# STORMWATER POLLUTION CONTROL PLAN

*For The Proposed:*

## Site Redevelopment

*Located At:*
285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane
East Hartford, Connecticut 06118

*Prepared On:*
April, 2024

*Prepared For:*

## Jasko Zelman 1, LLC

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# TABLE OF CONTENTS


1.0 INTRODUCTION ..... 5
2.0 Site Description ..... 5
2.1 Construction Activity ..... 5
2.2 Site & Disturbance Areas ..... 5
2.3 Proposed Stormwater Runoff ..... 6
2.4 Receiving Waters ..... 6
2.5 Wetland Area ..... 6
3.0 Construction Sequencing ..... 6
3.1 Sequence and Estimated Timetable of Major Activities ..... 6
4.0 Post-Construction Control Measures ..... 8
4.1 Sediment Removal Controls ..... 8
4.2 Velocity Dissipation ..... 8
5.0 Runoff Reduction and Low Impact Development Information ..... 8
6.0 Control Measures ..... 9
6.1 Temporary Control Measures ..... 9
6.1.1 Construction Entrance (Anti-tracking Pad) ..... 9
6.1.2 Temporary Diversion Swales ..... 9
6.1.3 Temporary Sediment Basin ..... 9
6.1.4 Temporary Sediment Trap ..... 10
6.1.5 Silt Fence ..... 10
6.1.6 Soil Stockpile Area ..... 10
6.1.7 Temporary Seed and Mulch for Seed ..... 10
6.1.8 Stone Check Dam ..... 11
6.1.9 Haybale Protection ..... 11
6.2 Additional Control Measures ..... 11
6.2.1 Dust Control ..... 11
6.2.2 Dewatering ..... 11
6.2.3 Washout Areas ..... 12
6.2.4 Off-site Vehicle Tracking & Dust Suppression ..... 12
6.2.5 Spill Prevention Control Plan ..... 12
6.2.6 Waste Disposal ..... 14
6.2.7 Post-Construction ..... 14

7.0 Maintenance of Post Construction Stormwater Management Facilities ..... 14
8.0 Inspections ..... 14
8.1 Inspection by Qualified Personnel ..... 14
8.1.1 Plan Implementation Inspections ..... 15
8.2 Routine Inspections ..... 15
9.0 Contractors ..... 16
9.1 Certification Statement ..... 17
10.0 Reporting and Record Keeping Requirements ..... 17
10.1 Record Keeping ..... 17
10.2 Reporting Requirements ..... 17
11.0 Notice of Termination ..... 17

**List of Figures**

Site Location Map (Figure 1)
FEMA Flood Map (Figure 2)
Soil Survey Map (Figure 3)
Inland Wetlands Map (Figure 4)
USGS Map (Figure 5)

**List of Drawings**

Existing Drainage Area Map (DA-1)
Proposed Drainage Area Map (DA-2)
Grading & Drainage Plans (2.20-2.24)
Soil Erosion & Sediment Control Plans (2.30-2.34)
Landscaping Plans (2.60-2.64)

**Appendix A**

Contractors Certification Statement

**Appendix B**

Site Inspection Checklist

**Appendix C**

Confirmation of Receipt of Application

**Appendix D**

Certificate of Registration

**Appendix E**

Copy of Notice of Termination Form

**Appendix F**

SWPCP Amendments

**Appendix G**

Engineering Report
Control Measures Narrative
Wetland and Watercourse Delineation & Report

# 1.0 INTRODUCTION

This Stormwater Pollution Control Plan (SWPCP) has been prepared in support of the Connecticut Department of Energy and Environmental Protection *General Permit for Stormwater and Dewatering Wastewaters from Construction Activities* (CTDEEP General Permit) for the properties located at 285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane in East Hartford, Connecticut. The property is owned by Jasko Zelman 1, LLC, and the contractor is to be determined. The overall site totals approximately 25.63± acres and is bound by Interstate-84 to the north, Forbes Street to the east, residential parcels, and commercial properties to the south, and commercial parcels to the west. The property is currently accessed via Nutmeg Lane to the south and from Forbes Street to the east, and currently is vacant with remains of previous bituminous pavement parking lots, concrete curbs, building remnants and grass lawn. Prior to 2020, the site was occupied with a ±79,120 square-foot footprint building with associated parking and landscape features. The purpose of the SWPCP is to minimize pollution caused by soil erosion and sedimentation during construction and to minimize stormwater pollution caused by the site after construction is completed.

This SWPCP has been developed in accordance with the requirements of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. This SWPCP is consistent with the 2024 Connecticut Stormwater Quality Manual, the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control and the requirements of the General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities, effective Dec. 31, 2020. A copy of the SWPCP shall be maintained on-site for the duration of construction activity.

# 2.0 Site Description

## 2.1 Construction Activity

The proposed site improvements consist of the demolition of the existing parking lot area and the construction of eight (8) apartment buildings with a total of 470 dwelling units and associated parking areas, access drives, and landscaping. Additionally, a clubhouse building, maintenance building, carports and garages will be constructed. Seven (7) of the proposed buildings will be constructed on the western portion of the site and one (1) building will be constructed on the east side. The redevelopment will provide a total of 872 parking spaces dedicated to the residential buildings. An existing access driveway into the parking lot from Nutmeg Lane is proposed to remain and service the development at the western side of the property. An additional full movement access point is proposed on Forbes Street for the eastern part of the site.

## 2.2 Site & Disturbance Areas

The total area of the project site is approximately 25.63 acres. The area of site disturbance is approximately 15.47 +/- acres.

### 2.3 Proposed Stormwater Runoff

At the completion of construction, the average curve number for the construction site will be approximately 90. Additional information, including a complete narrative, calculations. and figures describing the stormwater management system and approach can be found in the Engineering Report prepared by Solli Engineering, revised March 28, 2024, and included in Appendix G.

### 2.4 Receiving Waters

A portion of the existing runoff flows via overland flows or pipe flows through an existing stormwater system into a detention basin at the south side of the site and eventually into an existing drainage system at the southcentral part of the site. The remaining portion of the site discharges to the on-site stormwater wetlands area located in the central portion of the site.

Under proposed conditions, stormwater management will be accomplished via underground detention systems and surface infiltration/detention basins. Eventually, runoff will mimic existing conditions and will either flow into the existing drainage system or wetlands area.

### 2.5 Wetland Area

The mapped extent of the wetlands can be seen on Figure 4. There is a total of approximately 2.9 acres of wetlands on site. The wetland areas surrounding the proposed activities were delineated by a certified soil scientist, William Kenny, from William Kenny Associates, LLC. Three inland wetland and watercourse systems were identified and delineated. The first system, located in the central portion of the property, is a series of stormwater wetland basins. Another system, located in the eastern portion of the property, is a meadow wetland. The last system, which flows west to east, is a manmade drainage ditch (intermittent watercourse) connecting the two systems. Wetland soils are primarily poorly drained fine and formed from glaciolacustrine deposits or are forming from human altered deposits. The existing on-site wetlands will not be directly impacted as part of this excavation/filling operation. The Wetlands Report, prepared by William Kenny Associates, can be found within Appendix G.

## 3.0 Construction Sequencing

### 3.1 Sequence and Estimated Timetable of Major Activities

1) Contact Town of East Hartford Inland Wetland Agent, Zoning Official and Building Inspector at least forty-eight (48) hours prior to commencement of any demolition, construction, or regulated activity on this project.
2) Construct stone anti-tracking pads at construction entrances. Install silt sacks at catch basin inlets on offsite roads. Install all perimeter erosion & sediment controls per the plans. Clear only what is necessary to install perimeter controls.
3) Prepare temporary parking and storage areas.
4) Install the construction trailer (with support utilities; electric, water, etc.)

5) Halt all activities and contact the engineer of record to perform inspection and certification of best management practices (bmp's). General contractor shall schedule and conduct the storm water pre-construction meeting with the engineer, agencies, and ground-disturbing contractor before proceeding with construction.
6) Construct and stabilize sediment trap(s) with appropriate outfall structures (clear only those areas necessary to install traps).
7) Begin clearing and grubbing the site.
8) Site demolition and pavement removal.
9) Commence earthwork and install storm drainage systems. Install additional erosion and sediment controls as work progresses and continue storm drainage system construction. Topsoil and seed slopes which have achieved final site grading.
10) Construction staking of all building corners, utilities, access drives and parking areas.
11) Rough grading and filling of subgrades and slopes.
12) Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution.
13) Continue installation of storm drainage as subgrade elevations are achieved.
14) Building foundation subgrade and pad subgrade preparation.
15) Building foundation construction. Begin building superstructure.
16) Throughout construction, remove sediment from behind silt fences, hay bales and other erosion control devices, and from sediment traps as required. Removal shall be on a periodic basis (every significant rainfall of 0.25 inch or greater). Inspection of erosion control measures shall be on a weekly basis and after each rainfall of 0.50 inches or greater. Sediment collected shall be deposited and spread evenly upland on slopes during construction.
17) Throughout the construction sequence, periodic inspections shall be incorporated during the processing of this excavation and fill permit at specific milestones per town staff direction, and at least monthly inspections.
18) Complete storm drainage system.
19) Install site lighting.
20) Complete grading to subgrades and construct parking area subgrade.
21) Construct curbs and pavement structures.
22) Conduct fine grading.
23) Paving of all parking areas and driveways.
24) Final fine grading of slopes and non-paved areas.
25) Place 4” topsoil on slopes after final grading is completed. Fertilize seed and mulch. Seed mixture to be installed April 15th - June 1st or August 15th - October 1st only. Use erosion control blankets as required or ordered for slopes greater than 3:1 and as shown on landscape plans or erosion control plans. For temporary stabilization beyond seeding dates use annual rye at 4.0 lbs/1,000 s.f. fertilize

with 10-10-10 at 1.0 lbs. of nitrogen per 1,000 s.f. and lime at 100 lbs/1,000 s.f. (max.).

26) Install signing and pavement markings.
27) Clean storm drainage pipe structures, detention systems and water quality devices of debris and sediment.
28) Upon direction of the Town of East Hartford agent (after their final inspections have been performed and certificates of completion for inland wetlands and excavation/filing have been issued), erosion and sediment control measures shall be removed following stabilization of the site.

## 4.0 Post-Construction Control Measures

### 4.1 Sediment Removal Controls

In an effort to improve the quality of the stormwater discharged from the site, all runoff from roof and paved surfaces receives several levels of treatment. The proposed catch basins and yard drains will be equipped with sumps to trap some of the larger, heavier sediments for the stormwater runoff. The runoff will then be conveyed to the proposed underground detention systems, where it can be pre-treated through the use of hydrodynamic separators or isolator rows. Once in the underground system, the first-flush volume is forced to be infiltrated by elevating the outlet weirt above the elevation that will contain the entire Water Quality Volume for that drainage area within the system. In this way, an effective sediment removal rate of 100% is achieved, as no portion of the first flush volume is allowed to discharge. Refer to the Engineering Report & Control Measures Narrative in Appendix G for more details.

### 4.2 Velocity Dissipation

The discharge points of each proposed conveyance system will be equipped with rip-rap outlet protection. The proposed rip-rap will mitigate high velocity flows from the proposed flared end outlets from the stormwater quality basin on site.

## 5.0 Runoff Reduction and Low Impact Development Information

The stormwater management plan and design for the proposed development at 285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane is intended to be in compliance with the 2024 Connecticut Stormwater Quality Manual, while taking prevailing site conditions and practical considerations into account.

The proposed development results in a decrease in impervious area of approximately 0.02 acres when compared to existing conditions. The stormwater quality is proposed to be treated via the proposed underground detention systems, where it can be pre-treated through the use of hydrodynamic separators or isolator rows. These systems are designed to attenuate the proposed rate of runoff for the 2-, 5-, 10-, 25-, 50- and 100-year storm events to result in an overall peak

runoff discharge rate to be less than that of overall existing conditions and provide the required water quality volume below the lowest weir elevation on the outlet control structure.

A complete narrative, calculations and figures describing the stormwater management system and approach can be found in the Engineering Report included as Appendix G in this report.

## 6.0 Control Measures

All erosion and sediment control measures proposed as part of the project conforms to the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. It is important that the wetland areas adjacent to disturbed areas be protected during and after construction from sedimentation and pollutants to the maximum extent practicable. Silt fence, diversion swales, sediment traps and silt sacks are the main components of the proposed erosion and sedimentation control measures. No demolition debris shall be allowed to enter any resource area or to be stored beyond the limits of work. All demolition debris shall be removed from the site as soon as possible. Cut and fill slopes will be stabilized by vegetation, riprap, or erosion control geotextiles as soon as possible to minimize slope erosion.

### 6.1 Temporary Control Measures

#### 6.1.1 Construction Entrance (Anti-tracking Pad)

Construction Entrances are used to prevent the off-site transport of sediment by construction vehicles. Install the anti-tracking pads at the construction entrances. Ensure the pad is at least 50 feet long and graded so runoff does not enter Nutmeg Lane or Forbes Street. Replenish or replace aggregate if it becomes laden with sediment.

#### 6.1.2 Temporary Diversion Swales

Temporary Diversion Swales shall collect and convey runoff from exposed soil areas into temporary sediment traps. Install temporary diversion swales as needed to prevent scouring and erosion on site. Routinely check the diversions for functionality and address any eroded areas to ensure proper performance. Grass lined temporary diversion swales shall be seeded and stabilized accordingly. For stone lined temporary diversion swales, replenish or replace aggregate if it becomes laden with sediment.

#### 6.1.3 Temporary Sediment Basin

Temporary Sediment Basins are intended to intercept runoff and allow sediment to settle prior to its entry into the wetland. Inspect the temporary sediment basin at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater to determine conditions in the basin. Clean the sediment basin of sediments when sediment accumulation exceeds one half of the wet storage capacity of the basin or when the depth of available pool is reduced to 18 inches, whichever is achieved first. Sediment levels shall be marked within the sediment storage area by stakes or other means showing the threshold

elevation for sediment cleanout. Prior to the removal of sediments, dewater the basin through pumping or other means to the expose previously submerged sediments. Place removed sediment in the stockpile area as shown on the plans.

### 6.1.4 Temporary Sediment Trap

Temporary Sediment Traps collect and detain runoff to allow sediment to settle out prior to leaving the site for contributing drainage areas less than 5 acres. Install sediment traps at the low-lying locations and with the dimensions described on the plans. Inspect the temporary sediment trap at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater to determine conditions in the trap. Check the outlet to ensure that it is structurally sound and has not been damaged by erosion or construction equipment. Remove sediment when it has accumulated to no more than 50 percent of the design depth. Place removed sediment in the stockpile area as shown on plans. The temporary sediment trap may be removed after the contributing drainage area is stabilized.

### 6.1.5 Silt Fence

The purpose of a silt fence is to contain soil within the disturbed area. Install silt fence at the toe of the slope as shown on the plans. Leave space for maintenance between toe of slope and silt fence. Inspect the silt fence at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater to determine maintenance needs. When used for dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits or, if room allows, install a secondary silt fence up slope of the existing fence when sediment deposits reach approximately one half the height of the existing fence. Replace or repair the fence within 24 hours of observed failure.

### 6.1.6 Soil Stockpile Area

Locate stockpiles so that natural drainage is not obstructed. Attempt to maximize the distance of stockpiles from wetlands, watercourses, drainage ways, and steep slopes. When the stockpile is downgradient from a long slope, divert runoff water away from or around the stockpile. Install a geotextile silt fence or hay bale barrier around the stockpile area approximately 10 feet from the proposed toe of the slope. The side slopes of stockpiled material that is erodible should be no steeper than 2:1. Stockpiles that are not to be used within 30 days need to be seeded and mulched immediately after formation of the stockpile.

### 6.1.7 Temporary Seed and Mulch for Seed

Seed with a temporary seed mixture within 7 days after the suspension of grading work in disturbed areas where the suspension of work is expected to be more than 30 days but less than 1 year. Temporary seeding shall be conducive to the season. Seeded areas shall also be mulched in accordance with Mulch for Seed measures. Seeded areas should be inspected weekly for erosion and should be re-seeded, re-mulched and repaired if needed.

### 6.1.8 Stone Check Dam

Place the stone by hand or machine, making side slopes no steeper than 1:1 (i.e., the angle of repose) with a maximum height of 3 feet at the center of the check dam. The minimum height of the check dam shall be the flow depth of the drainageway, but it shall not exceed 3 feet in height at the center. Extend the stone check dam to the full width of the drainageway, plus 18 inches on each side leaving the height of the center of the stone check dam approximately 6 inches lower than the height of the outer edges. For temporary stone check dams, inspect stone check dams at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater to determine maintenance needs. Remove the sediment deposits when deposits reach approximately half the height of the check dam. Replace or repair the check dam within 24 hours of observed failure.

### 6.1.9 Haybale Protection

The haybale protection barrier shall be inspected once every seven calendar days or after every storm event producing 0.1 inches of rainfall or greater. Any necessary repairs shall be made immediately. Accumulated sediments shall be removed as required to keep the barrier functional. Deposits shall be removed when accumulations reach one-half the above ground height of the barrier.

## 6.2 Additional Control Measures

### 6.2.1 Dust Control

Limit the amount of exposed soil by phasing construction to reduce the area of land disturbed at any one time and by using, as soon as possible, stabilization measures. Maintain as much natural vegetation as is practicable. Identify and address sources of dust generated by construction activities. Limit construction traffic to predetermined routes. Paved surfaces require mechanical sweepers to remove soil that has been deposited or tracked onto the pavement. On unpaved travel ways and temporary haul roads, use road construction stabilization measures and/or water as needed to keep surface damp. Stationary sources of dust, such as rock crushers, use fine water sprays to control dust. If water is expected to be needed for dust control, identify the source of water in advance. Identify and address sources of wind generated dust. Provide special consideration to hill tops and long reaches of open ground where slopes may be exposed to high winds. Consider breaking up long reaches with temporary windbreaks constructed from brush piles, geotextile silt fences or hay bales. Plan on stabilizing slopes early.

### 6.2.2 Dewatering

If construction dewatering is required, it shall be conducted in accordance with CT DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities effective Dec. 31, 2020, modified

November 25, 2022. Discharges shall be directed into the sediment basin or other stormwater management areas unless otherwise approved by the engineer of record. Measures are indicated on the Soil Erosion and Sediment Control Plans (Sheets 2.30-2.34) included in the list of drawings. Temporary diversion ditches, plunge pools, and dewatering pits are to be installed as shown and as necessary during various phases of construction to control runoff until uphill areas are stabilized.

### 6.2.3 Washout Areas

Washout of applicators, containers, vehicles and equipment for concrete, paint and other materials shall be conducted in a designated washout area. There shall be no surface discharge of washout wastewaters from this area. Such washout shall be conducted: (1) outside of any buffers and at least 50 feet from any stream, wetland or other sensitive resource; or (2) in an entirely self-contained washout system. The permittee shall clearly flag off and designate areas to be used for washing and conduct such activities only in these areas. The permittee shall direct all wash water into a container or pit designed such that no overflows can occur during rainfall or after snowmelt. In addition, dumping of liquid wastes in storm sewers is prohibited. The permittee shall move and dispose of hardened concrete waste consistent with practices developed for the "Waste Disposal" section. At least once per week, the permittee must inspect any containers or pits used for washout to ensure structural integrity, adequate holding capacity, and to check for leaks or overflows. If there are signs of leaks, holes or overflows in the containers or pits that could lead to a discharge, the permittee shall repair them prior to further use. For concrete washout areas, the permittee shall remove hardened concrete waste whenever the hardened concrete has accumulated to a height of half of the container or pit or as necessary to avoid overflows.

### 6.2.4 Off-site Vehicle Tracking & Dust Suppression

Off-site vehicle tracking of sediments and the generation of dust shall be minimized. Wet dust suppression shall be used, in accordance with section 22a-174-18(c) of the Regulations of Connecticut State Agencies, for any construction activity that causes airborne particulates. The volume of water sprayed for controlling dust shall be minimized so as to prevent the runoff of water. No discharge of dust control water shall contain a visible oil sheen, floating solids, visible discoloration, or foaming agents or cause a visible sheen, floating solids, visible discoloration, or foaming in any receiving waters.

### 6.2.5 Spill Prevention Control Plan

Certain precautions are necessary to store petroleum materials, refuel and contain and properly clean up any inadvertent fuel or petroleum (i.e. oil, hydraulic fluid, etc.) spill to avoid possible impact to nearby habitats.

A spill containment kit consisting of a sufficient supply of absorbent pads and absorbent material will be maintained by the contractor at the construction site throughout the duration of the project. In addition, a waste drum will be kept on site to contain any used absorbent pads/material for proper and timely disposal off site in accordance with applicable local, state and federal laws.

The following petroleum and hazardous materials storage and refueling restrictions and spill response procedures will be adhered to by the Contractor.

1. Petroleum and Hazardous Materials Storage and Refueling
    a. Refueling of vehicles or machinery shall occur within the Limits of Disturbance ONLY and shall take place on an impervious pad with secondary containment designed to contain fuels. This area must be a minimum of 100 feet from wetlands or watercourses.
    b. Any fuel or hazardous materials that must be kept on site shall be stored on an impervious surface utilizing secondary containment a minimum of 100 feet from wetlands or watercourses.
2. Initial Spill Response Procedures
    a. Stop operations and shut off equipment.
    b. Remove any sources of spark or flame.
    c. Contain the source of the spill.
    d. Determine the approximate volume of the spill.
    e. Identify the location of the natural flow paths to prevent the release of the spill to sensitive nearby waterways or wetlands.
    f. Ensure that fellow workers are notified of the spill.
3. Spill Clean Up & Containment
    a. Obtain spill response materials from the on-site spill response kit. Place absorbent materials directly on the release area.
    b. Limit the spread of the spill by placing absorbent materials around the perimeter of the spill.
    c. Isolate and eliminate the spill source.
    d. Contact the appropriate local, state and/or federal agencies, as necessary. In the event of a spill, the Contractor will use Clean Harbors (800) 645-8265 for cleanup.
    e. Contact a disposal company to properly dispose of contaminated materials in accordance with all local, state and federal regulations.
4. Reporting
    a. Complete an incident report.

Submit a completed incident report to the appropriate Connecticut Department of Energy & Environmental Protection, Town of Monroe Agent and other applicable local, state and federal officials.

### 6.2.6 Waste Disposal

Construction site waste shall be properly managed and disposed of during the entire construction period. Additionally;

- A waste collection area will be designated. The selected area will minimize truck travel through the site and will not drain directly to the adjacent wetlands.
- Wast collection shall be scheduled regularly to prevent the containers from overfilling.
- Spills shall be cleaned up immediately.
- Defective containers that may cause leaks or spills will be identified through regular inspection. Any found to be defective will be repaired or replaced immediately.
- Any stockpiling of materials should be confined to the designated area as defined by the engineer.

### 6.2.7 Post-Construction

Upon completion of construction activities and stabilization of the site, the site shall be cleaned of construction sediment or debris and any remaining silt fence shall be removed prior to acceptance of the Project. Sediment shall be properly disposed of in accordance with all applicable laws, regulations and guidelines.

## 7.0 Maintenance of Post Construction Stormwater Management Facilities

Maintenance of the stormwater management facilities shall follow the guidelines of the 2024 Connecticut Stormwater Quality Manual. Sediment levels in the catch basin sumps, hydrodynamic separators, Underground Detention System Isolator rows and Stormwater Quality Basin shall also be monitored annually and accumulated sediment shall be removed when sediment depths become greater than 12 inches. Plantings within the basin shall be inspected semi-annually, and any invasive species identified shall be removed.

## 8.0 Inspections

### 8.1 Inspection by Qualified Personnel

All construction activities submitting a registration for this general permit shall be inspected initially for Plan implementation and then weekly for routine inspections. Inspectors from the DEEP and the appropriate District may inspect the site for compliance with this general permit at any time construction activities are ongoing and upon completion of construction activities to verify the final stabilization of the site and/or the installation of post-construction stormwater management measures pursuant to Section 6(a) of the general permit.

### 8.1.1 Plan Implementation Inspections

Within the first 30 days following commencement of the construction activity on the site, the permittee shall contact: (1) the appropriate District; or (2) a qualified soil erosion and sediment control professional of a qualified professional engineer to inspect the site. For each phase of construction, the site shall be inspected at least once within the first thirty (30) days of construction activity and at least three (3) times, with seven (7) of more days between inspections, within the first ninety (90) days of construction. For sites not inspected by District personnel, the inspector shall be someone who:

a. Is not an employee, as defined by the Internal Revenue Service in the Internal Revenue code of 1986, of the registrant, and

b. Has not engaged in any activities associated with the preparation, planning, designing, or engineering of such plan for soil erosion and sediment control or plan for engineered stormwater management systems on behalf of such registrant, and

c. Is not under the same employer as any person who engaged in any activities associated with the preparation, planning, designing, or engineering of such plans and specifications for soil erosion and sediment control or plans and specifications for engineered stormwater management systems on behalf of such registrant, and

d. Has no ownership interest of any kind in the project for which the registration is being submitted.

The permittee may use, if they wish, the same person(s) that provided the Plan Review Certification.

## 8.2 Routine Inspections

The permittee shall routinely inspect the site for compliance with the general permit and the Plan for the site until a Notice of Termination has been submitted. Inspection procedures for these routine inspections shall be addressed and implemented in the following manner. The permittee shall maintain a rain gauge on-site to document rainfall amounts. At least once a week and within 24 hours of the end of a storm that generates a discharge, a qualified inspector (provided by the permittee). As defined in the "Definitions" section (Section 2) of the general permit, shall inspect, at a minimum, the following:

-Disturbed areas of the construction activity that have not been finally stabilized
-All erosion and sedimentation control measures
-All structural control measures
-Soil stockpile areas
-Washout areas and locations where vehicles enter or exit the site
-Sediment traps and basins

These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to the receiving waters. Locations where vehicles enter or exit the site shall also be inspected for evidence of off-site sediment tracking. For storms that end on a weekend, holiday or other time after which normal working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For storms of less than 0.5 inches, an inspection shall occur immediately upon the start of the subsequent normal working hours. In areas of the site

where temporary stabilization has been implemented, a routine inspection shall be conducted at least weekly until final stabilization has been achieved. For all projects, once the site has achieved final stabilization for at least one full growing season (April – October) in the year following the end of construction, the Permittee shall have the site inspected by a qualified inspector to confirm such stabilization is maintained. The Permittee shall indicate compliance with this requirement on the Notice of Termination form.

The qualified inspector(s) shall evaluate the effectiveness of erosion and sediment controls, structural controls, stabilization practices, and any other controls implemented to prevent pollution and determine if it is necessary to install, maintain, or repair such controls and/or practices to improve the quality of stormwater discharges.

The qualified inspector conducting routine inspections shall prepare a report of each inspection. Each such report shall be retained as part of the Plan. A copy of each inspection report shall be submitted electronically in accordance with Section 5(c)(2) of the general permit. This report shall summarize: the scope of the inspection; name(s) and qualifications of personnel conducting the inspection; the date(s) of the inspection; weather conditions including precipitation information; major observations relating to erosion and sediment controls and the implementation of the Plan; a description of the stormwater discharge(s) from the site; and any water quality monitoring performed during the inspection. The report shall be signed by the permittee or his/her authorized representative in accordance with the "Certification of Documents," see Section 5(h) of this general permit. The report shall include a statement that, in the judgment of the qualified inspector(s) conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the Plan and permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance. Non-engineered corrective actions (as identified in the Guidelines) shall be implemented on site within 24 hours and incorporated into a revised Plan within three (3) calendar days of the date of inspection unless another schedule is specified in the Guidelines. Engineered corrective actions (as identified in the Guidelines) shall be implemented on site within seven (7) calendar days and incorporated into a revised Plan within ten (10) calendar days of the date of inspection unless another schedule is specified in the Guidelines or is approved by the commissioner. During the period in which any corrective actions are being developed and have not yet been fully implemented, interim measures shall be implemented to minimize the potential for the discharge of pollutants from the site.

## 9.0 Contractors

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

### 9.1 Certification Statement

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

## 10.0 Reporting and Record Keeping Requirements

### 10.1 Record Keeping

A. For a period of at least five years from the date the Notice of Termination is accepted by the Commissioner, the permittee shall retain copies of the Plan and all reports required by this general permit, and records of all data used to complete the registration for this general permit, unless the commissioner specifies another time period in writing.

B. The permittee shall retain an updated copy of the Plan required by this general permit at the construction site from the date construction is initiated at the site until the date construction at the site is completed.

C. Inspection records must be retained as part of the Plan for a period of five (5) years after the date of inspection. In addition, the following inspection reports shall be kept on-site with the Plan and shall be submitted to the Commissioner upon request:
    a. Plan Implementation Inspections conducted in accordance with Section 5(b)(4)(A) and recorded on checklist forms prepared pursuant to Section 5(b)(1)(B)(vi)(a).
    b. Routine Inspections conducted in accordance with Section 5(b)(4)(B) and recorded on checklist forms prepared pursuant to Section 5(b)(1)(B)(vi)(b).

D. Plan modifications made pursuant to Section 5(b)(5) of this general permit and any documentation associated with such modification shall be kept on-site with the Plan.

### 10.2 Reporting Requirements

The reports specified in this section shall be provided to the Commissioner within the timeframe specified in any request by the Commissioner, and if no timeframe is specified, no later than thirty (30) days after the date of any such request. If requested by the Commissioner, the reports shall be submitted to the Commissioner using NetDMR in the manner specified in subsection (B)

## 11.0 Notice of Termination

At the completion of a construction project the Permittee shall submit a Notice of Termination in accordance with the requirements of this section. A project shall be considered complete after all postconstruction measures are installed, cleaned, functioning, and inspected and the site has achieved final stabilization and inspection (see Sections 5(b)(4)(C) & (D) of the general permit,

respectively) for at least one full growing season (i.e. April through October) in the year following the cessation of construction activities. Final stabilization must be achieved for all phases of construction before a Notice of Termination may be submitted. A copy of the Notice of Termination form can be found in Appendix E.

**LIST OF FIGURES**

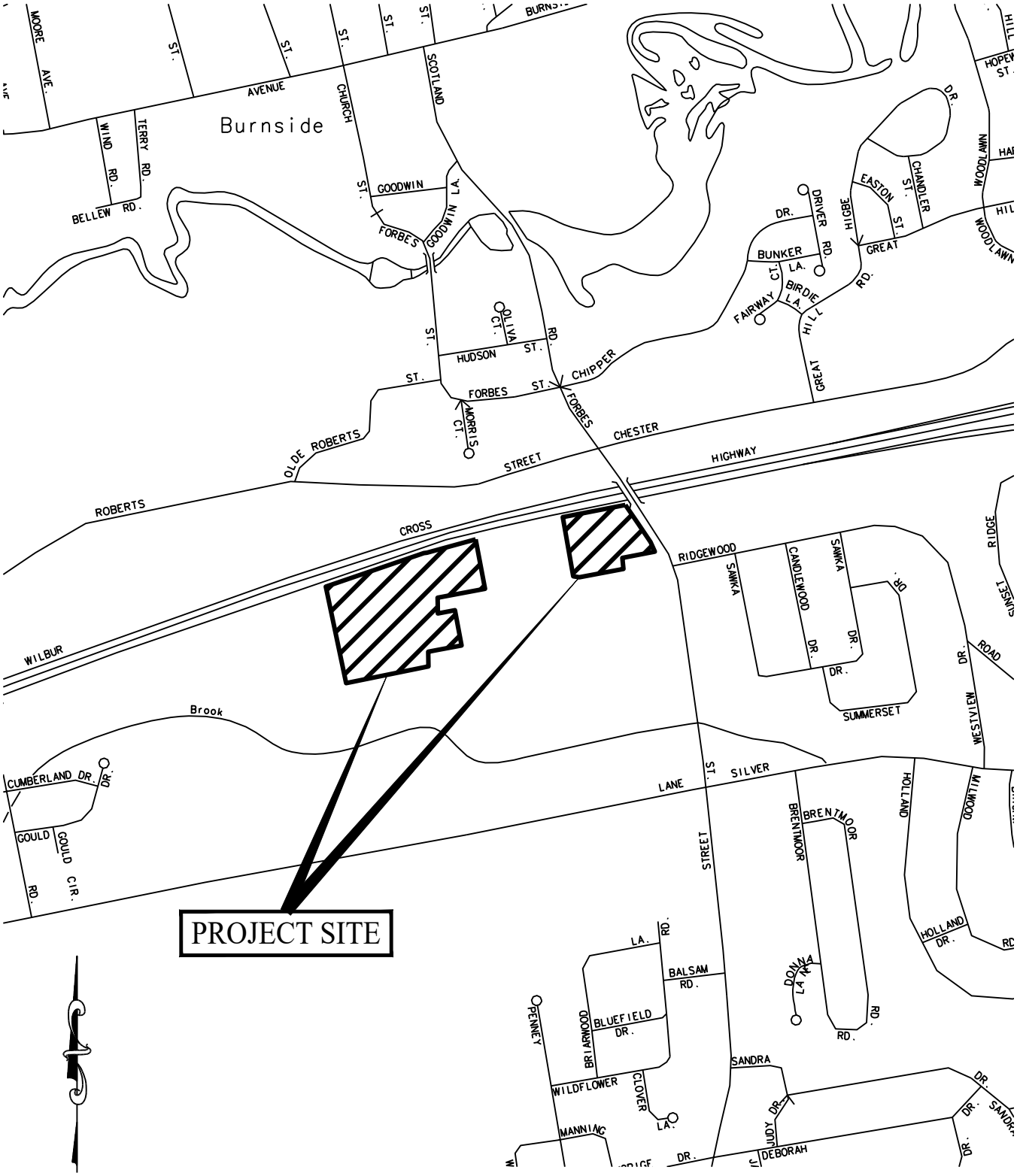
Site Location Map (Figure 1)

FEMA Flood Map (Figure 2)

Soil Survey Map (Figure 3)

Inland Wetlands Map (Figure 4)

USGS Map (Figure 5)




NOTE: BASE MAP INFORMATION TAKEN FROM CTDOT TRU MAP NUMBER 042

1,000 0 500 1,000

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
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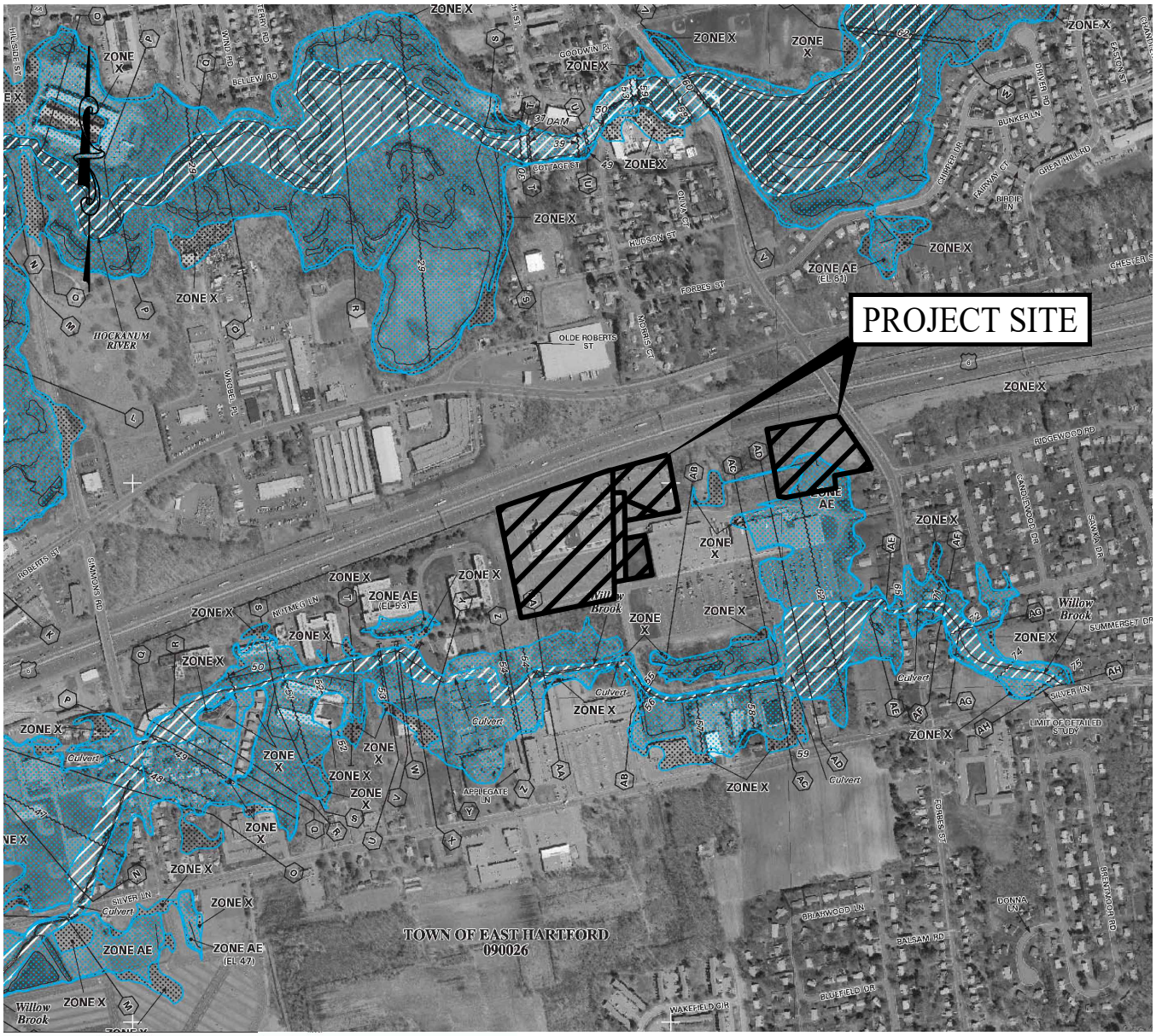
# SITE LOCATION MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 1,000' |
| Figure: | 1 |




## LEGEND

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT**

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER AREAS

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

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

513 — Base Flood Elevation line and value; elevation in ft*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in ft*

*Referenced to the North American Vertical Datum of 1988

Cross Section Line

Transect Line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4276000M — 1000-meter Universal Transverse Mercator grid values, zone 18

600000 FT — 5000-foot grid ticks

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel.)

M1.5 — River Mile

NOTE: BASE MAP INFORMATION TAKEN FROM FIRM FLOOD INSURANCE MAP, HARTFORD COUNTY, CONNECITCUT, PANEL NUMBER 388, MAP NUMBER 09003C0388F, REVISED SEPTEMBER 26, 2008.

1,000 0 500 1,000

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# FEMA FLOOD MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 1,000' |
| Figure: | 2 |

| Map unit symbol | Map unit name | Rating |
|---|---|---|
| 28A | Elmridge fine sandy loam, 0 to 3 percent slopes | C |
| 36B | Windsor loamy sand, 3 to 8 percent slopes | A |
| 306 | Udorthents-Urban land complex | B |
| 307 | Urban land | D |
| 701A | Ninigret fine sandy loam, 0 to 3 percent slopes | C |

NOTE:
SOIL MAP INFORMATION TAKEN FROM THE NATURAL RESOURCES CONSERVATION SERVICE, URL: http://websoilsurvey.nrcs.usda.gov

400 0 200 400

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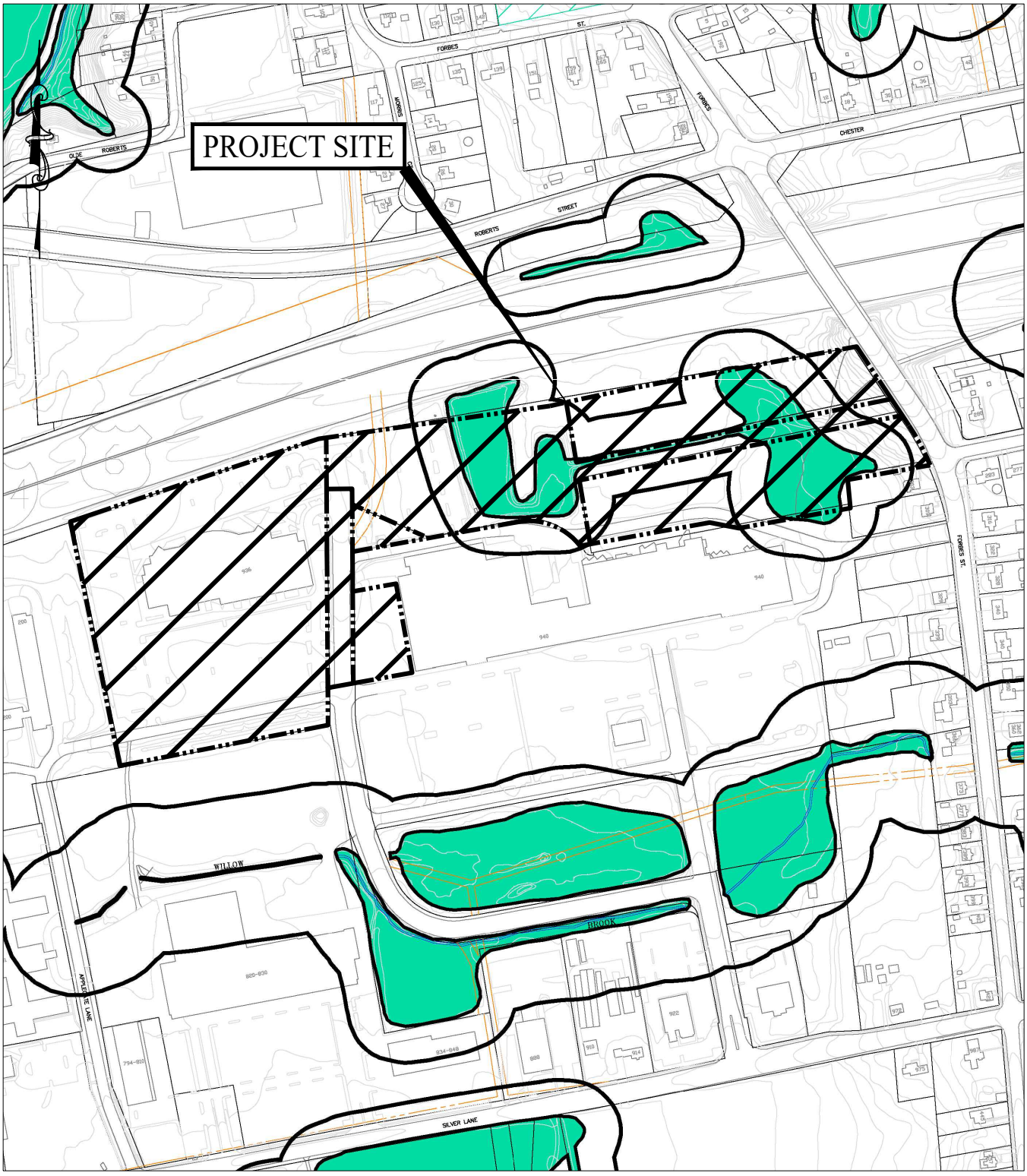
# SOIL SURVEY MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 400' |
| Figure: | 3 |




NOTE: BASE MAP INFORMATION TAKEN FROM INLAND WETLANDS MAPPING FROM THE TOWN OF EAST HARTFORD, MAP NUMBERS 12 & 17

400 0 400 800

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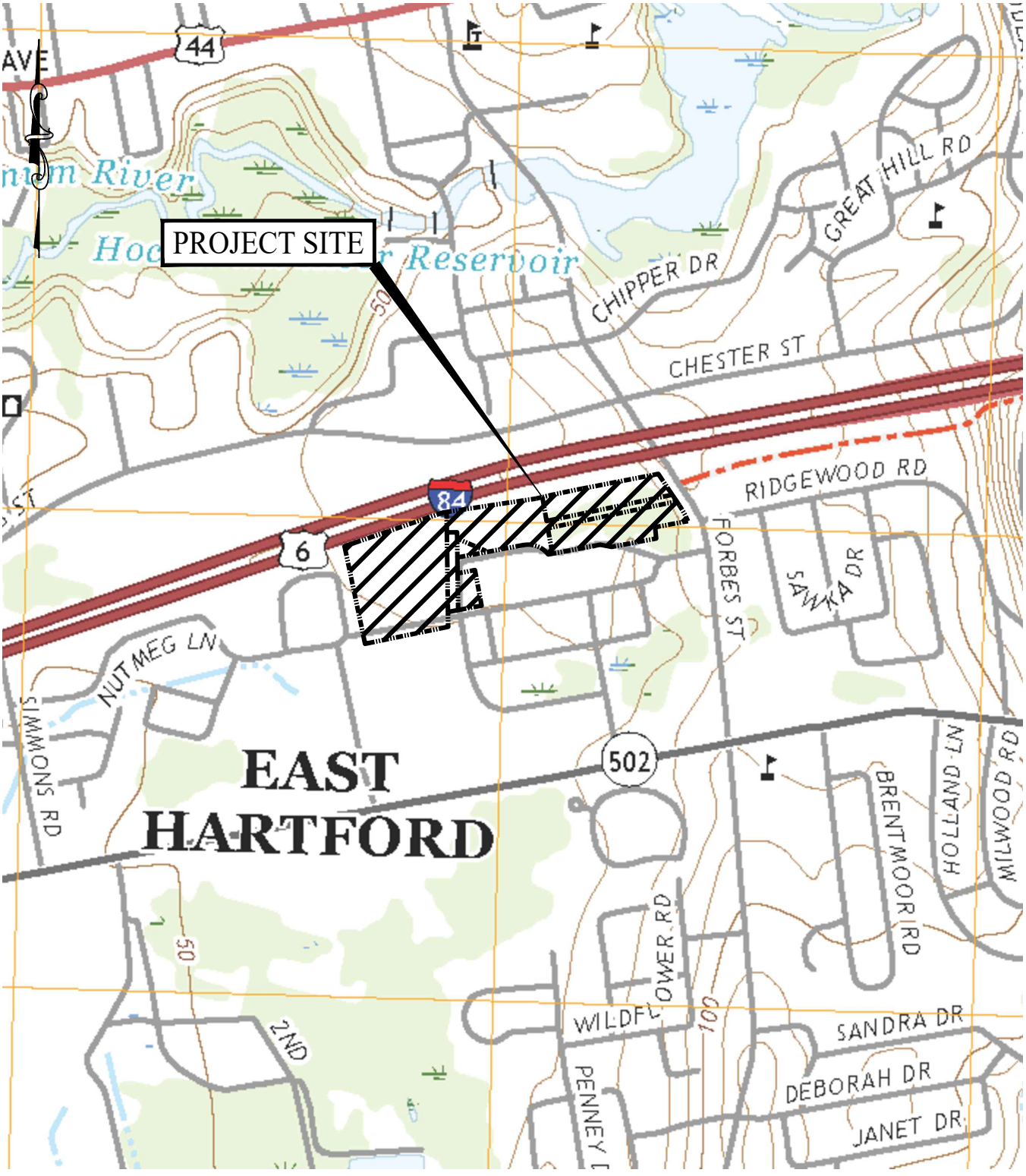
# INLAND WETLANDS MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 400' |
| Figure: | 4 |




NOTE: BASE MAP INFORMATION TAKEN FROM UNITED STATES GEOLOGICAL SURVEY (MANCHESTER, CONNECTICUT QUADRANGLE 7.5 MINUTE SERIES; 2021)

1,000 0 500 1,000

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# USGS MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 1,000' |
| Figure: | 5 |

**LIST OF DRAWINGS**

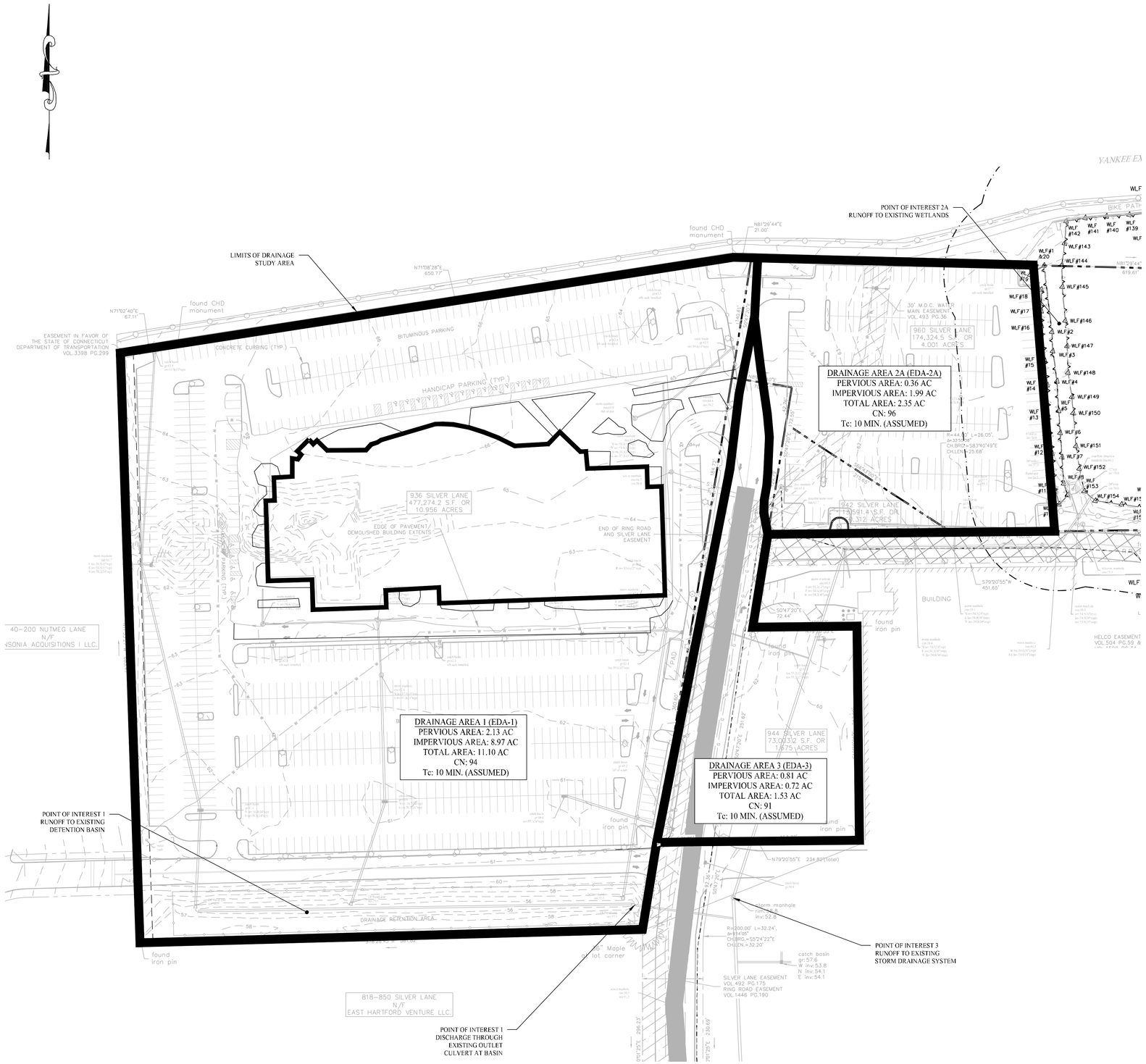
Existing Drainage Area Map (DA-1)

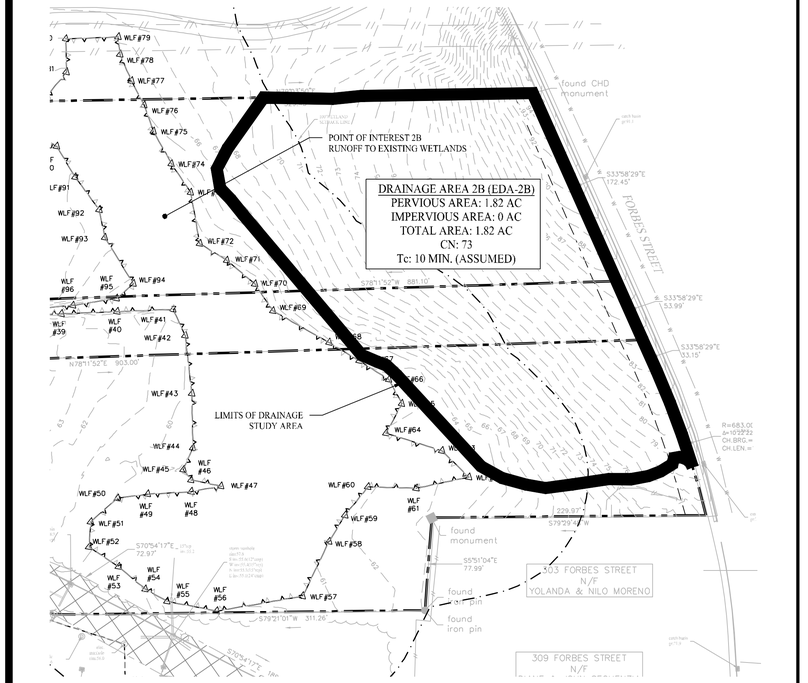
Proposed Drainage Area Map (DA-2)

Grading & Drainage Plans (2.20-2.24)

Soil Erosion & Sediment Control Plans (2.30-2.34)

Landscaping Plans (2.60-2.64)




## LEGEND

- PROPERTY LINE
- LIMIT OF DRAINAGE AREA
- SOIL TYPE BOUNDARY
- 51B — SOIL TYPE

| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 60 0 60 120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| | |
|---|---|
| Drawn By: | ABS |
| Checked By: | ARM |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 12/16/23 |
| Scale: | 1" = 60' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

# CONCOURSE PARK 309
SILVER LANE
EAST HARTFORD, CONNECTICUT

| Sheet Title: | Sheet #: |
|---|---|
| EXISTING DRAINAGE AREA MAP | EDA-1 |


Mar 29, 2024 - 11:26am chendry
X:\SE Files\Project Data\2020\2010501 - Silver Lane - East Hartford, CT\Cadd Data\SWPDP Set\2010501-Drainage Figure - Existing Conditions.dwg

PROPOSED DRAINAGE AREA 1A (PDA-1A)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 3.43 AC
OPEN SPACE (GOOD) = 1.11 AC
TOTAL DRAINAGE AREA = 4.54 AC
CURVE NUMBER = 94
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 2A (PDA-2A)
HYDROLOGIC SOIL GROUP A,C,& D
IMPERVIOUS AREA = 2.85 AC
OPEN SPACE (GOOD, A) = 0.10 AC
OPEN SPACE (GOOD, C) = 0.17 AC
OPEN SPACE (GOOD, D) = 0.20 AC
TOTAL DRAINAGE AREA = 3.31 AC
CURVE NUMBER = 94
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 1B (PDA-1B)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 2.38 AC
OPEN SPACE (GOOD, D) = 0.42 AC
TOTAL DRAINAGE AREA = 2.80 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 1C (PDA-1C)
HYDROLOGIC SOIL GROUP B & D
IMPERVIOUS AREA = 1.10 AC
OPEN SPACE (GOOD, B) = 0.05 AC
OPEN SPACE (GOOD, D) = 0.35 AC
TOTAL DRAINAGE AREA = 1.50 AC
CURVE NUMBER = 93
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 1D (PDA-1D)
HYDROLOGIC SOIL GROUP B
IMPERVIOUS AREA = 0.36 AC
OPEN SPACE (GOOD) = 0.34 AC
TOTAL DRAINAGE AREA = 0.70 AC
CURVE NUMBER = 80
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 2B (PDA-2B)
HYDROLOGIC SOIL GROUP B
IMPERVIOUS AREA = 0.91 AC
OPEN SPACE (GOOD, B) = 0.67 AC
TOTAL DRAINAGE AREA = 1.58 AC
CURVE NUMBER = 82
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 3A (PDA-3A)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 0.90 AC
OPEN SPACE (GOOD) = 0.16 AC
TOTAL DRAINAGE AREA = 1.06 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.

PROPOSED DRAINAGE AREA 3B (PDA-3B)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 0.55 AC
OPEN SPACE (GOOD) = 0.09 AC
TOTAL DRAINAGE AREA = 0.64 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.

936 SILVER LANE
477,274.2 S.F. OR
10.956 ACRES

960 SILVER LANE
174,324.5 S.F. OR
4.001 ACRES

942 SILVER LANE
13,591.4 S.F. OR
0.312 ACRES

944 SILVER LANE
73,003.2 S.F. OR
1.675 ACRES

40-200 NUTMEG LANE
N/F
ANSONIA ACQUISITIONS I LLC.

818-850 SILVER LANE
N/F
EAST HARTFORD VENTURE LLC.

503 FORBES STREET
N/F
YOLANDA & NILO MORENO

309 FORBES STREET
N/F

FORBES STREET

YANKEE EX

BUILDING

found CHD monument

found iron pin

36" Maple at lot corner

SILVER LANE EASEMENT
VOL.492 PG.175
RING ROAD EASEMENT
VOL.1446 PG.190

HELCO EASEMENT
VOL.504 PG.59 &

EASEMENT IN FAVOR OF
THE STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
VOL.3398 PG.299

LEGEND

PROPERTY LINE

LIMIT OF DRAINAGE AREA

SOIL TYPE BOUNDARY

51B SOIL TYPE

| Rev. #: | Date | Description |
|---|---|---|
| 1 | 04/12/23 | Revised Drainage Areas |

Graphic Scale: 60 0 60 120


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| | |
|---|---|
| Drawn By: | ABS |
| Checked By: | ARM |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 12/16/23 |
| Scale: | 1" = 60' |

STATE OF CONNECTICUT KEVIN M. SOLLI 25759 REGISTERED PROFESSIONAL ENGINEER
Kevin Solli, P.E.
CT 25759

Project:

CONCOURSE PARK 309
SILVER LANE
EAST HARTFORD, CONNECTICUT

Sheet Title: PROPOSED DRAINAGE AREA MAP

Sheet #: PDA-1

Mar. 29, 2024 - 11:27pm chendry
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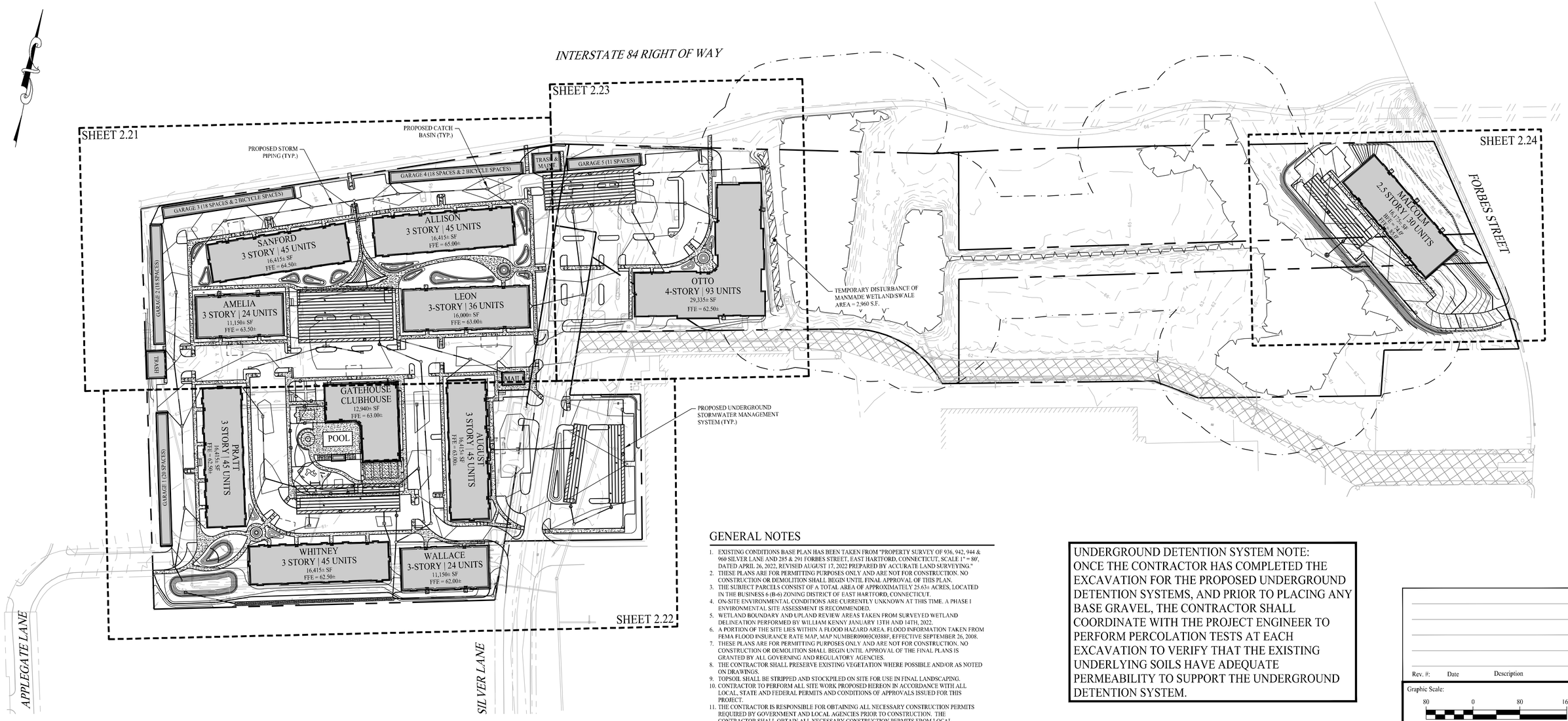


## GENERAL NOTES

1. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED AUGUST 17, 2022 PREPARED BY ACCURATE LAND SURVEYING."
2. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL FINAL APPROVAL OF THIS PLAN.
3. THE SUBJECT PARCELS CONSIST OF A TOTAL AREA OF APPROXIMATELY 25.63± ACRES, LOCATED IN THE BUSINESS 6 (B-6) ZONING DISTRICT OF EAST HARTFORD, CONNECTICUT.
4. ON-SITE ENVIRONMENTAL CONDITIONS ARE CURRENTLY UNKNOWN AT THIS TIME. A PHASE I ENVIRONMENTAL SITE ASSESSMENT IS RECOMMENDED.
5. WETLAND BOUNDARY AND UPLAND REVIEW AREAS TAKEN FROM SURVEYED WETLAND DELINEATION PERFORMED BY WILLIAM KENNY JANUARY 13TH AND 14TH, 2022.
6. A PORTION OF THE SITE LIES WITHIN A FLOOD HAZARD AREA. FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP, MAP NUMBER09003C0388F, EFFECTIVE SEPTEMBER 26, 2008.
7. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
8. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS.
9. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR USE IN FINAL LANDSCAPING.
10. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.
11. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY GOVERNMENT AND LOCAL AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY CONSTRUCTION PERMITS FROM LOCAL GOVERNING AUTHORITIES AND STATE REQUIRED TO PERFORM ALL REQUIRED WORK, INCLUDING FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES. THE CONTRACTOR SHALL POST ALL BONDS, EXCEPT CONNECTICUT DOT ENCROACHMENT PERMIT BOND, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
12. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
13. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
14. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC DEVICES FOR PROTECTION OF VEHICLES AND PEDESTRIANS CONSISTING OF DRUMS, BARRIERS, SIGNS, LIGHTS, FENCES AND UNIFORMED TRAFFIC CONTROLLERS AS REQUIRED, ORDERED BY THE ENGINEER OR REQUIRED BY THE STATE AND LOCAL GOVERNING AUTHORITIES.
15. ALL DISTURBANCE INCURRED TO TOWN OR STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER.
16. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT.
17. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR WETLANDS IN ACCORDANCE WITH THE REGULATIONS OF THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
18. ALL PIPE LENGTHS ARE HORIZONTAL DISTANCES AND ARE APPROXIMATE.
19. GRADING CONTRACTOR SHALL RESTORE TO GRADE AND COMPACTION ALL AREAS DISTURBED BY BUILDING CONSTRUCTION PRIOR TO ABSE AND PAVING OPERATIONS COMMENCING.
20. PROPOSED GRADING/EVALUATIONS ARE SCHEMATIC/CONCEPTUAL IN NATURE AND SUBJECT TO FURTHER REINFORCEMENT AS THE DESIGN IS FINALIZED.

UNDERGROUND DETENTION SYSTEM NOTE:
ONCE THE CONTRACTOR HAS COMPLETED THE EXCAVATION FOR THE PROPOSED UNDERGROUND DETENTION SYSTEMS, AND PRIOR TO PLACING ANY BASE GRAVEL, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO PERFORM PERCOLATION TESTS AT EACH EXCAVATION TO VERIFY THAT THE EXISTING UNDERLYING SOILS HAVE ADEQUATE PERMEABILITY TO SUPPORT THE UNDERGROUND DETENTION SYSTEM.

## LEGEND

- PROPERTY LINE
- ADJOINING LOT LINE
- 420 — MAJOR CONTOURS
- 421 — MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 420 — CONTOUR LABEL
- 568.85 — PROPOSED SPOT ELEVATION
- 568.85 — EXISTING SPOT ELEVATION
- RETAINING WALL / GRAVITY OR SEGMENTAL BLOCK
- STORM DRAIN PIPE
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- TP-103 — TEST PIT
- FLOW ARROW

## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| BC | BOTTOM OF CURB |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| DMH | DRAINAGE MANHOLE |
| EX | EXISTING |
| FES | FLARED END SECTION |
| FFE | FINISHED FLOOR ELEVATION |
| HDPE | HIGH-DENSITY POLYETHYLENE PIPE |
| INV | INVERT |
| LF | LINEAR FEET |
| PR | PROPOSED |
| RCP | REINFORCED CONCRETE PIPE |
| S | SLOPE |
| TC | TOP OF CURB |
| TF | TOP OF FRAME |
| TW | TOP OF WALL |
| TYP | TYPICAL |

| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 80 0 80 160

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11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695

| | |
|---|---|
| Drawn By: | ARM |
| Checked By: | RPP |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 80' |

Kevin M. Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: OVERALL GRADING & DRAINAGE PLAN

Sheet #: 2.20

Mar. 29, 2024 - 11:27am chendry
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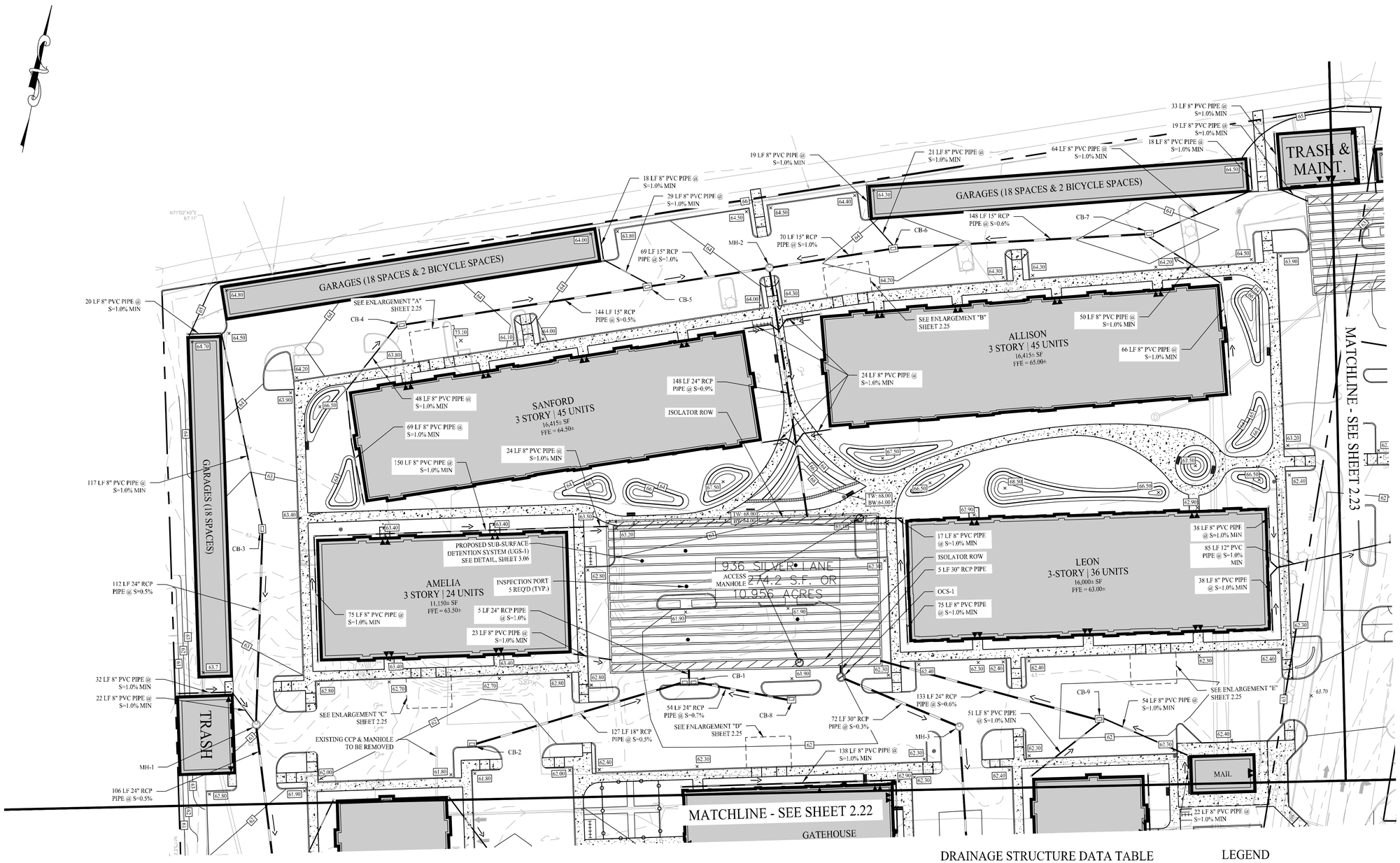


UNDERGROUND DETENTION SYSTEM NOTE:
ONCE THE CONTRACTOR HAS COMPLETED THE EXCAVATION FOR THE PROPOSED UNDERGROUND DETENTION SYSTEMS, AND PRIOR TO PLACING ANY BASE GRAVEL, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO PERFORM PERCOLATION TESTS AT EACH EXCAVATION TO VERIFY THAT THE EXISTING UNDERLYING SOILS HAVE ADEQUATE PERMEABILITY TO SUPPORT THE UNDERGROUND DETENTION SYSTEM.

## DRAINAGE STRUCTURE DATA TABLE

**CB-1**
DOUBLE TYPE "C"
TF = 61.30
INV(W) = 57.60
INV(E) = 57.60
INV(N) = 57.50

**CB-2**
TYPE "C"
TF = 61.50
INV(E) = 58.14

**CB-3**
TYPE "CL"
TF = 62.00
INV(S) = 59.25
INV (N) = 59.35

**CB-4**
TYPE "CL"
TF = 63.40
INV(W) = 60.35
INV(E) = 60.25

**CB-5**
TYPE "CL"
TF = 63.00
INV(W) = 59.53
INV(E) = 59.43
INV(N) = 59.53

**CB-6**
TYPE "CL"
TF = 63.50
INV(E) = 59.54
INV(W) = 59.44
INV(N) = 59.54

**CB-7**
TYPE "CL"
TF = 63.50
INV(E) = 60.50
INV(S) = 60.50
INV(W) = 60.40

**CB-8**
TYPE "C"
TF = 61.20
INV(W) = 58.00

**CB-9**
TYPE "CL"
TF = 61.30
INV(W) = 58.30
INV(E) = 58.40
INV(S) = 58.40

**MH-1**
TF = 63.20
INV = 58.69

**MH-2**
TF = 64.20
INV = 58.74

**MH-3**
TF = 62.30
INV = 56.98

**OCS-1**
TF = 61.40
INV (IN) = 57.20
WEIR ELEV. = 58.25
INV (OUT) = 57.20

**UGS-1**
391 STORMTECH DC-780 CHAMBERS
TOP OF STONE = 60.45
TOP OF CHAMBER = 59.95
BOTTOM OF CHAMBER = 57.45
BOTTOM STONE ELEVATION = 56.45

## LEGEND

- PROPERTY LINE
- ADJOINING LOT LINE
- MAJOR CONTOURS (420)
- MINOR CONTOURS (421)
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CONTOUR LABEL (420)
- PROPOSED SPOT ELEVATION (568.85)
- EXISTING SPOT ELEVATION
- RETAINING WALL / GRAVITY OR SEGMENTAL BLOCK
- STORM DRAIN PIPE
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- TEST PIT (TP-103)
- FLOW ARROW

## GENERAL NOTES

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2. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED AUGUST 17, 2022 PREPARED BY ACCURATE LAND SURVEYING."
3. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.

## GRADING AND UTILITIES NOTES

1. THIS DRAWING IS INTENDED TO DESCRIBE GRADING AND DRAINAGE ONLY. REFER TO SITE PLAN FOR GENERAL INFORMATION, AND DETAIL SHEETS FOR DETAILS.
2. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
3. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS. REFER TO EROSION CONTROL PLAN FOR LIMIT OF DISTURBANCE AND EROSION CONTROL NOTES.
4. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY GOVERNMENT AND LOCAL AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY CONSTRUCTION PERMITS FROM THE CITY OF EAST HARTFORD REQUIRED TO PERFORM ALL REQUIRED WORK, INCLUDING FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
5. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR USE IN FINAL LANDSCAPING.
6. THE CONTRACTOR SHALL COMPACT FILL IN 12" MAXIMUM LIFTS UNDER ALL PARKING, BUILDING, AND DRIVE AREAS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 (MODIFIED PROCTOR TEST), OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
7. ALL DISTURBANCE INCURRED TO CITY OR STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF EAST HARTFORD AUTHORITY.
8. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT.
9. ALL PIPE LENGTHS ARE HORIZONTAL DISTANCES AND ARE APPROXIMATE.
10. GRADING CONTRACTOR SHALL RESTORE TO GRADE AND COMPACTION ALL AREAS DISTURBED BY BUILDING CONSTRUCTION PRIOR TO BASE AND PAVING OPERATIONS COMMENCING.
11. ALL EXISTING UTILITY FRAME AND GRATES SHALL BE ADJUSTED TO PROPOSED GRADED
12. ALL BUILDINGS ARE TO BE CONNECTED TO THE PROPOSED DRAINAGE SYSTEM, CONTRACTOR TO VERIFY ROOF DRAINAGE LOCATIONS WITH ARCHITECTURAL/MEP PLANS

## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| BC | BOTTOM OF CURB |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| DMH | DRAINAGE MANHOLE |
| EX | EXISTING |
| FES | FLARED END SECTION |
| FFE | FINISHED FLOOR ELEVATION |
| HDPE | HIGH-DENSITY POLYETHYLENE PIPE |
| INV | INVERT |
| LF | LINEAR FEET |
| PR | PROPOSED |
| RCP | REINFORCED CONCRETE PIPE |
| S | SLOPE |
| TC | TOP OF CURB |
| TF | TOP OF FRAME |
| TW | TOP OF WALL |
| TYP | TYPICAL |

| Rev. #: | Date | Description |
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| 1 | 04/21/23 | Response to Town Comments |

Graphic Scale: 30 0 30 60


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501 Main Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 880-9695
11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695


| | |
|---|---|
| Drawn By: | ARM |
| Checked By: | RPP |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER
Kevin Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: DETAILED GRADING & DRAINAGE PLAN (1)

Sheet #: 2.21

Mar 29, 2024 - 11:28am chendry
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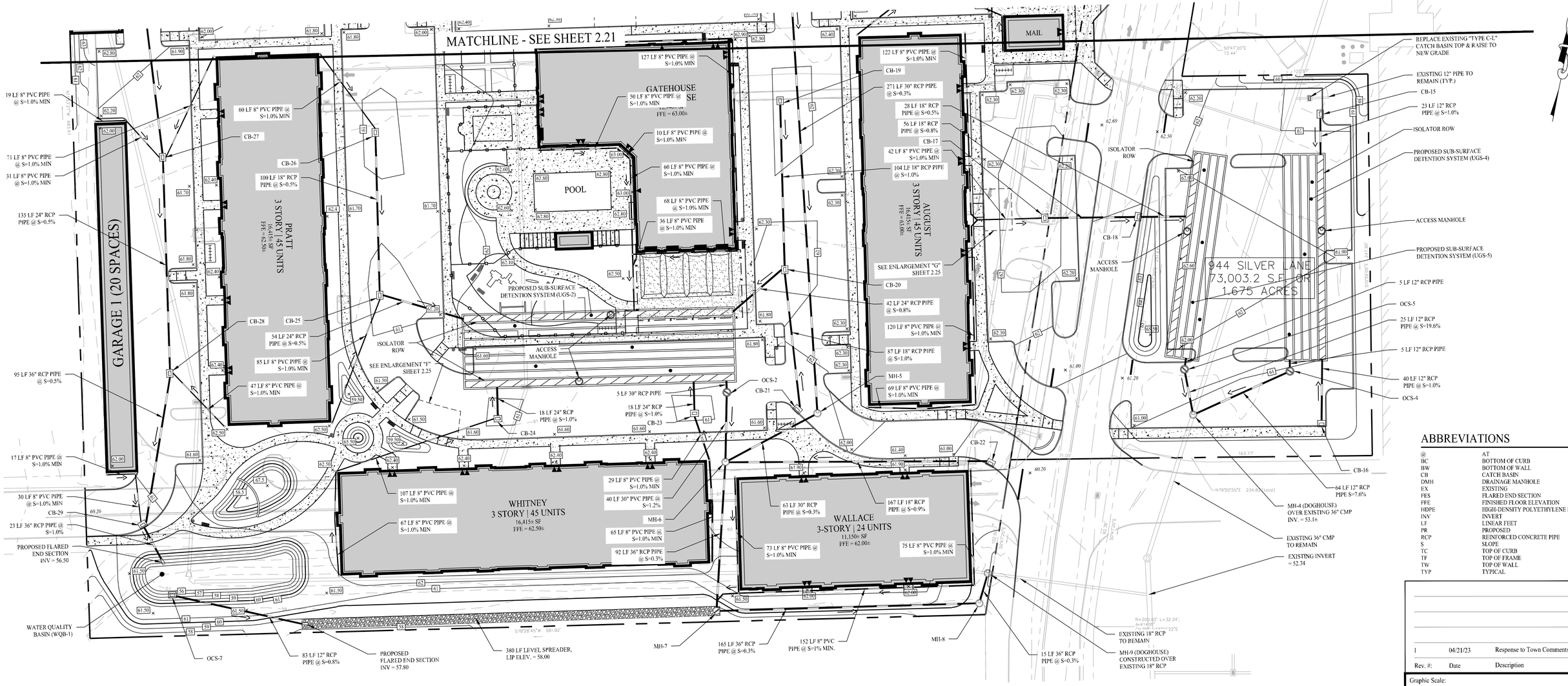


## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| BC | BOTTOM OF CURB |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| DMH | DRAINAGE MANHOLE |
| EX | EXISTING |
| FES | FLARED END SECTION |
| FFE | FINISHED FLOOR ELEVATION |
| HDPE | HIGH-DENSITY POLYETHYLENE PIPE |
| INV | INVERT |
| LF | LINEAR FEET |
| PR | PROPOSED |
| RCP | REINFORCED CONCRETE PIPE |
| S | SLOPE |
| TC | TOP OF CURB |
| TF | TOP OF FRAME |
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| TYP | TYPICAL |

| Rev. #: | Date | Description |
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| 1 | 04/21/23 | Response to Town Comments |

Graphic Scale: 30 0 30 60


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| Drawn By: | ARM |
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| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT KEVIN M. SOLLI 25759 LICENSED PROFESSIONAL ENGINEER
Kevin Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: DETAILED GRADING & DRAINAGE PLAN (2)

Sheet #: 2.22

## GENERAL NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION.
2. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED AUGUST 17, 2022, PREPARED BY ACCURATE LAND SURVEYING.
3. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.

## LEGEND

- PROPERTY LINE
- ADJOINING LOT LINE
- 420 — MAJOR CONTOURS
- 421 — MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 420 — CONTOUR LABEL
- 568.85 — PROPOSED SPOT ELEVATION
- 568.85 — EXISTING SPOT ELEVATION
- RETAINING WALL / GRAVITY OR SEGMENTAL BLOCK
- STORM DRAIN PIPE
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- TP-103 — TEST PIT
- FLOW ARROW

## GRADING AND UTILITIES NOTES

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## DRAINAGE STRUCTURE DATA TABLE

**CB-15**
TYPE "C"
TF = 60.78
INV(S) = 58.23

**CB-16**
TYPE "C"
TF = 60.70
INV(OUT) = 58.40

**CB-17**
TYPE "CL"
TF = 61.30
INV(E) = 58.70
INV(W) = 58.80

**CB-18**
TYPE "C"
TF = 61.90
INV(E) = 58.14
INV(W) = 58.24

**CB-19**
TYPE "CL"
TF = 61.30
INV(S) = 57.83

**CB-20**
TYPE "CL"
TF = 61.20
INV(S) = 56.89
INV(N) = 56.89
INV (W) = 56.79

**CB-21**
TYPE "CL"
TF = 61.40
INV(N) = 57.66

**CB-22**
FIRST DEFFENSE HYDRODYNAMIC SEPARATOR W/ TYPE "C" TOP
TF = 60.00
INV(W) = 57.50

**CB-23**
TYPE "CL"
TF = 60.80
INV(N) = 56.63
INV(S) = 56.73

**CB-24**
TYPE "CL"
TF = 60.80
INV(N) = 56.63
INV(W) = 56.73

**CB-25**
TYPE "CL"
TF = 61.60
INV(E) = 56.71
INV(S) = 56.81
INV (N) = 56.81

**CB-26**
TYPE "CL"
TF = 60.50
INV(S) = 57.82
INV(N) = 57.92

**CB-27**
TYPE "CL"
TF = 61.20
INV(N) = 58.16
INV(S) = 58.06
INV(W) = 58.16
INV(E) = 58.16

**CB-28**
TYPE "CL"
TF = 61.20
INV(S) = 57.29
INV(N) = 57.39
INV (E) = 57.39

**CB-29**
TYPE "C"
TF = 60.80
INV(N) = 56.85
INV(W) = 56.85
INV(S) = 56.75

**MH-4**
TF = 60.90
INV = 53.10±

**MH-5**
TF = 62.00
INV = 56.17

**MH-6**
TF = 61.90
INV = 55.98

**MH-7**
TF = 59.00
WEIR = 57.25
8" ORIFICE = 55.80
INV = 55.80

**MH-8**
TF = 59.00
INV = 55.25

**MH-9**
TF = 60.00
INV = 55.20

**OCS-2**
TF = 62.60
INV (IN) = 56.45
WEIR ELEV. = 58.00
INV. (OUT) = 56.45

**OCS-4**
TF = 61.10
INV (IN) = 58.00
WEIR ELEV. = 59.50
INV (OUT) = 58.00

**OCS-5**
TF = 61.30
INV (IN) = 58.00
WEIR ELEV. = 59.50
INV (OUT) = 58.00

**OCS-7**
TF = 60.30
INV (OUT) = 58.50

**UGS-2**
225 STORMTECH DC-780 CHAMBERS
TOP OF STONE = 59.45
TOP OF CHAMBER = 58.95
BOTTOM OF CHAMBER = 56.45
BOTTOM STONE ELEVATION = 55.45

**UGS-4**
95 STORMTECH DC-780 CHAMBERS
TOP OF STONE = 61.00
TOP OF CHAMBER = 60.50
BOTTOM OF CHAMBER = 58.00
BOTTOM STONE ELEVATION = 57.25

**UGS-5**
76 STORMTECH DC-780 CHAMBERS
TOP OF STONE = 61.00
TOP OF CHAMBER = 60.50
BOTTOM OF CHAMBER = 58.00
BOTTOM STONE ELEVATION = 57.25

UNDERGROUND DETENTION SYSTEM NOTE:
ONCE THE CONTRACTOR HAS COMPLETED THE EXCAVATION FOR THE PROPOSED UNDERGROUND DETENTION SYSTEMS, AND PRIOR TO PLACING ANY BASE GRAVEL, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO PERFORM PERCOLATION TESTS AT EACH EXCAVATION TO VERIFY THAT THE EXISTING UNDERLYING SOILS HAVE ADEQUATE PERMEABILITY TO SUPPORT THE UNDERGROUND DETENTION SYSTEM.


Mar 29, 2024 - 11:28am chendry
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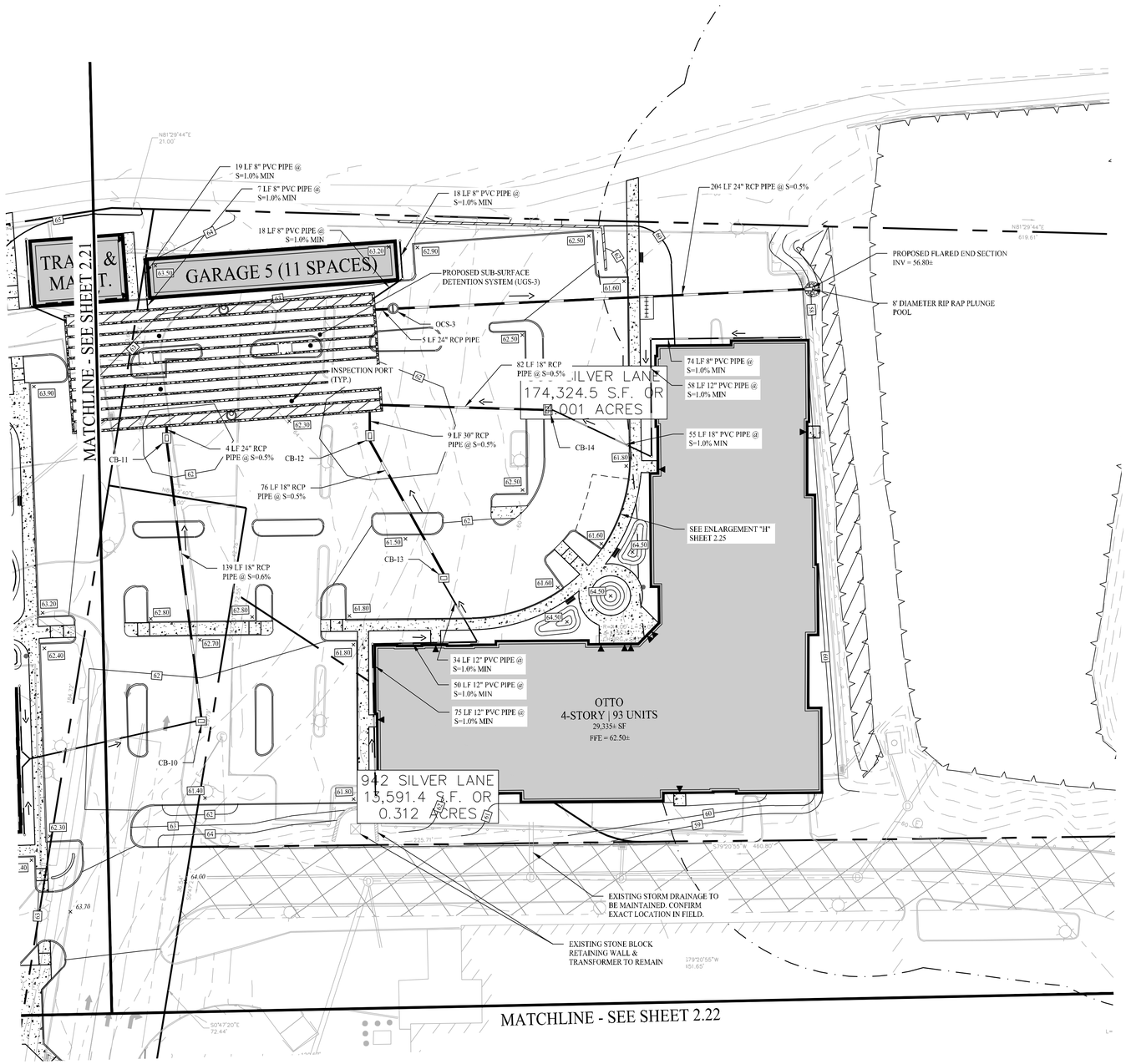


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11. ALL EXISTING UTILITY FRAME AND GRATES SHALL BE ADJUSTED TO PROPOSED GRADE.

## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| BC | BOTTOM OF CURB |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| DMH | DRAINAGE MANHOLE |
| EX | EXISTING |
| FES | FLARED END SECTION |
| FFE | FINISHED FLOOR ELEVATION |
| HDPE | HIGH-DENSITY POLYETHYLENE PIPE |
| INV | INVERT |
| LF | LINEAR FEET |
| PR | PROPOSED |
| RCP | REINFORCED CONCRETE PIPE |
| S | SLOPE |
| TC | TOP OF CURB |
| TF | TOP OF FRAME |
| TW | TOP OF WALL |
| TYP | TYPICAL |

UNDERGROUND DETENTION SYSTEM NOTE:
ONCE THE CONTRACTOR HAS COMPLETED THE EXCAVATION FOR THE PROPOSED UNDERGROUND DETENTION SYSTEMS, AND PRIOR TO PLACING ANY BASE GRAVEL, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO PERFORM PERCOLATION TESTS AT EACH EXCAVATION TO VERIFY THAT THE EXISTING UNDERLYING SOILS HAVE ADEQUATE PERMEABILITY TO SUPPORT THE UNDERGROUND DETENTION SYSTEM.

## LEGEND

- PROPERTY LINE
- ADJOINING LOT LINE
- 420 MAJOR CONTOURS
- 421 MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 420 CONTOUR LABEL
- 568.85 PROPOSED SPOT ELEVATION
- 568.85 EXISTING SPOT ELEVATION
- RETAINING WALL / GRAVITY OR SEGMENTAL BLOCK
- STORM DRAIN PIPE
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- TP-103 TEST PIT
- FLOW ARROW

## DRAINAGE STRUCTURE DATA TABLE

**CB-10**
TYPE "CL"
TF = 61.10
INV(N) = 58.90
INV(W) = 59.00

**CB-11**
TYPE "CL"
TF = 61.80
INV(N) = 57.97
INV(S) = 58.07

**CB-12**
TYPE "CL"
TF = 61.50
INV(N) = 58.00
INV(S) = 58.10

**CB-13**
TYPE "CL"
TF = 61.00
INV(N) = 58.38
INV(E) = 58.48

**CB-14**
TYPE "CL"
TF = 61.00
INV(W) = 58.36
INV(E) = 58.46

**OCS-3**
TF = 62.80
INV (IN) = 57.95
WEIR ELEV. = 58.50
INV (OUT) = 57.95

**UGS-3**
242 STORMTECH DC-780 CHAMBERS
TOP OF STONE = 60.95
TOP OF CHAMBER = 60.45
BOTTOM OF CHAMBER = 57.95
BOTTOM STONE ELEVATION = 56.95

| Rev. # | Date | Description |
|---|---|---|
| 1 | 04/21/23 | Response to Town Comments |

Graphic Scale: 30 0 30 60

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| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER
Kevin Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: DETAILED GRADING & DRAINAGE PLAN (3)

Sheet #: 2.23

Mar 29, 2024 - 11:28am chendry
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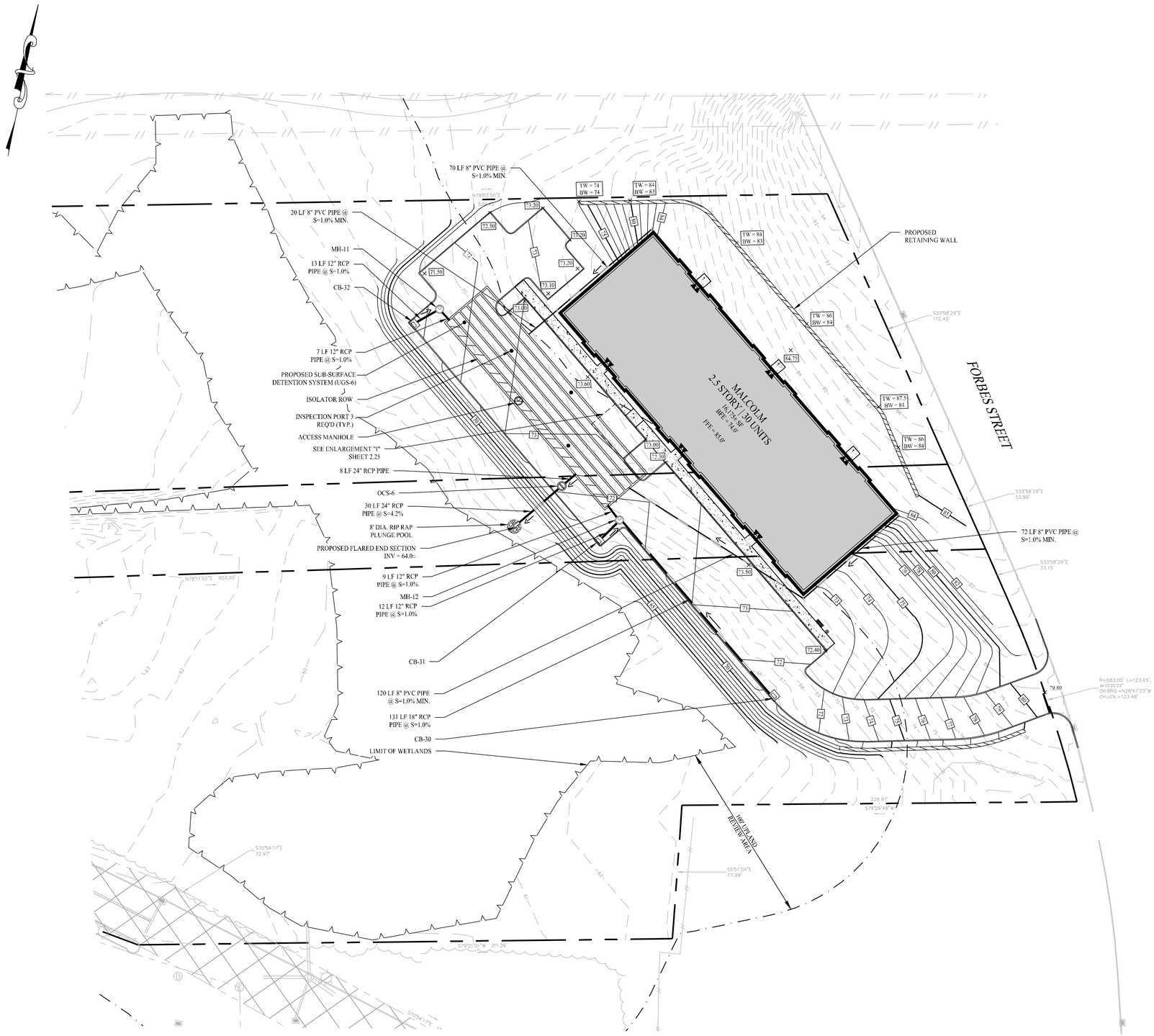


UNDERGROUND DETENTION SYSTEM NOTE:
ONCE THE CONTRACTOR HAS COMPLETED THE EXCAVATION FOR THE PROPOSED UNDERGROUND DETENTION SYSTEMS, AND PRIOR TO PLACING ANY BASE GRAVEL, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO PERFORM PERCOLATION TESTS AT EACH EXCAVATION TO VERIFY THAT THE EXISTING UNDERLYING SOILS HAVE ADEQUATE PERMEABILITY TO SUPPORT THE UNDERGROUND DETENTION SYSTEM.

## LEGEND

- PROPERTY LINE
- ADJOINING LOT LINE
- 420 — MAJOR CONTOURS
- 421 — MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 420 — CONTOUR LABEL
- 568.85 — PROPOSED SPOT ELEVATION
- ×568.85 — EXISTING SPOT ELEVATION
- RETAINING WALL / GRAVITY OR SEGMENTAL BLOCK
- STORM DRAIN PIPE
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- TP-103 — TEST PIT
- FLOW ARROW

## DRAINAGE STRUCTURE DATA TABLE

| | | |
|---|---|---|
| MH-11<br>TF = 71.20<br>INV (IN) = 67.72<br>INV (OUT) = 67.62 | CB-30<br>TYPE "C"<br>TF = 71.60<br>INV(OUT) = 69.05 | OCS-6<br>TF = 72.20<br>INV (IN) = 67.55<br>WEIR ELEV. = 68.00<br>INV (OUT) = 67.55 |
| MH-12<br>TF = 72.31<br>INV (IN) = 67.74<br>INV (OUT) = 67.64 | CB-31<br>TYPE "C"<br>TF = 71.10<br>INV(OUT) = 67.86 | UGS-6<br>120 STORMTECH DC-780 CHAMBERS<br>TOP OF STONE = 70.55<br>TOP OF CHAMBER = 70.05<br>BOTTOM OF CHAMBER = 67.55<br>BOTTOM STONE ELEVATION = 66.80 |
| | CB-32<br>TYPE "C"<br>TF = 70.70<br>INV(OUT) = 67.85 | |

## TEST PIT DATA

1. TEST PIT FS1 (ELEVATION 65.9)
   0"-8" - TOPSOIL/FOREST LITTER
   8"-24" - TAN BROWN SILTY FILL
   24"-33" - DARK BROWN/GREY SILT LOAM (POSS. ORIGINAL GRADE)
   33"-44" - TAN FINE SILTY LOAN, MOTTLED
   44"-78" - OLIVE GREY SILT WITH FINE SAND, MOTTLED

   MOTTLING/REDOX @ 24" (ELEVATION 63.9)
   GROUNDWATER @ 7.3" (ELEVATION 59.8)
   NO LEDGE/REFUSAL

2. TEST PIT FS2 (ELEVATION 70.0)
   0"-58" - MISC. FILL, CONSTRUCTION/DEMOLITION DEBRIS
   58"-64" - DARK BROWN/GREY SILT LOAN (POSS. ORIGINAL GRADE)
   64"-96" - GREY SILTY HARDPAN, MOTTLED

   MOTTLING/REDOX @ 64" (ELEVATION 64.7)
   NO GROUNDWATER
   NO LEDGE/REFUSAL

## GENERAL NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION.
2. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED AUGUST 17, 2022, PREPARED BY ACCURATE LAND SURVEYING.
3. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.

## GRADING AND UTILITIES NOTES

1. THIS DRAWING IS INTENDED TO DESCRIBE GRADING AND DRAINAGE ONLY. REFER TO SITE PLAN FOR GENERAL INFORMATION, AND DETAIL SHEETS FOR DETAILS.
2. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
3. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS. REFER TO EROSION CONTROL PLAN FOR LIMIT OF DISTURBANCE AND EROSION CONTROL NOTES.
4. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY GOVERNMENT AND LOCAL AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY CONSTRUCTION PERMITS FROM THE CITY OF EAST HARTFORD REQUIRED TO PERFORM ALL REQUIRED WORK, INCLUDING FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
5. TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON SITE FOR USE IN FINAL LANDSCAPING.
6. THE CONTRACTOR SHALL COMPACT FILL IN 12" MAXIMUM LIFTS UNDER ALL PARKING, BUILDING, AND DRIVE AREAS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 (MODIFIED PROCTOR TEST), OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
7. ALL DISTURBANCE INCURRED TO CITY OR STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF EAST HARTFORD AUTHORITY.
8. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT.
9. ALL PIPE LENGTHS ARE HORIZONTAL DISTANCES AND ARE APPROXIMATE.
10. GRADING CONTRACTOR SHALL RESTORE TO GRADE AND COMPACTION ALL AREAS DISTURBED BY BUILDING CONSTRUCTION PRIOR TO BASE AND PAVING OPERATIONS COMMENCING.
11. ALL EXISTING UTILITY FRAME AND GRATES SHALL BE ADJUSTED TO PROPOSED GRADE.

## ABBREVIATIONS

| | |
|---|---|
| @ | AT |
| BC | BOTTOM OF CURB |
| BW | BOTTOM OF WALL |
| CB | CATCH BASIN |
| DMH | DRAINAGE MANHOLE |
| EX | EXISTING |
| FES | FLARED END SECTION |
| FFE | FINISHED FLOOR ELEVATION |
| HDPE | HIGH-DENSITY POLYETHYLENE PIPE |
| INV | INVERT |
| LF | LINEAR FEET |
| PR | PROPOSED |
| RCP | REINFORCED CONCRETE PIPE |
| S | SLOPE |
| TC | TOP OF CURB |
| TF | TOP OF FRAME |
| TW | TOP OF WALL |
| TYP | TYPICAL |

| Rev. #: | Date | Description |
|---|---|---|
| 1 | 04/21/23 | Response to Town Comments |

Graphic Scale: 30 0 30 60

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|---|---|
| Drawn By: | ARM |
| Checked By: | RPP |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: DETAILED GRADING & DRAINAGE PLAN (4)

Sheet #: 2.24

Mar 29, 2024 - 11:28am chendry
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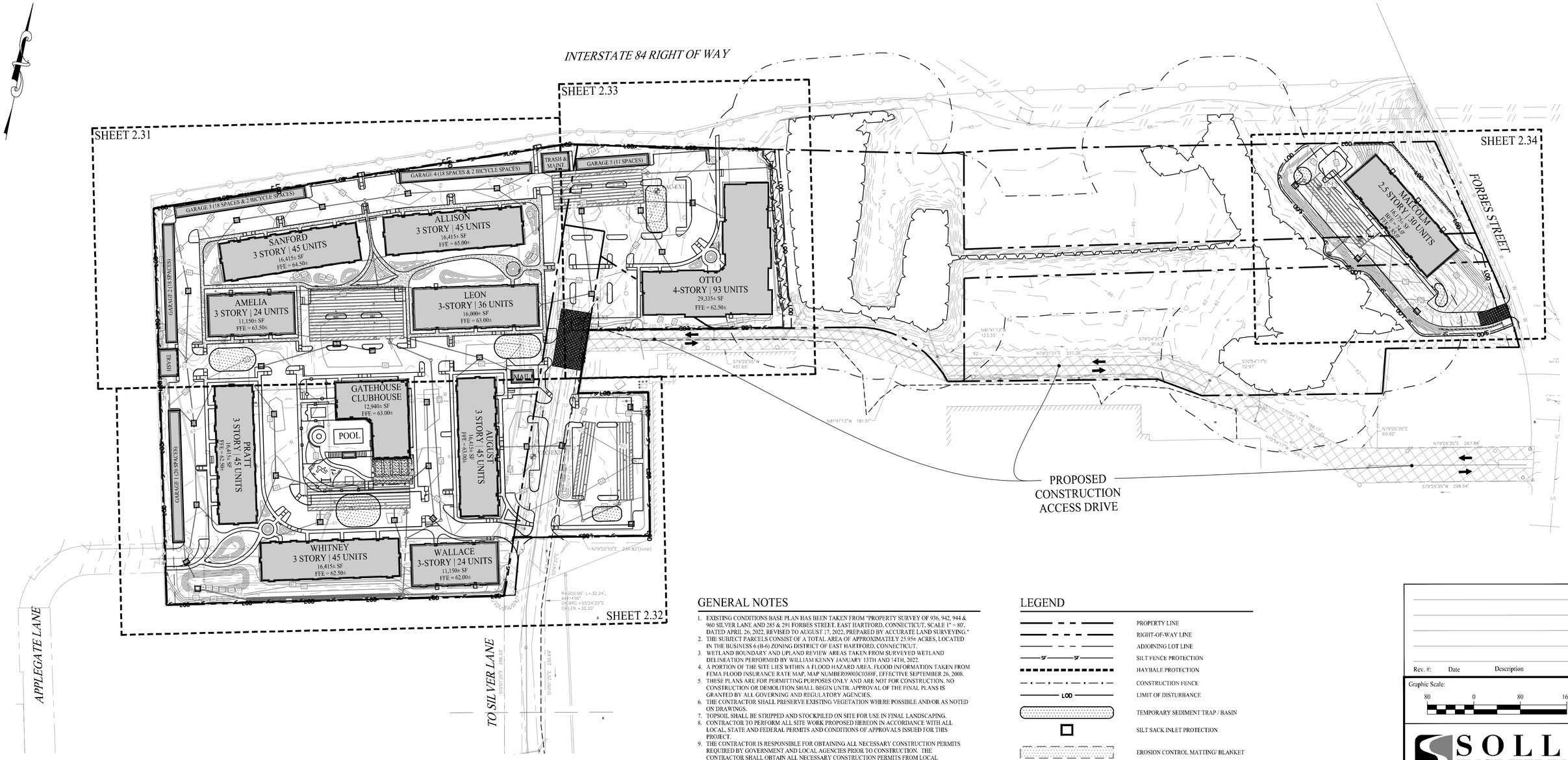


SEE SHEETS 2.31 - 2.34 & 2.41 FOR PROPOSED SOIL EROSION CONTROL MEASURES & DETAILS

## GENERAL NOTES

1. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED TO AUGUST 17, 2022, PREPARED BY ACCURATE LAND SURVEYING."
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5. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
6. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS.
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11. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
12. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC DEVICES FOR PROTECTION OF VEHICLES AND PEDESTRIANS CONSISTING OF DRUMS, BARRIERS, SIGNS, LIGHTS, FENCES AND UNIFORMED TRAFFIC CONTROLLERS AS REQUIRED, ORDERED BY THE ENGINEER OR REQUIRED BY THE STATE AND LOCAL GOVERNING AUTHORITIES.
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15. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR WETLANDS IN ACCORDANCE WITH THE REGULATIONS OF THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
16. ALL PIPE LENGTHS ARE HORIZONTAL DISTANCES AND ARE APPROXIMATE.
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## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- SF — SF — SILT FENCE PROTECTION
- HAYBALE PROTECTION
- CONSTRUCTION FENCE
- LOD — LIMIT OF DISTURBANCE
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- SILT SACK INLET PROTECTION
- EROSION CONTROL MATTING/ BLANKET
- MATERIAL STOCKPILE AREA
- CONSTRUCTION ENTRANCE

| Rev. #: | Date | Description |
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Graphic Scale: 80 0 80 160


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| Drawn By: | ARM |
| Checked By: | RPP |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 80' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin M. Solli, P.E.
CT 25759

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: OVERALL SOIL EROSION & SEDIMENT CONTROL PLAN

Sheet #: 2.30


Mar 29, 2024 - 11:28am chendry
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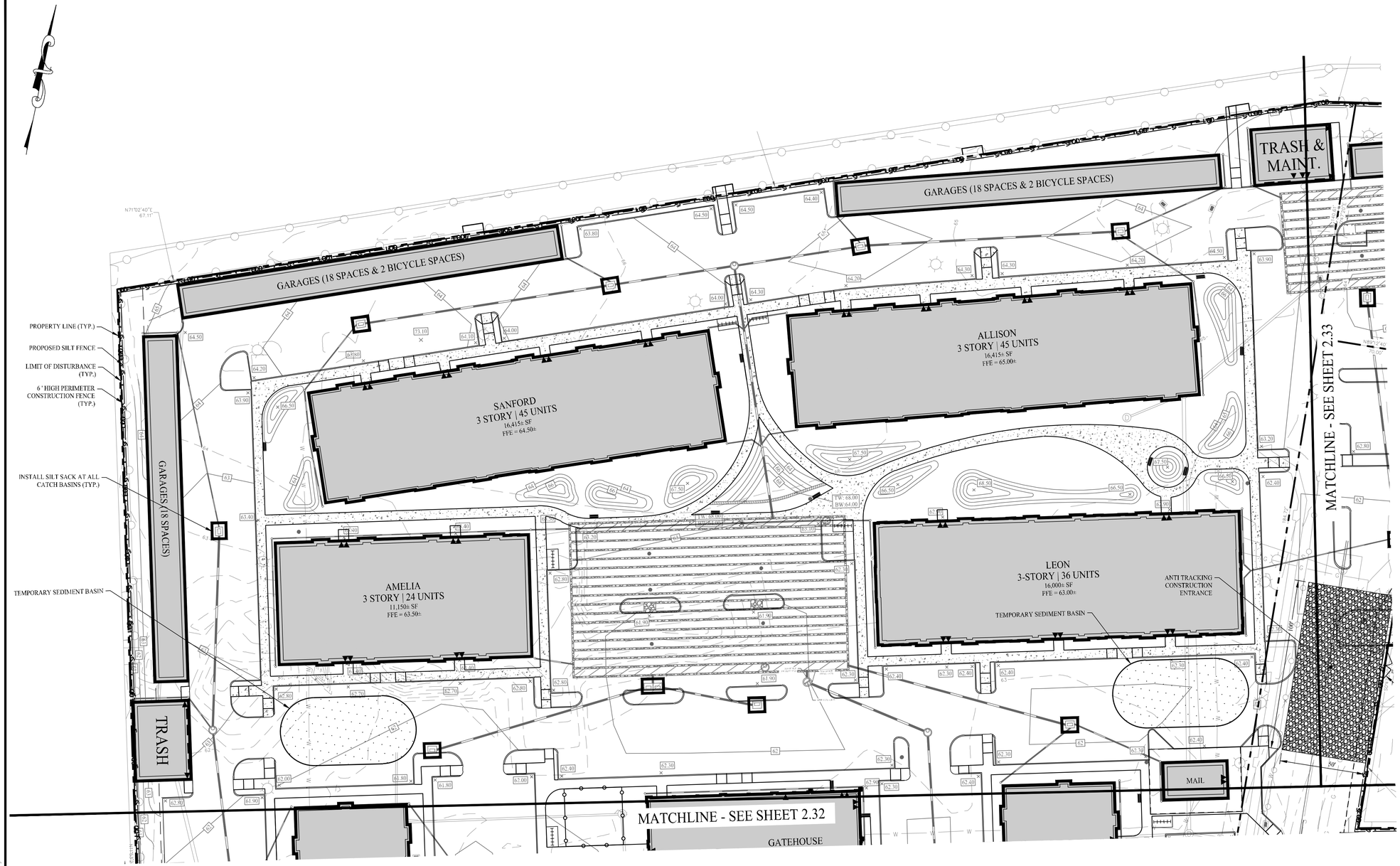


NOTE:
CONTRACTOR SHALL INSTALL TEMPORARY SWALES & DIVERSION BERMS AS REQUIRED TO DIRECT RUNOFF FROM DISTURBED AREAS INTO THE NEAREST TEMPORARY SEDIMENT BASIN

## GENERAL NOTES

1. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED TO AUGUST 17, 2022, PREPARED BY ACCURATE LAND SURVEYING."
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| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 30 0 30 60


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| Drawn By: | ARM |
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| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT — KEVIN M. SOLLI — 25759 — LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

| Sheet Title: | Sheet #: |
|---|---|
| SOIL EROSION & SEDIMENT CONTROL PLAN (1) | 2.31 |


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MATCHLINE - SEE SHEET 2.31

GARAGE 1 (20 SPACES)

PRATT
3 STORY | 45 UNITS
16,415± SF
FFE = 62.50±

GATEHOUSE
CLUBHOUSE
12,940± SF
FFE = 63.00±

POOL

AUGUST
3 STORY | 45 UNITS
16,415± SF
FFE = 63.80±

MAIL

WHITNEY
3 STORY | 45 UNITS
16,415± SF
FFE = 62.50±

WALLACE
3-STORY | 24 UNITS
11,150± SF
FFE = 62.00±

VAC-EXT

PROPERTY LINE (TYP.)

PROPOSED SILT FENCE

LIMIT OF DISTURBANCE (TYP.)

6' HIGH PERIMETER CONSTRUCTION FENCE (TYP.)

INSTALL SILT SACK AT ALL CATCH BASINS (TYP.)

LOCKED GATE FOR EMERGENCY ACCESS ONLY. CONSTRUCTION TRAFFIC TO UTILIZE CONSTRUCTION CONSTRUCTION ENTRANCE ALONG THE CONSTRUCTION ACCESS DRIVE FROM FORBES STREET.

TEMPORARY SEDIMENT BASIN

DOUBLE SWING GATES, LOCKED, FOR EMERGENCY ACCESS ONLY. CONSTRUCTION TRAFFIC TO UTILIZE CONSTRUCTION CONSTRUCTION ENTRANCE ALONG THE CONSTRUCTION ACCESS DRIVE FROM FORBES STREET.

NOTE:
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| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 30 0 30 60


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| | |
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| Drawn By: | ARM |
| Checked By: | RPP |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/09/23 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: SOIL EROSION & SEDIMENT CONTROL PLAN (2)

Sheet #: 2.32


Mar 29, 2024 - 11:28am chendry
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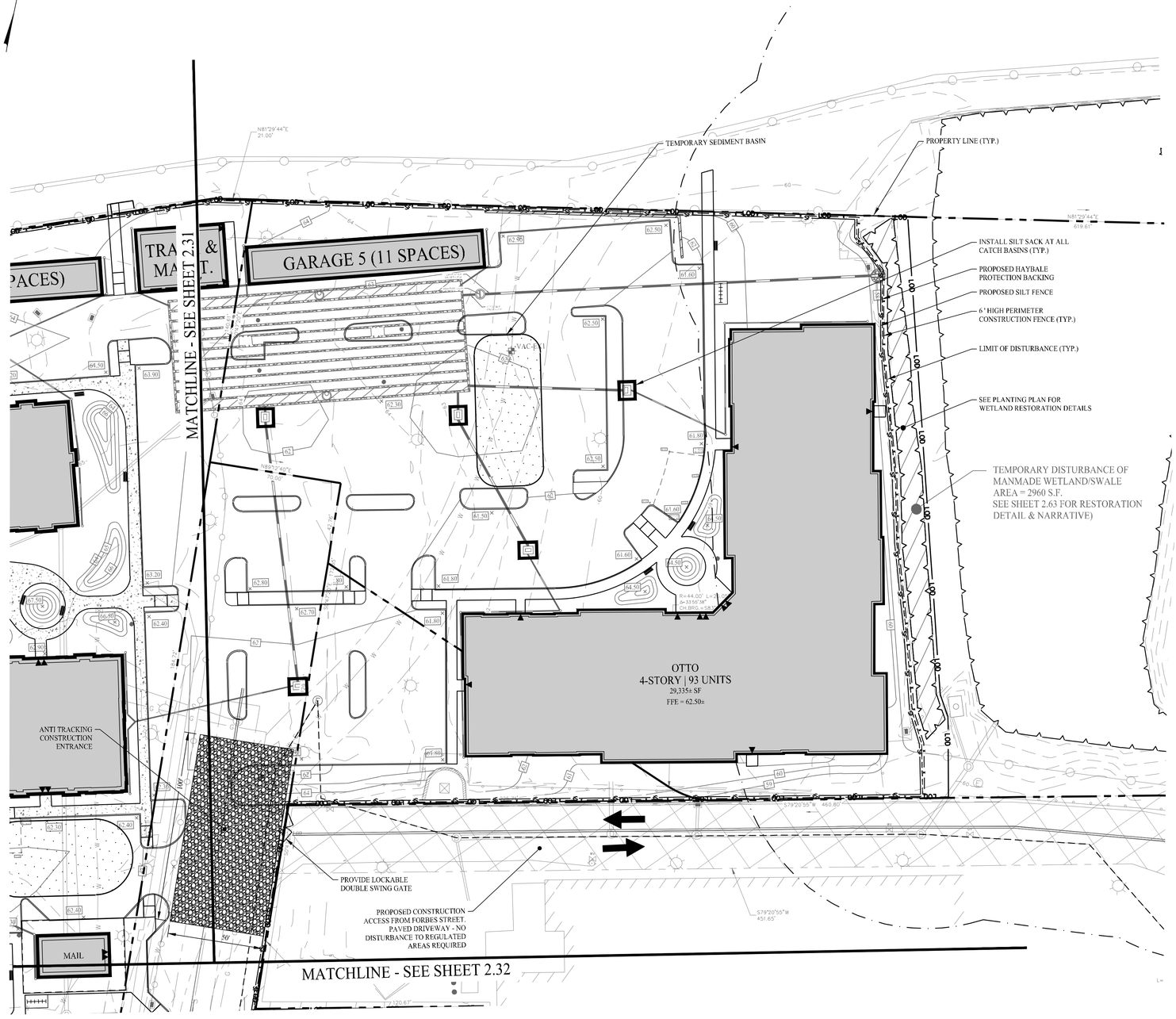


## GENERAL NOTES

1. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED APRIL 26, 2022, REVISED AUGUST 17, 2022, PREPARED BY ACCURATE LAND SURVEYING."
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## LEGEND

- PROPERTY LINE
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| Rev. #: | Date | Description |
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Graphic Scale: 30 0 30 60

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STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED · PROFESSIONAL ENGINEER
Kevin Solli, P.E.
CT 25759

Project:
# PROPOSED RESIDENTIAL REDEVELOPMENT
936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: SOIL EROSION & SEDIMENT CONTROL PLAN (3)

Sheet #: 2.33

Mar 29, 2024 - 11:28am chendry
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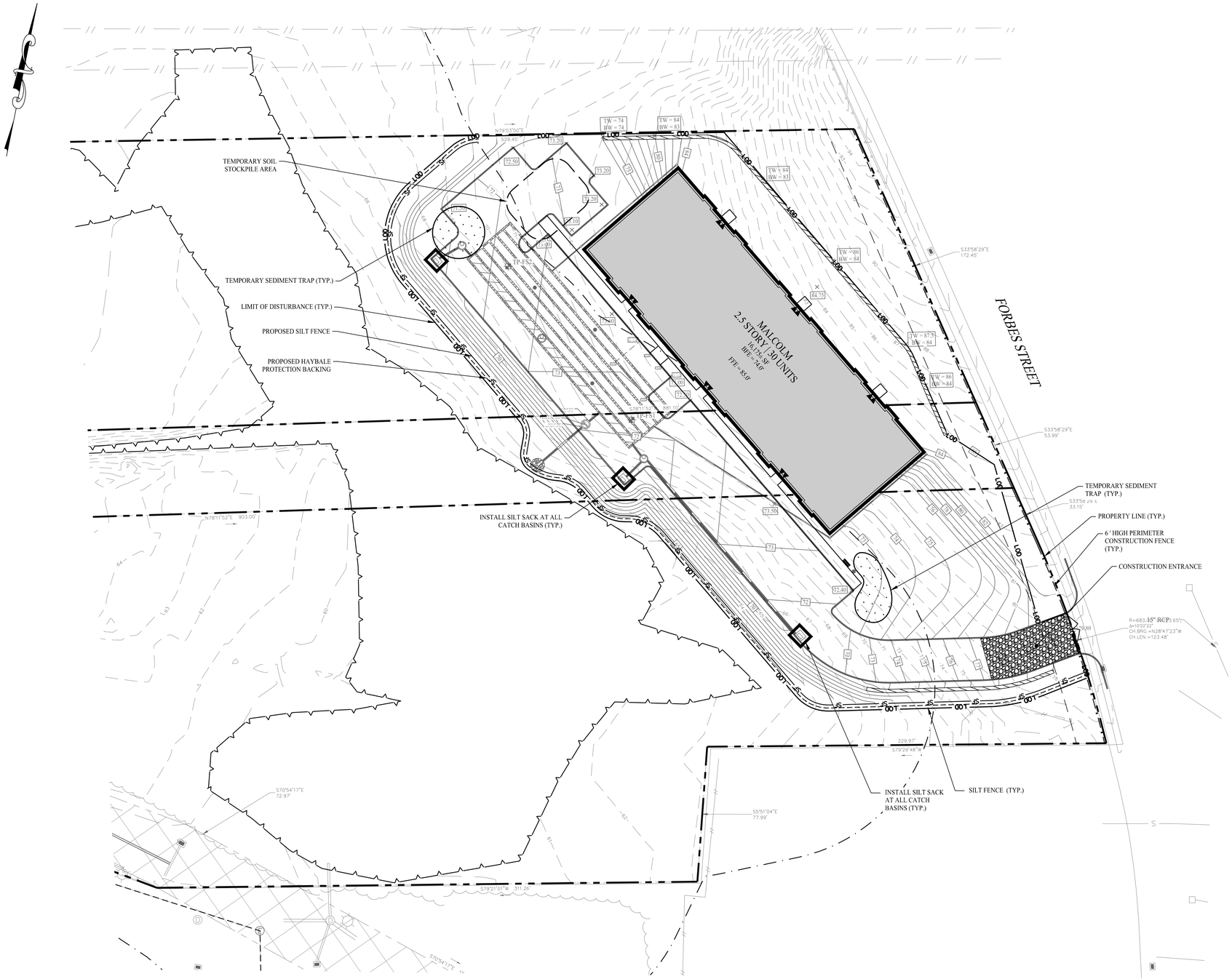


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STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: SOIL EROSION & SEDIMENT CONTROL PLAN (4)

Sheet #: 2.34


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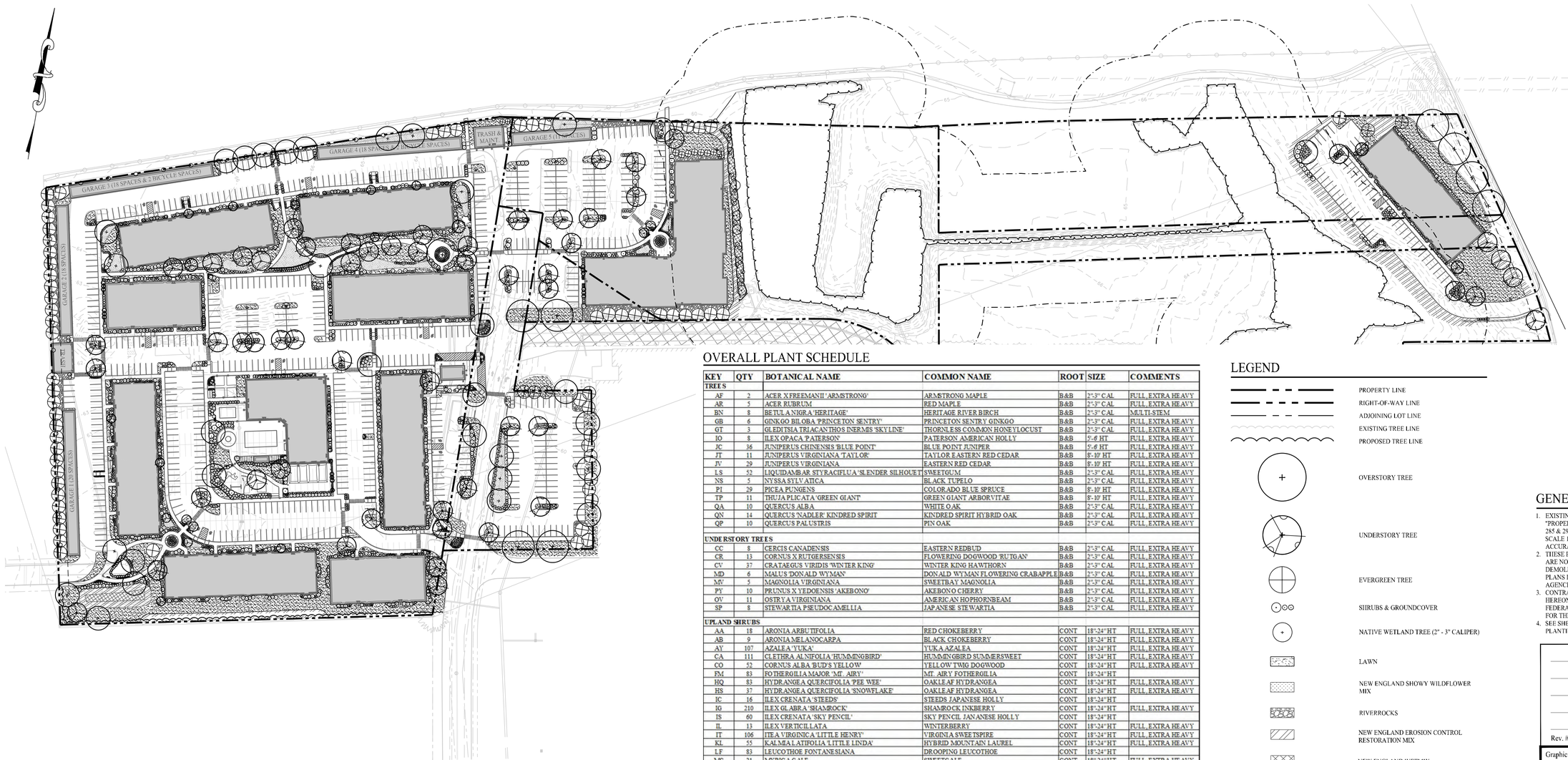


## OVERALL PLANT SCHEDULE

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **TREES** | | | | | | |
| AF | 2 | ACER X FREEMANII 'ARMSTRONG' | ARMSTRONG MAPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| AR | 5 | ACER RUBRUM | RED MAPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| BN | 8 | BETULA NIGRA 'HERITAGE' | HERITAGE RIVER BIRCH | B&B | 2"-3" CAL | MULTI-STEM |
| GB | 6 | GINKGO BILOBA 'PRINCETON SENTRY' | PRINCETON SENTRY GINKGO | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| GT | 3 | GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE' | THORNLESS COMMON HONEYLOCUST | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| IO | 8 | ILEX OPACA 'PATERSON' | PATERSON AMERICAN HOLLY | B&B | 5'-6 HT | FULL, EXTRA HEAVY |
| JC | 36 | JUNIPERUS CHINENSIS 'BLUE POINT' | BLUE POINT JUNIPER | B&B | 5'-6 HT | FULL, EXTRA HEAVY |
| JT | 11 | JUNIPERUS VIRGINIANA 'TAYLOR' | TAYLOR EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| JV | 29 | JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| LS | 52 | LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUET' | SWEETGUM | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| NS | 5 | NYSSA SYLVATICA | BLACK TUPELO | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| PI | 29 | PICEA PUNGENS | COLORADO BLUE SPRUCE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| TP | 11 | THUJA PLICATA 'GREEN GIANT' | GREEN GIANT ARBORVITAE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| QA | 10 | QUERCUS ALBA | WHITE OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| QN | 14 | QUERCUS 'NADLER' KINDRED SPIRIT | KINDRED SPIRIT HYBRID OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| QP | 10 | QUERCUS PALUSTRIS | PIN OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UNDERSTORY TREES** | | | | | | |
| CC | 8 | CERCIS CANADENSIS | EASTERN REDBUD | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CR | 13 | CORNUS X RUTGERSENSIS | FLOWERING DOGWOOD 'RUTGAN' | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CV | 37 | CRATAEGUS VIRIDIS 'WINTER KING' | WINTER KING HAWTHORN | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| MD | 6 | MALUS 'DONALD WYMAN' | DONALD WYMAN FLOWERING CRABAPPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| MV | 5 | MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| PY | 10 | PRUNUS X YEDOENSIS 'AKEBONO' | AKEBONO CHERRY | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| OV | 11 | OSTRYA VIRGINIANA | AMERICAN HOPHORNBEAM | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| SP | 8 | STEWARTIA PSEUDOCAMELLIA | JAPANESE STEWARTIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UPLAND SHRUBS** | | | | | | |
| AA | 18 | ARONIA ARBUTIFOLIA | RED CHOKEBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| AB | 9 | ARONIA MELANOCARPA | BLACK CHOKEBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| AY | 107 | AZALEA 'YUKA' | YUKA AZALEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CA | 111 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CO | 52 | CORNUS ALBA 'BUDS YELLOW' | YELLOW TWIG DOGWOOD | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| FM | 83 | FOTHERGILLA MAJOR 'MT. AIRY' | MT. AIRY FOTHERGILLA | CONT | 18"-24" HT | |
| HQ | 83 | HYDRANGEA QUERCIFOLIA 'PEE WEE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| HS | 37 | HYDRANGEA QUERCIFOLIA 'SNOWFLAKE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IC | 16 | ILEX CRENATA 'STEEDS' | STEEDS JAPANESE HOLLY | CONT | 18"-24" HT | |
| IG | 210 | ILEX GLABRA 'SHAMROCK' | SHAMROCK INKBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IS | 60 | ILEX CRENATA 'SKY PENCIL' | SKY PENCIL JAPANESE HOLLY | CONT | 18"-24" HT | |
| IL | 13 | ILEX VERTICILLATA | WINTERBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IT | 106 | ITEA VIRGINICA 'LITTLE HENRY' | VIRGINIA SWEETSPIRE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| KL | 55 | KALMIA LATIFOLIA 'LITTLE LINDA' | HYBRID MOUNTAIN LAUREL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| LF | 83 | LEUCOTHOE FONTANESIANA | DROOPING LEUCOTHOE | CONT | 18"-24" HT | |
| MG | 21 | MYRICA GALE | SWEETGALE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PF | 60 | POTENTILLA FRUTICOSA | BUSH CINQUEFOIL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PM | 129 | PINUS MUGO 'MOPS' | DWARF MUGO PINE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PO | 84 | PHYSOCARPUS OPULIFOLIUS 'TINY WINE' | DWARF COMMON NINEBARK | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PJM | 108 | RHODODENDRON P.J.M. | PJM RHODODENDRON | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| RM | 10 | RHODODENDRON MAXIMUM | ROSEBAY RHODODENDRON | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| SL | 34 | SPIREA LATIFOLIA | MEADOWSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| VA | 70 | VIBURNUM ACERIFOLIUM | MAPLE-LEAF VIBURNUM | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| **GROUNDCOVER** | | | | | | |
| AU | 66 | ARCTOSTAPHYLOS UVA-URSI | BEARBERRY | CONT | #1 CONT | |
| JH | 71 | JUNIPERUS HORIZONTALIS 'BAR HARBOR' | BAR HARBOR CREEPING JUNIPER | CONT | #1 CONT | |
| LM | 94 | LIRIOPE MUSCARI | LILY TURF | CONT | #1 CONT | |
| RA | 43 | RHUS AROMATICA 'GRO-LOW' | GRO-LOW FRAGRANT SUMAC | CONT | #1 CONT | |
| **PERENNIALS + FERNS** | | | | | | |
| AA | 7 | ASTILBE X ARENDSII 'FANAL' | FANAL ASTILBE | CONT | 1 GAL | |
| AC | 54 | ASTILBE CHINENSIS | ASTILBE | CONT | 1 GAL | |
| AM | 83 | ACHILLEA 'MOONSHINE' | MOONSHINE YARROW | CONT | 1 GAL | |
| AL | 18 | ALCHEMILLA MOLLIS | LADY'S MANTLE | CONT | 1 GAL | |
| AN | 18 | ASTER NOVAE-ANGLIAE 'PURPLE DOME' | PURPLE DOME ASTER | CONT | 1 GAL | |
| CH | 14 | CHELONE OBLIQUA 'ROSEA' | PINK TURTLEHEAD | CONT | 1 GAL | |
| DC | 33 | DELOSPERMA | ICE PLANT | CONT | 1 GAL | |
| EP | 32 | ECHINACEA PURPUREA | CONE FLOWER | CONT | | |
| FG | 37 | FESTUCA GLAUCA 'ELIJAH BLUE' | FESCUE GRASS | CONT | 1 GAL | |
| HU | 49 | HEUCHERA 'CARAMEL' | CORAL BELLS | CONT | 1 GAL | |
| IV | 38 | IRIS VERSICOLOR | BLUE FLAG IRIS | CONT | 1 GAL | |
| LK | 53 | LIATRIS SPICATA 'KOBOLD' | KOBOLD LIATRIS | CONT | 1 GAL | |
| MF | 36 | MONARDA FISTULOSA | BEE BALM | CONT | | |
| NF | 77 | NEPETA FAASSENII 'WALKER'S LOW' | WALKER'S LOW CATMINT | CONT | 1 GAL | |
| OC | 33 | OSMUNDA CINNAMOMEA | CINNAMON FERN | CONT | | |
| PP | 25 | PHLOX PANICULATA 'GLAMOUR GIRL' | GARDEN PHLOX | CONT | 1 GAL | |
| **GRASSES** | | | | | | |
| AG | 71 | ANDROPOGON GERARDII 'RED OCTOBER' | BIG BLUESTEM | CONT | 1 GAL | |
| CK | 71 | CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' | KARL FOERSTER REED GRASS | CONT | | |
| MC | 152 | MUHLENBERGIA CAPILLARIS | PINK MUHLY GRASS | CONT | 1 GAL | |
| PV | 36 | PANICUM VIRGATUM | SWITCHGRASS | CONT | 1 GAL | |
| OP | 40 | OPHIOPOGON PLANISCAPUS 'NIGRESCENS' | BLACK MONDO GRASS | CONT | 1 GAL | |
| SS | 163 | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM | CONT | 1 GAL | |

## NATIVE WETLAND PLANTINGS

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **NATIVE WETLAND TREES** | | | | | | |
| Arw | 5 | ACER RUBRUM | RED MAPLE | CONT | 4'-6 HT | FULL, EXTRA HEAVY |
| Nsw | 5 | NYSSA SYLVATICA | BLACK TUPELO | CONT | 4'-6 HT | FULL, EXTRA HEAVY |
| Pow | 2 | PLATANUS OCCIDENTALIS | AMERICAN SYCAMORE | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| QBw | 5 | QUERCUS BICOLOR | SWAMP WHITE OAK | CONT | 4'-6 HT | FULL, EXTRA HEAVY |
| QPw | 6 | QUERCUS PALUSTRIS | PIN OAK | CONT | 4'-6 HT | FULL, EXTRA HEAVY |
| Uaw | 3 | ULMUS AMERICANA 'PRINCETON' | PRINCETON AMERICAN ELM | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |

## SEED MIXES

| SEED MIXES |
|---|
| **NEW ENGLAND WETMIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/2,500 S.F. |
| **NEW ENGLAND SHOWY WILDFLOWER MIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/1,900 S.F. |
| **NEW ENGLAND EROSION CONTROL-RESTORATION MIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/2,500 S.F. |
| **LAWN: PENNINGTON SMART SEED SUN AND SHADE** |
| APPLICATION RATE NEW LAWNS: 9 LB/1,000 S.F. |

## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- NATIVE WETLAND TREE (2" - 3" CALIPER)
- LAWN
- NEW ENGLAND SHOWY WILDFLOWER MIX
- RIVERROCKS
- NEW ENGLAND EROSION CONTROL RESTORATION MIX
- NEW ENGLAND WETMIX

## GENERAL NOTES

1. EXISTING CONDITIONS BASE PLAN HAS BEEN TAKEN FROM "PROPERTY SURVEY OF 936, 942, 944 & 960 SILVER LANE AND 285 & 291 FORBES STREET, EAST HARTFORD, CONNECTICUT, SCALE 1" = 80', DATED MARCH 9, 2022, PREPARED BY ACCURATE LAND SURVEYING."
2. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
3. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.
4. SEE SHEET 2.65 (LANDSCAPE DETAILS & NOTES) FOR PLANTING DETAILS AND NOTES.

| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 80 0 80 160

SOLLI ENGINEERING
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11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695

| | |
|---|---|
| Drawn By: | MMH |
| Checked By: | MFB |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 02/01/23 |
| Scale: | 1" = 80' |

STATE OF CONNECTICUT · MARY F. BLACKBURN · REGISTERED LANDSCAPE ARCHITECT

Mary Blackburn, P.L.A.
CT 1499

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: OVERALL LANDSCAPE PLAN

Sheet #: 2.60

Mar 28, 2024 - 1:41pm chendry
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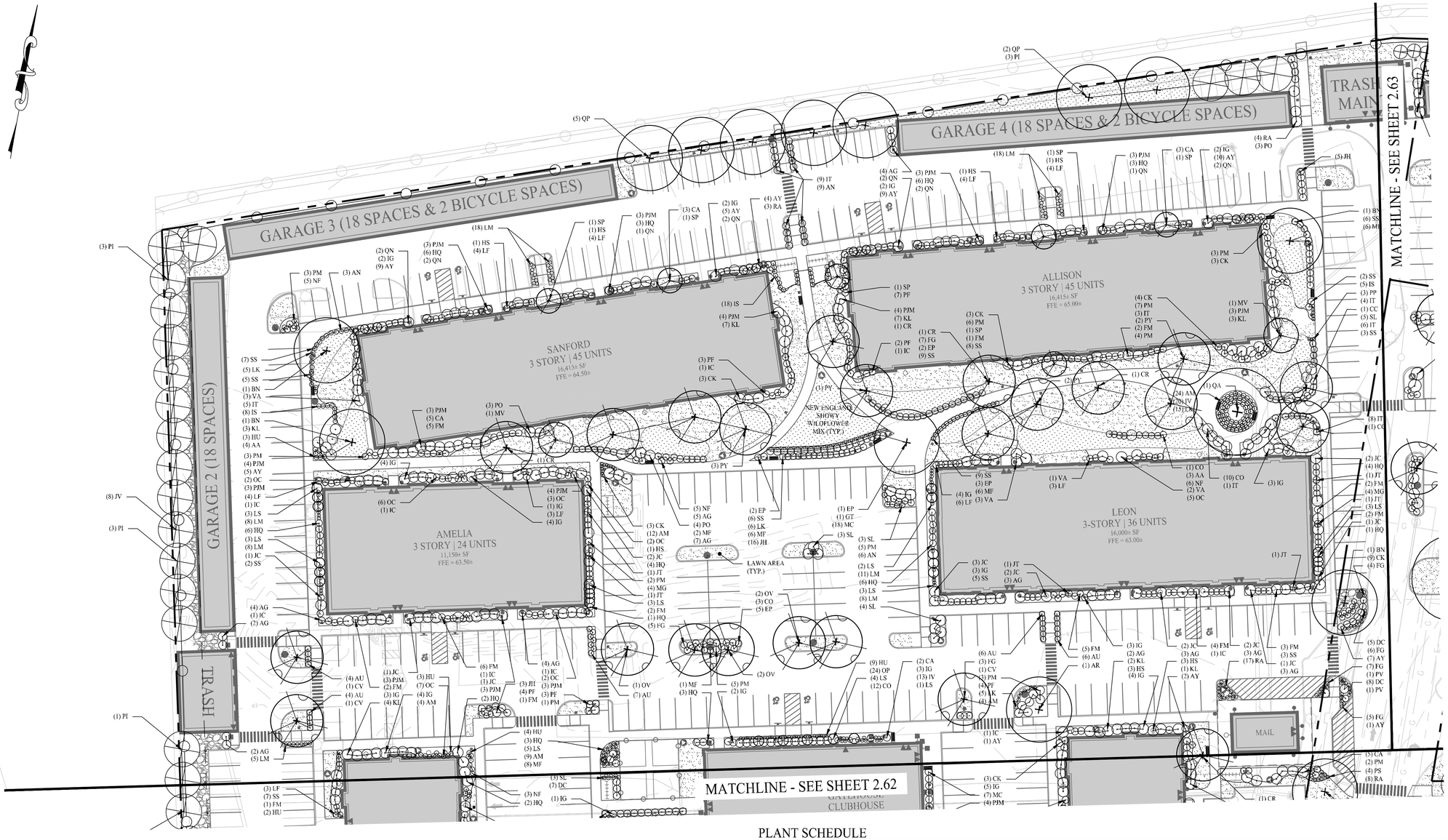


## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- LAWN
- NEW ENGLAND SHOWY WILDFLOWER MIX
- RIVERROCKS
- NEW ENGLAND EROSION CONTROL RESTORATION MIX

## PLANT SCHEDULE

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **TREES** | | | | | | |
| AR | 1 | ACER RUBRUM | RED MAPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| BN | 4 | BETULA NIGRA 'HERITAGE' | HERITAGE RIVER BIRCH | B&B | 2"-3" CAL | MULTI-STEM |
| GT | 1 | GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE' | THORNLESS COMMON HONEYLOCUST | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| JT | 6 | JUNIPERUS VIRGINIANA 'TAYLOR' | TAYLOR EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| JV | 8 | JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| JC | 18 | JUNIPERUS CHINENSIS 'BLUE POINT' | BLUE POINT JUNIPER | B&B | 5'-6' HT | FULL, EXTRA HEAVY |
| LS | 27 | LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUET' | SWEETGUM | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| PI | 10 | PICEA PUNGENS | COLORADO BLUE SPRUCE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| QA | 1 | QUERCUS ALBA | WHITE OAK | B&B | 3"-3 1/2" CAL | FULL, EXTRA HEAVY |
| QN | 14 | QUERCUS NADLER 'KINDRED SPIRIT | KINDRED SPIRIT HYBRID OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| QP | 7 | QUERCUS PALUSTRIS | PIN OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UNDERSTORY TREES** | | | | | | |
| CC | 2 | CERCIS CANADENSIS | EASTERN REDBUD | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CR | 4 | CORNUS X RUTGERSENSIS | FLOWERING DOGWOOD 'RUTGAN' | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CV | 3 | CRATAEGUS VIRIDIS 'WINTER KING' | WINTER KING HAWTHORN | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| MV | 2 | MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| PV | 8 | PRUNUS X YEDOENSIS 'AKEBONO' | AKEBONO CHERRY | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| OV | 5 | OSTRYA VIRGINIANA | AMERICAN HOPHORNBEAM | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| SP | 6 | STEWARTIA PSEUDOCAMELLIA | JAPANESE STEWARTIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UPLAND SHRUBS** | | | | | | |
| AY | 53 | AZALEA 'YUKA' | YUKA AZALEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CA | 13 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CO | 24 | CORNUS ALBA 'BUD'S YELLOW' | YELLOW TWIG DOGWOOD | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| FM | 37 | FOTHERGILLA MAJOR 'MT. AIRY' | MT. AIRY FOTHERGILLA | CONT | 18"-24" HT | |
| HQ | 48 | HYDRANGEA QUERCIFOLIA 'PEE WEE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| HS | 11 | HYDRANGEA QUERCIFOLIA 'SNOWFLAKE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IC | 9 | ILEX CRENATA 'STEEDS' | STEEDS JAPANESE HOLLY | CONT | 18"-24" HT | |
| IO | 46 | ILEX OLABRA 'SHAMROCK' | SHAMROCK INKBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IS | 31 | ILEX CRENATA 'SKY PENCIL' | SKY PENCIL JANANESE HOLLY | CONT | 18"-24" HT | |
| IT | 36 | ITEA VIRGINICA 'LITTLE HENRY' | VIRGINIA SWEETSPIRE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| KL | 27 | KALMIA LATIFOLIA 'LITTLE LINDA' | HYBRID MOUNTAIN LAUREL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| LF | 32 | LEUCOTHOE FONTANESIANA | DROOPING LEUCOTHOE | CONT | 18"-24" HT | |
| MG | 8 | MYRICA GALE | SWEETGALE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PF | 23 | POTENTILLA FRUTICOSA | BUSH CINQUEFOIL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PM | 40 | PINUS MUGO 'MOPS' | DWARF MUGO PINE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PO | 10 | PHYSOCARPUS OPULIFOLIUS 'TINY WINE' | DWARF COMMON NINEBARK | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PJM | 45 | RHODODENDRON P.J.M. | P.J.M. RHODODENDRON | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| SL | 15 | SPIREA LATIFOLIA | MEADOWSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| VA | 9 | VIBURNUM ACERIFOLIUM | MAPLE-LEAF VIBURNUM | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| **GROUNDCOVER** | | | | | | |
| AU | 27 | ARCTOSTAPHYLOS UVA-URSI | BEARBERRY | CONT | #1 CONT. | |
| JH | 24 | JUNIPERUS HORIZONTALIS 'BAR HARBOR' | BAR HARBOR CREEPING JUNIPER | CONT | #1 CONT. | |
| LM | 58 | LIRIOPE MUSCARI | LILY TURF | CONT | #1 CONT | |
| RA | 24 | RHUS AROMATICA 'GRO-LOW' | GRO-LOW FRAGRANT SUMAC | CONT | #1 CONT | |
| **PERENNIALS + FERNS** | | | | | | |
| AA | 7 | ASTILBE X ARENDSII 'FANAL' | FANAL ASTILBE | CONT | 1 GAL | |
| AM | 53 | ALCHEMILLA MOLLIS | LADY'S MANTLE | CONT | 1 GAL | |
| AN | 18 | ASTER NOVAE-ANGLIAE 'PURPLE DOME' | PURPLE DOME ASTER | CONT | 1 GAL | |
| EP | 13 | ECHINACEA PURPUREA | CONE FLOWER | CONT | | |
| FQ | 37 | FESTUCA GLAUCA 'ELIJAH BLUE | FESCUE GRASS | CONT | 1 GAL | |
| DC | 8 | DELOSPERMA | ICE PLANT | CONT | 1 GAL | |
| HU | 19 | HEUCHERA 'CARAMEL' | CORAL BELLS | CONT | 1 GAL | |
| IV | 33 | IRIS VERSICOLOR | BLUE FLAG IRIS | CONT | 1 GAL | |
| LK | 31 | LIATRIS SPICATA 'KOBOLD' | KOBOLD LIATRIS | CONT | 1 GAL | |
| MF | 29 | MONARDA FISTULOSA | BEE BALM | CONT | | |
| NF | 16 | NEPETA FAASSENII 'WALKER'S LOW' | WALKER'S LOW CATMINT | CONT | 1 GAL | |
| OC | 27 | OSMUNDA CINNAMOMEA | CINNAMON FERN | CONT | | |
| PP | 3 | PHLOX PANICULATA 'GLAMOUR GIRL' | GARDEN PHLOX | CONT | 1 GAL | |
| **GRASSES** | | | | | | |
| AG | 42 | ANDROPOGON GERARDII 'RED OCTOBER' | BIG BLUESTEM | CONT | 1 GAL | |
| CK | 25 | CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' | KARL FOERSTER REED GRASS | CONT | | |
| MC | 18 | MUHLENBERGIA CAPILLARIS | PINK MUHLY GRASS | CONT | 1 GAL | |
| OP | 24 | OPHIOPOGON PLANISCAPUS 'NIGRESCENS' | BLACK MONDO GRASS | CONT | 1 GAL | |
| PV | 2 | PANICUM VIRGATUM | SWITCHGRASS | CONT | 1 GAL | |
| SS | 65 | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM | CONT | 1 GAL | |

## SEED MIXES

| LAWN: PENNINGTON SMART SEED SUN AND SHADE | |
|---|---|
| APPLICATION RATE NEW LAWNS: 9 LB /1000 S.F. | |

| Rev. #: | Date | Description |
|---|---|---|
| | | |

Graphic Scale: 30 0 30 60


SOLLI ENGINEERING
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11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695


| | |
|---|---|
| Drawn By: | MMH |
| Checked By: | MFB |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 30' |


STATE OF CONNECTICUT — MARY F. BLACKBURN — REGISTERED LANDSCAPE ARCHITECT
Mary Blackburn, P.L.A.
CT 1499


Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: LANDSCAPE PLAN

Sheet #: 2.61


Mar 28, 2024 – 1:41pm chemsby
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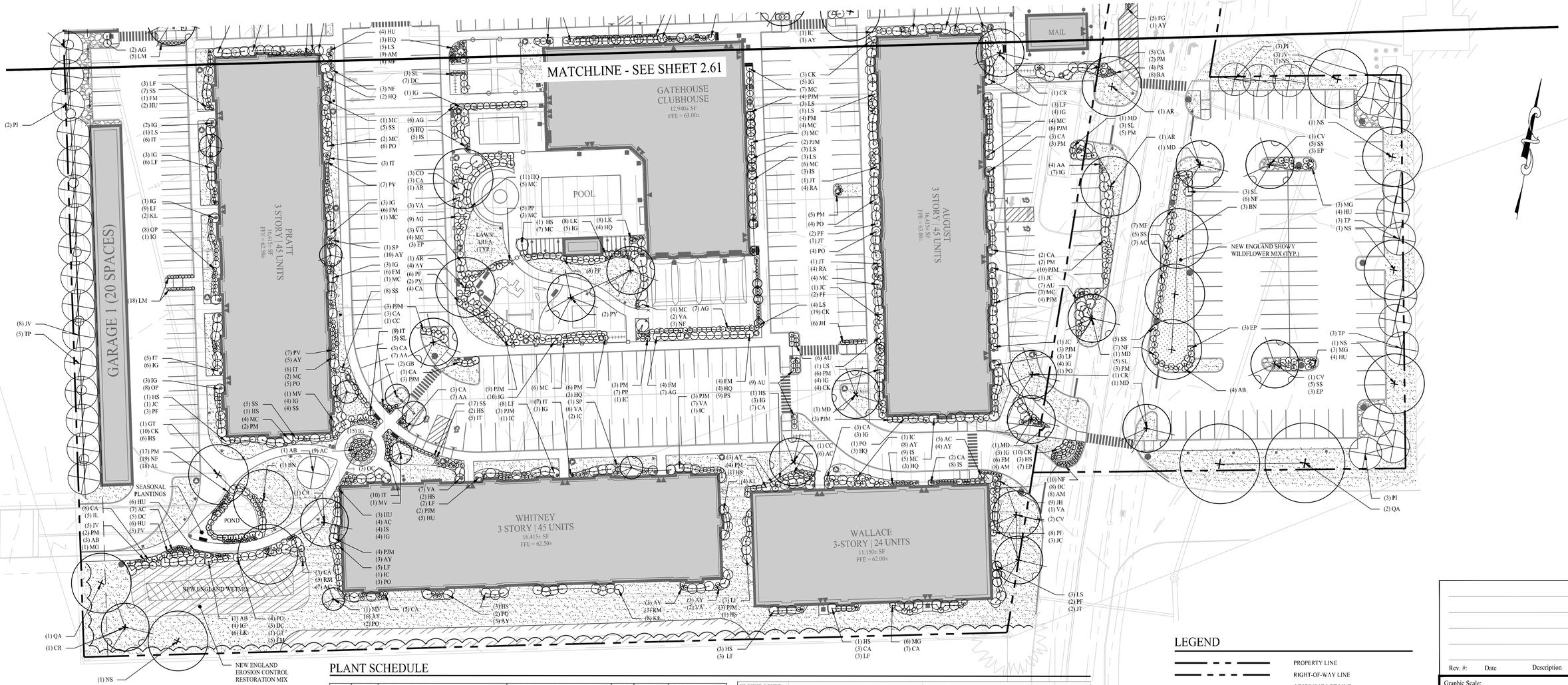


## PLANT SCHEDULE

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **TREES** | | | | | | |
| AR | 4 | ACER RUBRUM | RED MAPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| BN | 4 | BETULA NIGRA 'HERITAGE' | HERITAGE RIVER BIRCH | B&B | 2"-3" CAL | MULTI-STEM |
| GB | 2 | GINKGO BILOBA 'PRINCETON SENTRY' | PRINCETON SENTRY GINKGO | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| GT | 2 | GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE' | THORNLESS COMMON HONEYLOCUST | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| JT | 5 | JUNIPERUS VIRGINIANA 'TAYLOR' | TAYLOR EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| JV | 11 | JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| JC | 7 | JUNIPERUS CHINENSIS 'BLUE POINT' | BLUE POINT JUNIPER | B&B | 5'-6' HT | FULL, EXTRA HEAVY |
| LS | 19 | LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUET | SWEETGUM | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| NS | 5 | NYSSA SYLVATICA | BLACK TUPELO | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| TP | 11 | THUJA PLICATA 'GREEN GIANT' | GREEN GIANT ARBORVITAE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| PI | 8 | PICEA PUNGENS | COLORADO BLUE SPRUCE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| QA | 3 | QUERCUS ALBA | WHITE OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UNDERSTORY TREES** | | | | | | |
| CC | 2 | CERCIS CANADENSIS | EASTERN REDBUD | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CR | 4 | CORNUS X RUTGERSENSIS | FLOWERING DOGWOOD 'RUTGAN' | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CV | 4 | CRATAEGUS VIRIDIS 'WINTER KING' | WINTER KING HAWTHORN | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| MD | 6 | MALUS 'DONALD WYMAN' | DONALD WYMAN FLOWERING CRABAPPL | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| MV | 3 | MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| PV | 2 | PRUNUS VIRGINIANA | CHOKE CHERRY | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| SP | 2 | STEWARTIA PSEUDOCAMELLIA | JAPANESE STEWARTIA | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UPLAND SHRUBS** | | | | | | |
| AA | 18 | ARONIA ARBUTIFOLIA | RED CHOKEBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| AB | 9 | ARONIA MELANOCARPA | BLACK CHOKEBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| AY | 54 | AZALEA 'YUKA' | YUKA AZALEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CA | 65 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CO | 3 | CORNUS ALBA 'BUDS YELLOW' | YELLOW TWIG DOGWOOD | CONT | 24"-36" HT | FULL, EXTRA HEAVY |
| FM | 32 | FOTHERGILLA MAJOR 'MT. ARY' | MT. ARY FOTHERGILLA | CONT | 18"-24" HT | |
| HQ | 35 | HYDRANGEA QUERCIFOLIA 'PEE WEE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| HS | 26 | HYDRANGEA QUERCIFOLIA 'SNOWFLAKE' | OAKLEAF HYDRANGEA | CONT | 18"-24" HT | |
| IC | 7 | ILEX CRENATA 'STEEDS' | STEEDS JAPANESE HOLLY | CONT | 18"-24" HT | |
| IG | 103 | ILEX GLABRA 'SHAMROCK' | SHAMROCK INKBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IJ | 29 | ILEX CRENATA 'SKY PENCIL' | SKY PENCIL JAPANESE HOLLY | CONT | 18"-24" HT | |
| IL | 5 | ILEX VERTICILLATA | WINTERBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IT | 51 | ITEA VIRGINICA 'LITTLE HENRY' | VIRGINIA SWEETSPIRE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| KL | 28 | KALMIA LATIFOLIA 'LITTLE LINDA' | HYBRID MOUNTAIN LAUREL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| LF | 48 | LEUCOTHOE FONTANESIANA | DROOPING LEUCOTHOE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| MG | 13 | MYRICA GALE | SWEETGALE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PF | 31 | POTENTILLA FRUTICOSA | BUSH CINQUEFOIL | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PM | 64 | PINUS MUGO 'MOPS' | DWARF MUGO PINE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PO | 32 | PHYSOCARPUS OPULIFOLIUS 'TINY WINE' | DWARF COMMON NINEBARK | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PJM | 62 | RHODODENDRON PJM | PJM RHODODENDRON | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| RM | 6 | RHODODENDRON MAXIMUM | ROSEBAY RHODODENDRON | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| SL | 19 | SPIREA LATIFOLIA | MEADOWSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| VA | 29 | VIBURNUM ACERIFOLIUM | MAPLE-LEAF VIBURNUM | CONT | 18"-24" HT | FULL, EXTRA HEAVY |

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE |
|---|---|---|---|---|---|
| **GROUNDCOVER** | | | | | |
| AU | 22 | ARCTOSTAPHYLOS UVA-URSI | BEARBERRY | CONT | #1 CONT |
| JH | 35 | JUNIPERUS HORIZONTALIS 'BAR HARBOR' | BAR HARBOR CREEPING JUNIPER | CONT | #1 CONT |
| LM | 18 | LIRIOPE MUSCARI | LILY TURF | CONT | #1 CONT |
| RA | 16 | RHUS AROMATICA 'GRO-LOW' | GRO-LOW FRAGRANT SUMAC | CONT | #1 CONT |
| **PERENNIALS - FERNS** | | | | | |
| AC | 45 | ASTILBE CHINENSIS | ASTILBE | CONT | 1 GAL |
| AL | 18 | ALCHEMILLA MOLLIS | LADY'S MANTLE | CONT | 1 GAL |
| AM | 16 | ACHILLEA 'MOONSHINE' | MOONSHINE YARROW | CONT | 1 GAL |
| EP | 19 | ECHINACEA PURPUREA | CONE FLOWER | CONT | |
| DC | 25 | DELOSPERMA | ICE PLANT | CONT | 1 GAL |
| HU | 30 | HEUCHERA 'CARAMEL' | CORAL BELLS | CONT | 1 GAL |
| IV | 5 | IRIS VERSICOLOR | BLUE FLAG IRIS | CONT | 1 GAL |
| LK | 22 | LIATRIS SPICATA 'KOBOLD' | KOBOLD LIATRIS | CONT | 1 GAL |
| MF | 7 | MONARDA FISTULOSA | BEE BALM | CONT | |
| NF | 48 | NEPETA FAASSENII 'WALKER'S LOW' | WALKER'S LOW CATMINT | CONT | 1 GAL |
| OC | 3 | OSMUNDA CINNAMOMEA | CINNAMON FERN | CONT | |
| PP | 12 | PHLOX PANICULATA 'GLAMOUR GIRL' | GARDEN PHLOX | CONT | 1 GAL |
| **GRASSES** | | | | | |
| AG | 29 | ANDROPOGON GERARDII 'RED OCTOBER' | BIG BLUESTEM | CONT | 1 GAL |
| CK | 46 | CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' | KARL FOERSTER REED GRASS | CONT | |
| MC | 76 | MUHLENBERGIA CAPILLARIS | PINK MUHLY GRASS | CONT | 1 GAL |
| PV | 34 | PANICUM VIRGATUM | SWITCHGRASS | CONT | 1 GAL |
| OJ | 16 | OPHIOPOGON PLANISCAPUS 'NIGRESCENS' | BLACK MONDO GRASS | CONT | 1 GAL |
| SS | 66 | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM | CONT | 1 GAL |

## SEED MIXES

| SEED MIXES |
|---|
| **NEW ENGLAND WETMIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/2,500 S.F. |
| **NEW ENGLAND SHOWY WILDFLOWER MIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/1,900 S.F. |
| **NEW ENGLAND EROSION CONTROL RESTORATION MIX (NEW ENGLAND WETLAND PLANTS, INC.)** |
| APPLICATION RATE: 1 LB/2,500 S.F. |
| **LAWN: PENNINGTON SMART SEED SUN AND SHADE** |
| APPLICATION RATE NEW LAWNS: 9 LB/1,000 S.F. |

## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- LAWN
- NEW ENGLAND SHOWY WILDFLOWER MIX
- RIVERROCKS
- NEW ENGLAND EROSION CONTROL RESTORATION MIX
- NEW ENGLAND WETMIX

| Rev. #: | Date | Description |
|---|---|---|

Graphic Scale: 30 0 30 60


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11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695


| | |
|---|---|
| Drawn By: | MMH |
| Checked By: | MFB |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 30' |

STATE OF CONNECTICUT · MARY F. BLACKBURN · REGISTERED LANDSCAPE ARCHITECT

Mary Blackburn, P.L.A.
CT 1499

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

| Sheet Title: | Sheet #: |
|---|---|
| LANDSCAPE PLAN | 2.62 |


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## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- NATIVE WETLAND TREE (2" - 3" CALIPER)
- LAWN
- NEW ENGLAND SHOWY WILDFLOWER MIX
- RIVERROCKS
- NEW ENGLAND EROSION CONTROL RESTORATION MIX
- NEW ENGLAND WETMIX

## PLANT SCHEDULE

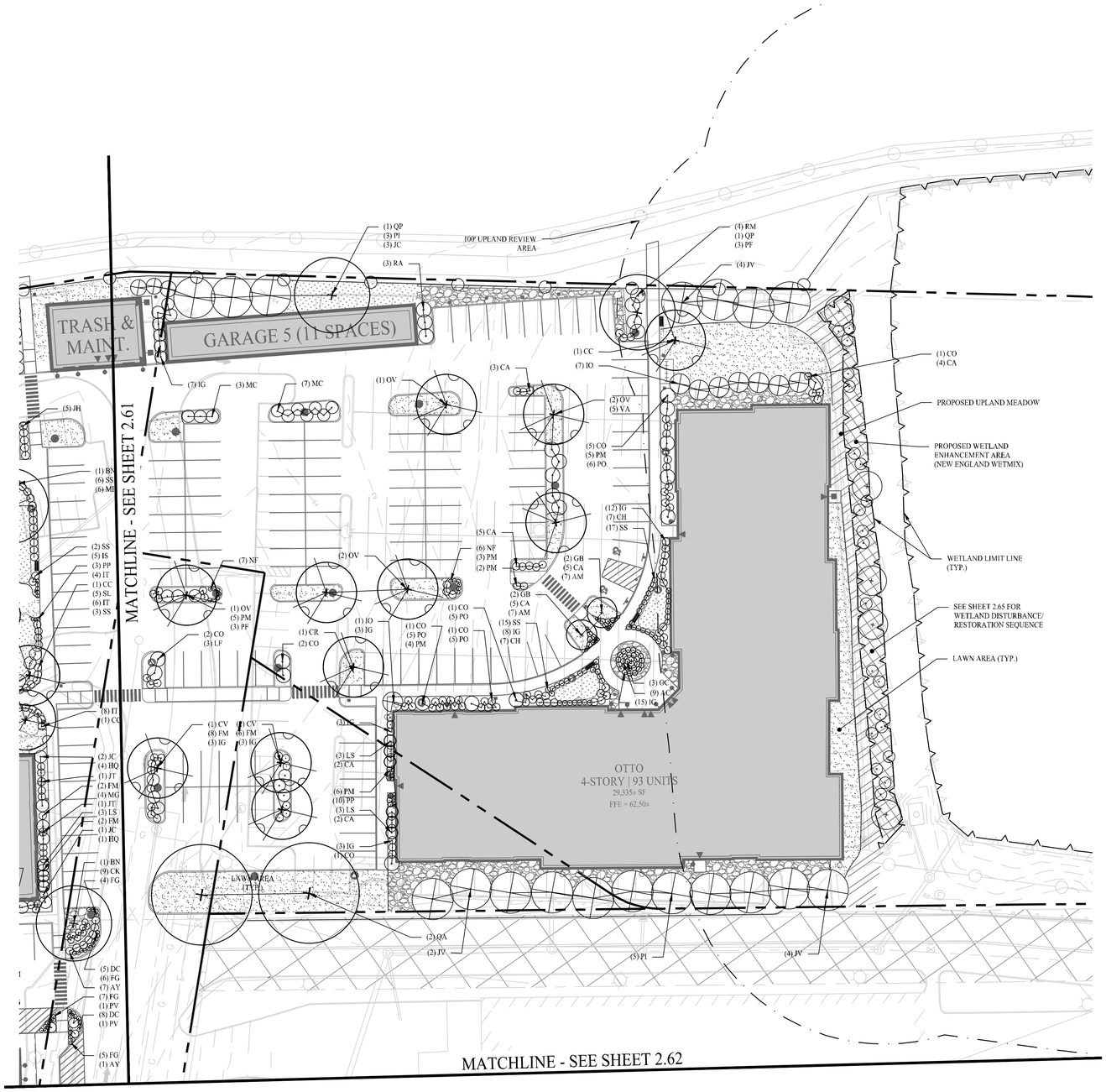
| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **TREES** | | | | | | |
| GB | 4 | GINKGO BILOBA 'PRINCETON SENTRY' | PRINCETON SENTRY GINKGO | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| IO | 8 | ILEX OPACA 'PATERSON' | PATERSON AMERICAN HOLLY | B&B | 6'-7' HT | FULL, EXTRA HEAVY |
| JC | 3 | JUNIPERUS CHINENSIS 'BLUE POINT' | BLUE POINT JUNIPER | B&B | 24"-36" HT | |
| JV | 10 | JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| LS | 6 | LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUET' | SWEETGUM | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| PI | 8 | PICEA PUNGENS | COLORADO BLUE SPRUCE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| QA | 2 | QUERCUS ALBA | WHITE OAK | B&B | 3"-3 1/2" CAL | FULL, EXTRA HEAVY |
| QP | 2 | QUERCUS PALUSTRIS | PIN OAK | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| **UNDERSTORY TREES** | | | | | | |
| CC | 1 | CERCIS CANADENSIS | EASTERN REDBUD | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| CR | 1 | CORNUS X RUTGERSENSIS | FLOWERING DOGWOOD 'RUTGAN' | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| CV | 3 | CRATAEGUS VIRIDIS 'WINTER KING' | WINTER KING HAWTHORN | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| OV | 6 | OSTRYA VIRGINIANA | AMERICAN HOPHORNBEAM | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| **UPLAND SHRUBS** | | | | | | |
| CA | 26 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CO | 14 | CORNUS ALBA 'BUD'S YELLOW' | YELLOW TWIG DOGWOOD | CONT | 24"-36" HT | FULL, EXTRA HEAVY |
| FM | 10 | FOTHERGILIA MAJOR 'MT. AIRY' | MT. AIRY FOTHERGILIA | CONT | | |
| IG | 57 | ILEX GLABRA 'SHAMROCK' | SHAMROCK INKBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| LF | 3 | LEUCOTHOE FONTANESIANA | DROOPING LEUCOTHOE | CONT | | |
| PF | 6 | POTENTILLA FRUTICOSA | BUSH CINQUEFOIL | CONT | 24"-36" HT | FULL, EXTRA HEAVY |
| PM | 25 | PINUS MUGO 'MOPS' | DWARF MUGO PINE | CONT | 24"-36" HT | FULL, EXTRA HEAVY |
| PO | 21 | PHYSOCARPUS OPULIFOLIUS 'TINY WINE' | DWARF COMMON NINEBARK | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| RM | 4 | RHODODENDRON MAXIMUM | ROSEBAY RHODODENDRON | CONT | 24"-36" HT | FULL, EXTRA HEAVY |
| **PERENNIALS + FERNS + GROUNDCOVER** | | | | | | |
| AC | 9 | ASTILBE CHINENSIS | ASTILBE | CONT | 1 GAL | |
| AM | 14 | ACHILLEA 'MOONSHINE' | MOONSHINE YARROW | CONT | 1 GAL | |
| CH | 14 | CHELONE OBLIQUA 'ROSEA' | PINK TURTLEHEAD | CONT | 1 GAL | |
| NF | 13 | NEPETA FAASSENII 'WALKER'S LOW' | WALKER'S LOW CATMINT | CONT | 1 GAL | |
| OC | 3 | OSMUNDA CINNAMOMEA | CINNAMON FERN | CONT | | |
| PP | 10 | PHLOX PANICULATA 'GLAMOUR GIRL' | GARDEN PHLOX | CONT | 1 GAL | |
| RA | 3 | RHUS AROMATICA 'GRO-LOW' | GRO-LOW FRAGRANT SUMAC | CONT | #1 CONT | |
| VA | 5 | VIBURNUM ACERIFOLIUM | MAPLE-LEAF VIBURNUM | CONT | | |
| **GRASSES** | | | | | | |
| MC | 10 | MUHLENBERGIA CAPILLARIS | PINK MUHLY GRASS | CONT | 1 GAL | |
| SS | 32 | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM | CONT | 1 GAL | |

## NATIVE WETLAND PLANTINGS

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **NATIVE WETLAND TREES** | | | | | | |
| Arw | 5 | ACER RUBRUM | RED MAPLE | CONT | 4'-6' HT | FULL, EXTRA HEAVY |
| NSw | 5 | NYSSA SYLVATICA | BLACK TUPELO | CONT | 4'-6' HT | FULL, EXTRA HEAVY |
| Psw | 2 | PLATANUS OCCIDENTALIS | AMERICAN SYCAMORE | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |
| QBw | 5 | QUERCUS BICOLOR | SWAMP WHITE OAK | CONT | 4'-6' HT | FULL, EXTRA HEAVY |
| QPw | 6 | QUERCUS PALUSTRIS | PIN OAK | CONT | 4'-6' HT | FULL, EXTRA HEAVY |
| Uaw | 3 | ULMUS AMERICANA 'PRINCETON' | PRINCETON' AMERICAN ELM | B&B | 2 1/2"-3" CAL | FULL, EXTRA HEAVY |

## SEED MIXES

| SEED MIXES | |
|---|---|
| **NEW ENGLAND WETMIX (NEW ENGLAND WETLAND PLANTS, INC.)** | |
| APPLICATION RATE: 1 LB /2,500 S.F. | |
| **NEW ENGLAND SHOWY WILDFLOWER MIX (NEW ENGLAND WETLAND PLANTS, INC.)** | |
| APPLICATION RATE: 1 LB /1,900 S.F. | |
| **NEW ENGLAND EROSION CONTROL/RESTORATION MIX (NEW ENGLAND WETLAND PLANTS, INC.)** | |
| APPLICATION RATE: 1 LB /2,500 S.F. | |
| **LAWN: PENNINGTON SMART SEED SUN AND SHADE** | |
| APPLICATION RATE NEW LAWNS: 9 LB/1,000 S.F. | |

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Graphic Scale: 30 0 30 60


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STATE OF CONNECTICUT · MARY F. BLACKBURN · REGISTERED LANDSCAPE ARCHITECT

Mary Blackburn, P.L.A.
CT 1499

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

| Sheet Title: | Sheet #: |
|---|---|
| LANDSCAPE PLAN | 2.63 |


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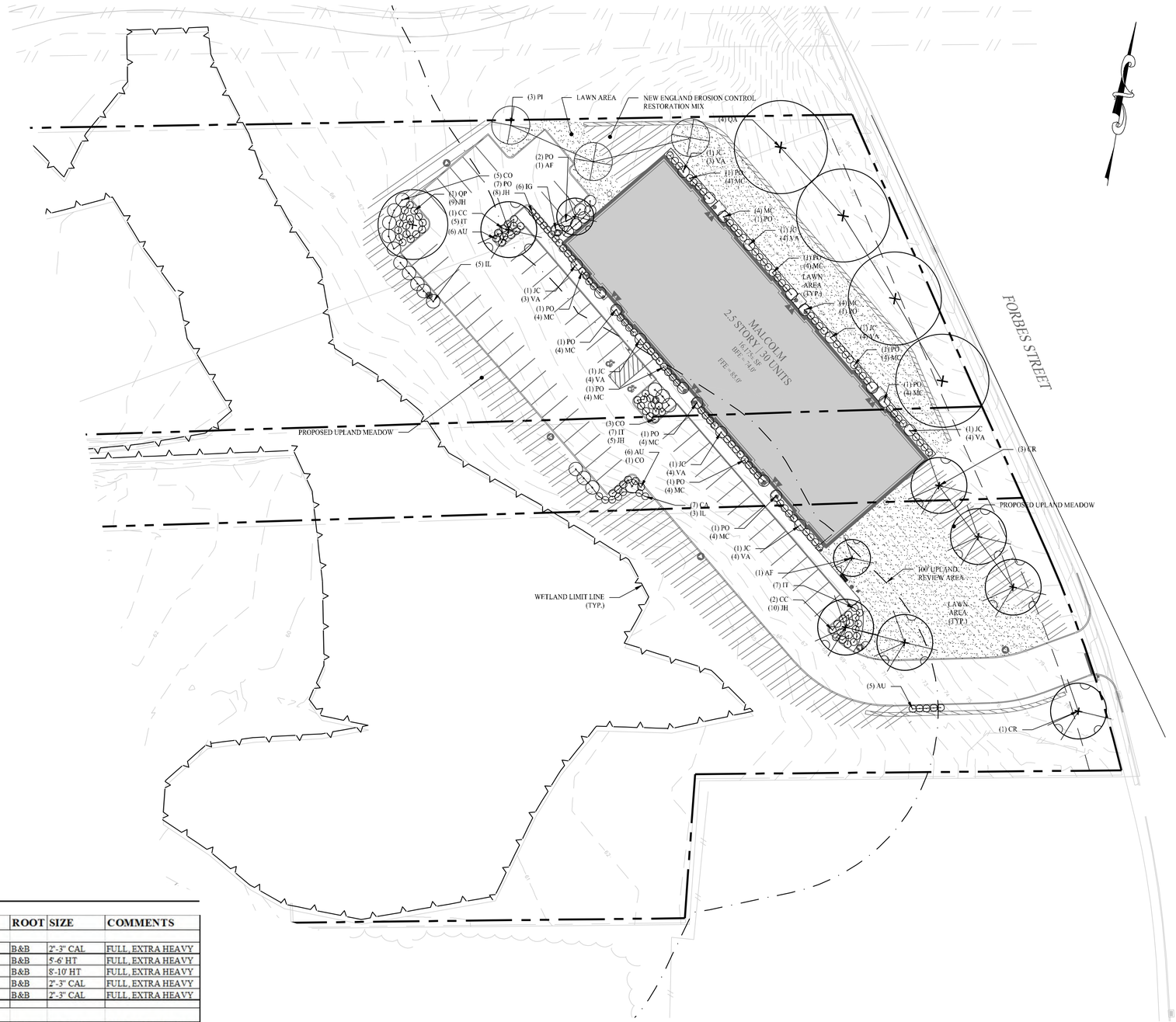
## LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- LAWN
- NEW ENGLAND EROSION CONTROL RESTORATION MIX




## PLANT SCHEDULE

| KEY | QTY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | COMMENTS |
|---|---|---|---|---|---|---|
| **TREES** | | | | | | |
| AF | 2 | ACER X FREEMANII 'ARMSTRONG' | ARMSTRONG MAPLE | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| JC | 8 | JUNIPERUS CHINENSIS 'BLUE POINT' | BLUE POINT JUNIPER | B&B | 5'-6' HT | FULL, EXTRA HEAVY |
| PI | 3 | PICEA PUNGENS | COLORADO BLUE SPRUCE | B&B | 8'-10' HT | FULL, EXTRA HEAVY |
| QA | 4 | QUERCUS ALBA | WHITE OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| QP | 1 | QUERCUS PALUSTRIS | PIN OAK | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UNDERSTORY TREES** | | | | | | |
| CC | 3 | CERCIS CANADENSIS | EASTERN REDBUD | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| CR | 4 | CORNUS X RUTGERSENSIS | FLOWERING DOGWOOD 'RUTGAN' | B&B | 2"-3" CAL | FULL, EXTRA HEAVY |
| **UPLAND SHRUBS** | | | | | | |
| CA | 7 | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| CO | 9 | CORNUS ALBA 'BUD'S YELLOW' | YELLOW TWIG DOGWOOD | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IG | 6 | ILEX GLABRA 'SHAMROCK' | SHAMROCK INKBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IV | 8 | ILEX VERTICILLATA | WINTERBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| IT | 19 | ITEA VIRGINICA 'LITTLE HENRY' | VIRGINIA SWEETSPIRE | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| PO | 21 | PHYSOCARPUS OPULIFOLIUS 'TINY WINE' | DWARF COMMON NINEBARK | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| VA | 30 | VACCINIUM ANGUSTIFOLIUM | LOW-BUSH BLUEBERRY | CONT | 18"-24" HT | FULL, EXTRA HEAVY |
| **GROUNDCOVER** | | | | | | |
| AU | 17 | ARCTOSTAPHYLOS UVA-URSI | BEARBERRY | CONT | #1 CONT | |
| JH | 32 | JUNIPERUS HORIZONTALIS 'BAR HARBOR' | BAR HARBOR CREEPING JUNIPER | CONT | #1 CONT | |
| **GRASSES** | | | | | | |
| MC | 48 | MUHLENBERGIA CAPILLARIS | PINK MUHLY GRASS | CONT | 1 GAL | |

## SEED MIXES

| SEED MIXES | |
|---|---|
| **NEW ENGLAND EROSION CONTROL/RESTORATION MIX (NEW ENGLAND WETLAND PLANTS, INC.)** | |
| | APPLICATION RATE: 1 LB/2,500 S.F. |
| **LAWN: PENNINGTON SMART SEED SUN AND SHADE** | |
| | APPLICATION RATE NEW LAWNS: 9 LB/1,000 S.F. |

Rev. #: Date Description

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| | |
|---|---|
| Drawn By: | MMH |
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STATE OF CONNECTICUT — MARY F. BLACKBURN — REGISTERED LANDSCAPE ARCHITECT

Mary Blackburn, P.L.A.
CT 1499

Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

Sheet Title: LANDSCAPE PLAN

Sheet #: 2.64


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**Appendix A**

Contractors Certification Statement

**GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER AND DEWATERING WASTGEWATERS ASSOCIATED WITH CONSTRUCTION ACTIVITIES**

**STORM WATER POLLUTION PREVENTION PLAN**
**GENERAL CONTRACTOR'S CERTIFICATION**

**Project Site: 285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane – East Hartford, CT**

**GENERAL CONTRACTOR'S CERTIFICATION:**

> "I certify under penalty of the law that I have read and understand the terms and conditions of the General Permit for the discharge of Stormwater and Dewatering Wastewaters from Construction Activities. I understand that as a contractor or subcontractor at the site, I am authorized by this general permit, and must comply with the terms and conditions of the permit, including but not limited to the requirements of the Stormwater Pollution Control Plan prepared for this site."

Name: _____
(Print)

Signature: _____

Title: _____

Company Name: _____

Address: _____

_____

_____

Telephone Number: _____

Date: _____

Scope of Services: _____

**Appendix B**

Site Inspection Checklist

**Proposed Residential Redevlopment**
**285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane – East Hartford, Connecticut**
**Stormwater Pollution Control Plan**
**Weekly Construction Site Inspection checklist and Report for Temporary and Final Stabilized Areas**

**Date of Weekly Inspection:** _____

**Project/Construction Manager Name, Signature and Qualifications:** _____

| Areas/Items Inspected | Checked (Y/N) | Comments/Notes | Corrective Actions Taken (Explain) |
|---|---|---|---|
| 1. All Disturbed/Unstabilized Soil Areas | | | |
| 2. Soil Erosion and Sediment Control Measures (e.g., silt fences, haybales, inlet protection, etc.) | | | |
| 3. Construction Entrances | | | |
| 4. Material/Vehicle/Machinery/Equipment Storage Areas | | | |
| 5. Catch Basins/Water Quality Units | | | |
| 6. Sediment Traps/Detention Basins | | | |
| 7. Soil Stockpile Areas | | | |
| 8. Stormwater Discharge Points (e.g. riprap pads) | | | |
| 9. Debris | | | |
| 10. Waste Receptacles | | | |
| 11. Litter | | | |
| 12. On-site and Nearby Wetlands and Watercourses | | | |
| 13. Other Relevant Areas or Items | | | |

**Appendix C**

Confirmation of Receipt of Application

**TO BE INSERTED UPON RECIEPT FROM CT DEEP**

**Appendix D**

Certificate of Registration

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

**Bureau of Materials Management and Compliance Assurance**

**Notice of Permit Authorization**

February, 05 2025

Mark Friedland
Jasko Zelman 1
114 W Main St
New Britain, CT 06051-4223

Subject: General Permit Registration for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities
Application NO.: 202411675

Mark Friedland:

The Department of Energy and Environmental Protection, Water Permitting and Enforcement Division of the Bureau of Materials Management and Compliance Assurance, has completed the review of the Concourse Park (located at 936 Silver Ln, East Hartford) registration for the **General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 12/31/2020, modified 11/25/2022 (general permit)** . The project is compliant with the requirements of the general permit and the discharge(s) associated with this project is (are) authorized to commence as of the date of this letter. Permit No. GSN004162 has been assigned to authorize the stormwater discharge(s) from this project.

Questions can be emailed to deep.stormwater@ct.gov.

**Appendix E**

Copy of Notice of Termination Form

# General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

## *Notice of Termination Form*

Please complete and submit this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your termination. Print or type unless otherwise noted.

Note: Ensure that for commercial and industrial facilities, registrations under the *General Permit for the Discharge of Stormwater Associated with Industrial Activity* (DEP-PED-GP-014) or the *General Permit for the Discharge of Stormwater from Commercial Activities* (DEP-PED-GP-004) have been filed where applicable. For questions about the applicability of these general permits, please call the Department at 860-424-3018.

## Part I: Registrant Information

1. Permit number: ***GSN***
2. Fill in the name of the registrant(s) as indicated on the registration certificate:

   Registrant: **Jasko Zelman 1, LLC**
3. Site Address: **285 & 291 Forbes St & 936, 942, 944 & 960 Silver Lane**

   City/Town: **East Hartford** State: **CT** Zip Code: **06118**
4. Date all storm drainage structures were cleaned of construction sediment:

   Date of Completion of Construction:

   Date of Last Inspection (must be at least three months after final stabilization pursuant to Section 6(b)(6)(D) of the general permit):
5. Check the post-construction activities at the site (check all that apply):

   ☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill

   ☐ Other (describe):

## Part II: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

| Signature of Permittee | Date |
|---|---|
| Name of Permittee (print or type) | Title (if applicable) |

Note: Please submit this Notice of Termination Form to:

STORMWATER PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

**Appendix F**

SWPCP Amendments

## STORM WATER POLLUTION CONTROL PLAN
## AMENDMENTS

| NO. | DATE | REASON FOR CHANGE | DATE INSTALLED |
|---|---|---|---|
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**Appendix G**

Engineering Report
Control Measures Narrative
Wetland and Watercourse Delineation & Report

# ENGINEERING REPORT

*For The Proposed:*

## Site Redevelopment

*Located At:*

285 & 291 Forbes Street and 936, 942, 944 & 960 Silver Lane
East Hartford, Connecticut 06118

*Prepared On:*

February 10, 2023

*Revised:*

April 12, 2023
March 28, 2024

*Prepared By:*

SOLLI ENGINEERING

501 Main Street
Monroe, Connecticut 06468
T: (203) 880-5455  F: (203) 880-9695

*Prepared For:*

## Jasko Zelman 1, LLC

Kevin M. Solli
CT PE #25759

## Executive Summary:

Solli Engineering, LLC has been retained by Jasko Zelman, LLC to provide site and traffic engineering services, environmental services, geotechnical investigation, and permitting assistance for the proposed "Concourse Park" to be constructed on the site of the former Showcase Cinema site on Silver Lane and Forbes Street in East Hartford. The proposed development consists of ten buildings, clubhouse, mail/package delivery facilities, two refuse/service buildings, and several garages and carports. In total, there are 432 proposed residential units includes, along with 786 parking spaces, internal vehicular circulation drives, an extensive network of pedestrian walkways, a pool and associated recreational amenities, underground site utilities, stormwater management systems, and lawn/landscape areas.

The existing site consists of several parcels of property that will be assembled for the development of Concourse Park. In general, the proposed development, apart from the one residential structure proposed near Forbes Street, is to be constructed within the previously developed footprint of the former movie theater. There is sufficient existing utility infrastructure within and adjacent to the site to service the proposed development. All proposed utilities within the development will be installed underground.

Stormwater management for the proposed development will be accomplished via underground detention systems and surface infiltration/detention basins. These systems will promote groundwater recharge and serve to maintain proposed rates of runoff at or below the existing conditions for all the rainfall events that were studied. Our stormwater calculations do not rely on the effects of infiltration to accomplish these results, although all the proposed detention systems are designed to promote infiltration/groundwater recharge.

# Table of Contents


Project Description & Development Summary: ..... 1

Existing Site Conditions: ..... 1

- General Site Conditions: ..... 1
- Utilities: ..... 1
- Existing Soils: ..... 1
- Traffic: ..... 2

Stormwater Management Study: ..... 2

- Methodology: ..... 2
- Scope of Study: ..... 2
- Existing Drainage Areas: ..... 3
  - Existing Drainage Area #1 (EDA-1): ..... 3
  - Existing Drainage Area #2 (EDA-2A & EDA-2B): ..... 3
  - Existing Drainage Area #3 (EDA-3) ..... 3
- Proposed Drainage Areas: ..... 3
  - Proposed Drainage Area #1 (PDA-1A, PDA-1B, PDA-1C, PDA-1D): ..... 3
  - Proposed Drainage Area #2 (PDA-2A & PDA-2B): ..... 3
  - Proposed Drainage Area #3 (PDA-3A & PDA-3B) ..... 4
- Summary of Results: ..... 4
- Stormwater Quality Management: ..... 5
- Conclusions & Report Closure: ..... 5


# Appendices:


Appendix A ..... NRCS Soils Report
Appendix B ..... NOAA Atlas 14 Precipitation Tables
Appendix C ..... Watershed Maps
Appendix D ..... HydroCAD Summary Calculations
Appendix E ..... Water Quality Volume Computations
Appendix F ..... Preliminary Soil Boring Logs
Appendix G ..... Figures
Appendix H ..... Stormwater Conveyance Calculations

# Project Description & Development Summary:

The proposed project consists of the redevelopment of the former Showcase Cinema site on Sliver Lane and the development of a smaller, undeveloped portion of the site on Forbes Street. In all, 432 residential apartments are proposed, distributed among ten three and four-story structures.

# Existing Site Conditions:

## General Site Conditions:

Currently, the site is vacant. The former cinema building has been removed, and the existing paved driveways, parking areas, and underground utilities remain. The western portion of the site contains the majority of the previously developed area. This portion of the site is generally gently sloping from north to south. The eastern portion of the cinema complex is generally covered in pavement and slopes gently from west to east, towards the central wetland area. The eastern portion of the site adjacent to Forbes Street is undeveloped, and slopes steeply from east to west towards the central wetland corridor.

There is a central wetland area that appears to have been manipulated/disturbed over the years. This portion of the site is generally vegetated/wooded. Currently, this wetland area drains through a large diameter culvert the runs from the southwest corner of the wetland area to the west and then to the south towards Silver Lane. This culvert appears to provide the primary conveyance for stormwater off the subject site as well as adjacent commercially developed properties. All existing drainage systems on the subject property, as well as adjacent properties, appear to connect to this main drainage culvert.

## Utilities:

As previously discussed, much of the site has been previously developed. As such, there is existing utility infrastructure within and adjacent to the proposed development. Water service is available and preliminary hydrant flow testing indicates that the existing water network has sufficient capacity to service the anticipated domestic water and fire service requirements of the development. Sanitary sewers exist on site. The development team is in active coordination with The Metropolitan District to review the project requirements regarding water and sewer services. Natural gas service is available and is subject to final design and load calculations, appears to be adequate for the proposal. Likewise, electrical service appears to be adequate or easily upgraded to service the project.

A site utility plan has been provided for review and reflects the general layout of the proposed utility network. We expect that some modifications and revisions to this plan will occur as final coordination with the various utility providers occurs.

## Existing Soils:

Based on initial test boring results (See Appendix F), the developed portions of the site have been extensively graded and/or filled; thus, these areas of the site are shown as Udorthents and/or Urban Land on the NRCS soil maps. Undeveloped areas are comprised of Ninigret and Elmridge fine sandy loams, and Windsor Loamy sands. The natural soils are classified as moderately well drained to excessively drained by the NRCS. The complete NRCS soils report for the project area is available for review in Appendix A. A full geotechnical investigation was performed on the site and the comprehensive geotechnical report will be available for review shortly.

### Traffic:

The proposed development will be accessed from Applegate Lane, Silver Lane, and Forbes Street. As the site traffic will affect conditions on the state highway network and exceeds 100,000 s.f./200 parking spaces, the project is undergoing an extensive review by the Connecticut DOT and Office of State Traffic Administration (OSTA). This process will also involve the review of the proposed drainage system and how it may affect the existing drainage system in Silver Lane.

## Stormwater Management Study:

### Methodology:

The stormwater management computations were performed utilizing the HydroCAD® hydrology software. The software is a computer implementation of the SCS/NRCS TR-55/TR-20 methodology for evaluating the rates and volumes of rainwater runoff from areas of land and is the default methodology to compare stormwater runoff under existing and proposed site conditions. This methodology utilizes the size of the contributing watershed, the surface conditions, the slope/topography of the land, the types of soils, and the depth of rainfall to evaluate runoff from a site. It also allows for runoff to be routed through retention/detention facilities to evaluate the effects that those elements have on the stormwater discharge from the site.

Stormwater conveyance was analyzed for the 25-year storm event utilizing the Hydraflow Storm Sewer computer program. The results of this analysis are provided in Appendix H.

The depths of rainfall for the various storm events were taken from the NOAA Hydrometeorogical Design Studies Center website, which provides NOAA Atlas 14 rainfall depths based on storm duration, recurrence interval, and precise location of the site.

Other hydraulic calculations are performed using generally accepted formulae.

The proposed stormwater management system was designed to provide the following benefits:

- Maintain Existing Drainage Patterns.
- Promote Infiltration/Groundwater Recharge
- Maintain Existing Peak Flow Rates
- Improve Water Quality using accepted Primary Treatment Methods

### Scope of Study:

For the purposes of our analysis, we focused only on the portions of the site that are to be modified by the proposed development project. There are undeveloped portions of the site that are to remain undeveloped in the proposed condition. For the purposes of stormwater, these areas will function similarly in the proposed condition as they do in the existing condition.

We have performed the analysis for the 1-year, 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year storm events.

While we believe the soils underlying the proposed underground detention systems will provide significant volume of infiltration during the studied storm events, our analysis does not take any credit for this infiltration.

## Existing Drainage Areas:

For the purposes of our analysis, three overall drainage areas were evaluated, based on their location, and point of discharge. These are further described as follows:

### Existing Drainage Area #1 (EDA-1):

This area is comprised of the western portion of the site and contains the former cinema location and much of the surface parking area associated with the former cinema use. Drainage from this area is collected and conveyed via a series of roof drains, catch basins, manholes, and stormwater culverts. The runoff is routed to a linear detention basin to the south, where it is metered out, via an 18" flared end culvert, to an existing stormwater culvert to the east. The bottom of this basin is partially paved, thereby limiting infiltration. In storm events greater than the 5-year event, our computations show that the basin overtops and discharges overland flow to the vacant property to the south. This area contains 11.1 acres in total.

### Existing Drainage Area #2 (EDA-2A & EDA-2B):

Drainage area #2 includes areas of the site that currently discharge directly into the on-site wetland area. This area is further divided into drainage areas EDA-2A and EDA-2B.

EDA-2A is located on the eastern side of the former cinema site. It is currently almost entirely paved with site drives and a parking lot. This area drains to the wetland area to the east via a combination of closed conduit drainage and sheet flow. The area contains 2.35 acres.

EDA-2B is located to the west of Forbes Street and includes 1.82 acres of undeveloped land that drains directly, via overland flow, into the on-site wetland area.

### Existing Drainage Area #3 (EDA-3)

EDA-3 is comprised of 1.53 acres of developed land along the main site driveway out to Silver Lane. This area is developed with paved driveway areas as well as larger areas of lawn. Runoff from this area is collected via a network of catch basins, yard inlets, and drainage culverts and directed to the main drainage culvert running north to south in this area.

## Proposed Drainage Areas:

### Proposed Drainage Area #1 (PDA-1A, PDA-1B, PDA-1C, PDA-1D):

This area is comprised of the western and central portions of the proposed development and is the largest of proposed drainage areas. This area is further subdivided into four smaller drainage areas (PDA-1A, PDA-1B, PDA-1C, PDA-1D). PDA-1A, PDA-1B, & PDA-1C are each associated with a proposed surface or underground detention system. Stormwater discharges from these areas are connected to the existing outlet culvert of the existing detention basin. PDA-1D consists of building room and surrounding landscaped area, and discharges via overland flow towards the property to the south. This drainage area contains approximately 9.54 acres in total.

### Proposed Drainage Area #2 (PDA-2A & PDA-2B):

Drainage area #2 includes areas of the site that currently discharge directly into the on-site wetland area. This area is further divided into drainage areas PDA-2A and PDA-2B.

PDA-2A is located on the eastern side of the former cinema site and is proposed to be developed with a single residential building, garages and carports, paved driveways and parking areas, and lawn/landscape areas. This area contains 3.31 acres. Stormwater from this area will be collected and conveyed through a network of roof drains, catch basins, and underground piping to an underground detention system. The discharge from the detention system will be directed to the wetland area to the east.

PDA-2B is located to the west of Forbes Street and is the proposed location for a single residential building and associated surface parking area. The runoff from this 1.58-acre drainage area will be collected and conveyed to a proposed underground detention system. The discharge from the detention system will be directed to the wetland area to the west.

### Proposed Drainage Area #3 (PDA-3A & PDA-3B)

PDA-3 is comprised of land along the main site driveway out to Silver Lane. For the purposes of our analysis, this area has been further divided into PDA-3A and PDA-3B.

PDA-3A is the area to the west of the site drive and is proposed to contain a portion of a residential building, site drives and parking, and lawn/landscape areas. The runoff from this 1.06-acre area is conveyed to a proposed underground detention system and then to the main north-south running drainage culvert.

PDA-3B is the area to the east of the site driveway and will contain site drives, parking, and lawn/landscaped areas. developed with paved driveway areas as well as larger areas of lawn. The runoff from this 0.64-acre area is conveyed to a proposed underground detention system and then to the main north-south running drainage culvert.

## Summary of Results:

Based on our analysis, we have provided the following summary of results for all the storm events that were studied:

| Storm Event | DA #1&#3 (Disch.to Culvert) | | DA #2A&#2B (Flow to Wetlands) | | Overland Flow to South | | Total Discharge | |
|---|---|---|---|---|---|---|---|---|
| | Ex.(c.f.s.) | Pr.(c.f.s.) | Ex.(c.f.s.) | Pr.(c.f.s.) | Ex.(c.f.s.) | Pr.(c.f.s.) | Ex.(c.f.s.) | Pr.(c.f.s.) |
| 1-Year | 11.52 | 1.22 | 5.23 | 2.51 | 0.00 | 0.00 | 16.75 | 3.73 |
| 2-Year | 13.53 | 4.15 | 6.76 | 5.32 | 0.00 | 0.00 | 20.29 | 9.47 |
| 5-Year | 16.38 | 13.43 | 9.25 | 8.20 | 2.60 | 1.52 | 28.23 | 23.15 |
| 10-Year | 18.50 | 15.45 | 11.35 | 9.81 | 27.26 | 8.23 | 57.11 | 33.49 |
| 25-Year | 20.47 | 18.80 | 14.24 | 13.09 | 45.25 | 19.18 | 79.96 | 51.07 |
| 50-Year | 21.69 | 20.58 | 16.38 | 15.14 | 53.77 | 24.23 | 91.84 | 59.95 |
| 100-Year | 23.03 | 21.84 | 18.73 | 17.14 | 62.96 | 29.73 | 106.20 | 68.71 |

As can be seen from the summary table, the stormwater discharge rates have been maintained or reduced from all the drainage areas studied and for all storm events. The HydroCAD® computation summaries supporting these results can be found in Appendix D.

## Stormwater Quality Management:

The site currently lacks any real stormwater quality measures. Some sediment removal likely occurs within the existing catch basin sumps and within the existing detention bottom. Any meaningful infiltration is significantly hindered by the paved bottom of the basin. Based on the outlet culvert from the basin, most sediments likely pass right through and into the downstream drainage system. In the area of the developed site that drains directly to the on-site wetlands, there are no provisions for sediment trapping or tempering of runoff temperature into the wetlands.

In the proposed condition, all runoff from roof and paved surfaces receives several levels of treatment. The proposed catch basins and yard drains will be equipped with sumps to trap some of the larger, heavier sediments for stormwater runoff. The runoff will then be conveyed to the proposed underground detention systems, where it will be treated through the utilization of isolator rows. Once in the underground system, the first-flush volume is forced to be infiltrated by elevating the outlet culvert above the elevation that will contain the entire required Water Quality Volume (50% of total WQV based on redevelopment) for that drainage area within the system. In this way, an effective sediment removal rate of 100% is achieved, as no portion of the first flush volume is allowed to discharge.

Trapping the Water Quality Volume provides other environmental benefits as well. Typically, the first flush runoff from roofs and paved areas is elevated in temperature. Discharging this warmer runoff directly into existing wetland areas and downstream watercourses can have damaging effects to those resources. By trapping the first flush runoff, that warmer water is infiltrated into the underlying soil and does not make its way into the downstream resources.

The proposed detention systems have been designed to provide approximately 24” of vertical separation between the bottoms of the systems and the observed groundwater, which provides adequate filtration and renovation of the stormwater through the soil column before reaching the groundwater table.

## Conclusions & Report Closure:

Based on the results of our analysis, we believe that the proposed development will not result in adverse effects to the community from a development, traffic, or utility demand standpoint. We also believe that the stormwater management system has been designed to maintain existing drainage patterns and peak flows, as well as enhance the quality of the stormwater discharge over what has previously existed.

**List of Appendices**

Appendix A: NRCS Soils Report
Appendix B: NOAA Atlas 14 Precipitation Tables
Appendix C: Watershed Maps
Appendix D: HydroCAD Summary
Appendix E: Water Quality Volume Computations
Appendix F: Preliminary Soil Boring Logs
Appendix G: Figures
Appendix H: Stormwater Conveyance Calculations

**APPENDIX A**
**NRCS SOILS REPORT**

Tabular Data – Version 19 (Sept 7, 2021)

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 State of Connecticut

April 11, 2022

# 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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# Contents

**Preface**.....2
**How Soil Surveys Are Made**.....5
**Soil Map**.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
State of Connecticut.....13
28A—Elmridge fine sandy loam, 0 to 3 percent slopes.....13
36B—Windsor loamy sand, 3 to 8 percent slopes.....15
306—Udorthents-Urban land complex.....16
307—Urban land.....17
701A—Ninigret fine sandy loam, 0 to 3 percent slopes.....18
**Soil Information for All Uses**.....21
Soil Properties and Qualities.....21
Soil Qualities and Features.....21
Hydrologic Soil Group.....21
**References**.....26

# 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.

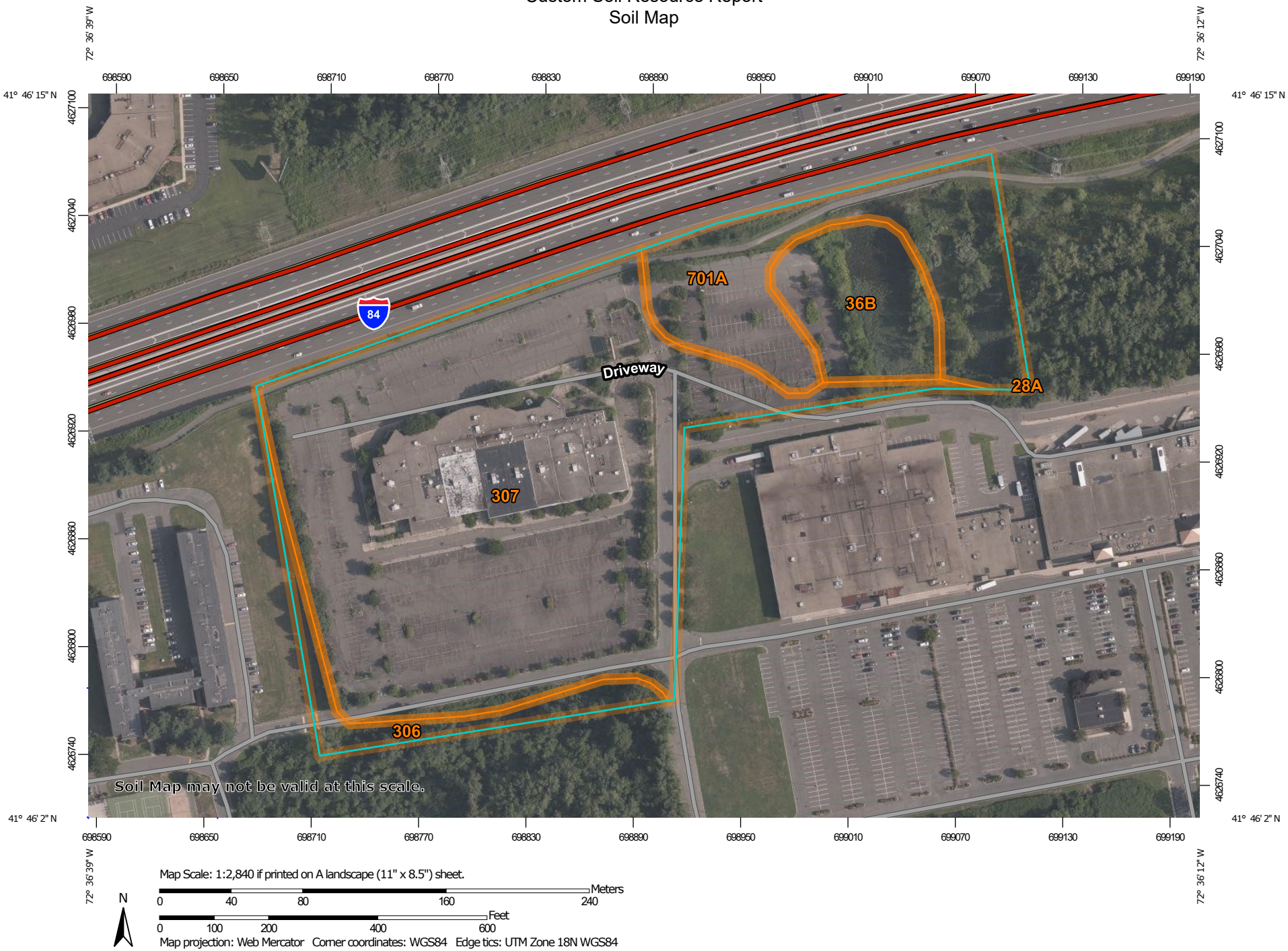
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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 Scale: 1:2,840 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

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

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil 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 1:12,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Jul 15, 2019—Aug 29, 2019

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

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 28A | Elmridge fine sandy loam, 0 to 3 percent slopes | 0.0 | 0.0% |
| 36B | Windsor loamy sand, 3 to 8 percent slopes | 1.6 | 8.9% |
| 306 | Udorthents-Urban land complex | 0.9 | 5.0% |
| 307 | Urban land | 12.4 | 67.6% |
| 701A | Ninigret fine sandy loam, 0 to 3 percent slopes | 3.4 | 18.5% |
| **Totals for Area of Interest** | | **18.3** | **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.

# State of Connecticut

## 28A—Elmridge fine sandy loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 9lm0
*Elevation:* 0 to 1,200 feet
*Mean annual precipitation:* 43 to 54 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 140 to 185 days
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Elmridge and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Elmridge

#### Setting

*Landform:* Terraces
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Coarse-loamy eolian sands over clayey glaciolacustrine deposits

#### Typical profile

*Ap - 0 to 6 inches:* fine sandy loam
*Bw1 - 6 to 10 inches:* fine sandy loam
*Bw2 - 10 to 18 inches:* fine sandy loam
*Bw3 - 18 to 25 inches:* sandy loam
*2C - 25 to 65 inches:* silty clay

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Moderately well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)
*Depth to water table:* About 18 to 30 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* Moderate (about 9.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* C
*Ecological site:* F145XY006CT - Semi-Rich Moist Lake Plain
*Hydric soil rating:* No

### Minor Components

#### Brancroft

*Percent of map unit:* 4 percent
*Landform:* Terraces

*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Belgrade**

*Percent of map unit:* 4 percent
*Landform:* Terraces
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Unnamed, red parent material**

*Percent of map unit:* 2 percent
*Hydric soil rating:* No

**Sudbury**

*Percent of map unit:* 2 percent
*Landform:* Terraces, outwash plains
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Shaker**

*Percent of map unit:* 2 percent
*Landform:* Terraces, drainageways, depressions
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

**Scitico**

*Percent of map unit:* 2 percent
*Landform:* Terraces, drainageways, depressions
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

**Ninigret**

*Percent of map unit:* 2 percent
*Landform:* Terraces, outwash plains
*Down-slope shape:* Linear
*Across-slope shape:* Concave
*Hydric soil rating:* No

**Berlin**

*Percent of map unit:* 1 percent
*Landform:* Terraces
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Maybid**

*Percent of map unit:* 1 percent
*Landform:* Terraces, drainageways, depressions
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

## 36B—Windsor loamy sand, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2svkf
*Elevation:* 0 to 1,210 feet
*Mean annual precipitation:* 36 to 71 inches
*Mean annual air temperature:* 39 to 55 degrees F
*Frost-free period:* 140 to 240 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Windsor, loamy sand, and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Windsor, Loamy Sand

#### Setting

*Landform:* Dunes, outwash plains, deltas, outwash terraces
*Landform position (three-dimensional):* Tread, riser
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex, linear
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

#### Typical profile

*O - 0 to 1 inches:* moderately decomposed plant material
*A - 1 to 3 inches:* loamy sand
*Bw - 3 to 25 inches:* loamy sand
*C - 25 to 65 inches:* sand

#### Properties and qualities

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 4.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2s
*Hydrologic Soil Group:* A
*Ecological site:* F144AY022MA - Dry Outwash

*Hydric soil rating:* No

**Minor Components**

**Hinckley, loamy sand**

*Percent of map unit:* 10 percent
*Landform:* Deltas, kames, eskers, outwash plains
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest, rise
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Hydric soil rating:* No

**Deerfield, loamy sand**

*Percent of map unit:* 5 percent
*Landform:* Deltas, terraces, outwash plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread, talf
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

## 306—Udorthents-Urban land complex

**Map Unit Setting**

*National map unit symbol:* 9lmg
*Elevation:* 0 to 2,000 feet
*Mean annual precipitation:* 43 to 56 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 120 to 185 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Udorthents and similar soils:* 50 percent
*Urban land:* 35 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Udorthents**

**Setting**

*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Drift

**Typical profile**

*A - 0 to 5 inches:* loam
*C1 - 5 to 21 inches:* gravelly loam
*C2 - 21 to 80 inches:* very gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 25 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to high (0.00 to 1.98 in/hr)
*Depth to water table:* About 54 to 72 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* Moderate (about 6.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Hydric soil rating:* No

**Description of Urban Land**

**Typical profile**

*H - 0 to 6 inches:* material

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8
*Hydrologic Soil Group:* D
*Hydric soil rating:* Unranked

**Minor Components**

**Unnamed, undisturbed soils**

*Percent of map unit:* 8 percent
*Hydric soil rating:* No

**Udorthents, wet substratum**

*Percent of map unit:* 5 percent
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 2 percent
*Hydric soil rating:* No

## 307—Urban land

**Map Unit Setting**

*National map unit symbol:* 9lmh
*Elevation:* 0 to 2,000 feet

*Mean annual precipitation:* 43 to 56 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 120 to 185 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**
*Urban land:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Urban Land**

**Typical profile**
*H - 0 to 6 inches:* material

**Interpretive groups**
*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8
*Hydrologic Soil Group:* D
*Hydric soil rating:* Unranked

**Minor Components**

**Udorthents, wet substratum**
*Percent of map unit:* 10 percent
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Unnamed, undisturbed soils**
*Percent of map unit:* 10 percent
*Hydric soil rating:* No

## 701A—Ninigret fine sandy loam, 0 to 3 percent slopes

**Map Unit Setting**
*National map unit symbol:* 2y07d
*Elevation:* 0 to 1,260 feet
*Mean annual precipitation:* 43 to 54 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 140 to 185 days
*Farmland classification:* All areas are prime farmland

**Map Unit Composition**
*Ninigret and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Ninigret

### Setting

*Landform:* Kame terraces, outwash plains, moraines, kames, outwash terraces
*Landform position (two-dimensional):* Footslope, toeslope
*Landform position (three-dimensional):* Base slope, tread
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex, concave
*Parent material:* Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

### Typical profile

*Ap - 0 to 8 inches:* fine sandy loam
*Bw1 - 8 to 16 inches:* fine sandy loam
*Bw2 - 16 to 26 inches:* fine sandy loam
*2C - 26 to 65 inches:* stratified loamy sand to loamy fine sand

### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* 18 to 38 inches to strongly contrasting textural stratification
*Drainage class:* Moderately well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.14 to 14.17 in/hr)
*Depth to water table:* About 17 to 39 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* C
*Ecological site:* F144AY026CT - Moist Silty Outwash
*Hydric soil rating:* No

## Minor Components

### Merrimac

*Percent of map unit:* 5 percent
*Landform:* Outwash plains, outwash terraces, eskers, kames, moraines
*Landform position (two-dimensional):* Summit, shoulder
*Landform position (three-dimensional):* Side slope, crest, tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Hydric soil rating:* No

### Agawam

*Percent of map unit:* 5 percent
*Landform:* Kame terraces, outwash plains, outwash terraces, moraines, kames
*Landform position (two-dimensional):* Summit, shoulder
*Landform position (three-dimensional):* Side slope, crest, tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex

*Hydric soil rating:* No

**Tisbury**

*Percent of map unit:* 3 percent
*Landform:* Outwash terraces, valley trains, deltas, outwash plains
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* No

**Raypol**

*Percent of map unit:* 2 percent
*Landform:* Drainageways, depressions
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

# Soil Information for All Uses

## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

### Hydrologic Soil Group

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

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

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

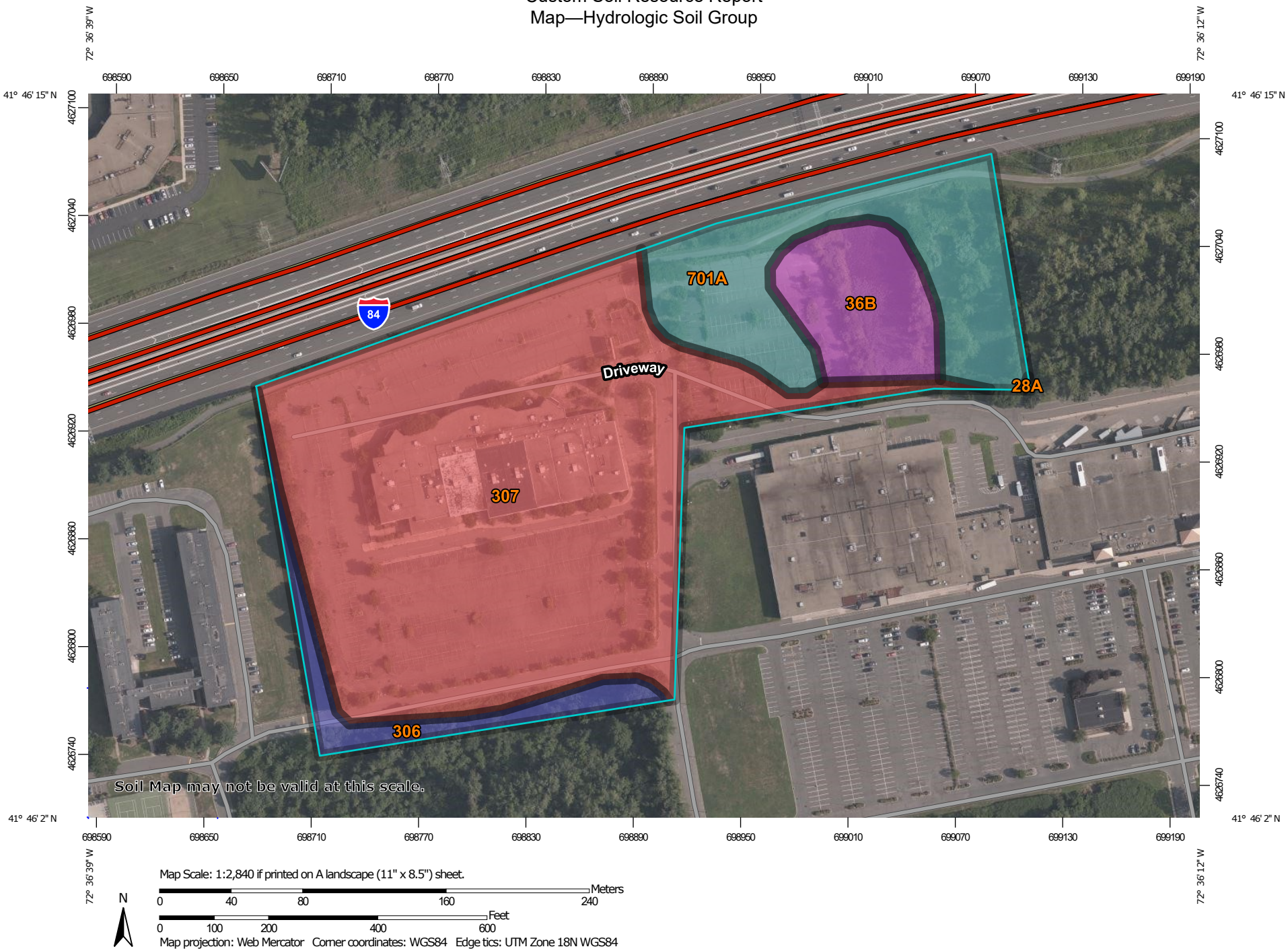
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

# Custom Soil Resource Report
## Map—Hydrologic Soil Group




Map Scale: 1:2,840 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

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

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

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

**Soil Rating Lines**

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

**Soil Rating Points**

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

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Jul 15, 2019—Aug 29, 2019

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

## Table—Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| 28A | Elmridge fine sandy loam, 0 to 3 percent slopes | C | 0.0 | 0.0% |
| 36B | Windsor loamy sand, 3 to 8 percent slopes | A | 1.6 | 8.9% |
| 306 | Udorthents-Urban land complex | B | 0.9 | 5.0% |
| 307 | Urban land | D | 12.4 | 67.6% |
| 701A | Ninigret fine sandy loam, 0 to 3 percent slopes | C | 3.4 | 18.5% |
| **Totals for Area of Interest** | | | **18.3** | **100.0%** |

## Rating Options—Hydrologic Soil Group

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

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# APPENDIX B
# HYDROLOGY

NOAA Atlas Precipitation Data

**NOAA Atlas 14, Volume 10, Version 3**
**Location name: East Hartford, Connecticut, USA***
**Latitude: 41.7691°, Longitude: -72.6082°**
**Elevation: 61.32 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

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

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.332 (0.262-0.419) | 0.404 (0.319-0.511) | 0.522 (0.411-0.663) | 0.619 (0.484-0.790) | 0.754 (0.570-1.01) | 0.856 (0.632-1.17) | 0.962 (0.689-1.37) | 1.08 (0.731-1.58) | 1.25 (0.813-1.90) | 1.39 (0.881-2.16) |
| 10-min | 0.471 (0.372-0.594) | 0.573 (0.452-0.724) | 0.740 (0.582-0.939) | 0.878 (0.686-1.12) | 1.07 (0.807-1.43) | 1.21 (0.895-1.66) | 1.36 (0.976-1.94) | 1.53 (1.04-2.24) | 1.77 (1.15-2.69) | 1.97 (1.25-3.06) |
| 15-min | 0.554 (0.437-0.699) | 0.674 (0.532-0.852) | 0.870 (0.684-1.10) | 1.03 (0.807-1.32) | 1.26 (0.949-1.68) | 1.43 (1.05-1.95) | 1.60 (1.15-2.29) | 1.80 (1.22-2.63) | 2.09 (1.36-3.17) | 2.32 (1.47-3.60) |
| 30-min | 0.742 (0.586-0.937) | 0.904 (0.714-1.14) | 1.17 (0.920-1.48) | 1.39 (1.09-1.78) | 1.69 (1.28-2.27) | 1.92 (1.42-2.63) | 2.16 (1.55-3.08) | 2.43 (1.64-3.55) | 2.81 (1.83-4.27) | 3.13 (1.98-4.85) |
| 60-min | 0.930 (0.735-1.18) | 1.14 (0.896-1.44) | 1.47 (1.16-1.87) | 1.75 (1.37-2.23) | 2.13 (1.61-2.85) | 2.42 (1.78-3.31) | 2.72 (1.95-3.87) | 3.06 (2.07-4.46) | 3.54 (2.30-5.37) | 3.94 (2.49-6.10) |
| 2-hr | 1.21 (0.963-1.52) | 1.47 (1.17-1.85) | 1.89 (1.50-2.38) | 2.24 (1.76-2.84) | 2.72 (2.07-3.63) | 3.08 (2.29-4.21) | 3.46 (2.50-4.94) | 3.91 (2.66-5.69) | 4.59 (2.98-6.91) | 5.15 (3.27-7.93) |
| 3-hr | 1.40 (1.11-1.75) | 1.69 (1.35-2.12) | 2.17 (1.73-2.73) | 2.57 (2.03-3.26) | 3.13 (2.39-4.16) | 3.53 (2.64-4.82) | 3.97 (2.89-5.67) | 4.50 (3.06-6.52) | 5.31 (3.46-7.97) | 5.99 (3.81-9.19) |
| 6-hr | 1.74 (1.40-2.17) | 2.12 (1.70-2.63) | 2.73 (2.18-3.41) | 3.23 (2.57-4.06) | 3.93 (3.02-5.21) | 4.45 (3.35-6.04) | 5.01 (3.67-7.11) | 5.69 (3.88-8.19) | 6.75 (4.41-10.1) | 7.66 (4.89-11.7) |
| 12-hr | 2.11 (1.70-2.61) | 2.58 (2.08-3.20) | 3.36 (2.70-4.17) | 4.00 (3.19-5.00) | 4.89 (3.78-6.44) | 5.54 (4.19-7.49) | 6.25 (4.60-8.84) | 7.13 (4.88-10.2) | 8.49 (5.57-12.6) | 9.66 (6.19-14.6) |
| 24-hr | 2.46 (2.00-3.02) | 3.06 (2.48-3.76) | 4.03 (3.26-4.97) | 4.84 (3.89-6.01) | 5.95 (4.63-7.82) | 6.77 (5.16-9.13) | 7.67 (5.70-10.8) | 8.82 (6.05-12.5) | 10.6 (6.99-15.7) | 12.2 (7.84-18.4) |
| 2-day | 2.79 (2.28-3.41) | 3.53 (2.88-4.31) | 4.72 (3.84-5.79) | 5.72 (4.62-7.05) | 7.09 (5.56-9.28) | 8.08 (6.22-10.9) | 9.19 (6.92-13.0) | 10.7 (7.35-15.1) | 13.1 (8.65-19.2) | 15.3 (9.85-22.8) |
| 3-day | 3.04 (2.50-3.70) | 3.85 (3.15-4.68) | 5.16 (4.21-6.31) | 6.26 (5.07-7.69) | 7.76 (6.11-10.1) | 8.85 (6.84-11.9) | 10.1 (7.62-14.3) | 11.7 (8.09-16.5) | 14.5 (9.56-21.1) | 16.9 (10.9-25.2) |
| 4-day | 3.25 (2.68-3.95) | 4.11 (3.38-4.99) | 5.51 (4.51-6.71) | 6.67 (5.42-8.17) | 8.26 (6.52-10.8) | 9.42 (7.29-12.6) | 10.7 (8.12-15.2) | 12.5 (8.62-17.5) | 15.4 (10.2-22.4) | 18.0 (11.6-26.7) |
| 7-day | 3.83 (3.16-4.61) | 4.78 (3.94-5.77) | 6.33 (5.20-7.67) | 7.62 (6.22-9.29) | 9.39 (7.44-12.2) | 10.7 (8.29-14.2) | 12.1 (9.19-17.0) | 14.0 (9.74-19.6) | 17.2 (11.4-24.9) | 20.0 (12.9-29.5) |
| 10-day | 4.41 (3.66-5.30) | 5.41 (4.48-6.51) | 7.05 (5.81-8.51) | 8.40 (6.88-10.2) | 10.3 (8.14-13.2) | 11.6 (9.04-15.4) | 13.1 (9.95-18.2) | 15.1 (10.5-21.0) | 18.3 (12.2-26.3) | 21.1 (13.7-31.0) |
| 20-day | 6.35 (5.29-7.58) | 7.40 (6.17-8.85) | 9.13 (7.58-11.0) | 10.6 (8.71-12.8) | 12.5 (9.96-15.9) | 14.0 (10.9-18.2) | 15.6 (11.7-21.1) | 17.5 (12.2-24.1) | 20.4 (13.6-29.1) | 22.8 (14.9-33.3) |
| 30-day | 8.02 (6.71-9.54) | 9.10 (7.61-10.8) | 10.9 (9.06-13.0) | 12.3 (10.2-14.8) | 14.4 (11.4-18.0) | 15.9 (12.3-20.4) | 17.5 (13.1-23.3) | 19.3 (13.6-26.4) | 21.9 (14.7-31.1) | 24.0 (15.6-34.9) |
| 45-day | 10.1 (8.51-12.0) | 11.2 (9.44-13.3) | 13.1 (10.9-15.6) | 14.6 (12.1-17.5) | 16.7 (13.3-20.8) | 18.3 (14.2-23.3) | 19.9 (14.8-26.2) | 21.6 (15.2-29.4) | 23.8 (16.1-33.7) | 25.6 (16.7-37.0) |
| 60-day | 11.9 (10.0-14.1) | 13.1 (11.0-15.5) | 15.0 (12.5-17.8) | 16.5 (13.8-19.8) | 18.7 (14.9-23.2) | 20.4 (15.8-25.8) | 22.1 (16.4-28.7) | 23.6 (16.7-32.1) | 25.6 (17.3-36.1) | 27.0 (17.7-39.0) |

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

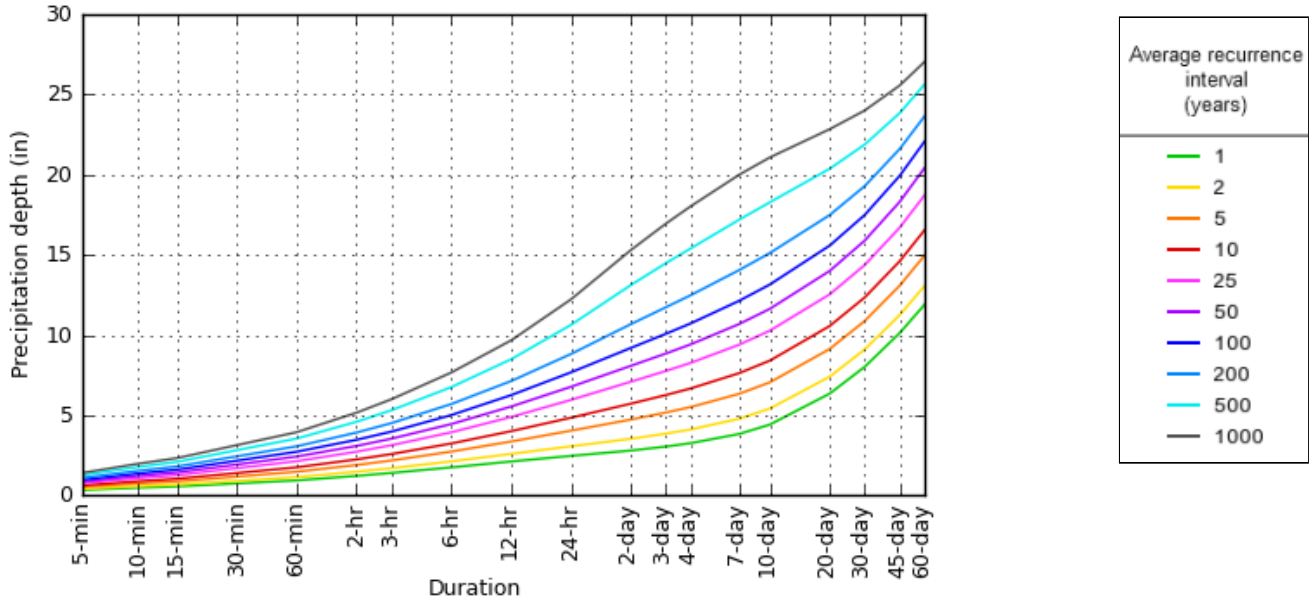
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

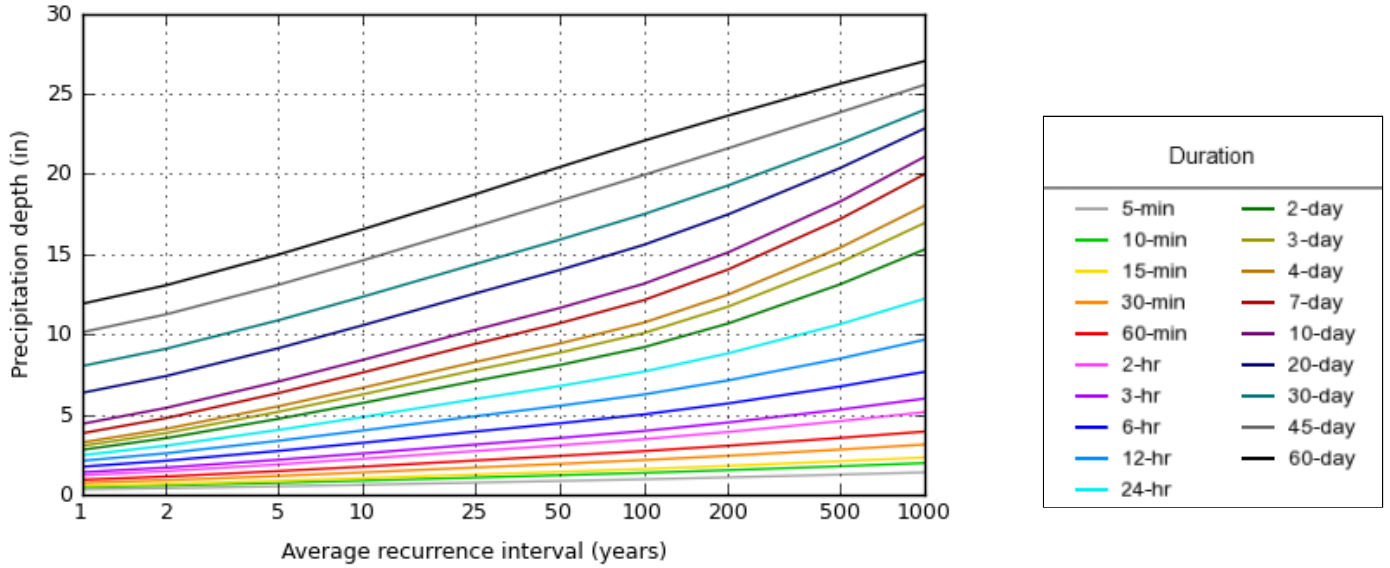
Please refer to NOAA Atlas 14 document for more information.

Back to Top

## PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.7691°, Longitude: -72.6082°




NOAA Atlas 14, Volume 10, Version 3

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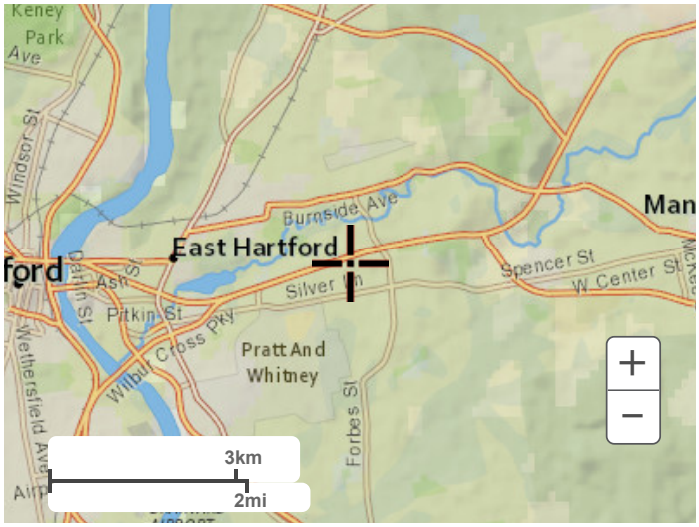
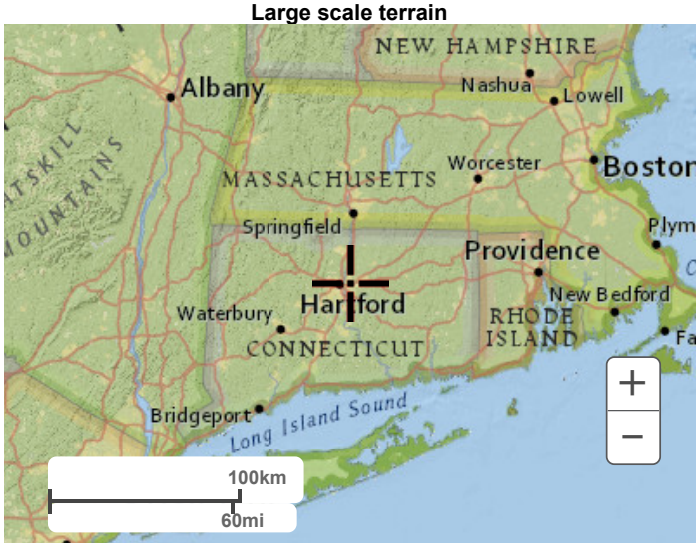
Back to Top

## Maps & aerials

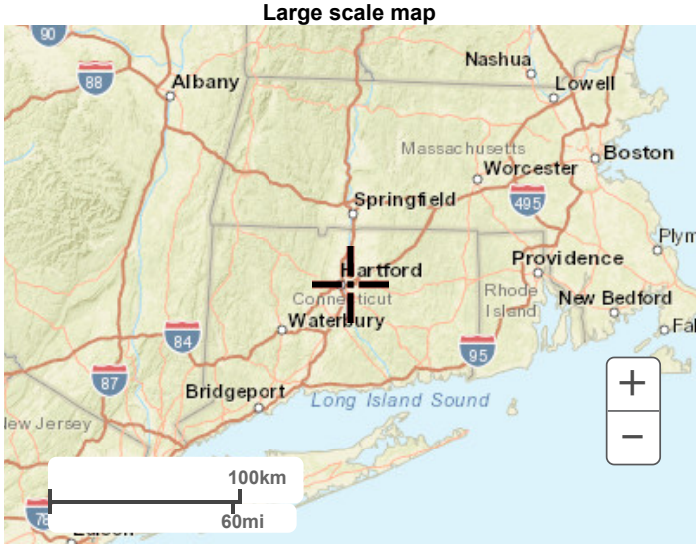
**Small scale terrain**



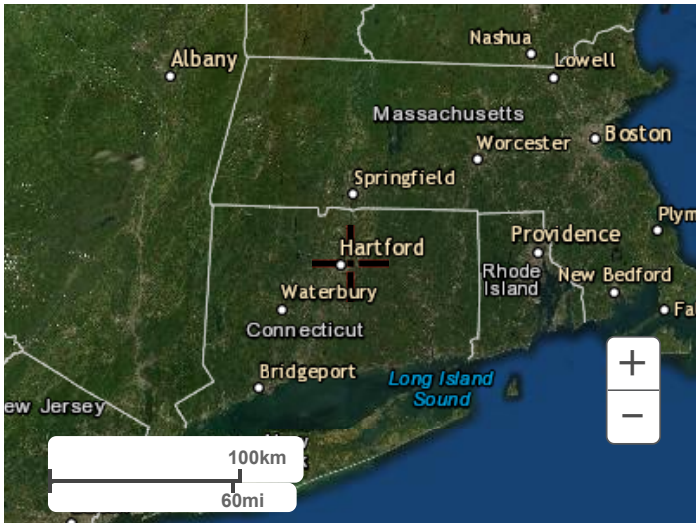

**Large scale terrain**




**Large scale map**




**Large scale aerial**




Back to Top

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

Disclaimer

**NOAA Atlas 14, Volume 10, Version 3**
**Location name: East Hartford, Connecticut, USA***
**Latitude: 41.7691°, Longitude: -72.6082°**
**Elevation: 61.32 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

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

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | **3.98** (3.14-5.03) | **4.85** (3.83-6.13) | **6.26** (4.93-7.96) | **7.43** (5.81-9.48) | **9.05** (6.84-12.1) | **10.3** (7.58-14.1) | **11.5** (8.27-16.5) | **13.0** (8.77-19.0) | **15.0** (9.76-22.8) | **16.7** (10.6-25.9) |
| 10-min | **2.83** (2.23-3.56) | **3.44** (2.71-4.34) | **4.44** (3.49-5.63) | **5.27** (4.12-6.73) | **6.41** (4.84-8.59) | **7.28** (5.37-9.97) | **8.18** (5.86-11.7) | **9.19** (6.22-13.4) | **10.6** (6.91-16.1) | **11.8** (7.49-18.3) |
| 15-min | **2.22** (1.75-2.80) | **2.70** (2.13-3.41) | **3.48** (2.74-4.42) | **4.13** (3.23-5.28) | **5.03** (3.80-6.74) | **5.70** (4.21-7.82) | **6.41** (4.59-9.14) | **7.21** (4.87-10.5) | **8.35** (5.42-12.7) | **9.28** (5.88-14.4) |
| 30-min | **1.48** (1.17-1.87) | **1.81** (1.43-2.29) | **2.34** (1.84-2.97) | **2.78** (2.17-3.55) | **3.39** (2.56-4.53) | **3.84** (2.84-5.26) | **4.32** (3.09-6.16) | **4.86** (3.28-7.10) | **5.63** (3.65-8.54) | **6.26** (3.96-9.70) |
| 60-min | **0.930** (0.735-1.18) | **1.14** (0.896-1.44) | **1.47** (1.16-1.87) | **1.75** (1.37-2.23) | **2.13** (1.61-2.85) | **2.42** (1.78-3.31) | **2.72** (1.95-3.87) | **3.06** (2.07-4.46) | **3.54** (2.30-5.37) | **3.94** (2.49-6.10) |
| 2-hr | **0.606** (0.482-0.760) | **0.734** (0.583-0.922) | **0.945** (0.748-1.19) | **1.12** (0.880-1.42) | **1.36** (1.03-1.81) | **1.54** (1.15-2.10) | **1.73** (1.25-2.47) | **1.96** (1.33-2.84) | **2.29** (1.49-3.46) | **2.58** (1.64-3.96) |
| 3-hr | **0.465** (0.371-0.582) | **0.563** (0.449-0.705) | **0.724** (0.575-0.910) | **0.857** (0.676-1.08) | **1.04** (0.795-1.39) | **1.18** (0.880-1.61) | **1.32** (0.962-1.89) | **1.50** (1.02-2.17) | **1.77** (1.15-2.65) | **2.00** (1.27-3.06) |
| 6-hr | **0.291** (0.234-0.362) | **0.354** (0.283-0.440) | **0.456** (0.364-0.569) | **0.540** (0.429-0.679) | **0.656** (0.504-0.869) | **0.742** (0.559-1.01) | **0.836** (0.612-1.19) | **0.951** (0.648-1.37) | **1.13** (0.737-1.68) | **1.28** (0.816-1.95) |
| 12-hr | **0.175** (0.141-0.216) | **0.214** (0.173-0.265) | **0.279** (0.224-0.346) | **0.332** (0.265-0.415) | **0.406** (0.313-0.534) | **0.460** (0.348-0.621) | **0.519** (0.382-0.734) | **0.592** (0.405-0.846) | **0.705** (0.462-1.05) | **0.802** (0.513-1.21) |
| 24-hr | **0.103** (0.083-0.126) | **0.127** (0.103-0.157) | **0.168** (0.136-0.207) | **0.202** (0.162-0.250) | **0.248** (0.193-0.326) | **0.282** (0.215-0.380) | **0.320** (0.238-0.452) | **0.367** (0.252-0.522) | **0.443** (0.291-0.653) | **0.509** (0.327-0.765) |
| 2-day | **0.058** (0.048-0.071) | **0.073** (0.060-0.090) | **0.098** (0.080-0.121) | **0.119** (0.096-0.147) | **0.148** (0.116-0.193) | **0.168** (0.130-0.227) | **0.191** (0.144-0.272) | **0.222** (0.153-0.314) | **0.273** (0.180-0.400) | **0.319** (0.205-0.476) |
| 3-day | **0.042** (0.035-0.051) | **0.053** (0.044-0.065) | **0.072** (0.059-0.088) | **0.087** (0.070-0.107) | **0.108** (0.085-0.141) | **0.123** (0.095-0.165) | **0.140** (0.106-0.198) | **0.163** (0.112-0.229) | **0.201** (0.133-0.293) | **0.235** (0.152-0.350) |
| 4-day | **0.034** (0.028-0.041) | **0.043** (0.035-0.052) | **0.057** (0.047-0.070) | **0.069** (0.056-0.085) | **0.086** (0.068-0.112) | **0.098** (0.076-0.132) | **0.112** (0.085-0.158) | **0.130** (0.090-0.183) | **0.160** (0.106-0.233) | **0.188** (0.121-0.278) |
| 7-day | **0.023** (0.019-0.027) | **0.028** (0.023-0.034) | **0.038** (0.031-0.046) | **0.045** (0.037-0.055) | **0.056** (0.044-0.072) | **0.064** (0.049-0.085) | **0.072** (0.055-0.101) | **0.084** (0.058-0.117) | **0.102** (0.068-0.148) | **0.119** (0.077-0.175) |
| 10-day | **0.018** (0.015-0.022) | **0.023** (0.019-0.027) | **0.029** (0.024-0.035) | **0.035** (0.029-0.043) | **0.043** (0.034-0.055) | **0.048** (0.038-0.064) | **0.055** (0.041-0.076) | **0.063** (0.044-0.088) | **0.076** (0.051-0.110) | **0.088** (0.057-0.129) |
| 20-day | **0.013** (0.011-0.016) | **0.015** (0.013-0.018) | **0.019** (0.016-0.023) | **0.022** (0.018-0.027) | **0.026** (0.021-0.033) | **0.029** (0.023-0.038) | **0.032** (0.024-0.044) | **0.036** (0.025-0.050) | **0.042** (0.028-0.061) | **0.048** (0.031-0.069) |
| 30-day | **0.011** (0.009-0.013) | **0.013** (0.011-0.015) | **0.015** (0.013-0.018) | **0.017** (0.014-0.021) | **0.020** (0.016-0.025) | **0.022** (0.017-0.028) | **0.024** (0.018-0.032) | **0.027** (0.019-0.037) | **0.030** (0.020-0.043) | **0.033** (0.022-0.048) |
| 45-day | **0.009** (0.008-0.011) | **0.010** (0.009-0.012) | **0.012** (0.010-0.014) | **0.014** (0.011-0.016) | **0.015** (0.012-0.019) | **0.017** (0.013-0.022) | **0.018** (0.014-0.024) | **0.020** (0.014-0.027) | **0.022** (0.015-0.031) | **0.024** (0.015-0.034) |
| 60-day | **0.008** (0.007-0.010) | **0.009** (0.008-0.011) | **0.010** (0.009-0.012) | **0.011** (0.010-0.014) | **0.013** (0.010-0.016) | **0.014** (0.011-0.018) | **0.015** (0.011-0.020) | **0.016** (0.012-0.022) | **0.018** (0.012-0.025) | **0.019** (0.012-0.027) |

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

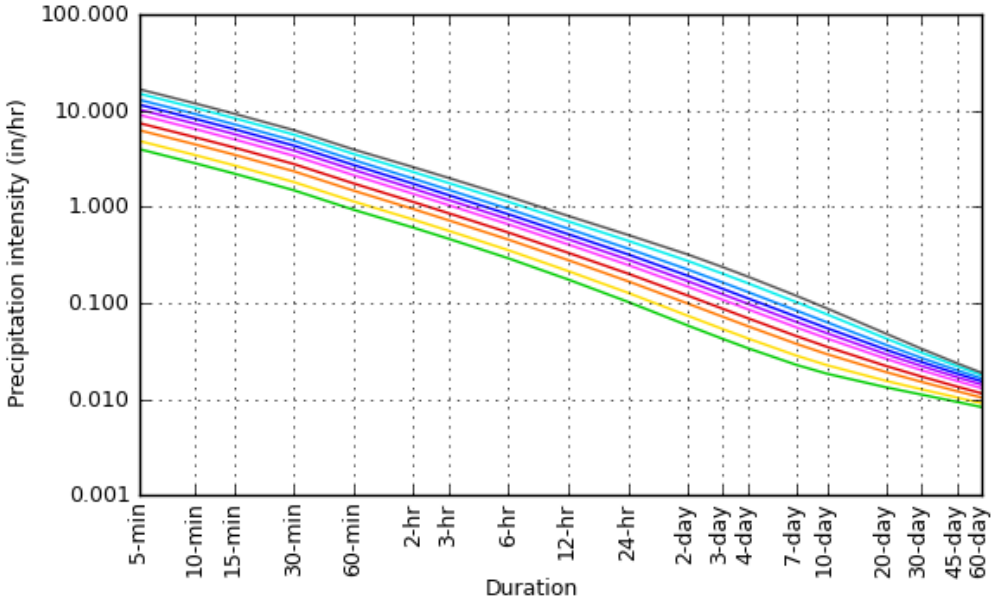
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

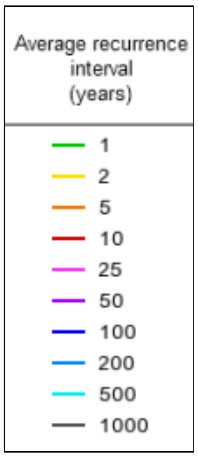
Please refer to NOAA Atlas 14 document for more information.

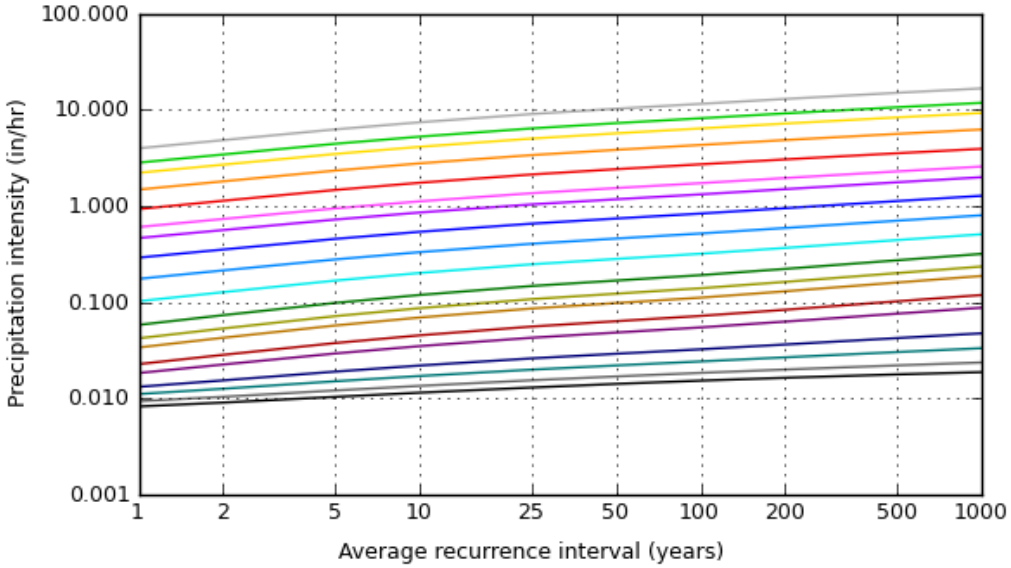
Back to Top

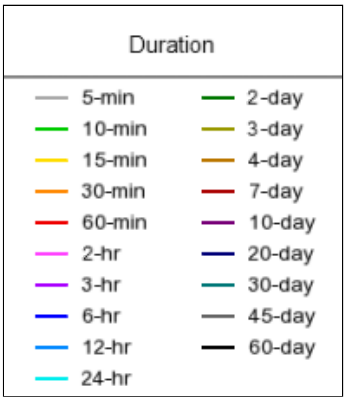
## PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.7691°, Longitude: -72.6082°

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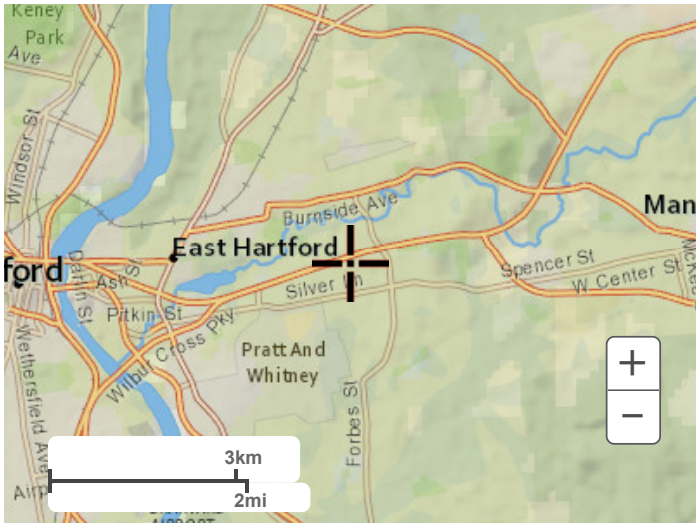
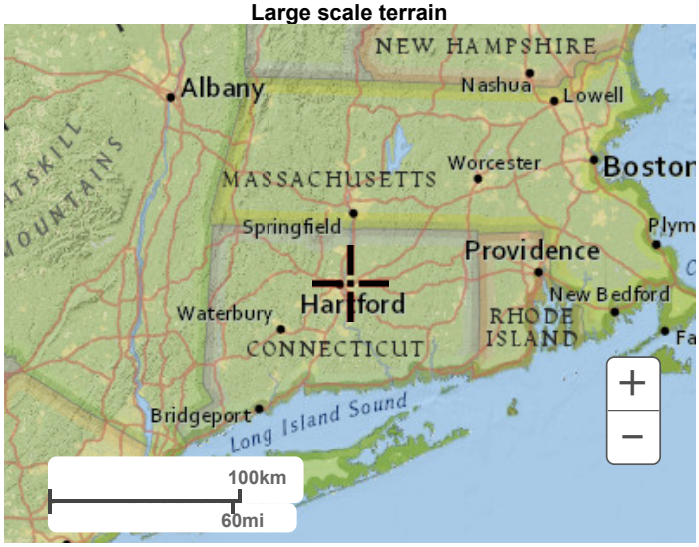
Back to Top

## Maps & aerials

**Small scale terrain**




**Large scale terrain**

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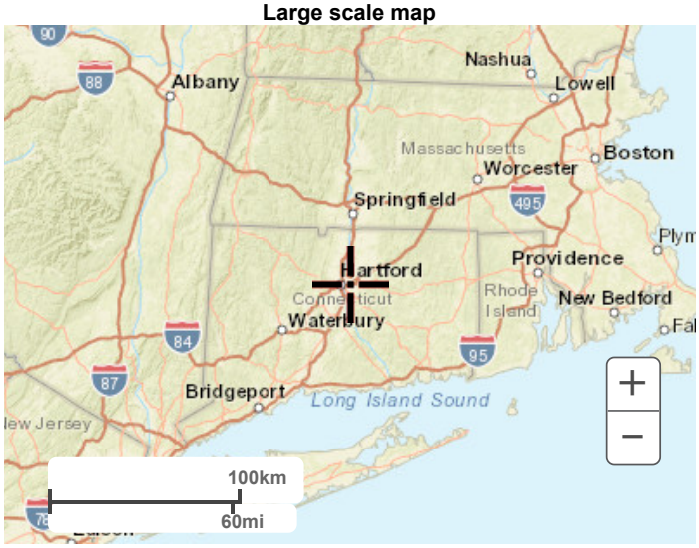
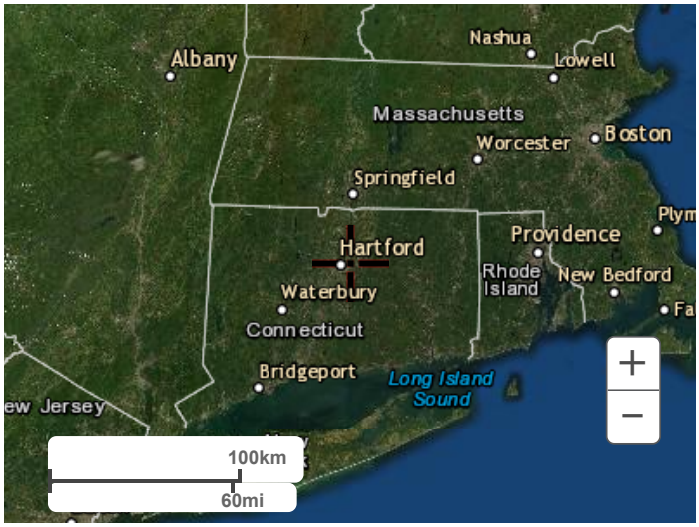



**Large scale aerial**




Back to Top

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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
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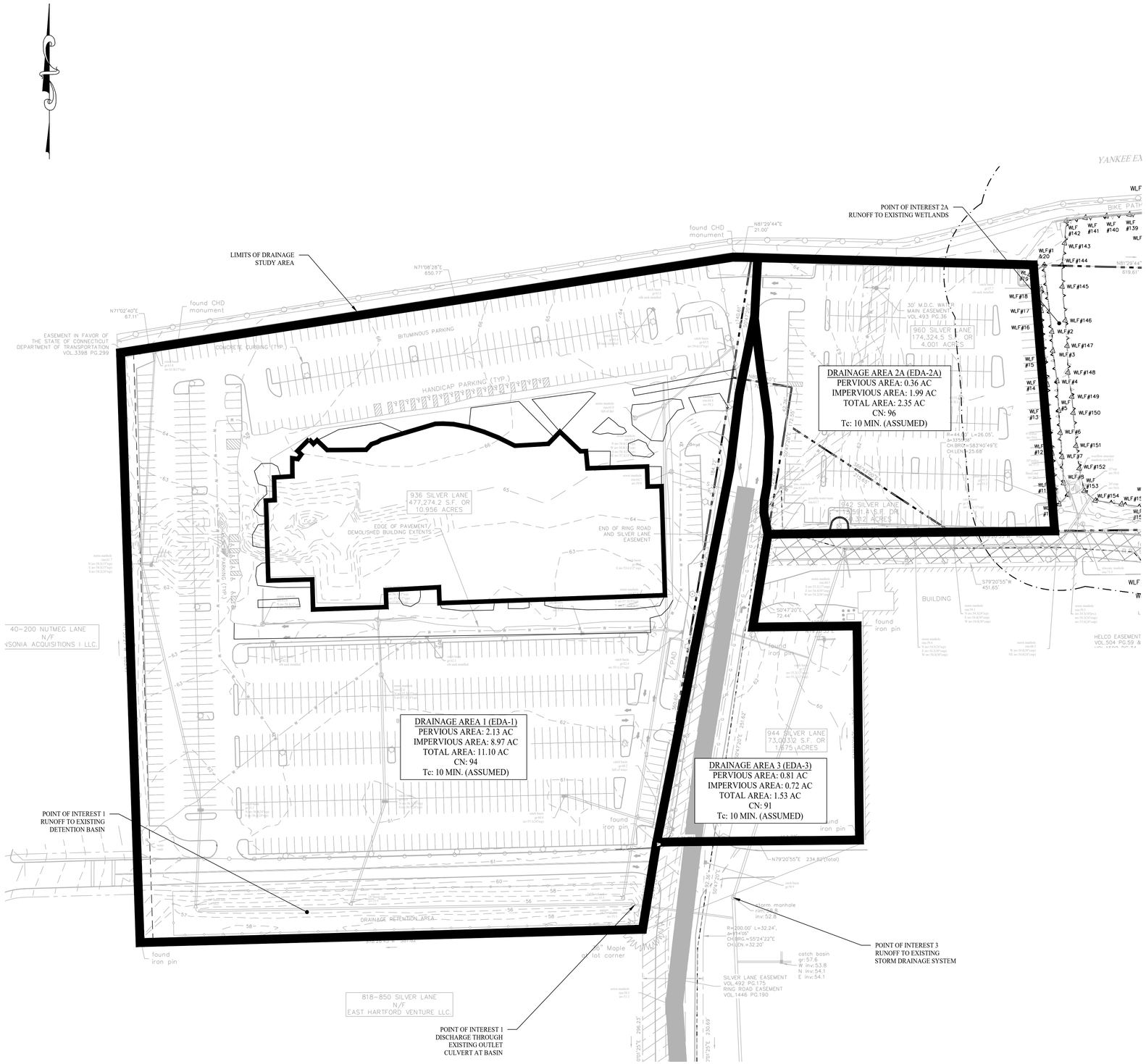
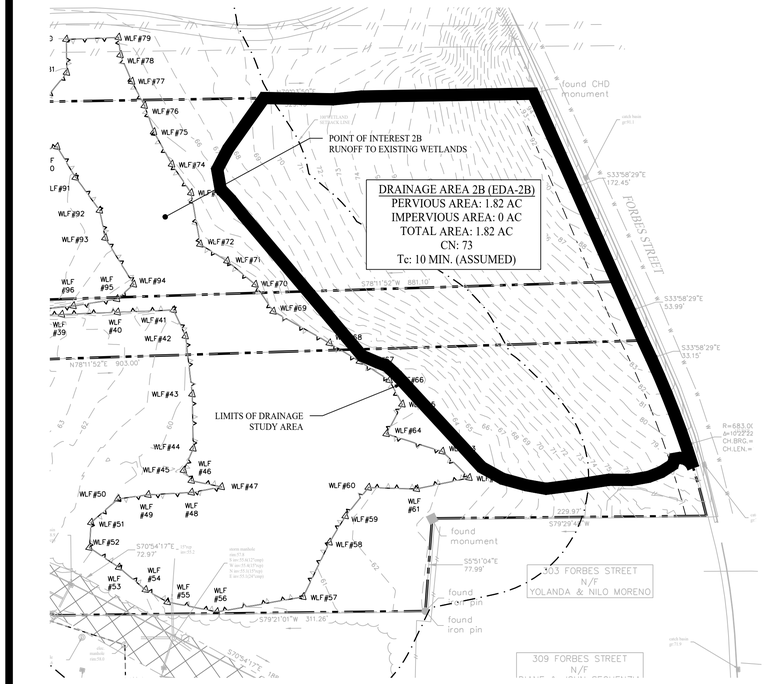
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

**APPENDIX C**
**WATERSHED MAPS**

Existing Drainage Area Map (DA-1)
Proposed Drainage Area Map (DA-2)




LEGEND

- PROPERTY LINE
- LIMIT OF DRAINAGE AREA
- SOIL TYPE BOUNDARY
- 51B — SOIL TYPE

| Rev. #: | Date | Description |
|---|---|---|
| | | |

Graphic Scale: 60 0 60 120


SOLLI ENGINEERING
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11 Vanderbilt Ave, Norwood, MA 02062 T: (781) 352-8491 F: (203) 880-9695


| | |
|---|---|
| Drawn By: | ABS |
| Checked By: | ARM |
| Approved By: | KMS |
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 60' |

STATE OF CONNECTICUT KEVIN M. SOLLI 25759 LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

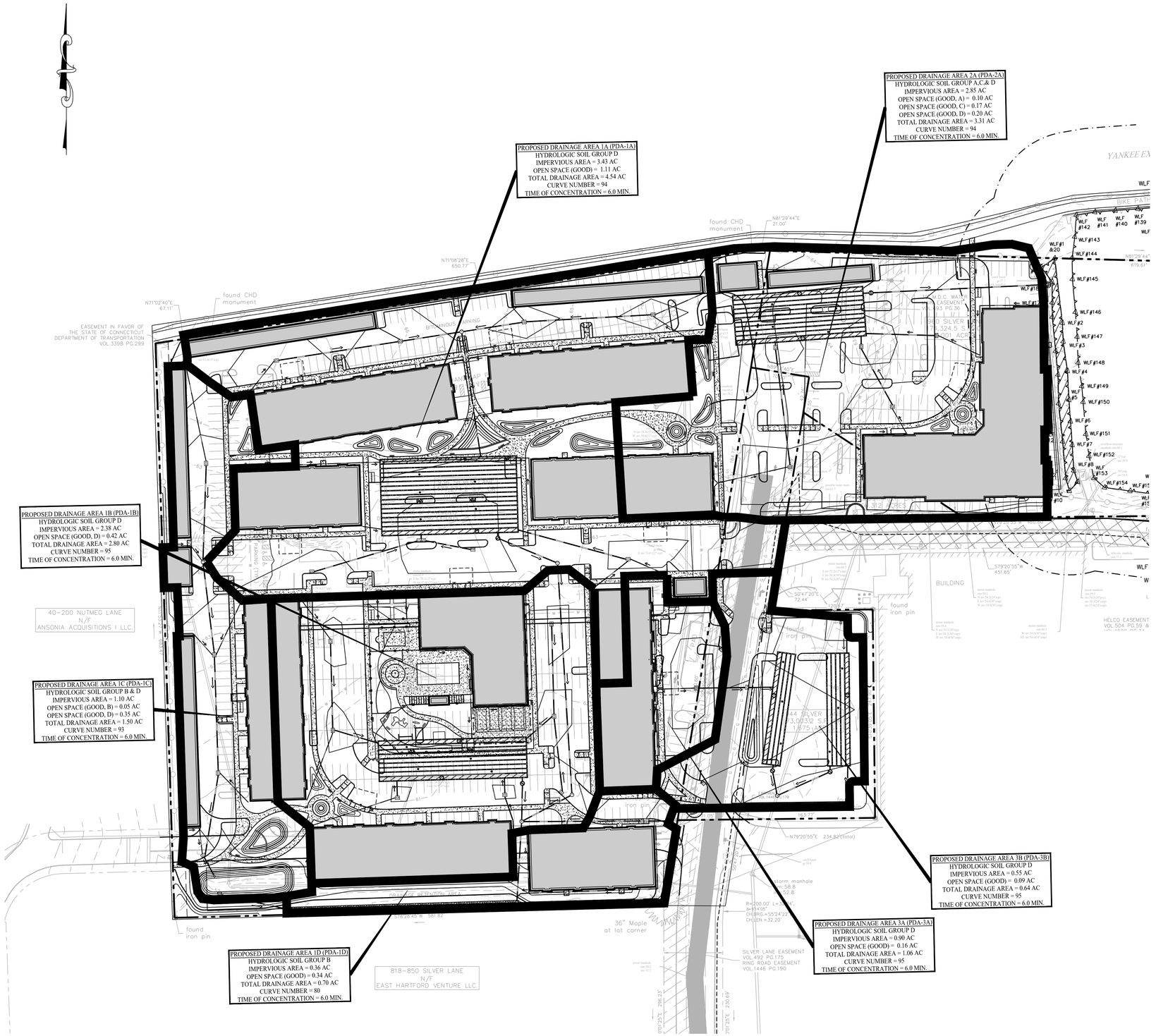
Project:

# PROPOSED RESIDENTIAL REDEVELOPMENT

936-960 SILVER LANE &
285-291 FORBES STREET
EAST HARTFORD, CONNECTICUT

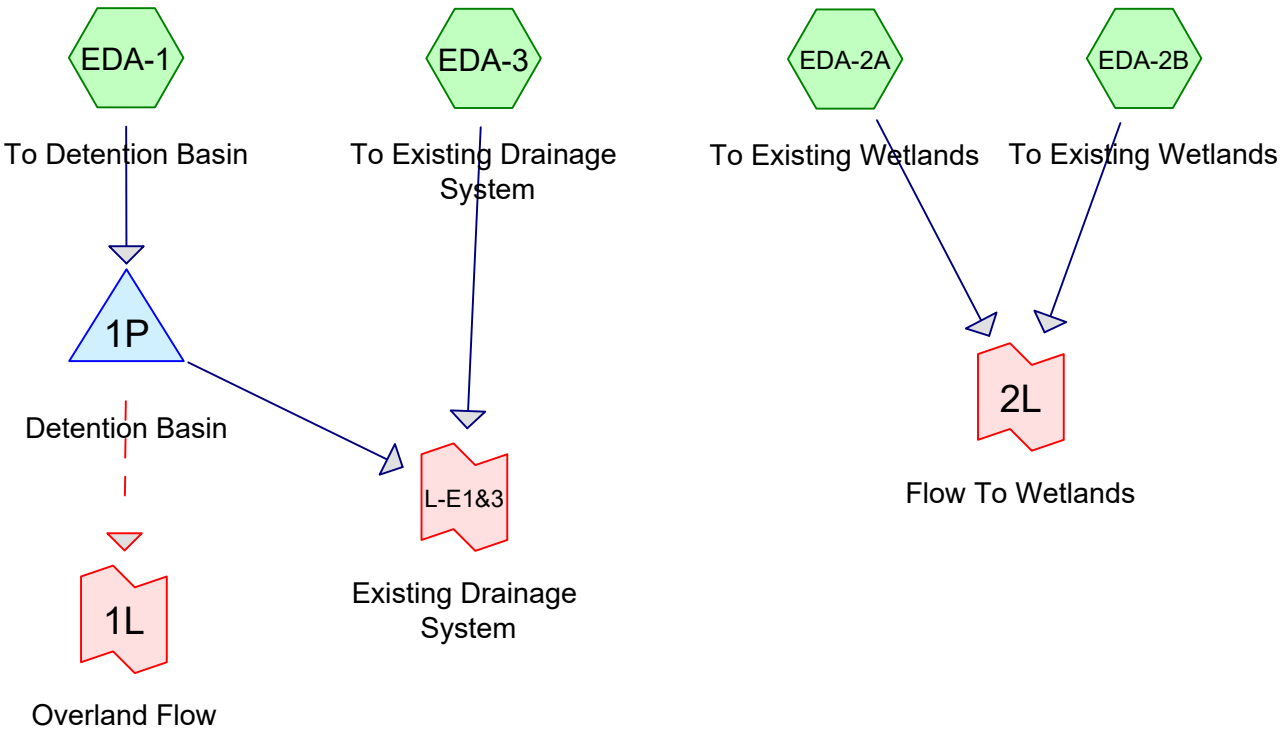
| Sheet Title: | Sheet #: |
|---|---|
| EXISTING DRAINAGE AREA MAP | EDA-1 |


Dec 29, 2022 - 4:31pm omagoulas
X:\SE Files\Project Data\2020\2010501 - Silver Lane - East Hartford, CT\Cadd Data\2010501-Drainage Figure - Existing Conditions.dwg


PROPOSED DRAINAGE AREA 1A (PDA-1A)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 3.43 AC
OPEN SPACE (GOOD) = 1.11 AC
TOTAL DRAINAGE AREA = 4.54 AC
CURVE NUMBER = 94
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 2A (PDA-2A)
HYDROLOGIC SOIL GROUP A,C,& D
IMPERVIOUS AREA = 2.85 AC
OPEN SPACE (GOOD, A) = 0.10 AC
OPEN SPACE (GOOD, C) = 0.17 AC
OPEN SPACE (GOOD, D) = 0.20 AC
TOTAL DRAINAGE AREA = 3.31 AC
CURVE NUMBER = 94
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 1B (PDA-1B)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 2.38 AC
OPEN SPACE (GOOD, D) = 0.42 AC
TOTAL DRAINAGE AREA = 2.80 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 1C (PDA-1C)
HYDROLOGIC SOIL GROUP B & D
IMPERVIOUS AREA = 1.10 AC
OPEN SPACE (GOOD, B) = 0.05 AC
OPEN SPACE (GOOD, D) = 0.35 AC
TOTAL DRAINAGE AREA = 1.50 AC
CURVE NUMBER = 93
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 1D (PDA-1D)
HYDROLOGIC SOIL GROUP B
IMPERVIOUS AREA = 0.36 AC
OPEN SPACE (GOOD) = 0.34 AC
TOTAL DRAINAGE AREA = 0.70 AC
CURVE NUMBER = 80
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 3A (PDA-3A)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 0.90 AC
OPEN SPACE (GOOD) = 0.16 AC
TOTAL DRAINAGE AREA = 1.06 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.
PROPOSED DRAINAGE AREA 3B (PDA-3B)
HYDROLOGIC SOIL GROUP D
IMPERVIOUS AREA = 0.55 AC
OPEN SPACE (GOOD) = 0.09 AC
TOTAL DRAINAGE AREA = 0.64 AC
CURVE NUMBER = 95
TIME OF CONCENTRATION = 6.0 MIN.
found CHD monument
found CHD monument
N71°08'28"E 650.77'
N71°02'40"E 67.11'
N81°29'44"E 21.00'
N81°29'44"E 618.61'
EASEMENT IN FAVOR OF THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION VOL.3398 PG.299
YANKEE EX
BIKE PATH
WLF #1 &20
WLF #2
WLF #3
WLF #4
WLF #5
WLF #6
WLF #7
WLF #8
WLF #9
WLF #10
WLF #139
WLF #140
WLF #141
WLF #142
WLF #143
WLF #144
WLF #145
WLF #146
WLF #147
WLF #148
WLF #149
WLF #150
WLF #151
WLF #152
WLF #153
WLF #154
D.O.C. WATER EASEMENT VOL.193 PG.36
BUILDING
S79°20'55"W 451.65'
S0°47'20"E 72.44'
found iron pin
found iron pin
HELCO EASEMENT VOL.504 PG.59 & VOL.1800 PG.54
40-200 NUTMEG LANE N/F ANSONIA ACQUISITIONS I, LLC.
818-850 SILVER LANE N/F EAST HARTFORD VENTURE LLC.
S78°28'45"W 581.62
found iron pin
36" Maple at lot corner
SILVER LANE EASEMENT VOL.492 PG.175
RING ROAD EASEMENT VOL.1446 PG.190
S70°25'E 286.23'
S70°25'E 220.69'
N79°20'55"E 234.82'(total)
R=200.00'
Δ=9°14'05"
CH.BRG.=S5°24'28"E
CH.LEN.=32.20'
storm manhole
rim=58.8
inv=52.8
sanitary manhole
rim=59.1
inv=51.2
sanitary manhole
rim=59.3
inv=51.3
storm manhole
rim=58.3
3 inv=53.83'(out)
storm manhole
rim=58.7
3 inv=53.83'(out)
storm manhole
rim=58.7
3 inv=54.03'(out)
storm manhole
rim=58.7
3 inv=54.03'(out)
storm manhole
rim=58.7
3 inv=54.23'(out)
storm manhole
rim=58.7
3 inv=54.23'(out)
storm manhole
rim=58.7
3 inv=54.43'(out)
storm manhole
rim=58.7
3 inv=54.43'(out)
storm manhole
rim=58.7
3

# APPENDIX D
# HYDROLOGY

HydroCAD Summary




Subcat Reach Pond Link

**Routing Diagram for Existing Conditions - Silver Lane, East Hartford - 2024**

Prepared by Solli Engineering, Printed 3/28/2024

HydroCAD® 10.20-4b s/n 13171 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 1-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 2.46 | 2 |
| 2 | 2-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 3.06 | 2 |
| 3 | 5-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.03 | 2 |
| 4 | 10-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.84 | 2 |
| 5 | 25-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 5.95 | 2 |
| 6 | 50-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 6.77 | 2 |
| 7 | 100-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 7.67 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D (EDA-3) |
| 3.710 | 79 | <50% Grass cover, Poor, HSG B (EDA-1, EDA-2B) |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C (EDA-2A) |
| 11.680 | 98 | Paved parking, HSG D (EDA-1, EDA-2A, EDA-3) |
| **16.560** | **93** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 3.710 | HSG B | EDA-1, EDA-2B |
| 0.360 | HSG C | EDA-2A |
| 12.490 | HSG D | EDA-1, EDA-2A, EDA-3 |
| 0.000 | Other | |
| **16.560** | | **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 | 0.000 | 0.000 | 0.810 | 0.000 | 0.810 | 50-75% Grass cover, Fair | EDA-3 |
| 0.000 | 3.710 | 0.360 | 0.000 | 0.000 | 4.070 | <50% Grass cover, Poor | EDA-1, EDA-2A, EDA-2B |
| 0.000 | 0.000 | 0.000 | 11.680 | 0.000 | 11.680 | Paved parking | EDA-1, EDA-2A, EDA-3 |
| **0.000** | **3.710** | **0.360** | **12.490** | **0.000** | **16.560** | **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 | EDA-1 | 0.00 | 0.00 | 180.0 | 0.0100 | 0.013 | 0.0 | 24.0 | 0.0 | |
| 2 | EDA-2A | 0.00 | 0.00 | 11.0 | 0.0550 | 0.011 | 0.0 | 15.0 | 0.0 | |
| 3 | EDA-3 | 0.00 | 0.00 | 7.0 | 0.0200 | 0.011 | 0.0 | 12.0 | 0.0 | |
| 4 | EDA-3 | 0.00 | 0.00 | 312.0 | 0.0030 | 0.011 | 0.0 | 30.0 | 0.0 | |
| 5 | 1P | 55.10 | 52.74 | 55.0 | 0.0429 | 0.011 | 0.0 | 18.0 | 0.0 | |

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>1.86"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=21.99 cfs 1.721 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>2.04"
Flow Length=427' Tc=6.0 min CN=96 Runoff=4.94 cfs 0.399 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>0.80"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=0.73 cfs 0.105 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>1.54"
Flow Length=688' Tc=6.0 min CN=91 Runoff=2.60 cfs 0.196 af

**Pond 1P: Detention Basin** Peak Elev=57.13' Storage=0.236 af Inflow=21.99 cfs 1.721 af
Primary=9.64 cfs 1.721 af Secondary=0.00 cfs 0.000 af Outflow=9.64 cfs 1.721 af

**Link 1L: Overland Flow** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Link 2L: Flow To Wetlands** Inflow=5.23 cfs 0.504 af
Primary=5.23 cfs 0.504 af

**Link L-E1&3: Existing Drainage System** Inflow=11.52 cfs 1.917 af
Primary=11.52 cfs 1.917 af

**Total Runoff Area = 16.560 ac Runoff Volume = 2.421 af Average Runoff Depth = 1.75"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

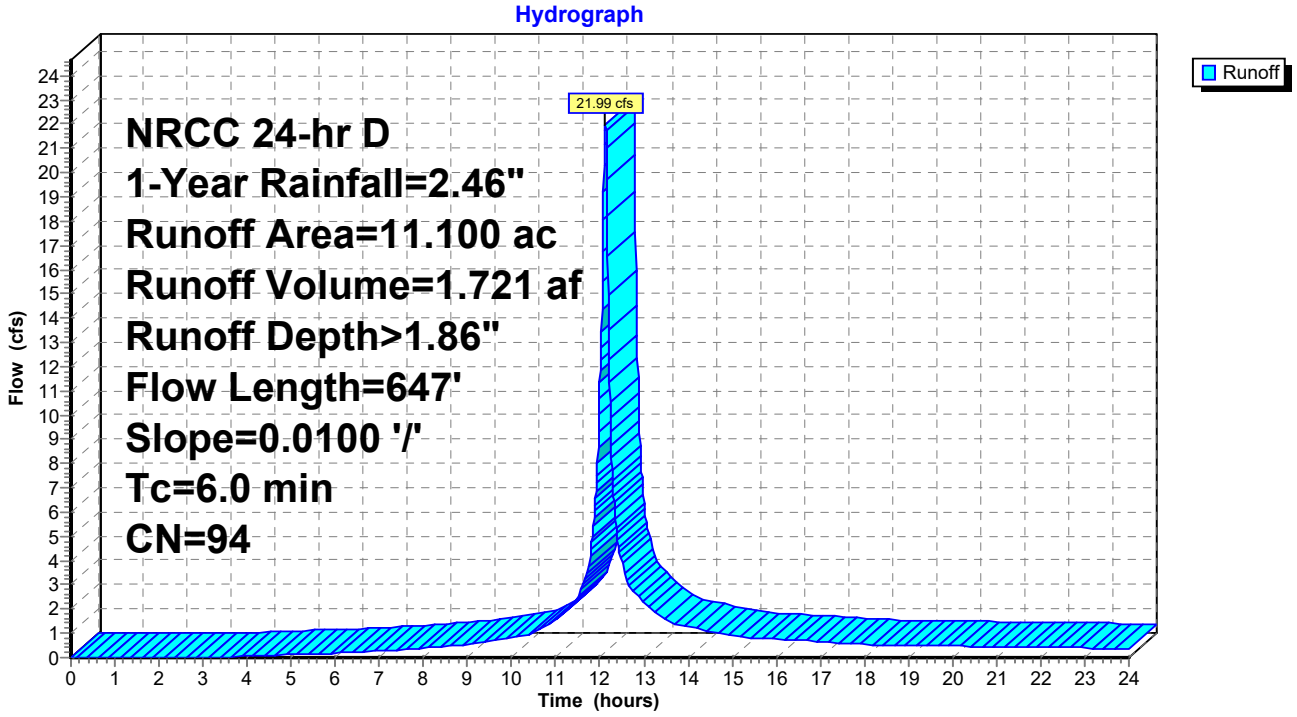
Runoff = 21.99 cfs @ 12.13 hrs, Volume= 1.721 af, Depth> 1.86"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

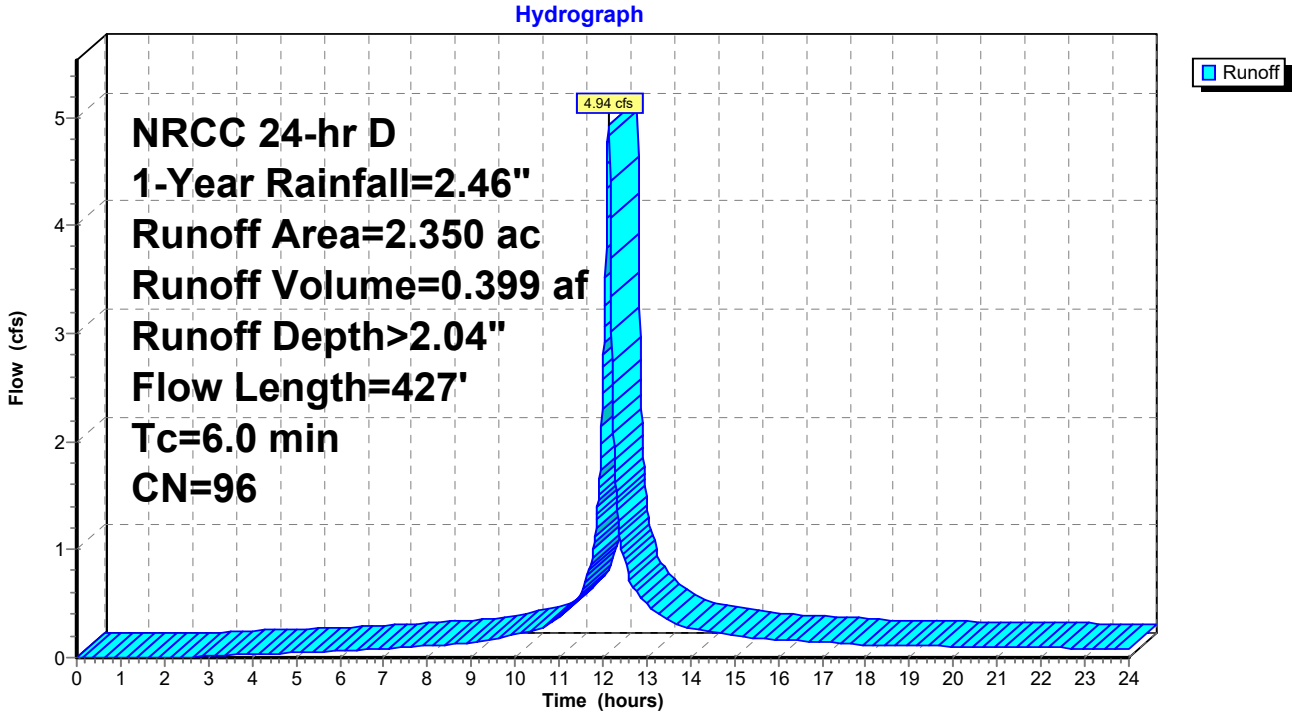
Runoff = 4.94 cfs @ 12.13 hrs, Volume= 0.399 af, Depth> 2.04"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

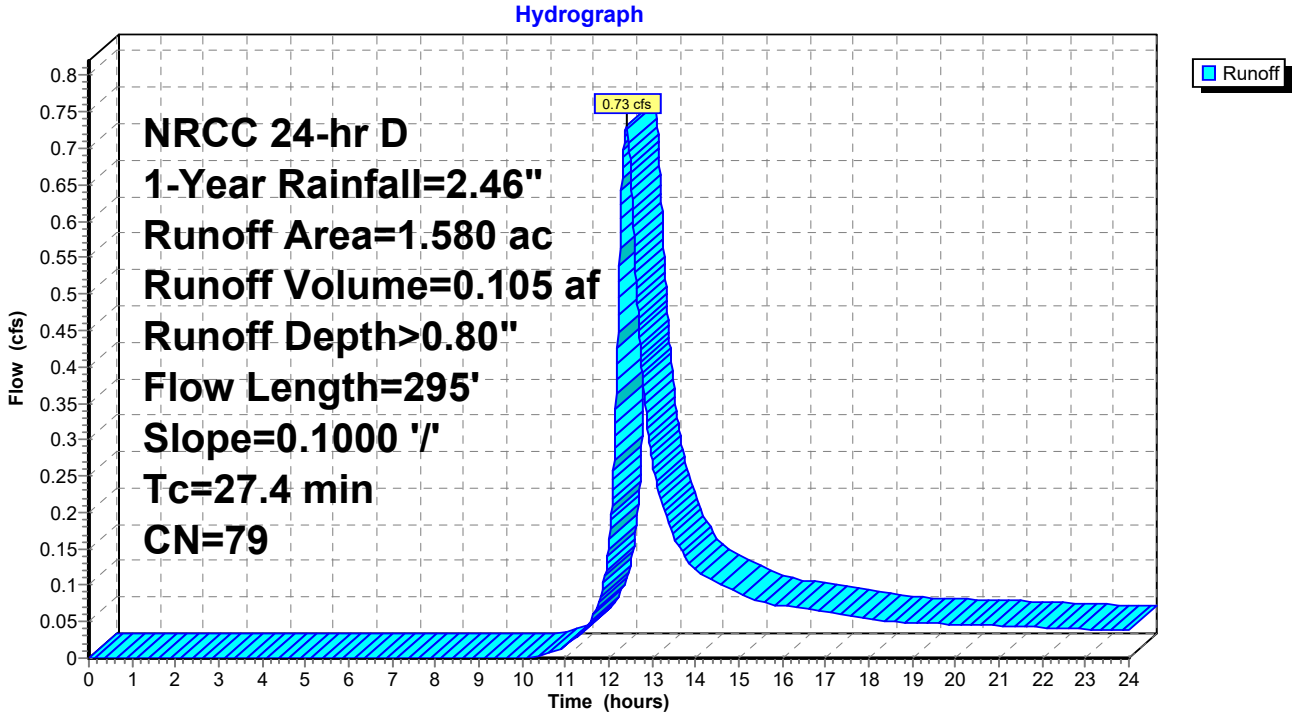
Runoff = 0.73 cfs @ 12.39 hrs, Volume= 0.105 af, Depth> 0.80"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

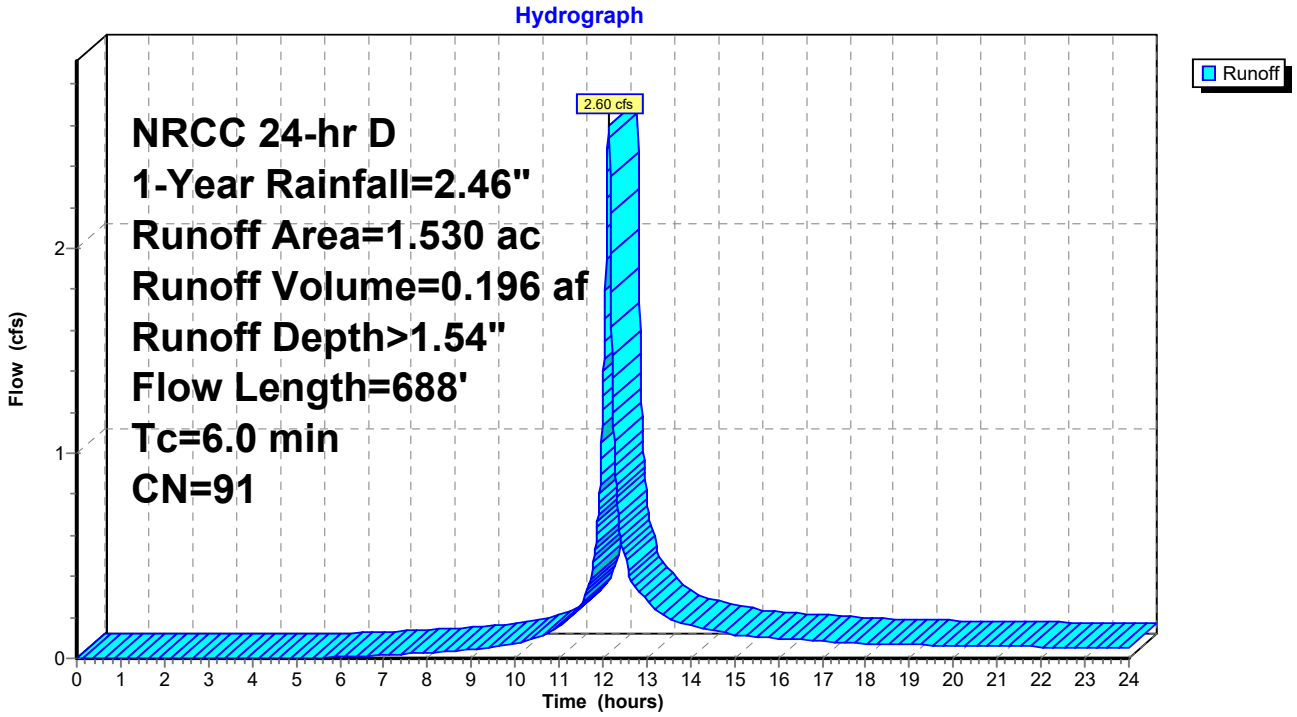
Runoff = 2.60 cfs @ 12.13 hrs, Volume= 0.196 af, Depth> 1.54"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 1.86" for 1-Year event
Inflow = 21.99 cfs @ 12.13 hrs, Volume= 1.721 af
Outflow = 9.64 cfs @ 12.24 hrs, Volume= 1.721 af, Atten= 56%, Lag= 6.9 min
Primary = 9.64 cfs @ 12.24 hrs, Volume= 1.721 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 57.13' @ 12.24 hrs Surf.Area= 0.253 ac Storage= 0.236 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.7 min ( 813.0 - 806.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

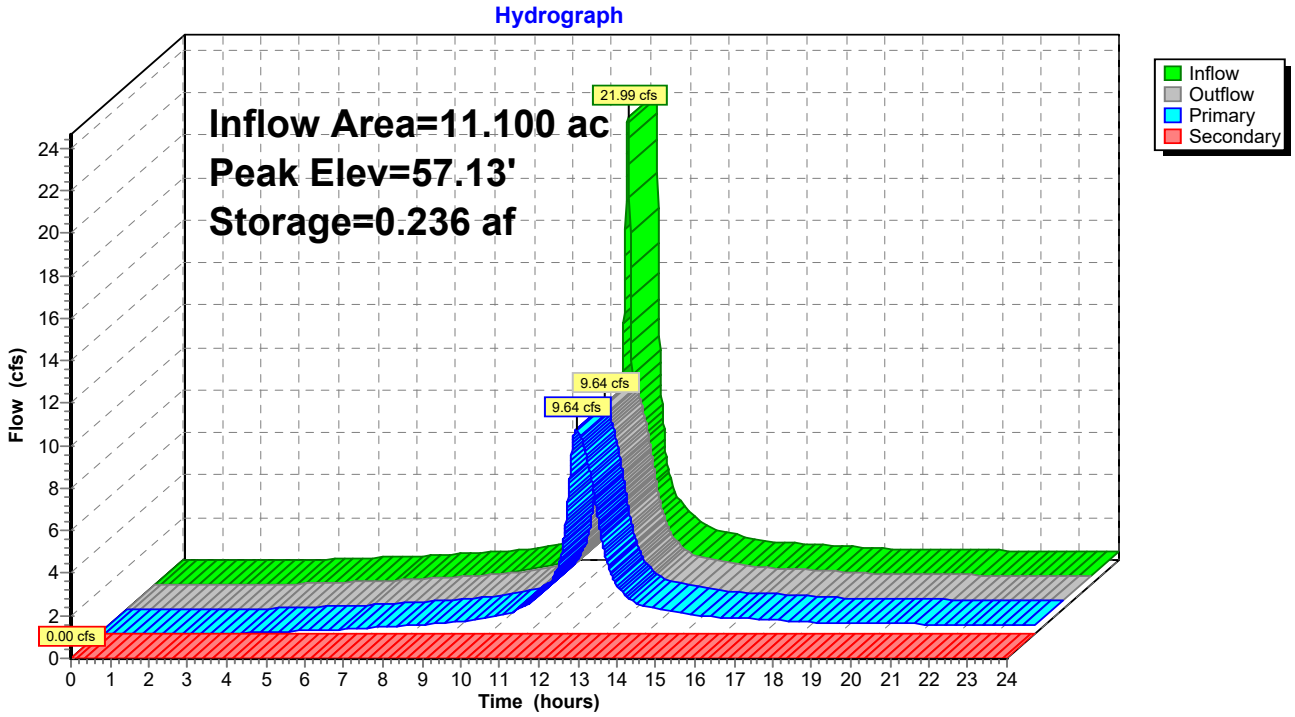
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=9.64 cfs @ 12.24 hrs HW=57.13' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 9.64 cfs @ 5.46 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.40' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 1P: Detention Basin

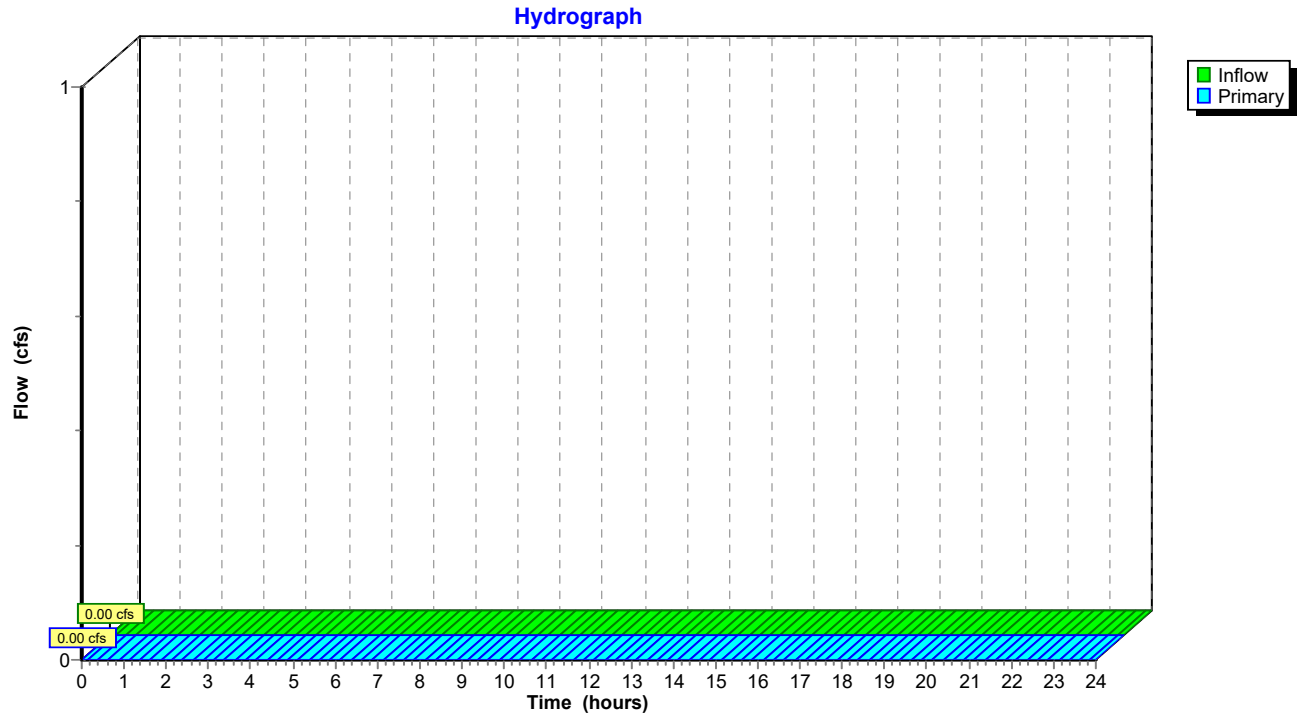


## Summary for Link 1L: Overland Flow

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

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

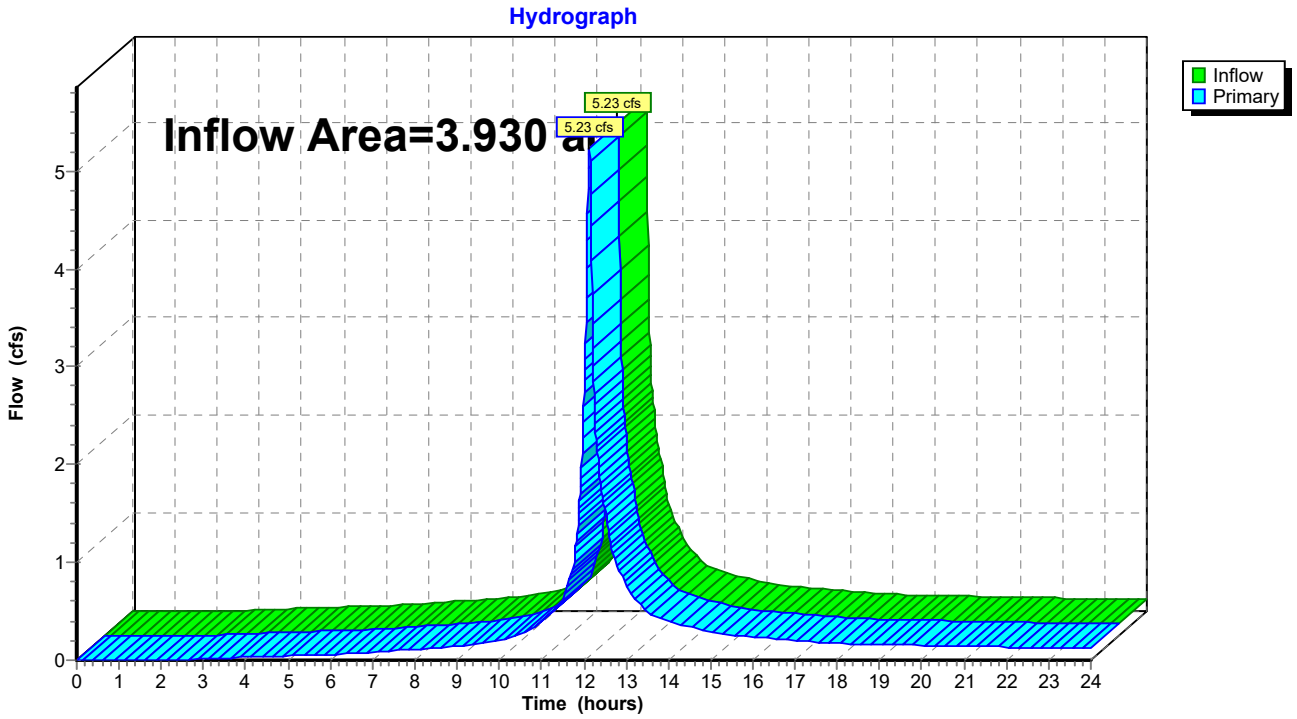


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 1.54" for 1-Year event
Inflow = 5.23 cfs @ 12.13 hrs, Volume= 0.504 af
Primary = 5.23 cfs @ 12.13 hrs, Volume= 0.504 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

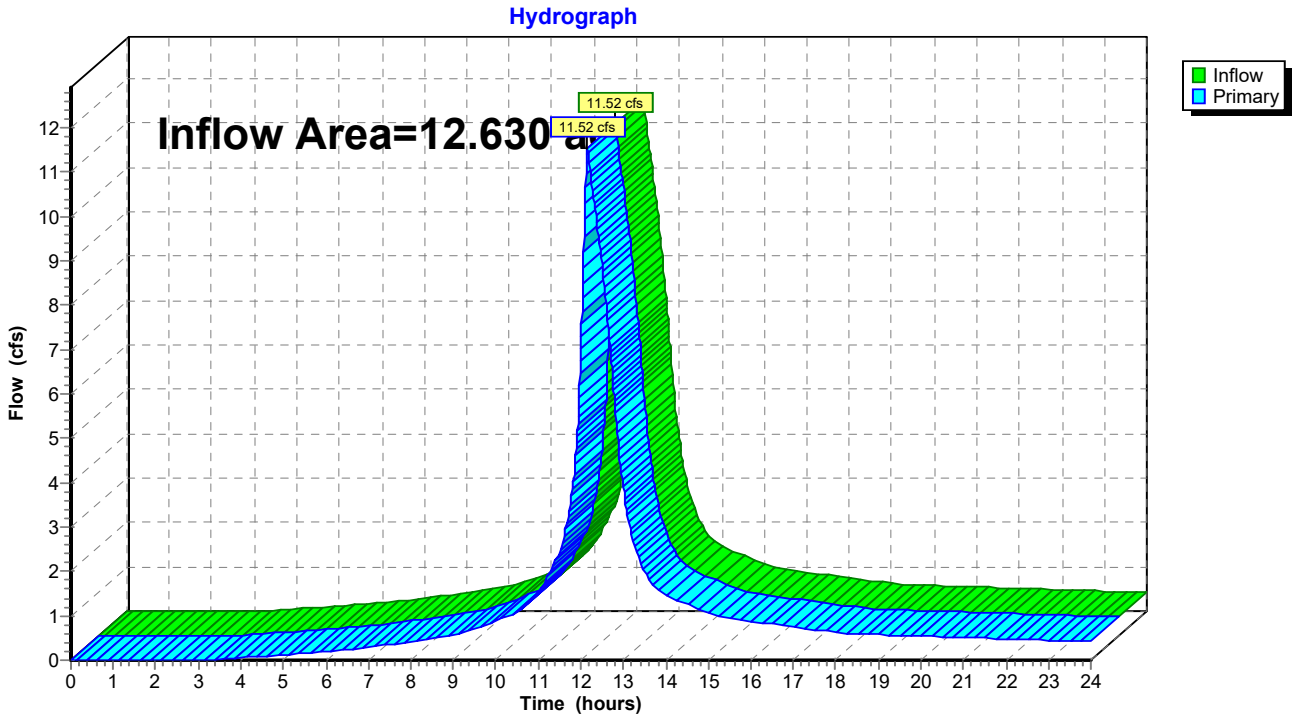


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 1.82" for 1-Year event
Inflow = 11.52 cfs @ 12.16 hrs, Volume= 1.917 af
Primary = 11.52 cfs @ 12.16 hrs, Volume= 1.917 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>2.44"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=28.35 cfs 2.256 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>2.62"
Flow Length=427' Tc=6.0 min CN=96 Runoff=6.26 cfs 0.514 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>1.22"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=1.15 cfs 0.160 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>2.09"
Flow Length=688' Tc=6.0 min CN=91 Runoff=3.48 cfs 0.266 af

**Pond 1P: Detention Basin** Peak Elev=57.50' Storage=0.340 af Inflow=28.35 cfs 2.256 af
Primary=10.94 cfs 2.256 af Secondary=0.00 cfs 0.000 af Outflow=10.94 cfs 2.256 af

**Link 1L: Overland Flow** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Link 2L: Flow To Wetlands** Inflow=6.76 cfs 0.674 af
Primary=6.76 cfs 0.674 af

**Link L-E1&3: Existing Drainage System** Inflow=13.53 cfs 2.522 af
Primary=13.53 cfs 2.522 af

**Total Runoff Area = 16.560 ac Runoff Volume = 3.197 af Average Runoff Depth = 2.32"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 125% of capacity of segment #3

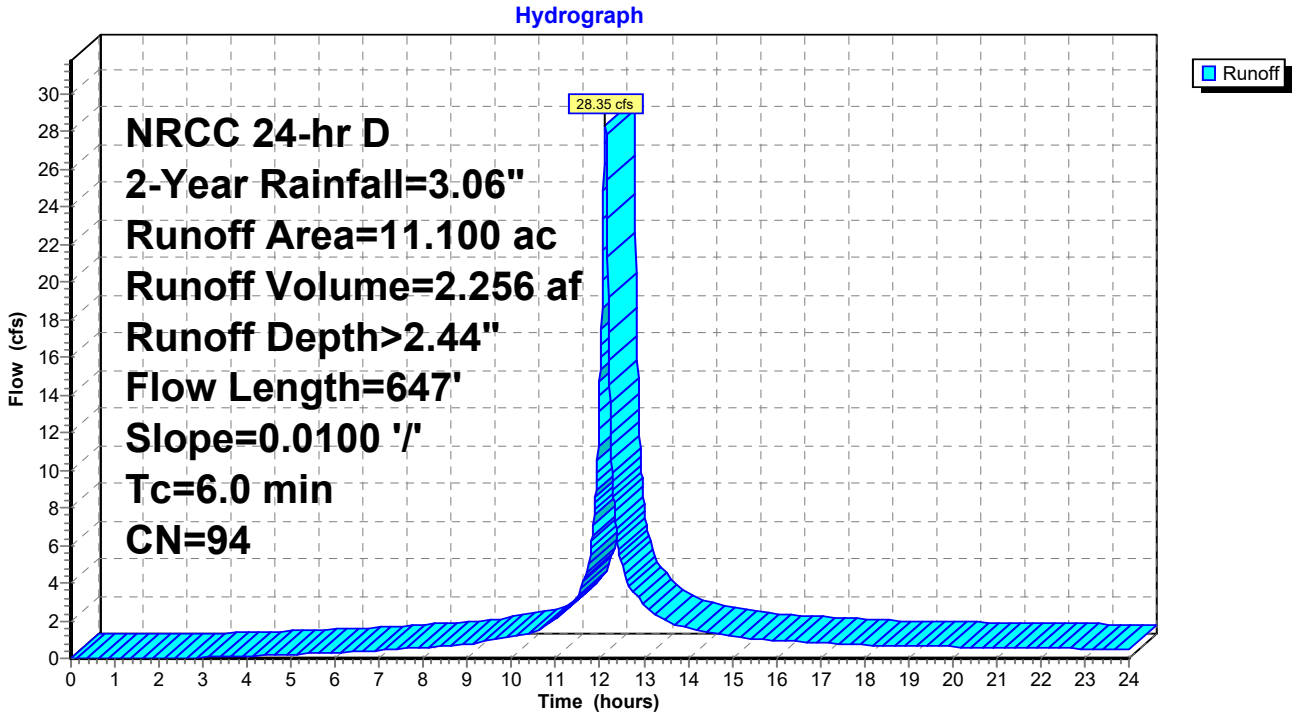
Runoff = 28.35 cfs @ 12.13 hrs, Volume= 2.256 af, Depth> 2.44"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

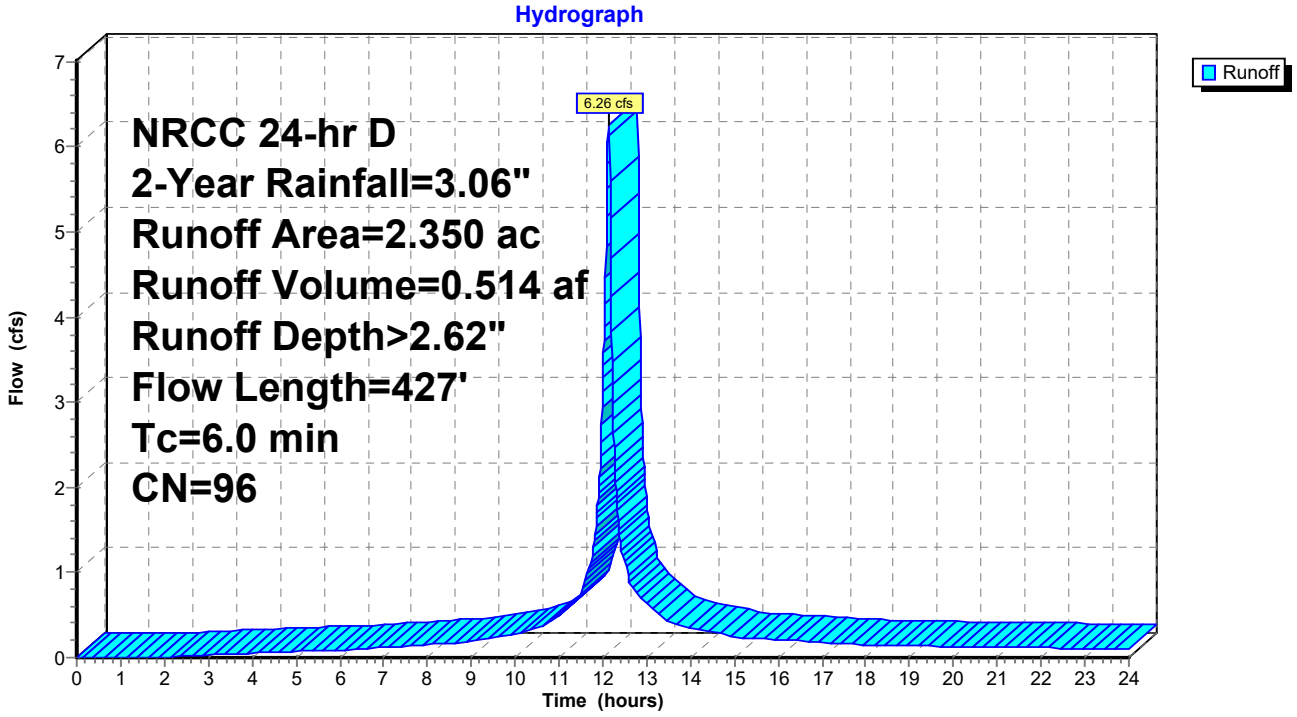
Runoff = 6.26 cfs @ 12.13 hrs, Volume= 0.514 af, Depth> 2.62"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

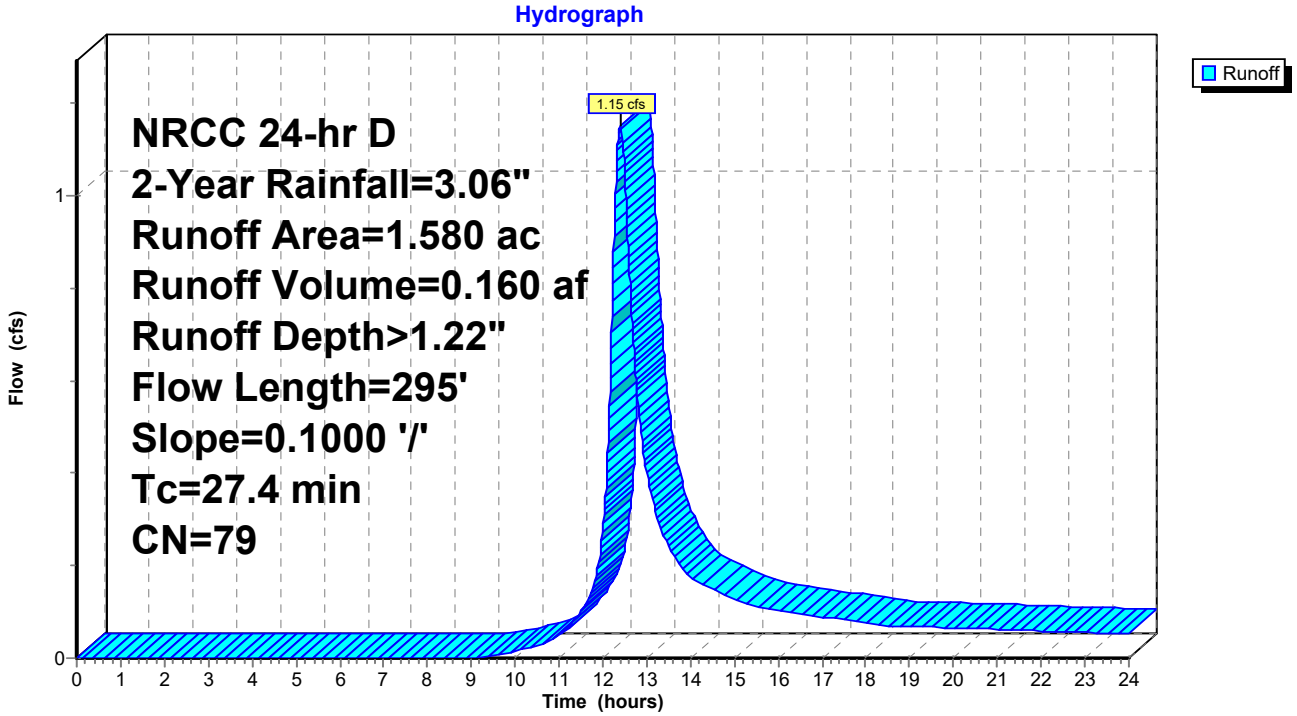
Runoff = 1.15 cfs @ 12.39 hrs, Volume= 0.160 af, Depth> 1.22"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

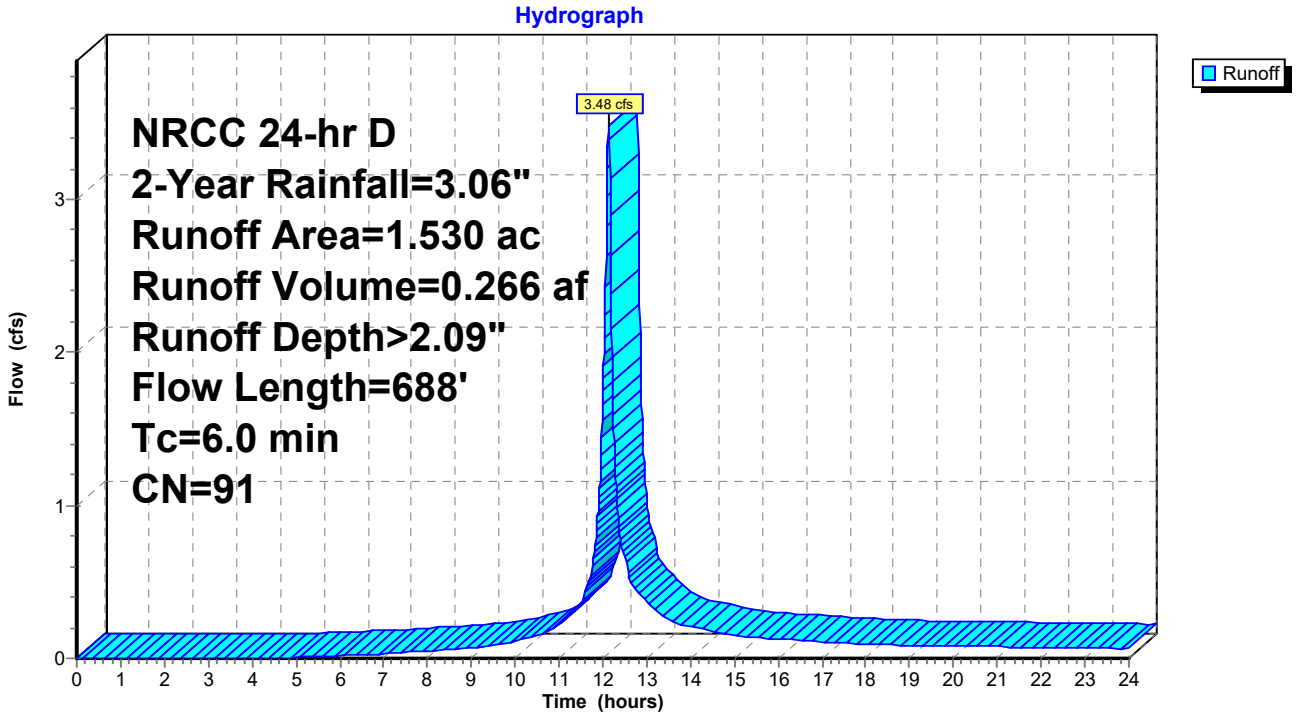
Runoff = 3.48 cfs @ 12.13 hrs, Volume= 0.266 af, Depth> 2.09"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 2.44" for 2-Year event
Inflow = 28.35 cfs @ 12.13 hrs, Volume= 2.256 af
Outflow = 10.94 cfs @ 12.26 hrs, Volume= 2.256 af, Atten= 61%, Lag= 8.1 min
Primary = 10.94 cfs @ 12.26 hrs, Volume= 2.256 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 57.50' @ 12.26 hrs Surf.Area= 0.313 ac Storage= 0.340 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 8.5 min ( 805.4 - 796.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

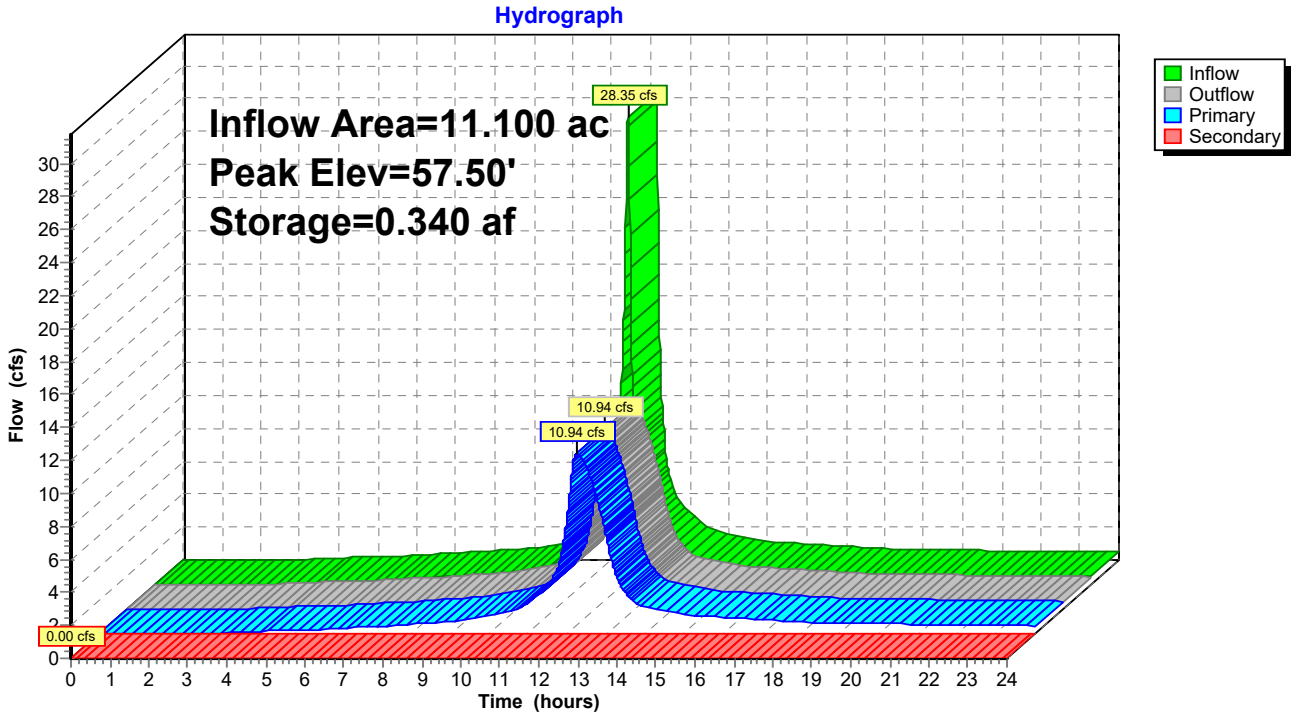
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=10.93 cfs @ 12.26 hrs HW=57.50' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 10.93 cfs @ 6.19 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.40' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 1P: Detention Basin

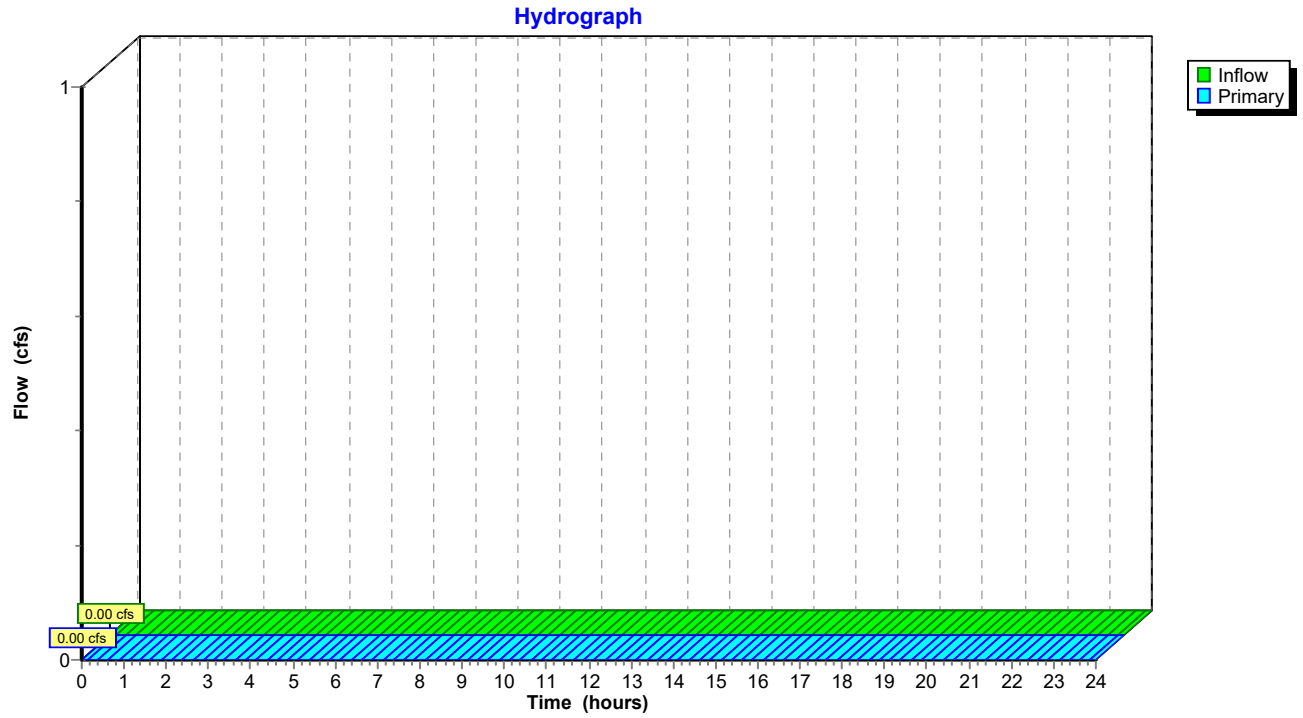


## Summary for Link 1L: Overland Flow

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

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

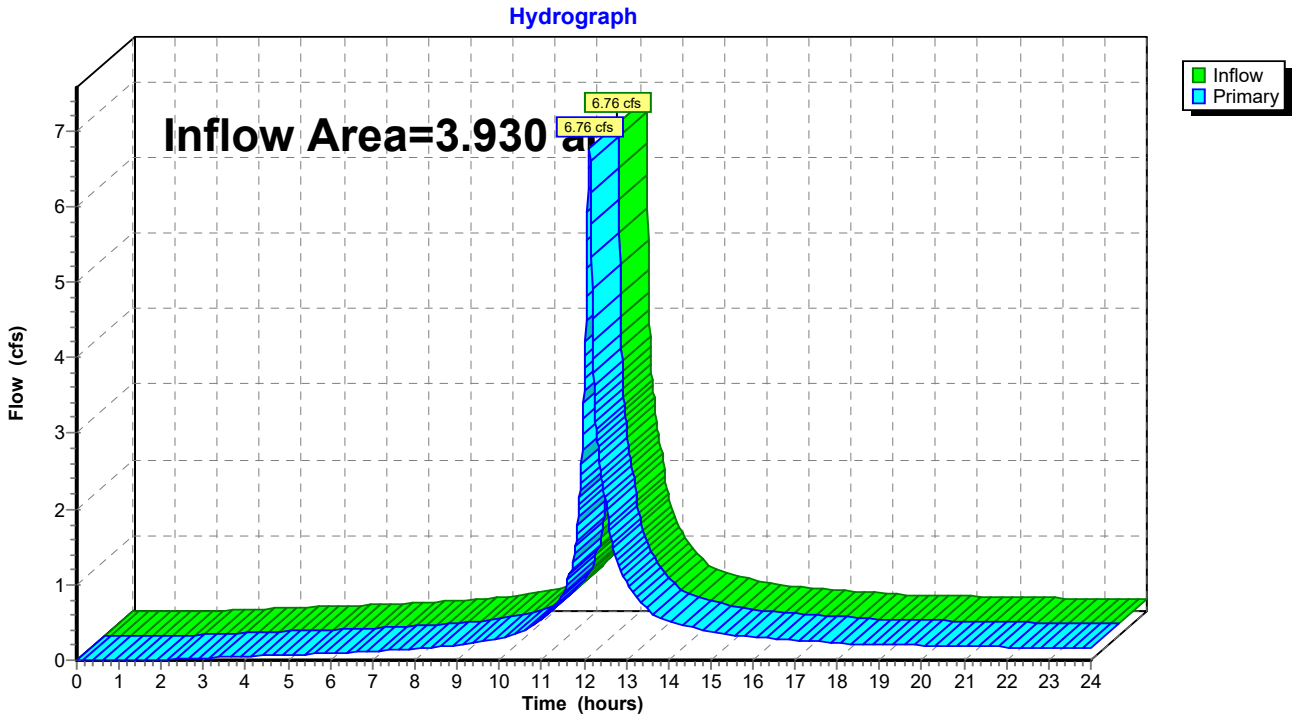


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 2.06" for 2-Year event
Inflow = 6.76 cfs @ 12.13 hrs, Volume= 0.674 af
Primary = 6.76 cfs @ 12.13 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

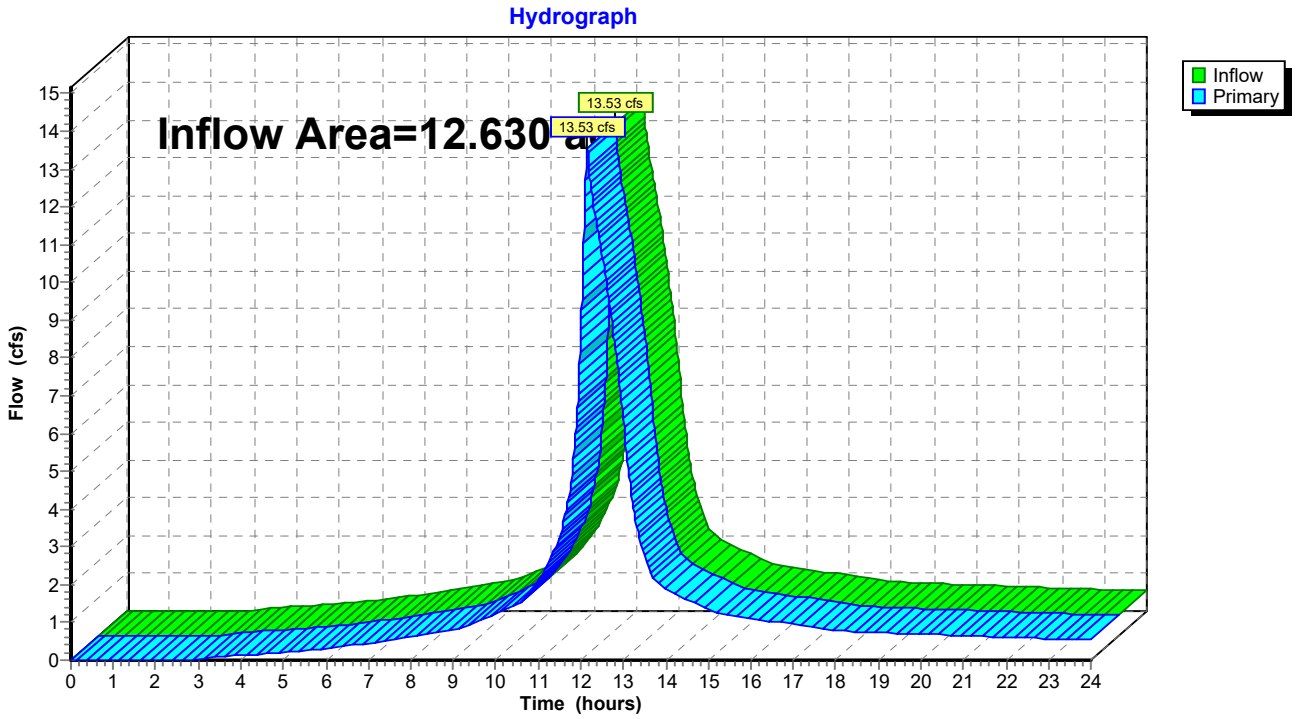


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 2.40" for 2-Year event
Inflow = 13.53 cfs @ 12.15 hrs, Volume= 2.522 af
Primary = 13.53 cfs @ 12.15 hrs, Volume= 2.522 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>3.39"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=38.55 cfs 3.132 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>3.58"
Flow Length=427' Tc=6.0 min CN=96 Runoff=8.39 cfs 0.702 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>1.97"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=1.89 cfs 0.259 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>3.00"
Flow Length=688' Tc=6.0 min CN=91 Runoff=4.91 cfs 0.383 af

**Pond 1P: Detention Basin** Peak Elev=58.01' Storage=0.521 af Inflow=38.55 cfs 3.132 af
Primary=12.49 cfs 3.120 af Secondary=2.60 cfs 0.011 af Outflow=15.09 cfs 3.131 af

**Link 1L: Overland Flow** Inflow=2.60 cfs 0.011 af
Primary=2.60 cfs 0.011 af

**Link 2L: Flow To Wetlands** Inflow=9.25 cfs 0.961 af
Primary=9.25 cfs 0.961 af

**Link L-E1&3: Existing Drainage System** Inflow=16.38 cfs 3.502 af
Primary=16.38 cfs 3.502 af

**Total Runoff Area = 16.560 ac Runoff Volume = 4.476 af Average Runoff Depth = 3.24"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 170% of capacity of segment #3

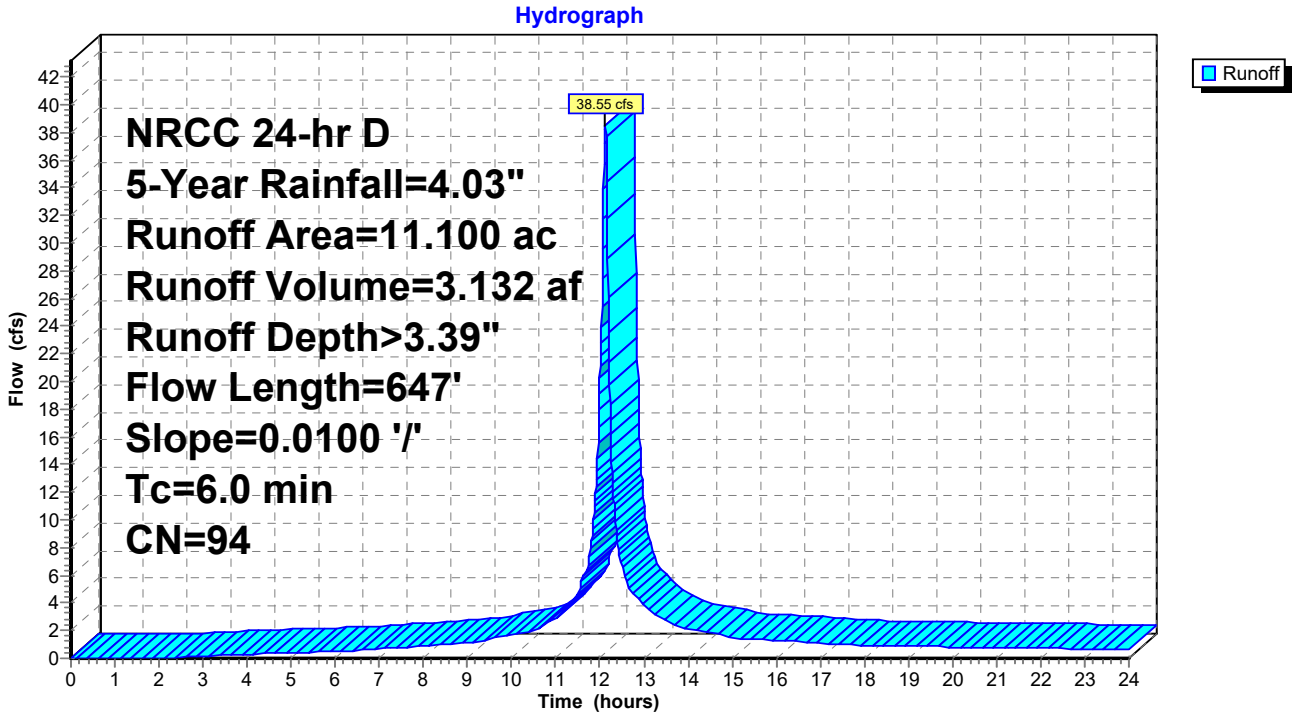
Runoff = 38.55 cfs @ 12.13 hrs, Volume= 3.132 af, Depth> 3.39"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

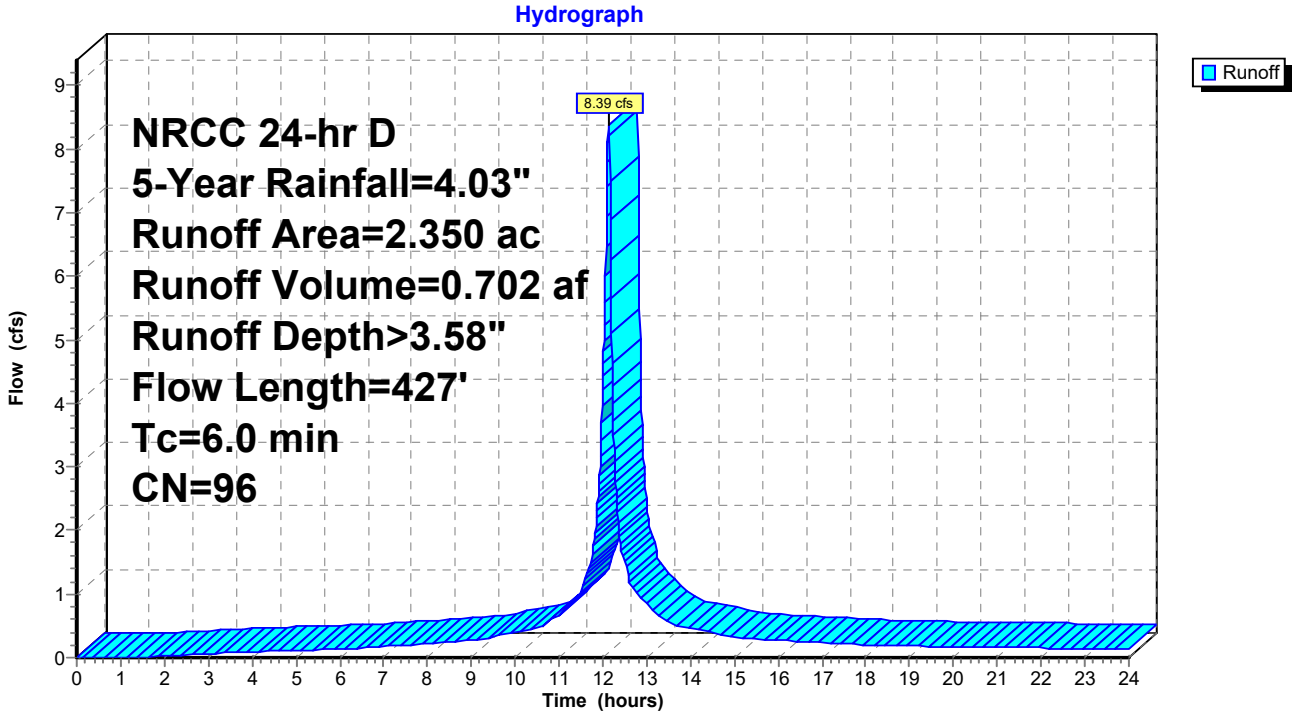
Runoff = 8.39 cfs @ 12.13 hrs, Volume= 0.702 af, Depth> 3.58"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

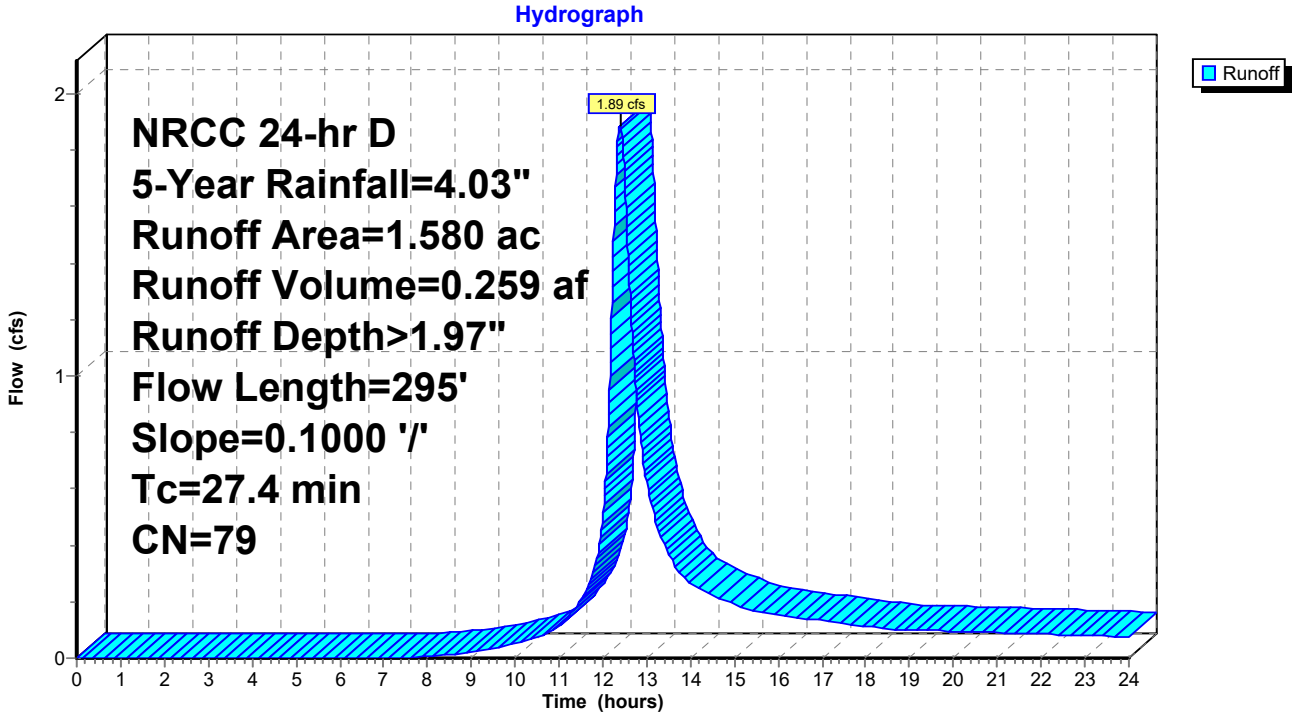
Runoff = 1.89 cfs @ 12.39 hrs, Volume= 0.259 af, Depth> 1.97"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

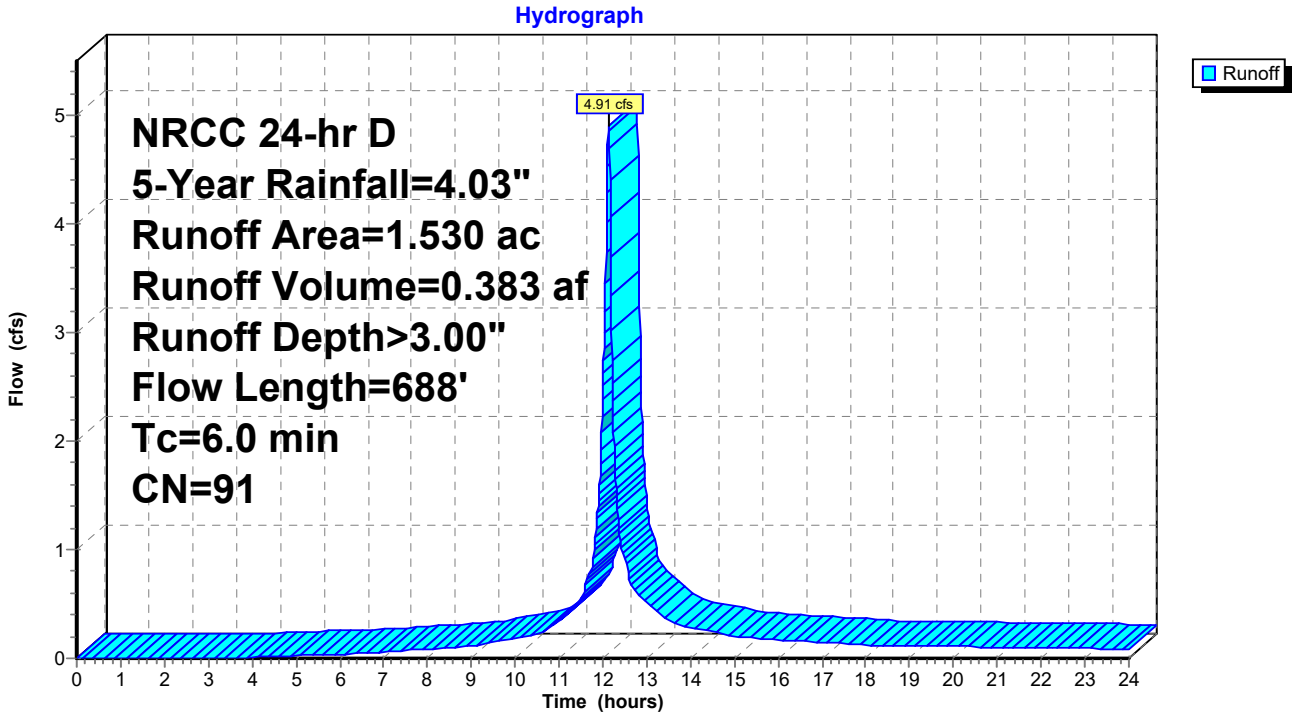
Runoff = 4.91 cfs @ 12.13 hrs, Volume= 0.383 af, Depth> 3.00"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 3.39" for 5-Year event
Inflow = 38.55 cfs @ 12.13 hrs, Volume= 3.132 af
Outflow = 15.09 cfs @ 12.26 hrs, Volume= 3.131 af, Atten= 61%, Lag= 8.0 min
Primary = 12.49 cfs @ 12.26 hrs, Volume= 3.120 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 2.60 cfs @ 12.26 hrs, Volume= 0.011 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.01' @ 12.26 hrs Surf.Area= 0.404 ac Storage= 0.521 af

Plug-Flow detention time= 11.3 min calculated for 3.130 af (100% of inflow)
Center-of-Mass det. time= 11.1 min ( 797.0 - 786.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

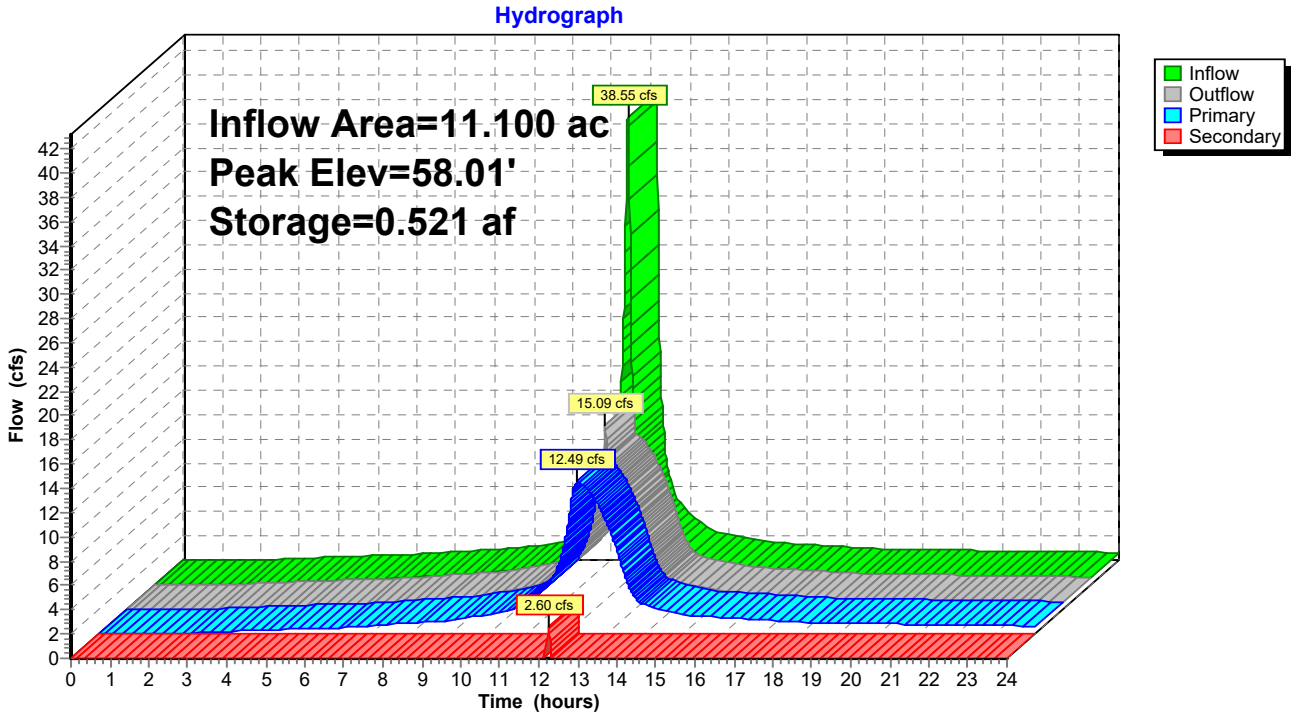
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=12.49 cfs @ 12.26 hrs HW=58.01' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 12.49 cfs @ 7.07 fps)

**Secondary OutFlow** Max=2.55 cfs @ 12.26 hrs HW=58.01' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.55 cfs @ 0.32 fps)

## Pond 1P: Detention Basin

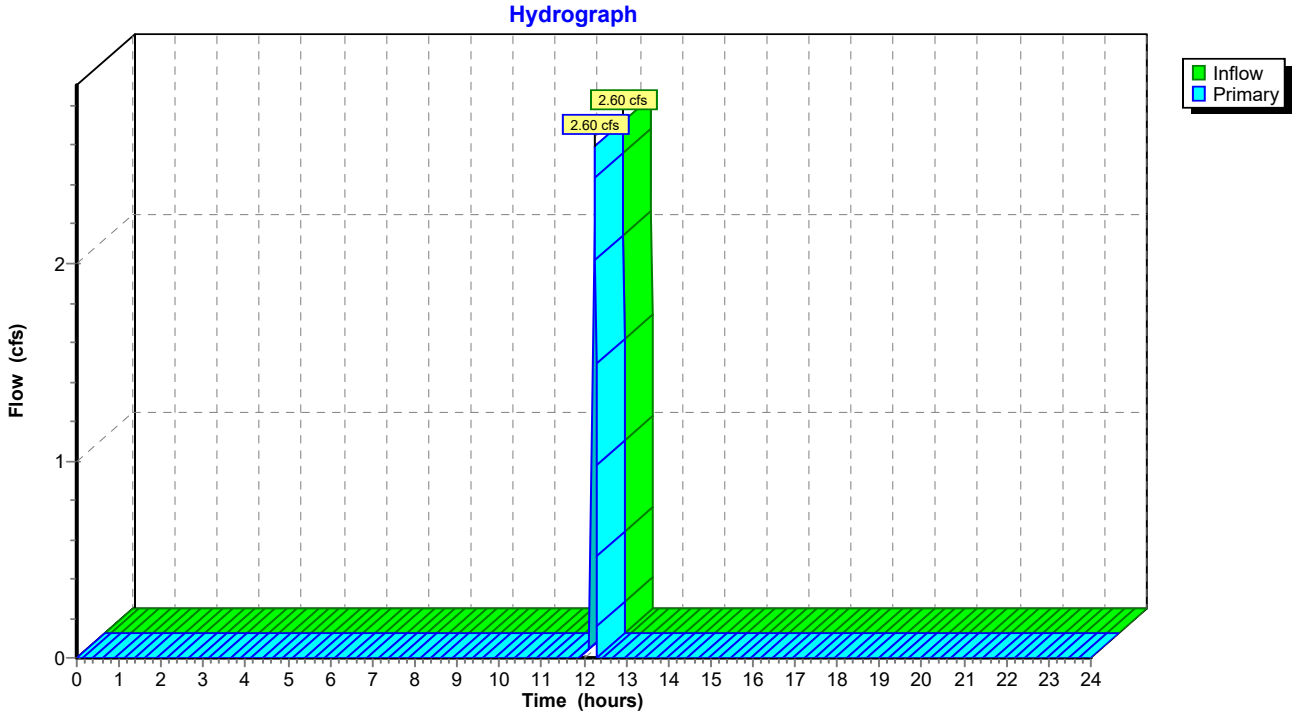


## Summary for Link 1L: Overland Flow

Inflow = 2.60 cfs @ 12.26 hrs, Volume= 0.011 af
Primary = 2.60 cfs @ 12.26 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

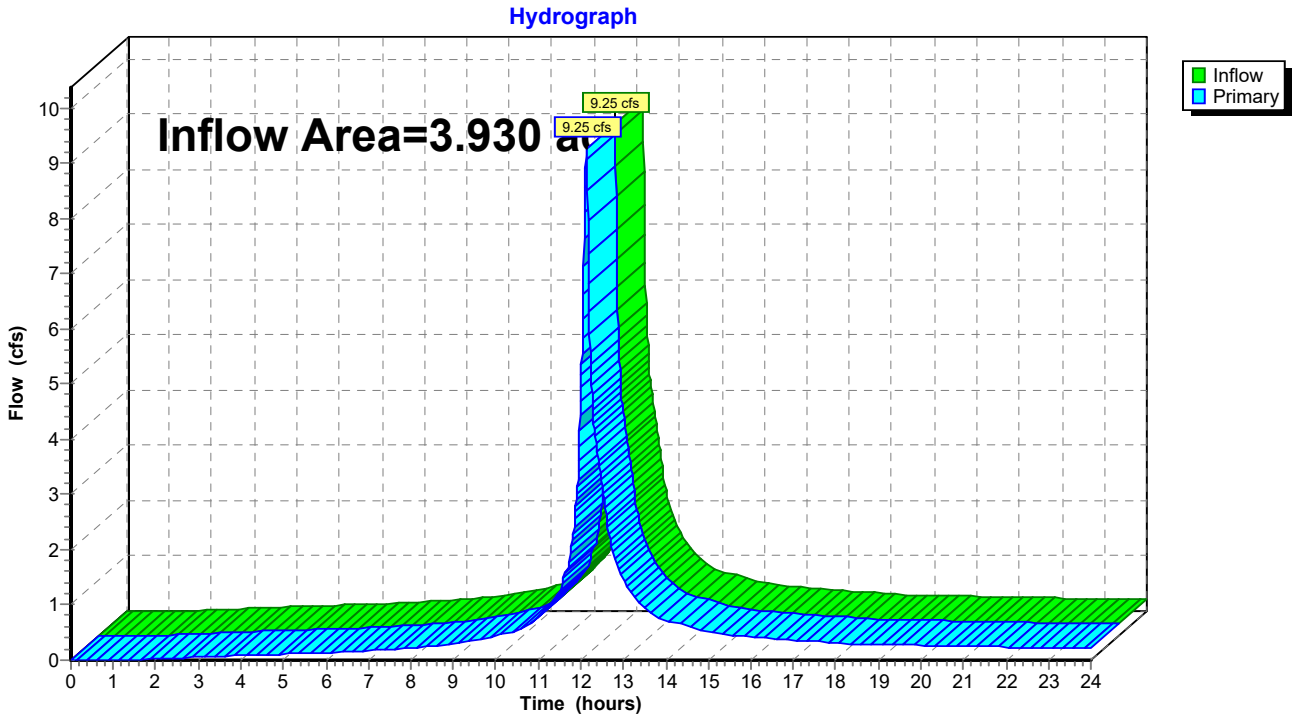


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 2.93" for 5-Year event
Inflow = 9.25 cfs @ 12.13 hrs, Volume= 0.961 af
Primary = 9.25 cfs @ 12.13 hrs, Volume= 0.961 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

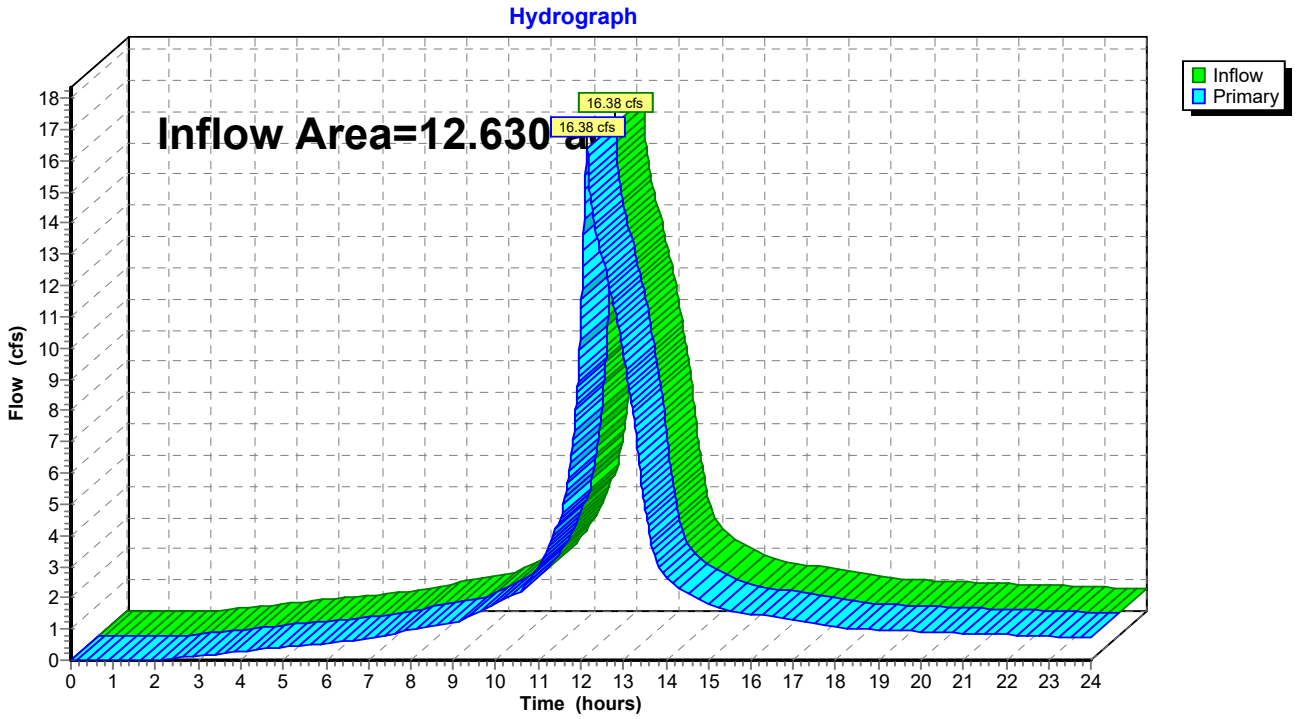


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 3.33" for 5-Year event
Inflow = 16.38 cfs @ 12.15 hrs, Volume= 3.502 af
Primary = 16.38 cfs @ 12.15 hrs, Volume= 3.502 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>4.18"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=46.99 cfs 3.869 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>4.39"
Flow Length=427' Tc=6.0 min CN=96 Runoff=10.16 cfs 0.859 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>2.64"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=2.54 cfs 0.348 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>3.78"
Flow Length=688' Tc=6.0 min CN=91 Runoff=6.10 cfs 0.482 af

**Pond 1P: Detention Basin** Peak Elev=58.07' Storage=0.545 af Inflow=46.99 cfs 3.869 af
Primary=12.67 cfs 3.672 af Secondary=27.26 cfs 0.196 af Outflow=39.93 cfs 3.867 af

**Link 1L: Overland Flow** Inflow=27.26 cfs 0.196 af
Primary=27.26 cfs 0.196 af

**Link 2L: Flow To Wetlands** Inflow=11.35 cfs 1.206 af
Primary=11.35 cfs 1.206 af

**Link L-E1&3: Existing Drainage System** Inflow=18.50 cfs 4.153 af
Primary=18.50 cfs 4.153 af

**Total Runoff Area = 16.560 ac Runoff Volume = 5.558 af Average Runoff Depth = 4.03"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 208% of capacity of segment #3

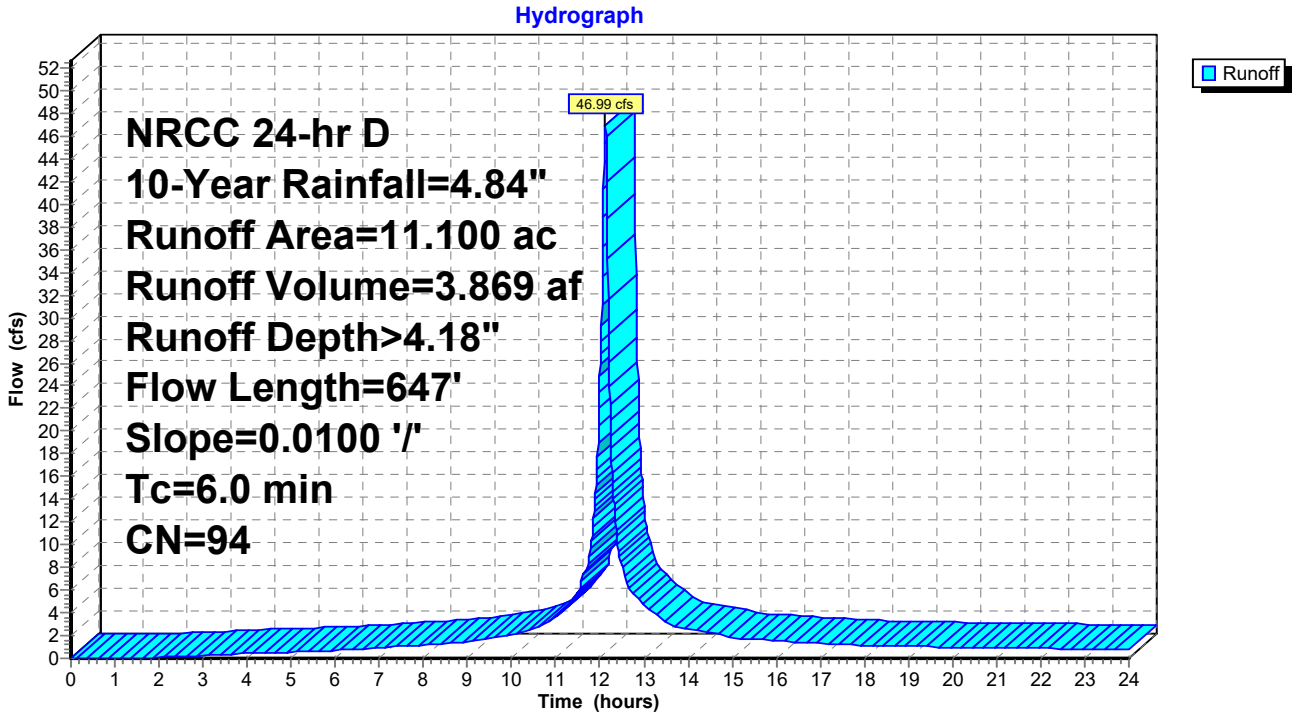
Runoff = 46.99 cfs @ 12.13 hrs, Volume= 3.869 af, Depth> 4.18"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

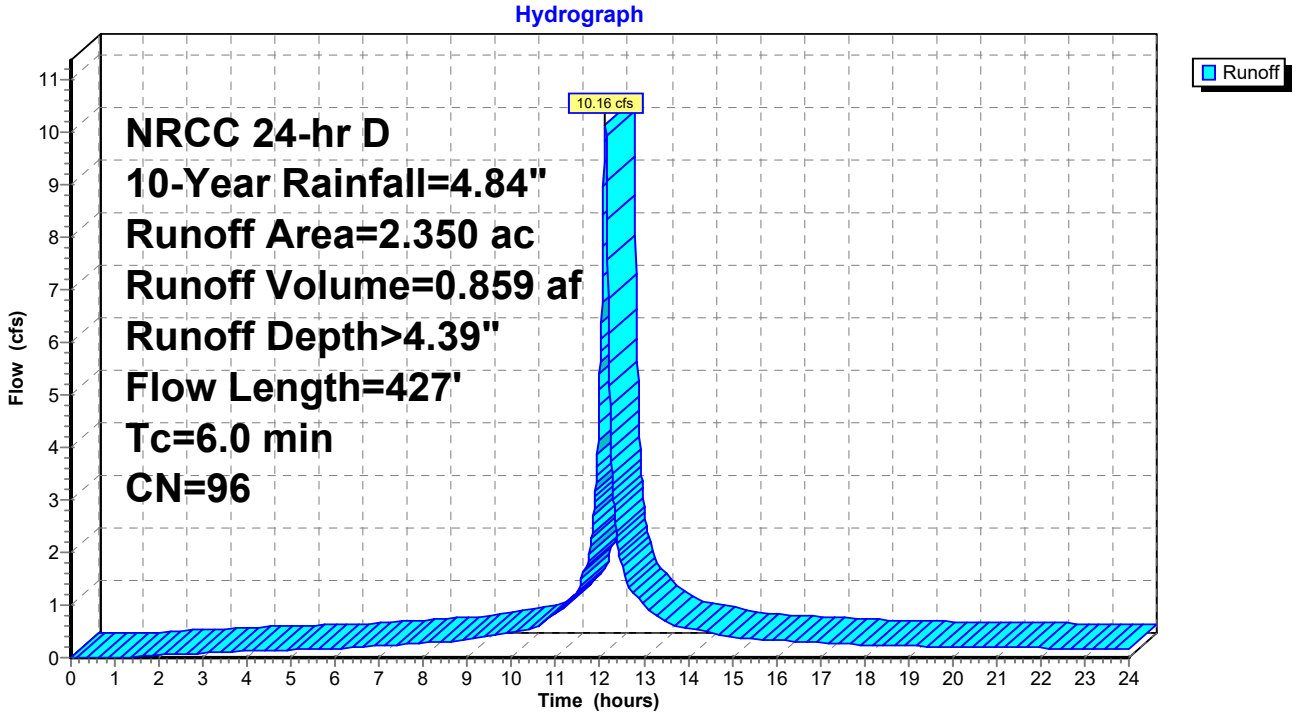
Runoff = 10.16 cfs @ 12.13 hrs, Volume= 0.859 af, Depth> 4.39"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

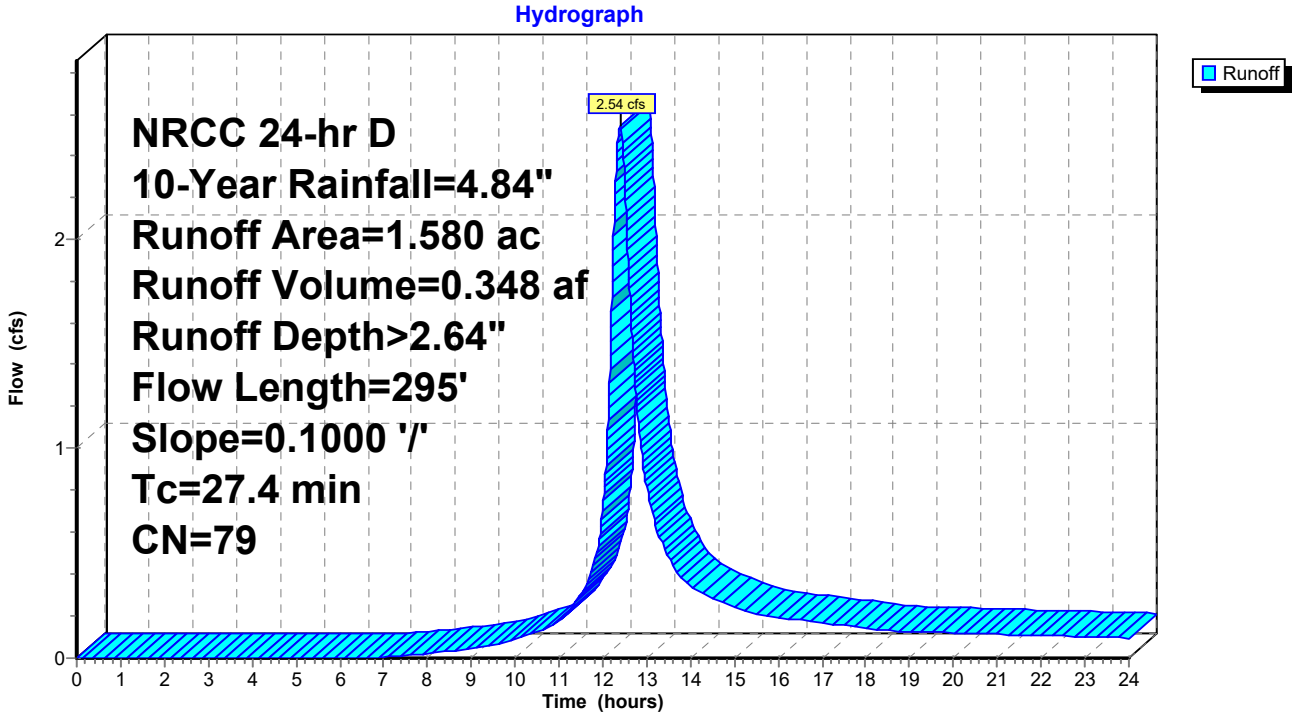
Runoff = 2.54 cfs @ 12.39 hrs, Volume= 0.348 af, Depth> 2.64"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

[47] Hint: Peak is 102% of capacity of segment #3

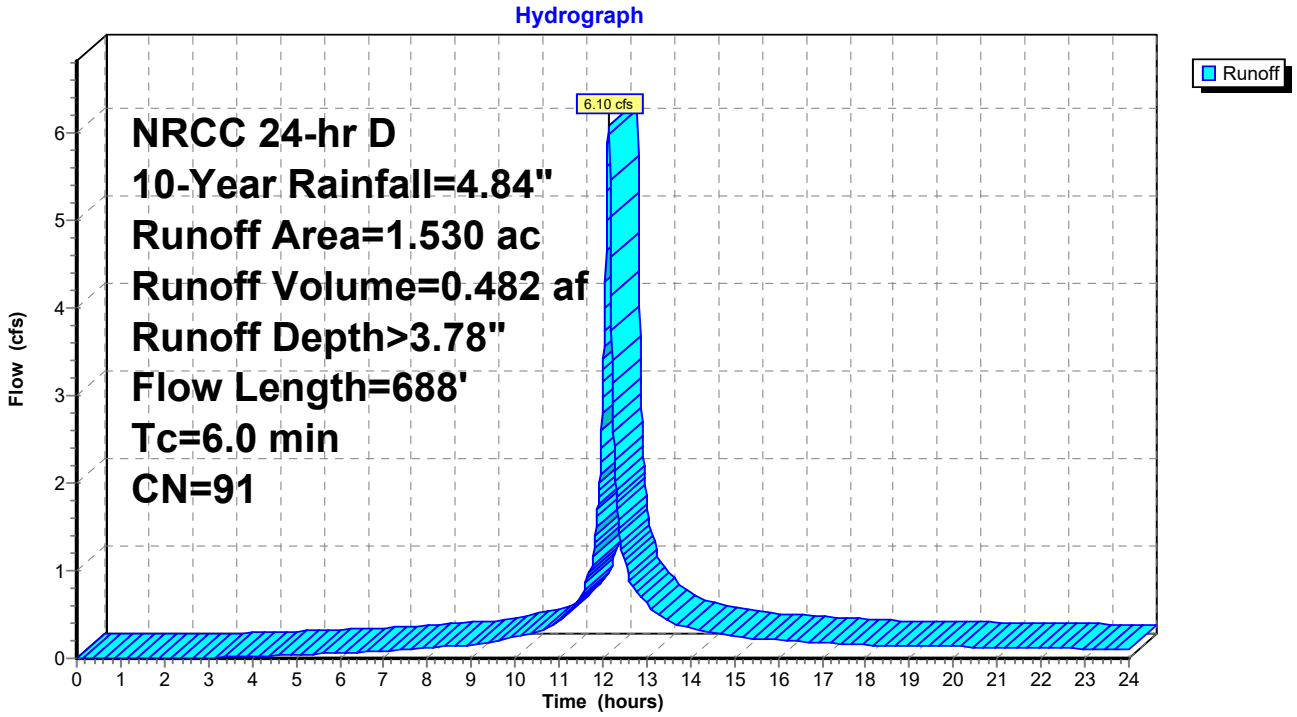
Runoff = 6.10 cfs @ 12.13 hrs, Volume= 0.482 af, Depth> 3.78"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 4.18" for 10-Year event
Inflow = 46.99 cfs @ 12.13 hrs, Volume= 3.869 af
Outflow = 39.93 cfs @ 12.17 hrs, Volume= 3.867 af, Atten= 15%, Lag= 2.4 min
Primary = 12.67 cfs @ 12.17 hrs, Volume= 3.672 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 27.26 cfs @ 12.17 hrs, Volume= 0.196 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.07' @ 12.17 hrs Surf.Area= 0.407 ac Storage= 0.545 af

Plug-Flow detention time= 11.2 min calculated for 3.865 af (100% of inflow)
Center-of-Mass det. time= 10.8 min ( 790.1 - 779.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

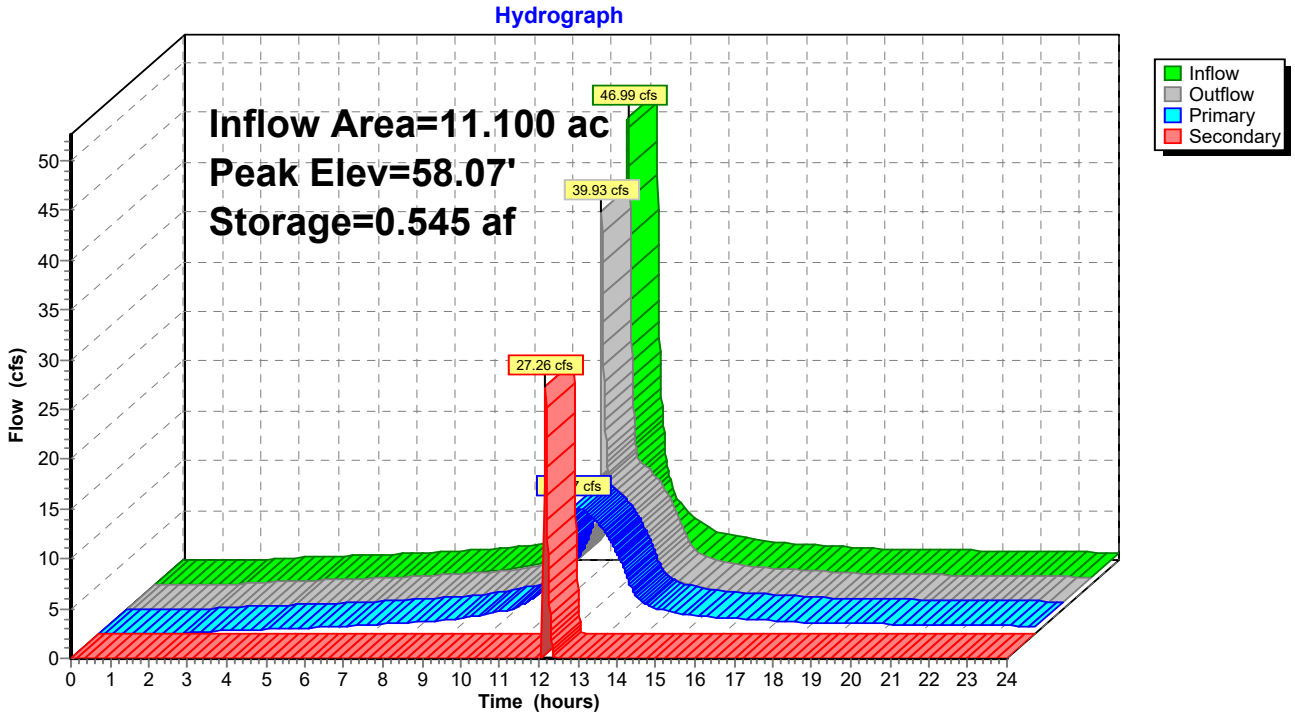
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=12.67 cfs @ 12.17 hrs HW=58.07' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 12.67 cfs @ 7.17 fps)

**Secondary OutFlow** Max=27.04 cfs @ 12.17 hrs HW=58.07' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 27.04 cfs @ 0.70 fps)

## Pond 1P: Detention Basin

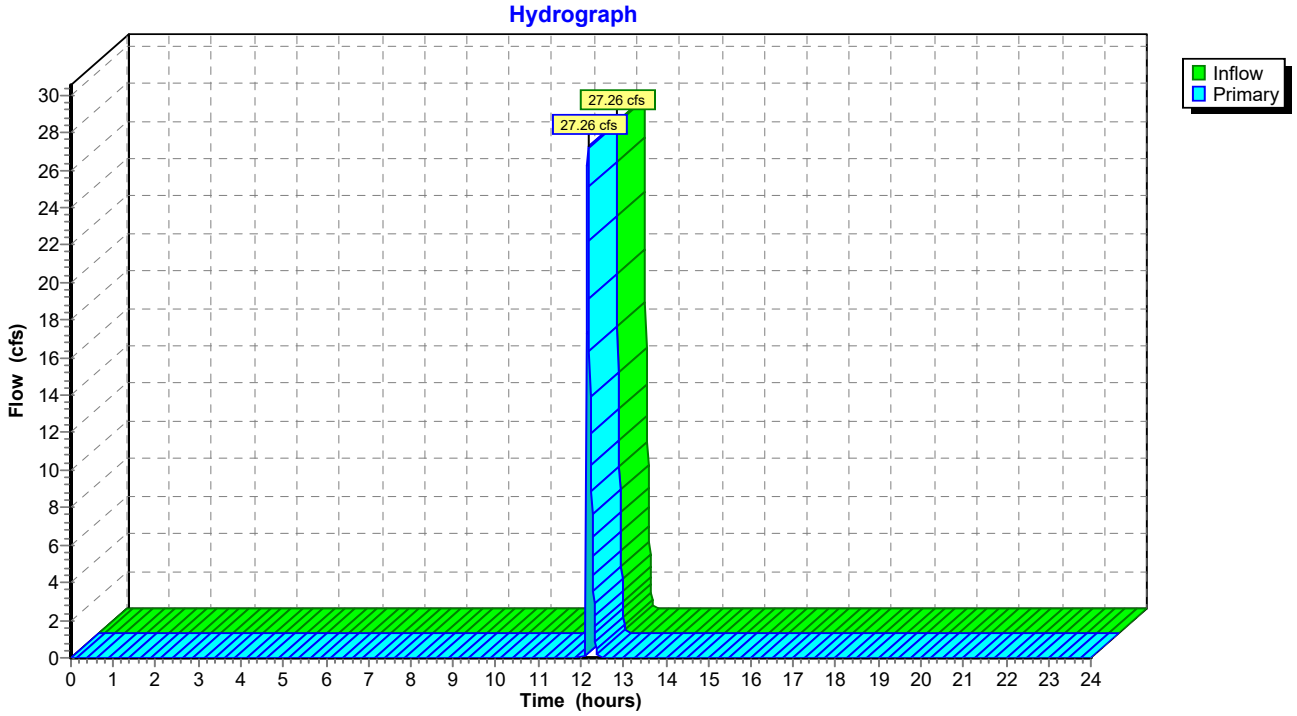


## Summary for Link 1L: Overland Flow

Inflow = 27.26 cfs @ 12.17 hrs, Volume= 0.196 af
Primary = 27.26 cfs @ 12.17 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

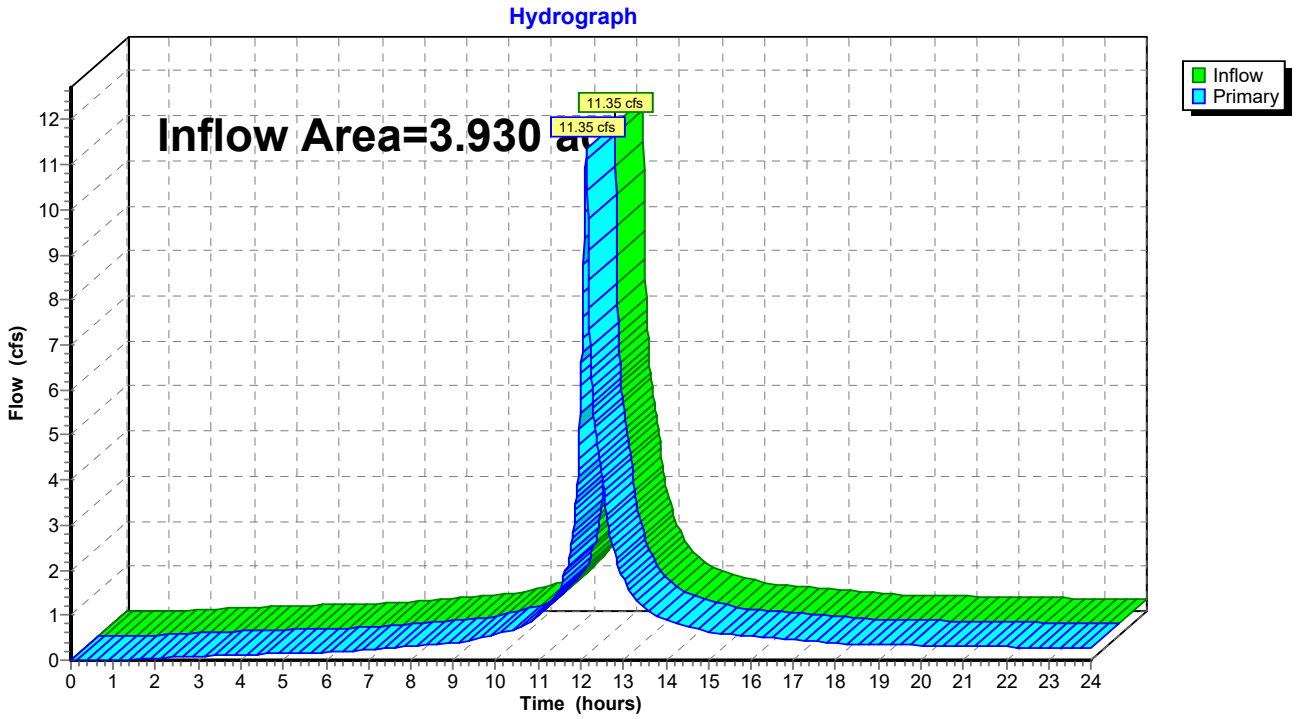


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 3.68" for 10-Year event
Inflow = 11.35 cfs @ 12.13 hrs, Volume= 1.206 af
Primary = 11.35 cfs @ 12.13 hrs, Volume= 1.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

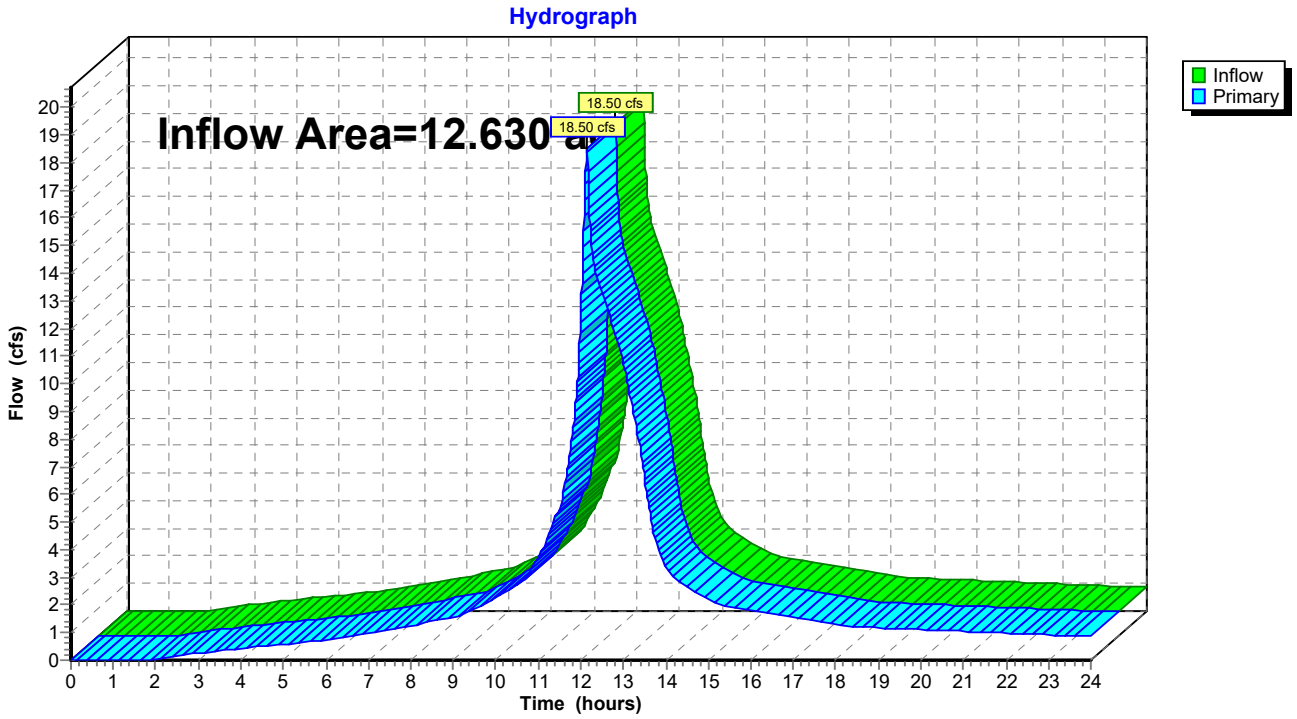


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 3.95" for 10-Year event
Inflow = 18.50 cfs @ 12.14 hrs, Volume= 4.153 af
Primary = 18.50 cfs @ 12.14 hrs, Volume= 4.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>5.28"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=58.48 cfs 4.884 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>5.49"
Flow Length=427' Tc=6.0 min CN=96 Runoff=12.56 cfs 1.075 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>3.60"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=3.46 cfs 0.474 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>4.86"
Flow Length=688' Tc=6.0 min CN=91 Runoff=7.71 cfs 0.619 af

**Pond 1P: Detention Basin** Peak Elev=58.10' Storage=0.558 af Inflow=58.48 cfs 4.884 af
Primary=12.76 cfs 4.402 af Secondary=45.25 cfs 0.478 af Outflow=58.01 cfs 4.880 af

**Link 1L: Overland Flow** Inflow=45.25 cfs 0.478 af
Primary=45.25 cfs 0.478 af

**Link 2L: Flow To Wetlands** Inflow=14.24 cfs 1.549 af
Primary=14.24 cfs 1.549 af

**Link L-E1&3: Existing Drainage System** Inflow=20.47 cfs 5.021 af
Primary=20.47 cfs 5.021 af

**Total Runoff Area = 16.560 ac Runoff Volume = 7.052 af Average Runoff Depth = 5.11"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 258% of capacity of segment #3

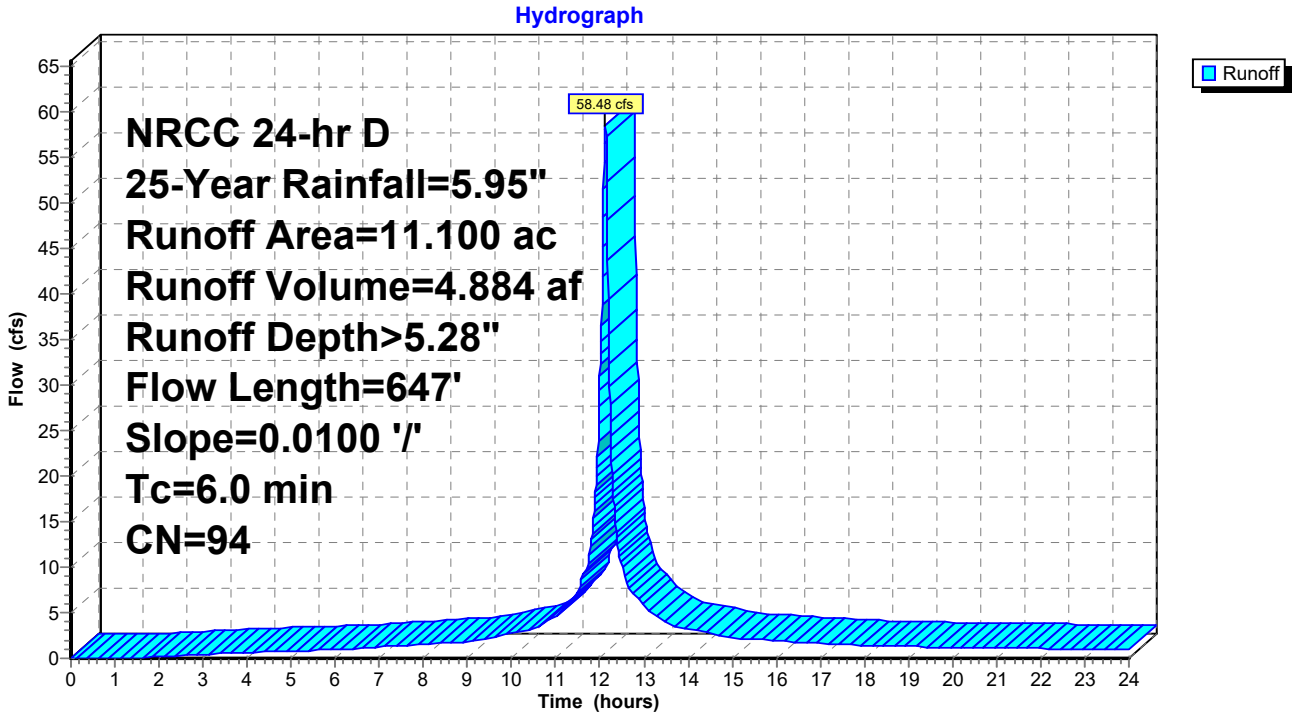
Runoff = 58.48 cfs @ 12.13 hrs, Volume= 4.884 af, Depth> 5.28"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.95"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

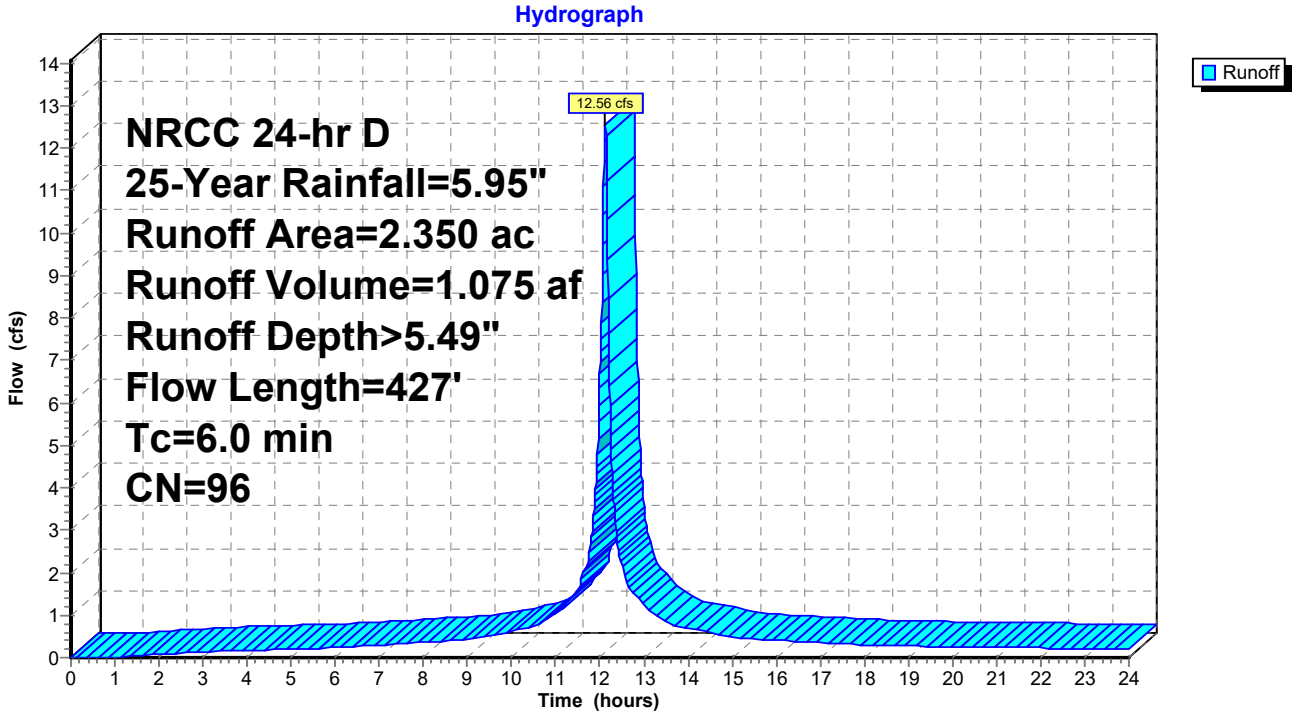
Runoff = 12.56 cfs @ 12.13 hrs, Volume= 1.075 af, Depth> 5.49"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.95"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

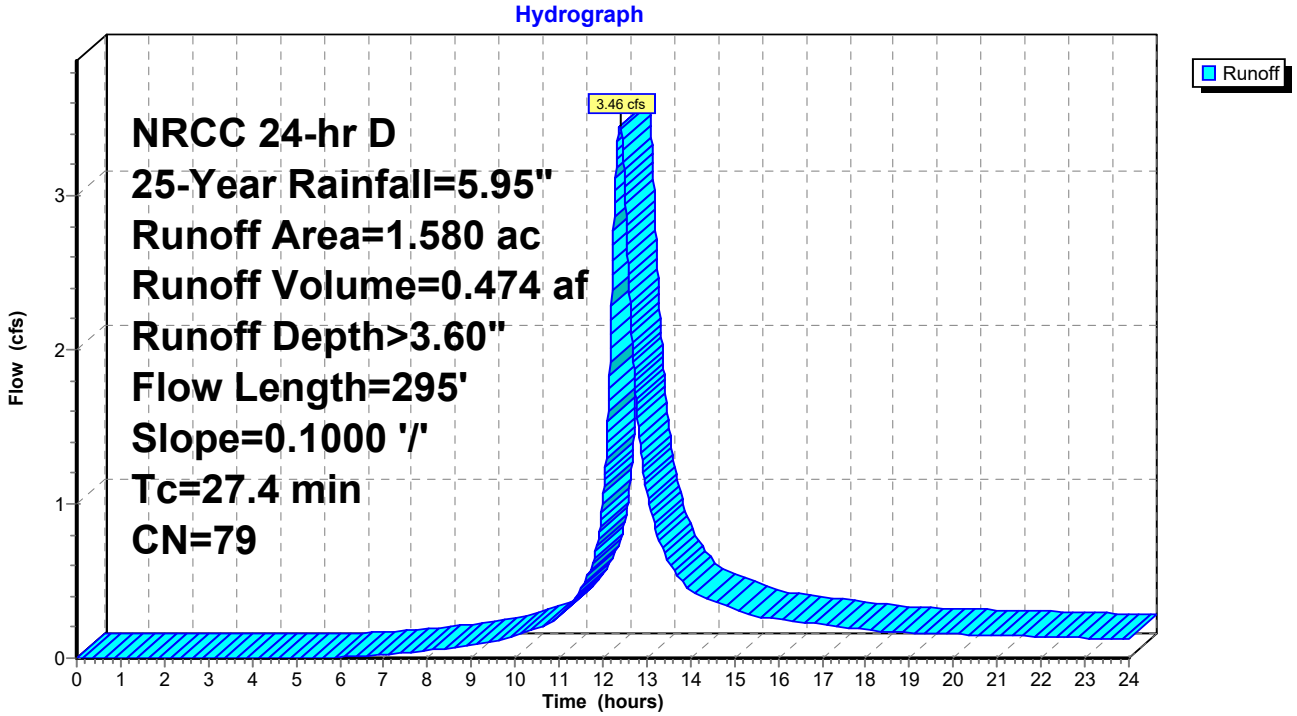
Runoff = 3.46 cfs @ 12.39 hrs, Volume= 0.474 af, Depth> 3.60"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.95"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

[47] Hint: Peak is 130% of capacity of segment #3

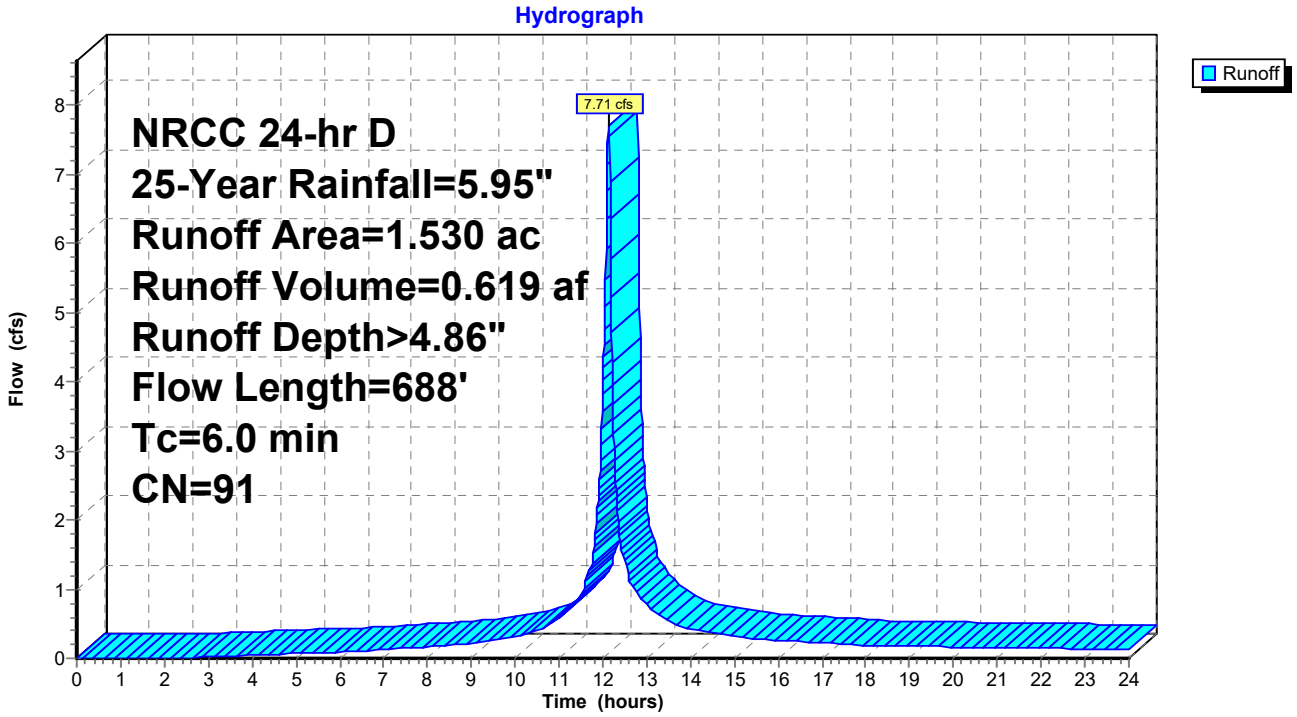
Runoff = 7.71 cfs @ 12.13 hrs, Volume= 0.619 af, Depth> 4.86"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.95"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 5.28" for 25-Year event
Inflow = 58.48 cfs @ 12.13 hrs, Volume= 4.884 af
Outflow = 58.01 cfs @ 12.14 hrs, Volume= 4.880 af, Atten= 1%, Lag= 0.5 min
Primary = 12.76 cfs @ 12.14 hrs, Volume= 4.402 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 45.25 cfs @ 12.14 hrs, Volume= 0.478 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.10' @ 12.14 hrs Surf.Area= 0.408 ac Storage= 0.558 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.6 min ( 783.0 - 772.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

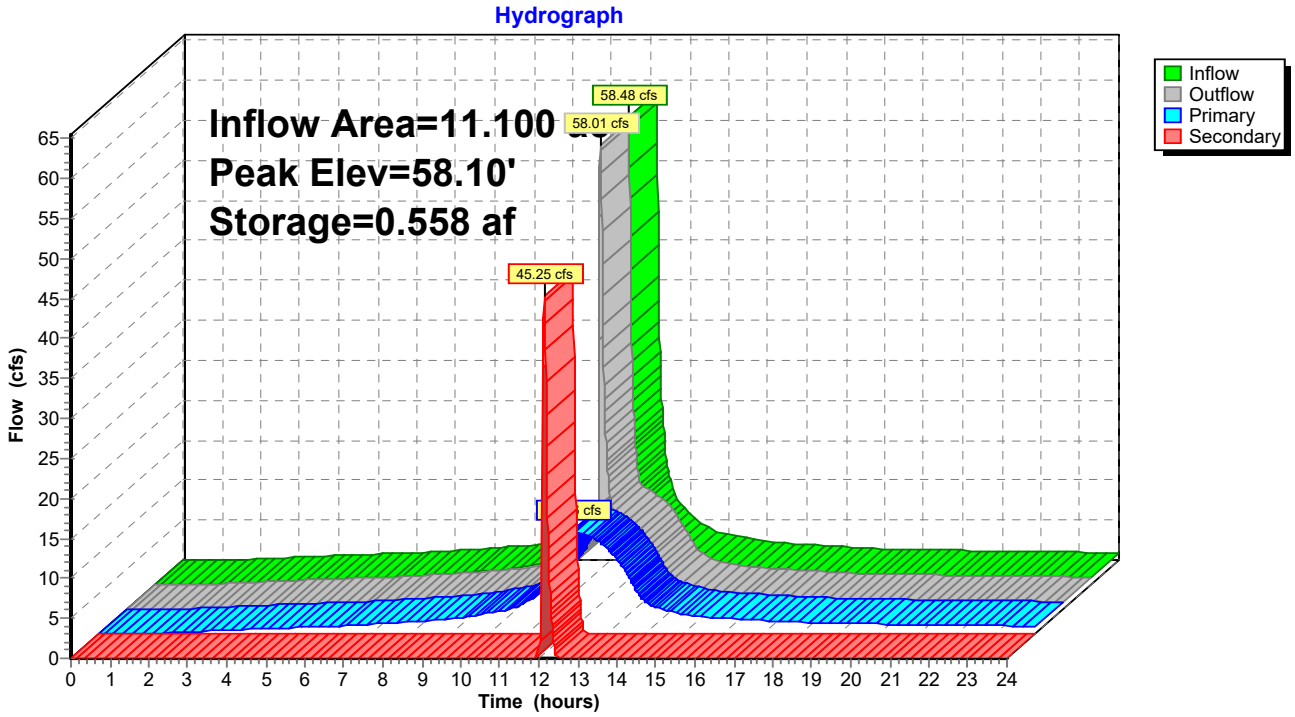
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=12.76 cfs @ 12.14 hrs HW=58.10' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 12.76 cfs @ 7.22 fps)

**Secondary OutFlow** Max=45.13 cfs @ 12.14 hrs HW=58.10' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 45.13 cfs @ 0.84 fps)

## Pond 1P: Detention Basin

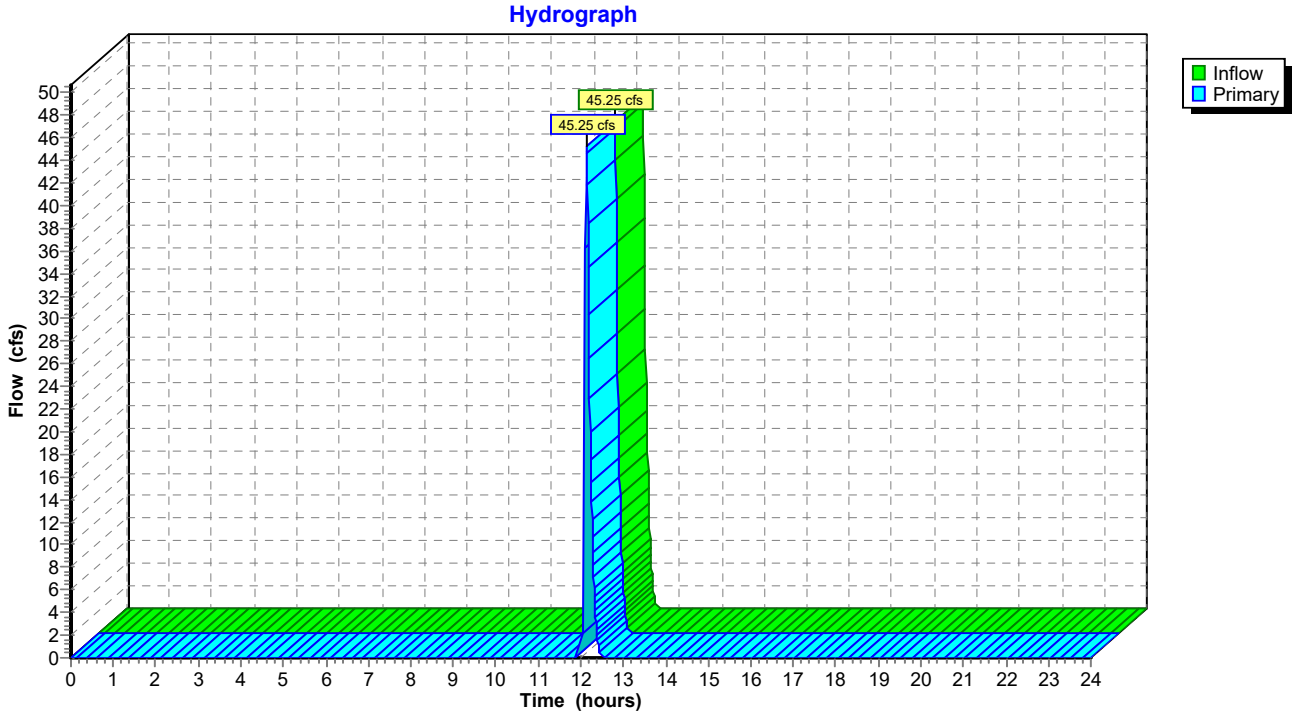


## Summary for Link 1L: Overland Flow

Inflow = 45.25 cfs @ 12.14 hrs, Volume= 0.478 af
Primary = 45.25 cfs @ 12.14 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

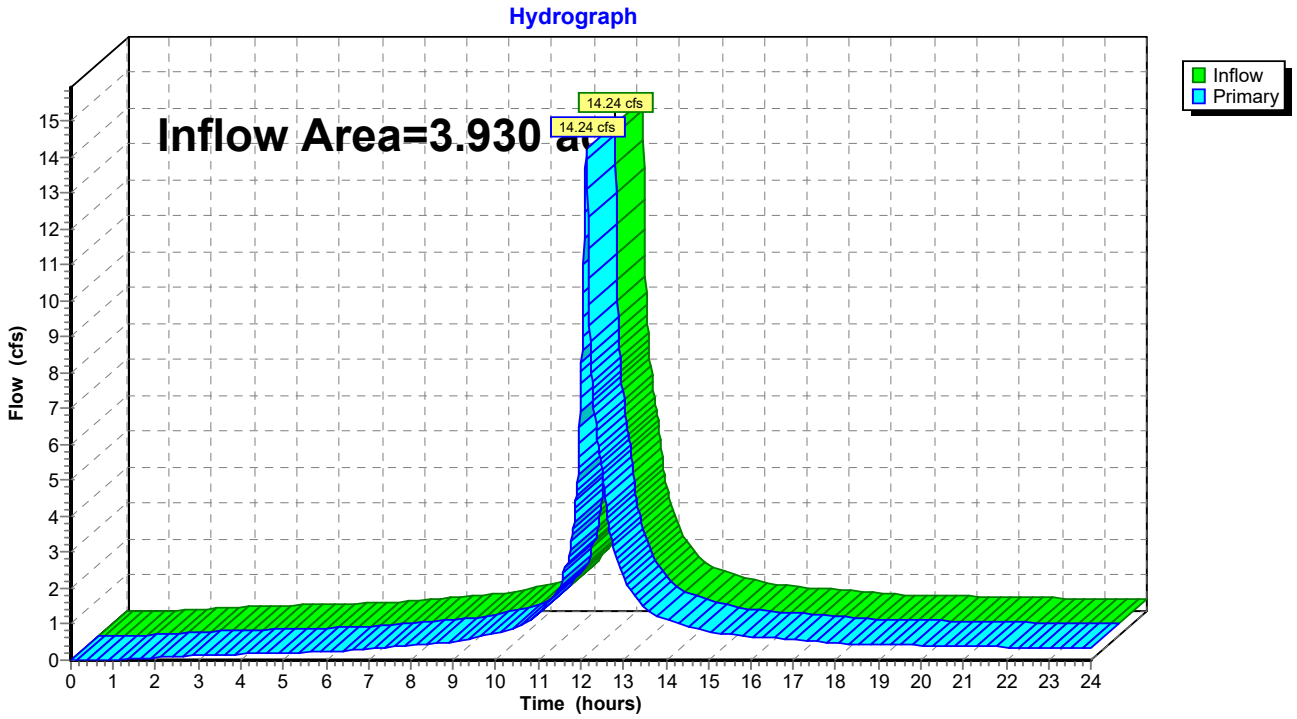


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 14.24 cfs @ 12.13 hrs, Volume= 1.549 af
Primary = 14.24 cfs @ 12.13 hrs, Volume= 1.549 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

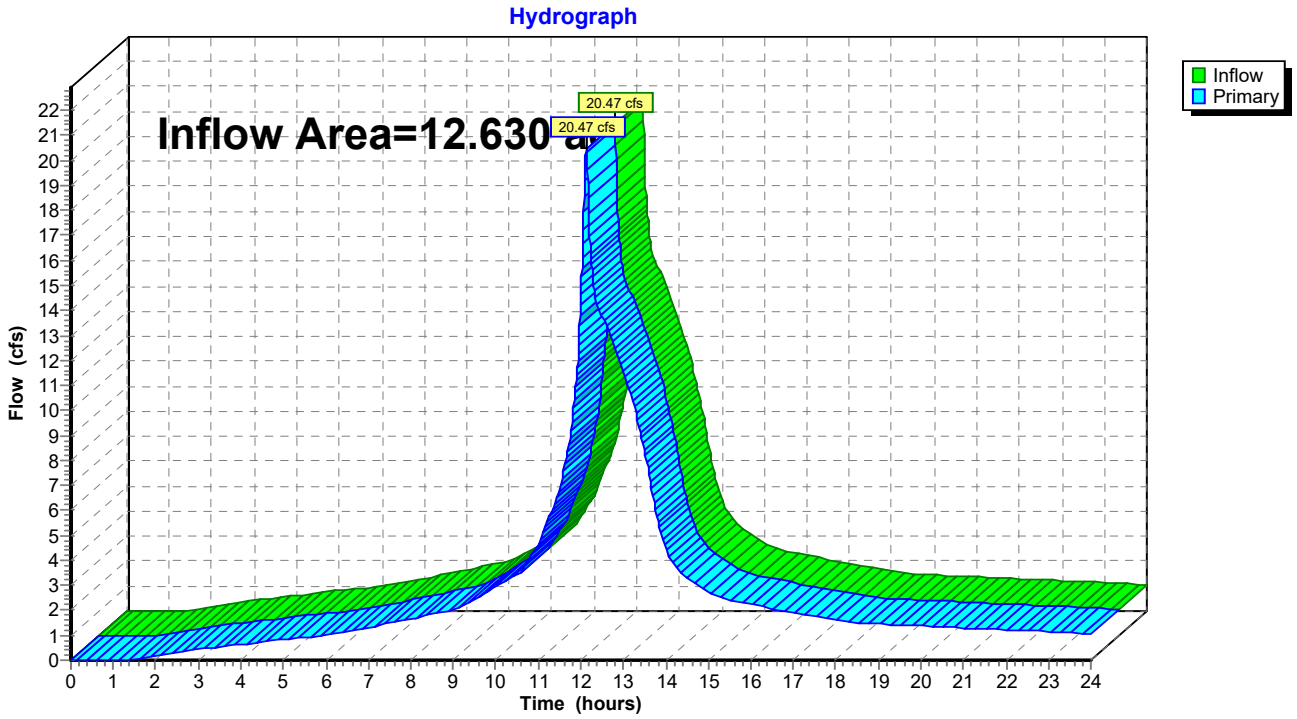


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 4.77" for 25-Year event
Inflow = 20.47 cfs @ 12.13 hrs, Volume= 5.021 af
Primary = 20.47 cfs @ 12.13 hrs, Volume= 5.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>6.09"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=66.92 cfs 5.636 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>6.30"
Flow Length=427' Tc=6.0 min CN=96 Runoff=14.34 cfs 1.235 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>4.34"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=4.15 cfs 0.571 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>5.66"
Flow Length=688' Tc=6.0 min CN=91 Runoff=8.90 cfs 0.721 af

**Pond 1P: Detention Basin** Peak Elev=58.11' Storage=0.563 af Inflow=66.92 cfs 5.636 af
Primary=12.80 cfs 4.927 af Secondary=53.77 cfs 0.704 af Outflow=66.57 cfs 5.631 af

**Link 1L: Overland Flow** Inflow=53.77 cfs 0.704 af
Primary=53.77 cfs 0.704 af

**Link 2L: Flow To Wetlands** Inflow=16.38 cfs 1.806 af
Primary=16.38 cfs 1.806 af

**Link L-E1&3: Existing Drainage System** Inflow=21.69 cfs 5.648 af
Primary=21.69 cfs 5.648 af

**Total Runoff Area = 16.560 ac Runoff Volume = 8.163 af Average Runoff Depth = 5.92"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 296% of capacity of segment #3

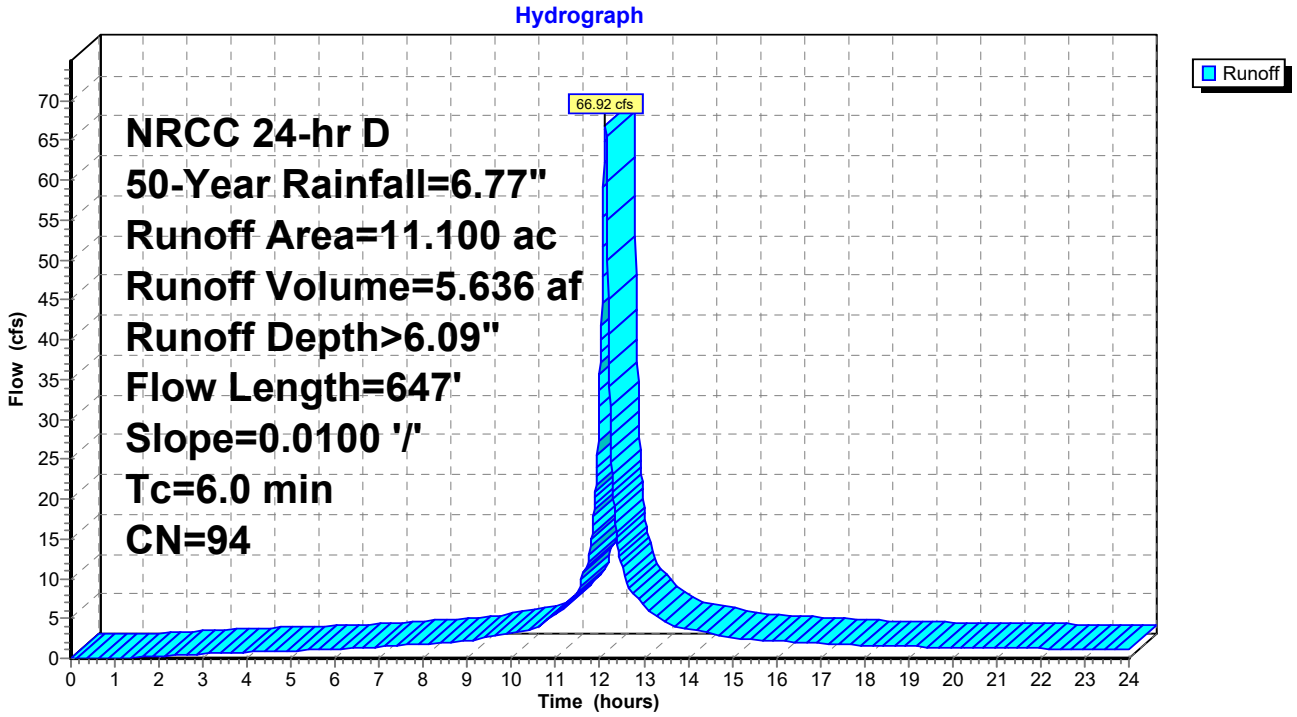
Runoff = 66.92 cfs @ 12.13 hrs, Volume= 5.636 af, Depth> 6.09"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.77"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

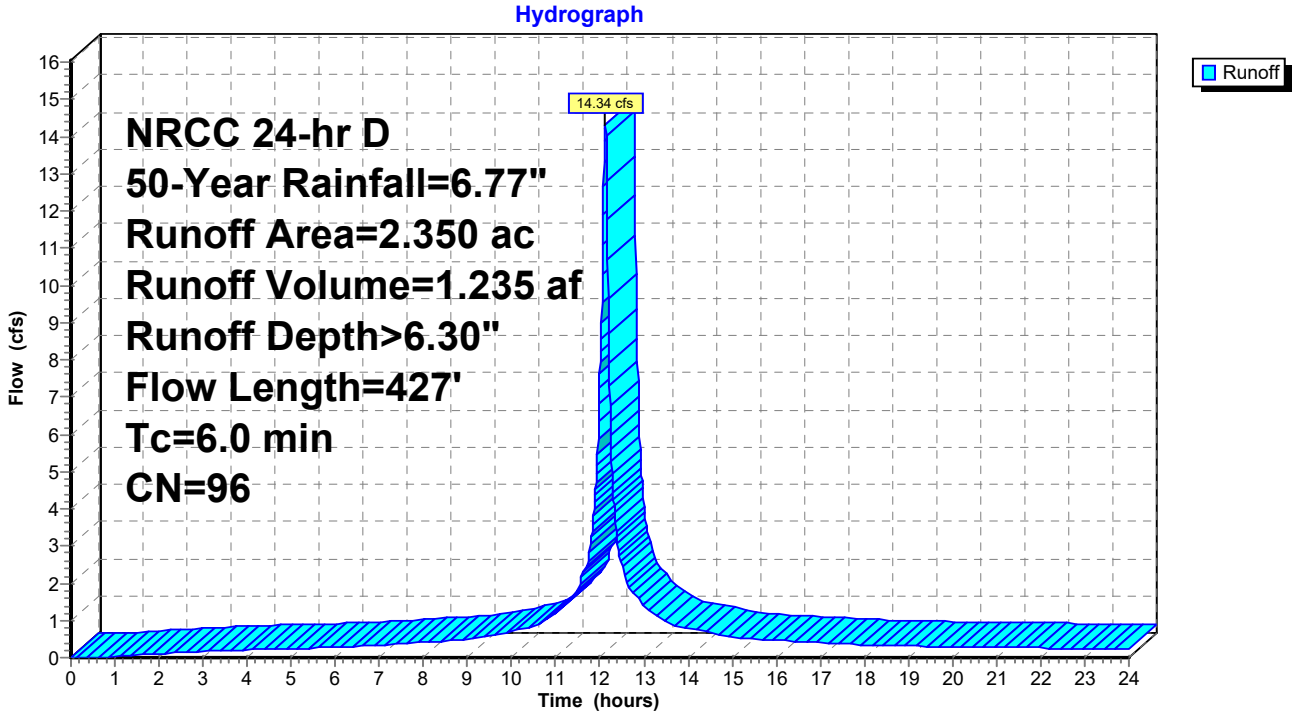
Runoff = 14.34 cfs @ 12.13 hrs, Volume= 1.235 af, Depth> 6.30"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.77"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

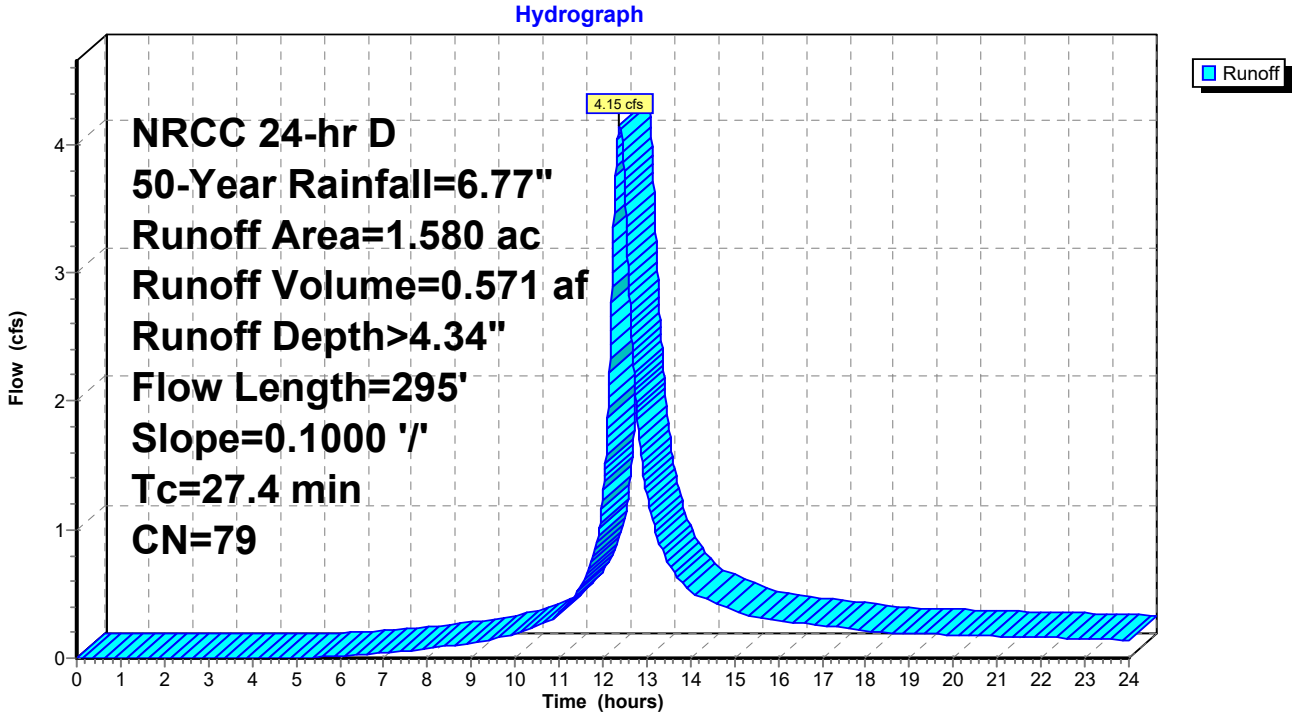
Runoff = 4.15 cfs @ 12.39 hrs, Volume= 0.571 af, Depth> 4.34"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.77"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

[47] Hint: Peak is 149% of capacity of segment #3

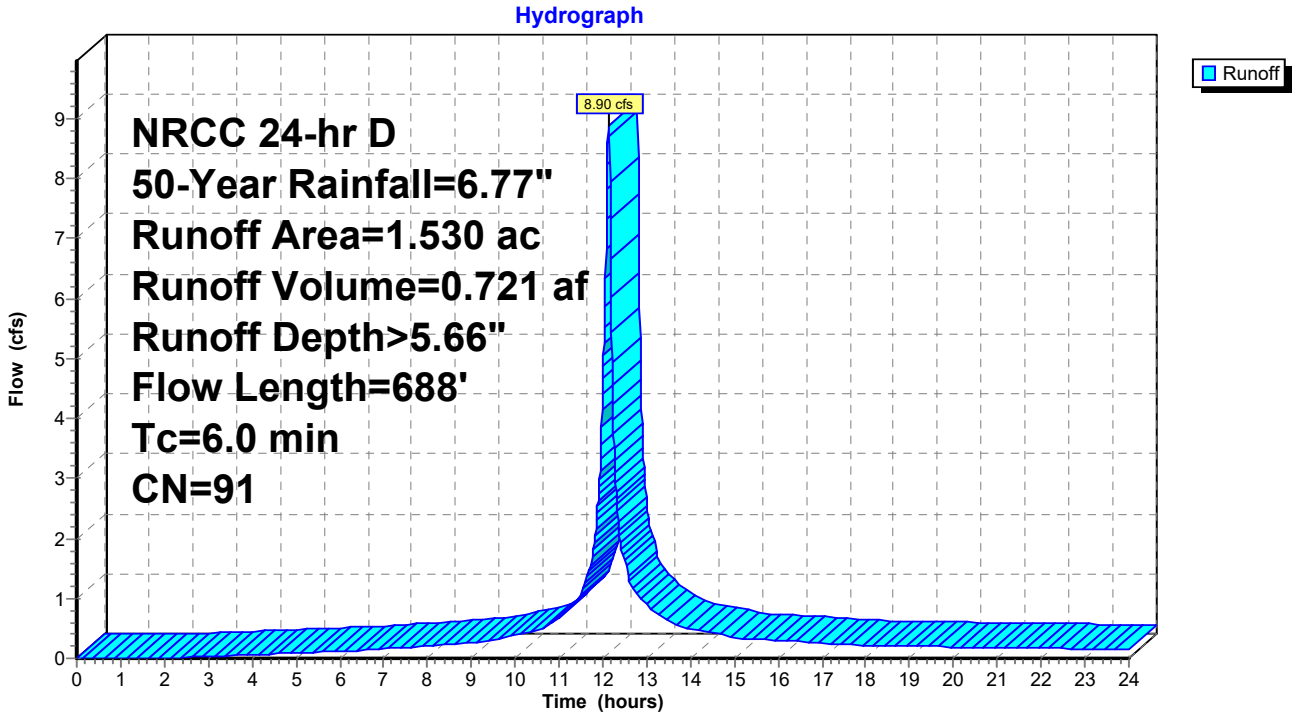
Runoff = 8.90 cfs @ 12.13 hrs, Volume= 0.721 af, Depth> 5.66"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.77"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 6.09" for 50-Year event
Inflow = 66.92 cfs @ 12.13 hrs, Volume= 5.636 af
Outflow = 66.57 cfs @ 12.14 hrs, Volume= 5.631 af, Atten= 1%, Lag= 0.4 min
Primary = 12.80 cfs @ 12.14 hrs, Volume= 4.927 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 53.77 cfs @ 12.14 hrs, Volume= 0.704 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.11' @ 12.14 hrs Surf.Area= 0.409 ac Storage= 0.563 af

Plug-Flow detention time= 11.1 min calculated for 5.628 af (100% of inflow)
Center-of-Mass det. time= 10.5 min ( 779.0 - 768.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

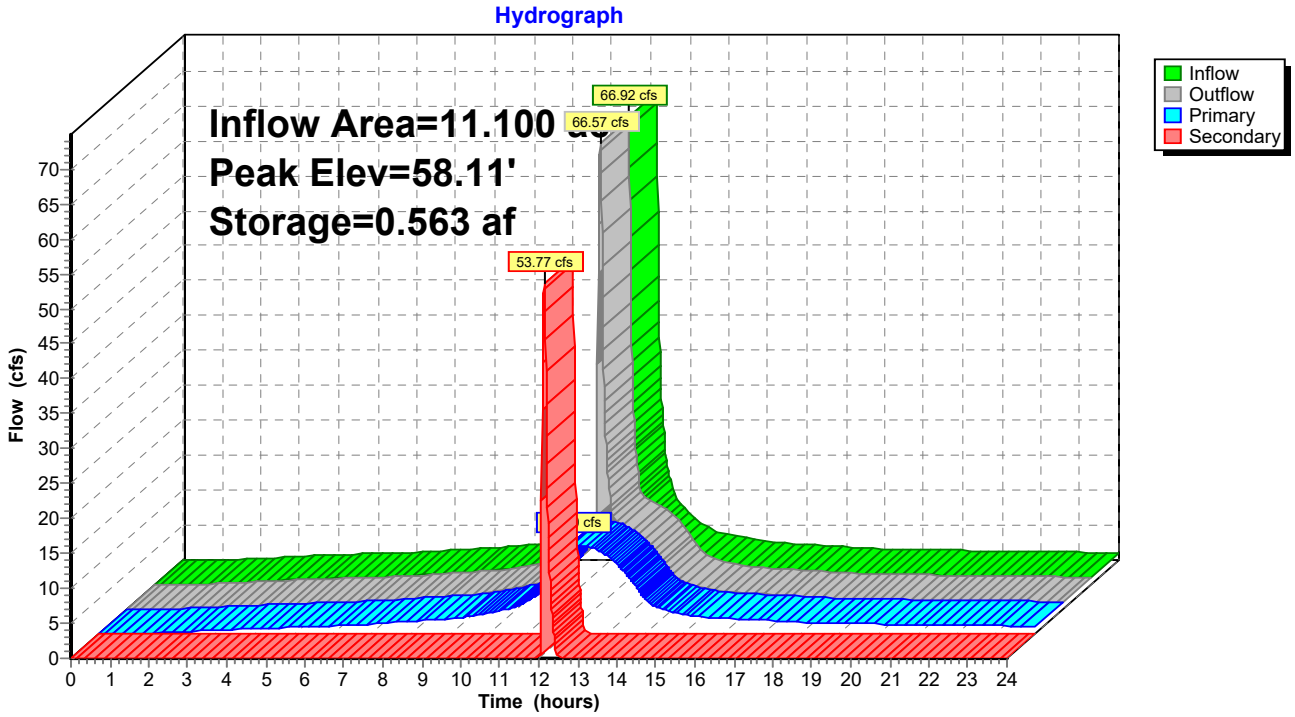
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=12.79 cfs @ 12.14 hrs HW=58.11' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 12.79 cfs @ 7.24 fps)

**Secondary OutFlow** Max=53.60 cfs @ 12.14 hrs HW=58.11' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 53.60 cfs @ 0.88 fps)

## Pond 1P: Detention Basin

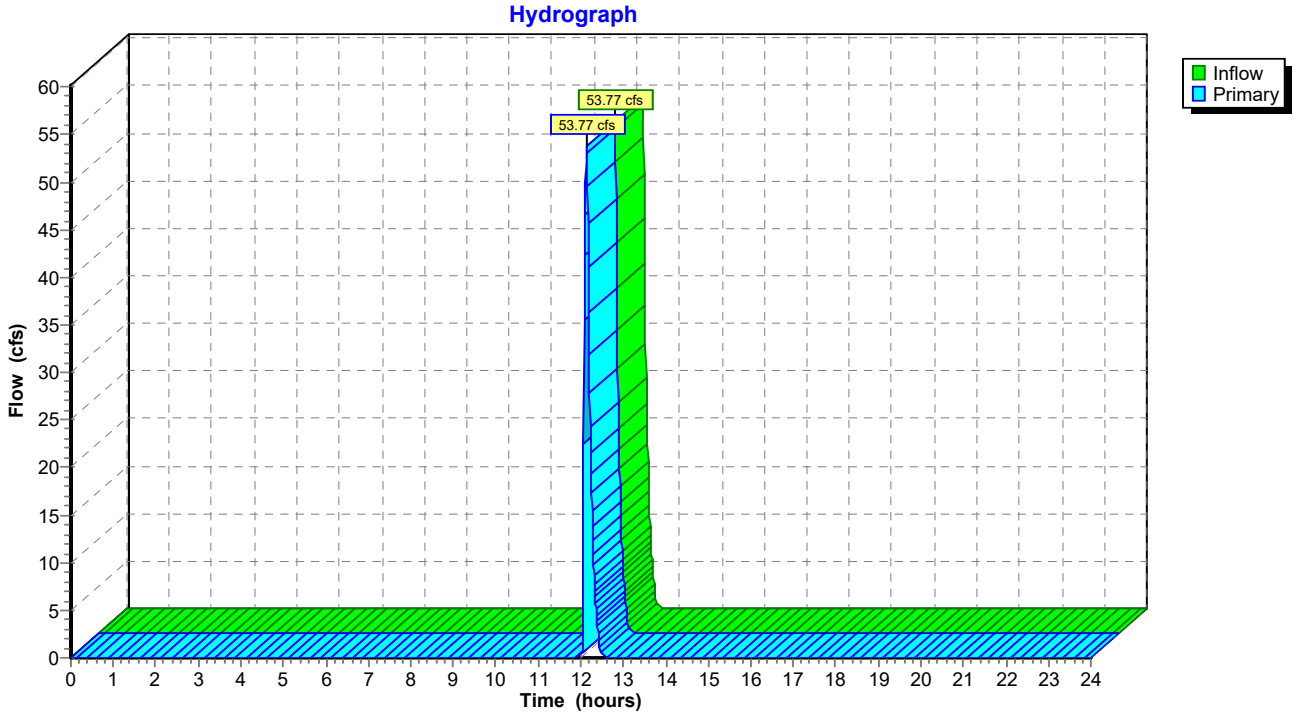


## Summary for Link 1L: Overland Flow

Inflow = 53.77 cfs @ 12.14 hrs, Volume= 0.704 af
Primary = 53.77 cfs @ 12.14 hrs, Volume= 0.704 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

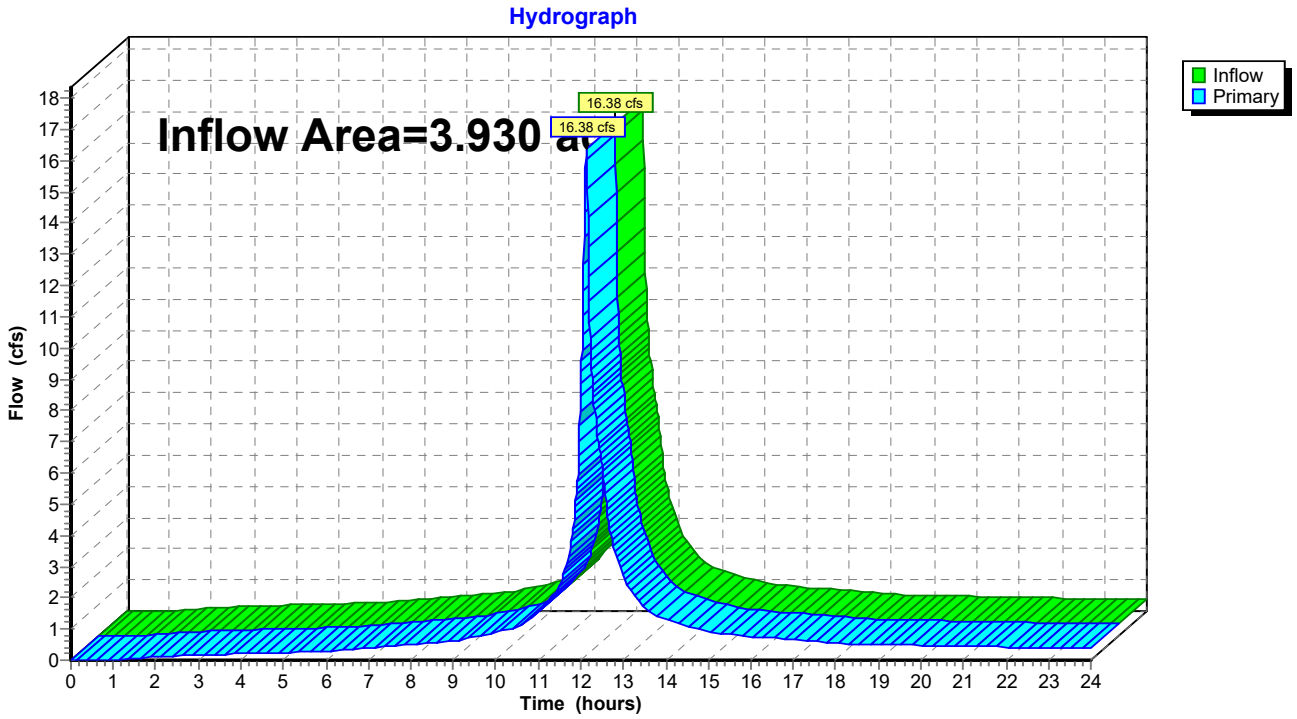


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 5.51" for 50-Year event
Inflow = 16.38 cfs @ 12.13 hrs, Volume= 1.806 af
Primary = 16.38 cfs @ 12.13 hrs, Volume= 1.806 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

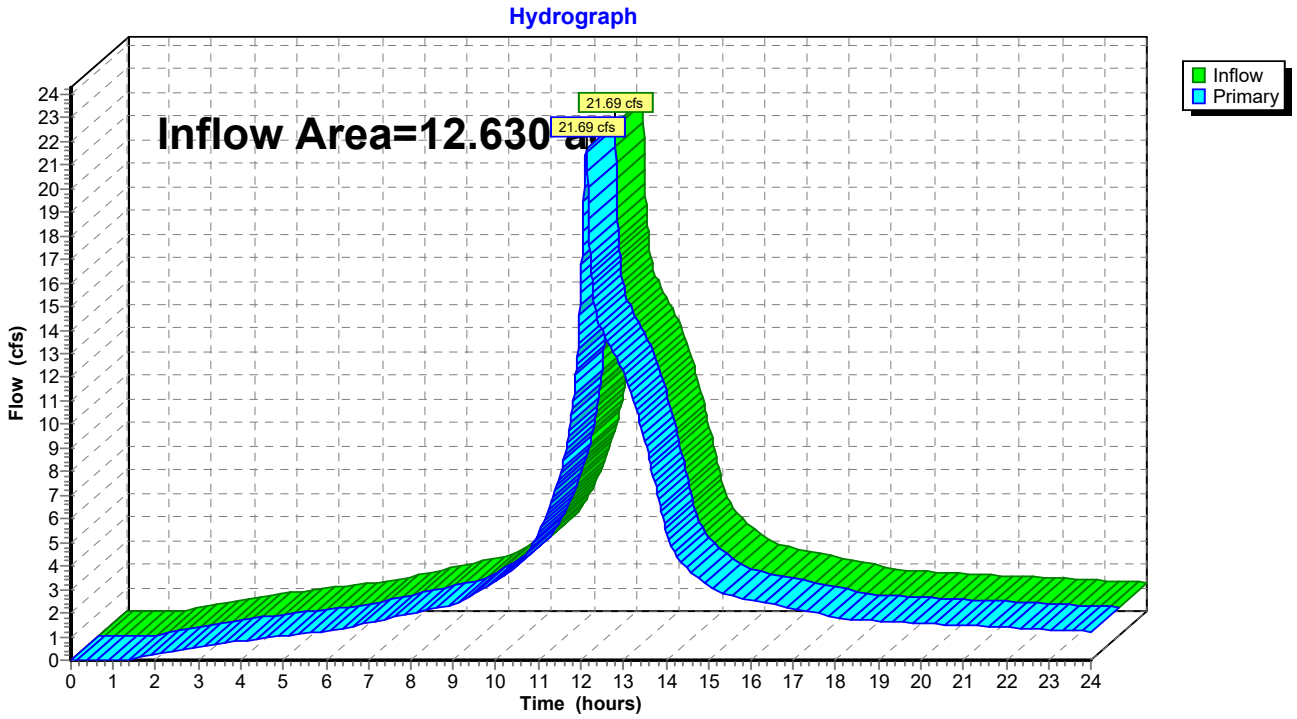


## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 5.37" for 50-Year event
Inflow = 21.69 cfs @ 12.13 hrs, Volume= 5.648 af
Primary = 21.69 cfs @ 12.13 hrs, Volume= 5.648 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EDA-1: To Detention Basin** Runoff Area=11.100 ac 80.81% Impervious Runoff Depth>6.99"
Flow Length=647' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=76.17 cfs 6.462 af

**Subcatchment EDA-2A: To Existing** Runoff Area=2.350 ac 84.68% Impervious Runoff Depth>7.20"
Flow Length=427' Tc=6.0 min CN=96 Runoff=16.28 cfs 1.410 af

**Subcatchment EDA-2B: To Existing** Runoff Area=1.580 ac 0.00% Impervious Runoff Depth>5.16"
Flow Length=295' Slope=0.1000 '/' Tc=27.4 min CN=79 Runoff=4.92 cfs 0.679 af

**Subcatchment EDA-3: To Existing** Runoff Area=1.530 ac 47.06% Impervious Runoff Depth>6.54"
Flow Length=688' Tc=6.0 min CN=91 Runoff=10.19 cfs 0.834 af

**Pond 1P: Detention Basin** Peak Elev=58.12' Storage=0.569 af Inflow=76.17 cfs 6.462 af
Primary=12.83 cfs 5.484 af Secondary=62.96 cfs 0.972 af Outflow=75.80 cfs 6.456 af

**Link 1L: Overland Flow** Inflow=62.96 cfs 0.972 af
Primary=62.96 cfs 0.972 af

**Link 2L: Flow To Wetlands** Inflow=18.73 cfs 2.089 af
Primary=18.73 cfs 2.089 af

**Link L-E1&3: Existing Drainage System** Inflow=23.03 cfs 6.318 af
Primary=23.03 cfs 6.318 af

**Total Runoff Area = 16.560 ac Runoff Volume = 9.386 af Average Runoff Depth = 6.80"**
**29.47% Pervious = 4.880 ac 70.53% Impervious = 11.680 ac**

## Summary for Subcatchment EDA-1: To Detention Basin

[47] Hint: Peak is 337% of capacity of segment #3

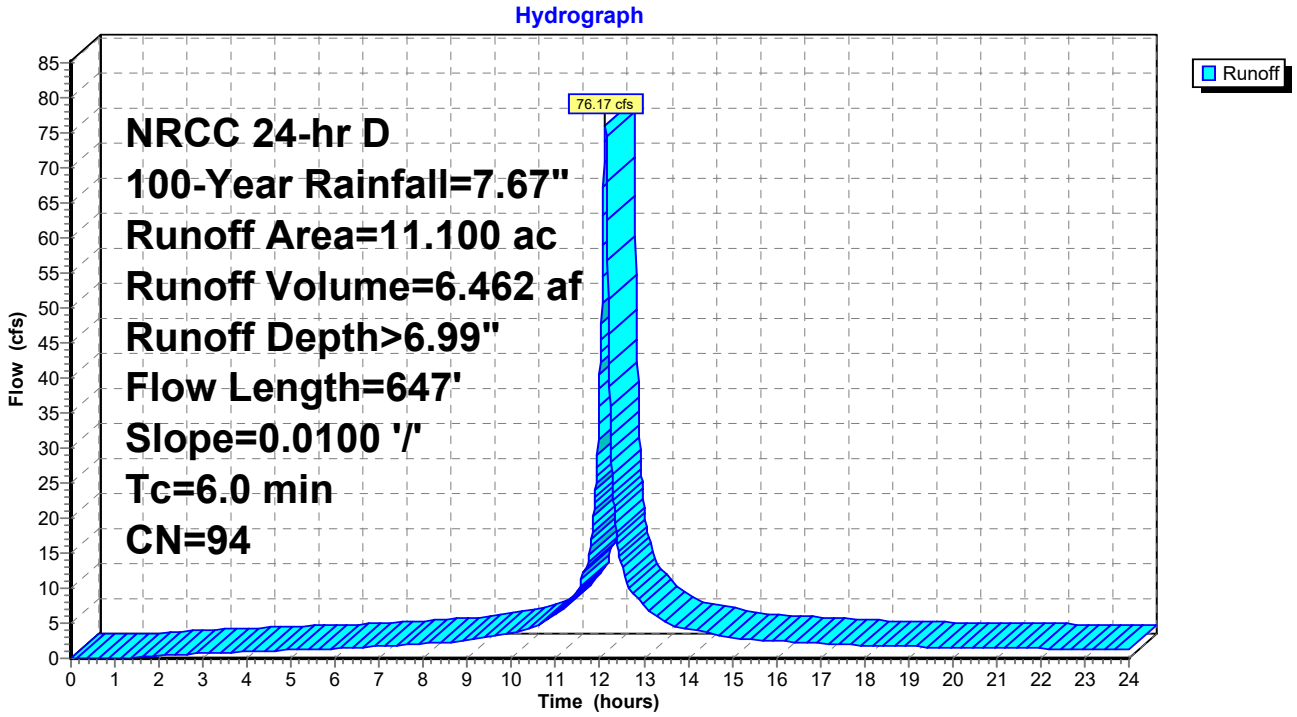
Runoff = 76.17 cfs @ 12.13 hrs, Volume= 6.462 af, Depth> 6.99"
Routed to Pond 1P : Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 8.970 | 98 | Paved parking, HSG D |
| 2.130 | 79 | <50% Grass cover, Poor, HSG B |
| 11.100 | 94 | Weighted Average |
| 2.130 | | 19.19% Pervious Area |
| 8.970 | | 80.81% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 300 | 0.0100 | 1.27 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.4 | 167 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 180 | 0.0100 | 7.20 | 22.62 | **Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Concrete pipe, bends & connections |
| 5.7 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-1: To Detention Basin



## Summary for Subcatchment EDA-2A: To Existing Wetlands

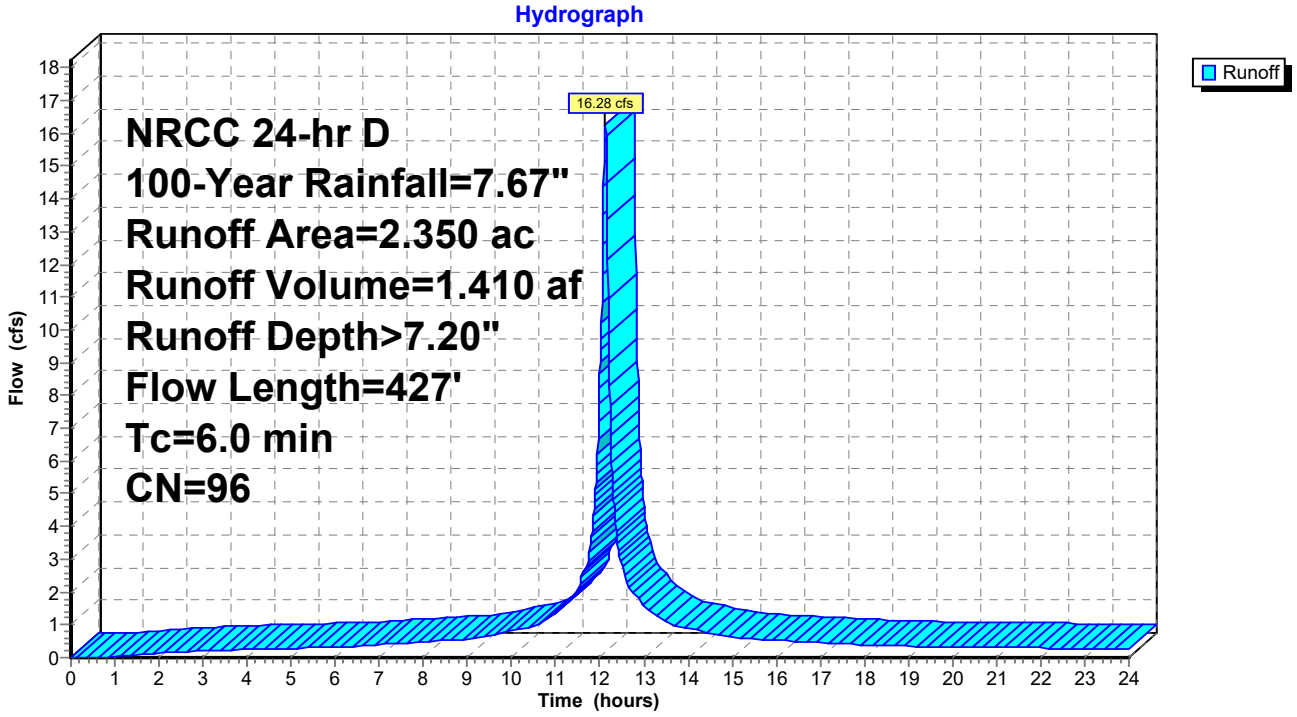
Runoff = 16.28 cfs @ 12.13 hrs, Volume= 1.410 af, Depth> 7.20"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 1.990 | 98 | Paved parking, HSG D |
| 0.360 | 86 | <50% Grass cover, Poor, HSG C |
| 2.350 | 96 | Weighted Average |
| 0.360 | | 15.32% Pervious Area |
| 1.990 | | 84.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.3 | 300 | 0.0150 | 1.49 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 11 | 0.0550 | 14.59 | 17.90 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean |
| 0.8 | 116 | 0.0150 | 2.49 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 4.1 | 427 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-2A: To Existing Wetlands



## Summary for Subcatchment EDA-2B: To Existing Wetlands

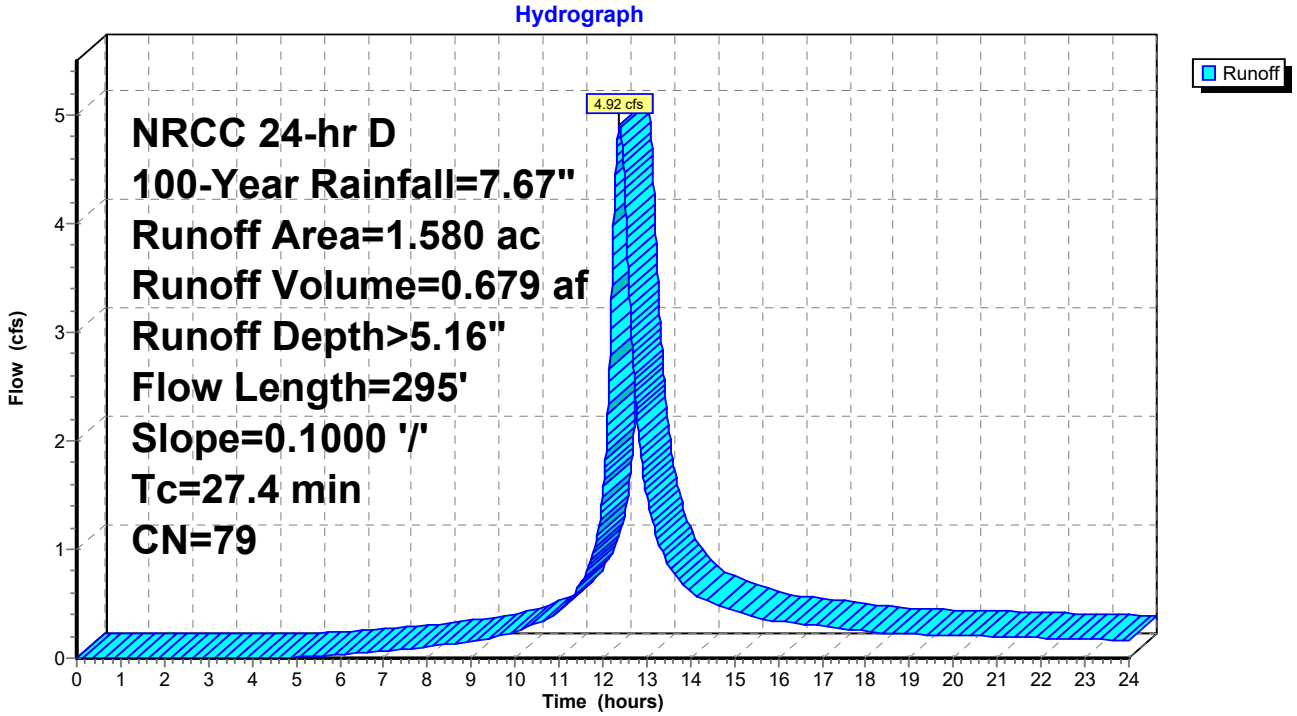
Runoff = 4.92 cfs @ 12.39 hrs, Volume= 0.679 af, Depth> 5.16"
Routed to Link 2L : Flow To Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 1.580 | 79 | <50% Grass cover, Poor, HSG B |
| 1.580 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.4 | 295 | 0.1000 | 0.18 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |

## Subcatchment EDA-2B: To Existing Wetlands



## Summary for Subcatchment EDA-3: To Existing Drainage System

[47] Hint: Peak is 171% of capacity of segment #3

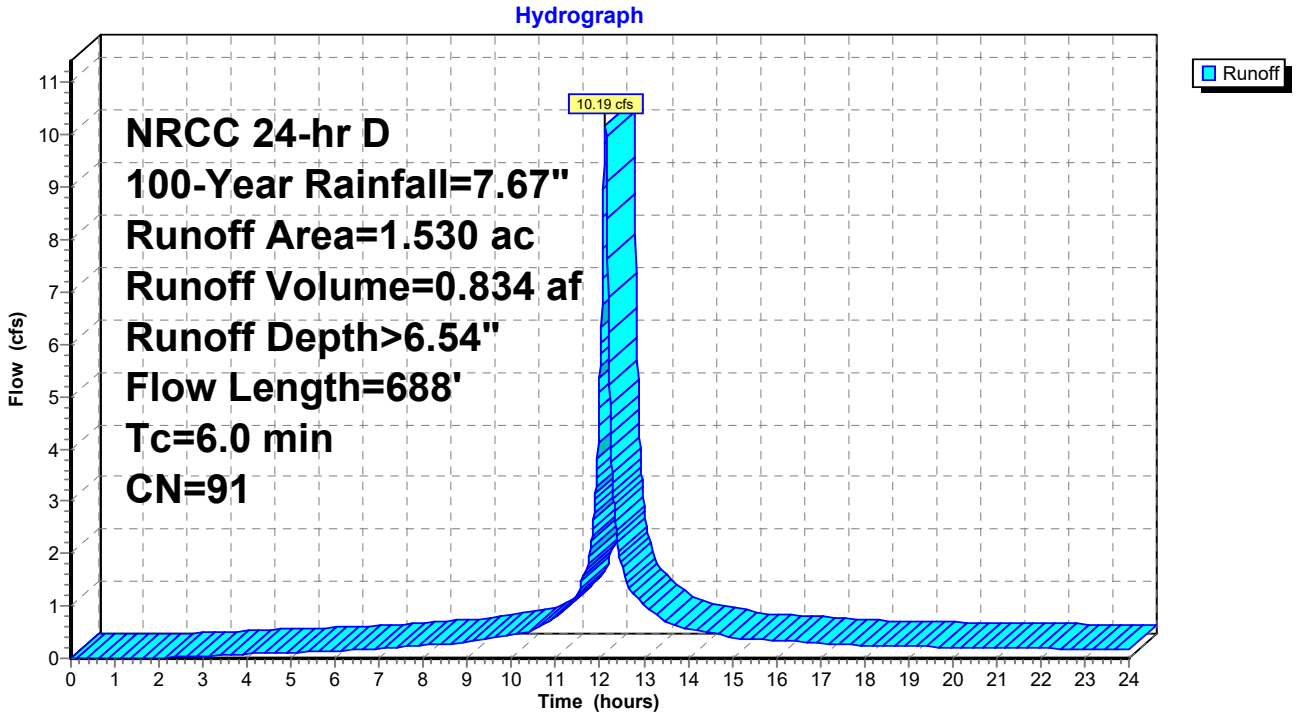
Runoff = 10.19 cfs @ 12.13 hrs, Volume= 0.834 af, Depth> 6.54"
Routed to Link L-E1&3 : Existing Drainage System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 0.720 | 98 | Paved parking, HSG D |
| 0.810 | 84 | 50-75% Grass cover, Fair, HSG D |
| 1.530 | 91 | Weighted Average |
| 0.810 | | 52.94% Pervious Area |
| 0.720 | | 47.06% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.7 | 275 | 0.0100 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 1.0 | 94 | 0.0500 | 1.57 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.0 | 7 | 0.0200 | 7.58 | 5.95 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean |
| 1.0 | 312 | 0.0030 | 5.41 | 26.55 | **Pipe Channel,** 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.011 Concrete pipe, straight & clean |
| 5.7 | 688 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment EDA-3: To Existing Drainage System



## Summary for Pond 1P: Detention Basin

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 11.100 ac, 80.81% Impervious, Inflow Depth > 6.99" for 100-Year event
Inflow = 76.17 cfs @ 12.13 hrs, Volume= 6.462 af
Outflow = 75.80 cfs @ 12.14 hrs, Volume= 6.456 af, Atten= 0%, Lag= 0.4 min
Primary = 12.83 cfs @ 12.14 hrs, Volume= 5.484 af
Routed to Link L-E1&3 : Existing Drainage System
Secondary = 62.96 cfs @ 12.14 hrs, Volume= 0.972 af
Routed to Link 1L : Overland Flow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.12' @ 12.14 hrs Surf.Area= 0.410 ac Storage= 0.569 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.4 min ( 775.3 - 764.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 55.40' | 0.945 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

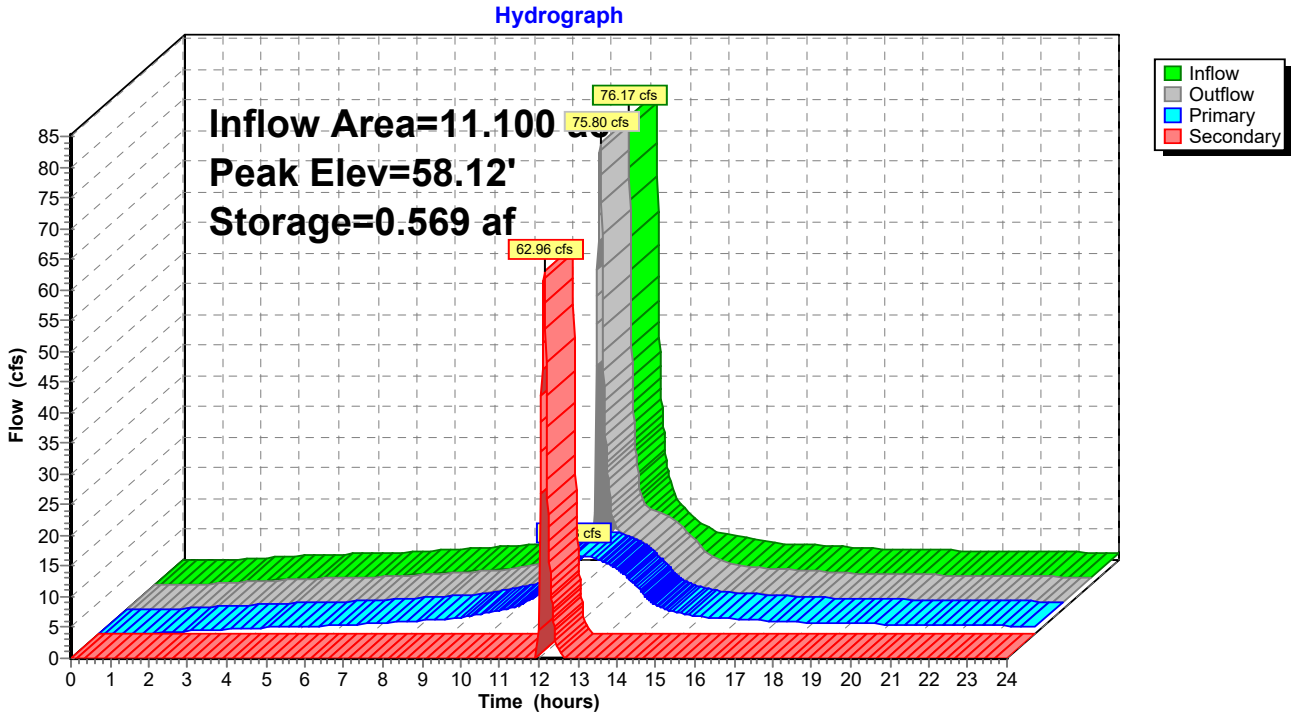
| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 55.40 | 0.023 | 1,004.0 | 0.000 | 0.000 | 0.023 |
| 56.00 | 0.109 | 1,020.0 | 0.036 | 0.036 | 0.084 |
| 57.00 | 0.233 | 1,094.0 | 0.167 | 0.204 | 0.371 |
| 58.00 | 0.404 | 1,153.0 | 0.315 | 0.518 | 0.614 |
| 59.00 | 0.450 | 1,223.0 | 0.427 | 0.945 | 0.919 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Secondary | 57.99' | **500.0' long x 2.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50<br>Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32 |
| #2 | Primary | 55.10' | **18.0" Round Culvert** L= 55.0' Ke= 0.500<br>Inlet / Outlet Invert= 55.10' / 52.74' S= 0.0429 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf |

**Primary OutFlow** Max=12.83 cfs @ 12.14 hrs HW=58.12' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 12.83 cfs @ 7.26 fps)

**Secondary OutFlow** Max=62.76 cfs @ 12.14 hrs HW=58.12' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 62.76 cfs @ 0.93 fps)

## Pond 1P: Detention Basin

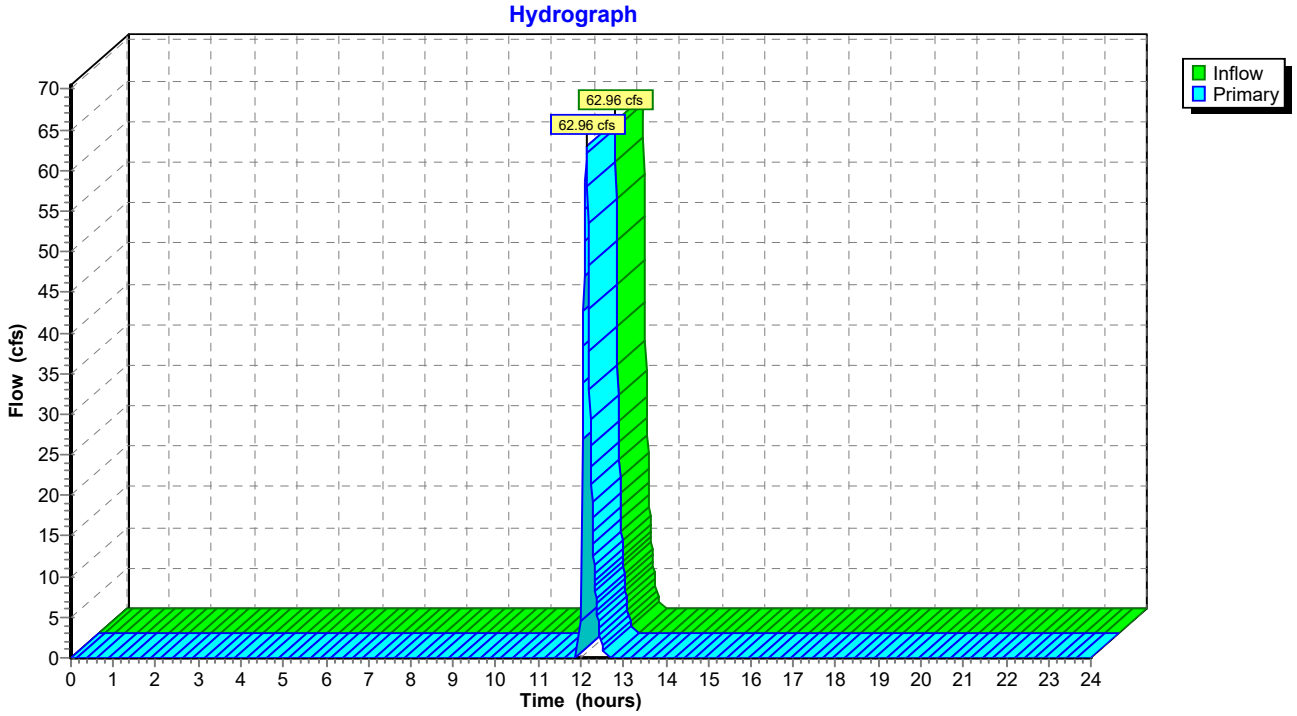


## Summary for Link 1L: Overland Flow

Inflow = 62.96 cfs @ 12.14 hrs, Volume= 0.972 af
Primary = 62.96 cfs @ 12.14 hrs, Volume= 0.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 1L: Overland Flow

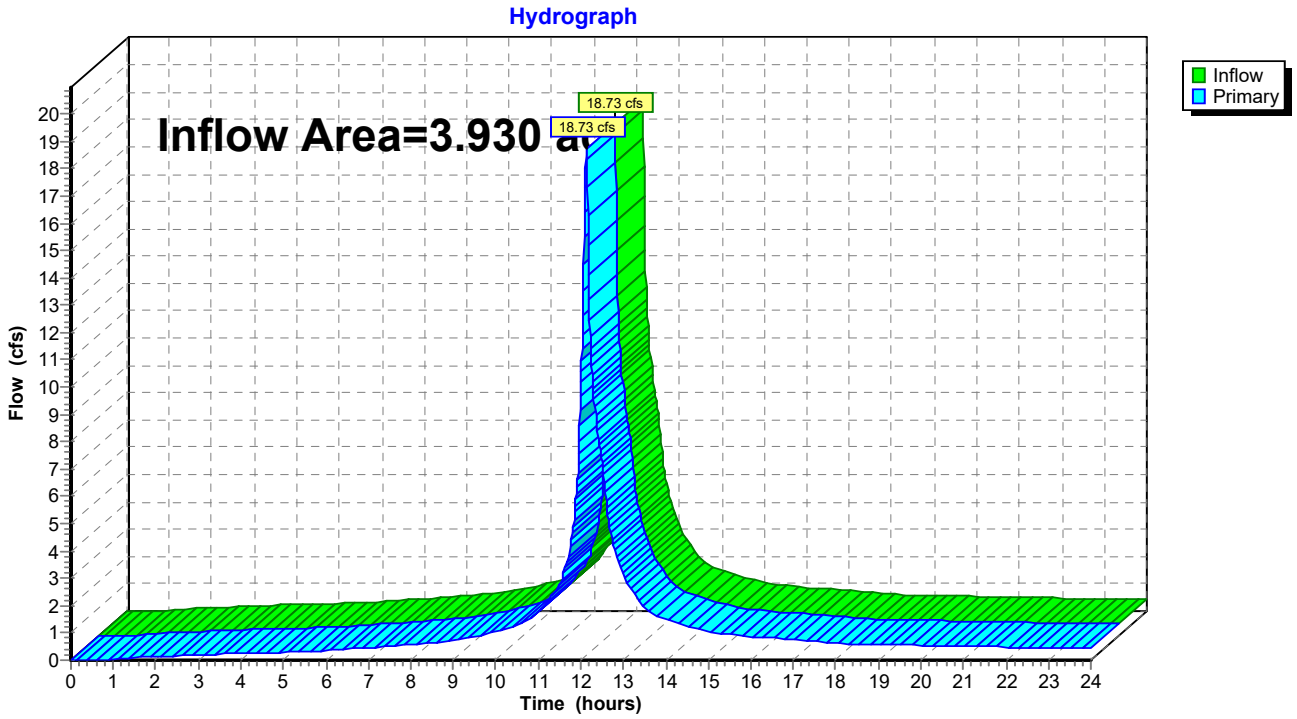


## Summary for Link 2L: Flow To Wetlands

Inflow Area = 3.930 ac, 50.64% Impervious, Inflow Depth > 6.38" for 100-Year event
Inflow = 18.73 cfs @ 12.13 hrs, Volume= 2.089 af
Primary = 18.73 cfs @ 12.13 hrs, Volume= 2.089 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Flow To Wetlands

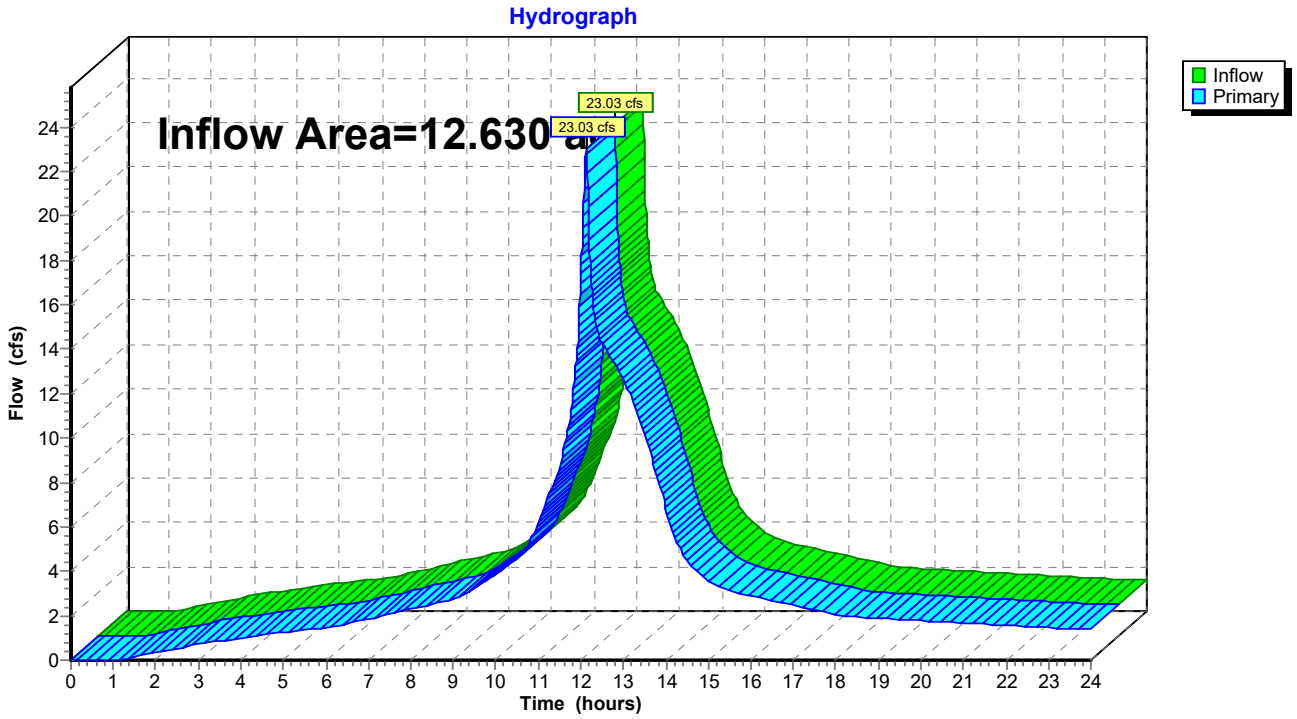


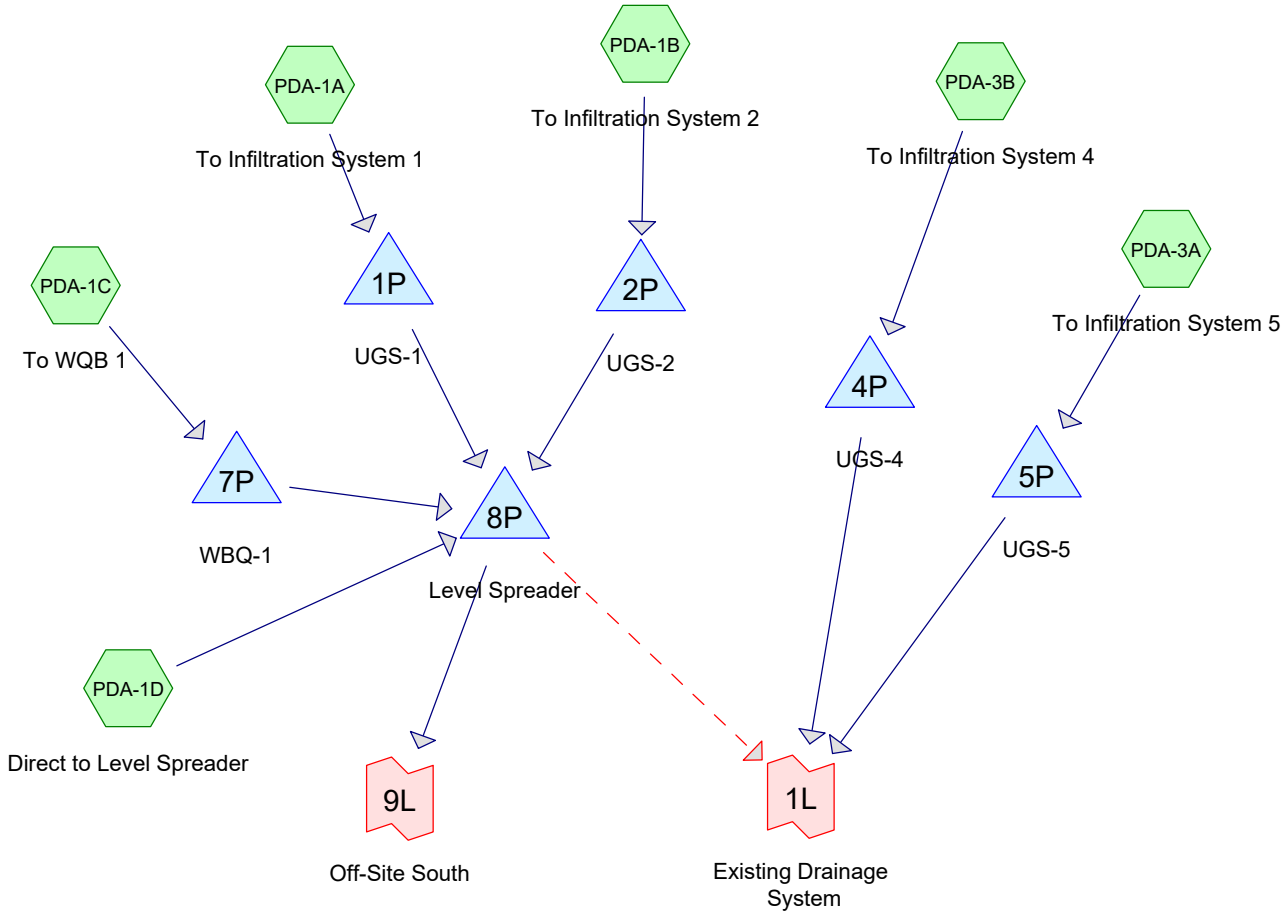
## Summary for Link L-E1&3: Existing Drainage System

Inflow Area = 12.630 ac, 76.72% Impervious, Inflow Depth > 6.00" for 100-Year event
Inflow = 23.03 cfs @ 12.13 hrs, Volume= 6.318 af
Primary = 23.03 cfs @ 12.13 hrs, Volume= 6.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link L-E1&3: Existing Drainage System






Subcat Reach Pond Link

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 1-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 2.46 | 2 |
| 2 | 2-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 3.06 | 2 |
| 3 | 5-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.04 | 2 |
| 4 | 10-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.85 | 2 |
| 5 | 25-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 5.98 | 2 |
| 6 | 50-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 6.80 | 2 |
| 7 | 100-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 7.67 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.390 | 61 | >75% Grass cover, Good, HSG B (PDA-1C, PDA-1D) |
| 2.130 | 80 | >75% Grass cover, Good, HSG D (PDA-1A, PDA-1B, PDA-1C, PDA-3A, PDA-3B) |
| 0.360 | 98 | Paved parking, HSG B (PDA-1D) |
| 8.360 | 98 | Paved parking, HSG D (PDA-1A, PDA-1B, PDA-1C, PDA-3A, PDA-3B) |
| **11.240** | **93** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.750 | HSG B | PDA-1C, PDA-1D |
| 0.000 | HSG C | |
| 10.490 | HSG D | PDA-1A, PDA-1B, PDA-1C, PDA-3A, PDA-3B |
| 0.000 | Other | |
| **11.240** | | **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 | 0.390 | 0.000 | 2.130 | 0.000 | 2.520 | >75% Grass cover, Good | PDA-1A, PDA-1B, PDA-1C, PDA-1D, PDA-3A, PDA-3B |
| 0.000 | 0.360 | 0.000 | 8.360 | 0.000 | 8.720 | Paved parking | PDA-1A, PDA-1B, PDA-1C, PDA-1D, PDA-3A, PDA-3B |
| **0.000** | **0.750** | **0.000** | **10.490** | **0.000** | **11.240** | **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 | PDA-1A | 0.00 | 0.00 | 387.0 | 0.0050 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 2 | PDA-1B | 0.00 | 0.00 | 157.0 | 0.0100 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 3 | PDA-1C | 0.00 | 0.00 | 256.0 | 0.0100 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 4 | PDA-3A | 0.00 | 0.00 | 85.0 | 0.0050 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 5 | PDA-3B | 0.00 | 0.00 | 26.0 | 0.0100 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 6 | 1P | 57.20 | 56.98 | 72.0 | 0.0031 | 0.011 | 0.0 | 30.0 | 0.0 | |
| 7 | 2P | 56.45 | 55.98 | 50.0 | 0.0094 | 0.011 | 0.0 | 30.0 | 0.0 | |
| 8 | 4P | 58.00 | 53.10 | 64.0 | 0.0766 | 0.011 | 0.0 | 12.0 | 0.0 | |
| 9 | 5P | 58.00 | 53.10 | 25.0 | 0.1960 | 0.011 | 0.0 | 12.0 | 0.0 | |
| 10 | 7P | 58.50 | 57.80 | 83.0 | 0.0084 | 0.012 | 0.0 | 12.0 | 0.0 | |
| 11 | 8P | 55.80 | 55.25 | 165.0 | 0.0033 | 0.012 | 0.0 | 30.0 | 0.0 | |

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=1.83"
Flow Length=509' Tc=6.0 min CN=94 Runoff=8.88 cfs 0.693 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=1.92"
Flow Length=293' Tc=13.5 min CN=95 Runoff=4.34 cfs 0.449 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=1.74"
Flow Length=360' Tc=7.1 min CN=93 Runoff=2.71 cfs 0.218 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=0.86"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=0.66 cfs 0.050 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=1.92"
Flow Length=213' Tc=6.2 min CN=95 Runoff=2.13 cfs 0.170 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=1.92"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=1.20 cfs 0.103 af

**Pond 1P: UGS-1** Peak Elev=58.48' Storage=0.395 af Inflow=8.88 cfs 0.693 af
Outflow=0.94 cfs 0.355 af

**Pond 2P: UGS-2** Peak Elev=58.11' Storage=0.315 af Inflow=4.34 cfs 0.449 af
Outflow=0.29 cfs 0.148 af

**Pond 4P: UGS-4** Peak Elev=59.22' Storage=0.103 af Inflow=1.20 cfs 0.103 af
Outflow=0.00 cfs 0.000 af

**Pond 5P: UGS-5** Peak Elev=59.60' Storage=0.100 af Inflow=2.13 cfs 0.170 af
Outflow=0.26 cfs 0.074 af

**Pond 7P: WBQ-1** Peak Elev=59.76' Storage=0.218 af Inflow=2.71 cfs 0.218 af
Outflow=0.00 cfs 0.000 af

**Pond 8P: Level Spreader** Peak Elev=56.48' Storage=0.045 af Inflow=1.02 cfs 0.553 af
Primary=0.00 cfs 0.000 af Secondary=1.00 cfs 0.518 af Outflow=1.00 cfs 0.518 af

**Link 1L: Existing Drainage System** Inflow=1.22 cfs 0.592 af
Primary=1.22 cfs 0.592 af

**Link 9L: Off-Site South** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 11.240 ac Runoff Volume = 1.682 af Average Runoff Depth = 1.80"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 353% of capacity of segment #2

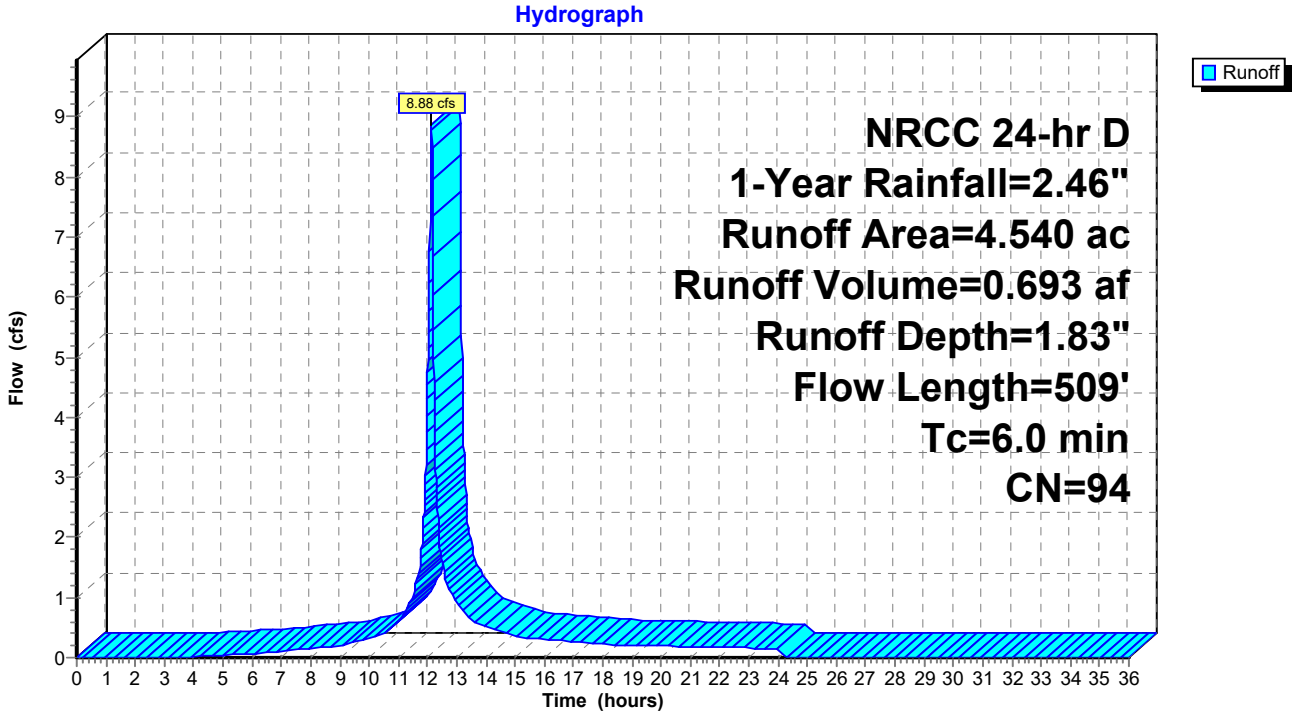
Runoff = 8.88 cfs @ 12.13 hrs, Volume= 0.693 af, Depth= 1.83"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 122% of capacity of segment #3

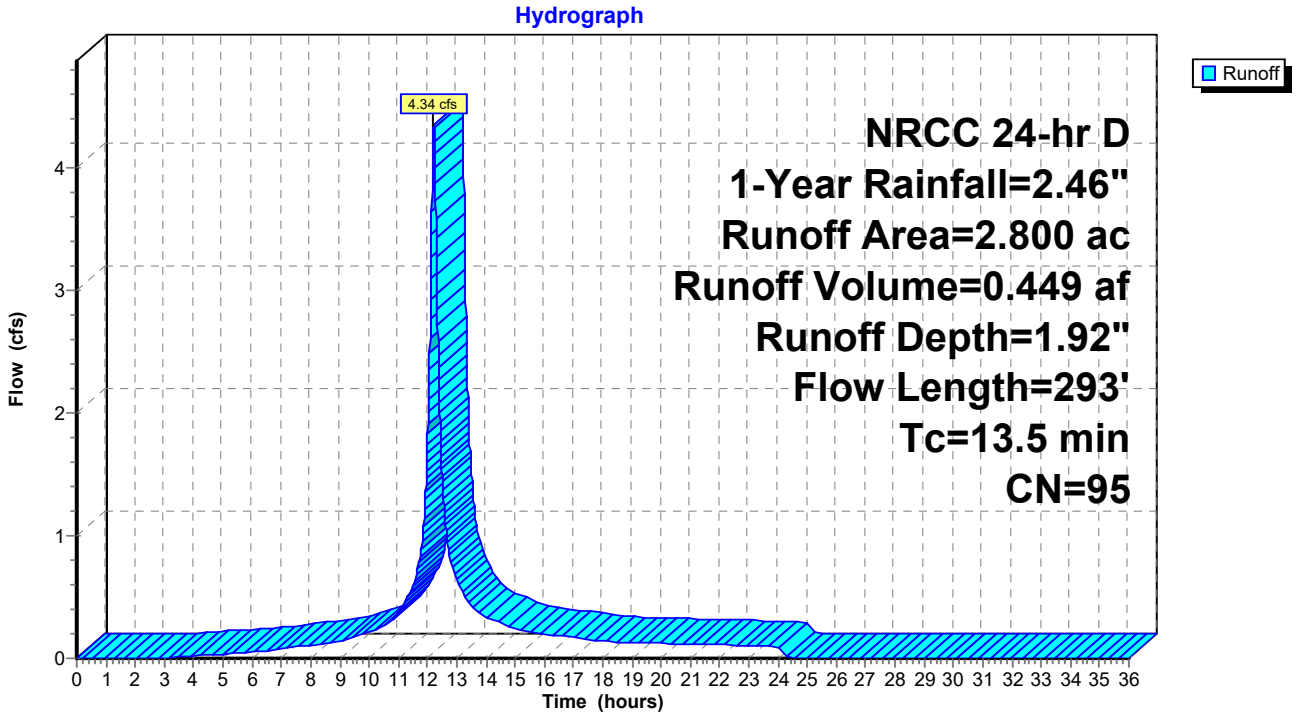
Runoff = 4.34 cfs @ 12.21 hrs, Volume= 0.449 af, Depth= 1.92"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

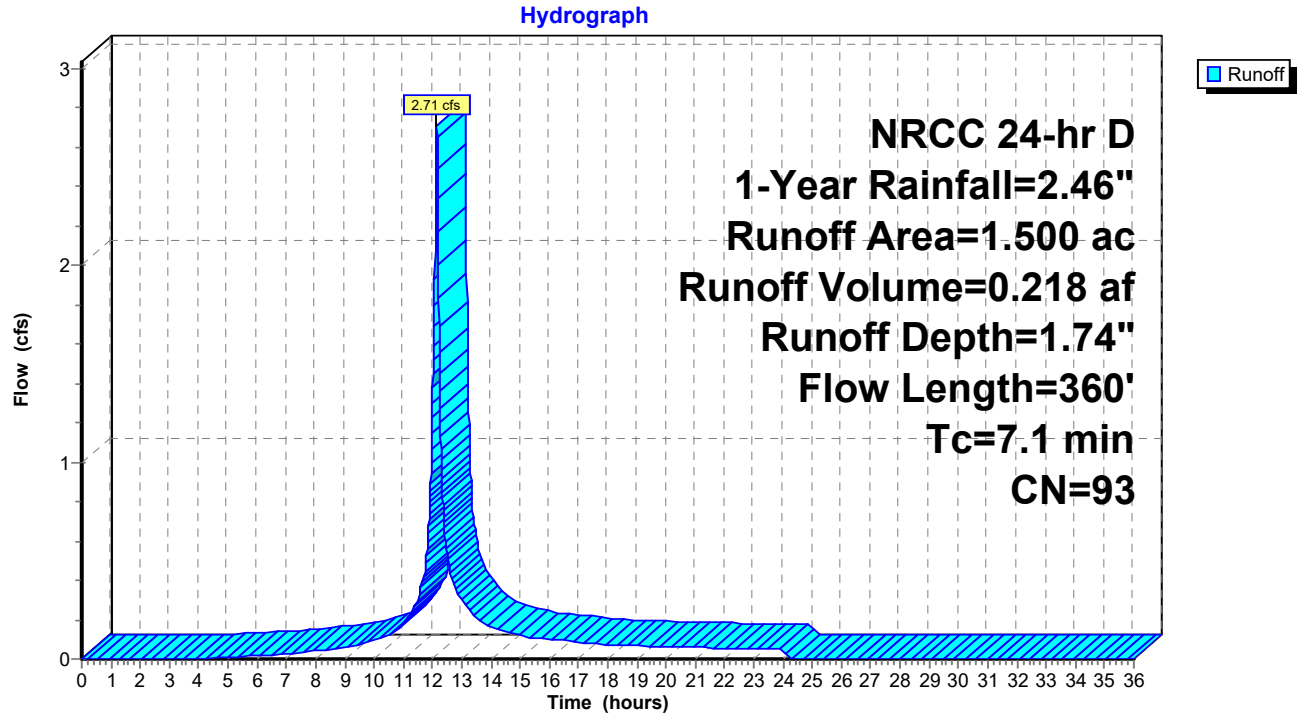
Runoff = 2.71 cfs @ 12.14 hrs, Volume= 0.218 af, Depth= 1.74"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

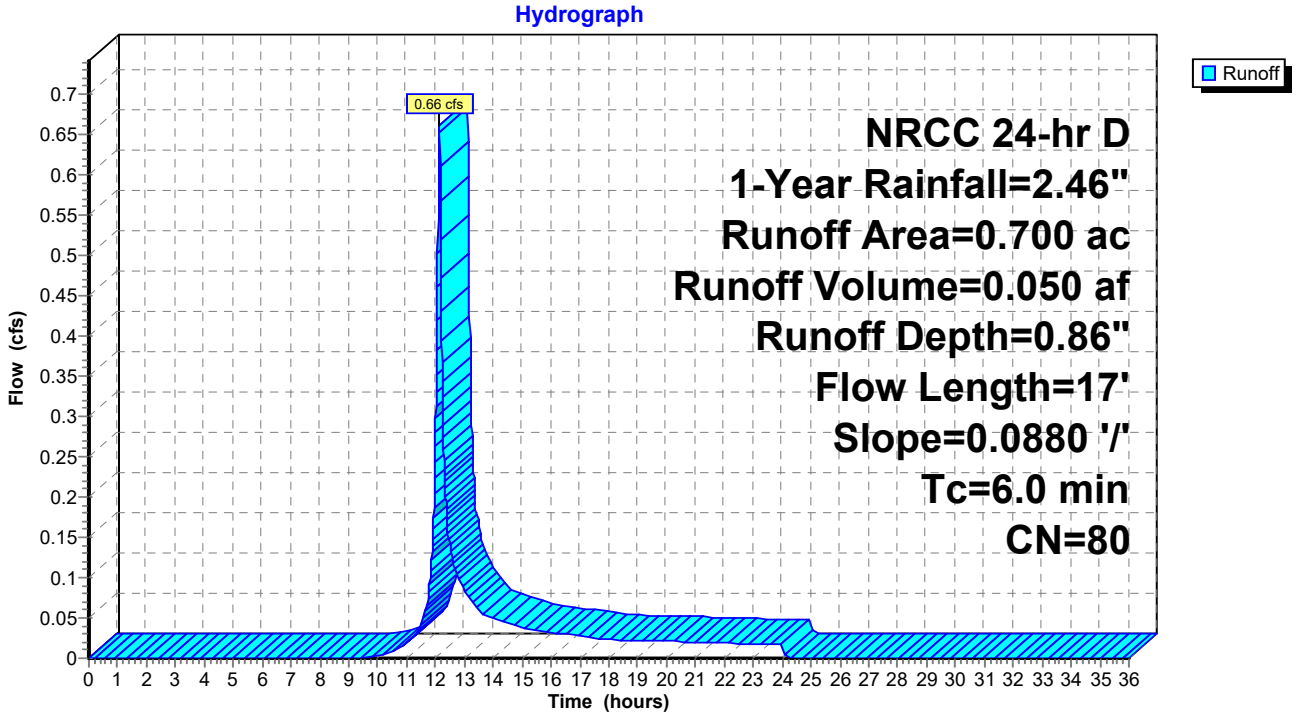
Runoff = 0.66 cfs @ 12.14 hrs, Volume= 0.050 af, Depth= 0.86"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

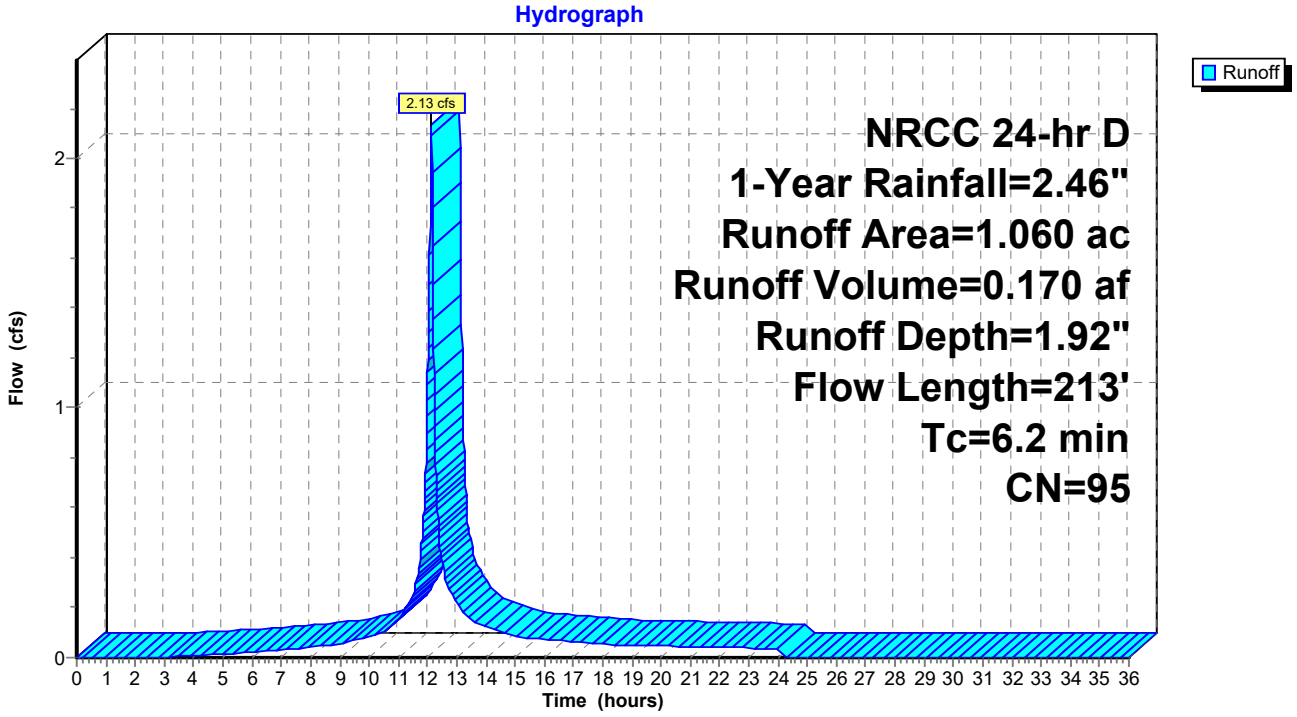
Runoff = 2.13 cfs @ 12.13 hrs, Volume= 0.170 af, Depth= 1.92"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

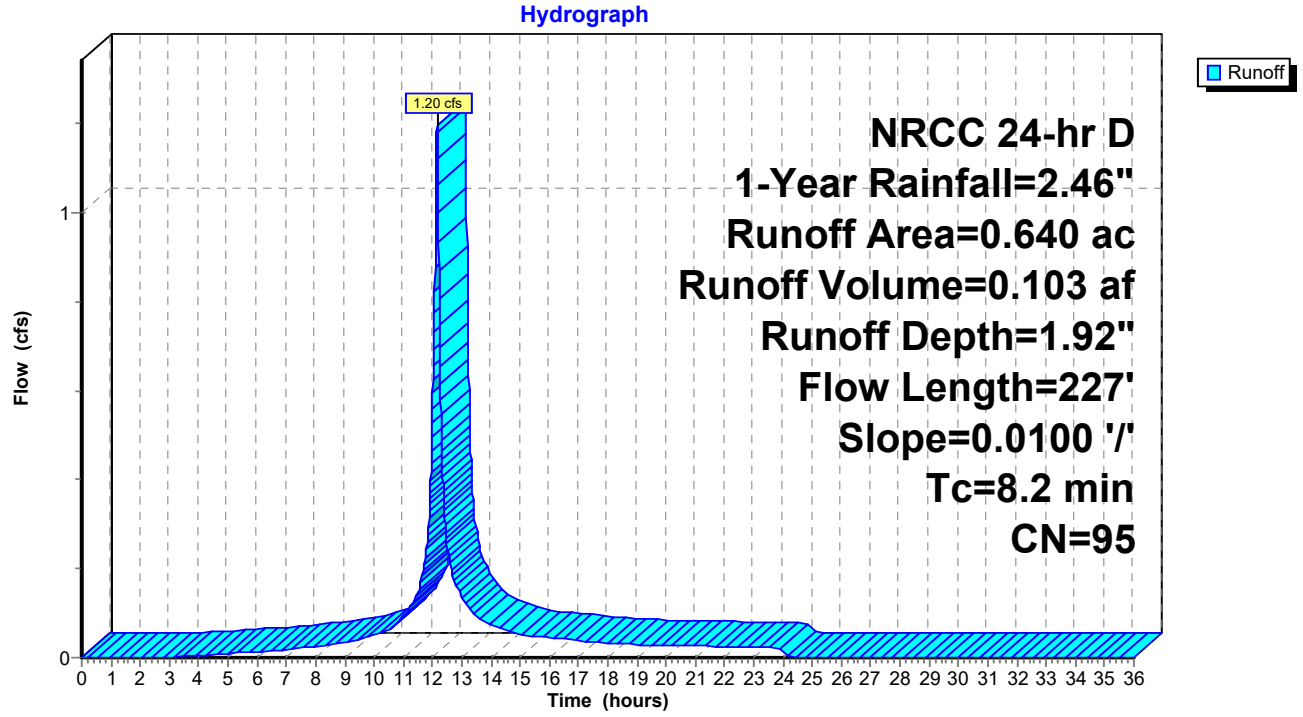
Runoff = 1.20 cfs @ 12.15 hrs, Volume= 0.103 af, Depth= 1.92"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 1.83" for 1-Year event
Inflow = 8.88 cfs @ 12.13 hrs, Volume= 0.693 af
Outflow = 0.94 cfs @ 12.99 hrs, Volume= 0.355 af, Atten= 89%, Lag= 51.4 min
Primary = 0.94 cfs @ 12.99 hrs, Volume= 0.355 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.48' @ 12.99 hrs Surf.Area= 0.316 ac Storage= 0.395 af

Plug-Flow detention time= 345.5 min calculated for 0.355 af (51% of inflow)
Center-of-Mass det. time= 202.7 min ( 1,013.0 - 810.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=0.94 cfs @ 12.99 hrs HW=58.48' TW=56.47' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.94 cfs of 7.05 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.94 cfs @ 1.35 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

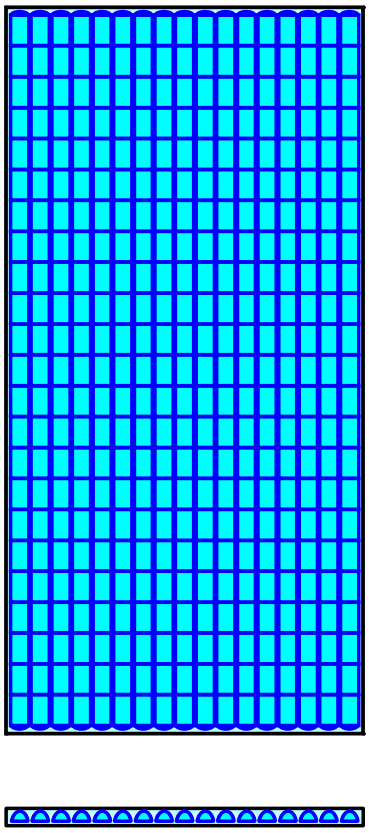
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

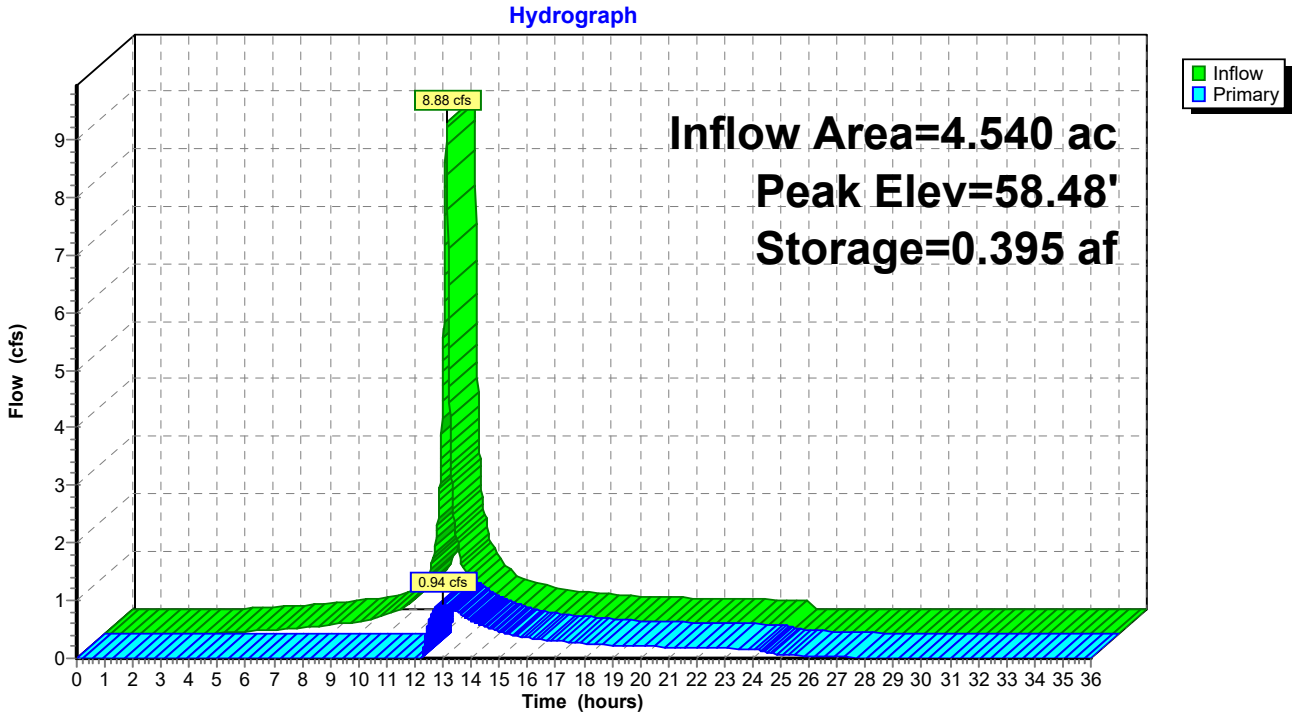
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
8.88 cfs
0.94 cfs
Inflow Area=4.540 ac
Peak Elev=58.48'
Storage=0.395 af
Flow (cfs)
0 1 2 3 4 5 6 7 8 9
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 1.92" for 1-Year event
Inflow = 4.34 cfs @ 12.21 hrs, Volume= 0.449 af
Outflow = 0.29 cfs @ 14.47 hrs, Volume= 0.148 af, Atten= 93%, Lag= 135.6 min
Primary = 0.29 cfs @ 14.47 hrs, Volume= 0.148 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.11' @ 14.47 hrs Surf.Area= 0.184 ac Storage= 0.315 af

Plug-Flow detention time= 469.4 min calculated for 0.148 af (33% of inflow)
Center-of-Mass det. time= 286.5 min ( 1,095.2 - 808.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=0.29 cfs @ 14.47 hrs HW=58.11' TW=56.42' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.29 cfs of 13.57 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 0.91 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

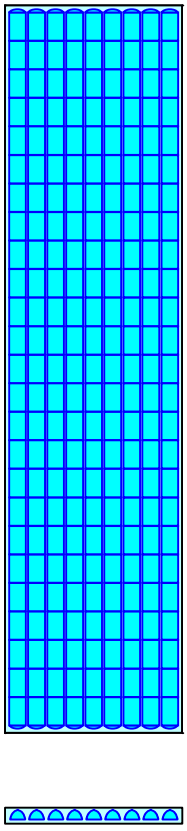
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

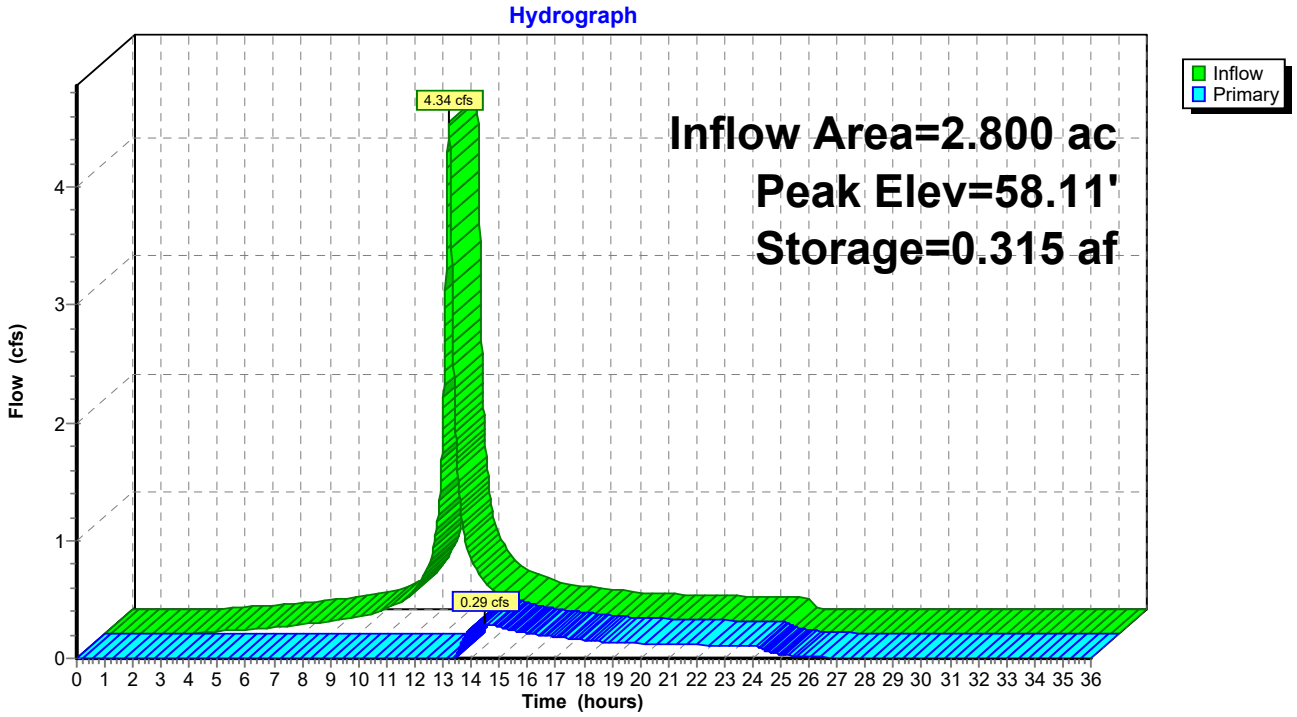
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
4.34 cfs
0.29 cfs
Inflow Area=2.800 ac
Peak Elev=58.11'
Storage=0.315 af
Flow (cfs)
0 1 2 3 4
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 1.92" for 1-Year event
Inflow = 1.20 cfs @ 12.15 hrs, Volume= 0.103 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.22' @ 24.48 hrs Surf.Area= 0.081 ac Storage= 0.103 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=57.25' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** ( Controls 0.00 cfs)
↑**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

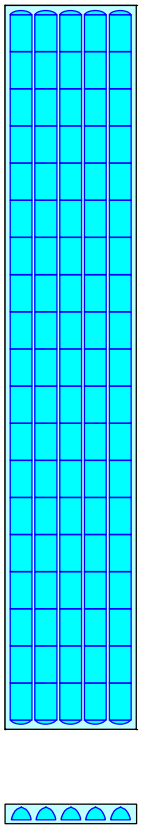
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

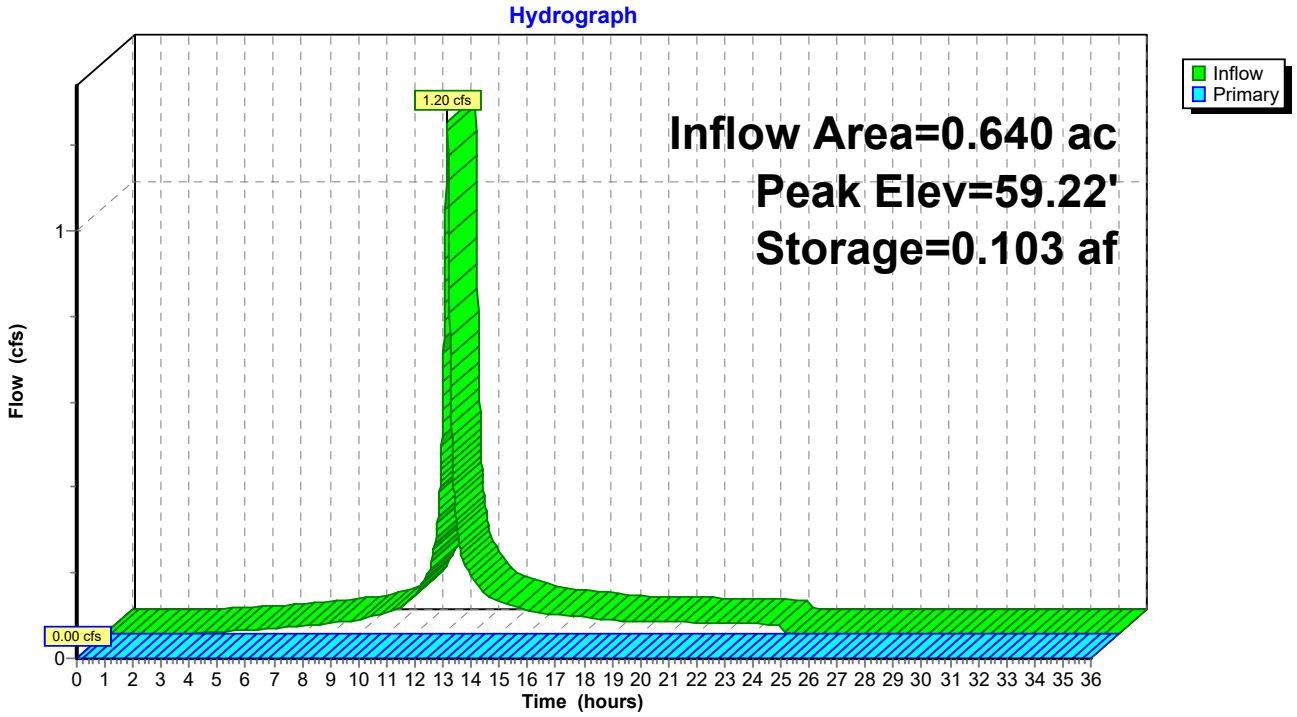
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
1.20 cfs
0.00 cfs
Inflow Area=0.640 ac
Peak Elev=59.22'
Storage=0.103 af
Flow (cfs)
0
1
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 1.92" for 1-Year event
Inflow = 2.13 cfs @ 12.13 hrs, Volume= 0.170 af
Outflow = 0.26 cfs @ 12.83 hrs, Volume= 0.074 af, Atten= 88%, Lag= 41.9 min
Primary = 0.26 cfs @ 12.83 hrs, Volume= 0.074 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.60' @ 12.83 hrs Surf.Area= 0.065 ac Storage= 0.100 af

Plug-Flow detention time= 351.8 min calculated for 0.074 af (44% of inflow)
Center-of-Mass det. time= 195.2 min ( 997.0 - 801.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.26 cfs @ 12.83 hrs HW=59.60' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 0.26 cfs of 3.96 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.87 fps)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

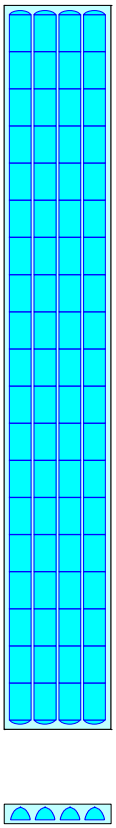
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

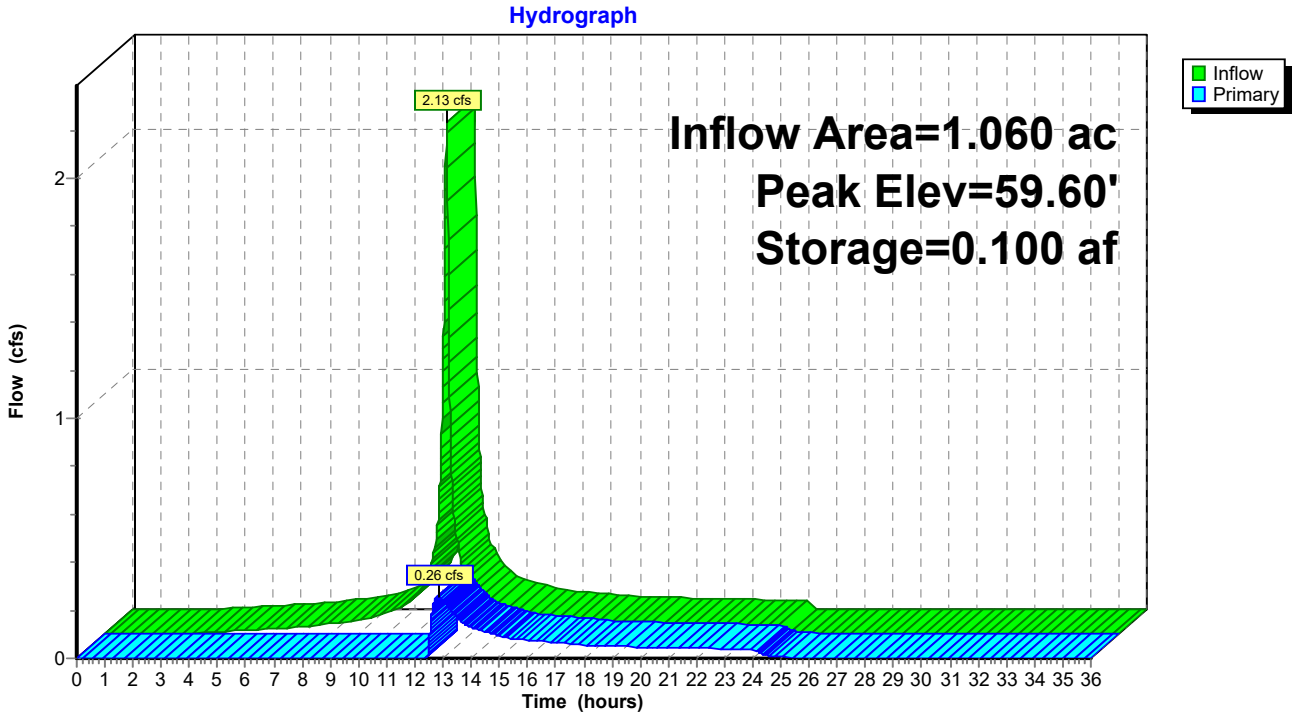
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
2.13 cfs
0.26 cfs
Inflow Area=1.060 ac
Peak Elev=59.60'
Storage=0.100 af
Flow (cfs)
0
1
2
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 1.74" for 1-Year event
Inflow = 2.71 cfs @ 12.14 hrs, Volume= 0.218 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.76' @ 24.42 hrs Surf.Area= 0.079 ac Storage= 0.218 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

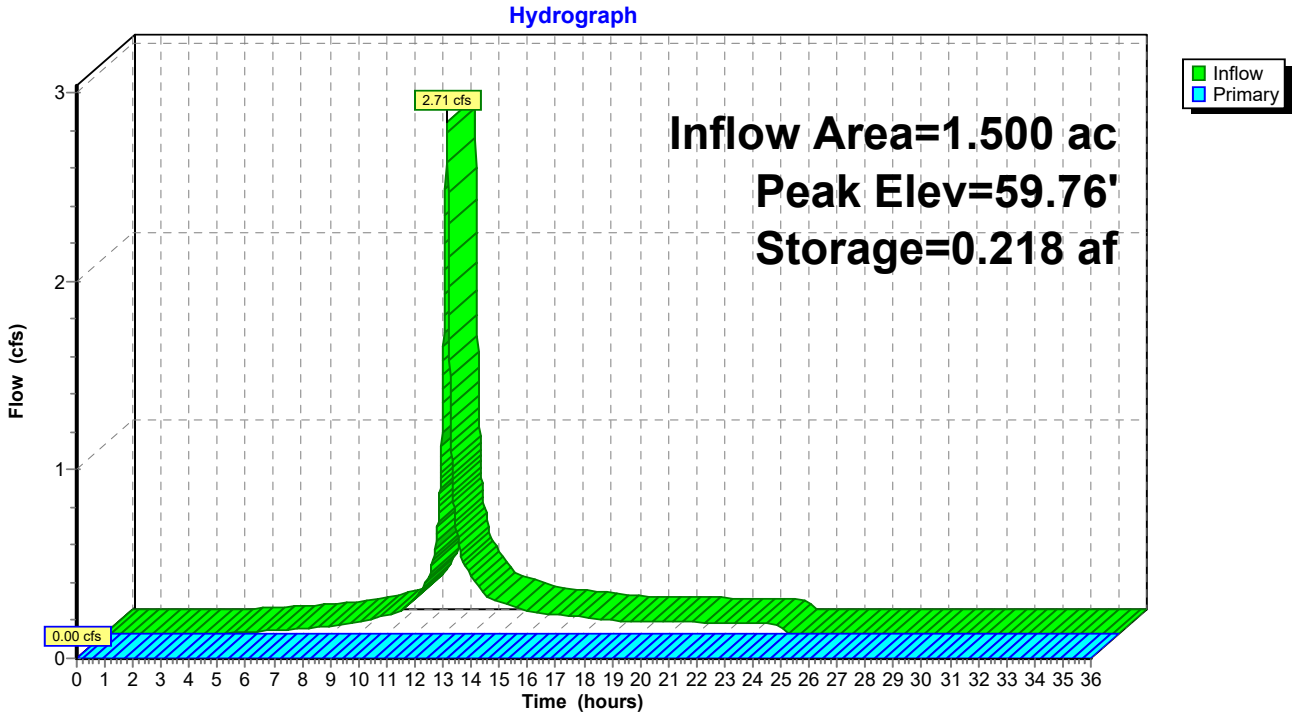
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=56.00' TW=53.50' (Dynamic Tailwater)
↑—**1=Culvert** ( Controls 0.00 cfs)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
2.71 cfs
0.00 cfs
Inflow Area=1.500 ac
Peak Elev=59.76'
Storage=0.218 af
Flow (cfs)
0
1
2
3
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth > 0.70" for 1-Year event
Inflow = 1.02 cfs @ 12.95 hrs, Volume= 0.553 af
Outflow = 1.00 cfs @ 13.13 hrs, Volume= 0.518 af, Atten= 3%, Lag= 11.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 9L : Off-Site South
Secondary = 1.00 cfs @ 13.13 hrs, Volume= 0.518 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 56.48' @ 13.13 hrs Surf.Area= 0.038 ac Storage= 0.045 af

Plug-Flow detention time= 62.3 min calculated for 0.518 af (94% of inflow)
Center-of-Mass det. time= 28.6 min ( 1,052.3 - 1,023.7 )

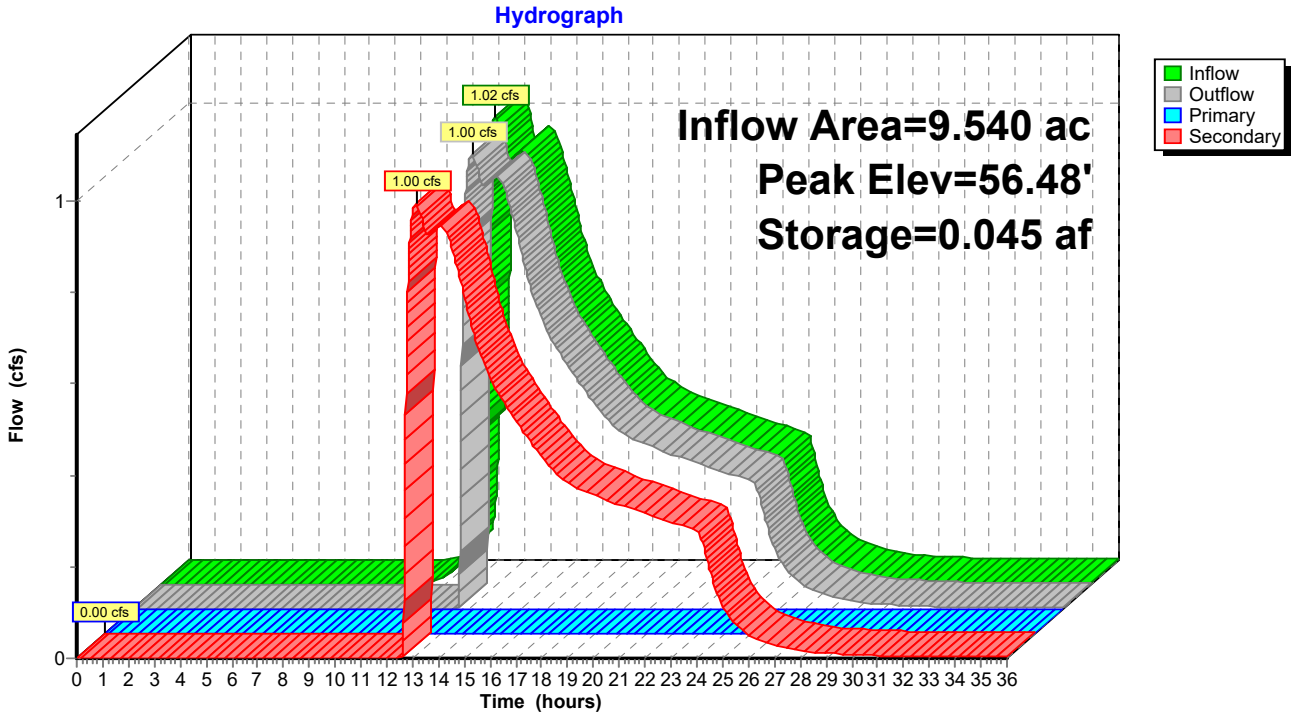
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=53.50' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=1.00 cfs @ 13.13 hrs HW=56.48' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 1.00 cfs of 2.25 cfs potential flow)
├─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** (Orifice Controls 1.00 cfs @ 2.85 fps)

## Pond 8P: Level Spreader

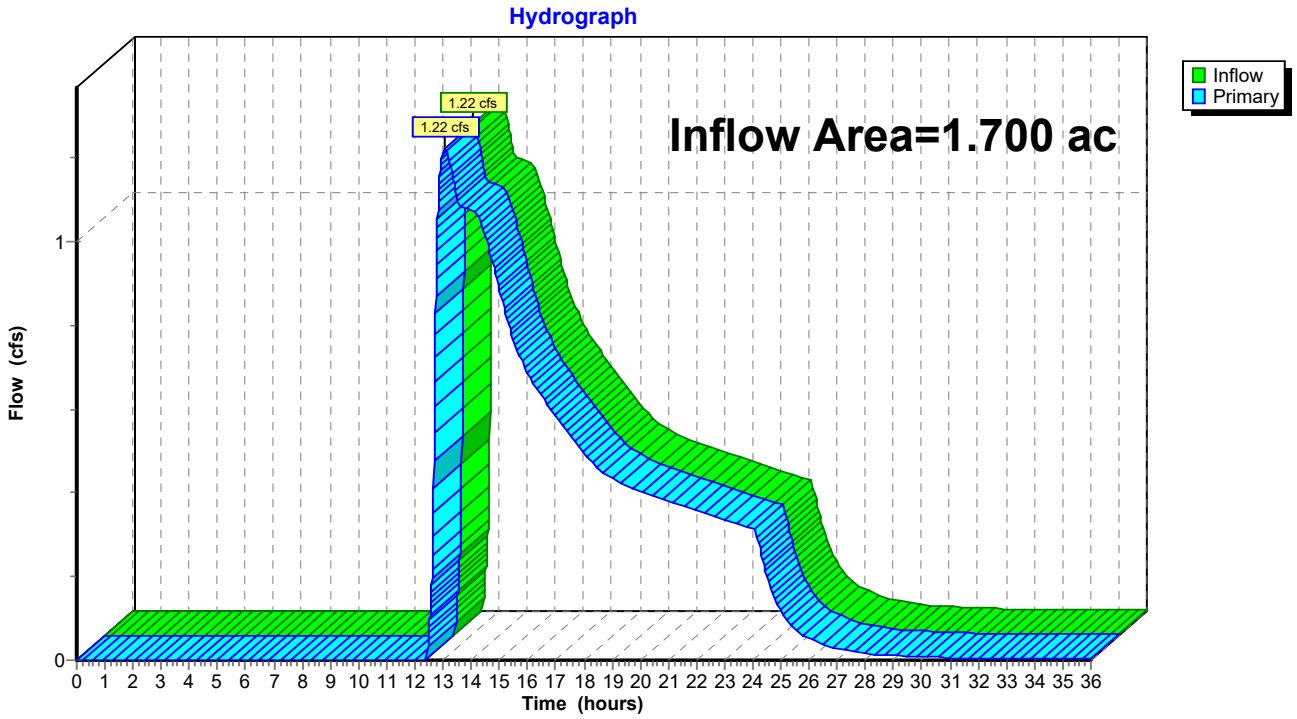


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 4.18" for 1-Year event
Inflow = 1.22 cfs @ 13.07 hrs, Volume= 0.592 af
Primary = 1.22 cfs @ 13.07 hrs, Volume= 0.592 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

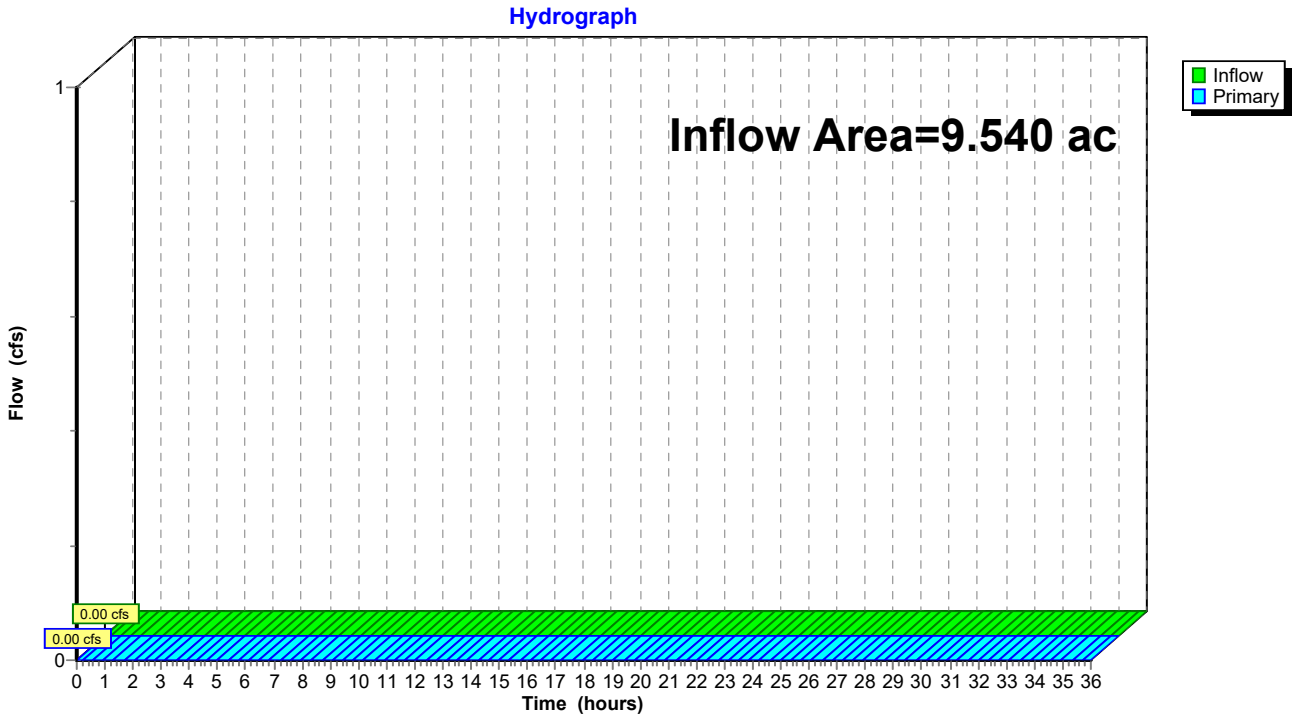


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 0.00" for 1-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

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=2.41"
Flow Length=509' Tc=6.0 min CN=94 Runoff=11.49 cfs 0.911 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=2.51"
Flow Length=293' Tc=13.5 min CN=95 Runoff=5.58 cfs 0.585 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=2.31"
Flow Length=360' Tc=7.1 min CN=93 Runoff=3.54 cfs 0.289 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=1.30"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=1.01 cfs 0.076 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=2.51"
Flow Length=213' Tc=6.2 min CN=95 Runoff=2.74 cfs 0.222 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=2.51"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=1.53 cfs 0.134 af

**Pond 1P: UGS-1** Peak Elev=58.72' Storage=0.454 af Inflow=11.49 cfs 0.911 af
Outflow=2.89 cfs 0.573 af

**Pond 2P: UGS-2** Peak Elev=58.25' Storage=0.333 af Inflow=5.58 cfs 0.585 af
Outflow=1.09 cfs 0.284 af

**Pond 4P: UGS-4** Peak Elev=59.53' Storage=0.120 af Inflow=1.53 cfs 0.134 af
Outflow=0.03 cfs 0.015 af

**Pond 5P: UGS-5** Peak Elev=59.77' Storage=0.108 af Inflow=2.74 cfs 0.222 af
Outflow=1.19 cfs 0.126 af

**Pond 7P: WBQ-1** Peak Elev=60.32' Storage=0.264 af Inflow=3.54 cfs 0.289 af
Outflow=0.08 cfs 0.026 af

**Pond 8P: Level Spreader** Peak Elev=57.52' Storage=0.061 af Inflow=3.62 cfs 0.959 af
Primary=0.00 cfs 0.000 af Secondary=3.61 cfs 0.924 af Outflow=3.61 cfs 0.924 af

**Link 1L: Existing Drainage System** Inflow=4.15 cfs 1.064 af
Primary=4.15 cfs 1.064 af

**Link 9L: Off-Site South** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 11.240 ac Runoff Volume = 2.216 af Average Runoff Depth = 2.37"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 456% of capacity of segment #2

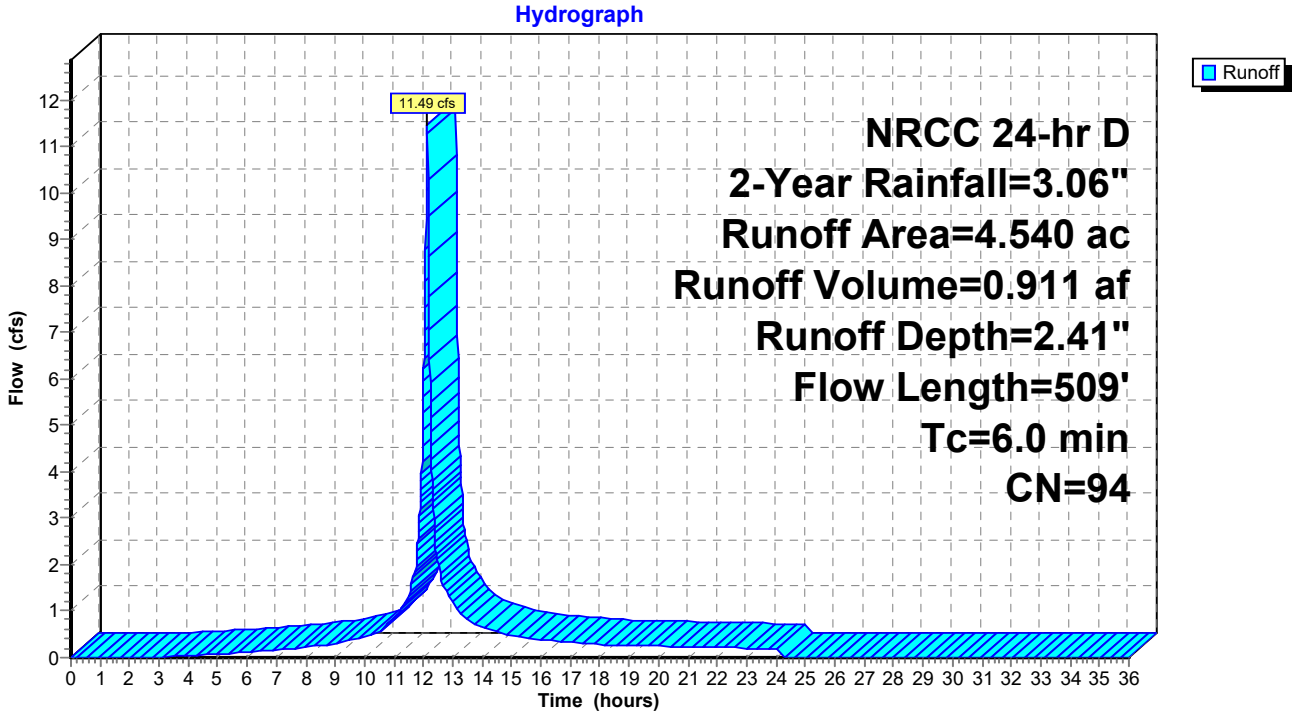
Runoff = 11.49 cfs @ 12.13 hrs, Volume= 0.911 af, Depth= 2.41"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 157% of capacity of segment #3

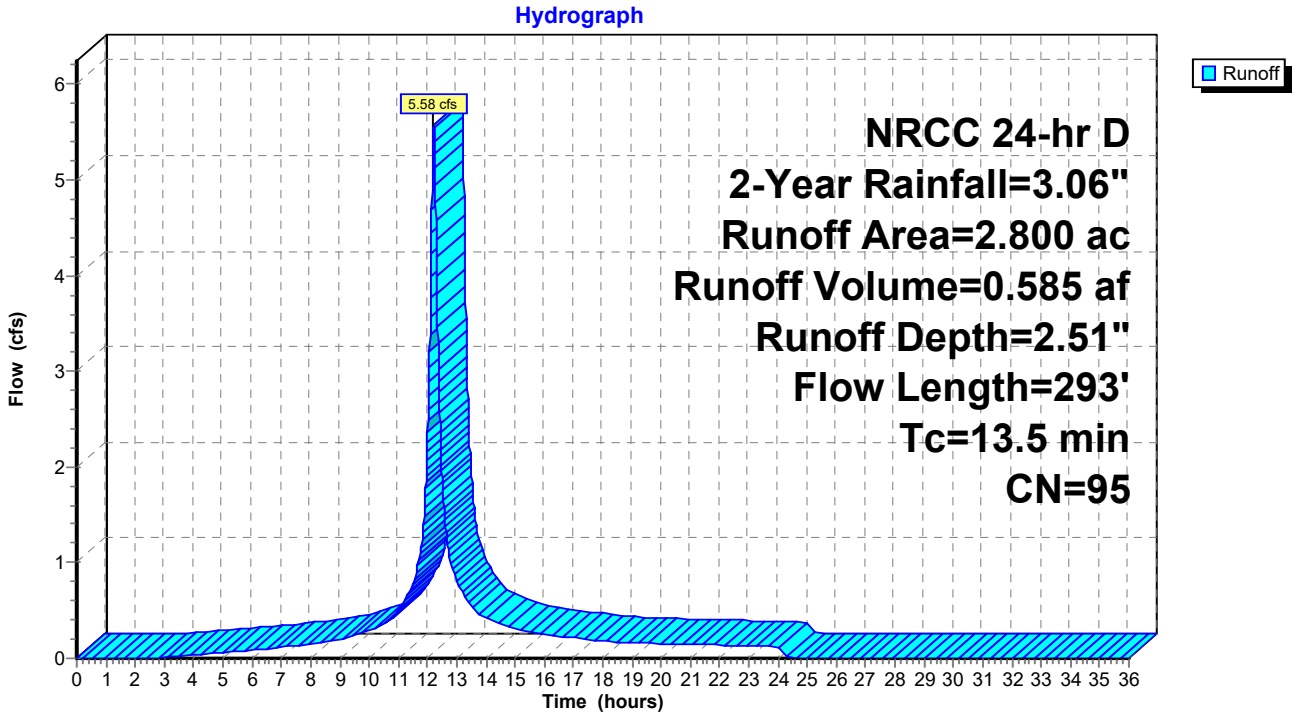
Runoff = 5.58 cfs @ 12.21 hrs, Volume= 0.585 af, Depth= 2.51"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

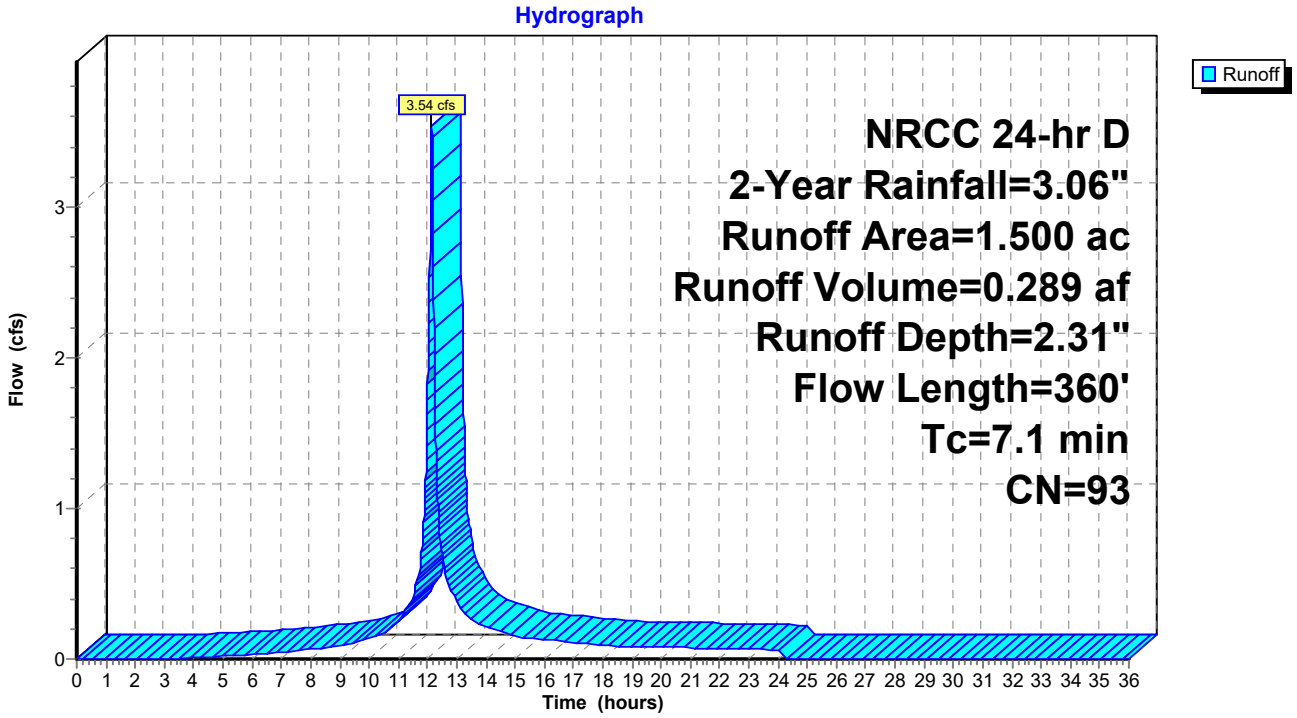
Runoff = 3.54 cfs @ 12.14 hrs, Volume= 0.289 af, Depth= 2.31"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

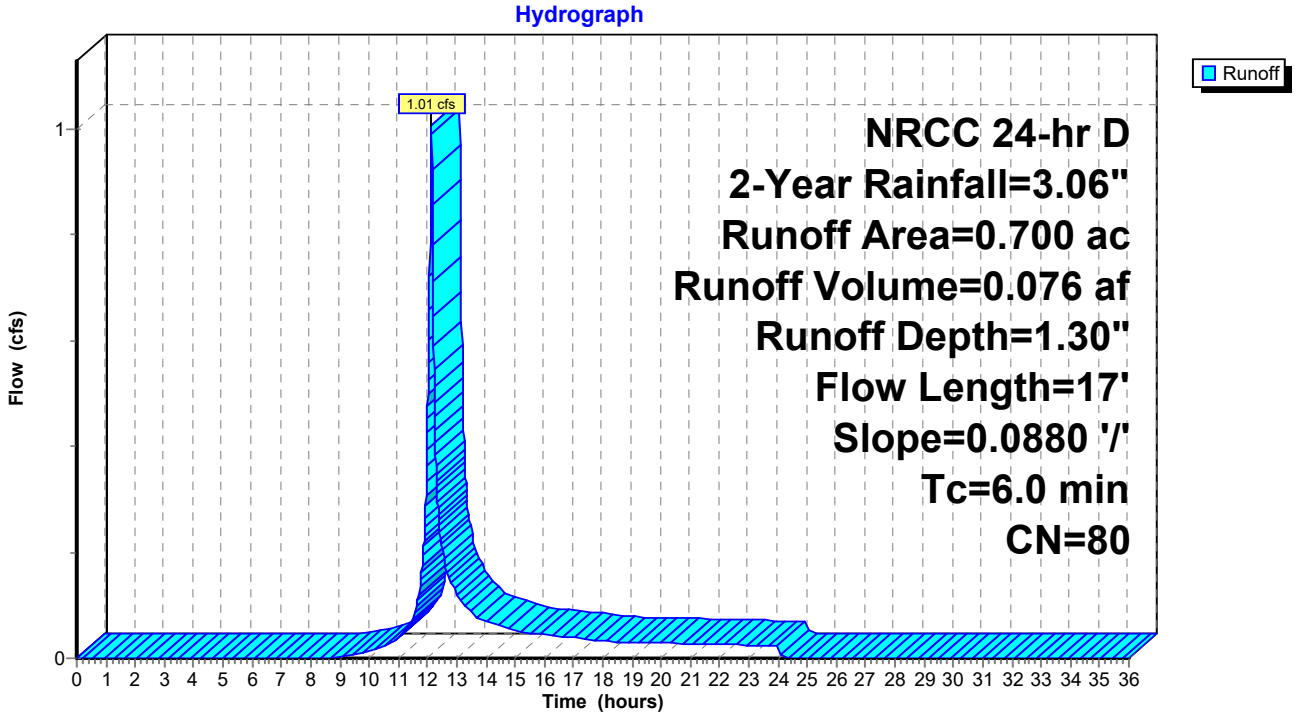
Runoff = 1.01 cfs @ 12.13 hrs, Volume= 0.076 af, Depth= 1.30"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 109% of capacity of segment #3

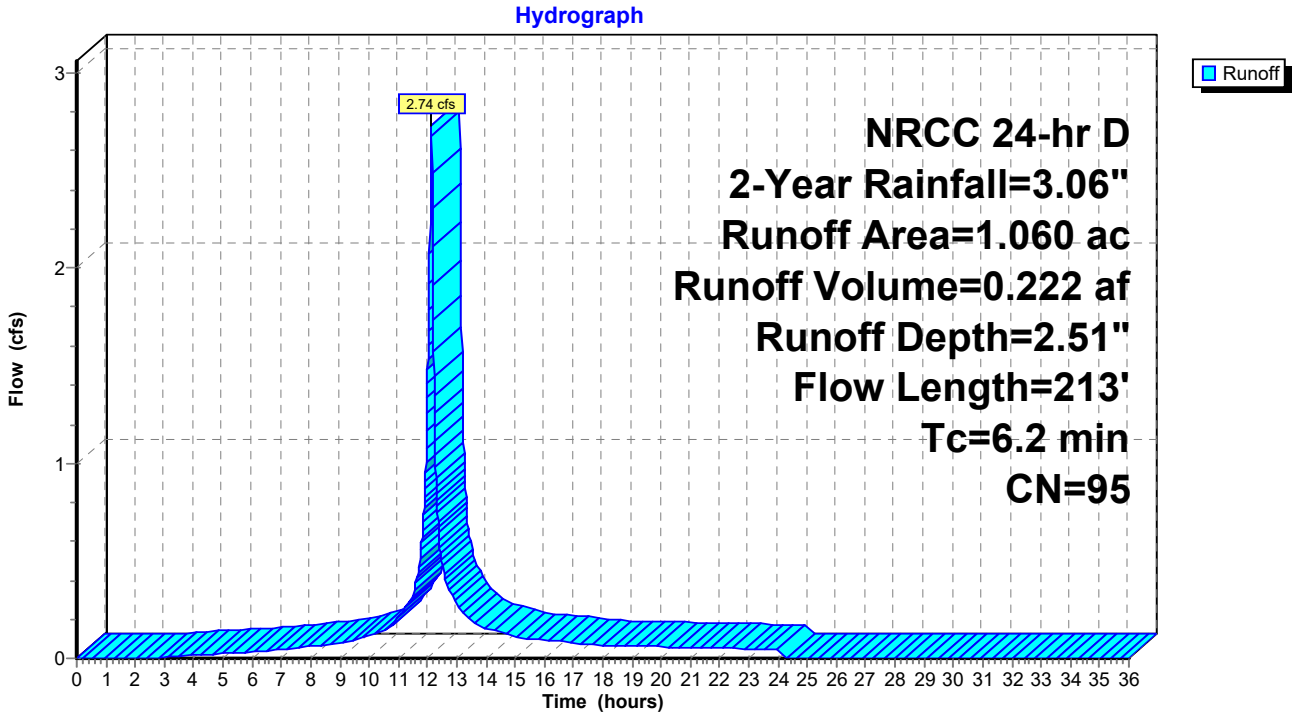
Runoff = 2.74 cfs @ 12.13 hrs, Volume= 0.222 af, Depth= 2.51"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

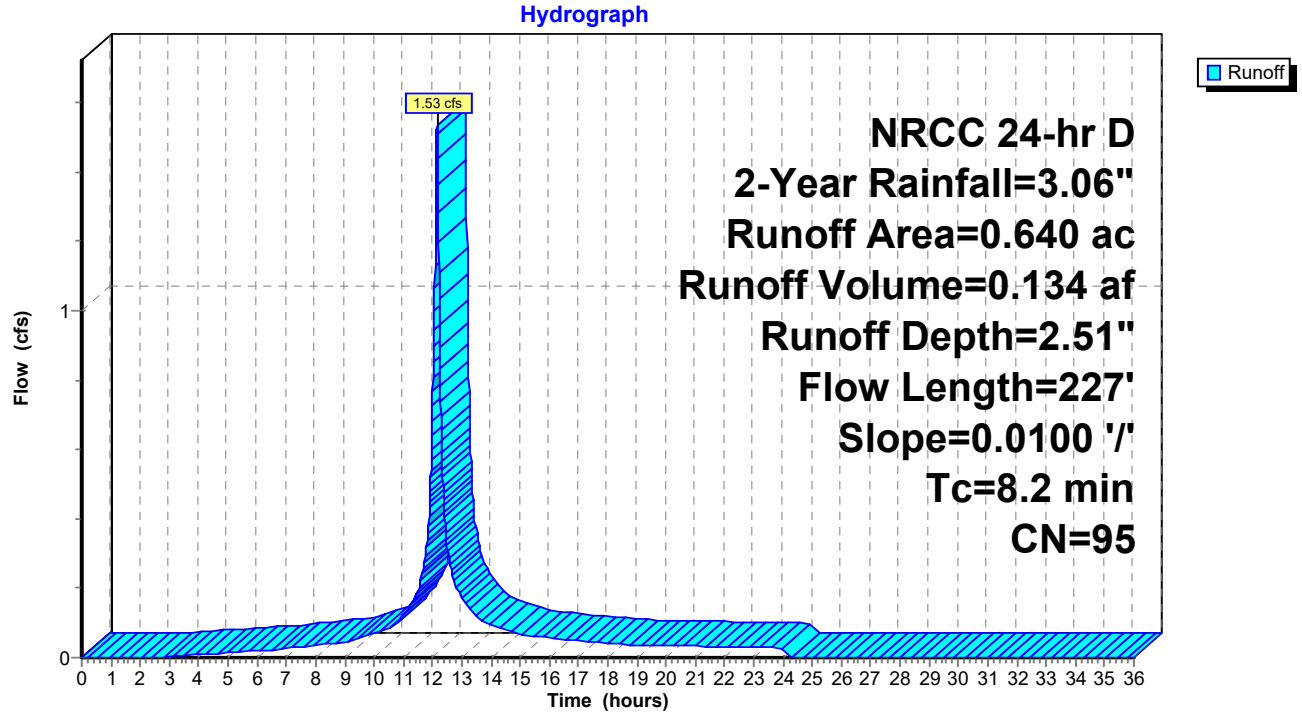
Runoff = 1.53 cfs @ 12.15 hrs, Volume= 0.134 af, Depth= 2.51"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 2.41" for 2-Year event
Inflow = 11.49 cfs @ 12.13 hrs, Volume= 0.911 af
Outflow = 2.89 cfs @ 12.36 hrs, Volume= 0.573 af, Atten= 75%, Lag= 13.9 min
Primary = 2.89 cfs @ 12.36 hrs, Volume= 0.573 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.72' @ 12.36 hrs Surf.Area= 0.316 ac Storage= 0.454 af

Plug-Flow detention time= 279.2 min calculated for 0.573 af (63% of inflow)
Center-of-Mass det. time= 152.5 min ( 953.1 - 800.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=2.89 cfs @ 12.36 hrs HW=58.72' TW=57.38' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 2.89 cfs of 9.55 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.89 cfs @ 2.04 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

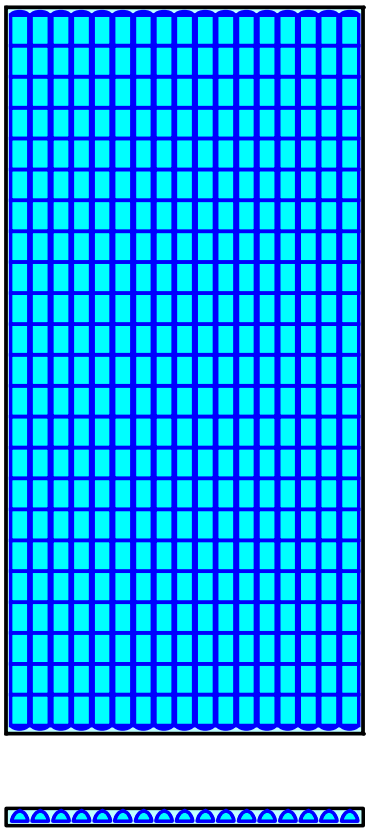
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

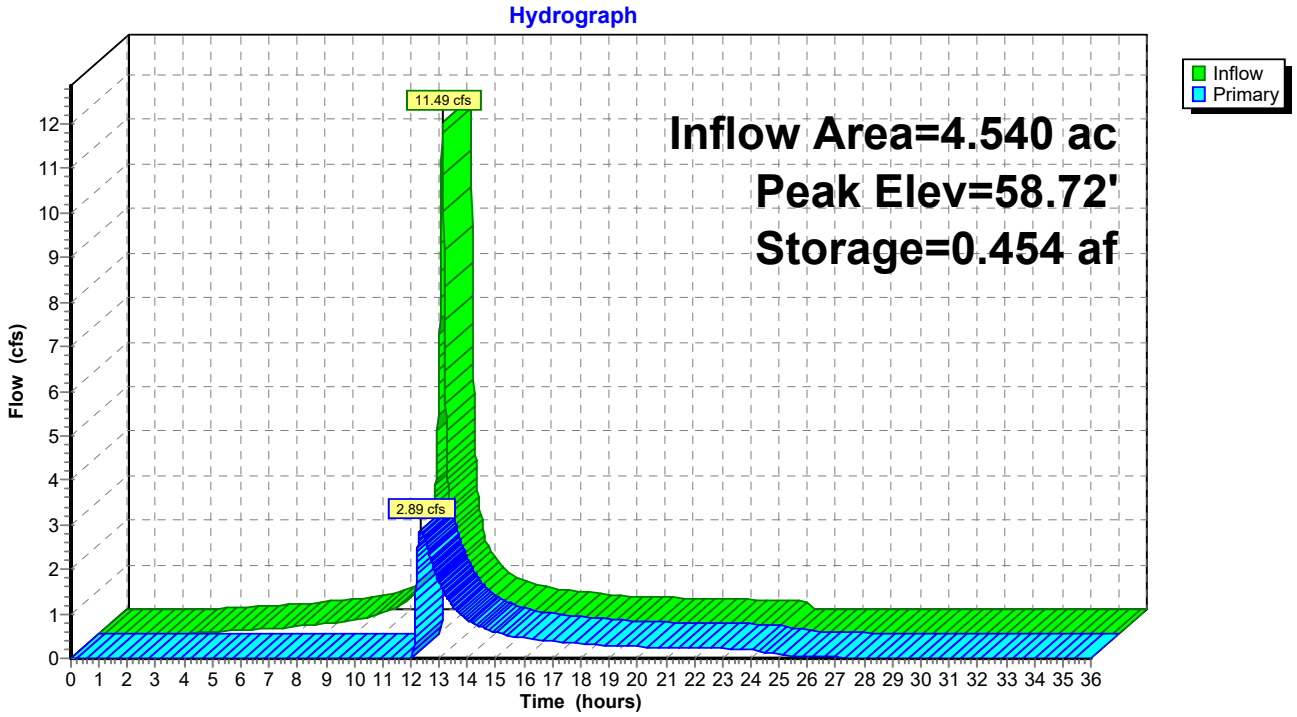
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
11.49 cfs
2.89 cfs
Inflow Area=4.540 ac
Peak Elev=58.72'
Storage=0.454 af
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 2.51" for 2-Year event
Inflow = 5.58 cfs @ 12.21 hrs, Volume= 0.585 af
Outflow = 1.09 cfs @ 12.74 hrs, Volume= 0.284 af, Atten= 80%, Lag= 31.7 min
Primary = 1.09 cfs @ 12.74 hrs, Volume= 0.284 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.25' @ 12.74 hrs Surf.Area= 0.184 ac Storage= 0.333 af

Plug-Flow detention time= 338.1 min calculated for 0.284 af (49% of inflow)
Center-of-Mass det. time= 187.7 min ( 987.3 - 799.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=1.09 cfs @ 12.74 hrs HW=58.25' TW=57.51' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 1.09 cfs of 14.01 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.09 cfs @ 1.43 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

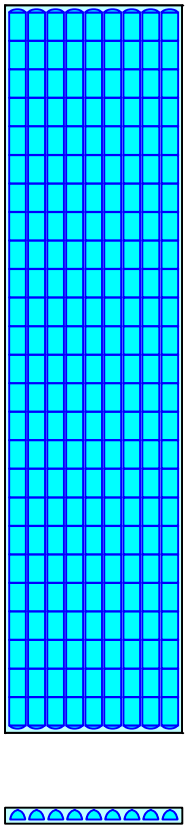
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

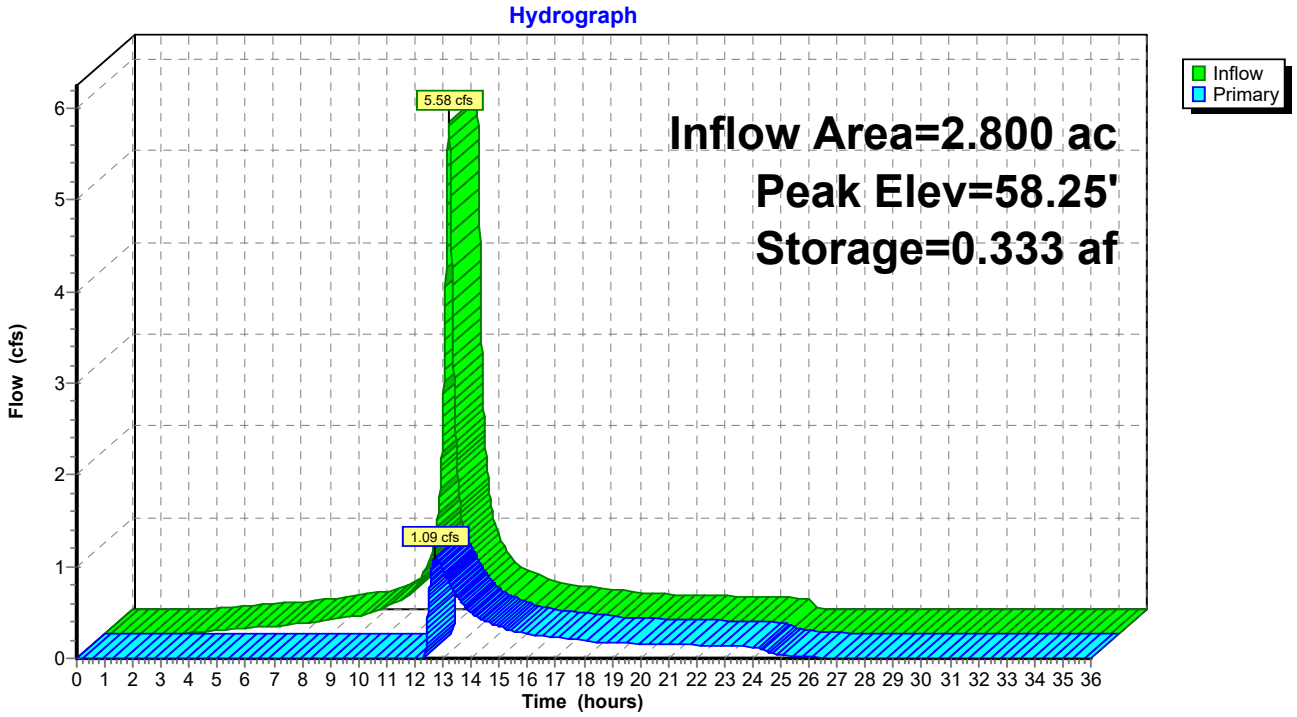
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
5.58 cfs
1.09 cfs
Inflow Area=2.800 ac
Peak Elev=58.25'
Storage=0.333 af
Flow (cfs)
0 1 2 3 4 5 6
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 2.51" for 2-Year event
Inflow = 1.53 cfs @ 12.15 hrs, Volume= 0.134 af
Outflow = 0.03 cfs @ 20.20 hrs, Volume= 0.015 af, Atten= 98%, Lag= 482.9 min
Primary = 0.03 cfs @ 20.20 hrs, Volume= 0.015 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.53' @ 20.20 hrs Surf.Area= 0.081 ac Storage= 0.120 af

Plug-Flow detention time= 849.9 min calculated for 0.015 af (11% of inflow)
Center-of-Mass det. time= 511.3 min ( 1,306.0 - 794.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.03 cfs @ 20.20 hrs HW=59.53' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.03 cfs of 3.83 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.03 cfs @ 0.45 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

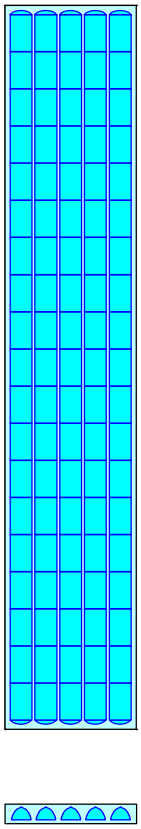
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

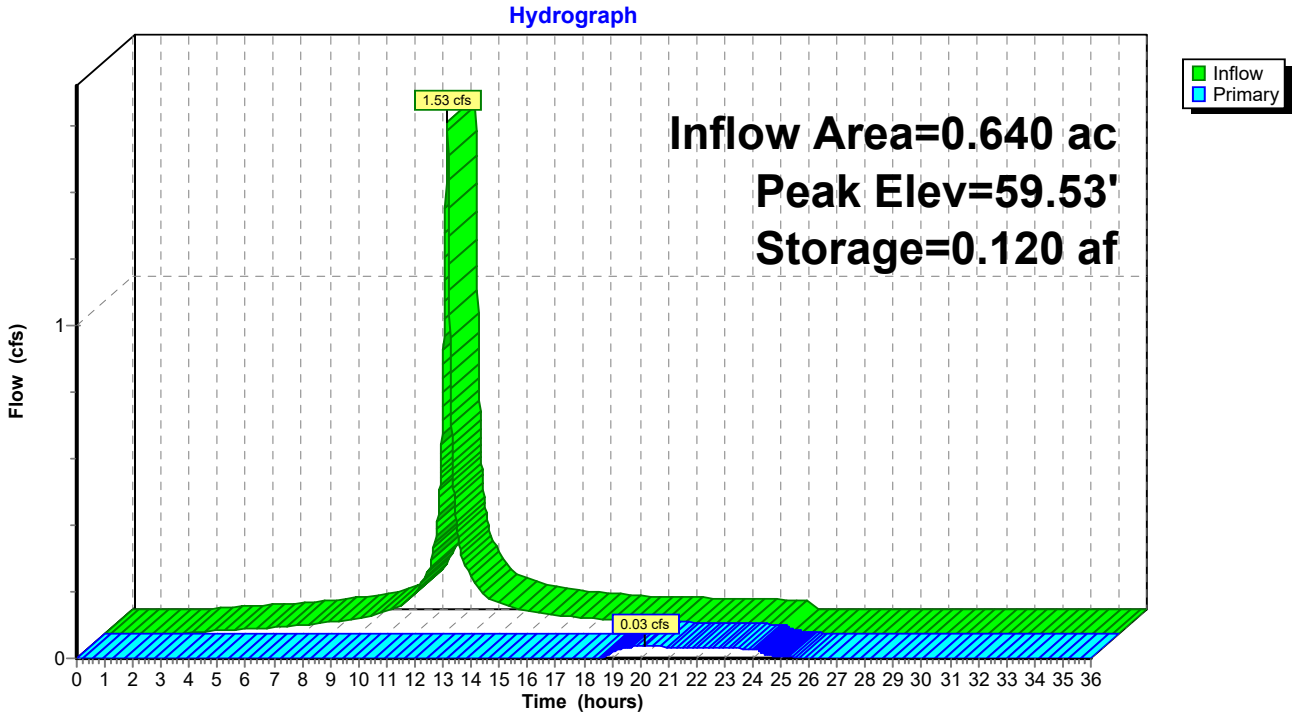
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
1.53 cfs
0.03 cfs
Inflow Area=0.640 ac
Peak Elev=59.53'
Storage=0.120 af
Flow (cfs)
0
1
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 2.51" for 2-Year event
Inflow = 2.74 cfs @ 12.13 hrs, Volume= 0.222 af
Outflow = 1.19 cfs @ 12.25 hrs, Volume= 0.126 af, Atten= 57%, Lag= 7.1 min
Primary = 1.19 cfs @ 12.25 hrs, Volume= 0.126 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.77' @ 12.25 hrs Surf.Area= 0.065 ac Storage= 0.108 af

Plug-Flow detention time= 274.6 min calculated for 0.126 af (57% of inflow)
Center-of-Mass det. time= 137.7 min ( 930.5 - 792.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.19 cfs @ 12.25 hrs HW=59.77' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 1.19 cfs of 4.26 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.19 cfs @ 1.47 fps)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

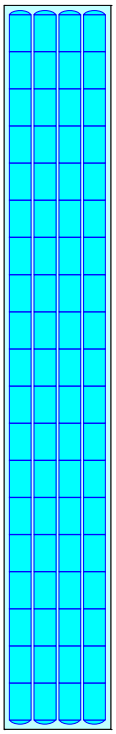
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

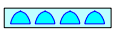
76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

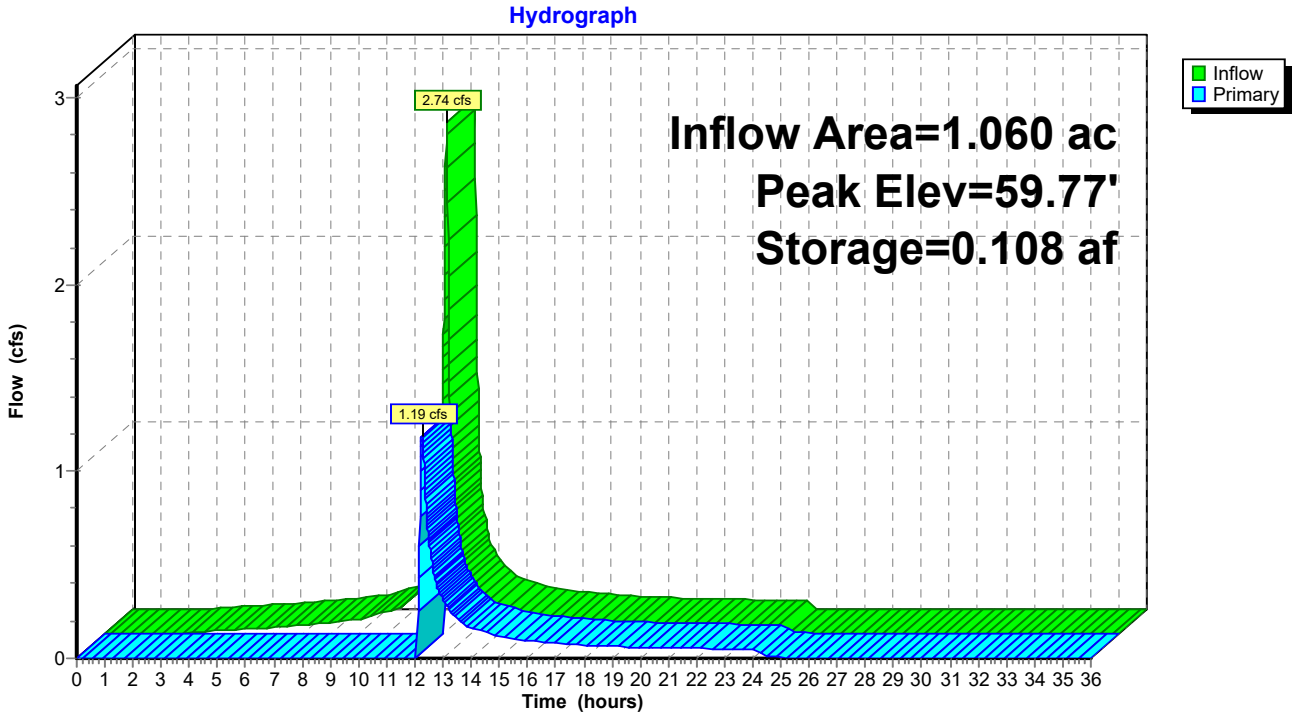
Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone





## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
2.74 cfs
1.19 cfs
Inflow Area=1.060 ac
Peak Elev=59.77'
Storage=0.108 af
Flow (cfs)
0
1
2
3
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 2.31" for 2-Year event
Inflow = 3.54 cfs @ 12.14 hrs, Volume= 0.289 af
Outflow = 0.08 cfs @ 20.56 hrs, Volume= 0.026 af, Atten= 98%, Lag= 505.2 min
Primary = 0.08 cfs @ 20.56 hrs, Volume= 0.026 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.32' @ 20.56 hrs Surf.Area= 0.086 ac Storage= 0.264 af

Plug-Flow detention time= 844.6 min calculated for 0.026 af (9% of inflow)
Center-of-Mass det. time= 515.7 min ( 1,324.6 - 808.8 )

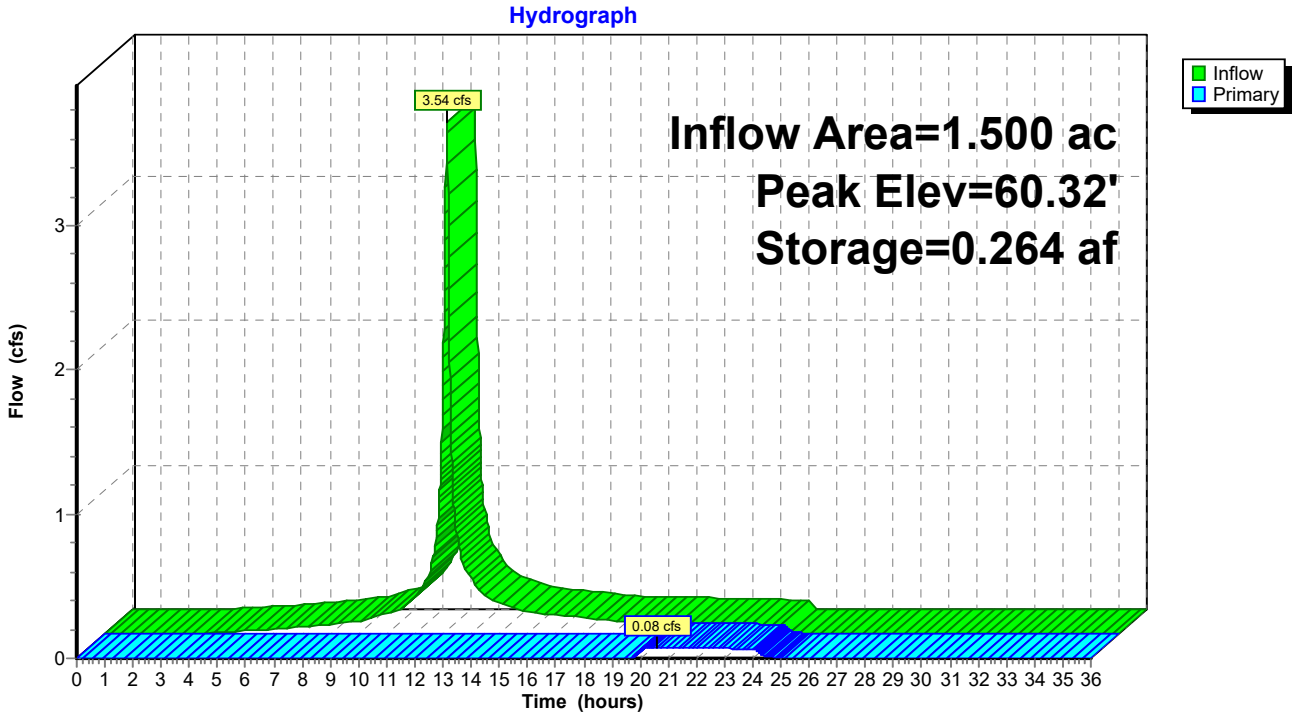
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=0.08 cfs @ 20.56 hrs HW=60.32' TW=56.22' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.08 cfs of 4.03 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.08 cfs @ 0.44 fps)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
3.54 cfs
0.08 cfs
Inflow Area=1.500 ac
Peak Elev=60.32'
Storage=0.264 af
Flow (cfs)
0
1
2
3
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth > 1.21" for 2-Year event
Inflow = 3.62 cfs @ 12.57 hrs, Volume= 0.959 af
Outflow = 3.61 cfs @ 12.59 hrs, Volume= 0.924 af, Atten= 0%, Lag= 1.2 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 9L : Off-Site South
Secondary = 3.61 cfs @ 12.59 hrs, Volume= 0.924 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 57.52' @ 12.59 hrs Surf.Area= 0.038 ac Storage= 0.061 af

Plug-Flow detention time= 39.0 min calculated for 0.924 af (96% of inflow)
Center-of-Mass det. time= 17.4 min ( 984.5 - 967.1 )

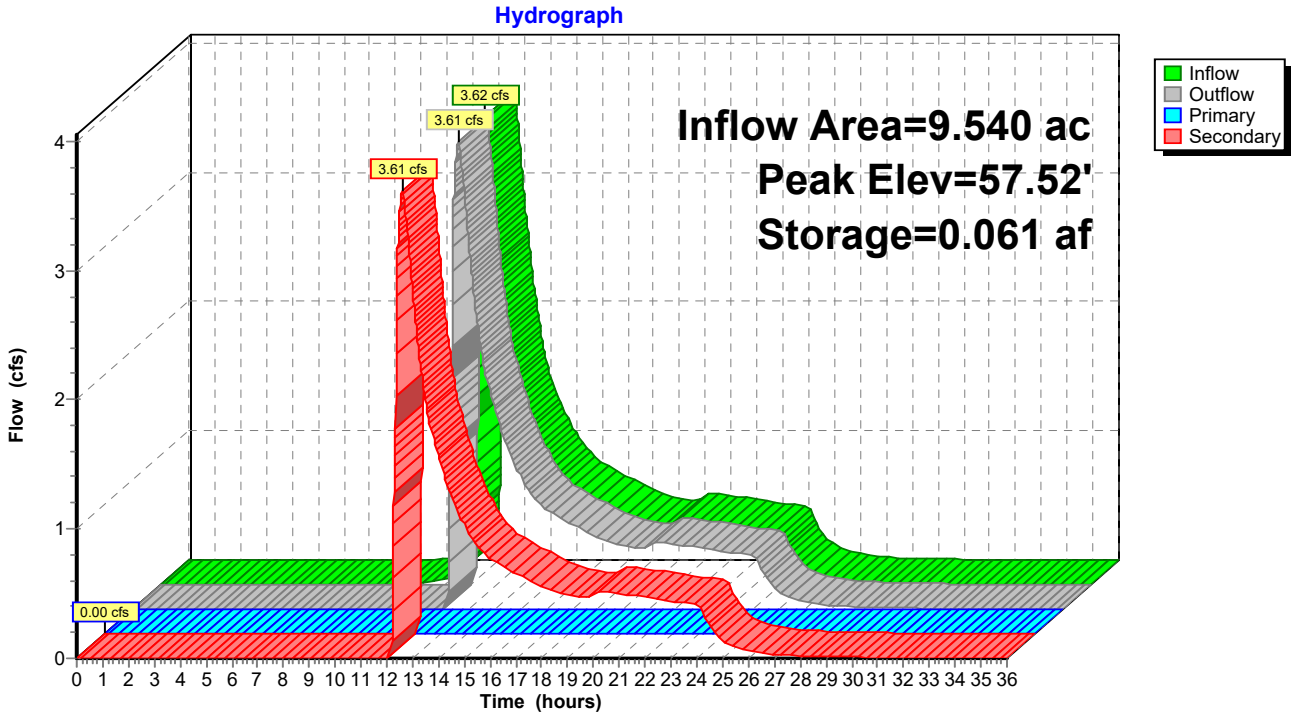
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=53.50' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=3.61 cfs @ 12.59 hrs HW=57.52' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 3.61 cfs of 12.24 cfs potential flow)
├─**3=Broad-Crested Rectangular Weir** (Weir Controls 1.63 cfs @ 1.49 fps)
└─**4=Orifice/Grate** (Orifice Controls 1.98 cfs @ 5.68 fps)

## Pond 8P: Level Spreader

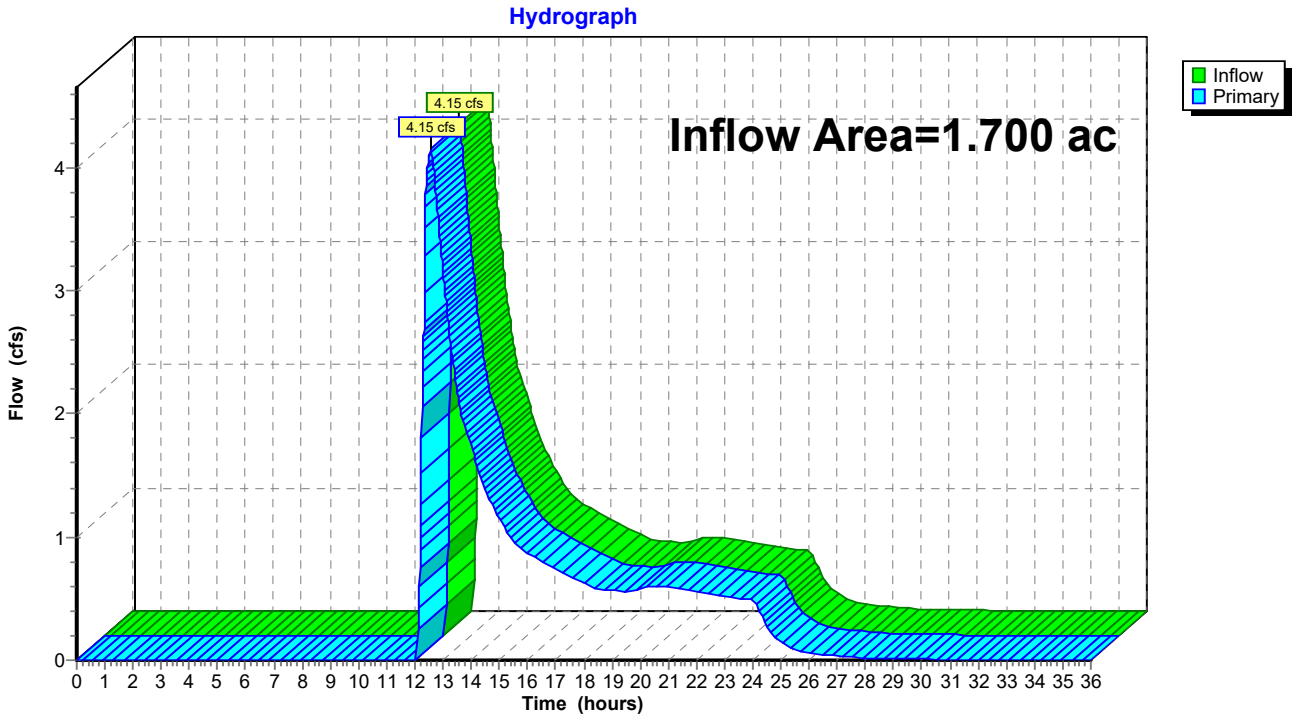


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 7.51" for 2-Year event
Inflow = 4.15 cfs @ 12.56 hrs, Volume= 1.064 af
Primary = 4.15 cfs @ 12.56 hrs, Volume= 1.064 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

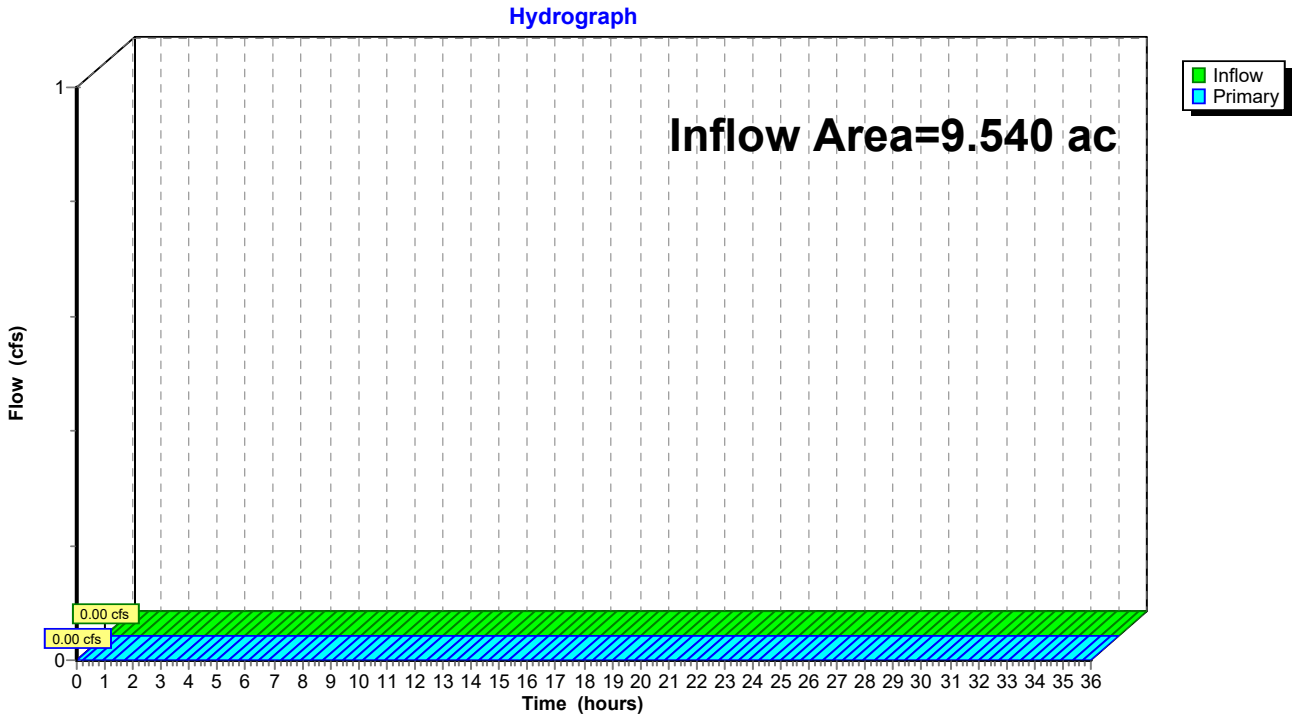


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% 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

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=3.36"
Flow Length=509' Tc=6.0 min CN=94 Runoff=15.71 cfs 1.273 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=3.47"
Flow Length=293' Tc=13.5 min CN=95 Runoff=7.57 cfs 0.810 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=3.26"
Flow Length=360' Tc=7.1 min CN=93 Runoff=4.89 cfs 0.407 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=2.07"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=1.62 cfs 0.121 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=3.47"
Flow Length=213' Tc=6.2 min CN=95 Runoff=3.71 cfs 0.307 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=3.47"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=2.08 cfs 0.185 af

**Pond 1P: UGS-1** Peak Elev=59.14' Storage=0.548 af Inflow=15.71 cfs 1.273 af
Outflow=8.26 cfs 0.934 af

**Pond 2P: UGS-2** Peak Elev=58.63' Storage=0.375 af Inflow=7.57 cfs 0.810 af
Outflow=4.67 cfs 0.509 af

**Pond 4P: UGS-4** Peak Elev=59.58' Storage=0.123 af Inflow=2.08 cfs 0.185 af
Outflow=0.18 cfs 0.066 af

**Pond 5P: UGS-5** Peak Elev=60.01' Storage=0.117 af Inflow=3.71 cfs 0.307 af
Outflow=3.24 cfs 0.211 af

**Pond 7P: WBQ-1** Peak Elev=60.36' Storage=0.268 af Inflow=4.89 cfs 0.407 af
Outflow=0.42 cfs 0.145 af

**Pond 8P: Level Spreader** Peak Elev=58.01' Storage=0.068 af Inflow=12.37 cfs 1.709 af
Primary=1.52 cfs 0.017 af Secondary=10.85 cfs 1.656 af Outflow=12.37 cfs 1.673 af

**Link 1L: Existing Drainage System** Inflow=13.43 cfs 1.933 af
Primary=13.43 cfs 1.933 af

**Link 9L: Off-Site South** Inflow=1.52 cfs 0.017 af
Primary=1.52 cfs 0.017 af

**Total Runoff Area = 11.240 ac Runoff Volume = 3.102 af Average Runoff Depth = 3.31"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 624% of capacity of segment #2

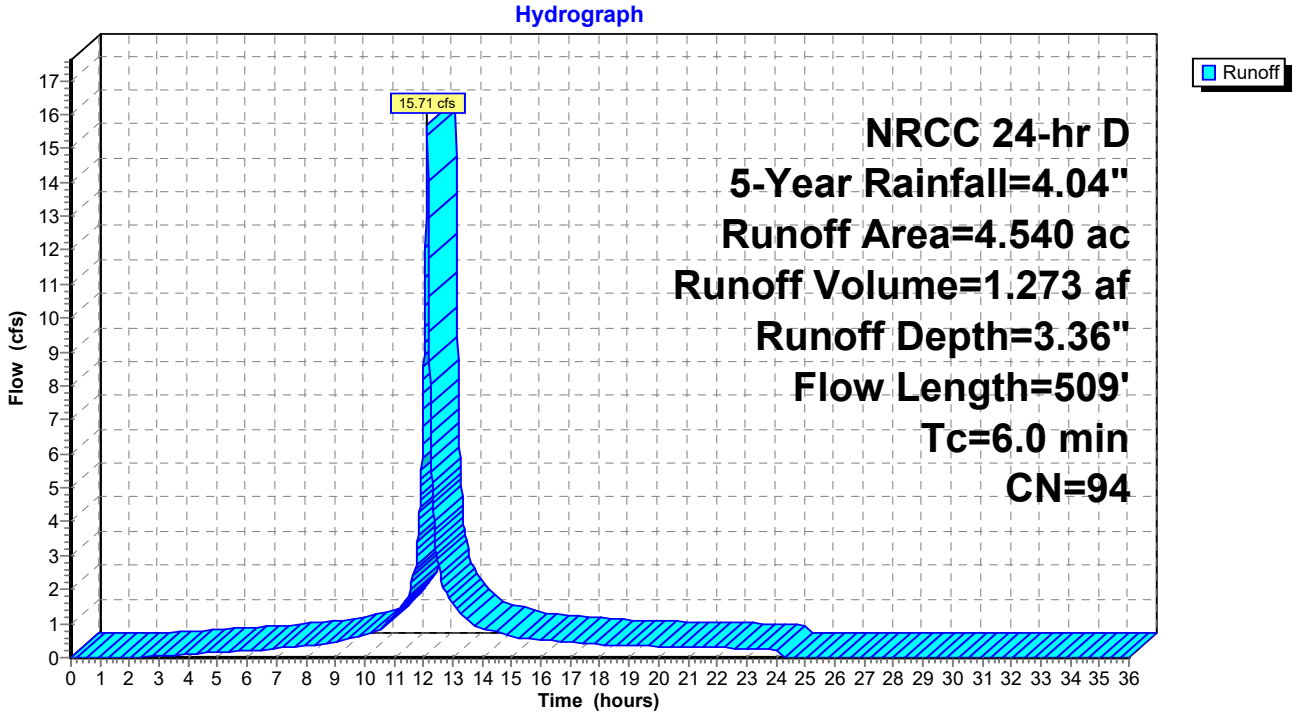
Runoff = 15.71 cfs @ 12.13 hrs, Volume= 1.273 af, Depth= 3.36"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 213% of capacity of segment #3

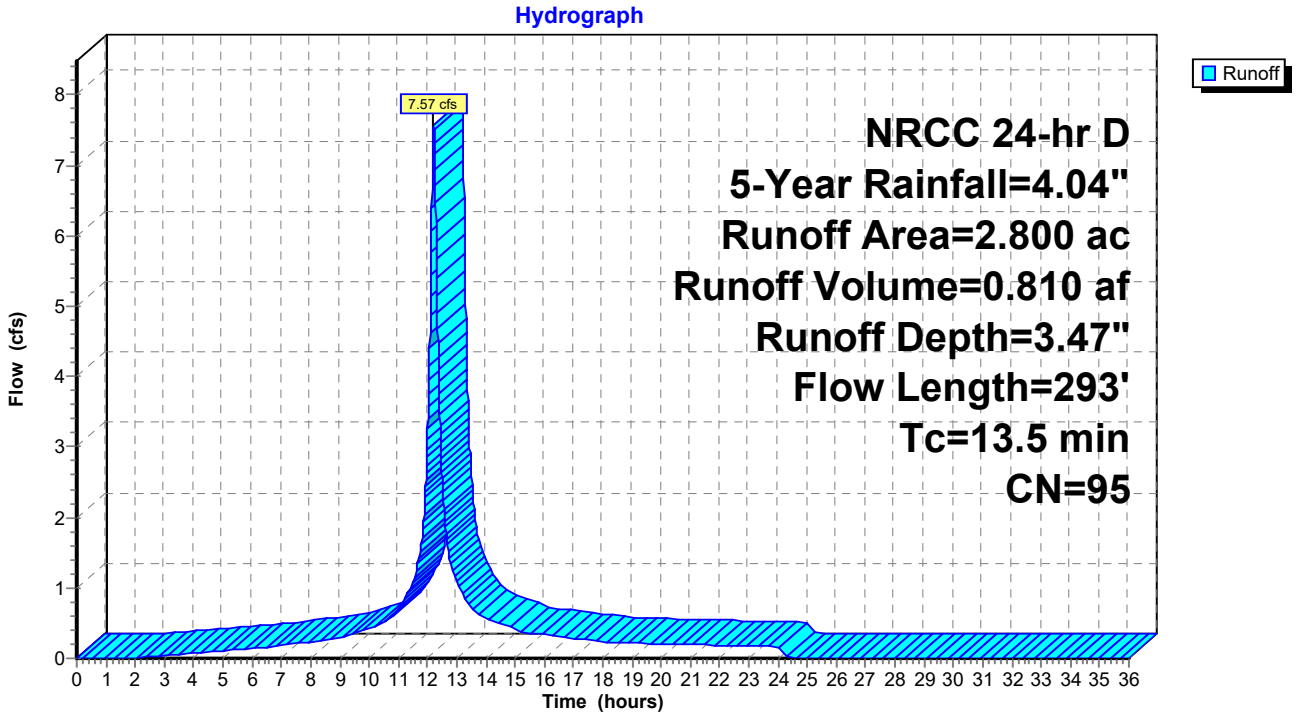
Runoff = 7.57 cfs @ 12.21 hrs, Volume= 0.810 af, Depth= 3.47"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

[47] Hint: Peak is 137% of capacity of segment #3

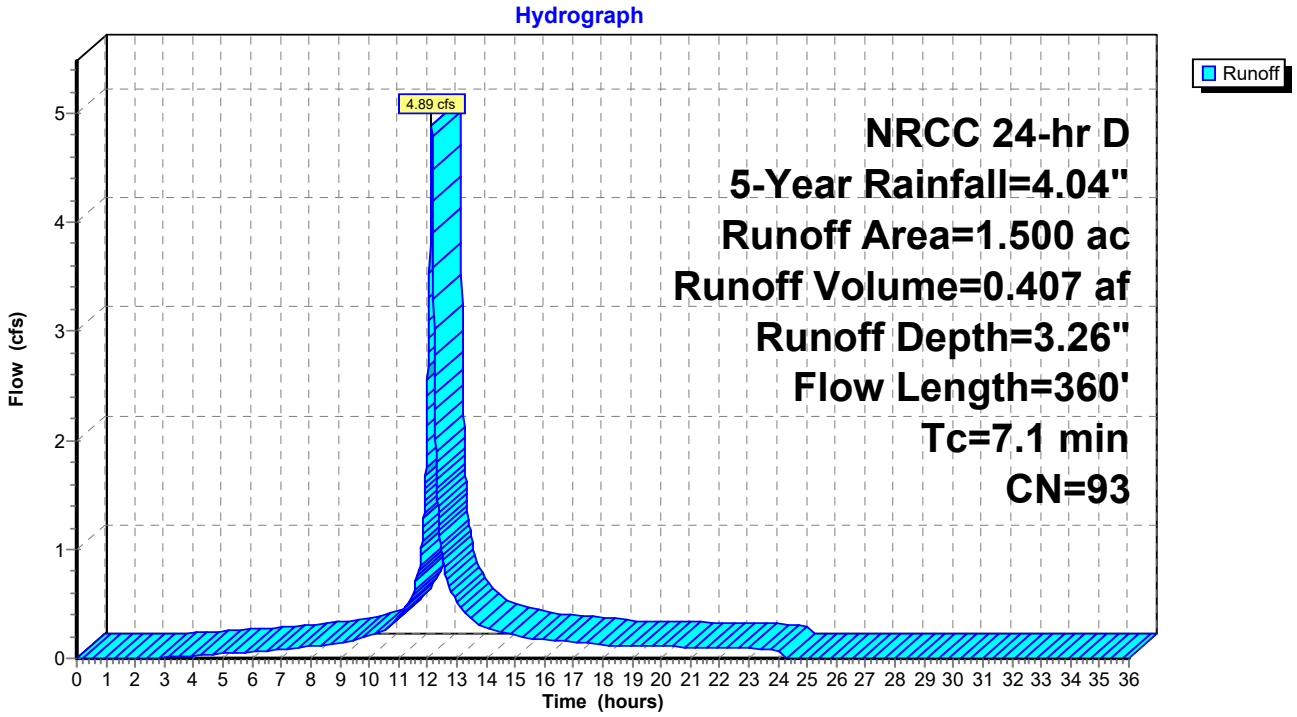
Runoff = 4.89 cfs @ 12.14 hrs, Volume= 0.407 af, Depth= 3.26"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

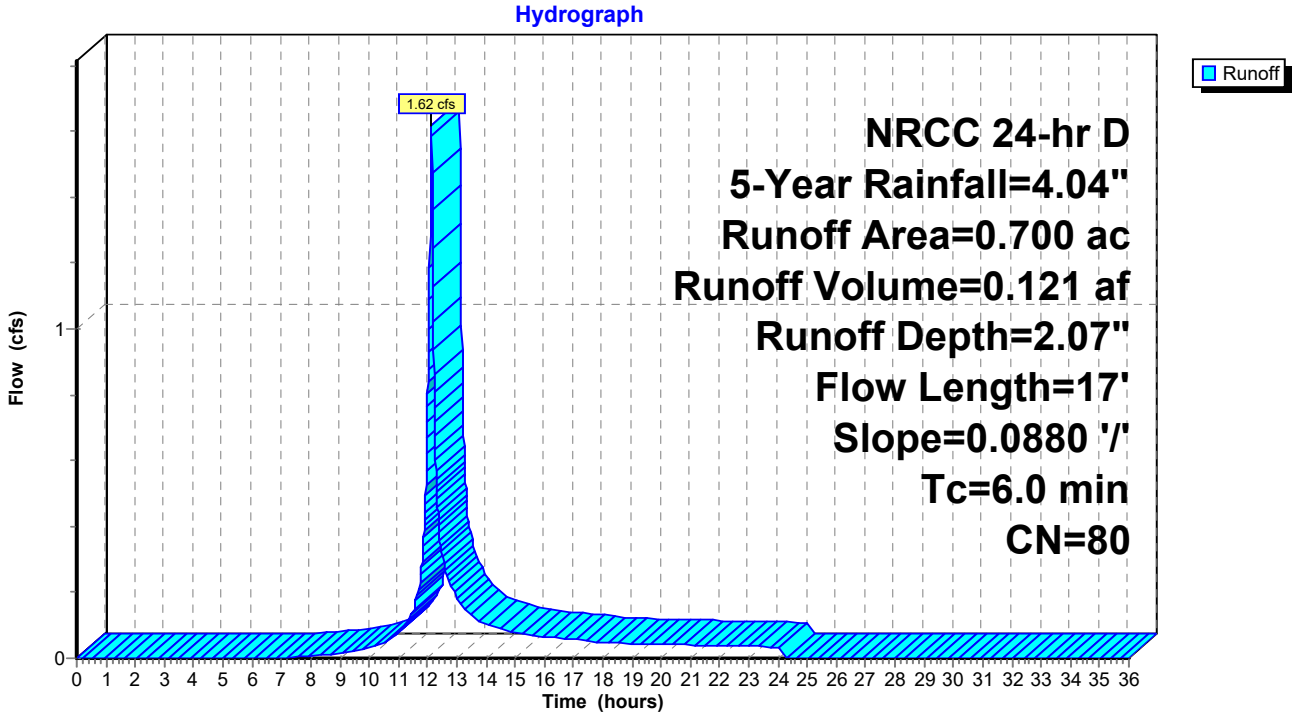
Runoff = 1.62 cfs @ 12.13 hrs, Volume= 0.121 af, Depth= 2.07"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 147% of capacity of segment #3

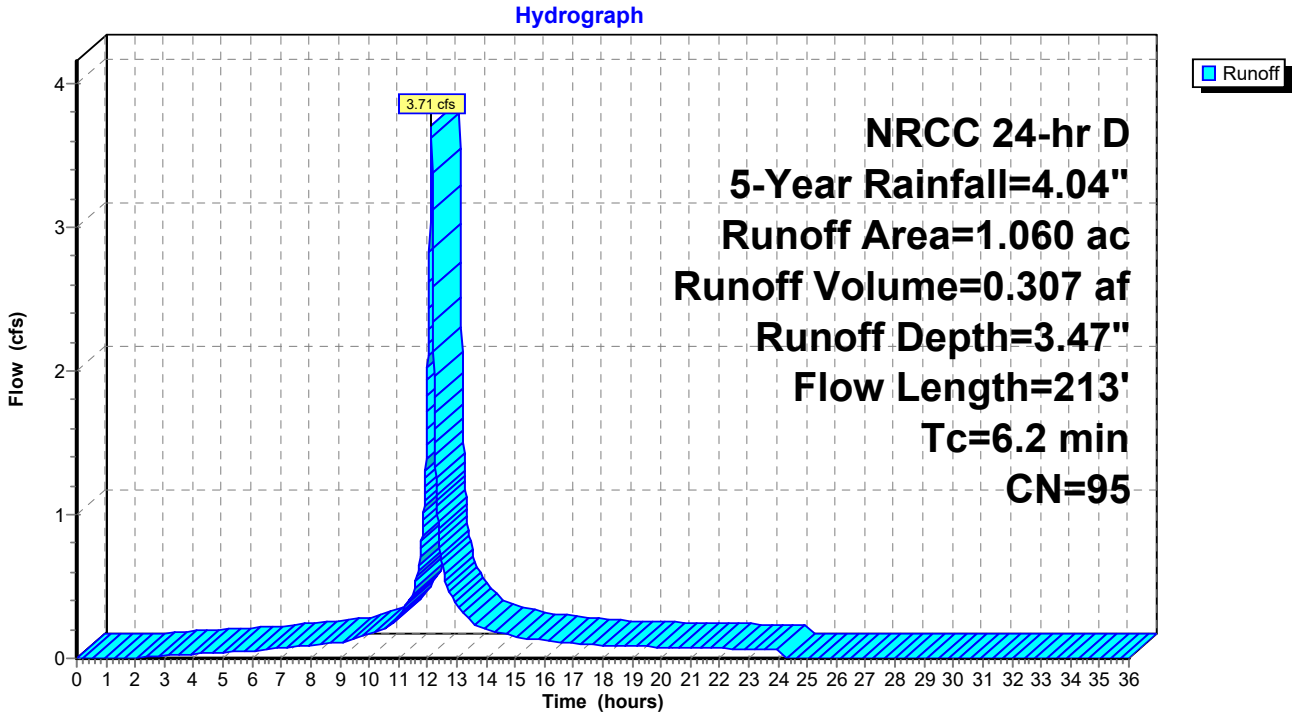
Runoff = 3.71 cfs @ 12.13 hrs, Volume= 0.307 af, Depth= 3.47"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

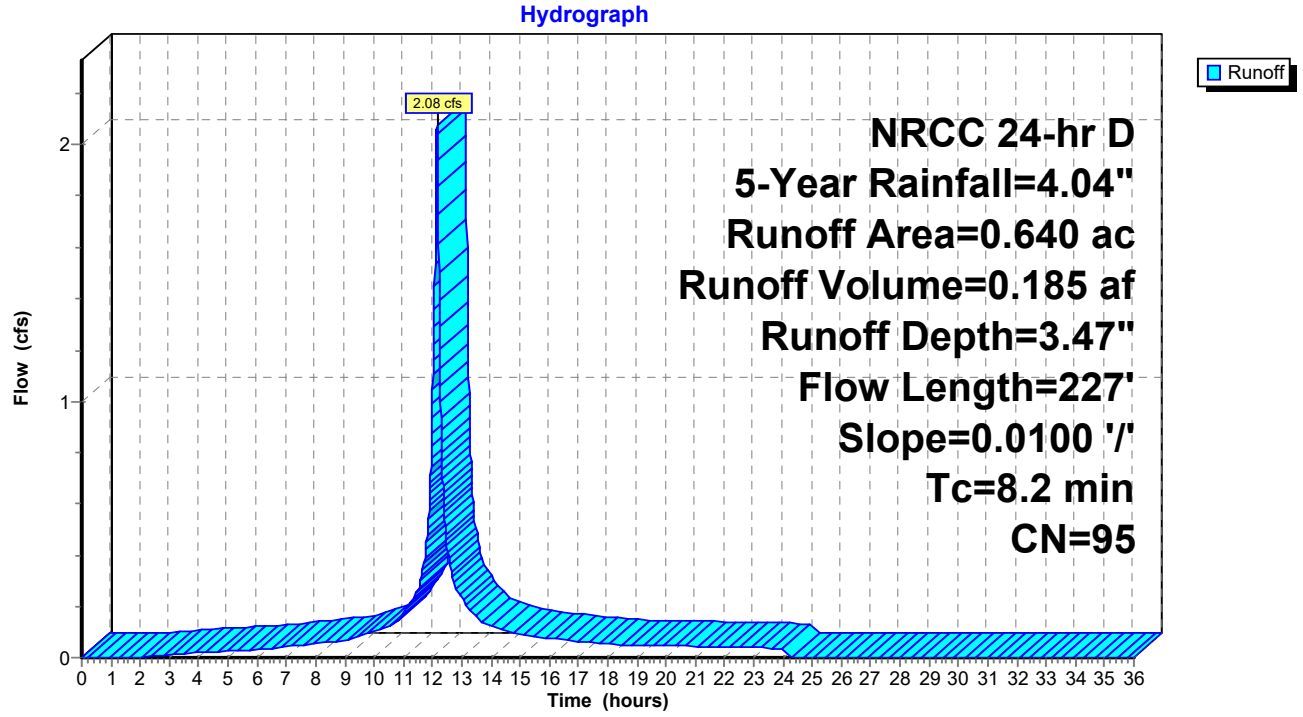
Runoff = 2.08 cfs @ 12.15 hrs, Volume= 0.185 af, Depth= 3.47"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 3.36" for 5-Year event
Inflow = 15.71 cfs @ 12.13 hrs, Volume= 1.273 af
Outflow = 8.26 cfs @ 12.22 hrs, Volume= 0.934 af, Atten= 47%, Lag= 5.3 min
Primary = 8.26 cfs @ 12.22 hrs, Volume= 0.934 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.14' @ 12.22 hrs Surf.Area= 0.316 ac Storage= 0.548 af

Plug-Flow detention time= 228.6 min calculated for 0.934 af (73% of inflow)
Center-of-Mass det. time= 120.7 min ( 910.0 - 789.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=8.26 cfs @ 12.22 hrs HW=59.13' TW=58.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 8.26 cfs of 14.34 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 8.26 cfs @ 3.11 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

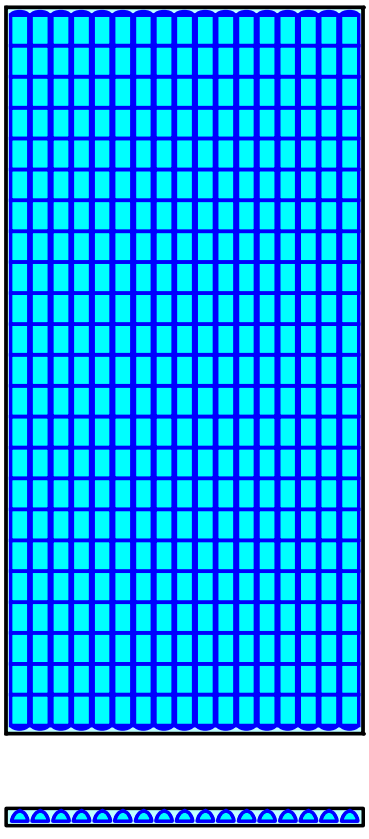
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

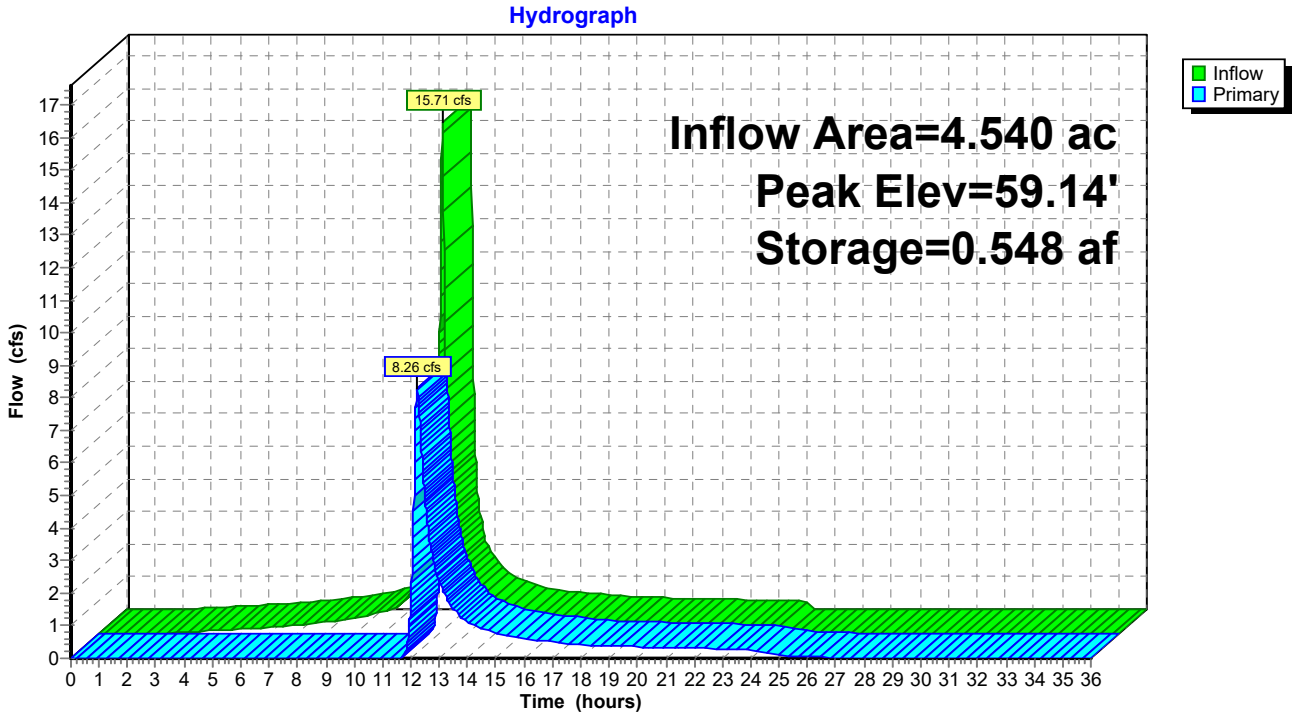
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
15.71 cfs
8.26 cfs
Inflow Area=4.540 ac
Peak Elev=59.14'
Storage=0.548 af
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 3.47" for 5-Year event
Inflow = 7.57 cfs @ 12.21 hrs, Volume= 0.810 af
Outflow = 4.67 cfs @ 12.35 hrs, Volume= 0.509 af, Atten= 38%, Lag= 8.6 min
Primary = 4.67 cfs @ 12.35 hrs, Volume= 0.509 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.63' @ 12.35 hrs Surf.Area= 0.184 ac Storage= 0.375 af

Plug-Flow detention time= 262.4 min calculated for 0.509 af (63% of inflow)
Center-of-Mass det. time= 134.3 min ( 923.4 - 789.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=4.67 cfs @ 12.35 hrs HW=58.63' TW=58.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 4.67 cfs of 16.23 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.67 cfs @ 2.47 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

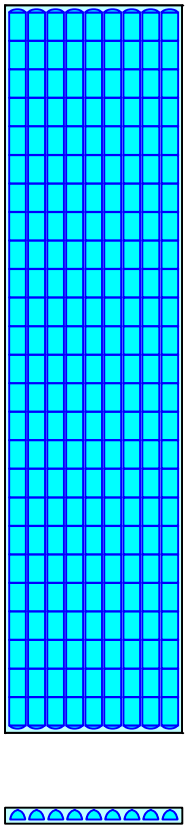
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

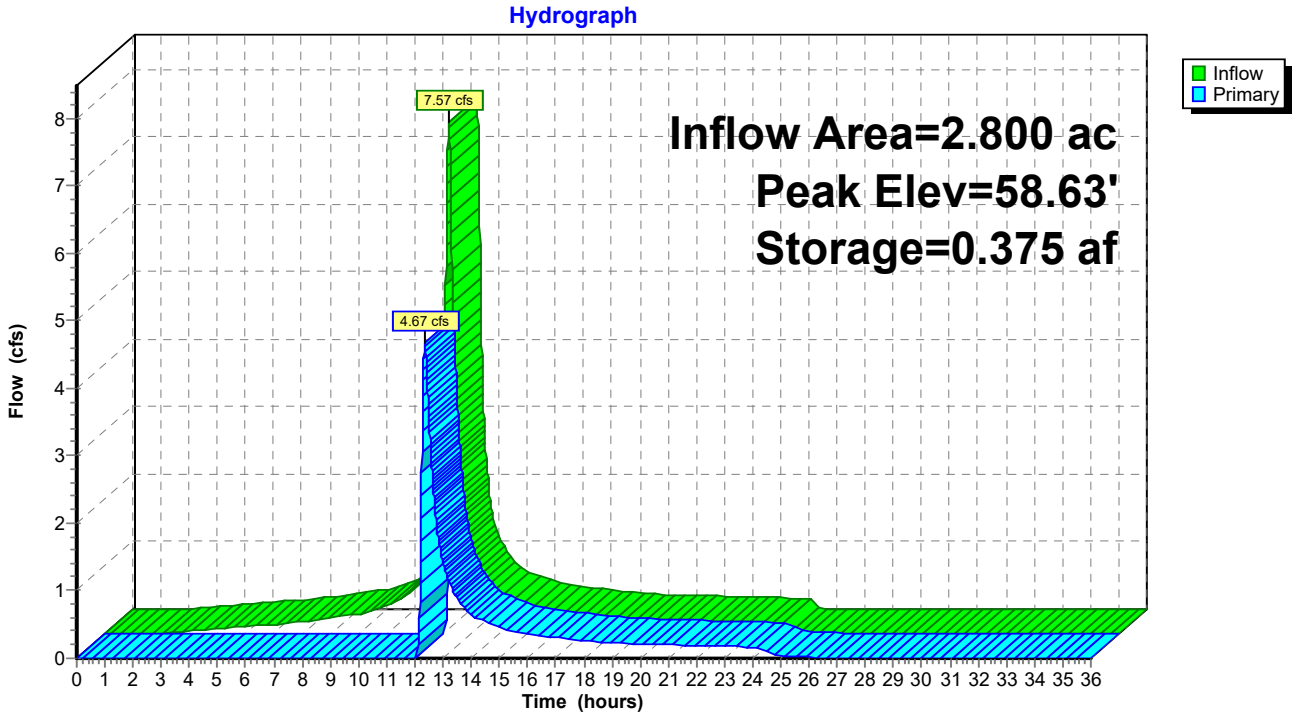
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
7.57 cfs
4.67 cfs
Inflow Area=2.800 ac
Peak Elev=58.63'
Storage=0.375 af
Flow (cfs)
0 1 2 3 4 5 6 7 8
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 3.47" for 5-Year event
Inflow = 2.08 cfs @ 12.15 hrs, Volume= 0.185 af
Outflow = 0.18 cfs @ 13.34 hrs, Volume= 0.066 af, Atten= 91%, Lag= 71.1 min
Primary = 0.18 cfs @ 13.34 hrs, Volume= 0.066 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.58' @ 13.34 hrs Surf.Area= 0.081 ac Storage= 0.123 af

Plug-Flow detention time= 438.9 min calculated for 0.066 af (36% of inflow)
Center-of-Mass det. time= 250.3 min ( 1,034.4 - 784.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.18 cfs @ 13.34 hrs HW=59.58' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 0.18 cfs of 3.92 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.18 cfs @ 0.78 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

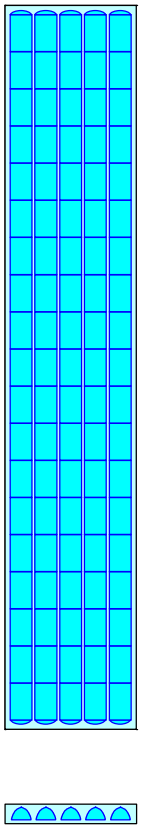
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

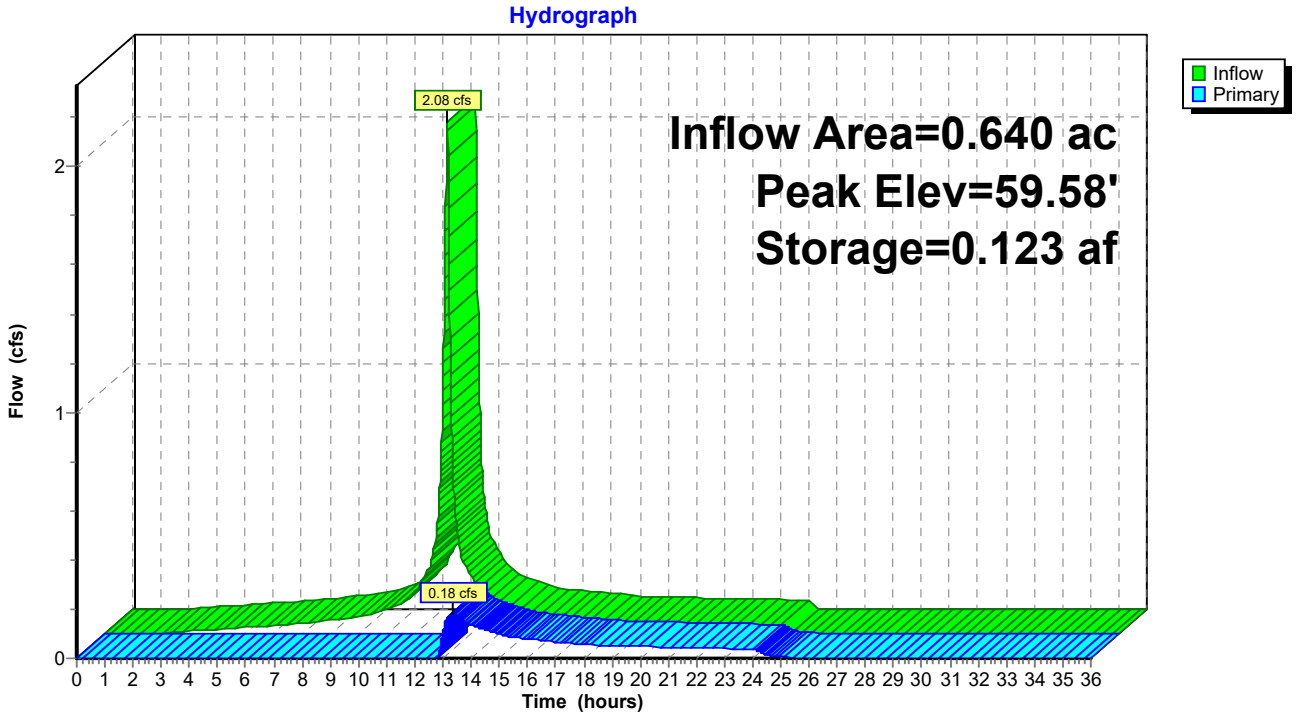
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
2.08 cfs
0.18 cfs
Inflow Area=0.640 ac
Peak Elev=59.58'
Storage=0.123 af
Flow (cfs)
0
1
2
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 3.47" for 5-Year event
Inflow = 3.71 cfs @ 12.13 hrs, Volume= 0.307 af
Outflow = 3.24 cfs @ 12.17 hrs, Volume= 0.211 af, Atten= 13%, Lag= 2.1 min
Primary = 3.24 cfs @ 12.17 hrs, Volume= 0.211 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.01' @ 12.17 hrs Surf.Area= 0.065 ac Storage= 0.117 af

Plug-Flow detention time= 223.6 min calculated for 0.211 af (69% of inflow)
Center-of-Mass det. time= 105.7 min ( 888.0 - 782.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=3.23 cfs @ 12.17 hrs HW=60.00' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 3.23 cfs of 4.64 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.23 cfs @ 2.13 fps)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

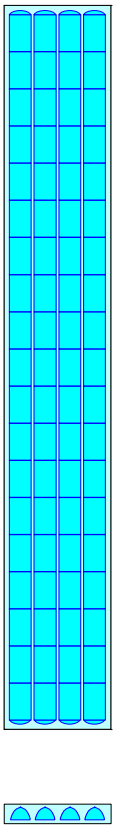
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

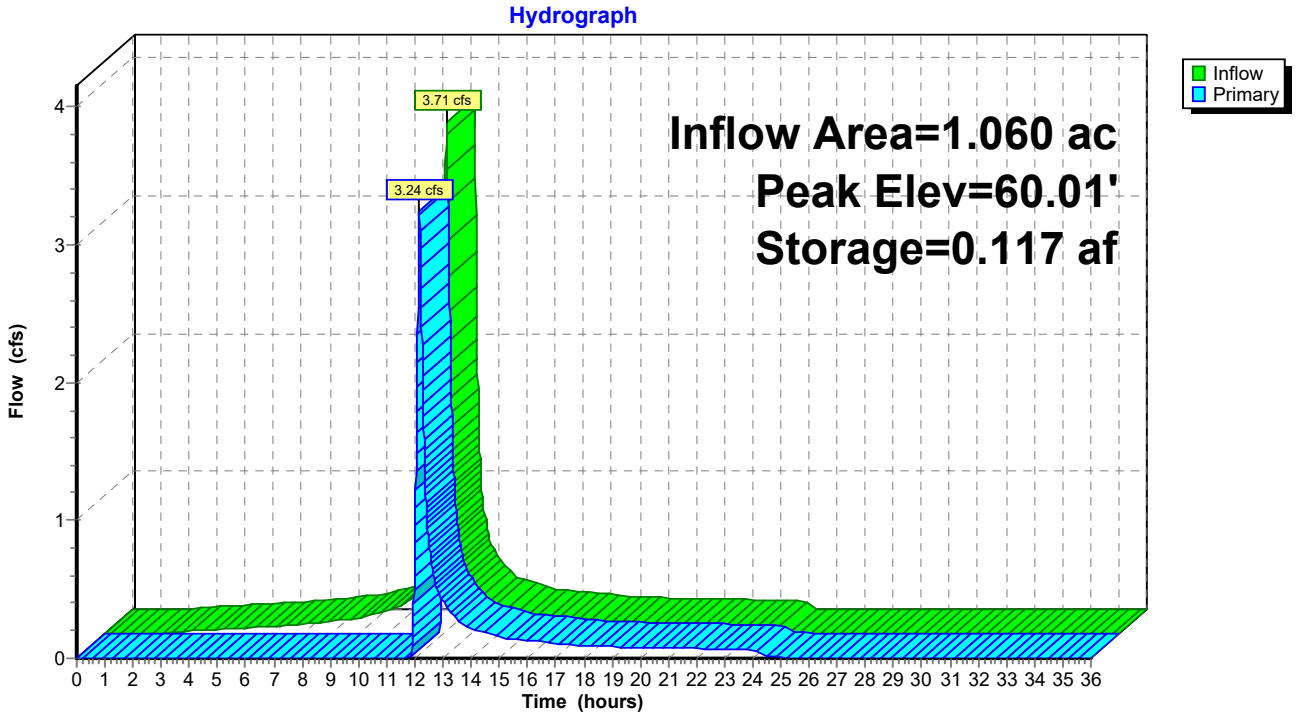
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
3.71 cfs
3.24 cfs
Inflow Area=1.060 ac
Peak Elev=60.01'
Storage=0.117 af
Flow (cfs)
0
1
2
3
4
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 3.26" for 5-Year event
Inflow = 4.89 cfs @ 12.14 hrs, Volume= 0.407 af
Outflow = 0.42 cfs @ 13.28 hrs, Volume= 0.145 af, Atten= 91%, Lag= 68.3 min
Primary = 0.42 cfs @ 13.28 hrs, Volume= 0.145 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.36' @ 13.28 hrs Surf.Area= 0.087 ac Storage= 0.268 af

Plug-Flow detention time= 416.7 min calculated for 0.145 af (35% of inflow)
Center-of-Mass det. time= 237.4 min ( 1,034.3 - 796.9 )

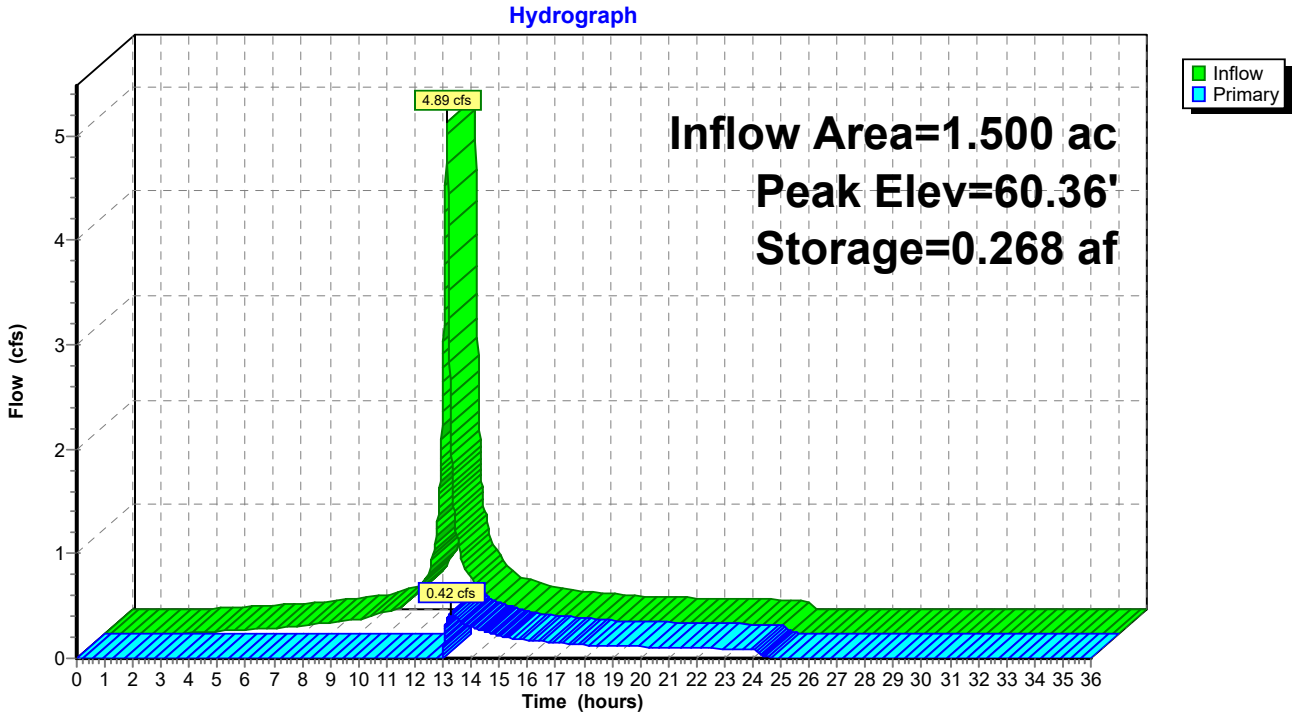
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=0.42 cfs @ 13.28 hrs HW=60.36' TW=57.52' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.42 cfs of 4.07 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.42 cfs @ 0.77 fps)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
4.89 cfs
0.42 cfs
Inflow Area=1.500 ac
Peak Elev=60.36'
Storage=0.268 af
Flow (cfs)
0 1 2 3 4 5
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 31 32 33 34 35 36

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth > 2.15" for 5-Year event
Inflow = 12.37 cfs @ 12.30 hrs, Volume= 1.709 af
Outflow = 12.37 cfs @ 12.30 hrs, Volume= 1.673 af, Atten= 0%, Lag= 0.1 min
Primary = 1.52 cfs @ 12.30 hrs, Volume= 0.017 af
Routed to Link 9L : Off-Site South
Secondary = 10.85 cfs @ 12.30 hrs, Volume= 1.656 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.01' @ 12.30 hrs Surf.Area= 0.038 ac Storage= 0.068 af

Plug-Flow detention time= 23.7 min calculated for 1.673 af (98% of inflow)
Center-of-Mass det. time= 10.8 min ( 931.5 - 920.7 )

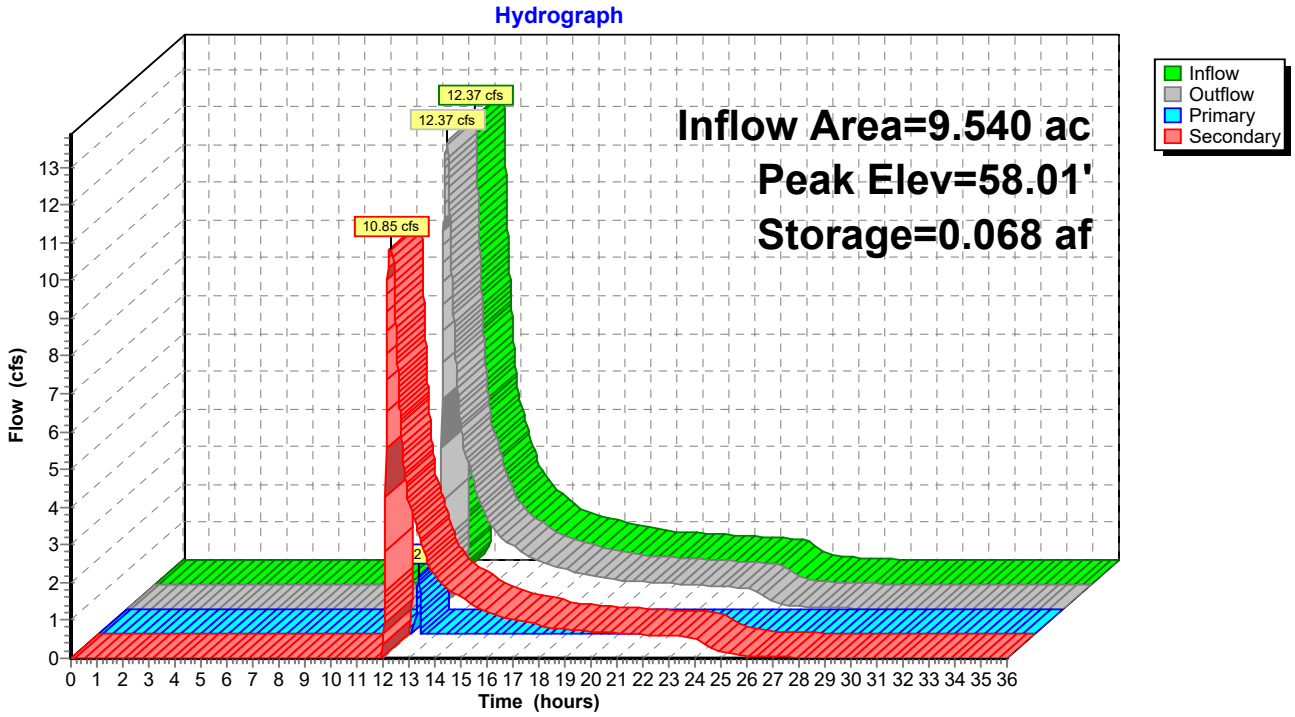
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=1.52 cfs @ 12.30 hrs HW=58.01' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 1.52 cfs @ 0.34 fps)

**Secondary OutFlow** Max=10.85 cfs @ 12.30 hrs HW=58.01' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 10.85 cfs of 18.13 cfs potential flow)
├─**3=Broad-Crested Rectangular Weir** (Weir Controls 8.55 cfs @ 2.83 fps)
└─**4=Orifice/Grate** (Orifice Controls 2.30 cfs @ 6.59 fps)

## Pond 8P: Level Spreader

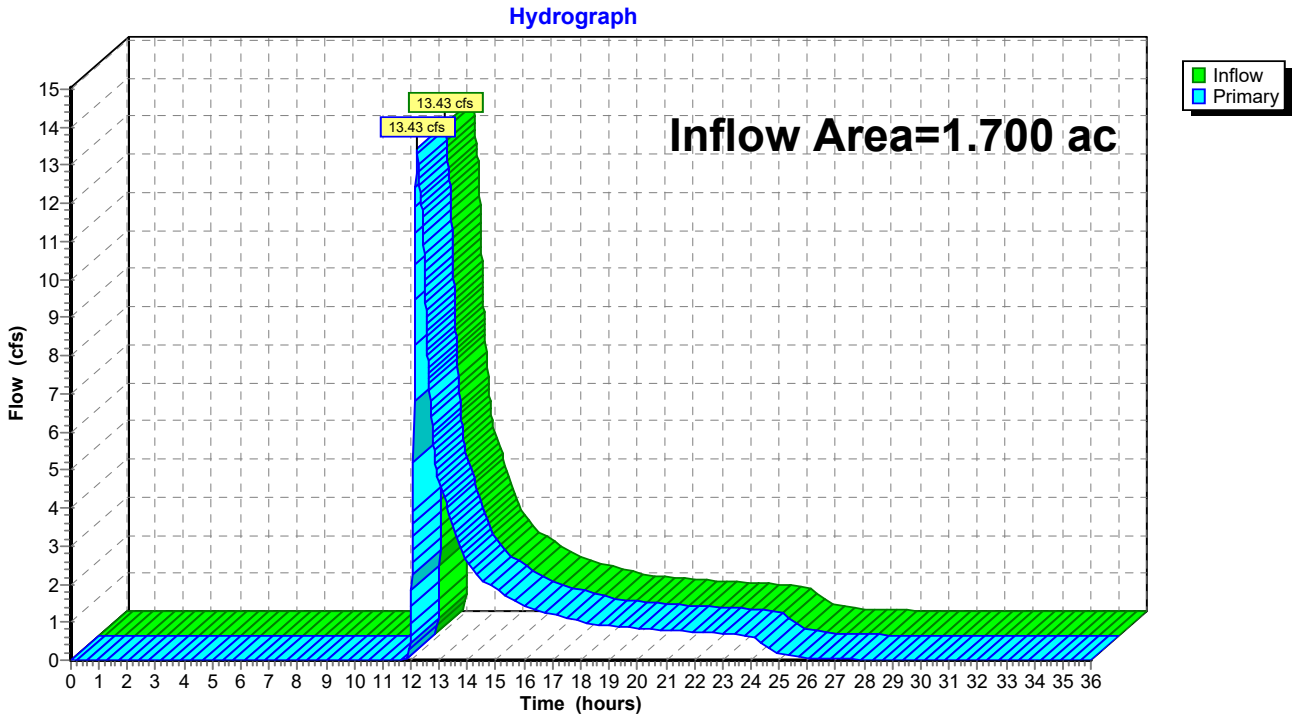


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 13.64" for 5-Year event
Inflow = 13.43 cfs @ 12.21 hrs, Volume= 1.933 af
Primary = 13.43 cfs @ 12.21 hrs, Volume= 1.933 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

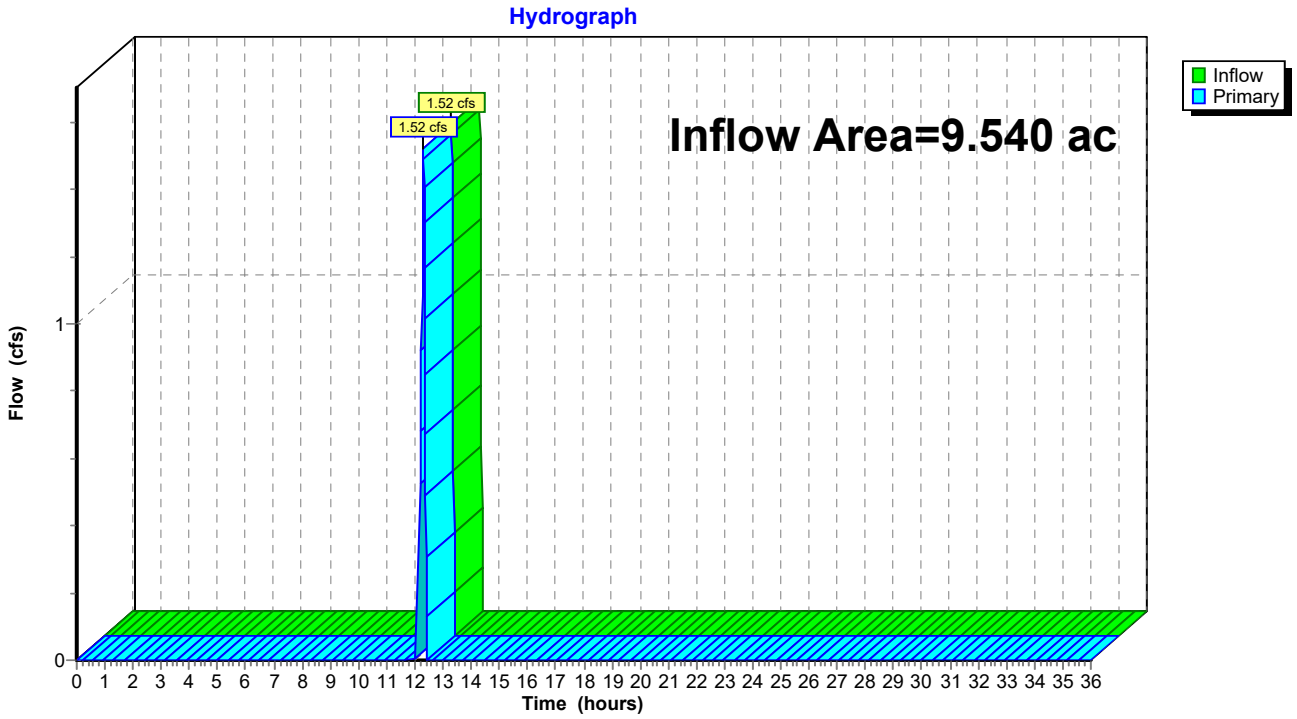


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 0.02" for 5-Year event
Inflow = 1.52 cfs @ 12.30 hrs, Volume= 0.017 af
Primary = 1.52 cfs @ 12.30 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

### Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=4.16"
Flow Length=509' Tc=6.0 min CN=94 Runoff=19.17 cfs 1.574 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=4.27"
Flow Length=293' Tc=13.5 min CN=95 Runoff=9.21 cfs 0.997 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=4.05"
Flow Length=360' Tc=7.1 min CN=93 Runoff=6.00 cfs 0.506 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=2.76"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=2.15 cfs 0.161 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=4.27"
Flow Length=213' Tc=6.2 min CN=95 Runoff=4.51 cfs 0.377 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=4.27"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=2.53 cfs 0.228 af

**Pond 1P: UGS-1** Peak Elev=59.37' Storage=0.597 af Inflow=19.17 cfs 1.574 af
Outflow=11.82 cfs 1.236 af

**Pond 2P: UGS-2** Peak Elev=58.86' Storage=0.394 af Inflow=9.21 cfs 0.997 af
Outflow=7.83 cfs 0.695 af

**Pond 4P: UGS-4** Peak Elev=59.67' Storage=0.128 af Inflow=2.53 cfs 0.228 af
Outflow=0.58 cfs 0.109 af

**Pond 5P: UGS-5** Peak Elev=60.08' Storage=0.120 af Inflow=4.51 cfs 0.377 af
Outflow=4.07 cfs 0.281 af

**Pond 7P: WBQ-1** Peak Elev=60.43' Storage=0.274 af Inflow=6.00 cfs 0.506 af
Outflow=1.58 cfs 0.244 af

**Pond 8P: Level Spreader** Peak Elev=58.04' Storage=0.069 af Inflow=19.78 cfs 2.336 af
Primary=8.23 cfs 0.191 af Secondary=11.56 cfs 2.110 af Outflow=19.79 cfs 2.301 af

**Link 1L: Existing Drainage System** Inflow=15.45 cfs 2.500 af
Primary=15.45 cfs 2.500 af

**Link 9L: Off-Site South** Inflow=8.23 cfs 0.191 af
Primary=8.23 cfs 0.191 af

**Total Runoff Area = 11.240 ac Runoff Volume = 3.843 af Average Runoff Depth = 4.10"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 761% of capacity of segment #2

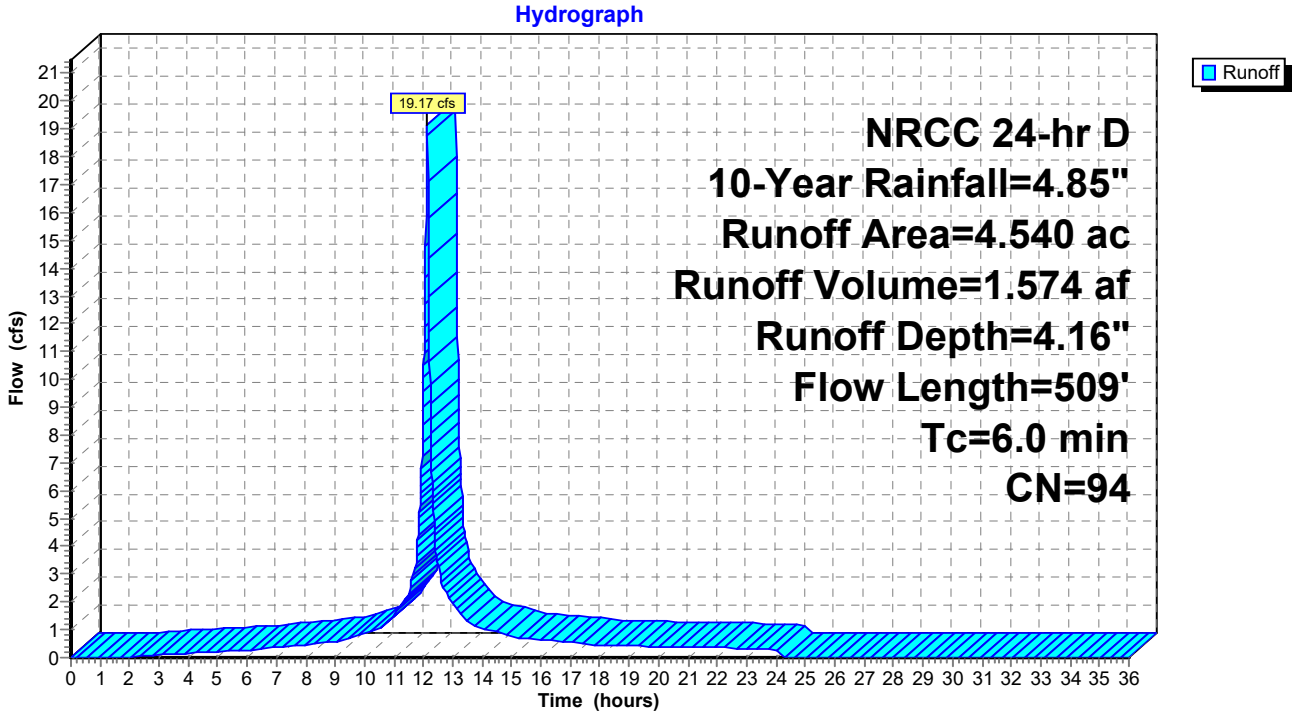
Runoff = 19.17 cfs @ 12.13 hrs, Volume= 1.574 af, Depth= 4.16"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 258% of capacity of segment #3

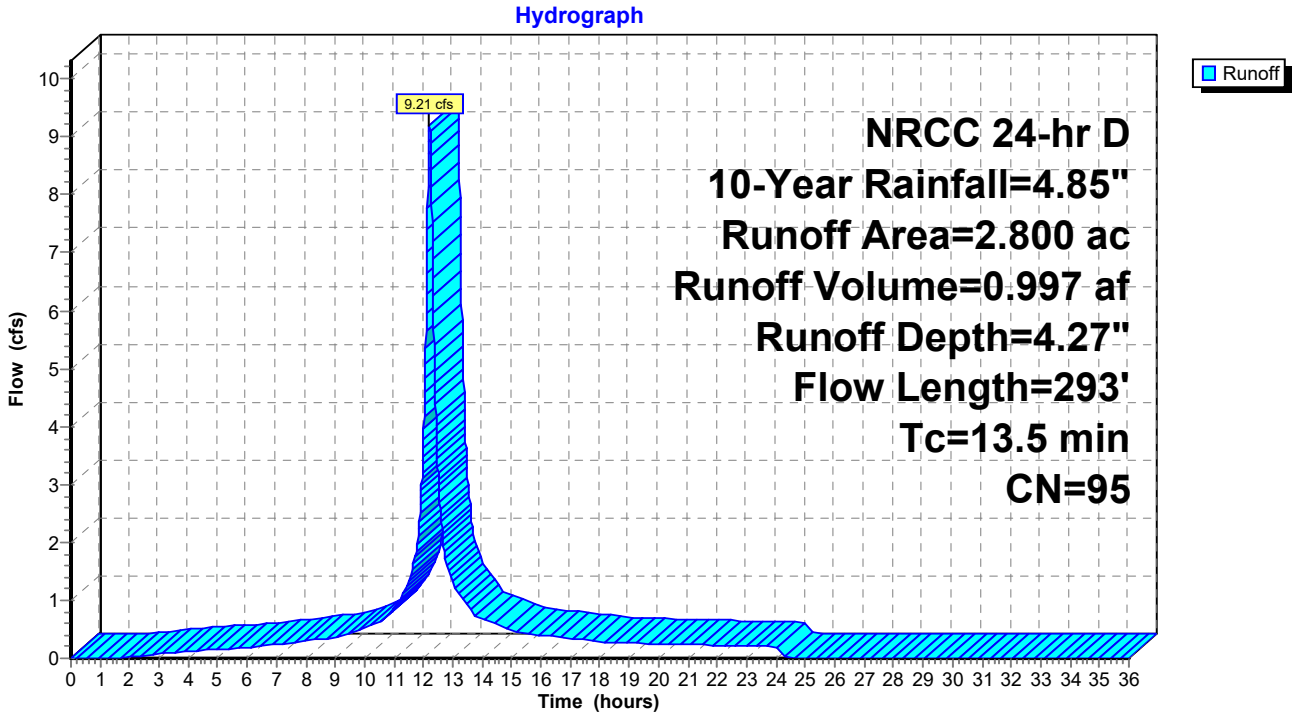
Runoff = 9.21 cfs @ 12.21 hrs, Volume= 0.997 af, Depth= 4.27"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

[47] Hint: Peak is 168% of capacity of segment #3

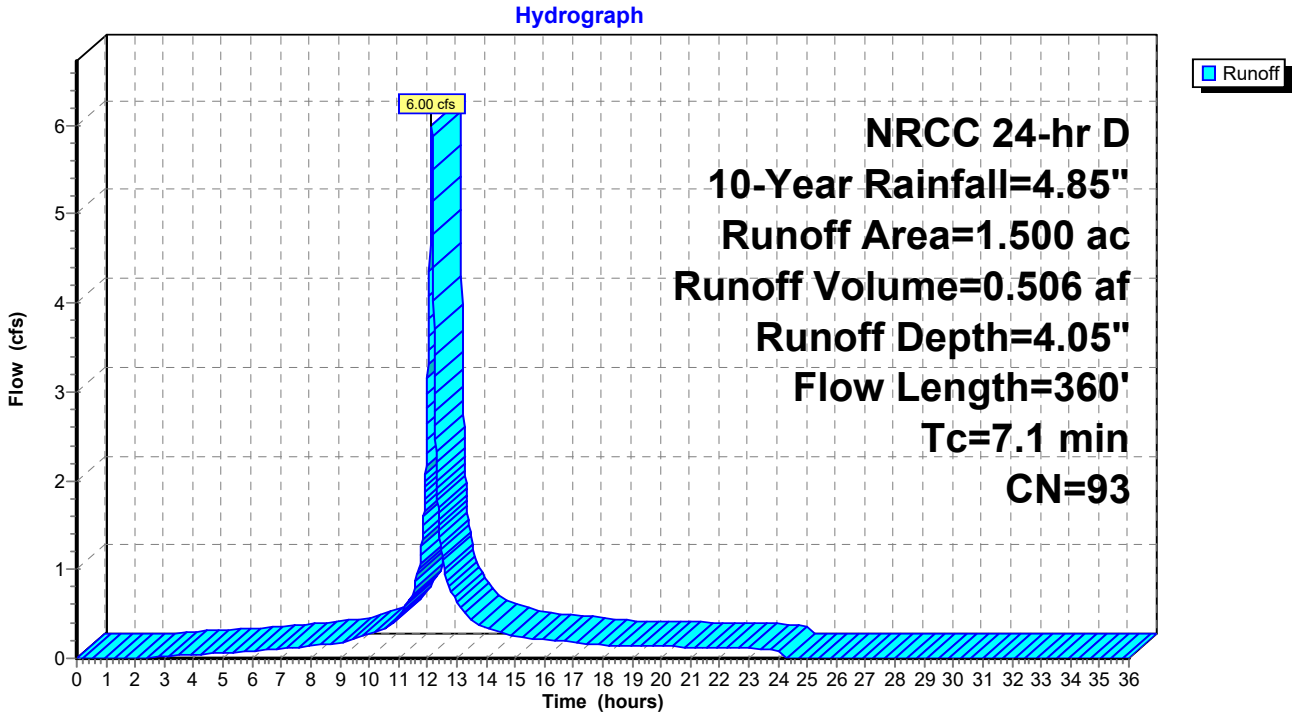
Runoff = 6.00 cfs @ 12.14 hrs, Volume= 0.506 af, Depth= 4.05"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

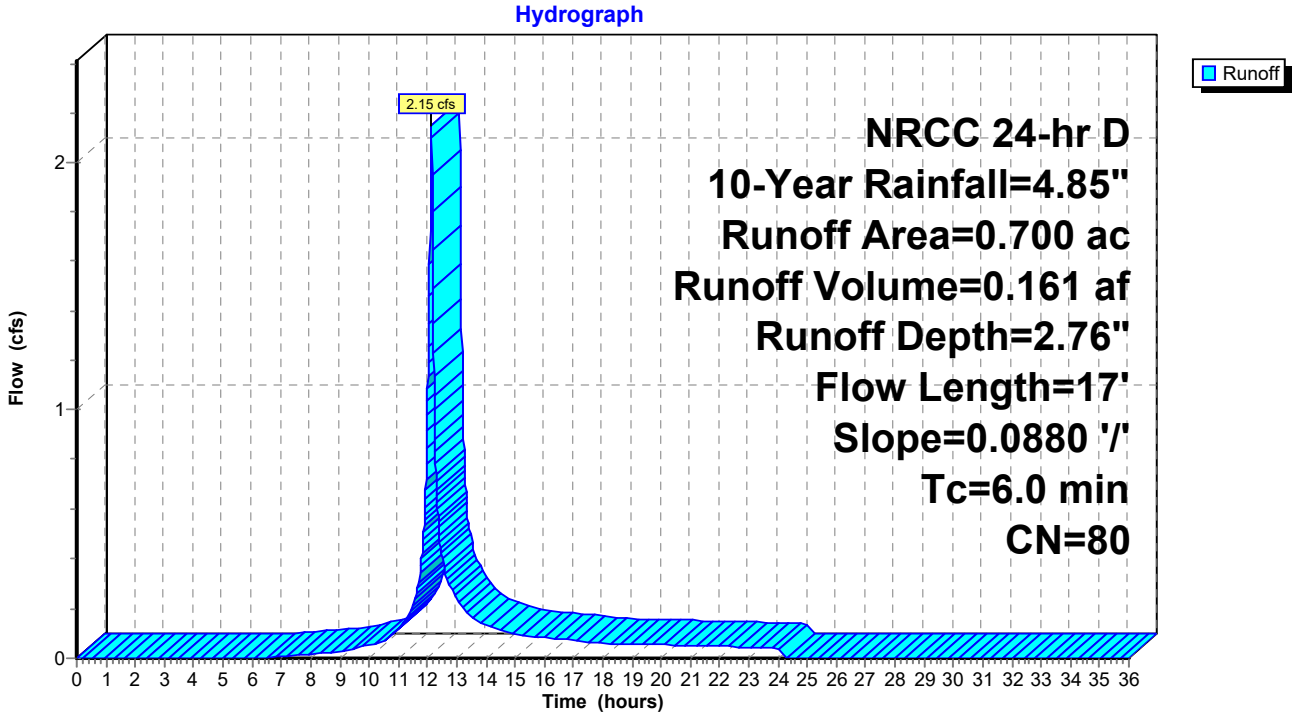
Runoff = 2.15 cfs @ 12.13 hrs, Volume= 0.161 af, Depth= 2.76"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 179% of capacity of segment #3

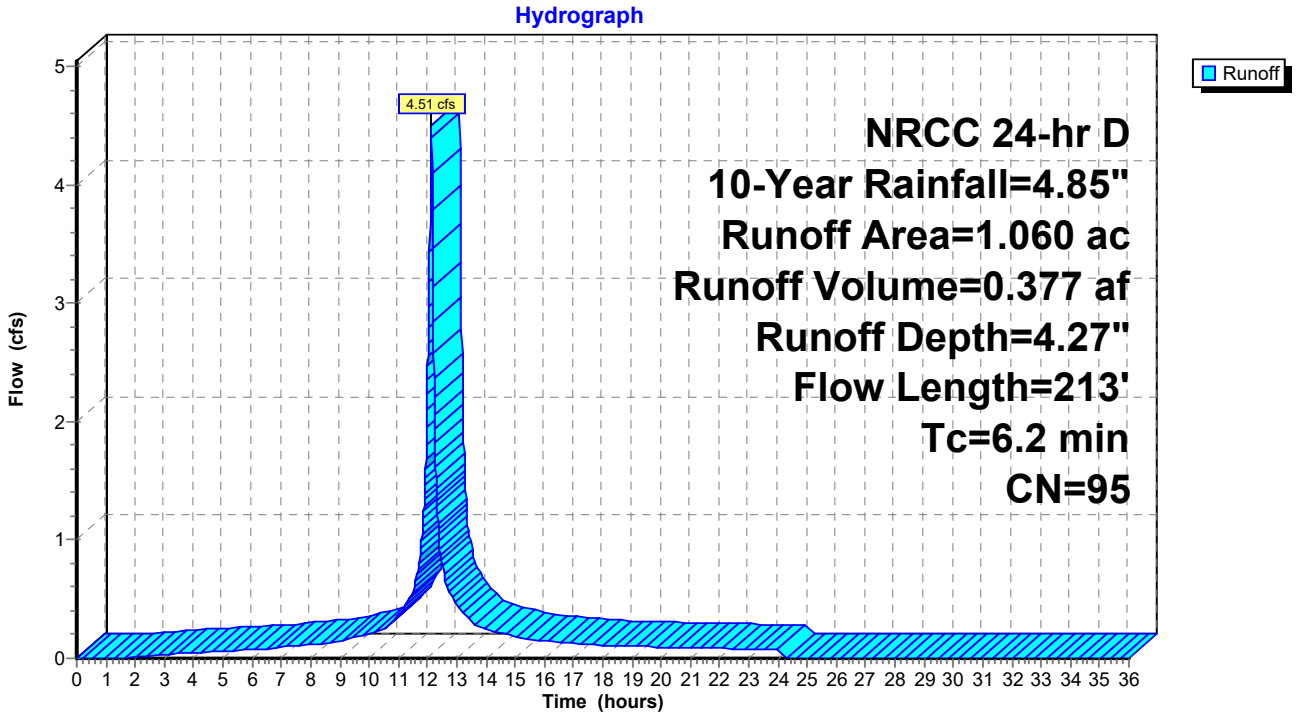
Runoff = 4.51 cfs @ 12.13 hrs, Volume= 0.377 af, Depth= 4.27"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

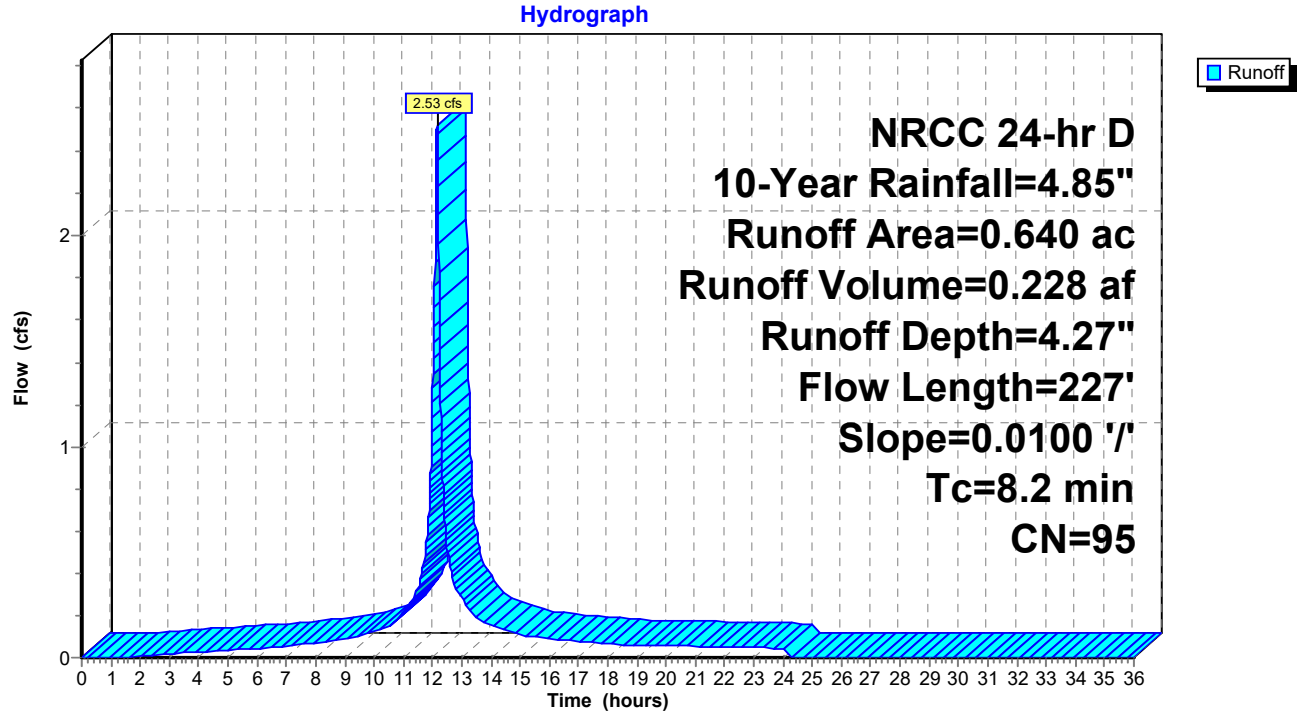
Runoff = 2.53 cfs @ 12.15 hrs, Volume= 0.228 af, Depth= 4.27"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 4.16" for 10-Year event
Inflow = 19.17 cfs @ 12.13 hrs, Volume= 1.574 af
Outflow = 11.82 cfs @ 12.20 hrs, Volume= 1.236 af, Atten= 38%, Lag= 4.2 min
Primary = 11.82 cfs @ 12.20 hrs, Volume= 1.236 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.37' @ 12.20 hrs Surf.Area= 0.316 ac Storage= 0.597 af

Plug-Flow detention time= 203.8 min calculated for 1.235 af (78% of inflow)
Center-of-Mass det. time= 108.2 min ( 890.7 - 782.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=11.82 cfs @ 12.20 hrs HW=59.37' TW=58.04' (Dynamic Tailwater)
↑**2=Culvert** (Passes 11.82 cfs of 17.24 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 11.82 cfs @ 3.51 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

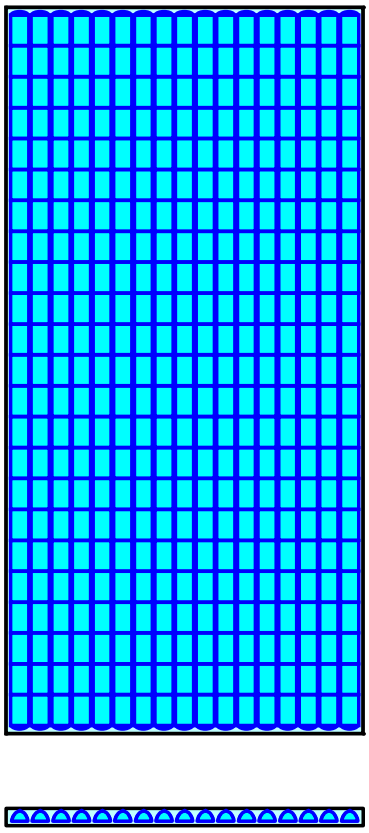
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

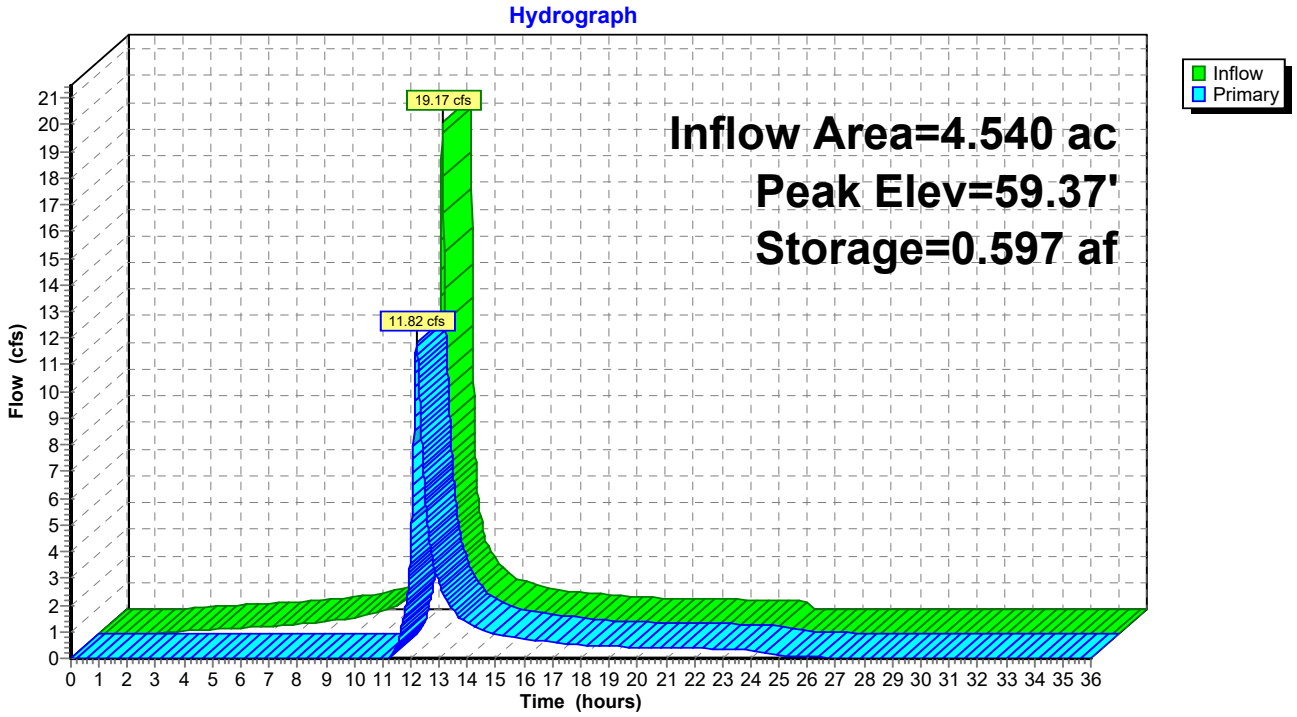
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
19.17 cfs
11.82 cfs
Inflow Area=4.540 ac
Peak Elev=59.37'
Storage=0.597 af
Flow (cfs)
Time (hours)

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 9.21 cfs @ 12.21 hrs, Volume= 0.997 af
Outflow = 7.83 cfs @ 12.28 hrs, Volume= 0.695 af, Atten= 15%, Lag= 4.4 min
Primary = 7.83 cfs @ 12.28 hrs, Volume= 0.695 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.86' @ 12.28 hrs Surf.Area= 0.184 ac Storage= 0.394 af

Plug-Flow detention time= 232.6 min calculated for 0.695 af (70% of inflow)
Center-of-Mass det. time= 116.5 min ( 899.4 - 782.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=7.83 cfs @ 12.28 hrs HW=58.86' TW=58.04' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 7.83 cfs of 20.73 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.83 cfs @ 3.05 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

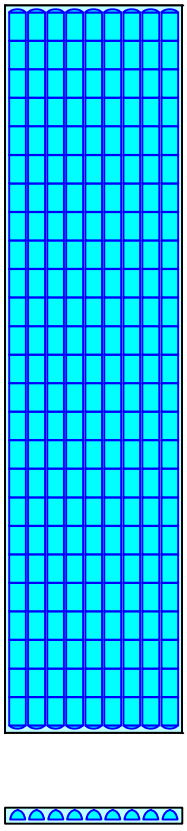
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

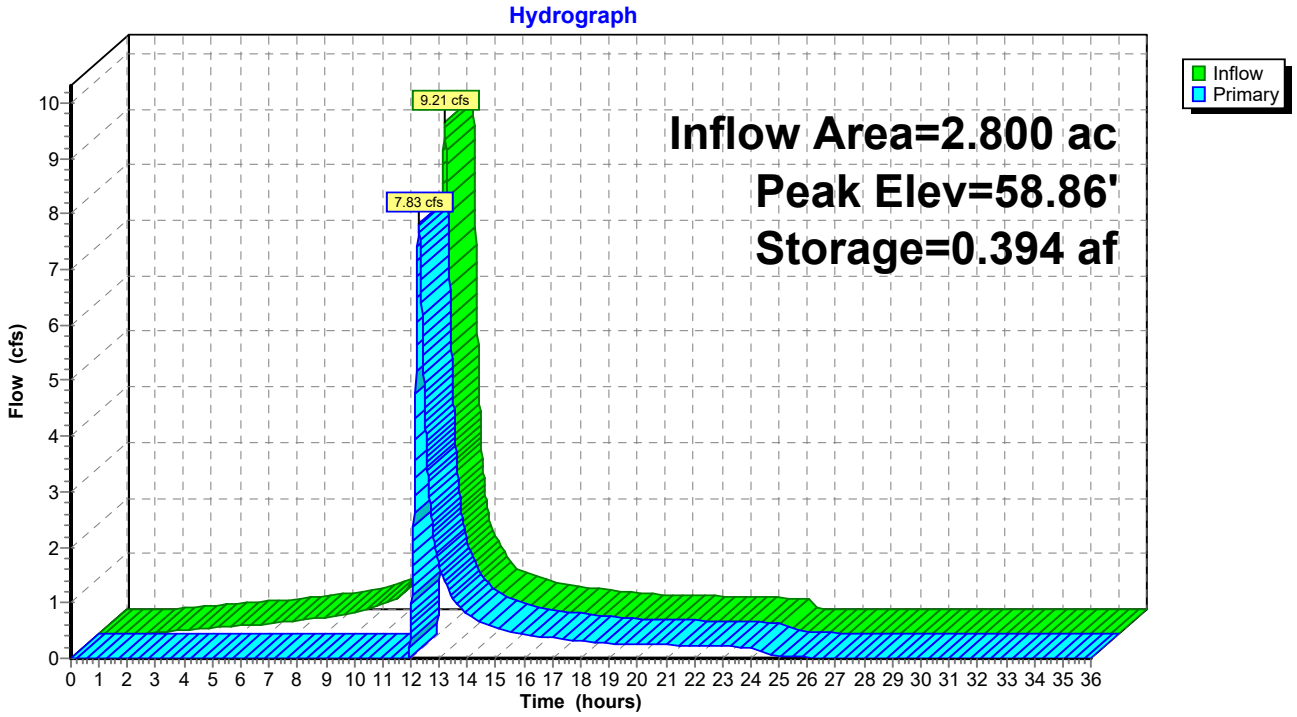
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
9.21 cfs
7.83 cfs
Inflow Area=2.800 ac
Peak Elev=58.86'
Storage=0.394 af
Flow (cfs)
0 1 2 3 4 5 6 7 8 9 10
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 2.53 cfs @ 12.15 hrs, Volume= 0.228 af
Outflow = 0.58 cfs @ 12.45 hrs, Volume= 0.109 af, Atten= 77%, Lag= 17.6 min
Primary = 0.58 cfs @ 12.45 hrs, Volume= 0.109 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.67' @ 12.45 hrs Surf.Area= 0.081 ac Storage= 0.128 af

Plug-Flow detention time= 340.2 min calculated for 0.109 af (48% of inflow)
Center-of-Mass det. time= 182.1 min ( 960.0 - 777.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.58 cfs @ 12.45 hrs HW=59.67' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 0.58 cfs of 4.09 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 1.15 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

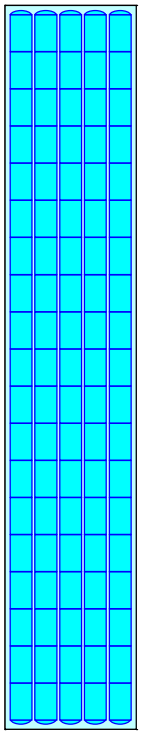
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

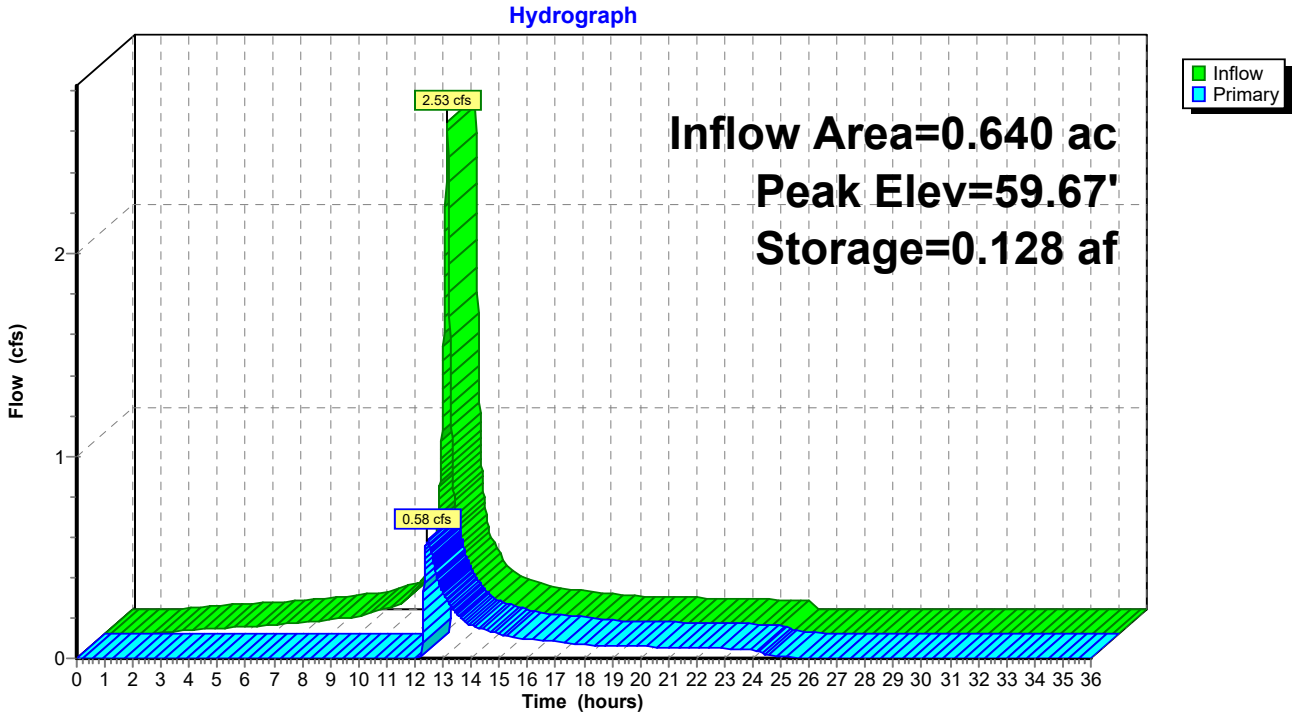
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
2.53 cfs
0.58 cfs
Inflow Area=0.640 ac
Peak Elev=59.67'
Storage=0.128 af
Flow (cfs)
0
1
2
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 31 32 33 34 35 36

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 4.51 cfs @ 12.13 hrs, Volume= 0.377 af
Outflow = 4.07 cfs @ 12.16 hrs, Volume= 0.281 af, Atten= 10%, Lag= 1.8 min
Primary = 4.07 cfs @ 12.16 hrs, Volume= 0.281 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.08' @ 12.16 hrs Surf.Area= 0.065 ac Storage= 0.120 af

Plug-Flow detention time= 200.4 min calculated for 0.281 af (75% of inflow)
Center-of-Mass det. time= 94.2 min ( 870.3 - 776.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=4.07 cfs @ 12.16 hrs HW=60.08' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 4.07 cfs of 4.76 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.07 cfs @ 2.34 fps)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

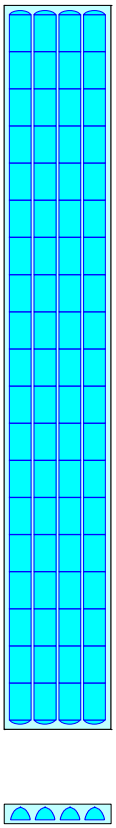
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

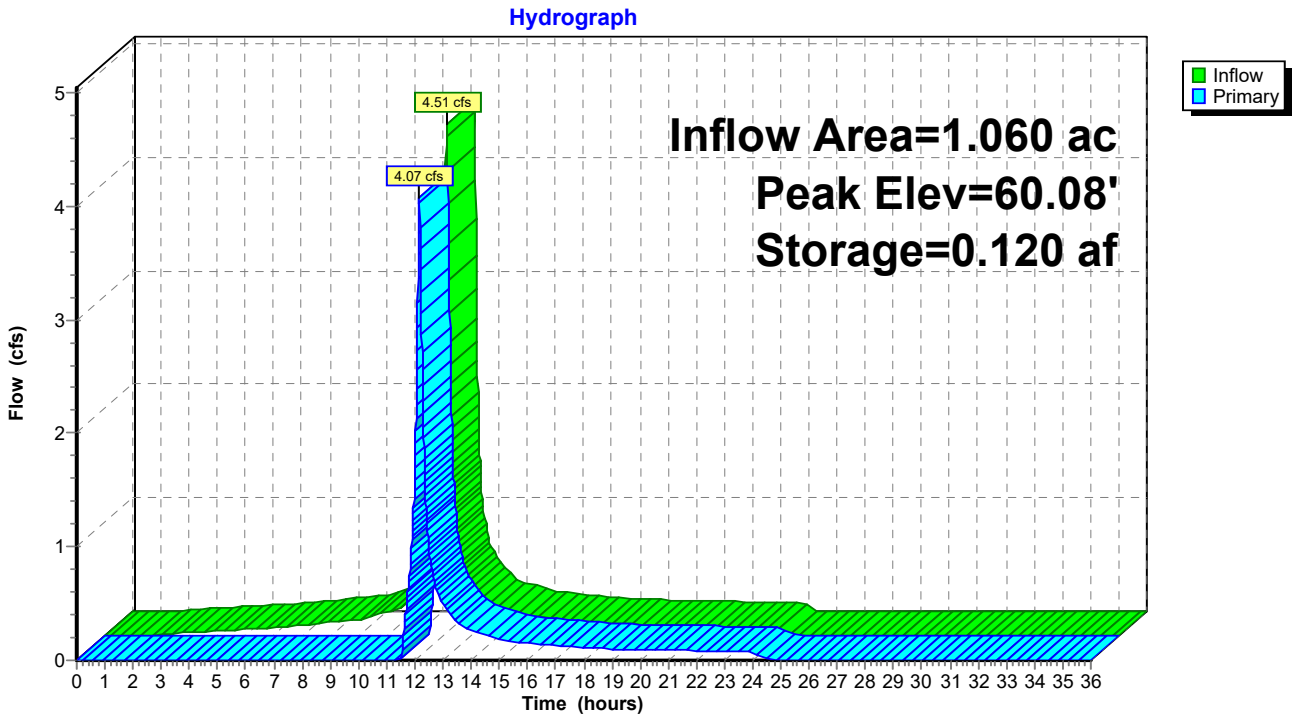
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
4.51 cfs
4.07 cfs
Inflow Area=1.060 ac
Peak Elev=60.08'
Storage=0.120 af
Flow (cfs)
0
1
2
3
4
5
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 4.05" for 10-Year event
Inflow = 6.00 cfs @ 12.14 hrs, Volume= 0.506 af
Outflow = 1.58 cfs @ 12.38 hrs, Volume= 0.244 af, Atten= 74%, Lag= 14.2 min
Primary = 1.58 cfs @ 12.38 hrs, Volume= 0.244 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.43' @ 12.38 hrs Surf.Area= 0.088 ac Storage= 0.274 af

Plug-Flow detention time= 318.6 min calculated for 0.243 af (48% of inflow)
Center-of-Mass det. time= 166.3 min ( 955.9 - 789.6 )

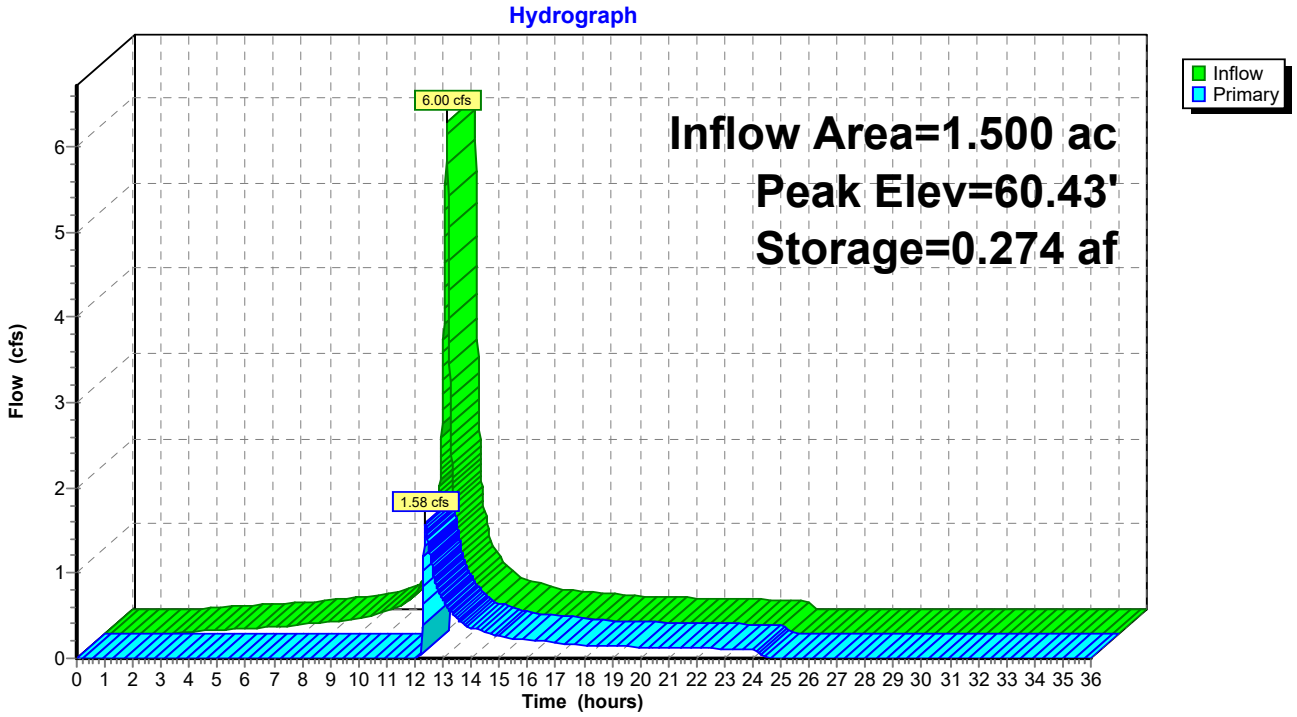
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=1.58 cfs @ 12.38 hrs HW=60.43' TW=58.03' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 1.58 cfs of 4.18 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 1.58 cfs @ 1.19 fps)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
6.00 cfs
1.58 cfs
Inflow Area=1.500 ac
Peak Elev=60.43'
Storage=0.274 af
Flow (cfs)
0 1 2 3 4 5 6
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 31 32 33 34 35 36

## Summary for Pond 8P: Level Spreader

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth > 2.94" for 10-Year event
Inflow = 19.78 cfs @ 12.27 hrs, Volume= 2.336 af
Outflow = 19.79 cfs @ 12.24 hrs, Volume= 2.301 af, Atten= 0%, Lag= 0.0 min
Primary = 8.23 cfs @ 12.24 hrs, Volume= 0.191 af
Routed to Link 9L : Off-Site South
Secondary = 11.56 cfs @ 12.24 hrs, Volume= 2.110 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.04' @ 12.24 hrs Surf.Area= 0.038 ac Storage= 0.069 af

Plug-Flow detention time= 18.5 min calculated for 2.300 af (98% of inflow)
Center-of-Mass det. time= 8.8 min ( 905.7 - 897.0 )

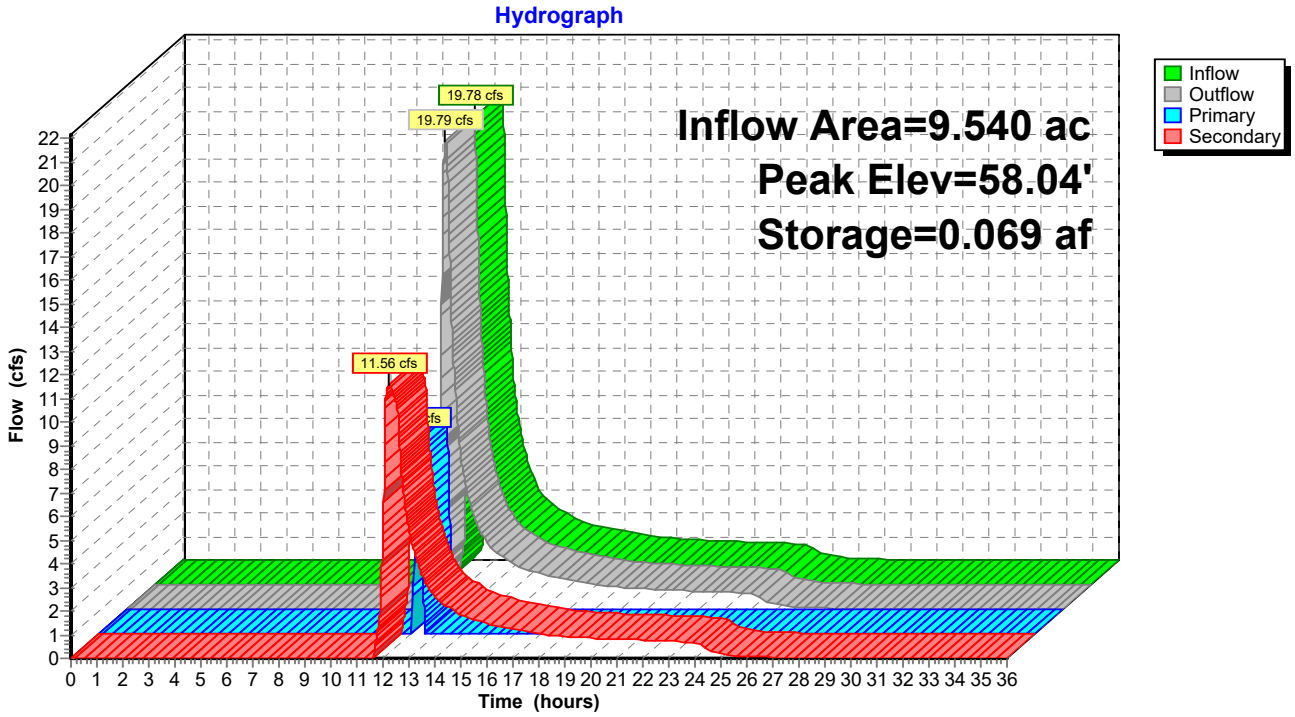
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=8.23 cfs @ 12.24 hrs HW=58.04' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 8.23 cfs @ 0.60 fps)

**Secondary OutFlow** Max=11.55 cfs @ 12.24 hrs HW=58.04' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 11.55 cfs of 18.54 cfs potential flow)
  ├─**3=Broad-Crested Rectangular Weir** (Weir Controls 9.23 cfs @ 2.92 fps)
  └─**4=Orifice/Grate** (Orifice Controls 2.32 cfs @ 6.65 fps)

## Pond 8P: Level Spreader

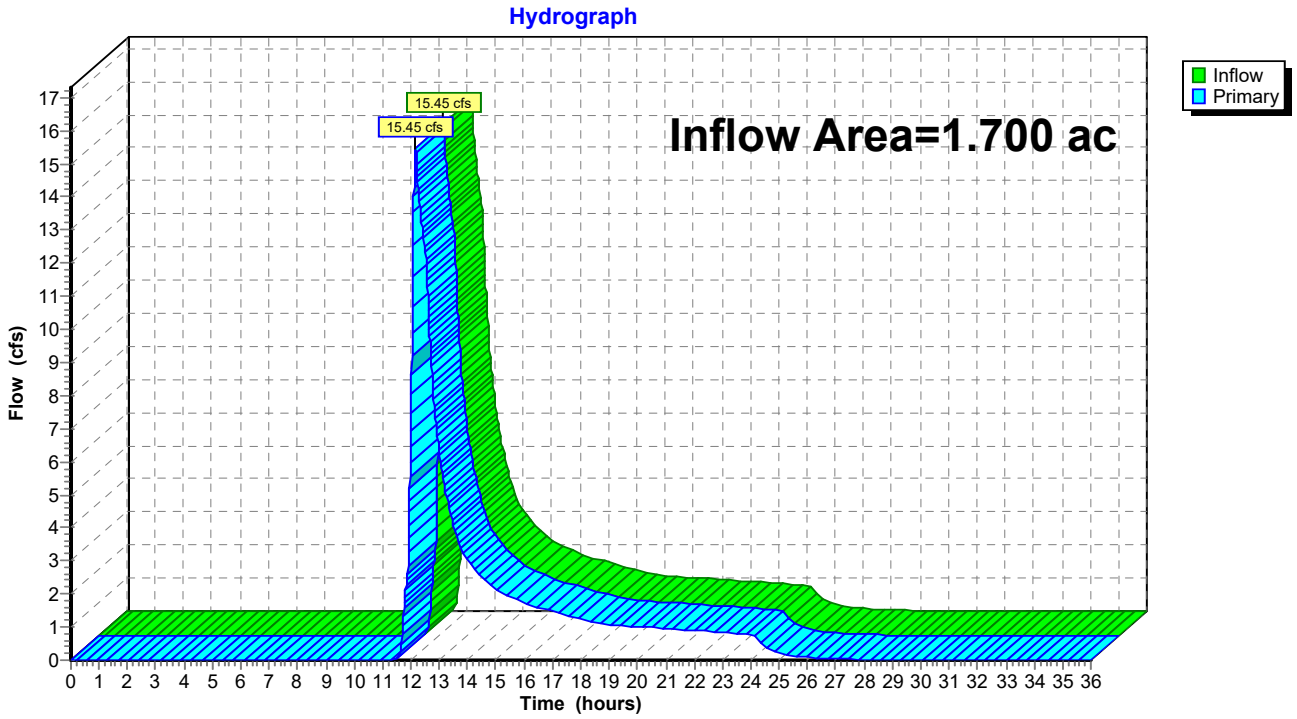


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 17.65" for 10-Year event
Inflow = 15.45 cfs @ 12.17 hrs, Volume= 2.500 af
Primary = 15.45 cfs @ 12.17 hrs, Volume= 2.500 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

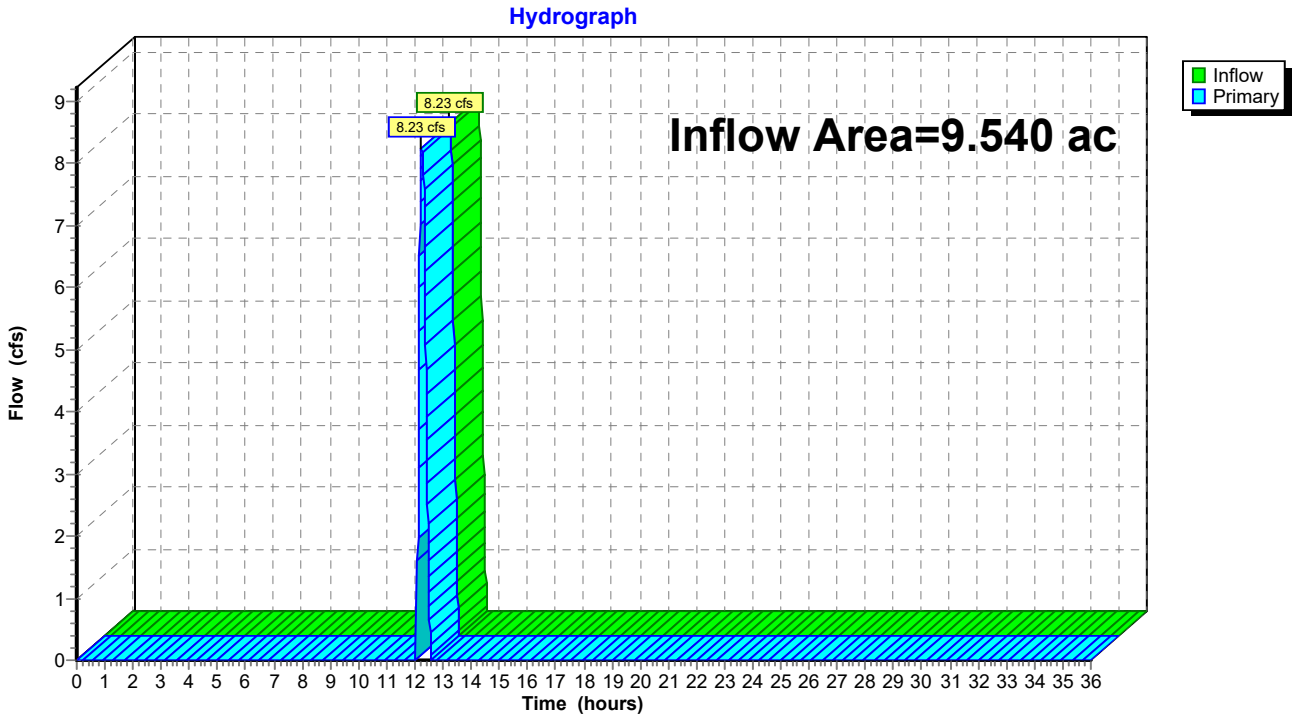


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 0.24" for 10-Year event
Inflow = 8.23 cfs @ 12.24 hrs, Volume= 0.191 af
Primary = 8.23 cfs @ 12.24 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=5.28"
Flow Length=509' Tc=6.0 min CN=94 Runoff=23.96 cfs 1.996 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=5.39"
Flow Length=293' Tc=13.5 min CN=95 Runoff=11.47 cfs 1.258 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=5.16"
Flow Length=360' Tc=7.1 min CN=93 Runoff=7.53 cfs 0.645 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=3.76"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=2.90 cfs 0.220 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=5.39"
Flow Length=213' Tc=6.2 min CN=95 Runoff=5.61 cfs 0.476 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=5.39"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=3.15 cfs 0.288 af

**Pond 1P: UGS-1** Peak Elev=59.62' Storage=0.644 af Inflow=23.96 cfs 1.996 af
Outflow=16.02 cfs 1.658 af

**Pond 2P: UGS-2** Peak Elev=59.04' Storage=0.408 af Inflow=11.47 cfs 1.258 af
Outflow=10.41 cfs 0.957 af

**Pond 4P: UGS-4** Peak Elev=59.87' Storage=0.139 af Inflow=3.15 cfs 0.288 af
Outflow=1.97 cfs 0.169 af

**Pond 5P: UGS-5** Peak Elev=60.19' Storage=0.124 af Inflow=5.61 cfs 0.476 af
Outflow=4.91 cfs 0.380 af

**Pond 7P: WBQ-1** Peak Elev=60.68' Storage=0.297 af Inflow=7.53 cfs 0.645 af
Outflow=4.48 cfs 0.383 af

**Pond 8P: Level Spreader** Peak Elev=58.08' Storage=0.069 af Inflow=31.47 cfs 3.217 af
Primary=19.18 cfs 0.478 af Secondary=12.29 cfs 2.704 af Outflow=31.47 cfs 3.182 af

**Link 1L: Existing Drainage System** Inflow=18.80 cfs 3.253 af
Primary=18.80 cfs 3.253 af

**Link 9L: Off-Site South** Inflow=19.18 cfs 0.478 af
Primary=19.18 cfs 0.478 af

**Total Runoff Area = 11.240 ac Runoff Volume = 4.883 af Average Runoff Depth = 5.21"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 951% of capacity of segment #2

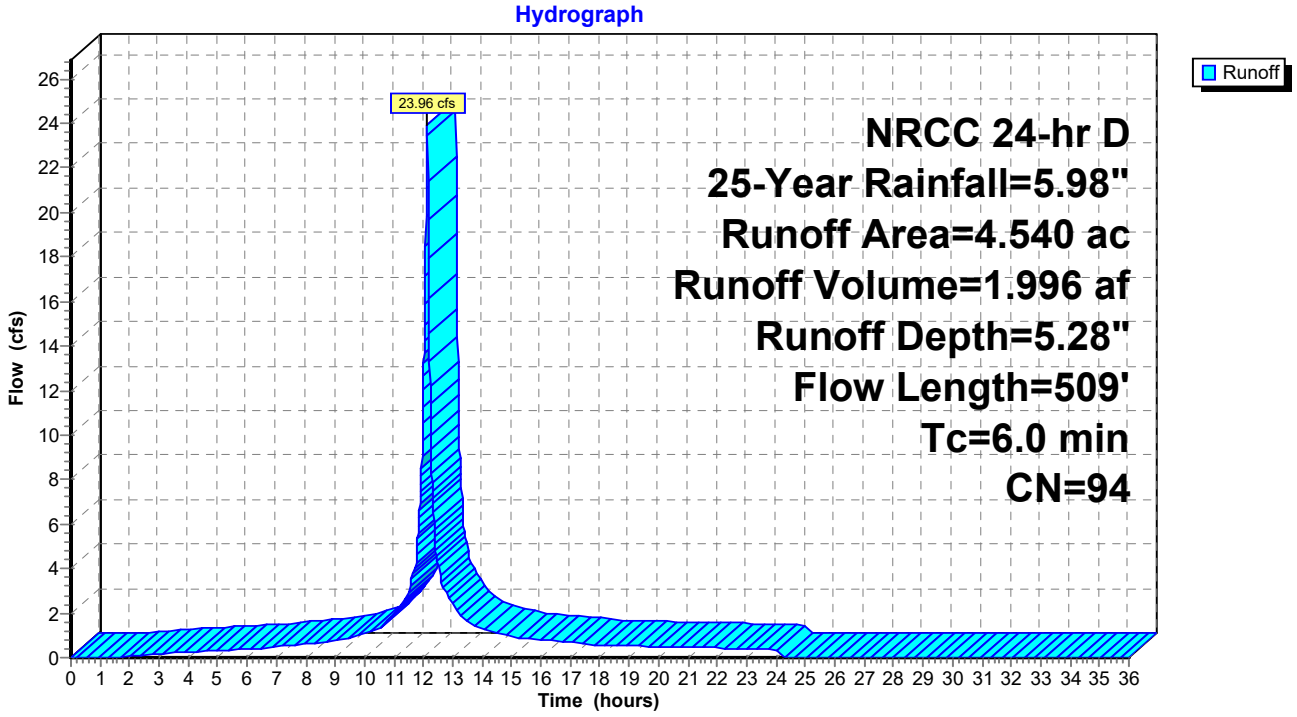
Runoff = 23.96 cfs @ 12.13 hrs, Volume= 1.996 af, Depth= 5.28"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 322% of capacity of segment #3

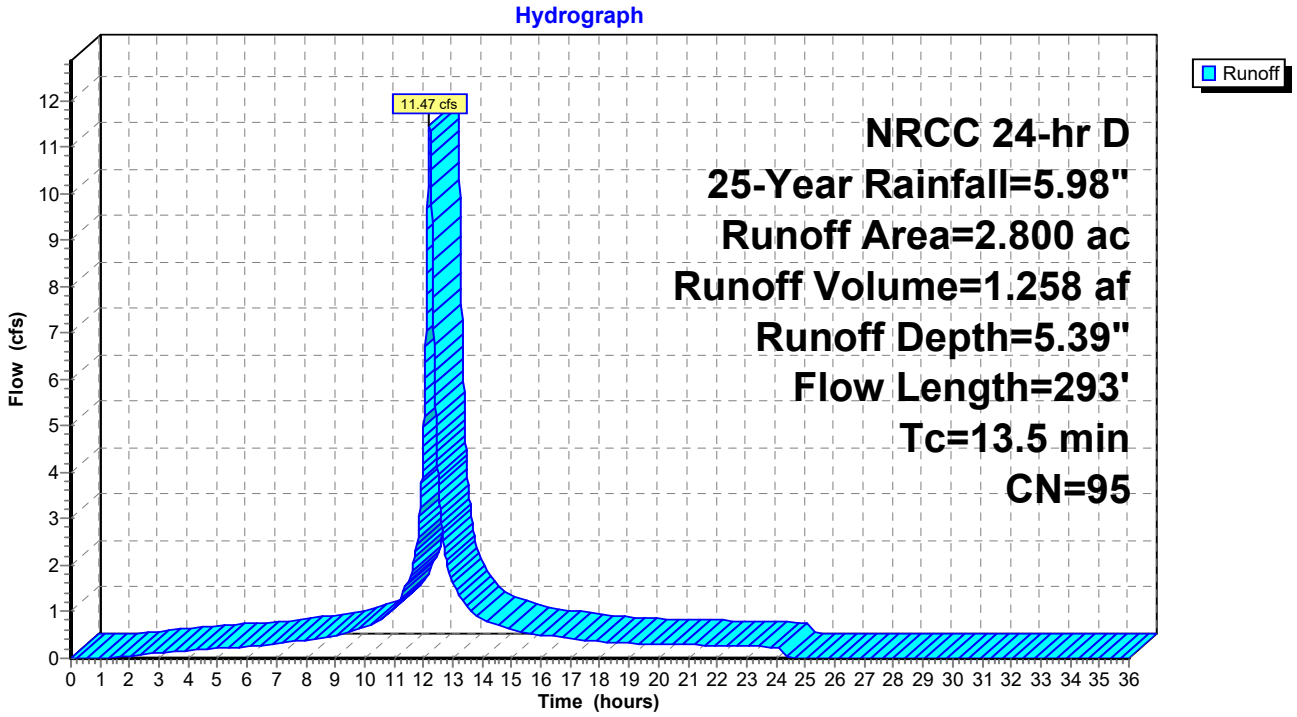
Runoff = 11.47 cfs @ 12.21 hrs, Volume= 1.258 af, Depth= 5.39"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

[47] Hint: Peak is 211% of capacity of segment #3

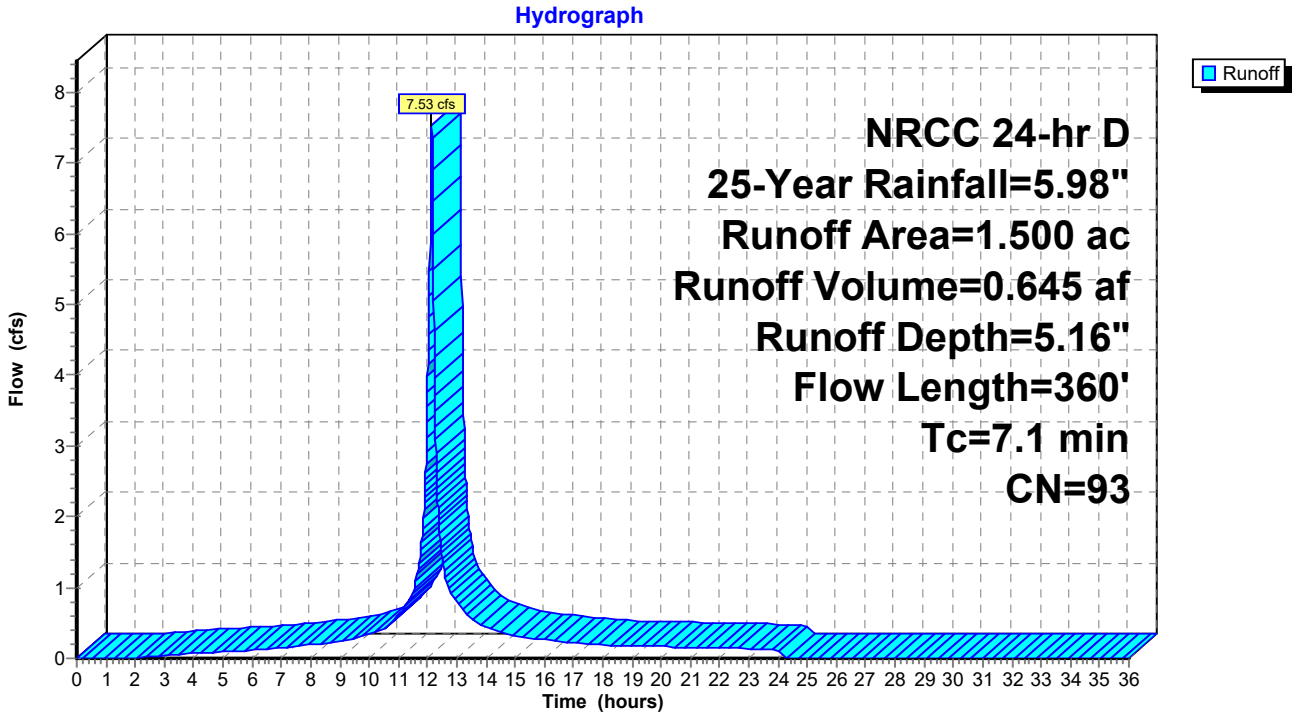
Runoff = 7.53 cfs @ 12.14 hrs, Volume= 0.645 af, Depth= 5.16"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

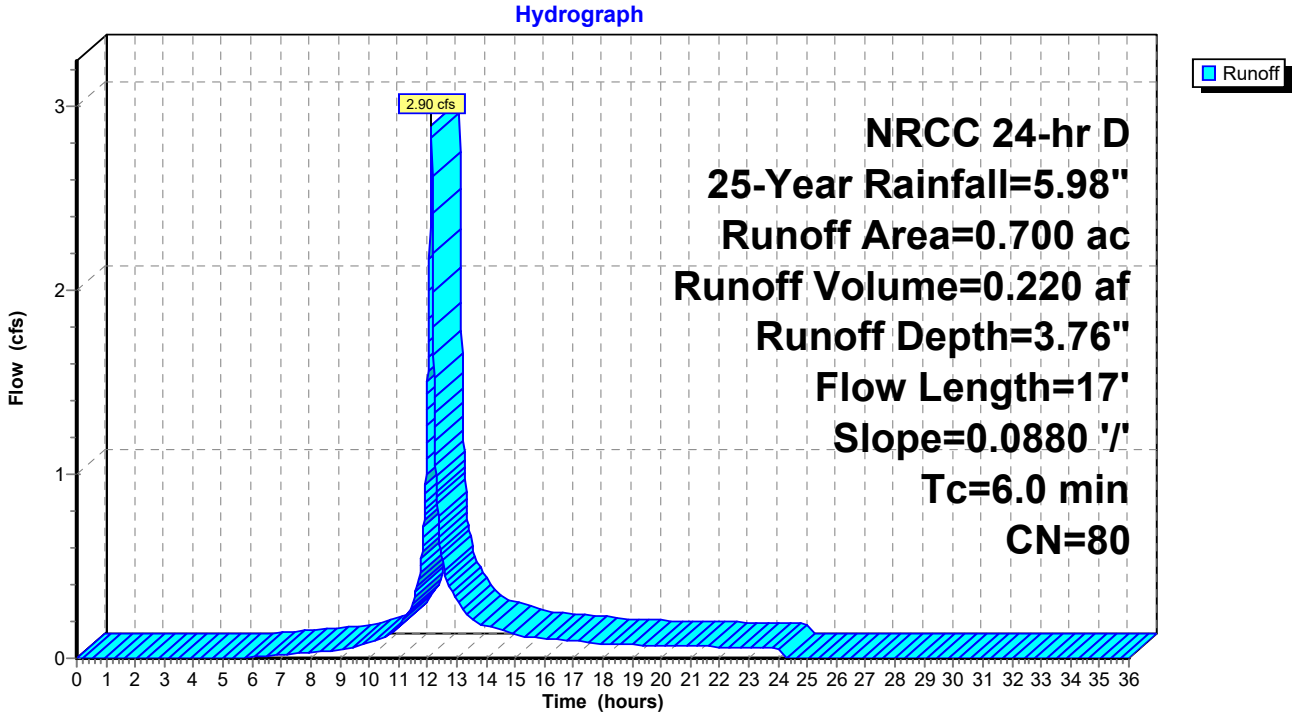
Runoff = 2.90 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 3.76"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 223% of capacity of segment #3

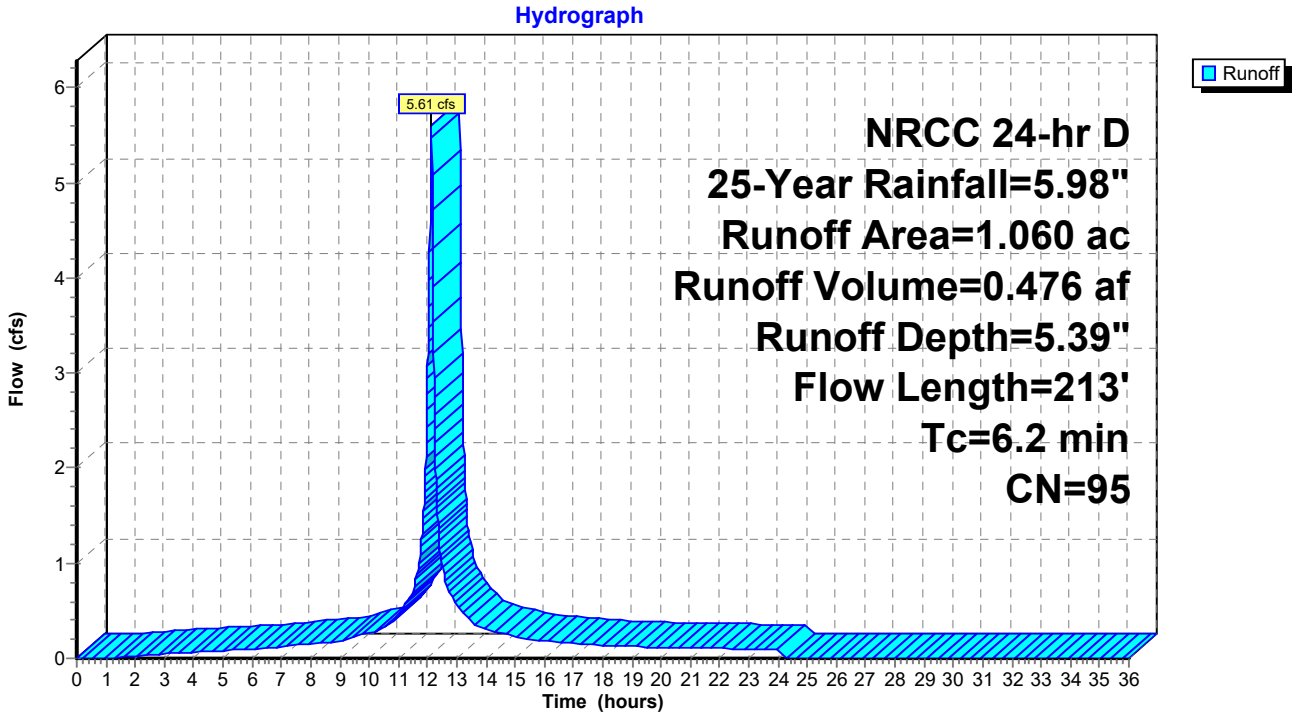
Runoff = 5.61 cfs @ 12.13 hrs, Volume= 0.476 af, Depth= 5.39"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

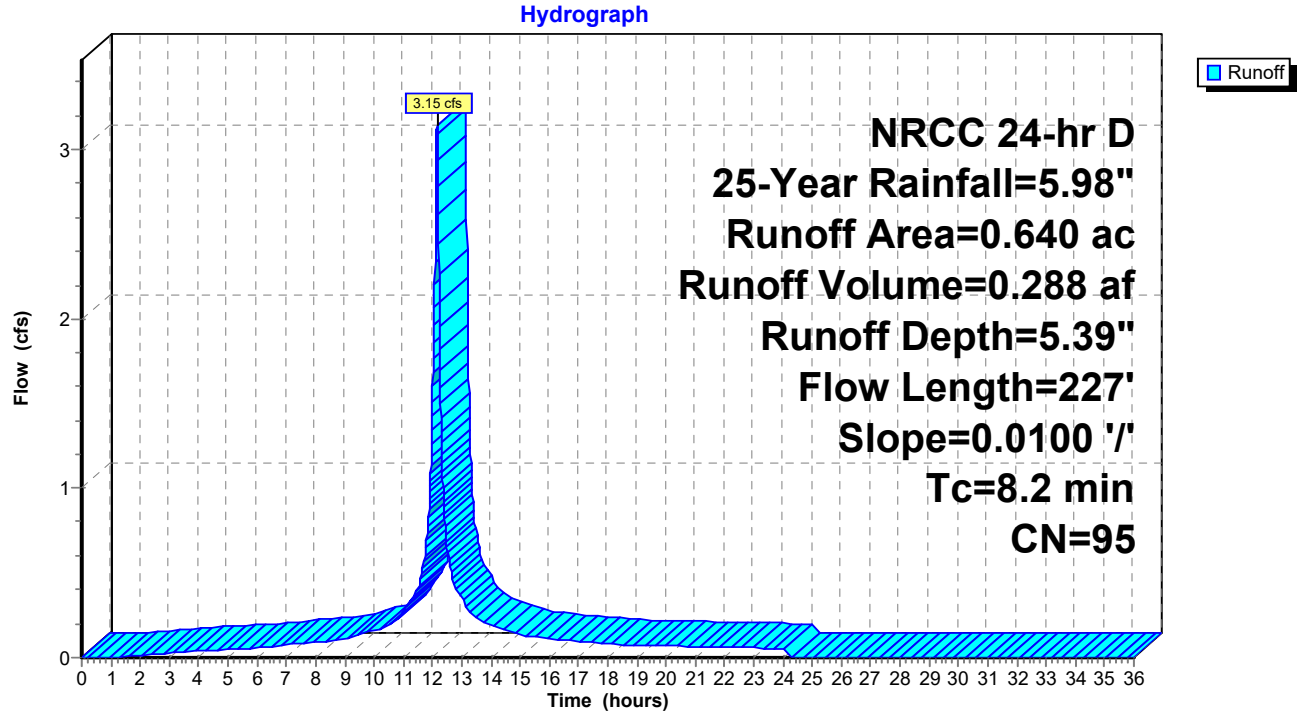
Runoff = 3.15 cfs @ 12.15 hrs, Volume= 0.288 af, Depth= 5.39"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 5.28" for 25-Year event
Inflow = 23.96 cfs @ 12.13 hrs, Volume= 1.996 af
Outflow = 16.02 cfs @ 12.19 hrs, Volume= 1.658 af, Atten= 33%, Lag= 3.7 min
Primary = 16.02 cfs @ 12.19 hrs, Volume= 1.658 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.62' @ 12.19 hrs Surf.Area= 0.316 ac Storage= 0.644 af

Plug-Flow detention time= 179.7 min calculated for 1.658 af (83% of inflow)
Center-of-Mass det. time= 97.3 min ( 872.6 - 775.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=16.01 cfs @ 12.19 hrs HW=59.62' TW=58.08' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 16.01 cfs of 20.34 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 16.01 cfs @ 3.89 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

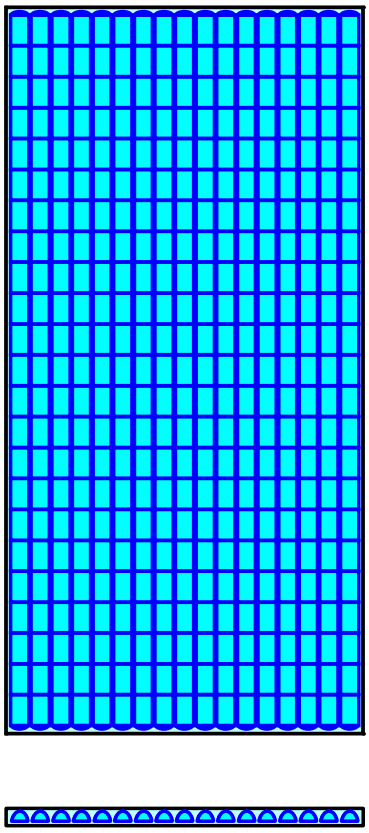
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

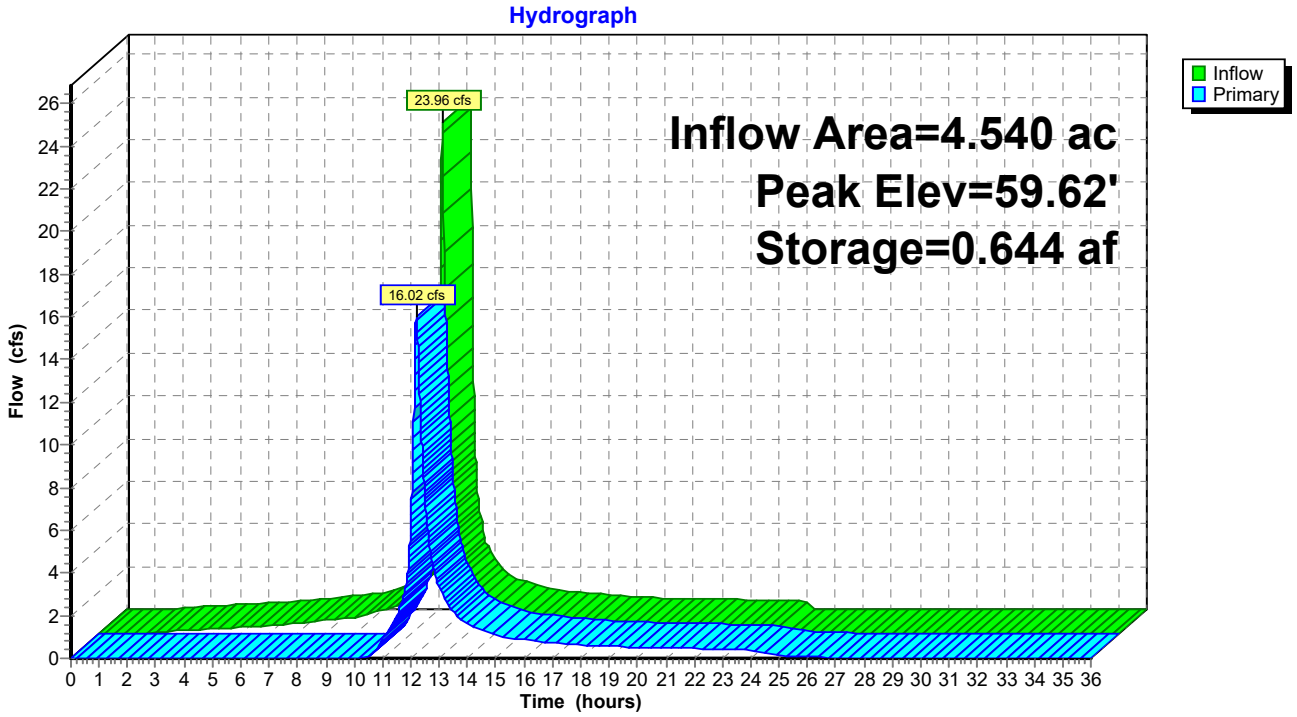
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
23.96 cfs
16.02 cfs
Inflow Area=4.540 ac
Peak Elev=59.62'
Storage=0.644 af
Flow (cfs)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 5.39" for 25-Year event
Inflow = 11.47 cfs @ 12.21 hrs, Volume= 1.258 af
Outflow = 10.41 cfs @ 12.26 hrs, Volume= 0.957 af, Atten= 9%, Lag= 3.3 min
Primary = 10.41 cfs @ 12.26 hrs, Volume= 0.957 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.04' @ 12.26 hrs Surf.Area= 0.184 ac Storage= 0.408 af

Plug-Flow detention time= 206.2 min calculated for 0.957 af (76% of inflow)
Center-of-Mass det. time= 103.0 min ( 879.3 - 776.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=10.41 cfs @ 12.26 hrs HW=59.03' TW=58.07' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 10.41 cfs of 23.17 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 10.41 cfs @ 3.35 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

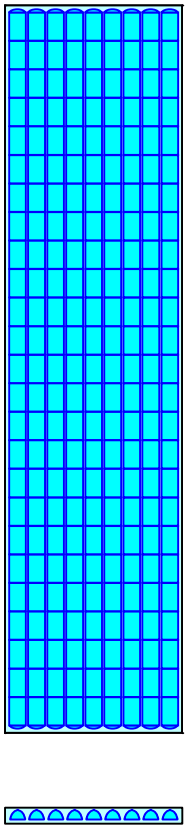
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

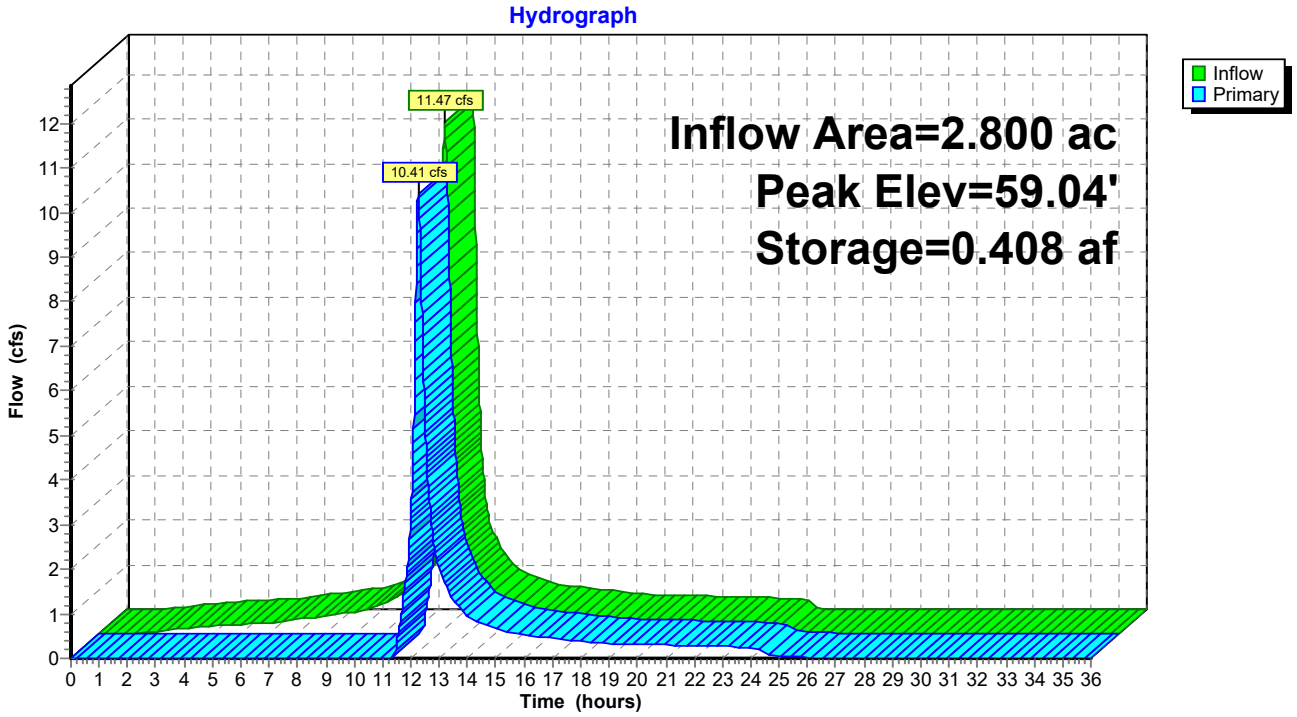
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
11.47 cfs
10.41 cfs
Inflow Area=2.800 ac
Peak Elev=59.04'
Storage=0.408 af
Flow (cfs)
0 1 2 3 4 5 6 7 8 9 10 11 12
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 5.39" for 25-Year event
Inflow = 3.15 cfs @ 12.15 hrs, Volume= 0.288 af
Outflow = 1.97 cfs @ 12.24 hrs, Volume= 0.169 af, Atten= 37%, Lag= 5.3 min
Primary = 1.97 cfs @ 12.24 hrs, Volume= 0.169 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.87' @ 12.24 hrs Surf.Area= 0.081 ac Storage= 0.139 af

Plug-Flow detention time= 280.9 min calculated for 0.169 af (59% of inflow)
Center-of-Mass det. time= 142.8 min ( 914.1 - 771.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.97 cfs @ 12.24 hrs HW=59.87' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 1.97 cfs of 4.43 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.97 cfs @ 1.77 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

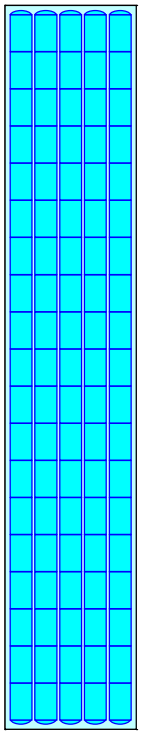
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

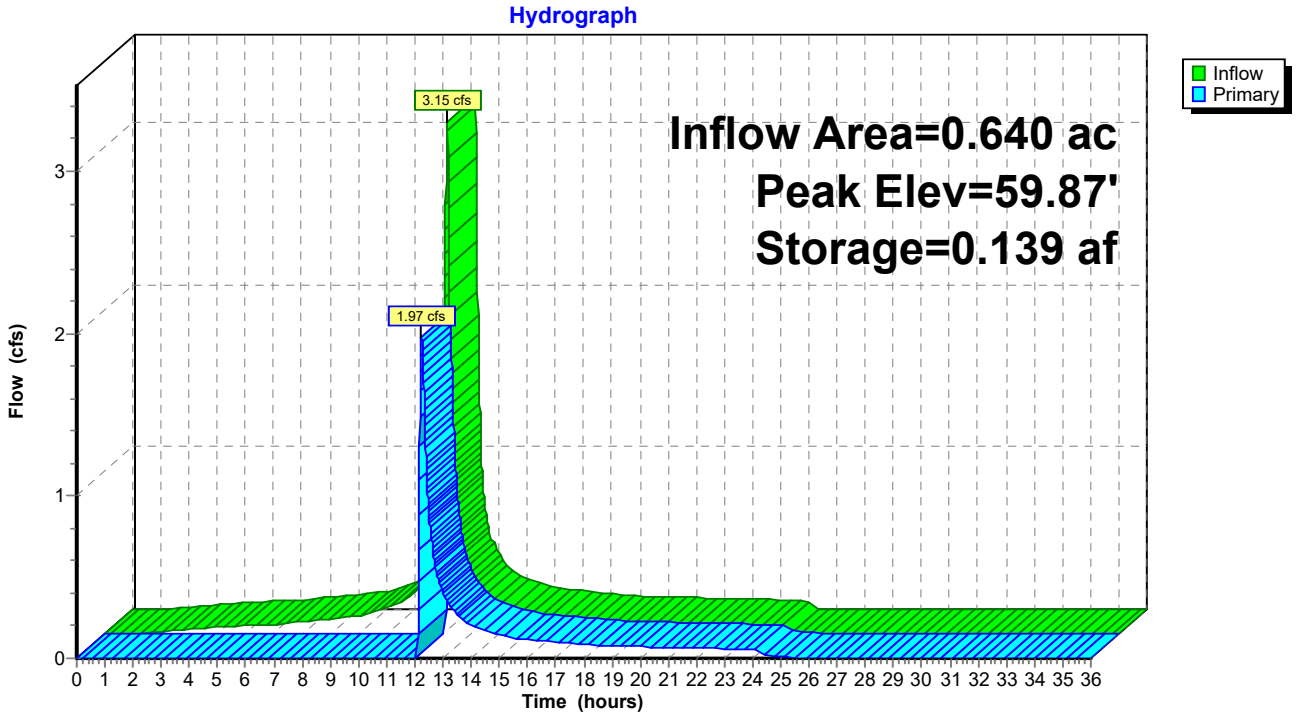
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
3.15 cfs
1.97 cfs
Inflow Area=0.640 ac
Peak Elev=59.87'
Storage=0.139 af
Flow (cfs)
0
1
2
3
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 5.39" for 25-Year event
Inflow = 5.61 cfs @ 12.13 hrs, Volume= 0.476 af
Outflow = 4.91 cfs @ 12.16 hrs, Volume= 0.380 af, Atten= 12%, Lag= 2.0 min
Primary = 4.91 cfs @ 12.16 hrs, Volume= 0.380 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.19' @ 12.16 hrs Surf.Area= 0.065 ac Storage= 0.124 af

Plug-Flow detention time= 177.2 min calculated for 0.380 af (80% of inflow)
Center-of-Mass det. time= 84.3 min ( 853.8 - 769.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=4.91 cfs @ 12.16 hrs HW=60.18' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 4.91 cfs @ 6.25 fps)
↑—**1=Broad-Crested Rectangular Weir** (Passes 4.91 cfs of 5.40 cfs potential flow)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

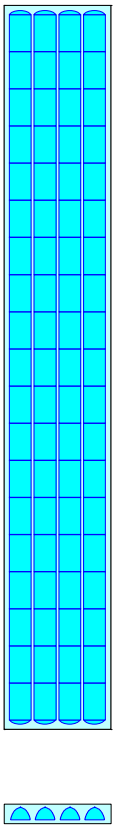
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

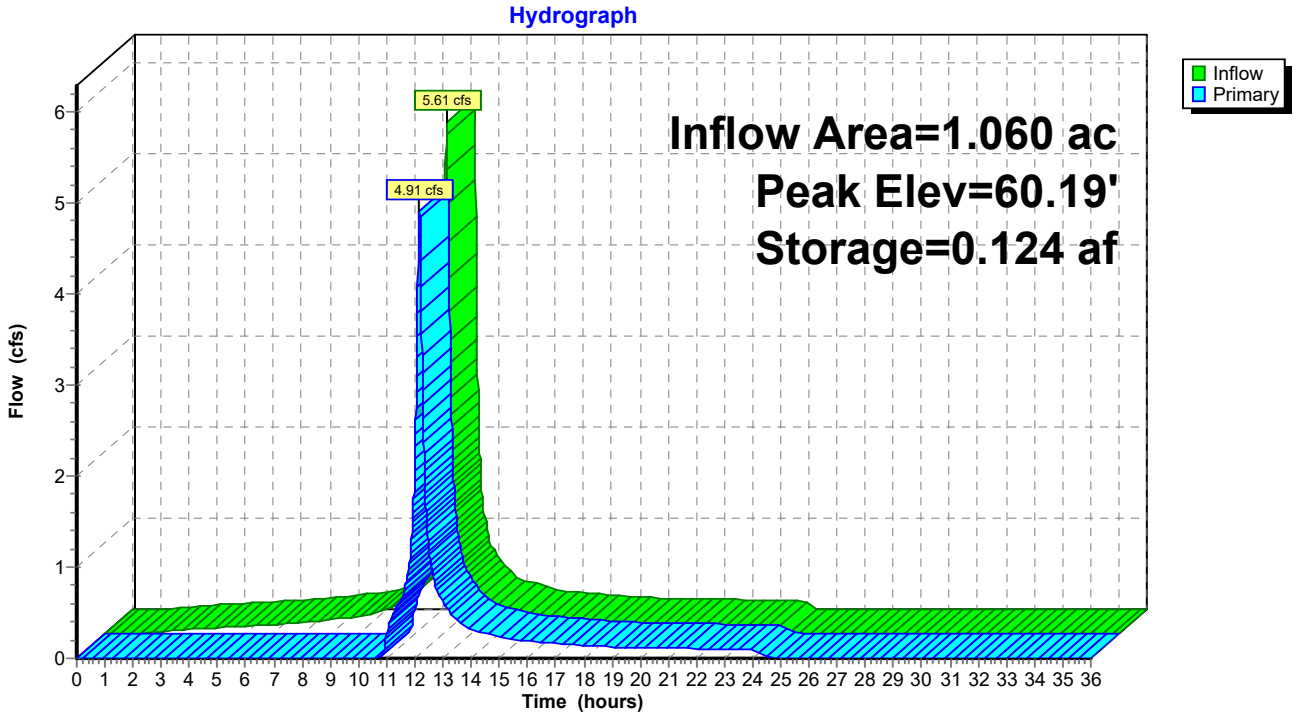
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
5.61 cfs
4.91 cfs
Inflow Area=1.060 ac
Peak Elev=60.19'
Storage=0.124 af
Flow (cfs)
0
1
2
3
4
5
6
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 5.16" for 25-Year event
Inflow = 7.53 cfs @ 12.14 hrs, Volume= 0.645 af
Outflow = 4.48 cfs @ 12.22 hrs, Volume= 0.383 af, Atten= 41%, Lag= 5.0 min
Primary = 4.48 cfs @ 12.22 hrs, Volume= 0.383 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.68' @ 12.22 hrs Surf.Area= 0.091 ac Storage= 0.297 af

Plug-Flow detention time= 261.7 min calculated for 0.383 af (59% of inflow)
Center-of-Mass det. time= 127.1 min ( 909.1 - 781.9 )

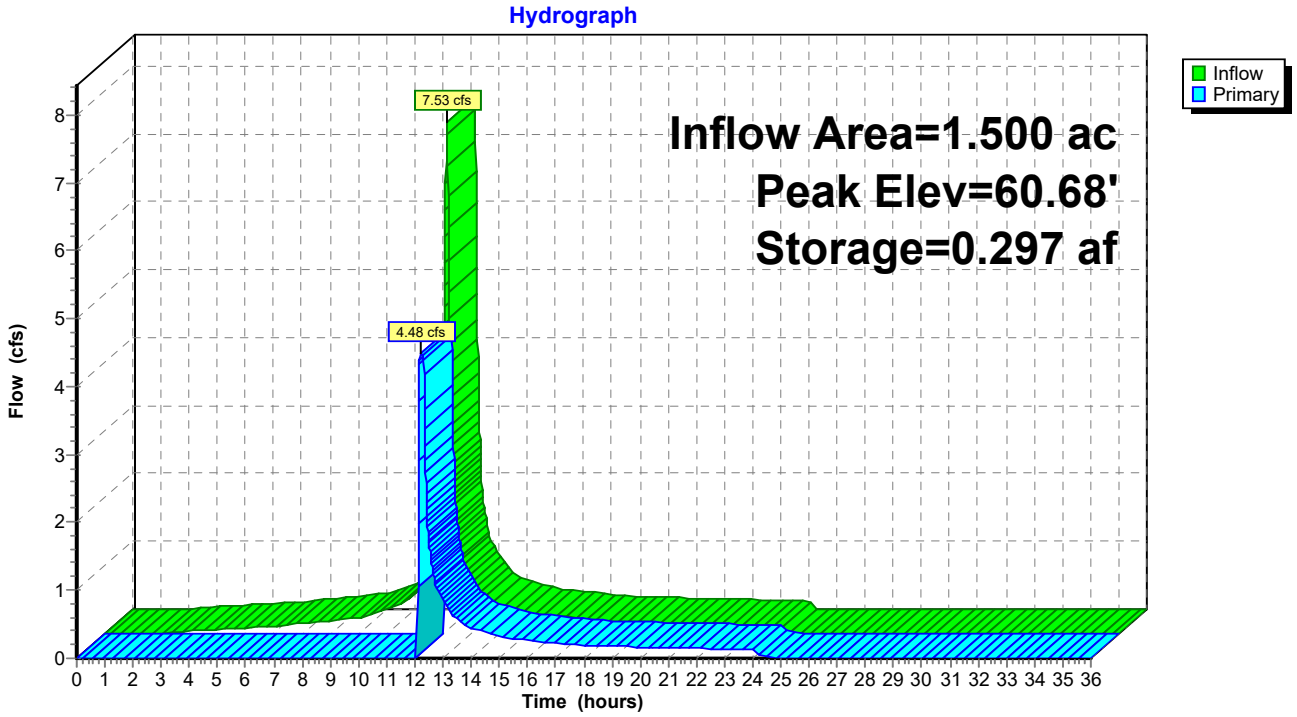
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=4.48 cfs @ 12.22 hrs HW=60.68' TW=58.08' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.48 cfs @ 5.71 fps)
↑—**2=Orifice/Grate** (Passes 4.48 cfs of 7.69 cfs potential flow)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
7.53 cfs
4.48 cfs
Inflow Area=1.500 ac
Peak Elev=60.68'
Storage=0.297 af
Flow (cfs)
0 1 2 3 4 5 6 7 8
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 31 32 33 34 35 36

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 4.05" for 25-Year event
Inflow = 31.47 cfs @ 12.21 hrs, Volume= 3.217 af
Outflow = 31.47 cfs @ 12.21 hrs, Volume= 3.182 af, Atten= 0%, Lag= 0.0 min
Primary = 19.18 cfs @ 12.21 hrs, Volume= 0.478 af
Routed to Link 9L : Off-Site South
Secondary = 12.29 cfs @ 12.21 hrs, Volume= 2.704 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.08' @ 12.21 hrs Surf.Area= 0.038 ac Storage= 0.069 af

Plug-Flow detention time= 15.0 min calculated for 3.182 af (99% of inflow)
Center-of-Mass det. time= 7.5 min ( 883.8 - 876.3 )

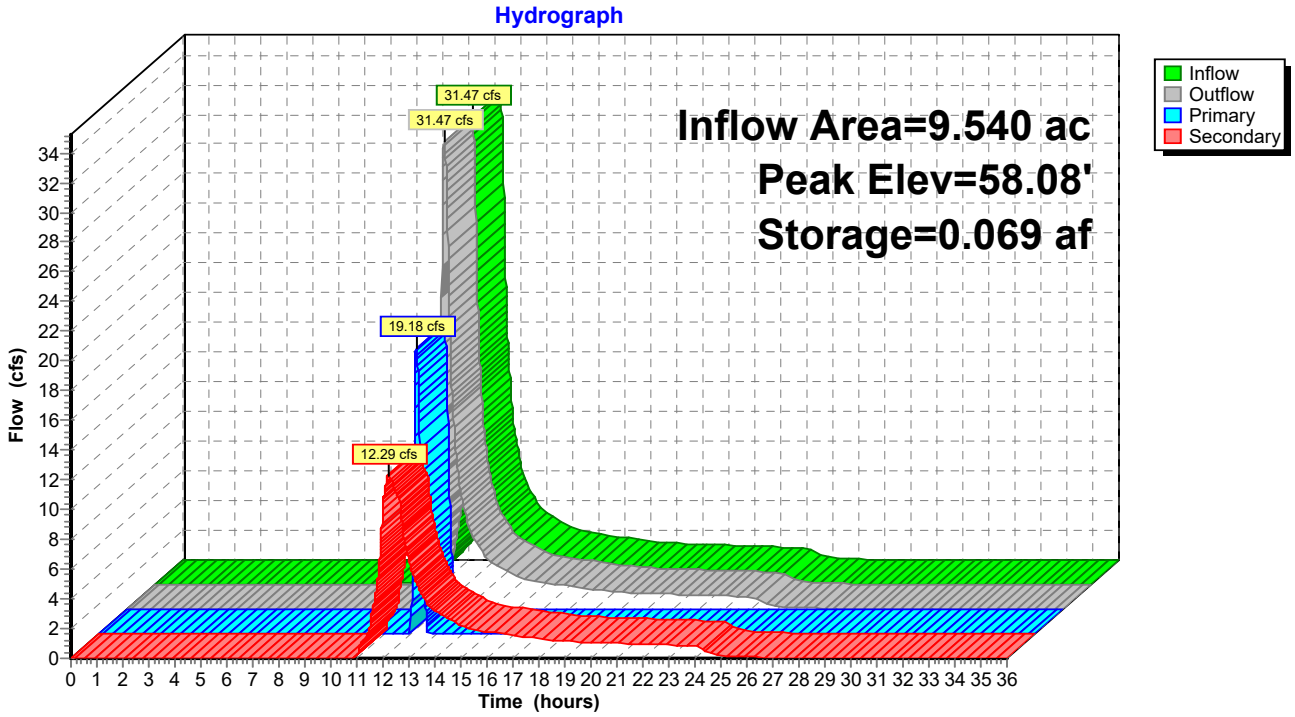
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=19.17 cfs @ 12.21 hrs HW=58.08' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 19.17 cfs @ 0.80 fps)

**Secondary OutFlow** Max=12.29 cfs @ 12.21 hrs HW=58.08' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 12.29 cfs of 19.00 cfs potential flow)
  ├─**3=Broad-Crested Rectangular Weir** (Weir Controls 9.95 cfs @ 3.00 fps)
  └─**4=Orifice/Grate** (Orifice Controls 2.34 cfs @ 6.71 fps)

## Pond 8P: Level Spreader

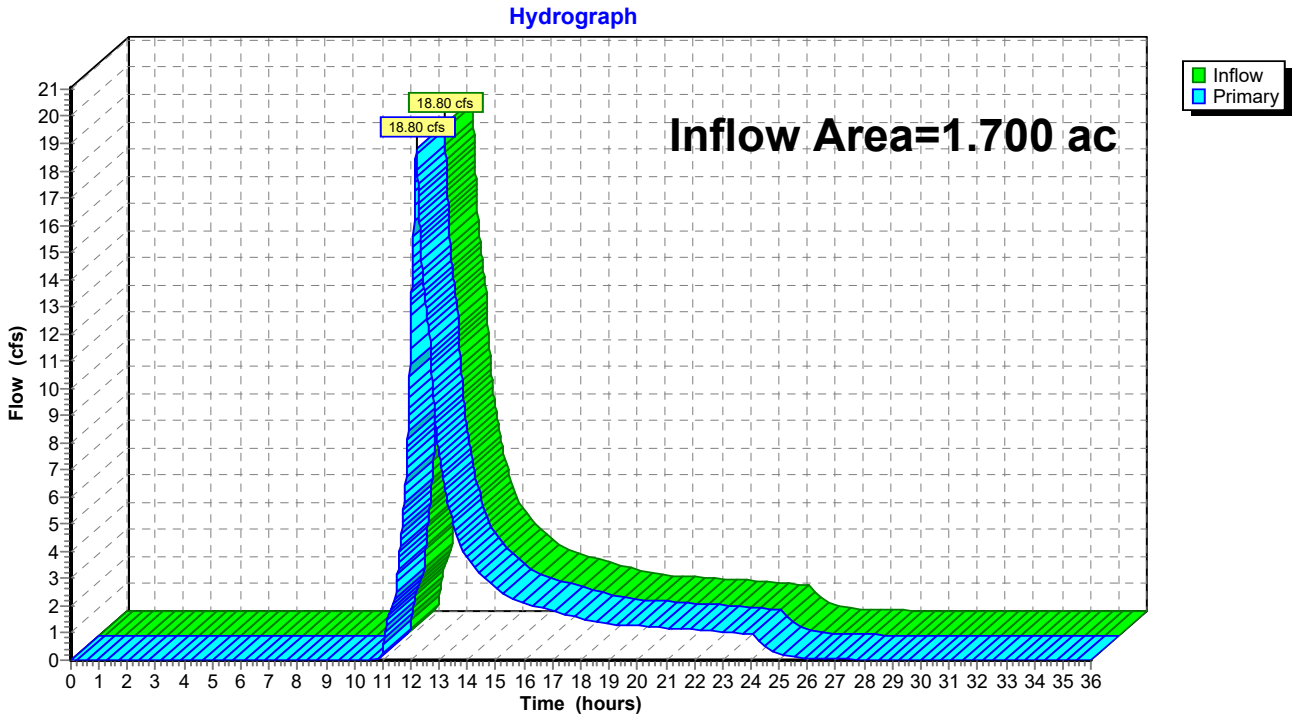


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 22.96" for 25-Year event
Inflow = 18.80 cfs @ 12.19 hrs, Volume= 3.253 af
Primary = 18.80 cfs @ 12.19 hrs, Volume= 3.253 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

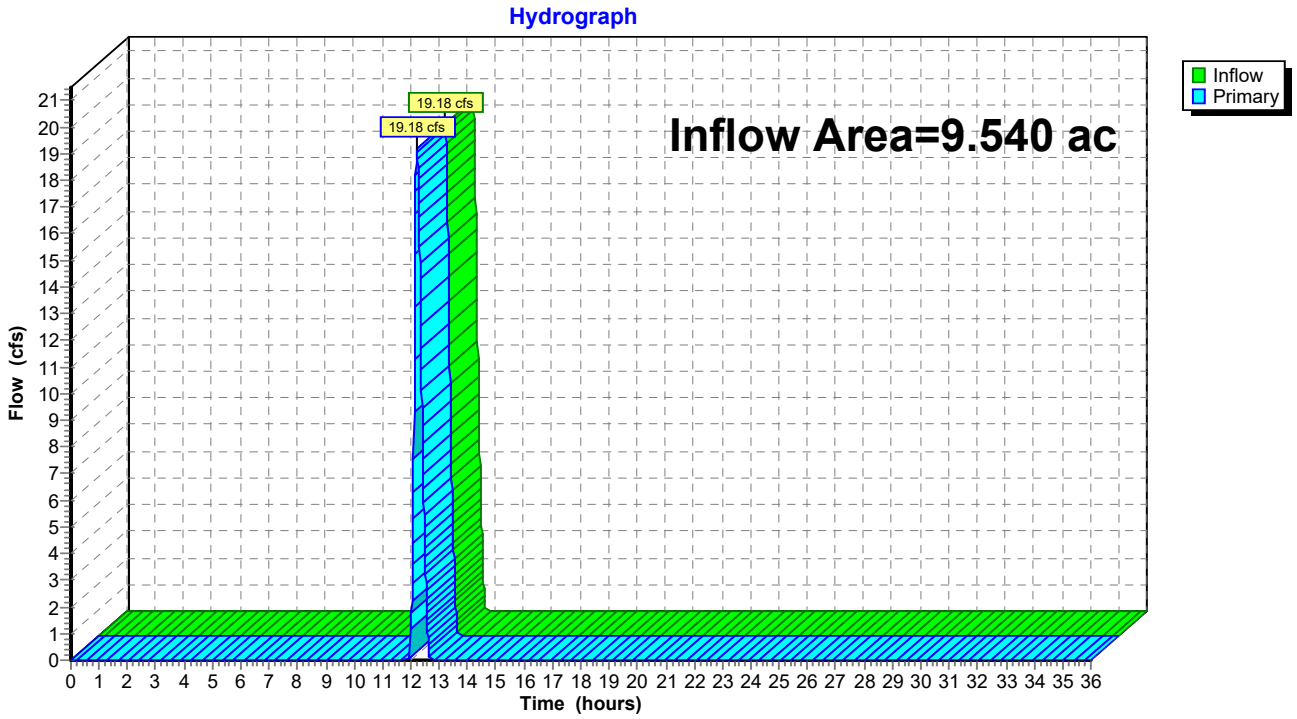


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 0.60" for 25-Year event
Inflow = 19.18 cfs @ 12.21 hrs, Volume= 0.478 af
Primary = 19.18 cfs @ 12.21 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=6.09"
Flow Length=509' Tc=6.0 min CN=94 Runoff=27.42 cfs 2.304 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=6.21"
Flow Length=293' Tc=13.5 min CN=95 Runoff=13.11 cfs 1.448 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=5.97"
Flow Length=360' Tc=7.1 min CN=93 Runoff=8.64 cfs 0.747 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=4.51"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=3.45 cfs 0.263 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=6.21"
Flow Length=213' Tc=6.2 min CN=95 Runoff=6.41 cfs 0.548 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=6.21"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=3.60 cfs 0.331 af

**Pond 1P: UGS-1** Peak Elev=59.80' Storage=0.672 af Inflow=27.42 cfs 2.304 af
Outflow=19.31 cfs 1.966 af

**Pond 2P: UGS-2** Peak Elev=59.14' Storage=0.416 af Inflow=13.11 cfs 1.448 af
Outflow=12.02 cfs 1.147 af

**Pond 4P: UGS-4** Peak Elev=59.97' Storage=0.144 af Inflow=3.60 cfs 0.331 af
Outflow=2.92 cfs 0.212 af

**Pond 5P: UGS-5** Peak Elev=60.34' Storage=0.129 af Inflow=6.41 cfs 0.548 af
Outflow=5.13 cfs 0.452 af

**Pond 7P: WBQ-1** Peak Elev=60.94' Storage=0.321 af Inflow=8.64 cfs 0.747 af
Outflow=4.78 cfs 0.484 af

**Pond 8P: Level Spreader** Peak Elev=58.09' Storage=0.070 af Inflow=36.80 cfs 3.860 af
Primary=24.23 cfs 0.687 af Secondary=12.57 cfs 3.138 af Outflow=36.80 cfs 3.825 af

**Link 1L: Existing Drainage System** Inflow=20.58 cfs 3.802 af
Primary=20.58 cfs 3.802 af

**Link 9L: Off-Site South** Inflow=24.23 cfs 0.687 af
Primary=24.23 cfs 0.687 af

**Total Runoff Area = 11.240 ac Runoff Volume = 5.641 af Average Runoff Depth = 6.02"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 1089% of capacity of segment #2

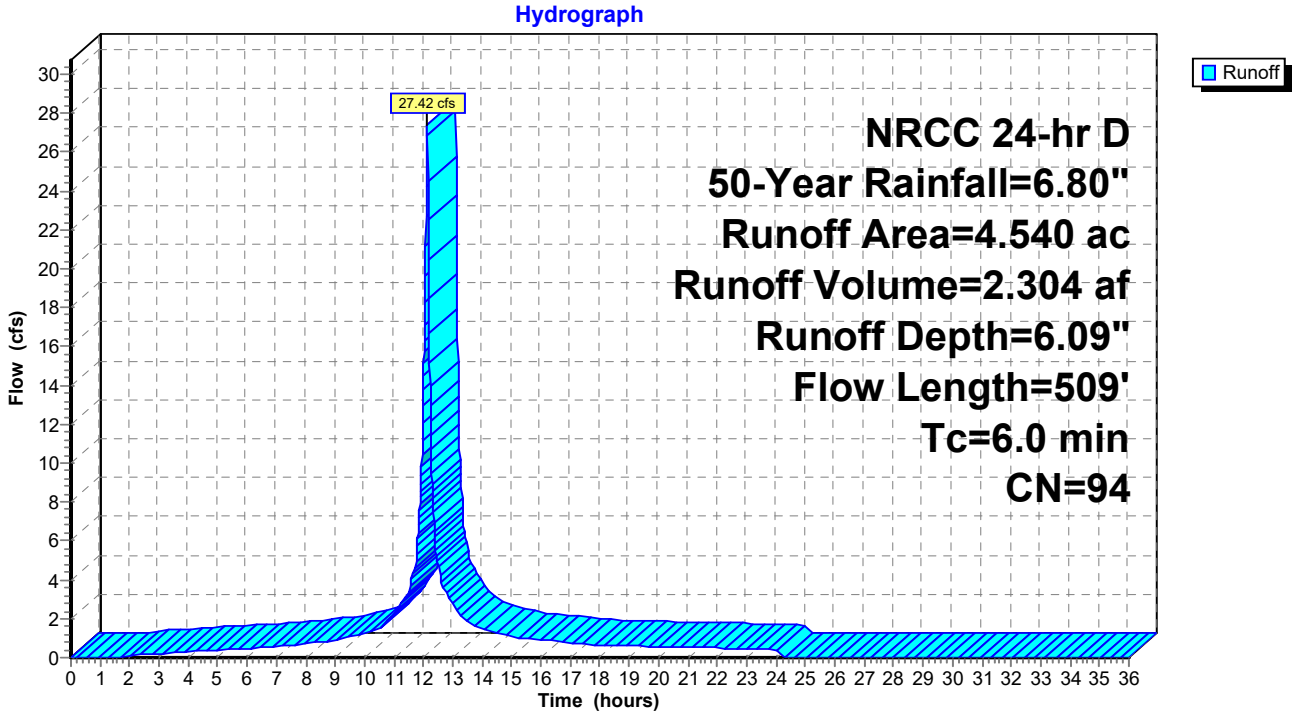
Runoff = 27.42 cfs @ 12.13 hrs, Volume= 2.304 af, Depth= 6.09"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 368% of capacity of segment #3

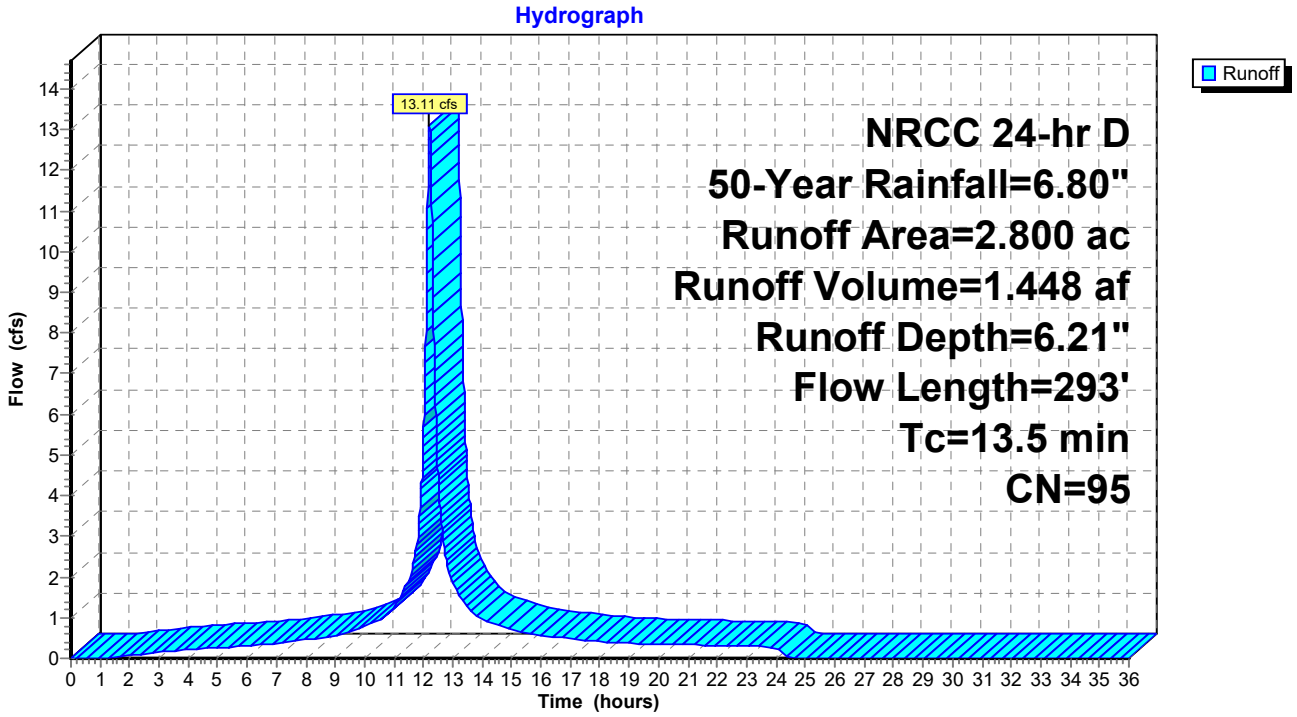
Runoff = 13.11 cfs @ 12.21 hrs, Volume= 1.448 af, Depth= 6.21"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

[47] Hint: Peak is 242% of capacity of segment #3

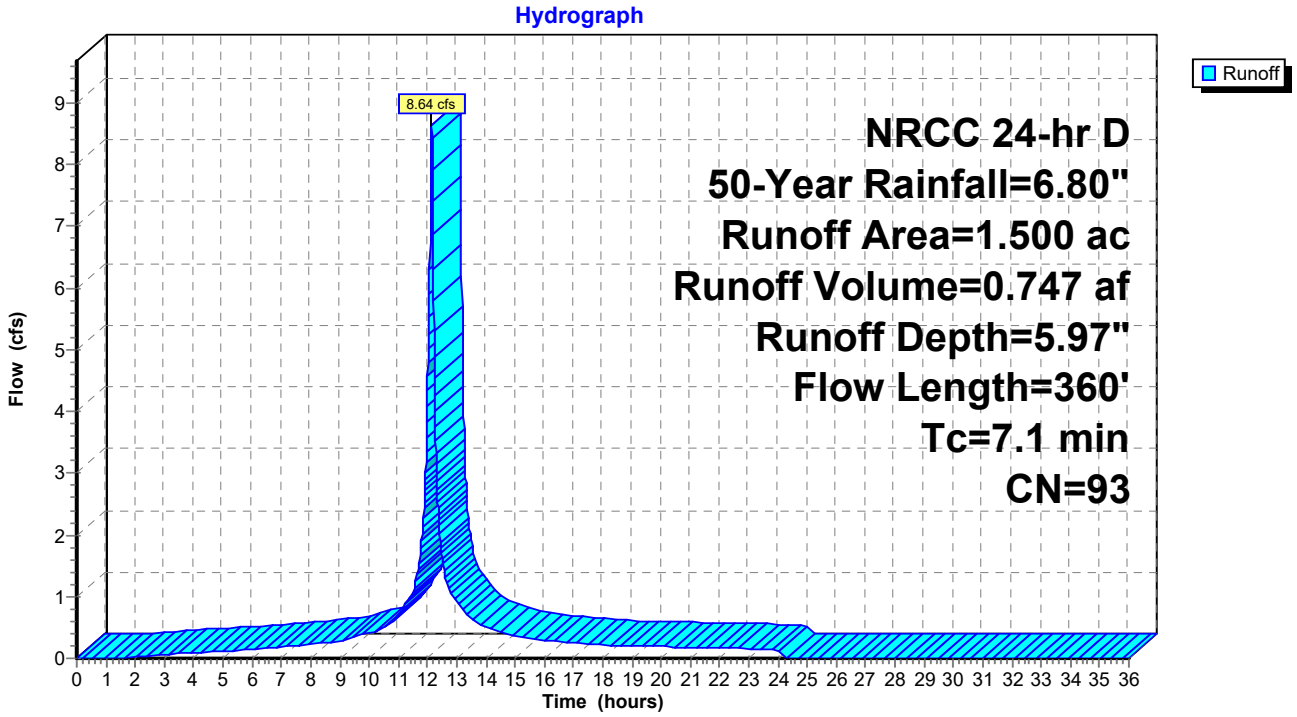
Runoff = 8.64 cfs @ 12.14 hrs, Volume= 0.747 af, Depth= 5.97"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

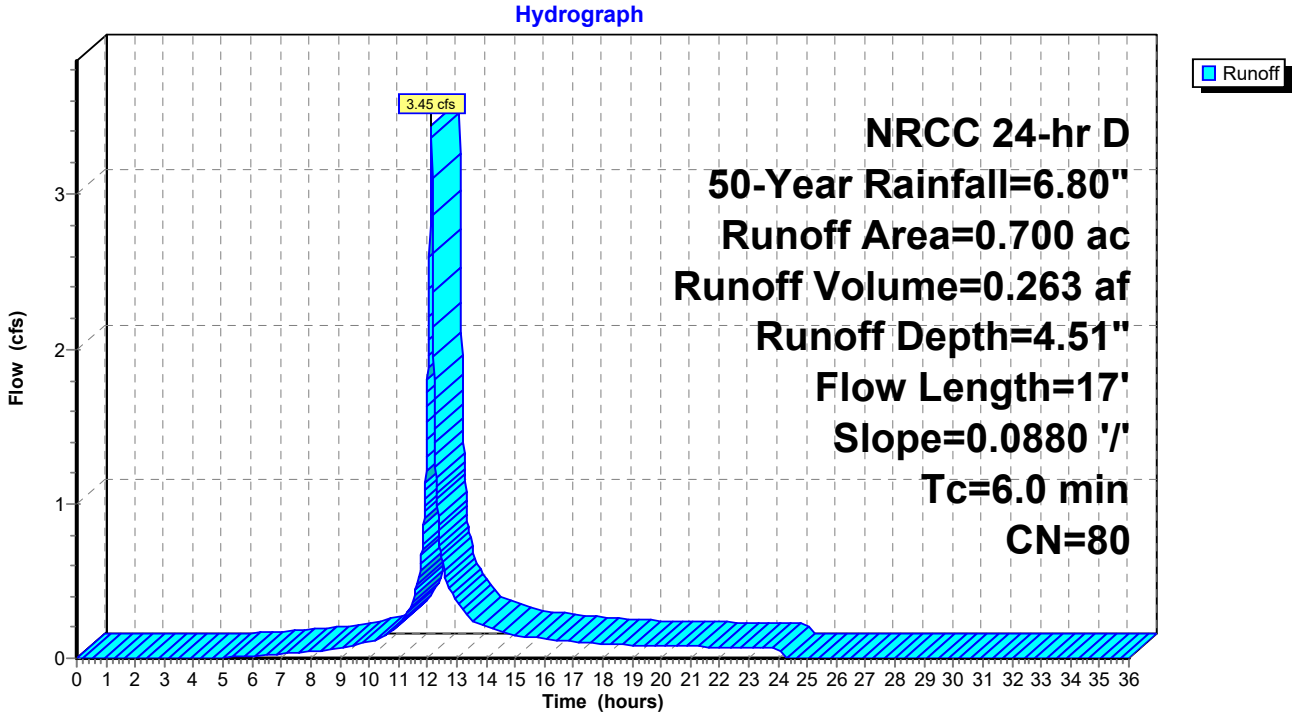
Runoff = 3.45 cfs @ 12.13 hrs, Volume= 0.263 af, Depth= 4.51"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 254% of capacity of segment #3

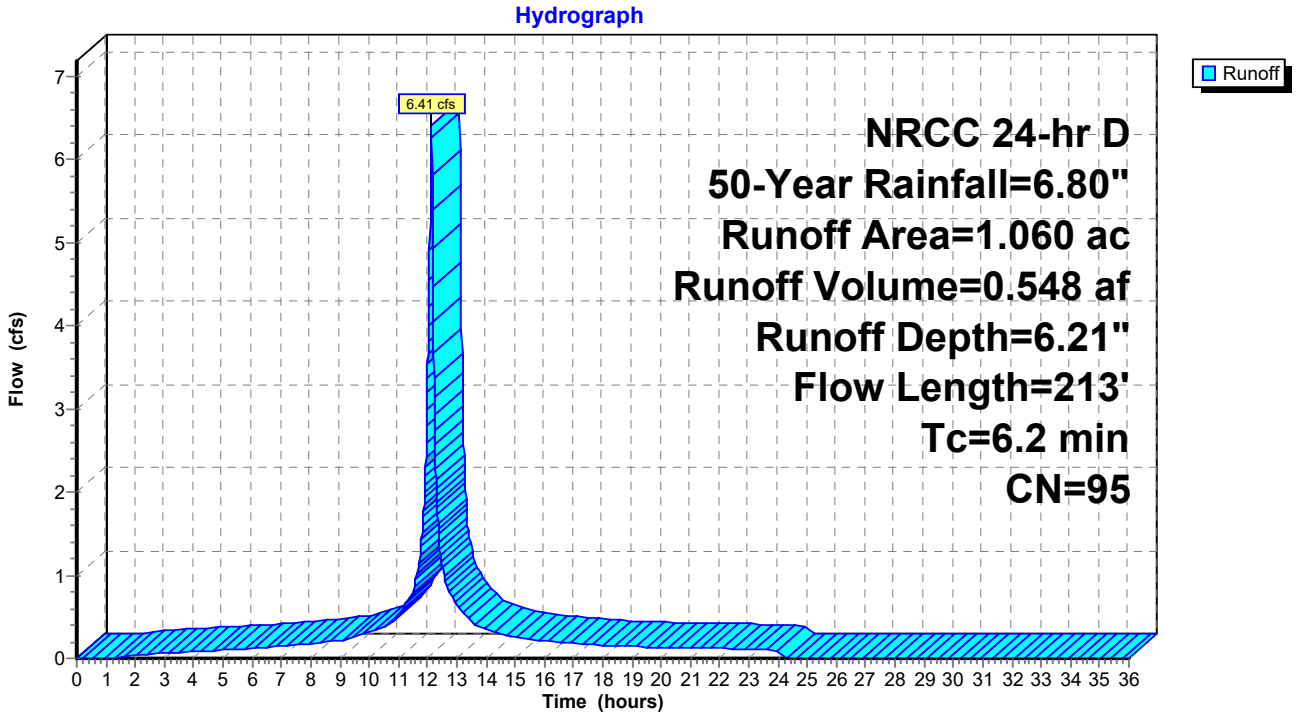
Runoff = 6.41 cfs @ 12.13 hrs, Volume= 0.548 af, Depth= 6.21"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

[47] Hint: Peak is 101% of capacity of segment #3

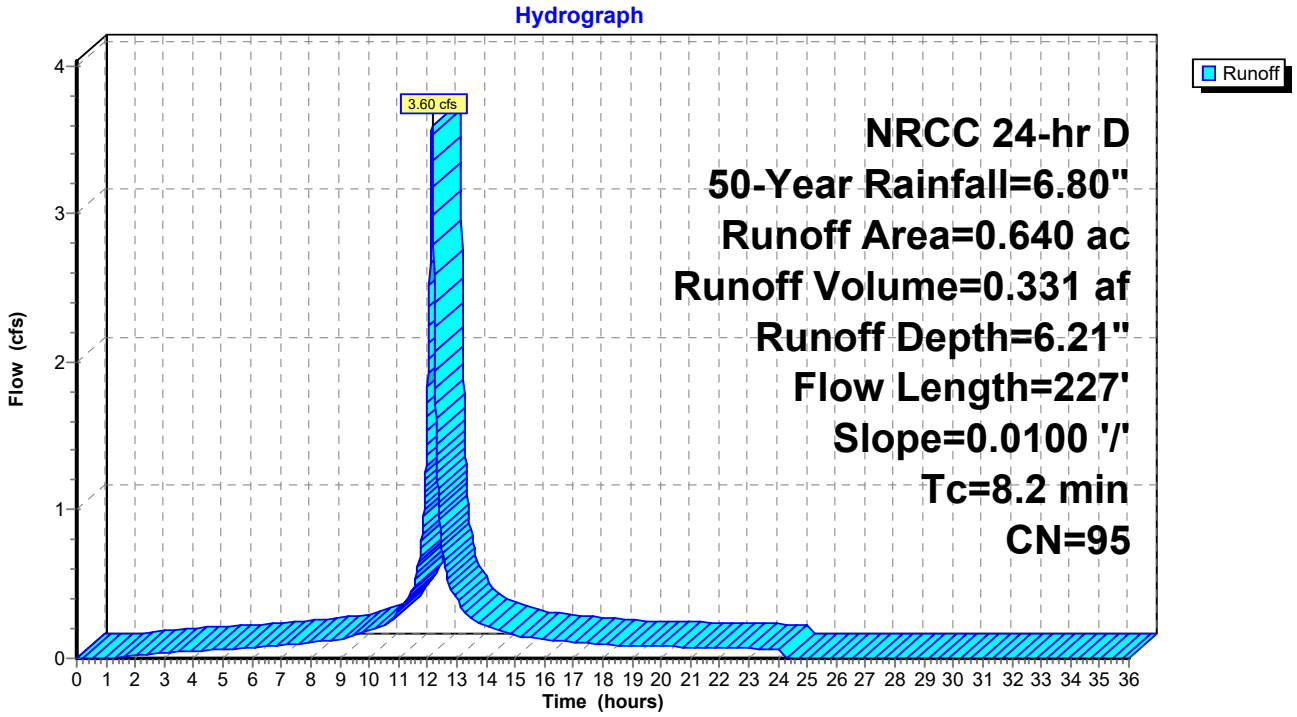
Runoff = 3.60 cfs @ 12.15 hrs, Volume= 0.331 af, Depth= 6.21"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 6.09" for 50-Year event
Inflow = 27.42 cfs @ 12.13 hrs, Volume= 2.304 af
Outflow = 19.31 cfs @ 12.19 hrs, Volume= 1.966 af, Atten= 30%, Lag= 3.4 min
Primary = 19.31 cfs @ 12.19 hrs, Volume= 1.966 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.80' @ 12.19 hrs Surf.Area= 0.316 ac Storage= 0.672 af

Plug-Flow detention time= 166.1 min calculated for 1.965 af (85% of inflow)
Center-of-Mass det. time= 91.3 min ( 862.5 - 771.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=19.29 cfs @ 12.19 hrs HW=59.80' TW=58.09' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 19.29 cfs of 22.54 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 19.29 cfs @ 4.14 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

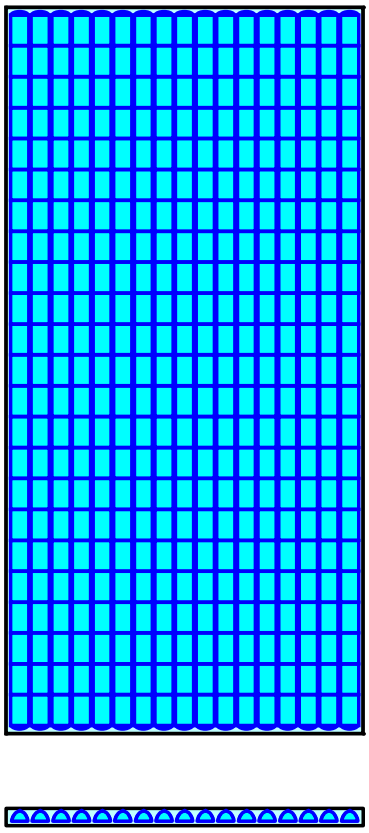
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

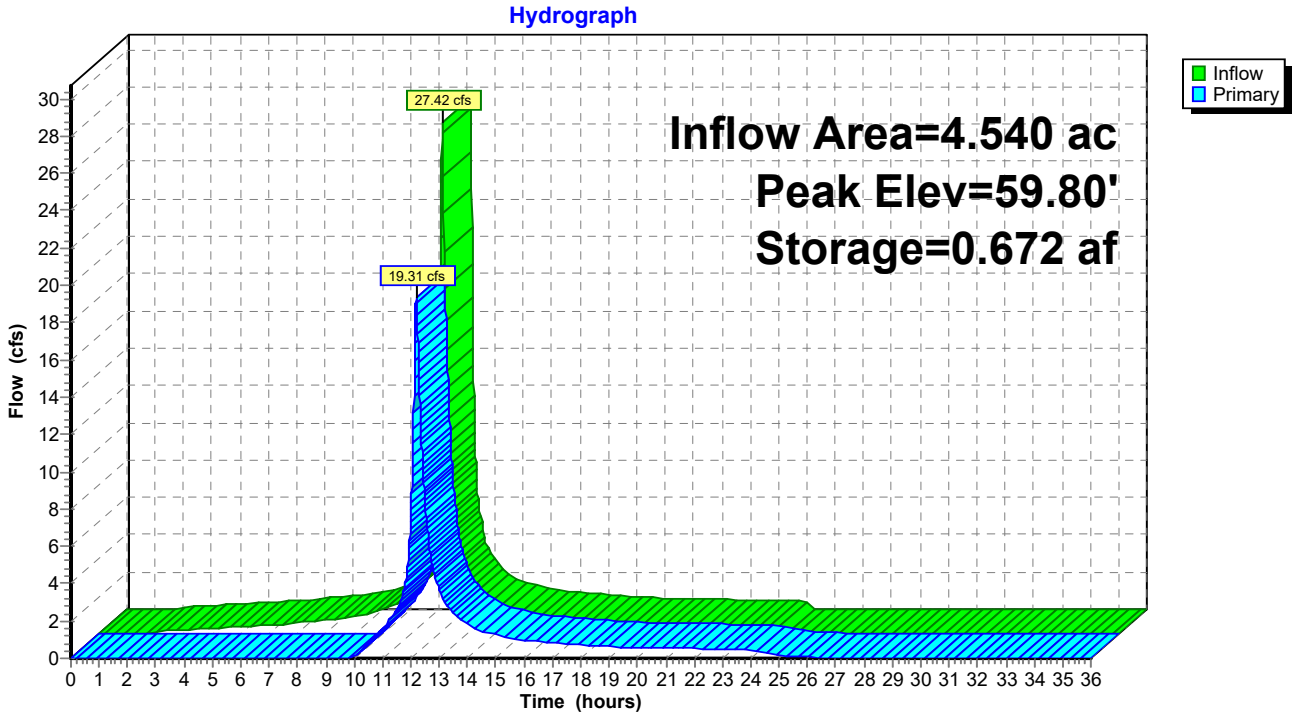
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
27.42 cfs
19.31 cfs
Inflow Area=4.540 ac
Peak Elev=59.80'
Storage=0.672 af
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 6.21" for 50-Year event
Inflow = 13.11 cfs @ 12.21 hrs, Volume= 1.448 af
Outflow = 12.02 cfs @ 12.26 hrs, Volume= 1.147 af, Atten= 8%, Lag= 3.2 min
Primary = 12.02 cfs @ 12.26 hrs, Volume= 1.147 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.14' @ 12.26 hrs Surf.Area= 0.184 ac Storage= 0.416 af

Plug-Flow detention time= 191.4 min calculated for 1.147 af (79% of inflow)
Center-of-Mass det. time= 96.4 min ( 868.9 - 772.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=12.03 cfs @ 12.26 hrs HW=59.14' TW=58.09' (Dynamic Tailwater)
↑**2=Culvert** (Passes 12.03 cfs of 24.26 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 12.03 cfs @ 3.52 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

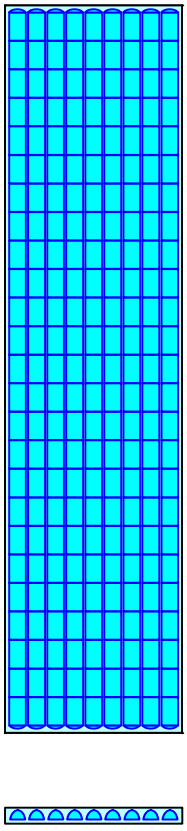
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

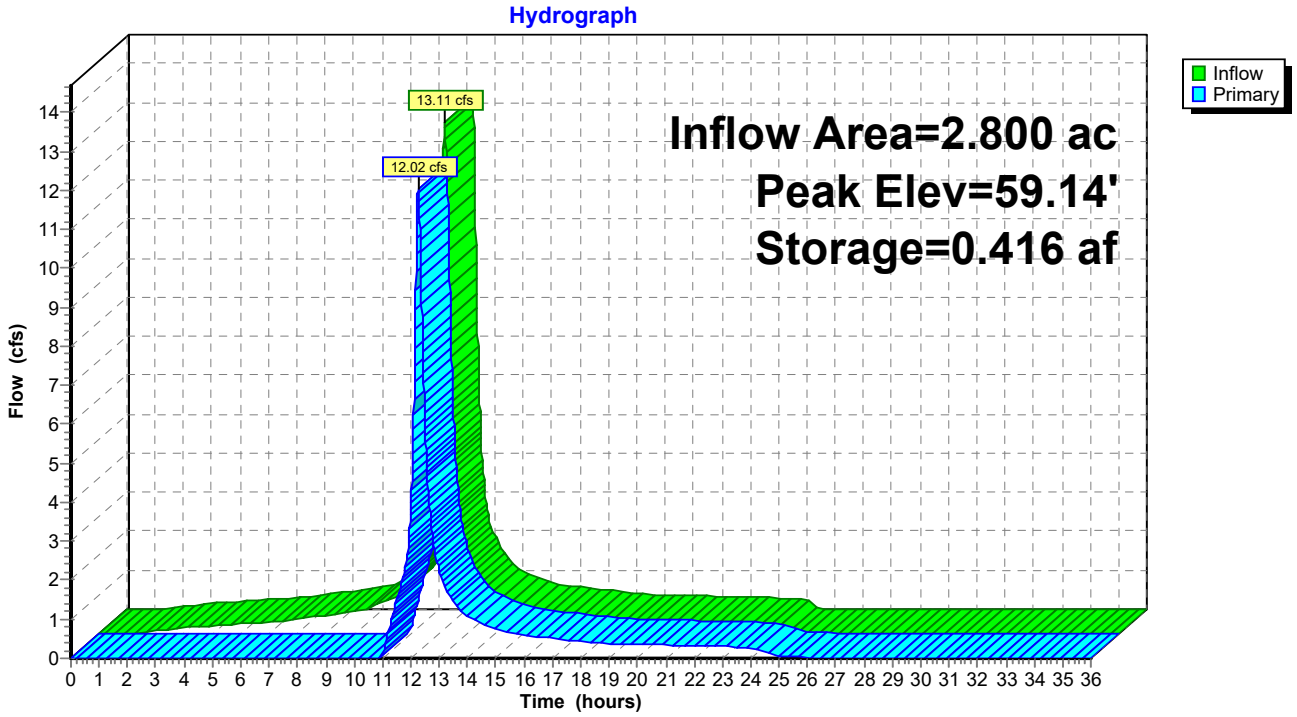
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
13.11 cfs
12.02 cfs
Inflow Area=2.800 ac
Peak Elev=59.14'
Storage=0.416 af
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 6.21" for 50-Year event
Inflow = 3.60 cfs @ 12.15 hrs, Volume= 0.331 af
Outflow = 2.92 cfs @ 12.20 hrs, Volume= 0.212 af, Atten= 19%, Lag= 3.1 min
Primary = 2.92 cfs @ 12.20 hrs, Volume= 0.212 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.97' @ 12.20 hrs Surf.Area= 0.081 ac Storage= 0.144 af

Plug-Flow detention time= 256.9 min calculated for 0.212 af (64% of inflow)
Center-of-Mass det. time= 128.4 min ( 896.0 - 767.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.92 cfs @ 12.20 hrs HW=59.97' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 2.92 cfs of 4.59 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.92 cfs @ 2.05 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

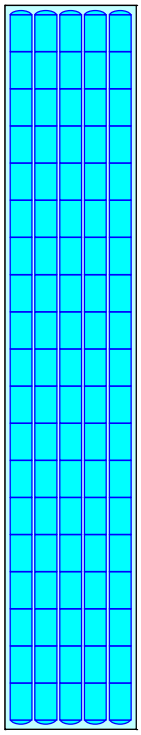
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

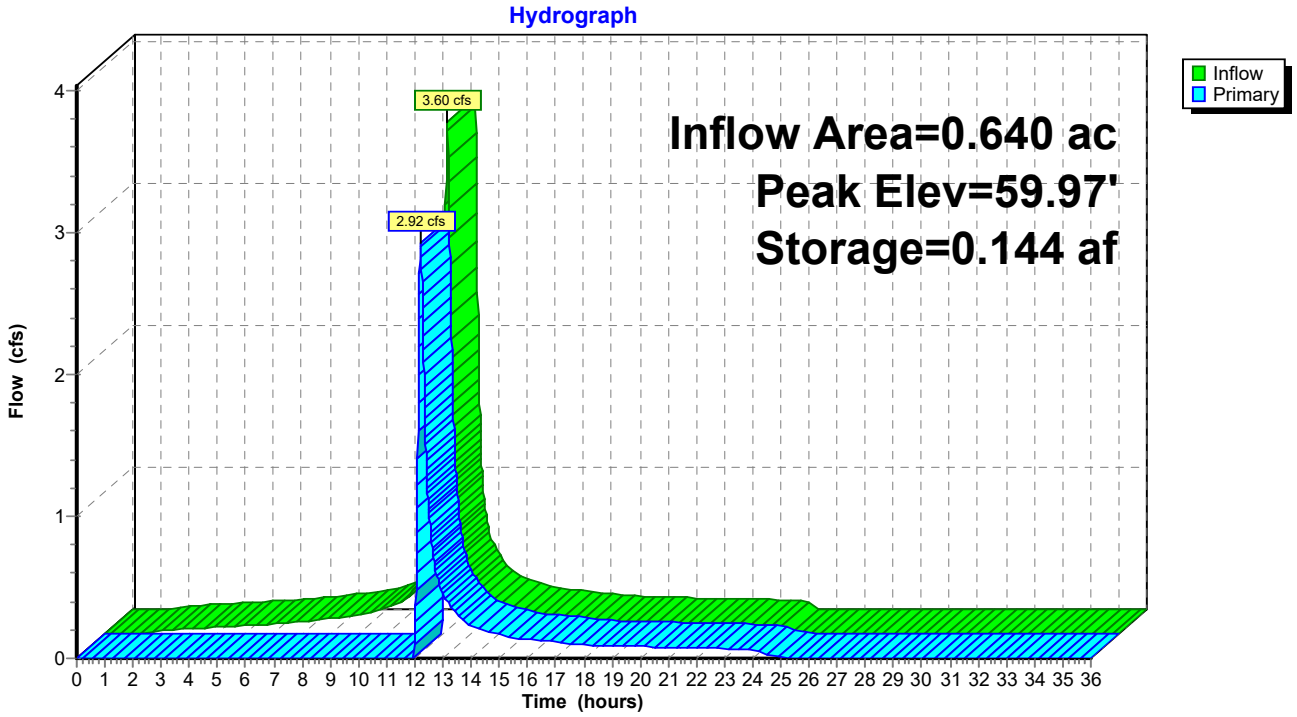
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
3.60 cfs
2.92 cfs
Inflow Area=0.640 ac
Peak Elev=59.97'
Storage=0.144 af
Flow (cfs)
0
1
2
3
4
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 6.21" for 50-Year event
Inflow = 6.41 cfs @ 12.13 hrs, Volume= 0.548 af
Outflow = 5.13 cfs @ 12.18 hrs, Volume= 0.452 af, Atten= 20%, Lag= 2.7 min
Primary = 5.13 cfs @ 12.18 hrs, Volume= 0.452 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.34' @ 12.18 hrs Surf.Area= 0.065 ac Storage= 0.129 af

Plug-Flow detention time= 164.1 min calculated for 0.452 af (82% of inflow)
Center-of-Mass det. time= 79.0 min ( 844.7 - 765.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=5.13 cfs @ 12.18 hrs HW=60.34' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 5.13 cfs @ 6.53 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 5.13 cfs of 7.64 cfs potential flow)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

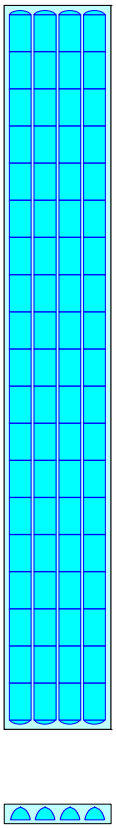
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

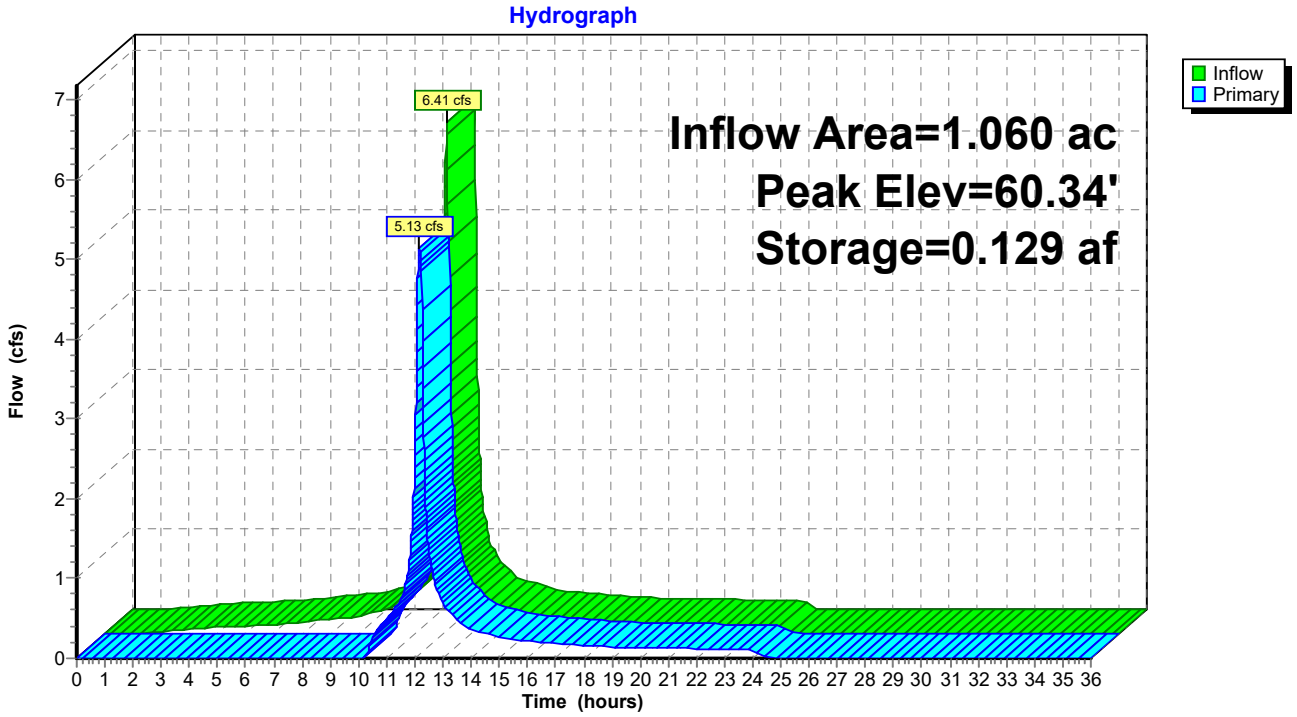
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
6.41 cfs
5.13 cfs
Inflow Area=1.060 ac
Peak Elev=60.34'
Storage=0.129 af
Flow (cfs)
0 1 2 3 4 5 6 7
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 31 32 33 34 35 36

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 5.97" for 50-Year event
Inflow = 8.64 cfs @ 12.14 hrs, Volume= 0.747 af
Outflow = 4.78 cfs @ 12.23 hrs, Volume= 0.484 af, Atten= 45%, Lag= 5.6 min
Primary = 4.78 cfs @ 12.23 hrs, Volume= 0.484 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.94' @ 12.23 hrs Surf.Area= 0.094 ac Storage= 0.321 af

Plug-Flow detention time= 239.8 min calculated for 0.484 af (65% of inflow)
Center-of-Mass det. time= 114.1 min ( 891.7 - 777.5 )

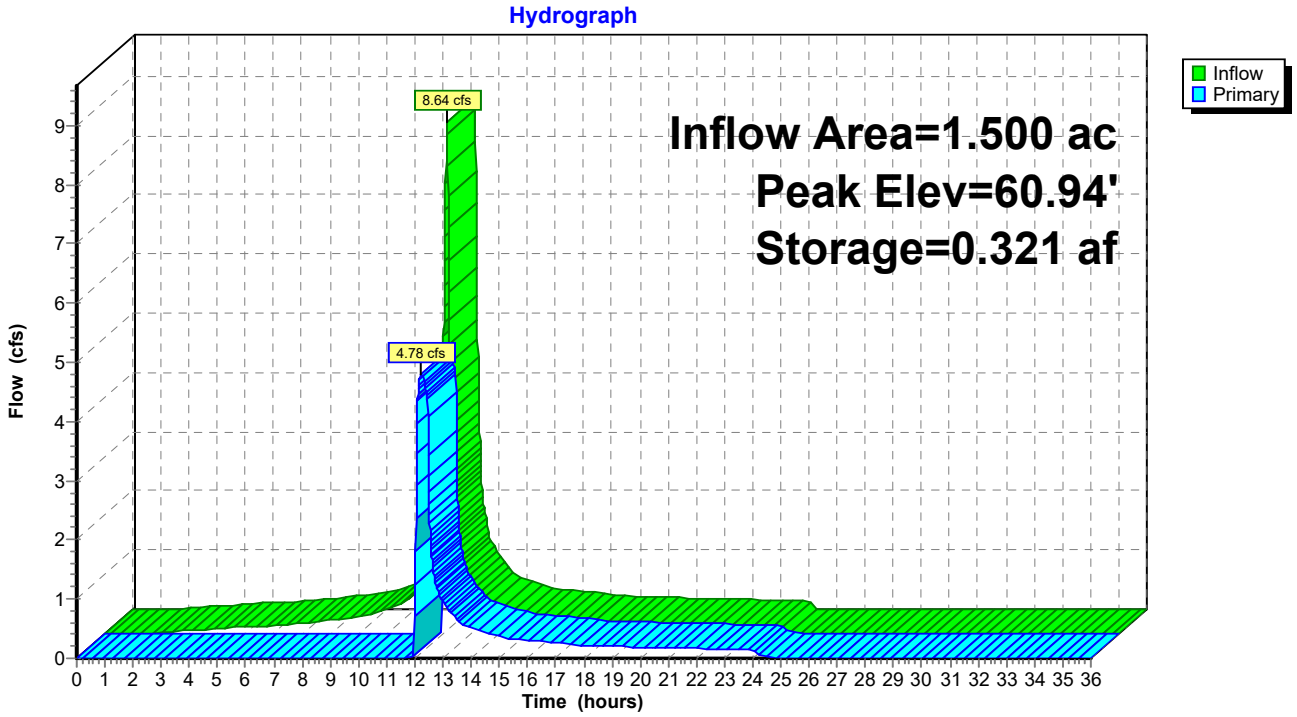
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=4.78 cfs @ 12.23 hrs HW=60.94' TW=58.09' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.78 cfs @ 6.09 fps)
↑—**2=Orifice/Grate** (Passes 4.78 cfs of 16.75 cfs potential flow)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
8.64 cfs
4.78 cfs
Inflow Area=1.500 ac
Peak Elev=60.94'
Storage=0.321 af
Flow (cfs)
0 1 2 3 4 5 6 7 8 9
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 31 32 33 34 35 36

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 4.86" for 50-Year event
Inflow = 36.80 cfs @ 12.20 hrs, Volume= 3.860 af
Outflow = 36.80 cfs @ 12.20 hrs, Volume= 3.825 af, Atten= 0%, Lag= 0.0 min
Primary = 24.23 cfs @ 12.20 hrs, Volume= 0.687 af
Routed to Link 9L : Off-Site South
Secondary = 12.57 cfs @ 12.20 hrs, Volume= 3.138 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.09' @ 12.20 hrs Surf.Area= 0.038 ac Storage= 0.070 af

Plug-Flow detention time= 13.2 min calculated for 3.824 af (99% of inflow)
Center-of-Mass det. time= 7.0 min ( 872.6 - 865.7 )

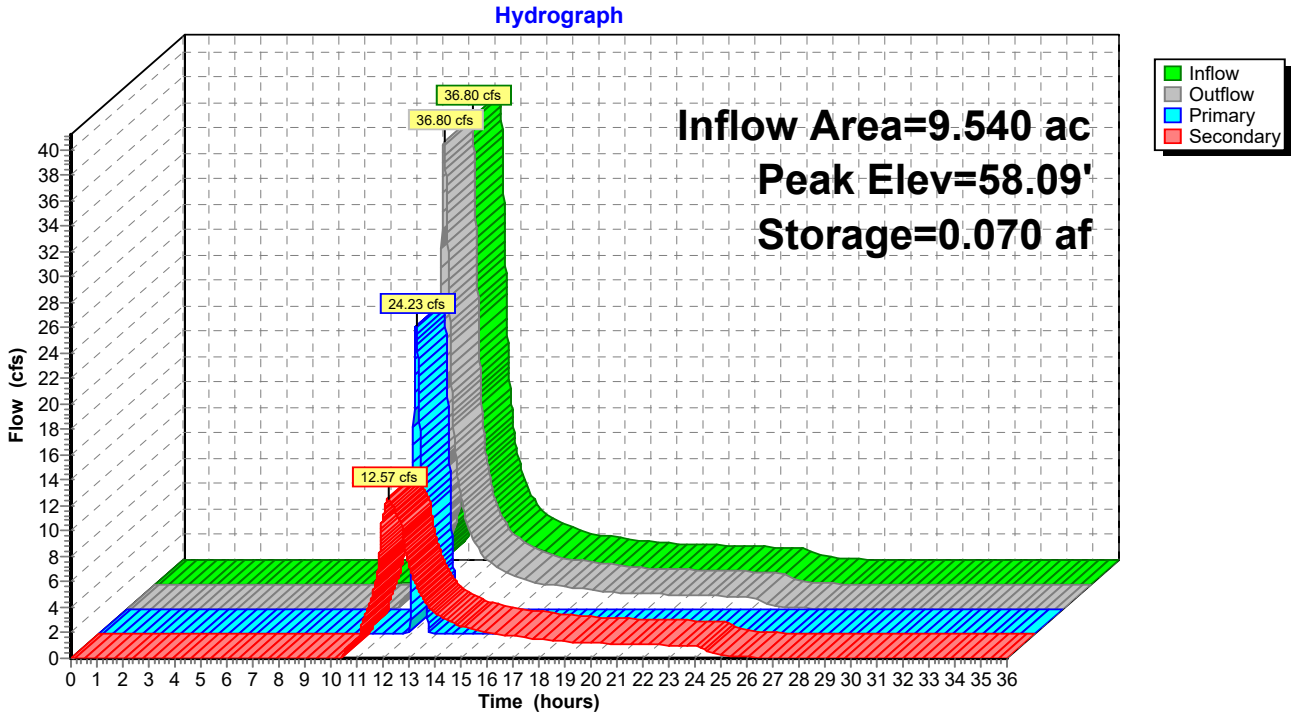
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=24.22 cfs @ 12.20 hrs HW=58.09' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 24.22 cfs @ 0.86 fps)

**Secondary OutFlow** Max=12.57 cfs @ 12.20 hrs HW=58.09' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 12.57 cfs of 19.18 cfs potential flow)
  ├─**3=Broad-Crested Rectangular Weir** (Weir Controls 10.22 cfs @ 3.03 fps)
  └─**4=Orifice/Grate** (Orifice Controls 2.35 cfs @ 6.74 fps)

## Pond 8P: Level Spreader

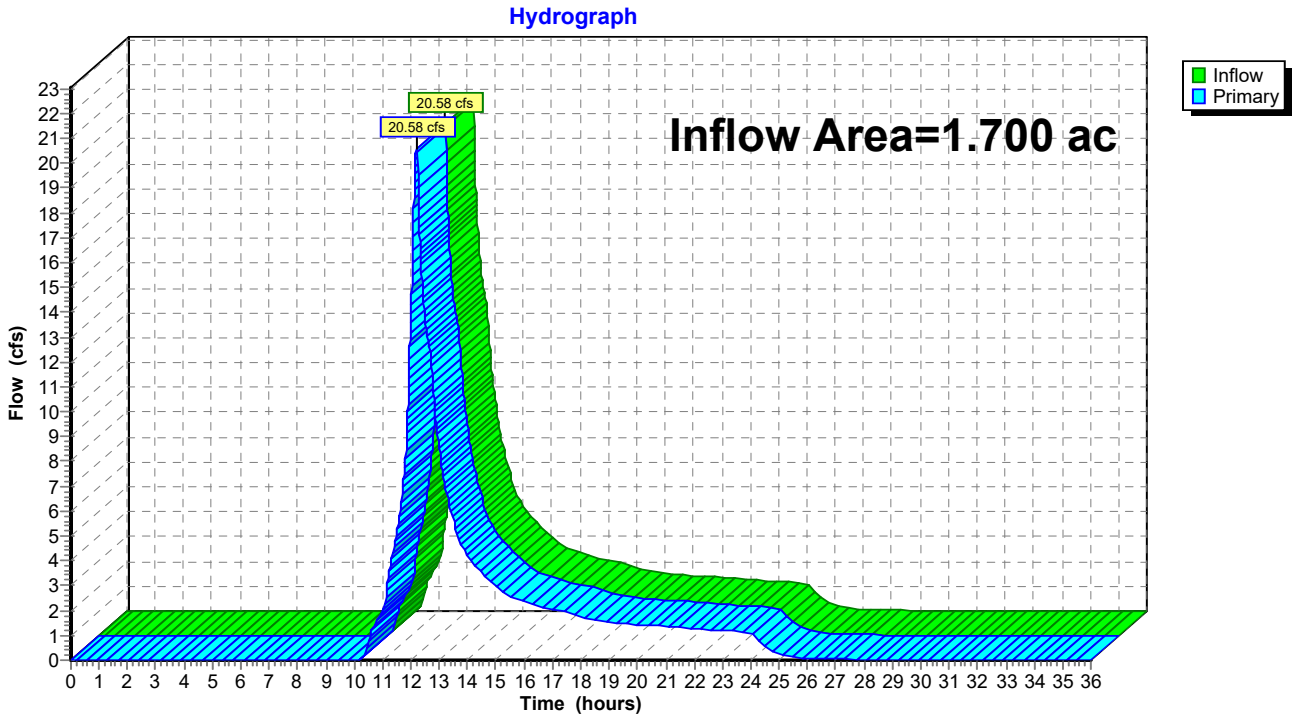


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 26.84" for 50-Year event
Inflow = 20.58 cfs @ 12.19 hrs, Volume= 3.802 af
Primary = 20.58 cfs @ 12.19 hrs, Volume= 3.802 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

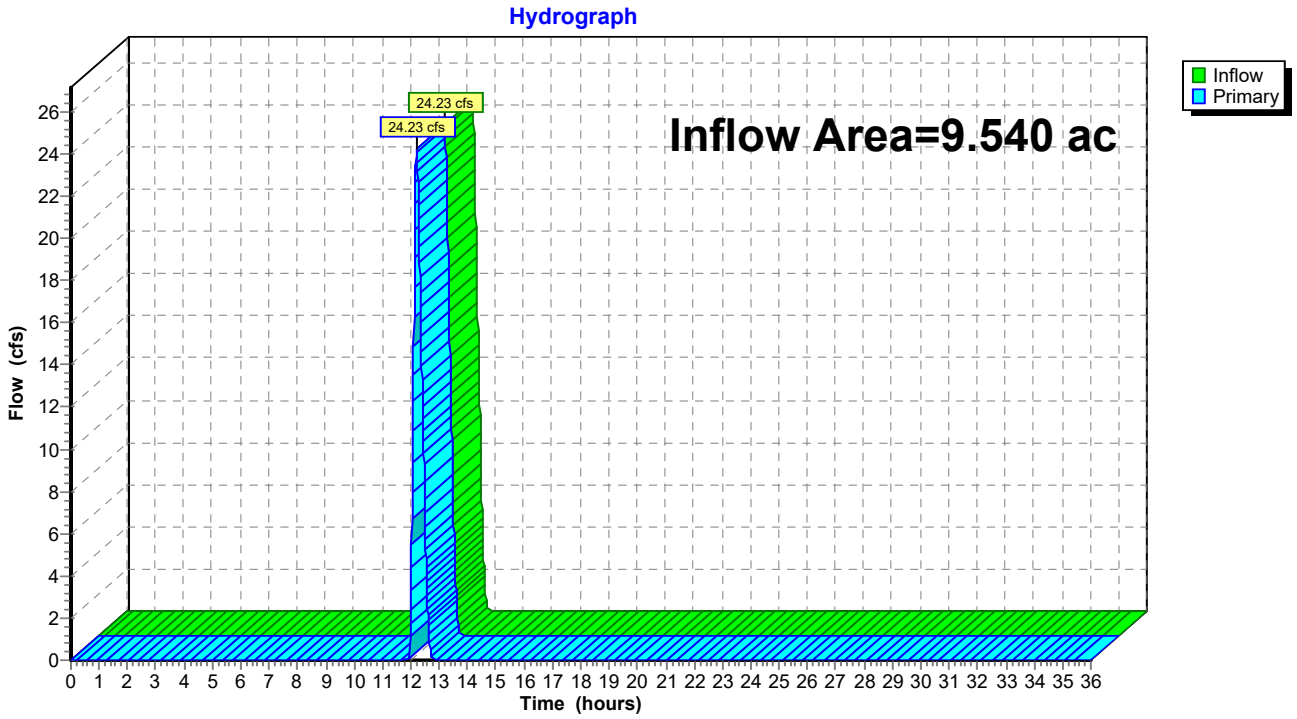


## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 0.86" for 50-Year event
Inflow = 24.23 cfs @ 12.20 hrs, Volume= 0.687 af
Primary = 24.23 cfs @ 12.20 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 9L: Off-Site South



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-1A: To Infiltration** Runoff Area=4.540 ac 75.55% Impervious Runoff Depth=6.95"
Flow Length=509' Tc=6.0 min CN=94 Runoff=31.08 cfs 2.631 af

**Subcatchment PDA-1B: To Infiltration** Runoff Area=2.800 ac 85.00% Impervious Runoff Depth=7.07"
Flow Length=293' Tc=13.5 min CN=95 Runoff=14.84 cfs 1.650 af

**Subcatchment PDA-1C: To WQB 1** Runoff Area=1.500 ac 73.33% Impervious Runoff Depth=6.84"
Flow Length=360' Tc=7.1 min CN=93 Runoff=9.81 cfs 0.854 af

**Subcatchment PDA-1D: Direct to Level** Runoff Area=0.700 ac 51.43% Impervious Runoff Depth=5.32"
Flow Length=17' Slope=0.0880 '/' Tc=6.0 min CN=80 Runoff=4.04 cfs 0.310 af

**Subcatchment PDA-3A: To Infiltration** Runoff Area=1.060 ac 84.91% Impervious Runoff Depth=7.07"
Flow Length=213' Tc=6.2 min CN=95 Runoff=7.26 cfs 0.625 af

**Subcatchment PDA-3B: To Infiltration** Runoff Area=0.640 ac 85.94% Impervious Runoff Depth=7.07"
Flow Length=227' Slope=0.0100 '/' Tc=8.2 min CN=95 Runoff=4.08 cfs 0.377 af

**Pond 1P: UGS-1** Peak Elev=60.00' Storage=0.698 af Inflow=31.08 cfs 2.631 af
Outflow=23.08 cfs 2.293 af

**Pond 2P: UGS-2** Peak Elev=59.24' Storage=0.423 af Inflow=14.84 cfs 1.650 af
Outflow=13.71 cfs 1.349 af

**Pond 4P: UGS-4** Peak Elev=60.03' Storage=0.147 af Inflow=4.08 cfs 0.377 af
Outflow=3.55 cfs 0.258 af

**Pond 5P: UGS-5** Peak Elev=60.57' Storage=0.135 af Inflow=7.26 cfs 0.625 af
Outflow=5.44 cfs 0.529 af

**Pond 7P: WBQ-1** Peak Elev=61.14' Storage=0.340 af Inflow=9.81 cfs 0.854 af
Outflow=5.00 cfs 0.592 af

**Pond 8P: Level Spreader** Peak Elev=58.11' Storage=0.070 af Inflow=42.59 cfs 4.544 af
Primary=29.73 cfs 0.914 af Secondary=12.86 cfs 3.594 af Outflow=42.59 cfs 4.508 af

**Link 1L: Existing Drainage System** Inflow=21.84 cfs 4.381 af
Primary=21.84 cfs 4.381 af

**Link 9L: Off-Site South** Inflow=29.73 cfs 0.914 af
Primary=29.73 cfs 0.914 af

**Total Runoff Area = 11.240 ac Runoff Volume = 6.448 af Average Runoff Depth = 6.88"**
**22.42% Pervious = 2.520 ac 77.58% Impervious = 8.720 ac**

## Summary for Subcatchment PDA-1A: To Infiltration System 1

[47] Hint: Peak is 1234% of capacity of segment #2

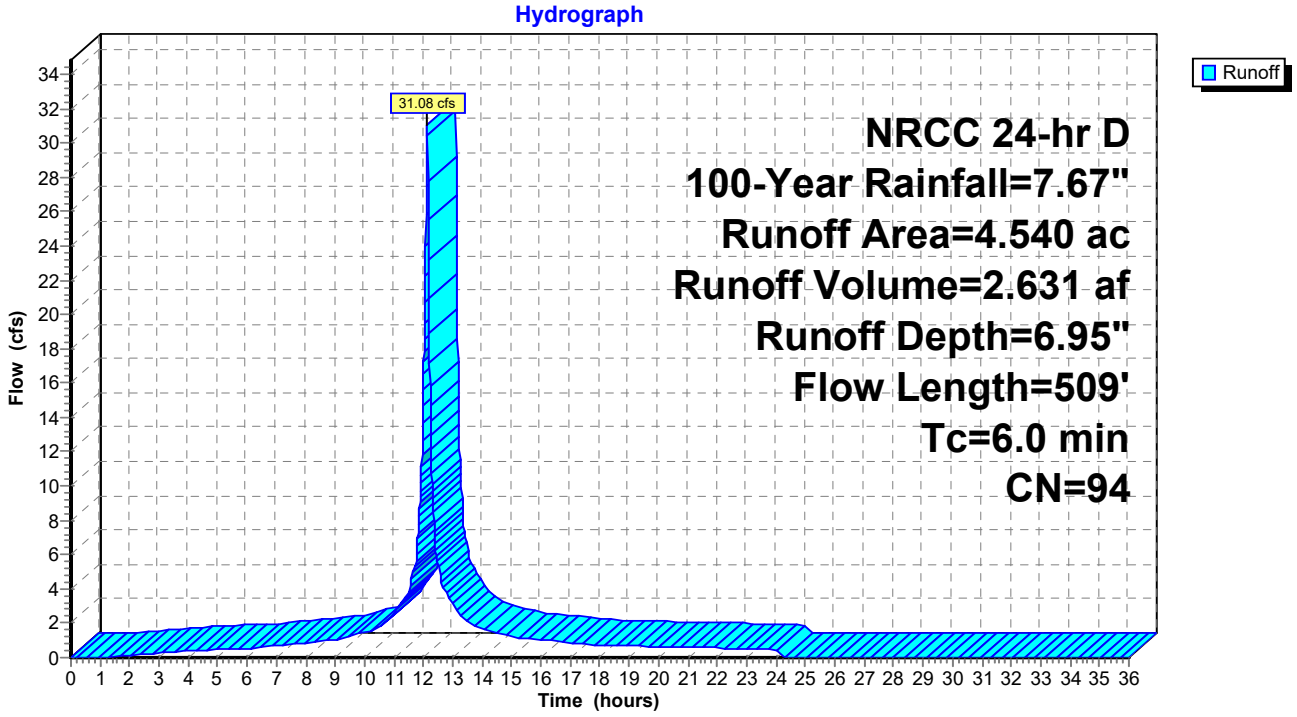
Runoff = 31.08 cfs @ 12.13 hrs, Volume= 2.631 af, Depth= 6.95"
Routed to Pond 1P : UGS-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 3.430 | 98 | Paved parking, HSG D |
| 1.110 | 80 | >75% Grass cover, Good, HSG D |
| 4.540 | 94 | Weighted Average |
| 1.110 | | 24.45% Pervious Area |
| 3.430 | | 75.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.6 | 122 | 0.0150 | 1.25 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 2.0 | 387 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 3.6 | 509 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1A: To Infiltration System 1



## Summary for Subcatchment PDA-1B: To Infiltration System 2

[47] Hint: Peak is 417% of capacity of segment #3

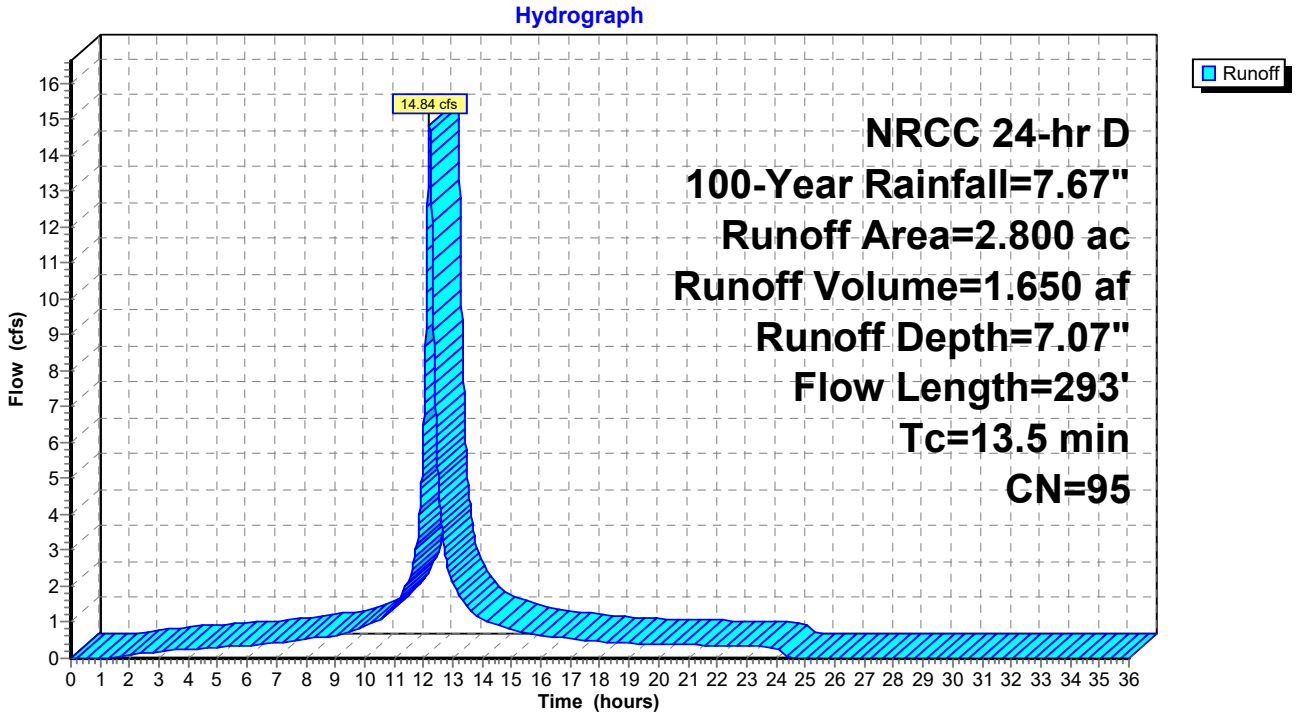
Runoff = 14.84 cfs @ 12.21 hrs, Volume= 1.650 af, Depth= 7.07"
Routed to Pond 2P : UGS-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 2.380 | 98 | Paved parking, HSG D |
| 0.420 | 80 | >75% Grass cover, Good, HSG D |
| 2.800 | 95 | Weighted Average |
| 0.420 | | 15.00% Pervious Area |
| 2.380 | | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.4 | 92 | 0.0100 | 0.12 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 0.5 | 44 | 0.0300 | 1.34 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.6 | 157 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 13.5 | 293 | Total | | | |

## Subcatchment PDA-1B: To Infiltration System 2



## Summary for Subcatchment PDA-1C: To WQB 1

[47] Hint: Peak is 275% of capacity of segment #3

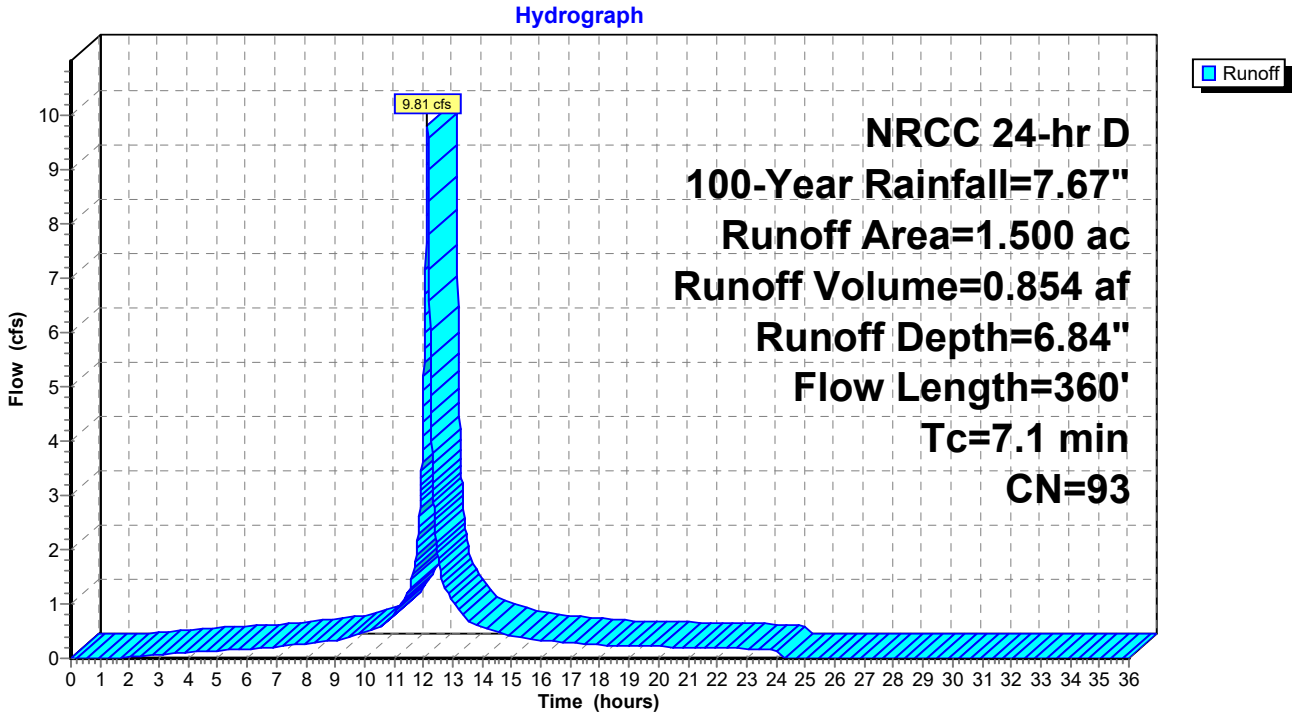
Runoff = 9.81 cfs @ 12.14 hrs, Volume= 0.854 af, Depth= 6.84"
Routed to Pond 7P : WBQ-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 1.100 | 98 | Paved parking, HSG D |
| 0.050 | 61 | >75% Grass cover, Good, HSG B |
| 0.350 | 80 | >75% Grass cover, Good, HSG D |
| 1.500 | 93 | Weighted Average |
| 0.400 | | 26.67% Pervious Area |
| 1.100 | | 73.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.8 | 22 | 0.0060 | 0.08 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.4 | 82 | 0.0100 | 0.98 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.9 | 256 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.1 | 360 | Total | | | |

## Subcatchment PDA-1C: To WQB 1



## Summary for Subcatchment PDA-1D: Direct to Level Spreader

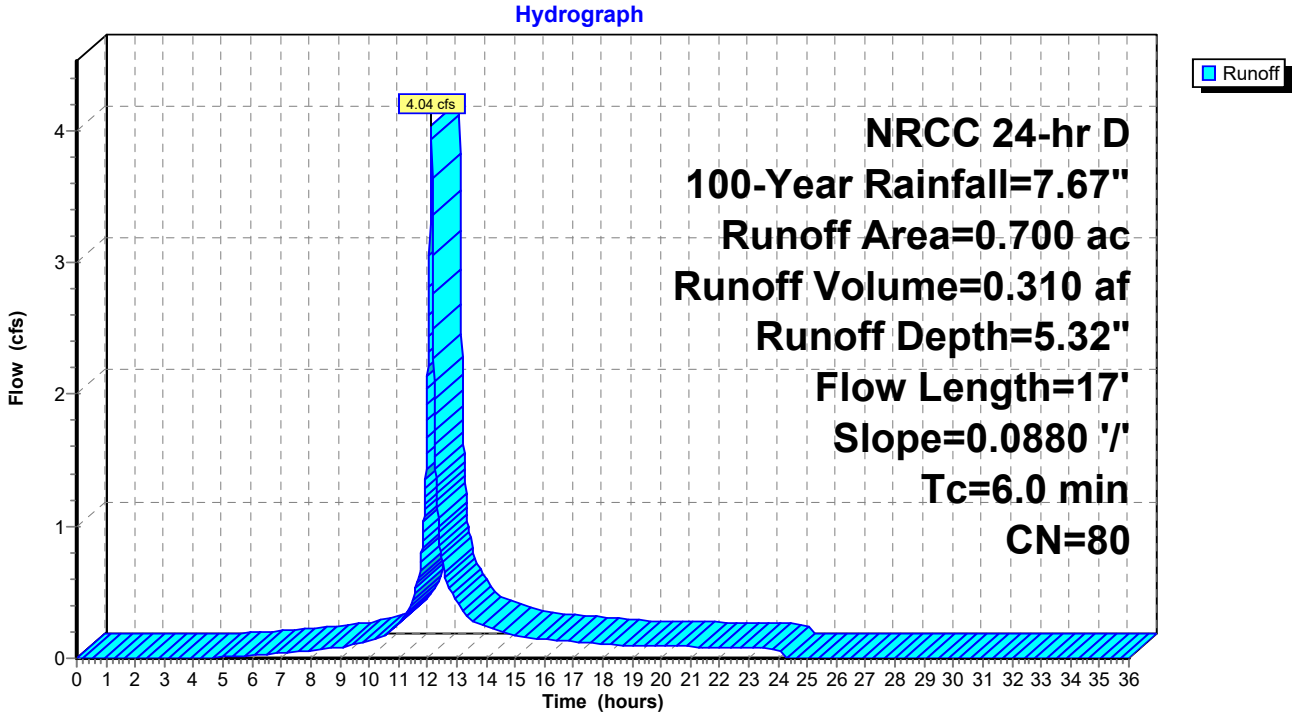
Runoff = 4.04 cfs @ 12.13 hrs, Volume= 0.310 af, Depth= 5.32"
Routed to Pond 8P : Level Spreader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 0.360 | 98 | Paved parking, HSG B |
| 0.340 | 61 | >75% Grass cover, Good, HSG B |
| 0.700 | 80 | Weighted Average |
| 0.340 | | 48.57% Pervious Area |
| 0.360 | | 51.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 17 | 0.0880 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.3 | 17 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-1D: Direct to Level Spreader



## Summary for Subcatchment PDA-3A: To Infiltration System 5

[47] Hint: Peak is 288% of capacity of segment #3

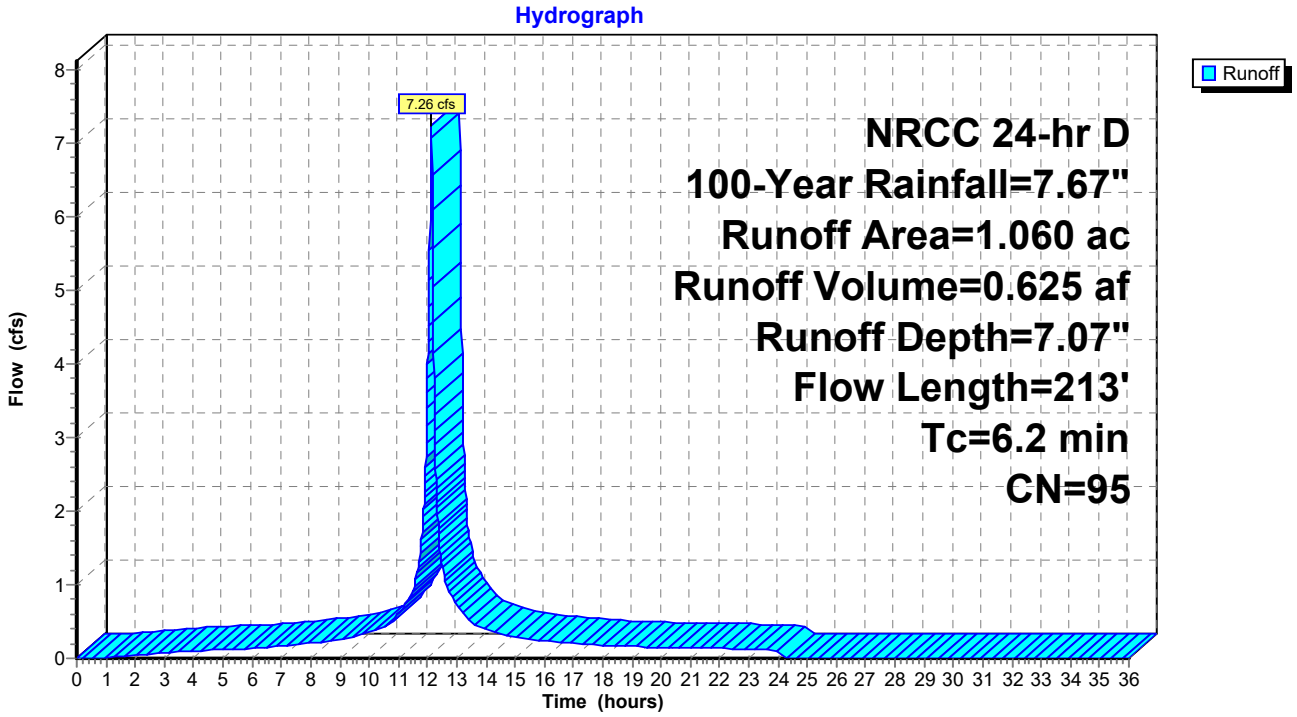
Runoff = 7.26 cfs @ 12.13 hrs, Volume= 0.625 af, Depth= 7.07"
Routed to Pond 5P : UGS-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG D |
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 1.060 | 95 | Weighted Average |
| 0.160 | | 15.09% Pervious Area |
| 0.900 | | 84.91% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 35 | 0.0200 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 1.5 | 93 | 0.0100 | 1.00 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.4 | 85 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.2 | 213 | Total | | | |

## Subcatchment PDA-3A: To Infiltration System 5



## Summary for Subcatchment PDA-3B: To Infiltration System 4

[47] Hint: Peak is 114% of capacity of segment #3

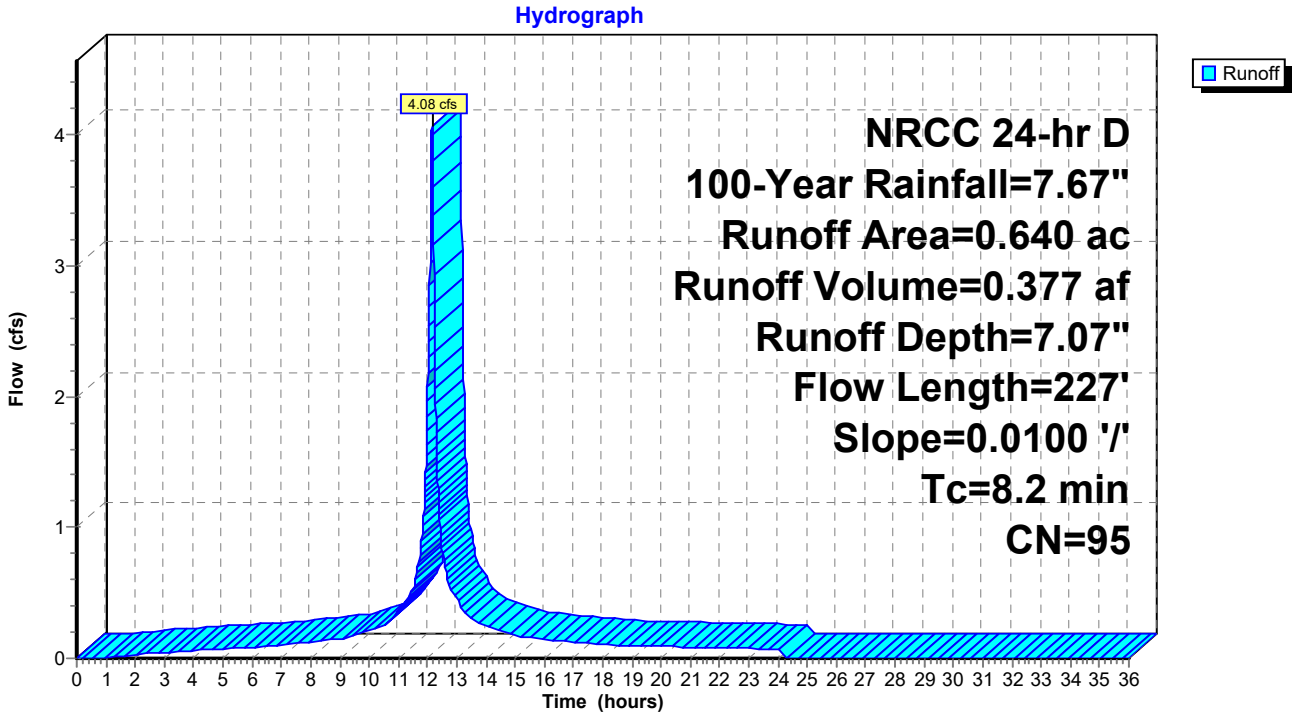
Runoff = 4.08 cfs @ 12.15 hrs, Volume= 0.377 af, Depth= 7.07"
Routed to Pond 4P : UGS-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 98 | Paved parking, HSG D |
| 0.090 | 80 | >75% Grass cover, Good, HSG D |
| 0.640 | 95 | Weighted Average |
| 0.090 | | 14.06% Pervious Area |
| 0.550 | | 85.94% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.6 | 34 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.06" |
| 2.5 | 167 | 0.0100 | 1.13 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.1 | 26 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.2 | 227 | Total | | | |

## Subcatchment PDA-3B: To Infiltration System 4



## Summary for Pond 1P: UGS-1

Inflow Area = 4.540 ac, 75.55% Impervious, Inflow Depth = 6.95" for 100-Year event
Inflow = 31.08 cfs @ 12.13 hrs, Volume= 2.631 af
Outflow = 23.08 cfs @ 12.18 hrs, Volume= 2.293 af, Atten= 26%, Lag= 3.1 min
Primary = 23.08 cfs @ 12.18 hrs, Volume= 2.293 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.00' @ 12.18 hrs Surf.Area= 0.316 ac Storage= 0.698 af

Plug-Flow detention time= 154.0 min calculated for 2.292 af (87% of inflow)
Center-of-Mass det. time= 85.9 min ( 853.5 - 767.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.45' | 0.340 af | **82.25'W x 167.38'L x 4.00'H Field A**<br>1.264 af Overall - 0.415 af Embedded = 0.849 af x 40.0% Voids |
| #2A | 57.45' | 0.415 af | **ADS_StormTech DC-780 +Cap** x 391 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>391 Chambers in 17 Rows |
| | | 0.755 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.25' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.20' | **30.0" Round Culvert**<br>L= 72.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.20' / 56.98' S= 0.0031 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=23.07 cfs @ 12.18 hrs HW=60.00' TW=58.11' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 23.07 cfs of 24.80 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 23.07 cfs @ 4.39 fps)

## Pond 1P: UGS-1 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

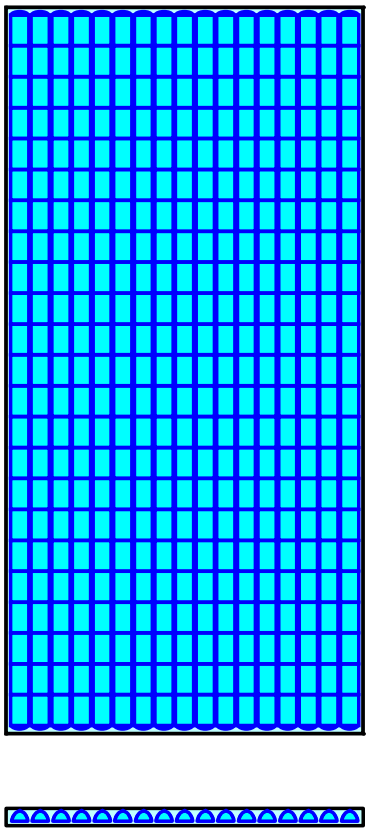
23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length
17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

391 Chambers x 46.2 cf = 18,079.5 cf Chamber Storage

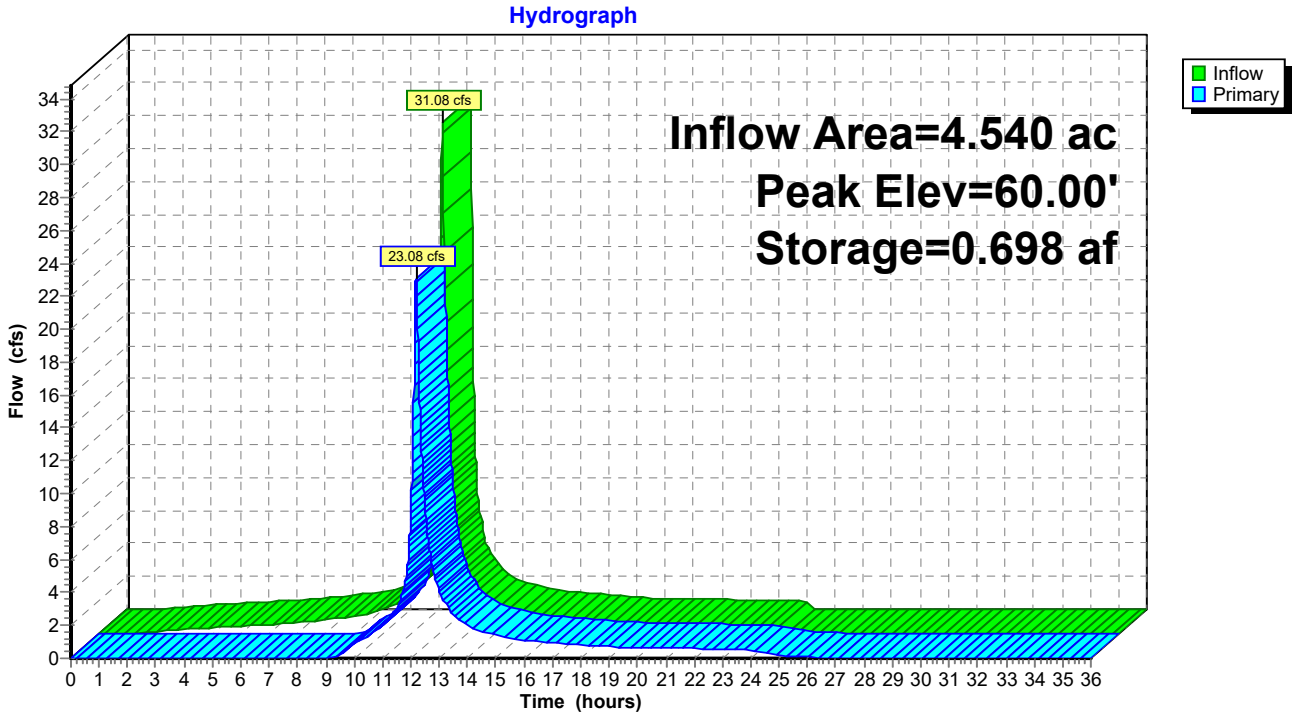
55,066.9 cf Field - 18,079.5 cf Chambers = 36,987.5 cf Stone x 40.0% Voids = 14,795.0 cf Stone Storage

Chamber Storage + Stone Storage = 32,874.5 cf = 0.755 af
Overall Storage Efficiency = 59.7%
Overall System Size = 167.38' x 82.25' x 4.00'

391 Chambers
2,039.5 cy Field
1,369.9 cy Stone



## Pond 1P: UGS-1


Hydrograph
Inflow
Primary
31.08 cfs
23.08 cfs
Inflow Area=4.540 ac
Peak Elev=60.00'
Storage=0.698 af
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
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 31 32 33 34 35 36

## Summary for Pond 2P: UGS-2

Inflow Area = 2.800 ac, 85.00% Impervious, Inflow Depth = 7.07" for 100-Year event
Inflow = 14.84 cfs @ 12.21 hrs, Volume= 1.650 af
Outflow = 13.71 cfs @ 12.26 hrs, Volume= 1.349 af, Atten= 8%, Lag= 3.0 min
Primary = 13.71 cfs @ 12.26 hrs, Volume= 1.349 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 59.24' @ 12.26 hrs Surf.Area= 0.184 ac Storage= 0.423 af

Plug-Flow detention time= 178.4 min calculated for 1.349 af (82% of inflow)
Center-of-Mass det. time= 90.7 min ( 859.9 - 769.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 55.45' | 0.200 af | **44.25'W x 181.62'L x 4.00'H Field A**<br>0.738 af Overall - 0.239 af Embedded = 0.499 af x 40.0% Voids |
| #2A | 56.45' | 0.239 af | **ADS_StormTech DC-780 +Cap** x 225 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>225 Chambers in 9 Rows |
| | | 0.438 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.00' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 56.45' | **30.0" Round Culvert**<br>L= 50.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 56.45' / 55.98' S= 0.0094 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 4.91 sf |

**Primary OutFlow** Max=13.71 cfs @ 12.26 hrs HW=59.24' TW=58.10' (Dynamic Tailwater)
↑**2=Culvert** (Passes 13.71 cfs of 25.30 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 13.71 cfs @ 3.67 fps)

## Pond 2P: UGS-2 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

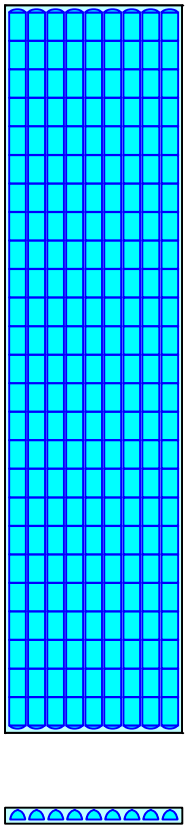
25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 44.25' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

225 Chambers x 46.2 cf = 10,403.8 cf Chamber Storage

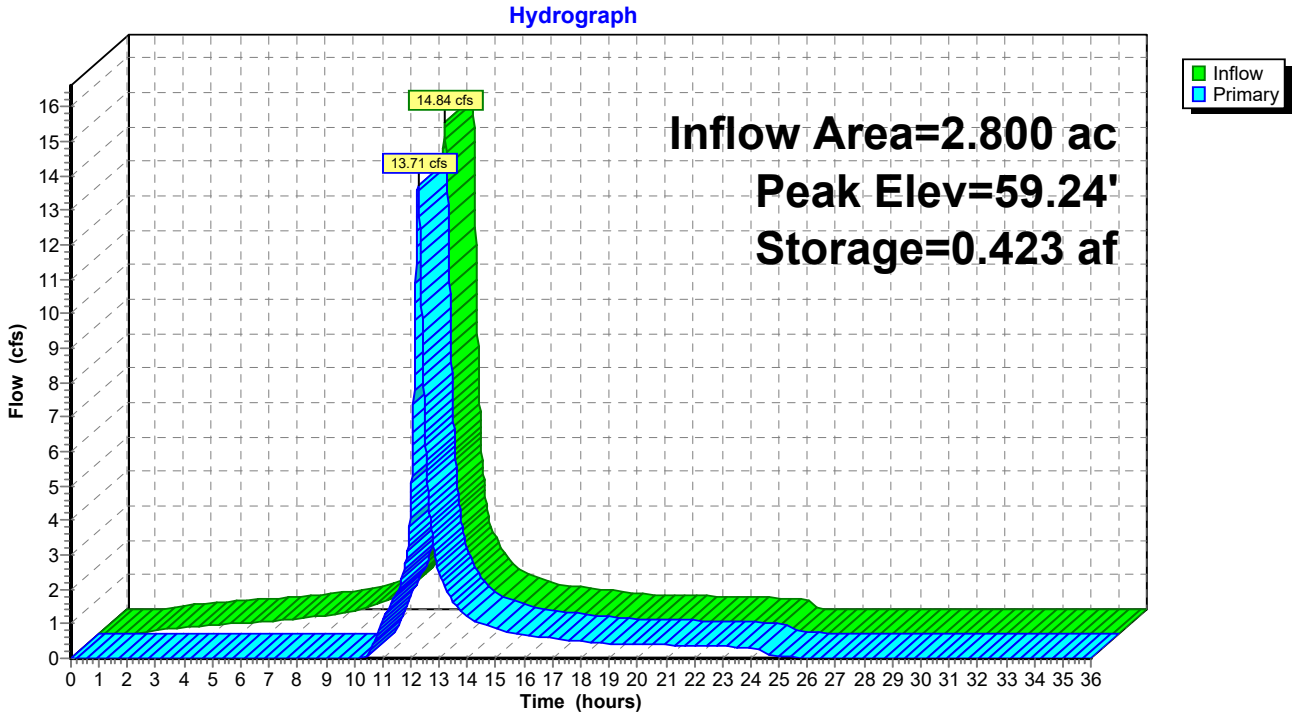
32,146.2 cf Field - 10,403.8 cf Chambers = 21,742.4 cf Stone x 40.0% Voids = 8,696.9 cf Stone Storage

Chamber Storage + Stone Storage = 19,100.7 cf = 0.438 af
Overall Storage Efficiency = 59.4%
Overall System Size = 181.62' x 44.25' x 4.00'

225 Chambers
1,190.6 cy Field
805.3 cy Stone



## Pond 2P: UGS-2


Hydrograph
Inflow
Primary
14.84 cfs
13.71 cfs
Inflow Area=2.800 ac
Peak Elev=59.24'
Storage=0.423 af
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
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 31 32 33 34 35 36

## Summary for Pond 4P: UGS-4

Inflow Area = 0.640 ac, 85.94% Impervious, Inflow Depth = 7.07" for 100-Year event
Inflow = 4.08 cfs @ 12.15 hrs, Volume= 0.377 af
Outflow = 3.55 cfs @ 12.19 hrs, Volume= 0.258 af, Atten= 13%, Lag= 2.4 min
Primary = 3.55 cfs @ 12.19 hrs, Volume= 0.258 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.03' @ 12.19 hrs Surf.Area= 0.081 ac Storage= 0.147 af

Plug-Flow detention time= 239.2 min calculated for 0.258 af (68% of inflow)
Center-of-Mass det. time= 118.4 min ( 882.8 - 764.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.080 af | **25.25'W x 138.90'L x 3.75'H Field A**<br>0.302 af Overall - 0.101 af Embedded = 0.201 af x 40.0% Voids |
| #2A | 58.00' | 0.101 af | **ADS_StormTech DC-780 +Cap** x 95 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>95 Chambers in 5 Rows |
| | | 0.181 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 64.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.0766 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=3.55 cfs @ 12.19 hrs HW=60.03' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 3.55 cfs of 4.68 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.55 cfs @ 2.21 fps)

## Pond 4P: UGS-4 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

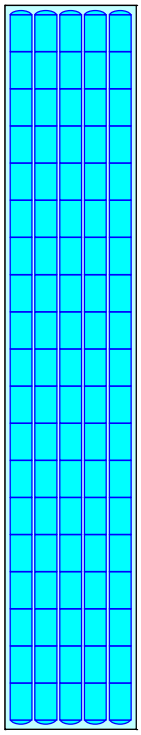
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

95 Chambers x 46.2 cf = 4,392.7 cf Chamber Storage

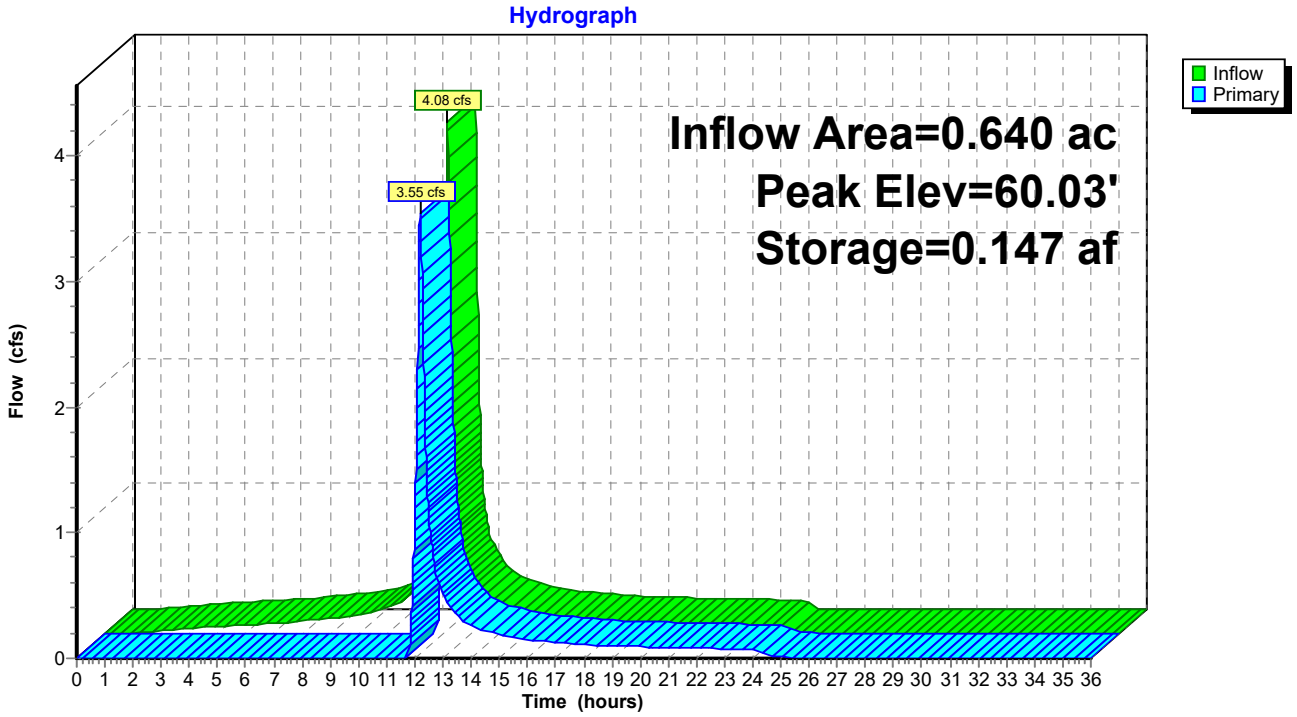
13,151.8 cf Field - 4,392.7 cf Chambers = 8,759.1 cf Stone x 40.0% Voids = 3,503.6 cf Stone Storage

Chamber Storage + Stone Storage = 7,896.3 cf = 0.181 af
Overall Storage Efficiency = 60.0%
Overall System Size = 138.90' x 25.25' x 3.75'

95 Chambers
487.1 cy Field
324.4 cy Stone



## Pond 4P: UGS-4


Hydrograph
Inflow
Primary
4.08 cfs
3.55 cfs
Inflow Area=0.640 ac
Peak Elev=60.03'
Storage=0.147 af
Flow (cfs)
0
1
2
3
4
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 31 32 33 34 35 36
Time (hours)

## Summary for Pond 5P: UGS-5

Inflow Area = 1.060 ac, 84.91% Impervious, Inflow Depth = 7.07" for 100-Year event
Inflow = 7.26 cfs @ 12.13 hrs, Volume= 0.625 af
Outflow = 5.44 cfs @ 12.18 hrs, Volume= 0.529 af, Atten= 25%, Lag= 3.1 min
Primary = 5.44 cfs @ 12.18 hrs, Volume= 0.529 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 60.57' @ 12.18 hrs Surf.Area= 0.065 ac Storage= 0.135 af

Plug-Flow detention time= 152.2 min calculated for 0.529 af (85% of inflow)
Center-of-Mass det. time= 74.2 min ( 836.7 - 762.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 57.25' | 0.066 af | **20.50'W x 138.90'L x 3.75'H Field A**<br>0.245 af Overall - 0.081 af Embedded = 0.164 af x 40.0% Voids |
| #2A | 58.00' | 0.081 af | **ADS_StormTech DC-780 +Cap** x 76 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>76 Chambers in 4 Rows |
| | | 0.146 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 59.50' | **3.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 58.00' | **12.0" Round Culvert**<br>L= 25.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.00' / 53.10' S= 0.1960 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

**Primary OutFlow** Max=5.44 cfs @ 12.18 hrs HW=60.57' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 5.44 cfs @ 6.93 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 5.44 cfs of 11.00 cfs potential flow)

## Pond 5P: UGS-5 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

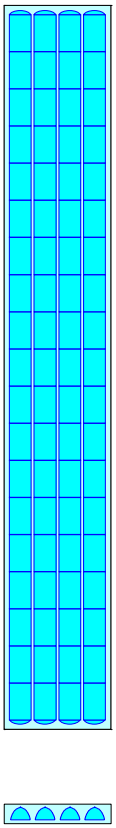
19 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 136.90' Row Length +12.0" End Stone x 2 = 138.90' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

76 Chambers x 46.2 cf = 3,514.2 cf Chamber Storage

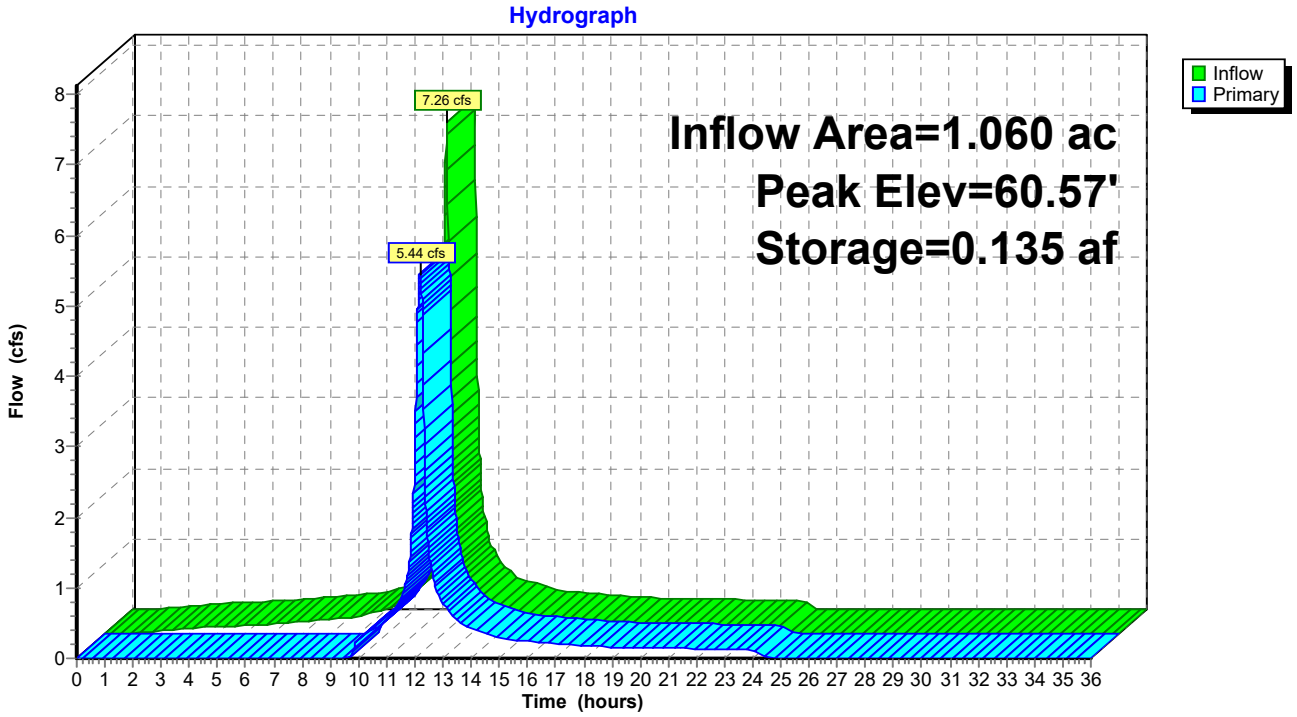
10,677.7 cf Field - 3,514.2 cf Chambers = 7,163.5 cf Stone x 40.0% Voids = 2,865.4 cf Stone Storage

Chamber Storage + Stone Storage = 6,379.6 cf = 0.146 af
Overall Storage Efficiency = 59.7%
Overall System Size = 138.90' x 20.50' x 3.75'

76 Chambers
395.5 cy Field
265.3 cy Stone



## Pond 5P: UGS-5


Hydrograph
Inflow
Primary
7.26 cfs
5.44 cfs
Inflow Area=1.060 ac
Peak Elev=60.57'
Storage=0.135 af
Flow (cfs)
0 1 2 3 4 5 6 7 8
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 31 32 33 34 35 36

## Summary for Pond 7P: WBQ-1

Inflow Area = 1.500 ac, 73.33% Impervious, Inflow Depth = 6.84" for 100-Year event
Inflow = 9.81 cfs @ 12.14 hrs, Volume= 0.854 af
Outflow = 5.00 cfs @ 12.24 hrs, Volume= 0.592 af, Atten= 49%, Lag= 6.3 min
Primary = 5.00 cfs @ 12.24 hrs, Volume= 0.592 af
Routed to Pond 8P : Level Spreader

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 61.14' @ 12.24 hrs Surf.Area= 0.102 ac Storage= 0.340 af

Plug-Flow detention time= 223.1 min calculated for 0.591 af (69% of inflow)
Center-of-Mass det. time= 105.5 min ( 879.2 - 773.6 )

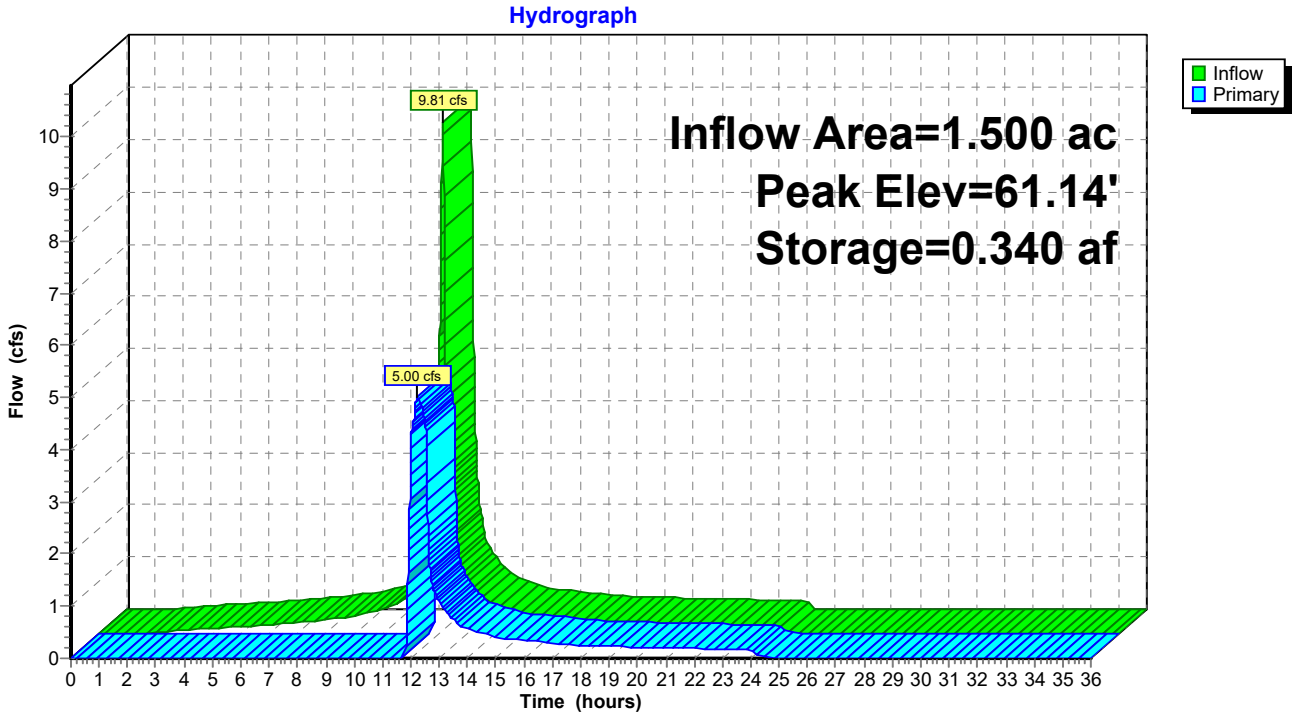
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 56.00' | 0.380 af | **Custom Stage Data (Irregular)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Perim. (feet) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|---|
| 56.00 | 0.038 | 209.0 | 0.000 | 0.000 | 0.038 |
| 57.00 | 0.048 | 222.0 | 0.043 | 0.043 | 0.049 |
| 58.00 | 0.059 | 235.0 | 0.054 | 0.097 | 0.061 |
| 59.00 | 0.070 | 247.0 | 0.065 | 0.161 | 0.073 |
| 60.00 | 0.082 | 260.0 | 0.076 | 0.238 | 0.087 |
| 61.00 | 0.095 | 272.0 | 0.089 | 0.326 | 0.100 |
| 61.50 | 0.119 | 297.0 | 0.053 | 0.380 | 0.126 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.50' | **12.0" Round Culvert**<br>L= 83.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 58.50' / 57.80' S= 0.0084 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf |
| #2 | Device 1 | 60.30' | **24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=5.00 cfs @ 12.24 hrs HW=61.14' TW=58.10' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 5.00 cfs @ 6.37 fps)
↑—**2=Orifice/Grate** (Passes 5.00 cfs of 25.28 cfs potential flow)

## Pond 7P: WBQ-1


Hydrograph
Inflow
Primary
9.81 cfs
5.00 cfs
Inflow Area=1.500 ac
Peak Elev=61.14'
Storage=0.340 af
Flow (cfs)
0 1 2 3 4 5 6 7 8 9 10
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 31 32 33 34 35 36

## Summary for Pond 8P: Level Spreader

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 5.72" for 100-Year event
Inflow = 42.59 cfs @ 12.19 hrs, Volume= 4.544 af
Outflow = 42.59 cfs @ 12.19 hrs, Volume= 4.508 af, Atten= 0%, Lag= 0.0 min
Primary = 29.73 cfs @ 12.19 hrs, Volume= 0.914 af
Routed to Link 9L : Off-Site South
Secondary = 12.86 cfs @ 12.19 hrs, Volume= 3.594 af
Routed to Link 1L : Existing Drainage System

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.11' @ 12.19 hrs Surf.Area= 0.038 ac Storage= 0.070 af

Plug-Flow detention time= 12.0 min calculated for 4.508 af (99% of inflow)
Center-of-Mass det. time= 6.5 min ( 863.1 - 856.6 )

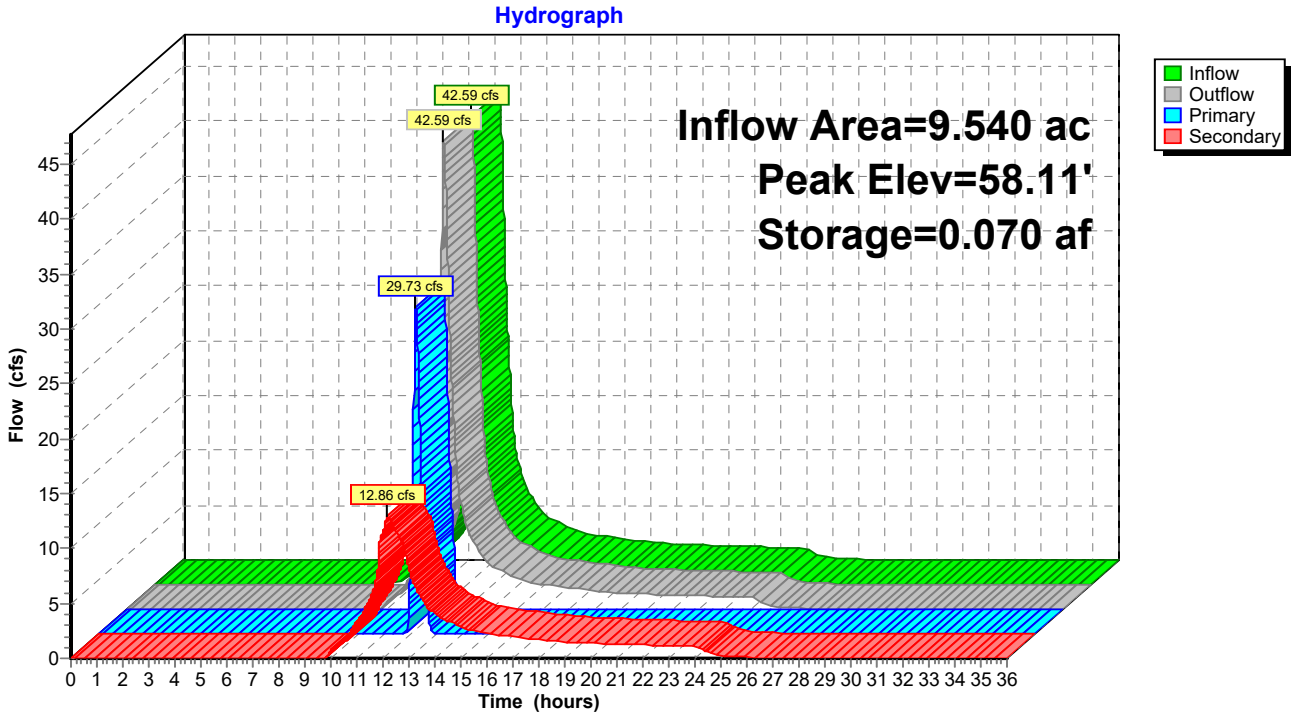
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 53.50' | 0.076 af | **6.00'W x 275.00'L x 5.00'H Prismatoid**<br>0.189 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 57.99' | **275.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #2 | Secondary | 55.80' | **30.0" Round Culvert**<br>L= 165.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 55.80' / 55.25' S= 0.0033 '/' Cc= 0.900<br>n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf |
| #3 | Device 2 | 57.25' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #4 | Device 2 | 55.80' | **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=29.73 cfs @ 12.19 hrs HW=58.11' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 29.73 cfs @ 0.92 fps)

**Secondary OutFlow** Max=12.86 cfs @ 12.19 hrs HW=58.11' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 12.86 cfs of 19.37 cfs potential flow)
  ├─**3=Broad-Crested Rectangular Weir** (Weir Controls 10.50 cfs @ 3.06 fps)
  └─**4=Orifice/Grate** (Orifice Controls 2.36 cfs @ 6.76 fps)

## Pond 8P: Level Spreader

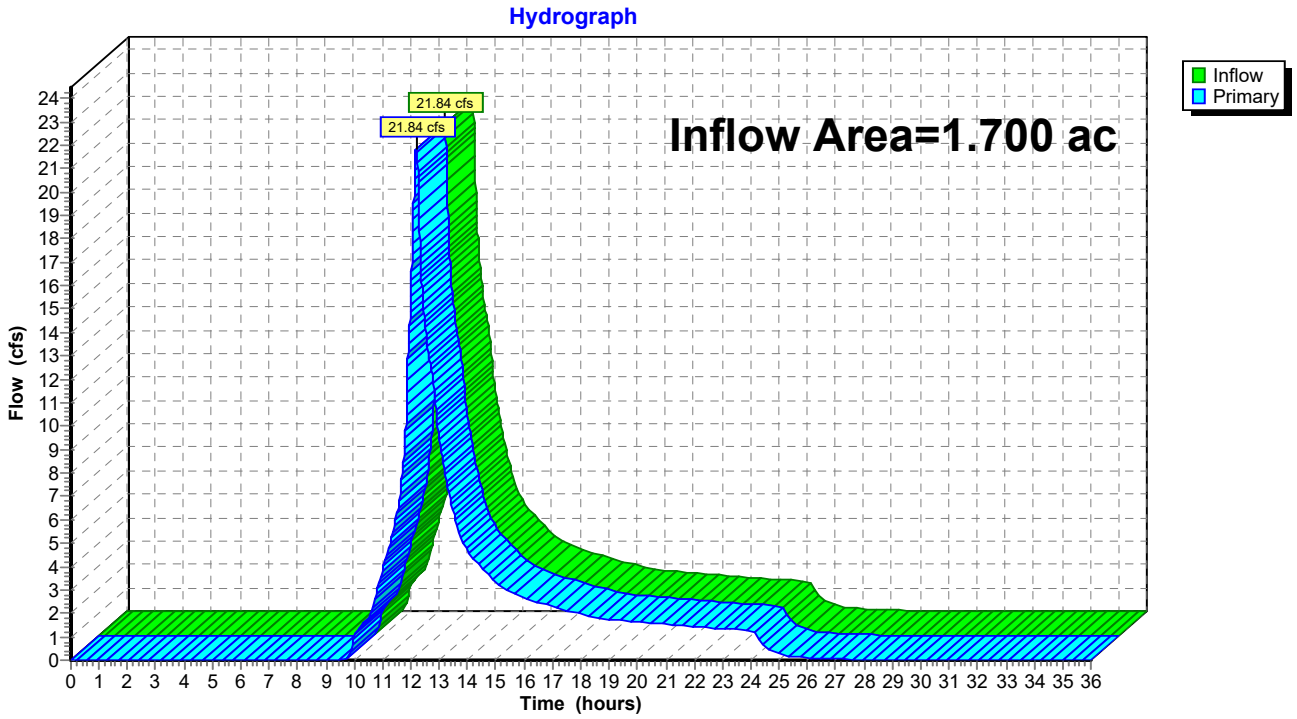


## Summary for Link 1L: Existing Drainage System

Inflow Area = 1.700 ac, 85.29% Impervious, Inflow Depth > 30.93" for 100-Year event
Inflow = 21.84 cfs @ 12.19 hrs, Volume= 4.381 af
Primary = 21.84 cfs @ 12.19 hrs, Volume= 4.381 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 1L: Existing Drainage System

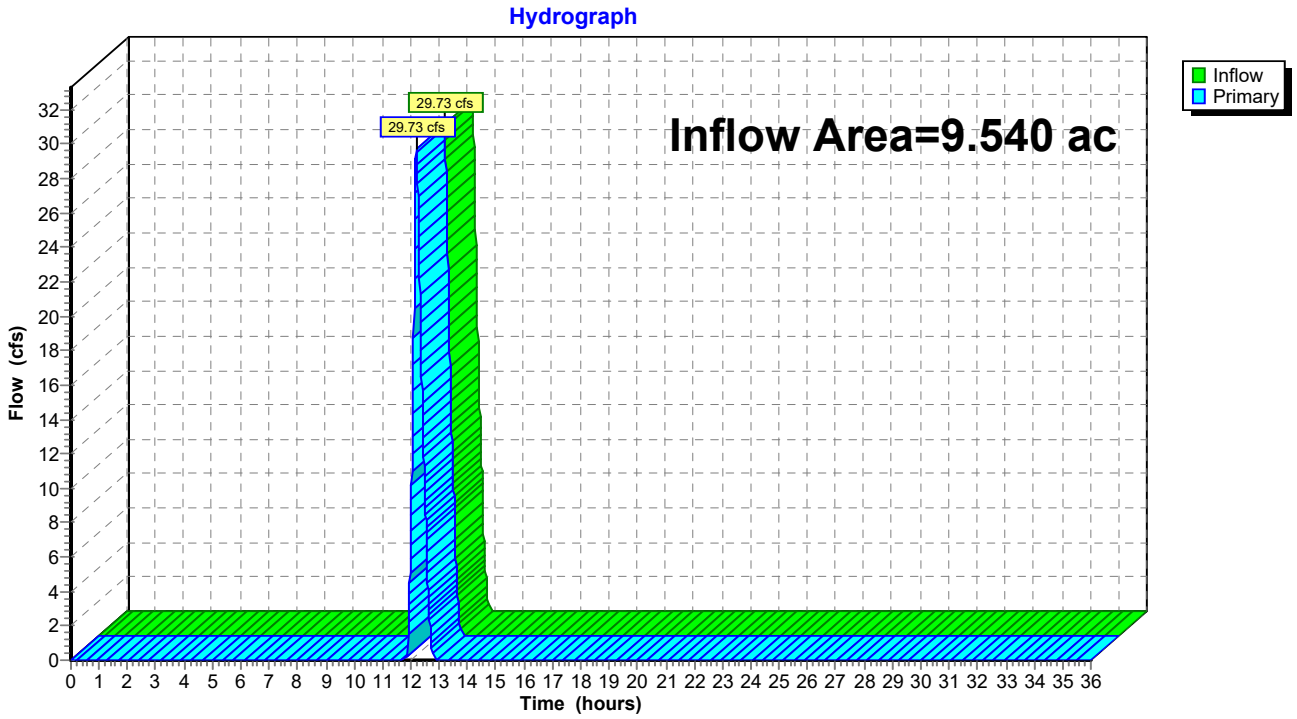


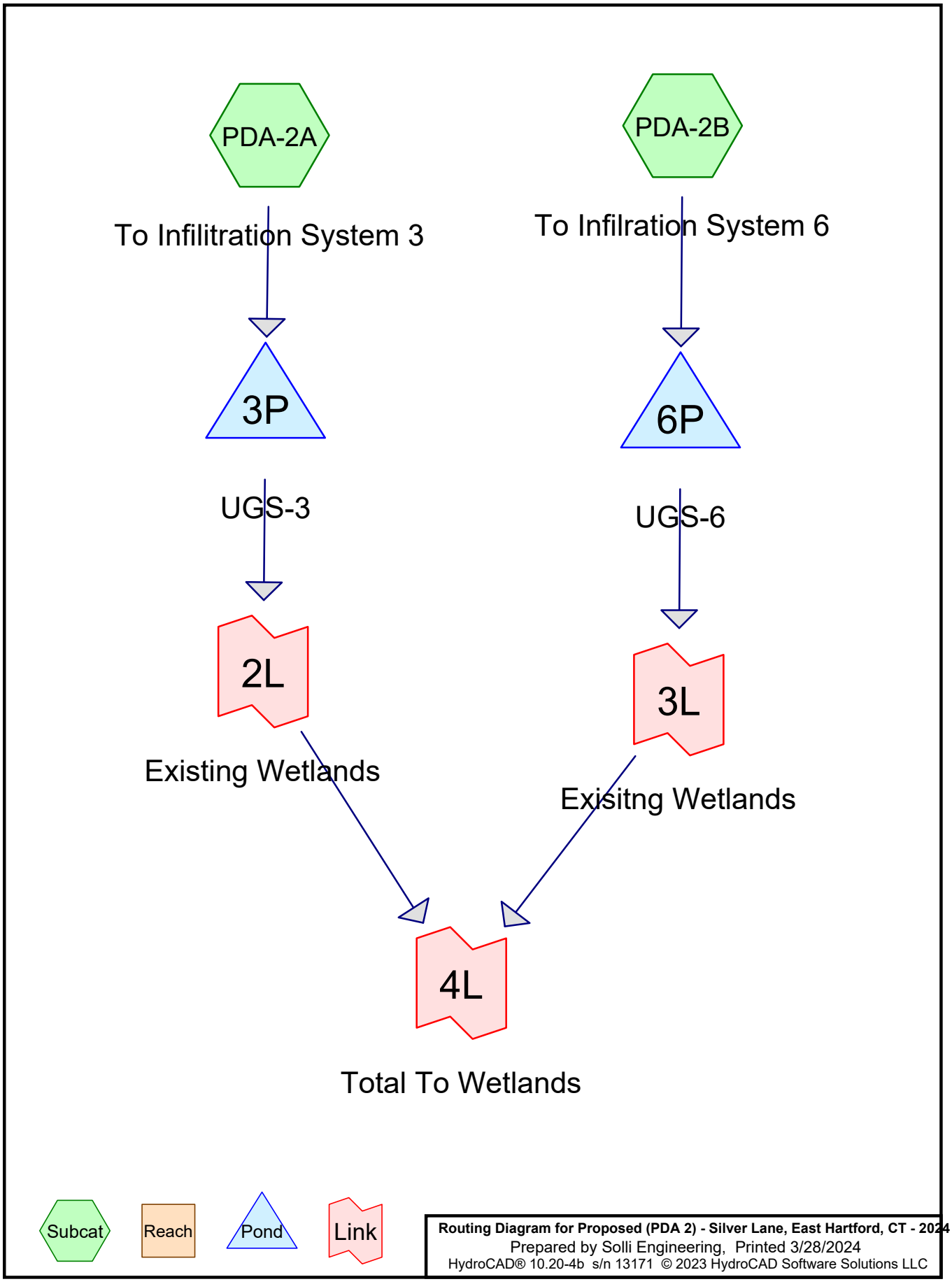
## Summary for Link 9L: Off-Site South

Inflow Area = 9.540 ac, 76.21% Impervious, Inflow Depth = 1.15" for 100-Year event
Inflow = 29.73 cfs @ 12.19 hrs, Volume= 0.914 af
Primary = 29.73 cfs @ 12.19 hrs, Volume= 0.914 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

## Link 9L: Off-Site South






**Routing Diagram for Proposed (PDA 2) - Silver Lane, East Hartford, CT - 2024**

Prepared by Solli Engineering, Printed 3/28/2024

HydroCAD® 10.20-4b s/n 13171 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 1-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 2.46 | 2 |
| 2 | 2-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 3.06 | 2 |
| 3 | 5-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.04 | 2 |
| 4 | 10-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 4.85 | 2 |
| 5 | 25-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 5.98 | 2 |
| 6 | 50-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 6.80 | 2 |
| 7 | 100-Year | NRCC 24-hr | D | Default | 24.00 | 1 | 7.67 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.100 | 39 | >75% Grass cover, Good, HSG A (PDA-2A) |
| 0.670 | 61 | >75% Grass cover, Good, HSG B (PDA-2B) |
| 0.170 | 74 | >75% Grass cover, Good, HSG C (PDA-2A) |
| 0.200 | 80 | >75% Grass cover, Good, HSG D (PDA-2A) |
| 0.910 | 98 | Paved parking, HSG B (PDA-2B) |
| 2.850 | 98 | Paved parking, HSG C (PDA-2A) |
| **4.900** | **90** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.100 | HSG A | PDA-2A |
| 1.580 | HSG B | PDA-2B |
| 3.020 | HSG C | PDA-2A |
| 0.200 | HSG D | PDA-2A |
| 0.000 | Other | |
| **4.900** | | **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 |
|---|---|---|---|---|---|---|---|
| 0.100 | 0.670 | 0.170 | 0.200 | 0.000 | 1.140 | >75% Grass cover, Good | PDA-2A, PDA-2B |
| 0.000 | 0.910 | 2.850 | 0.000 | 0.000 | 3.760 | Paved parking | PDA-2A, PDA-2B |
| **0.100** | **1.580** | **3.020** | **0.200** | **0.000** | **4.900** | **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 | PDA-2A | 0.00 | 0.00 | 6.0 | 0.0050 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 2 | PDA-2B | 0.00 | 0.00 | 145.0 | 0.0200 | 0.013 | 0.0 | 12.0 | 0.0 | |
| 3 | 3P | 57.95 | 56.80 | 204.0 | 0.0056 | 0.011 | 0.0 | 24.0 | 0.0 | |
| 4 | 6P | 67.55 | 64.00 | 30.0 | 0.1183 | 0.011 | 0.0 | 24.0 | 0.0 | |

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>1.83"
Flow Length=127' Tc=6.0 min CN=94 Runoff=6.49 cfs 0.506 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>0.96"
Flow Length=500' Tc=32.7 min CN=82 Runoff=0.82 cfs 0.126 af

**Pond 3P: UGS-3** Peak Elev=58.86' Storage=0.228 af Inflow=6.49 cfs 0.506 af
Outflow=2.51 cfs 0.328 af

**Pond 6P: UGS-6** Peak Elev=68.06' Storage=0.073 af Inflow=0.82 cfs 0.126 af
Outflow=0.11 cfs 0.055 af

**Link 2L: Existing Wetlands** Inflow=2.51 cfs 0.328 af
Primary=2.51 cfs 0.328 af

**Link 3L: Exisitng Wetlands** Inflow=0.11 cfs 0.055 af
Primary=0.11 cfs 0.055 af

**Link 4L: Total To Wetlands** Inflow=2.51 cfs 0.383 af
Primary=2.51 cfs 0.383 af

**Total Runoff Area = 4.900 ac Runoff Volume = 0.632 af Average Runoff Depth = 1.55"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 258% of capacity of segment #2

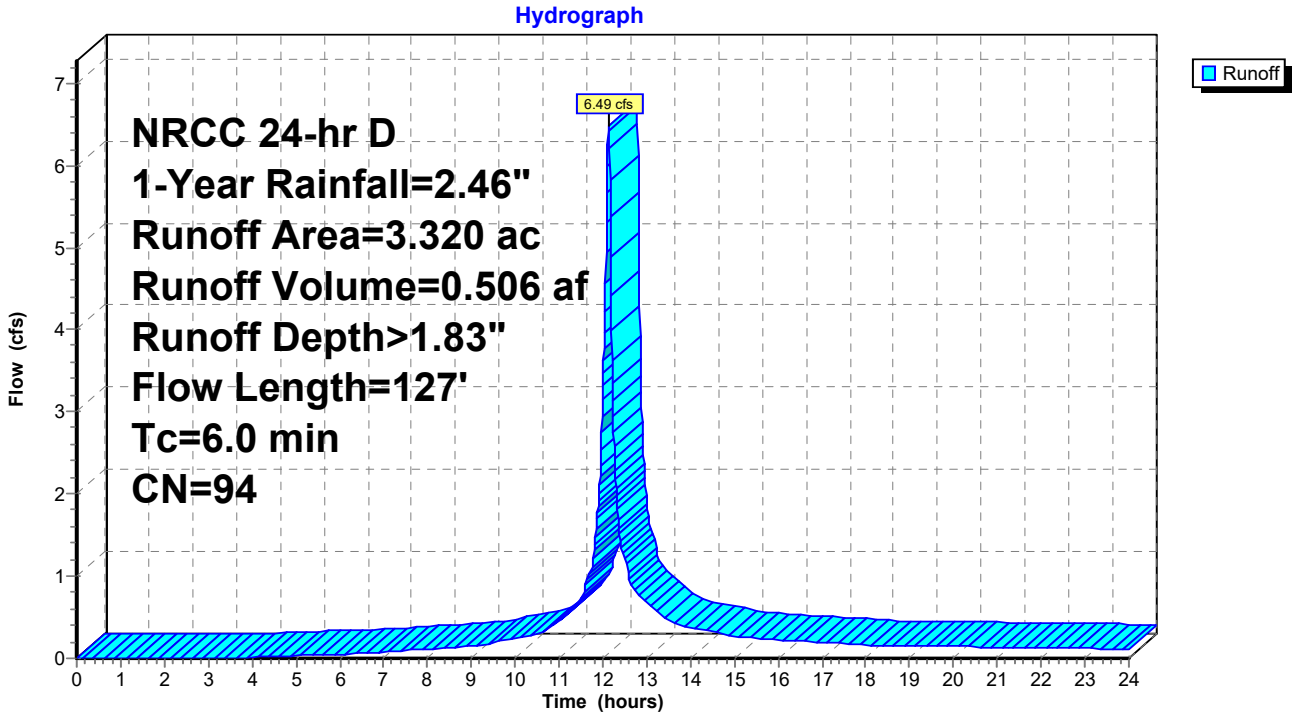
Runoff = 6.49 cfs @ 12.13 hrs, Volume= 0.506 af, Depth> 1.83"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

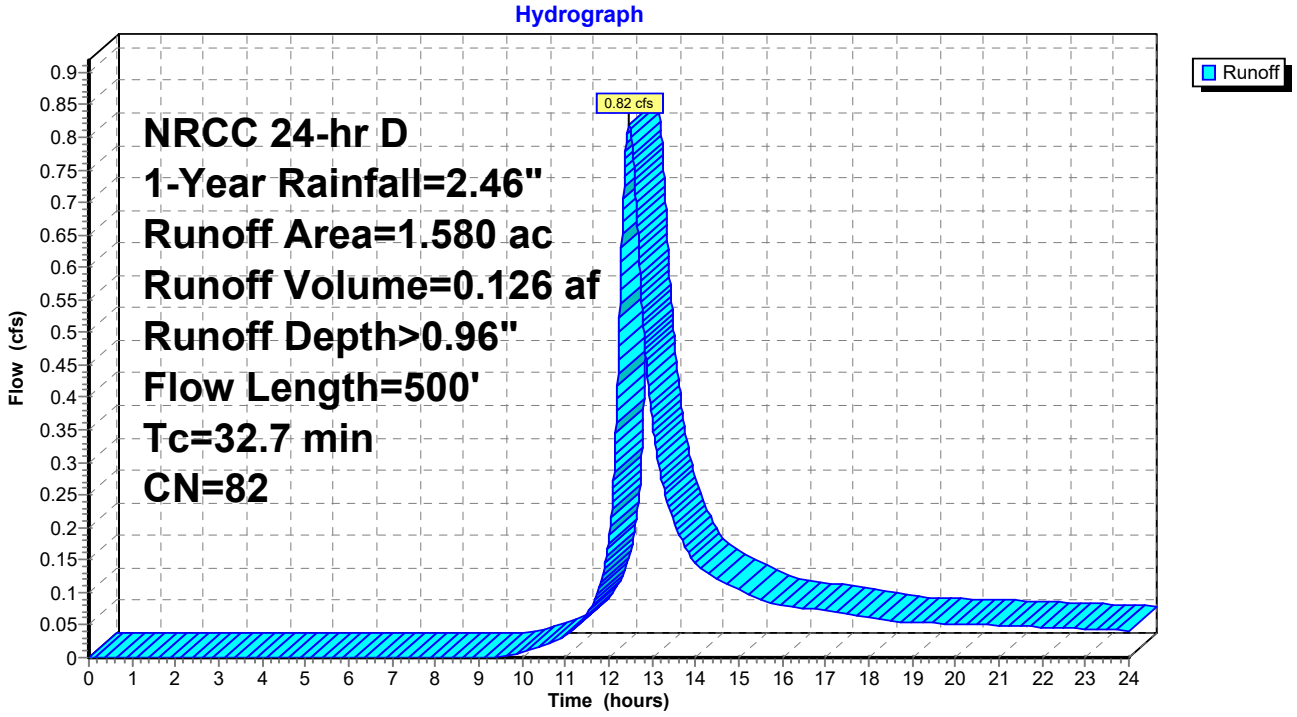
Runoff = 0.82 cfs @ 12.46 hrs, Volume= 0.126 af, Depth> 0.96"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 1-Year Rainfall=2.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 1.83" for 1-Year event
Inflow = 6.49 cfs @ 12.13 hrs, Volume= 0.506 af
Outflow = 2.51 cfs @ 12.27 hrs, Volume= 0.328 af, Atten= 61%, Lag= 8.1 min
Primary = 2.51 cfs @ 12.27 hrs, Volume= 0.328 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 58.86' @ 12.27 hrs Surf.Area= 0.198 ac Storage= 0.228 af

Plug-Flow detention time= 229.1 min calculated for 0.328 af (65% of inflow)
Center-of-Mass det. time= 106.6 min ( 915.8 - 809.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=2.51 cfs @ 12.27 hrs HW=58.86' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 2.51 cfs of 4.39 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.51 cfs @ 1.74 fps)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

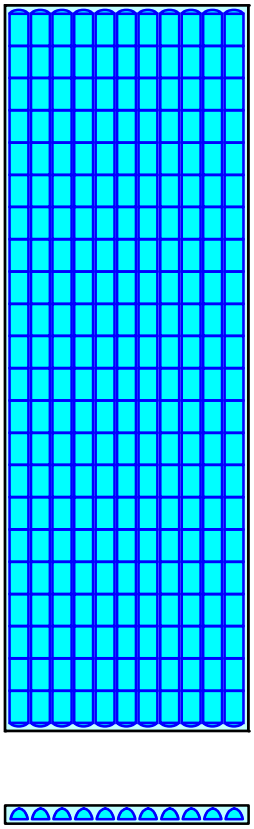
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

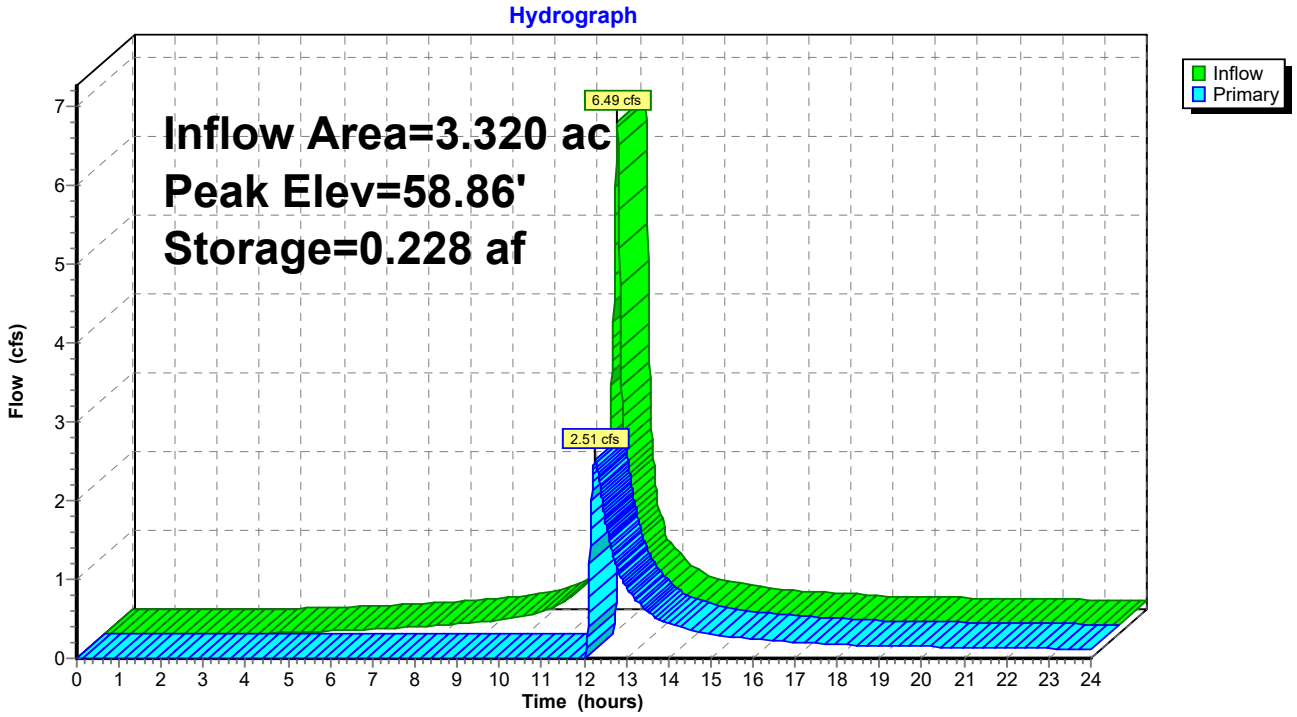
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=58.86'
Storage=0.228 af
6.49 cfs
2.51 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
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

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 0.96" for 1-Year event
Inflow = 0.82 cfs @ 12.46 hrs, Volume= 0.126 af
Outflow = 0.11 cfs @ 14.74 hrs, Volume= 0.055 af, Atten= 86%, Lag= 136.8 min
Primary = 0.11 cfs @ 14.74 hrs, Volume= 0.055 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.06' @ 14.74 hrs Surf.Area= 0.101 ac Storage= 0.073 af

Plug-Flow detention time= 343.9 min calculated for 0.055 af (44% of inflow)
Center-of-Mass det. time= 189.5 min ( 1,086.3 - 896.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=0.11 cfs @ 14.74 hrs HW=68.06' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 0.11 cfs of 1.56 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.71 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

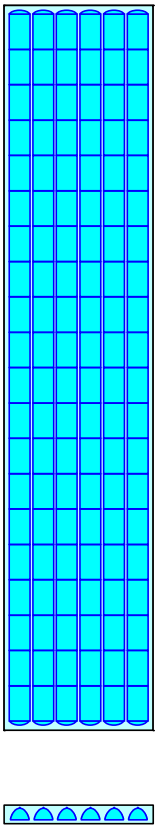
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

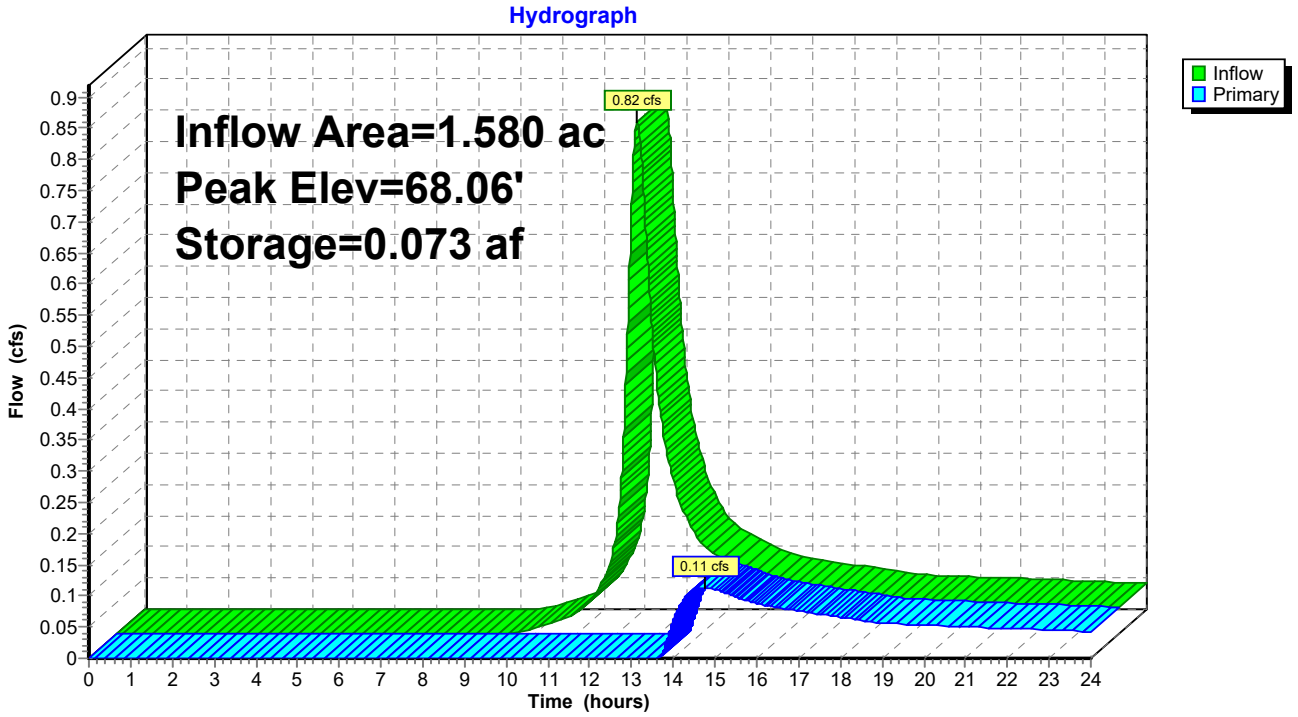
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

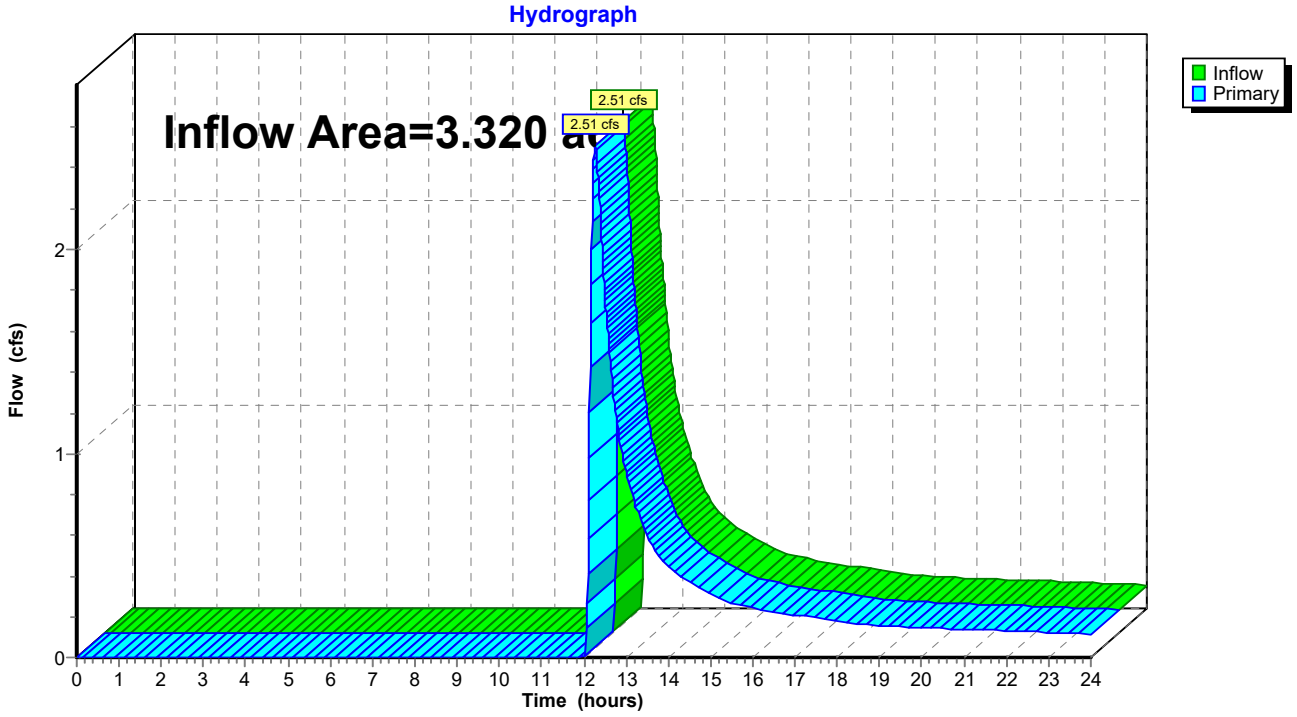

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.06'
Storage=0.073 af
0.82 cfs
0.11 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8 0.85 0.9
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 1.18" for 1-Year event
Inflow = 2.51 cfs @ 12.27 hrs, Volume= 0.328 af
Primary = 2.51 cfs @ 12.27 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

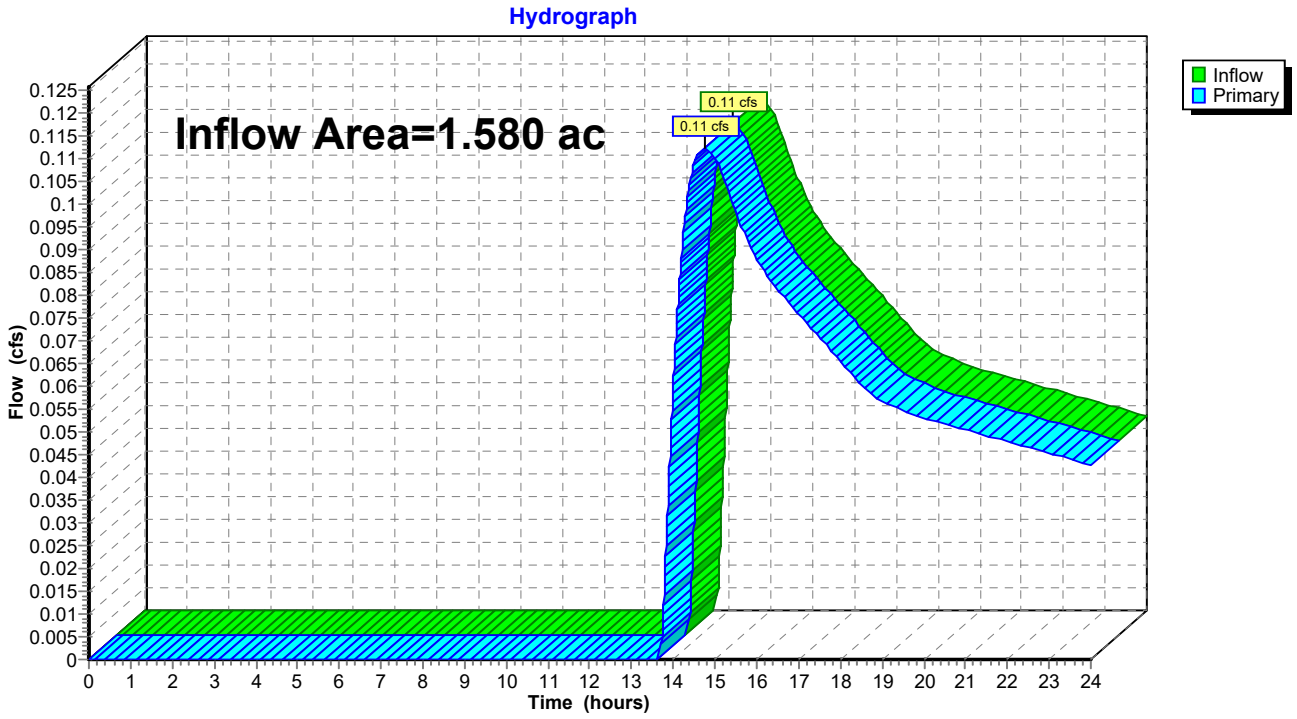


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 0.42" for 1-Year event
Inflow = 0.11 cfs @ 14.74 hrs, Volume= 0.055 af
Primary = 0.11 cfs @ 14.74 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

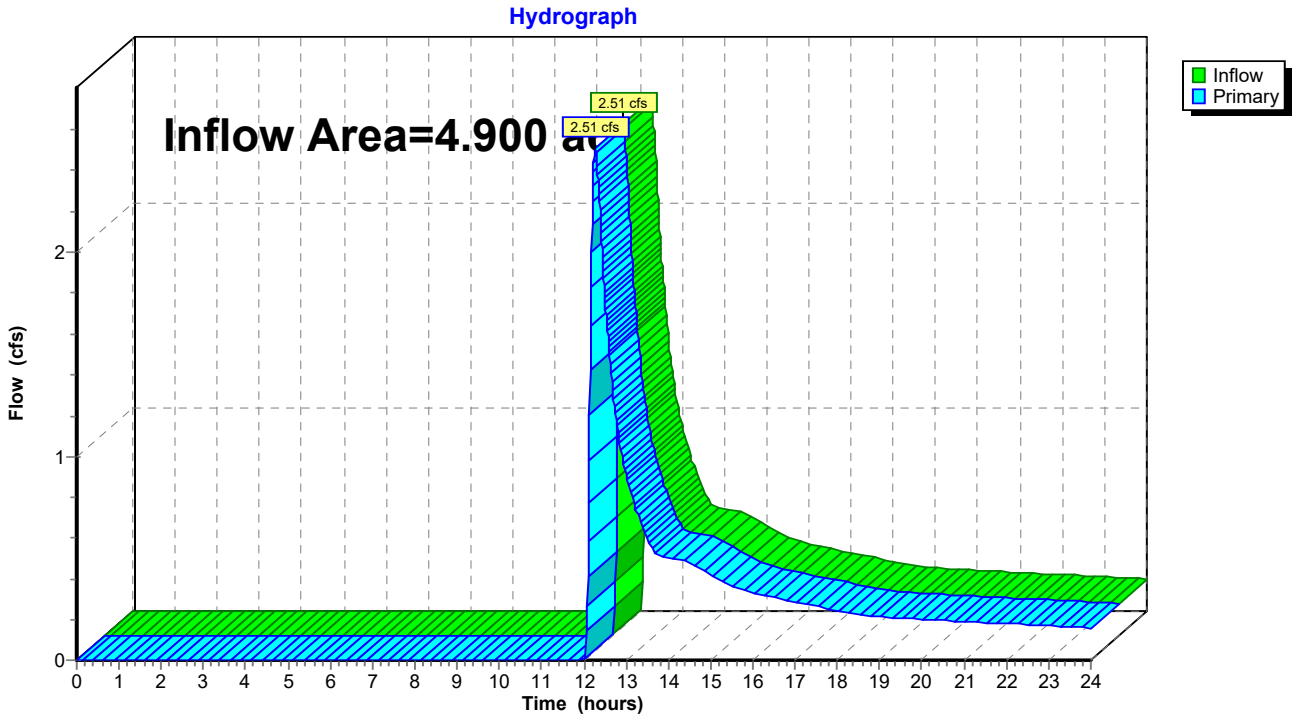


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 0.94" for 1-Year event
Inflow = 2.51 cfs @ 12.27 hrs, Volume= 0.383 af
Primary = 2.51 cfs @ 12.27 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>2.40"
Flow Length=127' Tc=6.0 min CN=94 Runoff=8.40 cfs 0.665 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>1.41"
Flow Length=500' Tc=32.7 min CN=82 Runoff=1.23 cfs 0.186 af

**Pond 3P: UGS-3** Peak Elev=59.07' Storage=0.261 af Inflow=8.40 cfs 0.665 af
Outflow=5.32 cfs 0.486 af

**Pond 6P: UGS-6** Peak Elev=68.16' Storage=0.081 af Inflow=1.23 cfs 0.186 af
Outflow=0.43 cfs 0.114 af

**Link 2L: Existing Wetlands** Inflow=5.32 cfs 0.486 af
Primary=5.32 cfs 0.486 af

**Link 3L: Exisitng Wetlands** Inflow=0.43 cfs 0.114 af
Primary=0.43 cfs 0.114 af

**Link 4L: Total To Wetlands** Inflow=5.32 cfs 0.600 af
Primary=5.32 cfs 0.600 af

**Total Runoff Area = 4.900 ac Runoff Volume = 0.851 af Average Runoff Depth = 2.08"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 333% of capacity of segment #2

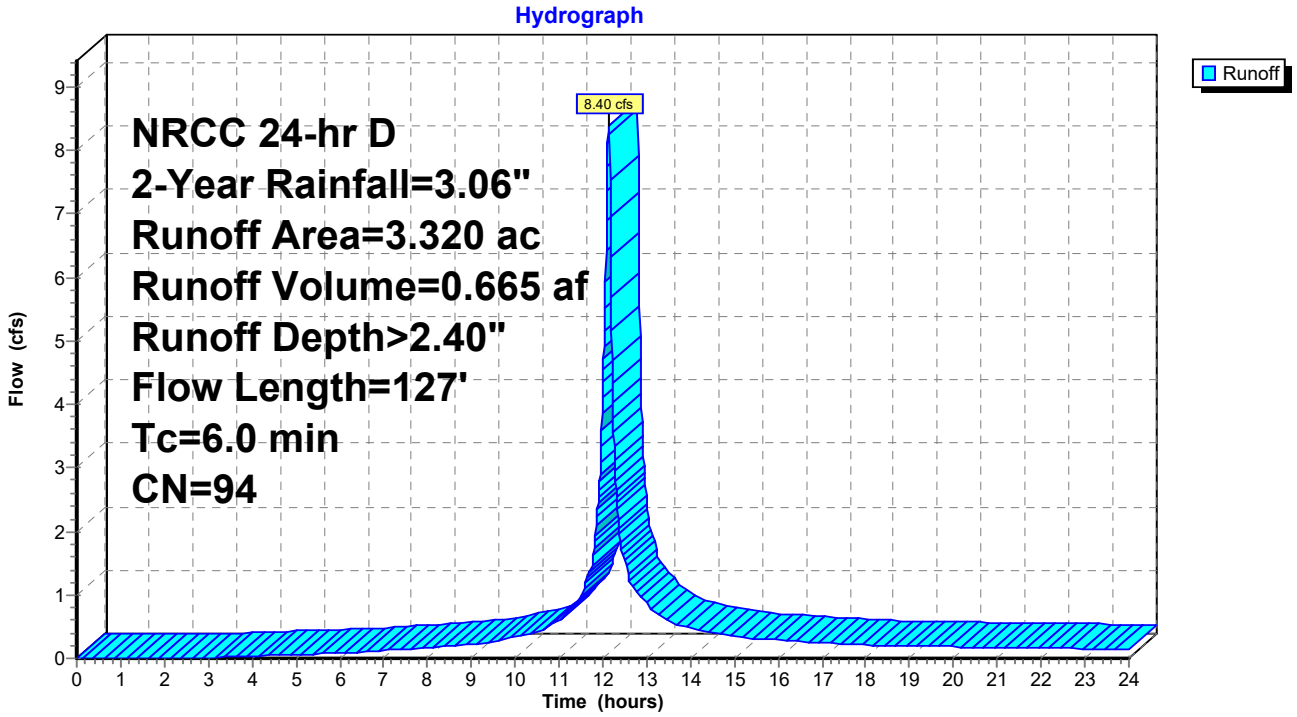
Runoff = 8.40 cfs @ 12.13 hrs, Volume= 0.665 af, Depth> 2.40"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

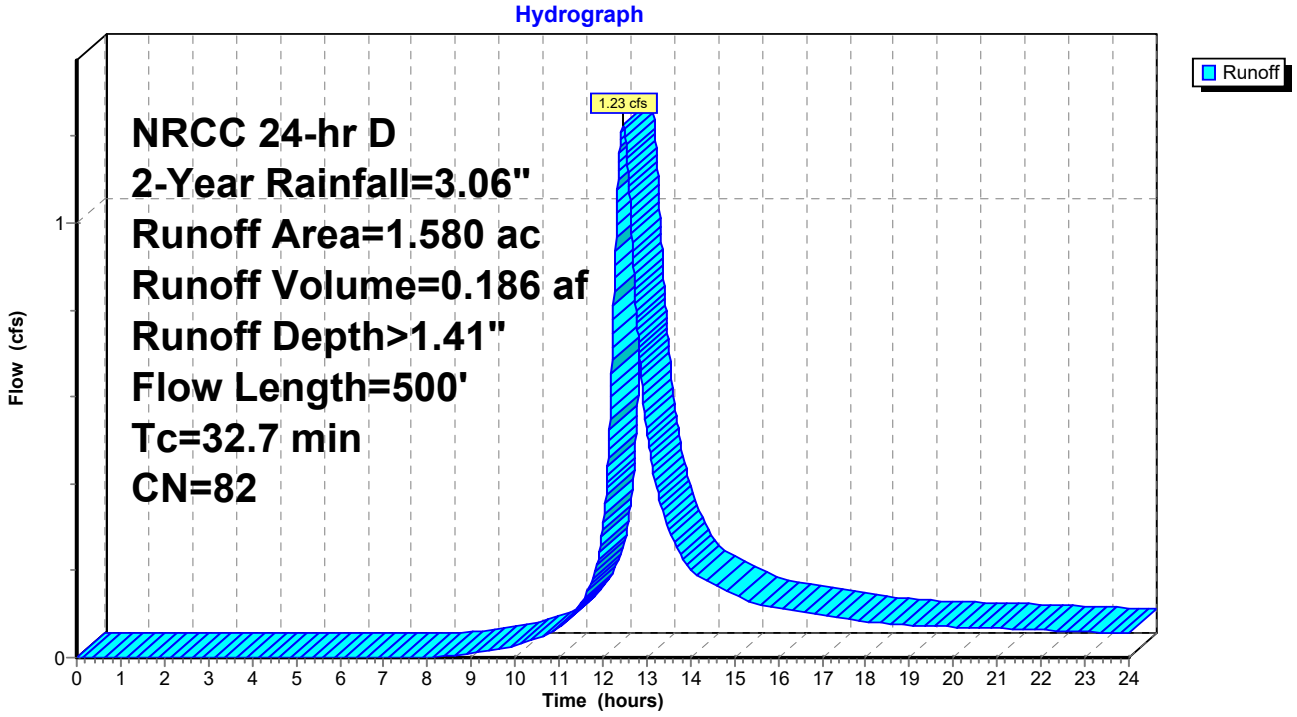
Runoff = 1.23 cfs @ 12.46 hrs, Volume= 0.186 af, Depth> 1.41"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 2.40" for 2-Year event
Inflow = 8.40 cfs @ 12.13 hrs, Volume= 0.665 af
Outflow = 5.32 cfs @ 12.20 hrs, Volume= 0.486 af, Atten= 37%, Lag= 4.1 min
Primary = 5.32 cfs @ 12.20 hrs, Volume= 0.486 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.07' @ 12.20 hrs Surf.Area= 0.198 ac Storage= 0.261 af

Plug-Flow detention time= 195.7 min calculated for 0.486 af (73% of inflow)
Center-of-Mass det. time= 88.3 min ( 887.8 - 799.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=5.32 cfs @ 12.20 hrs HW=59.07' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 5.32 cfs of 6.34 cfs potential flow)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.32 cfs @ 2.32 fps)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

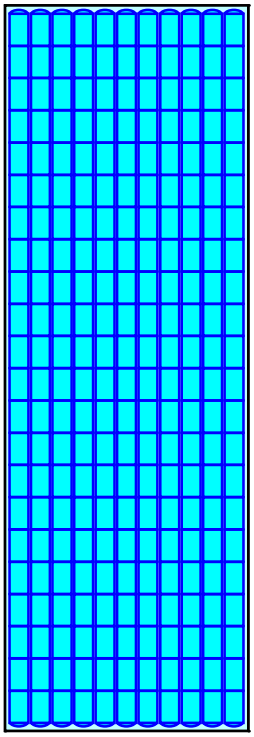
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

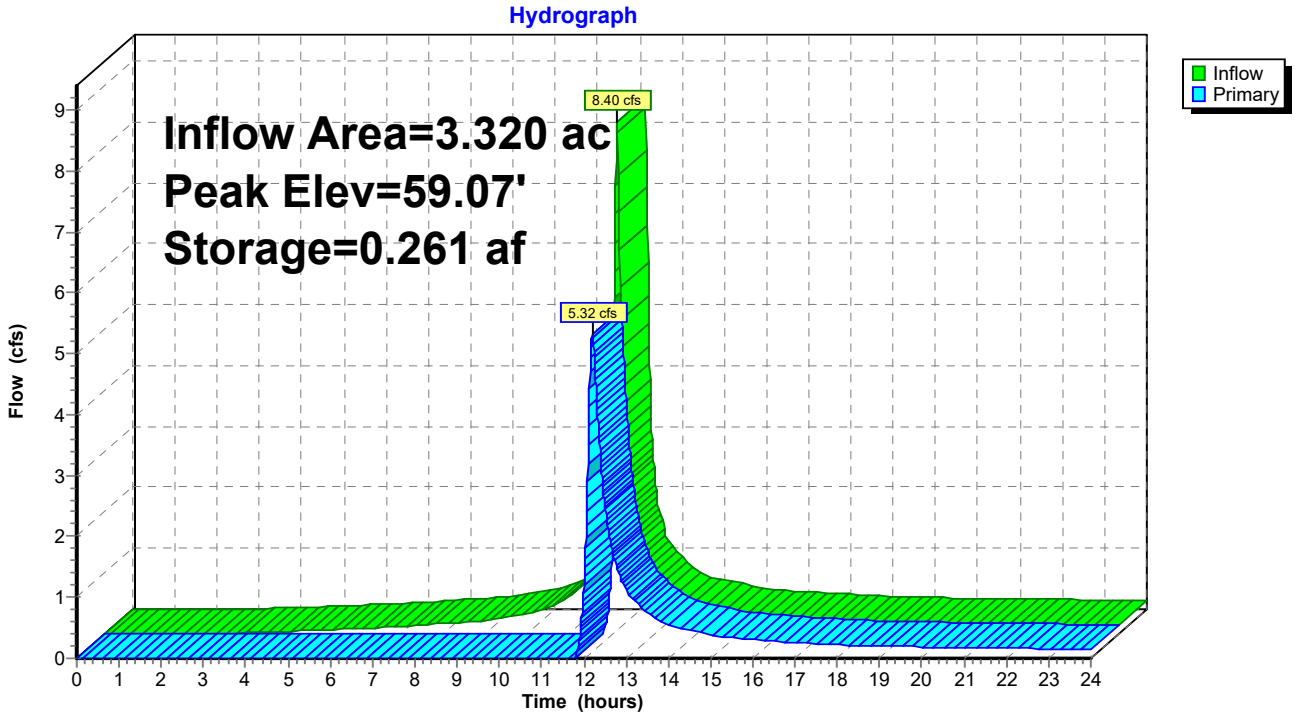
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.07'
Storage=0.261 af
8.40 cfs
5.32 cfs
Inflow
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

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 1.41" for 2-Year event
Inflow = 1.23 cfs @ 12.46 hrs, Volume= 0.186 af
Outflow = 0.43 cfs @ 13.15 hrs, Volume= 0.114 af, Atten= 65%, Lag= 41.3 min
Primary = 0.43 cfs @ 13.15 hrs, Volume= 0.114 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.16' @ 13.15 hrs Surf.Area= 0.101 ac Storage= 0.081 af

Plug-Flow detention time= 237.7 min calculated for 0.114 af (62% of inflow)
Center-of-Mass det. time= 108.5 min ( 991.2 - 882.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=0.43 cfs @ 13.15 hrs HW=68.16' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 0.43 cfs of 2.13 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.43 cfs @ 1.10 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

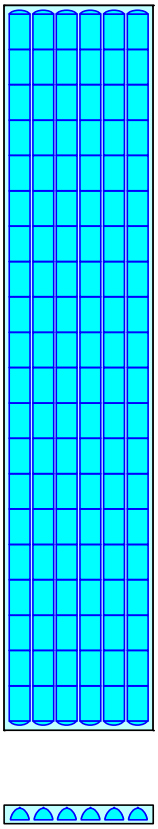
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

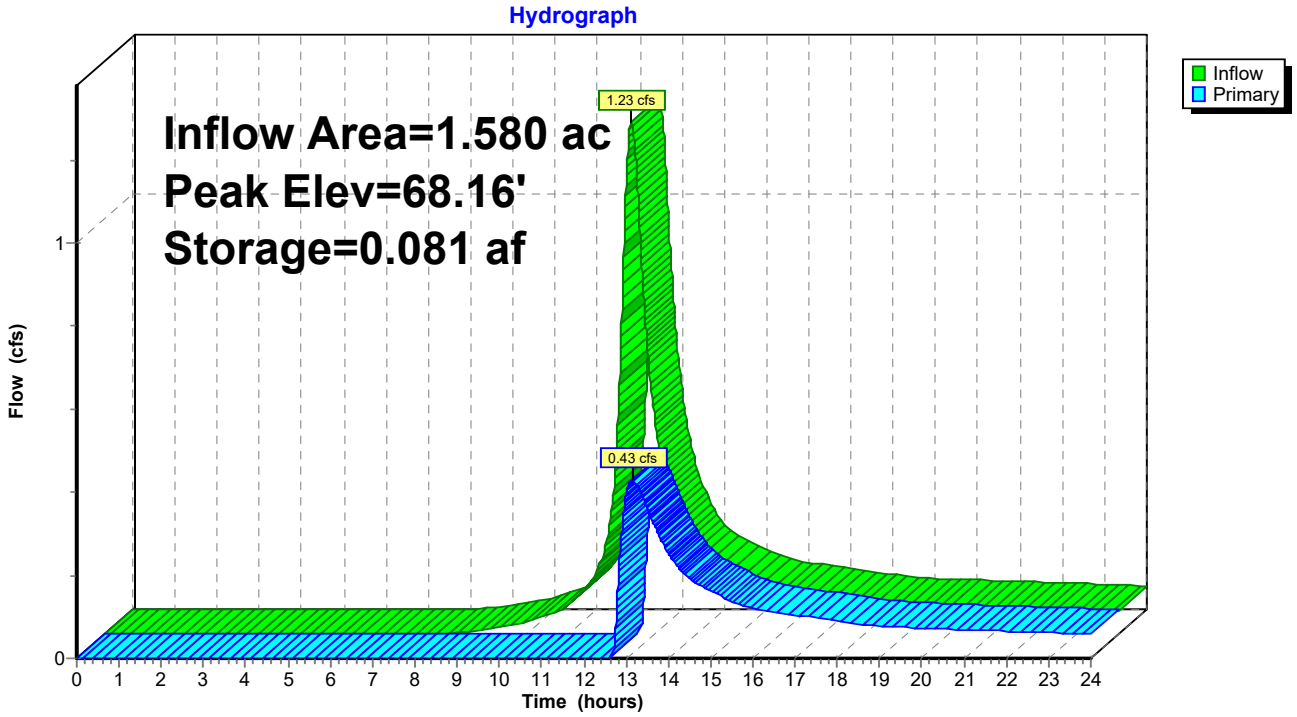
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

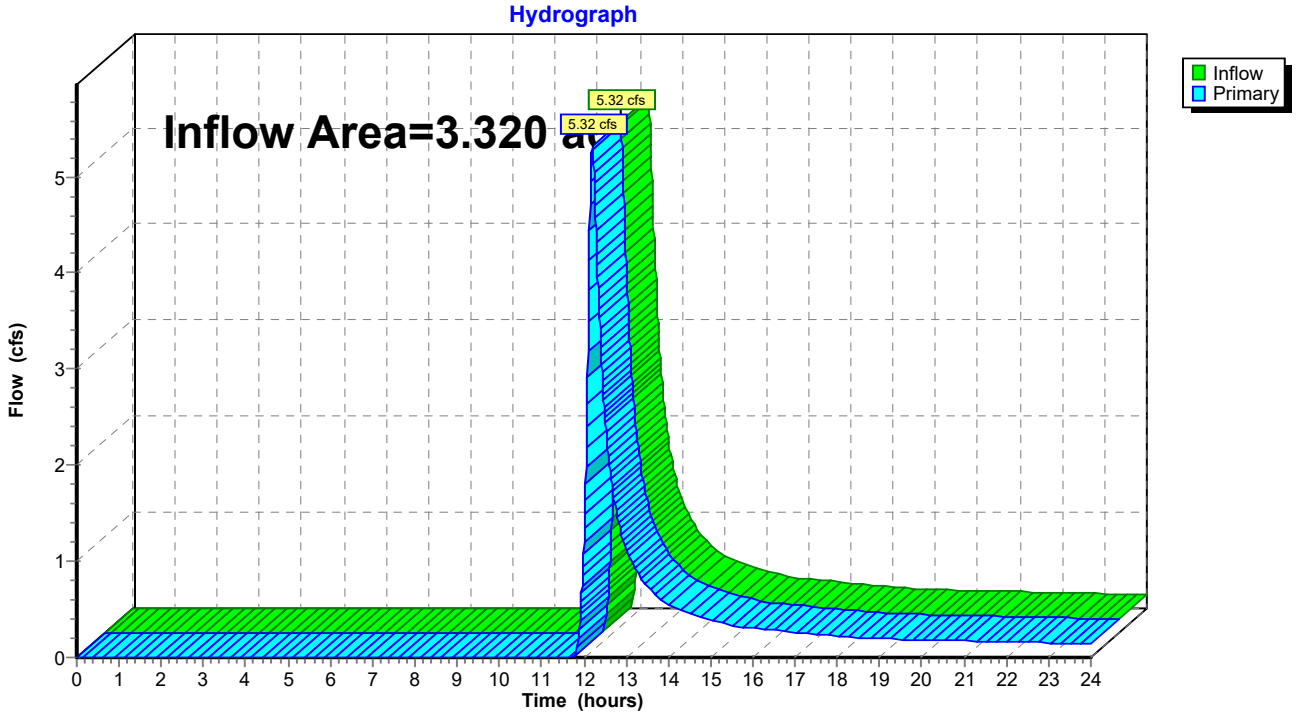

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.16'
Storage=0.081 af
1.23 cfs
0.43 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 1.76" for 2-Year event
Inflow = 5.32 cfs @ 12.20 hrs, Volume= 0.486 af
Primary = 5.32 cfs @ 12.20 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

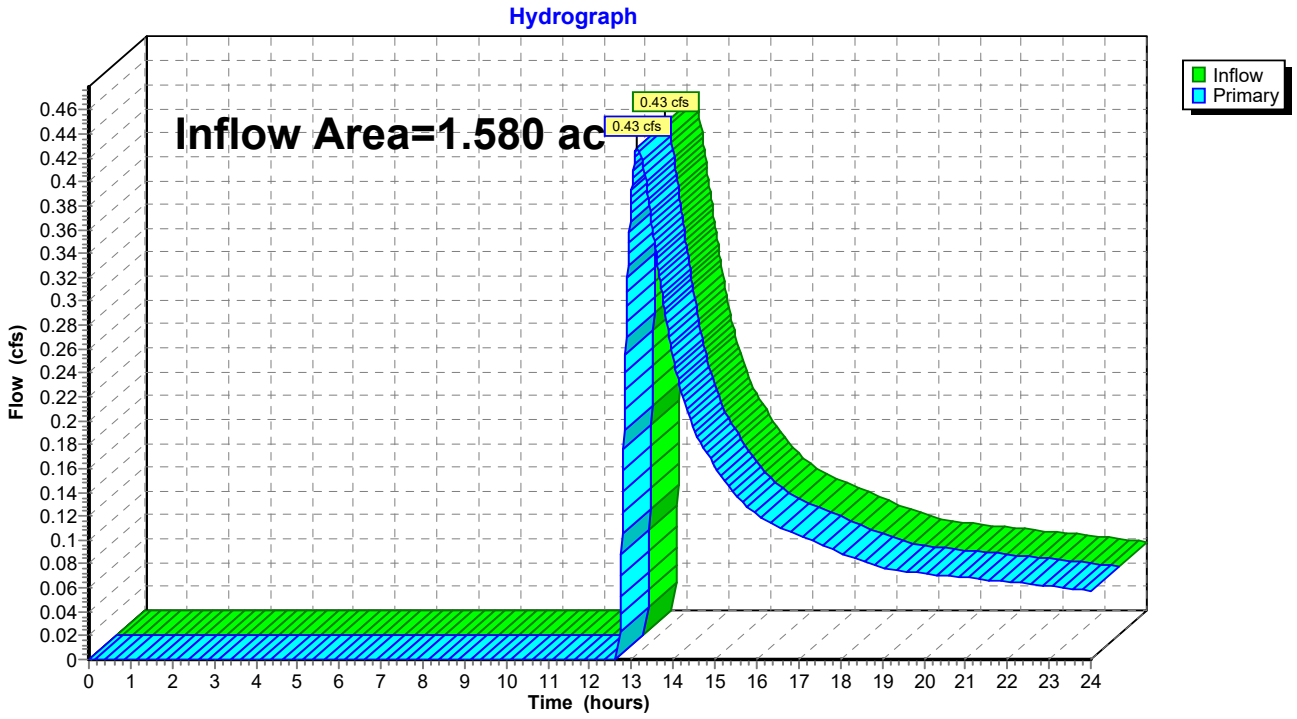


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 0.87" for 2-Year event
Inflow = 0.43 cfs @ 13.15 hrs, Volume= 0.114 af
Primary = 0.43 cfs @ 13.15 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

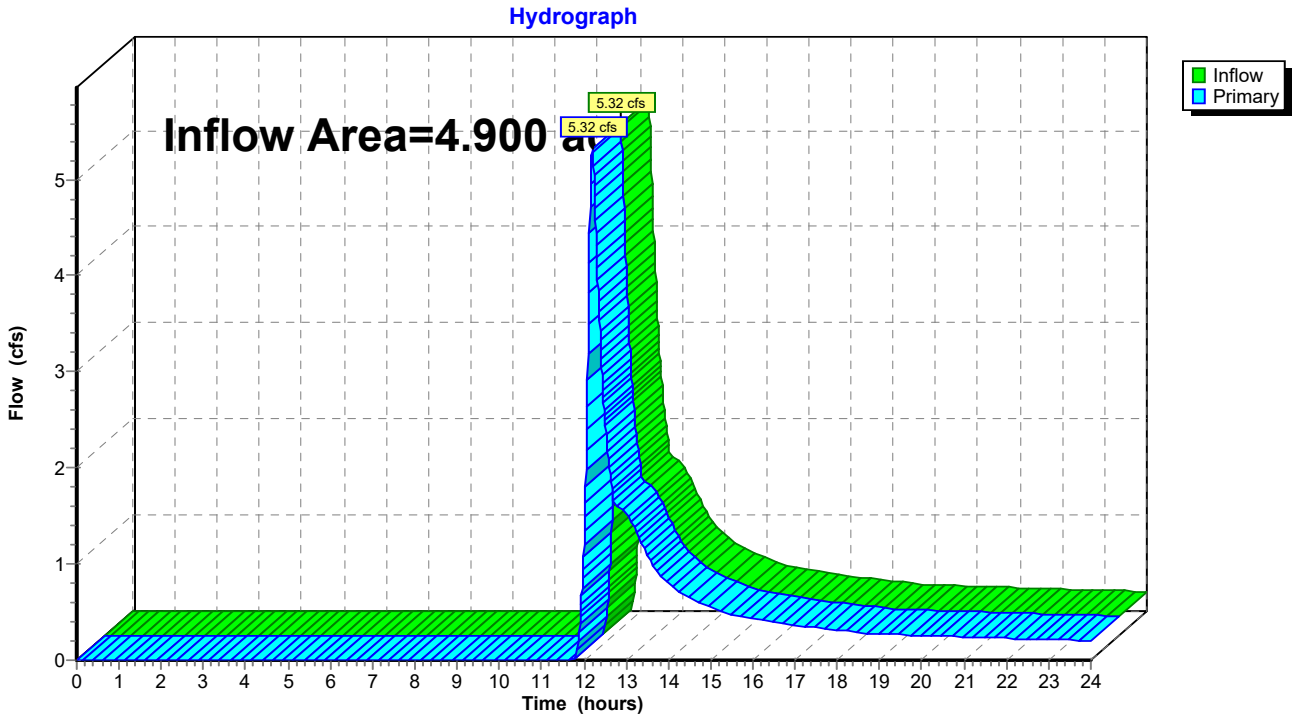


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 1.47" for 2-Year event
Inflow = 5.32 cfs @ 12.20 hrs, Volume= 0.600 af
Primary = 5.32 cfs @ 12.20 hrs, Volume= 0.600 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>3.36"
Flow Length=127' Tc=6.0 min CN=94 Runoff=11.49 cfs 0.929 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>2.21"
Flow Length=500' Tc=32.7 min CN=82 Runoff=1.94 cfs 0.291 af

**Pond 3P: UGS-3** Peak Elev=59.26' Storage=0.289 af Inflow=11.49 cfs 0.929 af
Outflow=8.20 cfs 0.748 af

**Pond 6P: UGS-6** Peak Elev=68.33' Storage=0.095 af Inflow=1.94 cfs 0.291 af
Outflow=1.38 cfs 0.219 af

**Link 2L: Existing Wetlands** Inflow=8.20 cfs 0.748 af
Primary=8.20 cfs 0.748 af

**Link 3L: Exisitng Wetlands** Inflow=1.38 cfs 0.219 af
Primary=1.38 cfs 0.219 af

**Link 4L: Total To Wetlands** Inflow=8.20 cfs 0.967 af
Primary=8.20 cfs 0.967 af

**Total Runoff Area = 4.900 ac Runoff Volume = 1.220 af Average Runoff Depth = 2.99"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 456% of capacity of segment #2

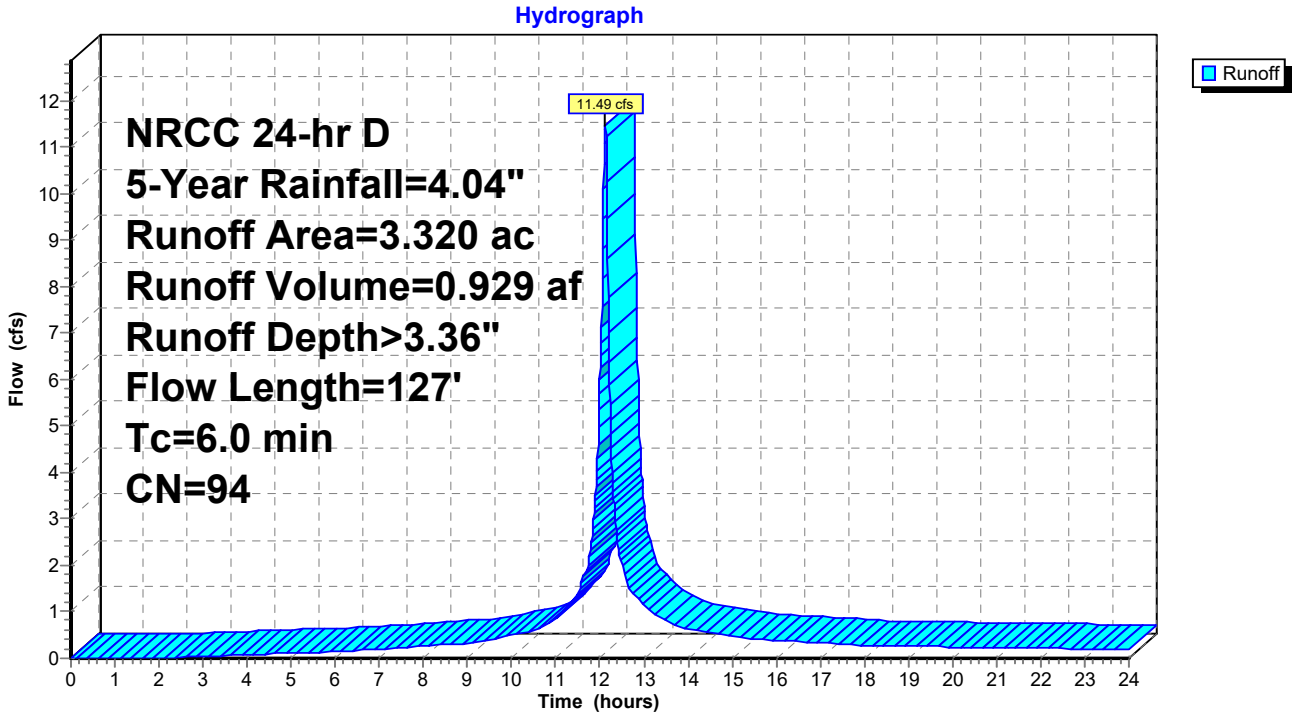
Runoff = 11.49 cfs @ 12.13 hrs, Volume= 0.929 af, Depth> 3.36"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

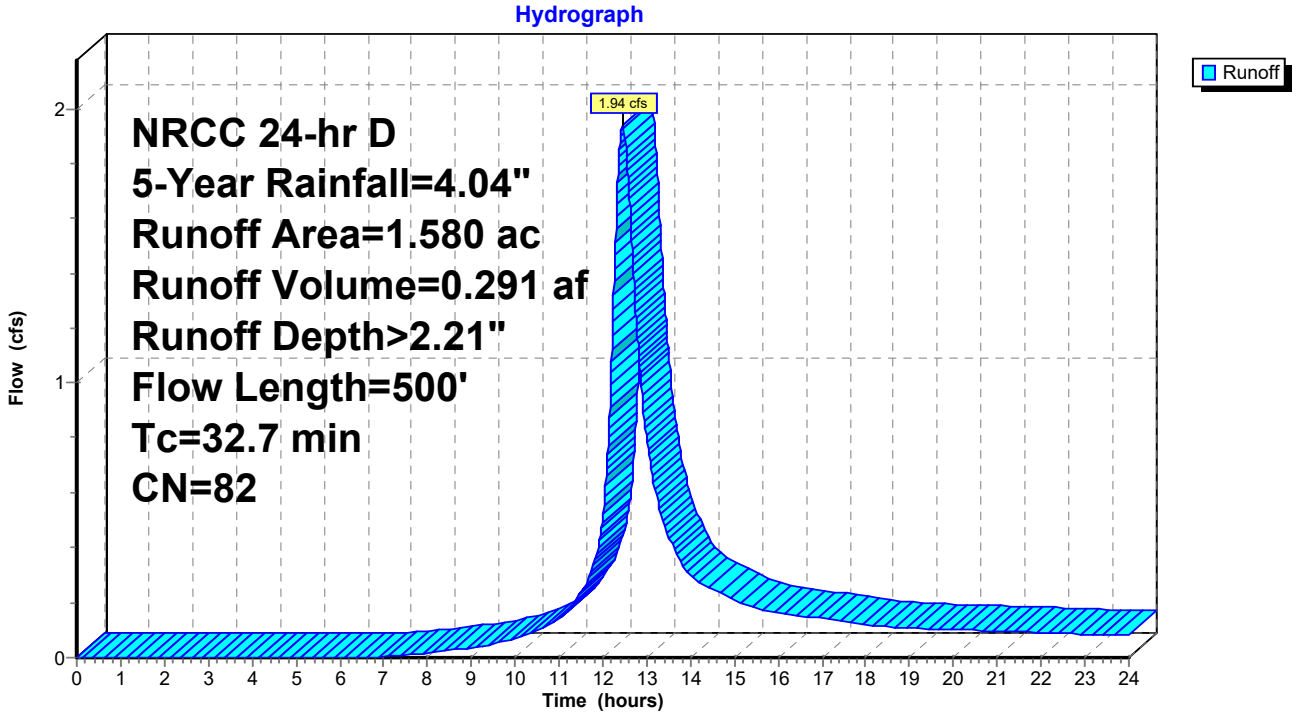
Runoff = 1.94 cfs @ 12.46 hrs, Volume= 0.291 af, Depth> 2.21"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 5-Year Rainfall=4.04"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 3.36" for 5-Year event
Inflow = 11.49 cfs @ 12.13 hrs, Volume= 0.929 af
Outflow = 8.20 cfs @ 12.18 hrs, Volume= 0.748 af, Atten= 29%, Lag= 3.3 min
Primary = 8.20 cfs @ 12.18 hrs, Volume= 0.748 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.26' @ 12.18 hrs Surf.Area= 0.198 ac Storage= 0.289 af

Plug-Flow detention time= 164.5 min calculated for 0.748 af (80% of inflow)
Center-of-Mass det. time= 75.3 min ( 863.6 - 788.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=8.20 cfs @ 12.18 hrs HW=59.26' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Barrel Controls 8.20 cfs @ 5.33 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 8.20 cfs of 8.65 cfs potential flow)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

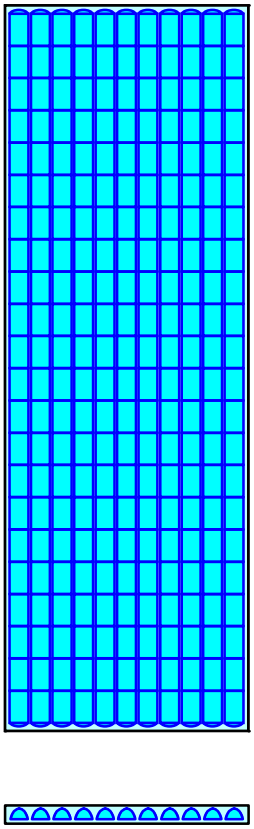
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

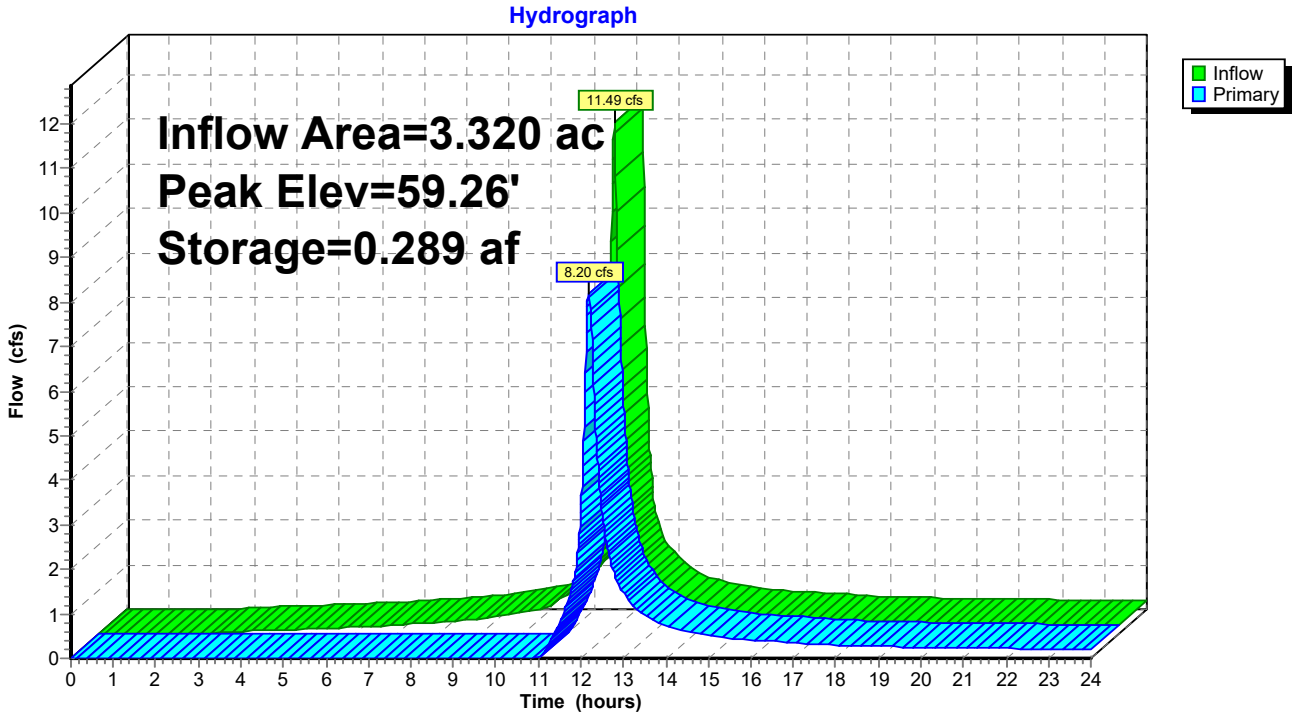
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.26'
Storage=0.289 af
11.49 cfs
8.20 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 2.21" for 5-Year event
Inflow = 1.94 cfs @ 12.46 hrs, Volume= 0.291 af
Outflow = 1.38 cfs @ 12.71 hrs, Volume= 0.219 af, Atten= 29%, Lag= 14.7 min
Primary = 1.38 cfs @ 12.71 hrs, Volume= 0.219 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.33' @ 12.71 hrs Surf.Area= 0.101 ac Storage= 0.095 af

Plug-Flow detention time= 168.3 min calculated for 0.219 af (75% of inflow)
Center-of-Mass det. time= 68.3 min ( 934.7 - 866.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=1.38 cfs @ 12.71 hrs HW=68.33' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 1.38 cfs of 3.43 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.38 cfs @ 1.66 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

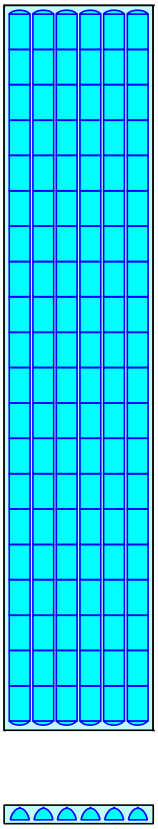
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

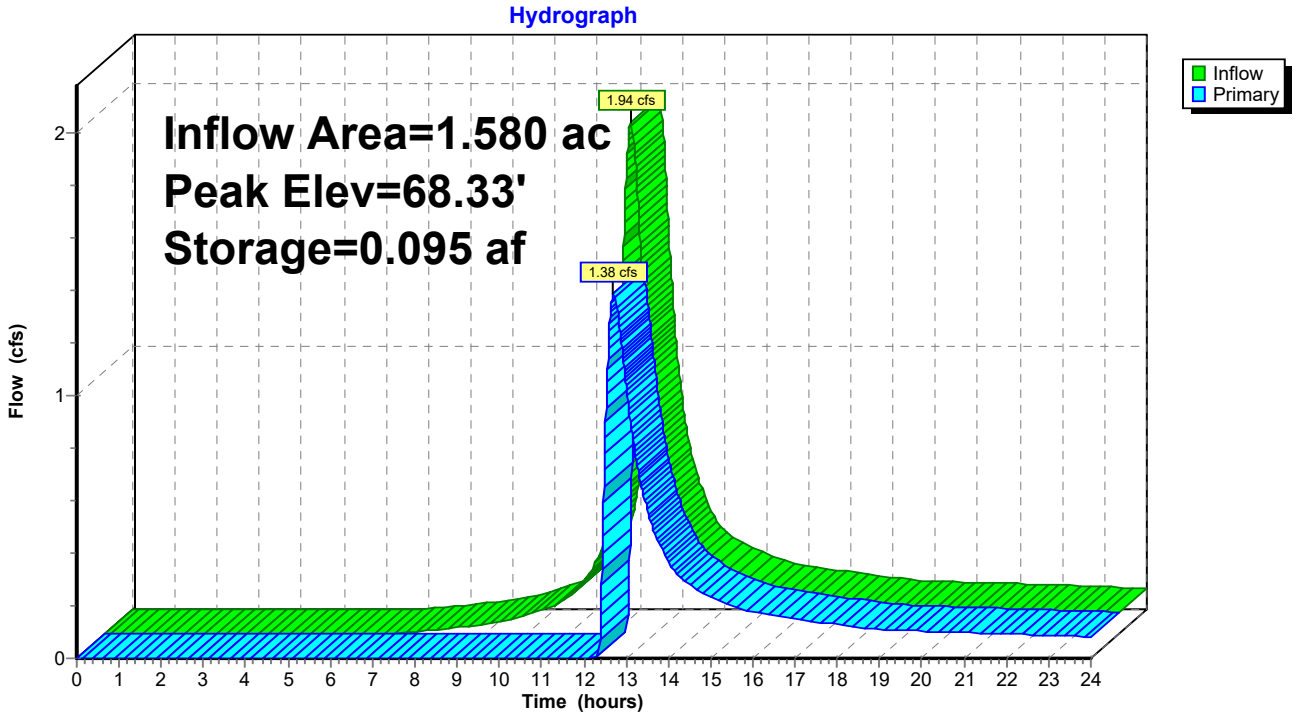
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

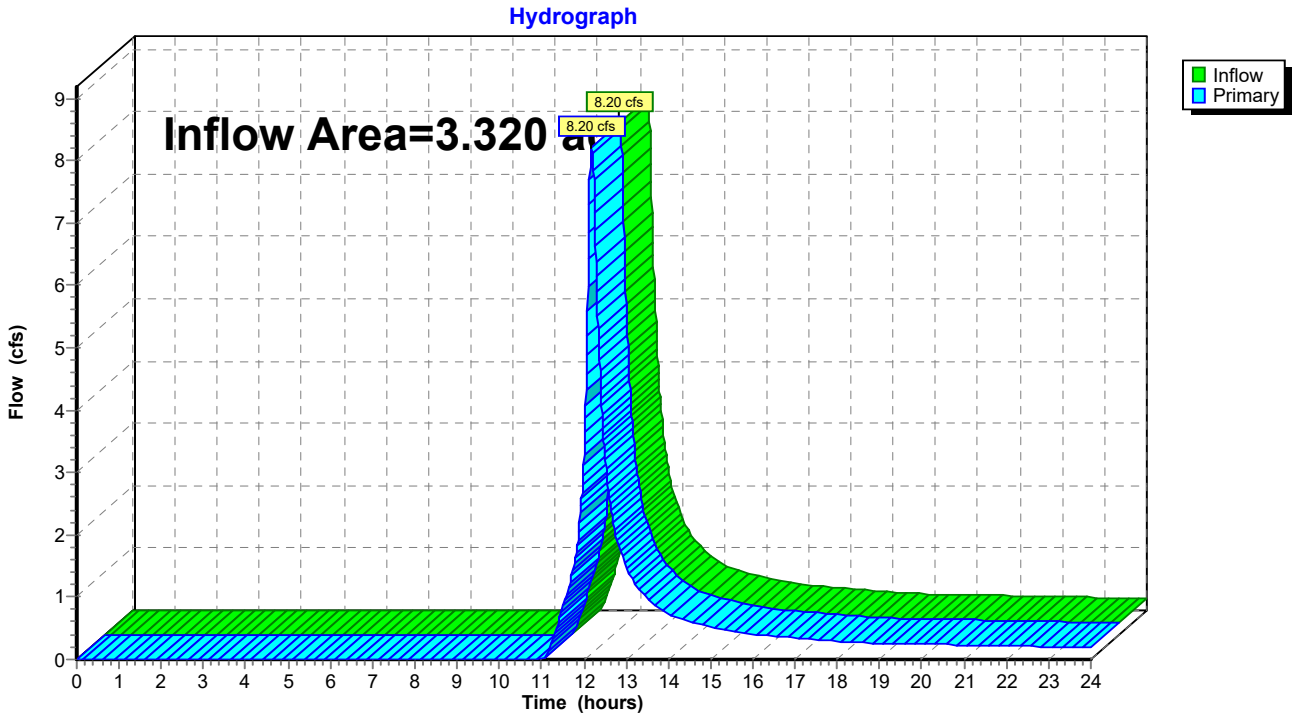

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.33'
Storage=0.095 af
1.94 cfs
1.38 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 2.70" for 5-Year event
Inflow = 8.20 cfs @ 12.18 hrs, Volume= 0.748 af
Primary = 8.20 cfs @ 12.18 hrs, Volume= 0.748 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

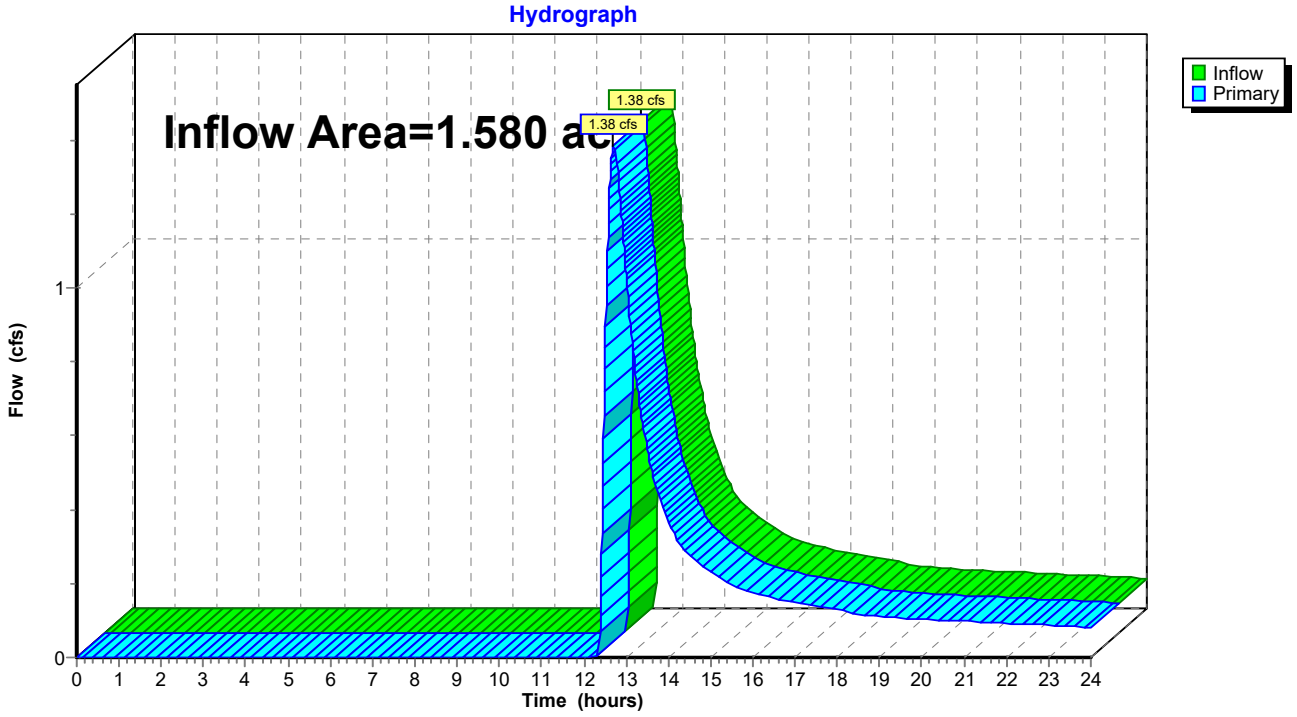


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 1.67" for 5-Year event
Inflow = 1.38 cfs @ 12.71 hrs, Volume= 0.219 af
Primary = 1.38 cfs @ 12.71 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

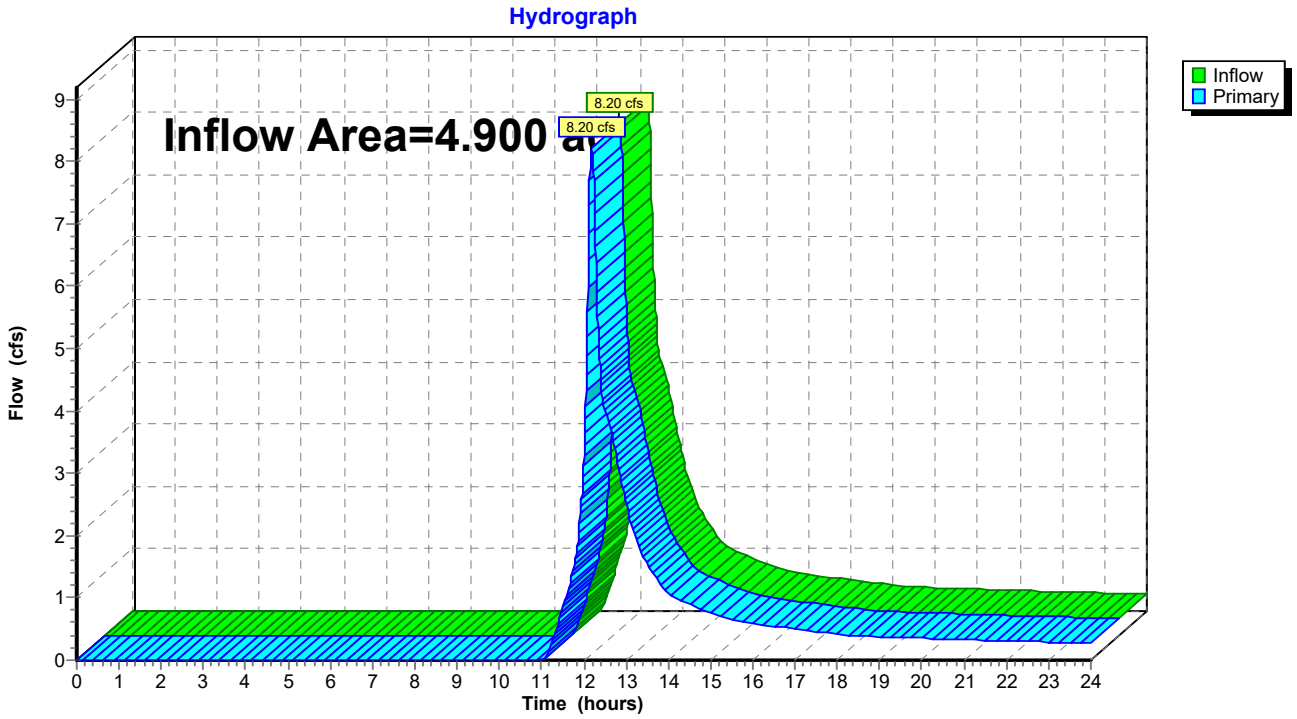


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 2.37" for 5-Year event
Inflow = 8.20 cfs @ 12.18 hrs, Volume= 0.967 af
Primary = 8.20 cfs @ 12.18 hrs, Volume= 0.967 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>4.15"
Flow Length=127' Tc=6.0 min CN=94 Runoff=14.02 cfs 1.149 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>2.91"
Flow Length=500' Tc=32.7 min CN=82 Runoff=2.55 cfs 0.384 af

**Pond 3P: UGS-3** Peak Elev=59.41' Storage=0.310 af Inflow=14.02 cfs 1.149 af
Outflow=9.72 cfs 0.967 af

**Pond 6P: UGS-6** Peak Elev=68.45' Storage=0.104 af Inflow=2.55 cfs 0.384 af
Outflow=2.21 cfs 0.311 af

**Link 2L: Existing Wetlands** Inflow=9.72 cfs 0.967 af
Primary=9.72 cfs 0.967 af

**Link 3L: Exisitng Wetlands** Inflow=2.21 cfs 0.311 af
Primary=2.21 cfs 0.311 af

**Link 4L: Total To Wetlands** Inflow=9.81 cfs 1.278 af
Primary=9.81 cfs 1.278 af

**Total Runoff Area = 4.900 ac Runoff Volume = 1.533 af Average Runoff Depth = 3.75"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 556% of capacity of segment #2

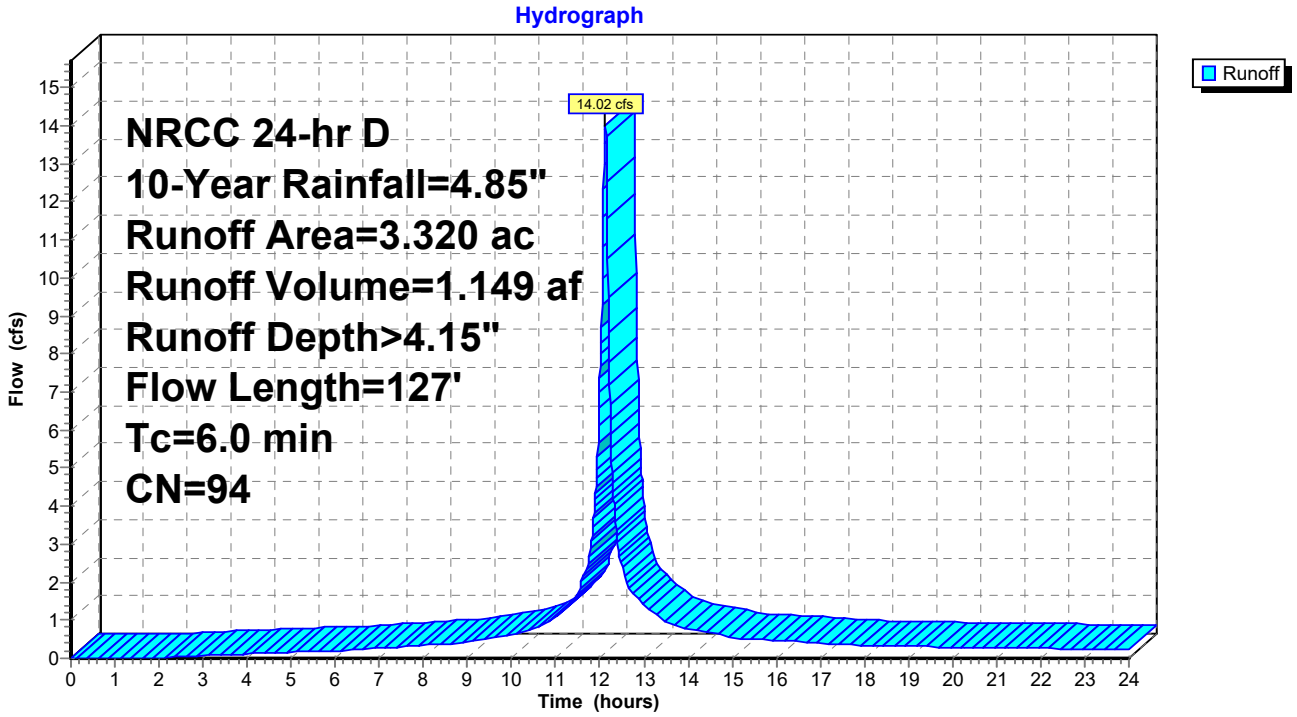
Runoff = 14.02 cfs @ 12.13 hrs, Volume= 1.149 af, Depth> 4.15"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

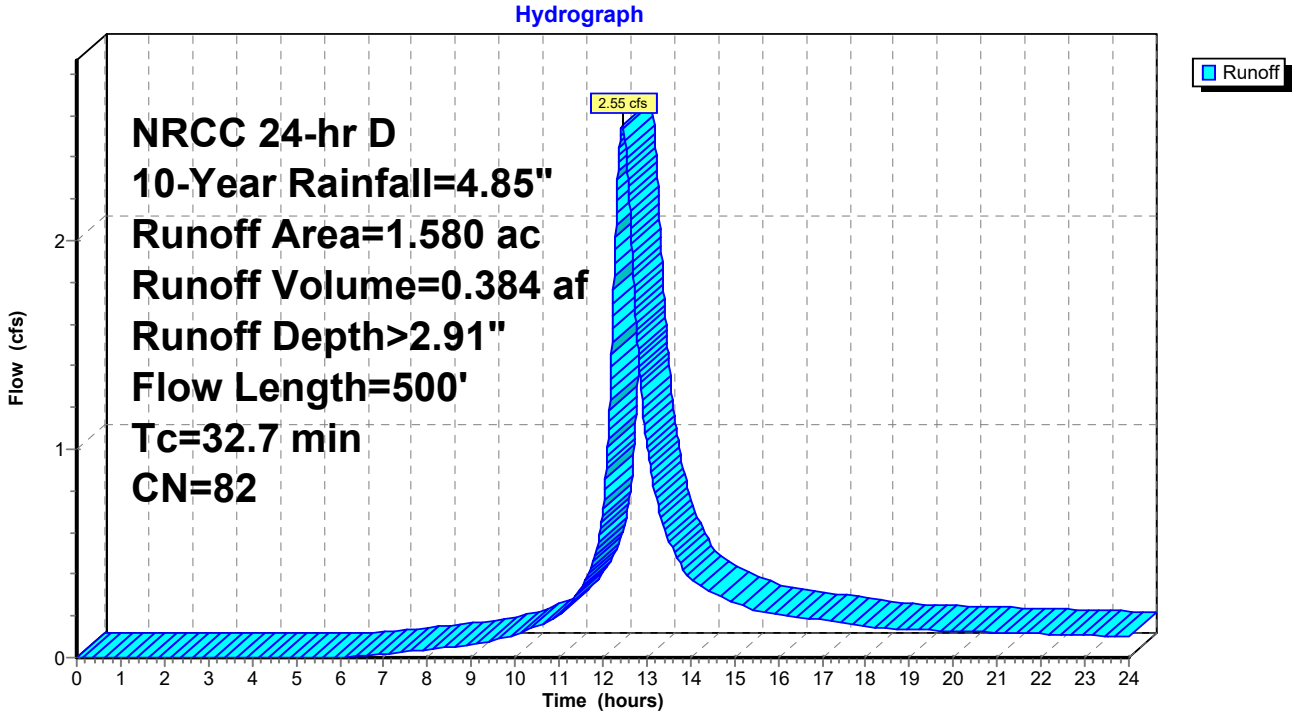
Runoff = 2.55 cfs @ 12.46 hrs, Volume= 0.384 af, Depth> 2.91"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 4.15" for 10-Year event
Inflow = 14.02 cfs @ 12.13 hrs, Volume= 1.149 af
Outflow = 9.72 cfs @ 12.19 hrs, Volume= 0.967 af, Atten= 31%, Lag= 3.5 min
Primary = 9.72 cfs @ 12.19 hrs, Volume= 0.967 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.41' @ 12.19 hrs Surf.Area= 0.198 ac Storage= 0.310 af

Plug-Flow detention time= 147.1 min calculated for 0.967 af (84% of inflow)
Center-of-Mass det. time= 69.0 min ( 850.5 - 781.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=9.71 cfs @ 12.19 hrs HW=59.41' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Barrel Controls 9.71 cfs @ 5.53 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 9.71 cfs of 11.45 cfs potential flow)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

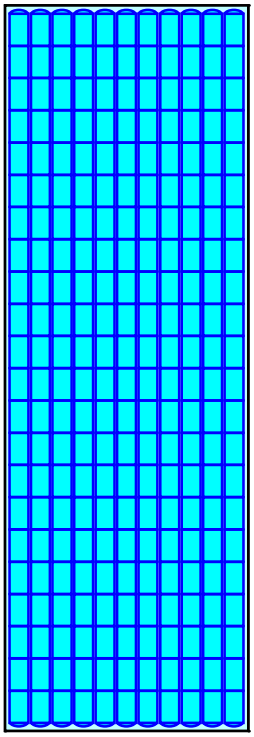
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

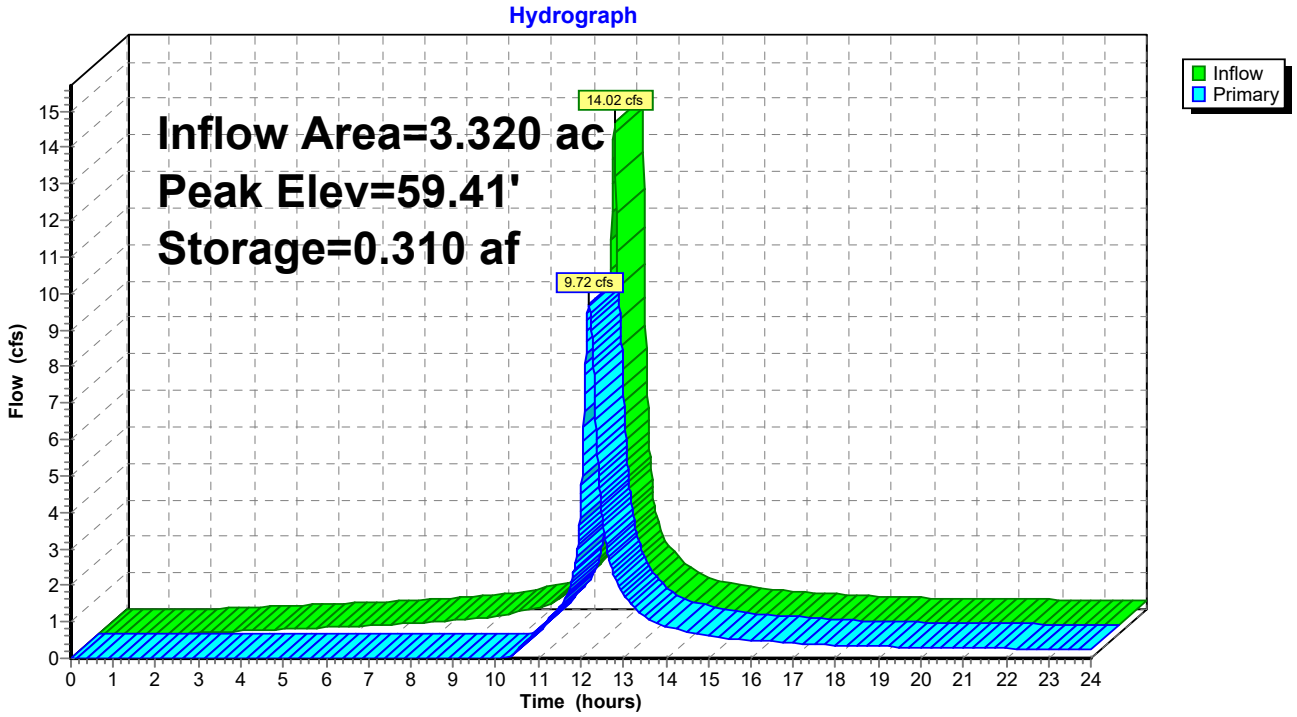
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.41'
Storage=0.310 af
14.02 cfs
9.72 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 2.91" for 10-Year event
Inflow = 2.55 cfs @ 12.46 hrs, Volume= 0.384 af
Outflow = 2.21 cfs @ 12.60 hrs, Volume= 0.311 af, Atten= 14%, Lag= 8.7 min
Primary = 2.21 cfs @ 12.60 hrs, Volume= 0.311 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.45' @ 12.60 hrs Surf.Area= 0.101 ac Storage= 0.104 af

Plug-Flow detention time= 139.9 min calculated for 0.311 af (81% of inflow)
Center-of-Mass det. time= 56.2 min ( 912.7 - 856.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=2.21 cfs @ 12.60 hrs HW=68.45' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 2.21 cfs of 4.40 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.21 cfs @ 1.98 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

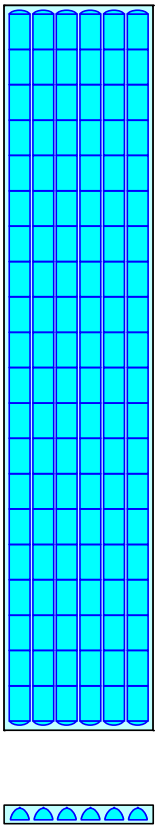
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

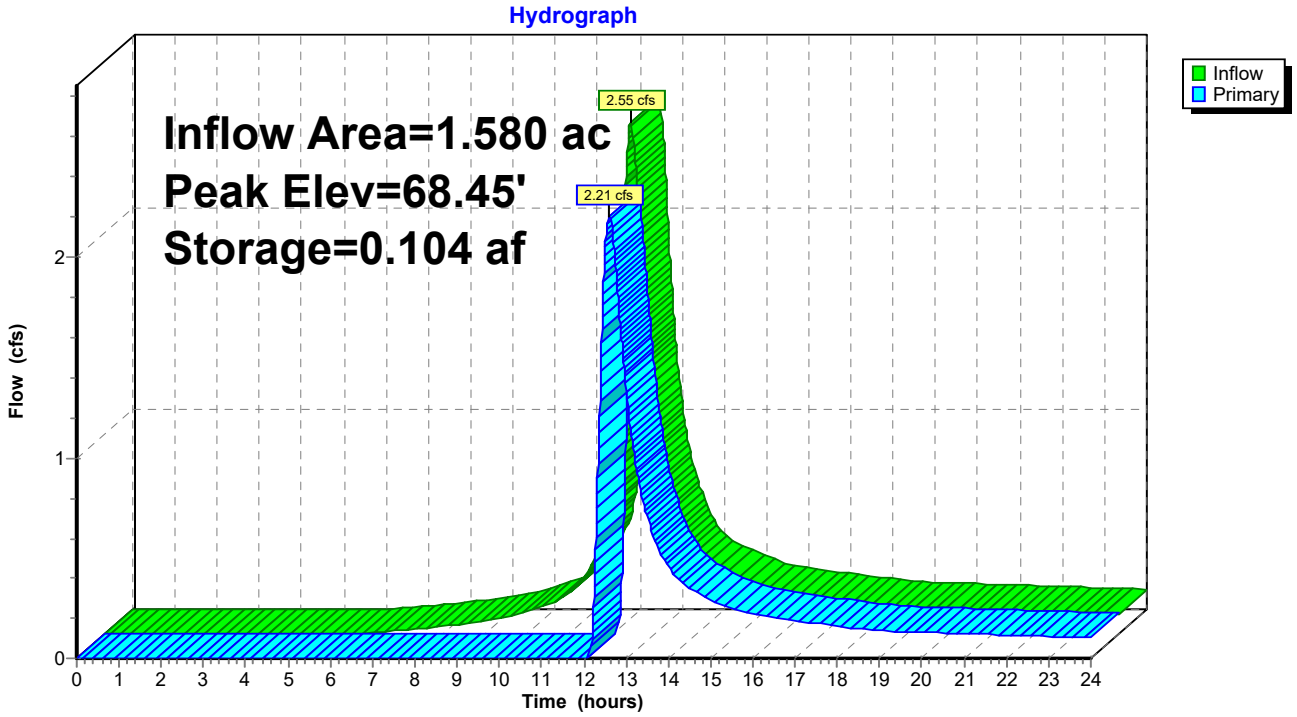
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

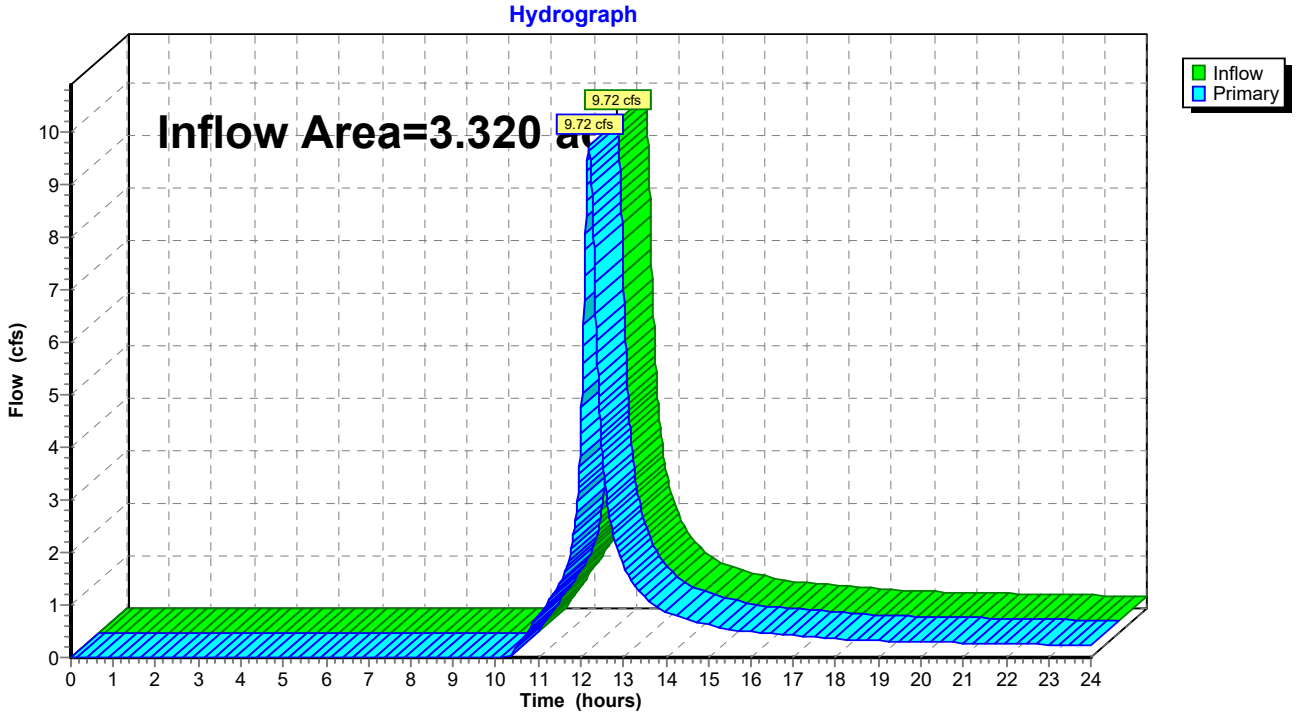

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.45'
Storage=0.104 af
2.55 cfs
2.21 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 3.49" for 10-Year event
Inflow = 9.72 cfs @ 12.19 hrs, Volume= 0.967 af
Primary = 9.72 cfs @ 12.19 hrs, Volume= 0.967 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

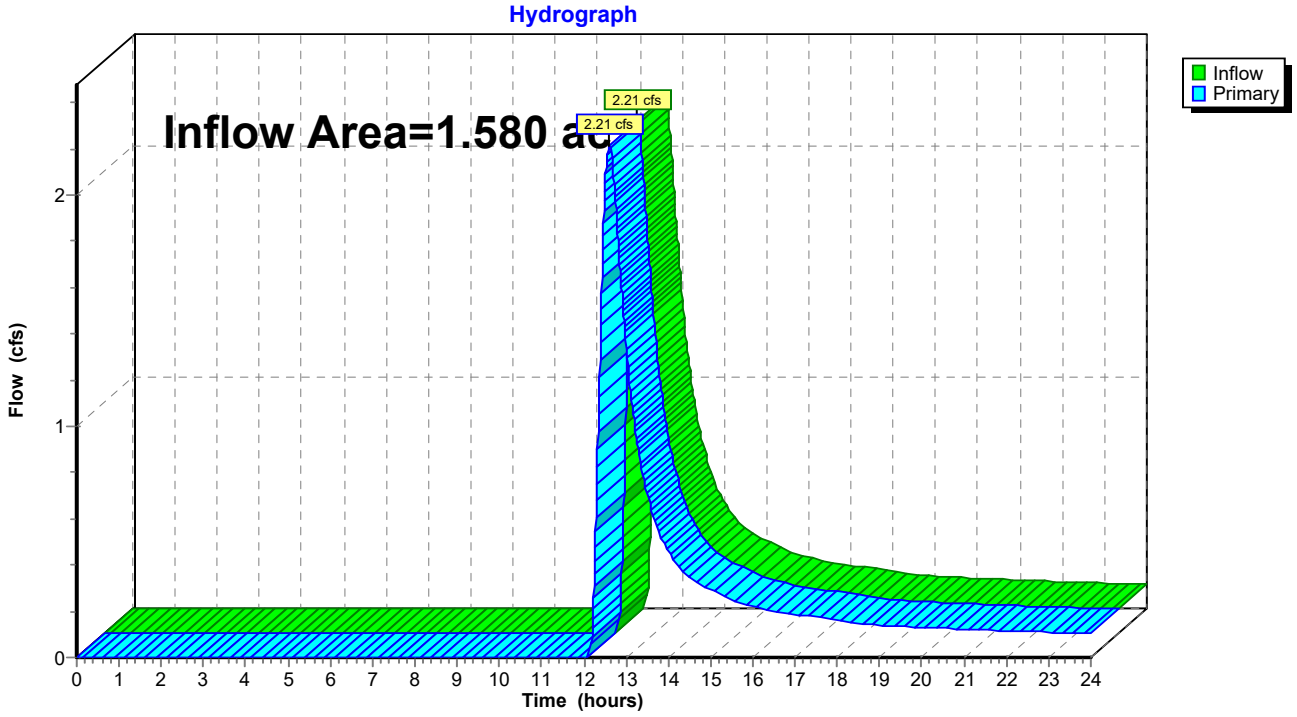


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 2.36" for 10-Year event
Inflow = 2.21 cfs @ 12.60 hrs, Volume= 0.311 af
Primary = 2.21 cfs @ 12.60 hrs, Volume= 0.311 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

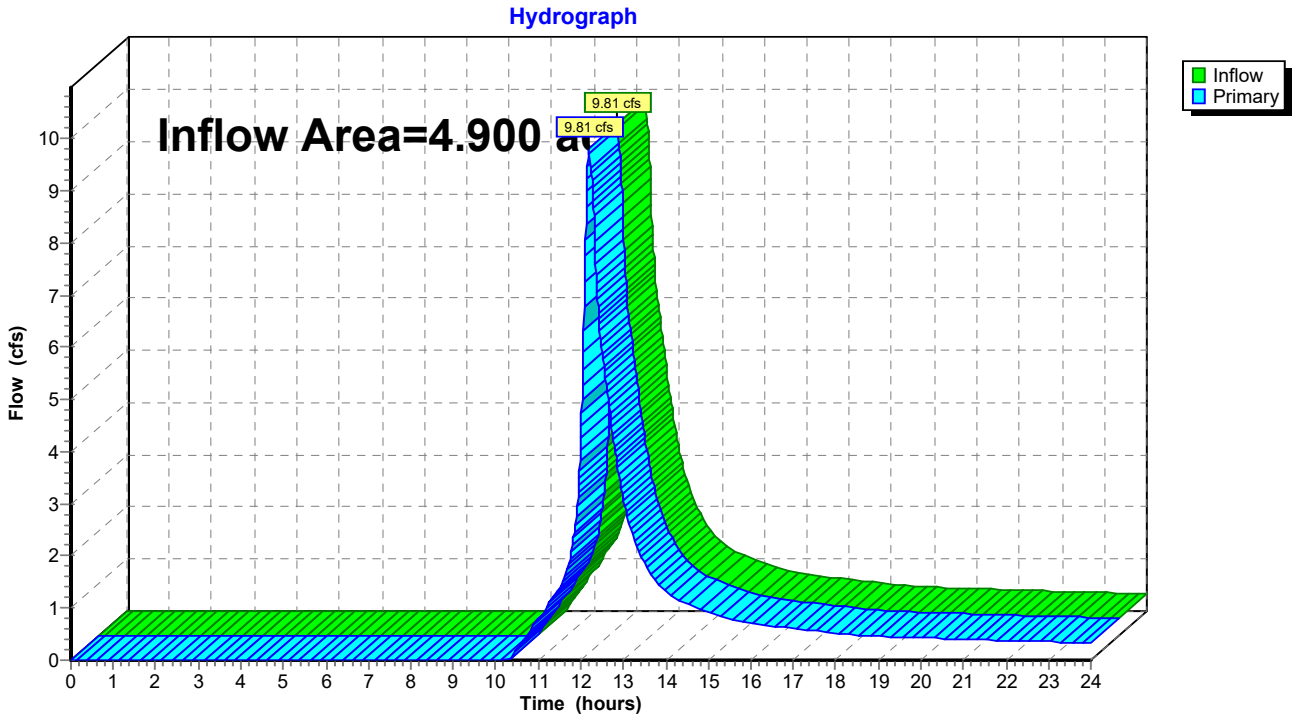


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 3.13" for 10-Year event
Inflow = 9.81 cfs @ 12.19 hrs, Volume= 1.278 af
Primary = 9.81 cfs @ 12.19 hrs, Volume= 1.278 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>5.27"
Flow Length=127' Tc=6.0 min CN=94 Runoff=17.52 cfs 1.458 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>3.93"
Flow Length=500' Tc=32.7 min CN=82 Runoff=3.42 cfs 0.517 af

**Pond 3P: UGS-3** Peak Elev=59.62' Storage=0.340 af Inflow=17.52 cfs 1.458 af
Outflow=11.96 cfs 1.273 af

**Pond 6P: UGS-6** Peak Elev=68.56' Storage=0.112 af Inflow=3.42 cfs 0.517 af
Outflow=3.16 cfs 0.444 af

**Link 2L: Existing Wetlands** Inflow=11.96 cfs 1.273 af
Primary=11.96 cfs 1.273 af

**Link 3L: Exisitng Wetlands** Inflow=3.16 cfs 0.444 af
Primary=3.16 cfs 0.444 af

**Link 4L: Total To Wetlands** Inflow=13.09 cfs 1.717 af
Primary=13.09 cfs 1.717 af

**Total Runoff Area = 4.900 ac Runoff Volume = 1.975 af Average Runoff Depth = 4.84"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 696% of capacity of segment #2

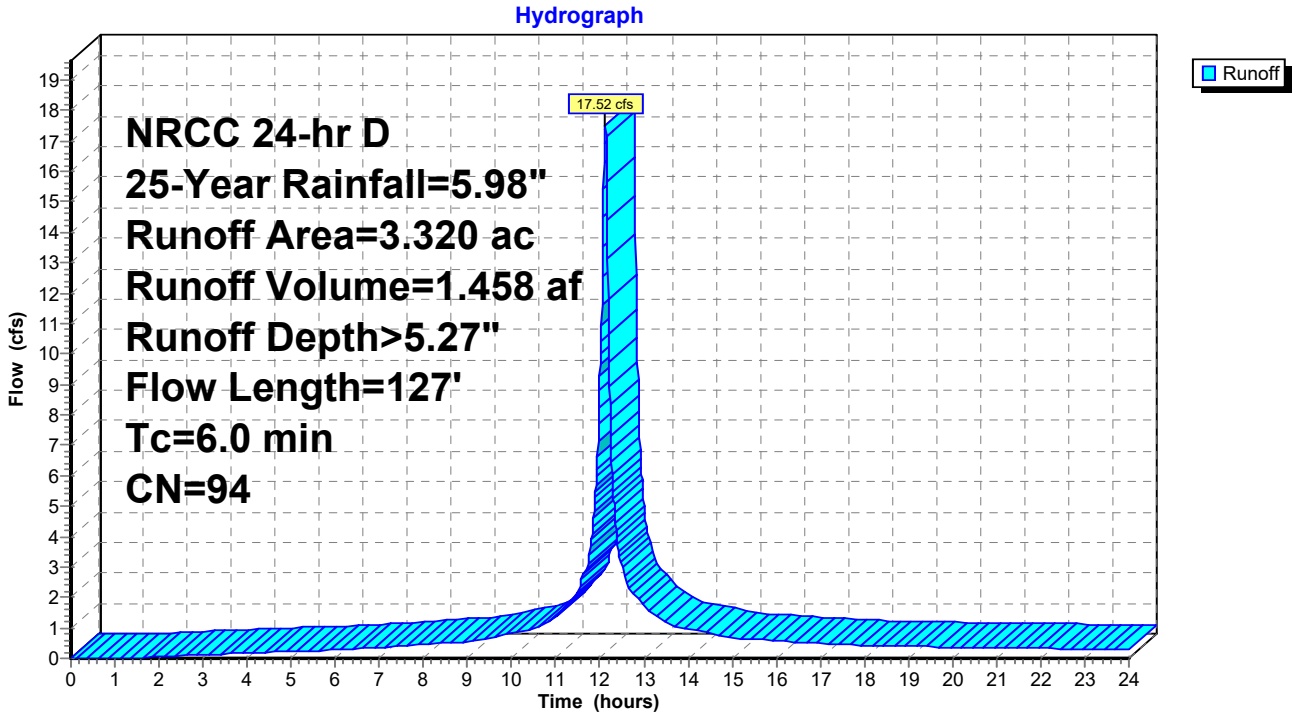
Runoff = 17.52 cfs @ 12.13 hrs, Volume= 1.458 af, Depth> 5.27"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

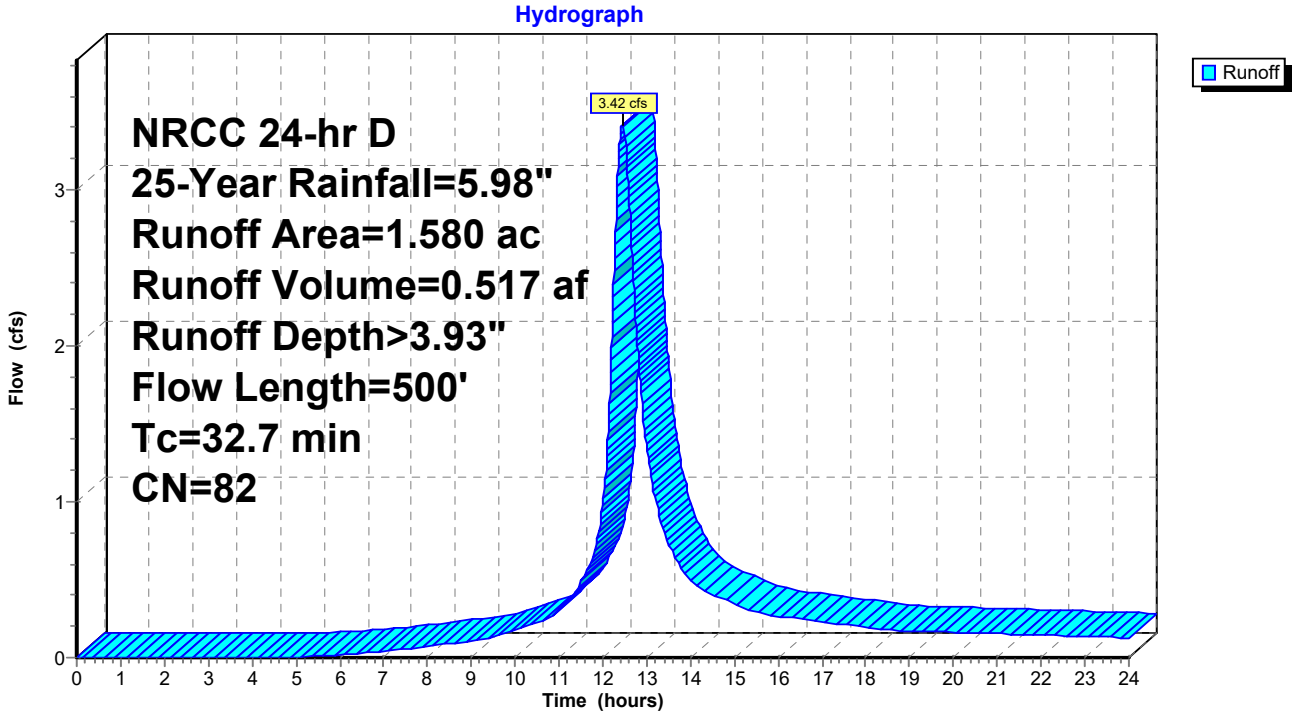
Runoff = 3.42 cfs @ 12.46 hrs, Volume= 0.517 af, Depth> 3.93"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=5.98"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 5.27" for 25-Year event
Inflow = 17.52 cfs @ 12.13 hrs, Volume= 1.458 af
Outflow = 11.96 cfs @ 12.19 hrs, Volume= 1.273 af, Atten= 32%, Lag= 3.6 min
Primary = 11.96 cfs @ 12.19 hrs, Volume= 1.273 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.62' @ 12.19 hrs Surf.Area= 0.198 ac Storage= 0.340 af

Plug-Flow detention time= 128.8 min calculated for 1.273 af (87% of inflow)
Center-of-Mass det. time= 62.3 min ( 836.7 - 774.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=11.95 cfs @ 12.19 hrs HW=59.62' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Barrel Controls 11.95 cfs @ 5.76 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 11.95 cfs of 15.79 cfs potential flow)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

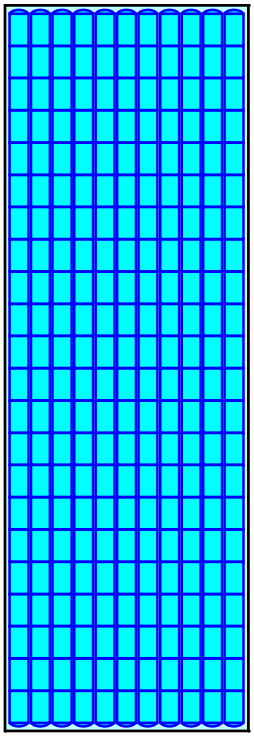
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

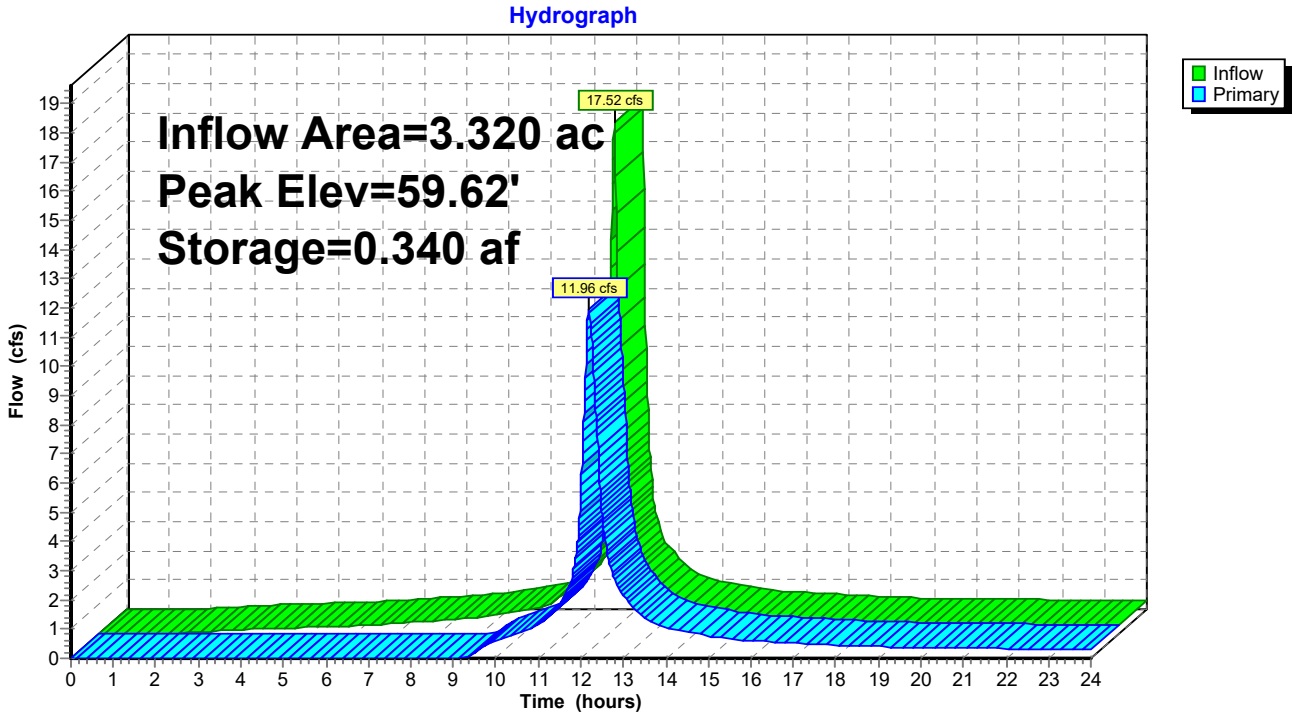
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.62'
Storage=0.340 af
17.52 cfs
11.96 cfs
Inflow
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
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 3.93" for 25-Year event
Inflow = 3.42 cfs @ 12.46 hrs, Volume= 0.517 af
Outflow = 3.16 cfs @ 12.56 hrs, Volume= 0.444 af, Atten= 8%, Lag= 6.0 min
Primary = 3.16 cfs @ 12.56 hrs, Volume= 0.444 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.56' @ 12.56 hrs Surf.Area= 0.101 ac Storage= 0.112 af

Plug-Flow detention time= 116.1 min calculated for 0.444 af (86% of inflow)
Center-of-Mass det. time= 48.3 min ( 894.0 - 845.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=3.16 cfs @ 12.56 hrs HW=68.56' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 3.16 cfs of 5.41 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.16 cfs @ 2.27 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

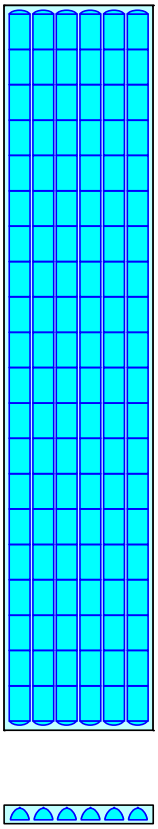
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

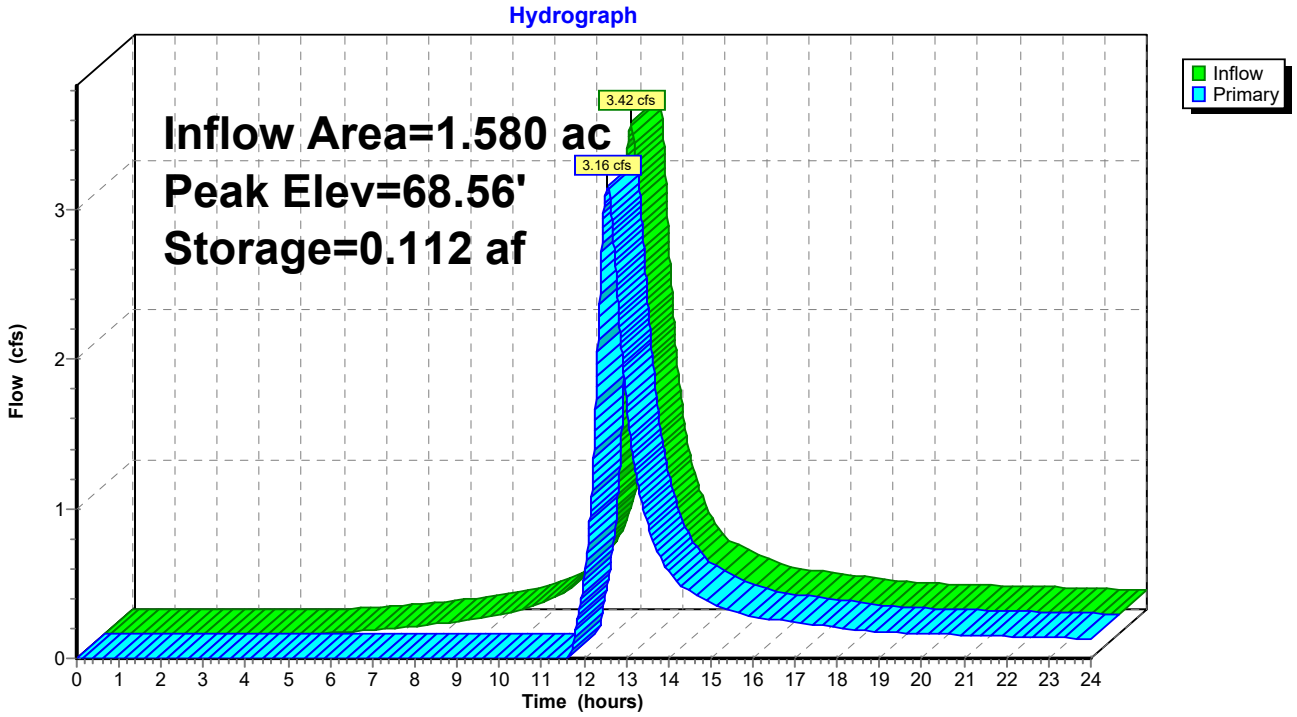
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

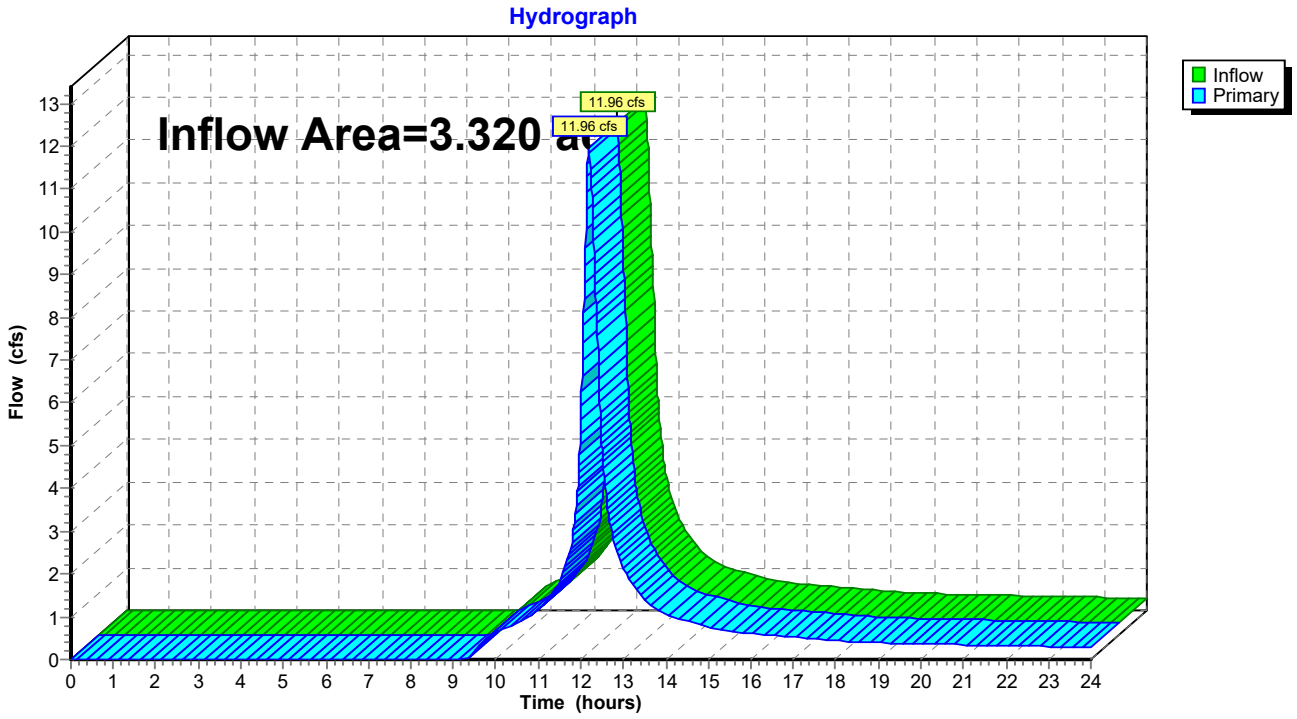

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.56'
Storage=0.112 af
3.42 cfs
3.16 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 4.60" for 25-Year event
Inflow = 11.96 cfs @ 12.19 hrs, Volume= 1.273 af
Primary = 11.96 cfs @ 12.19 hrs, Volume= 1.273 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

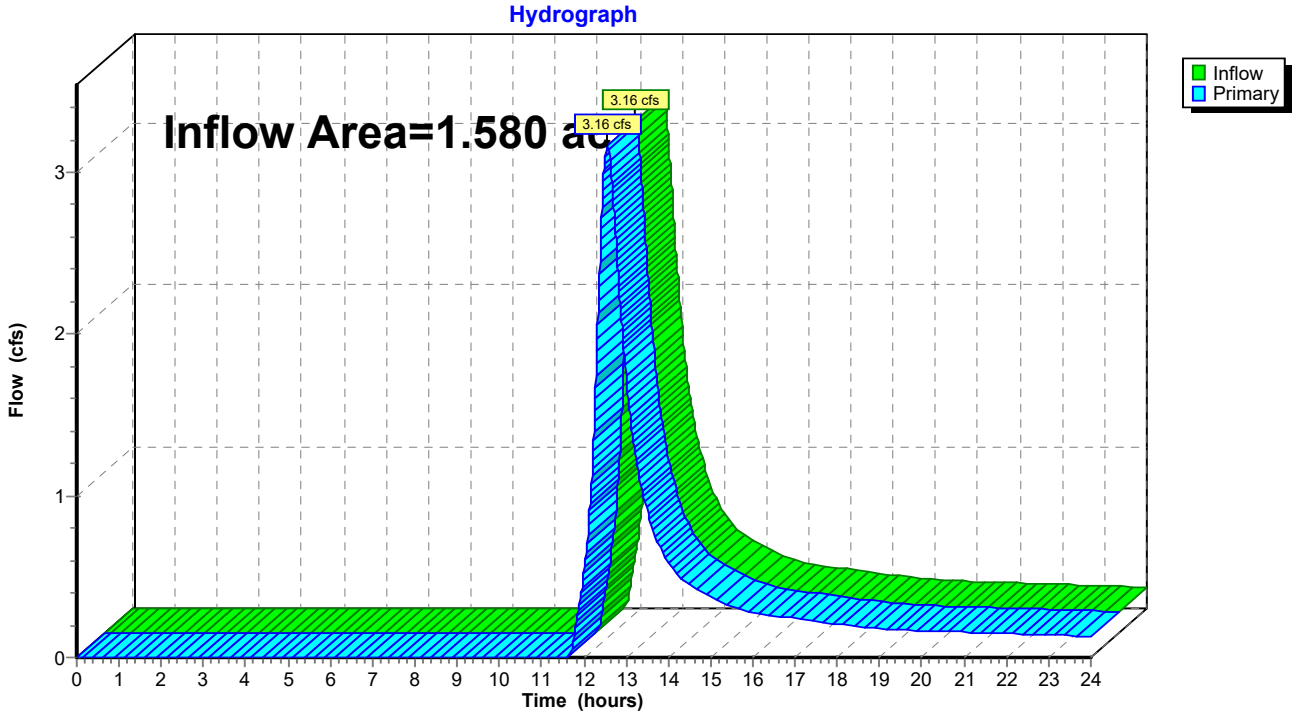


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 3.37" for 25-Year event
Inflow = 3.16 cfs @ 12.56 hrs, Volume= 0.444 af
Primary = 3.16 cfs @ 12.56 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

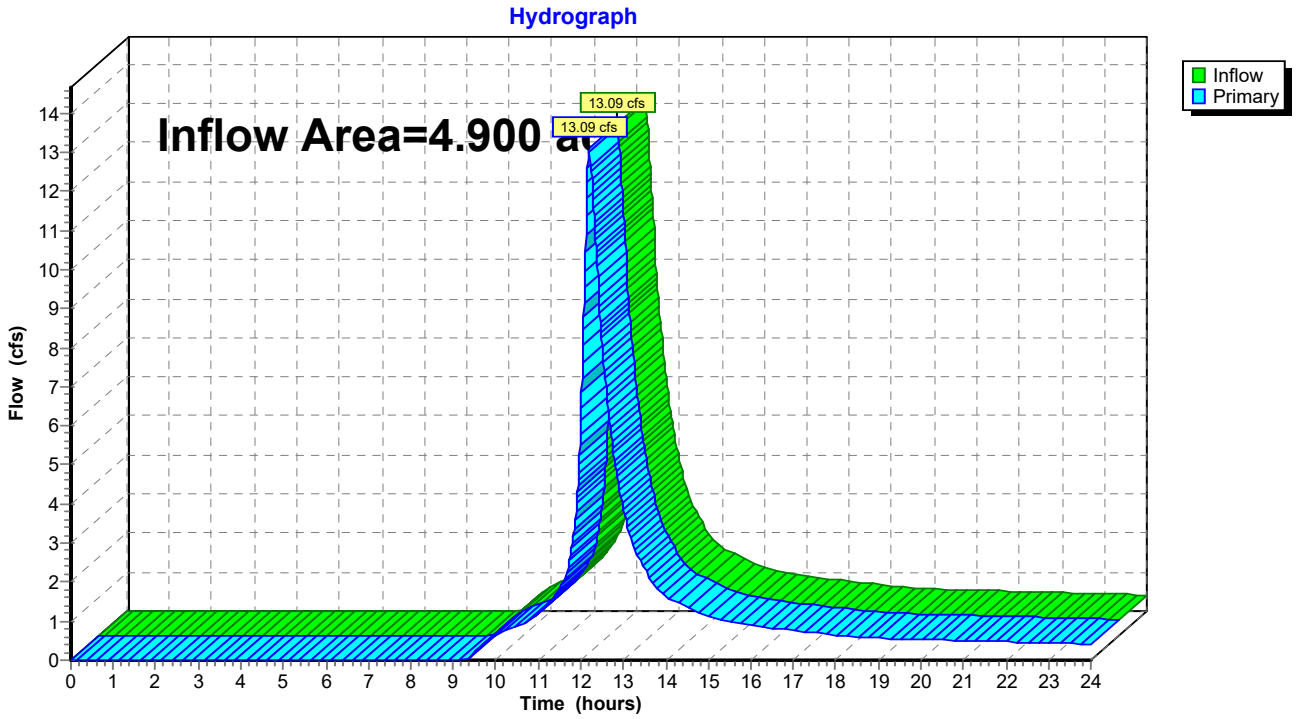


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 4.21" for 25-Year event
Inflow = 13.09 cfs @ 12.20 hrs, Volume= 1.717 af
Primary = 13.09 cfs @ 12.20 hrs, Volume= 1.717 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>6.08"
Flow Length=127' Tc=6.0 min CN=94 Runoff=20.05 cfs 1.682 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>4.68"
Flow Length=500' Tc=32.7 min CN=82 Runoff=4.06 cfs 0.617 af

**Pond 3P: UGS-3** Peak Elev=59.79' Storage=0.361 af Inflow=20.05 cfs 1.682 af
Outflow=13.64 cfs 1.497 af

**Pond 6P: UGS-6** Peak Elev=68.62' Storage=0.117 af Inflow=4.06 cfs 0.617 af
Outflow=3.79 cfs 0.542 af

**Link 2L: Existing Wetlands** Inflow=13.64 cfs 1.497 af
Primary=13.64 cfs 1.497 af

**Link 3L: Exisitng Wetlands** Inflow=3.79 cfs 0.542 af
Primary=3.79 cfs 0.542 af

**Link 4L: Total To Wetlands** Inflow=15.14 cfs 2.039 af
Primary=15.14 cfs 2.039 af

**Total Runoff Area = 4.900 ac Runoff Volume = 2.299 af Average Runoff Depth = 5.63"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 796% of capacity of segment #2

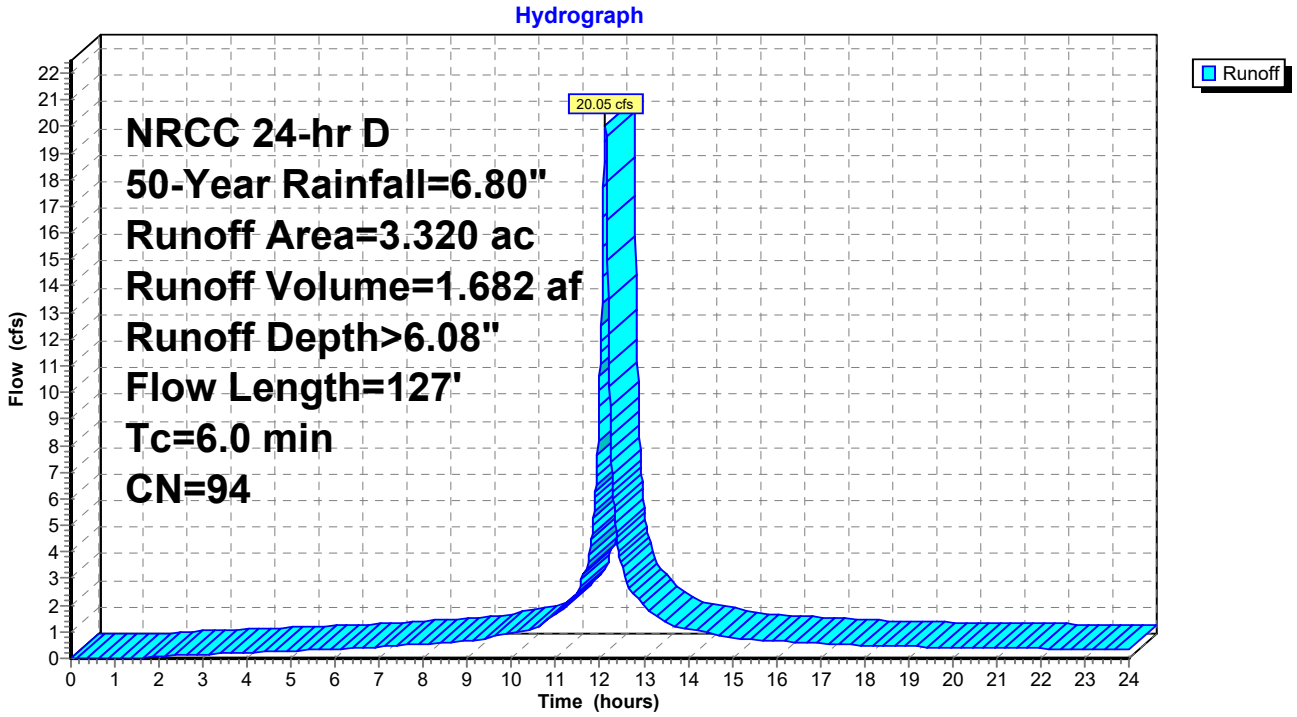
Runoff = 20.05 cfs @ 12.13 hrs, Volume= 1.682 af, Depth> 6.08"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

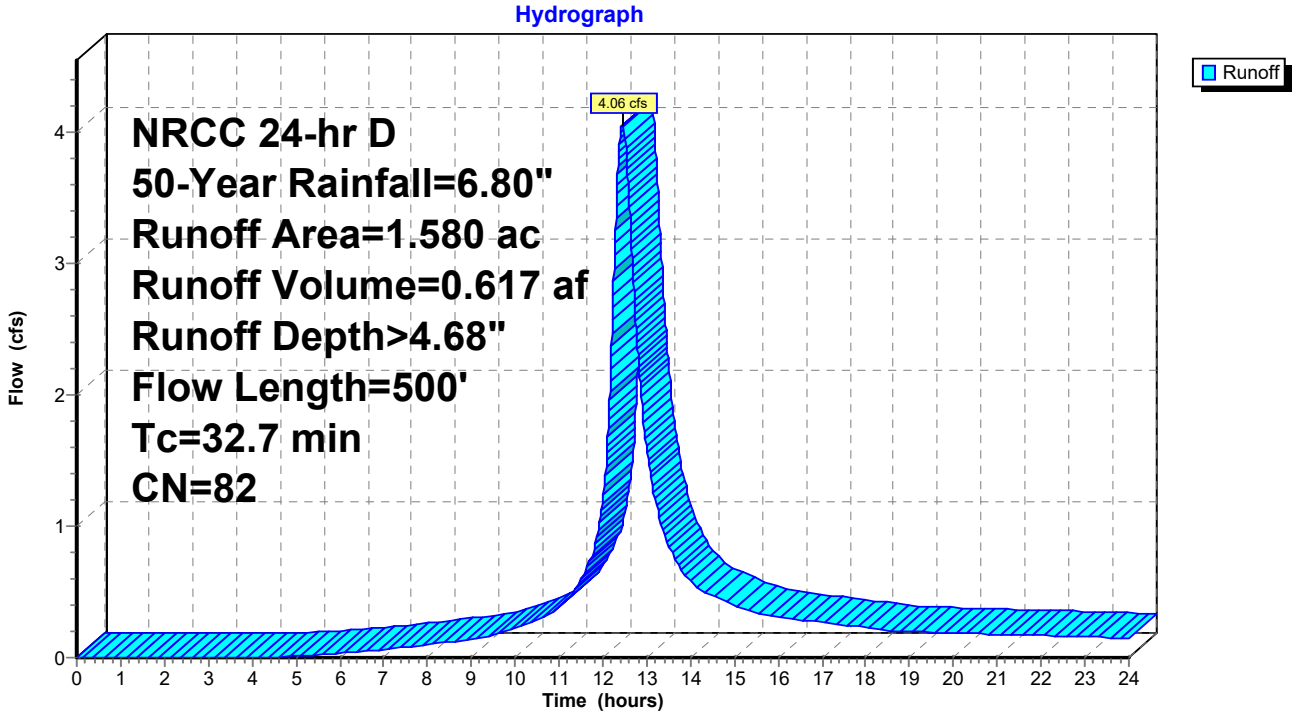
Runoff = 4.06 cfs @ 12.46 hrs, Volume= 0.617 af, Depth> 4.68"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.80"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 6.08" for 50-Year event
Inflow = 20.05 cfs @ 12.13 hrs, Volume= 1.682 af
Outflow = 13.64 cfs @ 12.19 hrs, Volume= 1.497 af, Atten= 32%, Lag= 3.6 min
Primary = 13.64 cfs @ 12.19 hrs, Volume= 1.497 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.79' @ 12.19 hrs Surf.Area= 0.198 ac Storage= 0.361 af

Plug-Flow detention time= 118.4 min calculated for 1.496 af (89% of inflow)
Center-of-Mass det. time= 58.3 min ( 828.6 - 770.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=13.64 cfs @ 12.19 hrs HW=59.79' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Barrel Controls 13.64 cfs @ 5.91 fps)
↑**1=Broad-Crested Rectangular Weir** (Passes 13.64 cfs of 19.36 cfs potential flow)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

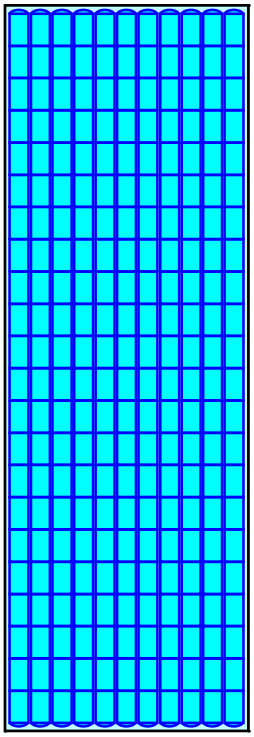
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

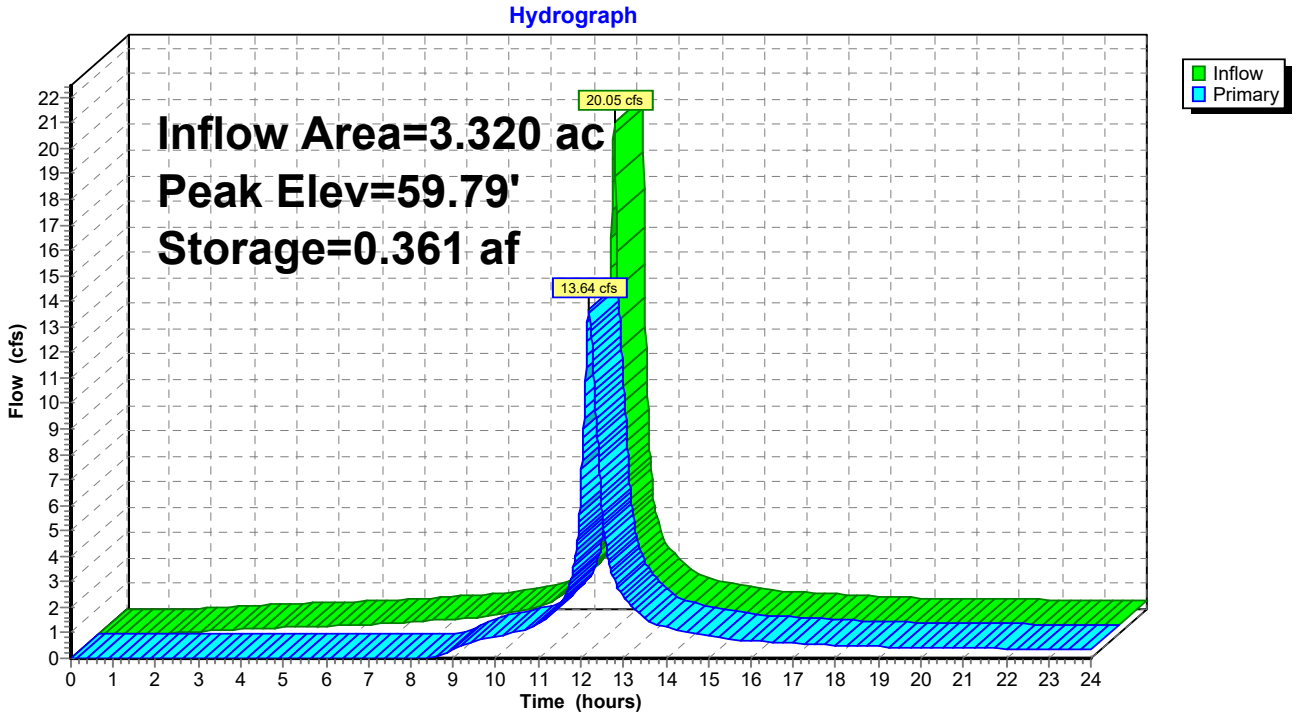
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.79'
Storage=0.361 af
20.05 cfs
13.64 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 4.68" for 50-Year event
Inflow = 4.06 cfs @ 12.46 hrs, Volume= 0.617 af
Outflow = 3.79 cfs @ 12.55 hrs, Volume= 0.542 af, Atten= 6%, Lag= 5.3 min
Primary = 3.79 cfs @ 12.55 hrs, Volume= 0.542 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.62' @ 12.55 hrs Surf.Area= 0.101 ac Storage= 0.117 af

Plug-Flow detention time= 104.7 min calculated for 0.542 af (88% of inflow)
Center-of-Mass det. time= 44.9 min ( 884.3 - 839.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=3.79 cfs @ 12.55 hrs HW=68.62' TW=0.00' (Dynamic Tailwater)
↑└**2=Culvert** (Passes 3.79 cfs of 6.03 cfs potential flow)
↑└**1=Broad-Crested Rectangular Weir** (Weir Controls 3.79 cfs @ 2.44 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

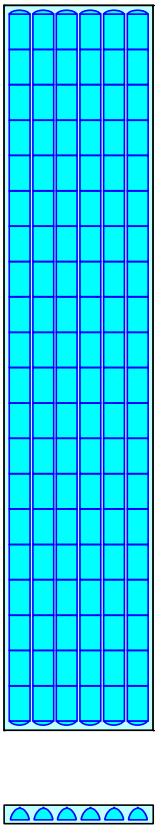
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

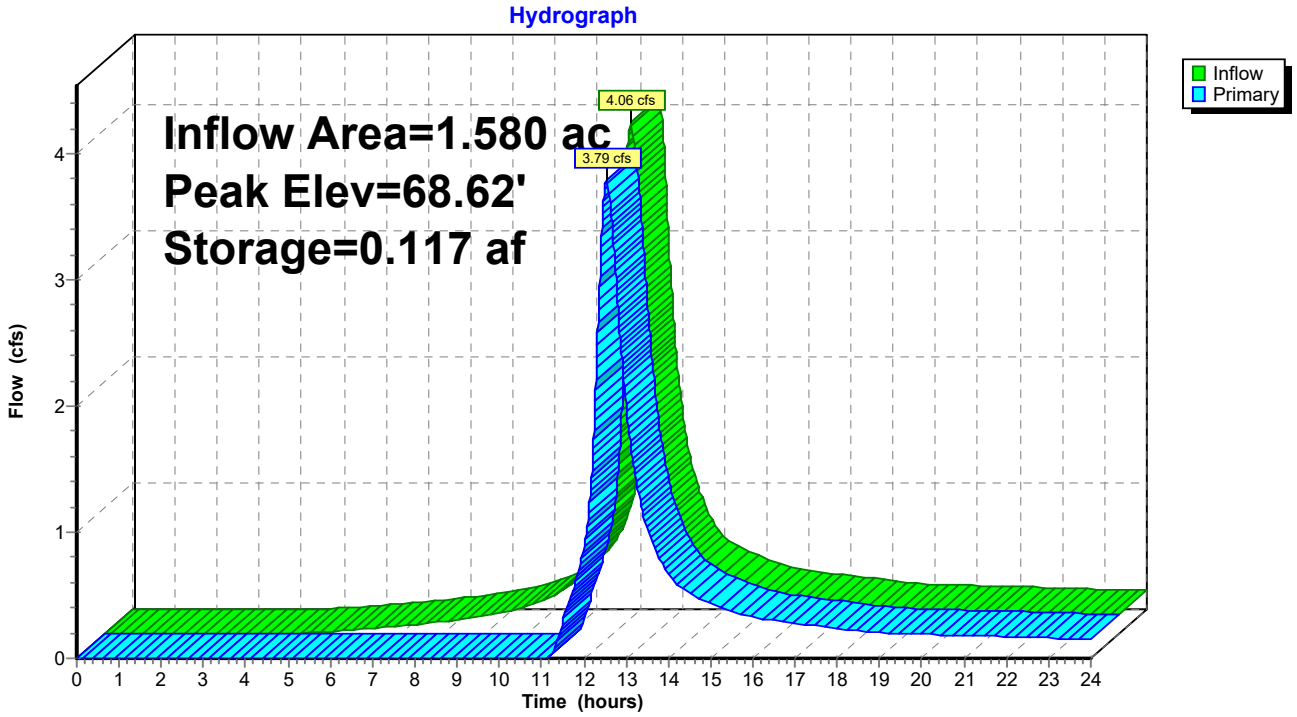
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

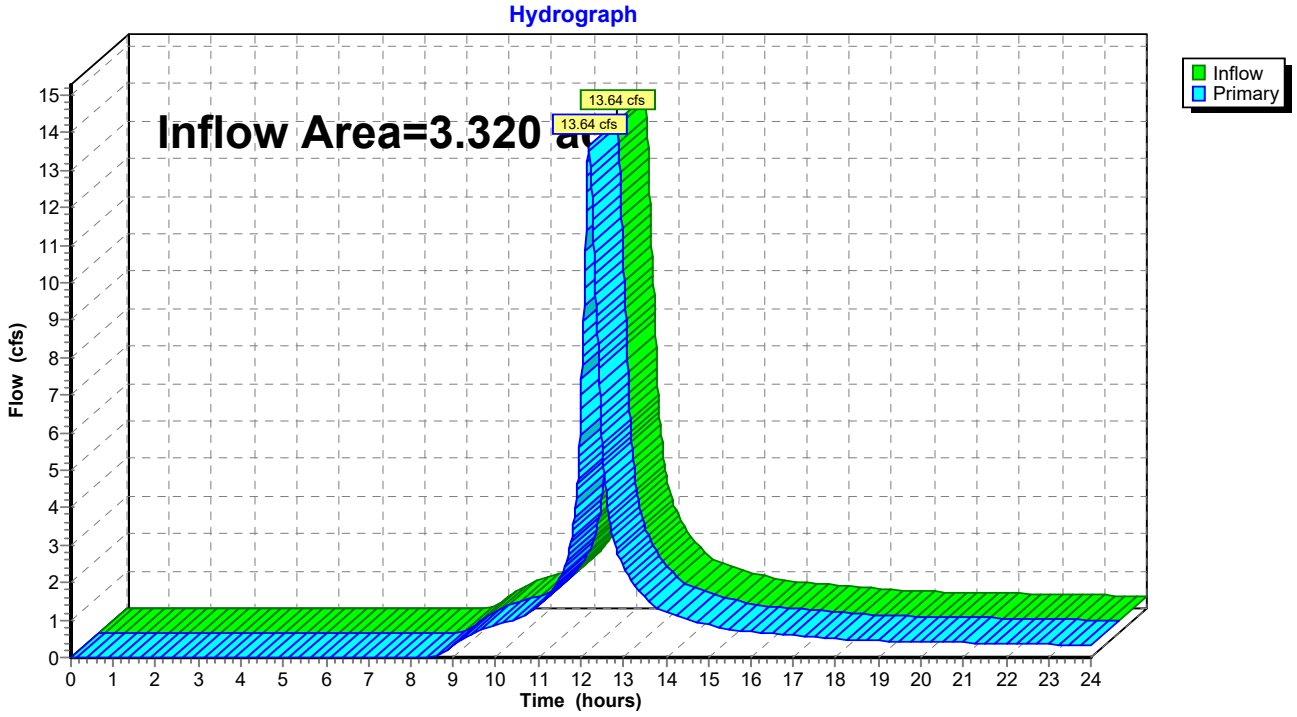

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.62'
Storage=0.117 af
4.06 cfs
3.79 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 5.41" for 50-Year event
Inflow = 13.64 cfs @ 12.19 hrs, Volume= 1.497 af
Primary = 13.64 cfs @ 12.19 hrs, Volume= 1.497 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

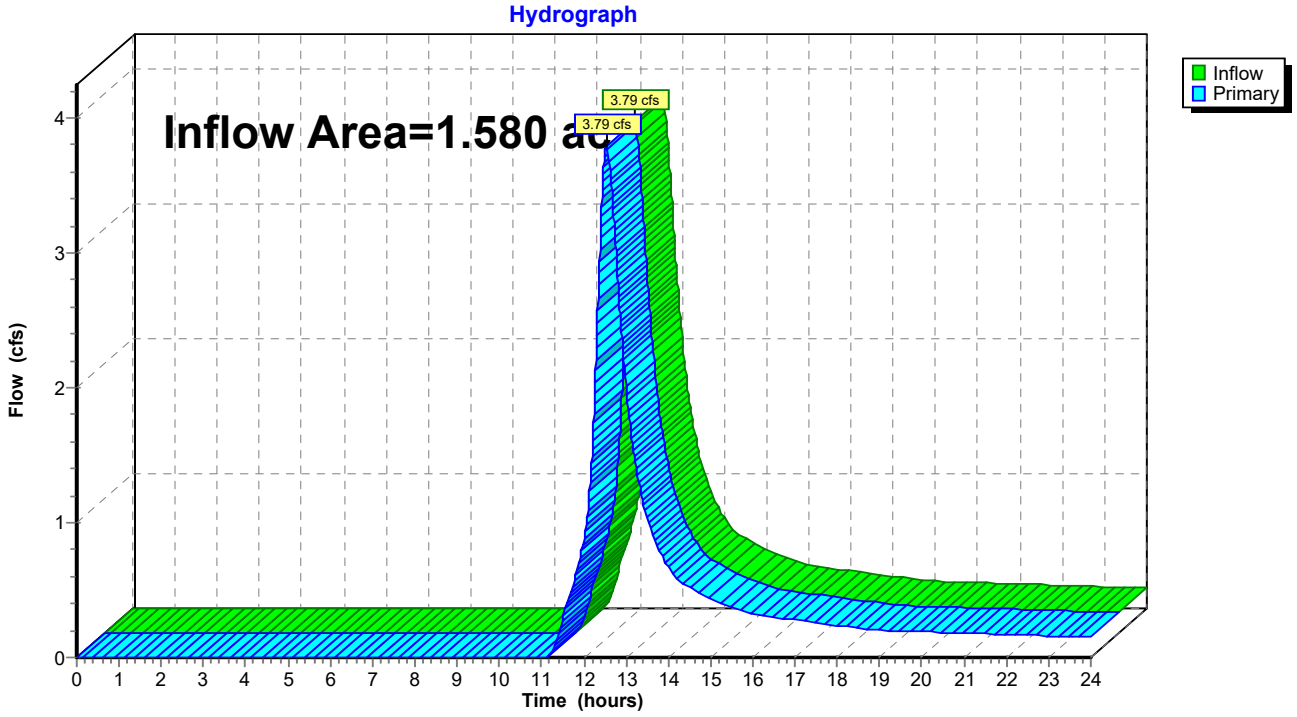


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 4.12" for 50-Year event
Inflow = 3.79 cfs @ 12.55 hrs, Volume= 0.542 af
Primary = 3.79 cfs @ 12.55 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

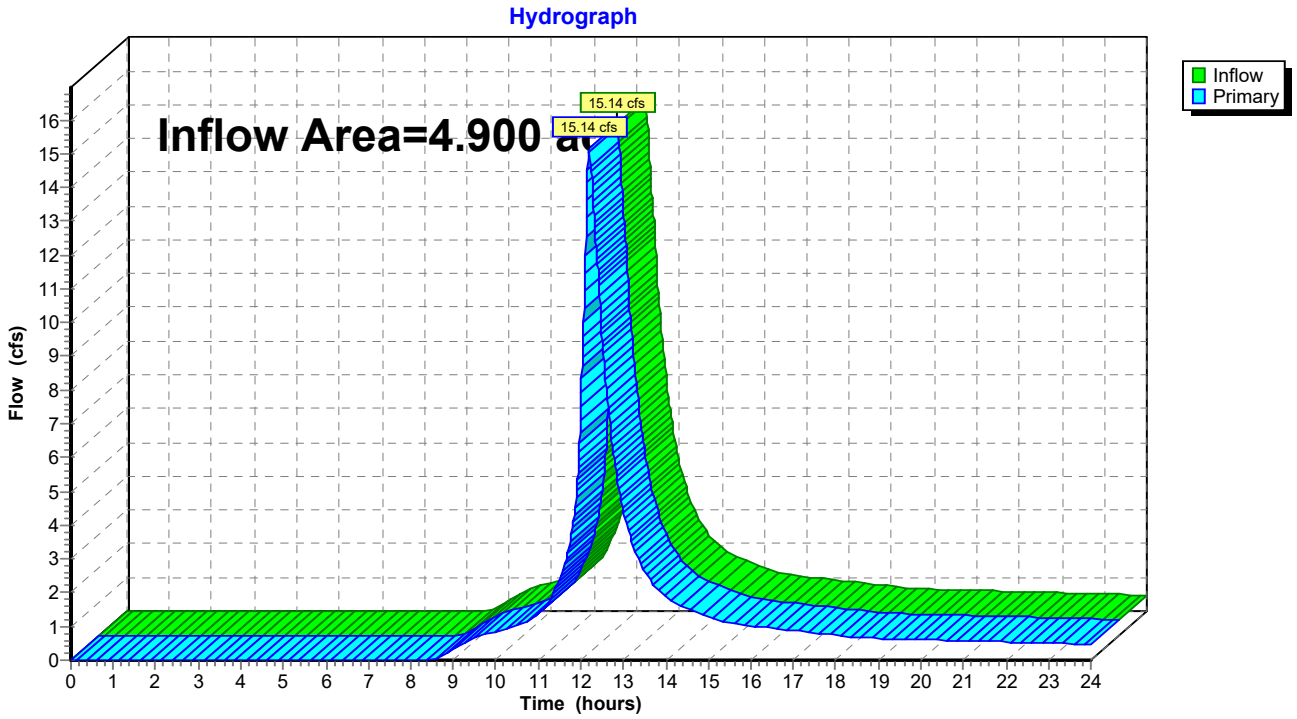


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 4.99" for 50-Year event
Inflow = 15.14 cfs @ 12.20 hrs, Volume= 2.039 af
Primary = 15.14 cfs @ 12.20 hrs, Volume= 2.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 4L: Total To Wetlands



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PDA-2A: To Infilitration** Runoff Area=3.320 ac 85.84% Impervious Runoff Depth>6.94"
Flow Length=127' Tc=6.0 min CN=94 Runoff=22.73 cfs 1.921 af

**Subcatchment PDA-2B: To Infilration** Runoff Area=1.580 ac 57.59% Impervious Runoff Depth>5.49"
Flow Length=500' Tc=32.7 min CN=82 Runoff=4.73 cfs 0.723 af

**Pond 3P: UGS-3** Peak Elev=59.97' Storage=0.384 af Inflow=22.73 cfs 1.921 af
Outflow=15.29 cfs 1.734 af

**Pond 6P: UGS-6** Peak Elev=68.68' Storage=0.122 af Inflow=4.73 cfs 0.723 af
Outflow=4.47 cfs 0.649 af

**Link 2L: Existing Wetlands** Inflow=15.29 cfs 1.734 af
Primary=15.29 cfs 1.734 af

**Link 3L: Exisitng Wetlands** Inflow=4.47 cfs 0.649 af
Primary=4.47 cfs 0.649 af

**Link 4L: Total To Wetlands** Inflow=17.14 cfs 2.383 af
Primary=17.14 cfs 2.383 af

**Total Runoff Area = 4.900 ac Runoff Volume = 2.645 af Average Runoff Depth = 6.48"**
**23.27% Pervious = 1.140 ac 76.73% Impervious = 3.760 ac**

## Summary for Subcatchment PDA-2A: To Infilitration System 3

[47] Hint: Peak is 902% of capacity of segment #2

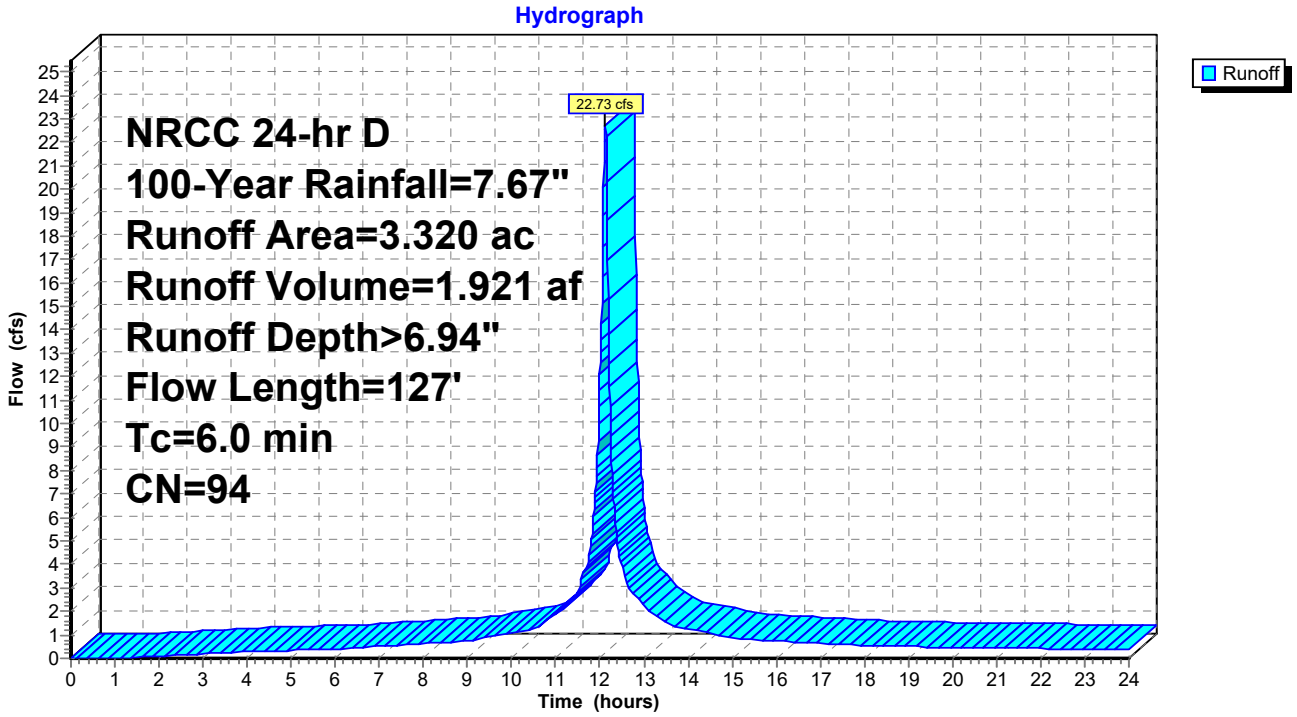
Runoff = 22.73 cfs @ 12.13 hrs, Volume= 1.921 af, Depth> 6.94"
Routed to Pond 3P : UGS-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 2.850 | 98 | Paved parking, HSG C |
| 0.200 | 80 | >75% Grass cover, Good, HSG D |
| 0.100 | 39 | >75% Grass cover, Good, HSG A |
| 0.170 | 74 | >75% Grass cover, Good, HSG C |
| 3.320 | 94 | Weighted Average |
| 0.470 | | 14.16% Pervious Area |
| 2.850 | | 85.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.4 | 121 | 0.0210 | 1.42 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.06" |
| 0.0 | 6 | 0.0050 | 3.21 | 2.52 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 1.4 | 127 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment PDA-2A: To Infilitration System 3



## Summary for Subcatchment PDA-2B: To Infilration System 6

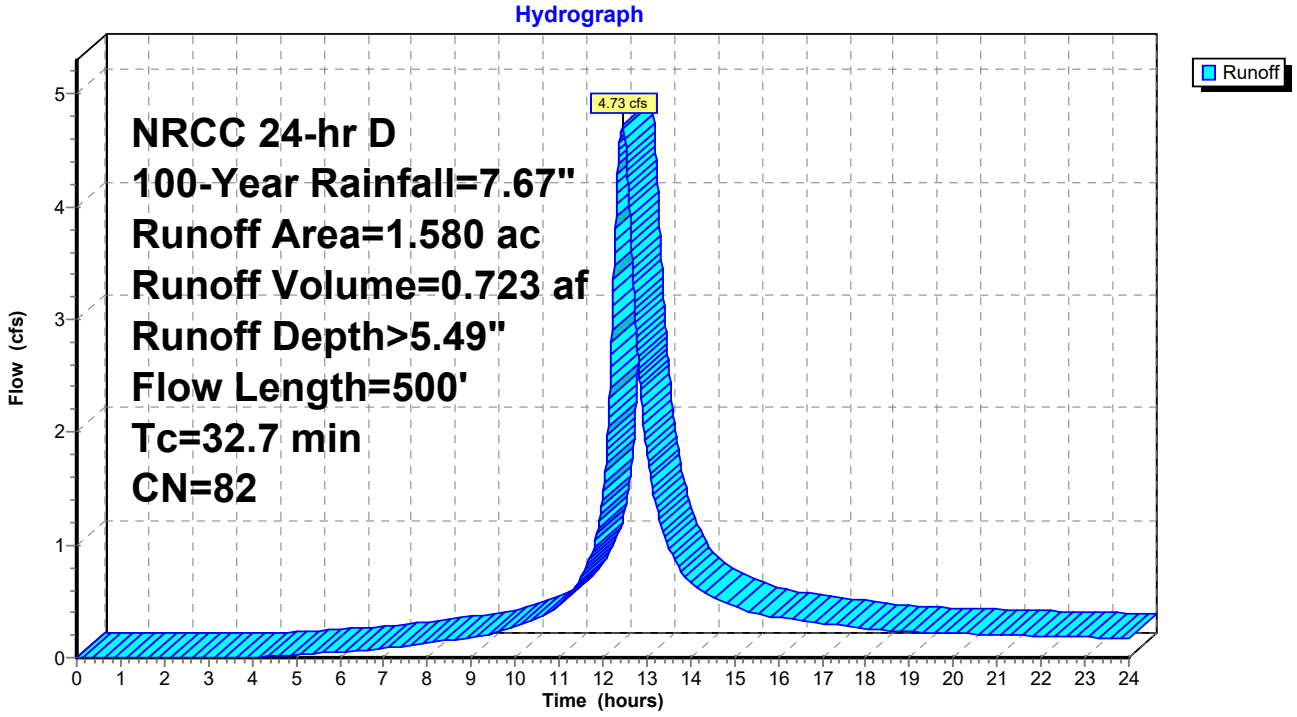
Runoff = 4.73 cfs @ 12.46 hrs, Volume= 0.723 af, Depth> 5.49"
Routed to Pond 6P : UGS-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=7.67"

| Area (ac) | CN | Description |
|---|---|---|
| 0.910 | 98 | Paved parking, HSG B |
| 0.670 | 61 | >75% Grass cover, Good, HSG B |
| 1.580 | 82 | Weighted Average |
| 0.670 | | 42.41% Pervious Area |
| 0.910 | | 57.59% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.0 | 300 | 0.0700 | 0.16 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.06" |
| 0.3 | 55 | 0.0300 | 3.52 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 145 | 0.0200 | 6.42 | 5.04 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 32.7 | 500 | Total | | | |

## Subcatchment PDA-2B: To Infilration System 6



## Summary for Pond 3P: UGS-3

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 6.94" for 100-Year event
Inflow = 22.73 cfs @ 12.13 hrs, Volume= 1.921 af
Outflow = 15.29 cfs @ 12.19 hrs, Volume= 1.734 af, Atten= 33%, Lag= 3.7 min
Primary = 15.29 cfs @ 12.19 hrs, Volume= 1.734 af
Routed to Link 2L : Existing Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.97' @ 12.19 hrs Surf.Area= 0.198 ac Storage= 0.384 af

Plug-Flow detention time= 109.1 min calculated for 1.733 af (90% of inflow)
Center-of-Mass det. time= 54.6 min ( 821.3 - 766.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 56.95' | 0.214 af | **53.75'W x 160.26'L x 4.00'H Field A**<br>0.791 af Overall - 0.257 af Embedded = 0.534 af x 40.0% Voids |
| #2A | 57.95' | 0.257 af | **ADS_StormTech DC-780 +Cap** x 242 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>242 Chambers in 11 Rows |
| | | 0.471 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 58.50' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 57.95' | **24.0" Round Culvert**<br>L= 204.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 57.95' / 56.80' S= 0.0056 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=15.29 cfs @ 12.19 hrs HW=59.97' TW=0.00' (Dynamic Tailwater)
↑└**2=Culvert** (Inlet Controls 15.29 cfs @ 4.87 fps)
↑└**1=Broad-Crested Rectangular Weir** (Passes 15.29 cfs of 23.72 cfs potential flow)

## Pond 3P: UGS-3 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

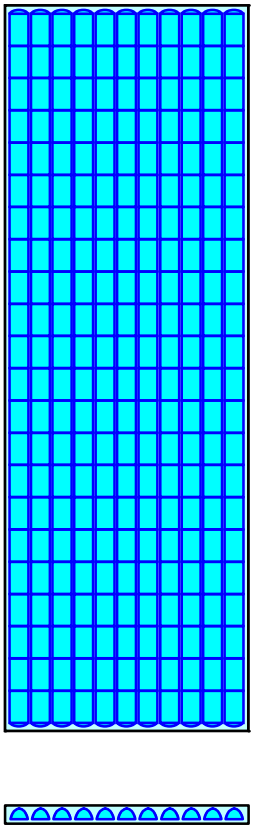
22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length
11 Rows x 51.0" Wide + 6.0" Spacing x 10 + 12.0" Side Stone x 2 = 53.75' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

242 Chambers x 46.2 cf = 11,189.9 cf Chamber Storage

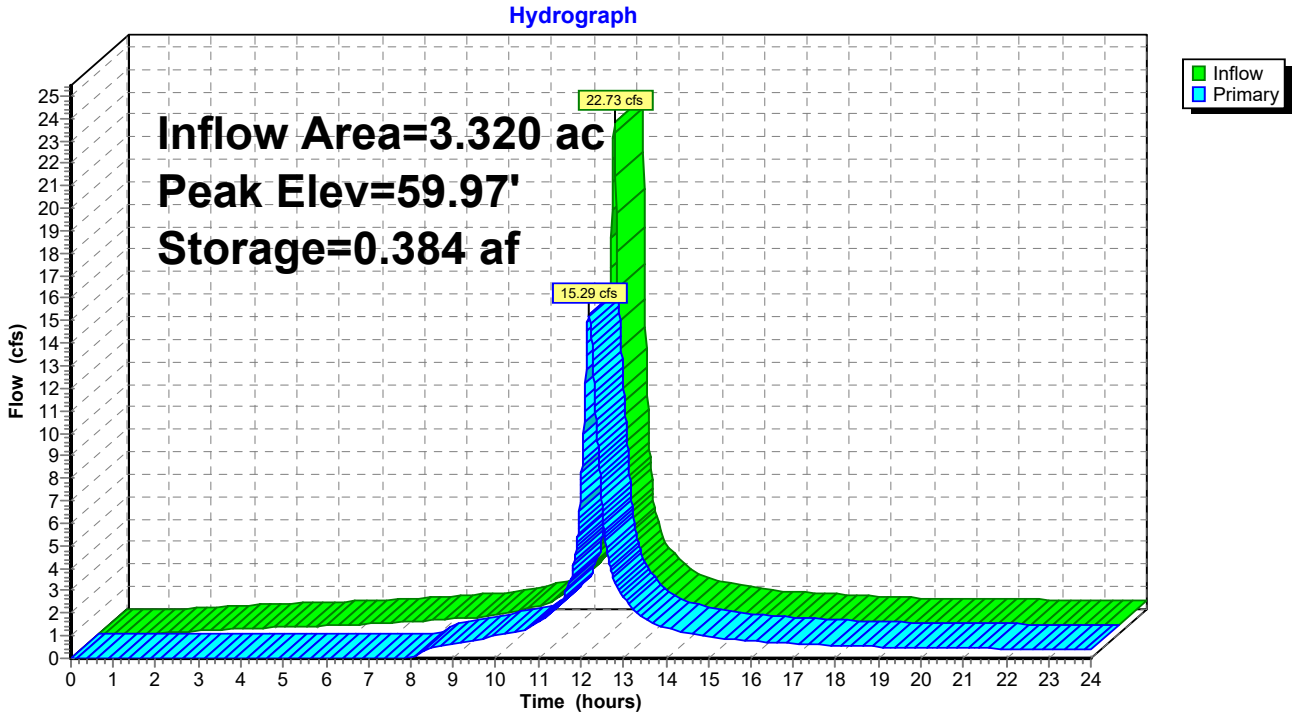
34,455.2 cf Field - 11,189.9 cf Chambers = 23,265.3 cf Stone x 40.0% Voids = 9,306.1 cf Stone Storage

Chamber Storage + Stone Storage = 20,496.0 cf = 0.471 af
Overall Storage Efficiency = 59.5%
Overall System Size = 160.26' x 53.75' x 4.00'

242 Chambers
1,276.1 cy Field
861.7 cy Stone



## Pond 3P: UGS-3


Hydrograph
Inflow Area=3.320 ac
Peak Elev=59.97'
Storage=0.384 af
22.73 cfs
15.29 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

## Summary for Pond 6P: UGS-6

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 5.49" for 100-Year event
Inflow = 4.73 cfs @ 12.46 hrs, Volume= 0.723 af
Outflow = 4.47 cfs @ 12.54 hrs, Volume= 0.649 af, Atten= 5%, Lag= 4.8 min
Primary = 4.47 cfs @ 12.54 hrs, Volume= 0.649 af
Routed to Link 3L : Exisitng Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 68.68' @ 12.54 hrs Surf.Area= 0.101 ac Storage= 0.122 af

Plug-Flow detention time= 95.1 min calculated for 0.648 af (90% of inflow)
Center-of-Mass det. time= 42.1 min ( 875.8 - 833.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 66.80' | 0.100 af | **30.00'W x 146.02'L x 3.75'H Field A**<br>0.377 af Overall - 0.127 af Embedded = 0.250 af x 40.0% Voids |
| #2A | 67.55' | 0.127 af | **ADS_StormTech DC-780 +Cap** x 120 Inside #1<br>Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf<br>Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap<br>120 Chambers in 6 Rows |
| | | 0.227 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 68.00' | **2.5' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #2 | Primary | 67.55' | **24.0" Round Culvert**<br>L= 30.0' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 67.55' / 64.00' S= 0.1183 '/' Cc= 0.900<br>n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf |

**Primary OutFlow** Max=4.47 cfs @ 12.54 hrs HW=68.68' TW=0.00' (Dynamic Tailwater)
↑**2=Culvert** (Passes 4.47 cfs of 6.65 cfs potential flow)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.47 cfs @ 2.62 fps)

## Pond 6P: UGS-6 - Chamber Wizard Field A

**Chamber Model = ADS_StormTechDC-780 +Cap (ADS StormTech® DC-780 with cap length)**
Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

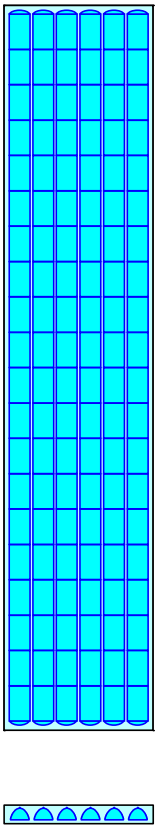
20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
9.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.75' Field Height

120 Chambers x 46.2 cf = 5,548.7 cf Chamber Storage

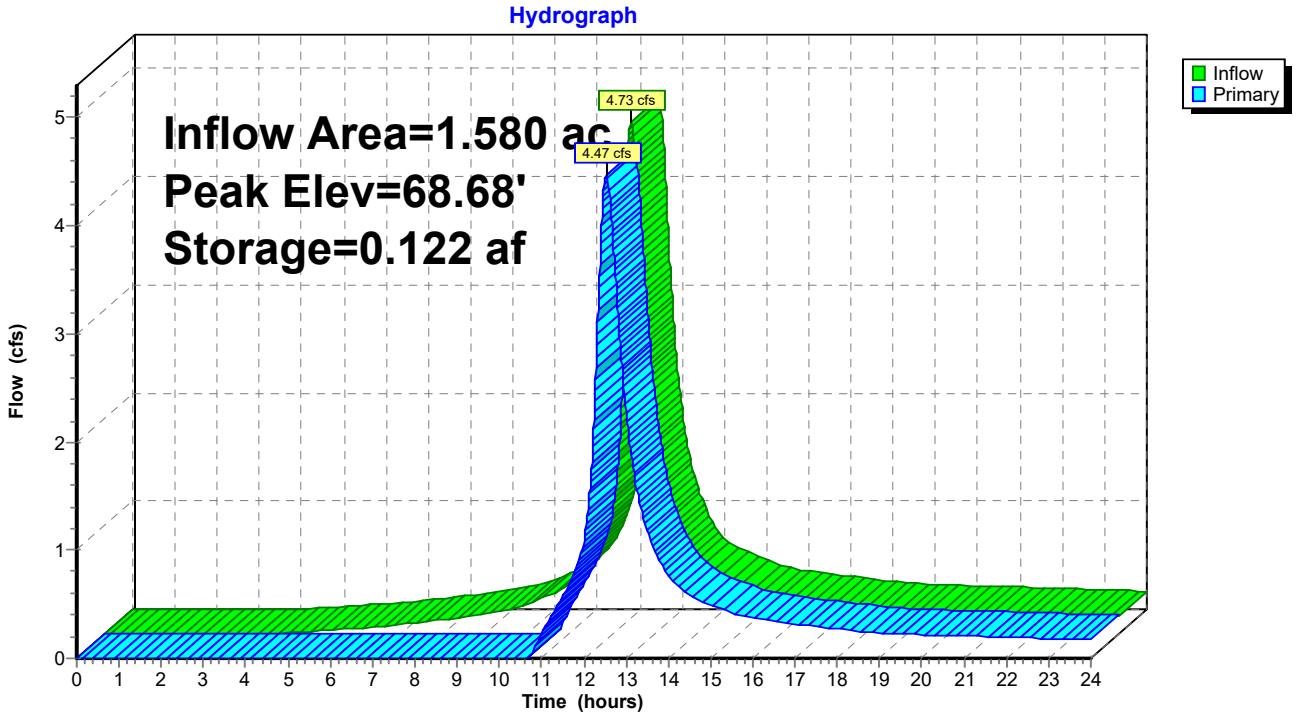
16,426.9 cf Field - 5,548.7 cf Chambers = 10,878.2 cf Stone x 40.0% Voids = 4,351.3 cf Stone Storage

Chamber Storage + Stone Storage = 9,900.0 cf = 0.227 af
Overall Storage Efficiency = 60.3%
Overall System Size = 146.02' x 30.00' x 3.75'

120 Chambers
608.4 cy Field
402.9 cy Stone



## Pond 6P: UGS-6

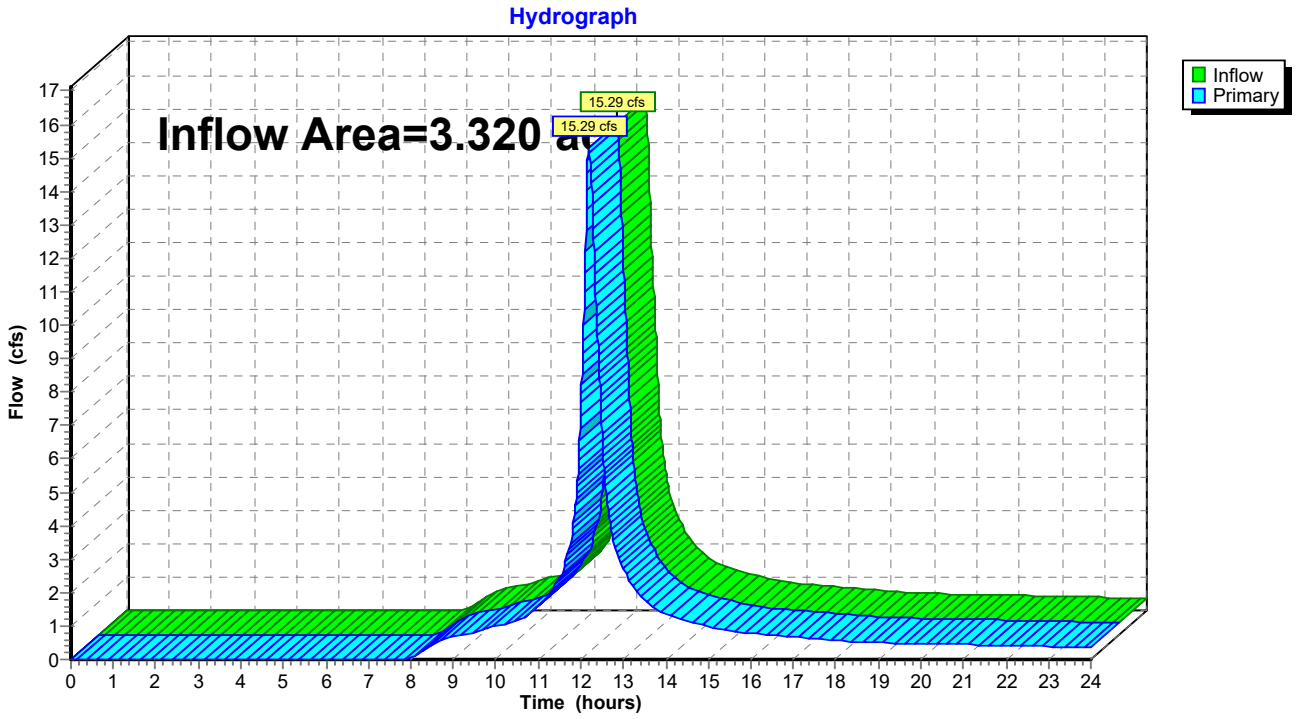

Hydrograph
Inflow Area=1.580 ac
Peak Elev=68.68'
Storage=0.122 af
4.73 cfs
4.47 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Link 2L: Existing Wetlands

Inflow Area = 3.320 ac, 85.84% Impervious, Inflow Depth > 6.27" for 100-Year event
Inflow = 15.29 cfs @ 12.19 hrs, Volume= 1.734 af
Primary = 15.29 cfs @ 12.19 hrs, Volume= 1.734 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 2L: Existing Wetlands

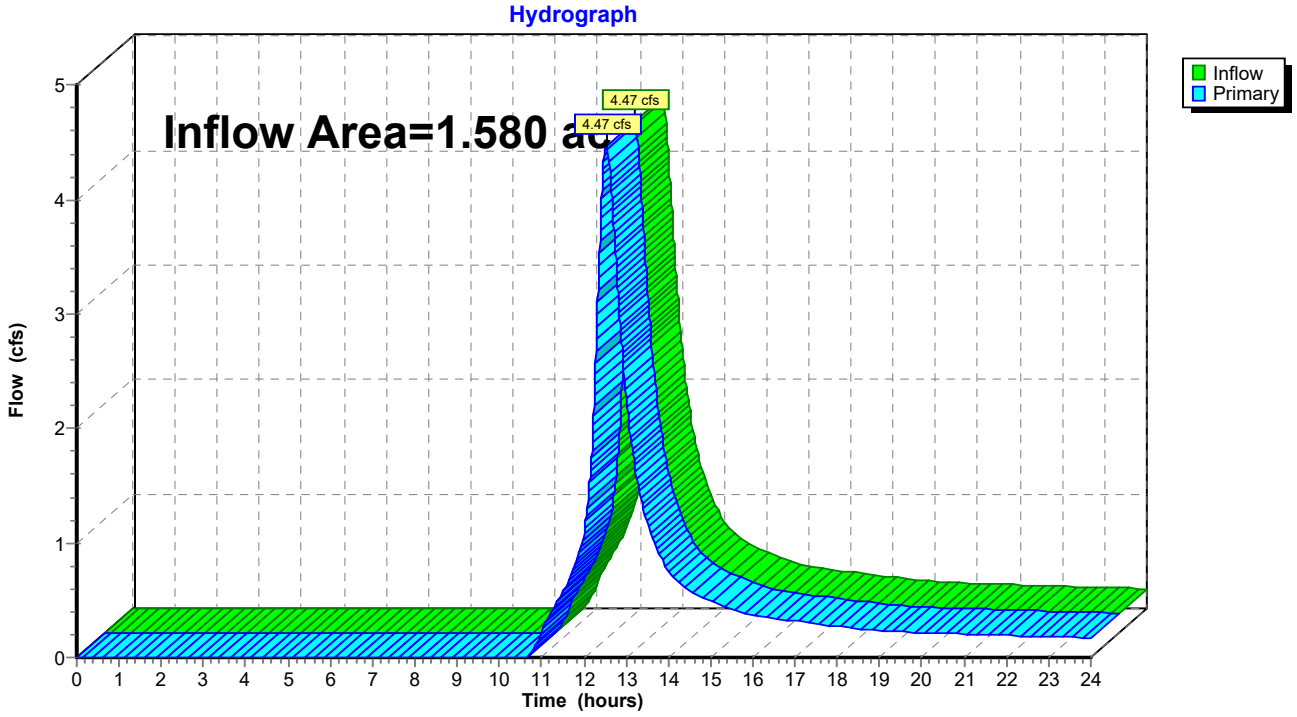


## Summary for Link 3L: Exisitng Wetlands

Inflow Area = 1.580 ac, 57.59% Impervious, Inflow Depth > 4.93" for 100-Year event
Inflow = 4.47 cfs @ 12.54 hrs, Volume= 0.649 af
Primary = 4.47 cfs @ 12.54 hrs, Volume= 0.649 af, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total To Wetlands

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 3L: Exisitng Wetlands

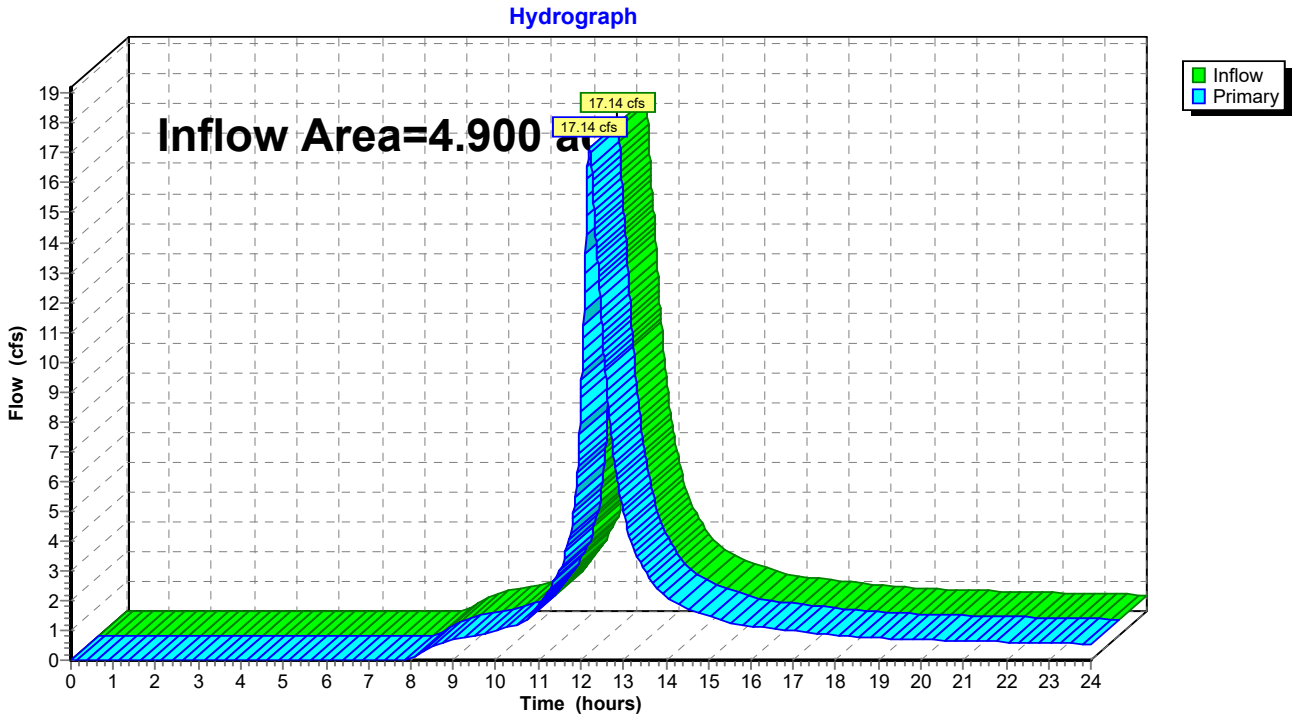


## Summary for Link 4L: Total To Wetlands

Inflow Area = 4.900 ac, 76.73% Impervious, Inflow Depth > 5.84" for 100-Year event
Inflow = 17.14 cfs @ 12.20 hrs, Volume= 2.383 af
Primary = 17.14 cfs @ 12.20 hrs, Volume= 2.383 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

## Link 4L: Total To Wetlands



# APPENDIX E
## WATER QUALITY VOLUME COMPUTATIONS

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | |
|---|---|---|---|---|
| Watershed Description: | PDA-1A & UGS-1 | | | |
| Area of impervious coverage, $A_{IMP}$ | 3.71 | Acres | | |
| Total area of watershed $A_{TOT}$ | 4.54 | Acres | | |
| Percent impervious cover, I | 81.7 | % | | |
| Volumetric runoff coefficent, R | 0.785 | | | |
| Water Quality Volume, WQV | 0.386 | ac-ft | 16,828 | cf |
| 50 % Water Quality Volume, 0.50WQV | 0.193 | ac-ft | 8,414 | cf |
| Volume of System below outlet | 0.338 | ac-ft | 14,723 | cf Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | |
|---|---|---|---|---|
| Watershed Description: | PDA-1B & UGS-2 | | | |
| Area of impervious coverage, $A_{IMP}$ | 2.33 | Acres | | |
| Total area of watershed $A_{TOT}$ | 2.8 | Acres | | |
| Percent impervious cover, I | 83.2 | % | | |
| Volumetric runoff coefficent, R | 0.799 | | | |
| Water Quality Volume, WQV | 0.242 | ac-ft | 10,556 | cf |
| 50 % Water Quality Volume, 0.50WQV | 0.121 | ac-ft | 5,278 | cf |
| Volume of System below outlet | 0.301 | ac-ft | 13,112 | cf Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | | |
|---|---|---|---|---|---|
| Watershed Description: | PDA-1C & WQB-1 | | | | |
| Area of impervious coverage, $A_{IMP}$ | 1.1 | Acres | | | |
| Total area of watershed $A_{TOT}$ | 1.5 | Acres | | | |
| Percent impervious cover, I | 73.33 | % | | | |
| Volumetric runoff coefficent, R | 0.710 | | | | |
| Water Quality Volume, WQV | 0.115 | ac-ft | 5,026 | cf | |
| 50 % Water Quality Volume, 0.50WQV | 0.058 | ac-ft | 2,513 | cf | |
| Volume of System below outlet | 0.263 | ac-ft | 11,456 | cf | Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | | |
|---|---|---|---|---|---|
| Watershed Description: | PDA-1D | | | | |
| Area of impervious coverage, $A_{IMP}$ | 0.36 | Acres | | | |
| Total area of watershed $A_{TOT}$ | 0.7 | Acres | | | |
| Percent impervious cover, I | 51.42857 | % | | | |
| Volumetric runoff coefficent, R | 0.512857 | | | | |
| Water Quality Volume, WQV | 0.038892 | ac-ft | 1,694 | cf | |
| 50 % Water Quality Volume, 0.50WQV | 0.019446 | ac-ft | 847 | cf | |
| Volume of runoff below Perforated Pipe | 0.033 | ac-ft | 1,437 | cf | Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | |
|---|---|---|---|---|
| Watershed Description: | PDA-2A & UGS3 | | | |
| Area of impervious coverage, $A_{IMP}$ | 2.65 | Acres | | |
| Total area of watershed $A_{TOT}$ | 3.31 | Acres | | |
| Percent impervious cover, I | 80.06 | % | | |
| Volumetric runoff coefficent, R | 0.77 | | | |
| Water Quality Volume, WQV | 0.276 | ac-ft | 12,036 | cf |
| 50 % Water Quality Volume, 0.50WQV | 0.138 | ac-ft | 6,018 | cf |
| Volume of System below outlet | 0.17 | ac-ft | 7,405 | cf Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | | |
|---|---|---|---|---|---|
| Watershed Description: | PDA-2B & UGS-6 | | | | |
| Area of impervious coverage, $A_{IMP}$ | 0.85 | Acres | | | |
| Total area of watershed $A_{TOT}$ | 1.82 | Acres | | | |
| Percent impervious cover, I | 46.70 | % | | | |
| Volumetric runoff coefficent, R | 0.470 | | | | |
| Water Quality Volume, WQV | 0.093 | ac-ft | 4,039 | cf | |
| 50 % Water Quality Volume, 0.50WQV | 0.046 | ac-ft | 2,020 | cf | |
| Volume of System below outlet | 0.068 | ac-ft | 2,962 | cf | Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | | |
|---|---|---|---|---|---|
| Watershed Description: | PDA-3A & UGS-5 | | | | |
| Area of impervious coverage, $A_{IMP}$ | 0.54 | Acres | | | |
| Total area of watershed $A_{TOT}$ | 0.64 | Acres | | | |
| Percent impervious cover, I | 84.38 | % | | | |
| Volumetric runoff coefficent, R | 0.809 | | | | |
| Water Quality Volume, WQV | 0.056 | ac-ft | 2,444 | cf | |
| 50 % Water Quality Volume, 0.50WQV | 0.028 | ac-ft | 1,222 | cf | |
| Volume of System below outlet | 0.096 | ac-ft | 4,182 | cf | Exceeds Required WQV |

**Project:** Silver Lane
**Location:** Silver Lane, East Hartford, CT
**Date:** 3/28/2024

**Water Quality Volume Calculations**

$$WQV = \frac{(1.3")(R)(A)}{12}$$

$$I = \frac{A_{IMF}}{A_{TOT}}$$

Where
WQV = water quality volume (ac-ft)
R = volumetric runoff coefficent = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

| | | | | |
|---|---|---|---|---|
| Watershed Description: | PDA-3B & UGS-4 | | | |
| Area of impervious coverage, $A_{IMP}$ | 0.91 | Acres | | |
| Total area of watershed $A_{TOT}$ | 1.08 | Acres | | |
| Percent impervious cover, I | 84.3 | % | | |
| Volumetric runoff coefficent, R | 0.808 | | | |
| Water Quality Volume, WQV | 0.095 | ac-ft | 4,120 | cf |
| 50 % Water Quality Volume, 0.50WQV | 0.047 | ac-ft | 2,060 | |
| Volume of System below outlet | 0.119 | ac-ft | 5,184 | cf Exceeds Required WQV |

# APPENDIX F
## PRELIMINARY SOIL BORING LOGS

Wetland Soils Report Prepared by William Kenney Associates

# BORING LOG

SLR International Corporation
99 Realty Drive, Cheshire, CT 06410
203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-1 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±62.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 7:30 AM | ±6.2' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Top 3": ASPHALT. | 0.3' | ASPHALT | 61.7' | |
| 1 | | | | Bottom 9": Gray, fine to coarse SAND and fine to coarse GRAVEL, trace Silt. | | | | 1 |
| | | | 5 | S-1: Medium dense, Top 6": Gray, fine to coarse SAND and fine to coarse GRAVEL, trace Silt. | | | | |
| 2 | S-1 | 16 | 6 | Bottom 10": Brown, fine to coarse SAND, little fine to coarse Gravel, little Silt. | | FILL | | |
| | | | 7 | | | | | |
| 3 | | | 8 | | 3.0' | | 59.0' | |
| | | | 8 | S-2: Medium dense, gray, fine to medium SAND, trace Silt. | | | | |
| 4 | S-2 | 20 | 8 | | | | | |
| | | | 10 | | | | | |
| 5 | | | 11 | | | | | |
| | | | 3 | S-3: Medium dense, Top 12": Gray, fine to medium SAND, trace Silt. | | | | |
| 6 | S-3 | 20 | 6 | Bottom 8": Reddish brown, fine to coarse SAND, trace Silt. | 6.2' | G.W.T. | 55.8' | |
| | | | 5 | | | | | |
| 7 | | | 6 | | | | | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | | | | | | |
| | | | 3 | S-4: Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt. | | | | |
| 11 | S-4 | 22 | 1 | | | SAND | | |
| | | | 3 | | | | | |
| 12 | | | 3 | | | | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | | | | | | |
| | | | 2 | S-5: Loose, brown, fine to coarse SAND, trace fine Gravel, trace Silt. | | | | |
| 16 | S-5 | 14 | 2 | | | | | |
| | | | 4 | | | | | |
| 17 | | | 6 | | | | | |
| | | | | | | | | |
| 18 | | | | | 18.5' | | 43.5' | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | | | |
| | | | 2 | S-6: Stiff, reddish brown, CLAY with varved CLAY & SILT. | | | | |
| 21 | S-6 | 22 | 4 | | | VARVED CLAY | | |
| | | | 5 | | | | | |
| 22 | | | 4 | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

SLR International Corporation
99 Realty Drive, Cheshire, CT 06410
203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-1 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±62.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 7:30 AM | ±6.2' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | | 23.5' | **VARVED CLAY** | 38.5' | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| | | | 6 | S-7: Medium dense, reddish brown, fine to coarse SAND, some fine to coarse Gravel, little Silt. | | | | |
| 26 | S-7 | 12 | 8 | | | | | |
| | | | 11 | | | | | |
| 27 | | | 11 | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| | | | 18 | S-8: Dense, reddish brown, fine to coarse SAND, little fine to coarse Gravel, little Silt. | | | | |
| 31 | S-8 | 14 | 23 | | | | | |
| | | | 19 | | | | | |
| 32 | | | 22 | | | **GLACIAL TILL** | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| | | | 6 | S-9: Medium dense, reddish brown, fine to coarse SAND, little fine to coarse Gravel, little Silt. | | | | |
| 36 | S-9 | 14 | 7 | | | | | |
| | | | 12 | | | | | |
| 37 | | | 17 | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| | | | | | 39.5' | | 22.5' | |
| 40 | | | | | | **WEATHERED** | | |
| | S-10 | 3 | 50/3" | S-10: Very dense, reddish brown, fine to medium SAND, some Silt, trace fine Gravel. | 41.0' | **BEDROCK** | 21.0' | 2 |
| 41 | | | | Bottom of Exploration ±41.0' | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:** 2. Auger refusal at ±41.0'.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

SLR International Corporation
99 Realty Drive, Cheshire, CT 06410
203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-2 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±58.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 11:00 AM | ±3.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Top 3.5": ASPHALT. Middle 3.5": Gray, fine to coarse SAND and fine to coarse GRAVEL, trace Silt. | 0.3' | **ASPHALT** | 58.2' | 1 |
| 1 | | | | Bottom 5": Brown, fine to coarse SAND, some Silt, little fine to coarse Gravel. | | | | 1 |
| | | | 4 | S-1: Medium dense, Top 8": Brown, fine to coarse SAND, some Silt, little fine to coarse Gravel. | | **FILL** | | |
| 2 | S-1 | 20 | 9 | Bottom 12": Brown, fine to coarse SAND, trace Silt. | 2.0' | | 56.5' | |
| | | | 11 | | | | | |
| 3 | | | 9 | | 3.0' | **G.W.T.** | 55.5' | |
| | | | 6 | S-2: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 4 | S-2 | 21 | 6 | | | | | |
| | | | 8 | | | | | |
| 5 | | | 6 | | | | | |
| | | | 3 | S-3: Loose, brown, fine to medium SAND, trace Silt. | | | | |
| 6 | S-3 | 18 | 5 | | | | | |
| | | | 4 | | | **SAND** | | |
| 7 | | | 4 | | | | | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | | | | | | |
| | | | 2 | S-4: Top 16": Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| | | | 3 | Middle 2": Medium, reddish brown, CLAY. | 11.3' | | 47.2' | |
| 11 | S-4 | 19 | 3 | Bottom 1": Loose, reddish brown, fine to coarse SAND, some Clayey Silt, little fine to coarse Gravel. | 11.5' | **CLAY** | 47.0' | |
| | | | 4 | | | | | |
| 12 | | | | | | | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | 5 | S-5: Medium dense, reddish brown, fine to coarse SAND, some fine to coarse Gravel, little Clayey Silt. | | | | |
| | | | 33 | | | | | |
| 16 | S-5 | 12 | 9 | | | | | |
| | | | 4 | | | | | |
| 17 | | | | | | **GLACIAL TILL** | | |
| | | | | | | | | |
| 18 | | | | | | | | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | | | |
| | | | 6 | S-6: Medium dense, reddish brown, fine to coarse SAND, some Clayey Silt, little fine to coarse Gravel. | | | | |
| | | | 12 | | | | | |
| 21 | S-6 | 18 | 12 | | | | | |
| | | | 39 | | | | | |
| 22 | | | | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

SLR International Corporation
99 Realty Drive, Cheshire, CT 06410
203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-2 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±58.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 11:00 AM | ±3.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | 6 | S-7: Medium dense, reddish brown, fine to coarse SAND, little fine to coarse Gravel, little Silt. | | GLACIAL TILL | | |
| 26 | S-7 | 20 | 8 | | | | | |
| | | | 6 | | | | | |
| 27 | | | 7 | | 27.0' | | 31.5' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 41 | | | | | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-3 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±64.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 1:00 AM | ±8.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | 14 | S-1: Medium dense, Top 2": Brown, fine to coarse SAND, little Silt, trace fine Gravel, trace Organics. | 0.2' | **TOPSOIL** | 63.8' | |
| 1 | S-1 | 18 | 5 | Middle 4": ASPHALT. | 0.5' | **ASPHALT** | 63.5' | |
| | | | 5 | Bottom 12": Brown, fine to medium SAND, trace fine Gravel, trace Silt. | | | | |
| 2 | | | 4 | | | | | |
| | | | 5 | S-2: Medium dense, brown, fine to medium SAND, trace Silt, trace Debris (e.g., plastic). | | | | |
| 3 | S-2 | 18 | 9 | | | **FILL** | | |
| | | | 11 | | | | | |
| 4 | | | 10 | | | | | |
| | | | | | 4.5' | | 59.5' | |
| 5 | | | | | | | | |
| | | | 4 | S-3: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 6 | S-3 | 20 | 4 | | | | | |
| | | | 6 | | | | | |
| 7 | | | 8 | | | | | |
| | | | | | 8.0' | **G.W.T.** ▼ | 56.0' | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | | | | | | |
| | | | 3 | S-4: Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| 11 | S-4 | 24 | 5 | | | | | |
| | | | 3 | | | | | |
| 12 | | | 6 | | | | | |
| | | | | | | **SAND** | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | | | | | | |
| | | | 3 | S-5: Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| 16 | S-5 | 22 | 3 | | | | | |
| | | | 2 | | | | | |
| 17 | | | 3 | | | | | |
| | | | | | | | | |
| 18 | | | | | | | | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | | | |
| | | | 3 | S-6: Top 10": Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| 21 | S-6 | 22 | 2 | Bottom 12": Medium, reddish brown, CLAY. | 21.0' | | 43.0' | |
| | | | 3 | | | | | |
| 22 | | | 2 | | | **CLAY** | | |
| | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-3 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 3, 2022 | **GROUND SURFACE ELEVATION:** ±64.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-03 | 1:00 AM | ±8.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | 1 | S-7: Soft, reddish brown, SILT. | | CLAY | | |
| 26 | S-7 | 24 | 1 | | | | | |
| | | | 2 | | | | | |
| 27 | | | 1 | | 27.0' | | 37.0' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 41 | | | | | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-4 | **SHEET:** 1 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±63.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 8:00 AM | ±9.5' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | S-1 | 18 | 2<br>10<br>34<br>16 | S-1: Dense, Top 3": Dark brown, fine to coarse SAND, little Silt, little Organics.<br>Bottom 15": Brown, fine to coarse SAND, some fine to coarse Gravel, little Debris (e.g., concrete), little Silt. | 0.3' | **TOPSOIL** | 62.7' | |
| 2 | | | | | | | | |
| 3 | S-2 | 22 | 9<br>7<br>7<br>9 | S-2: Medium dense, brown, fine to medium SAND, trace Silt. | | **FILL** | | |
| 4 | | | | | 4.5' | | 58.5' | |
| 5 | | | | | | | | |
| 6 | S-3 | 20 | 11<br>15<br>12<br>10 | S-3: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | 9.5' | **G.W.T.** ▼ | 53.5' | |
| 10 | | | | | | | | |
| 11 | S-4 | 20 | 4<br>2<br>2<br>3 | S-4: Loose, brown, fine to coarse SAND, trace Silt. | | **SAND** | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | S-5 | 24 | 1<br>2<br>3<br>2 | S-5: Top 6": Loose, brown, fine to coarse SAND, trace Silt.<br>Bottom 18": Medium, gray, CLAY varved with CLAY and SILT. | 15.5' | | 47.5' | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | **VARVED CLAY** | | |
| 20 | | | | | | | | |
| 21 | S-6 | 24 | 1<br>2<br>1<br>1 | S-6: Soft, gray, CLAY varved with CLAY and SILT. | | | | |
| 22 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-4 | **SHEET:** 2 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±63.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 8:00 AM | ±9.5' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | | 23.5' | VARVED CLAY | 39.5' | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 25 | S-7 | 24 | 1 | S-7: Soft, gray, CLAY. | | | | |
| 26 | | | 1 | | | | | |
| | | | 1 | | | | | |
| 27 | | | 1 | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 30 | S-8 | 24 | WOR | S-8: Soft, reddish brown, CLAY. | | | | |
| 31 | | | WOH | | | | | |
| | | | 2 | | | | | |
| 32 | | | 1 | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | CLAY | | |
| 35 | S-9 | 24 | WOR | S-9: Very soft, reddish brown, CLAY. | | | | |
| 36 | | | WOH | | | | | |
| | | | WOH | | | | | |
| 37 | | | WOH | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 40 | S-10 | 24 | WOR | S-10: Very soft, reddish brown, CLAY. | | | | |
| 41 | | | WOH | | | | | |
| | | | 1 | | | | | |
| 42 | | | 1 | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |
| | S-11 | 24 | WOH | S-11: Soft, reddish brown, CLAY. | | | | |
| | | | WOH | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-4 | **SHEET:** 3 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±63.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 8:00 AM | ±9.5' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 47 | S-11 | 24 | 2<br>2 | | | **CLAY** | | |
| 48 | | | | | 48.0' | | 15.0' | |
| 49 | | | | | | | | |
| 50 | | | | | | **GLACIAL TILL** | | |
| 51 | S-12 | 15 | 10<br>11<br>11<br>27 | S-12: Medium dense, reddish brown, fine to coarse SAND, some fine to coarse Gravel, some Silt. | | | | |
| 52 | | | | | 52.0' | | 11.0' | |
| 53 | | | | Bottom of Exploration ±52.0' | | | | |
| 54 | | | | | | | | |
| 55 | | | | | | | | |
| 56 | | | | | | | | |
| 57 | | | | | | | | |
| 58 | | | | | | | | |
| 59 | | | | | | | | |
| 60 | | | | | | | | |
| 61 | | | | | | | | |
| 62 | | | | | | | | |
| 63 | | | | | | | | |
| 64 | | | | | | | | |
| 65 | | | | | | | | |
| 66 | | | | | | | | |
| 67 | | | | | | | | |
| 68 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-5 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±65.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 11:30 AM | ±9.2 | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | Top 2.5": ASPHALT. | 0.2' | ASPHALT | 64.8' | |
| | | | | Bottom 9.5": Reddish brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. | | | | 1 |
| | | | 9 | S-1: Medium dense, Top 5": Reddish brown, fine to coarse SAND, some fine to coarse Gravel, | | | | |
| 2 | S-1 | 18 | 10 | little Debris (e.g., asphalt), trace Silt. | | FILL | | |
| | | | 11 | Bottom 13": Brown, fine to coarse SAND, little Silt. | | | | |
| 3 | | | 11 | | 3.0' | | 62.0' | |
| | | | 11 | S-2: Medium dense, brown, fine to medium SAND, trace Silt. | | | | |
| 4 | S-2 | 20 | 10 | | | | | |
| | | | 10 | | | | | |
| 5 | | | 5 | S-3: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| | | | 12 | | | | | |
| 6 | S-3 | 22 | 14 | | | | | |
| | | | 15 | | | | | |
| 7 | | | | | | | | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | 9.2' | G.W.T. ▽ | 55.8' | |
| | | | | | | | | |
| 10 | | | | | | SAND | | |
| | | | 3 | S-4: Loose, brown, fine to medium SAND, trace Silt. | | | | |
| 11 | S-4 | 20 | 5 | | | | | |
| | | | 4 | | | | | |
| 12 | | | 2 | | | | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | 4 | S-5: Top 17": Loose, brown, fine to medium SAND, trace Silt. | | | | |
| | | | 4 | Bottom 1": Stiff, gray, CLAY. | | | | |
| 16 | S-5 | 18 | 5 | | 16.5' | | 48.5' | |
| | | | 4 | | | | | |
| 17 | | | | | | | | |
| | | | | | | | | |
| 18 | | | | | | | | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | CLAY | | |
| | | | 1 | S-6: Very soft, gray, CLAY. | | | | |
| 21 | S-6 | 24 | 1 | | | | | |
| | | | 2 | | | | | |
| 22 | | | | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-5 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±65.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 11:30 AM | ±9.2 | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | WOH | S-7: Soft, gray, CLAY. | | CLAY | | |
| 26 | S-7 | 24 | 1 | | | | | |
| | | | 1 | | | | | |
| 27 | | | 1 | | 27.0' | | 38.0' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 41 | | | | | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-6 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±61.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 1:30 PM | ±6.8' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Top 3": ASPHALT. | 0.3' | ASPHALT | 61.2' | |
| 1 | | | | Bottom 9": Reddish brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. | | FILL | | 1 |
| | S-1 | 21 | 4 | S-1: Medium dense, Top 2": Reddish brown, fine to coarse SAND, some fine to coarse Gravel, some Silt. | 1.5' | | 60.0' | |
| 2 | | | 7 | Bottom 19": Brown, fine to medium SAND, little Silt. | | | | |
| | | | 10 | | | | | |
| 3 | | | 6 | | | | | |
| | S-2 | 20 | 6 | S-2: Medium dense, dark brown, fine to medium SAND, little Silt. | | | | |
| 4 | | | 6 | | | | | |
| | | | 7 | | | | | |
| 5 | | | 6 | | | | | |
| | S-3 | 19 | 4 | S-3: Medium dense, brown, fine to medium SAND, little Silt. | | | | |
| 6 | | | 5 | | | | | |
| | | | 7 | | | | | |
| 7 | | | 8 | | 6.8' | G.W.T. ▼ | 54.7' | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | | | | SAND | | |
| | S-4 | 22 | 5 | S-4: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 11 | | | 6 | | | | | |
| | | | 5 | | | | | |
| 12 | | | 6 | | | | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | 4 | S-5: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| | S-5 | 18 | 6 | | | | | |
| 16 | | | 8 | | | | | |
| | | | 4 | | | | | |
| 17 | | | | | | | | |
| | | | | | | | | |
| 18 | | | | | 18.5' | | 43.0' | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | | | |
| | | | 1 | S-6: Medium, reddish brown, CLAY. | | | | |
| 21 | S-6 | 20 | 2 | | | CLAY | | |
| | | | 3 | | | | | |
| 22 | | | 2 | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-6 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 4, 2022 | **GROUND SURFACE ELEVATION:** ±61.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-04 | 1:30 PM | ±6.8' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | WOH | S-7: Very soft, reddish brown, CLAY. | | CLAY | | |
| 26 | S-7 | 24 | 1 | | | | | |
| 27 | | | 2 | | 27.0' | | 34.5' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 41 | | | | | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
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# BORING LOG

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203.271.1773 | www.slrconsulting.com

| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-7 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±64.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 8:00 AM | ±8.3' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Top 2": ASPHALT. Middle 7": Reddish brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. | 0.2' | ASPHALT | 64.3' | 1 |
| 1 | | | | Bottom 3": Brown, fine to medium SAND, little Silt. | 0.8' | FILL | 63.7' | 1 |
| | | | 6 | S-1: Medium dense, brown, fine to medium SAND, little Silt. | | | | |
| 2 | S-1 | 22 | 6 | | | | | |
| | | | 10 | | | | | |
| 3 | | | 10 | | | | | |
| | | | 7 | S-2: Medium dense, brown, fine to medium SAND, little Silt. | | | | |
| 4 | S-2 | 19 | 7 | | | | | |
| | | | 6 | | | | | |
| 5 | | | 7 | | | | | |
| | | | 3 | S-3: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 6 | S-3 | 15 | 5 | | | | | |
| | | | 5 | | | | | |
| 7 | | | 5 | | | | | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | 8.3' | G.W.T. | 56.2' | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | 2 | S-4: Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| | | | 1 | | | | | |
| 11 | S-4 | 20 | 3 | | | | | |
| 12 | | | 3 | | | SAND | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | 5 | S-5: Loose, brown, fine to coarse SAND, trace Silt. | | | | |
| | | | 3 | | | | | |
| 16 | S-5 | 17 | 3 | | | | | |
| 17 | | | 5 | | | | | |
| | | | | | | | | |
| 18 | | | | | | | | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | 2 | S-6: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| | | | 6 | | | | | |
| 21 | S-6 | 16 | 5 | | | | | |
| 22 | | | 3 | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
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| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
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| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
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# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-7 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±64.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 8:00 AM | ±8.3' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | 23.5' | | 41.0' | |
| 25 | | | WOH | S-7: Soft, reddish brown, CLAY. | | **CLAY** | | |
| 26 | S-7 | 24 | 1 | | | | | |
| | | | 1 | | | | | |
| 27 | | | 2 | | 27.0' | | 37.5' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
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| 40 | | | | | | | | |
| 41 | | | | | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-8 | **SHEET:** 1 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±62.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 11:00 AM | ±6.2' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Top 3": ASPHALT. Middle 5": Reddish brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. | 0.3' | **ASPHALT** | 62.2' | 1 |
| 1 | | | | Bottom 4": Brown, fine to coarse SAND, little Silt, trace fine Gravel. | | | | 1 |
| | S-1 | 16 | 10 | S-1: Medium dense, Top 6": Brown, fine to coarse SAND, little Silt, trace fine Gravel. | | **FILL** | | |
| 2 | | | 13 | Bottom 10": Brown, fine to medium SAND, trace Silt. | 2.0' | | 60.5' | |
| | | | 15 | | | | | |
| 3 | | | 12 | | | | | |
| | S-2 | 24 | 14 | S-2: Dense, brown, fine to medium SAND, little Silt. | | | | |
| 4 | | | 16 | | | | | |
| | | | 14 | | | | | |
| 5 | | | 15 | | | | | |
| | S-3 | 21 | 4 | S-3: Medium dense, brown, fine to medium SAND, trace Silt. | | | | |
| 6 | | | 5 | | 6.2' | **G.W.T.** ▼ | 56.3' | |
| | | | 7 | | | | | |
| 7 | | | 7 | | | | | |
| | | | | | | | | |
| 8 | | | | | | | | |
| | | | | | | | | |
| 9 | | | | | | | | |
| | | | | | | | | |
| 10 | | | | | | | | |
| | S-4 | 24 | 6 | S-4: Loose, brown, fine to coarse SAND, trace Silt. | | **SAND** | | |
| 11 | | | 5 | | | | | |
| | | | 3 | | | | | |
| 12 | | | 3 | | | | | |
| | | | | | | | | |
| 13 | | | | | | | | |
| | | | | | | | | |
| 14 | | | | | | | | |
| | | | | | | | | |
| 15 | | | | | | | | |
| | S-5 | 20 | 3 | S-5: Medium dense, brown, fine to coarse SAND, trace Silt. | | | | |
| 16 | | | 6 | | | | | |
| | | | 4 | | | | | |
| 17 | | | 2 | | | | | |
| | | | | | | | | |
| 18 | | | | | 18.5' | | 44.0' | |
| | | | | | | | | |
| 19 | | | | | | | | |
| | | | | | | | | |
| 20 | | | | | | | | |
| | S-6 | 24 | WOH | S-6: Very soft, gray, CLAY. | | **CLAY** | | |
| 21 | | | 1 | | | | | |
| | | | 1 | | | | | |
| 22 | | | | | | | | |
| | | | | | | | | |

**Remarks:** 1. Soil classified from auger cuttings.

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-8 | **SHEET:** 2 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±62.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 11:00 AM | ±6.2' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | S-7 | 24 | WOH<br>1<br>2 | S-7: Very soft, reddish brown, CLAY. | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | S-8 | 24 | WOR<br>WOH<br>WOH<br>1 | S-8: Very soft, reddish brown, CLAY. | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| 36 | S-9 | 24 | WOR<br>WOH<br>1<br>1 | S-9: Very soft, reddish brown, CLAY. | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| 41 | S-10 | 24 | WOR<br>WOH<br>1<br>2 | S-10: Very soft, reddish brown, CLAY. | | | | |
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |
| | S-11 | 24 | WOR<br>WOH | S-11: Top 22": Very soft, reddish brown, CLAY.<br>Bottom 2": Very loose, reddish brown, SILT, little fine Sand. | | CLAY | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-8 | **SHEET:** 3 of 3 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±62.5' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 11:00 AM | ±6.2' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 47 | S-11 | 24 | 1<br>1 | | 46.5' | **CLAY** | 16.0' | |
| | | | | | 47.3' | **SILT** | 15.2' | |
| 48 | | | | | | | | |
| 49 | | | | | | | | |
| 50 | | | | | | **GLACIAL TILL** | | |
| 51 | S-12 | 13 | 5<br>8<br>12<br>15 | S-12: Medium dense, reddish brown, fine to coarse SAND, some fine to coarse Gravel, some Clayey Silt. | | | | |
| 52 | | | | | 52.0' | | 10.5' | |
| 53 | | | | Bottom of Exploration ±52.0' | | | | |
| 54 | | | | | | | | |
| 55 | | | | | | | | |
| 56 | | | | | | | | |
| 57 | | | | | | | | |
| 58 | | | | | | | | |
| 59 | | | | | | | | |
| 60 | | | | | | | | |
| 61 | | | | | | | | |
| 62 | | | | | | | | |
| 63 | | | | | | | | |
| 64 | | | | | | | | |
| 65 | | | | | | | | |
| 66 | | | | | | | | |
| 67 | | | | | | | | |
| 68 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-9 | **SHEET:** 1 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±61.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 1:00 PM | ±8.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | S-1 | 15 | 1<br>3<br>4<br>3 | S-1: Loose, Top 12": Dark brown, fine to medium SAND, little Silt, trace fine Gravel, trace Organics.<br>Bottom 3": Reddish brown, fine to coarse SAND, fine to coarse Gravel, trace Silt. | 1.0' | **TOPSOIL** | 60.0' | |
| 2<br>3 | S-2 | 12 | 3<br>4<br>4<br>5 | S-2: Loose, brown, fine to coarse SAND, trace Silt, trace Organics. | | **FILL** | | |
| 4<br>5 | | | | | 4.5' | | 56.5' | |
| 6 | S-3 | 3 | 10<br>10<br>9<br>9 | S-3: Medium dense, brown, fine to medium SAND, little Silt. | | | | |
| 7<br>8 | | | | | 8.0' | **G.W.T.** ▼ | 53.0' | |
| 9<br>10 | | | | | | | | |
| 11 | S-4 | 6 | 7<br>8<br>6<br>6 | S-4: Medium dense, brown, fine to coarse SAND, little Silt. | | **SAND** | | |
| 12<br>13 | | | | | | | | |
| 14<br>15 | | | | | | | | |
| 16 | S-5 | 16 | 8<br>6<br>3<br>3 | S-5: Top 6": Loose, brown, fine to coarse SAND, trace Silt.<br>Bottom 10": Stiff, gray, CLAY. | 16.0' | | 45.0' | |
| 17<br>18 | | | | | | | | |
| 19<br>20 | | | | | | **CLAY** | | |
| 21 | S-6 | 24 | 1<br>1<br>1<br>1 | S-6: Soft, gray, CLAY. | | | | |
| 22 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |

# BORING LOG

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| | | | |
|---|---|---|---|
| **PROJECT:** | SILVER LANE RESIDENTIAL DEVELOPMENT | **BORING NO.:** SLR-9 | **SHEET:** 2 of 2 |
| **LOCATION:** | NUTMEG LANE, EAST HARTFORD, CONNECTICUT | **CONTRACTOR:** SITE, LLC | |
| **PROJ. NO:** | 141.16872.00009 | **FOREMAN:** J. DEANGELIS | |
| **CLIENT:** | SOLLI ENGINEERING, LLC | **INSPECTOR:** R. GOWISNOCK | |
| **DATE:** | MAY 5, 2022 | **GROUND SURFACE ELEVATION:** ±61.0' | |

| **EQUIPMENT:** | **AUGER** | **CASING** | **SAMPLER** | **COREBRL.** | **GROUNDWATER DEPTH (FT.)** | | | **TYPE OF RIG:** |
|---|---|---|---|---|---|---|---|---|
| **TYPE** | HSA | - | SS | - | **DATE** | **TIME** | **WATER DEPTH** | TRACK W/ AUTOMATIC HAMMER |
| **SIZE ID (IN.)** | 2 1/4 | - | 1 3/8 | - | 2022-05-05 | 1:00 PM | ±8.0' | **RIG MODEL:** |
| **HMR. WT (LB.)** | - | - | 140 | - | | | | CME-55 LCX |
| **HMR. FALL (IN.)** | - | - | 30 | - | | | | |

| Depth (FT) | SAMPLE NUMBER | RECOVERY (IN) | BLOWS PER 6" | SOIL AND ROCK CLASSIFICATION-DESCRIPTION<br>BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) | DEPTH (FT.) | STRATUM DESCRIPTION | ELEV. (FT.) | Remark |
|---|---|---|---|---|---|---|---|---|
| 24 | | | | | | | | |
| 25 | | | WOR | S-7: Very soft, reddish brown, CLAY. | | CLAY | | |
| 26 | S-7 | 24 | WOH | | | | | |
| | | | WOH | | | | | |
| 27 | | | 1 | | 27.0' | | 34.0' | |
| | | | | Bottom of Exploration ±27.0' | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
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| 35 | | | | | | | | |
| 36 | | | | | | | | |
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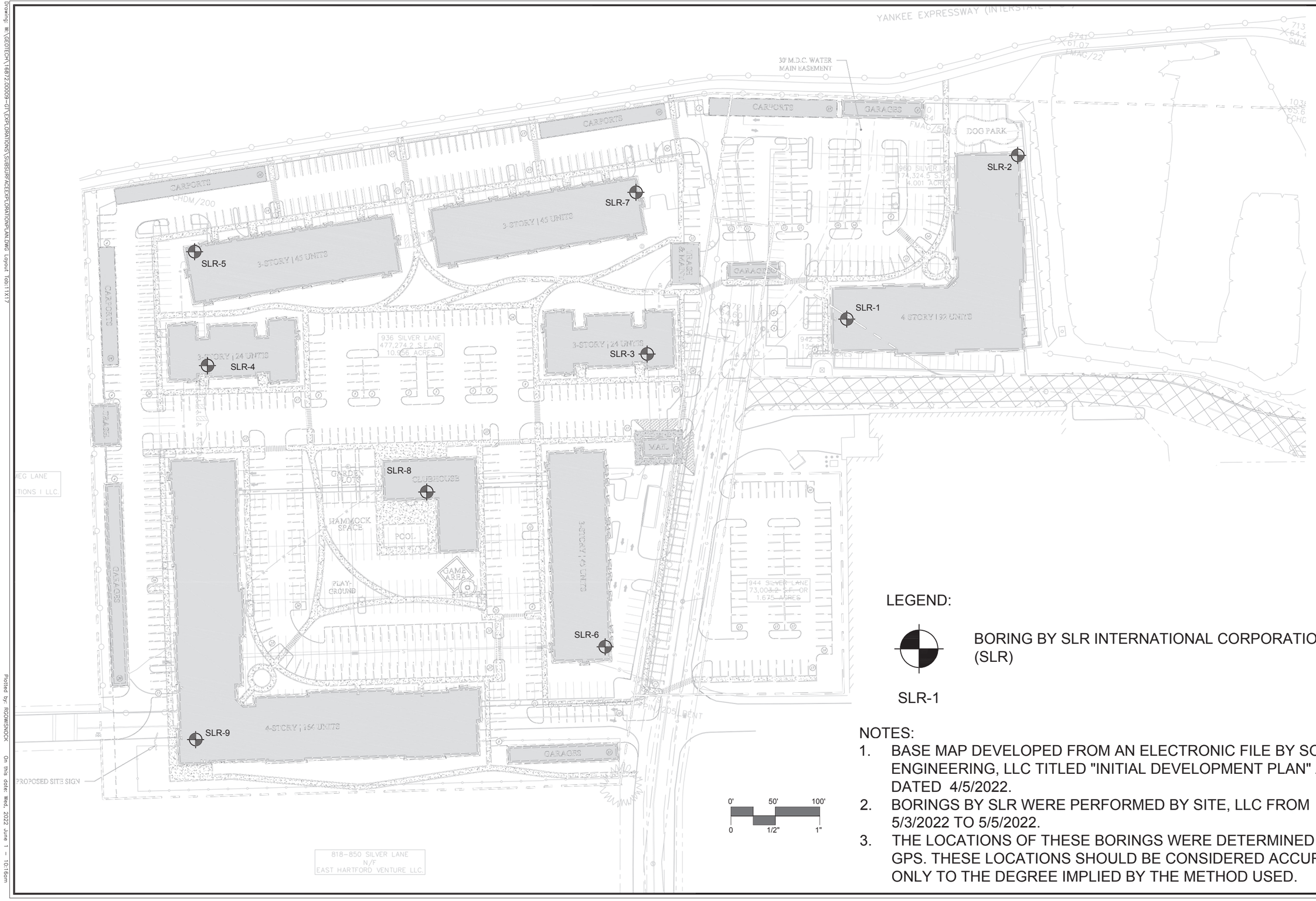
| 42 | | | | | | | | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | | | | | | | | |

**Remarks:**

| NON-PLASTIC (SPT-N) | PLASTIC (SPT-N) | SAMPLE TYPE | PROPORTIONS |
|---|---|---|---|
| 0-4 = VERY LOOSE | 0-2 = VERY SOFT | C = ROCK CORE | trace = <10% |
| 4-10 = LOOSE | 2-4 = SOFT | S = SPLIT SPOON | little = 10% - 20% |
| 10-30 = MEDIUM DENSE | 4-8 = MEDIUM | UP = UNDISTURBED PISTON | some = 20% - 35% |
| 30-50 = DENSE | 8-15 = STIFF | UT = UNDISTURBED THINWALL | and = 35% - 50% |
| 50+ = VERY DENSE | 15-30 = VERY STIFF | | |
| | 30 + = HARD | | |




LEGEND:

BORING BY SLR INTERNATIONAL CORPORATION (SLR)

SLR-1

NOTES:

1. BASE MAP DEVELOPED FROM AN ELECTRONIC FILE BY SOLLI ENGINEERING, LLC TITLED "INITIAL DEVELOPMENT PLAN" AND DATED 4/5/2022.
2. BORINGS BY SLR WERE PERFORMED BY SITE, LLC FROM 5/3/2022 TO 5/5/2022.
3. THE LOCATIONS OF THESE BORINGS WERE DETERMINED BY GPS. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.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203.271.1773
SLRCONSULTING.COM


REVISIONS

# SUBSURFACE EXPLORATION LOCATION PLAN

## SILVER LANE RESIDENTIAL DEVELOPMENT

NUTMEG LANE
EAST HARTFORD, CONNECTICUT

| JWK | RDG | JWK |
|---|---|---|
| DESIGNED | DRAWN | CHECKED |

SCALE: 1"=100'

DATE: MAY 27, 2022

PROJECT NO.: 141.16872.00009

SHEET NO.: FIG. 2

Copyright Milone & MacBroom, Inc - 2020

Drawing: W:\GEOTECH\16872.00009-01\EXPLORATIONS\SUBSURFACEEXPLORATIONPLAN.DWG Layout: Tab1 11x17
Plotted by: RGOMESNOCK On this date: Wed, 2022 June 1 - 10:16am

WILLIAM KENNY ASSOCIATES
LANDSCAPE ARCHITECTURE ▪ ECOLOGICAL SERVICES

January 14, 2022

Mr. Kevin Solli
Solli Engineering LLC
501 Main Street, Suite 2-4
Monroe, CT 06468

Re: Wetland and Watercourse Delineation
936 & 960 Silver Lane, 285 & 291 Forbes Street, East Hartford, Connecticut

Dear Mr. Solli:

As requested, we visited the referenced properties to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified, and to identify onsite soil types. This letter includes the methods and results of our investigation, which we completed today, January 14, 2022. In summary, three inland wetland and watercourse systems were identified and delineated. The first system, which is located in the central portion of the property, is a series of stormwater wetland basins. Another system, which is located in the eastern portion of the property, is a meadow wetland. The last system, which extends and flows west to east, is manmade drainage ditch (intermittent watercourse) connects these two systems.

***Regulatory Definitions***

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The Act defines Intermittent Watercourses as having a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

***Methodology***

A second order soil survey in accordance with the principles and practices noted in the USDA publication *Soil Survey Manual* (1993) was completed at the subject site. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA 2005).

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Fairfield CT 06824
203 366 0588
www.wkassociates.net

Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils. Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of two feet) were completed at the site.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

Wetland boundaries were demarcated (flagged) with pink surveyor's tape (hung from vegetation) or small flags (on wire stakes) labeled "William Kenny Associates" that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

***Results***

The approximate 25.3-acre commercial and undeveloped properties are located at 936 & 960 Silver Lane, 285 & 291 Forbes Street in East Hartford, Connecticut. Silver Lane is several hundred feet south of the central and eastern portions of the property, Interstate 84 borders the northern property boundary, Nutmeg Lane borders the western portion of the southern property boundary, and Forbes Street borders the eastern property boundary. Property improvements, which are in the western portion of the site, are asphalt driveway and parking areas. The vegetative cover in the central and eastern portions of the site is a meadow. A broadleaved deciduous woodland is present in the central-western portion of the site. There is very little vegetative cover in the western portion of the property.

Three inland wetland and watercourse systems were identified and delineated. The first system, which is located in the central portion of the property, is a series of stormwater wetland basins. Another system, which is located in the eastern portion of the property, is a meadow wetland. The last system, which extends and flows west to east, is manmade drainage ditch (intermittent watercourse) connects these two systems. Wetland soils are primarily poorly drained fine and formed from glaciolacustrine deposits or are forming from human altered deposits. The approximate locations of the systems are shown on the attached map. The boundaries of the systems were marked at the site with flags numbered 1 to 20 and 30 to 172.

Six soil map units were identified on the property (three wetland and three upland). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account for 10 to 15 percent of each map unit. The mapped units are identified in the following table by name and symbol and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope). These characteristics are generally the primary characteristics to be considered in land use planning and management. A description of each characteristic and their land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA 2005), and at *https://soilseries.sc.egov.usda.gov/osdname.aspx.* On the day of the review, there was one inch to

three inches of soil frost and one inch to two inches of snow cover. The upland soil was moist and the wetland soil was wet to inundated. The sky was clear and air temperatures were in the 30's ° F.

| Map Unit Sym. | Map Unit Name | Parent Material | Slope (%) | Drainage Class | High Water Table Depth (ft) | High Water Table Kind | High Water Table Mos. | Depth To Bedrock (in) |
|---|---|---|---|---|---|---|---|---|
| **Upland Soil** | | | | | | | | |
| 28 | Elmridge Fine Sandy Loam | Glaciolacustrine | | Moderately Well Drained | | | | |
| 307 | Urban Land Complex | Pavement & structures account for 85% or more of the area. Additional investigations required to determine characteristics | | | | | | |
| 308 | Udorthents, Smoothed | Excavated or Filled Soil (>2 feet) | 0-45 | Well Drained to Somewhat Poorly Drained | 1.5->6.0 | Apparent | Nov-May | >60 |
| **Wetland Soil** | | | | | | | | |
| 1 | Aquents | Excavated or Filled Soil (>2 feet) | 0-3 | Poorly Drained | 0.0-1.5 | Apparent | Nov-May | >60 |
| 9 | Scitico, Shaker and Maybid soils | Clayey Glaciolacustrine | 0-65 | Poorly Drained | 0.0-1.5 | Apparent | Jan-Dec | >60 |
| 15 | Scarboro Mucky sandy loam | Organic Material | 0-3 | Very Poorly Drained | 0.0-1.0 | Apparent | Jan-Dec | >60 |

Parent material is the unconsolidated organic and mineral material in which soil forms. Soil inherits characteristics, such as mineralogy and texture, from its parent material. Glacial till is unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice. Glacial outwash consists of gravel, sand, and silt, which are commonly stratified and deposited by glacial melt water. Alluvium is material such as sand, silt, or clay, deposited on land by streams. Organic deposits consist of decomposed plant and animal parts.

A soil's texture affects the ease of digging, filling, and compacting and the permeability of a soil. Generally sand and gravel soils, such as outwash soils, have higher permeability rates than most glacial till soils. Soil permeability affects the cost to design and construct subsurface sanitary disposal facilities and, if too slow or too fast, may preclude their use. Outwash soils are generally excellent sources of natural aggregates (sand and gravel) suitable for commercial use, such as construction sub base material. Organic layers in soils can cause movement of structural footings. Compacted glacial till layers make excavating more difficult and may preclude the use of subsurface sanitary disposal systems or increase their design and construction costs if fill material is required.

Generally, soils with steeper slopes increase construction costs, increase the potential for erosion and sedimentation impacts, and reduce the feasibility of locating subsurface sanitary disposal facilities.

Drainage class refers to the frequency and duration of periods of soil saturation or partial saturation during soil formation. Seven classes of natural drainage classes exist. They range from excessively drained, where water is removed from the soil very rapidly, to very poorly drained, where water is

removed so slowly that free water remains at or near the soil surface during most of the growing season. Soil drainage affects the type and growth of plants found in an area. When landscaping or gardening, drainage class information can be used to assure that proposed plants are adapted to existing drainage conditions or that necessary alterations to drainage conditions (irrigation or drainage systems) are provided to assure plant survival.

High water table is the highest level of a saturated zone in the soil in most years. The water table can affect the timing of excavations; the ease of excavating, constructing, and grading; and the supporting capacity of the soil. Shallow water tables may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

The depth to bedrock refers to the depth to fixed rock. Bedrock depth affects the ease and cost of construction, such as digging, filling, compacting, and planting. Shallow depth bedrock may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

***Conclusions***

Today, we investigated the properties at 936 & 960 Silver Lane, 285 & 291 Forbes Street in East Hartford, Connecticut and identified and delineated three inland wetland and watercourse systems. Thank you for the opportunity to assist you. If you should have any questions or comments, please do not hesitate to contact us.

Sincerely,

William L. Kenny, PWS, PLA
Soil Scientist

Alexander Wojtkowiak
Soil Scientist

Enclosure

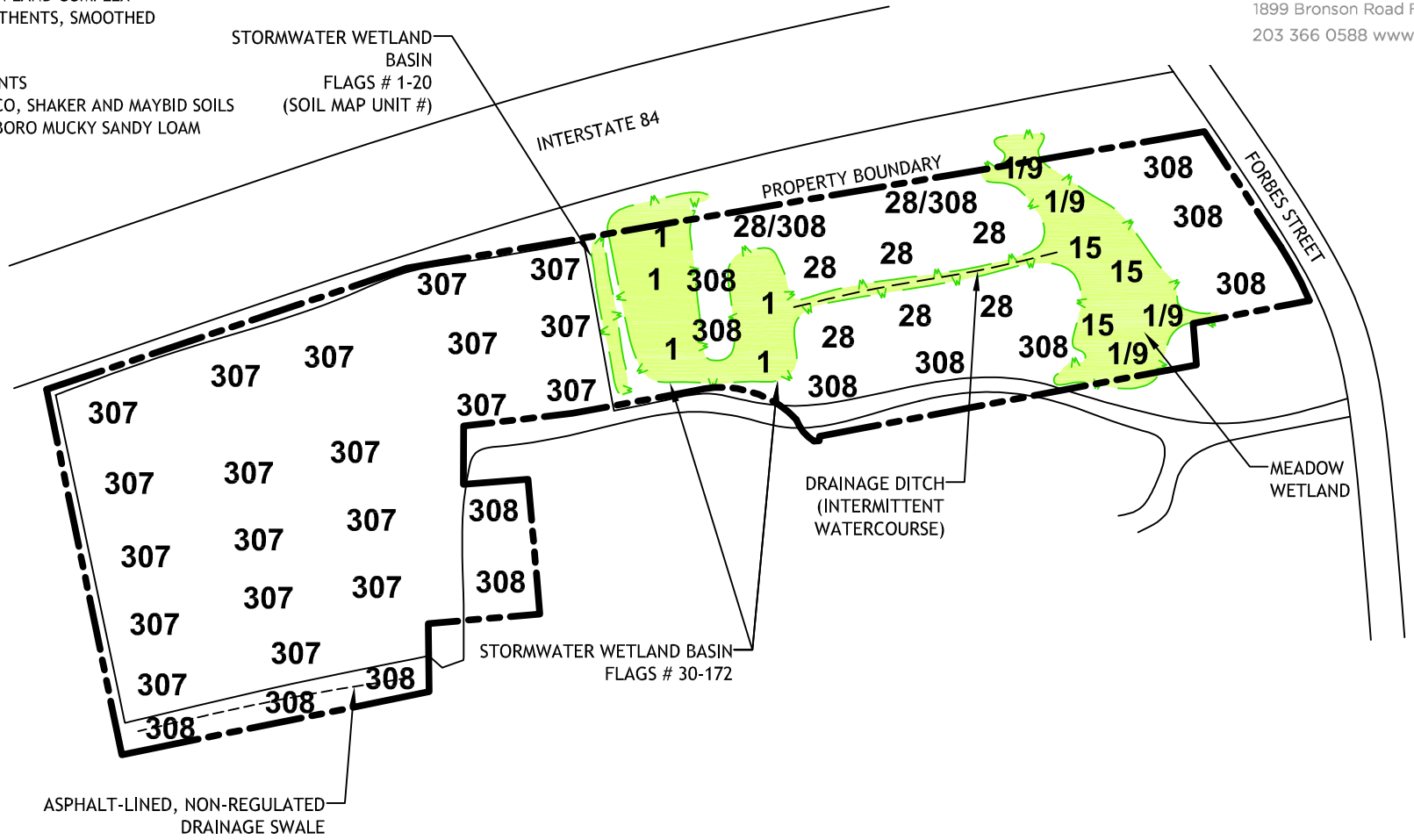
*Ref. No. 5143*

WILLIAM KENNY ASSOCIATES
LANDSCAPE ARCHITECTURE ▪ ECOLOGICAL SERVICES
1899 Bronson Road Fairfield CT 06824
203 366 0588 www.wkassociates.net

SOIL LEGEND

UPLAND
**28** ELMRIDGE FINE SANDY LOAM
**307** URBAN LAND COMPLEX
**308** UDORTHENTS, SMOOTHED

WETLAND
**1** AQUENTS
**9** SCITICO, SHAKER AND MAYBID SOILS
**15** SCARBORO MUCKY SANDY LOAM




NOTES:
- *INFORMATION SHOWN ON THIS DRAWING, INCLUDING THE WETLAND BOUNDARY, IS APPROXIMATE. THE BOUNDARY IS NOT A SURVEYED REPRESENTATION OF WHAT WAS FIELD MARKED (FLAGGED).*
- *WETLAND AND SOIL INFORMATION PROVIDED BY WILLIAM KENNY ASSOC. OTHER INFORMATION TAKEN FROM A DRAWING PREPARED BY SOLLI ENGINEERING.*
- ***28, 307, 308, 1, 9** AND **15** ARE SOIL MAPPING UNIT SYMBOLS. SEE WETLAND DELINEATION REPORT FOR THE SOIL MAP UNIT NAMES AND ADDITIONAL RELATED INFORMATION.*

*I CERTIFY THAT THIS WETLAND MAP SUBSTANTIALLY REPRESENTS THE SOILS AND WETLANDS MAPPED IN THE FIELD*

*WILLIAM L. KENNY, SOIL SCIENTIST*

## *WETLAND & WATERCOURSE MAP*

***936 & 960 SILVER LANE***
***285 & 291 FORBES STREET***
***EAST HARTFORD, CONNECTICUT***

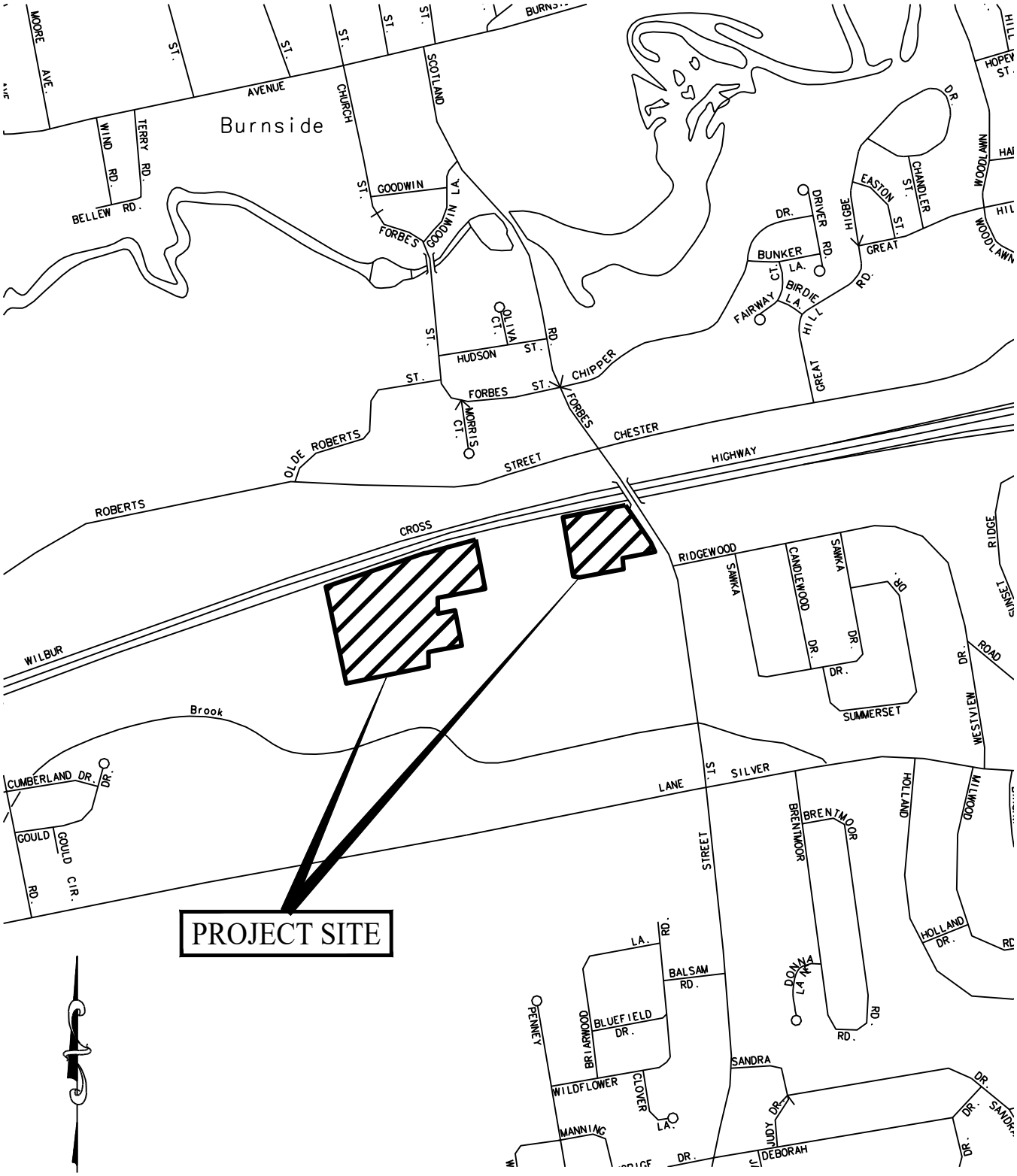
*SCALE: NOT TO SCALE*
*DATE: JANUARY 14, 2022*

*Ref. No. 5143*

***NORTH***

**APPENDIX G**
**FIGURES**

Site Location Map (Figure 1)
FEMA Flood Map (Figure 2)
Soil Survey Map (Figure 3)
Inland Wetlands Map (Figure 4)
USGS Map (Figure 5)




NOTE: BASE MAP INFORMATION TAKEN FROM CTDOT TRU MAP NUMBER 042

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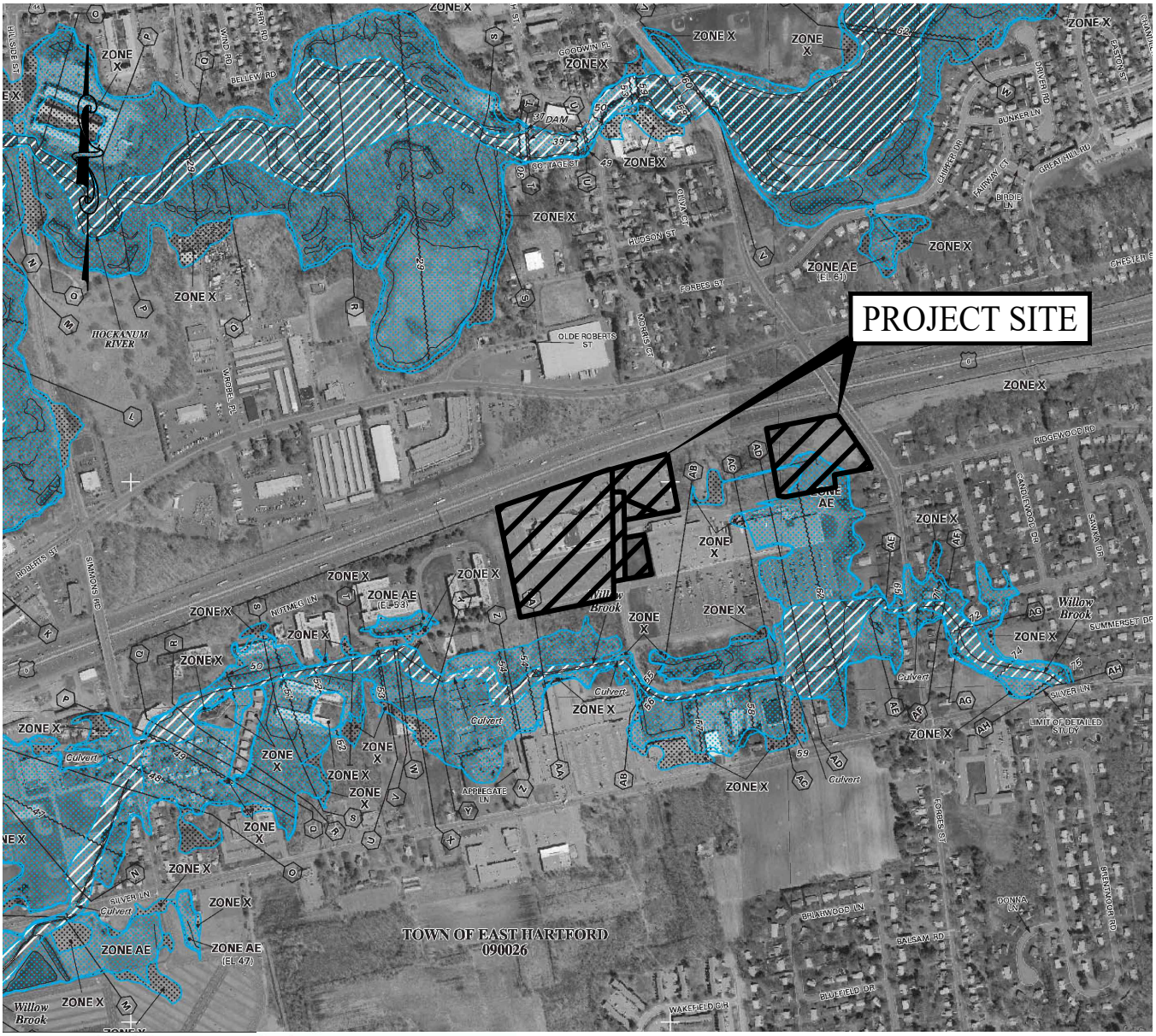
# SITE LOCATION MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 1,000' |
| Figure: | 1 |




## LEGEND

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT**

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

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

**FLOODWAY AREAS IN ZONE AE**

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

**OTHER AREAS**

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

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

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

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in 0*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in 0*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross Section Line
- 23 — 23 — Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M — 1000-meter Universal Transverse Mercator grid values, zone 18
- 600000 FT — 5000-foot grid ticks
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 — River Mile

NOTE: BASE MAP INFORMATION TAKEN FROM FIRM FLOOD INSURANCE MAP, HARTFORD COUNTY, CONNECITCUT, PANEL NUMBER 388, MAP NUMBER 09003C0388F, REVISED SEPTEMBER 26, 2008.

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# FEMA FLOOD MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 1,000' |
| Figure: | 2 |

| Map unit symbol | Map unit name | Rating |
|---|---|---|
| 28A | Elmridge fine sandy loam, 0 to 3 percent slopes | C |
| 36B | Windsor loamy sand, 3 to 8 percent slopes | A |
| 306 | Udorthents-Urban land complex | B |
| 307 | Urban land | D |
| 701A | Ninigret fine sandy loam, 0 to 3 percent slopes | C |

NOTE:
SOIL MAP INFORMATION TAKEN FROM THE NATURAL RESOURCES CONSERVATION SERVICE, URL: http://websoilsurvey.nrcs.usda.gov

400 0 200 400

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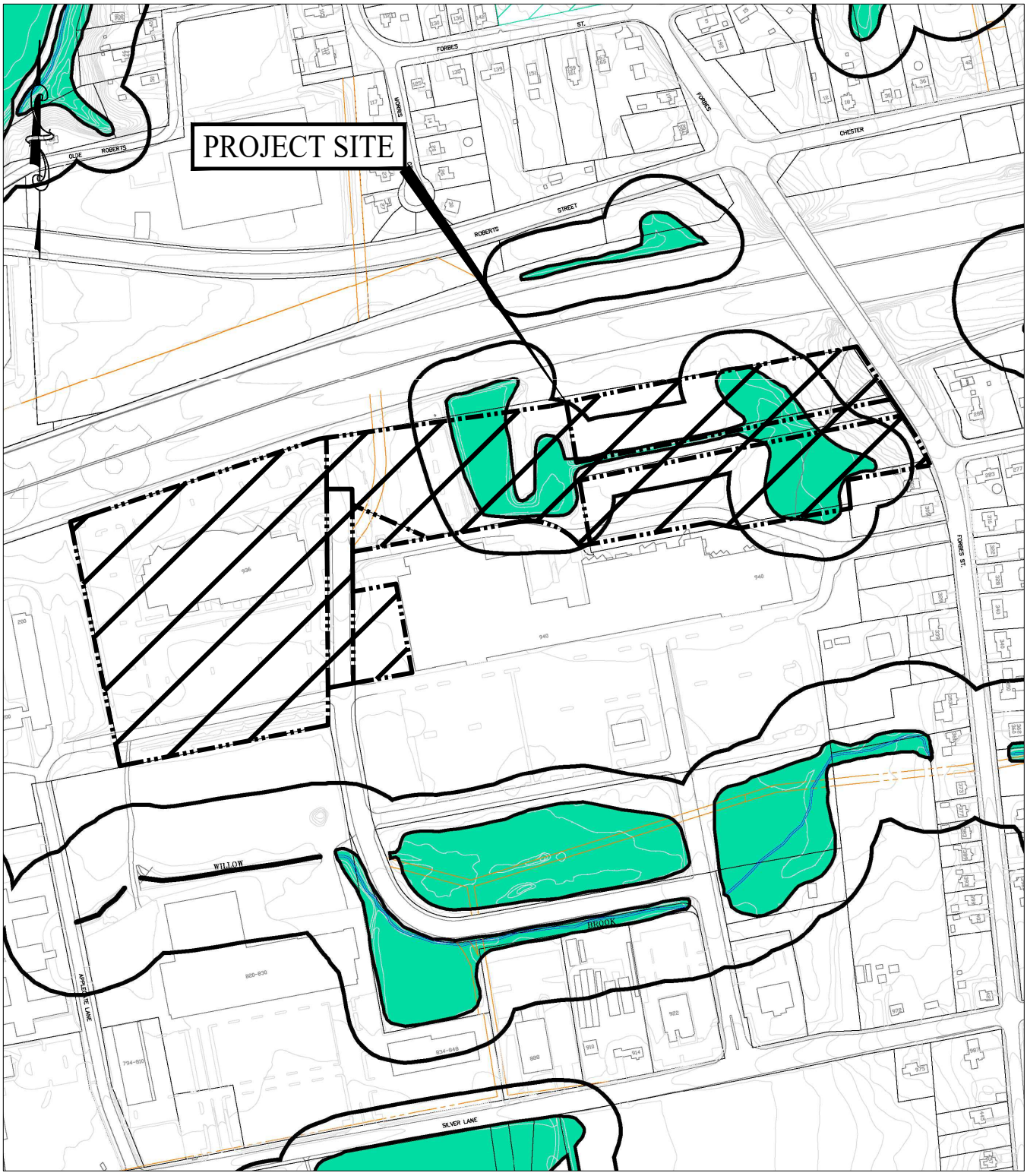
# SOIL SURVEY MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 400' |
| Figure: | 3 |




NOTE: BASE MAP INFORMATION TAKEN FROM INLAND WETLANDS MAPPING FROM THE TOWN OF EAST HARTFORD, MAP NUMBERS 12 & 17

400 0 400 800

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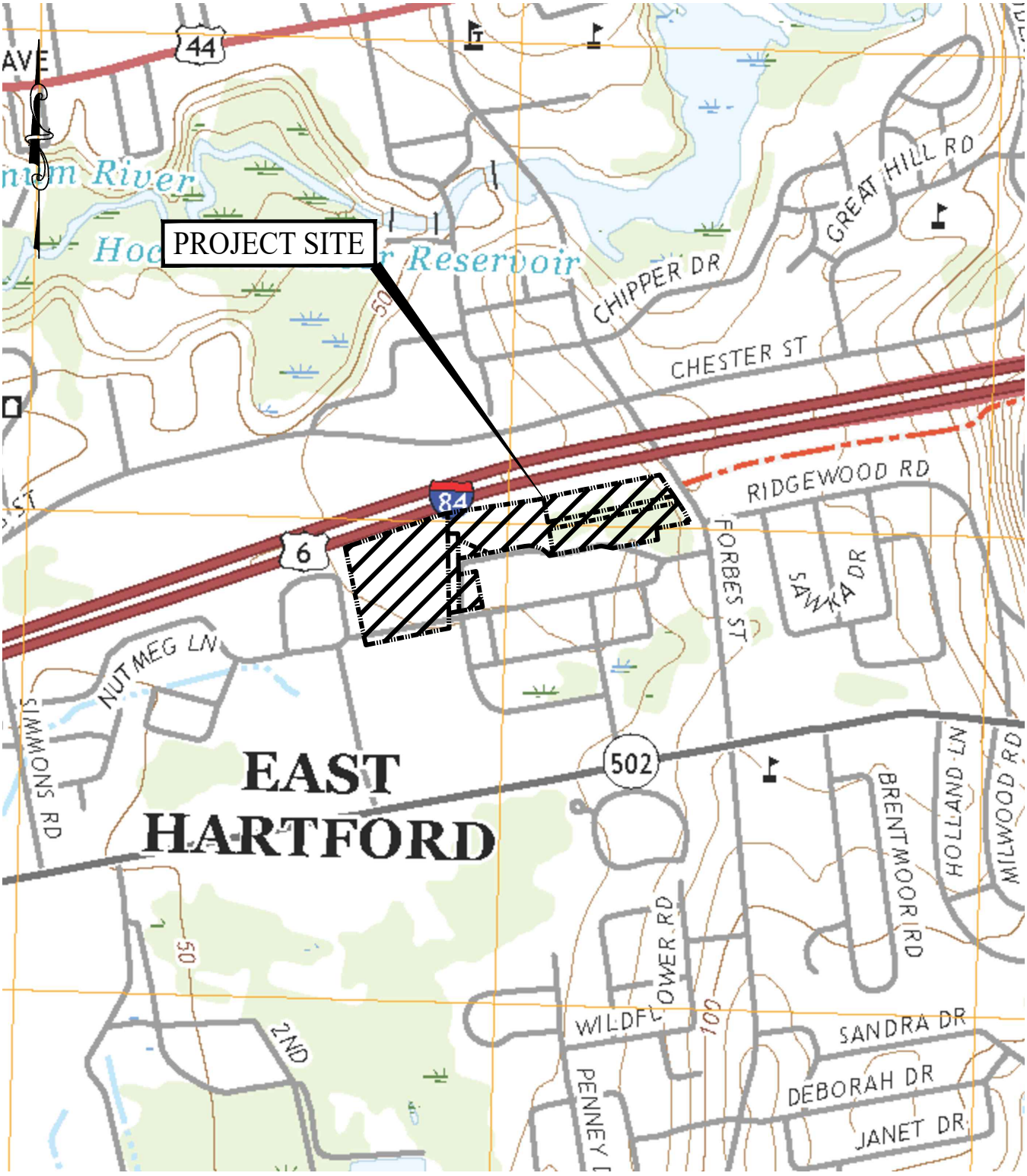
# INLAND WETLANDS MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 400' |
| Figure: | 4 |




NOTE: BASE MAP INFORMATION TAKEN FROM UNITED STATES GEOLOGICAL SURVEY (MANCHESTER, CONNECTICUT QUADRANGLE 7.5 MINUTE SERIES; 2021)

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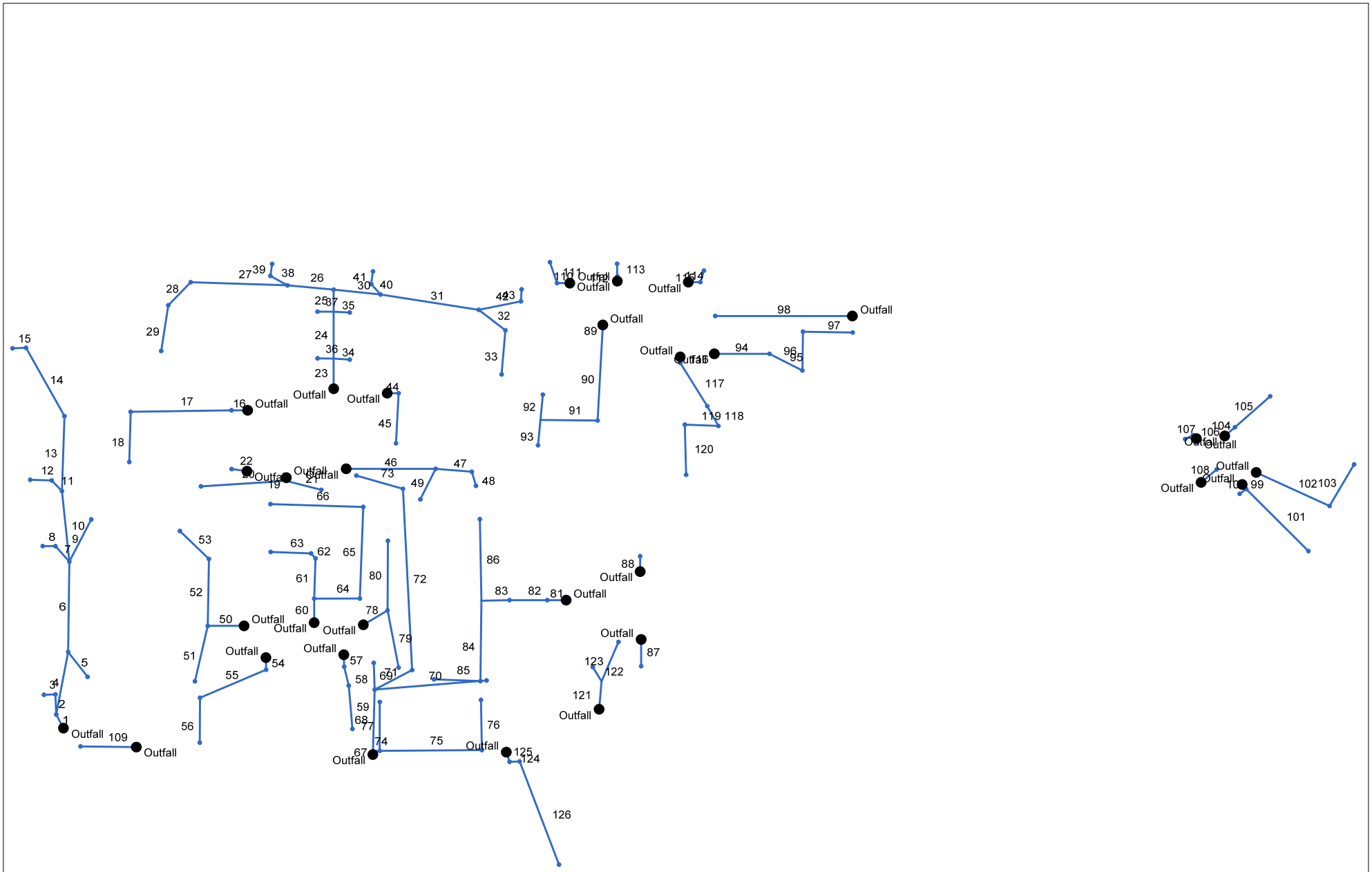
# USGS MAP

SILVER LANE
EAST HARTFORD, CONNECTICUT

| | |
|---|---|
| Project #: | 2010501 |
| Plan Date: | 12/16/22 |
| Scale: | 1" = 1,000' |
| Figure: | 5 |

# APPENDIX H
# STORMWATER CONVEYANCE CALCULATIONS

# Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan




| Project File: 2010501-Storm Sewers New.stm | Number of lines: 126 | Date: 4/13/2023 |
|---|---|---|

# Storm Sewer Inventory Report



| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 1 | End | 23.000 | -117.688 | Comb | 0.00 | 0.05 | 0.71 | 6.0 | 56.50 | 1.09 | 56.75 | 36 | Cir | 0.013 | 1.01 | 60.80 | CB-29 |
| 2 | 1 | 30.000 | 25.246 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 56.85 | 3.83 | 58.00 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-33A |
| 3 | 2 | 17.000 | -89.254 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 58.00 | 11.76 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-33B |
| 4 | 1 | 95.000 | 38.407 | DrGrt | 0.00 | 0.15 | 0.83 | 6.0 | 56.85 | 0.46 | 57.29 | 36 | Cir | 0.013 | 1.59 | 61.20 | CB-28 |
| 5 | 4 | 47.000 | 131.376 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 57.39 | 6.62 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-30 |
| 6 | 4 | 135.000 | -9.956 | DrGrt | 0.00 | 0.24 | 0.88 | 6.0 | 57.39 | 0.50 | 58.06 | 24 | Cir | 0.013 | 1.09 | 61.20 | CB-27 |
| 7 | 6 | 31.000 | -42.529 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 58.16 | 5.94 | 60.00 | 8 | Cir | 0.013 | 1.17 | 0.00 | RF-32A |
| 8 | 7 | 19.000 | -48.060 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 60.00 | 1.05 | 60.20 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-32B |
| 9 | 6 | 71.000 | 26.585 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.16 | 3.30 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-29 |
| 10 | 6 | 106.000 | -6.717 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 58.16 | 0.50 | 58.69 | 24 | Cir | 0.013 | 0.67 | 63.20 | MH-1 |
| 11 | 10 | 22.000 | -37.919 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 58.69 | 1.41 | 59.00 | 8 | Cir | 0.013 | 1.11 | 0.00 | RF-37A |
| 12 | 11 | 32.000 | -44.225 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 59.00 | 6.25 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-37B |
| 13 | 10 | 112.000 | 7.858 | DrGrt | 0.00 | 0.42 | 0.81 | 6.0 | 58.69 | 0.50 | 59.25 | 24 | Cir | 0.013 | 0.86 | 62.00 | CB-3 |
| 14 | 13 | 117.000 | -31.179 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 59.35 | 2.69 | 62.50 | 8 | Cir | 0.013 | 1.36 | 0.00 | RF-40A |
| 15 | 14 | 20.000 | -62.742 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 62.50 | 12.50 | 65.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-40B |
| 16 | End | 24.000 | 180.000 | DrGrt | 0.00 | 0.07 | 0.95 | 6.0 | 57.20 | 1.00 | 57.44 | 8 | Cir | 0.013 | 0.50 | 0.00 | RF-36A |
| 17 | 16 | 150.000 | -0.865 | DrGrt | 0.00 | 0.07 | 0.95 | 6.0 | 57.44 | 1.00 | 58.94 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-36B |
| 18 | 17 | 75.000 | -87.565 | DrGrt | 0.00 | 0.07 | 0.95 | 6.0 | 58.94 | 1.00 | 59.69 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-35B |
| 19 | End | 5.000 | 92.743 | Comb | 0.00 | 1.09 | 0.65 | 6.0 | 57.45 | 1.00 | 57.50 | 30 | Cir | 0.013 | 2.21 | 61.30 | CB-1 |
| 20 | 19 | 127.000 | 83.593 | Comb | 0.00 | 0.28 | 0.89 | 6.0 | 57.60 | 0.50 | 58.24 | 18 | Cir | 0.013 | 1.00 | 61.50 | CB-2 |
| 21 | 19 | 54.000 | -78.536 | Comb | 0.00 | 0.28 | 0.89 | 6.0 | 57.60 | 1.11 | 58.20 | 24 | Cir | 0.013 | 1.00 | 61.20 | CB-8 |
| 22 | End | 23.000 | -172.101 | DrGrt | 0.00 | 0.07 | 0.95 | 6.0 | 57.20 | 1.00 | 57.43 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-35A |
| 23 | End | 45.000 | -90.000 | None | 0.00 | 0.00 | 0.00 | 0.0 | 57.45 | 1.00 | 57.90 | 24 | Cir | 0.013 | 1.00 | 0.00 | |

Project File: 2010501-Storm Sewers New.stm

Number of lines: 126

Date: 4/13/2023

# Storm Sewer Inventory Report

| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 24 | 23 | 70.000 | 0.000 | None | 0.00 | 0.00 | 0.00 | 0.0 | 57.71 | 1.00 | 58.41 | 24 | Cir | 0.013 | 1.00 | 0.00 | (2) |
| 25 | 24 | 33.000 | 0.000 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 58.41 | 1.00 | 58.74 | 24 | Cir | 0.013 | 1.00 | 64.20 | MH-2 |
| 26 | 25 | 69.000 | -84.686 | DrGrt | 0.00 | 0.34 | 0.90 | 6.0 | 58.74 | 1.00 | 59.43 | 15 | Cir | 0.013 | 0.69 | 63.00 | CB-5 |
| 27 | 26 | 144.000 | -3.431 | DrGrt | 0.00 | 0.19 | 0.89 | 6.0 | 59.53 | 0.50 | 60.25 | 15 | Cir | 0.013 | 1.17 | 63.40 | CB-4 |
| 28 | 27 | 48.000 | -47.954 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 60.25 | 1.00 | 60.73 | 8 | Cir | 0.013 | 0.94 | 0.00 | RF-2 |
| 29 | 28 | 69.000 | -35.106 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 60.73 | 1.00 | 61.42 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-1 |
| 30 | 25 | 70.000 | 95.993 | DrGrt | 0.00 | 0.27 | 0.88 | 6.0 | 58.74 | 1.00 | 59.44 | 15 | Cir | 0.013 | 1.50 | 63.50 | CB-6 |
| 31 | 30 | 148.000 | 2.927 | DrGrt | 0.00 | 0.24 | 0.90 | 6.0 | 59.54 | 0.58 | 60.40 | 15 | Cir | 0.013 | 0.91 | 63.50 | CB-7 |
| 32 | 31 | 50.000 | 28.771 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 60.50 | 1.00 | 61.00 | 8 | Cir | 0.013 | 1.30 | 0.00 | RF-7 |
| 33 | 32 | 66.000 | 57.229 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 61.00 | 1.52 | 62.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-8 |
| 34 | 23 | 24.000 | 93.631 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 57.71 | 1.00 | 57.95 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-6 |
| 35 | 24 | 24.000 | 92.661 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.41 | 1.00 | 58.65 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-5 |
| 36 | 23 | 24.000 | -89.162 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 57.71 | 1.00 | 57.95 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-4 |
| 37 | 24 | 24.000 | -89.643 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.41 | 1.00 | 58.65 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-3 |
| 38 | 26 | 29.000 | 23.740 | DrGrt | 0.00 | 0.06 | 0.95 | 0.0 | 59.53 | 1.00 | 59.82 | 8 | Cir | 0.013 | 1.42 | 0.00 | RF-41A |
| 39 | 38 | 18.000 | 68.963 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 59.82 | 1.00 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-41B |
| 40 | 30 | 21.000 | -137.354 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 59.54 | 2.19 | 60.00 | 8 | Cir | 0.013 | 1.20 | 0.00 | RF-42A |
| 41 | 40 | 19.000 | 49.781 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 60.00 | 10.53 | 62.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-42B |
| 42 | 31 | 64.000 | -20.448 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 60.50 | 2.34 | 62.00 | 8 | Cir | 0.013 | 1.46 | 0.00 | RF-43A |
| 43 | 42 | 18.000 | -75.447 | DrGrt | 0.00 | 0.03 | 0.95 | 6.0 | 62.00 | 2.78 | 62.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-43B |
| 44 | End | 17.000 | 0.000 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 57.20 | 4.71 | 58.00 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-9 |
| 45 | 44 | 75.000 | 92.986 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.00 | 2.67 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-11 |
| 46 | End | 133.000 | 0.000 | DrGrt | 0.00 | 0.37 | 0.89 | 6.0 | 57.45 | 0.71 | 58.40 | 24 | Cir | 0.013 | 1.50 | 61.30 | CB-9 |

# Storm Sewer Inventory Report

| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 47 | 46 | 54.000 | 4.618 | DrGrt | 0.00 | 0.01 | 0.95 | 6.0 | 58.40 | 2.96 | 60.00 | 8 | Cir | 0.013 | 1.42 | 0.00 | RF-13A |
| 48 | 47 | 22.000 | 69.041 | DrGrt | 0.00 | 0.01 | 0.95 | 6.0 | 60.00 | 2.27 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-13B |
| 49 | 46 | 51.000 | 116.442 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.40 | 3.14 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-14 |
| 50 | End | 54.000 | 180.000 | DrGrt | 0.00 | 0.26 | 0.74 | 6.0 | 56.45 | 0.48 | 56.71 | 24 | Cir | 0.013 | 1.50 | 61.60 | CB-25 |
| 51 | 50 | 85.000 | -76.998 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 56.81 | 4.34 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-31 |
| 52 | 50 | 100.000 | 90.985 | DrGrt | 0.00 | 0.39 | 0.80 | 6.0 | 56.81 | 1.01 | 57.82 | 18 | Cir | 0.013 | 1.16 | 60.50 | CB-26 |
| 53 | 52 | 60.000 | -46.961 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 57.92 | 4.30 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-28 |
| 54 | End | 18.000 | 89.066 | DrGrt | 0.00 | 0.45 | 0.70 | 6.0 | 56.45 | 1.00 | 56.63 | 24 | Cir | 0.013 | 1.41 | 60.80 | CB-24 |
| 55 | 54 | 107.000 | 67.824 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 56.73 | 3.06 | 60.00 | 8 | Cir | 0.013 | 1.40 | 0.00 | RF-22 |
| 56 | 55 | 67.000 | -66.643 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 60.00 | 0.75 | 60.50 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-23 |
| 57 | End | 18.000 | 88.210 | DrGrt | 0.00 | 0.31 | 0.70 | 6.0 | 56.45 | 1.00 | 56.63 | 24 | Cir | 0.013 | 0.50 | 60.80 | CB-23 |
| 58 | 57 | 29.000 | -11.753 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 56.73 | 4.38 | 58.00 | 8 | Cir | 0.013 | 0.50 | 0.00 | RF-21 |
| 59 | 58 | 65.000 | 8.723 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 58.00 | 3.08 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-20 |
| 60 | End | 36.000 | -90.000 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 56.45 | 1.53 | 57.00 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-34D |
| 61 | 60 | 60.000 | 1.897 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 57.00 | 1.67 | 58.00 | 8 | Cir | 0.013 | 1.10 | 0.00 | RF-34E |
| 62 | 61 | 10.000 | -43.445 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 58.00 | 5.00 | 58.50 | 8 | Cir | 0.013 | 1.15 | 0.00 | RF-34F |
| 63 | 62 | 60.000 | -46.362 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 58.50 | 0.83 | 59.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-34G |
| 64 | 60 | 68.000 | 89.975 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 57.00 | 1.47 | 58.00 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF34-C |
| 65 | 64 | 137.000 | -87.886 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 58.00 | 1.09 | 59.50 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-34B |
| 66 | 65 | 138.000 | -90.334 | DrGrt | 0.00 | 0.04 | 0.95 | 6.0 | 59.50 | 1.09 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-34A |
| 67 | End | 5.000 | 271.602 | None | 0.00 | 0.00 | 0.00 | 0.0 | 55.80 | 0.00 | 55.80 | 36 | Cir | 0.013 | 1.00 | 59.00 | |
| 68 | 67 | 92.000 | 0.000 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 55.70 | 0.30 | 55.98 | 36 | Cir | 0.013 | 1.00 | 61.90 | MH-6 |
| 69 | 68 | 40.000 | -3.628 | MH | 8.58 | 0.00 | 0.00 | 0.0 | 56.45 | 0.00 | 56.45 | 30 | Cir | 0.013 | 1.00 | 62.60 | OCS-2 |

# Storm Sewer Inventory Report



| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 70 | 68 | 167.000 | 83.698 | Comb | 0.00 | 0.11 | 0.84 | 6.0 | 55.98 | 0.91 | 57.50 | 18 | Cir | 0.013 | 1.00 | 60.00 | CB-22 |
| 71 | 68 | 63.000 | 60.671 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 55.98 | 0.30 | 56.17 | 30 | Cir | 0.013 | 0.92 | 62.00 | MH-5 |
| 72 | 71 | 271.000 | -65.181 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 56.17 | 0.30 | 56.98 | 30 | Cir | 0.013 | 0.96 | 62.30 | MH-3 |
| 73 | 72 | 72.000 | -71.106 | MH | 8.27 | 0.00 | 0.00 | 0.0 | 56.98 | 0.31 | 57.20 | 30 | Cir | 0.013 | 1.00 | 61.40 | OSC-1 |
| 74 | 67 | 10.000 | 85.352 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 55.71 | 12.90 | 57.00 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-25 |
| 75 | 74 | 152.000 | 2.618 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 57.00 | 0.99 | 58.50 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-27 |
| 76 | 75 | 75.000 | -90.584 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 58.50 | 2.00 | 60.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-26 |
| 77 | 74 | 73.000 | -86.803 | DrGrt | 0.00 | 0.06 | 0.95 | 6.0 | 57.00 | 1.37 | 58.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-24 |
| 78 | End | 42.000 | -30.784 | DrGrt | 0.00 | 0.17 | 0.84 | 6.0 | 56.45 | 0.81 | 56.79 | 24 | Cir | 0.013 | 1.98 | 61.20 | CB-20 |
| 79 | 78 | 87.000 | 109.952 | Comb | 0.00 | 0.12 | 0.80 | 6.0 | 56.89 | 0.89 | 57.66 | 18 | Cir | 0.013 | 1.00 | 61.40 | CB-21 |
| 80 | 78 | 104.000 | -58.953 | DrGrt | 0.00 | 0.31 | 0.87 | 6.0 | 56.89 | 0.90 | 57.83 | 18 | Cir | 0.013 | 1.00 | 61.30 | CB-19 |
| 81 | End | 28.000 | 180.000 | Comb | 0.00 | 0.18 | 0.85 | 6.0 | 58.00 | 0.50 | 58.14 | 18 | Cir | 0.013 | 0.50 | 61.90 | CB-18 |
| 82 | 81 | 56.000 | 0.000 | DrGrt | 0.00 | 0.39 | 0.73 | 6.0 | 58.24 | 0.82 | 58.70 | 18 | Cir | 0.013 | 0.50 | 61.30 | CB-17 |
| 83 | 82 | 42.000 | -1.311 | None | 0.00 | 0.00 | 0.00 | 0.0 | 58.80 | 1.00 | 59.22 | 8 | Cir | 0.013 | 1.00 | 0.00 | |
| 84 | 83 | 120.000 | -87.968 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 59.22 | 1.07 | 60.50 | 8 | Cir | 0.013 | 1.50 | 0.00 | RF-17 |
| 85 | 84 | 69.000 | 91.490 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 60.50 | 0.72 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-16 |
| 86 | 83 | 122.000 | 90.235 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 59.22 | 1.46 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-15 |
| 87 | End | 40.000 | 90.000 | Comb | 0.00 | 0.33 | 0.90 | 6.0 | 58.00 | 1.00 | 58.40 | 12 | Cir | 0.013 | 1.00 | 60.70 | CB-16 |
| 88 | End | 23.000 | -90.000 | Comb | 0.00 | 0.29 | 0.89 | 6.0 | 58.00 | 1.00 | 58.23 | 12 | Cir | 0.013 | 1.00 | 60.78 | CB-15 |
| 89 | End | 4.000 | 92.986 | DrGrt | 0.00 | 0.52 | 0.86 | 6.0 | 57.95 | 0.50 | 57.97 | 24 | Cir | 0.013 | 0.50 | 61.80 | CB-11 |
| 90 | 89 | 139.000 | 0.116 | DrGrt | 0.00 | 0.44 | 0.87 | 6.0 | 58.07 | 0.60 | 58.90 | 18 | Cir | 0.013 | 1.50 | 61.10 | CB-10 |
| 91 | 90 | 85.000 | 87.494 | None | 0.00 | 0.00 | 0.00 | 0.0 | 59.00 | 1.00 | 59.85 | 12 | Cir | 0.013 | 1.00 | 63.50 | |
| 92 | 91 | 38.000 | 94.770 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 59.85 | 1.00 | 60.23 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-10 |

# Storm Sewer Inventory Report



| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 93 | 91 | 38.000 | -85.219 | DrGrt | 0.00 | 0.09 | 0.95 | 0.6 | 59.85 | 1.00 | 60.23 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-12 |
| 94 | End | 82.000 | 0.000 | Comb | 0.00 | 0.21 | 0.84 | 6.0 | 57.95 | 0.50 | 58.36 | 18 | Cir | 0.013 | 0.76 | 61.00 | CB-14 |
| 95 | 94 | 55.000 | 26.924 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 58.46 | 1.00 | 59.01 | 18 | Cir | 0.013 | 1.50 | 62.50 | RF-18C |
| 96 | 95 | 58.000 | -116.185 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 59.01 | 1.00 | 59.59 | 12 | Cir | 0.013 | 1.50 | 62.50 | RF-18B |
| 97 | 96 | 74.000 | 90.265 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 59.59 | 1.00 | 60.33 | 8 | Cir | 0.013 | 1.00 | 62.50 | RF-18A |
| 98 | End | 204.000 | 180.000 | MH | 8.97 | 0.00 | 0.00 | 0.0 | 56.80 | 0.56 | 57.95 | 24 | Cir | 0.013 | 1.00 | 62.80 | OCS-3 |
| 99 | End | 9.000 | 48.814 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 67.55 | 1.00 | 67.64 | 12 | Cir | 0.013 | 1.00 | 72.31 | MH-12 |
| 100 | 99 | 12.000 | 95.065 | Comb | 0.00 | 0.25 | 0.85 | 6.0 | 67.74 | 1.00 | 67.86 | 12 | Cir | 0.013 | 1.00 | 71.10 | CB-31 |
| 101 | 99 | 131.000 | -3.774 | Comb | 0.00 | 0.56 | 0.53 | 6.0 | 67.74 | 1.00 | 69.05 | 18 | Cir | 0.013 | 1.00 | 71.60 | CB-30 |
| 102 | End | 120.000 | 24.647 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 67.55 | 1.00 | 68.75 | 8 | Cir | 0.013 | 1.49 | 0.00 | RF-46 |
| 103 | 102 | 72.000 | -84.085 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 68.75 | 1.00 | 69.47 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-47 |
| 104 | End | 20.000 | -40.525 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 67.55 | 1.00 | 67.75 | 8 | Cir | 0.013 | 0.50 | 0.00 | RF-44 |
| 105 | 104 | 70.000 | -0.898 | DrGrt | 0.00 | 0.09 | 0.95 | 6.0 | 67.75 | 1.00 | 68.45 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-45 |
| 106 | End | 7.000 | -135.764 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 67.55 | 1.00 | 67.62 | 12 | Cir | 0.013 | 0.95 | 71.20 | MH-11 |
| 107 | 106 | 13.000 | -70.361 | Comb | 0.00 | 0.45 | 0.60 | 6.0 | 67.72 | 1.00 | 67.85 | 12 | Cir | 0.013 | 1.00 | 70.70 | CB-32 |
| 108 | End | 30.000 | -40.000 | MH | 2.72 | 0.00 | 0.00 | 0.0 | 65.00 | 8.50 | 67.55 | 24 | Cir | 0.013 | 1.00 | 72.20 | OCS-6 |
| 109 | End | 83.000 | -179.293 | MH | 4.51 | 0.00 | 0.00 | 0.0 | 57.80 | 0.84 | 58.50 | 12 | Cir | 0.013 | 1.00 | 60.30 | OCS-7 |
| 110 | End | 19.000 | 180.000 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 57.95 | 10.79 | 60.00 | 8 | Cir | 0.013 | 1.44 | 0.00 | RF-38A |
| 111 | 110 | 33.000 | 71.411 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 60.00 | 6.06 | 62.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-38B |
| 112 | End | 7.000 | -90.000 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 57.95 | 29.29 | 60.00 | 8 | Cir | 0.013 | 0.50 | 0.00 | RF-39A |
| 113 | 112 | 19.000 | -0.902 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 60.00 | 5.26 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-39B |
| 114 | End | 18.000 | 0.000 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 57.95 | 5.83 | 59.00 | 8 | Cir | 0.013 | 1.45 | 0.00 | RF-39C |
| 115 | 114 | 18.000 | -73.024 | DrGrt | 0.00 | 0.02 | 0.95 | 6.0 | 59.00 | 11.11 | 61.00 | 8 | Cir | 0.013 | 1.00 | 0.00 | RF-39D |

# Storm Sewer Inventory Report



| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 116 | End | 9.000 | 90.000 | DrGrt | 0.00 | 0.41 | 0.92 | 6.0 | 57.95 | 0.56 | 58.00 | 30 | Cir | 0.013 | 0.87 | 61.50 | CB-12 |
| 117 | 116 | 76.000 | -31.893 | DrGrt | 0.00 | 0.21 | 0.84 | 6.0 | 58.10 | 0.37 | 58.38 | 18 | Cir | 0.013 | 0.50 | 61.00 | CB-13 |
| 118 | 117 | 34.000 | 2.573 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 58.38 | 3.29 | 59.50 | 12 | Cir | 0.013 | 1.50 | 62.50 | RF-19A |
| 119 | 118 | 50.000 | 121.587 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 59.50 | 1.00 | 60.00 | 12 | Cir | 0.013 | 1.50 | 62.50 | RF-19B |
| 120 | 119 | 75.000 | -93.724 | DrGrt | 0.00 | 0.12 | 0.95 | 6.0 | 60.00 | 1.00 | 60.75 | 12 | Cir | 0.013 | 1.00 | 62.50 | RF-19C |
| 121 | End | 41.898 | -85.000 | None | 0.00 | 0.00 | 0.00 | 0.0 | 52.80 | 0.79 | 53.13 | 36 | Cir | 0.013 | 0.65 | 61.20 | |
| 122 | 121 | 25.000 | -36.729 | MH | 2.27 | 0.00 | 0.00 | 0.0 | 53.13 | 19.48 | 58.00 | 12 | Cir | 0.013 | 1.00 | 61.30 | OCS-5 |
| 123 | 121 | 64.000 | 18.172 | MH | 1.24 | 0.00 | 0.00 | 0.0 | 53.13 | 7.61 | 58.00 | 12 | Cir | 0.013 | 1.00 | 61.10 | OCS-4 |
| 124 | End | 15.255 | 71.402 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 52.74 | 16.13 | 55.20 | 18 | Cir | 0.013 | 0.97 | 60.00 | |
| 125 | 124 | 15.000 | -73.613 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 55.20 | 0.33 | 55.25 | 36 | Cir | 0.013 | 0.96 | 59.00 | |
| 126 | 125 | 165.000 | 71.402 | MH | 12.35 | 0.00 | 0.00 | 0.0 | 55.25 | 0.33 | 55.80 | 36 | Cir | 0.013 | 1.00 | 59.00 | MH-7 |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 1 | | Combination | 60.80 | Cir | 4.00 | 4.00 | 36 | Cir | 56.75 | 8<br>36 | Cir<br>Cir | 56.85<br>56.85 |
| 2 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | 8 | Cir | 58.00 |
| 3 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |
| 4 | | DropGrate | 61.20 | Cir | 4.00 | 4.00 | 36 | Cir | 57.29 | 8<br>24 | Cir<br>Cir | 57.39<br>57.39 |
| 5 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 6 | | DropGrate | 61.20 | Cir | 4.00 | 4.00 | 24 | Cir | 58.06 | 8<br>8<br>24 | Cir<br>Cir<br>Cir | 58.16<br>58.16<br>58.16 |
| 7 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 8 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.20 | | | |
| 9 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 10 | | Manhole | 63.20 | Cir | 4.00 | 4.00 | 24 | Cir | 58.69 | 8<br>24 | Cir<br>Cir | 58.69<br>58.69 |
| 11 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.00 | 8 | Cir | 59.00 |
| 12 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 13 | | DropGrate | 62.00 | Cir | 4.00 | 4.00 | 24 | Cir | 59.25 | 8 | Cir | 59.35 |
| 14 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.50 | 8 | Cir | 62.50 |
| 15 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 65.00 | | | |
| 16 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.44 | 8 | Cir | 57.44 |
| 17 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.94 | 8 | Cir | 58.94 |
| 18 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.69 | | | |
| 19 | | Combination | 61.30 | Cir | 4.00 | 4.00 | 30 | Cir | 57.50 | 18<br>24 | Cir<br>Cir | 57.60<br>57.60 |
| 20 | | Combination | 61.50 | Cir | 4.00 | 4.00 | 18 | Cir | 58.24 | | | |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 21 | | Combination | 61.20 | Cir | 4.00 | 4.00 | 24 | Cir | 58.20 | | | |
| 22 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.43 | | | |
| 23 | New | None | 0.00 | n/a | n/a | n/a | 24 | Cir | 57.90 | 24<br>8<br>8 | Cir<br>Cir<br>Cir | 57.71<br>57.71<br>57.71 |
| 24 | New | None | 0.00 | n/a | n/a | n/a | 24 | Cir | 58.41 | 24<br>8<br>8 | Cir<br>Cir<br>Cir | 58.41<br>58.41<br>58.41 |
| 25 | | Manhole | 64.20 | Cir | 4.00 | 4.00 | 24 | Cir | 58.74 | 15<br>15 | Cir<br>Cir | 58.74<br>58.74 |
| 26 | | DropGrate | 63.00 | Cir | 4.00 | 4.00 | 15 | Cir | 59.43 | 15<br>8 | Cir<br>Cir | 59.53<br>59.53 |
| 27 | | DropGrate | 63.40 | Cir | 4.00 | 4.00 | 15 | Cir | 60.25 | 8 | Cir | 60.25 |
| 28 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.73 | 8 | Cir | 60.73 |
| 29 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.42 | | | |
| 30 | | DropGrate | 63.50 | Cir | 4.00 | 4.00 | 15 | Cir | 59.44 | 15<br>8 | Cir<br>Cir | 59.54<br>59.54 |
| 31 | | DropGrate | 63.50 | Cir | 4.00 | 4.00 | 15 | Cir | 60.40 | 8<br>8 | Cir<br>Cir | 60.50<br>60.50 |
| 32 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | 8 | Cir | 61.00 |
| 33 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.00 | | | |
| 34 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.95 | | | |
| 35 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.65 | | | |
| 36 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.95 | | | |
| 37 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.65 | | | |
| 38 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.82 | 8 | Cir | 59.82 |
| 39 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 40 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 41 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.00 | | | |
| 42 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.00 | 8 | Cir | 62.00 |
| 43 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.50 | | | |
| 44 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | 8 | Cir | 58.00 |
| 45 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |
| 46 | | DropGrate | 61.30 | Cir | 4.00 | 4.00 | 24 | Cir | 58.40 | 8<br>8 | Cir<br>Cir | 58.40<br>58.40 |
| 47 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 48 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 49 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |
| 50 | | DropGrate | 61.60 | Cir | 4.00 | 4.00 | 24 | Cir | 56.71 | 8<br>18 | Cir<br>Cir | 56.81<br>56.81 |
| 51 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 52 | | DropGrate | 60.50 | Cir | 4.00 | 4.00 | 18 | Cir | 57.82 | 8 | Cir | 57.92 |
| 53 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 54 | | DropGrate | 60.80 | Cir | 4.00 | 4.00 | 24 | Cir | 56.63 | 8 | Cir | 56.73 |
| 55 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 56 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | | | |
| 57 | | DropGrate | 60.80 | Cir | 4.00 | 4.00 | 24 | Cir | 56.63 | 8 | Cir | 56.73 |
| 58 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | 8 | Cir | 58.00 |
| 59 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |
| 60 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.00 | 8<br>8 | Cir<br>Cir | 57.00<br>57.00 |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 61 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | 8 | Cir | 58.00 |
| 62 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.50 | 8 | Cir | 58.50 |
| 63 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.00 | | | |
| 64 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | 8 | Cir | 58.00 |
| 65 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.50 | 8 | Cir | 59.50 |
| 66 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 67 | New | None | 59.00 | n/a | n/a | n/a | 36 | Cir | 55.80 | 36<br>8 | Cir<br>Cir | 55.70<br>55.71 |
| 68 | | Manhole | 61.90 | Cir | 4.00 | 4.00 | 36 | Cir | 55.98 | 30<br>18<br>30 | Cir<br>Cir<br>Cir | 56.45<br>55.98<br>55.98 |
| 69 | | Manhole | 62.60 | Cir | 4.00 | 4.00 | 30 | Cir | 56.45 | | | |
| 70 | | Combination | 60.00 | Cir | 4.00 | 4.00 | 18 | Cir | 57.50 | | | |
| 71 | | Manhole | 62.00 | Cir | 4.00 | 4.00 | 30 | Cir | 56.17 | 30 | Cir | 56.17 |
| 72 | | Manhole | 62.30 | Cir | 4.00 | 4.00 | 30 | Cir | 56.98 | 30 | Cir | 56.98 |
| 73 | | Manhole | 61.40 | Cir | 4.00 | 4.00 | 30 | Cir | 57.20 | | | |
| 74 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 57.00 | 8<br>8 | Cir<br>Cir | 57.00<br>57.00 |
| 75 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.50 | 8 | Cir | 58.50 |
| 76 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | | | |
| 77 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 58.00 | | | |
| 78 | | DropGrate | 61.20 | Cir | 4.00 | 4.00 | 24 | Cir | 56.79 | 18<br>18 | Cir<br>Cir | 56.89<br>56.89 |
| 79 | | Combination | 61.40 | Cir | 4.00 | 4.00 | 18 | Cir | 57.66 | | | |
| 80 | | DropGrate | 61.30 | Cir | 4.00 | 4.00 | 18 | Cir | 57.83 | | | |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 81 | | Combination | 61.90 | Cir | 4.00 | 4.00 | 18 | Cir | 58.14 | 18 | Cir | 58.24 |
| 82 | | DropGrate | 61.30 | Cir | 4.00 | 4.00 | 18 | Cir | 58.70 | 8 | Cir | 58.80 |
| 83 | | None | 0.00 | n/a | n/a | n/a | 8 | Cir | 59.22 | 8<br>8 | Cir<br>Cir | 59.22<br>59.22 |
| 84 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.50 | 8 | Cir | 60.50 |
| 85 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 86 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 87 | | Combination | 60.70 | Cir | 4.00 | 4.00 | 12 | Cir | 58.40 | | | |
| 88 | | Combination | 60.78 | Cir | 4.00 | 4.00 | 12 | Cir | 58.23 | | | |
| 89 | | DropGrate | 61.80 | Cir | 4.00 | 4.00 | 24 | Cir | 57.97 | 18 | Cir | 58.07 |
| 90 | | DropGrate | 61.10 | Cir | 4.00 | 4.00 | 18 | Cir | 58.90 | 12 | Cir | 59.00 |
| 91 | | None | 63.50 | n/a | n/a | n/a | 12 | Cir | 59.85 | 8<br>8 | Cir<br>Cir | 59.85<br>59.85 |
| 92 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.23 | | | |
| 93 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.23 | | | |
| 94 | | Combination | 61.00 | Cir | 4.00 | 4.00 | 18 | Cir | 58.36 | 18 | Cir | 58.46 |
| 95 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 18 | Cir | 59.01 | 12 | Cir | 59.01 |
| 96 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 12 | Cir | 59.59 | 8 | Cir | 59.59 |
| 97 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 8 | Cir | 60.33 | | | |
| 98 | | Manhole | 62.80 | Cir | 4.00 | 4.00 | 24 | Cir | 57.95 | | | |
| 99 | | Manhole | 72.31 | Cir | 4.00 | 4.00 | 12 | Cir | 67.64 | 12<br>18 | Cir<br>Cir | 67.74<br>67.74 |
| 100 | | Combination | 71.10 | Cir | 4.00 | 4.00 | 12 | Cir | 67.86 | | | |
| 101 | | Combination | 71.60 | Cir | 4.00 | 4.00 | 18 | Cir | 69.05 | | | |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 102 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 68.75 | 8 | Cir | 68.75 |
| 103 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 69.47 | | | |
| 104 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 67.75 | 8 | Cir | 67.75 |
| 105 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 68.45 | | | |
| 106 | | Manhole | 71.20 | Cir | 4.00 | 4.00 | 12 | Cir | 67.62 | 12 | Cir | 67.72 |
| 107 | | Combination | 70.70 | Cir | 4.00 | 4.00 | 12 | Cir | 67.85 | | | |
| 108 | | Manhole | 72.20 | Cir | 4.00 | 4.00 | 24 | Cir | 67.55 | | | |
| 109 | | Manhole | 60.30 | Cir | 4.00 | 4.00 | 12 | Cir | 58.50 | | | |
| 110 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 111 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 62.00 | | | |
| 112 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 60.00 | 8 | Cir | 60.00 |
| 113 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 114 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 59.00 | 8 | Cir | 59.00 |
| 115 | | DropGrate | 0.00 | Cir | 4.00 | 4.00 | 8 | Cir | 61.00 | | | |
| 116 | | DropGrate | 61.50 | Cir | 4.00 | 4.00 | 30 | Cir | 58.00 | 18 | Cir | 58.10 |
| 117 | | DropGrate | 61.00 | Cir | 4.00 | 4.00 | 18 | Cir | 58.38 | 12 | Cir | 58.38 |
| 118 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 12 | Cir | 59.50 | 12 | Cir | 59.50 |
| 119 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 12 | Cir | 60.00 | 12 | Cir | 60.00 |
| 120 | | DropGrate | 62.50 | Cir | 4.00 | 4.00 | 12 | Cir | 60.75 | | | |
| 121 | | None | 61.20 | n/a | n/a | n/a | 36 | Cir | 53.13 | 12<br>12 | Cir<br>Cir | 53.13<br>53.13 |
| 122 | | Manhole | 61.30 | Cir | 4.00 | 4.00 | 12 | Cir | 58.00 | | | |
| 123 | | Manhole | 61.10 | Cir | 4.00 | 4.00 | 12 | Cir | 58.00 | | | |

# Structure Report



| Struct No. | Structure ID | Junction Type | Rim Elev (ft) | Structure | | | Line Out | | | Line In | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shape | Length (ft) | Width (ft) | Size (in) | Shape | Invert (ft) | Size (in) | Shape | Invert (ft) |
| 124 | | Manhole | 60.00 | Cir | 4.00 | 4.00 | 18 | Cir | 55.20 | 36 | Cir | 55.20 |
| 125 | | Manhole | 59.00 | Cir | 4.00 | 4.00 | 36 | Cir | 55.25 | 36 | Cir | 55.25 |
| 126 | | Manhole | 59.00 | Cir | 4.00 | 4.00 | 36 | Cir | 55.80 | | | |

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 1 | End | 23.000 | 0.05 | 1.32 | 0.71 | 0.04 | 1.15 | 6.0 | 12.7 | 5.7 | 6.57 | 69.53 | 0.93 | 36 | 1.09 | 56.50 | 56.75 | 60.70 | 60.70 | 0.00 | 60.80 | CB-29 |
| 2 | 1 | 30.000 | 0.03 | 0.06 | 0.95 | 0.03 | 0.06 | 6.0 | 6.4 | 8.1 | 0.46 | 2.36 | 1.32 | 8 | 3.83 | 56.85 | 58.00 | 60.72 | 60.76 | 60.80 | 0.00 | RF-33A |
| 3 | 2 | 17.000 | 0.03 | 0.03 | 0.95 | 0.03 | 0.03 | 6.0 | 6.0 | 8.4 | 0.24 | 4.14 | 0.68 | 8 | 11.76 | 58.00 | 60.00 | 60.80 | 60.81 | 0.00 | 0.00 | RF-33B |
| 4 | 1 | 95.000 | 0.15 | 1.21 | 0.83 | 0.12 | 1.06 | 6.0 | 11.2 | 6.1 | 6.47 | 45.39 | 0.92 | 36 | 0.46 | 56.85 | 57.29 | 60.72 | 60.72 | 60.80 | 61.20 | CB-28 |
| 5 | 4 | 47.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 3.11 | 2.62 | 8 | 6.62 | 57.39 | 60.50 | 60.75 | 60.91 | 61.20 | 0.00 | RF-30 |
| 6 | 4 | 135.000 | 0.24 | 0.97 | 0.88 | 0.21 | 0.85 | 6.0 | 10.1 | 6.5 | 5.49 | 15.93 | 1.75 | 24 | 0.50 | 57.39 | 58.06 | 60.75 | 60.83 | 61.20 | 61.20 | CB-27 |
| 7 | 6 | 31.000 | 0.03 | 0.06 | 0.95 | 0.03 | 0.06 | 6.0 | 6.5 | 8.1 | 0.46 | 2.94 | 1.32 | 8 | 5.94 | 58.16 | 60.00 | 60.88 | 60.92 | 61.20 | 0.00 | RF-32A |
| 8 | 7 | 19.000 | 0.03 | 0.03 | 0.95 | 0.03 | 0.03 | 6.0 | 6.0 | 8.4 | 0.24 | 1.24 | 0.68 | 8 | 1.05 | 60.00 | 60.20 | 60.95 | 60.96 | 0.00 | 0.00 | RF-32B |
| 9 | 6 | 71.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 2.19 | 2.10 | 8 | 3.30 | 58.16 | 60.50 | 60.88 | 61.10 | 61.20 | 0.00 | RF-29 |
| 10 | 6 | 106.000 | 0.00 | 0.58 | 0.00 | 0.00 | 0.49 | 0.0 | 8.6 | 7.0 | 3.47 | 15.99 | 1.10 | 24 | 0.50 | 58.16 | 58.69 | 60.88 | 60.90 | 61.20 | 63.20 | MH-1 |
| 11 | 10 | 22.000 | 0.02 | 0.04 | 0.95 | 0.02 | 0.04 | 6.0 | 7.2 | 7.7 | 0.29 | 1.43 | 0.84 | 8 | 1.41 | 58.69 | 59.00 | 60.91 | 60.93 | 63.20 | 0.00 | RF-37A |
| 12 | 11 | 32.000 | 0.02 | 0.02 | 0.95 | 0.02 | 0.02 | 6.0 | 6.0 | 8.4 | 0.16 | 3.02 | 1.25 | 8 | 6.25 | 59.00 | 61.00 | 60.94 | 61.18 | 0.00 | 0.00 | RF-37B |
| 13 | 10 | 112.000 | 0.42 | 0.54 | 0.81 | 0.34 | 0.45 | 6.0 | 7.0 | 7.8 | 3.54 | 15.99 | 1.19 | 24 | 0.50 | 58.69 | 59.25 | 60.91 | 60.94 | 63.20 | 62.00 | CB-3 |
| 14 | 13 | 117.000 | 0.06 | 0.12 | 0.95 | 0.06 | 0.11 | 6.0 | 6.2 | 8.2 | 0.94 | 1.98 | 3.17 | 8 | 2.69 | 59.35 | 62.50 | 60.96 | 62.96 | 62.00 | 0.00 | RF-40A |
| 15 | 14 | 20.000 | 0.06 | 0.06 | 0.95 | 0.06 | 0.06 | 6.0 | 6.0 | 8.4 | 0.48 | 4.27 | 2.35 | 8 | 12.50 | 62.50 | 65.00 | 62.96 | 65.32 | 0.00 | 0.00 | RF-40B |
| 16 | End | 24.000 | 0.07 | 0.21 | 0.95 | 0.07 | 0.20 | 6.0 | 7.6 | 7.5 | 1.49 | 1.21 | 4.28 | 8 | 1.00 | 57.20 | 57.44 | 59.16 | 59.53 | 0.00 | 0.00 | RF-36A |
| 17 | 16 | 150.000 | 0.07 | 0.14 | 0.95 | 0.07 | 0.13 | 6.0 | 6.8 | 7.9 | 1.05 | 1.21 | 3.01 | 8 | 1.00 | 57.44 | 58.94 | 59.67 | 60.80 | 0.00 | 0.00 | RF-36B |
| 18 | 17 | 75.000 | 0.07 | 0.07 | 0.95 | 0.07 | 0.07 | 6.0 | 6.0 | 8.4 | 0.56 | 1.21 | 1.59 | 8 | 1.00 | 58.94 | 59.69 | 61.02 | 61.17 | 0.00 | 0.00 | RF-35B |
| 19 | End | 5.000 | 1.09 | 1.65 | 0.65 | 0.71 | 1.21 | 6.0 | 7.8 | 7.4 | 8.92 | 41.01 | 3.70 | 30 | 1.00 | 57.45 | 57.50 | 59.16 | 58.49 | 0.00 | 61.30 | CB-1 |
| 20 | 19 | 127.000 | 0.28 | 0.28 | 0.89 | 0.25 | 0.25 | 6.0 | 6.0 | 8.4 | 2.08 | 7.45 | 2.75 | 18 | 0.50 | 57.60 | 58.24 | 58.49 | 58.78 | 61.30 | 61.50 | CB-2 |
| 21 | 19 | 54.000 | 0.28 | 0.28 | 0.89 | 0.25 | 0.25 | 6.0 | 6.0 | 8.4 | 2.08 | 23.84 | 2.46 | 24 | 1.11 | 57.60 | 58.20 | 58.49 | 58.70 | 61.30 | 61.20 | CB-8 |
| 22 | End | 23.000 | 0.07 | 0.07 | 0.95 | 0.07 | 0.07 | 6.0 | 6.0 | 8.4 | 0.56 | 1.21 | 1.59 | 8 | 1.00 | 57.20 | 57.43 | 60.81 | 60.86 | 0.00 | 0.00 | RF-35A |

Project File: 2010501-Storm Sewers New.stm

Number of lines: 126

Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 23 | End | 45.000 | 0.00 | 2.00 | 0.00 | 0.00 | 1.84 | 0.0 | 8.8 | 7.0 | 12.82 | 22.62 | 4.08 | 24 | 1.00 | 57.45 | 57.90 | 60.81 | 60.95 | 0.00 | 0.00 | |
| 24 | 23 | 70.000 | 0.00 | 1.82 | 0.00 | 0.00 | 1.67 | 0.0 | 8.5 | 7.1 | 11.83 | 22.62 | 3.77 | 24 | 1.00 | 57.71 | 58.41 | 61.21 | 61.40 | 0.00 | 0.00 | (2) |
| 25 | 24 | 33.000 | 0.00 | 1.64 | 0.00 | 0.00 | 1.50 | 0.0 | 8.3 | 7.2 | 10.72 | 22.62 | 3.41 | 24 | 1.00 | 58.41 | 58.74 | 61.63 | 61.70 | 0.00 | 64.20 | MH-2 |
| 26 | 25 | 69.000 | 0.34 | 0.83 | 0.90 | 0.31 | 0.76 | 6.0 | 7.8 | 7.4 | 5.60 | 6.46 | 4.56 | 15 | 1.00 | 58.74 | 59.43 | 61.88 | 62.40 | 64.20 | 63.00 | CB-5 |
| 27 | 26 | 144.000 | 0.19 | 0.37 | 0.89 | 0.17 | 0.34 | 6.0 | 6.8 | 7.9 | 2.69 | 4.57 | 2.19 | 15 | 0.50 | 59.53 | 60.25 | 62.62 | 62.87 | 63.00 | 63.40 | CB-4 |
| 28 | 27 | 48.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.6 | 8.0 | 1.37 | 1.21 | 3.93 | 8 | 1.00 | 60.25 | 60.73 | 62.96 | 63.58 | 63.40 | 0.00 | RF-2 |
| 29 | 28 | 69.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 60.73 | 61.42 | 63.81 | 64.05 | 0.00 | 0.00 | RF-1 |
| 30 | 25 | 70.000 | 0.27 | 0.81 | 0.88 | 0.24 | 0.74 | 6.0 | 8.1 | 7.3 | 5.36 | 6.46 | 4.37 | 15 | 1.00 | 58.74 | 59.44 | 61.88 | 62.36 | 64.20 | 63.50 | CB-6 |
| 31 | 30 | 148.000 | 0.24 | 0.48 | 0.90 | 0.22 | 0.44 | 6.0 | 7.2 | 7.7 | 3.40 | 4.92 | 2.77 | 15 | 0.58 | 59.54 | 60.40 | 62.81 | 63.22 | 63.50 | 63.50 | CB-7 |
| 32 | 31 | 50.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.5 | 8.0 | 1.37 | 1.21 | 3.94 | 8 | 1.00 | 60.50 | 61.00 | 63.33 | 63.98 | 63.50 | 0.00 | RF-7 |
| 33 | 32 | 66.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.49 | 2.05 | 8 | 1.52 | 61.00 | 62.00 | 64.29 | 64.52 | 0.00 | 0.00 | RF-8 |
| 34 | 23 | 24.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 57.71 | 57.95 | 61.21 | 61.30 | 0.00 | 0.00 | RF-6 |
| 35 | 24 | 24.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 58.41 | 58.65 | 61.63 | 61.71 | 0.00 | 0.00 | RF-5 |
| 36 | 23 | 24.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 57.71 | 57.95 | 61.21 | 61.30 | 0.00 | 0.00 | RF-4 |
| 37 | 24 | 24.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 58.41 | 58.65 | 61.63 | 61.71 | 0.00 | 0.00 | RF-3 |
| 38 | 26 | 29.000 | 0.06 | 0.12 | 0.95 | 0.06 | 0.11 | 0.0 | 6.2 | 8.2 | 0.94 | 1.21 | 2.68 | 8 | 1.00 | 59.53 | 59.82 | 62.62 | 62.80 | 63.00 | 0.00 | RF-41A |
| 39 | 38 | 18.000 | 0.06 | 0.06 | 0.95 | 0.06 | 0.06 | 6.0 | 6.0 | 8.4 | 0.48 | 1.21 | 1.36 | 8 | 1.00 | 59.82 | 60.00 | 62.96 | 62.99 | 0.00 | 0.00 | RF-41B |
| 40 | 30 | 21.000 | 0.03 | 0.06 | 0.95 | 0.03 | 0.06 | 6.0 | 6.5 | 8.1 | 0.46 | 1.79 | 1.32 | 8 | 2.19 | 59.54 | 60.00 | 62.81 | 62.84 | 63.50 | 0.00 | RF-42A |
| 41 | 40 | 19.000 | 0.03 | 0.03 | 0.95 | 0.03 | 0.03 | 6.0 | 6.0 | 8.4 | 0.24 | 3.92 | 0.68 | 8 | 10.53 | 60.00 | 62.00 | 62.87 | 62.88 | 0.00 | 0.00 | RF-42B |
| 42 | 31 | 64.000 | 0.03 | 0.06 | 0.95 | 0.03 | 0.06 | 6.0 | 6.4 | 8.1 | 0.46 | 1.85 | 1.32 | 8 | 2.34 | 60.50 | 62.00 | 63.33 | 63.42 | 63.50 | 0.00 | RF-43A |
| 43 | 42 | 18.000 | 0.03 | 0.03 | 0.95 | 0.03 | 0.03 | 6.0 | 6.0 | 8.4 | 0.24 | 2.01 | 0.68 | 8 | 2.78 | 62.00 | 62.50 | 63.46 | 63.47 | 0.00 | 0.00 | RF-43B |
| 44 | End | 17.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.6 | 8.0 | 1.37 | 2.62 | 3.92 | 8 | 4.71 | 57.20 | 58.00 | 60.81 | 61.03 | 0.00 | 0.00 | RF-9 |
| 45 | 44 | 75.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.97 | 2.05 | 8 | 2.67 | 58.00 | 60.00 | 61.39 | 61.65 | 0.00 | 0.00 | RF-11 |

Project File: 2010501-Storm Sewers New.stm | Number of lines: 126 | Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 46 | End | 133.000 | 0.37 | 0.48 | 0.89 | 0.33 | 0.43 | 6.0 | 9.6 | 6.7 | 2.89 | 19.12 | 0.92 | 24 | 0.71 | 57.45 | 58.40 | 60.81 | 60.83 | 0.00 | 61.30 | CB-9 |
| 47 | 46 | 54.000 | 0.01 | 0.02 | 0.95 | 0.01 | 0.02 | 6.0 | 7.6 | 7.5 | 0.14 | 2.08 | 0.41 | 8 | 2.96 | 58.40 | 60.00 | 60.85 | 60.86 | 61.30 | 0.00 | RF-13A |
| 48 | 47 | 22.000 | 0.01 | 0.01 | 0.95 | 0.01 | 0.01 | 6.0 | 6.0 | 8.4 | 0.08 | 1.82 | 0.32 | 8 | 2.27 | 60.00 | 60.50 | 60.86 | 60.86 | 0.00 | 0.00 | RF-13B |
| 49 | 46 | 51.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 2.14 | 2.05 | 8 | 3.14 | 58.40 | 60.00 | 60.85 | 61.03 | 61.30 | 0.00 | RF-14 |
| 50 | End | 54.000 | 0.26 | 0.83 | 0.74 | 0.19 | 0.68 | 6.0 | 7.4 | 7.6 | 5.12 | 15.69 | 1.63 | 24 | 0.48 | 56.45 | 56.71 | 59.12 | 59.15 | 0.00 | 61.60 | CB-25 |
| 51 | 50 | 85.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 2.52 | 2.66 | 8 | 4.34 | 56.81 | 60.50 | 59.21 | 60.90 | 61.60 | 0.00 | RF-31 |
| 52 | 50 | 100.000 | 0.39 | 0.48 | 0.80 | 0.31 | 0.40 | 6.0 | 6.5 | 8.1 | 3.21 | 10.55 | 1.82 | 18 | 1.01 | 56.81 | 57.82 | 59.21 | 59.30 | 61.60 | 60.50 | CB-26 |
| 53 | 52 | 60.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 2.50 | 2.66 | 8 | 4.30 | 57.92 | 60.50 | 59.36 | 60.90 | 60.50 | 0.00 | RF-28 |
| 54 | End | 18.000 | 0.45 | 0.63 | 0.70 | 0.32 | 0.49 | 6.0 | 7.0 | 7.8 | 3.78 | 22.62 | 1.20 | 24 | 1.00 | 56.45 | 56.63 | 59.12 | 59.13 | 0.00 | 60.80 | CB-24 |
| 55 | 54 | 107.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.5 | 8.0 | 1.37 | 2.11 | 4.19 | 8 | 3.06 | 56.73 | 60.00 | 59.16 | 60.55 | 60.80 | 0.00 | RF-22 |
| 56 | 55 | 67.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.04 | 2.80 | 8 | 0.75 | 60.00 | 60.50 | 60.55 | 60.90 | 0.00 | 0.00 | RF-23 |
| 57 | End | 18.000 | 0.31 | 0.49 | 0.70 | 0.22 | 0.39 | 6.0 | 6.7 | 8.0 | 3.09 | 22.62 | 0.98 | 24 | 1.00 | 56.45 | 56.63 | 59.12 | 59.12 | 0.00 | 60.80 | CB-23 |
| 58 | 57 | 29.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.5 | 8.0 | 1.37 | 2.53 | 3.94 | 8 | 4.38 | 56.73 | 58.00 | 59.13 | 59.51 | 60.80 | 0.00 | RF-21 |
| 59 | 58 | 65.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 2.12 | 2.66 | 8 | 3.08 | 58.00 | 60.00 | 59.63 | 60.40 | 0.00 | 0.00 | RF-20 |
| 60 | End | 36.000 | 0.04 | 0.28 | 0.95 | 0.04 | 0.27 | 6.0 | 10.3 | 6.4 | 1.71 | 1.49 | 4.89 | 8 | 1.53 | 56.45 | 57.00 | 59.12 | 59.84 | 0.00 | 0.00 | RF-34D |
| 61 | 60 | 60.000 | 0.04 | 0.12 | 0.95 | 0.04 | 0.11 | 6.0 | 7.2 | 7.7 | 0.88 | 1.56 | 2.51 | 8 | 1.67 | 57.00 | 58.00 | 60.39 | 60.71 | 0.00 | 0.00 | RF-34E |
| 62 | 61 | 10.000 | 0.04 | 0.08 | 0.95 | 0.04 | 0.08 | 6.0 | 7.1 | 7.7 | 0.59 | 2.70 | 1.68 | 8 | 5.00 | 58.00 | 58.50 | 60.82 | 60.84 | 0.00 | 0.00 | RF-34F |
| 63 | 62 | 60.000 | 0.04 | 0.04 | 0.95 | 0.04 | 0.04 | 6.0 | 6.0 | 8.4 | 0.32 | 1.10 | 0.91 | 8 | 0.83 | 58.50 | 59.00 | 60.89 | 60.93 | 0.00 | 0.00 | RF-34G |
| 64 | 60 | 68.000 | 0.04 | 0.12 | 0.95 | 0.04 | 0.11 | 6.0 | 9.9 | 6.6 | 0.75 | 1.46 | 2.14 | 8 | 1.47 | 57.00 | 58.00 | 60.39 | 60.66 | 0.00 | 0.00 | RF34-C |
| 65 | 64 | 137.000 | 0.04 | 0.08 | 0.95 | 0.04 | 0.08 | 6.0 | 8.5 | 7.1 | 0.54 | 1.26 | 1.54 | 8 | 1.09 | 58.00 | 59.50 | 60.76 | 61.03 | 0.00 | 0.00 | RF-34B |
| 66 | 65 | 138.000 | 0.04 | 0.04 | 0.95 | 0.04 | 0.04 | 6.0 | 6.0 | 8.4 | 0.32 | 1.26 | 1.42 | 8 | 1.09 | 59.50 | 61.00 | 61.09 | 61.32 | 0.00 | 0.00 | RF-34A |
| 67 | End | 5.000 | 0.00 | 0.35 | 0.00 | 0.00 | 0.32 | 0.0 | 13.0 | 5.7 | 18.66 | 0.00 | 3.23 | 36 | 0.00 | 55.80 | 55.80 | 58.08 | 58.09 | 59.00 | 59.00 | |
| 68 | 67 | 92.000 | 0.00 | 0.11 | 0.00 | 0.00 | 0.09 | 0.0 | 12.4 | 5.8 | 17.39 | 36.79 | 2.85 | 36 | 0.30 | 55.70 | 55.98 | 58.25 | 58.29 | 59.00 | 61.90 | MH-6 |

Project File: 2010501-Storm Sewers New.stm

Number of lines: 126

Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 69 | 68 | 40.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 8.58 | 0.00 | 1.75 | 30 | 0.00 | 56.45 | 56.45 | 58.95 | 58.97 | 61.90 | 62.60 | OCS-2 |
| 70 | 68 | 167.000 | 0.11 | 0.11 | 0.84 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.77 | 10.02 | 0.55 | 18 | 0.91 | 55.98 | 57.50 | 58.43 | 58.44 | 61.90 | 60.00 | CB-22 |
| 71 | 68 | 63.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 3.4 | 0.0 | 8.27 | 22.52 | 1.73 | 30 | 0.30 | 55.98 | 56.17 | 58.43 | 58.45 | 61.90 | 62.00 | MH-5 |
| 72 | 71 | 271.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.7 | 0.0 | 8.27 | 22.42 | 2.11 | 30 | 0.30 | 56.17 | 56.98 | 58.49 | 58.59 | 62.00 | 62.30 | MH-3 |
| 73 | 72 | 72.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 8.27 | 22.67 | 2.50 | 30 | 0.31 | 56.98 | 57.20 | 58.68 | 58.71 | 62.30 | 61.40 | OSC-1 |
| 74 | 67 | 10.000 | 0.06 | 0.24 | 0.95 | 0.06 | 0.23 | 6.0 | 7.9 | 7.4 | 1.68 | 4.34 | 4.81 | 8 | 12.90 | 55.71 | 57.00 | 58.25 | 58.44 | 59.00 | 0.00 | RF-25 |
| 75 | 74 | 152.000 | 0.06 | 0.12 | 0.95 | 0.06 | 0.11 | 6.0 | 6.9 | 7.8 | 0.89 | 1.20 | 2.56 | 8 | 0.99 | 57.00 | 58.50 | 58.98 | 59.81 | 0.00 | 0.00 | RF-27 |
| 76 | 75 | 75.000 | 0.06 | 0.06 | 0.95 | 0.06 | 0.06 | 6.0 | 6.0 | 8.4 | 0.48 | 1.71 | 2.11 | 8 | 2.00 | 58.50 | 60.00 | 59.96 | 60.32 | 0.00 | 0.00 | RF-26 |
| 77 | 74 | 73.000 | 0.06 | 0.06 | 0.95 | 0.06 | 0.06 | 6.0 | 6.0 | 8.4 | 0.48 | 1.41 | 1.36 | 8 | 1.37 | 57.00 | 58.00 | 58.98 | 59.09 | 0.00 | 0.00 | RF-24 |
| 78 | End | 42.000 | 0.17 | 0.60 | 0.84 | 0.14 | 0.51 | 6.0 | 9.2 | 6.8 | 3.46 | 20.35 | 1.10 | 24 | 0.81 | 56.45 | 56.79 | 59.12 | 59.13 | 0.00 | 61.20 | CB-20 |
| 79 | 78 | 87.000 | 0.12 | 0.12 | 0.80 | 0.10 | 0.10 | 6.0 | 6.0 | 8.4 | 0.80 | 9.88 | 0.45 | 18 | 0.89 | 56.89 | 57.66 | 59.17 | 59.17 | 61.20 | 61.40 | CB-21 |
| 80 | 78 | 104.000 | 0.31 | 0.31 | 0.87 | 0.27 | 0.27 | 6.0 | 6.0 | 8.4 | 2.25 | 9.98 | 1.30 | 18 | 0.90 | 56.89 | 57.83 | 59.17 | 59.21 | 61.20 | 61.30 | CB-19 |
| 81 | End | 28.000 | 0.18 | 0.84 | 0.85 | 0.15 | 0.69 | 6.0 | 7.6 | 7.5 | 5.20 | 7.43 | 3.01 | 18 | 0.50 | 58.00 | 58.14 | 59.47 | 59.52 | 0.00 | 61.90 | CB-18 |
| 82 | 81 | 56.000 | 0.39 | 0.66 | 0.73 | 0.28 | 0.54 | 6.0 | 7.2 | 7.7 | 4.16 | 9.52 | 3.48 | 18 | 0.82 | 58.24 | 58.70 | 59.59 | 59.48 | 61.90 | 61.30 | CB-17 |
| 83 | 82 | 42.000 | 0.00 | 0.27 | 0.00 | 0.00 | 0.26 | 0.0 | 7.1 | 7.8 | 1.99 | 1.21 | 5.70 | 8 | 1.00 | 58.80 | 59.22 | 59.48 | 60.62 | 61.30 | 0.00 | |
| 84 | 83 | 120.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.6 | 8.0 | 1.37 | 1.25 | 3.93 | 8 | 1.07 | 59.22 | 60.50 | 61.12 | 62.67 | 0.00 | 0.00 | RF-17 |
| 85 | 84 | 69.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.03 | 2.05 | 8 | 0.72 | 60.50 | 61.00 | 63.03 | 63.27 | 0.00 | 0.00 | RF-16 |
| 86 | 83 | 122.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.46 | 2.21 | 8 | 1.46 | 59.22 | 61.00 | 61.12 | 61.54 | 0.00 | 0.00 | RF-15 |
| 87 | End | 40.000 | 0.33 | 0.33 | 0.90 | 0.30 | 0.30 | 6.0 | 6.0 | 8.4 | 2.48 | 3.56 | 3.93 | 12 | 1.00 | 58.00 | 58.40 | 58.86 | 59.07 | 0.00 | 60.70 | CB-16 |
| 88 | End | 23.000 | 0.29 | 0.29 | 0.89 | 0.26 | 0.26 | 6.0 | 6.0 | 8.4 | 2.16 | 3.56 | 3.58 | 12 | 1.00 | 58.00 | 58.23 | 58.86 | 58.86 | 0.00 | 60.78 | CB-15 |
| 89 | End | 4.000 | 0.52 | 1.14 | 0.86 | 0.45 | 1.00 | 6.0 | 8.0 | 7.3 | 7.29 | 15.99 | 3.72 | 24 | 0.50 | 57.95 | 57.97 | 59.67 | 58.93 | 0.00 | 61.80 | CB-11 |
| 90 | 89 | 139.000 | 0.44 | 0.62 | 0.87 | 0.38 | 0.55 | 6.0 | 7.1 | 7.7 | 4.28 | 8.11 | 4.31 | 18 | 0.60 | 58.07 | 58.90 | 58.93 | 59.69 | 61.80 | 61.10 | CB-10 |
| 91 | 90 | 85.000 | 0.00 | 0.18 | 0.00 | 0.00 | 0.17 | 0.0 | 6.3 | 8.2 | 1.40 | 3.56 | 2.98 | 12 | 1.00 | 59.00 | 59.85 | 59.69 | 60.35 | 61.10 | 63.50 | |

Project File: 2010501-Storm Sewers New.stm

Number of lines: 126

Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 92 | 91 | 38.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.91 | 8 | 1.00 | 59.85 | 60.23 | 60.35 | 60.63 | 63.50 | 0.00 | RF-10 |
| 93 | 91 | 38.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 0.6 | 0.6 | 9.0 | 0.77 | 1.21 | 3.07 | 8 | 1.00 | 59.85 | 60.23 | 60.35 | 60.65 | 63.50 | 0.00 | RF-12 |
| 94 | End | 82.000 | 0.21 | 0.57 | 0.84 | 0.18 | 0.52 | 6.0 | 7.5 | 7.6 | 3.92 | 7.43 | 2.24 | 18 | 0.50 | 57.95 | 58.36 | 59.67 | 59.77 | 0.00 | 61.00 | CB-14 |
| 95 | 94 | 55.000 | 0.12 | 0.36 | 0.95 | 0.11 | 0.34 | 6.0 | 6.9 | 7.9 | 2.69 | 10.50 | 2.74 | 18 | 1.00 | 58.46 | 59.01 | 59.83 | 59.63 | 61.00 | 62.50 | RF-18C |
| 96 | 95 | 58.000 | 0.12 | 0.24 | 0.95 | 0.11 | 0.23 | 6.0 | 6.5 | 8.1 | 1.84 | 3.56 | 3.76 | 12 | 1.00 | 59.01 | 59.59 | 59.63 | 60.17 | 62.50 | 62.50 | RF-18B |
| 97 | 96 | 74.000 | 0.12 | 0.12 | 0.95 | 0.11 | 0.11 | 6.0 | 6.0 | 8.4 | 0.95 | 1.21 | 3.32 | 8 | 1.00 | 59.59 | 60.33 | 60.17 | 60.79 | 62.50 | 62.50 | RF-18A |
| 98 | End | 204.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 8.97 | 16.98 | 5.25 | 24 | 0.56 | 56.80 | 57.95 | 57.87 | 59.02 | 0.00 | 62.80 | OCS-3 |
| 99 | End | 9.000 | 0.00 | 0.81 | 0.00 | 0.00 | 0.51 | 0.0 | 7.6 | 7.5 | 3.82 | 3.56 | 5.34 | 12 | 1.00 | 67.55 | 67.64 | 68.38 | 68.52 | 0.00 | 72.31 | MH-12 |
| 100 | 99 | 12.000 | 0.25 | 0.25 | 0.85 | 0.21 | 0.21 | 6.0 | 6.0 | 8.4 | 1.78 | 3.56 | 2.26 | 12 | 1.00 | 67.74 | 67.86 | 68.94 | 68.97 | 72.31 | 71.10 | CB-31 |
| 101 | 99 | 131.000 | 0.56 | 0.56 | 0.53 | 0.30 | 0.30 | 6.0 | 6.0 | 8.4 | 2.48 | 10.50 | 2.71 | 18 | 1.00 | 67.74 | 69.05 | 68.94 | 69.65 | 72.31 | 71.60 | CB-30 |
| 102 | End | 120.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.6 | 8.0 | 1.37 | 1.21 | 3.92 | 8 | 1.00 | 67.55 | 68.75 | 68.36 | 69.90 | 0.00 | 0.00 | RF-46 |
| 103 | 102 | 72.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.05 | 8 | 1.00 | 68.75 | 69.47 | 70.26 | 70.51 | 0.00 | 0.00 | RF-47 |
| 104 | End | 20.000 | 0.09 | 0.18 | 0.95 | 0.09 | 0.17 | 6.0 | 6.6 | 8.0 | 1.37 | 1.21 | 3.93 | 8 | 1.00 | 67.55 | 67.75 | 68.36 | 68.62 | 0.00 | 0.00 | RF-44 |
| 105 | 104 | 70.000 | 0.09 | 0.09 | 0.95 | 0.09 | 0.09 | 6.0 | 6.0 | 8.4 | 0.71 | 1.21 | 2.25 | 8 | 1.00 | 67.75 | 68.45 | 68.74 | 68.97 | 0.00 | 0.00 | RF-45 |
| 106 | End | 7.000 | 0.00 | 0.45 | 0.00 | 0.00 | 0.27 | 0.0 | 6.1 | 8.3 | 2.24 | 3.56 | 3.76 | 12 | 1.00 | 67.55 | 67.62 | 68.36 | 68.26 | 0.00 | 71.20 | MH-11 |
| 107 | 106 | 13.000 | 0.45 | 0.45 | 0.60 | 0.27 | 0.27 | 6.0 | 6.0 | 8.4 | 2.26 | 3.56 | 4.52 | 12 | 1.00 | 67.72 | 67.85 | 68.30 | 68.49 | 71.20 | 70.70 | CB-32 |
| 108 | End | 30.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 2.72 | 65.94 | 3.67 | 24 | 8.50 | 65.00 | 67.55 | 65.57 | 68.12 | 0.00 | 72.20 | OCS-6 |
| 109 | End | 83.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 4.51 | 3.27 | 5.93 | 12 | 0.84 | 57.80 | 58.50 | 58.69 | 60.01 | 0.00 | 60.30 | OCS-7 |
| 110 | End | 19.000 | 0.02 | 0.04 | 0.95 | 0.02 | 0.04 | 6.0 | 7.2 | 7.7 | 0.29 | 3.97 | 1.64 | 8 | 10.79 | 57.95 | 60.00 | 59.67 | 60.25 | 0.00 | 0.00 | RF-38A |
| 111 | 110 | 33.000 | 0.02 | 0.02 | 0.95 | 0.02 | 0.02 | 6.0 | 6.0 | 8.4 | 0.16 | 2.97 | 1.69 | 8 | 6.06 | 60.00 | 62.00 | 60.25 | 62.18 | 0.00 | 0.00 | RF-38B |
| 112 | End | 7.000 | 0.02 | 0.04 | 0.95 | 0.02 | 0.04 | 6.0 | 6.7 | 7.9 | 0.30 | 6.54 | 1.67 | 8 | 29.29 | 57.95 | 60.00 | 59.67 | 60.25 | 0.00 | 0.00 | RF-39A |
| 113 | 112 | 19.000 | 0.02 | 0.02 | 0.95 | 0.02 | 0.02 | 6.0 | 6.0 | 8.4 | 0.16 | 2.77 | 1.67 | 8 | 5.26 | 60.00 | 61.00 | 60.25 | 61.18 | 0.00 | 0.00 | RF-39B |

Project File: 2010501-Storm Sewers New.stm | Number of lines: 126 | Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 114 | End | 18.000 | 0.02 | 0.04 | 0.95 | 0.02 | 0.04 | 6.0 | 6.7 | 8.0 | 0.30 | 2.92 | 0.87 | 8 | 5.83 | 57.95 | 59.00 | 59.67 | 59.68 | 0.00 | 0.00 | RF-39C |
| 115 | 114 | 18.000 | 0.02 | 0.02 | 0.95 | 0.02 | 0.02 | 6.0 | 6.0 | 8.4 | 0.16 | 4.03 | 1.25 | 8 | 11.11 | 59.00 | 61.00 | 59.70 | 61.18 | 0.00 | 0.00 | RF-39D |
| 116 | End | 9.000 | 0.41 | 0.98 | 0.92 | 0.38 | 0.90 | 6.0 | 8.1 | 7.3 | 6.50 | 30.57 | 3.13 | 30 | 0.56 | 57.95 | 58.00 | 59.67 | 58.84 | 0.00 | 61.50 | CB-12 |
| 117 | 116 | 76.000 | 0.21 | 0.57 | 0.84 | 0.18 | 0.52 | 6.0 | 7.5 | 7.5 | 3.89 | 6.37 | 3.78 | 18 | 0.37 | 58.10 | 58.38 | 58.95 | 59.23 | 61.50 | 61.00 | CB-13 |
| 118 | 117 | 34.000 | 0.12 | 0.36 | 0.95 | 0.11 | 0.34 | 6.0 | 7.4 | 7.6 | 2.60 | 6.46 | 3.92 | 12 | 3.29 | 58.38 | 59.50 | 59.34 | 60.19 | 61.00 | 62.50 | RF-19A |
| 119 | 118 | 50.000 | 0.12 | 0.24 | 0.95 | 0.11 | 0.23 | 6.0 | 7.0 | 7.8 | 1.77 | 3.56 | 3.46 | 12 | 1.00 | 59.50 | 60.00 | 60.19 | 60.57 | 62.50 | 62.50 | RF-19B |
| 120 | 119 | 75.000 | 0.12 | 0.12 | 0.95 | 0.11 | 0.11 | 6.0 | 6.0 | 8.4 | 0.95 | 3.56 | 2.61 | 12 | 1.00 | 60.00 | 60.75 | 60.57 | 61.16 | 62.50 | 62.50 | RF-19C |
| 121 | End | 41.898 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.7 | 0.0 | 3.51 | 59.19 | 3.64 | 36 | 0.79 | 52.80 | 53.13 | 53.38 | 53.71 | 0.00 | 61.20 | |
| 122 | 121 | 25.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 2.27 | 15.72 | 4.50 | 12 | 19.48 | 53.13 | 58.00 | 53.71 | 58.64 | 61.20 | 61.30 | OCS-5 |
| 123 | 121 | 64.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 1.24 | 9.82 | 3.01 | 12 | 7.61 | 53.13 | 58.00 | 53.71 | 58.47 | 61.20 | 61.10 | OCS-4 |
| 124 | End | 15.255 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 1.7 | 0.0 | 12.35 | 42.17 | 7.46 | 18 | 16.13 | 52.74 | 55.20 | 54.07 | 56.53 | 0.00 | 60.00 | |
| 125 | 124 | 15.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 1.6 | 0.0 | 12.35 | 38.51 | 4.17 | 36 | 0.33 | 55.20 | 55.25 | 56.53 | 56.54 | 60.00 | 59.00 | |
| 126 | 125 | 165.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 12.35 | 38.51 | 4.03 | 36 | 0.33 | 55.25 | 55.80 | 56.81 | 56.99 | 59.00 | 59.00 | MH-7 |

Project File: 2010501-Storm Sewers New.stm

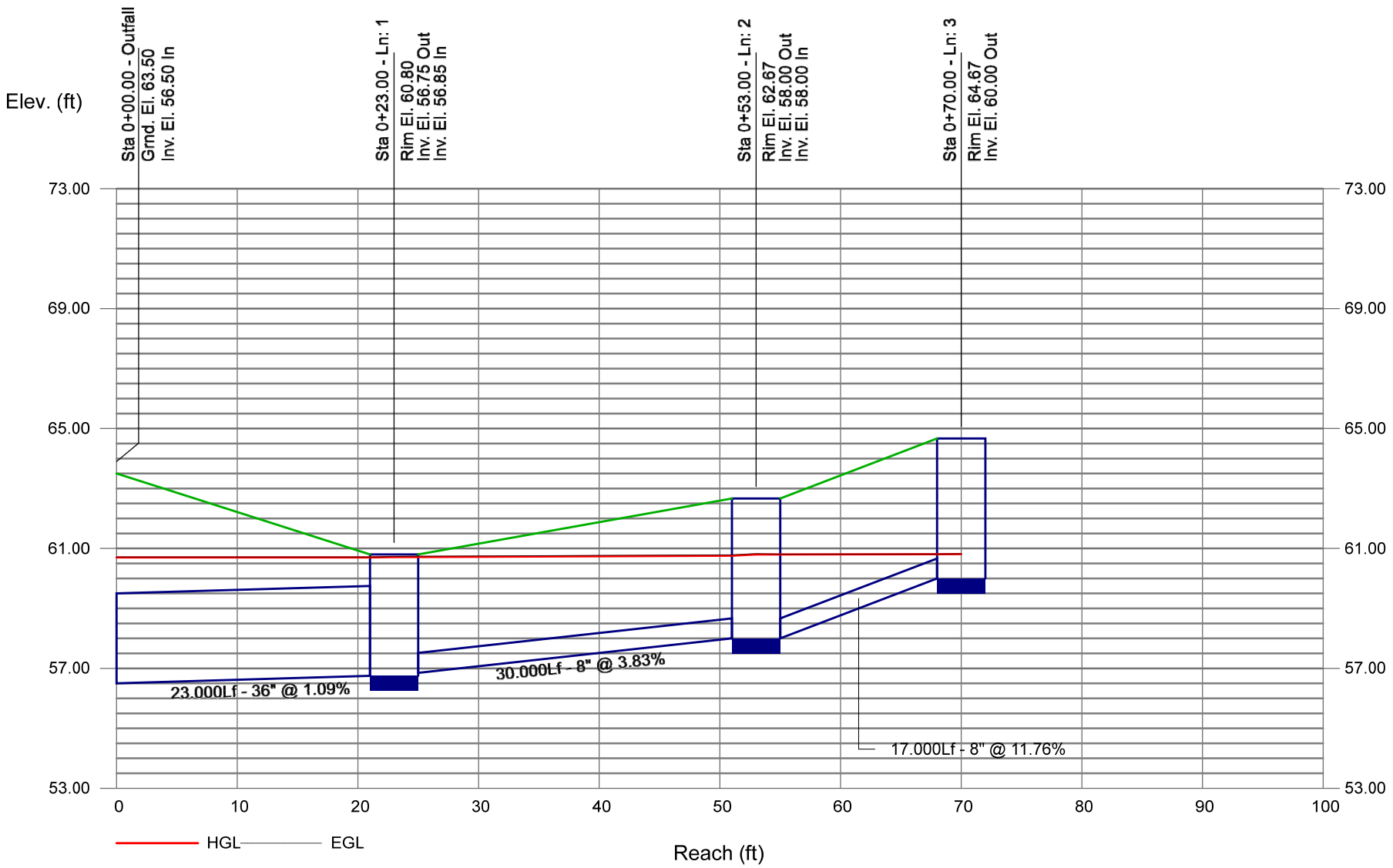
Number of lines: 126

Run Date: 4/13/2023

NOTES:Intensity = 41.90 / (Inlet time + 3.60) ^ 0.71; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Profile

Proj. file: 2010501-Storm Sewers New.stm



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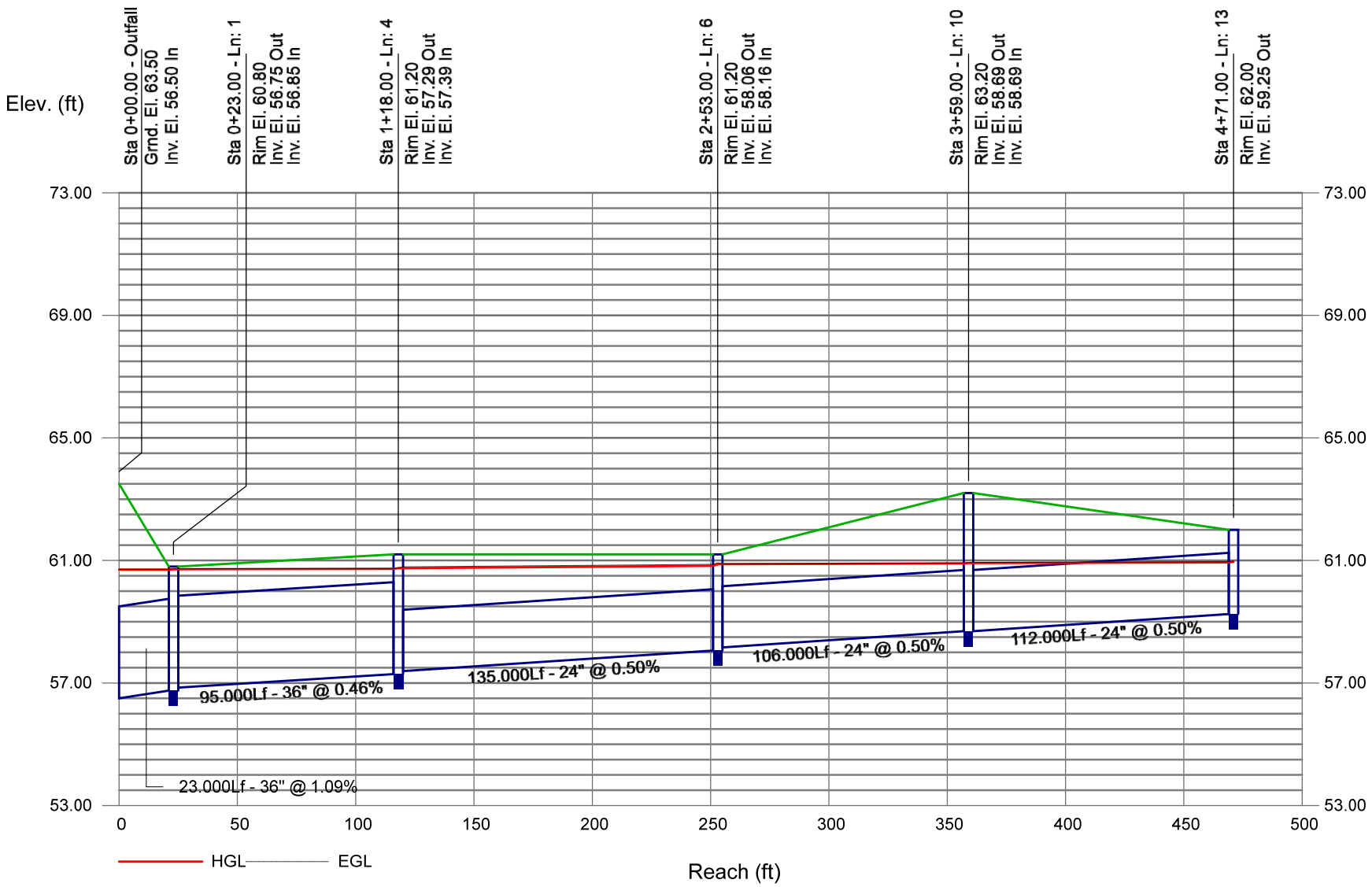

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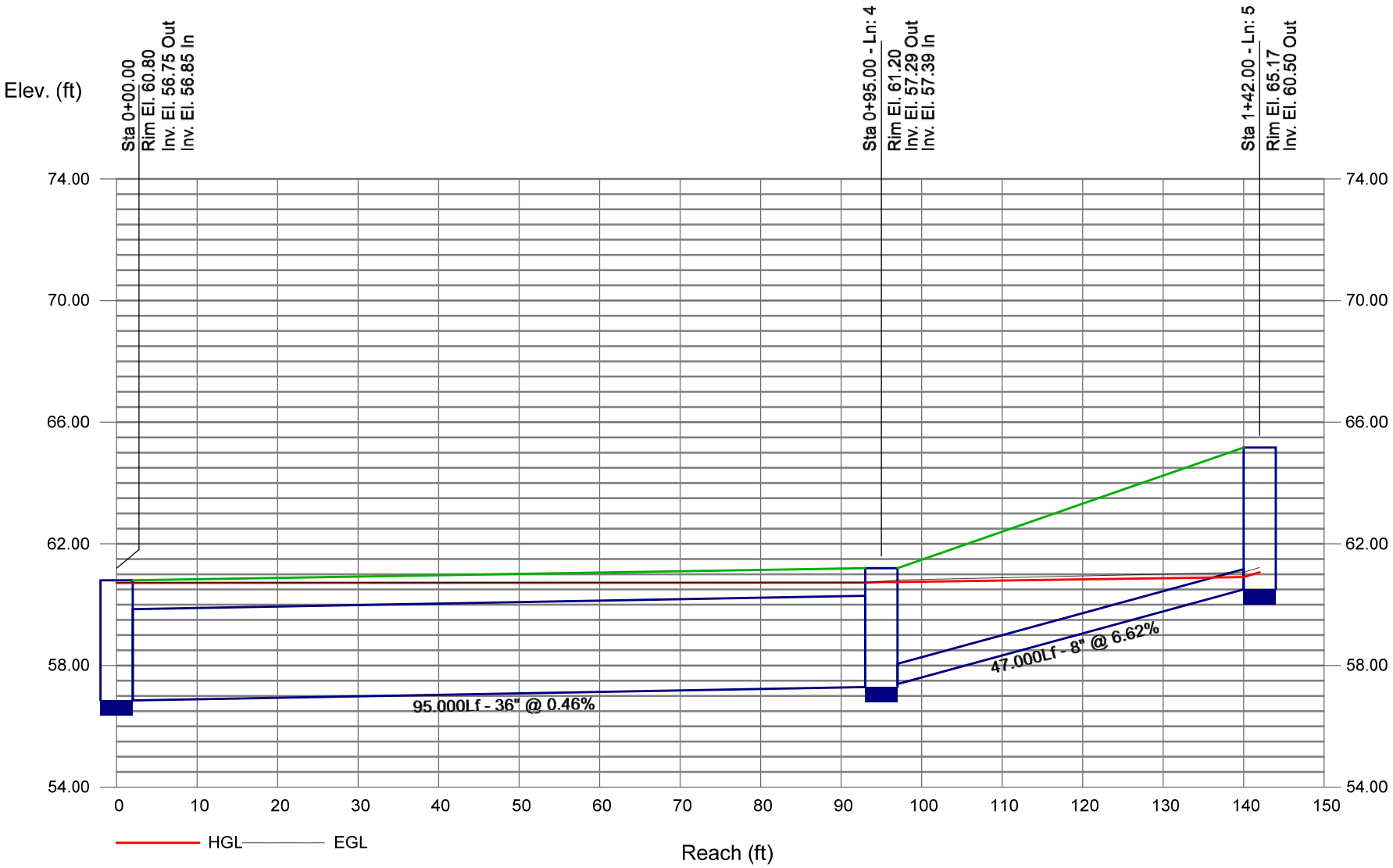

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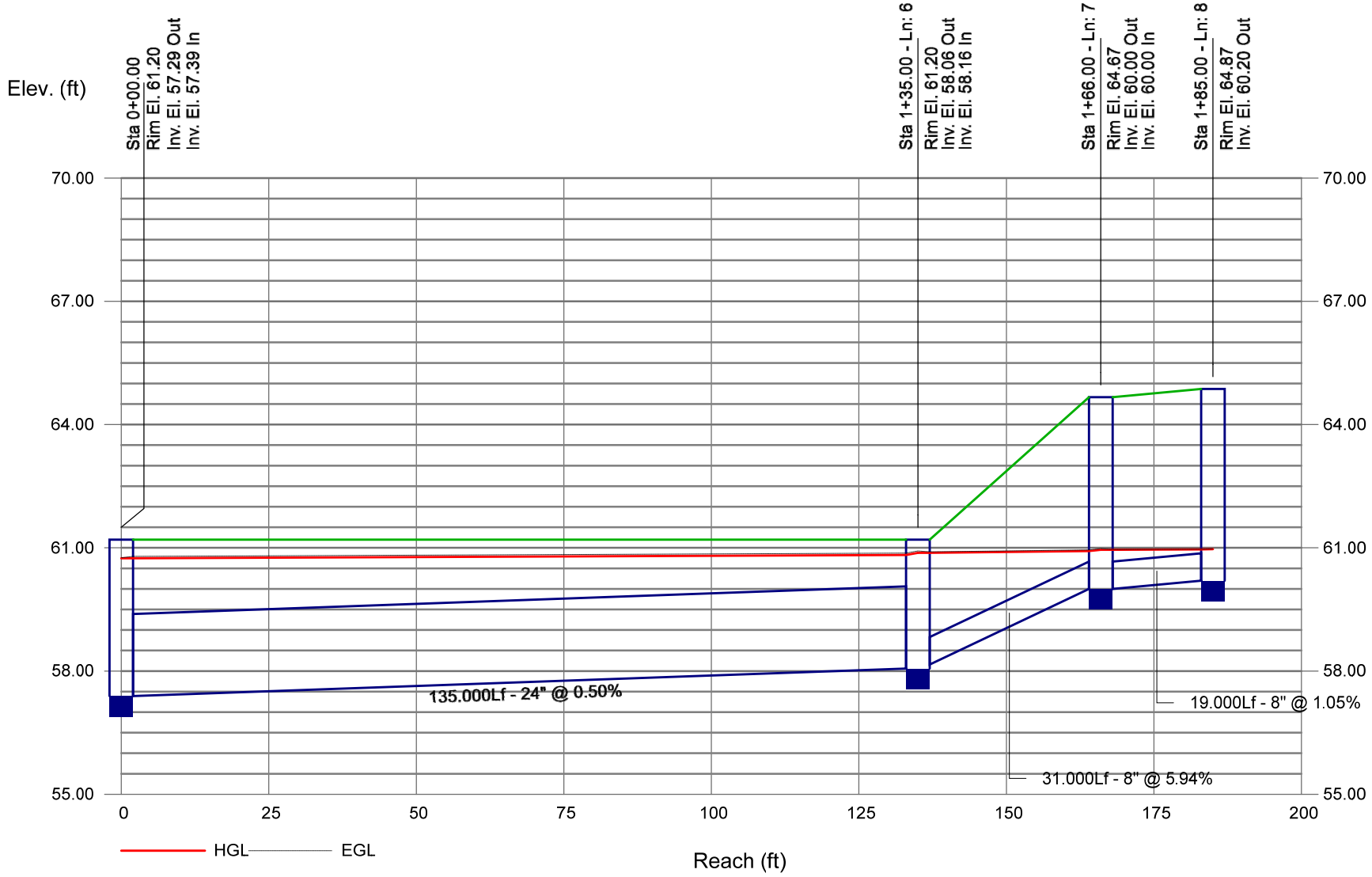

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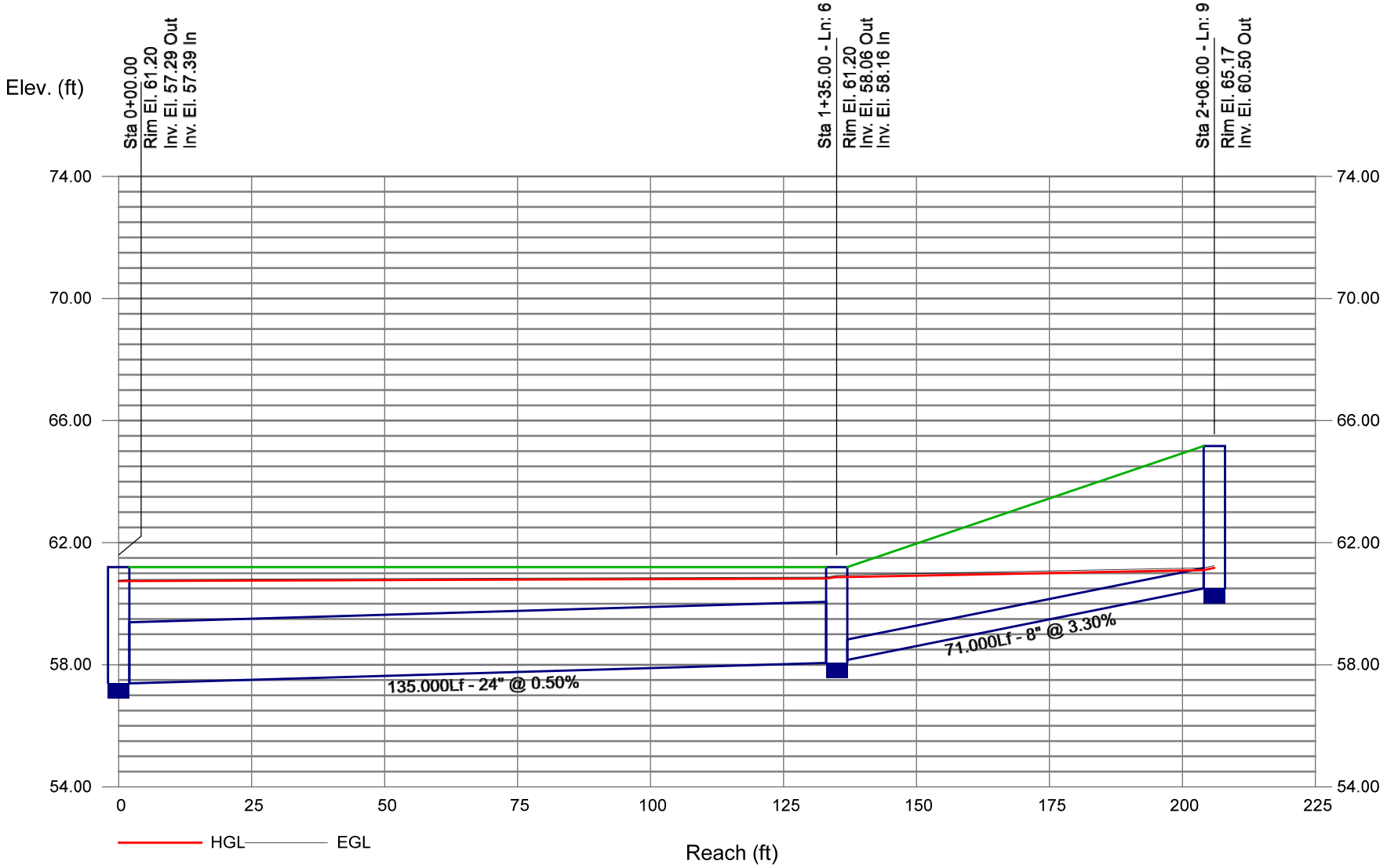

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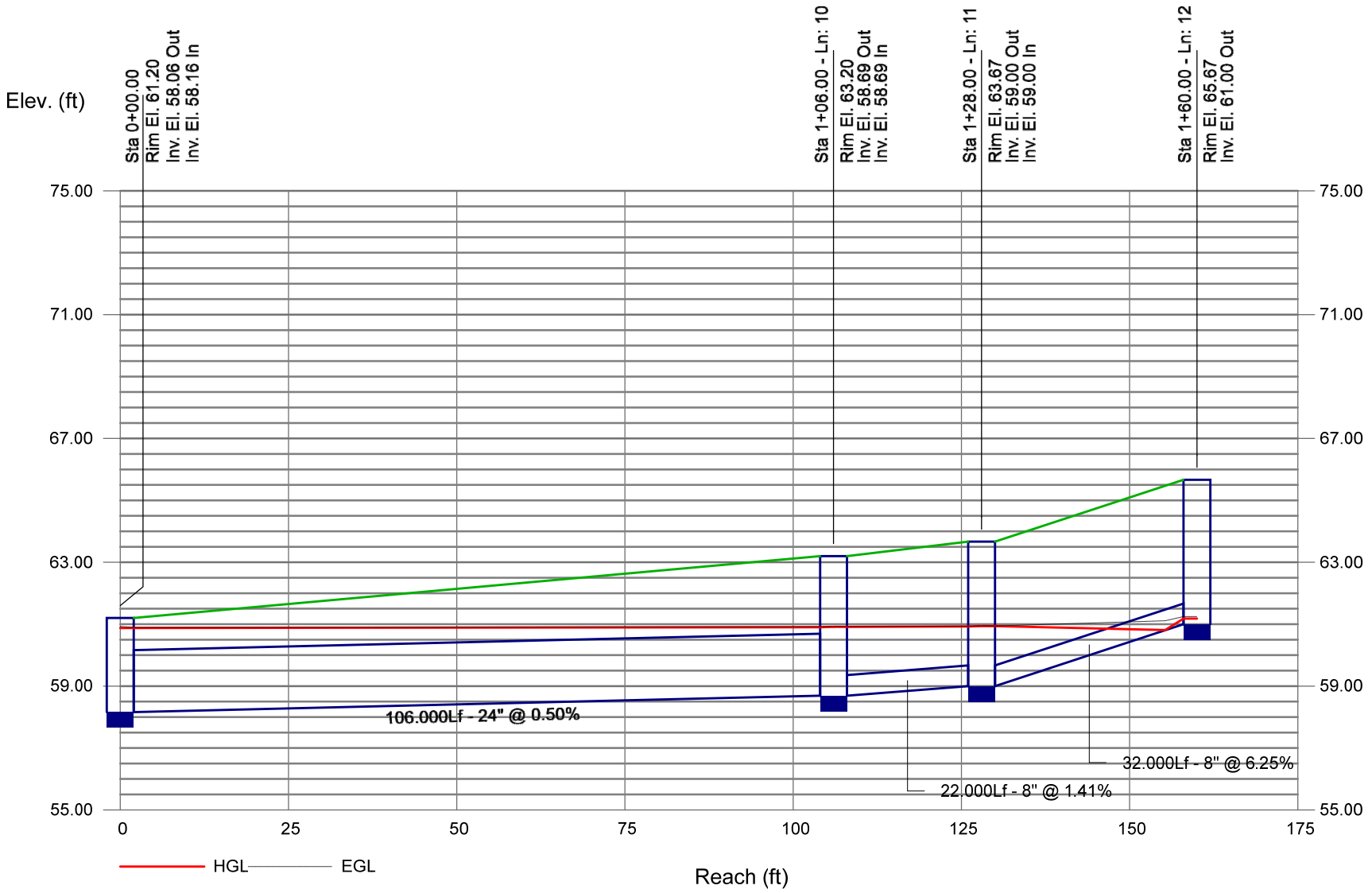

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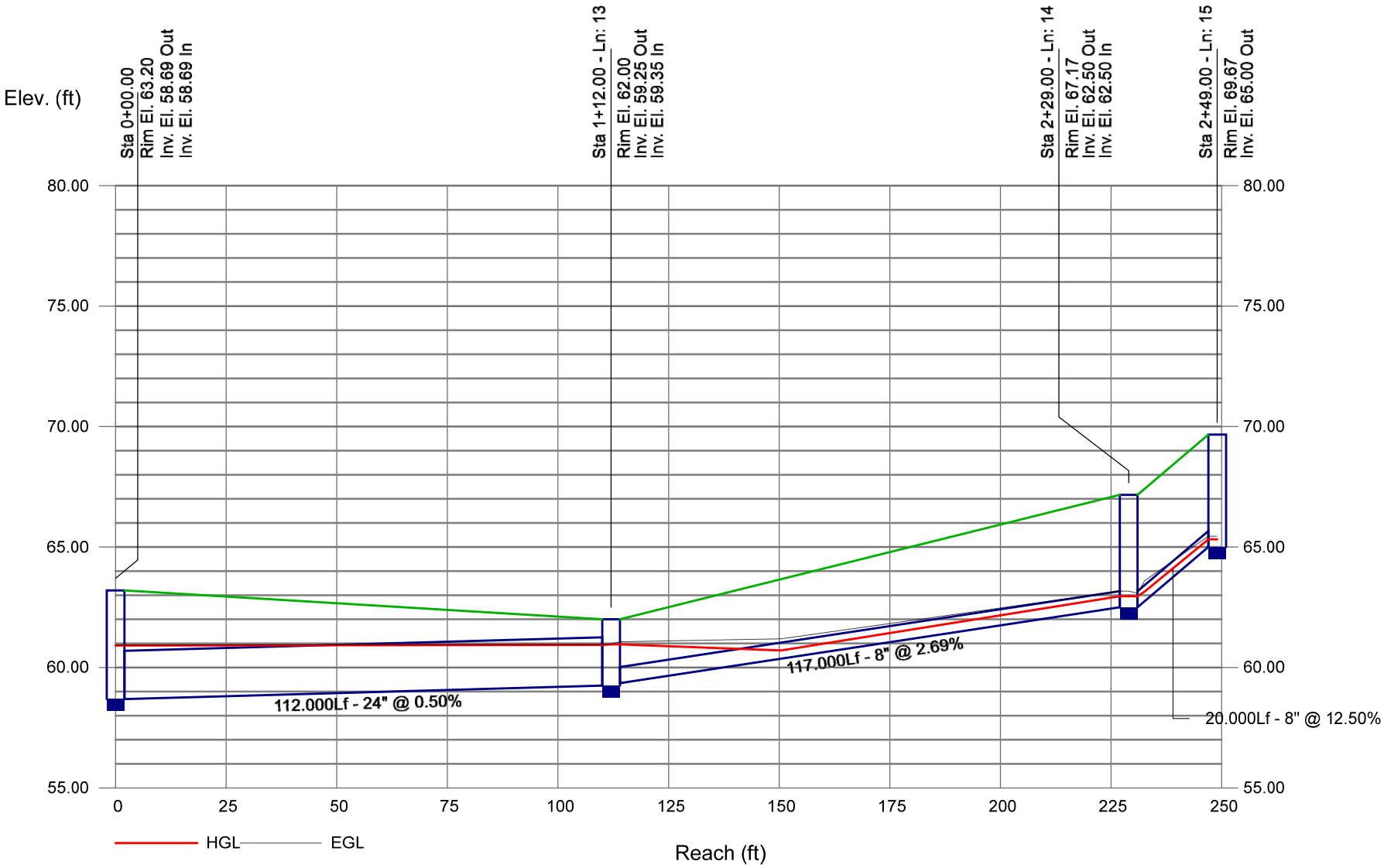

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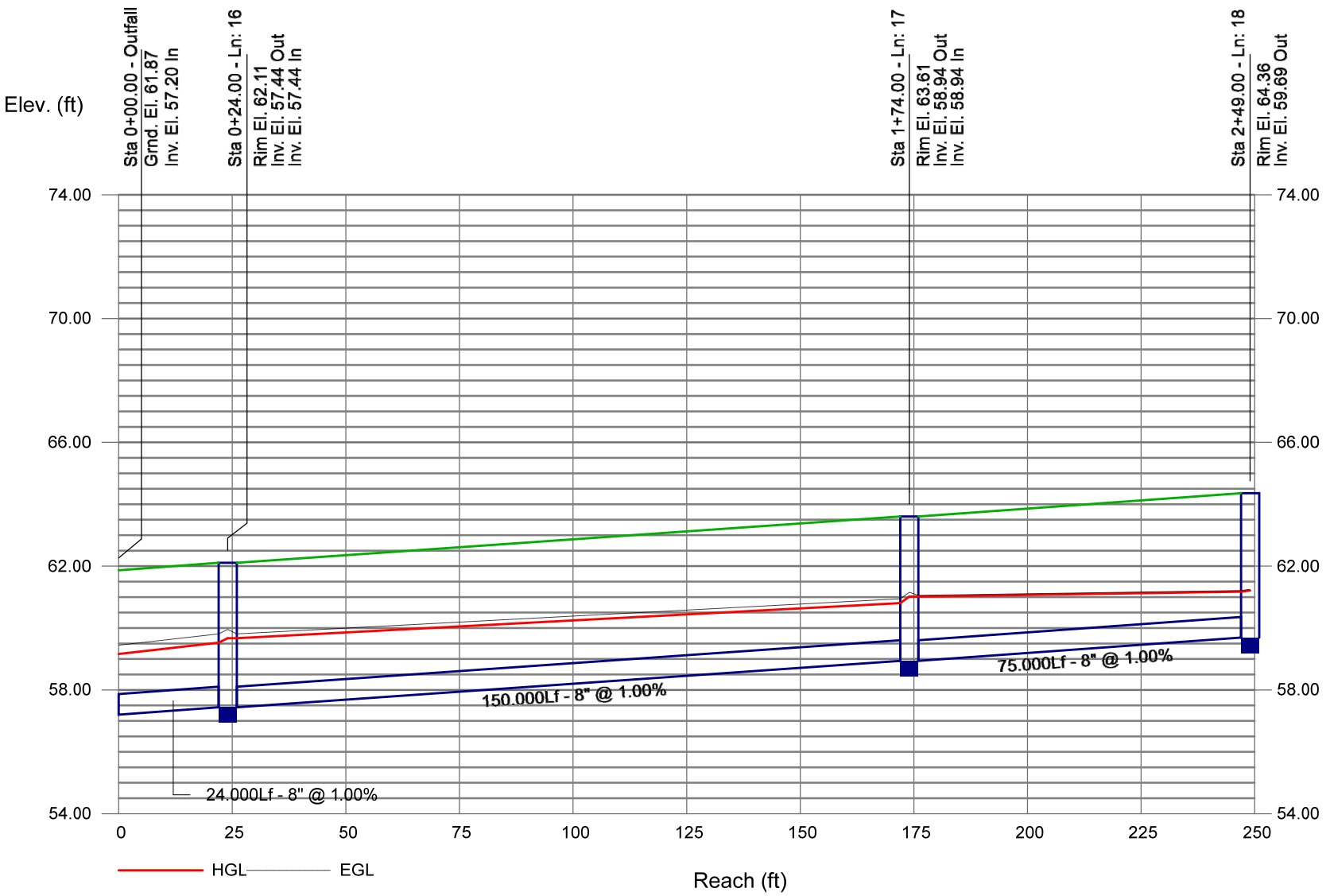

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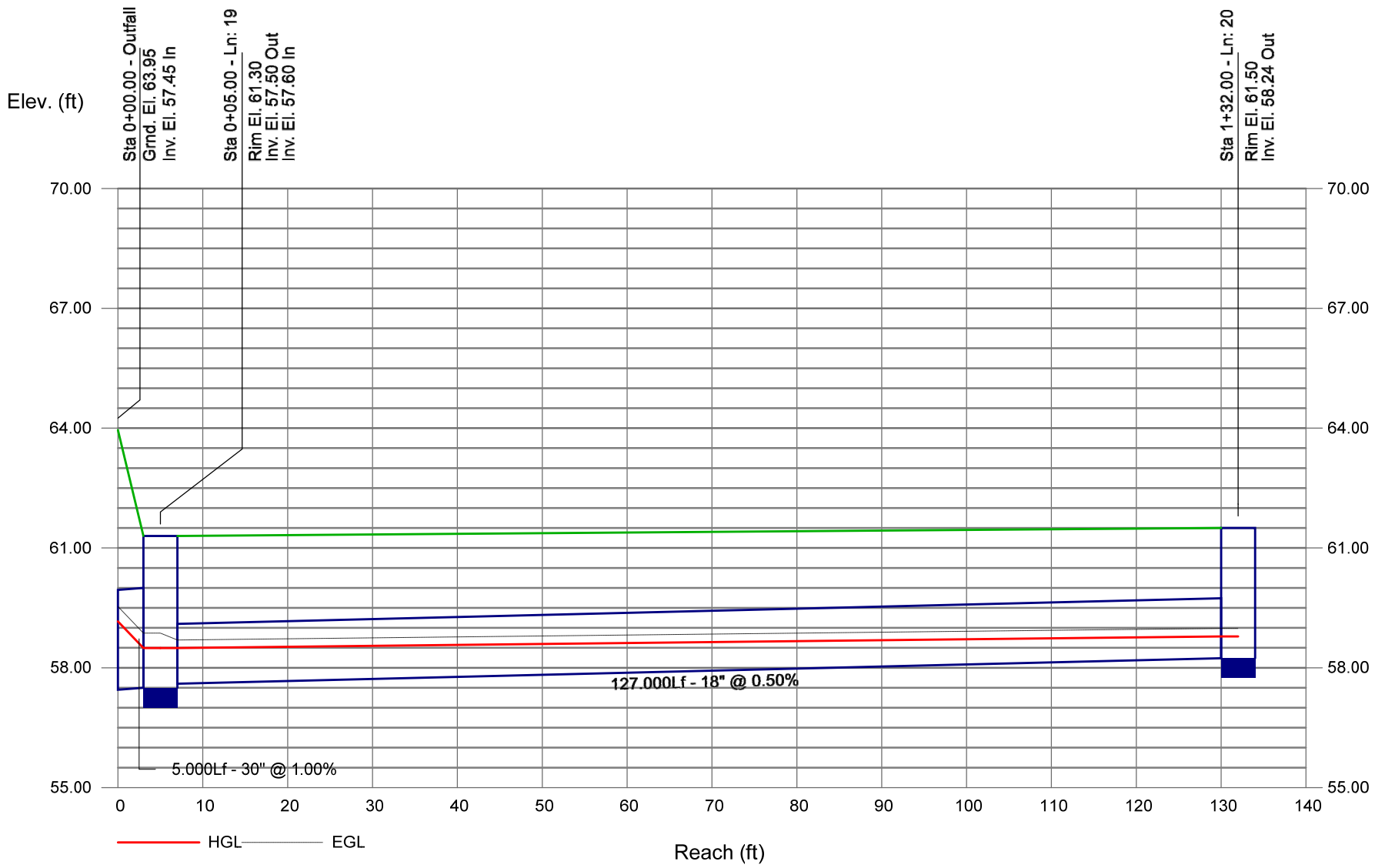

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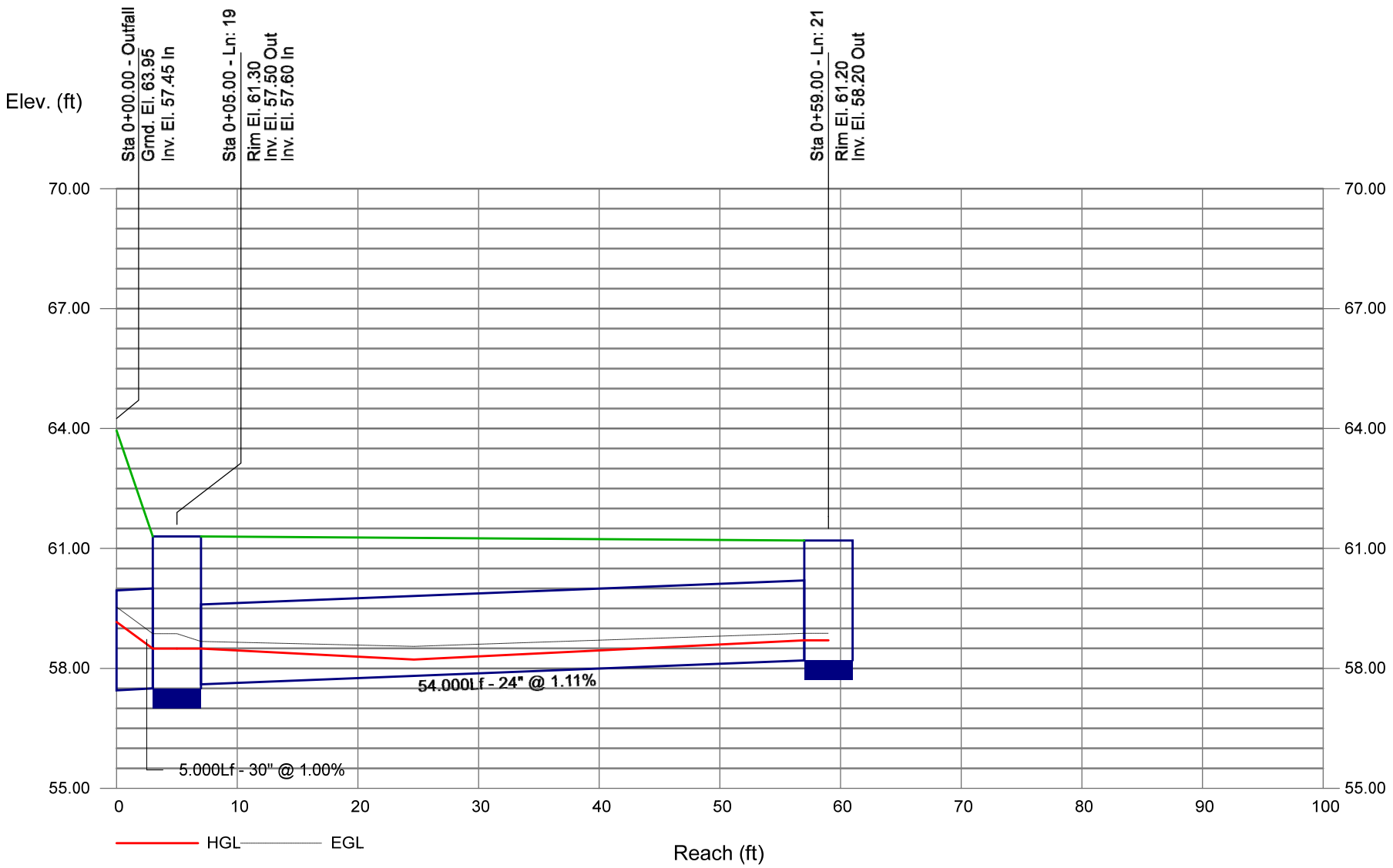

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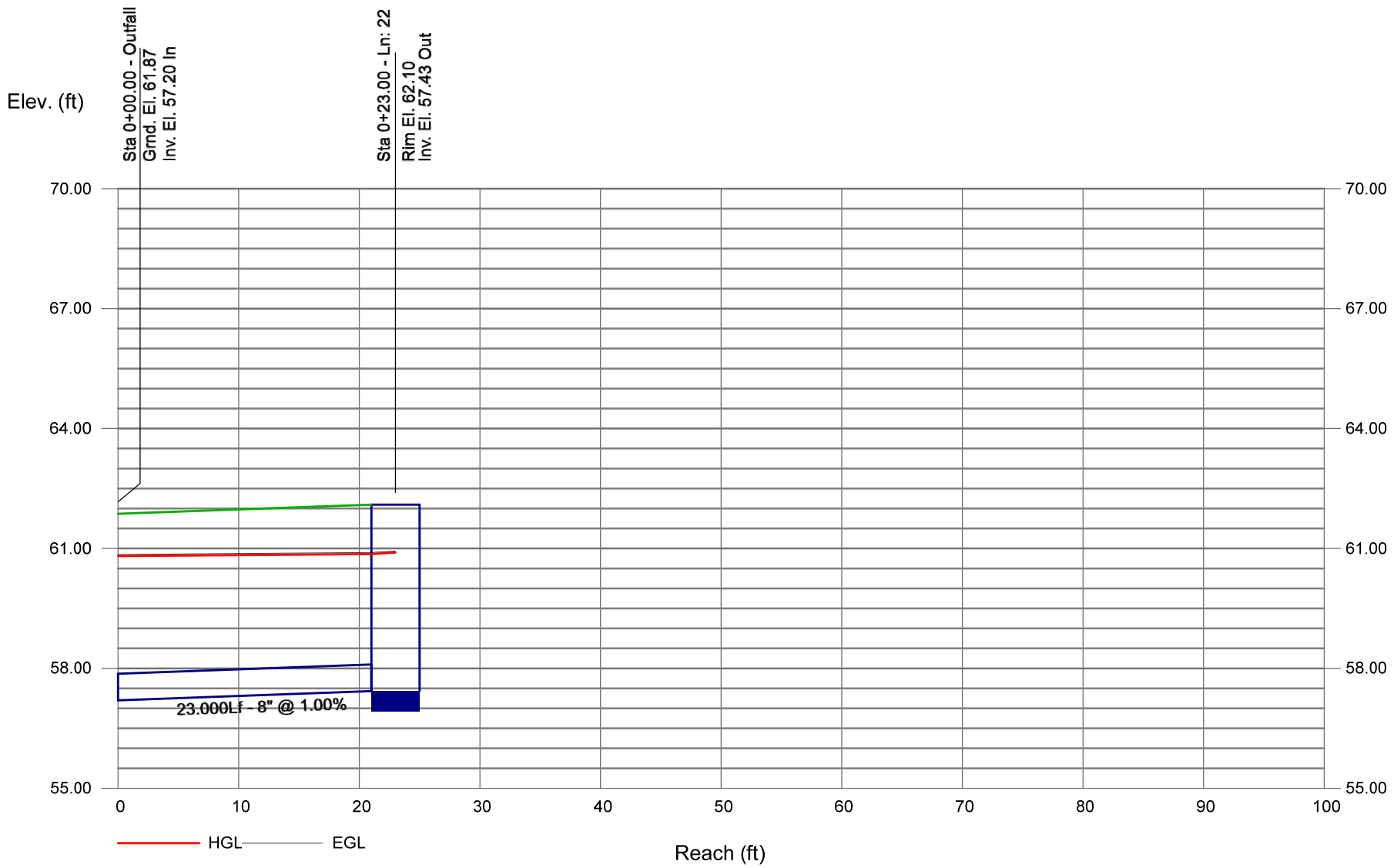

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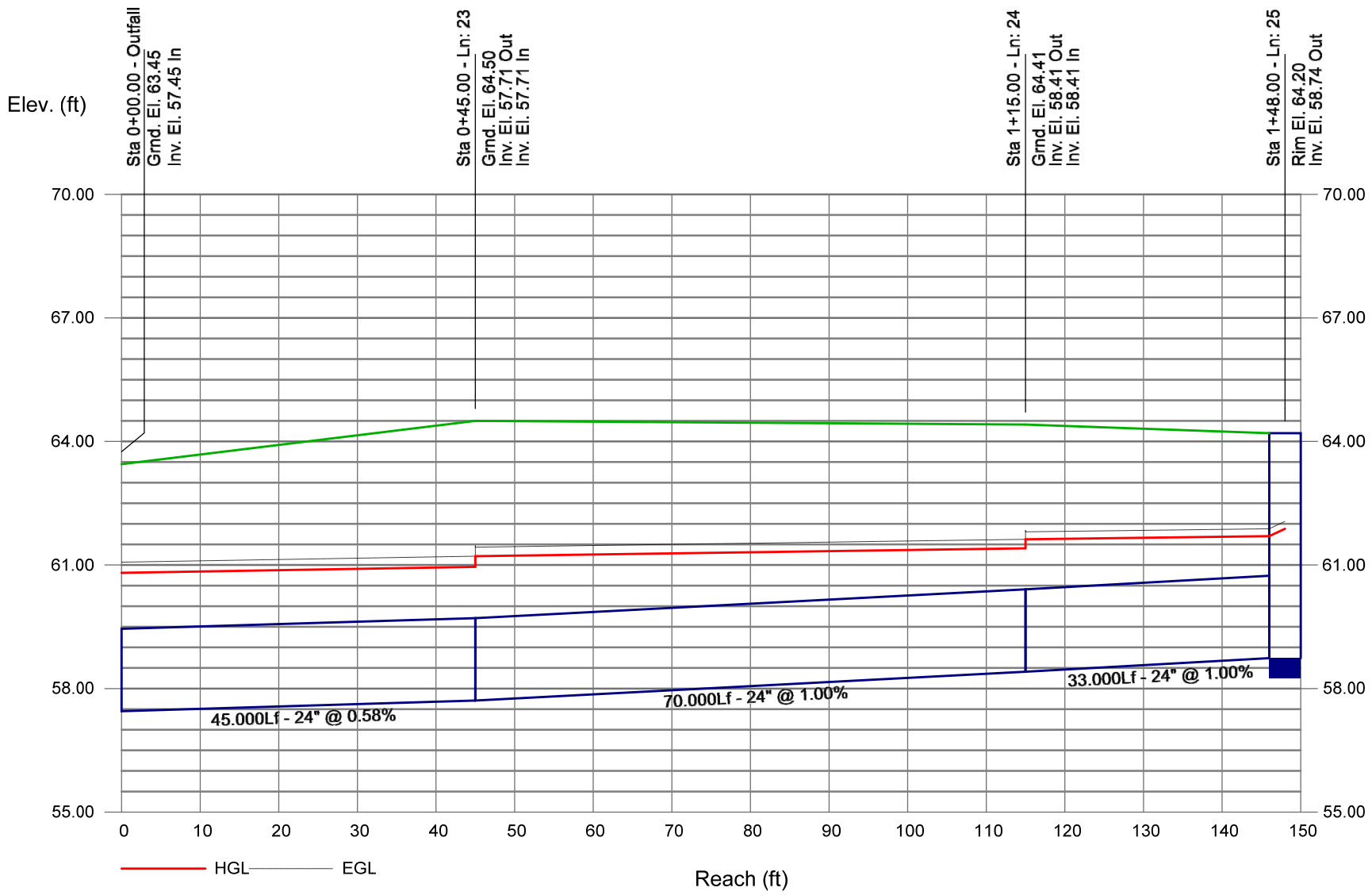

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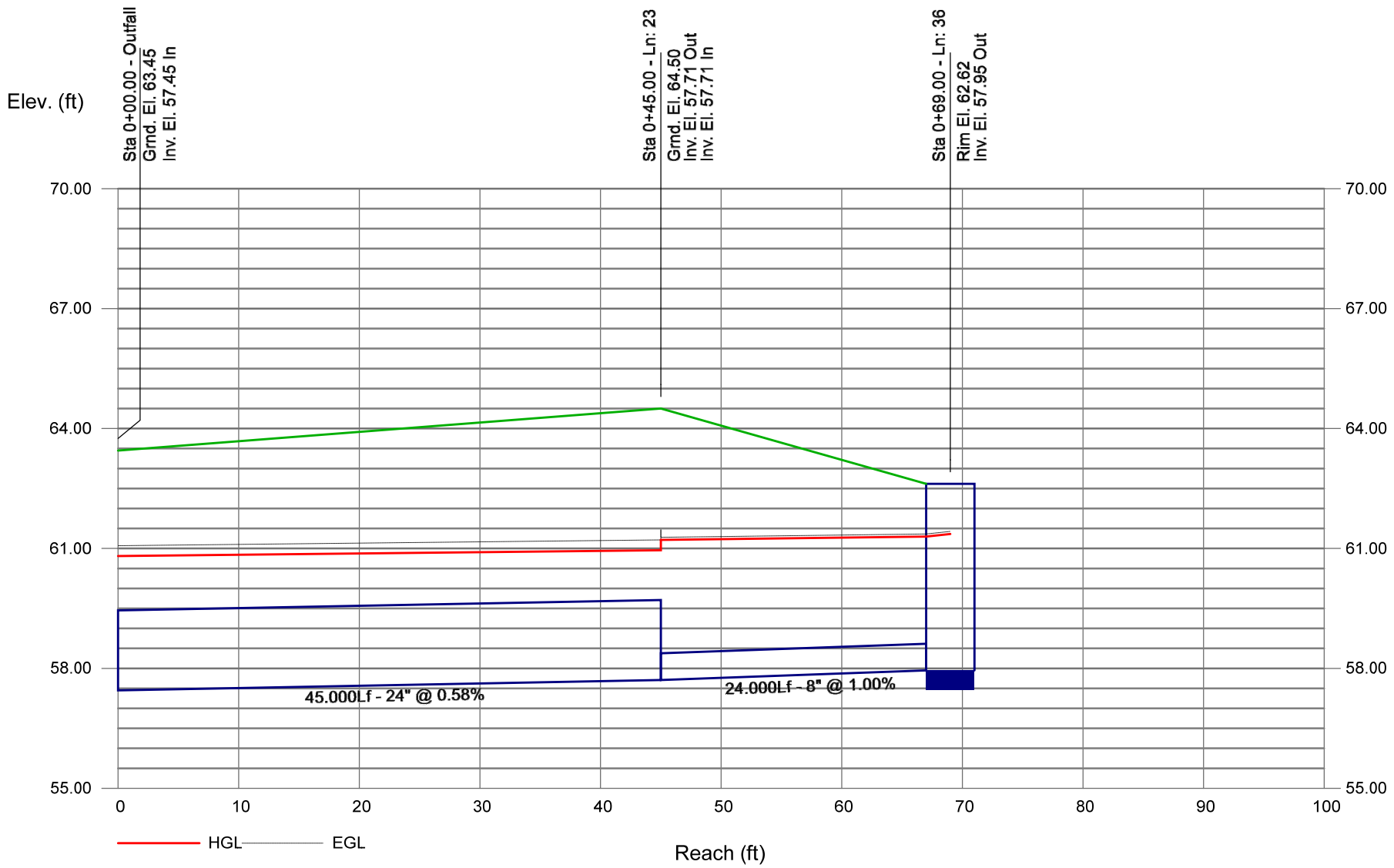

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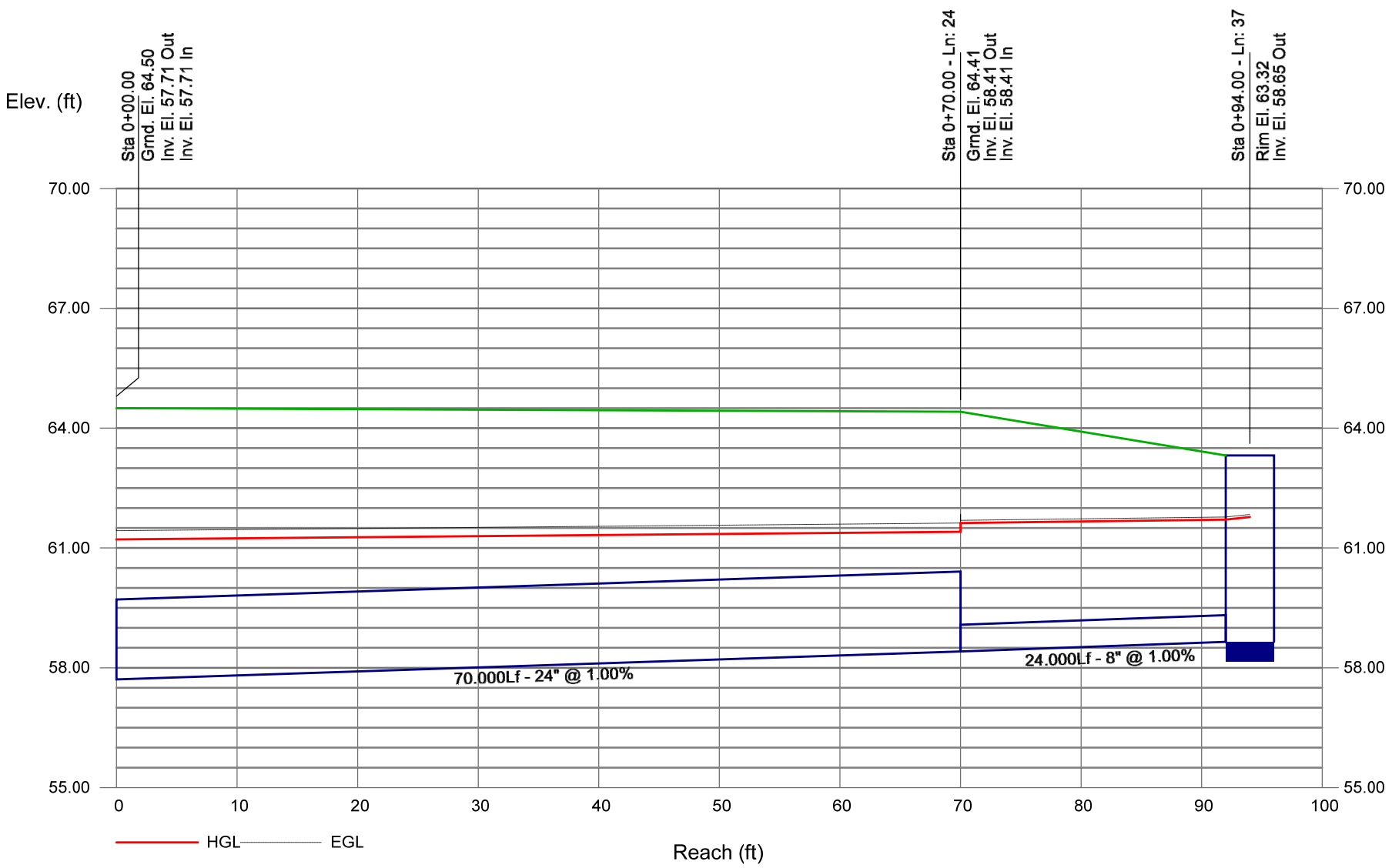

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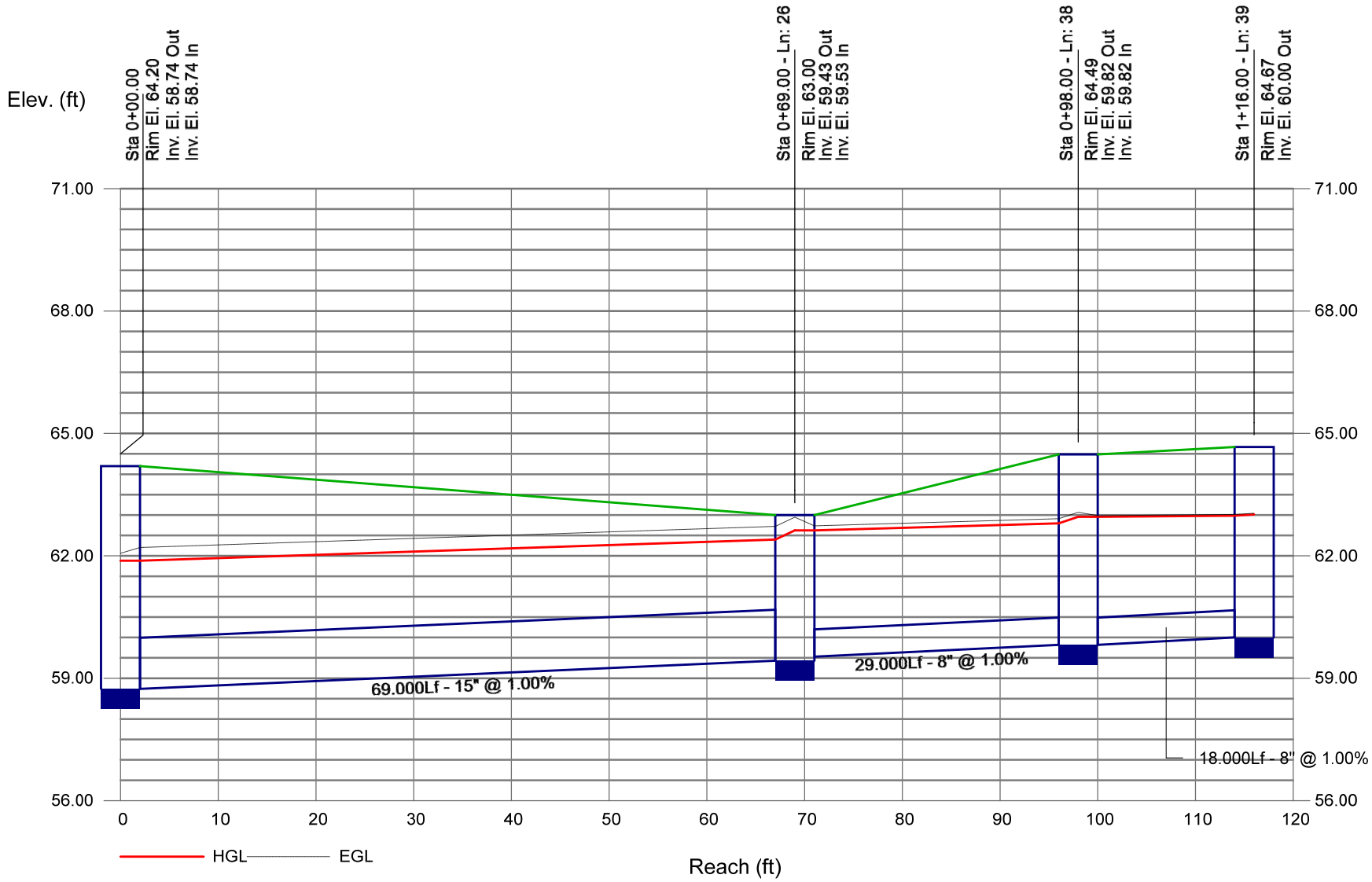

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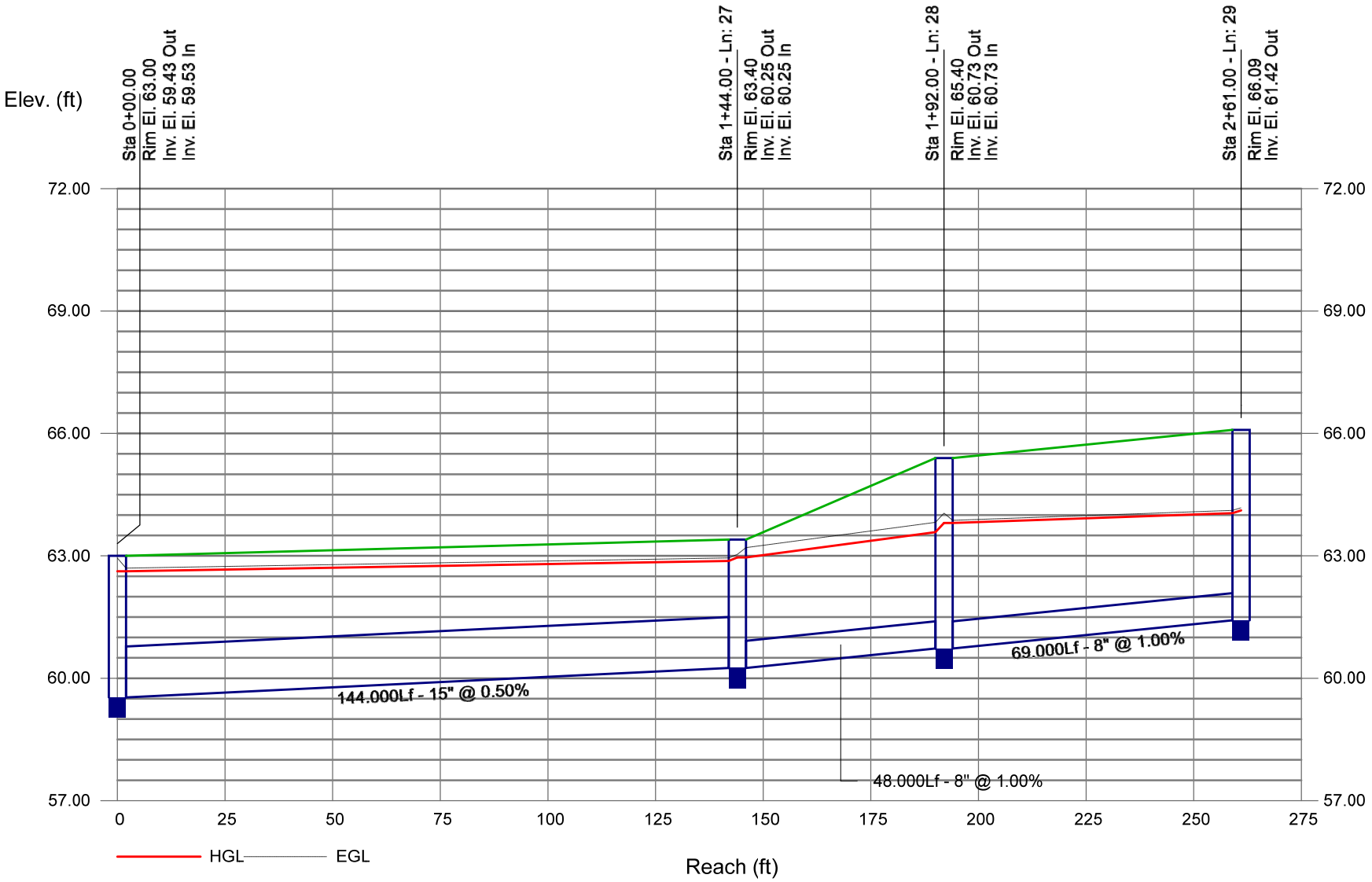

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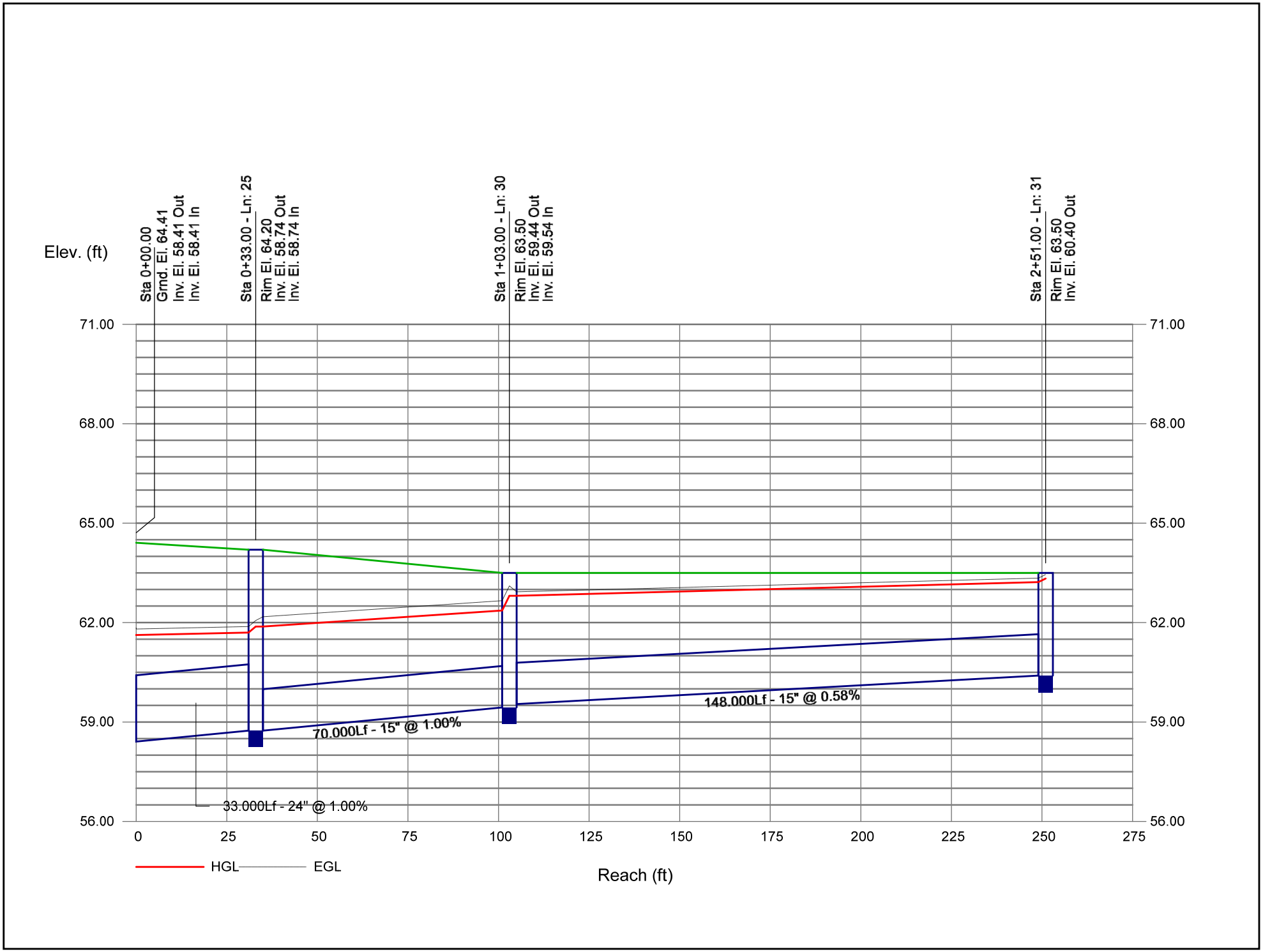

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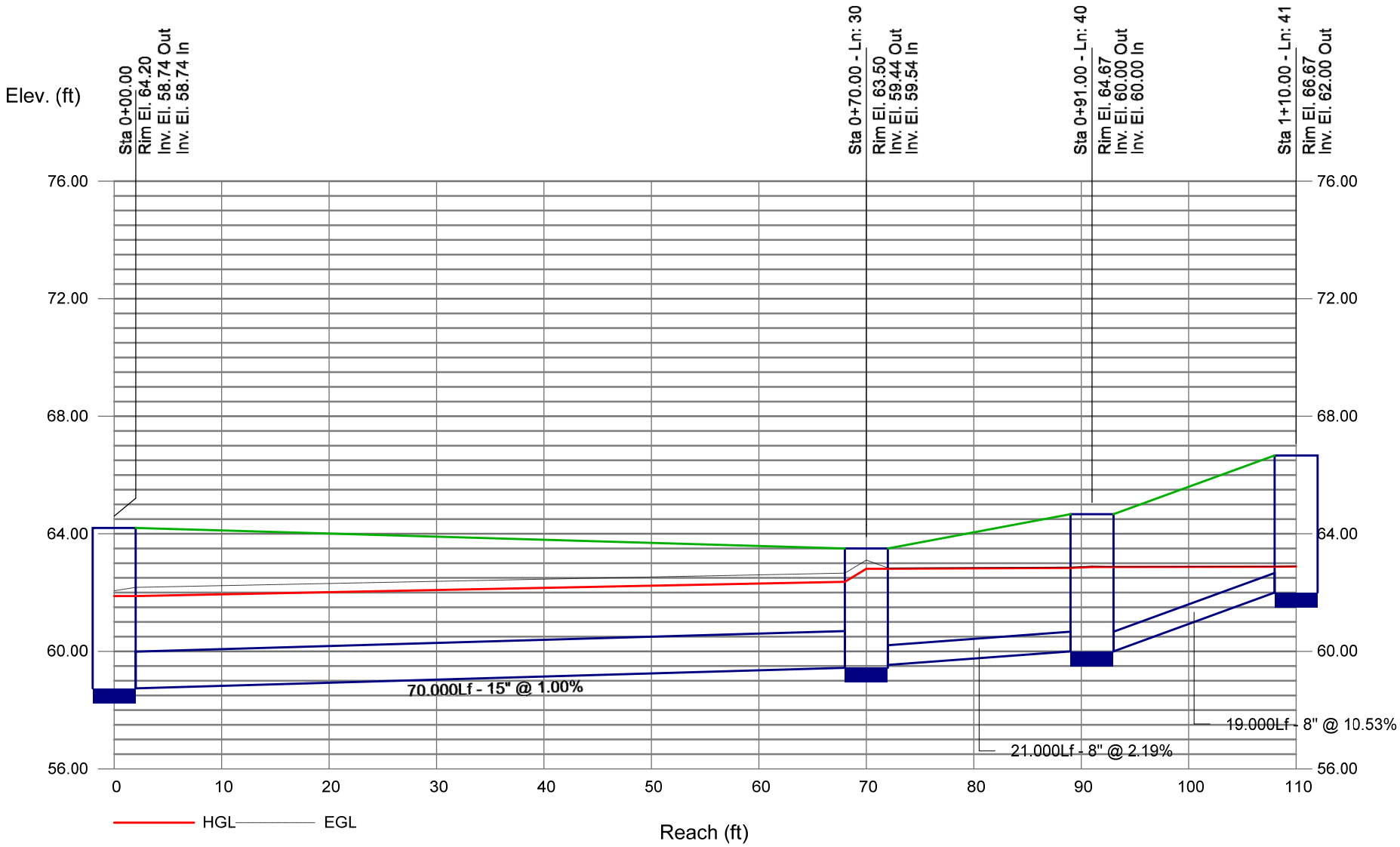

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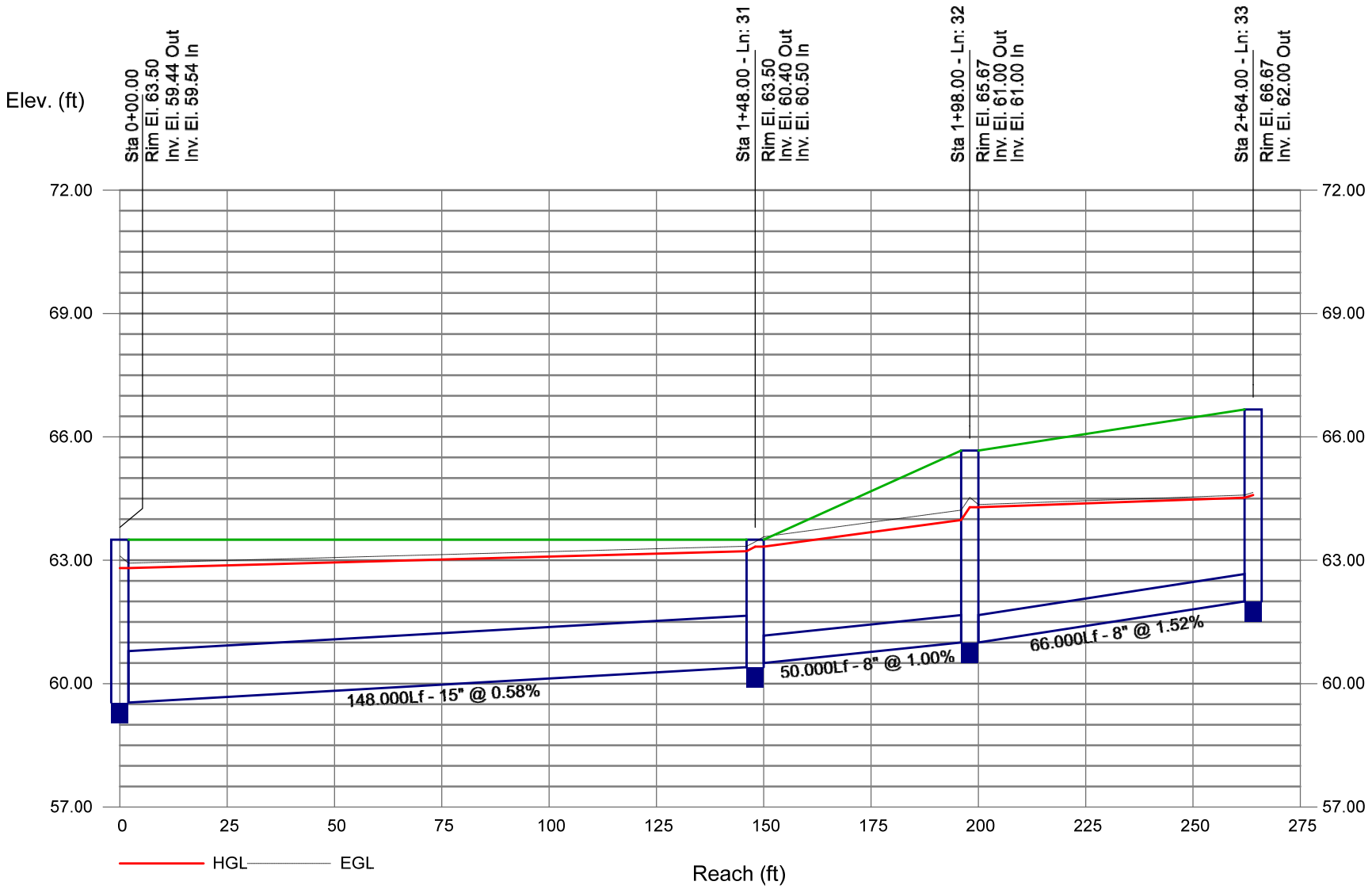

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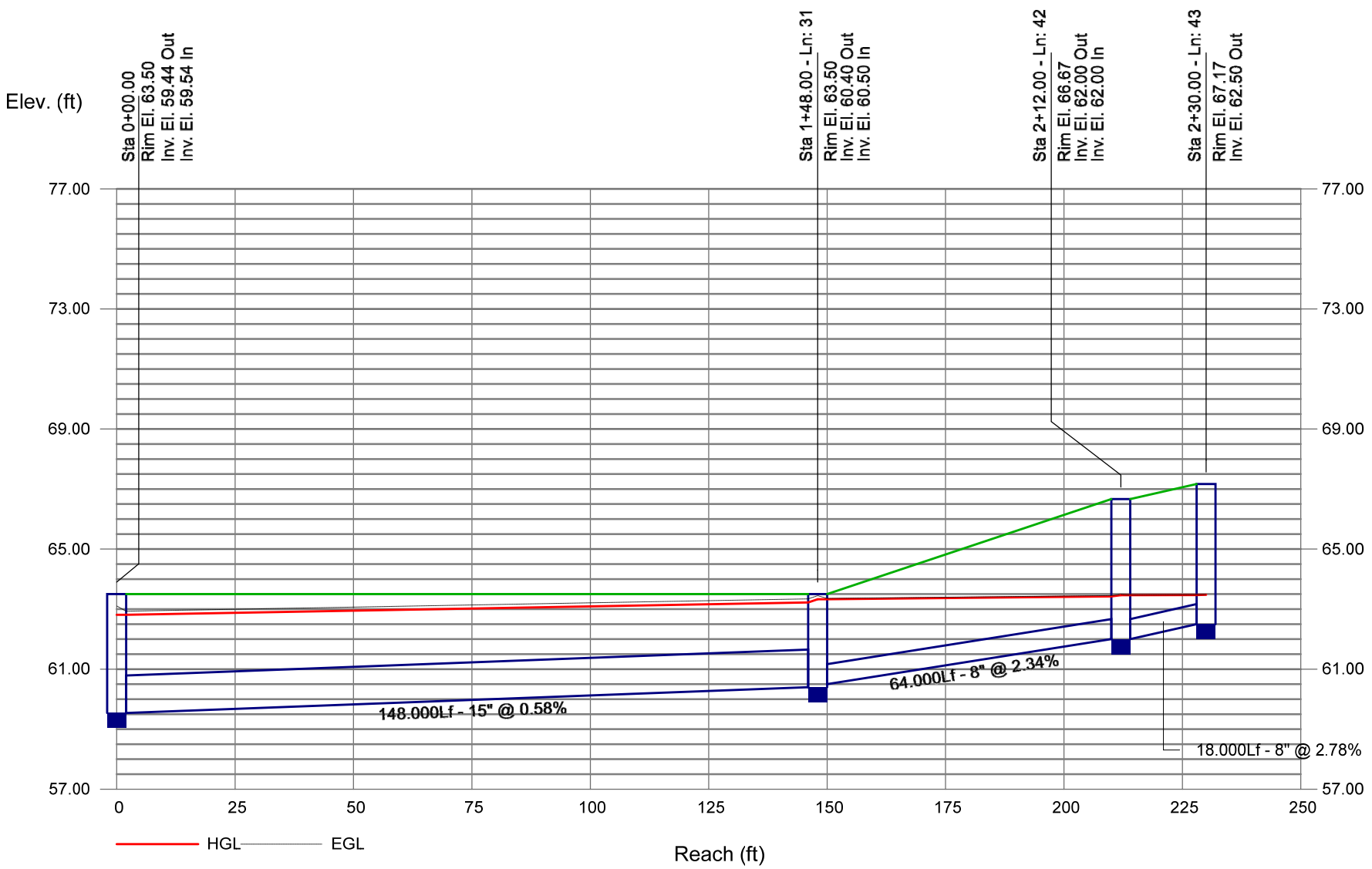

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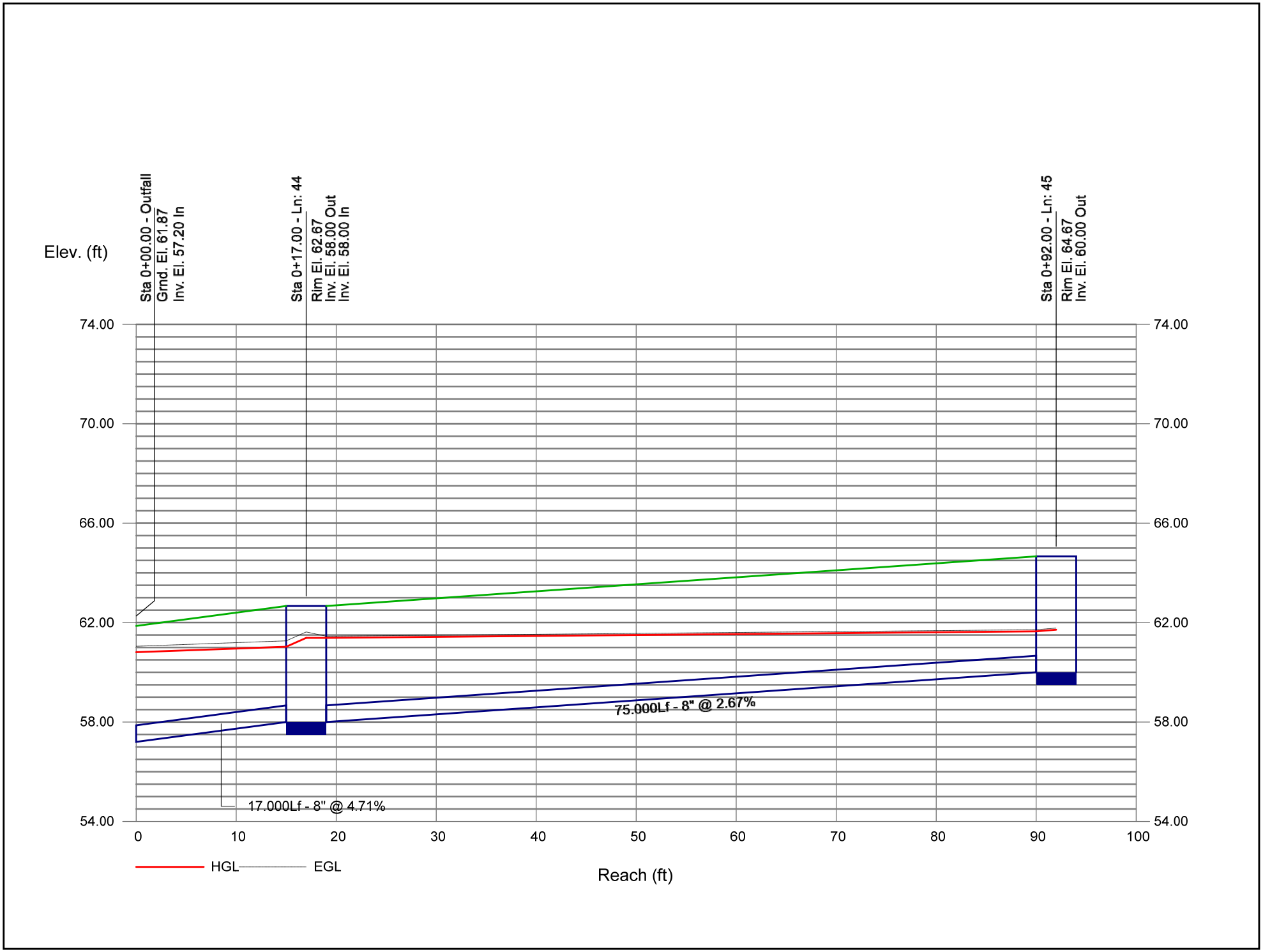

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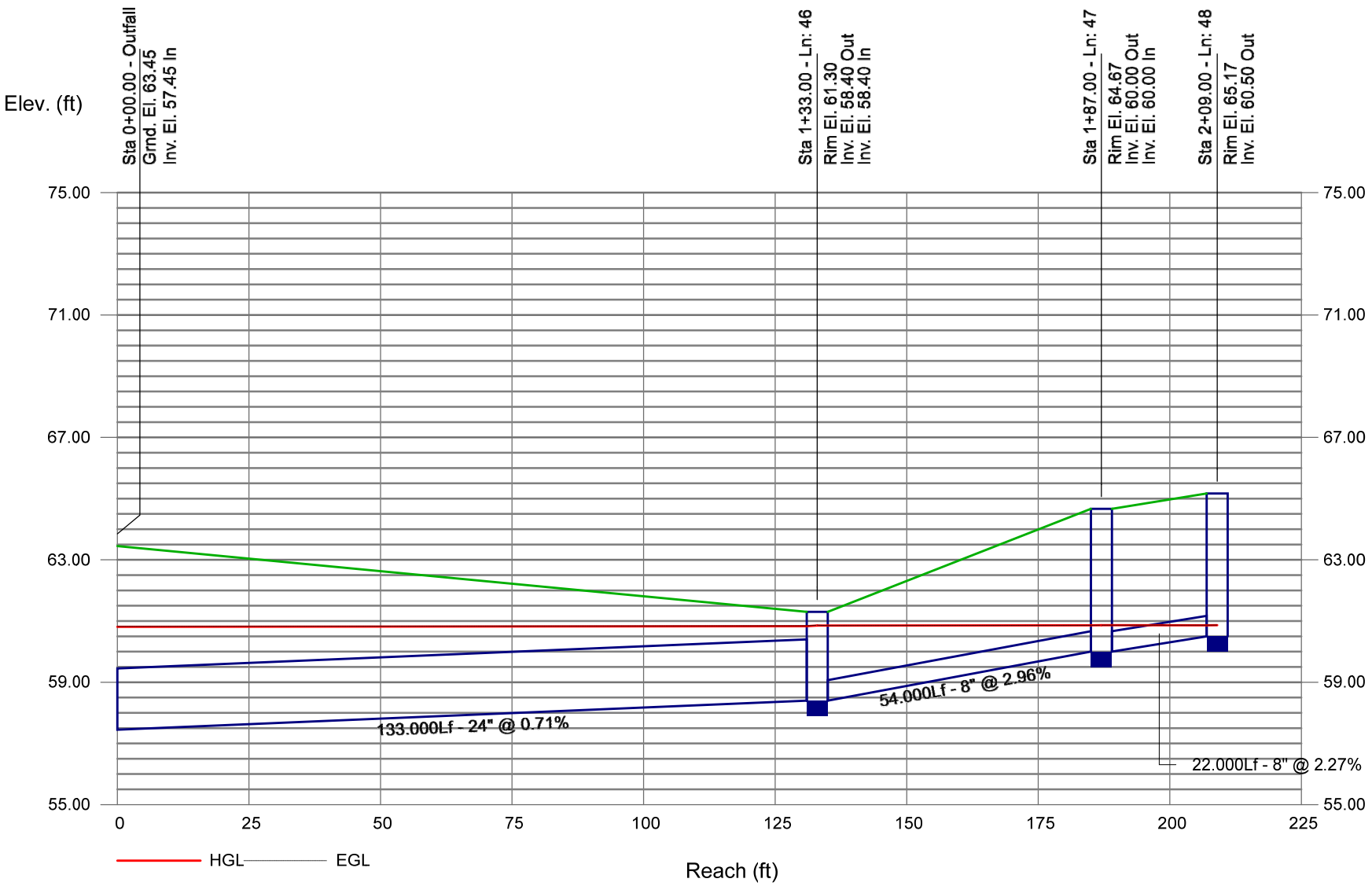

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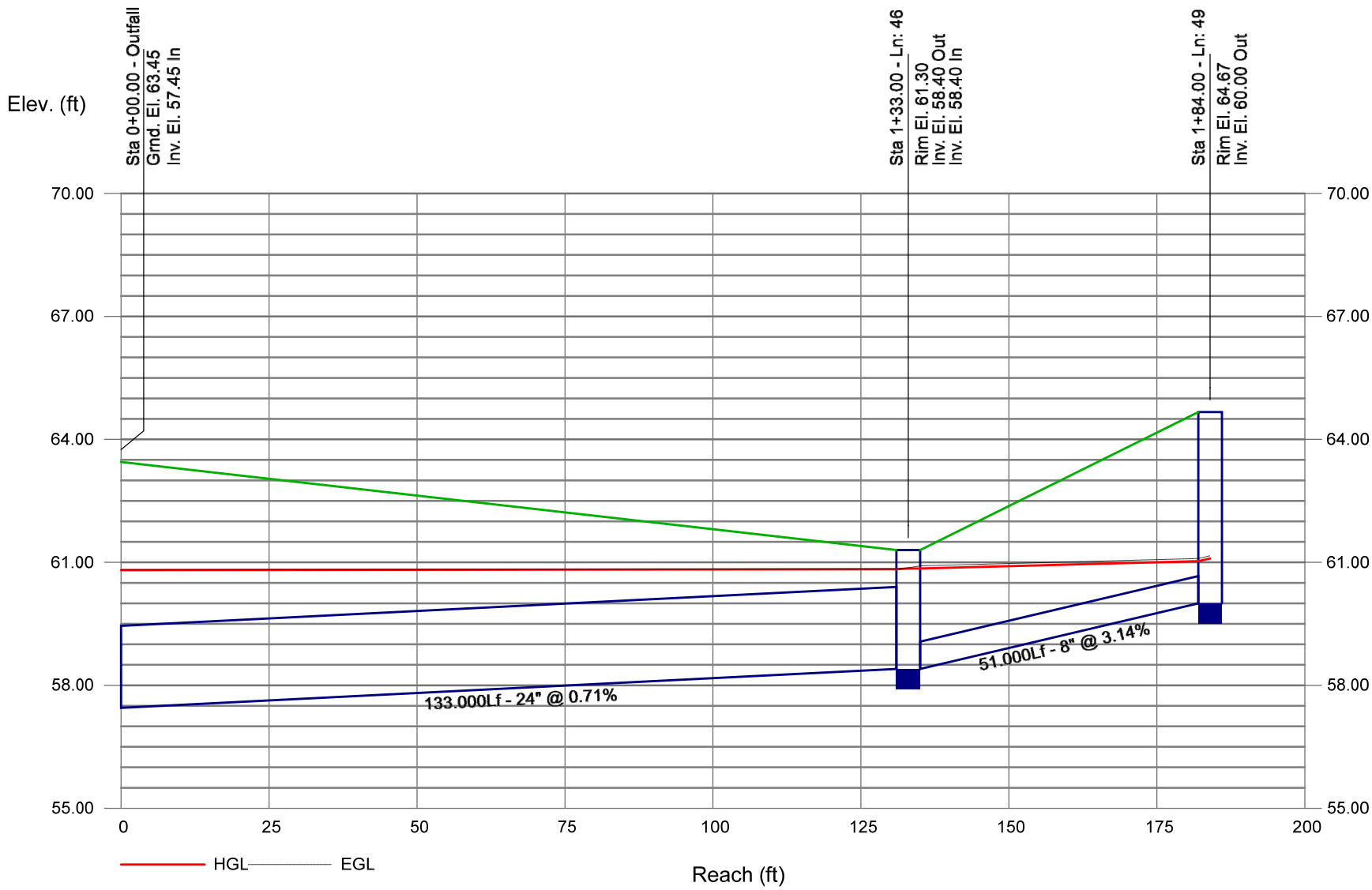

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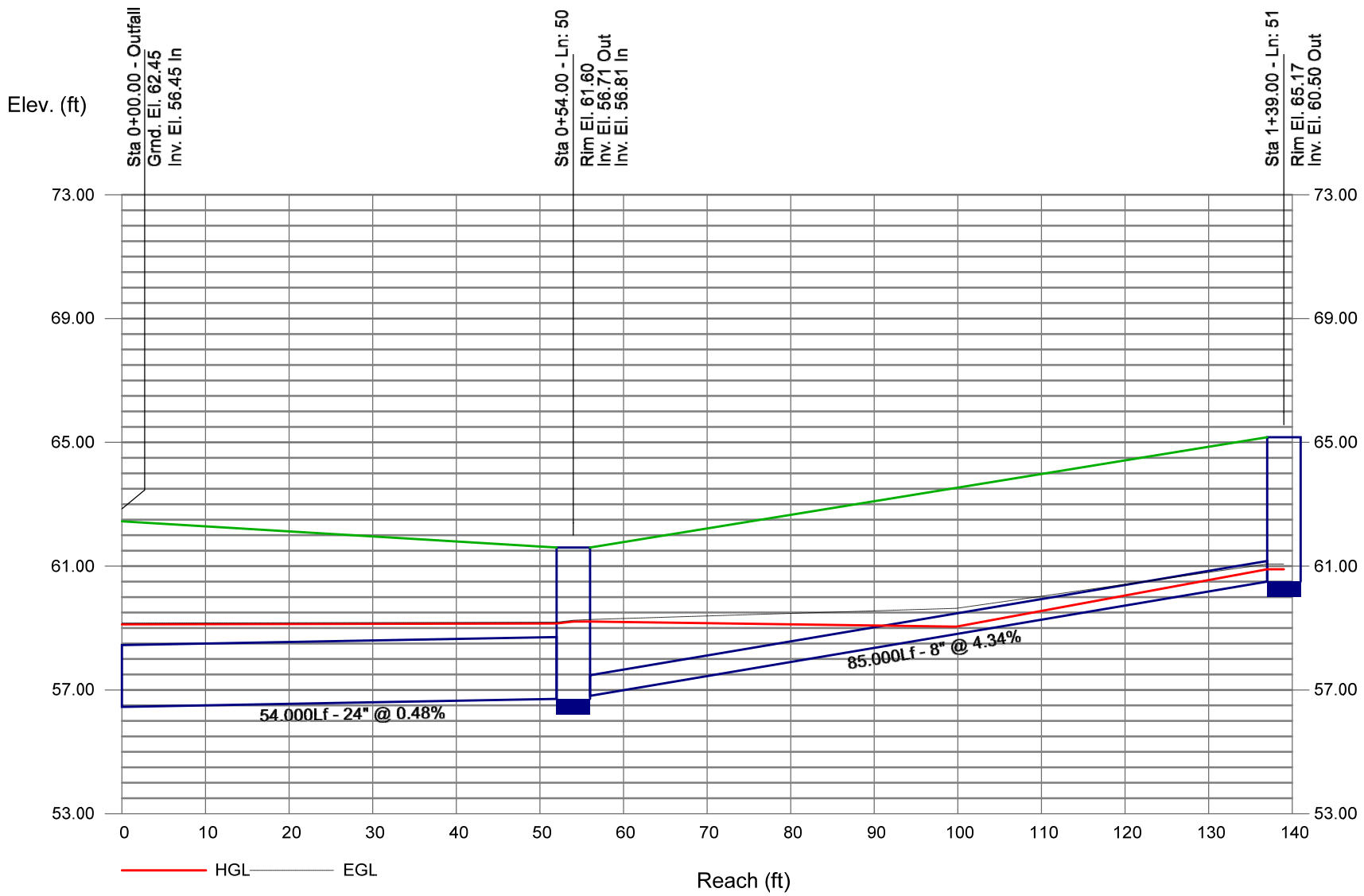

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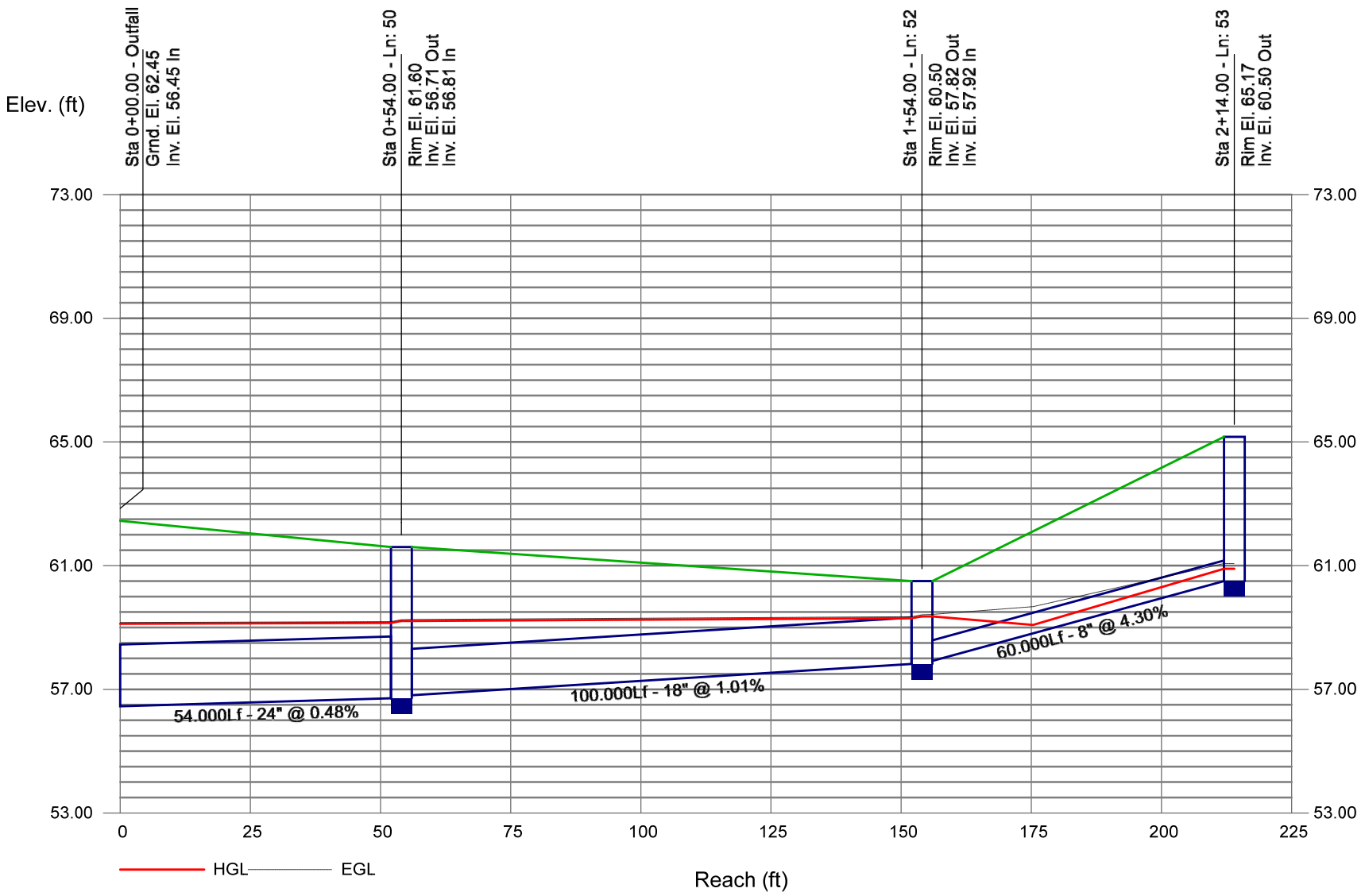

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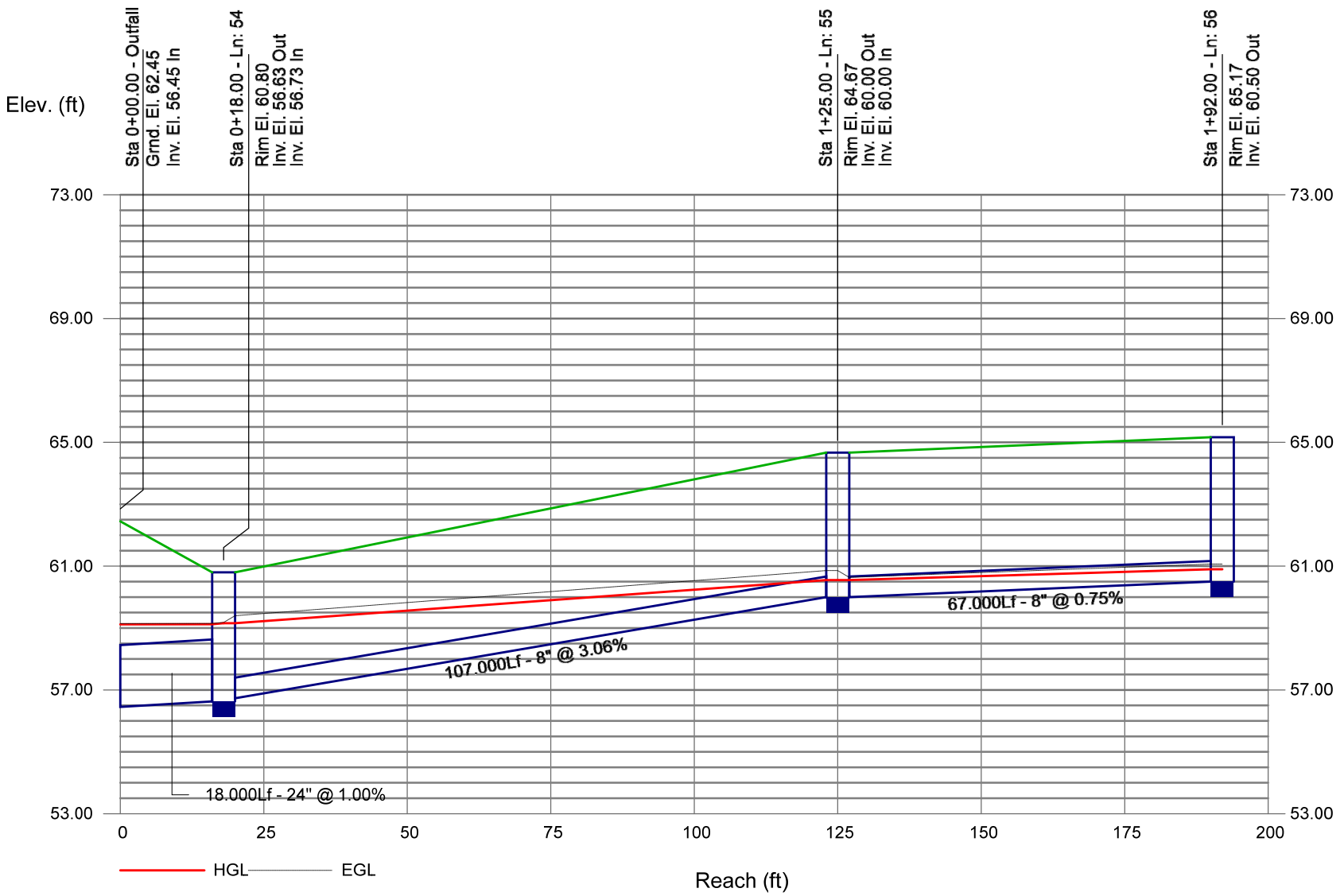

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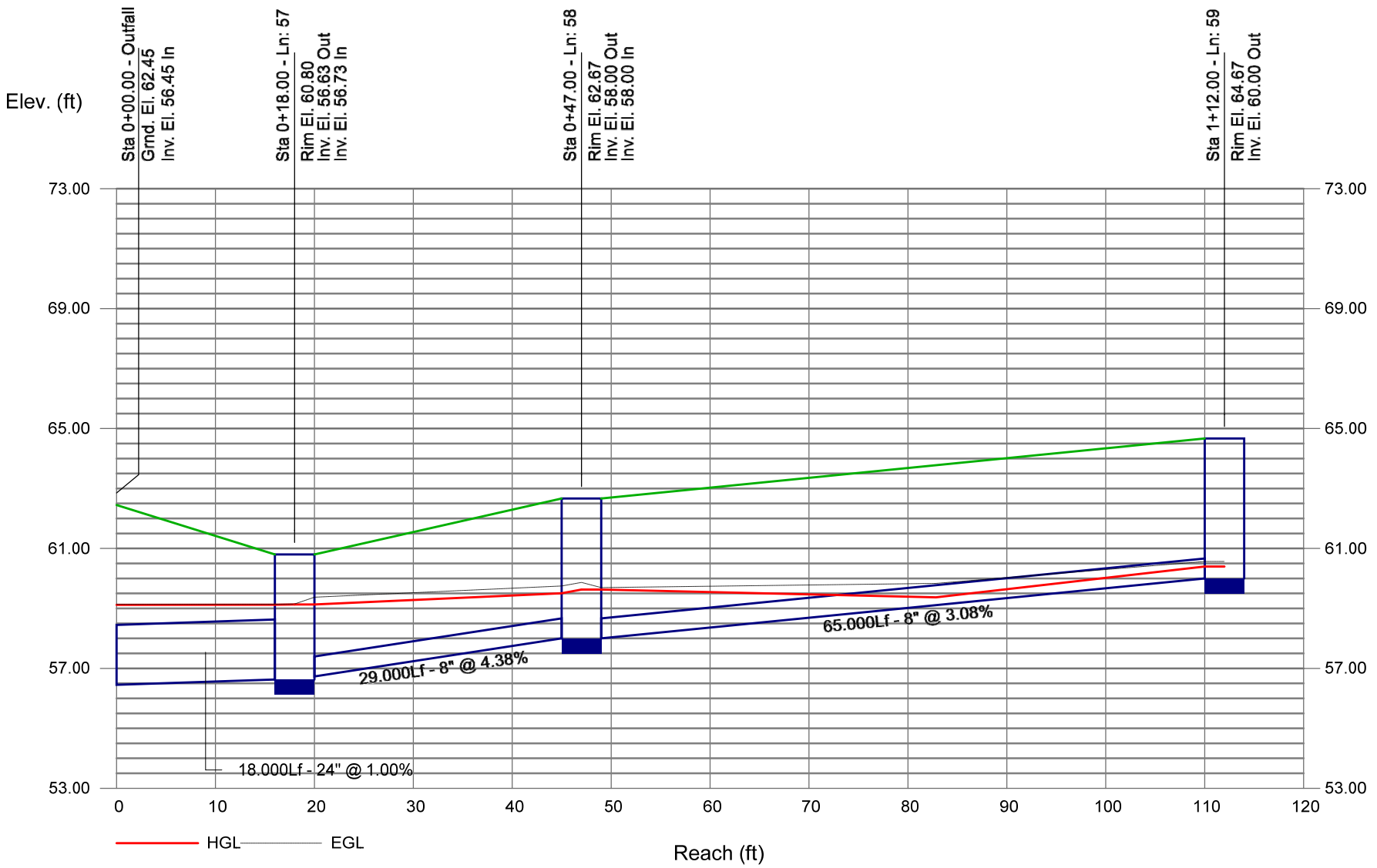

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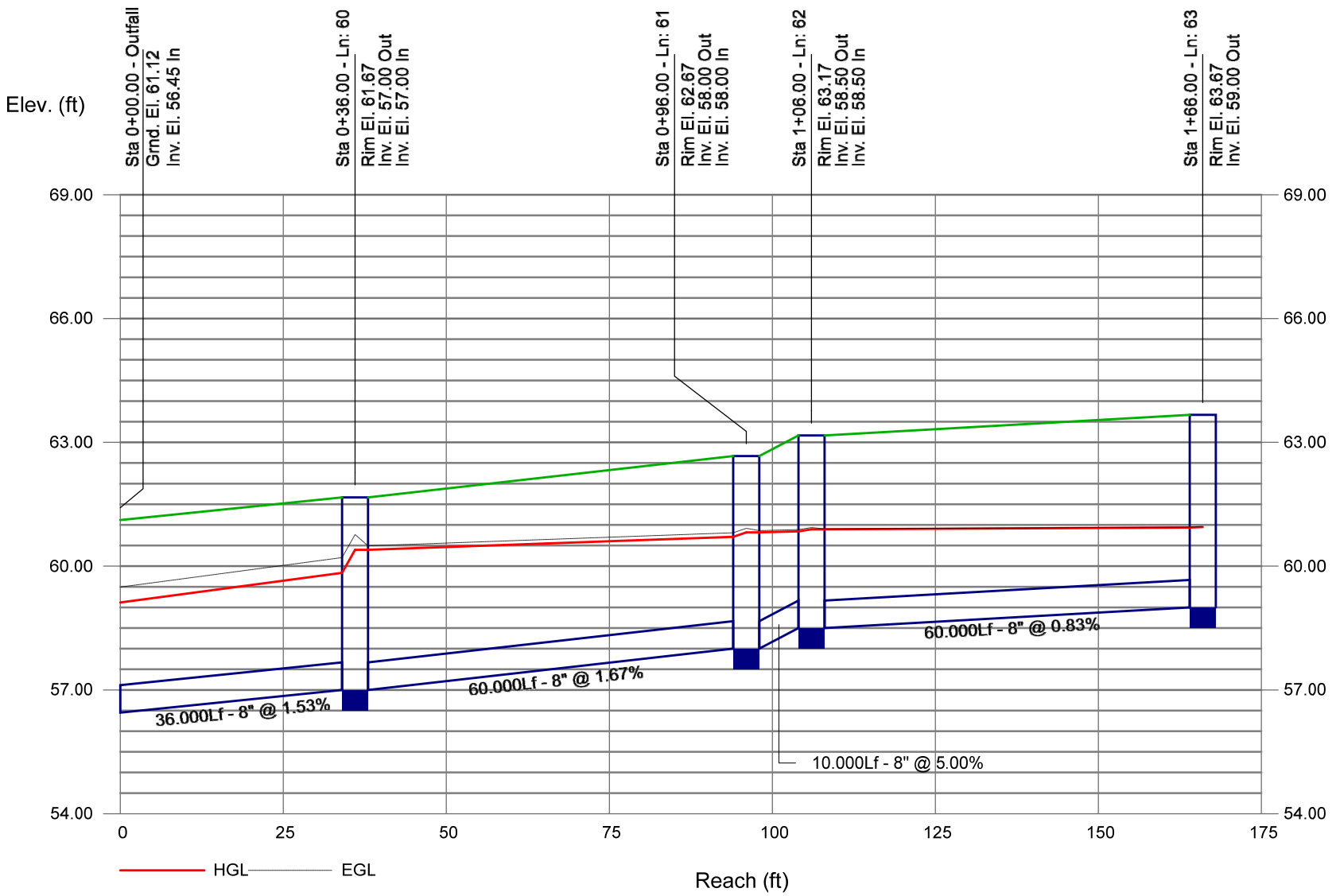

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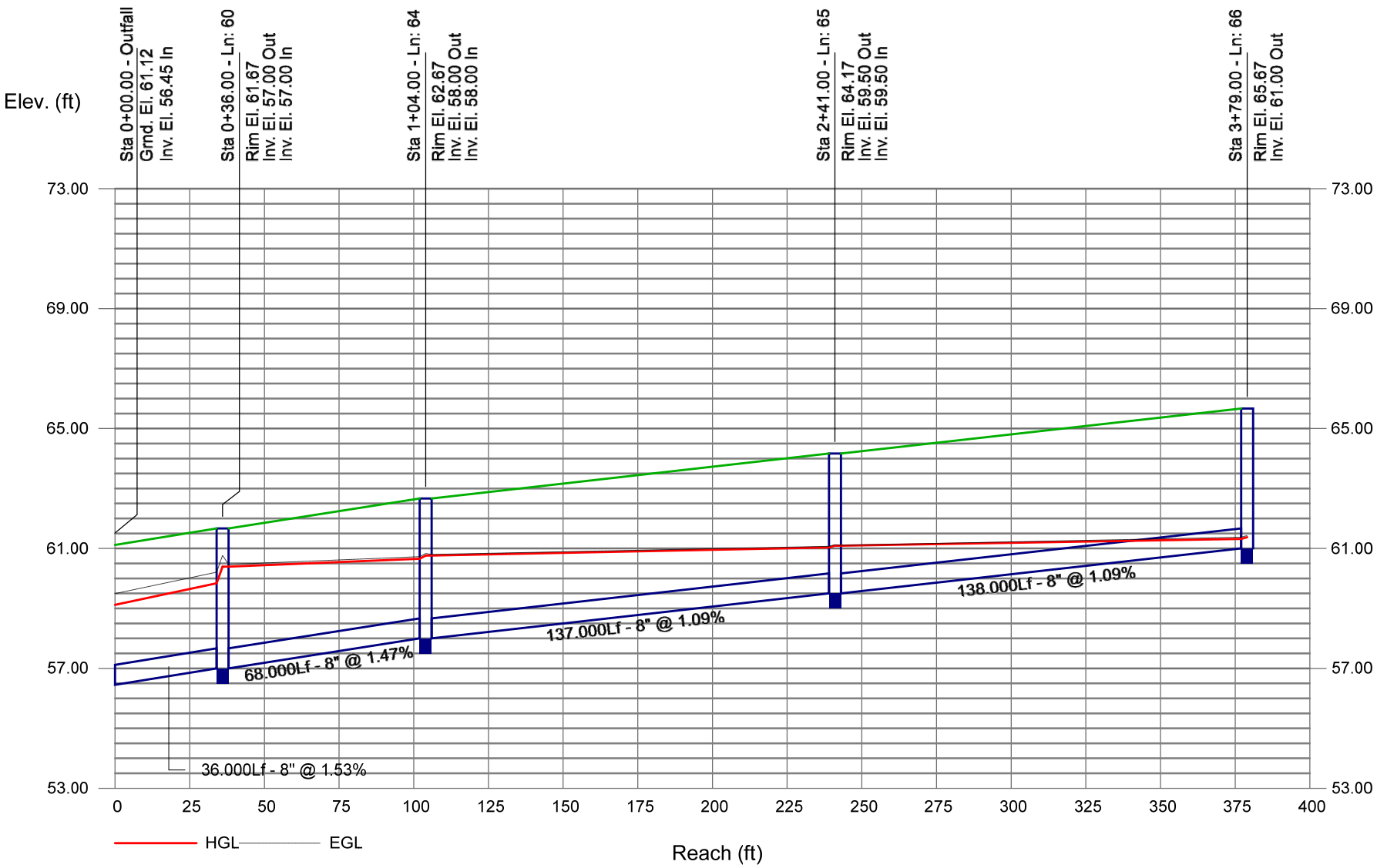

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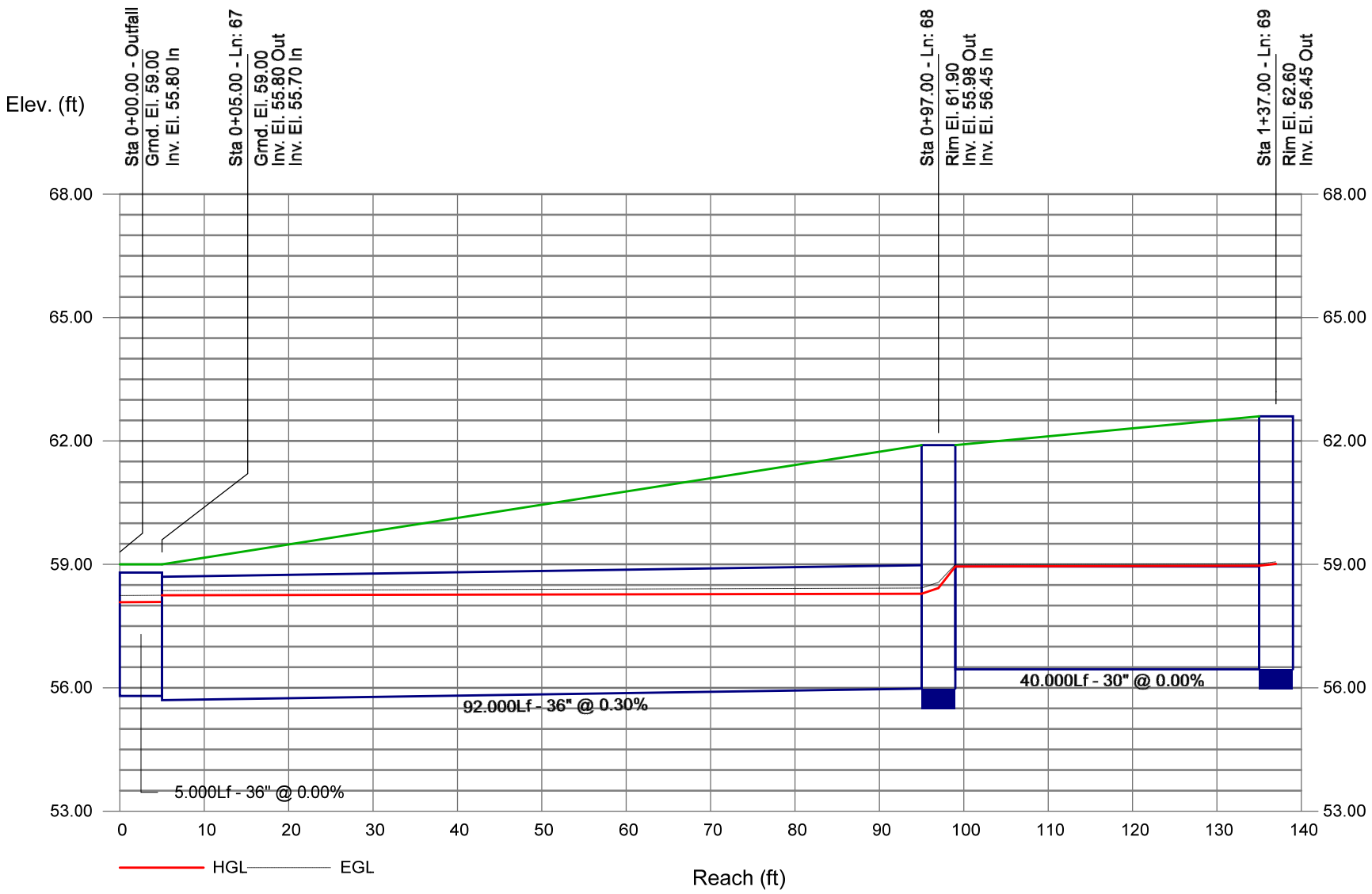

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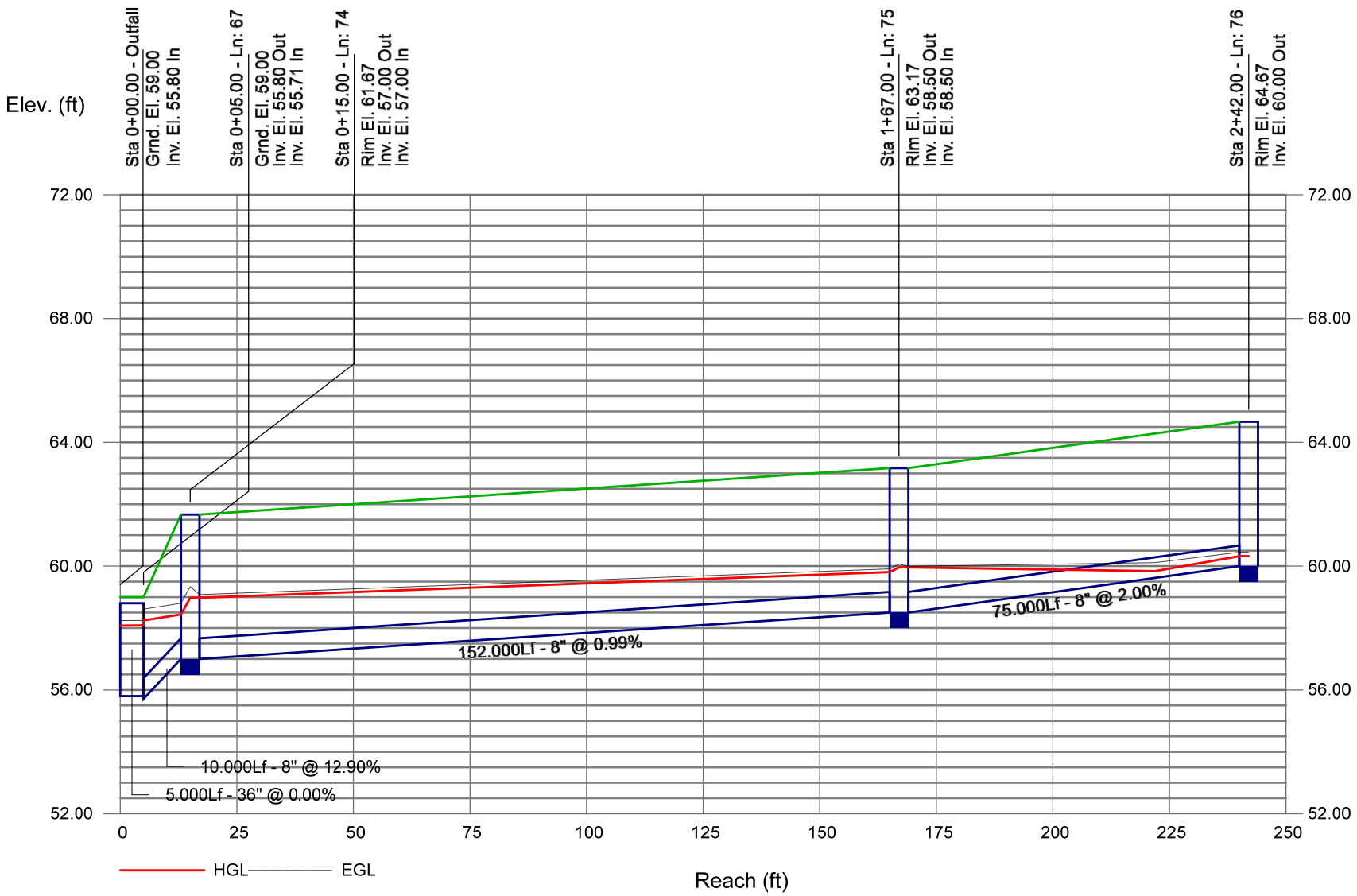

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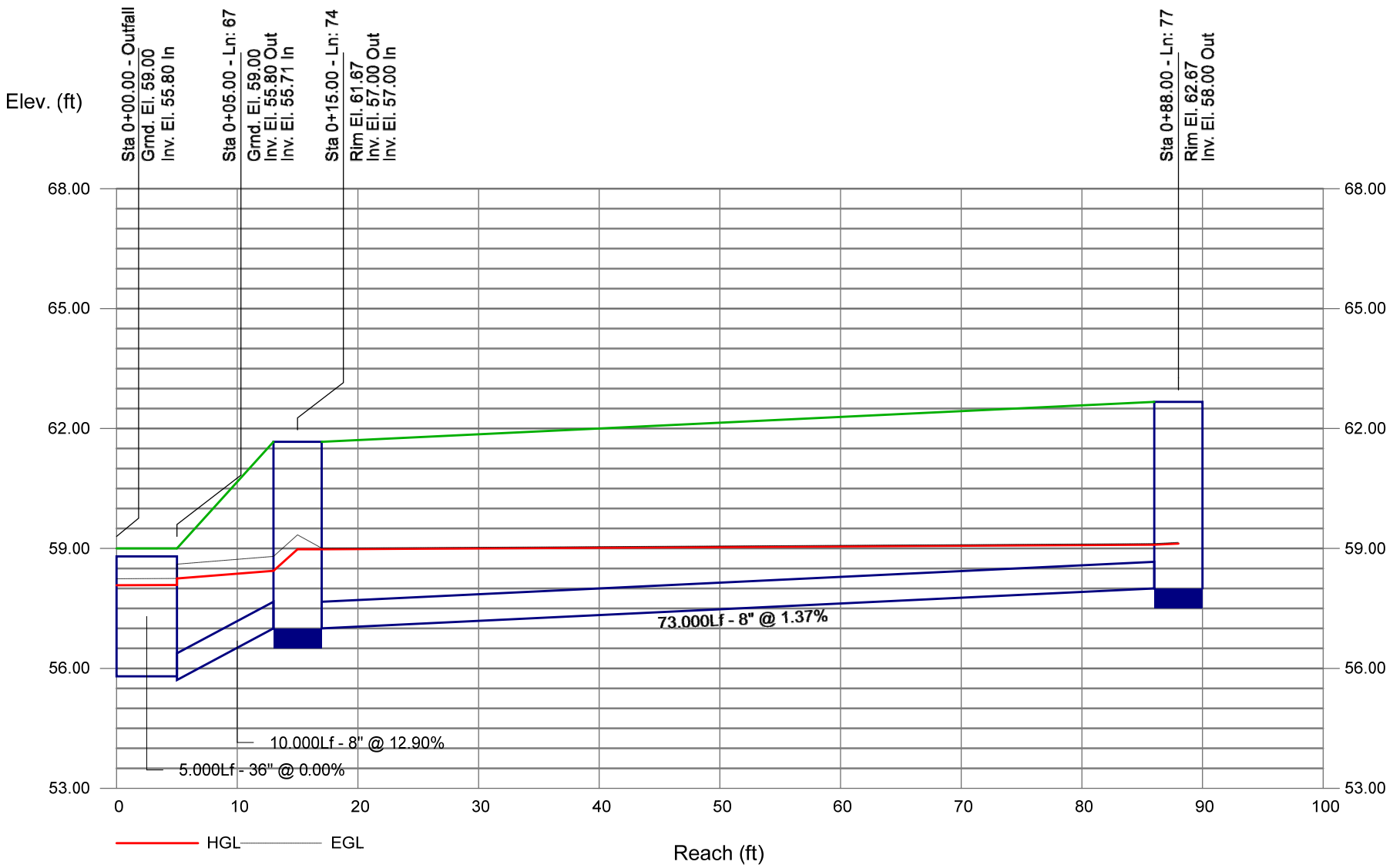

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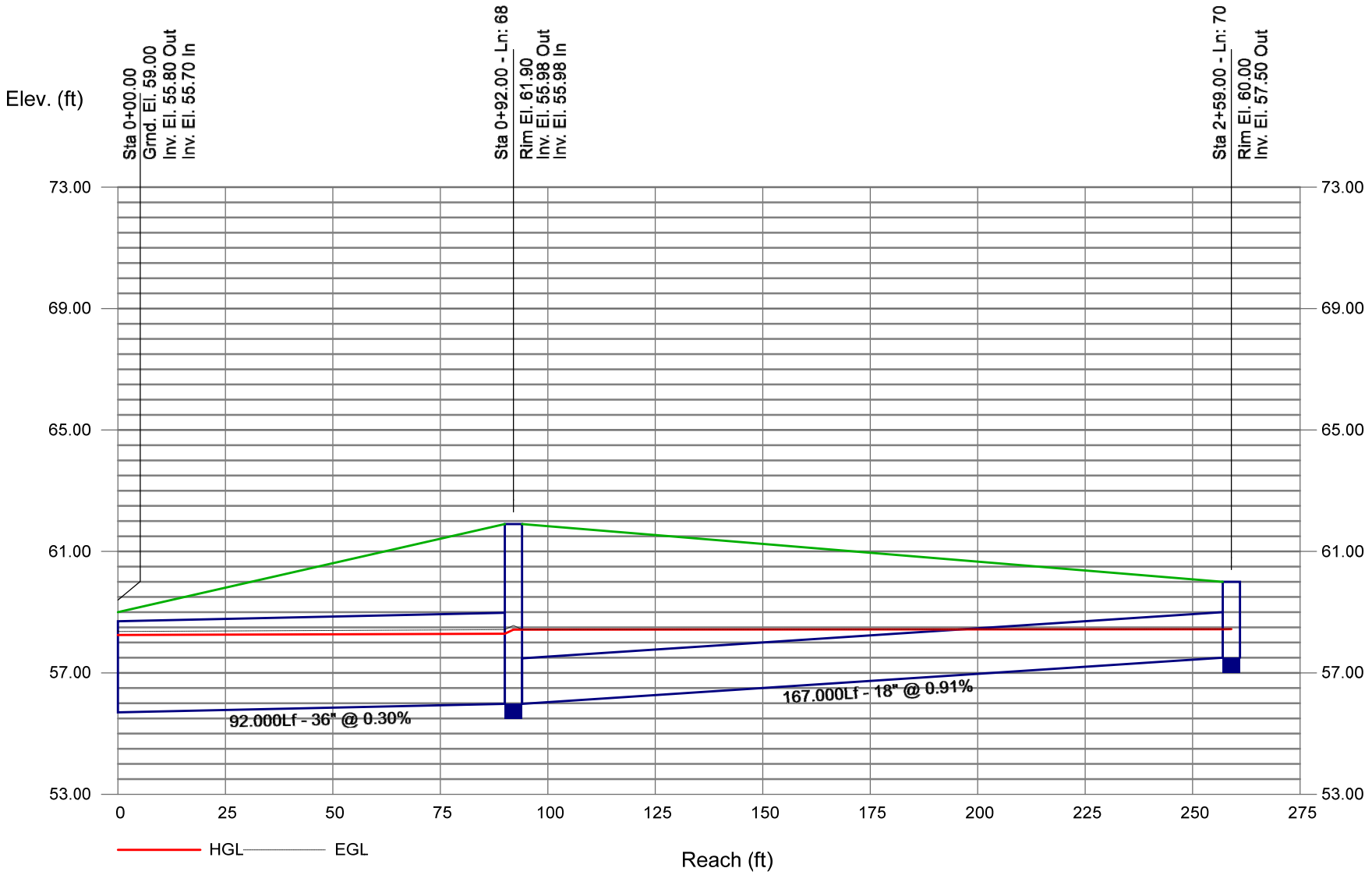

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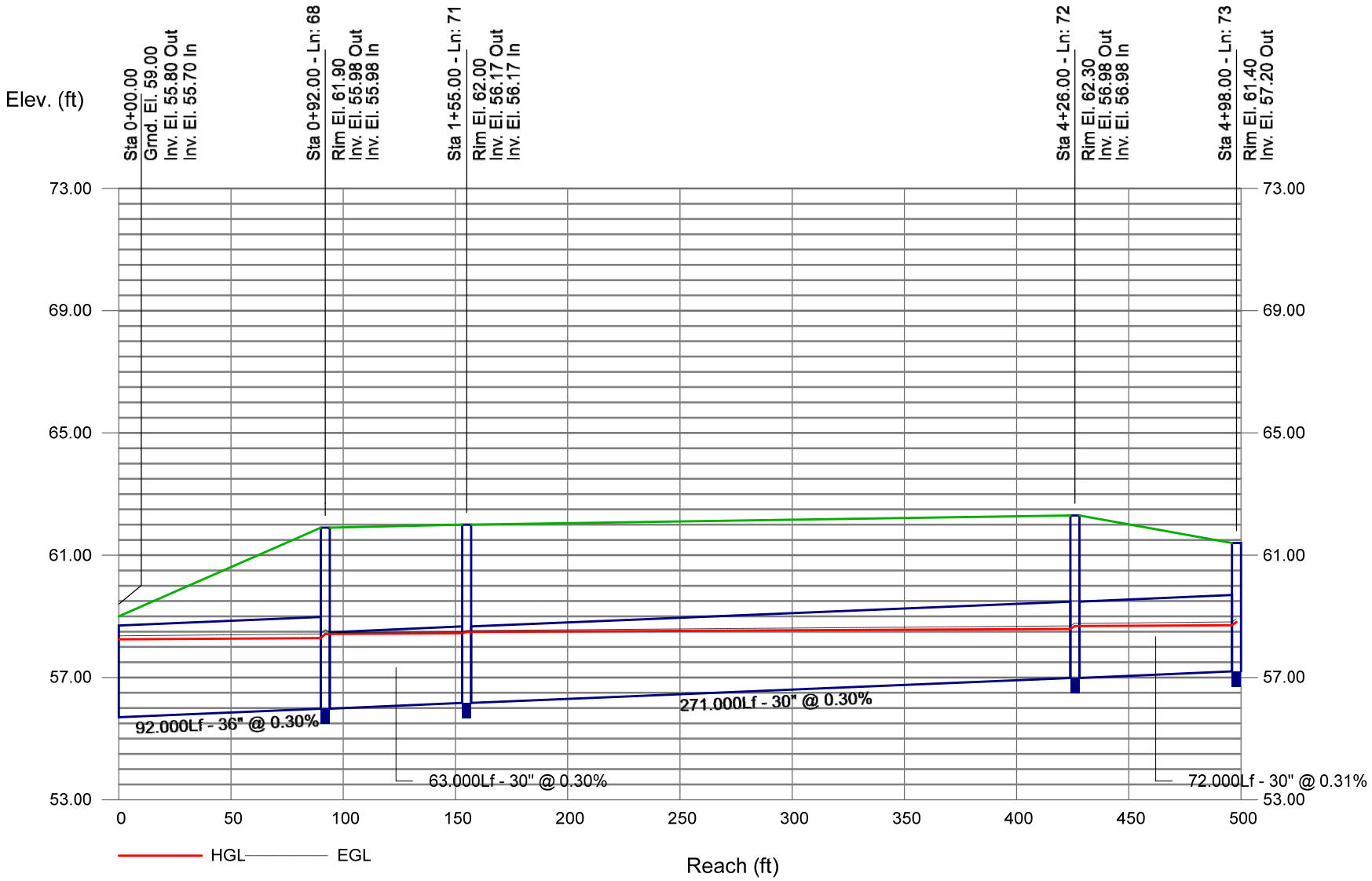

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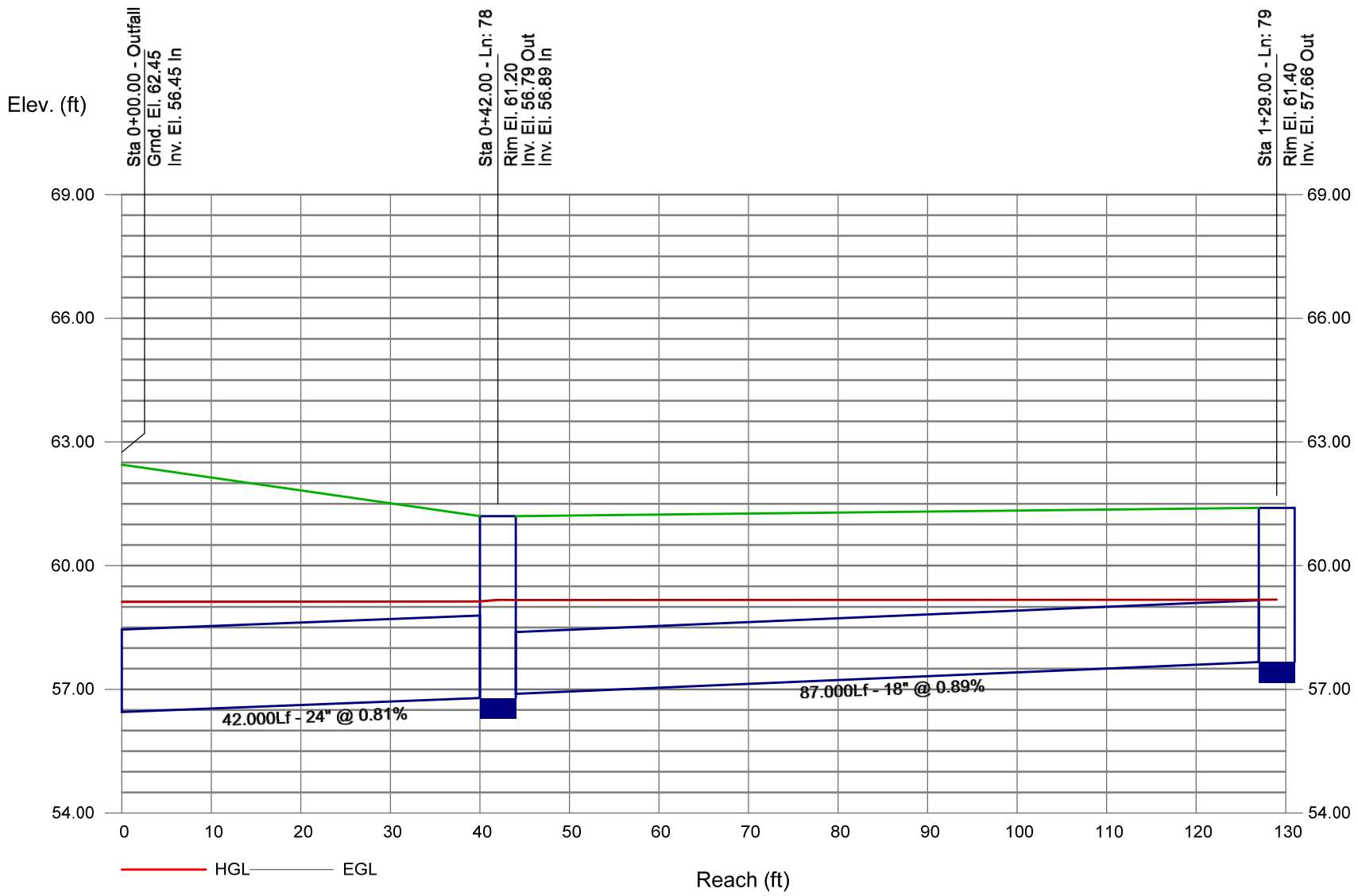

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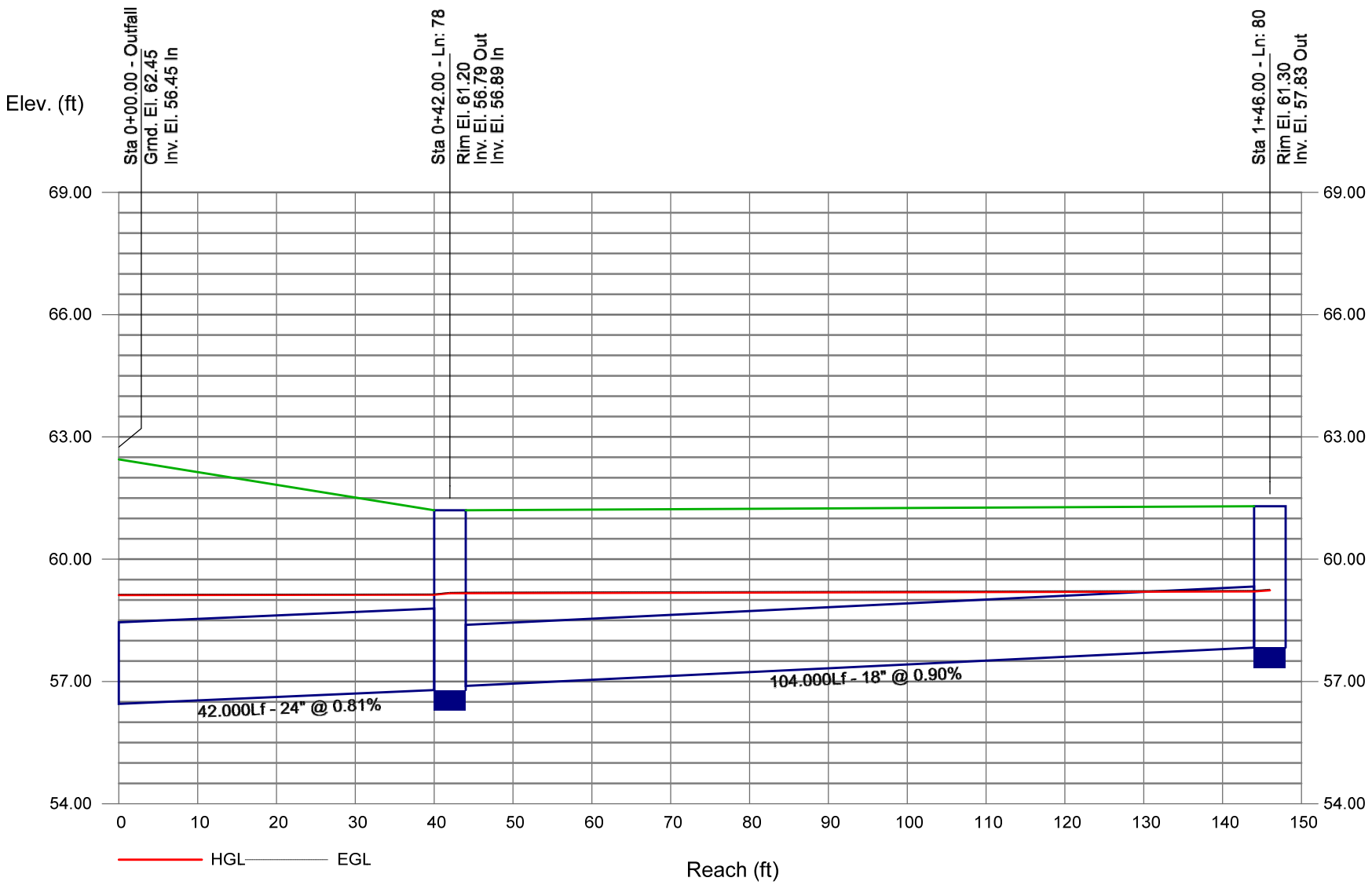

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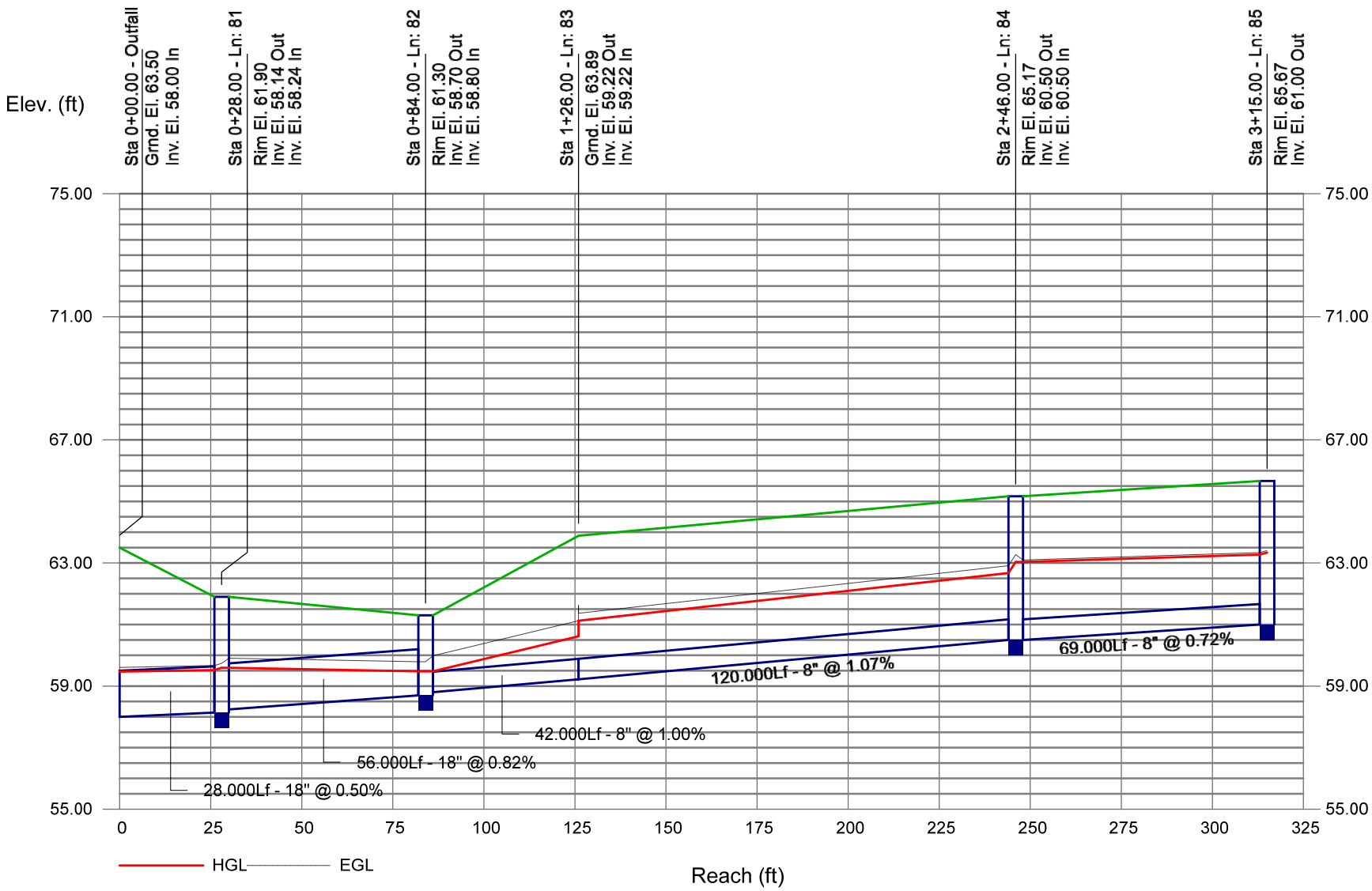

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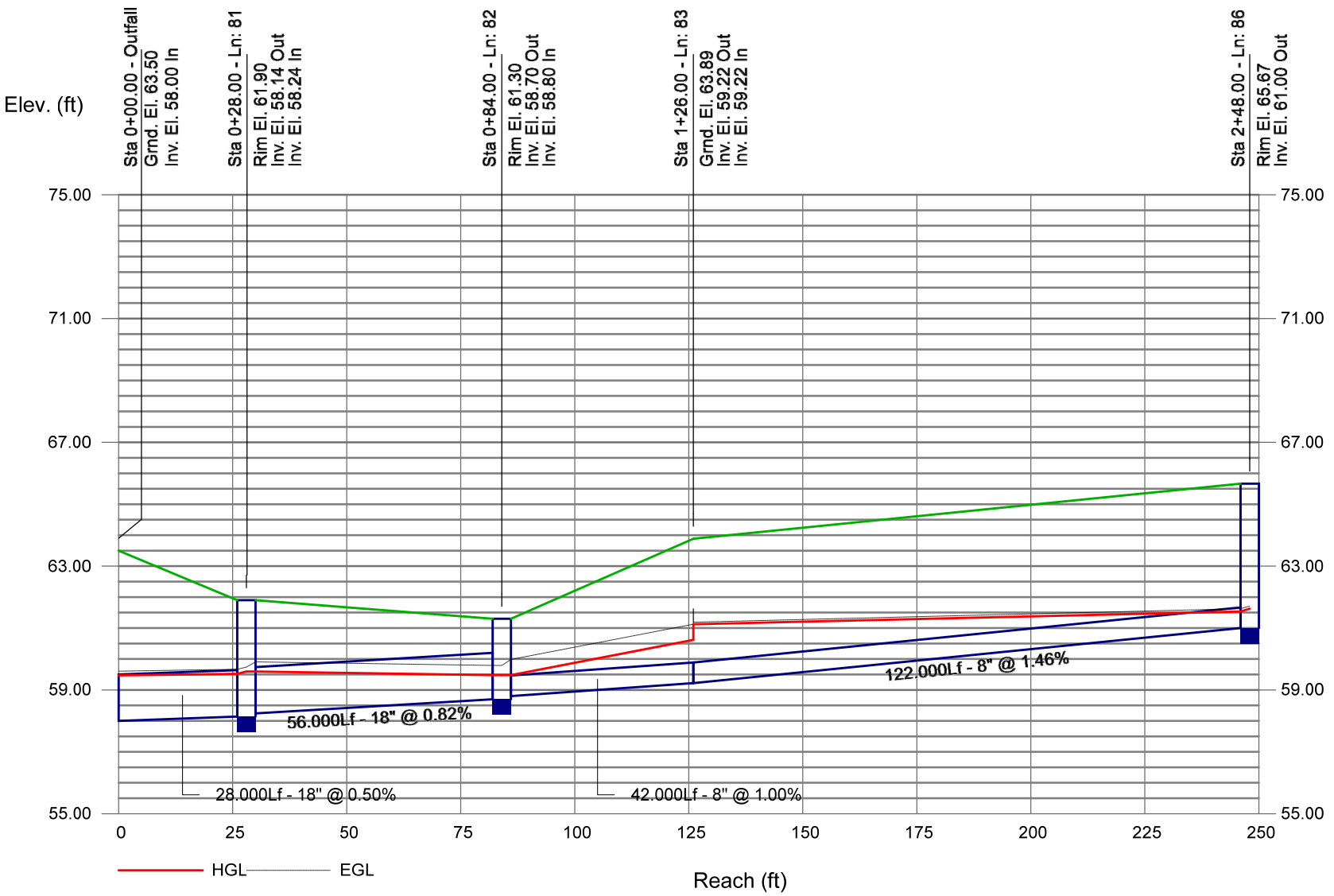

# Storm Sewer Profile

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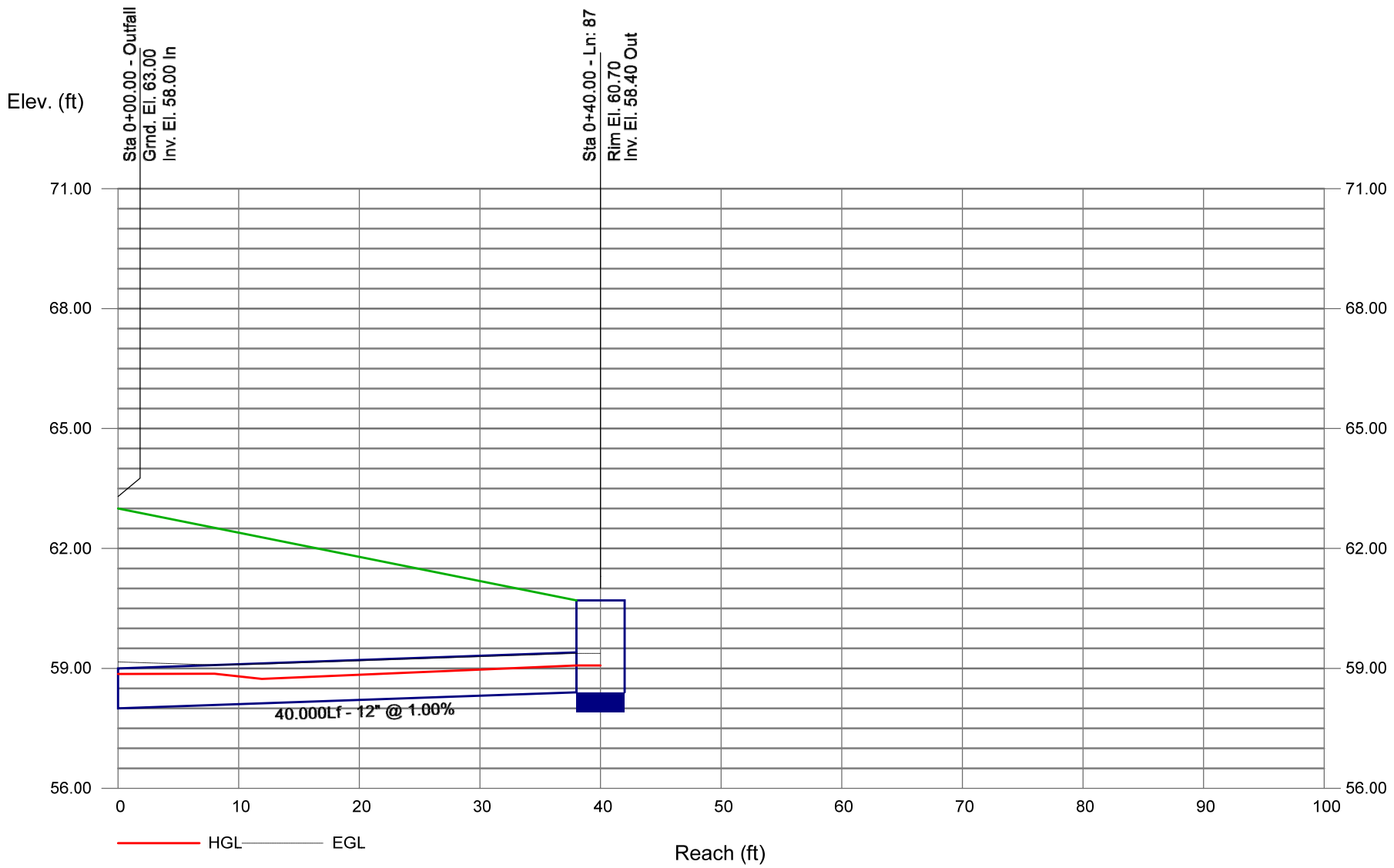

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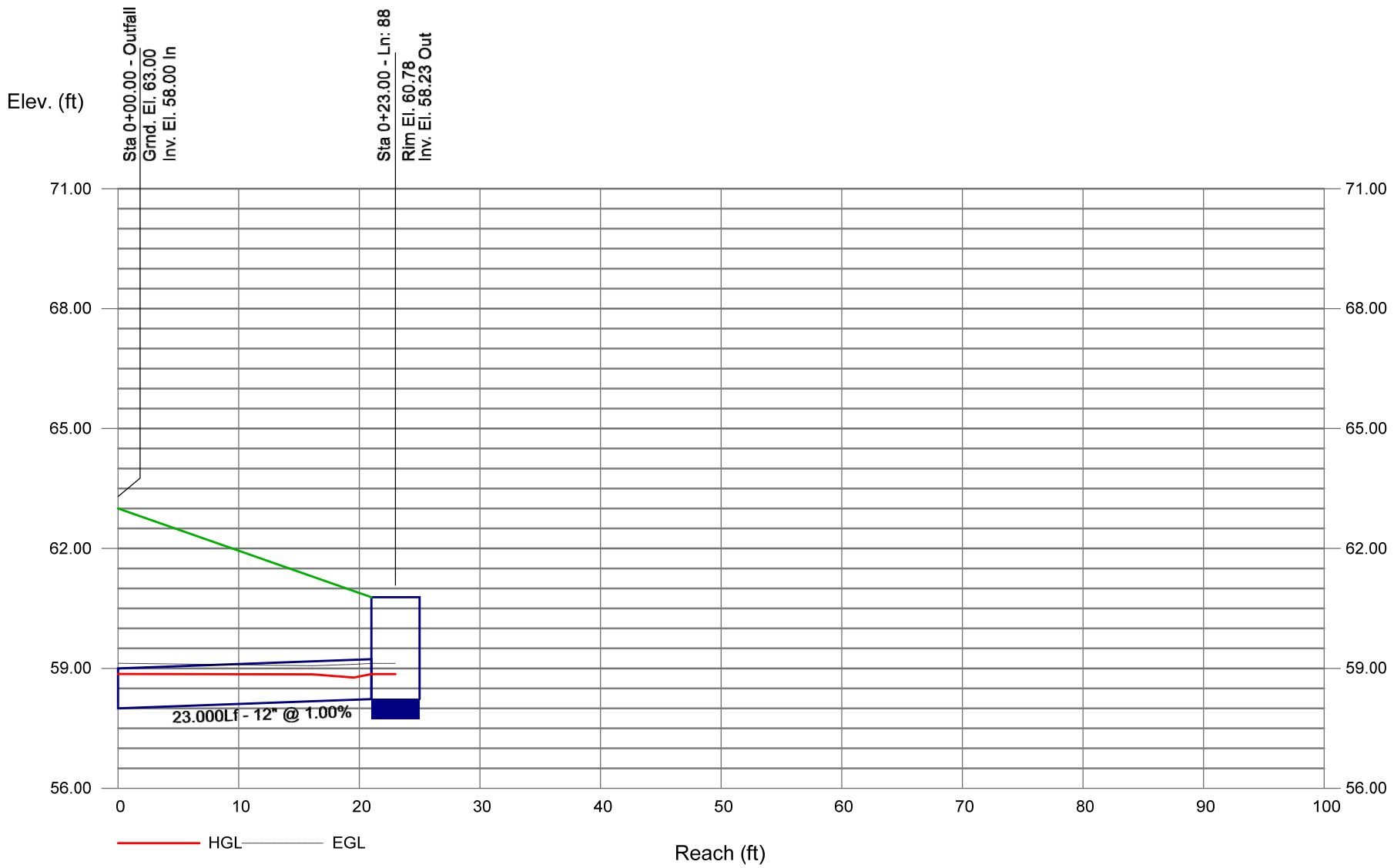

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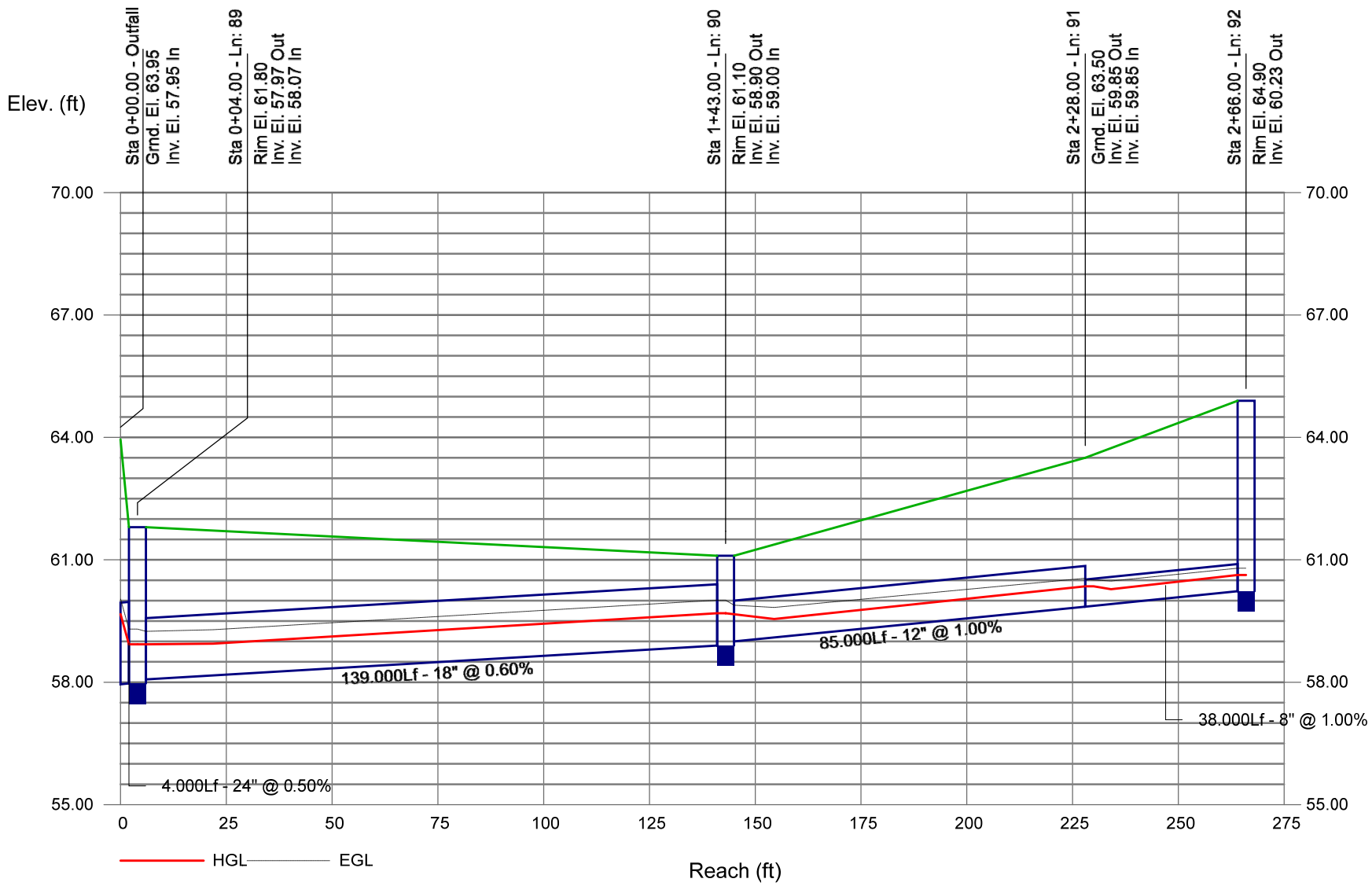

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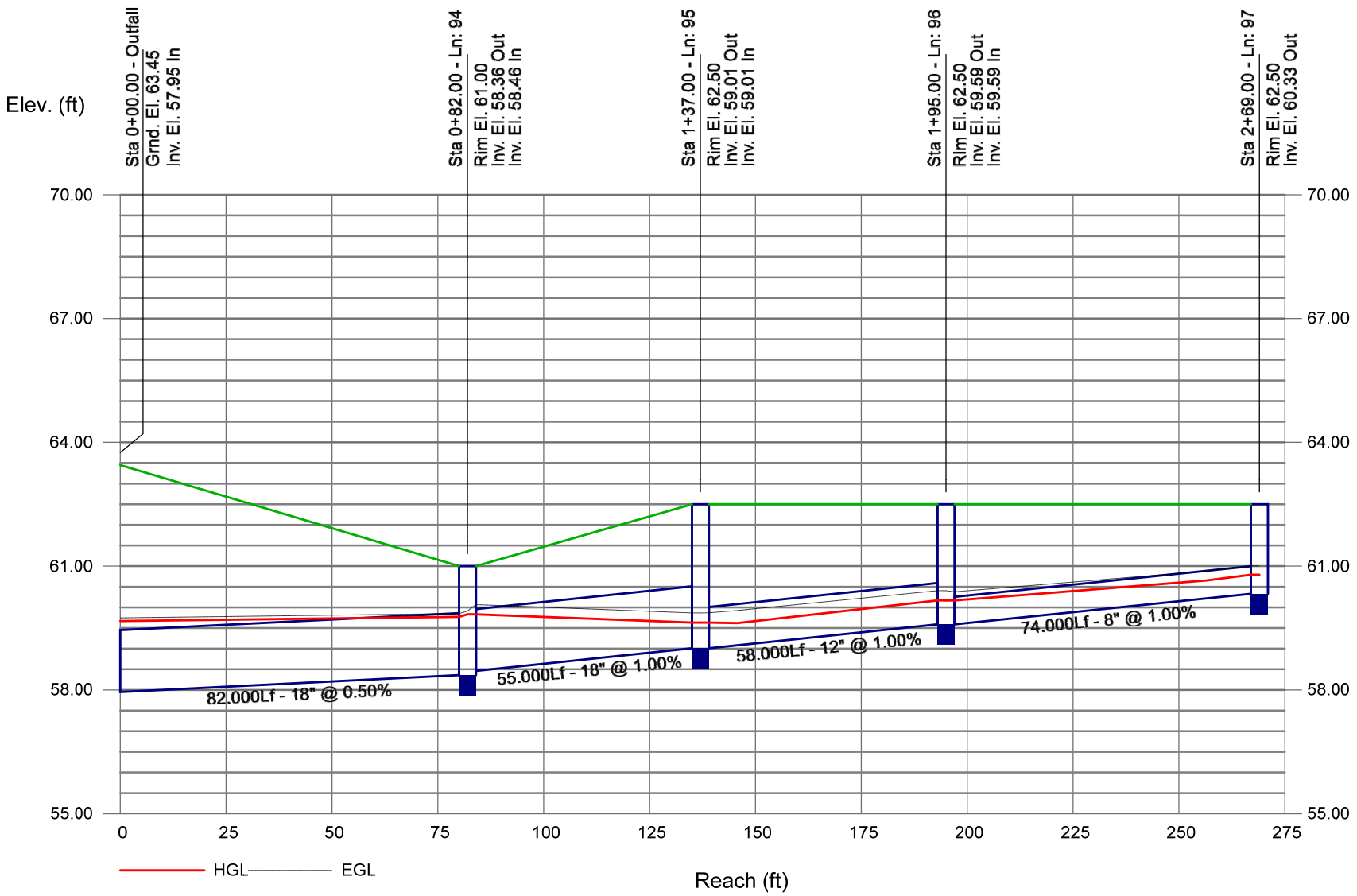

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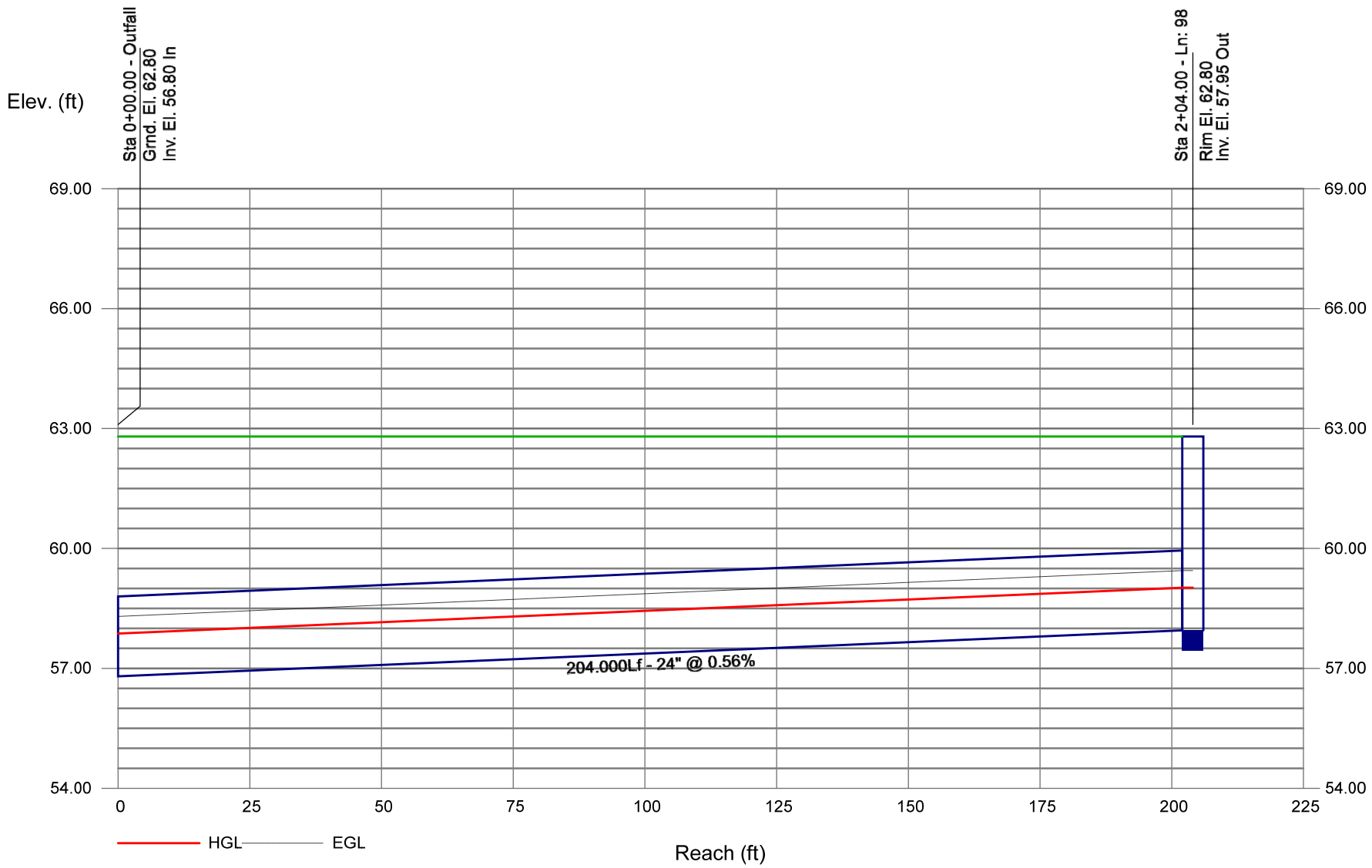

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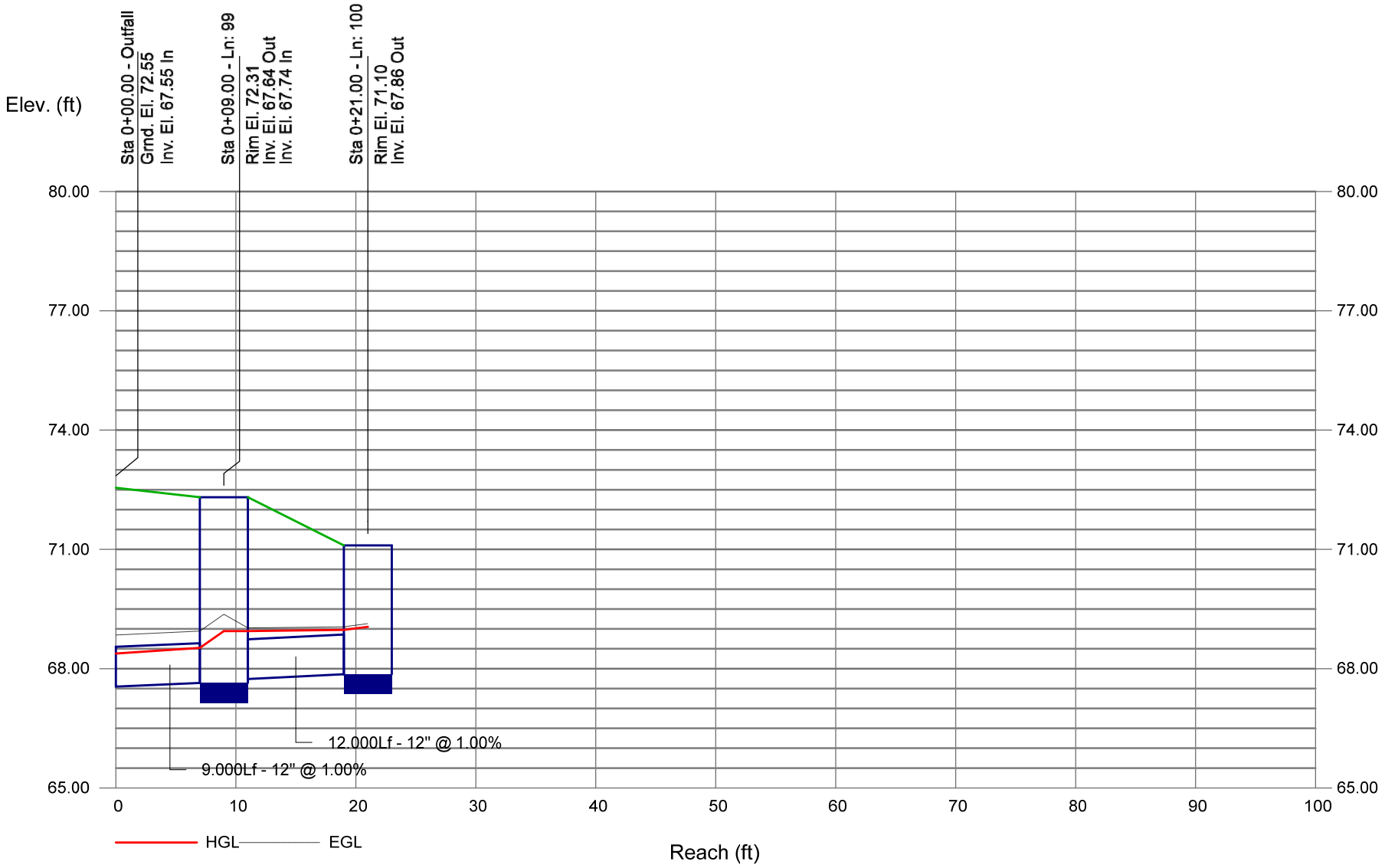

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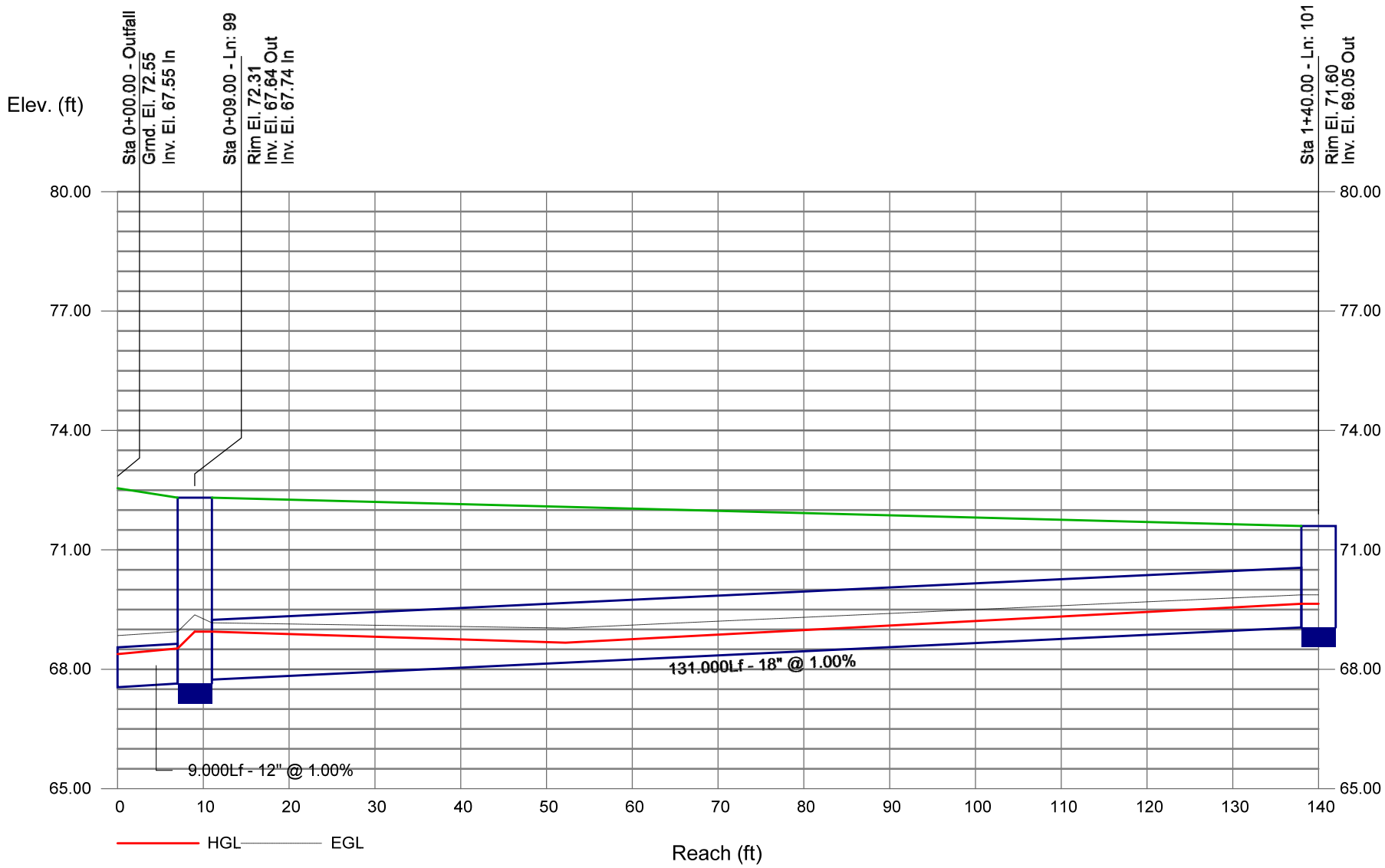

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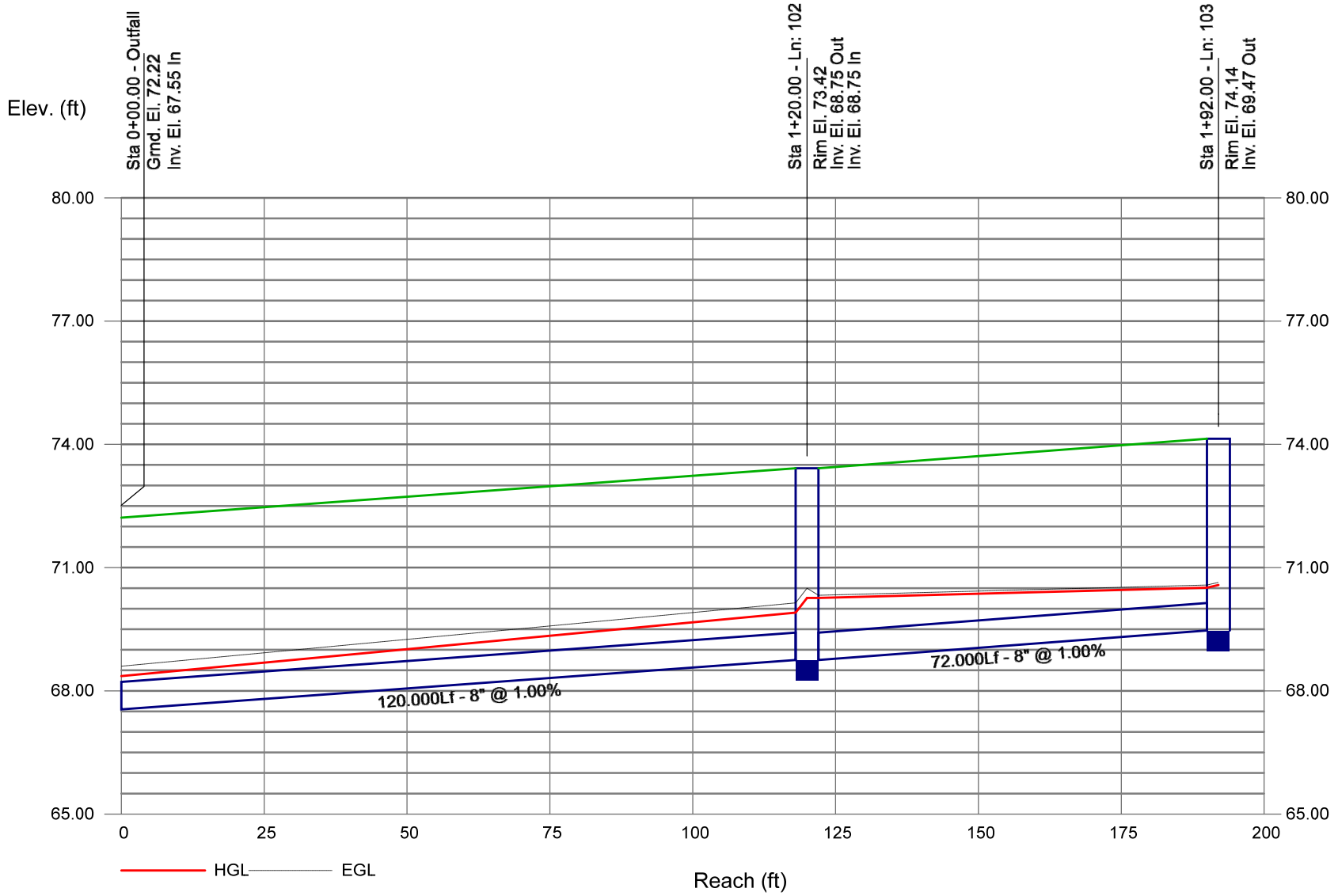

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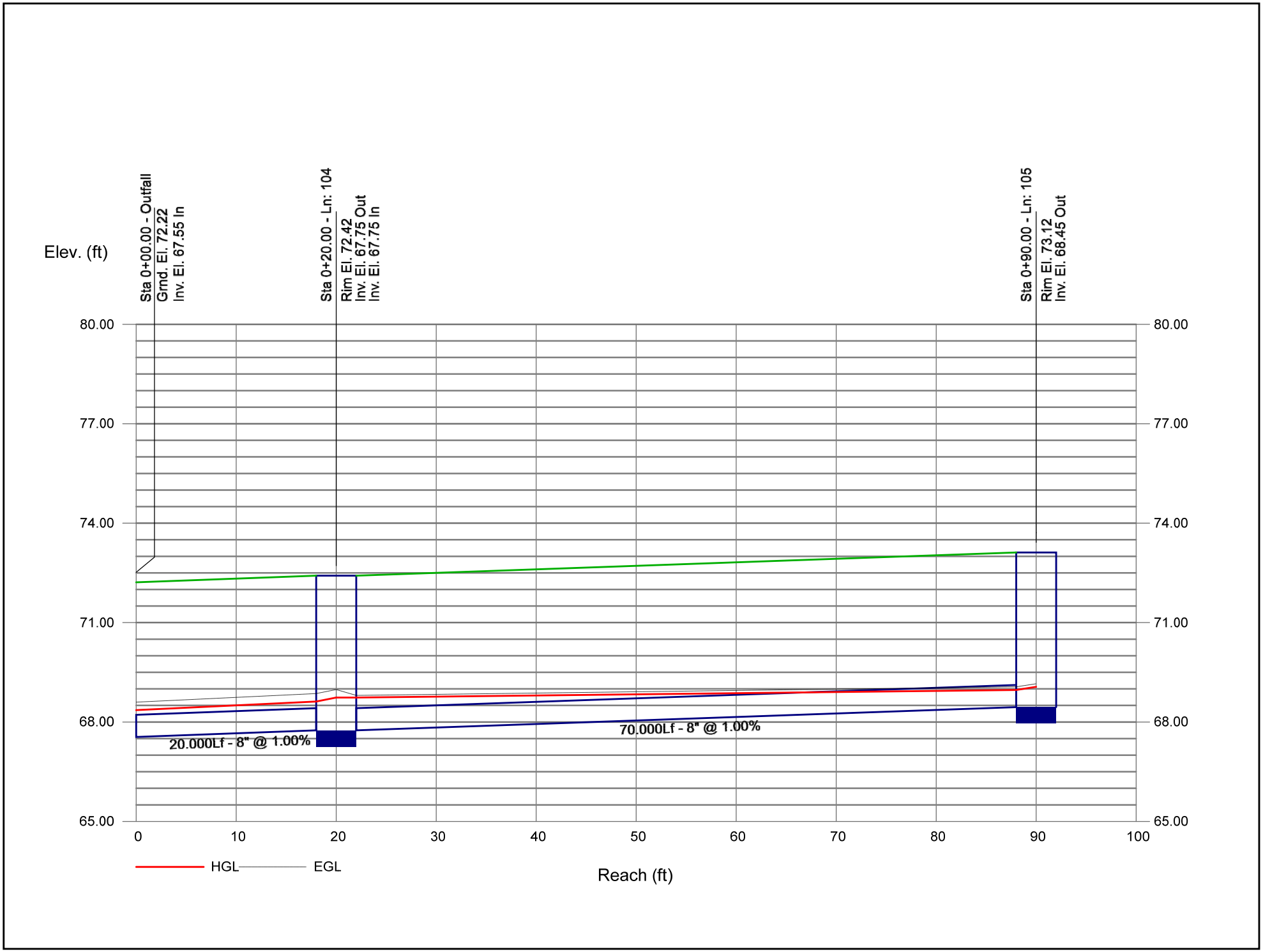

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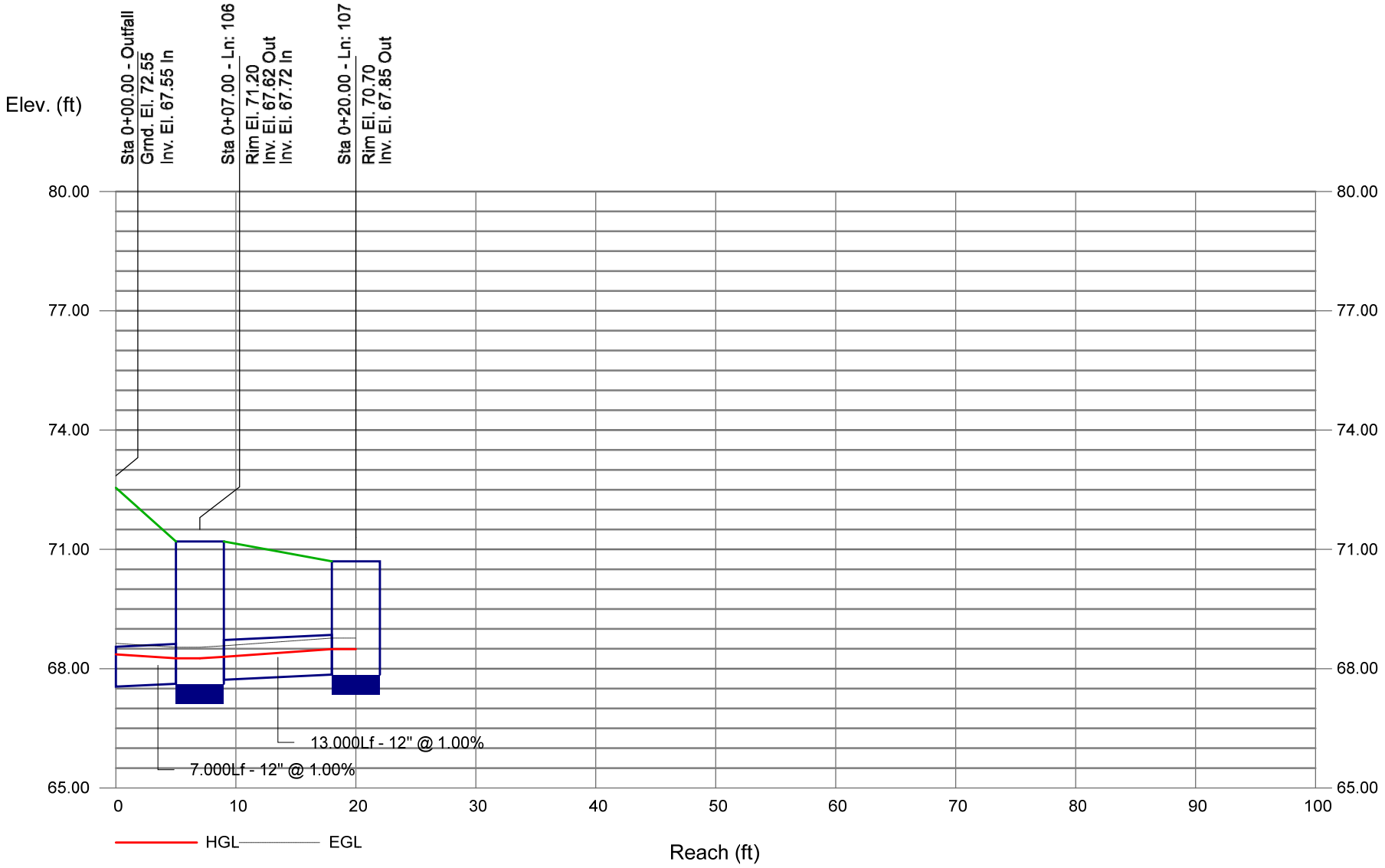

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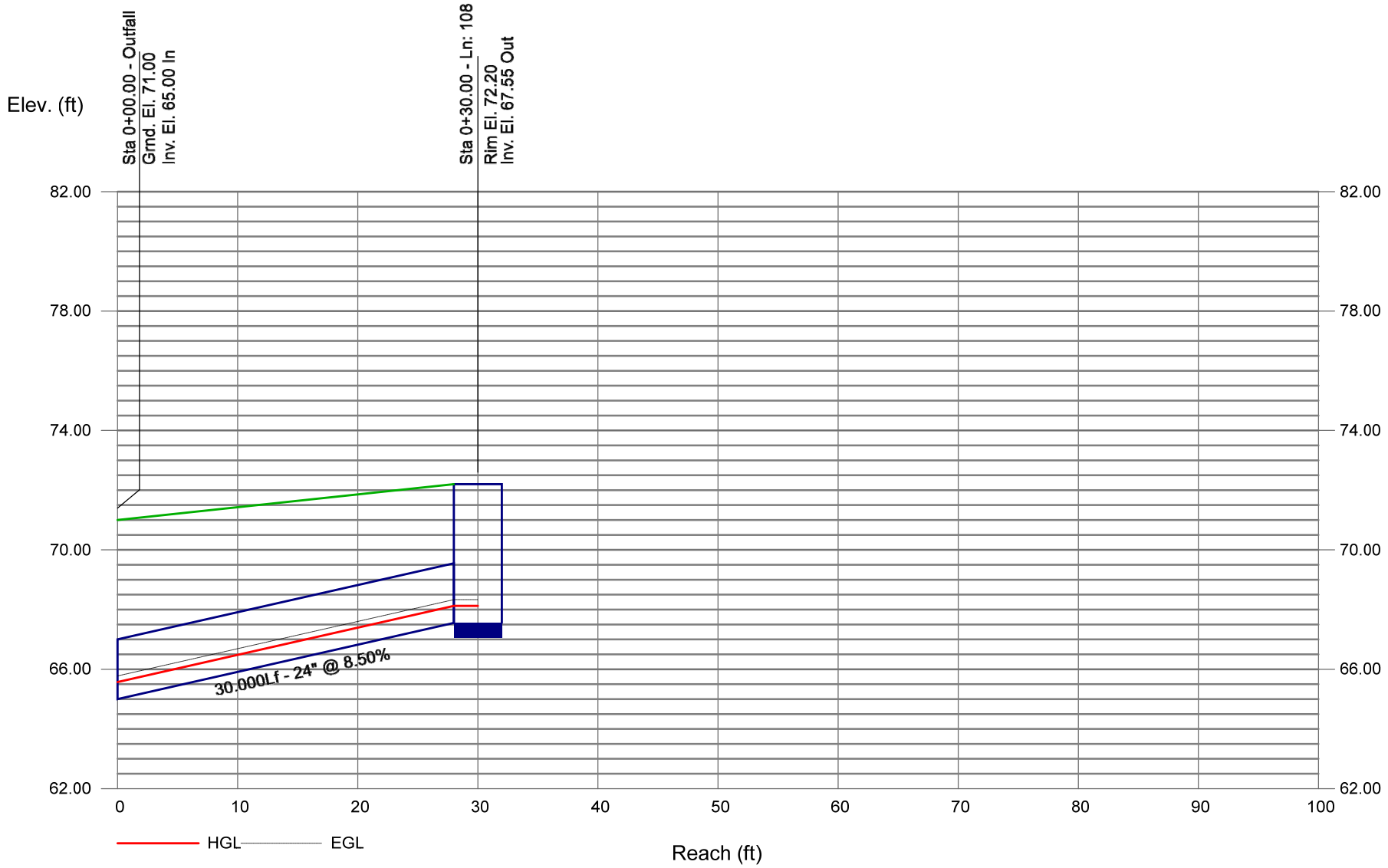

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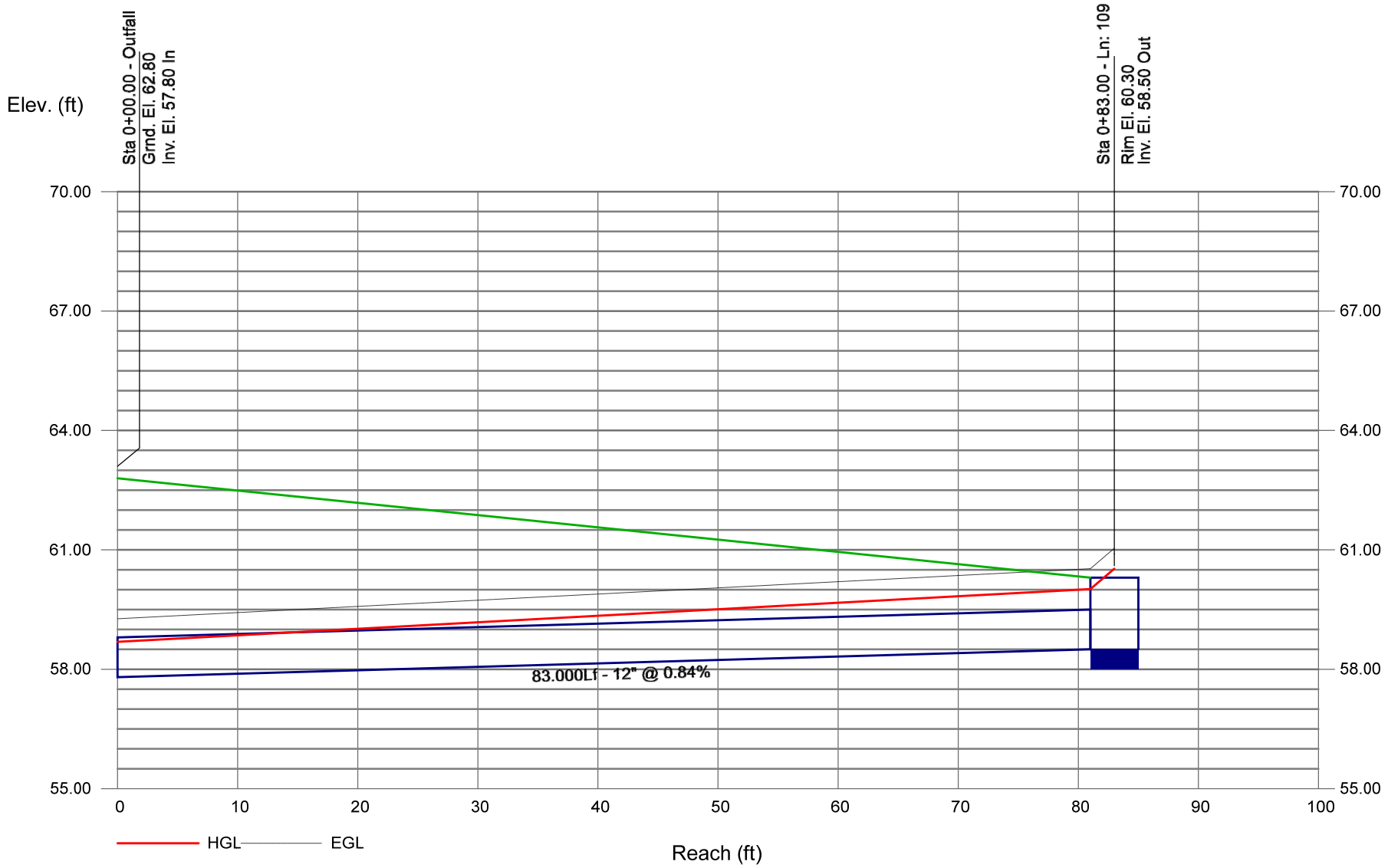

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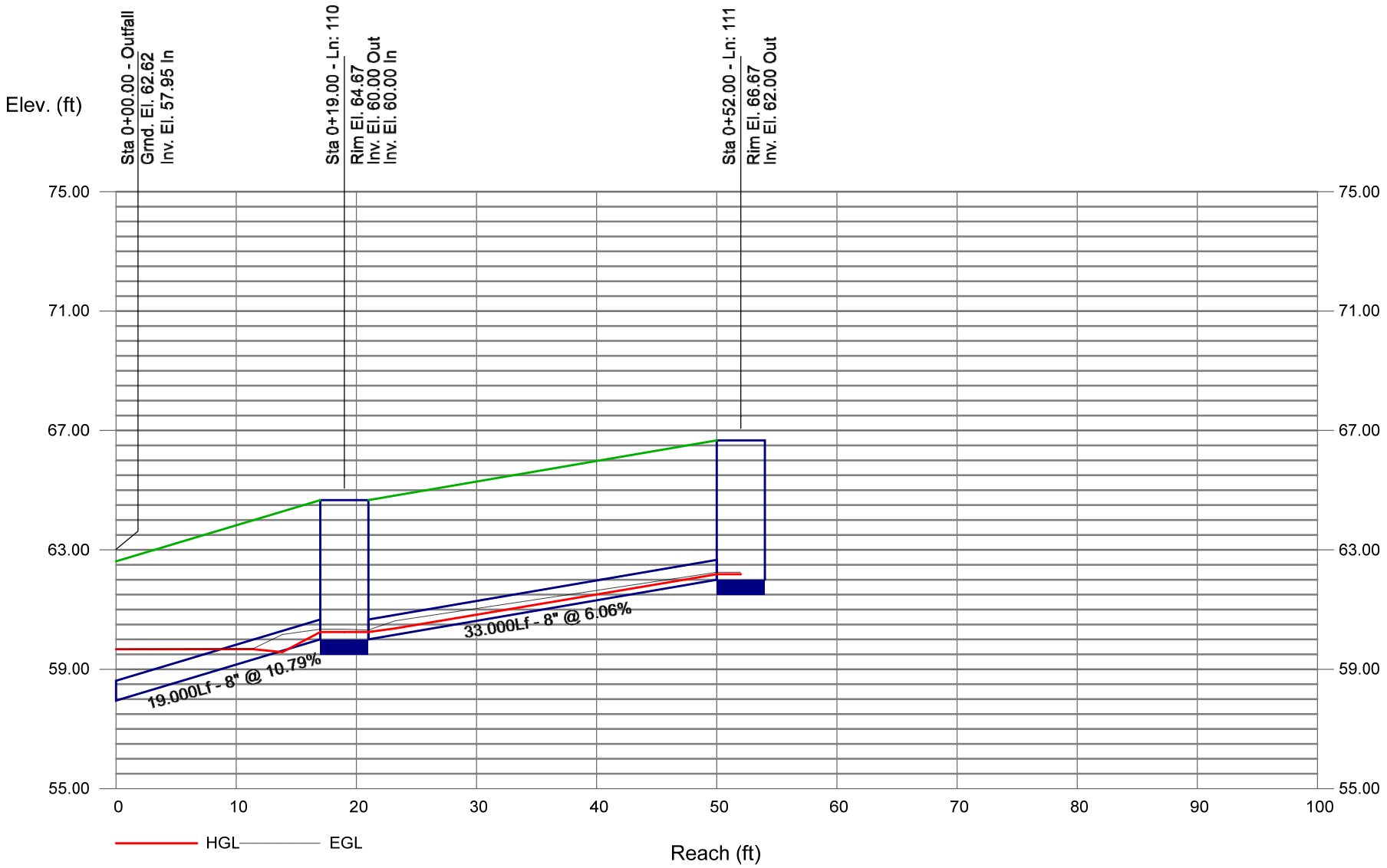

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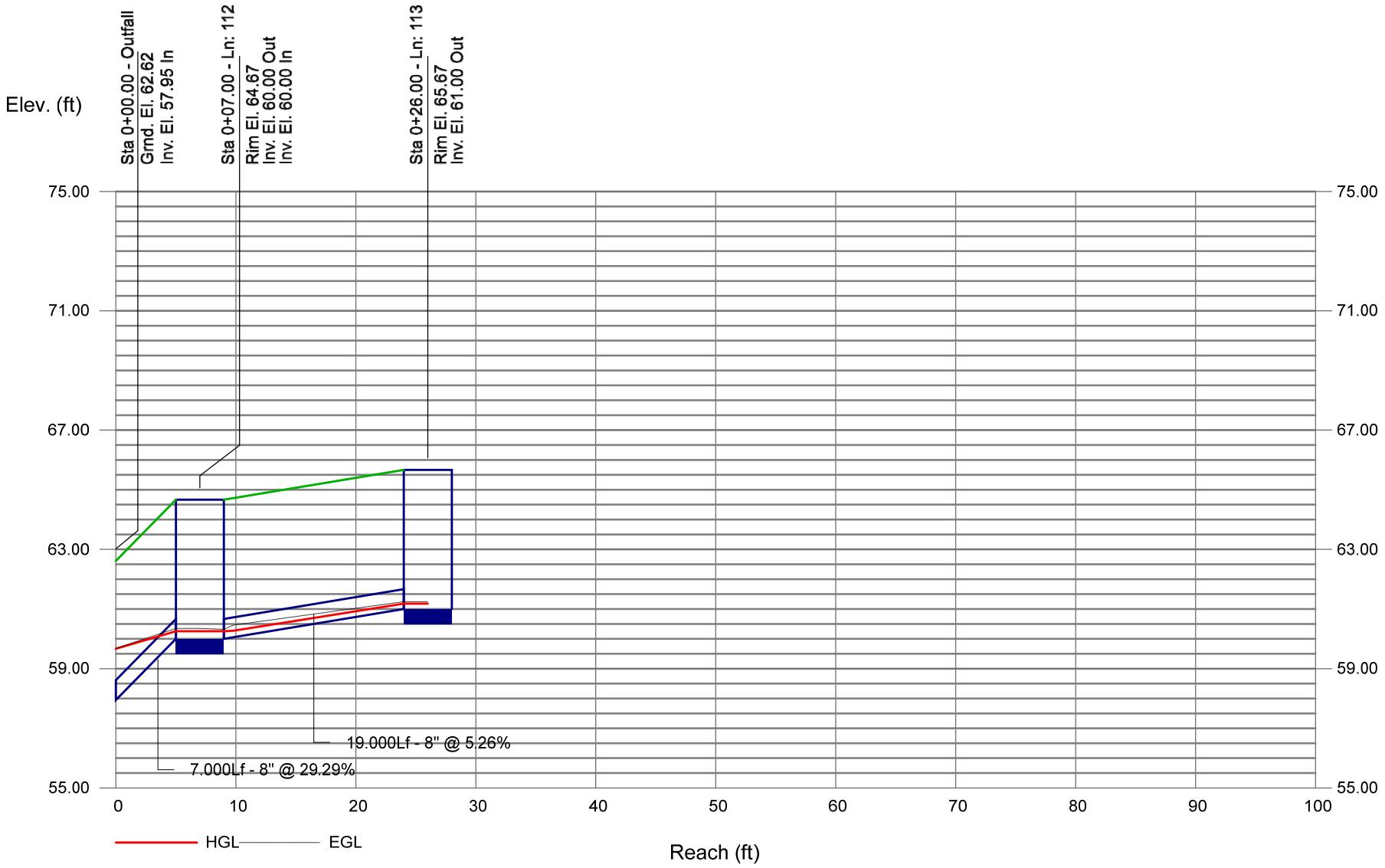

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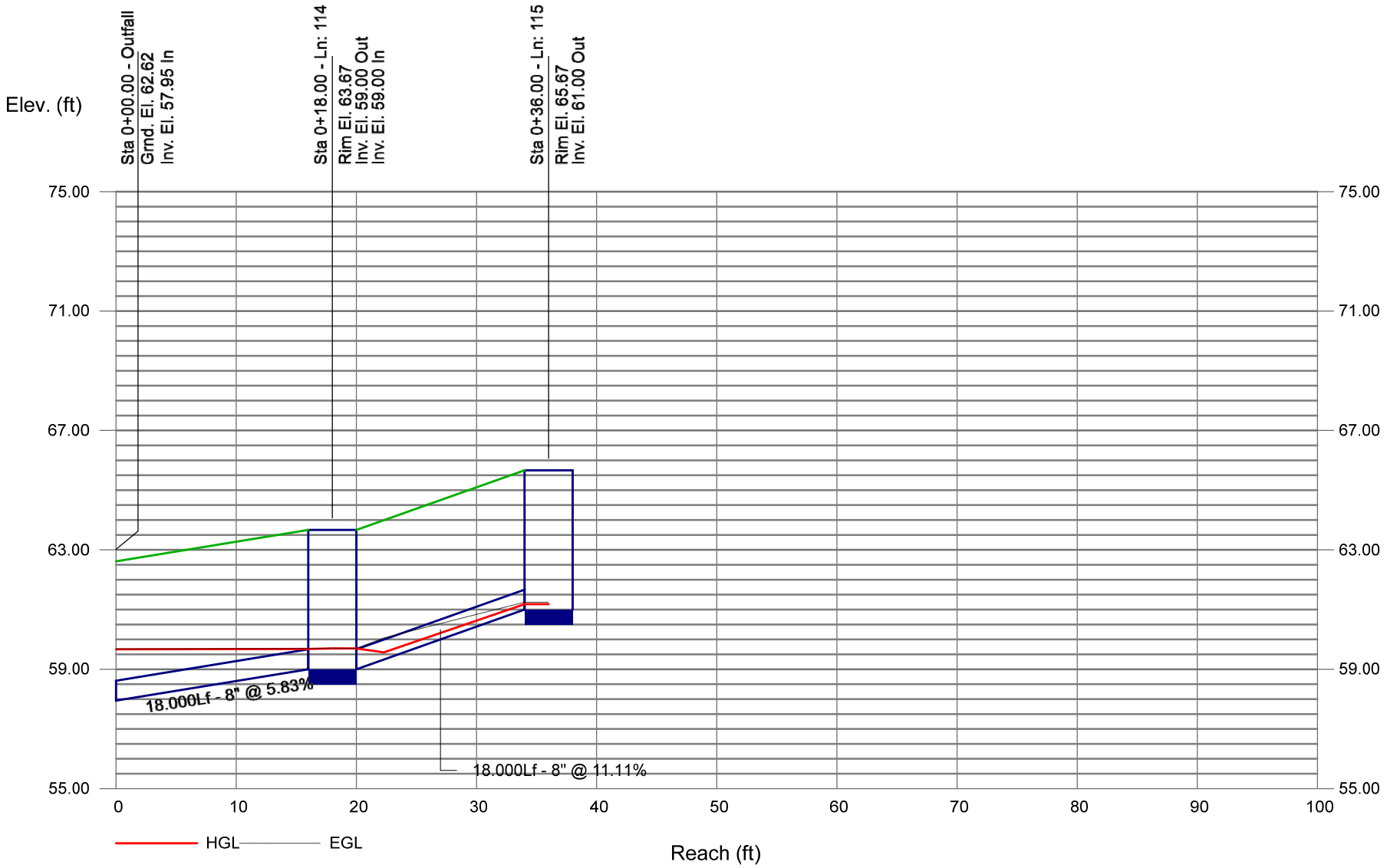

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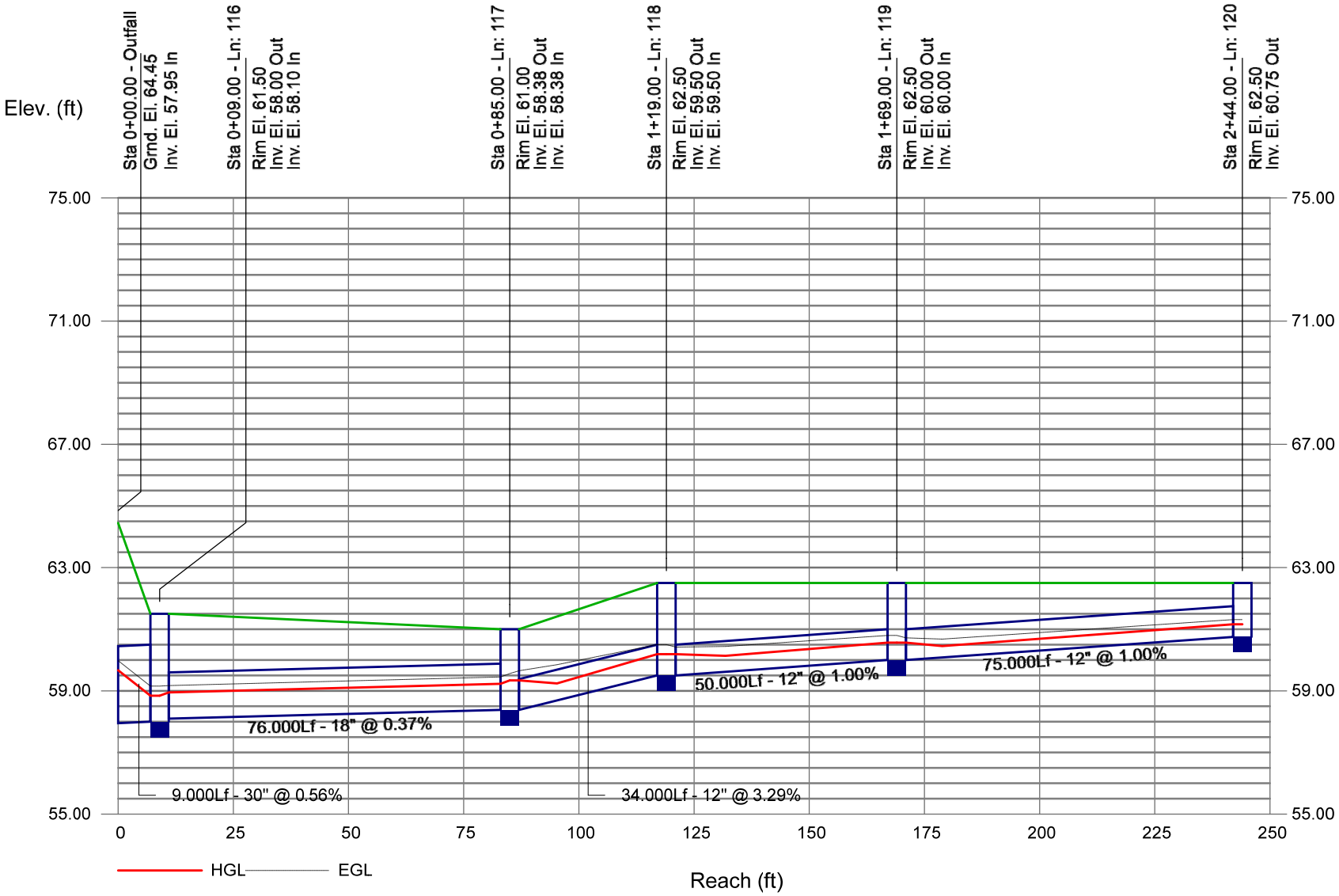

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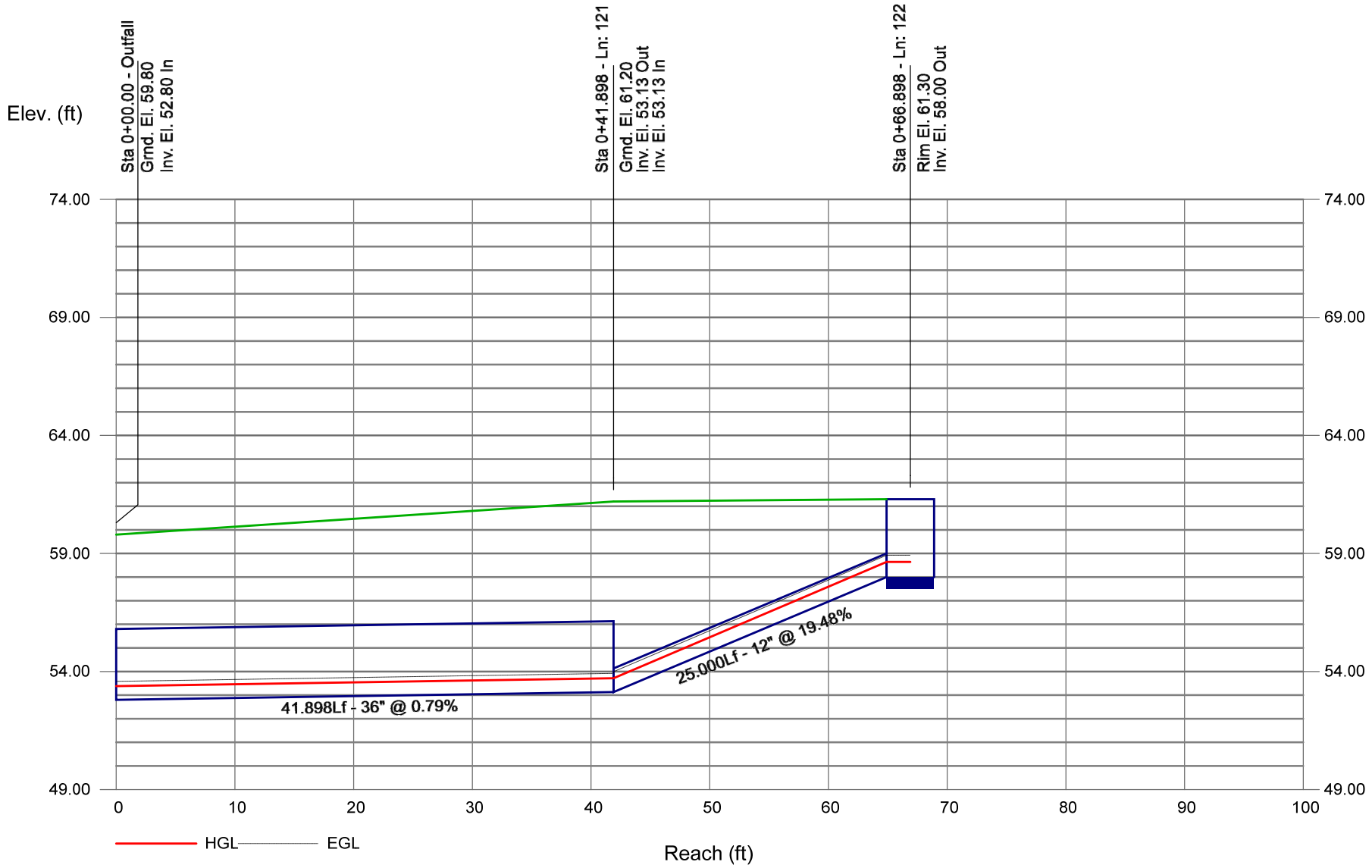

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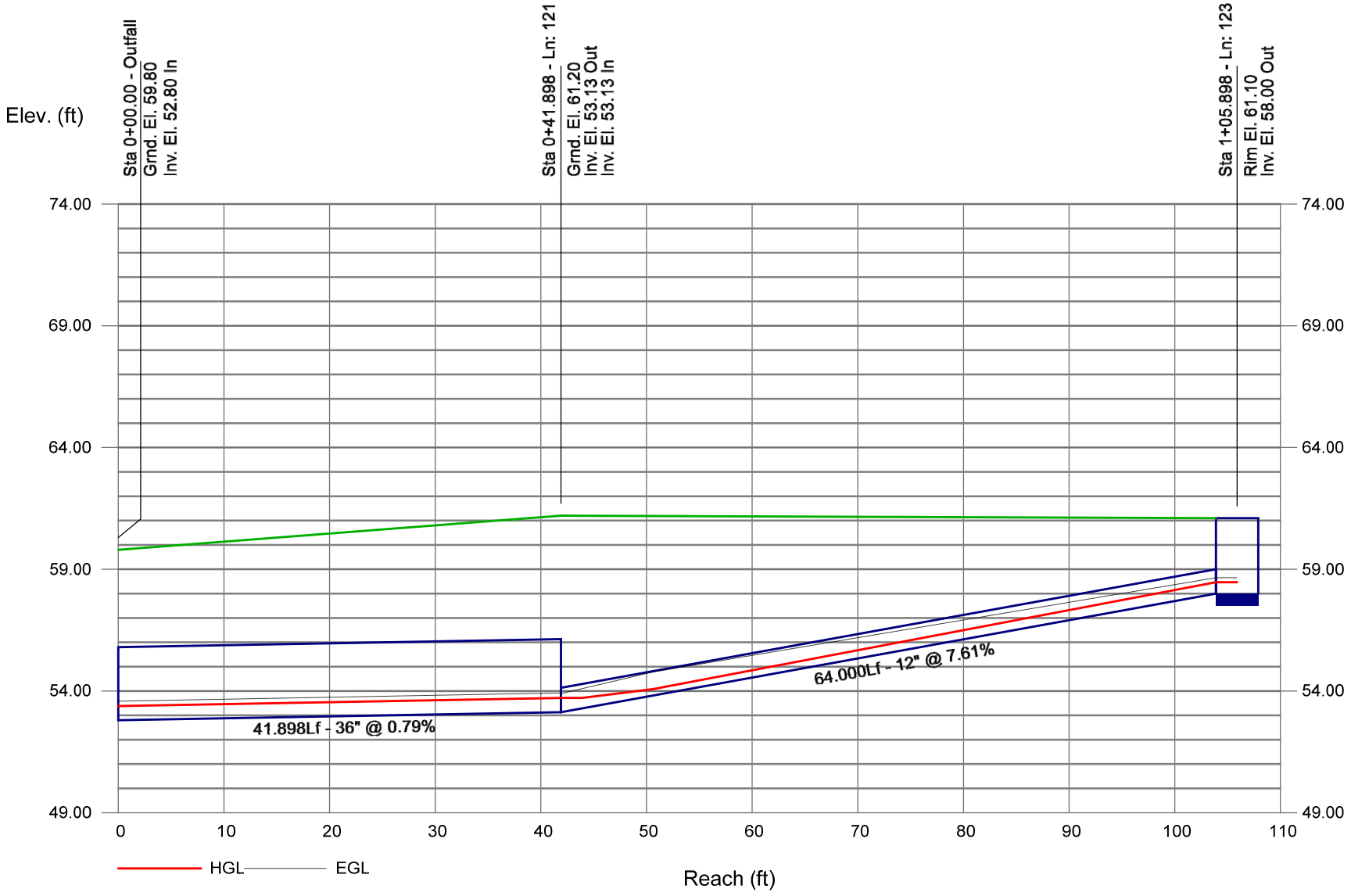

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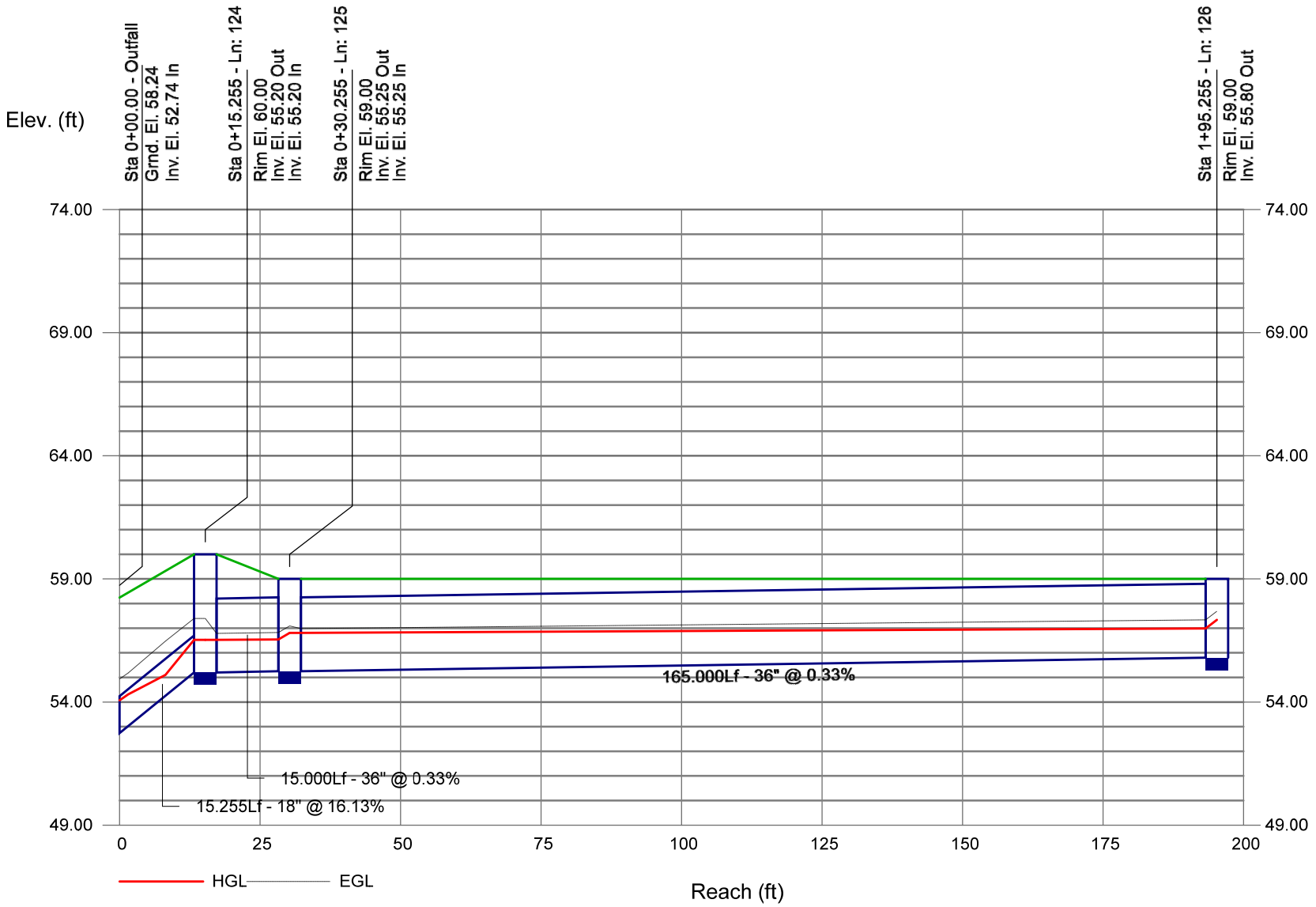

## Control Measures Narrative

In accordance with Section 5 (b) (1) (B) (iv) Control Measures of the General Permit, calculations supporting design of sediment and floatables removal controls pursuant to Section 5(b)(2)(C)(ii)(b) are as follows:

The redevelopment provides water quality measures in the form of hydrodynamic separators, upgradient of the detention systems, or isolator rows which will treat the water quality volume for their respective areas, ensuring that runoff from the proposed parking areas is treated prior to entering the respective outlets. In accordance with the 2024 CT Stormwater Quality Manual, the hydrodynamic separators and underground detention systems have been designed as water quality measures based on the water quality calculations included in the Engineering Report.

WILLIAM KENNY ASSOCIATES
LANDSCAPE ARCHITECTURE ▪ ECOLOGICAL SERVICES

January 14, 2022

Mr. Kevin Solli
Solli Engineering LLC
501 Main Street, Suite 2-4
Monroe, CT 06468

Re: Wetland and Watercourse Delineation
936 & 960 Silver Lane, 285 & 291 Forbes Street, East Hartford, Connecticut

Dear Mr. Solli:

As requested, we visited the referenced properties to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified, and to identify onsite soil types. This letter includes the methods and results of our investigation, which we completed today, January 14, 2022. In summary, three inland wetland and watercourse systems were identified and delineated. The first system, which is located in the central portion of the property, is a series of stormwater wetland basins. Another system, which is located in the eastern portion of the property, is a meadow wetland. The last system, which extends and flows west to east, is manmade drainage ditch (intermittent watercourse) connects these two systems.

***Regulatory Definitions***

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The Act defines Intermittent Watercourses as having a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

***Methodology***

A second order soil survey in accordance with the principles and practices noted in the USDA publication *Soil Survey Manual* (1993) was completed at the subject site. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA 2005).

1899 Bronson Road
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Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils. Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of two feet) were completed at the site.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation.

Wetland boundaries were demarcated (flagged) with pink surveyor's tape (hung from vegetation) or small flags (on wire stakes) labeled "William Kenny Associates" that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

***Results***

The approximate 25.3-acre commercial and undeveloped properties are located at 936 & 960 Silver Lane, 285 & 291 Forbes Street in East Hartford, Connecticut. Silver Lane is several hundred feet south of the central and eastern portions of the property, Interstate 84 borders the northern property boundary, Nutmeg Lane borders the western portion of the southern property boundary, and Forbes Street borders the eastern property boundary. Property improvements, which are in the western portion of the site, are asphalt driveway and parking areas. The vegetative cover in the central and eastern portions of the site is a meadow. A broadleaved deciduous woodland is present in the central-western portion of the site. There is very little vegetative cover in the western portion of the property.

Three inland wetland and watercourse systems were identified and delineated. The first system, which is located in the central portion of the property, is a series of stormwater wetland basins. Another system, which is located in the eastern portion of the property, is a meadow wetland. The last system, which extends and flows west to east, is manmade drainage ditch (intermittent watercourse) connects these two systems. Wetland soils are primarily poorly drained fine and formed from glaciolacustrine deposits or are forming from human altered deposits. The approximate locations of the systems are shown on the attached map. The boundaries of the systems were marked at the site with flags numbered 1 to 20 and 30 to 172.

Six soil map units were identified on the property (three wetland and three upland). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account for 10 to 15 percent of each map unit. The mapped units are identified in the following table by name and symbol and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope). These characteristics are generally the primary characteristics to be considered in land use planning and management. A description of each characteristic and their land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA 2005), and at *https://soilseries.sc.egov.usda.gov/osdname.aspx.* On the day of the review, there was one inch to

three inches of soil frost and one inch to two inches of snow cover. The upland soil was moist and the wetland soil was wet to inundated. The sky was clear and air temperatures were in the 30's ° F.

| Map Unit Sym. | Map Unit Name | Parent Material | Slope (%) | Drainage Class | High Water Table Depth (ft) | High Water Table Kind | High Water Table Mos. | Depth To Bedrock (in) |
|---|---|---|---|---|---|---|---|---|
| **Upland Soil** | | | | | | | | |
| 28 | Elmridge Fine Sandy Loam | Glaciolacustrine | | Moderately Well Drained | | | | |
| 307 | Urban Land Complex | Pavement & structures account for 85% or more of the area. Additional investigations required to determine characteristics | | | | | | |
| 308 | Udorthents, Smoothed | Excavated or Filled Soil (>2 feet) | 0-45 | Well Drained to Somewhat Poorly Drained | 1.5->6.0 | Apparent | Nov-May | >60 |
| **Wetland Soil** | | | | | | | | |
| 1 | Aquents | Excavated or Filled Soil (>2 feet) | 0-3 | Poorly Drained | 0.0-1.5 | Apparent | Nov-May | >60 |
| 9 | Scitico, Shaker and Maybid soils | Clayey Glaciolacustrine | 0-65 | Poorly Drained | 0.0-1.5 | Apparent | Jan-Dec | >60 |
| 15 | Scarboro Mucky sandy loam | Organic Material | 0-3 | Very Poorly Drained | 0.0-1.0 | Apparent | Jan-Dec | >60 |

Parent material is the unconsolidated organic and mineral material in which soil forms. Soil inherits characteristics, such as mineralogy and texture, from its parent material. Glacial till is unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice. Glacial outwash consists of gravel, sand, and silt, which are commonly stratified and deposited by glacial melt water. Alluvium is material such as sand, silt, or clay, deposited on land by streams. Organic deposits consist of decomposed plant and animal parts.

A soil's texture affects the ease of digging, filling, and compacting and the permeability of a soil. Generally sand and gravel soils, such as outwash soils, have higher permeability rates than most glacial till soils. Soil permeability affects the cost to design and construct subsurface sanitary disposal facilities and, if too slow or too fast, may preclude their use. Outwash soils are generally excellent sources of natural aggregates (sand and gravel) suitable for commercial use, such as construction sub base material. Organic layers in soils can cause movement of structural footings. Compacted glacial till layers make excavating more difficult and may preclude the use of subsurface sanitary disposal systems or increase their design and construction costs if fill material is required.

Generally, soils with steeper slopes increase construction costs, increase the potential for erosion and sedimentation impacts, and reduce the feasibility of locating subsurface sanitary disposal facilities.

Drainage class refers to the frequency and duration of periods of soil saturation or partial saturation during soil formation. Seven classes of natural drainage classes exist. They range from excessively drained, where water is removed from the soil very rapidly, to very poorly drained, where water is

removed so slowly that free water remains at or near the soil surface during most of the growing season. Soil drainage affects the type and growth of plants found in an area. When landscaping or gardening, drainage class information can be used to assure that proposed plants are adapted to existing drainage conditions or that necessary alterations to drainage conditions (irrigation or drainage systems) are provided to assure plant survival.

High water table is the highest level of a saturated zone in the soil in most years. The water table can affect the timing of excavations; the ease of excavating, constructing, and grading; and the supporting capacity of the soil. Shallow water tables may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

The depth to bedrock refers to the depth to fixed rock. Bedrock depth affects the ease and cost of construction, such as digging, filling, compacting, and planting. Shallow depth bedrock may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

***Conclusions***

Today, we investigated the properties at 936 & 960 Silver Lane, 285 & 291 Forbes Street in East Hartford, Connecticut and identified and delineated three inland wetland and watercourse systems. Thank you for the opportunity to assist you. If you should have any questions or comments, please do not hesitate to contact us.

Sincerely,

William L. Kenny, PWS, PLA
Soil Scientist

Alexander Wojtkowiak
Soil Scientist

Enclosure

*Ref. No. 5143*

WILLIAM KENNY ASSOCIATES
LANDSCAPE ARCHITECTURE ▪ ECOLOGICAL SERVICES
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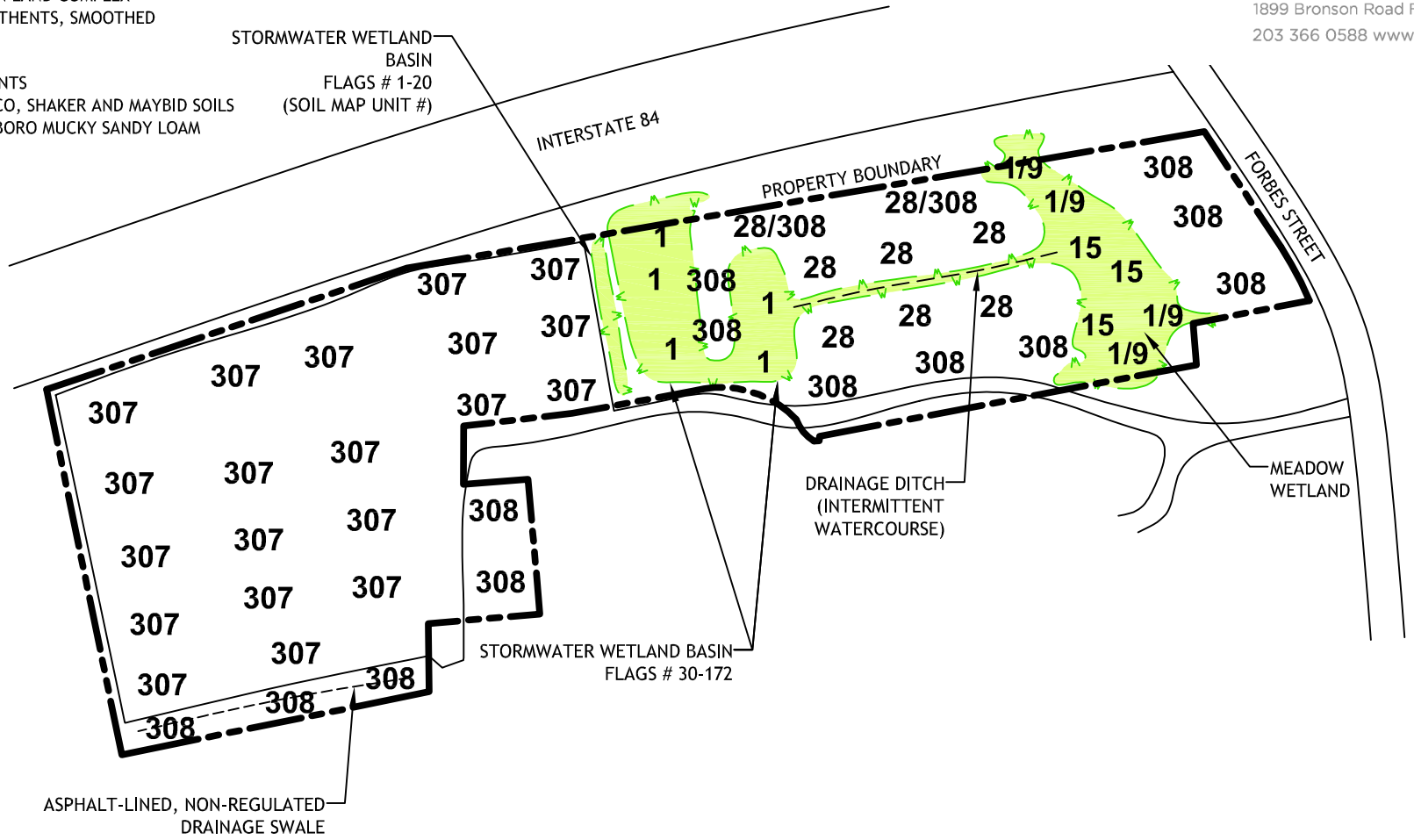
203 366 0588 www.wkassociates.net

SOIL LEGEND

UPLAND
**28** ELMRIDGE FINE SANDY LOAM
**307** URBAN LAND COMPLEX
**308** UDORTHENTS, SMOOTHED

WETLAND
**1** AQUENTS
**9** SCITICO, SHAKER AND MAYBID SOILS
**15** SCARBORO MUCKY SANDY LOAM




NOTES:
- *INFORMATION SHOWN ON THIS DRAWING, INCLUDING THE WETLAND BOUNDARY, IS APPROXIMATE. THE BOUNDARY IS NOT A SURVEYED REPRESENTATION OF WHAT WAS FIELD MARKED (FLAGGED).*
- *WETLAND AND SOIL INFORMATION PROVIDED BY WILLIAM KENNY ASSOC. OTHER INFORMATION TAKEN FROM A DRAWING PREPARED BY SOLLI ENGINEERING.*
- ***28, 307, 308, 1, 9** AND **15** ARE SOIL MAPPING UNIT SYMBOLS. SEE WETLAND DELINEATION REPORT FOR THE SOIL MAP UNIT NAMES AND ADDITIONAL RELATED INFORMATION.*

*I CERTIFY THAT THIS WETLAND MAP SUBSTANTIALLY REPRESENTS THE SOILS AND WETLANDS MAPPED IN THE FIELD*

*WILLIAM L. KENNY, SOIL SCIENTIST*

## *WETLAND & WATERCOURSE MAP*

***936 & 960 SILVER LANE***
***285 & 291 FORBES STREET***
***EAST HARTFORD, CONNECTICUT***

*SCALE: NOT TO SCALE*
*DATE: JANUARY 14, 2022*

*Ref. No. 5143*

***NORTH***