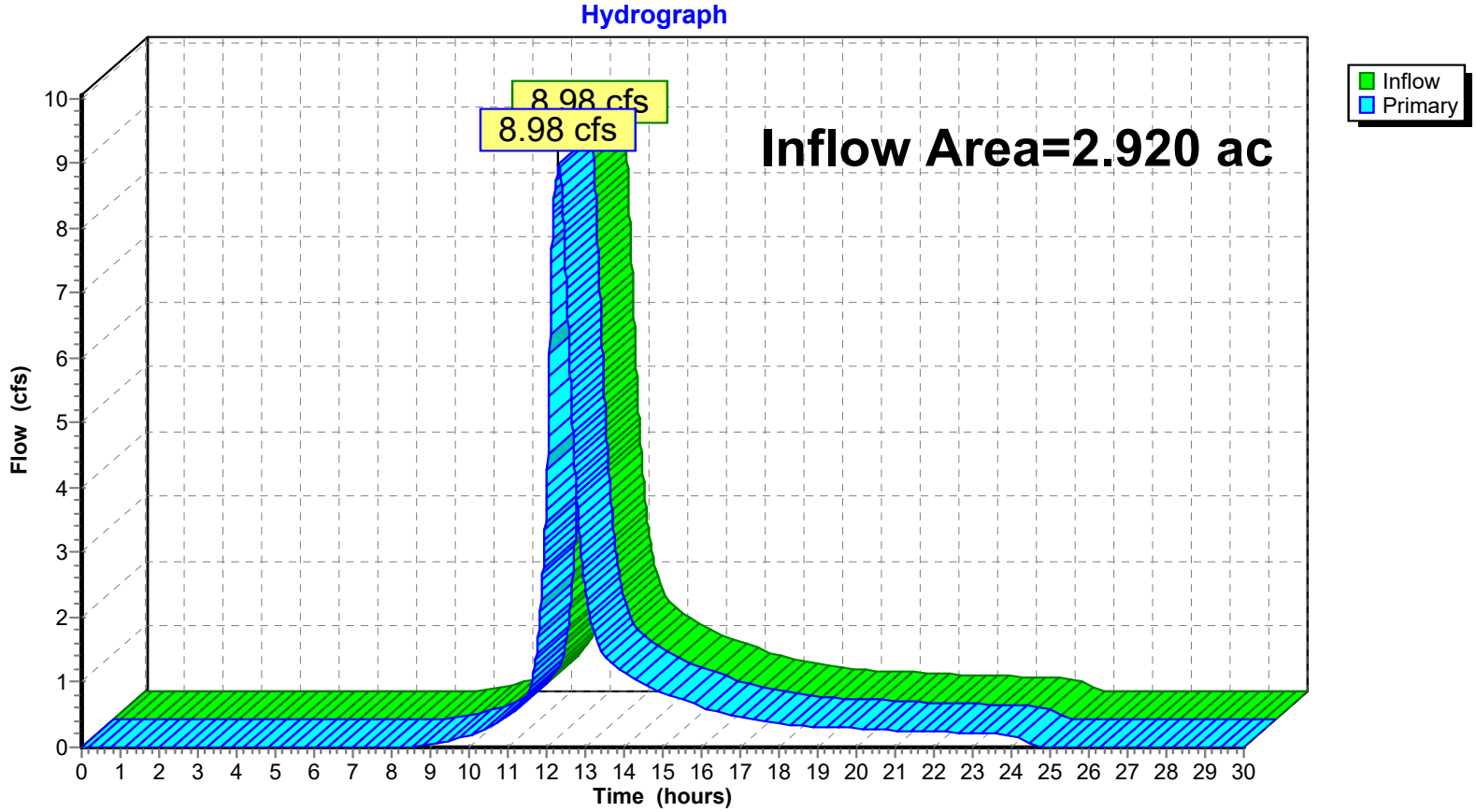


Summary for Link SPC: Study Point C

Inflow Area = 2.920 ac, 2.05% Impervious, Inflow Depth = 4.59" for 100 Year event
Inflow = 8.98 cfs @ 12.30 hrs, Volume= 1.118 af
Primary = 8.98 cfs @ 12.30 hrs, Volume= 1.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

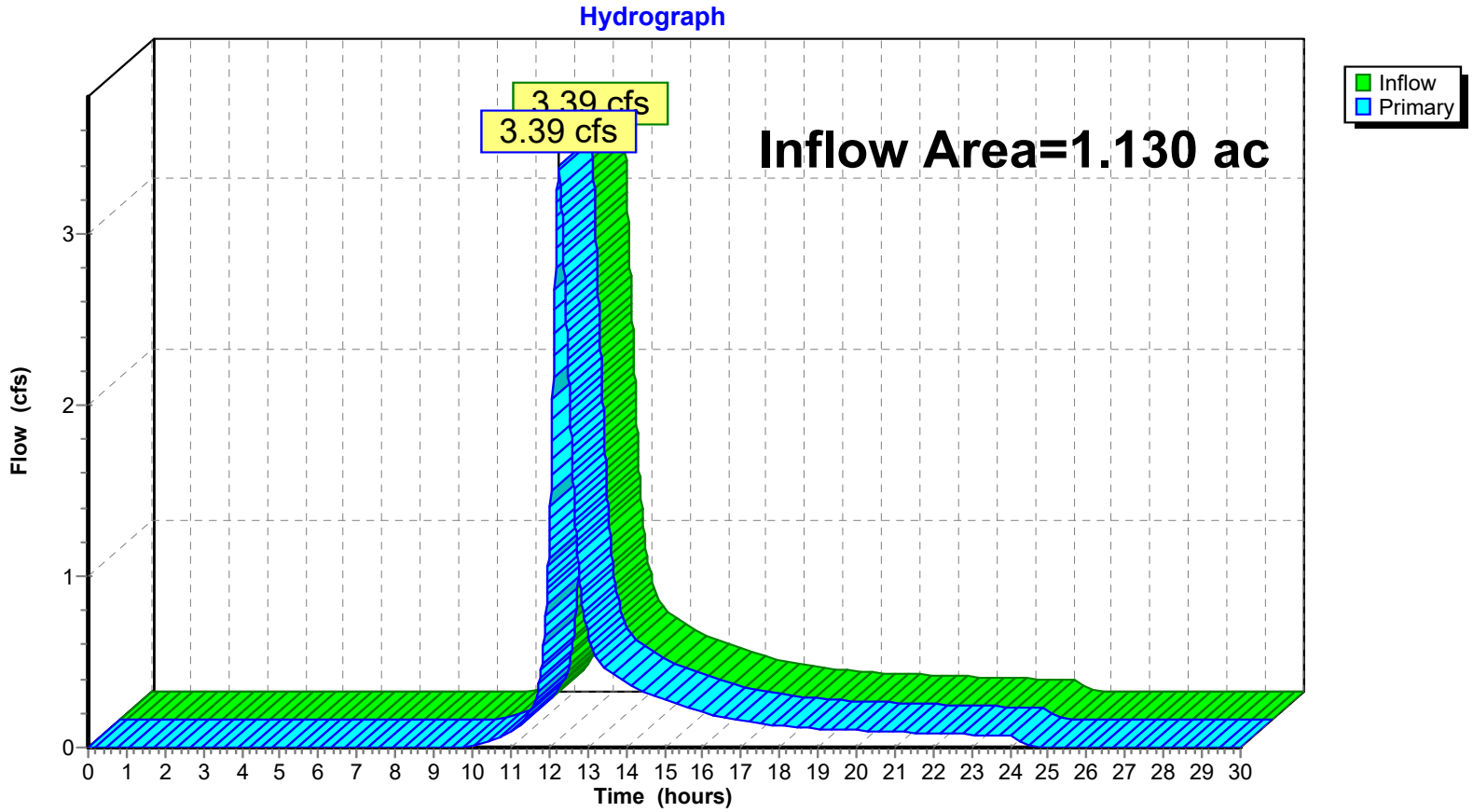


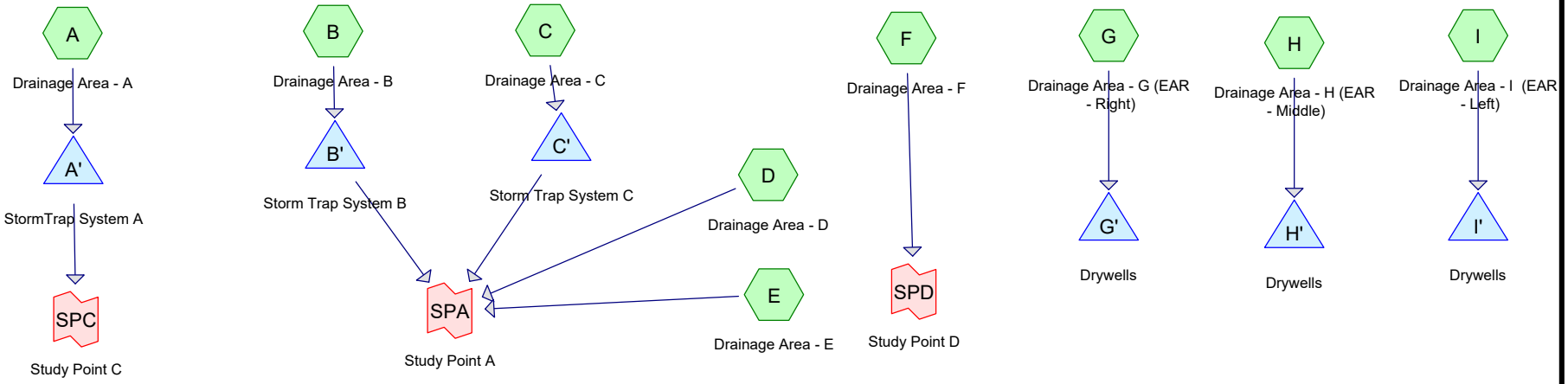
Summary for Link SPD: Study Point D

Inflow Area = 1.130 ac, 0.00% Impervious, Inflow Depth = 3.70" for 100 Year event
Inflow = 3.39 cfs @ 12.26 hrs, Volume= 0.349 af
Primary = 3.39 cfs @ 12.26 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D





Subcat Reach Pond Link

Routing Diagram for 20240722_HydroCAD
Prepared by VHB, Inc, Printed 10/24/2024
HydroCAD® 10.20-3c s/n 01038 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 year	Type III 24-hr		Default	24.00	1	3.50	2
2	10 year	Type III 24-hr		Default	24.00	1	4.75	2
3	100 year	Type III 24-hr		Default	24.00	1	8.80	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.477	61	>75% Grass cover, Good, HSG B (A, B, C, D)
3.325	98	Paved parking, HSG B (A, B, C, D)
0.255	98	Paved parking, HSG C (G, H, I)
3.308	98	Roofs, HSG B (A, B, C, D)
5.810	60	Woods, Fair, HSG B (B, C)
4.036	58	Woods/grass comb., Good, HSG B (E, F)
24.210	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
23.955	HSG B	A, B, C, D, E, F
0.255	HSG C	G, H, I
0.000	HSG D	
0.000	Other	
24.210		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	7.477	0.000	0.000	0.000	7.477	>75% Grass cover, Good	A, B, C, D
0.000	3.325	0.255	0.000	0.000	3.580	Paved parking	A, B, C, D, G, H, I
0.000	3.308	0.000	0.000	0.000	3.308	Roofs	A, B, C, D
0.000	5.810	0.000	0.000	0.000	5.810	Woods, Fair	B, C
0.000	4.036	0.000	0.000	0.000	4.036	Woods/grass comb., Good	E, F
0.000	**23.955**	**0.255**	**0.000**	**0.000**	**24.210**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	A	0.00	0.00	302.0	0.0100	0.018	0.0	15.0	0.0	Drainage Area - A
2	B	0.00	0.00	351.0	0.0100	0.013	0.0	15.0	0.0	Drainage Area - B
3	C	0.00	0.00	261.0	0.0100	0.018	0.0	15.0	0.0	Drainage Area - C

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentA: Drainage Area - A Runoff Area=185,549 sf 44.70% Impervious Runoff Depth=1.50"
Flow Length=533' Tc=26.1 min CN=78 Runoff=4.43 cfs 0.532 af

SubcatchmentB: Drainage Area - B Runoff Area=471,440 sf 24.25% Impervious Runoff Depth=1.01"
Flow Length=1,087' Tc=10.3 min CN=70 Runoff=10.13 cfs 0.909 af

SubcatchmentC: Drainage Area - C Runoff Area=147,009 sf 38.07% Impervious Runoff Depth=1.30"
Flow Length=443' Tc=10.0 min CN=75 Runoff=4.35 cfs 0.366 af

SubcatchmentD: Drainage Area - D Runoff Area=63,683 sf 56.08% Impervious Runoff Depth=1.78"
Flow Length=150' Slope=0.0475 '/' Tc=10.0 min CN=82 Runoff=2.66 cfs 0.217 af

SubcatchmentE: Drainage Area - E Runoff Area=134,419 sf 0.00% Impervious Runoff Depth=0.45"
Flow Length=213' Tc=68.2 min CN=58 Runoff=0.39 cfs 0.116 af

SubcatchmentF: Drainage Area - F Runoff Area=41,378 sf 0.00% Impervious Runoff Depth=0.45"
Flow Length=314' Tc=23.8 min CN=58 Runoff=0.20 cfs 0.036 af

SubcatchmentG: Drainage Area - G (EAR - Right) Runoff Area=3,953 sf 100.00% Impervious Runoff Depth=3.27"
Tc=10.0 min CN=98 Runoff=0.27 cfs 0.025 af

SubcatchmentH: Drainage Area - H (EAR - Middle) Runoff Area=4,391 sf 100.00% Impervious Runoff Depth=3.27"
Tc=10.0 min CN=98 Runoff=0.30 cfs 0.027 af

SubcatchmentI: Drainage Area - I (EAR - Left) Runoff Area=2,770 sf 100.00% Impervious Runoff Depth=3.27"
Tc=10.0 min CN=98 Runoff=0.19 cfs 0.017 af

Pond A': StormTrap System A Peak Elev=126.33' Storage=8,848 cf Inflow=4.43 cfs 0.532 af
Discarded=0.64 cfs 0.518 af Primary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.518 af

Pond B': Storm Trap System B Peak Elev=73.68' Storage=15,986 cf Inflow=10.13 cfs 0.909 af
Discarded=0.94 cfs 0.890 af Primary=0.00 cfs 0.000 af Outflow=0.94 cfs 0.890 af

Pond C': Storm Trap System C Peak Elev=69.50' Storage=7,238 cf Inflow=4.35 cfs 0.366 af
Discarded=0.32 cfs 0.366 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.366 af

Pond G': Drywells Peak Elev=91.98' Storage=0.008 af Inflow=0.27 cfs 0.025 af
Outflow=0.04 cfs 0.025 af

Pond H': Drywells Peak Elev=87.13' Storage=0.009 af Inflow=0.30 cfs 0.027 af
Outflow=0.04 cfs 0.027 af

Pond I': Drywells Peak Elev=81.05' Storage=0.005 af Inflow=0.19 cfs 0.017 af
Outflow=0.03 cfs 0.017 af

Link SPA: Study Point A Inflow=2.67 cfs 0.334 af
Primary=2.67 cfs 0.334 af

Link SPC: Study Point C below 15.00 cfs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link SPD: Study Point D Inflow=0.20 cfs 0.036 af
Primary=0.20 cfs 0.036 af

Total Runoff Area = 24.210 ac Runoff Volume = 2.246 af Average Runoff Depth = 1.11"
71.55% Pervious = 17.322 ac 28.45% Impervious = 6.888 ac

Summary for Subcatchment A: Drainage Area - A

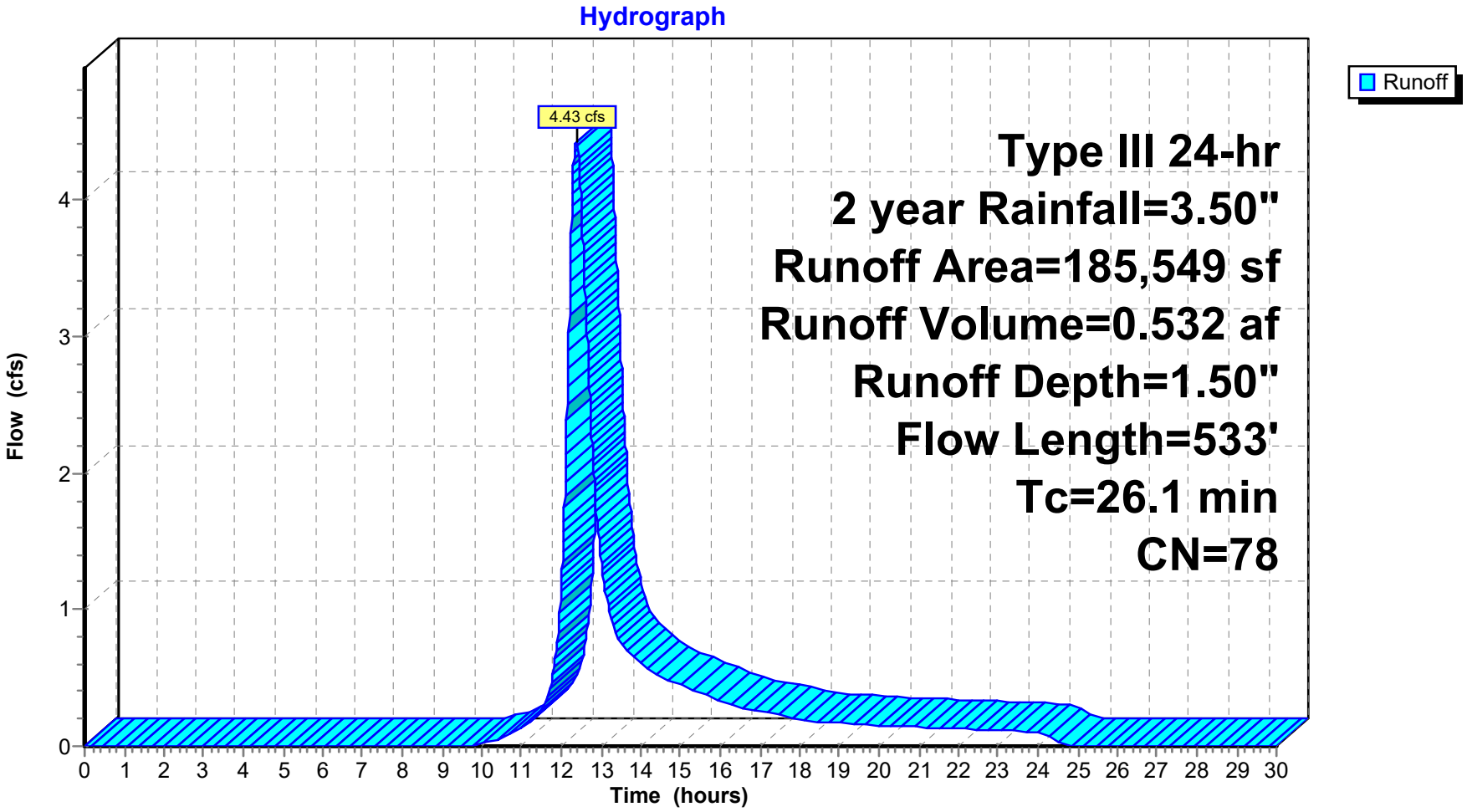
Runoff = 4.43 cfs @ 12.38 hrs, Volume= 0.532 af, Depth= 1.50"
Routed to Pond A' : StormTrap System A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
50,170	98	Paved parking, HSG B
102,617	61	>75% Grass cover, Good, HSG B
32,762	98	Roofs, HSG B
185,549	78	Weighted Average
102,617		55.30% Pervious Area
82,932		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	41	0.2668	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.2	190	0.0094	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	302	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
26.1	533	Total			

Subcatchment A: Drainage Area - A



Summary for Subcatchment B: Drainage Area - B

[47] Hint: Peak is 157% of capacity of segment #3

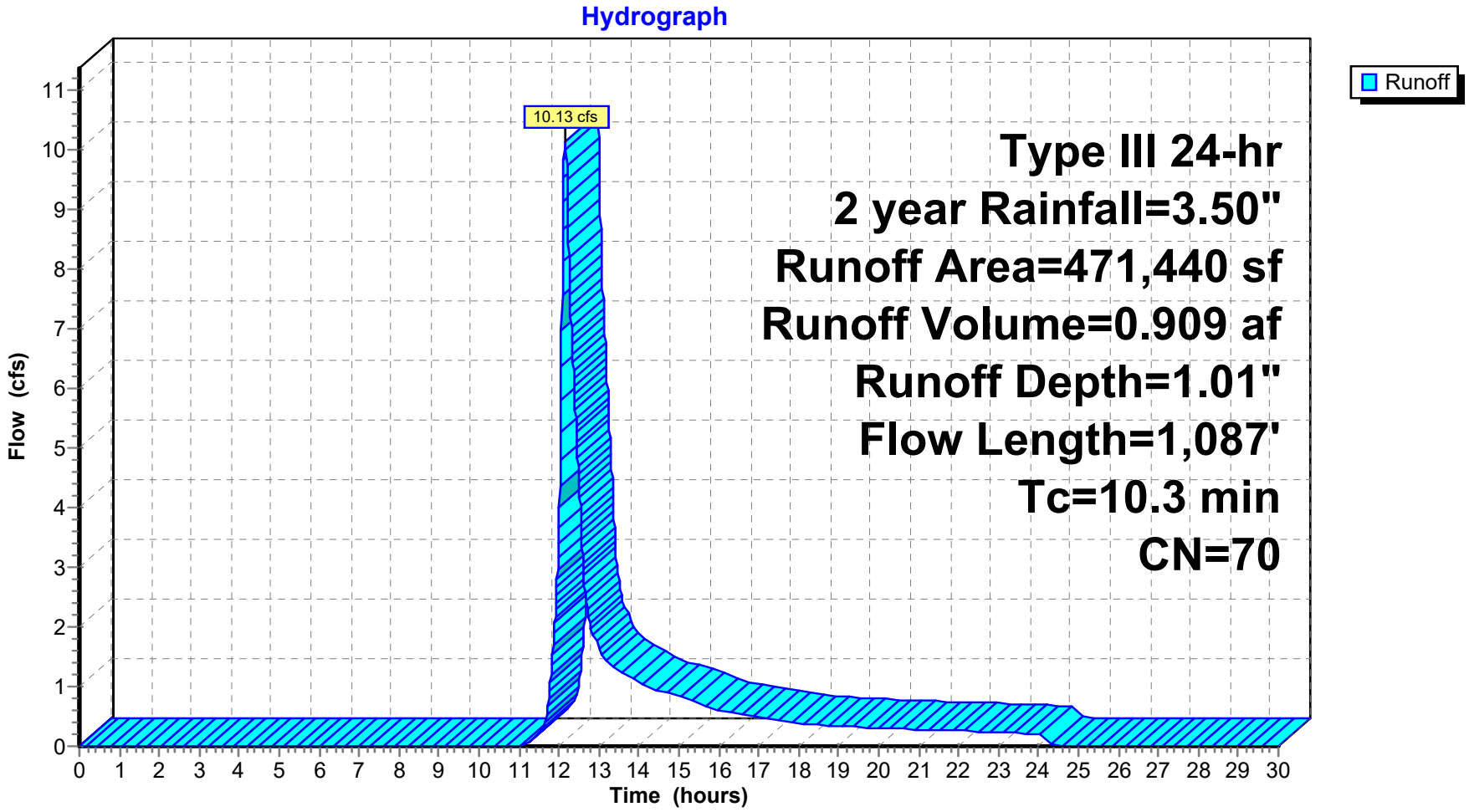
Runoff = 10.13 cfs @ 12.16 hrs, Volume= 0.909 af, Depth= 1.01"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
49,256	98	Paved parking, HSG B
152,096	61	>75% Grass cover, Good, HSG B
65,055	98	Roofs, HSG B
205,033	60	Woods, Fair, HSG B
471,440	70	Weighted Average
357,129		75.75% Pervious Area
114,311		24.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	599	0.0348	36.88	457,149.18	**Channel Flow, BIOSWALE** Area= 12,397.0 sf Perim= 1,234.0' r= 10.05' n= 0.035 Riprap, 6-inch
8.9	137	0.3016	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	351	0.0100	5.26	6.46	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
10.3	1,087	Total			

Subcatchment B: Drainage Area - B



Summary for Subcatchment C: Drainage Area - C

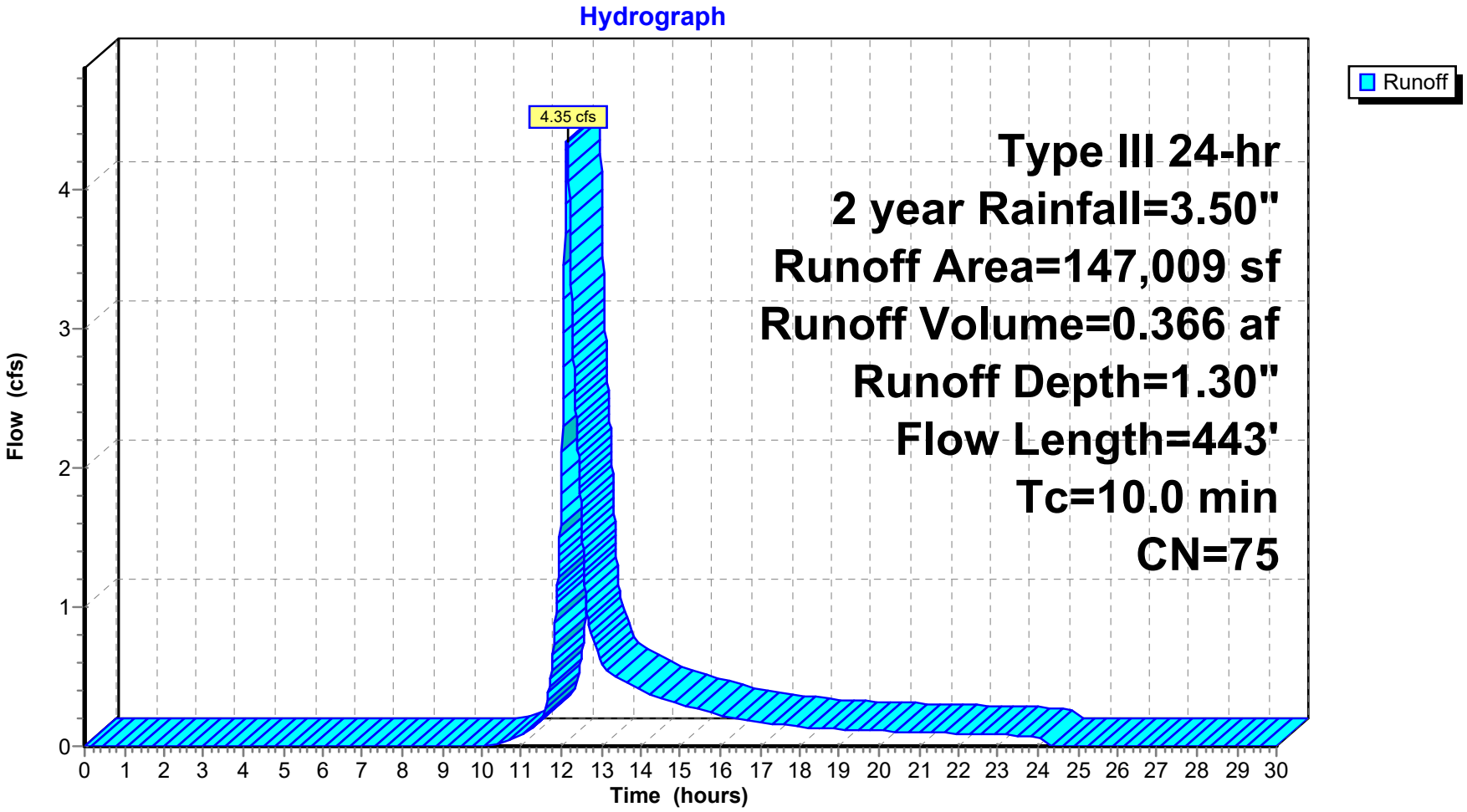
Runoff = 4.35 cfs @ 12.15 hrs, Volume= 0.366 af, Depth= 1.30"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
36,356	98	Paved parking, HSG B
42,997	61	>75% Grass cover, Good, HSG B
19,606	98	Roofs, HSG B
48,050	60	Woods, Fair, HSG B
147,009	75	Weighted Average
91,047		61.93% Pervious Area
55,962		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	182	0.0198	1.62		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	261	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
3.0	443	Total, Increased to minimum Tc = 10.0 min			

Subcatchment C: Drainage Area - C



Summary for Subcatchment D: Drainage Area - D

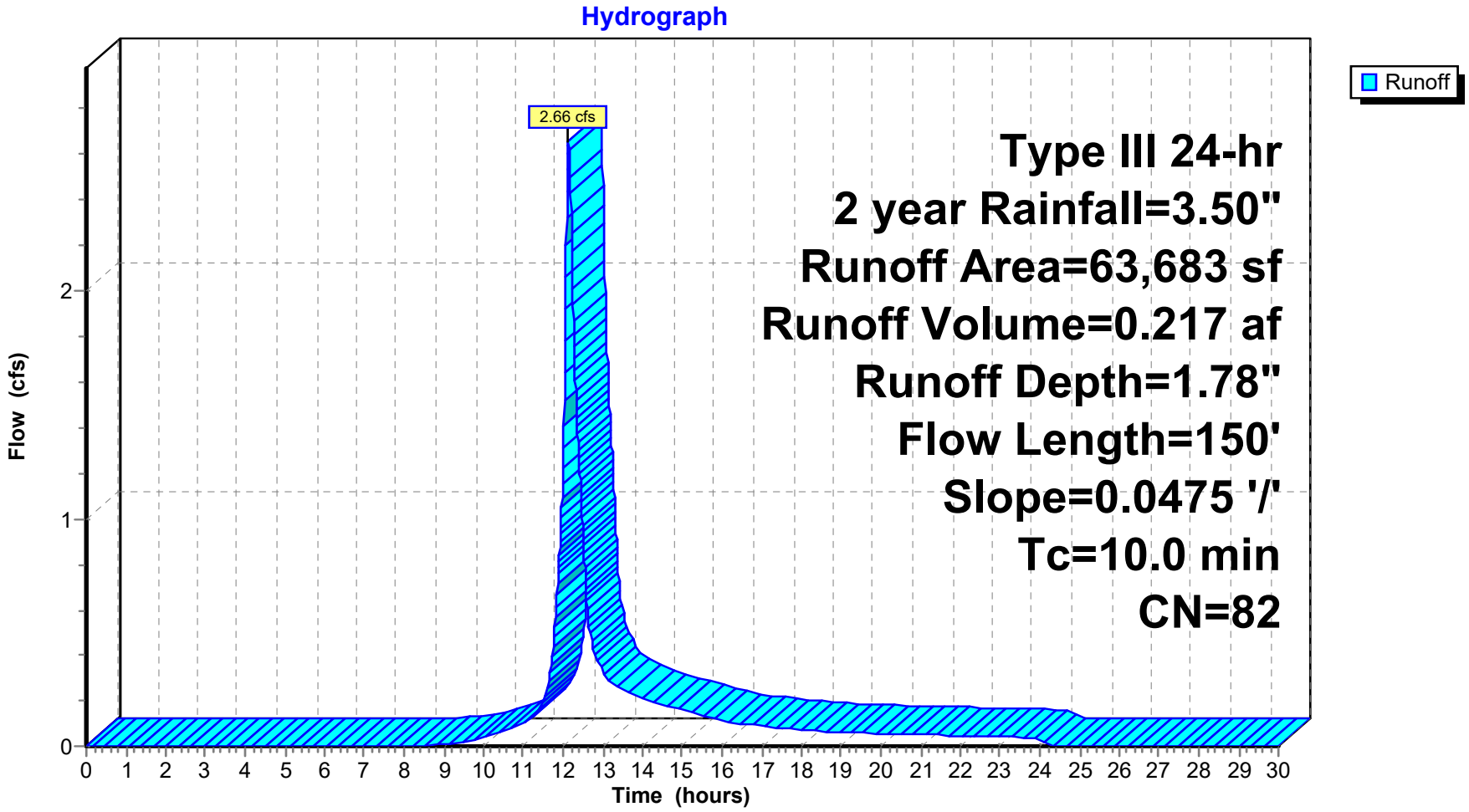
Runoff = 2.66 cfs @ 12.14 hrs, Volume= 0.217 af, Depth= 1.78"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
9,034	98	Paved parking, HSG B
27,967	61	>75% Grass cover, Good, HSG B
26,682	98	Roofs, HSG B
63,683	82	Weighted Average
27,967		43.92% Pervious Area
35,716		56.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.0475	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
9.2	150	Total, Increased to minimum Tc = 10.0 min			

Subcatchment D: Drainage Area - D



Summary for Subcatchment E: Drainage Area - E

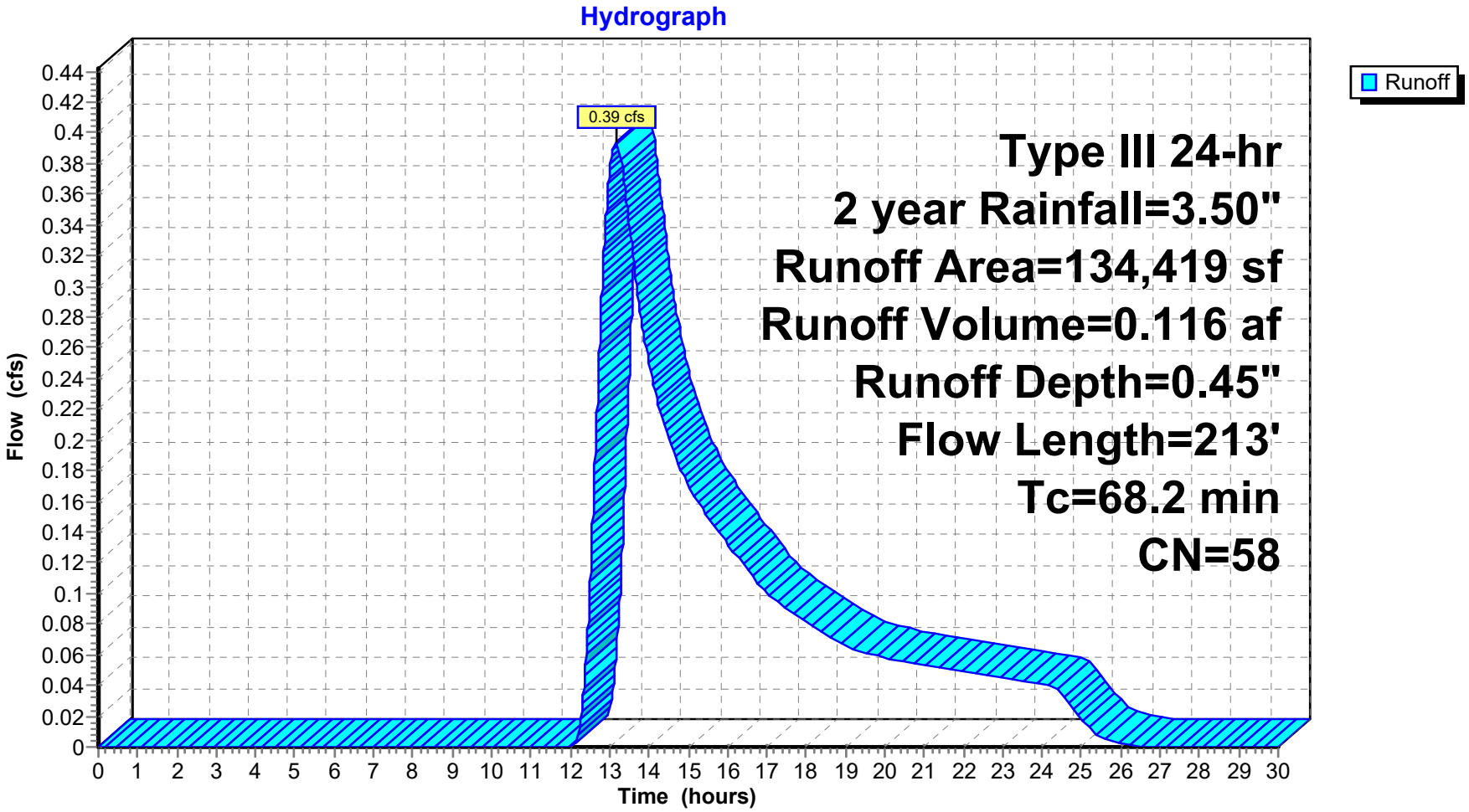
Runoff = 0.39 cfs @ 13.18 hrs, Volume= 0.116 af, Depth= 0.45"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
134,419	58	Woods/grass comb., Good, HSG B
134,419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
5.5	109	0.6400	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
68.2	213	Total			

Subcatchment E: Drainage Area - E



Summary for Subcatchment F: Drainage Area - F

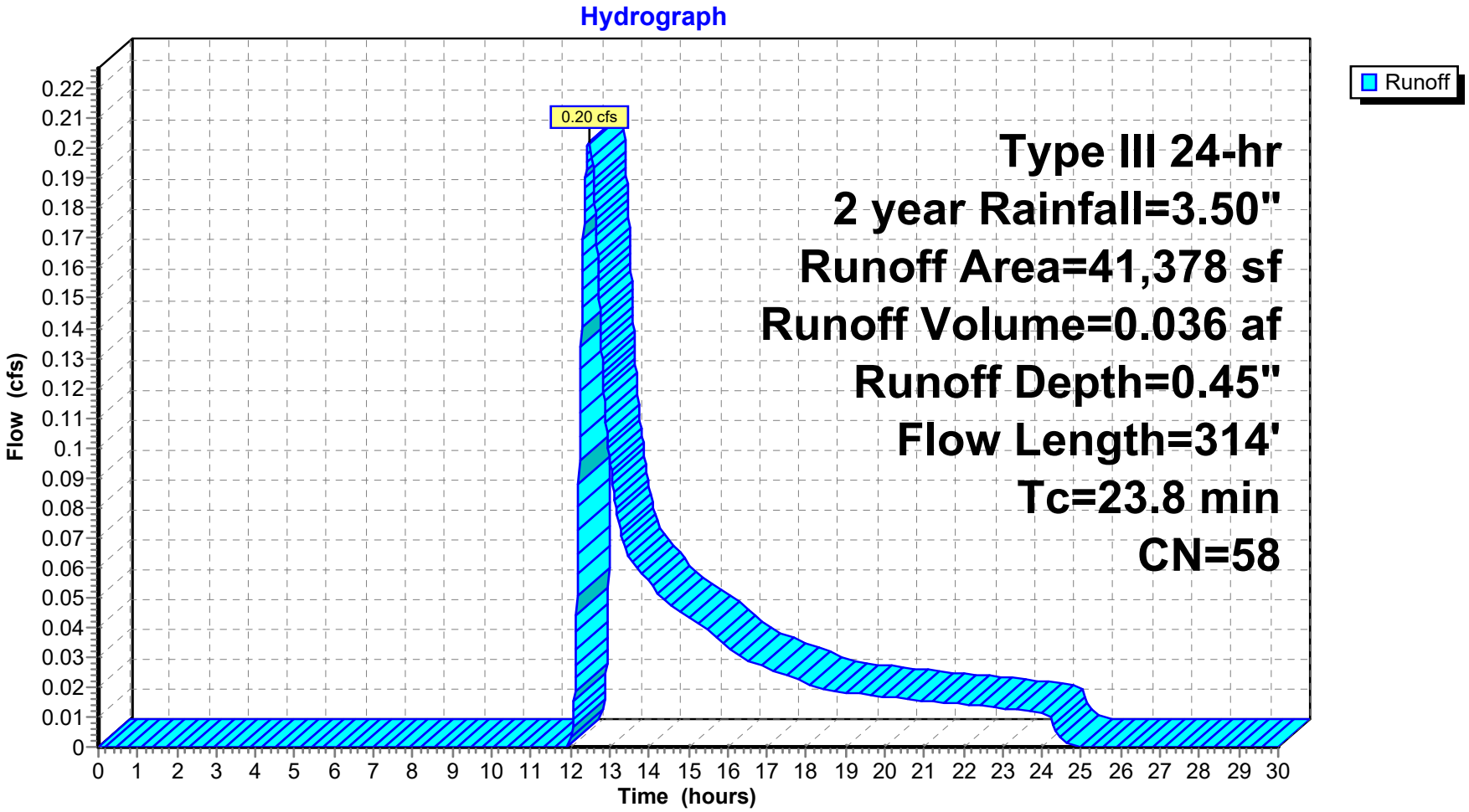
Runoff = 0.20 cfs @ 12.48 hrs, Volume= 0.036 af, Depth= 0.45"
Routed to Link SPD : Study Point D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
41,378	58	Woods/grass comb., Good, HSG B
41,378		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	71	0.0707	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.7	127	0.3708	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.1	84	0.7722	0.34		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.6	32	0.3741	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
23.8	314	Total			

Subcatchment F: Drainage Area - F



Summary for Subcatchment G: Drainage Area - G (EAR - Right)

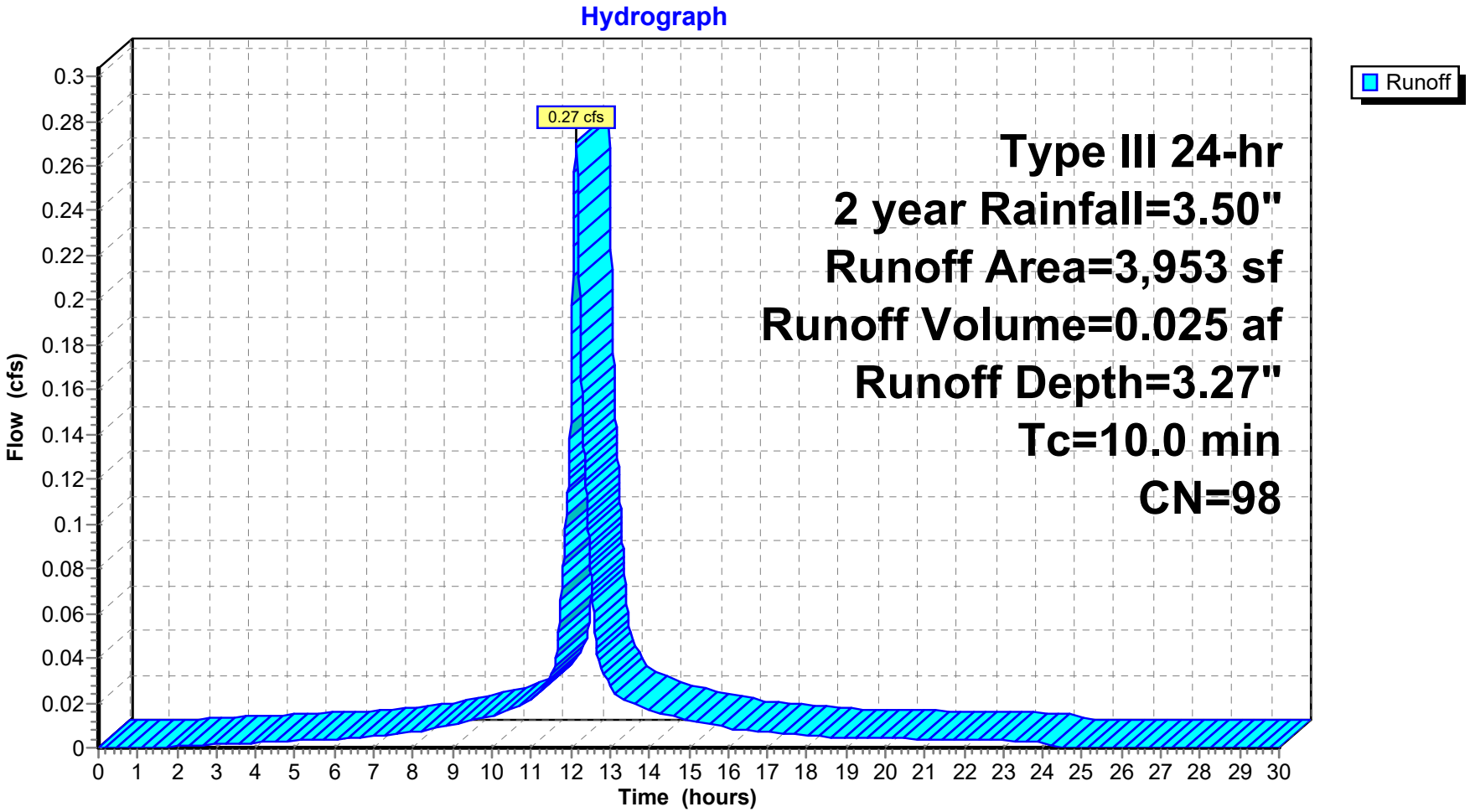
Runoff = 0.27 cfs @ 12.13 hrs, Volume= 0.025 af, Depth= 3.27"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
3,953	98	Paved parking, HSG C
3,953		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment G: Drainage Area - G (EAR - Right)



Summary for Subcatchment H: Drainage Area - H (EAR - Middle)

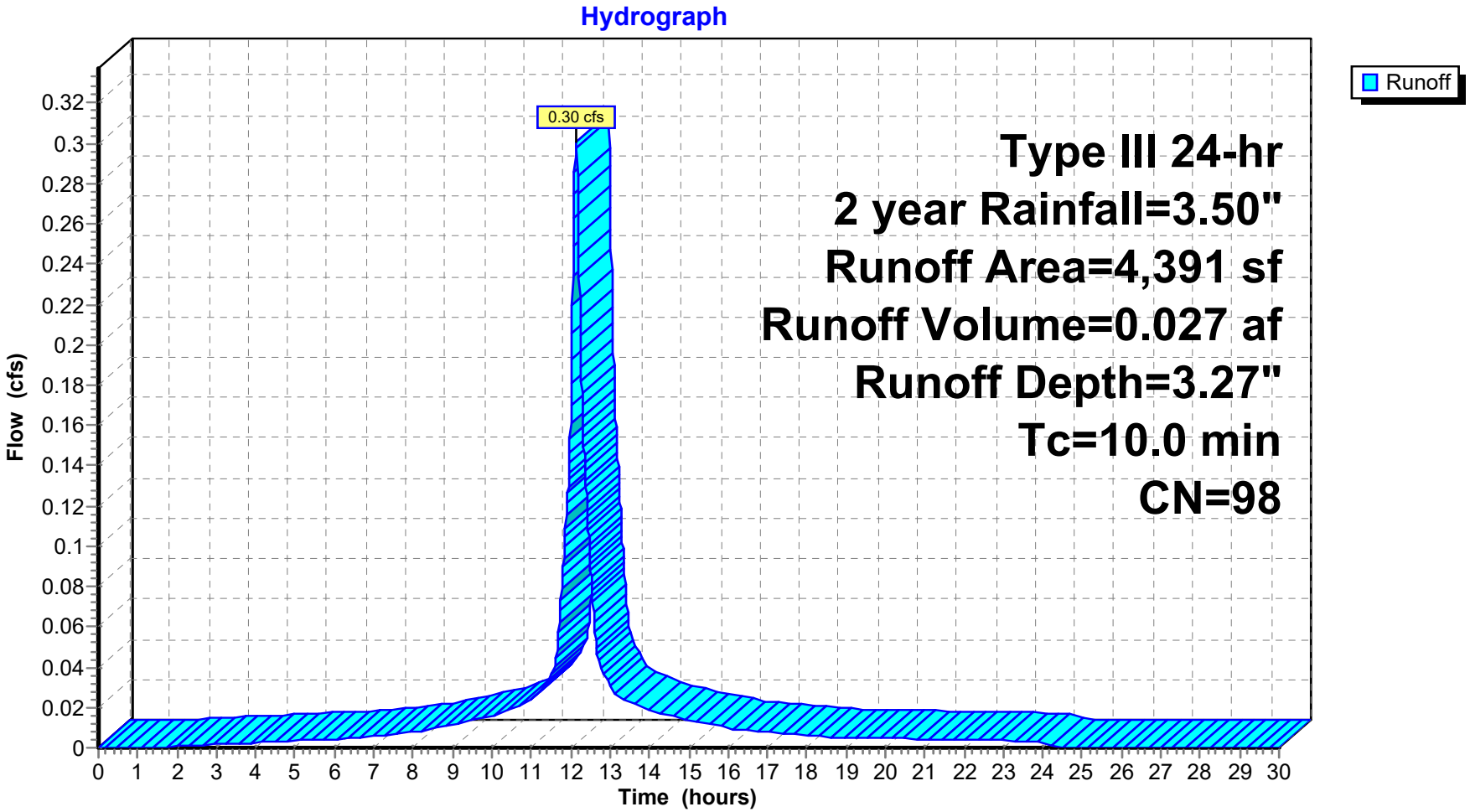
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 3.27"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
4,391	98	Paved parking, HSG C
4,391		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment H: Drainage Area - H (EAR - Middle)



Summary for Subcatchment I: Drainage Area - I (EAR - Left)

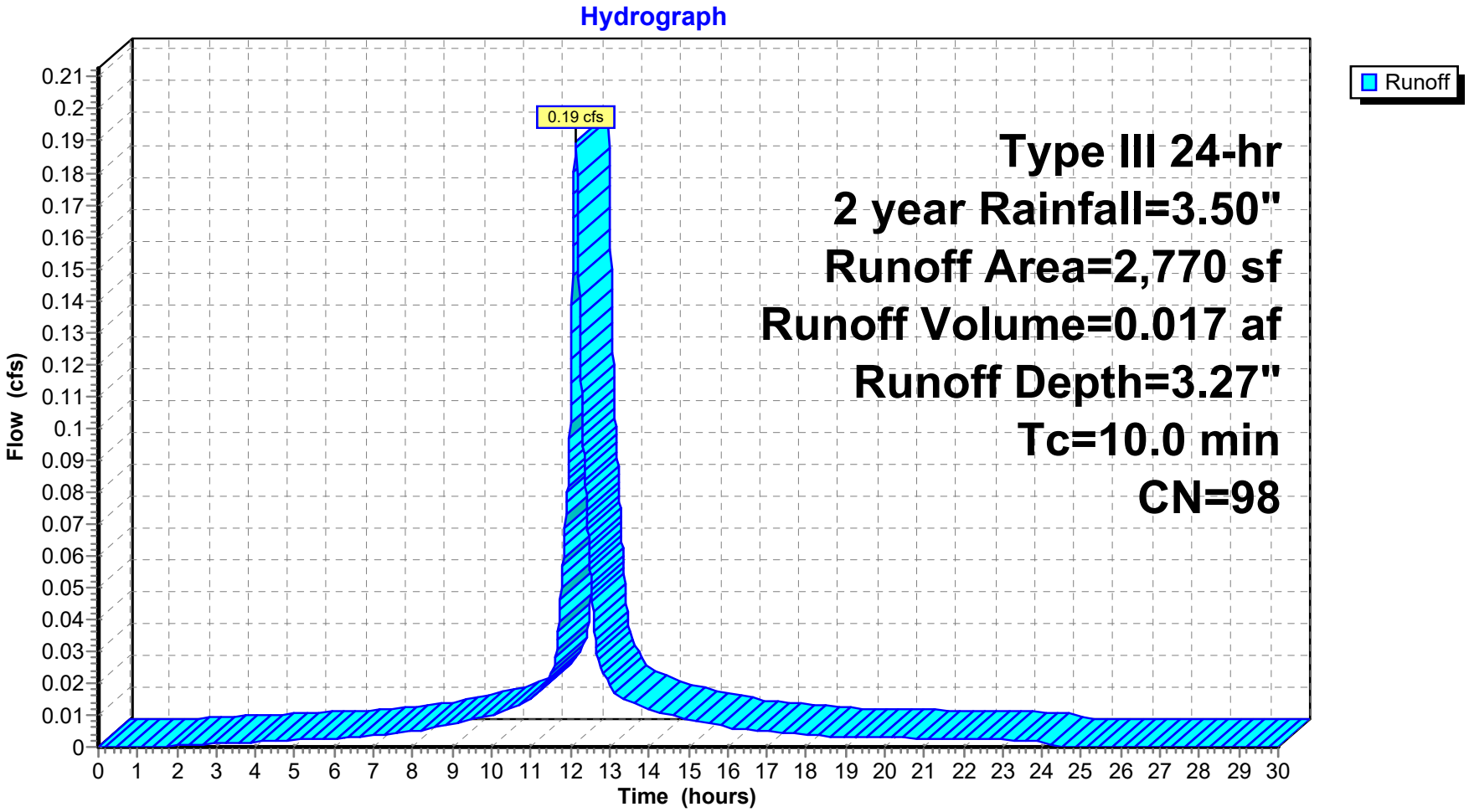
Runoff = 0.19 cfs @ 12.13 hrs, Volume= 0.017 af, Depth= 3.27"
Routed to Pond I' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.50"

Area (sf)	CN	Description
2,770	98	Paved parking, HSG C
2,770		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment I: Drainage Area - I (EAR - Left)



Summary for Pond A': StormTrap System A

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 1.50" for 2 year event
Inflow = 4.43 cfs @ 12.38 hrs, Volume= 0.532 af
Outflow = 0.64 cfs @ 11.86 hrs, Volume= 0.518 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.64 cfs @ 11.86 hrs, Volume= 0.518 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPC : Study Point C

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 126.33' @ 13.84 hrs Surf.Area= 5,543 sf Storage= 8,848 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 115.8 min (978.8 - 863.0)

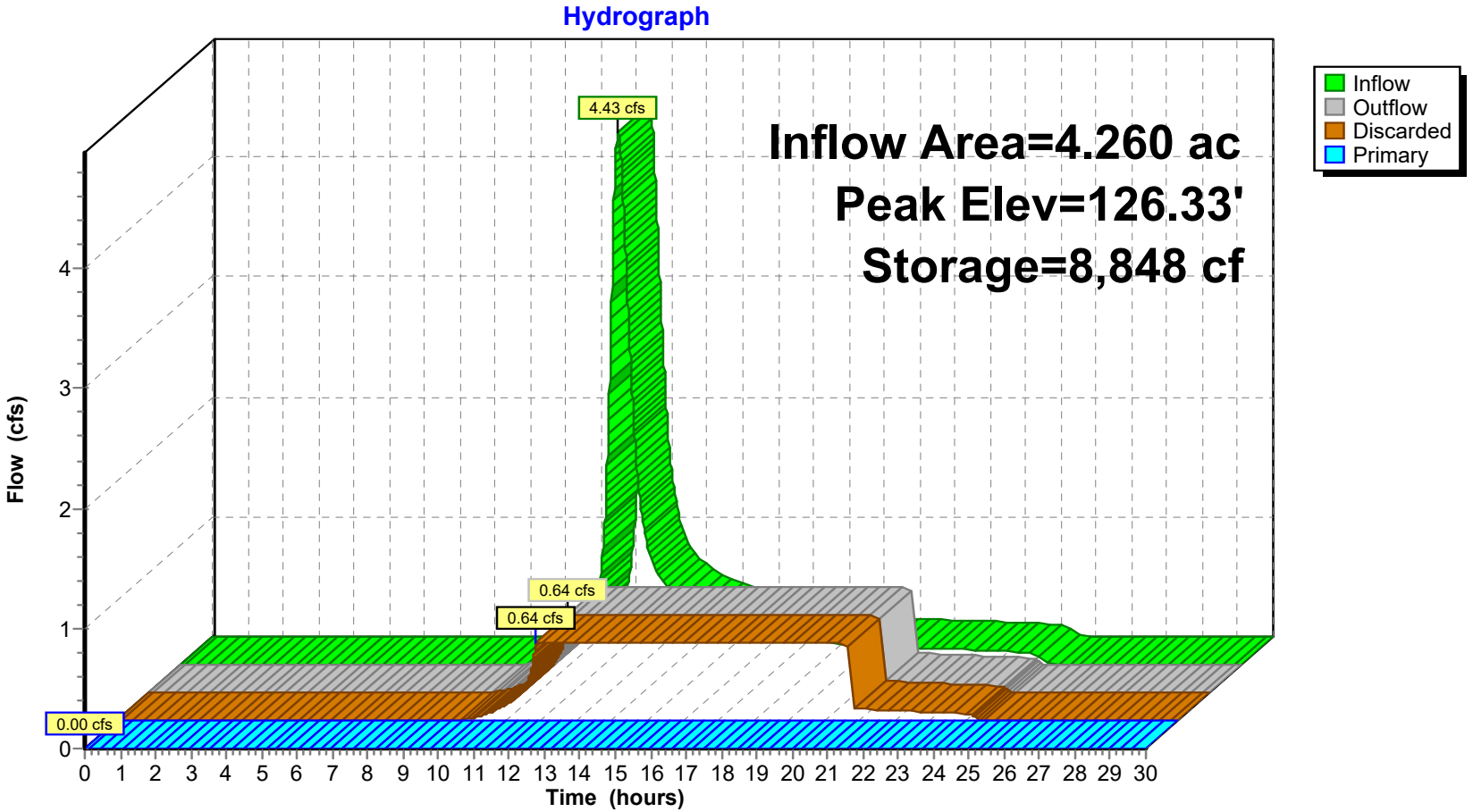
Volume	Invert	Avail.Storage	Storage Description
#1	124.06'	21,599 cf	**StormTrap ST2 DoubleTrap 8-6**x 12 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 12 Chambers in 4 Rows 33.92' x 46.19' Core + 6.66' Border = 47.23' x 59.50' System
#2	124.06'	20,918 cf	**StormTrap ST2 DoubleTrap 8-6**x 10 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System
		42,517 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	124.06'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	130.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.64 cfs @ 11.86 hrs HW=124.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.64 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=124.06' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond A': StormTrap System A



Summary for Pond B': Storm Trap System B

Inflow Area = 10.823 ac, 24.25% Impervious, Inflow Depth = 1.01" for 2 year event
Inflow = 10.13 cfs @ 12.16 hrs, Volume= 0.909 af
Outflow = 0.94 cfs @ 11.77 hrs, Volume= 0.890 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.94 cfs @ 11.77 hrs, Volume= 0.890 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 73.68' @ 14.47 hrs Surf.Area= 8,092 sf Storage= 15,986 cf

Plug-Flow detention time= 178.8 min calculated for 0.890 af (98% of inflow)
Center-of-Mass det. time= 167.3 min (1,040.5 - 873.3)

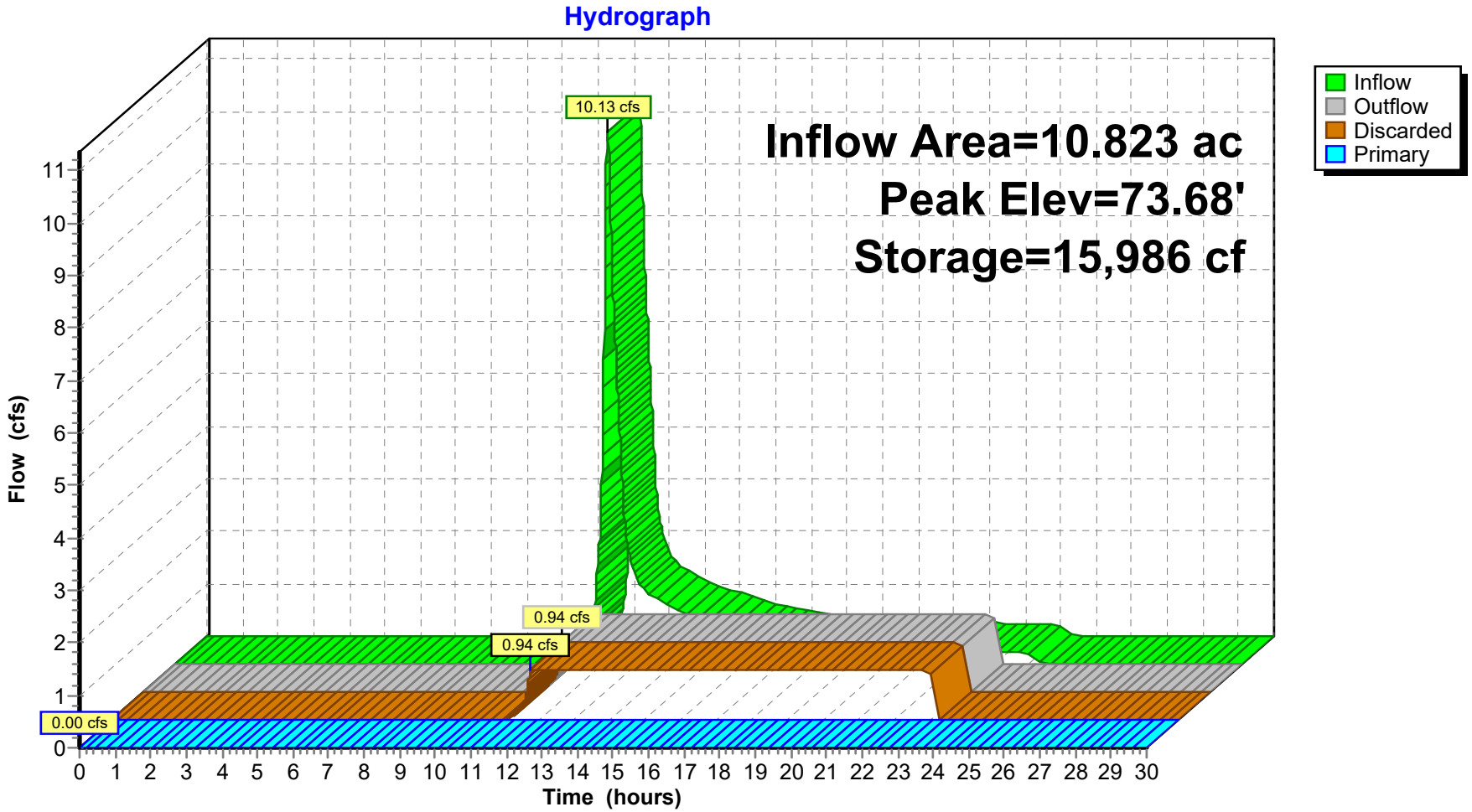
Volume	Invert	Avail.Storage	Storage Description
#1	71.00'	109,769 cf	**StormTrap ST2 DoubleTrap 15-0**x 45 Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf 45 Chambers in 9 Rows 76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	71.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	79.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.94 cfs @ 11.77 hrs HW=71.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond B': Storm Trap System B



Summary for Pond C': Storm Trap System C

Inflow Area = 3.375 ac, 38.07% Impervious, Inflow Depth = 1.30" for 2 year event
Inflow = 4.35 cfs @ 12.15 hrs, Volume= 0.366 af
Outflow = 0.32 cfs @ 11.65 hrs, Volume= 0.366 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.32 cfs @ 11.65 hrs, Volume= 0.366 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 69.50' @ 14.85 hrs Surf.Area= 2,733 sf Storage= 7,238 cf

Plug-Flow detention time= 236.7 min calculated for 0.366 af (100% of inflow)
Center-of-Mass det. time= 236.6 min (1,093.8 - 857.2)

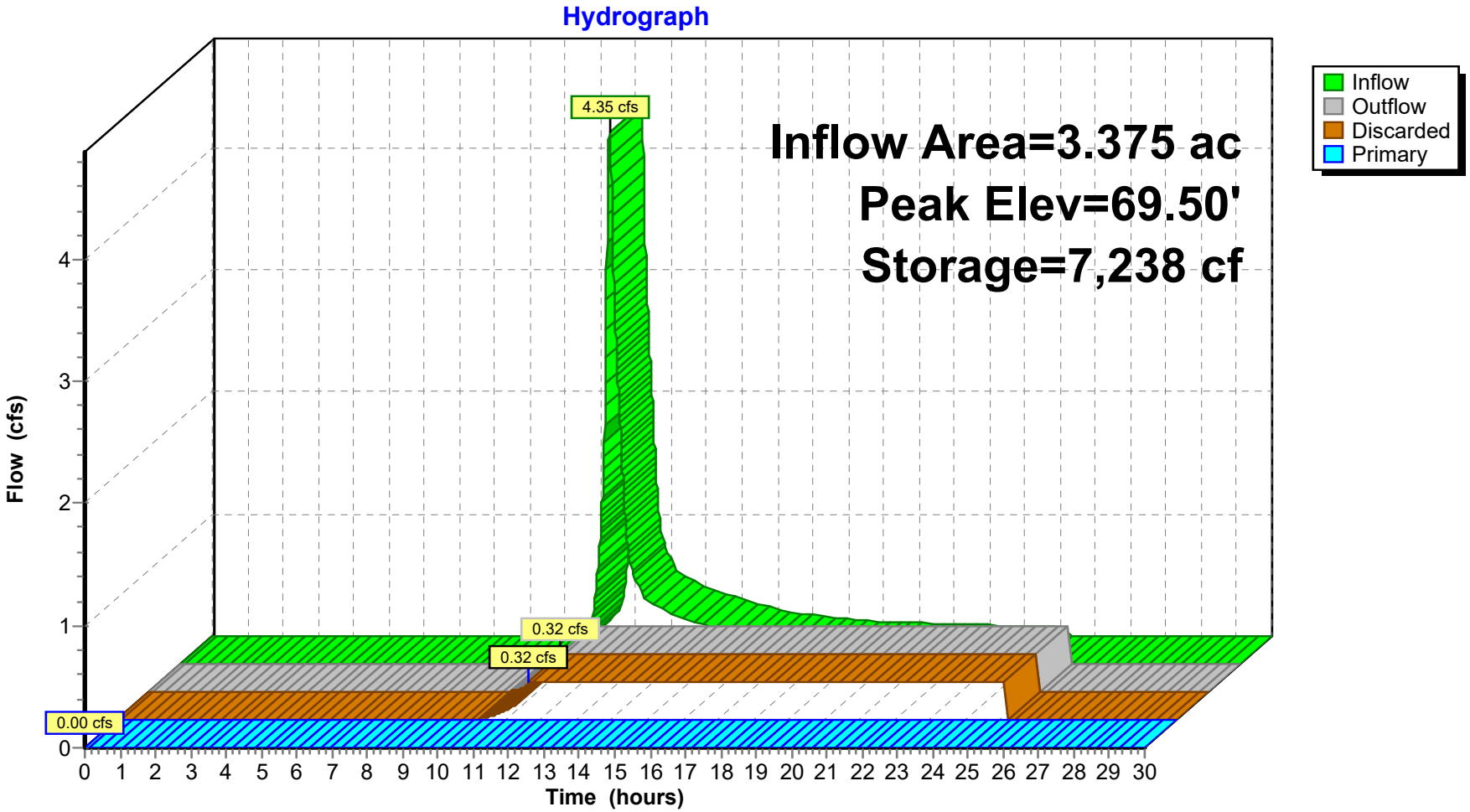
Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	33,796 cf	**StormTrap ST2 DoubleTrap 14-0**x 10 Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 11.65 hrs HW=66.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond C': Storm Trap System C



Summary for Pond G': Drywells

Inflow Area = 0.091 ac,100.00% Impervious, Inflow Depth = 3.27" for 2 year event
Inflow = 0.27 cfs @ 12.13 hrs, Volume= 0.025 af
Outflow = 0.04 cfs @ 11.70 hrs, Volume= 0.025 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.70 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 91.98' @ 12.71 hrs Surf.Area= 0.008 ac Storage= 0.008 af

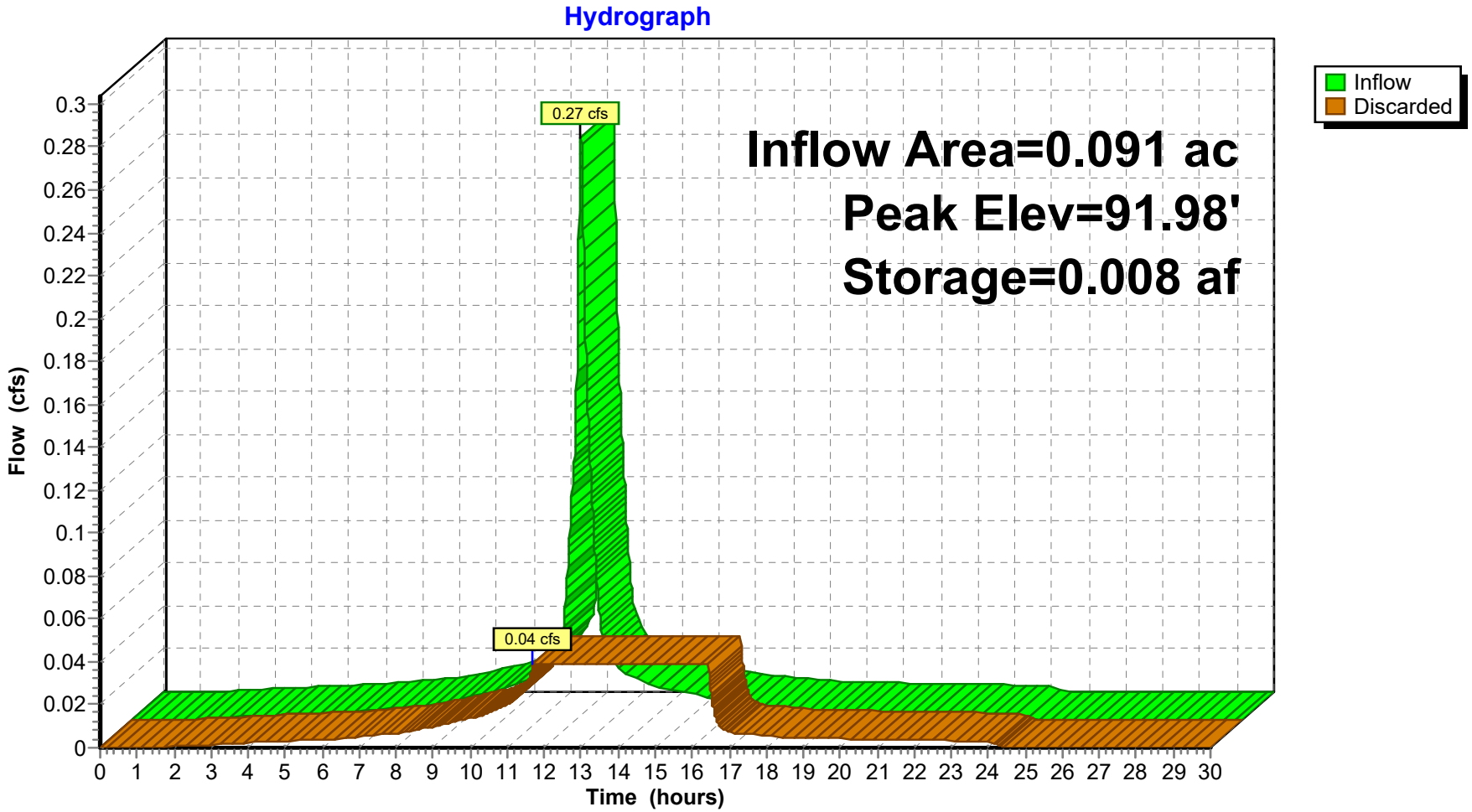
Plug-Flow detention time= 54.7 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 54.7 min (812.9 - 758.3)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.70 hrs HW=91.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond G': Drywells



Summary for Pond H': Drywells

Inflow Area = 0.101 ac,100.00% Impervious, Inflow Depth = 3.27" for 2 year event
Inflow = 0.30 cfs @ 12.13 hrs, Volume= 0.027 af
Outflow = 0.04 cfs @ 11.66 hrs, Volume= 0.027 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.66 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 87.13' @ 12.78 hrs Surf.Area= 0.008 ac Storage= 0.009 af

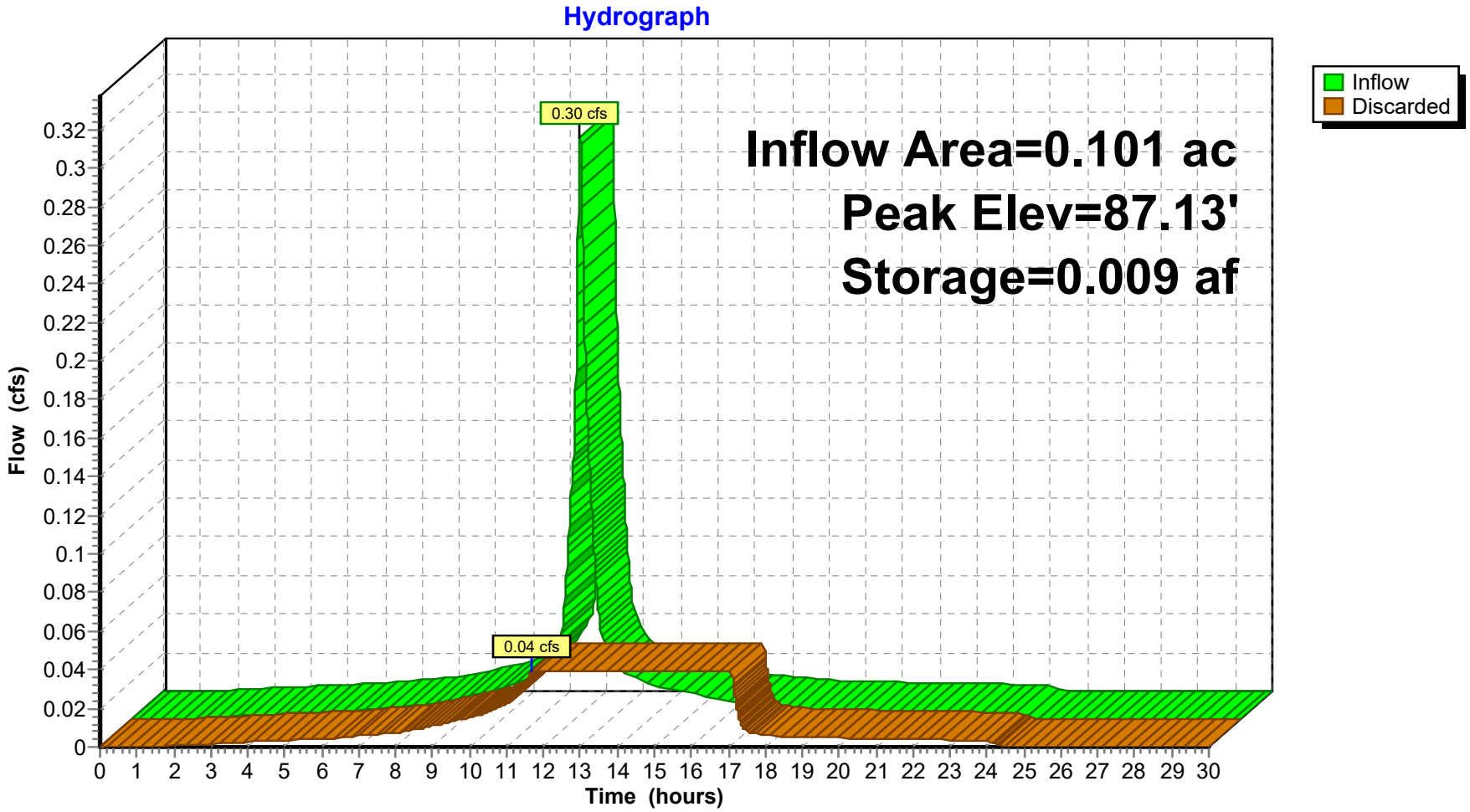
Plug-Flow detention time= 65.4 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 65.4 min (823.6 - 758.3)

Volume	Invert	Avail.Storage	Storage Description
#1	86.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	86.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.66 hrs HW=86.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond H': Drywells



Summary for Pond I': Drywells

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth = 3.27" for 2 year event
Inflow = 0.19 cfs @ 12.13 hrs, Volume= 0.017 af
Outflow = 0.03 cfs @ 11.69 hrs, Volume= 0.017 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.69 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 81.05' @ 12.74 hrs Surf.Area= 0.005 ac Storage= 0.005 af

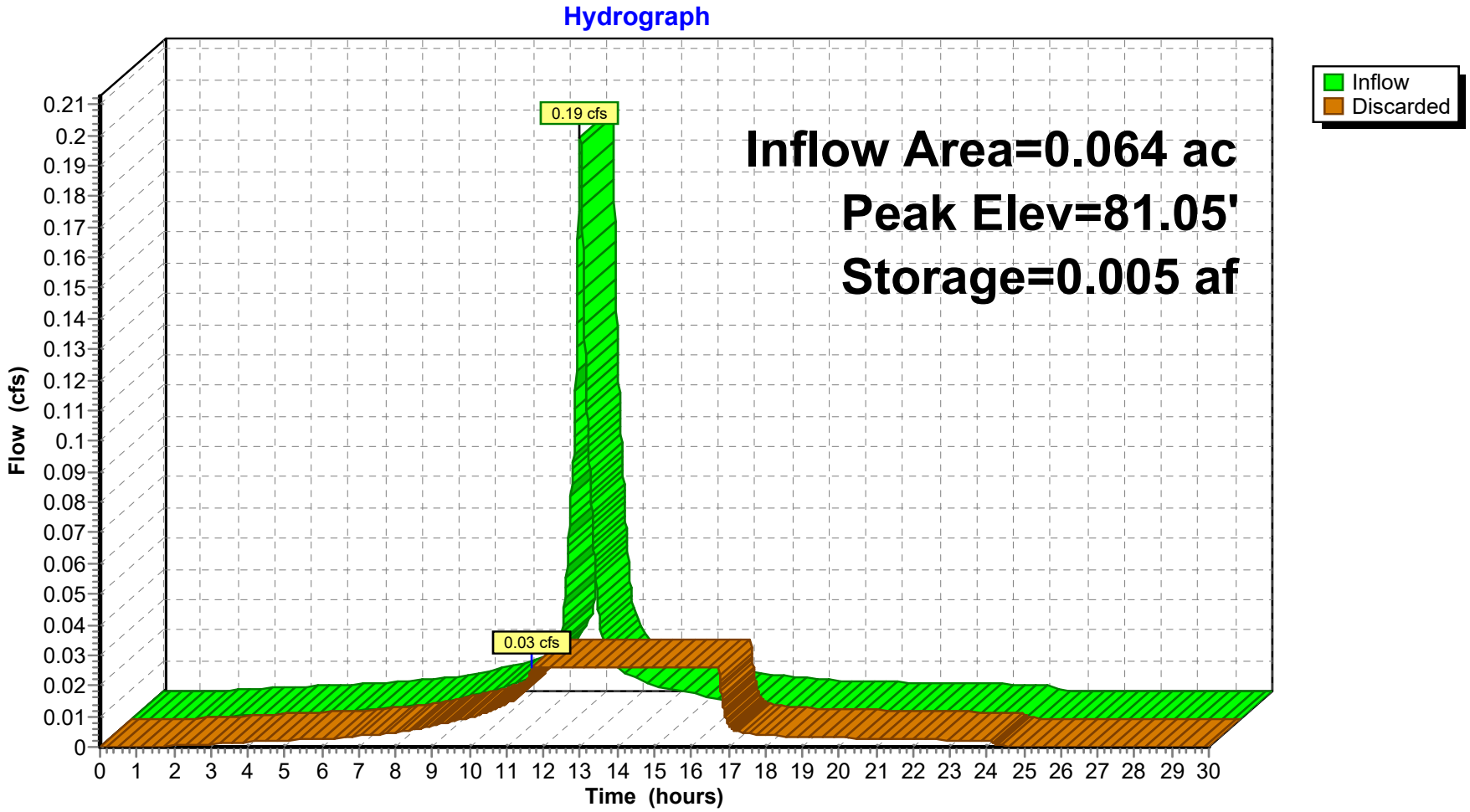
Plug-Flow detention time= 59.5 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 59.5 min (817.8 - 758.3)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	0.026 af	**12.00'D x 5.00'H Drywell** x 2

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.03 cfs @ 11.69 hrs HW=80.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond I': Drywells

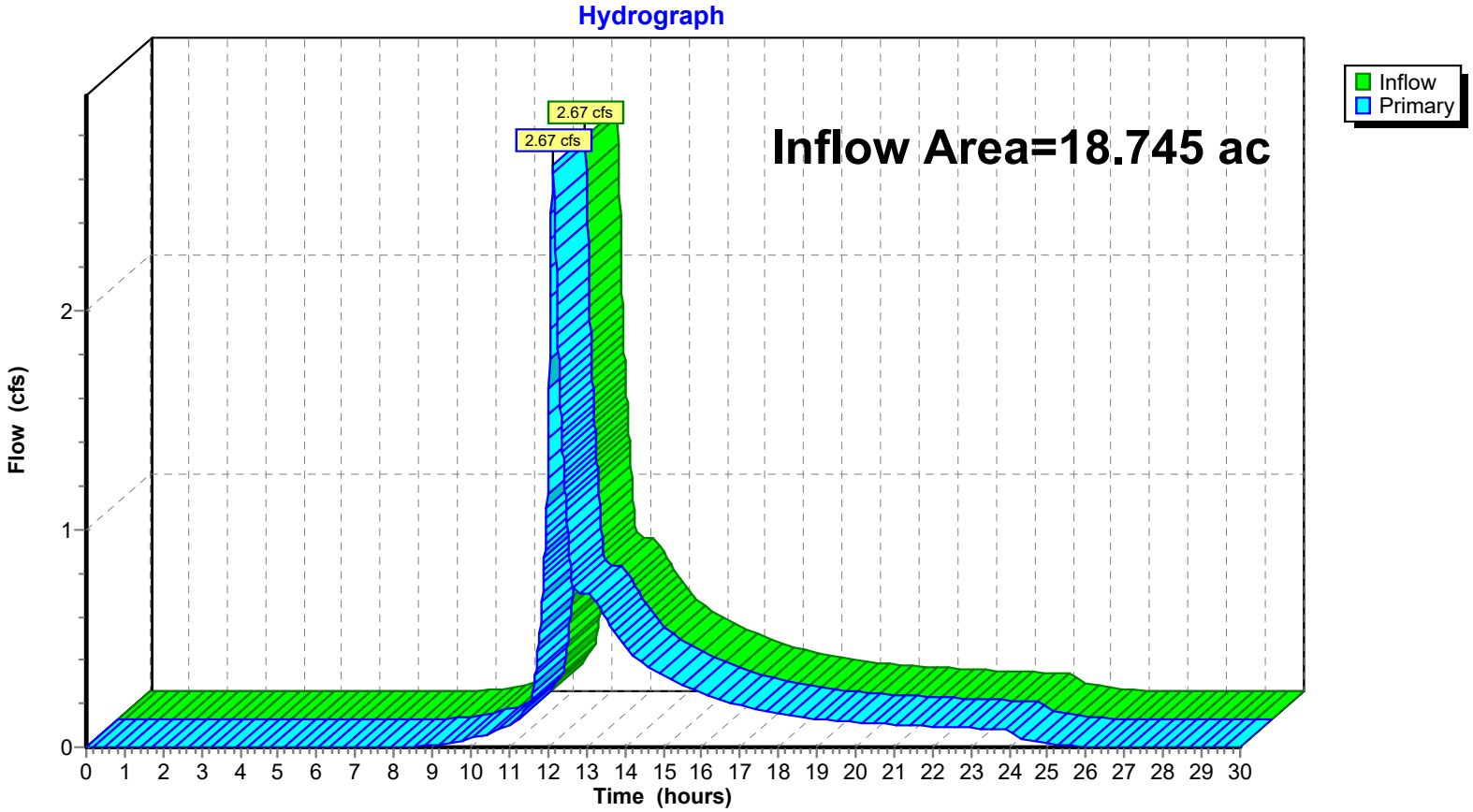


Summary for Link SPA: Study Point A

Inflow Area = 18.745 ac, 25.23% Impervious, Inflow Depth = 0.21" for 2 year event
Inflow = 2.67 cfs @ 12.14 hrs, Volume= 0.334 af
Primary = 2.67 cfs @ 12.14 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: Study Point A

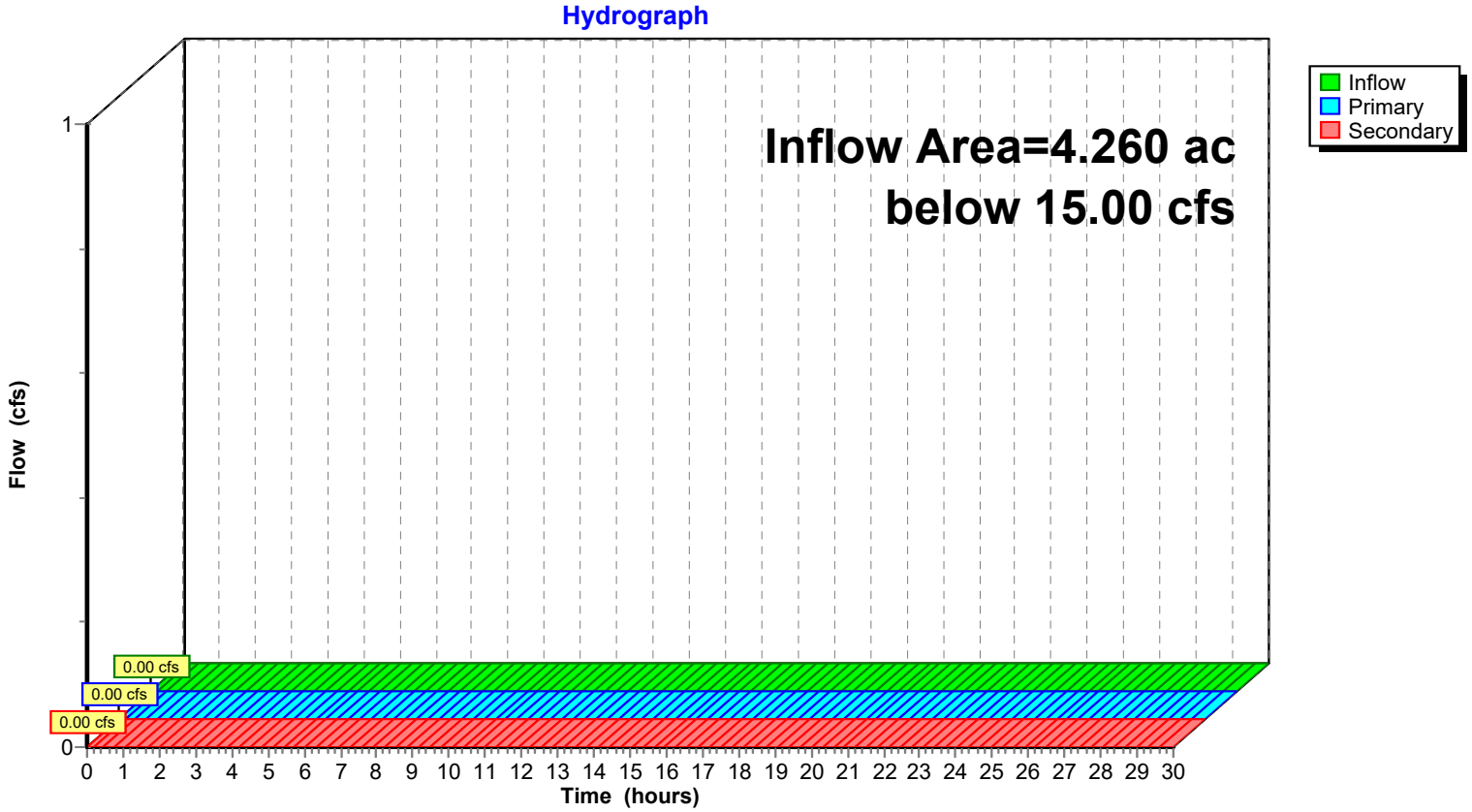


Summary for Link SPC: Study Point C

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow below 15.00 cfs, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

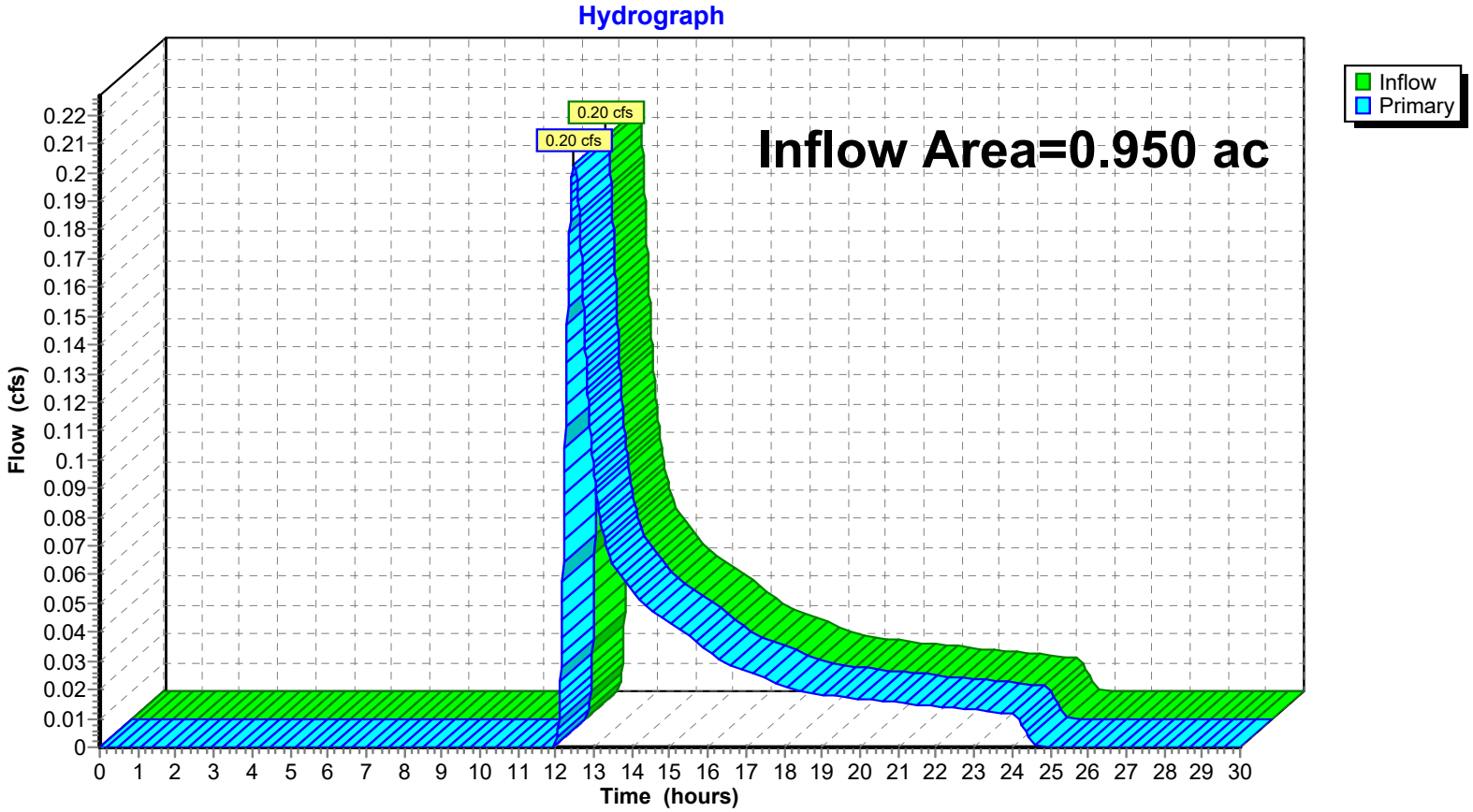


Summary for Link SPD: Study Point D

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.45" for 2 year event
Inflow = 0.20 cfs @ 12.48 hrs, Volume= 0.036 af
Primary = 0.20 cfs @ 12.48 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentA: Drainage Area - A Runoff Area=185,549 sf 44.70% Impervious Runoff Depth=2.50"
Flow Length=533' Tc=26.1 min CN=78 Runoff=7.50 cfs 0.888 af

SubcatchmentB: Drainage Area - B Runoff Area=471,440 sf 24.25% Impervious Runoff Depth=1.85"
Flow Length=1,087' Tc=10.3 min CN=70 Runoff=19.80 cfs 1.671 af

SubcatchmentC: Drainage Area - C Runoff Area=147,009 sf 38.07% Impervious Runoff Depth=2.25"
Flow Length=443' Tc=10.0 min CN=75 Runoff=7.72 cfs 0.632 af

SubcatchmentD: Drainage Area - D Runoff Area=63,683 sf 56.08% Impervious Runoff Depth=2.86"
Flow Length=150' Slope=0.0475 '/' Tc=10.0 min CN=82 Runoff=4.27 cfs 0.348 af

SubcatchmentE: Drainage Area - E Runoff Area=134,419 sf 0.00% Impervious Runoff Depth=1.03"
Flow Length=213' Tc=68.2 min CN=58 Runoff=1.14 cfs 0.266 af

SubcatchmentF: Drainage Area - F Runoff Area=41,378 sf 0.00% Impervious Runoff Depth=1.03"
Flow Length=314' Tc=23.8 min CN=58 Runoff=0.61 cfs 0.082 af

SubcatchmentG: Drainage Area - G (EAR - Right) Runoff Area=3,953 sf 100.00% Impervious Runoff Depth=4.51"
Tc=10.0 min CN=98 Runoff=0.37 cfs 0.034 af

SubcatchmentH: Drainage Area - H (EAR - Middle) Runoff Area=4,391 sf 100.00% Impervious Runoff Depth=4.51"
Tc=10.0 min CN=98 Runoff=0.41 cfs 0.038 af

SubcatchmentI: Drainage Area - I (EAR - Left) Runoff Area=2,770 sf 100.00% Impervious Runoff Depth=4.51"
Tc=10.0 min CN=98 Runoff=0.26 cfs 0.024 af

Pond A': StormTrap System A Peak Elev=128.34' Storage=18,897 cf Inflow=7.50 cfs 0.888 af
Discarded=0.64 cfs 0.888 af Primary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.888 af

Pond B': Storm Trap System B Peak Elev=76.99' Storage=40,201 cf Inflow=19.80 cfs 1.671 af
Discarded=0.94 cfs 1.475 af Primary=0.00 cfs 0.000 af Outflow=0.94 cfs 1.475 af

Pond C': Storm Trap System C Peak Elev=73.04' Storage=15,794 cf Inflow=7.72 cfs 0.632 af
Discarded=0.32 cfs 0.513 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.513 af

Pond G': Drywells Peak Elev=92.52' Storage=0.012 af Inflow=0.37 cfs 0.034 af
Outflow=0.04 cfs 0.034 af

Pond H': Drywells Peak Elev=87.76' Storage=0.014 af Inflow=0.41 cfs 0.038 af
Outflow=0.04 cfs 0.038 af

Pond I': Drywells Peak Elev=81.63' Storage=0.008 af Inflow=0.26 cfs 0.024 af
Outflow=0.03 cfs 0.024 af

Link SPA: Study Point A Inflow=4.32 cfs 0.614 af
Primary=4.32 cfs 0.614 af

Link SPC: Study Point C below 15.00 cfs Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Link SPD: Study Point D Inflow=0.61 cfs 0.082 af
Primary=0.61 cfs 0.082 af

Total Runoff Area = 24.210 ac Runoff Volume = 3.983 af Average Runoff Depth = 1.97"
71.55% Pervious = 17.322 ac 28.45% Impervious = 6.888 ac

Summary for Subcatchment A: Drainage Area - A

[47] Hint: Peak is 161% of capacity of segment #3

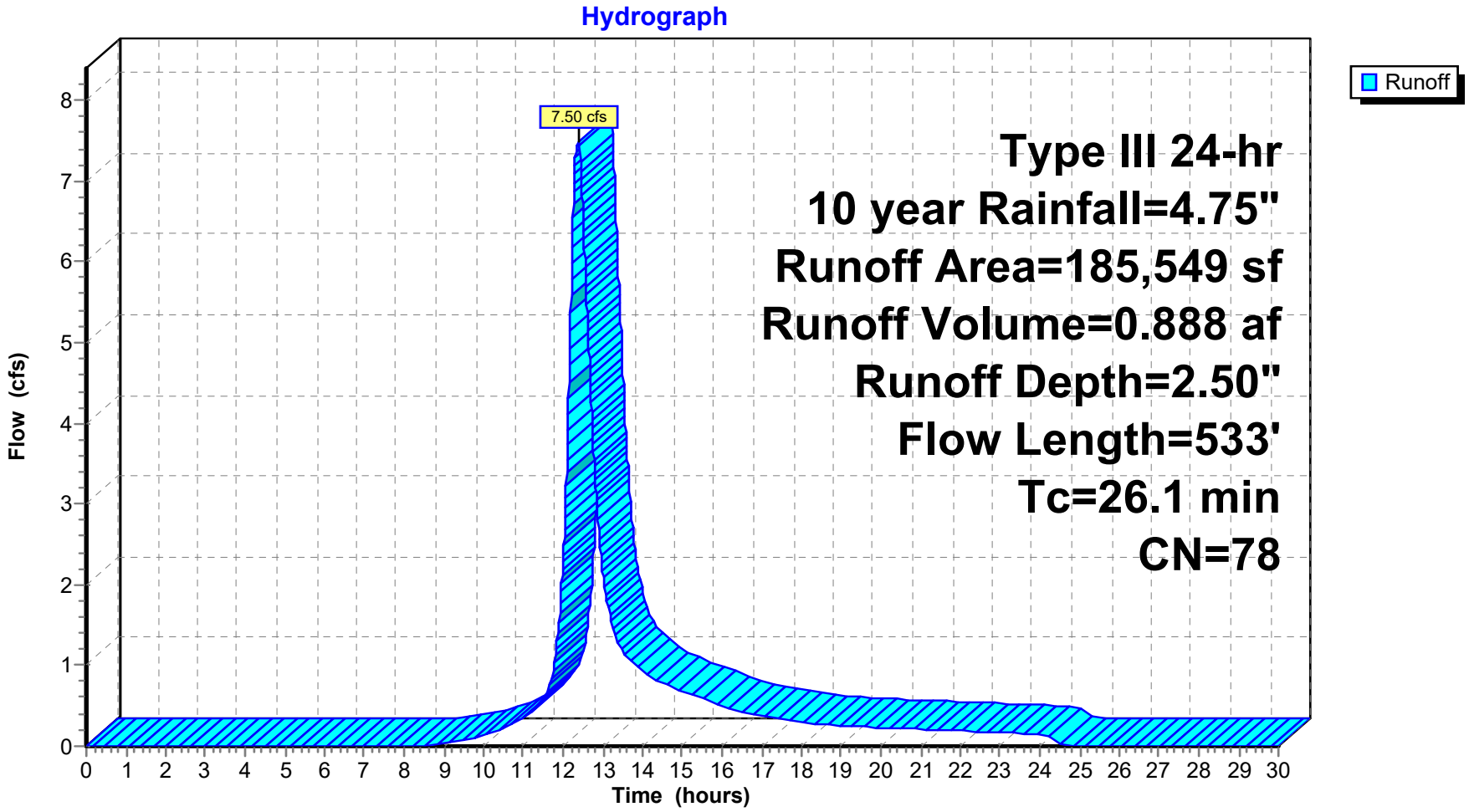
Runoff = 7.50 cfs @ 12.38 hrs, Volume= 0.888 af, Depth= 2.50"
Routed to Pond A' : StormTrap System A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
50,170	98	Paved parking, HSG B
102,617	61	>75% Grass cover, Good, HSG B
32,762	98	Roofs, HSG B
185,549	78	Weighted Average
102,617		55.30% Pervious Area
82,932		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	41	0.2668	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.2	190	0.0094	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	302	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
26.1	533	Total			

Subcatchment A: Drainage Area - A



Summary for Subcatchment B: Drainage Area - B

[47] Hint: Peak is 306% of capacity of segment #3

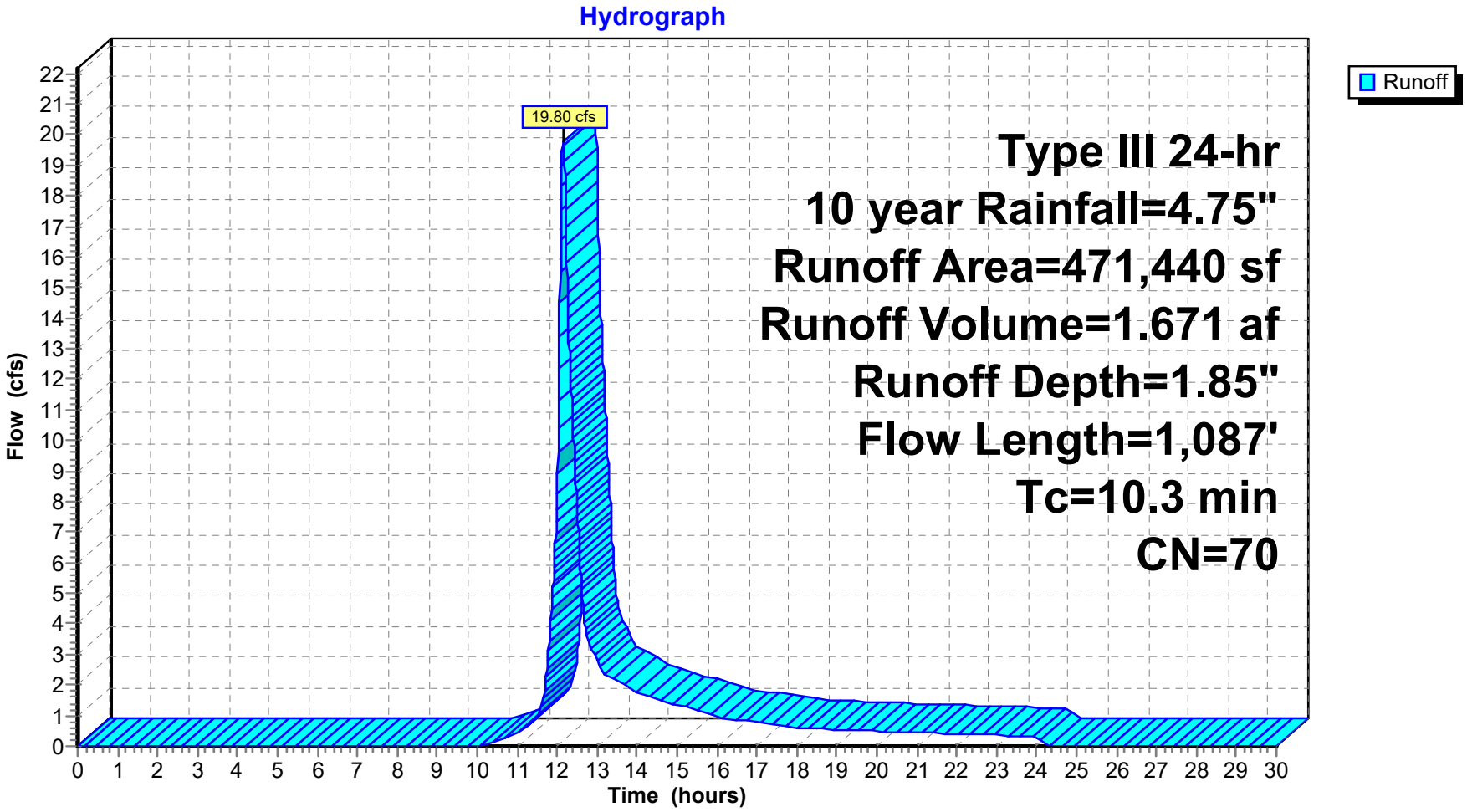
Runoff = 19.80 cfs @ 12.15 hrs, Volume= 1.671 af, Depth= 1.85"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
49,256	98	Paved parking, HSG B
152,096	61	>75% Grass cover, Good, HSG B
65,055	98	Roofs, HSG B
205,033	60	Woods, Fair, HSG B
471,440	70	Weighted Average
357,129		75.75% Pervious Area
114,311		24.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	599	0.0348	36.88	457,149.18	**Channel Flow, BIOSWALE** Area= 12,397.0 sf Perim= 1,234.0' r= 10.05' n= 0.035 Riprap, 6-inch
8.9	137	0.3016	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	351	0.0100	5.26	6.46	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
10.3	1,087	Total			

Subcatchment B: Drainage Area - B



Summary for Subcatchment C: Drainage Area - C

[47] Hint: Peak is 166% of capacity of segment #2

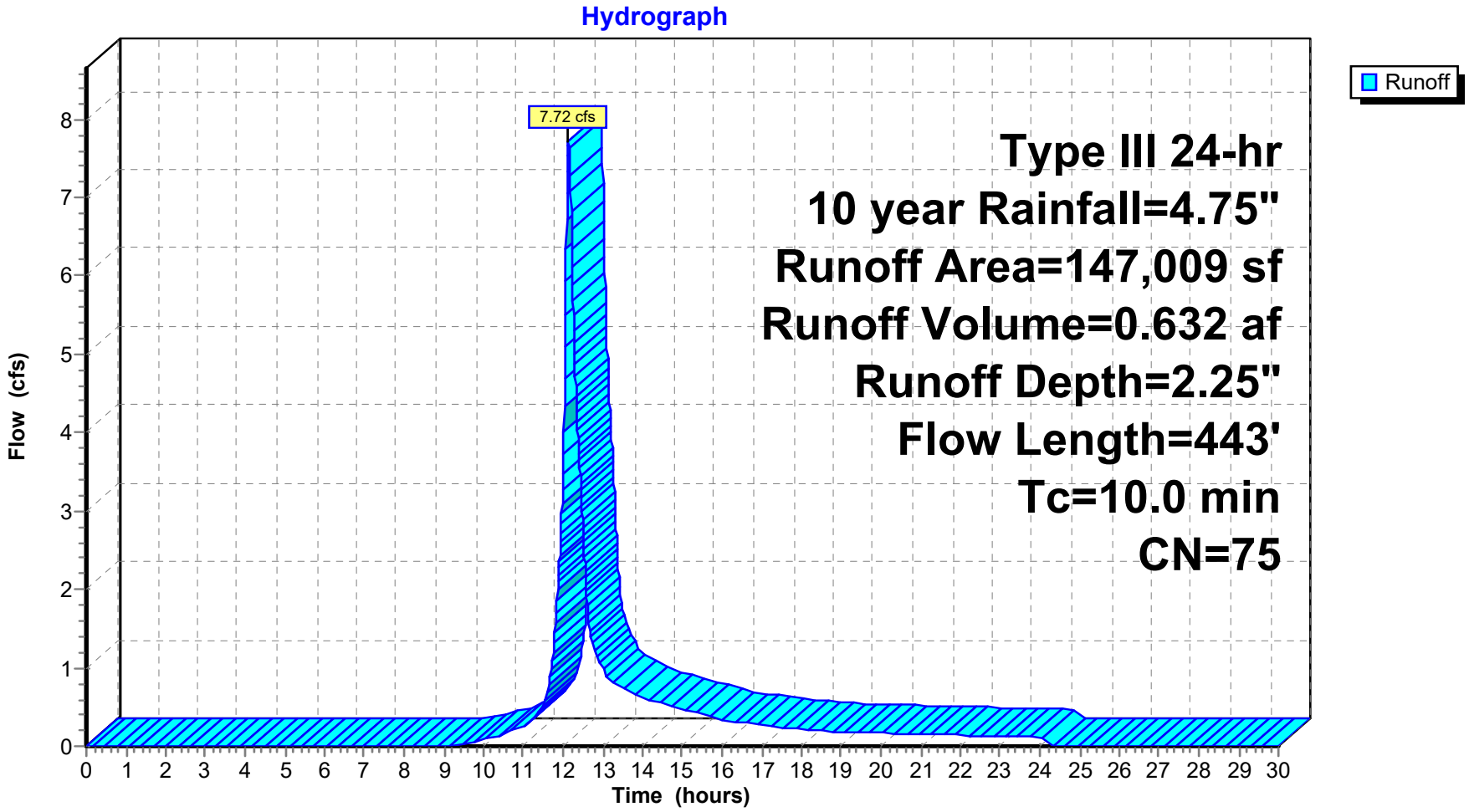
Runoff = 7.72 cfs @ 12.14 hrs, Volume= 0.632 af, Depth= 2.25"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
36,356	98	Paved parking, HSG B
42,997	61	>75% Grass cover, Good, HSG B
19,606	98	Roofs, HSG B
48,050	60	Woods, Fair, HSG B
147,009	75	Weighted Average
91,047		61.93% Pervious Area
55,962		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	182	0.0198	1.62		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	261	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
3.0	443	Total, Increased to minimum Tc = 10.0 min			

Subcatchment C: Drainage Area - C



Summary for Subcatchment D: Drainage Area - D

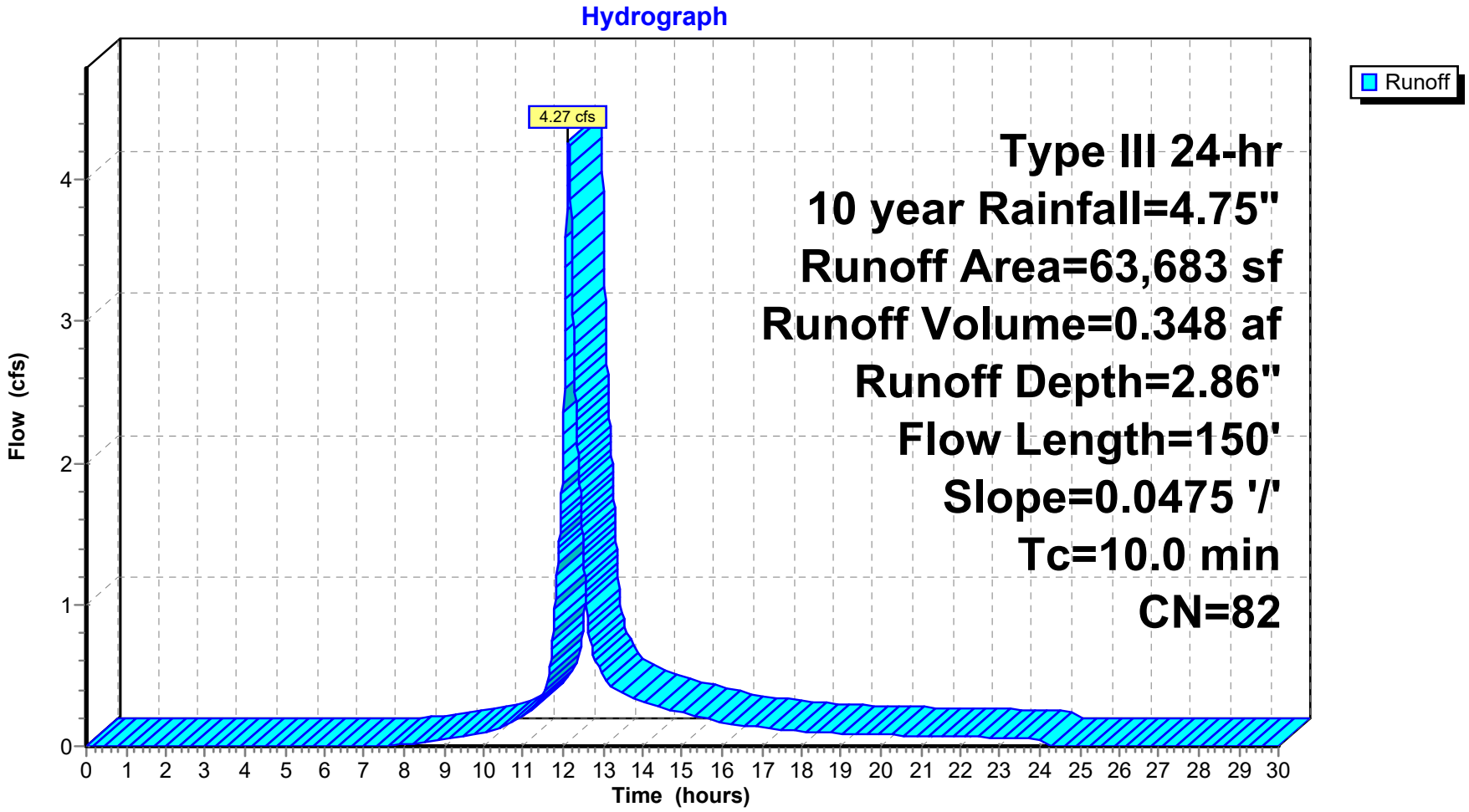
Runoff = 4.27 cfs @ 12.14 hrs, Volume= 0.348 af, Depth= 2.86"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
9,034	98	Paved parking, HSG B
27,967	61	>75% Grass cover, Good, HSG B
26,682	98	Roofs, HSG B
63,683	82	Weighted Average
27,967		43.92% Pervious Area
35,716		56.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.0475	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
9.2	150	Total, Increased to minimum Tc = 10.0 min			

Subcatchment D: Drainage Area - D



Summary for Subcatchment E: Drainage Area - E

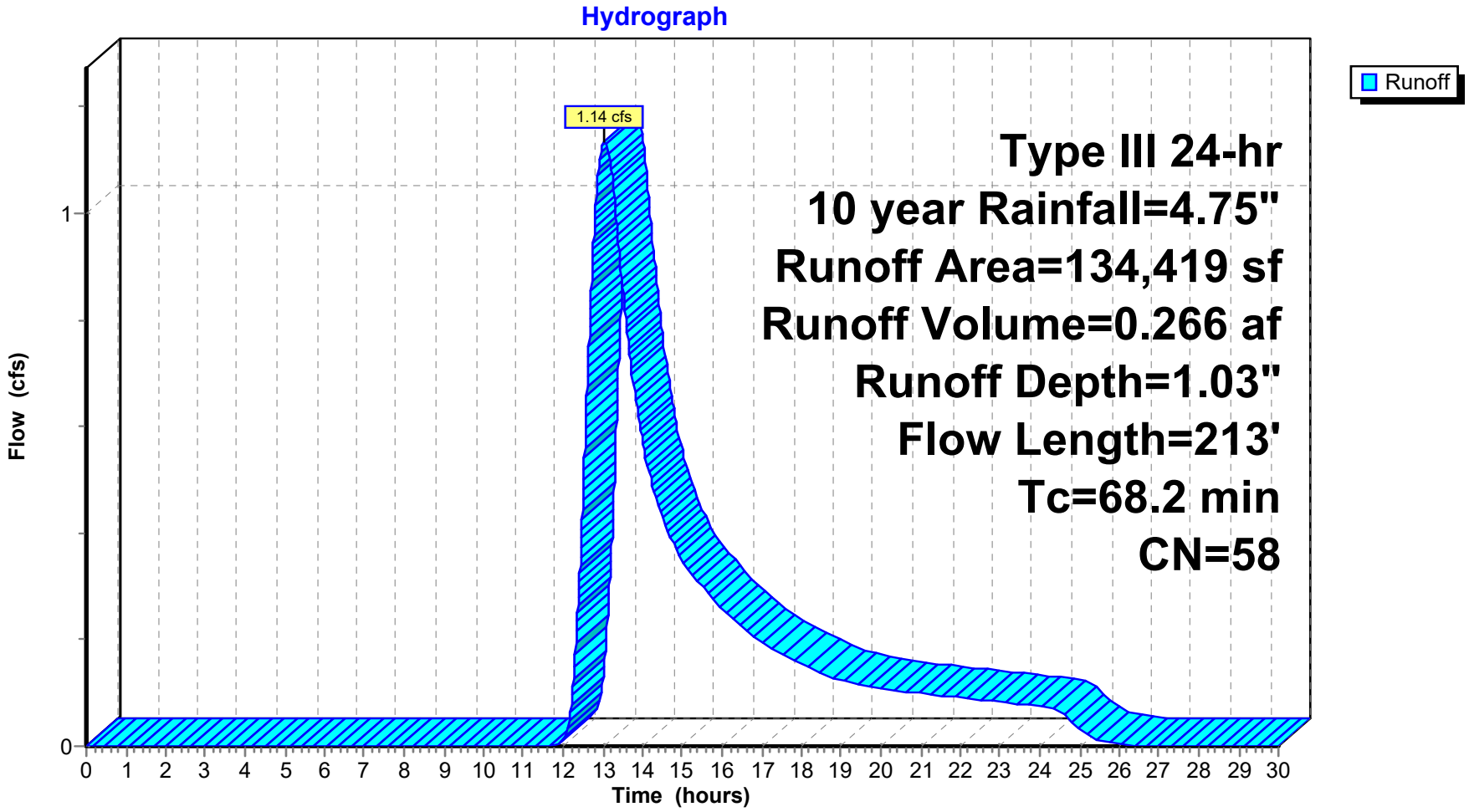
Runoff = 1.14 cfs @ 13.04 hrs, Volume= 0.266 af, Depth= 1.03"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
134,419	58	Woods/grass comb., Good, HSG B
134,419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
5.5	109	0.6400	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
68.2	213	Total			

Subcatchment E: Drainage Area - E



Summary for Subcatchment F: Drainage Area - F

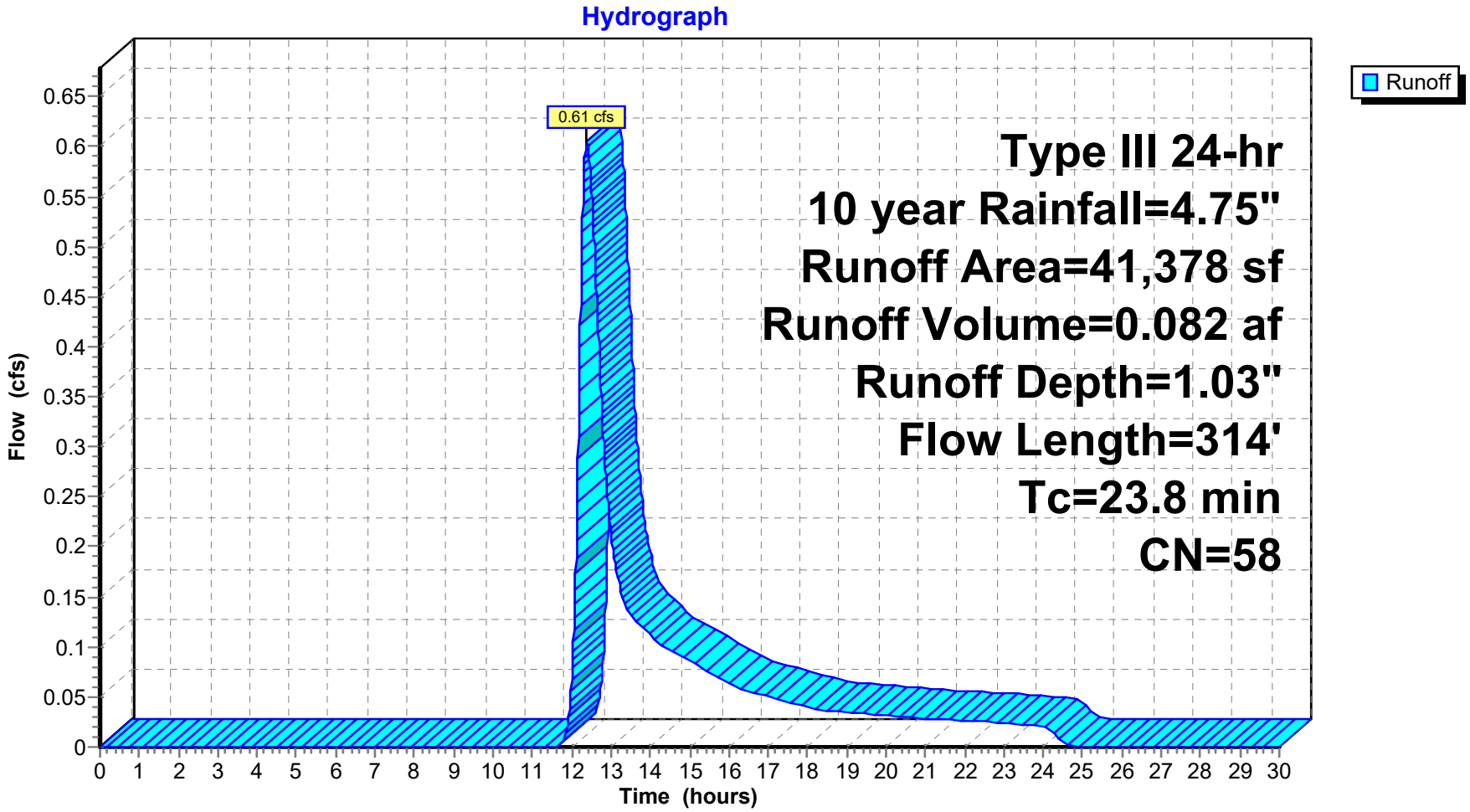
Runoff = 0.61 cfs @ 12.40 hrs, Volume= 0.082 af, Depth= 1.03"
Routed to Link SPD : Study Point D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
41,378	58	Woods/grass comb., Good, HSG B
41,378		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	71	0.0707	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.7	127	0.3708	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.1	84	0.7722	0.34		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.6	32	0.3741	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
23.8	314	Total			

Subcatchment F: Drainage Area - F



Summary for Subcatchment G: Drainage Area - G (EAR - Right)

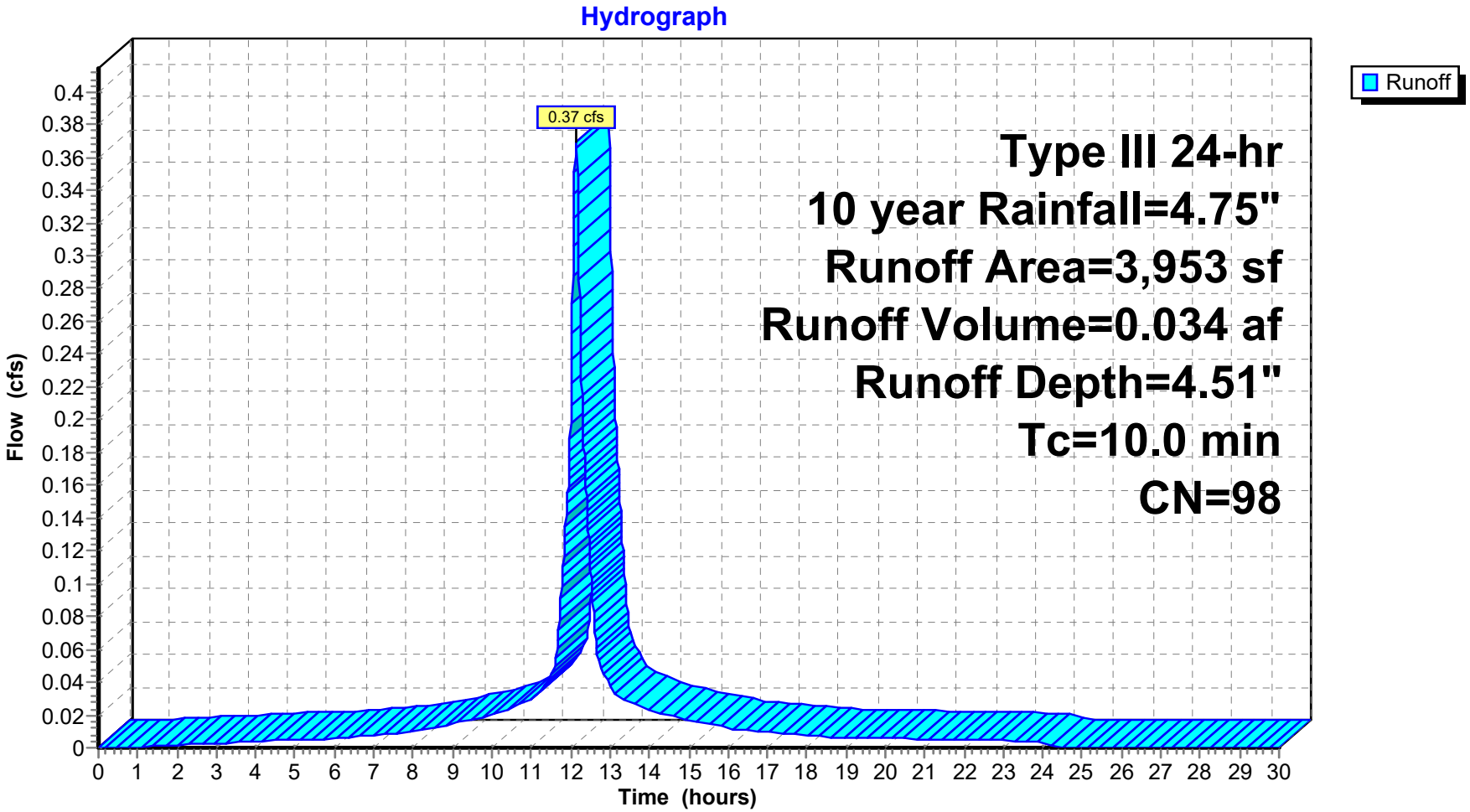
Runoff = 0.37 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 4.51"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
3,953	98	Paved parking, HSG C
3,953		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment G: Drainage Area - G (EAR - Right)



Summary for Subcatchment H: Drainage Area - H (EAR - Middle)

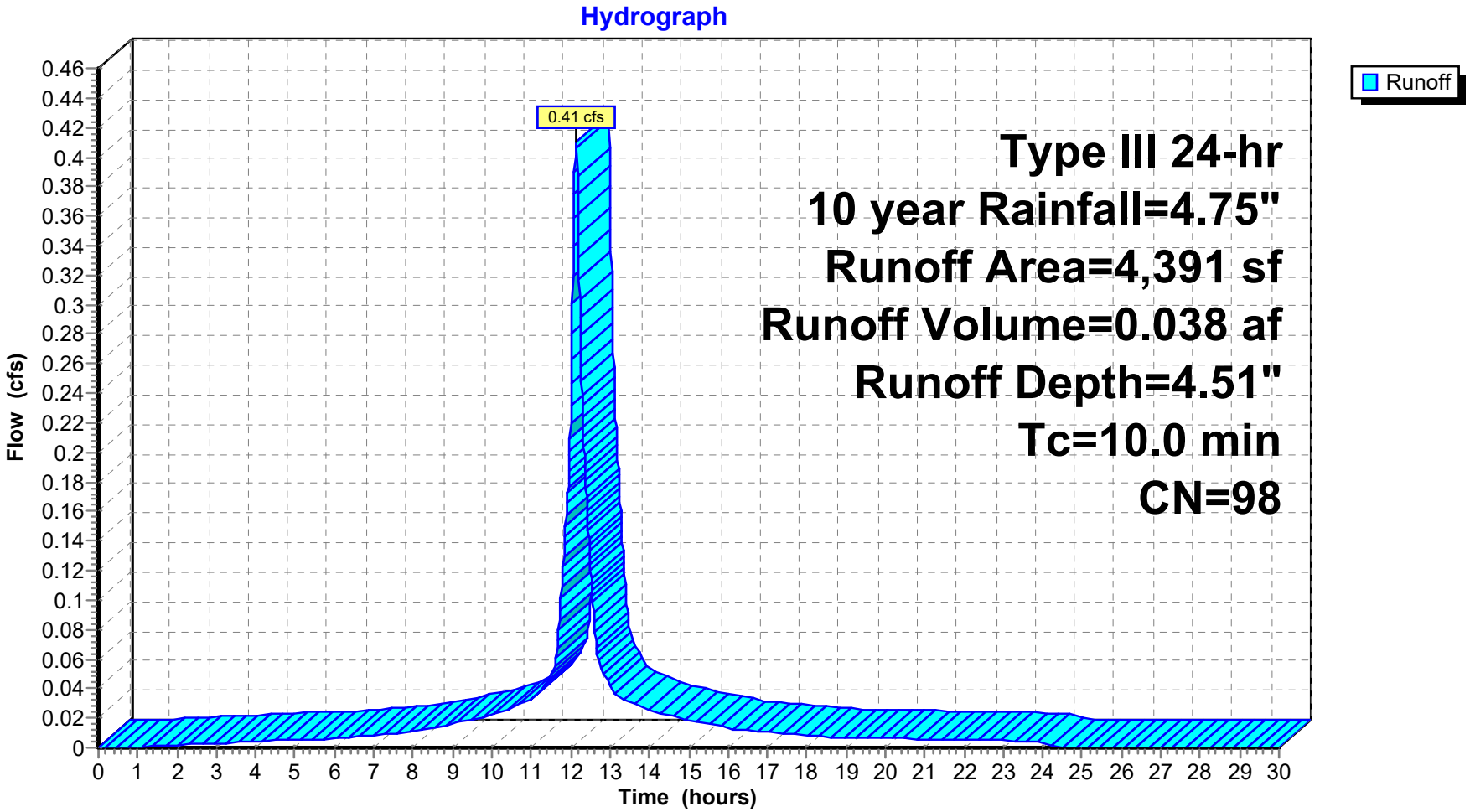
Runoff = 0.41 cfs @ 12.13 hrs, Volume= 0.038 af, Depth= 4.51"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
4,391	98	Paved parking, HSG C
4,391		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment H: Drainage Area - H (EAR - Middle)



Summary for Subcatchment I: Drainage Area - I (EAR - Left)

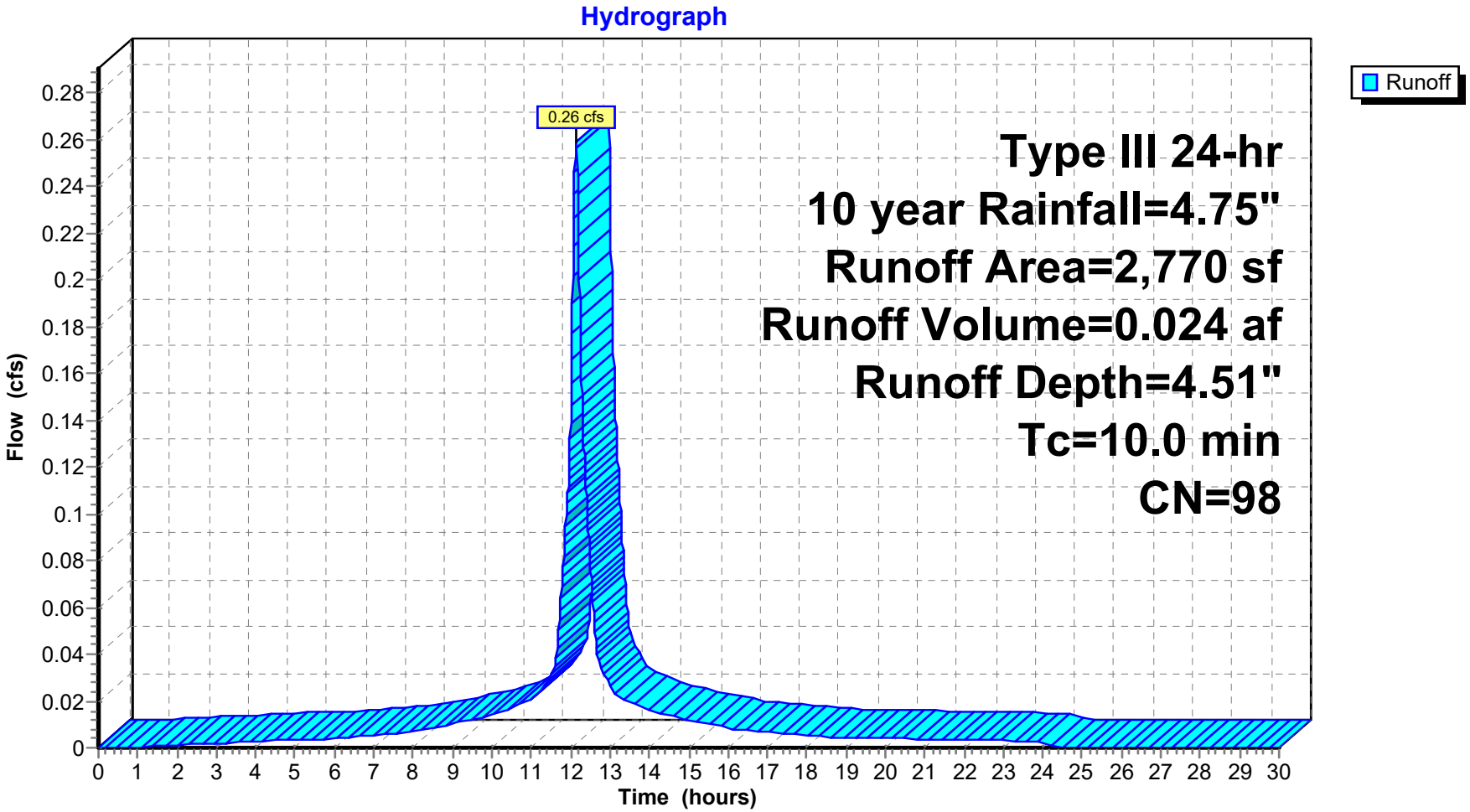
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 0.024 af, Depth= 4.51"
Routed to Pond I' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.75"

Area (sf)	CN	Description
2,770	98	Paved parking, HSG C
2,770		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment I: Drainage Area - I (EAR - Left)



Summary for Pond A': StormTrap System A

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 2.50" for 10 year event
Inflow = 7.50 cfs @ 12.38 hrs, Volume= 0.888 af
Outflow = 0.64 cfs @ 11.55 hrs, Volume= 0.888 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.64 cfs @ 11.55 hrs, Volume= 0.888 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPC : Study Point C

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 128.34' @ 15.24 hrs Surf.Area= 5,543 sf Storage= 18,897 cf

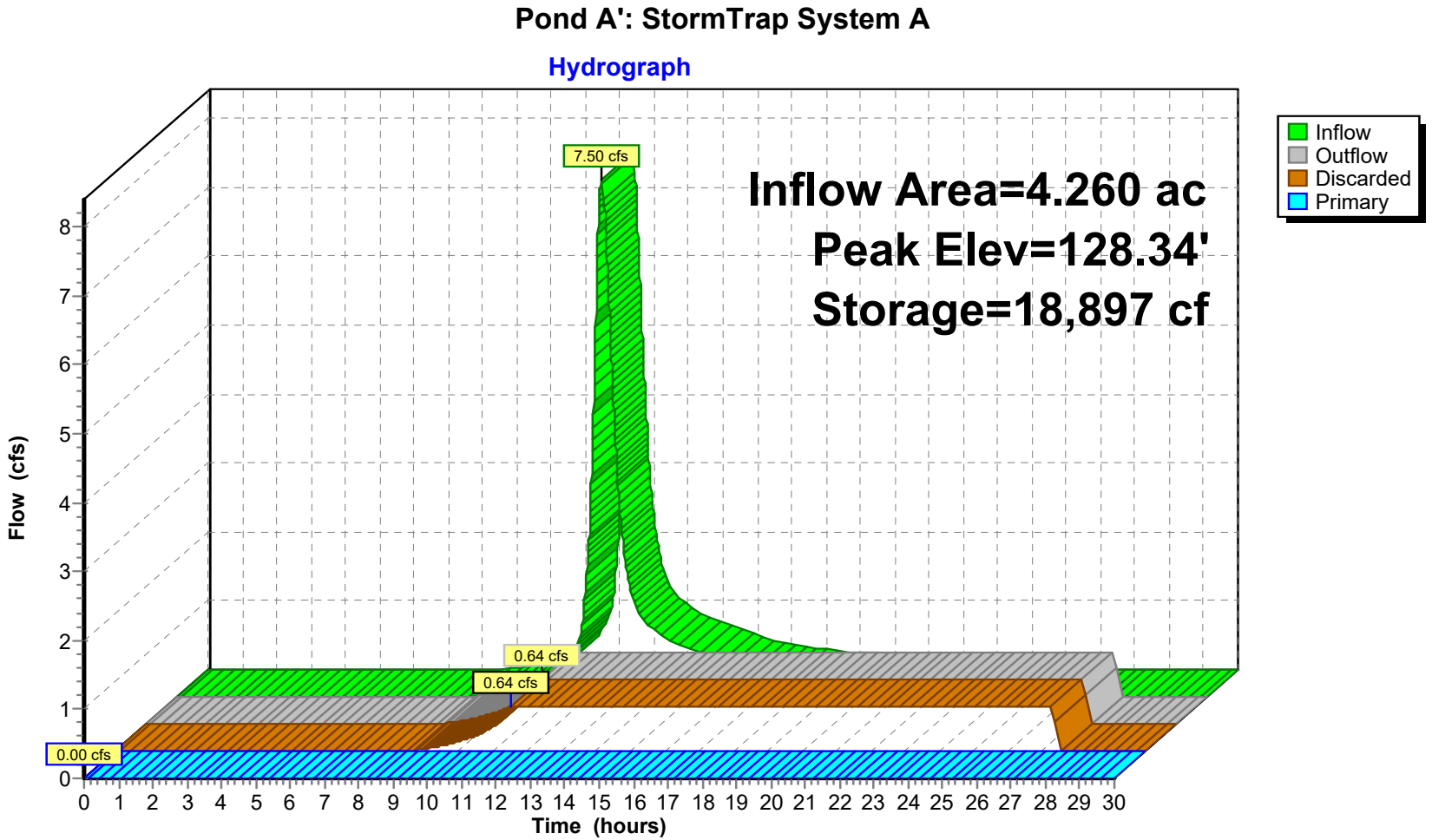
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 291.7 min (1,139.8 - 848.1)

Volume	Invert	Avail.Storage	Storage Description
#1	124.06'	21,599 cf	**StormTrap ST2 DoubleTrap 8-6**x 12 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 12 Chambers in 4 Rows 33.92' x 46.19' Core + 6.66' Border = 47.23' x 59.50' System
#2	124.06'	20,918 cf	**StormTrap ST2 DoubleTrap 8-6**x 10 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System
		42,517 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	124.06'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	130.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.64 cfs @ 11.55 hrs HW=124.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.64 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=124.06' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)



Summary for Pond B': Storm Trap System B

Inflow Area = 10.823 ac, 24.25% Impervious, Inflow Depth = 1.85" for 10 year event
Inflow = 19.80 cfs @ 12.15 hrs, Volume= 1.671 af
Outflow = 0.94 cfs @ 11.45 hrs, Volume= 1.475 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.94 cfs @ 11.45 hrs, Volume= 1.475 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 76.99' @ 16.13 hrs Surf.Area= 8,092 sf Storage= 40,201 cf

Plug-Flow detention time= 429.1 min calculated for 1.475 af (88% of inflow)
Center-of-Mass det. time= 373.9 min (1,228.3 - 854.5)

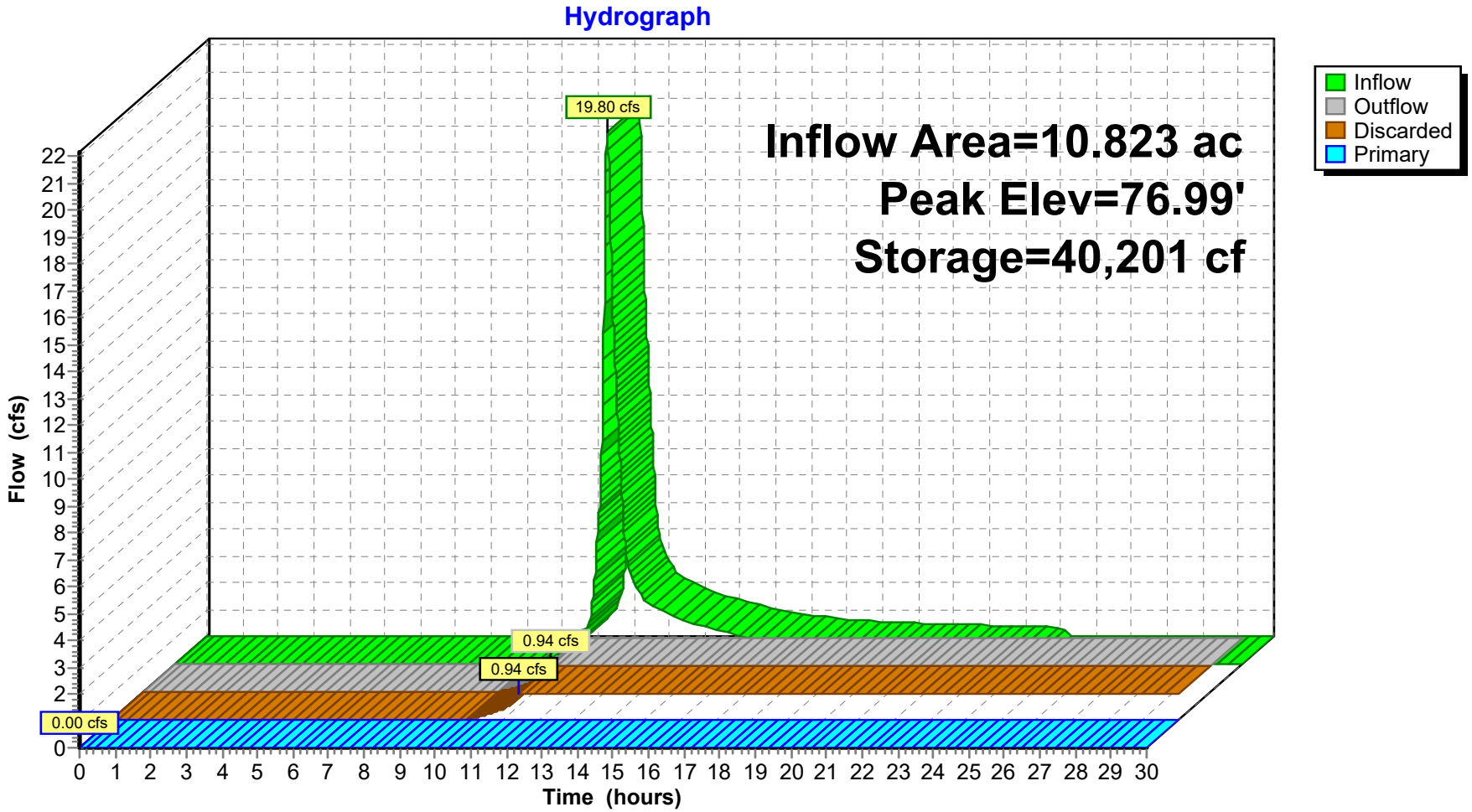
Volume	Invert	Avail.Storage	Storage Description
#1	71.00'	109,769 cf	**StormTrap ST2 DoubleTrap 15-0**x 45 Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf 45 Chambers in 9 Rows 76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	71.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	79.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.94 cfs @ 11.45 hrs HW=71.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=71.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond B': Storm Trap System B



Summary for Pond C': Storm Trap System C

Inflow Area = 3.375 ac, 38.07% Impervious, Inflow Depth = 2.25" for 10 year event
Inflow = 7.72 cfs @ 12.14 hrs, Volume= 0.632 af
Outflow = 0.32 cfs @ 11.18 hrs, Volume= 0.513 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.32 cfs @ 11.18 hrs, Volume= 0.513 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 73.04' @ 16.25 hrs Surf.Area= 2,733 sf Storage= 15,794 cf

Plug-Flow detention time= 446.7 min calculated for 0.513 af (81% of inflow)
Center-of-Mass det. time= 370.4 min (1,211.4 - 841.1)

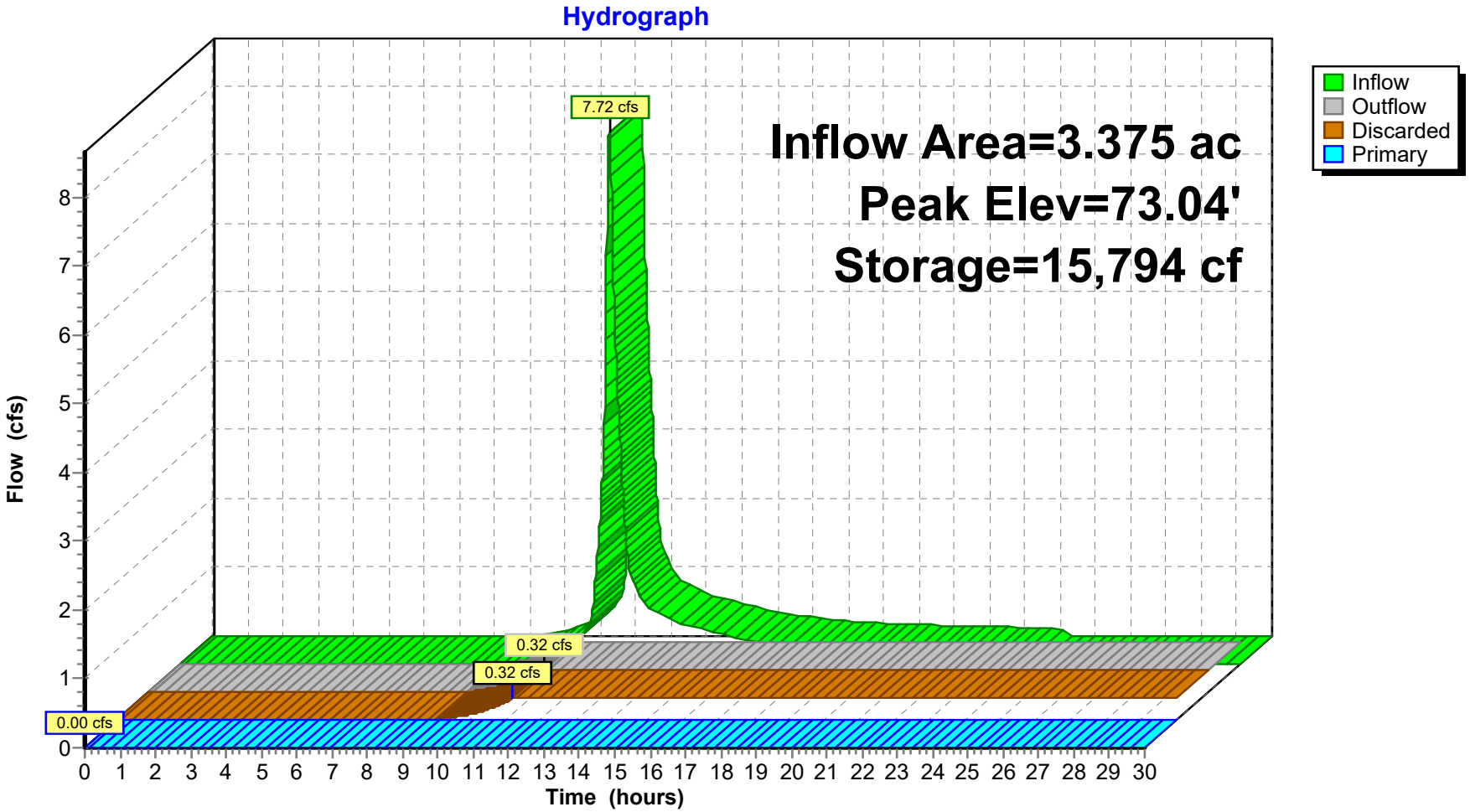
Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	33,796 cf	**StormTrap ST2 DoubleTrap 14-0**x 10 Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 11.18 hrs HW=66.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond C': Storm Trap System C



Summary for Pond G': Drywells

Inflow Area = 0.091 ac,100.00% Impervious, Inflow Depth = 4.51" for 10 year event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.034 af
Outflow = 0.04 cfs @ 11.48 hrs, Volume= 0.034 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.48 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 92.52' @ 12.96 hrs Surf.Area= 0.008 ac Storage= 0.012 af

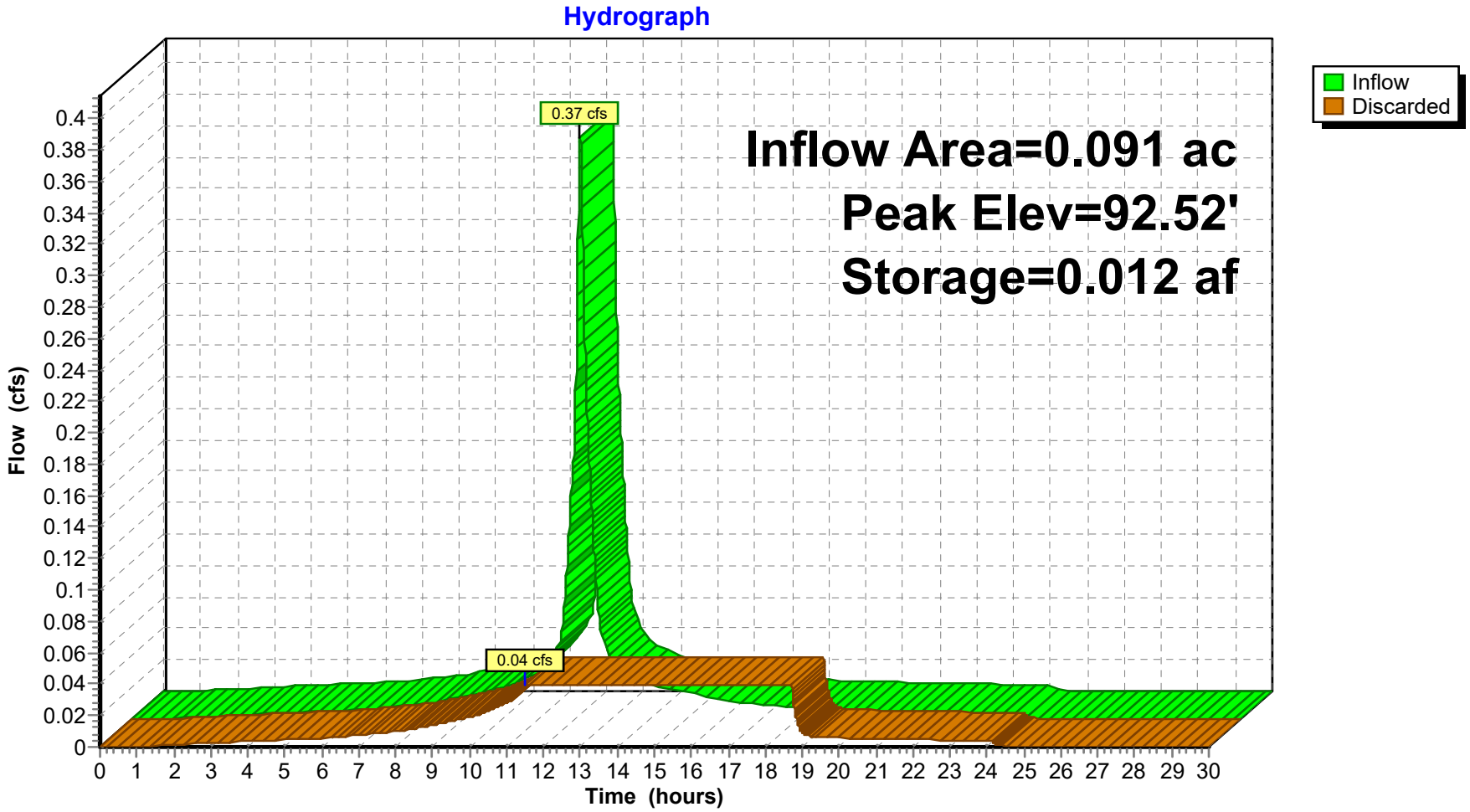
Plug-Flow detention time= 91.4 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 91.4 min (844.0 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.48 hrs HW=91.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond G': Drywells



Summary for Pond H': Drywells

Inflow Area = 0.101 ac,100.00% Impervious, Inflow Depth = 4.51" for 10 year event
Inflow = 0.41 cfs @ 12.13 hrs, Volume= 0.038 af
Outflow = 0.04 cfs @ 11.37 hrs, Volume= 0.038 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.37 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 87.76' @ 13.06 hrs Surf.Area= 0.008 ac Storage= 0.014 af

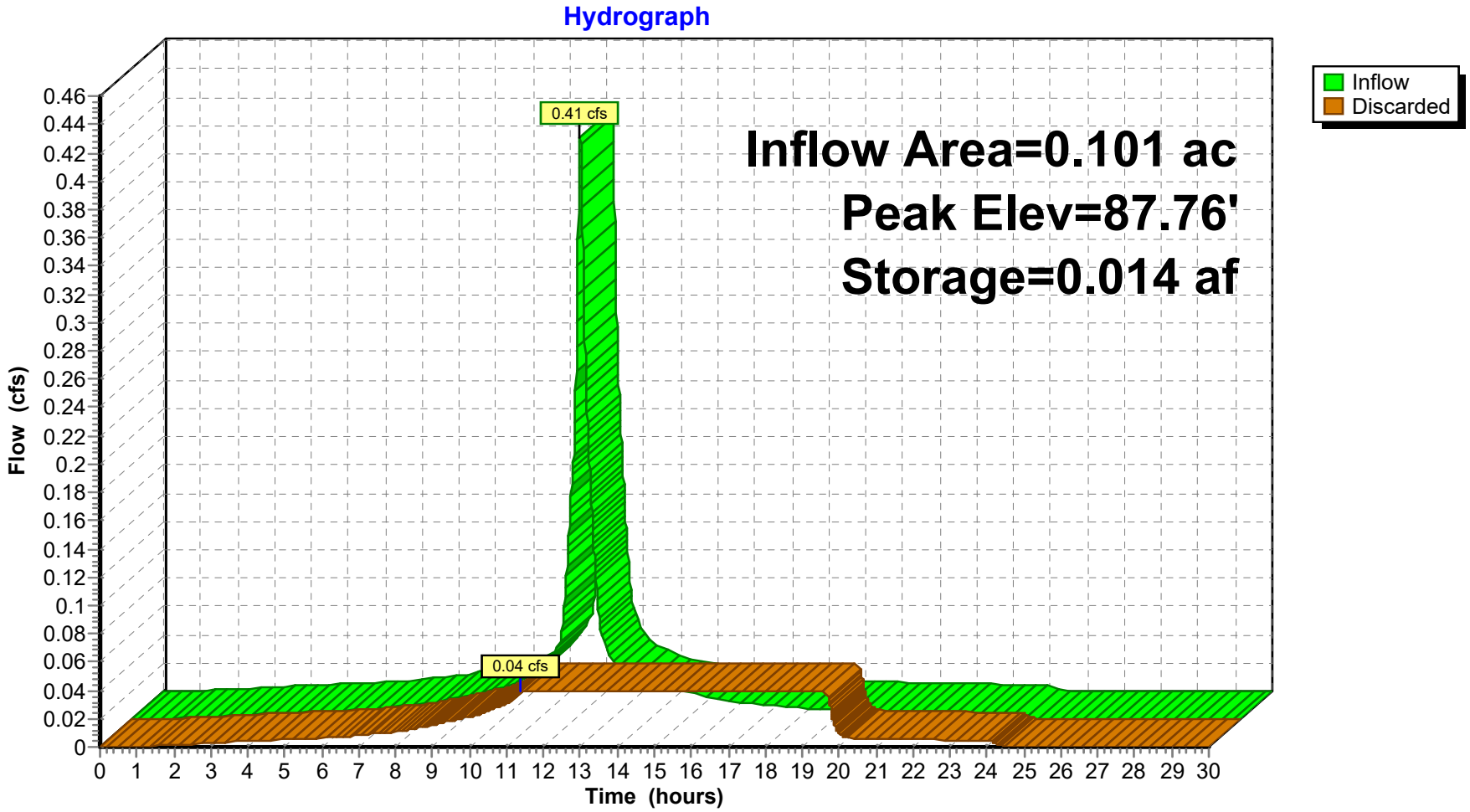
Plug-Flow detention time= 109.2 min calculated for 0.038 af (100% of inflow)
Center-of-Mass det. time= 109.2 min (861.8 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	86.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	86.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.37 hrs HW=86.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond H': Drywells



Summary for Pond I': Drywells

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth = 4.51" for 10 year event
Inflow = 0.26 cfs @ 12.13 hrs, Volume= 0.024 af
Outflow = 0.03 cfs @ 11.43 hrs, Volume= 0.024 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.43 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 81.63' @ 13.01 hrs Surf.Area= 0.005 ac Storage= 0.008 af

Plug-Flow detention time= 99.5 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 99.5 min (852.0 - 752.6)

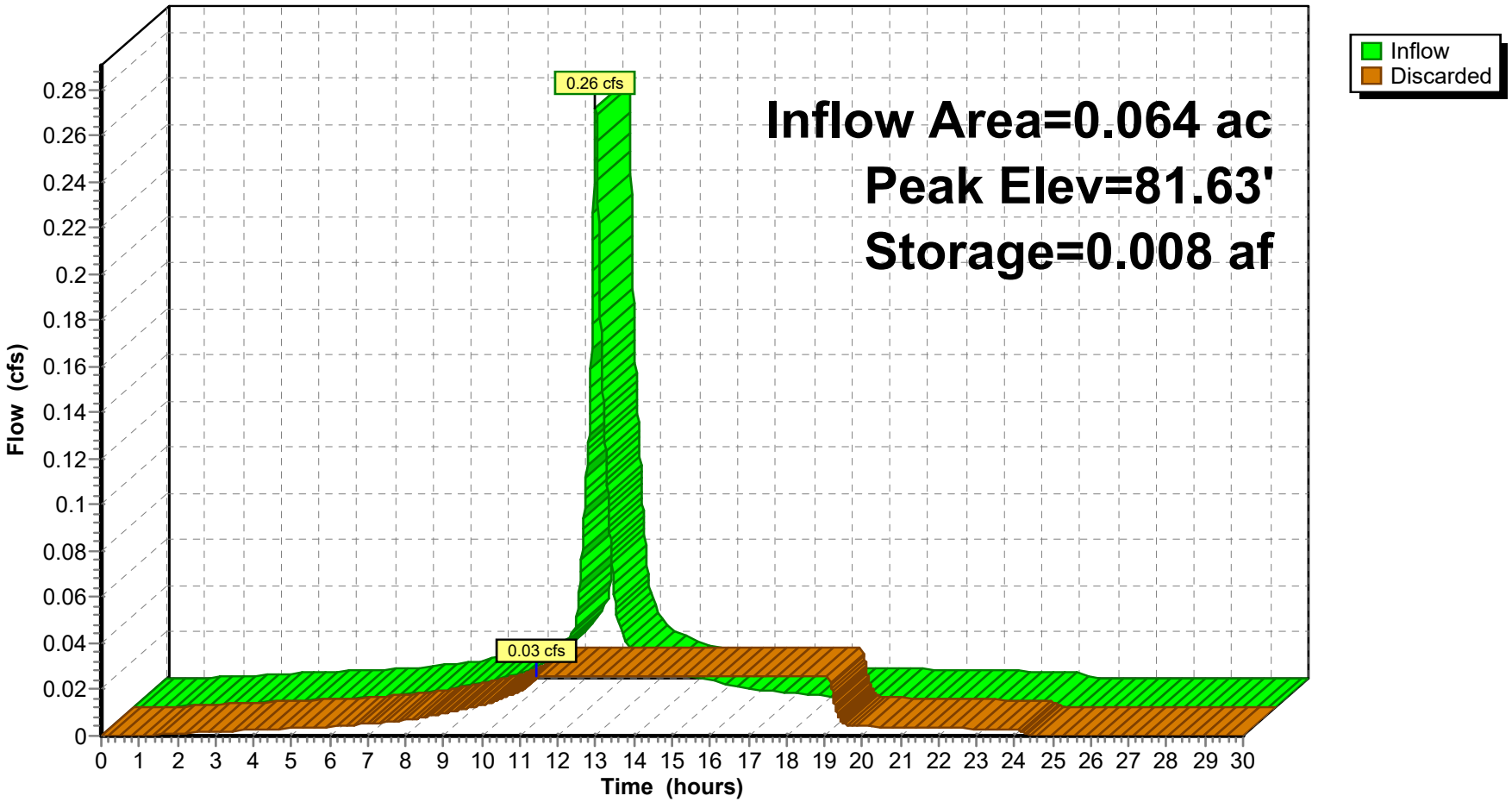
Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	0.026 af	**12.00'D x 5.00'H Drywell** x 2

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.03 cfs @ 11.43 hrs HW=80.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond I': Drywells

Hydrograph

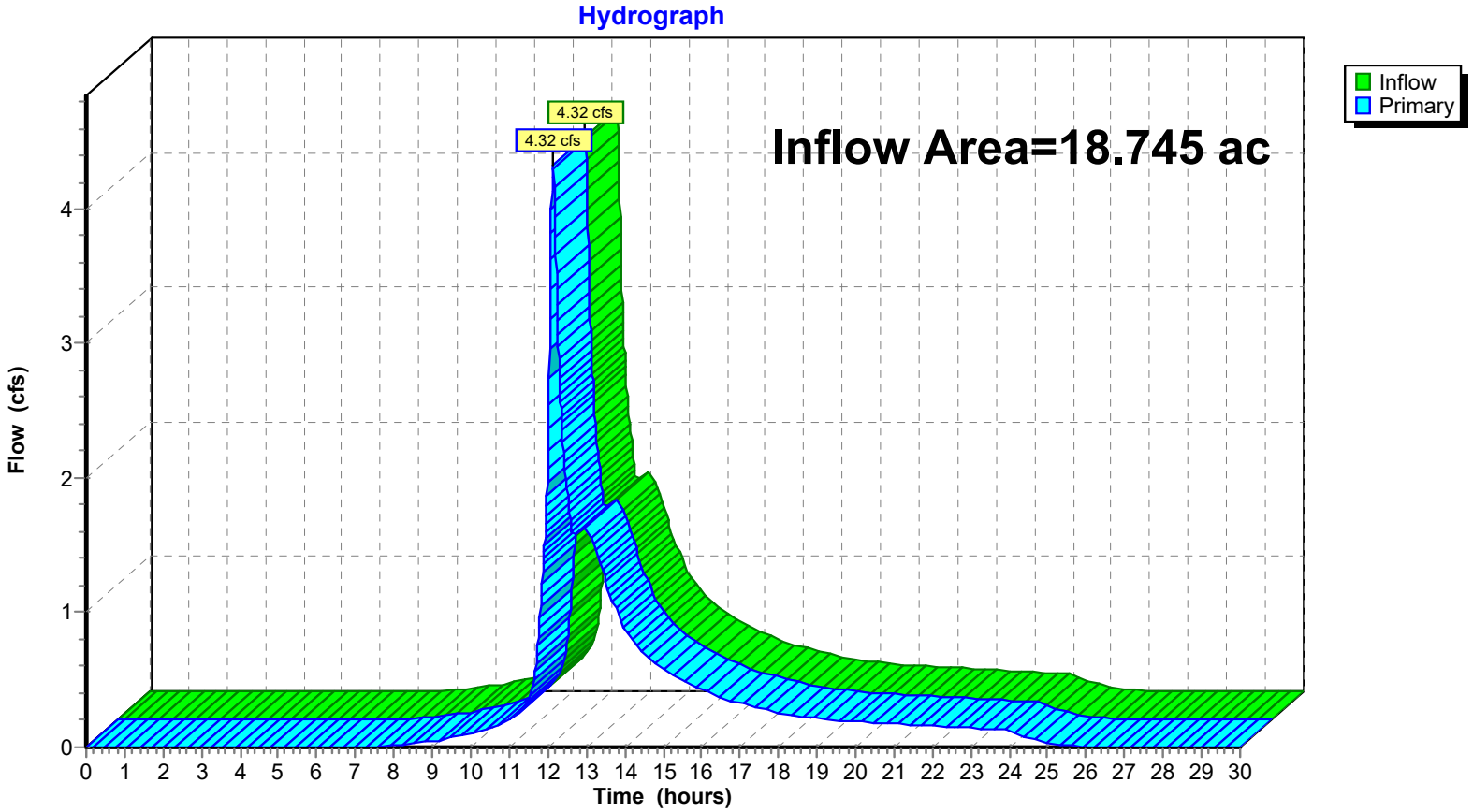


Summary for Link SPA: Study Point A

Inflow Area = 18.745 ac, 25.23% Impervious, Inflow Depth = 0.39" for 10 year event
Inflow = 4.32 cfs @ 12.14 hrs, Volume= 0.614 af
Primary = 4.32 cfs @ 12.14 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: Study Point A

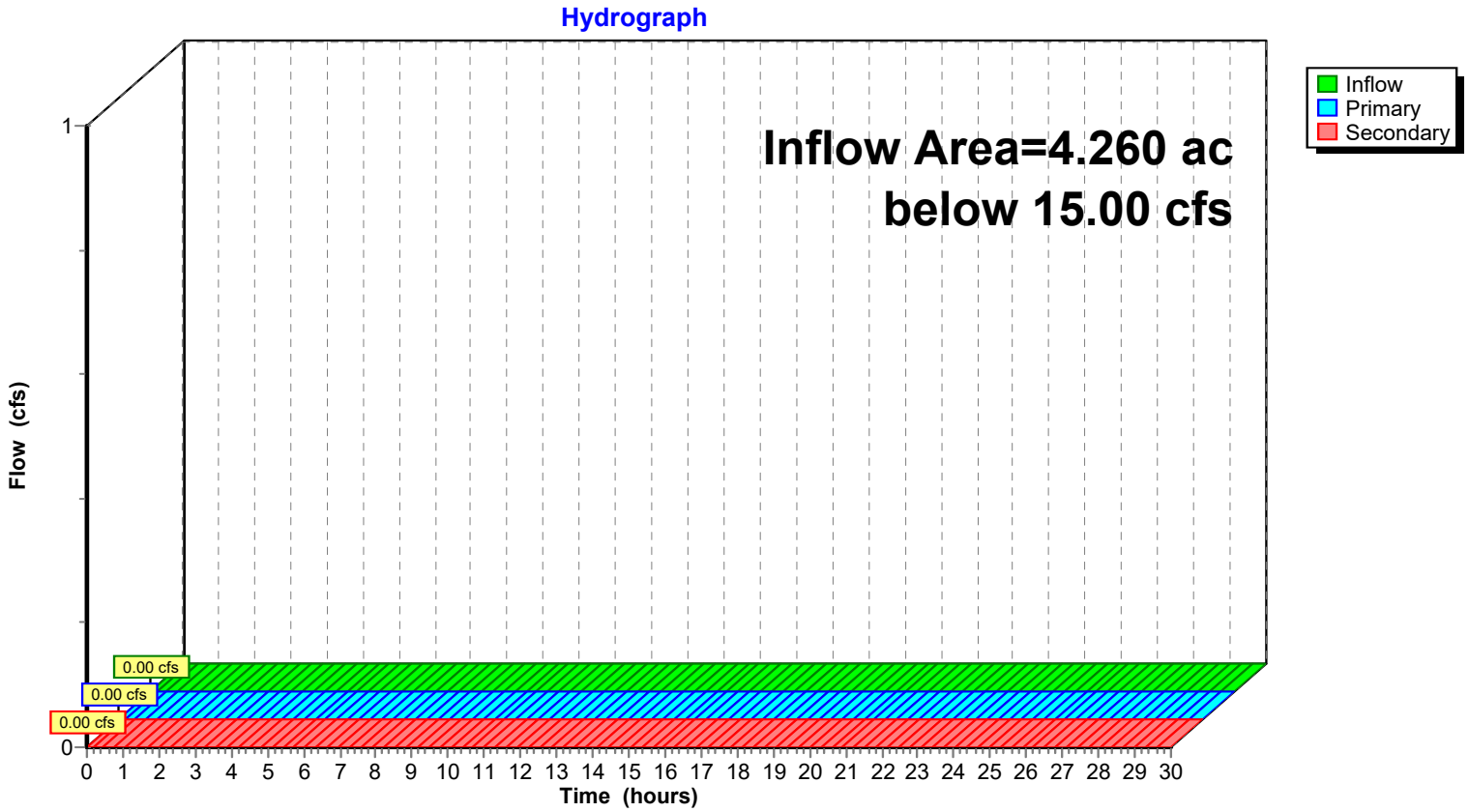


Summary for Link SPC: Study Point C

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 0.00" for 10 year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow below 15.00 cfs, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

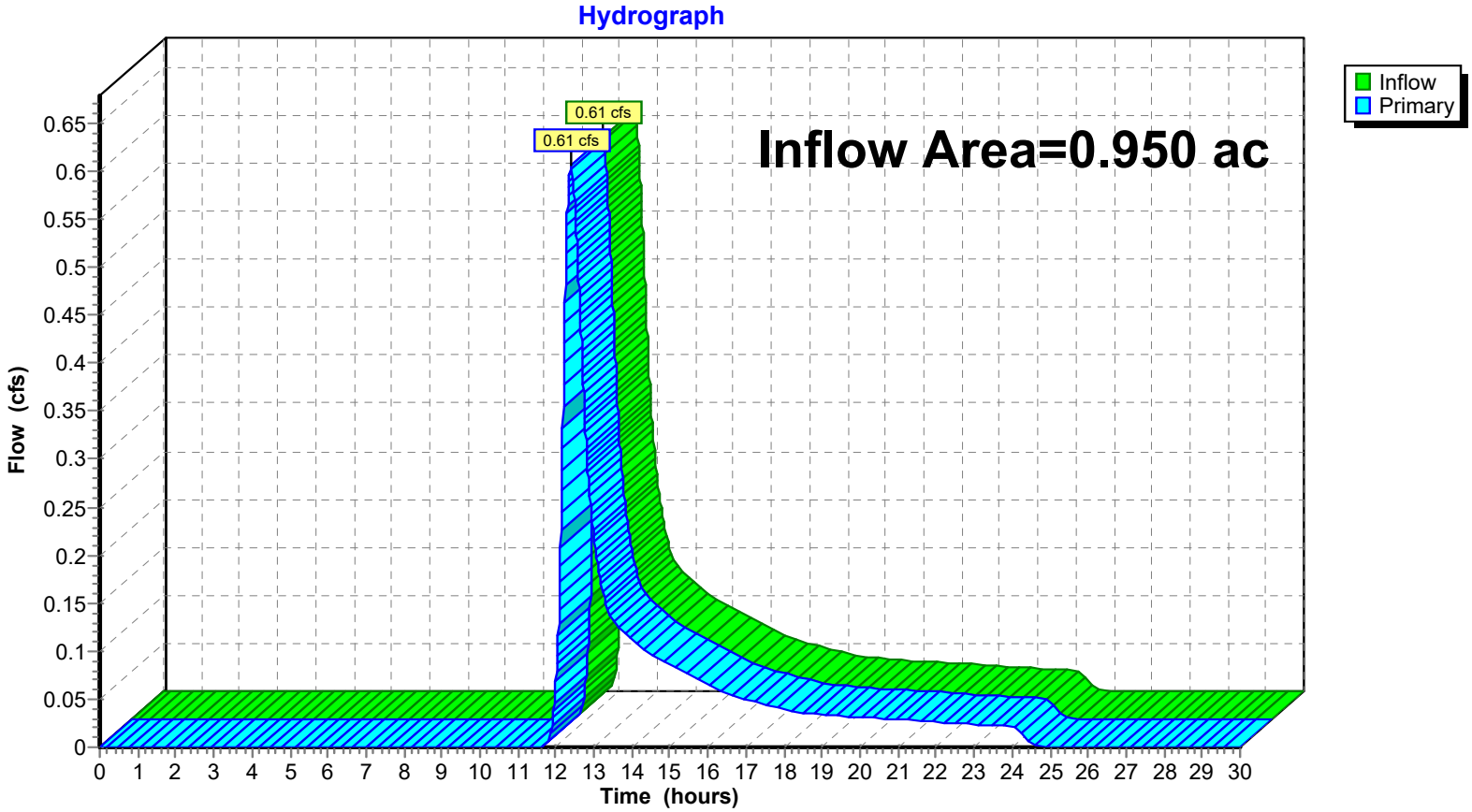


Summary for Link SPD: Study Point D

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 1.03" for 10 year event
Inflow = 0.61 cfs @ 12.40 hrs, Volume= 0.082 af
Primary = 0.61 cfs @ 12.40 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentA: Drainage Area - A Runoff Area=185,549 sf 44.70% Impervious Runoff Depth=6.13"
Flow Length=533' Tc=26.1 min CN=78 Runoff=18.22 cfs 2.178 af

SubcatchmentB: Drainage Area - B Runoff Area=471,440 sf 24.25% Impervious Runoff Depth=5.16"
Flow Length=1,087' Tc=10.3 min CN=70 Runoff=56.67 cfs 4.653 af

SubcatchmentC: Drainage Area - C Runoff Area=147,009 sf 38.07% Impervious Runoff Depth=5.77"
Flow Length=443' Tc=10.0 min CN=75 Runoff=19.82 cfs 1.622 af

SubcatchmentD: Drainage Area - D Runoff Area=63,683 sf 56.08% Impervious Runoff Depth=6.62"
Flow Length=150' Slope=0.0475 '/' Tc=10.0 min CN=82 Runoff=9.66 cfs 0.807 af

SubcatchmentE: Drainage Area - E Runoff Area=134,419 sf 0.00% Impervious Runoff Depth=3.70"
Flow Length=213' Tc=68.2 min CN=58 Runoff=4.79 cfs 0.952 af

SubcatchmentF: Drainage Area - F Runoff Area=41,378 sf 0.00% Impervious Runoff Depth=3.70"
Flow Length=314' Tc=23.8 min CN=58 Runoff=2.54 cfs 0.293 af

SubcatchmentG: Drainage Area - G (EAR - Right) Runoff Area=3,953 sf 100.00% Impervious Runoff Depth=8.56"
Tc=10.0 min CN=98 Runoff=0.69 cfs 0.065 af

SubcatchmentH: Drainage Area - H (EAR - Middle) Runoff Area=4,391 sf 100.00% Impervious Runoff Depth=8.56"
Tc=10.0 min CN=98 Runoff=0.76 cfs 0.072 af

SubcatchmentI: Drainage Area - I (EAR - Left) Runoff Area=2,770 sf 100.00% Impervious Runoff Depth=8.56"
Tc=10.0 min CN=98 Runoff=0.48 cfs 0.045 af

Pond A': StormTrap System A Peak Elev=132.40' Storage=39,218 cf Inflow=18.22 cfs 2.178 af
Discarded=0.64 cfs 1.143 af Primary=5.21 cfs 0.804 af Outflow=5.85 cfs 1.947 af

Pond B': Storm Trap System B Peak Elev=84.01' Storage=91,582 cf Inflow=56.67 cfs 4.653 af
Discarded=0.94 cfs 1.642 af Primary=8.03 cfs 2.209 af Outflow=8.97 cfs 3.851 af

Pond C': Storm Trap System C Peak Elev=78.14' Storage=28,097 cf Inflow=19.82 cfs 1.622 af
Discarded=0.32 cfs 0.572 af Primary=7.27 cfs 0.684 af Outflow=7.59 cfs 1.256 af

Pond G': Drywells Peak Elev=94.68' Storage=0.029 af Inflow=0.69 cfs 0.065 af
Outflow=0.04 cfs 0.065 af

Pond H': Drywells Peak Elev=90.29' Storage=0.033 af Inflow=0.76 cfs 0.072 af
Outflow=0.04 cfs 0.072 af

Pond I': Drywells Peak Elev=83.95' Storage=0.021 af Inflow=0.48 cfs 0.045 af
Outflow=0.03 cfs 0.045 af

Link SPA: Study Point A Inflow=20.61 cfs 4.652 af
Primary=20.61 cfs 4.652 af

Link SPC: Study Point C below 15.00 cfs Inflow=5.21 cfs 0.804 af
Primary=5.21 cfs 0.804 af Secondary=0.00 cfs 0.000 af

Link SPD: Study Point D Inflow=2.54 cfs 0.293 af
Primary=2.54 cfs 0.293 af

Total Runoff Area = 24.210 ac Runoff Volume = 10.688 af Average Runoff Depth = 5.30"
71.55% Pervious = 17.322 ac 28.45% Impervious = 6.888 ac

Summary for Subcatchment A: Drainage Area - A

[47] Hint: Peak is 391% of capacity of segment #3

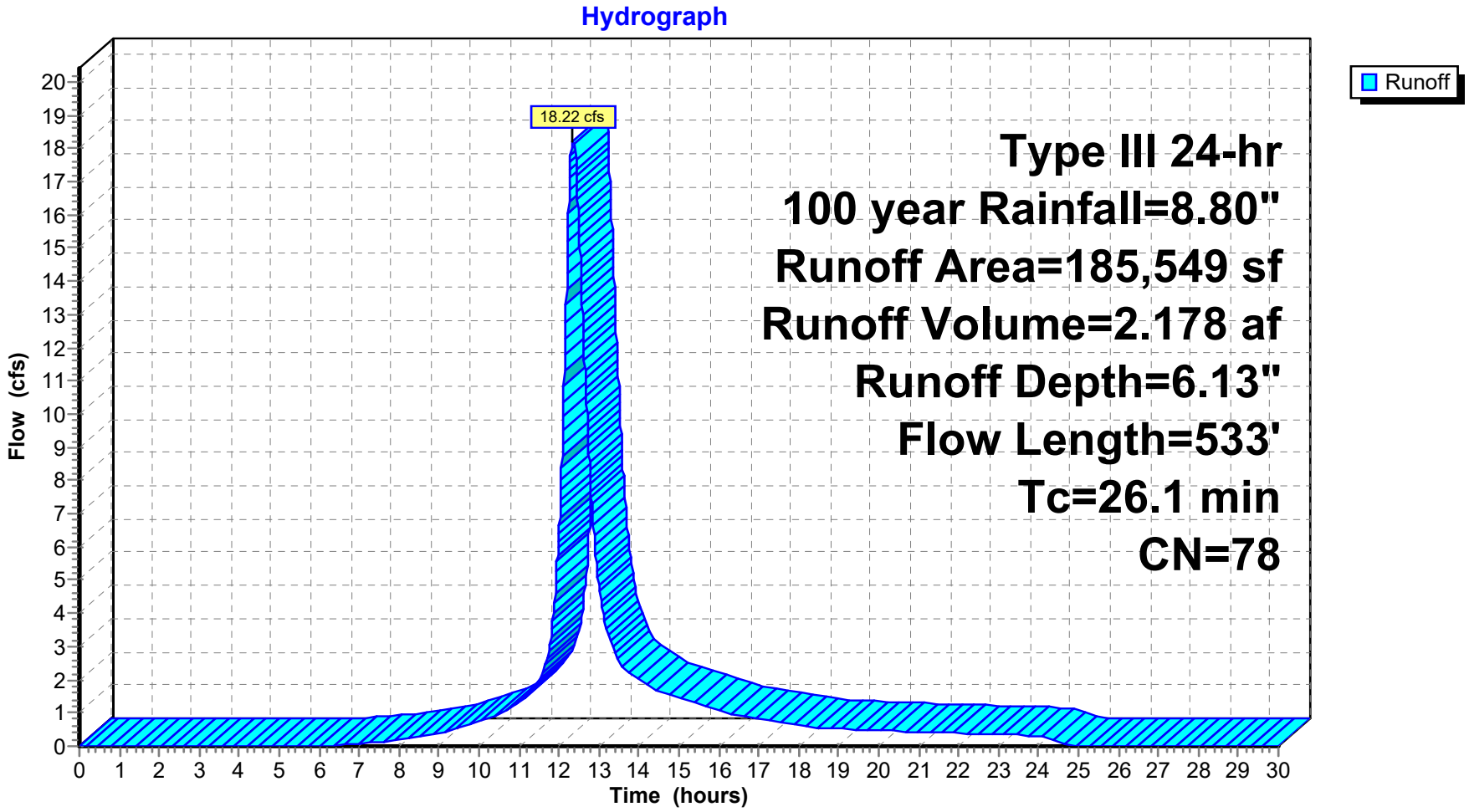
Runoff = 18.22 cfs @ 12.35 hrs, Volume= 2.178 af, Depth= 6.13"
Routed to Pond A' : StormTrap System A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
50,170	98	Paved parking, HSG B
102,617	61	>75% Grass cover, Good, HSG B
32,762	98	Roofs, HSG B
185,549	78	Weighted Average
102,617		55.30% Pervious Area
82,932		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	41	0.2668	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
21.2	190	0.0094	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	302	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
26.1	533	Total			

Subcatchment A: Drainage Area - A



Summary for Subcatchment B: Drainage Area - B

[47] Hint: Peak is 877% of capacity of segment #3

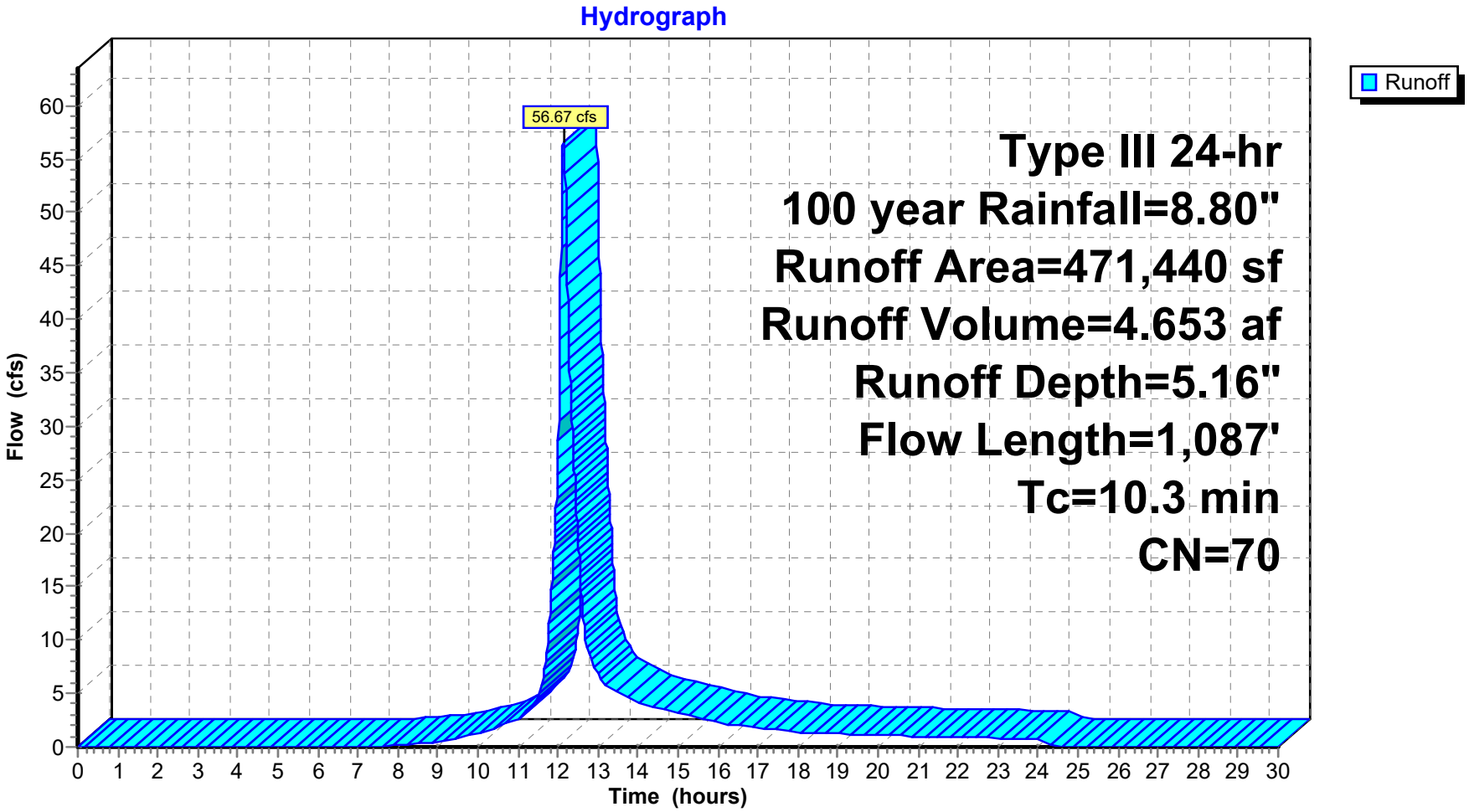
Runoff = 56.67 cfs @ 12.14 hrs, Volume= 4.653 af, Depth= 5.16"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
49,256	98	Paved parking, HSG B
152,096	61	>75% Grass cover, Good, HSG B
65,055	98	Roofs, HSG B
205,033	60	Woods, Fair, HSG B
471,440	70	Weighted Average
357,129		75.75% Pervious Area
114,311		24.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	599	0.0348	36.88	457,149.18	**Channel Flow, BIOSWALE** Area= 12,397.0 sf Perim= 1,234.0' r= 10.05' n= 0.035 Riprap, 6-inch
8.9	137	0.3016	0.26		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.1	351	0.0100	5.26	6.46	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
10.3	1,087	Total			

Subcatchment B: Drainage Area - B



Summary for Subcatchment C: Drainage Area - C

[47] Hint: Peak is 425% of capacity of segment #2

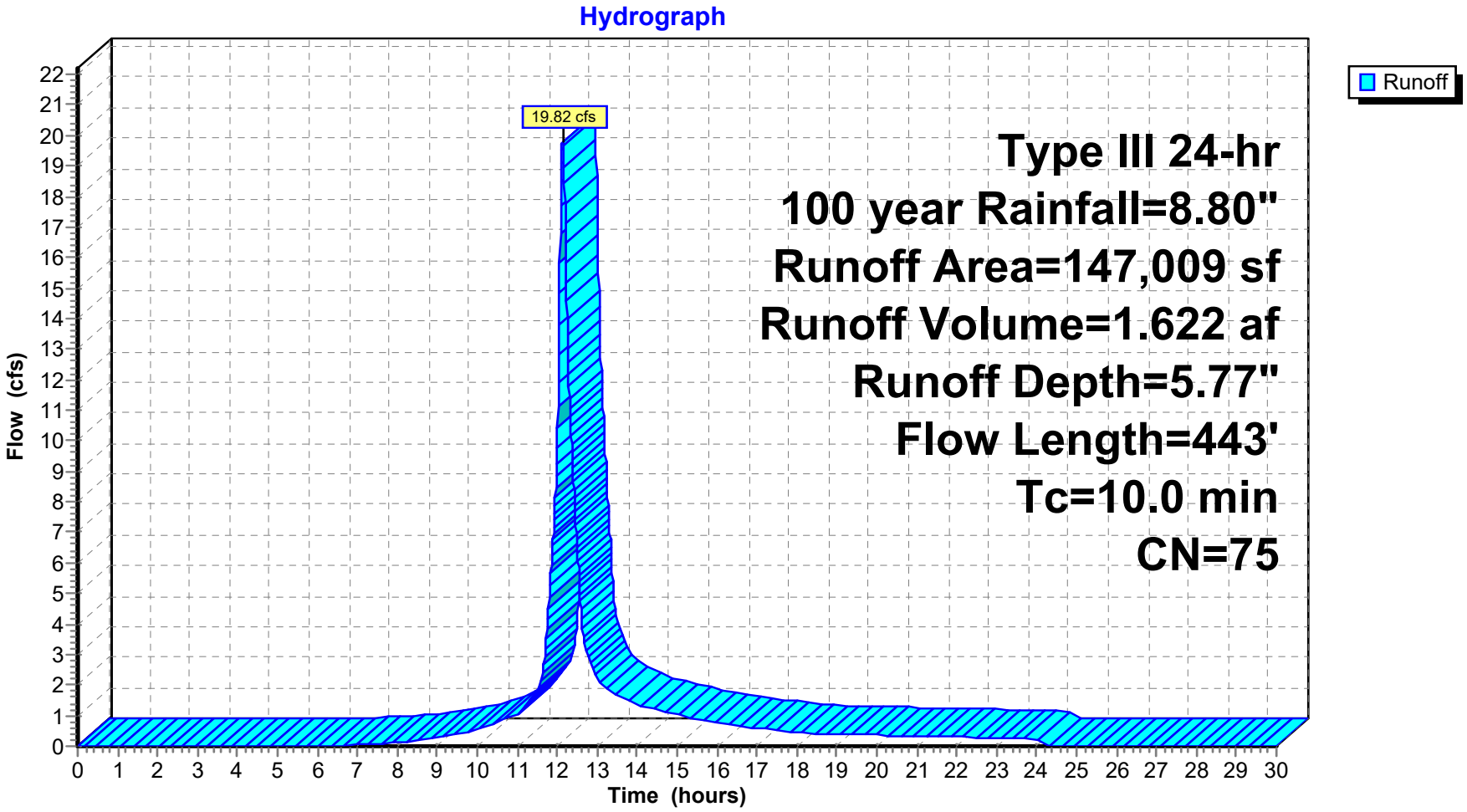
Runoff = 19.82 cfs @ 12.14 hrs, Volume= 1.622 af, Depth= 5.77"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
36,356	98	Paved parking, HSG B
42,997	61	>75% Grass cover, Good, HSG B
19,606	98	Roofs, HSG B
48,050	60	Woods, Fair, HSG B
147,009	75	Weighted Average
91,047		61.93% Pervious Area
55,962		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	182	0.0198	1.62		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
1.1	261	0.0100	3.80	4.67	**Pipe Channel, PIPES TO STORMTRAP** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.018 Corrugated PE, corrugated interior
3.0	443	Total, Increased to minimum Tc = 10.0 min			

Subcatchment C: Drainage Area - C



Summary for Subcatchment D: Drainage Area - D

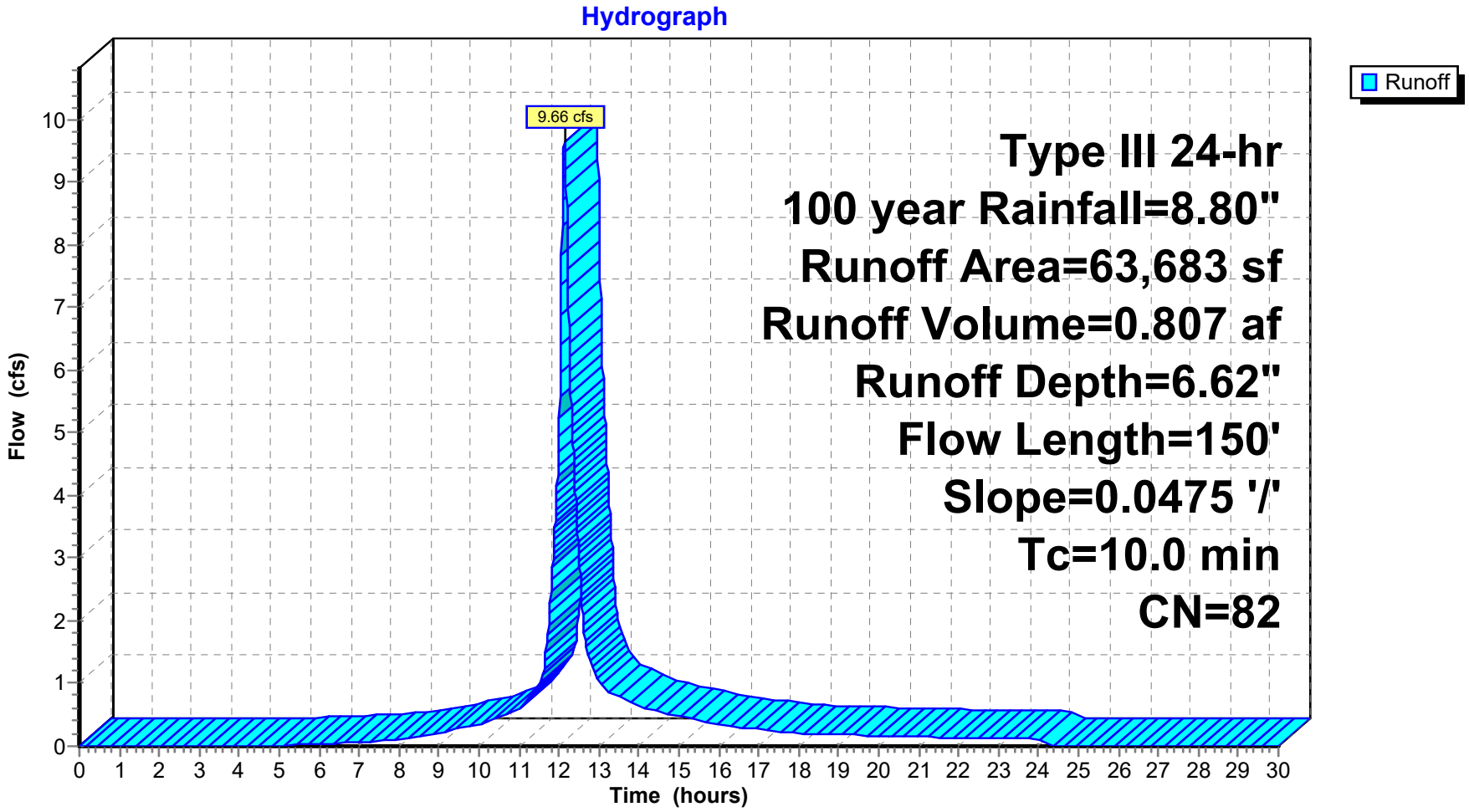
Runoff = 9.66 cfs @ 12.14 hrs, Volume= 0.807 af, Depth= 6.62"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
9,034	98	Paved parking, HSG B
27,967	61	>75% Grass cover, Good, HSG B
26,682	98	Roofs, HSG B
63,683	82	Weighted Average
27,967		43.92% Pervious Area
35,716		56.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	150	0.0475	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
9.2	150	Total, Increased to minimum Tc = 10.0 min			

Subcatchment D: Drainage Area - D



Summary for Subcatchment E: Drainage Area - E

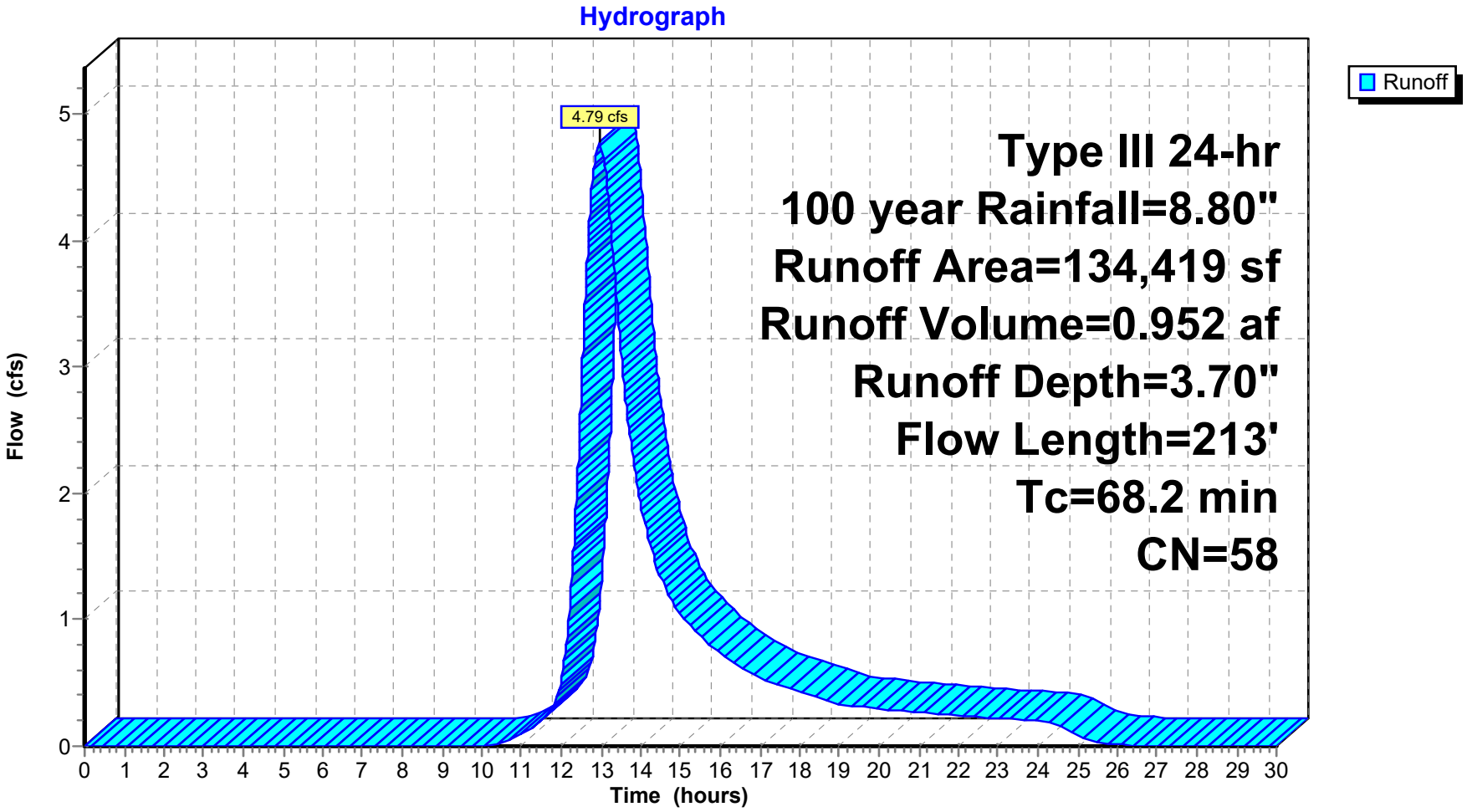
Runoff = 4.79 cfs @ 12.96 hrs, Volume= 0.952 af, Depth= 3.70"
Routed to Link SPA : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
134,419	58	Woods/grass comb., Good, HSG B
134,419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
62.7	104	0.0053	0.03		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
5.5	109	0.6400	0.33		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
68.2	213	Total			

Subcatchment E: Drainage Area - E



Summary for Subcatchment F: Drainage Area - F

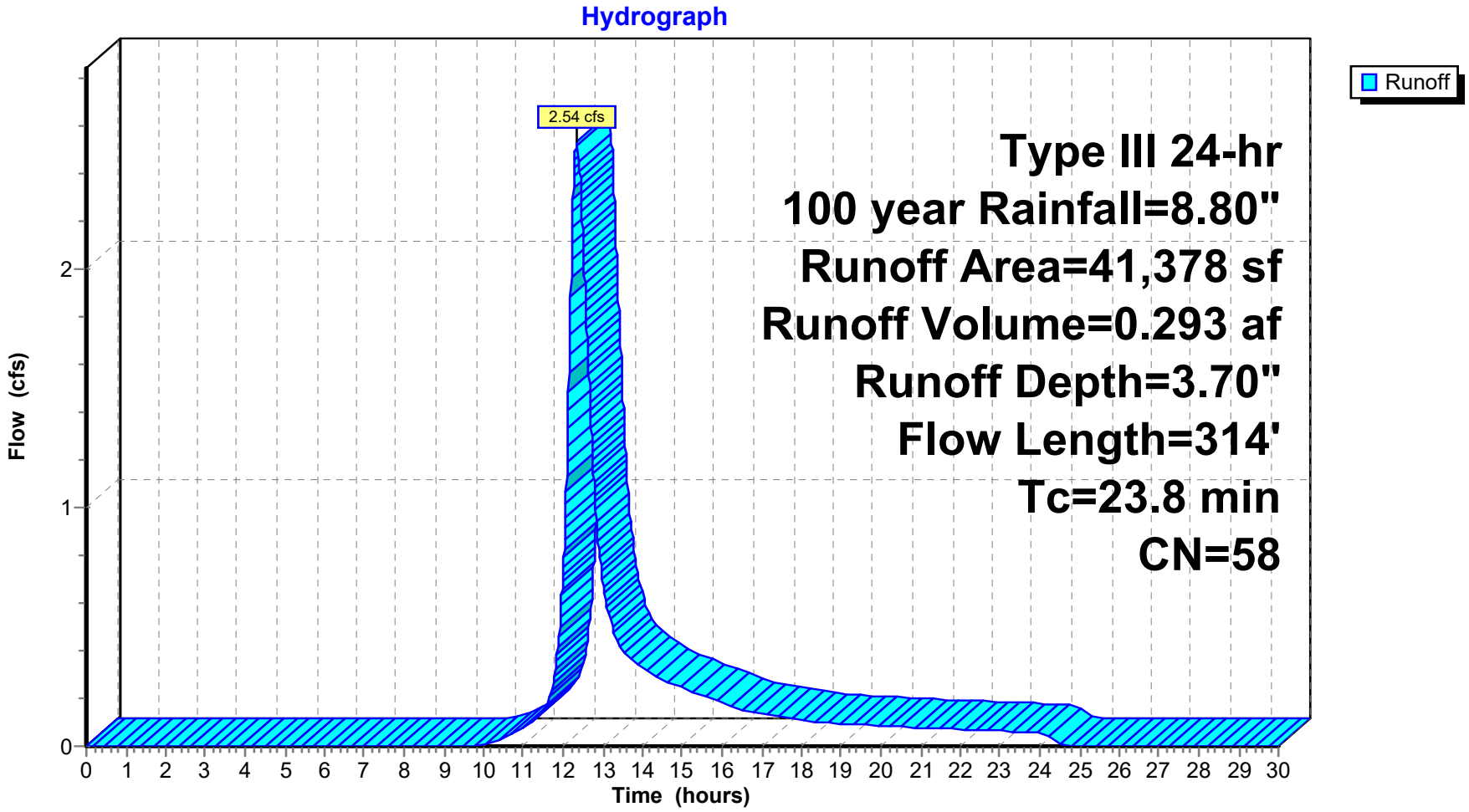
Runoff = 2.54 cfs @ 12.35 hrs, Volume= 0.293 af, Depth= 3.70"
Routed to Link SPD : Study Point D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
41,378	58	Woods/grass comb., Good, HSG B
41,378		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	71	0.0707	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.7	127	0.3708	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
4.1	84	0.7722	0.34		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.6	32	0.3741	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
23.8	314	Total			

Subcatchment F: Drainage Area - F



Summary for Subcatchment G: Drainage Area - G (EAR - Right)

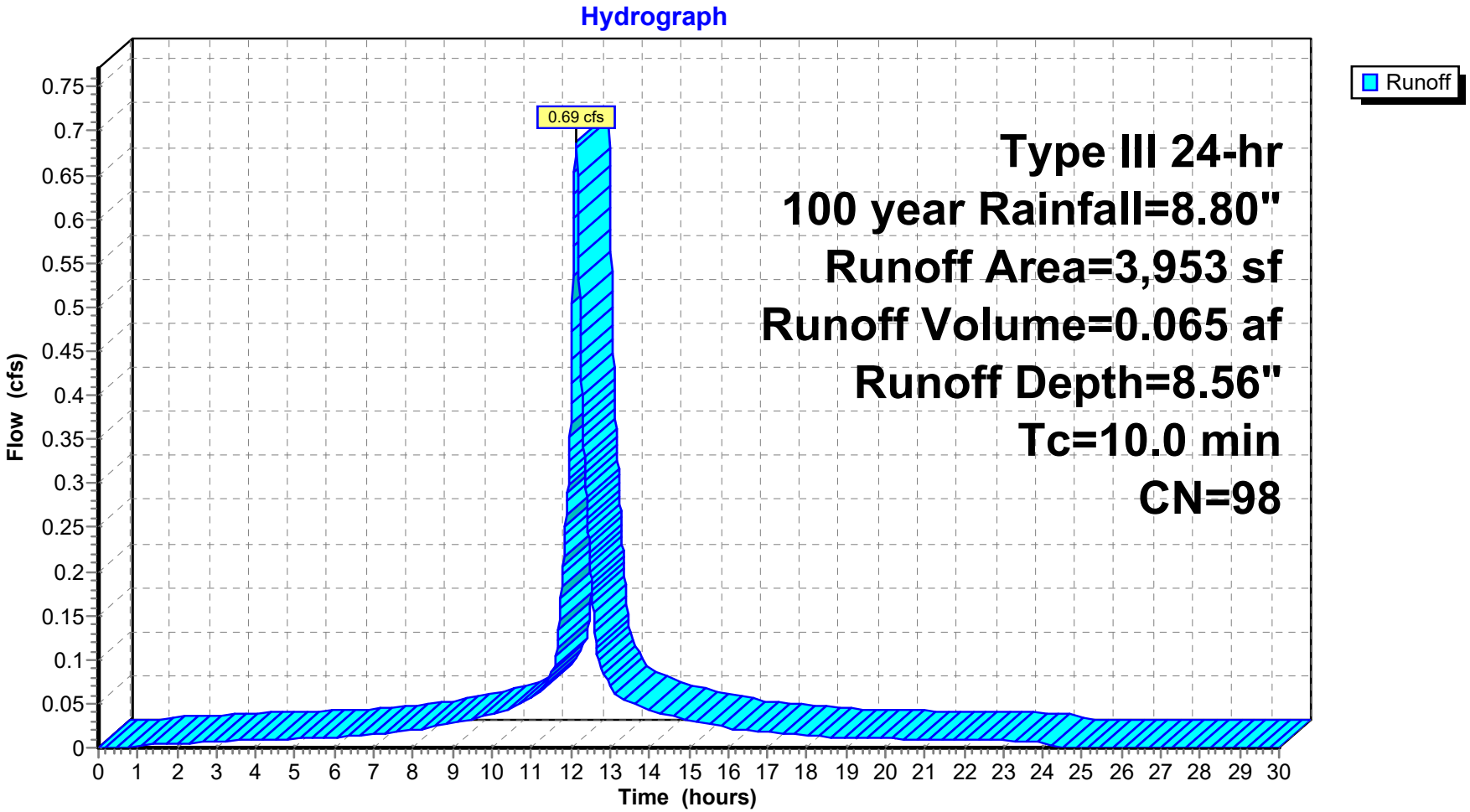
Runoff = 0.69 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 8.56"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
3,953	98	Paved parking, HSG C
3,953		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment G: Drainage Area - G (EAR - Right)



Summary for Subcatchment H: Drainage Area - H (EAR - Middle)

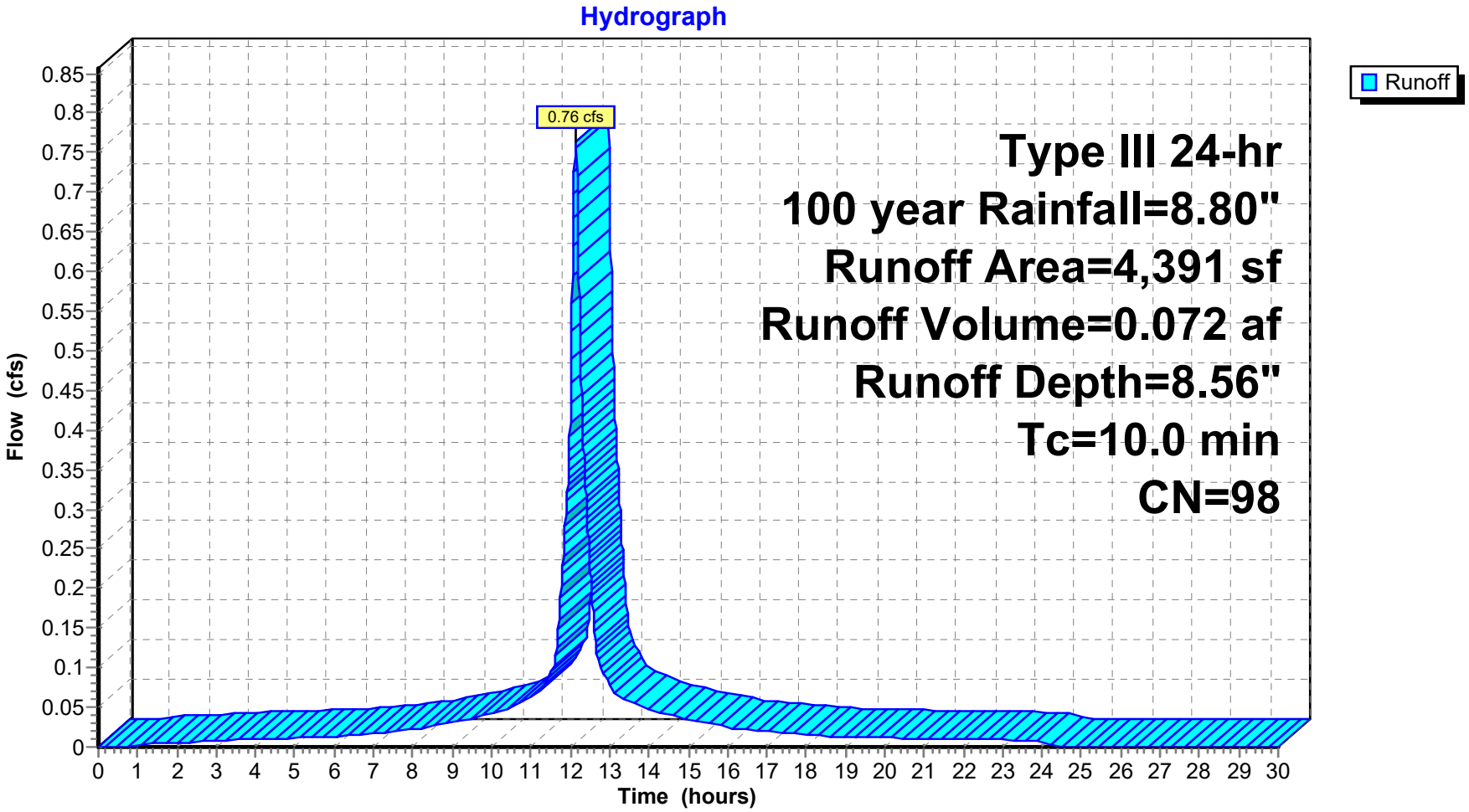
Runoff = 0.76 cfs @ 12.13 hrs, Volume= 0.072 af, Depth= 8.56"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
4,391	98	Paved parking, HSG C
4,391		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment H: Drainage Area - H (EAR - Middle)



Summary for Subcatchment I: Drainage Area - I (EAR - Left)

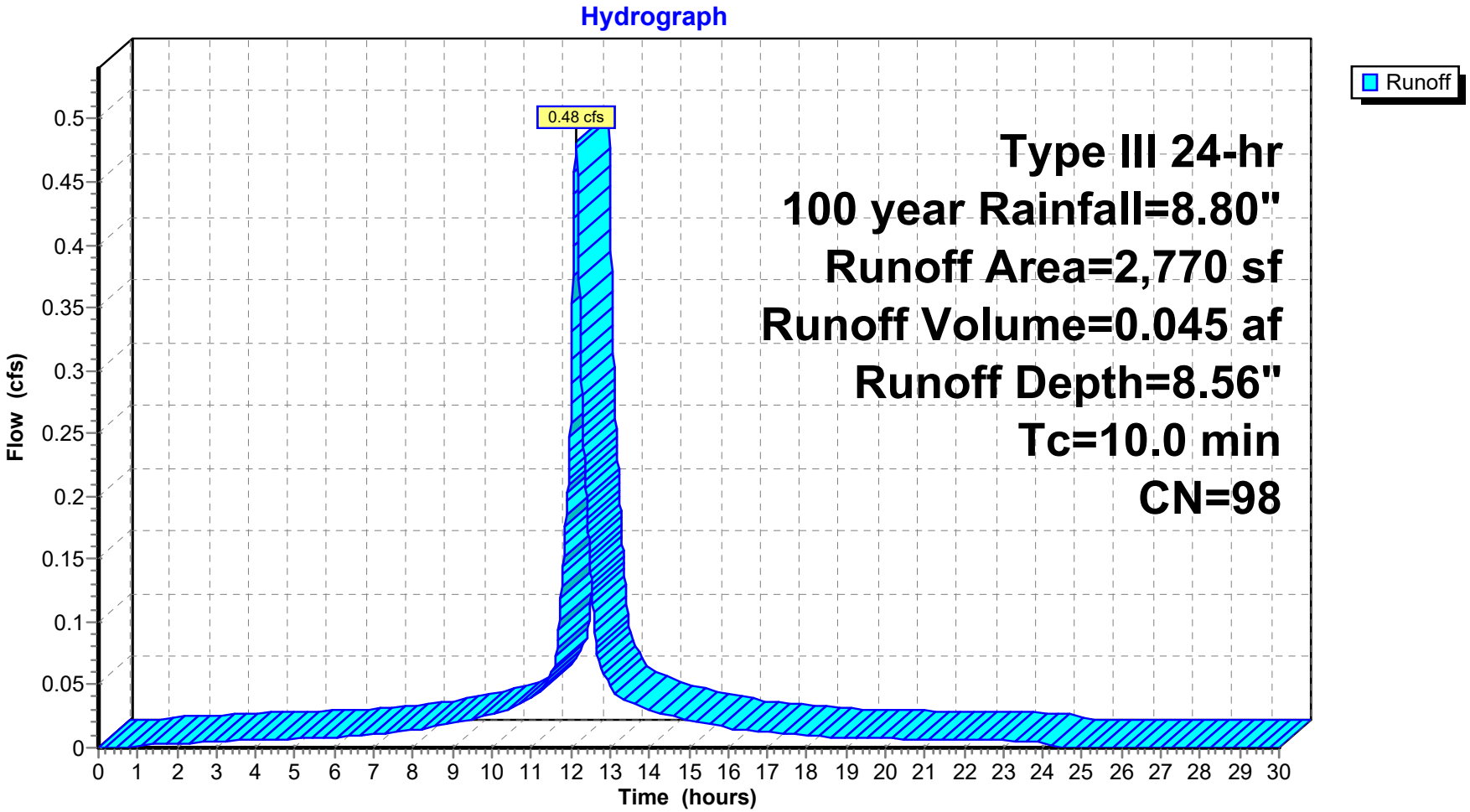
Runoff = 0.48 cfs @ 12.13 hrs, Volume= 0.045 af, Depth= 8.56"
Routed to Pond I' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.80"

Area (sf)	CN	Description
2,770	98	Paved parking, HSG C
2,770		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment I: Drainage Area - I (EAR - Left)



Summary for Pond A': StormTrap System A

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 6.13" for 100 year event
Inflow = 18.22 cfs @ 12.35 hrs, Volume= 2.178 af
Outflow = 5.85 cfs @ 12.91 hrs, Volume= 1.947 af, Atten= 68%, Lag= 33.4 min
Discarded = 0.64 cfs @ 9.76 hrs, Volume= 1.143 af
Primary = 5.21 cfs @ 12.91 hrs, Volume= 0.804 af
Routed to Link SPC : Study Point C

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 132.40' @ 12.91 hrs Surf.Area= 5,543 sf Storage= 39,218 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 197.9 min (1,020.4 - 822.5)

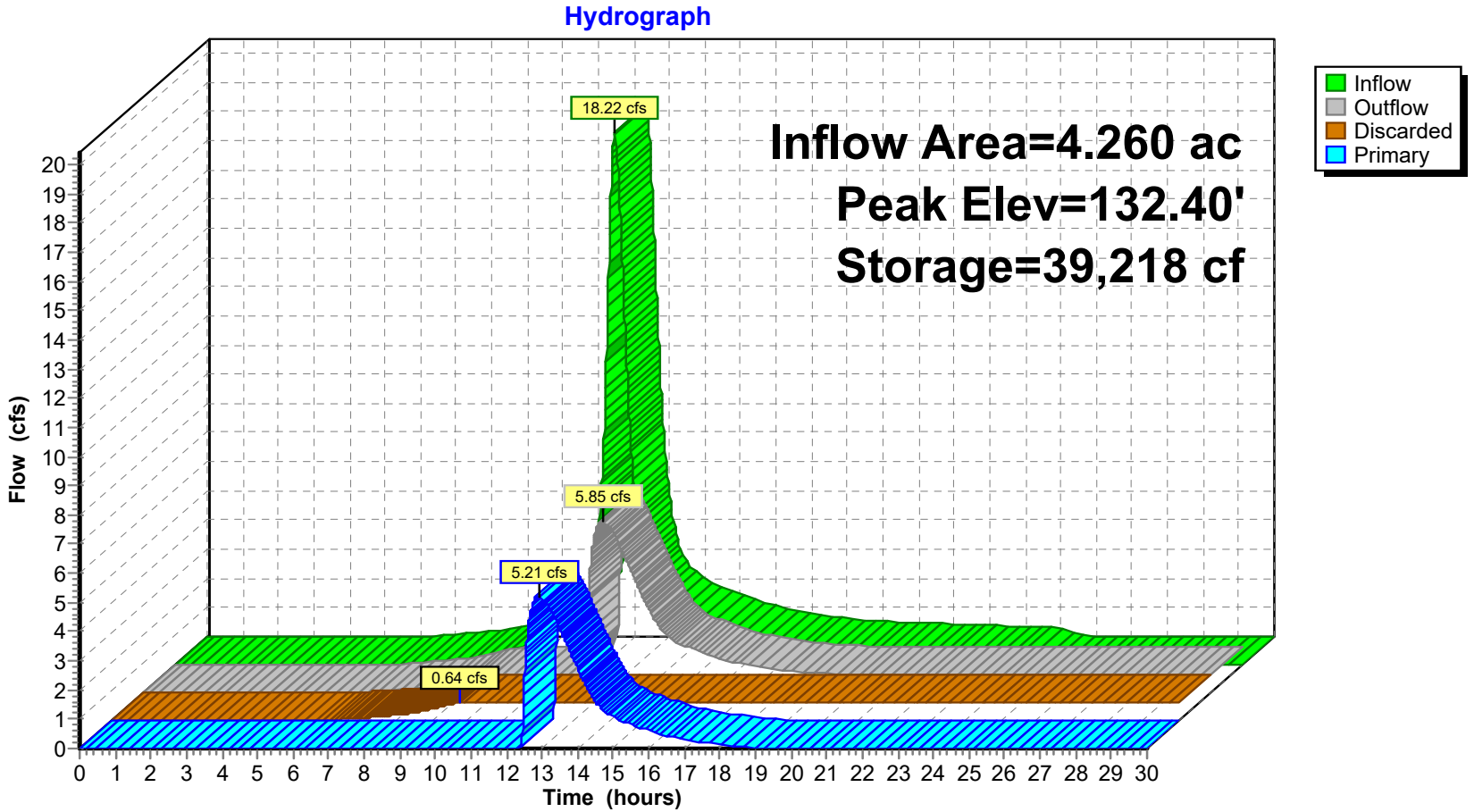
Volume	Invert	Avail.Storage	Storage Description
#1	124.06'	21,599 cf	**StormTrap ST2 DoubleTrap 8-6**x 12 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 12 Chambers in 4 Rows 33.92' x 46.19' Core + 6.66' Border = 47.23' x 59.50' System
#2	124.06'	20,918 cf	**StormTrap ST2 DoubleTrap 8-6**x 10 Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System
		42,517 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	124.06'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	130.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.64 cfs @ 9.76 hrs HW=124.56' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.64 cfs)

Primary OutFlow Max=5.21 cfs @ 12.91 hrs HW=132.40' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 5.21 cfs @ 6.64 fps)

Pond A': StormTrap System A



Summary for Pond B': Storm Trap System B

Inflow Area = 10.823 ac, 24.25% Impervious, Inflow Depth = 5.16" for 100 year event
Inflow = 56.67 cfs @ 12.14 hrs, Volume= 4.653 af
Outflow = 8.97 cfs @ 12.75 hrs, Volume= 3.851 af, Atten= 84%, Lag= 36.6 min
Discarded = 0.94 cfs @ 9.63 hrs, Volume= 1.642 af
Primary = 8.03 cfs @ 12.75 hrs, Volume= 2.209 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 84.01' @ 12.75 hrs Surf.Area= 8,092 sf Storage= 91,582 cf

Plug-Flow detention time= 240.3 min calculated for 3.850 af (83% of inflow)
Center-of-Mass det. time= 169.7 min (994.4 - 824.6)

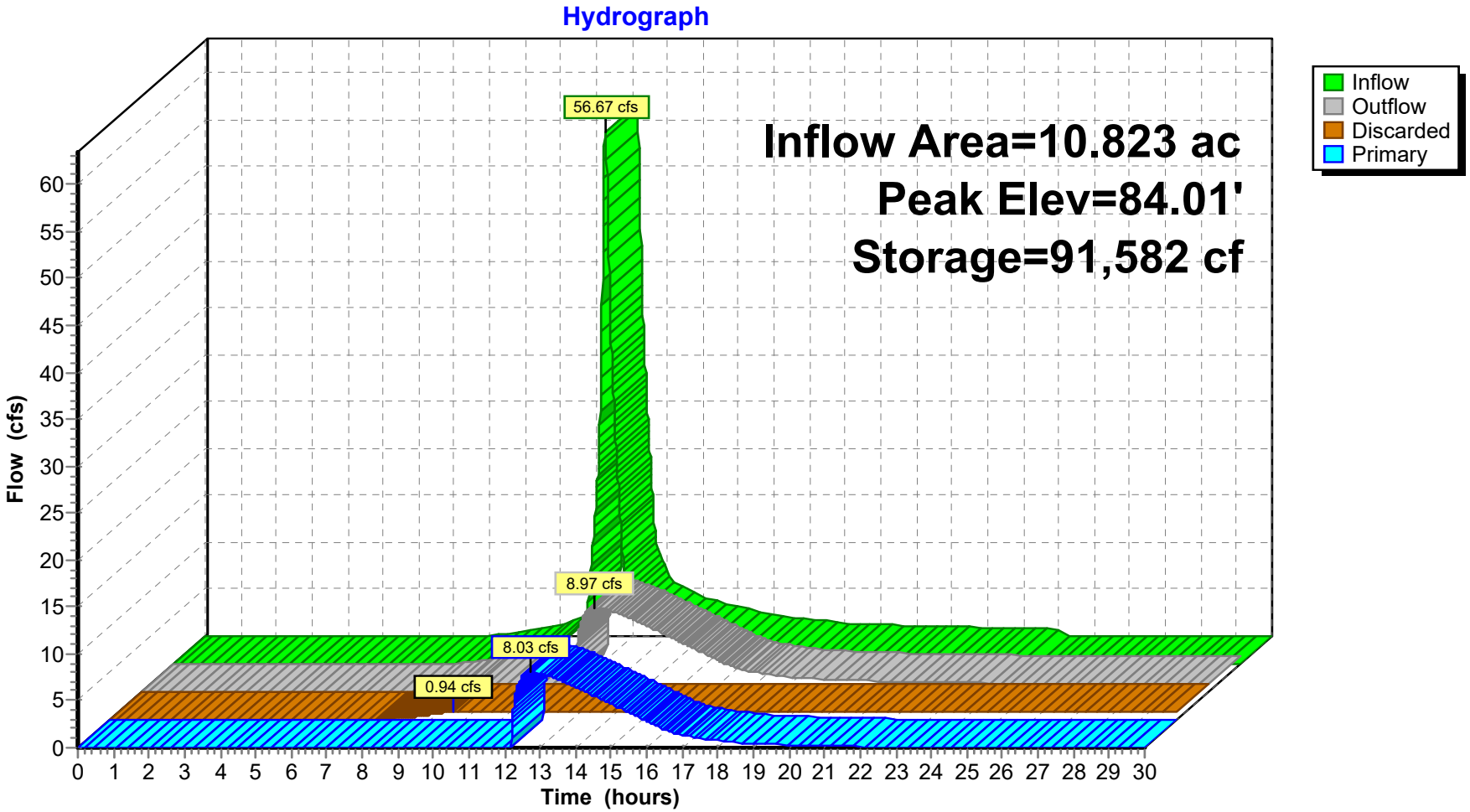
Volume	Invert	Avail.Storage	Storage Description
#1	71.00'	109,769 cf	**StormTrap ST2 DoubleTrap 15-0**x 45 Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf 45 Chambers in 9 Rows 76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	71.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	79.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.94 cfs @ 9.63 hrs HW=71.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

Primary OutFlow Max=8.04 cfs @ 12.75 hrs HW=84.01' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 8.04 cfs @ 10.23 fps)

Pond B': Storm Trap System B



Summary for Pond C': Storm Trap System C

Inflow Area = 3.375 ac, 38.07% Impervious, Inflow Depth = 5.77" for 100 year event
Inflow = 19.82 cfs @ 12.14 hrs, Volume= 1.622 af
Outflow = 7.59 cfs @ 12.45 hrs, Volume= 1.256 af, Atten= 62%, Lag= 18.9 min
Discarded = 0.32 cfs @ 9.13 hrs, Volume= 0.572 af
Primary = 7.27 cfs @ 12.45 hrs, Volume= 0.684 af
Routed to Link SPA : Study Point A

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 78.14' @ 12.45 hrs Surf.Area= 2,733 sf Storage= 28,097 cf

Plug-Flow detention time= 237.6 min calculated for 1.256 af (77% of inflow)
Center-of-Mass det. time= 155.9 min (969.9 - 814.0)

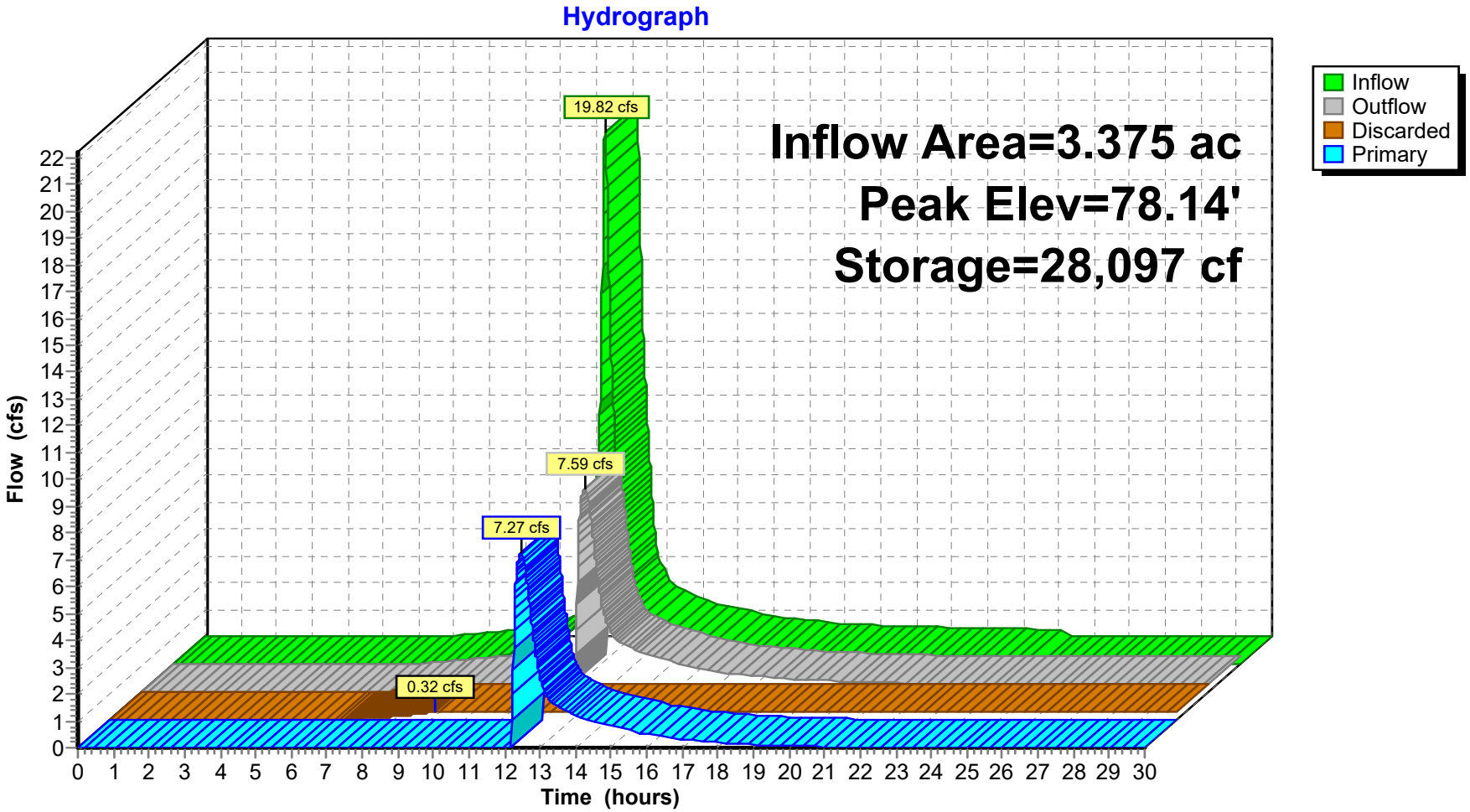
Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	33,796 cf	**StormTrap ST2 DoubleTrap 14-0**x 10 Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf 10 Chambers in 2 Rows 16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System

Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Primary	76.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.32 cfs @ 9.13 hrs HW=66.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=7.27 cfs @ 12.45 hrs HW=78.14' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 7.27 cfs @ 5.92 fps)

Pond C': Storm Trap System C



Summary for Pond G': Drywells

Inflow Area = 0.091 ac,100.00% Impervious, Inflow Depth = 8.56" for 100 year event
Inflow = 0.69 cfs @ 12.13 hrs, Volume= 0.065 af
Outflow = 0.04 cfs @ 10.26 hrs, Volume= 0.065 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.04 cfs @ 10.26 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 94.68' @ 14.19 hrs Surf.Area= 0.008 ac Storage= 0.029 af

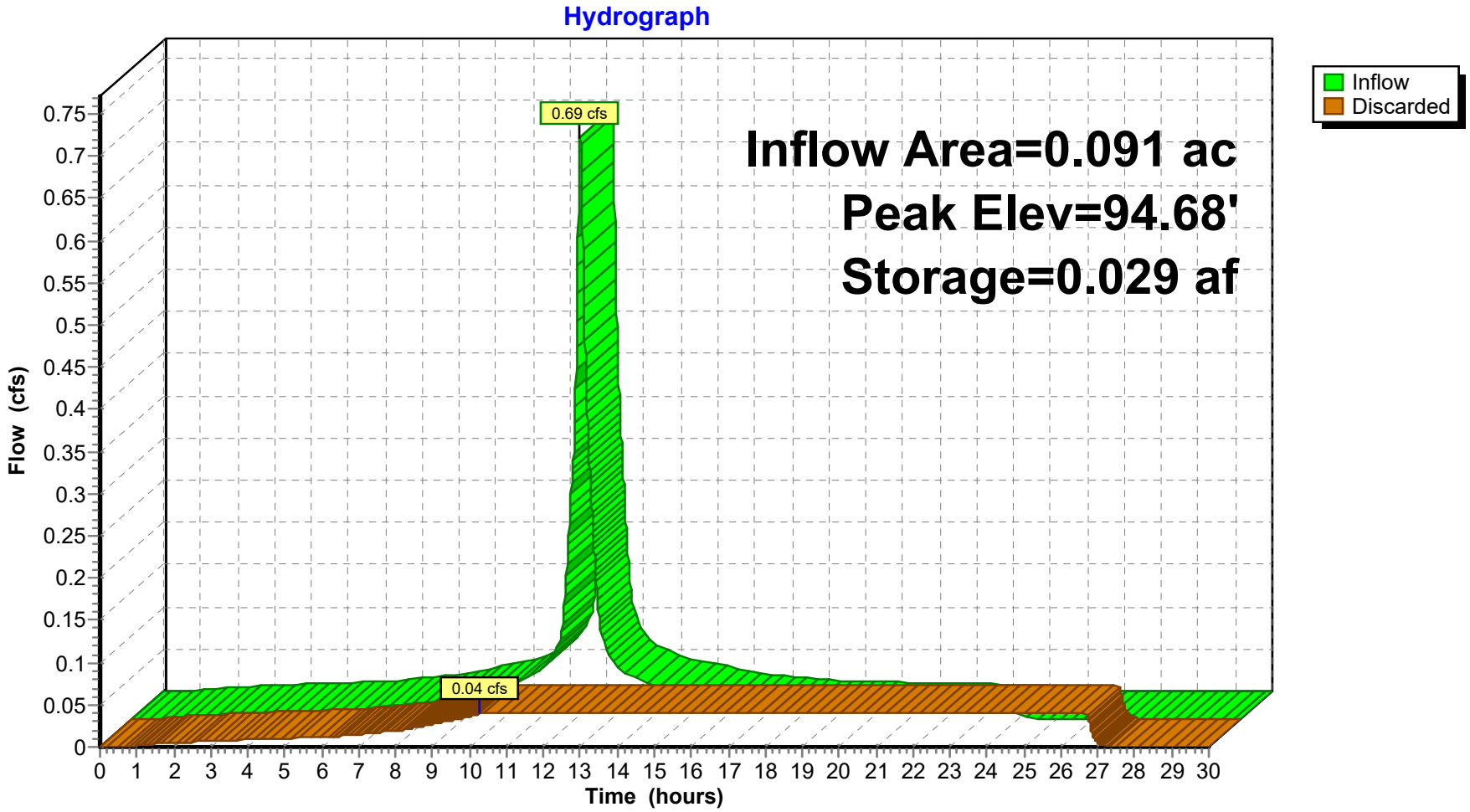
Plug-Flow detention time= 256.3 min calculated for 0.065 af (100% of inflow)
Center-of-Mass det. time= 256.3 min (1,000.1 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 10.26 hrs HW=91.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond G': Drywells



Summary for Pond H': Drywells

Inflow Area = 0.101 ac,100.00% Impervious, Inflow Depth = 8.56" for 100 year event
Inflow = 0.76 cfs @ 12.13 hrs, Volume= 0.072 af
Outflow = 0.04 cfs @ 9.89 hrs, Volume= 0.072 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.04 cfs @ 9.89 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 90.29' @ 14.59 hrs Surf.Area= 0.008 ac Storage= 0.033 af

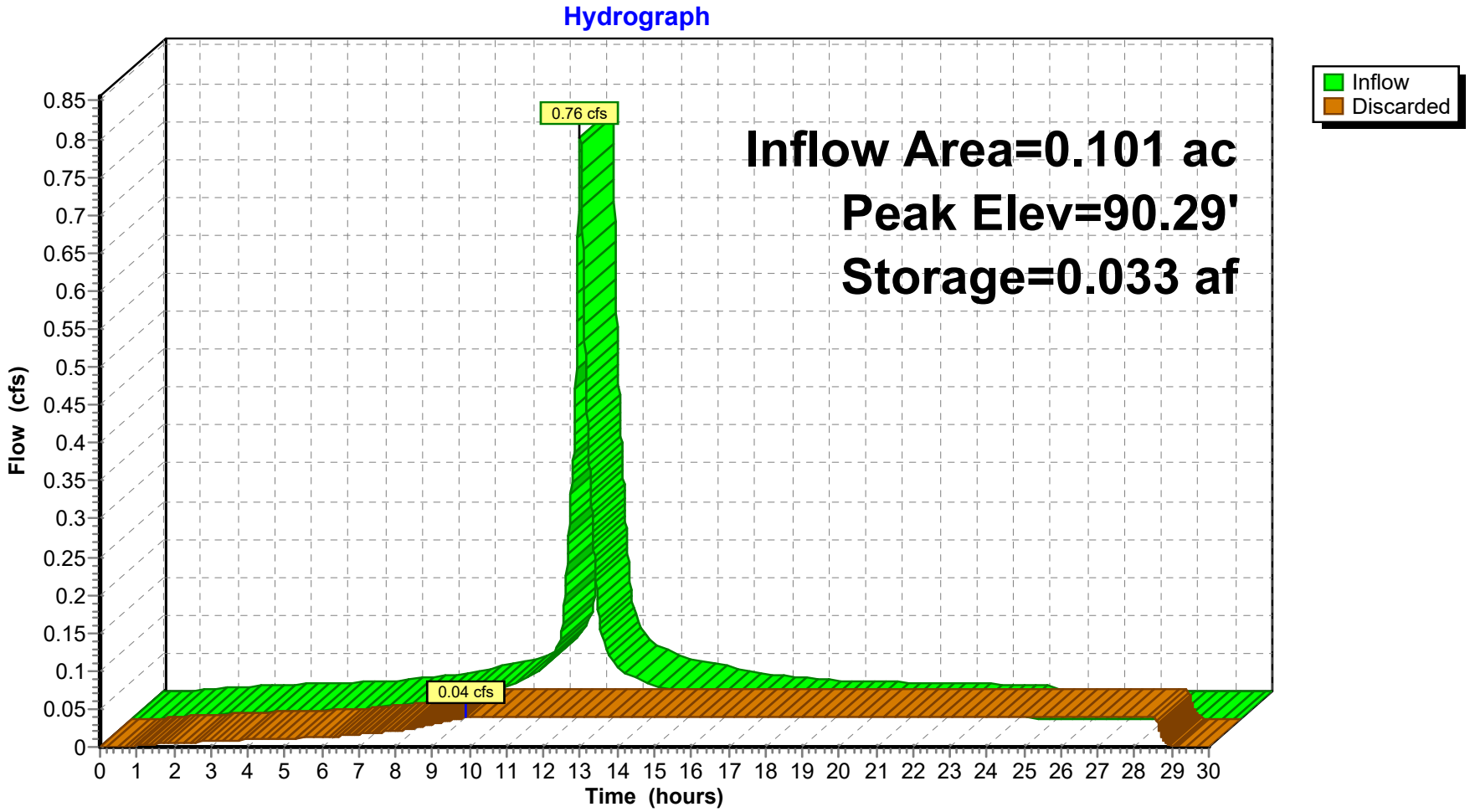
Plug-Flow detention time= 303.2 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 303.2 min (1,046.9 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	86.00'	0.039 af	**12.00'D x 5.00'H Drywell** x 3

Device	Routing	Invert	Outlet Devices
#1	Discarded	86.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 9.89 hrs HW=86.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

Pond H': Drywells



Summary for Pond I': Drywells

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth = 8.56" for 100 year event
Inflow = 0.48 cfs @ 12.13 hrs, Volume= 0.045 af
Outflow = 0.03 cfs @ 10.11 hrs, Volume= 0.045 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.03 cfs @ 10.11 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 83.95' @ 14.38 hrs Surf.Area= 0.005 ac Storage= 0.021 af

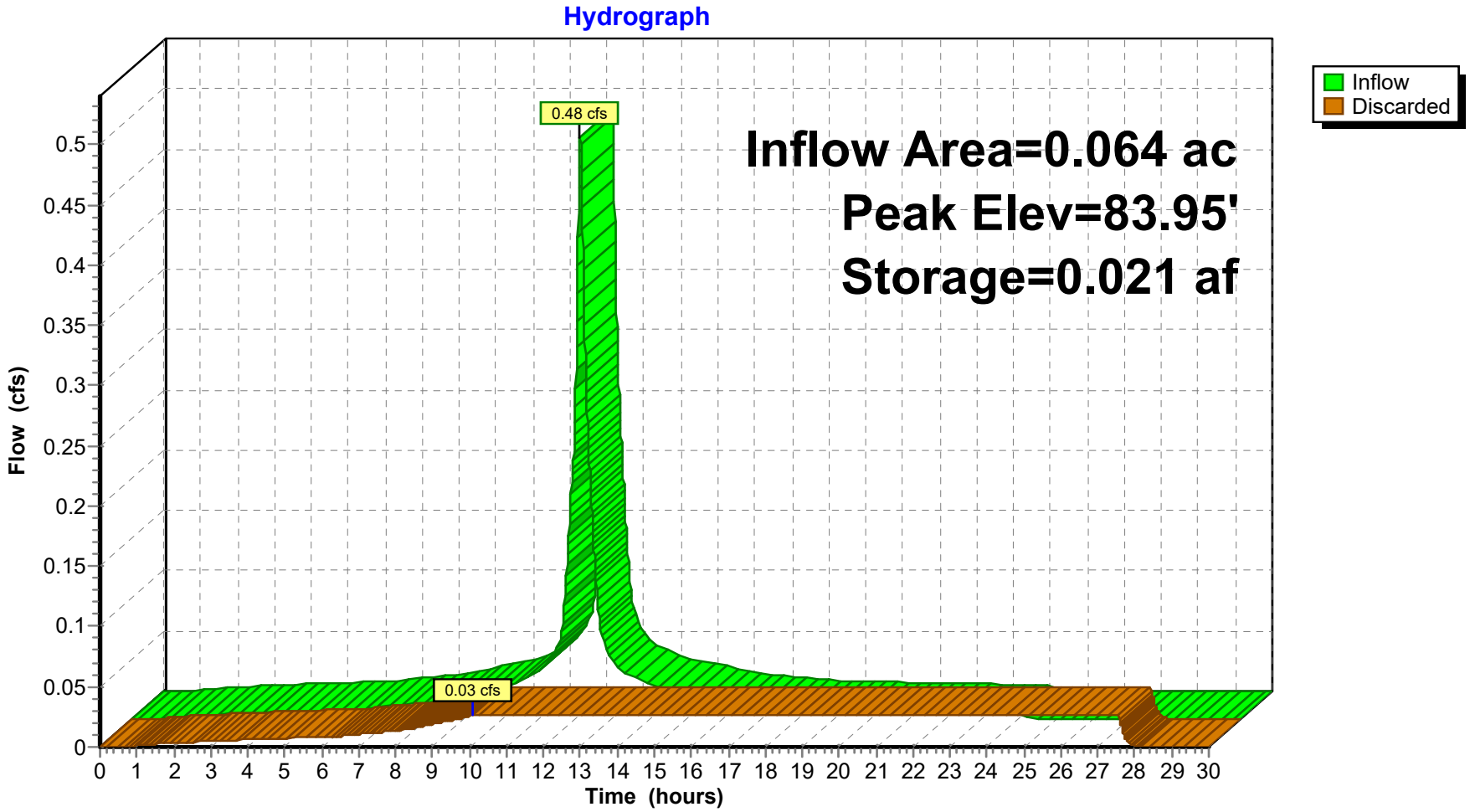
Plug-Flow detention time= 277.7 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 277.6 min (1,021.4 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	0.026 af	**12.00'D x 5.00'H Drywell** x 2

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.03 cfs @ 10.11 hrs HW=80.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond I': Drywells

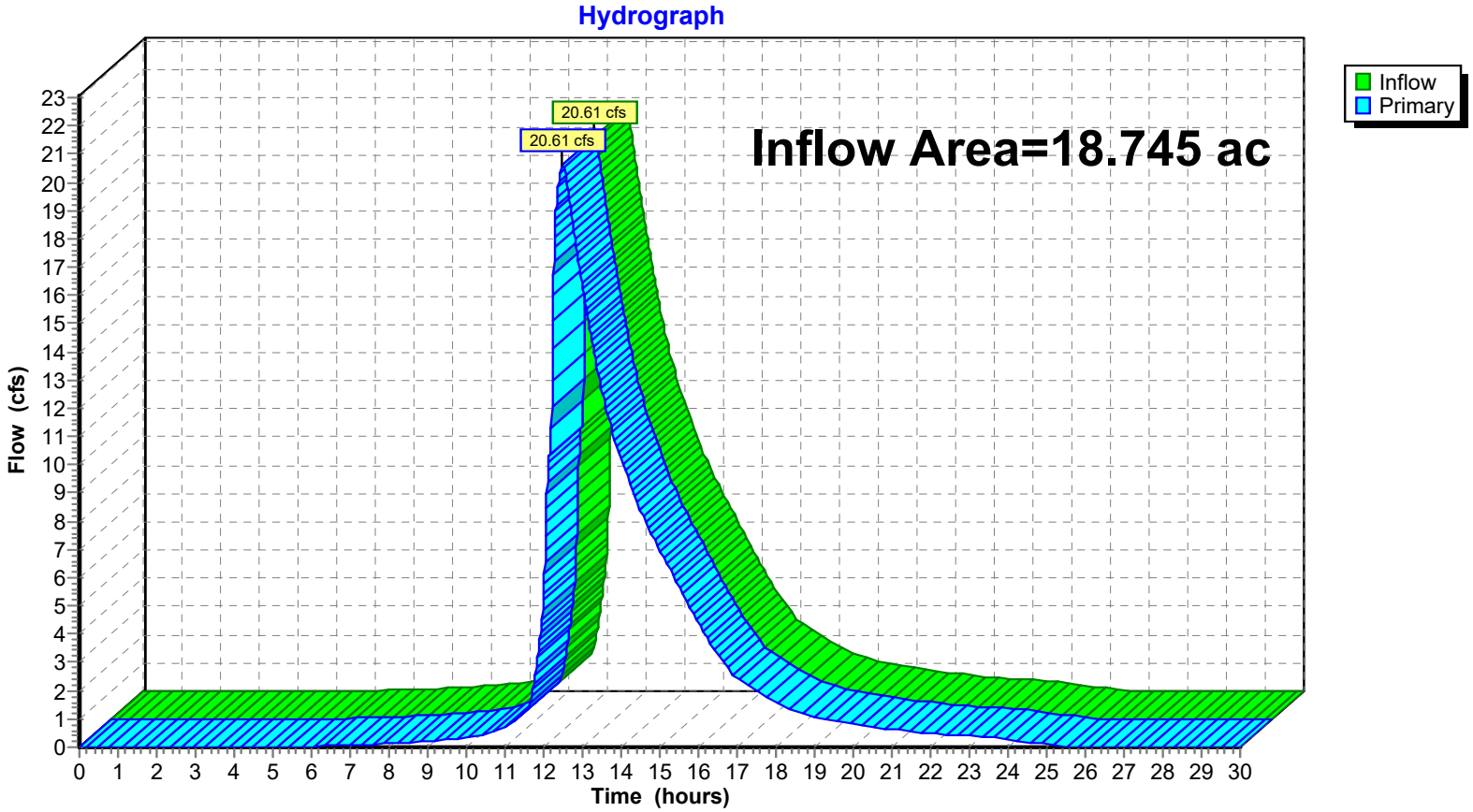


Summary for Link SPA: Study Point A

Inflow Area = 18.745 ac, 25.23% Impervious, Inflow Depth = 2.98" for 100 year event
Inflow = 20.61 cfs @ 12.48 hrs, Volume= 4.652 af
Primary = 20.61 cfs @ 12.48 hrs, Volume= 4.652 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPA: Study Point A

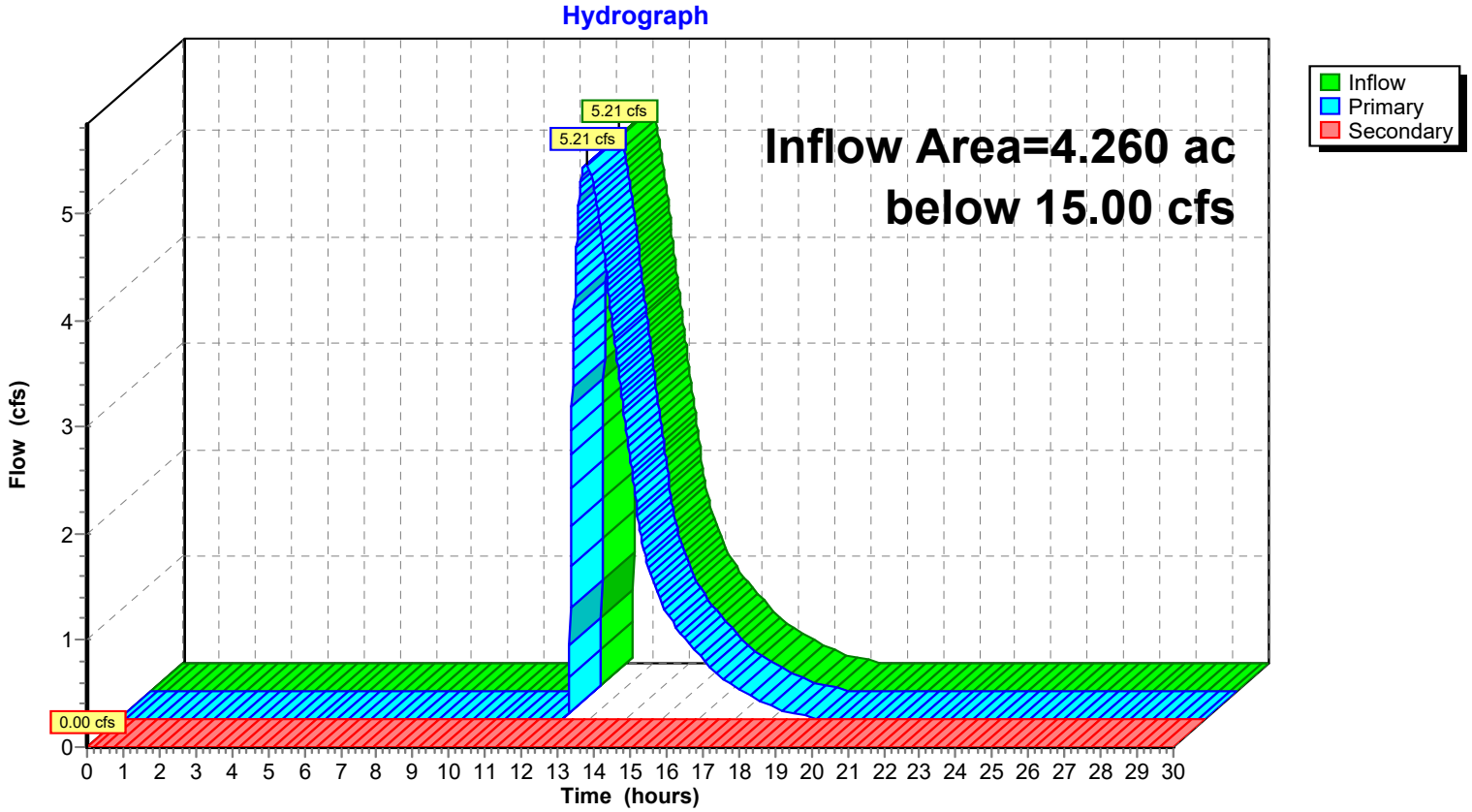


Summary for Link SPC: Study Point C

Inflow Area = 4.260 ac, 44.70% Impervious, Inflow Depth = 2.27" for 100 year event
Inflow = 5.21 cfs @ 12.91 hrs, Volume= 0.804 af
Primary = 5.21 cfs @ 12.91 hrs, Volume= 0.804 af, Atten= 0%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow below 15.00 cfs, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPC: Study Point C

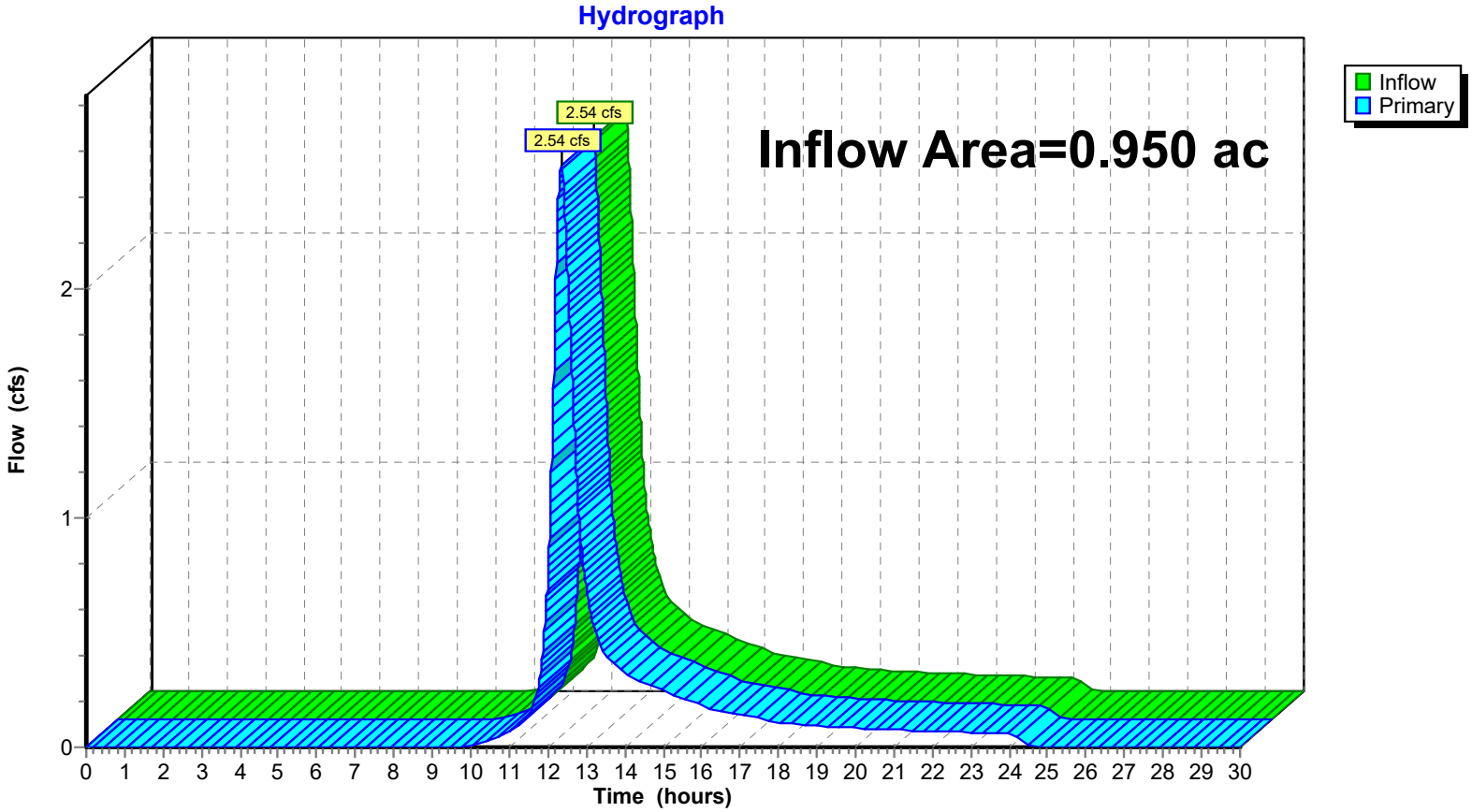


Summary for Link SPD: Study Point D

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 3.70" for 100 year event
Inflow = 2.54 cfs @ 12.35 hrs, Volume= 0.293 af
Primary = 2.54 cfs @ 12.35 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SPD: Study Point D



NYS Water Quality and Quantity Required
Post Development - Study Point A

Input:

Total Drainage Area	815,551.6269	square feet	18.72	acres
Impervious Area	204,989.1688	square feet	4.71	acres
Pervious Area	610,562.4581	square feet	14.02	acres
Rainfall as per Local Agency	N/A	inches	N/A	feet
P = 90% NYS rainfall	1.5	inches / day		
i - 1-year storm	2.8	inches / day		
i - 10-year storm	5.0	inches / day		
i - 100-year storm	9.0	inches / day		
% of WQv Provided by Infiltration Practices	100	percent		

Provided Storage as per Local Agency

Type	# of Chambers Provided	CF/Galley	Provided (CF)
Storm Trap B	45	1,686.70	75,902
Storm Trap C	10	1,437.10	14,371
	Total Cubic Feet Provided		**90,273**

Step 2: Total Pre-Treatment Volume (% of Water Quality Treatment Volume)

Pre-Treatment volume based on infiltration rate (fc) of underlying soils **fc = 5 inches per hour**

If fc is < 2.0 inches per hour	25% of WQv to be provided
If fc is > 2.0 inches per hour	50% of WQv to be provided
If fc is > 5.0 inches per hour	100% of WQv to be provided

Total Pre-Treatment Volume	**=**	**0.3232**	**acre-feet**
	=	14,079	cubic feet

WQv Provided by Infiltration

PROVIDED	**WQv**	**=**	**2.0724**	**acre-feet**
			90,273	cubic feet

Step 3: Total Water Quality Treatment Volume (WQv)

WQv = [(P)*(Rv)*(A)]/12

Total WQv = WQv + Pre-Treatment Volume

P		1.5	inches
Rv		0.2762	percent
A		18.72	acres
WQv	**=**	**0.6464**	**acre-feet**
	=	28,158.4792	cubic feet
Total WQv	**=**	**0.9696**	**acre-feet**
	=	42,237.7187	cubic feet

Step 4-5: Calculate Runoff Reduction Volume (RRv)

RRv = (% of WQv Provided By Practice)(WQv Provided)

RRv	**=**	**2.0724**	**acre-feet**
		90,273	cubic feet

Is RRV > WQv? **Yes, No Other Practices Needed**

Step 6: Apply Standard Practices

Not Applicable

Step 7: Apply Peak Flow Control Practices

Not Applicable

NYS Water Quality and Quantity Required
Post Development - Study Point C

Input:

Total Drainage Area	185,549.9814	square feet	4.26	acres
Impervious Area	82,932.9145	square feet	1.90	acres
Pervious Area	102,617.0669	square feet	2.36	acres
Rainfall as per Local Agency	N/A	inches	N/A	feet
P = 90% NYS rainfall	1.5	inches / day		
i - 1-year storm	2.8	inches / day		
i - 10-year storm	5.0	inches / day		
i - 100-year storm	9.0	inches / day		
% of WQv Provided by Infiltration Practices	100	percent		

Provided Storage

Type	# of Chambers	CF	Provided (CF)
Storm Trap A Higher	12	1,027.00	12,324
Storm Trap A Lower	10	1,027.00	10,270
Total Cubic Feet Provided			**22,594**

Step 2: Total Pre-Treatment Volume (% of Water Quality Treatment Volume)

Pre-Treatment volume based on infiltration rate (fc) of underlying soils — **fc = 5 inches per hour**

If fc is < 2.0 inches per hour	25% of WQv to be provided
If fc is > 2.0 inches per hour	50% of WQv to be provided
If fc is > 5.0 inches per hour	100% of WQv to be provided

Total Pre-Treatment Volume		**=**	**0.1204**	**acre-feet**
		=	5,245	cubic feet
PROVIDED	**WQv**	**=**	**0.5187**	**acre-feet**
			22,594	cubic feet

Step 3: Total Water Quality Treatment Volume (WQv)

WQv = [(P)*(Rv)*(A)]/12

Total WQv = WQv + Pre-Treatment Volume

P		1.5	inches
Rv		0.4523	percent
A		4.26	acres
WQv	**=**	**0.2408**	**acre-feet**
	=	10,489.6403	cubic feet
Total WQv	**=**	**0.3612**	**acre-feet**
	=	15,734.4604	cubic feet

Step 4-5: Calculate Runoff Reduction Volume (RRv)

RRv = (% of WQv Provided By Practice)(WQv Provided)

RRv	**=**	**0.5187**	**acre-feet**
		22,594	cubic feet

Is RRV > WQv? **Yes, No Other Practices Needed**

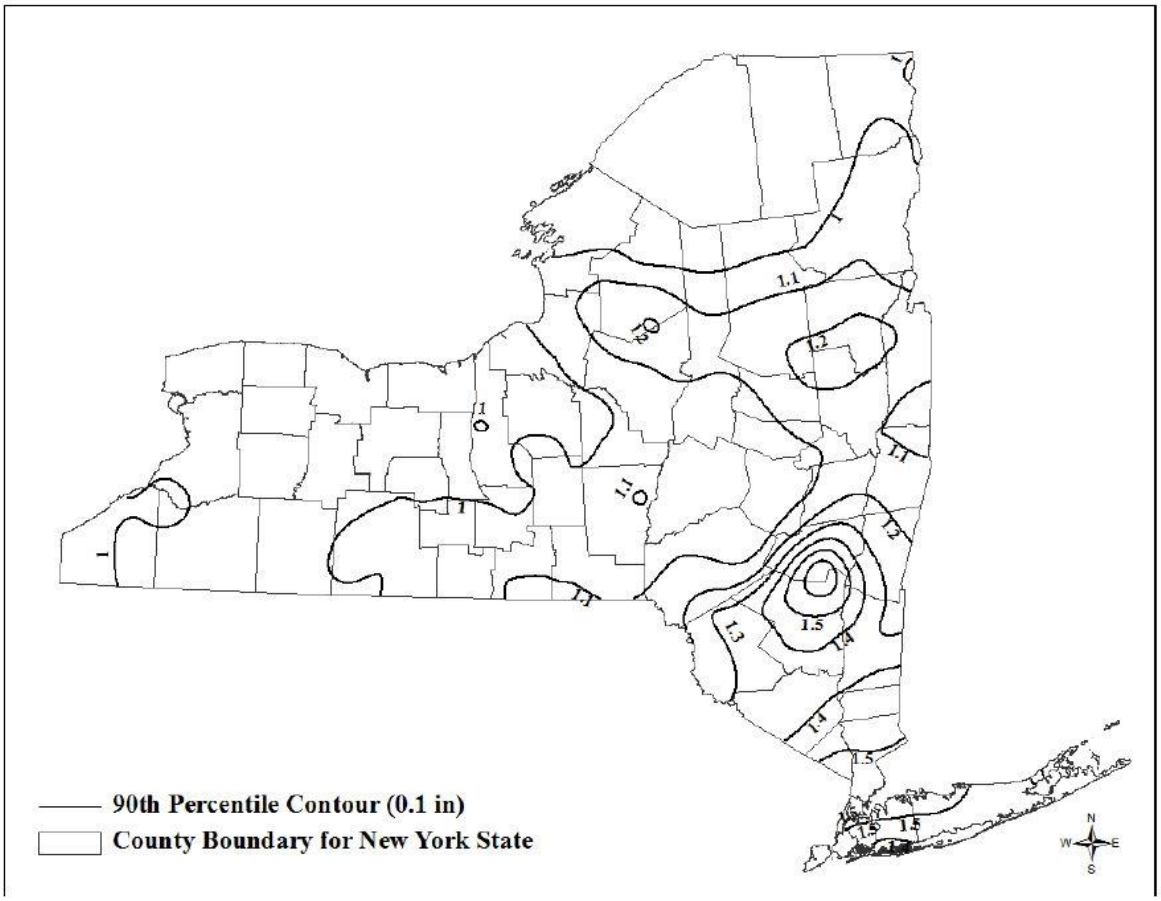
Step 6: Apply Standard Practices

Not Applicable

Step 7: Apply Peak Flow Control Practices

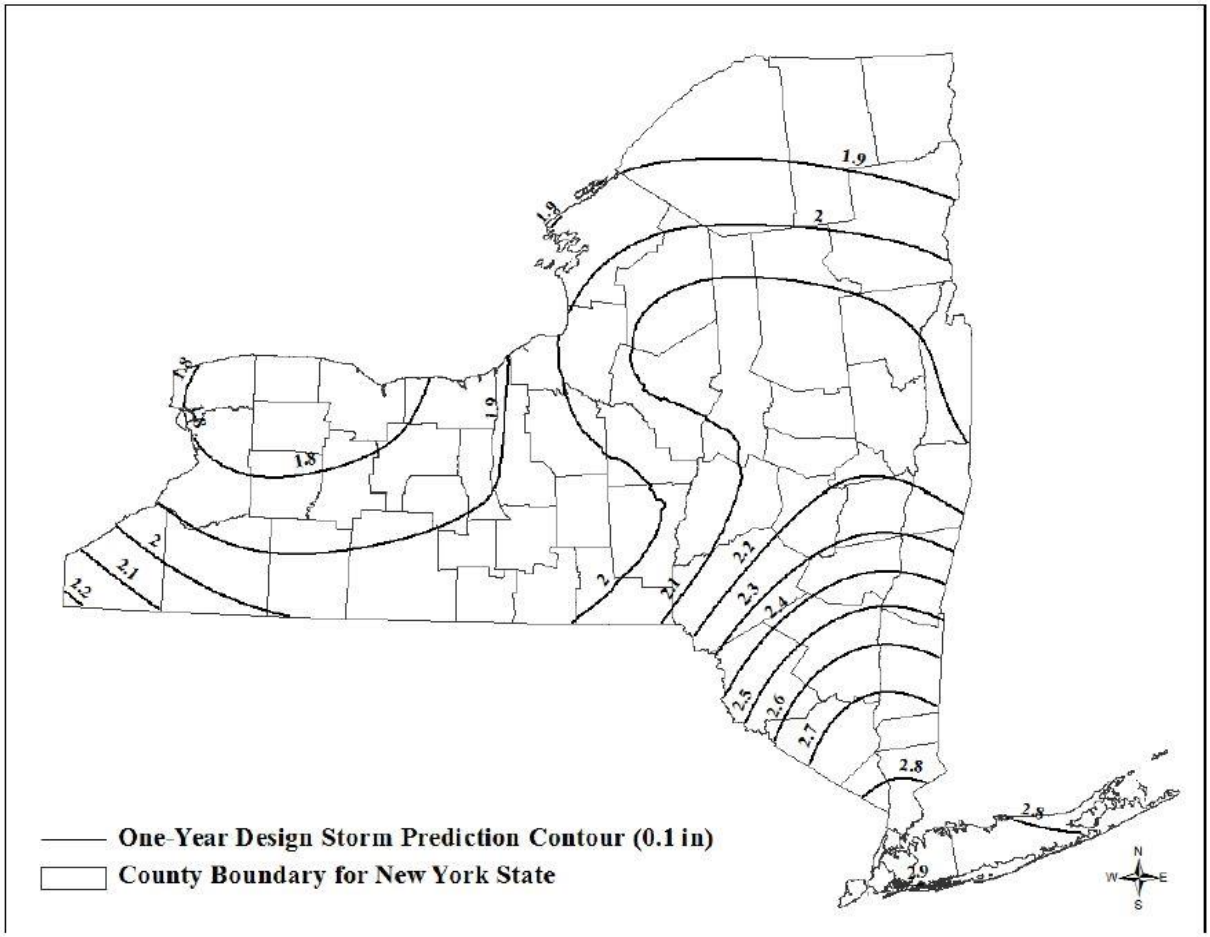
Not Applicable

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



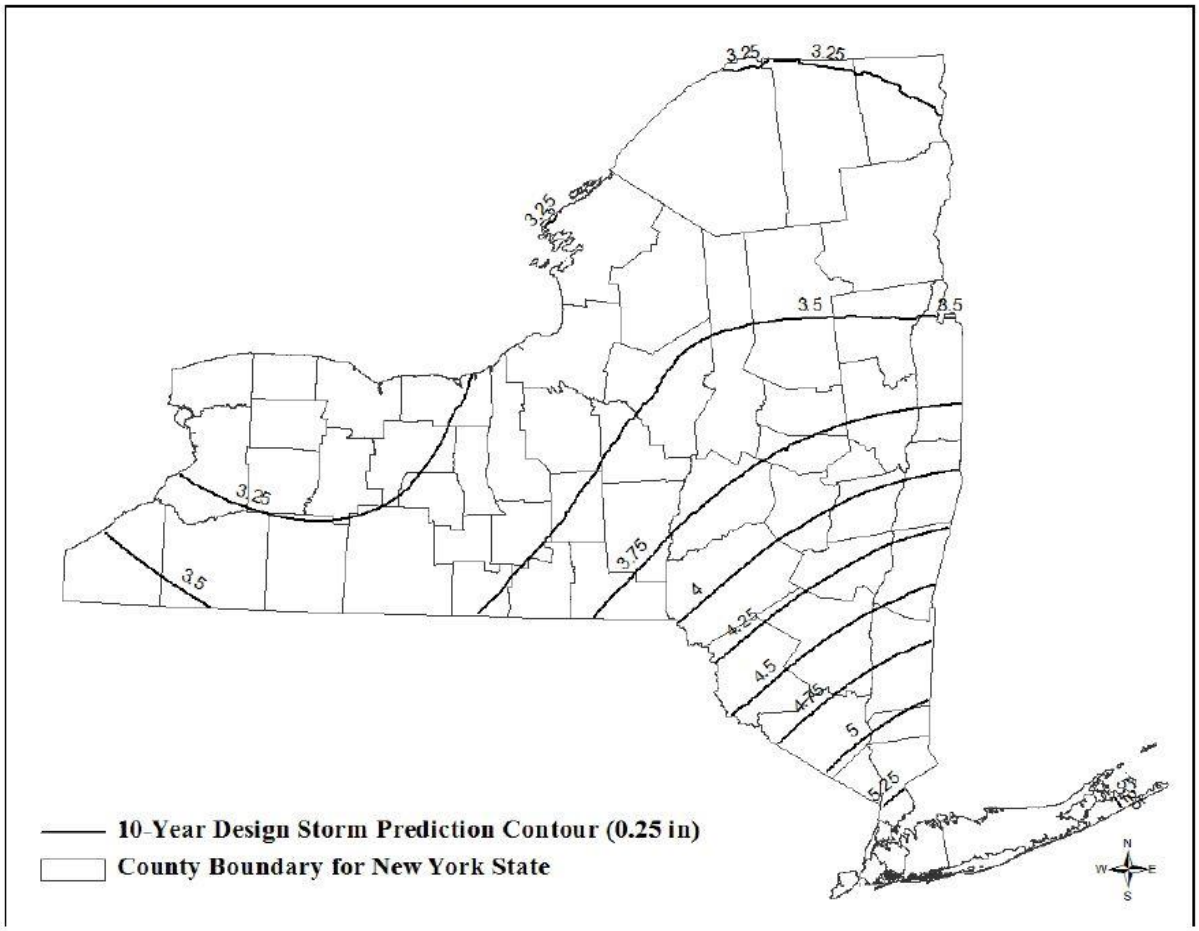
Source: New York State Storm Water Management Design Manual, January 2015.

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



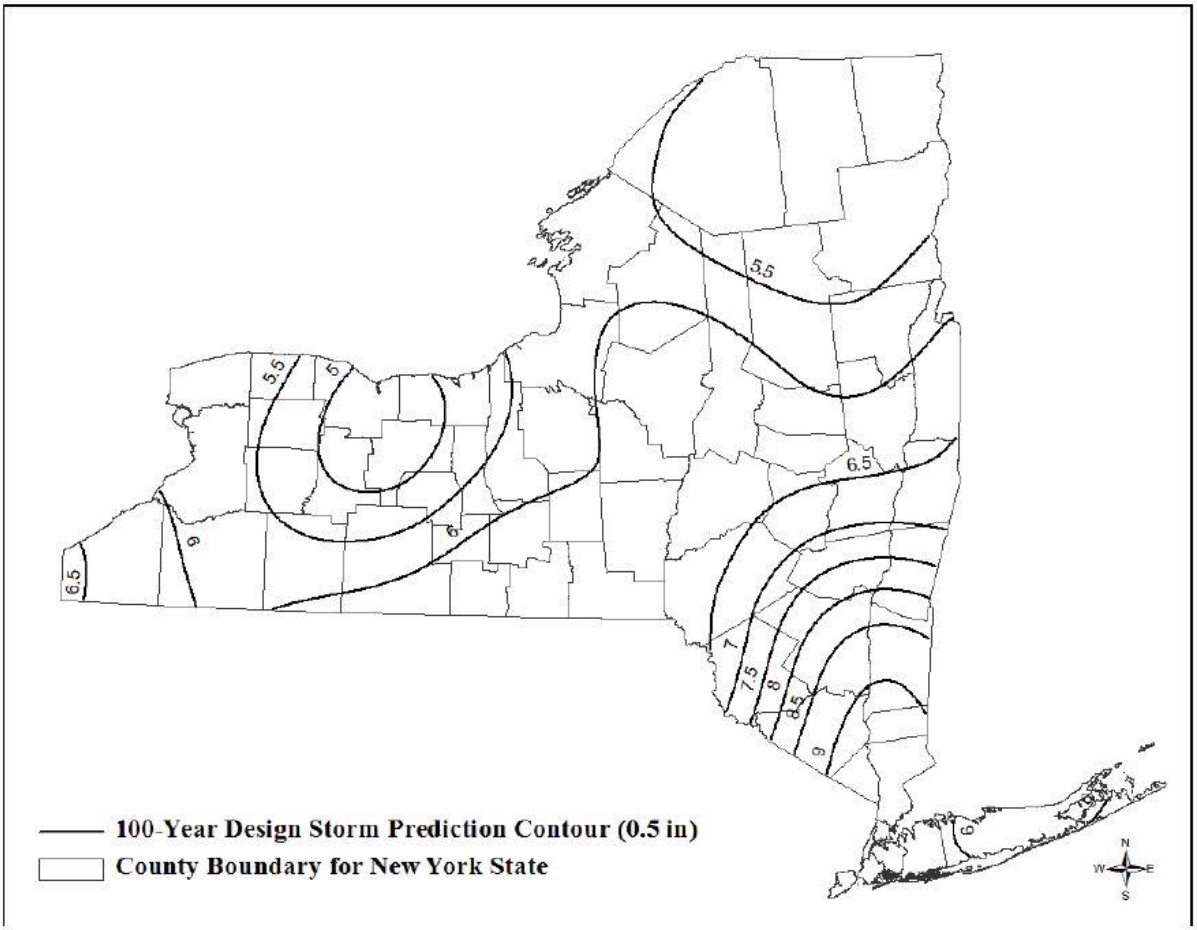
Source: New York State Storm Water Management Design Manual, January 2015

Figure 4.3: Ten-Year Design Storm in New York State (NYSDEC, 2013)



Source: New York State Storm Water Management Design Manual, January 2015

Figure 4.4: One Hundred-Year Design Storm in New York State (NYSDEC, 2013)



Source: New York State Storm Water Management Design Manual, January 2015

Attachment F
Maintenance Agreements

Attachment G
Operations & Maintenance Manual

Operations & Maintenance Plan

The Site Operator is responsible for the operation and maintenance of the installed stormwater management practices to ensure proper functionality throughout the life of the system. Regular maintenance of stormwater management practices is important for flood control, structural integrity, and water quality. The following lists all procedures for inspection and maintenance for post-development Stormwater Management Practices:

StormTrap and Catch Basin System:

Inspection Requirements:

Drainage structures should be inspected at least once per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Excessive debris, silt or sediment build-up inside of structure/piping
- Cracks or other damage to the structure
- Collapsed or blocked pipes
- Excessive ponding around leaching structures

Maintenance Requirements:

Should problems be encountered during inspection, maintenance is required as follows:

- Debris, silt and sediment buildup shall be removed from structures.
- Pipes shall be cleaned of debris and/or sediment.
- Repair to existing structures/piping.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

Landscape Areas:

Inspection Requirements:

Landscaped areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Dead plants or turf areas resulting from drought or illness.
- Erosion from surface runoff.
- Sediment build-up in low areas.

Maintenance Requirements:

- Re-seeding/watering of dead lawn areas.
- Removal of sediment build-up.
- Re-grading and re-establishment of landscaping in eroded areas.
- Mowing and general landscape maintenance as required.

Parking Areas:

Inspection Requirements:

Parking and paved areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Broken pavement or sink holes around drainage inlets.
- Evidence of ponding in intermittent low areas.
- Sand and Salt build up from snow operations.

Maintenance Requirements:

- Repairing of any damaged pavement or low areas.
- Sweeping and removing any sediment or debris on the pavement as necessary.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

Attachment H
SWPPP Amendment Log

Attachment H – SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
1		XX/XX/2022	XXXXXXX, PE Project Manager

Forms

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.40

(Submission #: HQ6-JHYJ-51BPH, version 1)

Details

Originally Started By	Daniella Balsano
Alternate Identifier	Orchards on Hudson - Residential
Submission ID	HQ6-JHYJ-51BPH
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
SDL Marlboro LLC

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

Owner/Operator Contact Person First Name
Blanchard, Esq

Owner/Operator Mailing Address
561 Seventh Ave Suite 903

City
New York

State
NY

Zip
10018

Phone
9145827809

Email
mblanchard@blanchardwilson.com

Federal Tax ID
NONE PROVIDED

> If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual's social security number.

Project Location

Project/Site Name
Orchards on Hudson - Residential

Street Address (Not P.O. Box)
103 - 137 Dock Road

Side of Street
North

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

State
NY

Zip
12542-845

DEC Region
3

> The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on "Other Useful Reference Layers" on the left side of the map, then click on "DEC Administrative Boundary." Zoom out as needed to see the Region boundaries.
> For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
ULSTER

Name of Nearest Cross Street
9W

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
108.4-3-29.1

Tax Map Numbers
109.1-3-13, 14.2 &15

> If the project does not have tax map numbers (e.g. linear projects), enter “Not Applicable” or "N/A".

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.6062302,-73.9702501

Project Details

2. What is the nature of this project?
New Construction

> For the purposes of this eNOI, “New Construction” refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Other: Single Family Residential Property, Duplex Residential Property and Industrial - Vacant Land

Post-Development Future Land Use
Multifamily Residential

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
25.2

Total Area to be Disturbed (acres)
15.1

Existing Impervious Area to be Disturbed (acres)
0.7

Future Impervious Area Within Disturbed Area (acres)
7.2

5. Do you plan to disturb more than 5 acres of soil at any one time?
Yes

---

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

A (%)
90.8

B (%)
1.4

C (%)
7.8

D (%)
0

7. Is this a phased project?
No

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

Start Date
09/01/2025

End Date
09/01/2027

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

> Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, “Unnamed tributary to Niagara River.”

9a. Type of waterbody identified in question 9?
River Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

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

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

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

> Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on “Permit Related Layers” on the left side of the map, then click on “Class AA AAS Watersheds.”

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 D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

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

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

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

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

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

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

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

Required SWPPP Components

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

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

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the 2015 or 2024 NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
VHB Engineering, Surveying, Landscape Architecture and Geology, P.C

Contact Name (Last, First)
Laino, Angelo

Mailing Address
100 motor parkway ste 350

City
HAUPPAUGE

State
New York

Zip
11788

Phone
6317873409

Email
alaino@vhb.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
swpppcert - S&S.pdf - 09/11/2024 04:41 PM
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

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

Temporary Structural
Level Spreader
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Protecting Vegetation
Mulching
Topsoiling

Permanent Structural
Land Grading
Riprap Slope Protection

Other
NONE PROVIDED

Post-Construction Criteria

*** 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 Area
Preservation of Buffers

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.
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).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
1.3308

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing 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 the Post-Construction SMP Identification section 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.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
2.5911

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

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)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

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; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section 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. (acre-feet)
NONE PROVIDED

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 - 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).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, 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 (acre-feet)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
Site discharges directly to tidal waters or a fifth order or larger stream.

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

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.

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

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

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.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing 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.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
9.75

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
7.12

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

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

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

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

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.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
SPDES Multi-Sector GP (Enter SPDES # below)

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. 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.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
9/11/2024 4:41 PM	swpppcert - S&S.pdf	Attachment	Daniella Balsano

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

Orchards on Hudson - Residential

Owner/Operator Information

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

SDL Marlboro, 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.

Angelo		Laino
First name	MI	Last Name

Signature

9/11/2024

Date

Revised: January 2020

0644089821

NOTICE OF INTENT

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

NYR ☐☐☐☐☐☐
(for DEC use only)

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

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

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

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

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State ☐☐ Zip ☐☐☐☐☐ - ☐☐☐☐

Phone (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Fax (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Email (Owner/Operator)

FED TAX ID ☐☐ - ☐☐☐☐☐☐☐ (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

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

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

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

Tax Map Numbers
Section-Block-Parcel

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)

Y Coordinates (Northing) 4

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**
.	.	.	.

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**
%	%	%	%

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

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

Start Date / / - **End Date** / /

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

Name

9a. Type of waterbody identified in Question 9?

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

9b. How was the wetland identified?

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

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

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

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

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

.

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

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

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

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

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - -

Fax - -

Email

SWPPP Preparer Certification

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

First Name **MI**

Last Name

Signature

Date / /

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

			.			
			.			**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)			___.___
○ Dry Swale (O-1)			___.___
Standard SMPs			
○ Micropool Extended Detention (P-1)			___.___
○ Wet Pond (P-2)			___.___
○ Wet Extended Detention (P-3)			___.___
○ Multiple Pond System (P-4)			___.___
○ Pocket Pond (P-5)			___.___
○ Surface Sand Filter (F-1)			___.___
○ Underground Sand Filter (F-2)			___.___
○ Perimeter Sand Filter (F-3)			___.___
○ Organic Filter (F-4)			___.___
○ Shallow Wetland (W-1)			___.___
○ Extended Detention Wetland (W-2)			___.___
○ Pond/Wetland System (W-3)			___.___
○ Pocket Wetland (W-4)			___.___
○ Wet Swale (O-2)			___.___

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

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

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

Name

Manufacturer

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

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

Total RRv provided

. **acre-feet**

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

○ **Yes** ○ **No**

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

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

Minimum RRv Required

. **acre-feet**

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

○ **Yes** ○ **No**

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

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

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

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

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

WQv Provided

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

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

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

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

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

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

CPv Required

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

CPv Provided

[ ][ ][ ].[ ][ ][ ] **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

[ ][ ][ ].[ ][ ][ ] **CFS**

Post-development

[ ][ ][ ].[ ][ ][ ] **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

[ ][ ][ ].[ ][ ][ ] **CFS**

Post-development

[ ][ ][ ].[ ][ ][ ] **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 [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ○ None

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

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

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

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

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 **MI**

Print Last Name

Owner/Operator Signature

Date / /

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:	SDL Marlboro, LLC
2. Contact Person:	Mark Blanchard, Esq.
3. Street Address:	561 Seventh Ave Suite 903
4. City/State/Zip:	New York, NY 10018
II. Project Site Information	
5. Project/Site Name:	Orchards on Hudson - Residential
6. Street Address:	103-137 Dock Road
7. City/State/Zip:	Town of Marlborough, NY 12542
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)

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:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
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)

EROSION AND SEDIMENT CONTROL PLAN REVIEW CHECKLIST

Project Name _____ Site Location _____

Applicant's Name & Address _____
_____

General

A narrative statement shall be provided that describes the proposed project nature and purpose; the existing site conditions including topography, vegetation and drainage; adjacent and off-site areas affected by the project; description of the soils on the site and key properties; notations of critical areas such as steep slopes, channels or wetlands; the overall phasing, sequencing and stabilization plan; total disturbed area and those not to be disturbed.

I. Construction Drawings

Are the following items shown on the construction drawings:	Yes	No
1. Vicinity Map with scale and north arrow	____	____
2. Legend, scales, N arrow on plan view	____	____
3. Existing and proposed topography shown with contours labeled with spots elevations in critical areas	____	____
4. Scope of the plan noted in the Title Block	____	____
5. Limits of clearing and grading shown	____	____
6. Existing vegetation delineated	____	____
7. Soil boundaries shown on the plan view	____	____
8. Existing drainage patterns, 100 year floodplain and sub-areas shown	____	____
9. Existing and proposed development facilities/ improvements shown	____	____
10. Location of Erosion and Sediment control practices as phased with construction	____	____
11. Phasing plan with 5 acre threshold limits shown	____	____
12. Stockpile locations, staging areas and access points clearly defined	____	____
13. Street profiles, utility locations, property boundaries and, easement delineations shown	____	____

II. Construction Notes & Details	Yes	No
1. Specific sequence of operation given for each phase	____	____
2. Inspection and maintenance schedule shown for the specific practices	____	____
3. Design details show all dimensions and installation details necessary for construction	____	____
4. Implementation schedule for E&S practices is provided with removal criteria stated	____	____
5. Construction waste management plan incorporated in the notes	____	____
6. Site Inspections during construction are noted on the drawings and is in accordance with the General Permit for Stormwater Discharges from Construction Activities	____	____

III. Erosion & Sediment Control Practices

A. General	Yes	No
1. Practice meets purpose and design criteria	____	____
2. Standard details and construction notes are provided	____	____
3. Special timing of practice noted if applicable	____	____
4. Provisions for traffic crossings shown on the drawings where necessary	____	____

B. Practices Controlling Runoff	Yes	No
1. Positive drainage is maintained with contributing drainage area shown	____	____
2. Flow grades properly stabilized	____	____
3. Adequate outlet or discharge condition stabilized	____	____
4. Necessary dimensions, gradations, calculations, and materials shown	____	____

C. Practices Stabilizing Soil	Yes	No
1. Seeding rates and areas properly shown on the drawings	____	____
2. Mulch materials and rates specified on the drawings	____	____
3. Sequencing and timing provisions limit soil exposure to 14 days	____	____

C. Practices Stabilizing Soil (cont'd)	Yes	No
4. Rolled Erosion Control Products (RECP's) used are specified to location and appropriate weight/tie down	____	____
5. All soil seed bed preparation and amendments are specified on the drawings or in the specifications	____	____
6. The seeding dates are specified to cover the entire year for both temporary and permanent seedings	____	____
7. Maximum created slope is no steeper than 2 foot horizontal to 1 foot vertical with Cut and Fill slopes shown	____	____

D. Practices Controlling Sediment	Yes	No
1. Sediment traps/basins are sized in accordance with criteria	____	____
2. The contributing drainage area is shown on the grading plan	____	____
3. All scaled dimensions and volumes are shown on the plan	____	____
4. Maintenance requirements and clean out elevations established for all sediment control practices (50% capacity)	____	____
5. All access points of the project are shown to be stabilized	____	____
6. Storm drain inlets adequately protected	____	____
7. Silt fences are shown on the contour lines with no more than one quarter acre per 100 foot drainage to it	____	____
8. Temporary sediment traps being used at locations of future stormwater infiltration facilities	____	____

Additional Comments

Plan Reviewed By: _____ Date: _____

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents
   a. Preamble to Site Assessment and Inspections
   b. Operator's Certification
   c. Qualified Professional's Credentials & Certification
   d. Pre-Construction Site Assessment Checklist

II. Construction Duration Inspections
   a. Directions
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III. Monthly Summary Reports

IV. Monitoring, Reporting, and Three-Month Status Reports
   a. Operator's Compliance Response Form

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS
Project Name _____
Permit No. _____ Date of Authorization _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections
The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

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

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

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

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

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

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

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

Yes No NA

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

2. Resource Protection

Yes No NA

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

3. Surface Water Protection

Yes No NA

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

4. Stabilized Construction Entrance

Yes No NA

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

5. Perimeter Sediment Controls

Yes No NA

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

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

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

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

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

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

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

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

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

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

SITE PLAN/SKETCH

_____	_____
Inspector (print name)	**Date of Inspection**
_____	_____
Qualified 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 or 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 property?
[ ] [ ] [ ] Is dust adequately controlled?

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

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

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 occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

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 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.

Sediment Control Practices (continued)

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.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% 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 stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

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

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

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

_____ _____

Signature of Permittee or Duly Authorized Representative Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

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: SDL Marlboro, LLC

2. Street Address: 103-137 Dock Road

3. City/State/Zip: Town of Marlborough, 12542

4. Contact Person: Mark Blanchard, Esq. | 4a. Telephone: (914) 582-7809

4b. Contact Person E-Mail: mblanchard@blanchardwilson.com

II. Project Site Information

5. Project/Site Name: Orchards on Hudson

6. Street Address: 103-137 Dock Road

7. City/Zip: Town of Marlborough, 12542

8. County: Ulster 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)

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)

CERTIFICATION OF PROJECT CONSTRUCTION CONTRACTORS

SDL Marlboro LLC
561 Seventh Ave Suite 903
New York, NY 10018

The following certification shall be signed by each contractor and subcontractor responsible for on-site activities, or any other subcontractor who will perform any action that may reasonably be expected to cause or have the potential to cause pollution of the waters of New York. All contractors shall provide a representative who has received proper erosion control training.

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

Owner/Operator Representative	**Trained Contractor**	**Trained Subcontractor (If Necessary)**
_____	_____	_____
Name	Name	Name
_____	_____	_____
Signature and Date	Signature and Date	Signature and Date
_____	_____	_____
Title/Responsible For	Title/Responsible For	Title/Responsible For
_____	_____	_____
_____	_____	_____
_____	_____	_____
Company and Address	Company and Address	Company and Address
_____	_____	_____
Telephone Number	Telephone Number	Telephone Number

Spill Response Procedure

Initial Notification

In the event of a spill, the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager: (name) _____

(phone) _____

Construction Manager: (name) _____

(phone) _____

Assessment - Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. The supervisor will first contact the Southampton Fire Department and then notify the Suffolk County Police Department and Suffolk County Health Department. The fire department is ultimately responsible for matters of public health and safety and should be notified immediately.

Fire Department:	911 or (845) 236-4121
Police Department:	(845) 338-3640
Ulster County Health Department:	(845) 340-3150

Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The New York Department of Environmental Conservation and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees.

NYSDEC Spill Hotline: 1-800-457-7362 (within NYS)

National Response Center: 1-800-424-8802 / (518) 457-7362 (outside NYS)

For further information, contact:

New York State Department of Environmental Conservation

Division of Environmental Remediation

Bureau of Spill Prevention & Response

625 Broadway – 11th Floor

Albany, NY 12233-7020

(518) 402-9546

HAZARDOUS WASTE / OIL SPILL REPORT

Date____/_____/_____ Time_____ AM / PM

Exact location (Transformer #)_____

Type of equipment_____Make_____Size_____

S / N_____Weather Conditions_____

On or near water ☐ Yes If yes, name of body of water_____
☐ No

Type of chemical / oil spilled_____

Amount of chemical / oil spilled_____

Cause of spill_____

_____

_____

Measures taken to contain or clean up spill_____

_____

_____

Amount of chemical / oil recovered_____Method_____

Material collected as a result of clean up

_____drums containing_____

_____drums containing_____

_____drums containing_____

Location and method of debris disposal_____

_____

Name and address of any person, firm, or corporation suffering damages_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring___

_____

Spill reported to General Office by_____Time_____AM / PM

Spill reported to DEC / National Response Center by_____

DEC Date____/_____/_____ Time_____ AM / PM Inspector_____

NRC Date____/_____/_____ Time_____ AM / PM Inspector_____

Additional comments_____

_____

_____

EMERGENCY RESPONSE EQUIPMENT
INVENTORY

The following equipment and materials shall be maintained at all times and stored in a secure area for construction activities emergency response need.

--	SORBENT PADS	5 PADS
--	SAND BAGS (empty)	10
--	SPEEDI-DRI ABSORBENT	5 40# BAGS
--	SHOVEL	1
--	PICK	1
--	PRY BAR	1

The following items shall be placed in a convenient, readily accessible location on site.

--	STRAW BALES & GRADE STAKES	10
--	SAND	2 CUBIC YARDS

EMERGENCY NOTIFICATION PHONE NUMBERS

1. SUPERVISOR/MANAGER
   NAME: _____ BEEPER: _____
   PHONE: _____ HOME PHONE: _____

   ALTERNATE:
   NAME: _____ BEEPER: _____
   PHONE: _____ HOME PHONE: _____

2. TOWN OF MARLBOROUGH FIRE DEPARTMENT
   EMERGENCY: 911
   BUSINESS: 1-845-236-4121

3. ULSTER COUNTY POLICE DEPARTMENT
   EMERGENCY: 911
   GENERAL NUMBER: 1-845-338-3640

4. CLEANUP CONTRACTOR: _____
   ADDRESS: _____
   PHONE: _____

5. NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION
   EMERGENCY: 1-800-457-7362
   OUTSIDE NEW YORK: 1-518-457-7362

6. NATIONAL RESPONSE CENTER
   PHONE: 1-800-424-8802

   ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY
   BUSINESS: 1-212-637-3660

7. ULSTER COUNTY HEALTH DEPARTMENT
   PHONE: 1-845-340-3150