STORMWATER POLLUTION PREVENTION PLAN REPORT FOR ARTIS SENIOR LIVING

553 North State Road
Town of Ossining
Westchester County, New York

August, 2015
Revised November 9, 2015
Revised April 6, 2016

Submitted to:

Town of Ossining

Prepared by:

Kellard Sessions Consulting, P.C.
500 Main Street
Armonk, New York 10504

TABLE OF CONTENTS

Stormwater Pollution Prevention Plan Report (SWPPP)

Page

NARRATIVE REPORT (SWPPP)

A. Project Overview 1

B. Stormwater Management Plan 3

C. Erosion and Sediment Control Plan 11

D. General Construction Sequencing 15

E. Post-Construction Stormwater Facility Inspection and Maintenance Program 17

F. Forms 19

- Notice of Intent
- MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form
- Contractor Certification
- Maintenance Inspection Checklist

TABLE

Table 1 Required Permits and Approvals 2

Table 2 Design Point - Summary of Hydrological Analysis 6

TABLE OF CONTENTS (CONT'D)

Stormwater Pollution Prevention Plan Report (SWPPP)

APPENDIX

I. Hydrological Calculations

A. Existing Conditions
B. Proposed Conditions

II. Design Calculations

A. Water Quality Volume (WQv) Calculation

B. Runoff Reduction Calculations

C. Green Practices Tables

- Planning Practices for Preservation of Natural Features and Conservation
- Planning Practices for Reduction of Impervious Cover
- Green Infrastructure Techniques Acceptable for Runoff Reduction

D. Soil Testing Data Sheets

E. Pretreatment Design Calculations

III. Exhibit from the New York State Office of Parks, Recreation and Historic Preservation

IV. Off-Site Drainage Conveyance Design

TABLE OF CONTENTS (CONT'D)

Stormwater Pollution Prevention Plan Report (SWPPP)

DRAWINGS (prepared by Kellard Sessions Consulting, P.C., dated last revised April 6, 2016)

- Sheet 1/9 Existing Conditions
- Sheet 2/9 Layout Plan
- Sheet 3/9 Grading & Utilities Plan
- Sheet 4/9 Erosion and Sediment Control Plan
- Sheet 5/9 Landscaping Plan
- Sheet 6/9 Wetland Mitigation Plan
- Sheet 7/9 Details
- Sheet 8/9 Details
- Sheet 9/9 Details

NARRATIVE REPORT (SWPPP)

NARRATIVE REPORT (SWPPP)

A. PROJECT OVERVIEW

The project site is designated as Section 90.15, Block 1, Lot 45 on the Town of Ossining, New York tax maps. Mailing address of the property is 553 North State Road, Briarcliff Manor, New York, although the property does not lie within the Village of Briarcliff, but rather in the Town of Ossining, County of Westchester and State of New York.

The property is located along the northern side of North State Road, formerly County Road #154. It has 232.99 feet of frontage along North State Road which is curbed and has concrete sidewalks. The property contains 66,699 s.f. and is located in the GB District. It is bordered by a small strip retail center to the west, automotive use to the east and single-family residential homes to the north.

The proposed project will include the demolition of the existing structures on the property, and the redevelopment of the property with a two (2) story 64 bed memory care assisted living facility. Memory care assisted living facilities cater specifically to people with Alzheimers and other forms of dementia. They provide a residential alternative to traditional institutionalized care.

Pursuant to Section III.A.8 of the GP-0-15-002, an exhibit from the New York State Office of Parks, Recreation and Historic Preservation is provided in Appendix III. As shown on the exhibit, the proposed development does not impact potentially significant cultural resource and no archaeological investigations or preservation measures are required.

The project site will involve disturbance to a total of ±1.5 acres. Based on the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activities GP-0-15-002 regulations, the proposed construction activities require the implementation of an erosion and sediment control program. A subsurface infiltration system will be implemented to provide treatment for all proposed impervious surfaces. The infiltration system has been sized to mitigate the increase in runoff generated by the 100 year design storm event from the proposed impervious surfaces. The infiltration system design calculations have been provided in Appendix II, Section B.

As part of the stormwater BMP soil investigation, the applicant's engineer conducted soil testing within the vicinity of the infiltration areas. Results of the field testing were used by the applicant's engineer during the design of the stormwater practice systems. The soil data test results are provided in Appendix II, Section E.

Throughout the construction process, strict adherence to the erosion control plans and specifications will be maintained to ensure that all sediment is contained within the site in a controlled manner and that the untimely or unnecessary removal of existing vegetation is prevented. It is anticipated that the project will occur over a period of approximately twelve (12) months, commencing in June, 2016.

This report has been prepared in accordance with New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activities GP-0-15-002 and follows the guidelines set forth by the NYSDEC Stormwater Management Design Manual("NYSSMDM") and related requirements of the Town of Ossining.

Table 1 summarizes the permits and approvals required to implement the project.

TABLE 1 REQUIRED PERMITS AND APPROVALS		
Town of Ossining Town Board	Zoning Text Amendments	Pending
Town of Ossining Planning Board	Site Plan Approval Wetland Permit Tree Permit SEQRA Determination	Pending Pending Pending Pending
Town of Ossining Town Engineer	Site Plan Review	Pending
Town of Ossining Stormwater Management Officer	SWPPP Approval	Pending
Town of Ossining Environmental Review Board	Review and Recommendation on Stormwater, Wetlands, Steep Slopes and Tree Permits	Pending
Westchester County Planning Board	Review and Recommendation on Zoning Text Amendment and Curb Cut	Pending
New York State Department of Environmental Conservation	SPDES GP-0-15-002 Notice of Intent - Stormwater	Pending Pending
Town of Ossining Highway Department	Curb Cut Permit Road Opening Permit Connection to Sanitary Sewage	Pending Pending Pending
Town of Ossining Building Department	Building Permit	Pending
Town of Ossining Water Department	Connection to Water Main	Pending

B. STORMWATER MANAGEMENT PLAN

The stormwater management system proposed to treat the stormwater runoff associated with the proposed development consists of an underground infiltration system. The project site lies within the Pocantico River Basin. No lands represented on the plan limits are located within a designated 100 year flood plain.

Stormwater Management Plan - Overview

The methodology, requirements and guidelines used in the analysis and the preparation of the stormwater management plan for the project include:

- Computer software entitled, "Hydrocad Version 10.0", developed by Hydrocad Software Solutions, LLC. This program is based on USDA Soil Conservation Service (SCS) Technical Release 20 (TR-20).
- New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activities GP-0-15-002.
- New York State Stormwater Management Design Manual (latest edition).
- New York State Standards and Specifications for Erosion and Sediment Control, (latest edition).
- Town of Ossining requirements for Stormwater Management and Erosion and Sediment Control (Chapter 168).

Stormwater management computations (provided in the Appendix) were based upon the Soil Conservation Service (SCS), TR-20 methodologies and recommendations included in the "New York Standards and Specifications for Erosion and Sediment Control". Pre and post development rates of stormwater have been computed for comparison for the 1 year, 10 year and 100 year storm event using Type III, 24-hour rainfall events. The computer software entitled "Hydrocad Version 10.0" by Hydrocad Software Solutions, LLC has been utilized to determine the runoff rates and detention requirements.

TR-20 model of the site in existing conditions was constructed to determine runoff rates for the 1 year, 10 year and 100 year design stormwater. These rates serve as maximum target discharge rates for the developed conditions. Having established the target rates in accordance with the New York State Stormwater Management Design Manual, the TR-20 model of the proposed (developed) condition was similarly constructed to include the water quality facilities, the proposed detention system and the sub-areas contributing to them.

The precipitation values for the 1, 10 and 100 year design storms were obtained from the latest Northeast Regional Climate Data Center isohyetal maps. The values provided are for the 24-hour design storms in the Town of Ossining.

Design Storm (year)	**24-Hour Rainfall (inches)**
1	3.0
10	5.0
100	9.0

- Pre Development Condition

  The site sits lower than the surrounding properties and is level with North State Road. There is less than ten (10) feet of elevation across the site, with no steep slopes. A small off-site wetland is located adjacent to the northern boundary of the property. The wetland receives runoff from residential properties to the north. The wetland is smaller than the 1/2 acre minimum requirement to render it regulated. The on-site soil is Charlton Chatfield Complex which is Hydrologic Soil Group B (HSG B).

  An existing residence is located within the northwest corner of the property. It is accessed by a looped driveway with two (2) curb cuts onto North State Road. A majority of the property is lawn with less than 30 trees scattered about the site. Exposed bedrock is visible within the center of the lot favoring the roadway and piles of rock are stored within the eastern portion of the site. The lawn area is bordered by unmaintained areas, which include brush, east of the driveway, along the northern border and in the vicinity of bedrock along North State Road.

- Post Development Condition

  The proposed project will include the demolition of the existing structures on the property, and the redevelopment of the property with a two (2) story 64 bed memory care assisted living facility. Memory care assisted living facilities cater specifically to people with Alzheimers and other forms of dementia. They provide a residential alternative to traditional institutionalized care.

  New sanitary sewer, domestic water and fire supply will be installed to serve the project. A new drainage culvert will be required to transport storm flow through the property. A stormwater treatment system will also be required to improve water quality and mitigate peak storm flows leaving the property.

The site will be raised slightly above the elevation of North State Road. A vegetated buffer will be planted along the rear property boundary to screen the project from the residential neighborhood to the rear of the property. Those existing mature trees which are in very good condition will be incorporated into the landscape where possible. A formal landscaped entrance with signage will be located along the entry and the frontage will be landscaped.

The project includes the implementation of stormwater management practices which will mitigate the increase of runoff in the developed state to at least match existing runoff conditions. An underground infiltration system will be installed to mitigate peak runoff flows.

There is an existing drainage conveyance system that collects off-site runoff from the rear of the property. New piping will be installed to replace the existing failing pipe. Additionally, larger surge pipes will be installed to collect runoff from the larger (25 year storm) and safely convey the flows to the existing drainage system within North State Road. The modeling and design of this diversion system can be found in Appendix IV.

Stormwater Detention Requirements

NYSDEC requirements include the capture and temporary storage of the water quality volume (WQv). The WQv is defined as the volume of runoff generated from the entire 90th percentile rain event. The stormwater practices have been designed to treat the estimated runoff volume resulting from the WQv calculated in Appendix II, Section A.

Channel protection volume (CPv) is required to protect stream channels from erosion. Channel protection volume is accomplished by providing 24-hour extended detention of the 1 year, 24-hour storm event.

Overbank flood control (Qp) is required to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. Overbank flood control requires storage to attenuate the post development 10 year, 24-hour peak discharge rate (Qp) to below pre development rates. The requirement of overbank flood control has been achieved by infiltrating the 10 year, 24-hour storm event within the infiltration system. The peak stormwater runoff discharge rates for the proposed conditions have been reduced to a value below those of the corresponding existing conditions contributing for the 10 year, 24-hour storm event.

Extreme flood control (Qf) criteria is required to prevent the increased risk of flood damage from large storm events, maintain the boundaries of the 100 year flood plain and to protect the physical integrity of stormwater management practices. Extreme flood control requires storage to attenuate the post development 100 year, 24-hour peak discharge rate (Qf) to below pre development rates. The requirement of extreme flood control has been achieved by infiltrating the increase in runoff generated by the 100 year storm from the increase in impervious. The peak stormwater runoff discharge rates for the proposed conditions have been reduced to a value below those of the

corresponding existing conditions for the 100 year, 24-hour storm event. The peak stormwater runoff discharge rates for the proposed conditions from this project for all storms analyzed have been attenuated to the corresponding existing conditions. Therefore, all potential adverse impacts due to stormwater runoff from this proposed project have been mitigated.

Table 2 summarizes the pre and post development hydrological analysis.

TABLE 2 DESIGN POINT - SUMMARY OF HYDROLOGICAL ANALYSIS			
WATERSHED CONDITION	**PEAK DISCHARGE BY STORM RETURN FREQUENCY (cfs)**		
	STORM FREQUENCY (year)		
Design Point #1	**100**	**10**	**1**
Existing Condition	7.13	2.57	0.74
Proposed Condition	5.59	1.41	0.00

Source: Kellard Sessions Consulting, P.C.

Stormwater Quality Requirements

Stormwater quality has been addressed in accordance with the guidelines set forth in the New York State General Permit for Stormwater Discharge, GP-0-15-002.

Pretreatment of the infiltration systems will be provided by deep sump catch basins and hooded outlets. These systems will collect first flush sediments and provide access for maintenance.

The proposed infiltration area has been sized to capture and treat the water quality volume generated from the project site. The green infrastructure techniques and stormwater practices have been sized based on Chapter 5 "Green Infrastructure Practices" of the NYSSMDM.

Planning and Green Infrastructure

The current design regulations of the NYSDEC emphasize stormwater management at the source of the runoff. This will reduce the runoff at the downstream design point of the site resulting in smaller standard practices for quality treatment and quantity attenuation. The following five step process has been incorporated into the design of the project.

1. Site Planning
2. Determine WQv
3. Runoff Reduction by Applying Green Infrastructure Techniques and Standard SMP's with RRv Capacity

4. Apply Standard Stormwater Management Practices to address Remaining WQv
5. Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

1. Site Planning

In order to achieve a reduction in runoff volume, the site design has incorporated the minimum grading and clearing and planning practices to preserve natural features. Green infrastructure practices have been implemented to manage and treat stormwater, maintain and restore natural hydrology through infiltration, promote evapotransportation and to capture and reuse stormwater.

The plans identify natural resource areas including wetlands, water ways, buffers, vegetative cover, critical areas, topography, on-site soils and bedrock locations. The project was designed to preserve natural features and hydrology and to maintain natural drainage patterns. The clearing and grading have been kept to a minimum to preserve the natural conditions of the site to the extent possible. A table of the planning practices for preservation of natural features and conservation and planning practices for reduction of impervious cover and how these practices apply to the project has been provided in Appendix II, Section D.

2. Determine WQv

Based on the drainage areas on the site, the ground cover (including impervious surfaces) was determined, as well as the time of concentration flow paths. From this information, the WQv was calculated. The WQv for enhanced phosphorus removal is designed to treat the estimated runoff resulting from the 1 year, 24-hour storm event over the post development watershed. The WQv calculations have been provided in Appendix II, Section A.

3. Runoff Reduction by Applying Green Infrastructure Techniques and Standards SMP's with RRv Capacity

The infiltration systems have been designed to capture runoff at the source of the disturbance for the Assisted Living Facility. The water quality volume has been reduced by approximately 100% due to the implementation of the infiltration system. Based on the implementation of the infiltration practice system utilized for treatment, the amount of runoff reduction provided adequately meets the intent of the design requirements outlined in the NYSSMDM. A table which evaluates and justifies the feasibility of a green practice for treatment of the proposed project has been provided in Appendix II, Section D.

4. Apply Standard Stormwater Management Practices to Address Remaining WQv

   The infiltration system was sized to treat the increase in runoff for up to the 100 year storm. Therefore, any additional volume provided beyond what is required for RRv will be used to treat the remaining WQv. To achieve 100% reduction of the runoff volume, the infiltration system has been sized to capture the remaining 10% of runoff reduction. The infiltration system will capture the estimated runoff resulting from the 1 year, 24-hour design storm over the post development watershed. The infiltration system automatically meets channel protection requirements since it has been sized to handle the full water quality volume. Therefore, the infiltration system has provided 100% reduction of the runoff volume.

5. Apply Volume and Peak Rate Control Practices If Needed to Meet Requirements

   The infiltration system has been designed to meet the requirements for channel protection volume, overbank flood control and extreme flood control. The peak flow rates in excess of existing flow rates for the 10 year and 100 year post development design storm events will be infiltrated resulting in a reduction of the peak flow rates of the post development conditions to below the peak flow rates of the existing conditions.

6. Soil Restoration

   Soil restoration is a required practice applied across areas of development site where soils have been disturbed and will be vegetated in order to recover the properties and porosity of the soil. Soil restoration is applied in the cleanup, restoration and landscaping phase of construction followed by permanent establishment of an appropriate, deep-rooted groundcover to help maintain the restored soil structure.

   The disturbed areas for the project will be developed into several different uses including, buildings, parking, sidewalks, infiltration and grassed areas. The grassed areas will be the focus of the soil restoration which will include mechanical decompaction, compost amendment or both.

   In accordance with Table 5.3 of the design manual, the Hydrologic Soil Group C soils will require aeration and application of six(6) inches of topsoil in the disturbed areas with no grade change. In the areas where cut and fill occur, a full soil restoration is required per "Deep Ripping and De-Compaction, DEC 2008" which includes the two-phase practice of 1) Deep Ripping and 2) Decompaction (deep subsoiling) of the soil material to help mitigate the physically induced impacts of soil compression.

Off-Site Stormwater Diversion

As mentioned above, the existing wetland area and watercourse are supplied by approximately 16.1 acres of contributing off-site drainage area. This drainage area has been delineated on the figure in Appendix IV. Also, located in Appendix IV is the hydrologic model for this area.

There is an existing pipe that helps drain the wetland and watercourse. This pipe traverses the project site diagonally north to south and connects to the existing drainage system in north State Road. This pipe will be removed during construction and replaced with an 18" diameter pipe system. A headwall will be installed at the pipe inlet to increase the system collection performance. The proposed pipe will only convey diverted water not runoff from the proposed project and will connect to the same collection system in North State Road to maintain the downstream hydrology. The design calculations for this system can be found in Appendix IV. As shown, the contributing drainage area to the existing and proposed pipes was modeled using HydroCAD. The calculated 25 year storm produces a flow around 16.2 cfs. This flow is then collected via the proposed headwall and conveyed around the building.

The proposed pipes are set to meet existing inverts to maintain the current level of service. The pipe capacity was analyzed in two (2) ways. The first was discharging the entire flow into the pipe, the second (and more realistic) included creating a tail water condition in the existing low-lying area to the rear of the property. As the pipe capacity is taxed, the water will be temporarily stored in the low-lying topography. This storage scenario is what currently happens at this locaiton. Both scenarios show that the 25 year storm will not have an impact on the proposed building and will be diverted safely.

Ths applicant has included in the current wetland mitigation program the installation of a water quality treatment structure ("Downstream Defender") for the treatment of off-site stormwater runoff that currently drains through the property. As Sheet 6A/9 illustrates, a ±16.1 acre drainage shed, including properties both north and south of Morningside Avenue, drains to the applicant's property, ultimately being piped through an existing culvert to the Town's drainage system within North State Road.

Presently, this off-site stormwater is piped to North State Road without the benefit of any water quality treatment. Under the applicant's current wetland mitigation program, the incorporation of the "Downstream Defender" water quality structure will direct the stormwater flows from the ±16.1 acre off-site area to the "Downstream Defender" where it will be treated for pollutants including total suspended solids, phosphorus, nitrogen, floatable trash and petroleum products. The proposed "Downstream Defender", 4' diameter model will treat off-site stormwater flows of up to the 1 year storm event. This addition to the current wetland mitigation program will provide a significant water quality benefit for the stormwater runoff flowing from this untreated ±16.1 acre off-site watershed.

It should be noted that the Downstream Defender has been incorporated in this project as a wetland mitigation measure. Nevertheless, this practice has been included in the post-construction practice maintenance program to insure proper performance and treatment.

C. EROSION AND SEDIMENT CONTROL PLAN

All proposed soil erosion and sediment control practices have been designed in accordance with the following publications:

- New York Standards and Specifications for Erosion and Sediment Control, latest edition
- New York State SPDES General Permit for Stormwater Runoff from Construction Activity (GP-0-15-002)
- Town Code of Ossining Chapter 168 "Stormwater Management and Erosion and Sediment Control"

The primary aim of the soil erosion and sediment control plan is to reduce soil erosion from areas stripped of vegetation during and after construction and to prevent silt from reaching the drainage structures, infiltration systems and downstream properties. The infiltration systems will not be put into service until the contributing drainage areas to the system have been stabilized. As outlined in the construction sequencing notes below and on the Sediment & Erosion Control Plan, the Sediment & Erosion Control Plan is an integral component of the construction phasing and sequencing and will be implemented to control sediment and re-establish vegetation as soon as practicable. The plan will be implemented prior to the commencement of any earthmoving activities.

A copy of the contractor certification form is provided in Stormwater Pollution Prevention Plan Section F. This form will be signed by the contractor prior to the commencement of construction activity.

The owner/operator shall maintain at the construction site a copy of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities, GP-0-15-002, the Notice of Intent (NOI), the NOI acknowledgment letter, the Stormwater Pollution Prevention Plan Report for Artis Senior Living, the MS4 SWPPP Acceptance Form and inspection reports from the qualified inspector until all disturbed areas have achieved final stabilization and the Notice of Termination (NOT) has been filed with the NYSDEC.

The applicant or developer or their representative shall be on site at all times when construction or grading activity takes place. A qualified inspector shall conduct site inspections a minimum of once every seven (7) calendar days. The qualified inspector shall inspect and document the effectiveness of all erosion and sediment control practices. The qualified inspector shall prepare an inspection report subsequent to each and every inspection. The reports shall be forwarded to the Town's Stormwater Management Officer and also copied to the site logbook. The qualified inspector must be a licensed Professional Engineer, a Certified Professional in Erosion and Sediment Control (CPESC), a Registered Landscape Architect or someone working under the direct supervision of, and at the same company as, the Licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of NYSDEC endorsed

training in proper erosion and sediment control principles from a soil and water conservation district.

The proposed soil erosion and sediment control devices include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice are also provided herein. The owner or operator must ensure that all erosion and sediment control practices identified herein are maintained in effective operating condition at all times.

- STABILIZED CONSTRUCTION ENTRANCE

  A stabilized construction entrance shall be installed at the project entrance as indicated on the plans. The purpose of the stabilized construction entrance is to prevent vehicles leaving the site from tracking sediment, mud or any other construction-related materials from the site onto North State Road.

  Maintenance/Inspection

  The Contractor shall maintain the construction entrance in a manner which prevents or significantly reduces the tracking of sediment/soil onto North State Road. The Contractor shall inspect the construction entrance daily and after each rain event for displacement or loss of aggregate. The Contractor shall top-dress the construction entrance when displacement/loss of aggregate occurs, or if the aggregate becomes clogged or silted to the extent that the entrance can no longer perform its intended function. The Contractor shall inspect the vicinity of the construction entrance several times a day and immediately remove any sediment dropped or washed onto North State Road.

- SILT FENCE

  Silt fence (geotextile filter cloth) shall be placed in locations depicted on the approved plans. The purpose of the silt fence is to reduce the velocity of sediment-laden stormwater from small drainage areas and to intercept the transported sediment load. In general, silt fence shall be used at the perimeter of disturbed areas, toe of slopes or intermediately within slopes where obvious channel concentration of stormwater is not present. Silt fence shall always be installed parallel to the contours in order to prevent concentrated flows from developing along the silt fence.

  Maintenance/Inspection

  Silt fencing shall be inspected at a minimum of every seven (7) days. Inspections shall include ensuring that the fence material is tightly secured to the wood posts. In addition, overlapping filter fabric shall be secure and the fabric shall be maintained a minimum of

eight (8) inches below grade. In the event that any "bulges" develop in the fence, that section of fence shall be replaced immediately with a new fence section. Any visible sediment build-up against the fence shall be removed and deposited on-site a minimum of 100 feet from any wetland.

- INLET PROTECTION

After the project's drain inlets have been installed and the site is completely constructed and stabilized, these drain inlets will receive stormwater from the driveway and overland watersheds. The inlet protection barrier will allow stormwater to be filtered prior to reaching the inlet grate.

Maintenance/Inspection

Inlet protection devices shall be inspected at a minimum of every seven (7) days. Care shall be taken to ensure that all inlet protection devices are properly located and secure and do not become displaced. Any accumulated sediments shall be removed from the device and deposited not less than 100 feet from a wetland.

- SOIL/MATERIAL STOCKPILING

All soil/material stripped from the construction area during grubbing and grading shall be stockpiled in locations illustrated on the approved plans, or in practical locations on-site.

Maintenance/Inspection

All stockpiles shall be inspected (for signs of erosion or problems with seed establishment) at a minimum of once every seven (7) days. Soil stockpiles shall be protected from erosion by vegetating the stockpile with a rapidly-germinating grass seed and surrounded with either silt fence or staked weed-free haybales. In the non-growing season, the stockpiles shall be protected by a tarpaulin covering the entire stockpile.

- SURFACE STABILIZATION

All disturbed areas will be protected from erosion with the use of vegetative measures (e.g., grass seed mix, sod) hydromulch, weed-free hay or Curlex Excelsior Erosion Control Blankets.

Erosion control barriers consisting of silt fencing shall be placed around exposed areas during construction. Any areas stripped of vegetation during construction will be vegetated and/or mulched to prevent erosion of the exposed soils. In site areas where significant erosion potential exists (steep slopes/slopes exceeding 2:1) and/or where specifically directed, Curlex Excelsior Erosion Control Blankets (Manufactured by American Excelsior

or approved equal) shall be installed. Mulch is also used alone for temporary stabilization in non-growing months.

Materials that may be used for mulching include weed-free straw/ hay/salt hay, wood fiber, synthetic soil stabilizers, mulch netting, erosion control blankets or sod. A permanent vegetative cover will be established upon completion of construction of those areas which have been brought to finish grade and to remain undisturbed.

- GENERAL LAND GRADING

The applicant or their representatives shall be on-site at all times when construction or grading activity takes place and shall inspect and document the effectiveness of all sediment and erosion control practices.

The intent of the erosion controls is to control all disturbed areas, such that soils are protected from erosion by temporary methods and, ultimately by permanent vegetation. All cut and fill slopes shall be kept to a maximum slope of 2:1. In the event that a slope must exceed a 2:1 slope, it shall be stabilized with stone rip-rap. On fill slopes, all material will be placed in layers not to exceed 9 inches in depth and adequately compacted. Where practicable, diversion swales shall be constructed on the top of all fill embankments to divert any overland flows away from the fill slope.

- DUST CONTROL

Where vegetative or mulch cover is not practicable in disturbed areas of the site, dust shall be controlled by the use of water sprinkling. The surface shall be sprayed until wet. Dust control shall continue until such time as the entire site is adequately stabilized with permanent vegetative cover.

- POLLUTION PREVENTION MEASURES FOR CONSTRUCTION RELATED ACTIVITIES

Pollution prevention practices for preventing litter, construction chemicals (if applicable) and construction debris from becoming a pollutant source in stormwater discharge includes daily pickup of construction debris, inspection, designated storage areas, and physical controls such as silt fencing and inlet protection. Inspections will also be conducted to ensure that dust control measures are utilized as necessary. During construction, maintenance, construction and waste materials will be stored within suitable areas/dumpsters, as appropriate, to minimize the exposure of the materials to stormwater and spill prevention. All maintenance and construction waste will be disposed of in a safe manner in accordance with all applicable regulations.

D. GENERAL CONSTRUCTION SEQUENCING

Outlined below is a brief listing of the construction sequencing for the project.

Prior to any interior site activity, the owner, contractor, owner's engineer and Town Engineer shall hold a pre-construction meeting.

Final stabilization as defined by the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities GP-0-15-002 is the establishment of a uniform perennial vegetative cover with a density of eighty (80) percent over the pervious surface once all soil disturbance activities have ceased. Cover can be vegetative (e.g., grass, trees, seed and mulch, shrubs or turf) or non-vegetative (e.g., geotextiles, rip-rap or gabions, pavement, roofs, etc.).

The applicant shall notify the Town of Ossining enforcement official at least 48 hours before any of the following as required by the Stormwater Management Officer:

- Start of construction.
- Installation of sediment and erosion control measures.
- Completion of site clearing.
- Completion of rough grading.
- Completion of final grading.
- Closure of the construction season.
- Completion of final landscaping.
- Successful establishment of landscaping in public areas.

The owners/contractor is required to submit As-Built plans for any stormwater management practices located on site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be certified by a New York State licensed land surveyor or professional engineer.

Construction Sequencing

- Owner/operator to obtain all necessary permits/approvals.
- Owner/operator to conduct a pre-construction meeting.
- Contractor to stake clearing limits of disturbance for driveway and drainage facilities.
- Contractor to install perimeter erosion controls.
- Contractor to install stabilized construction entrance.
- Contractor to install silt fence in locations as indicated on the Erosion & Sediment Control Plan.
- Contractor to commence demolition of existing site features.
- Contractor to commence clearing and grubbing for structures, parking and utilities.
- Contractor to initiate general excavation of the parking lot, foundations and drainage facilities.

- Contractor to stockpile excavated soil in soil stockpile locations to reclaim for further use (i.e., landscaping).
- Contractor to construct facility.
- Contractor to make necessary utility service connections.
- Contractor to initiate installation of drainage facilities.
- The outlet of the drain inlet immediately upstream of the infiltration system shall be plugged or capped. This will keep the infiltration system off line during construction.
- Contractor to install inlet protection around installed drainage facilities.
- Contractor to complete storm drainage facilities.
- Contractor to rough grade parking lot, if required.
- Contractor to provide dust control during construction as necessary.
- Contractor to finish final grade of parking lot.
- Contractor to re-vegetate disturbed areas.
- Contractor shall final stabilize all drainage areas tributary to each stormwater facility.
- Contractor to install wetland mitigation measures.
- Contractor shall remove silt fence, inlet protection, drain inlet plug and all erosion control practices upon final stabilization.
- Re-vegetation of disturbed areas.
- Once site is stabilized, infiltration system to be placed on-line.
- Contractor to install landscaping.
- Remove sediment and erosion controls upon site stabilization.

E. POST-CONSTRUCTION STORMWATER FACILITY INSPECTION AND MAINTENANCE PROGRAM

General

The "Erosion and Sediment Control Plan" (Sheet 4/9) and "Details" (Sheet 7/9) are integral components of the post-construction stormwater facility inspection and maintenance program. The owner, its successors and/or assigns shall completely familiarize themselves with the plans, details and notes.

The drainage collection system, infiltration systems and their related appurtenances shall be collectively referred to herein as the "stormwater facilities."

The owner, its successors and/or assigns shall be responsible for the ongoing inspection and maintenance of the stormwater facilities. The purpose of the inspection/maintenance program is to provide basic instructions to the owner as to the proper inspection and maintenance of the stormwater facilities and related appurtenances and to help the owner identify if these facilities are not performing properly.

Inspection and Maintenance of Permanent Drainage Systems and BMPs

1. General Stormwater Facilities (i.e., drain inlets and grass swales)

   These stormwater facilities shall be inspected weekly for the first three (3) months following the completion of construction. Thereafter, these facilities shall be inspected at a minimum quarterly, and always immediately following a rain event. Upon inspection, facilities shall be immediately maintained and/or cleaned as may be required. Any site areas exhibiting soil erosion of any kind shall be immediately restored and stabilized with vegetation, mulch or rip-rap stone, depending on the area to be stabilized.

   Upon each inspection, all visible debris including, but not limited to, twigs, leaf and forest litter shall be removed. Grass swales shall be mowed twice annually (spring and fall) to a height of 4" - 6".

2. Vegetated Areas

   The areas within the swales shall be mowed periodically. Any debris, litter or fallen trees/shrubs shall be removed from within swales at the time of each mowing, unless such debris impedes the proper flow of water, in which case all debris shall be immediately removed upon inspection. All visible accumulated sediments shall be removed when sediments become clearly visible.

Special care shall be taken when removing sediment so as not to disrupt the intended finished grades of the swales. Any displaced or removed soil shall be replaced, in-kind, to maintain the slopes and original design intent of the swale.

3. Drain Inlets

All drain inlets have been designed with deep sumps to trap sediment prior to its transport downstream. These sumps will require periodic inspection and maintenance to ensure that adequate depth is maintained within the sumps.

All sumps shall be inspected once per month for the first three (3) months (after drainage system has been put into service). Thereafter, all sumps shall be inspected every four (4) months (i.e., production of ½ inch of rainfall or greater). The owner shall take measurements of the sump depth.

If sediment has accumulated to one-half the depth of the sump, all sediment shall be removed from the sump. Sediments can be removed from the sumps with hand-labor or with a vacuum device.

4. Downstream Defender Water Quality Structures

The Downstream Defender is a high performance hydrodynamic separator that is a highly effective means for the removal of sediment, floating debris and free-oil. The Downstream Defender chamber can be inspected and maintained completely from the surface elevation. The unit shall be inspected quarterly for the first year of operation and semi-annual for subsequent years.

Free-floating oil and flotable debris shall be observed, maintained and removed through the manhole access provided directly over the swirl chamber. The cleanout of accumulated sediment shall be performed when the sediment is within 30 to 36 inches of the water surface. The depth of the sediment shall be measured by the use of a stadia rod or a measurement tape. The sediment and debris can be removed with hand labor or with a vacuum device.

Contact Person

The entity responsible for implementing the maintenance program will be the owner, its successors and/or assigns. The current owners are Artis Senior Living, LLC, 1651 Old Meadow Road, McLean, Virginia 22102, (703) 992-7985.

F. FORMS

- Notice of Intent
- MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form
- Contractor Certification
- Maintenance Inspection Checklist

P:\Art100\Reports\ART100BH-SWPPP-04-16.wpd

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.10

(Submission #: 28Z-0G3M-XTSF, version 1)

PRINTED ON 8/28/2015

Summary

Submission #:	28Z-0G3M-XTSF	**Date Submitted:**	Not Submitted
Form:	NOI for coverage under Stormwater General Permit for Construction Activity version 1.10 (Artis-Ossining-NOI-08-15)	**Status:**	Draft
Applicant:	Kellard Sessions	**Active Steps:**	Form Submitted - Review
Reference #:			
Description:	NOI for coverage under Stormwater General Permit for Construction Activity		

Notes
There are currently no Submission Notes.

Details

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)

Artis Senior Living, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Ferentinos

Owner/Operator Contact Person First Name

Max

Owner/Operator Mailing Address

1651 Old Meadow Road

City

McLean

State

VA

Zip

22102

Phone

703-992-7985

Email

mferentinos@artissl.com

Federal Tax ID

NONE PROVIDED

Project Location

Project/Site Name

Artis Senior Living

Street Address (Not P.O. Box)

553 North State Road

Side of Street

North

City/Town/Village (THAT ISSUES BUILDING PERMIT)

Town of Ossining

State

NY

Zip

10562

County

WESTCHESTER

DEC Region

3

Name of Nearest Cross Street

Ryder Avenue

Distance to Nearest Cross Street (Feet)

550

Project In Relation to Cross Street

South

Tax Map Numbers Section-Block-Parcel

90.15-1-145

Tax Map Numbers

NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are: - Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates. - The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates

599088,4558121

Project Details

2. What is the nature of this project?

Redevelopment with
increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse

Single Family Subdivision

Post-Development Future Land Use

Other
Other

Assisted Living

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.

NONE PROVIDED

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. *** ROUND TO THE NEAREST TENTH OF AN ACRE. *

Total Site Area (acres)

1.5

Total Area to be Disturbed (acres)

1.5

Existing Impervious Area to be Disturbed (acres)

0.3

Future Impervious Area Within Disturbed Area (acres)

1.0

5. Do you plan to disturb more than 5 acres of soil at any one time?

---

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

A (%)

0

B (%)

100

C (%)

0

D (%)

0

7. Is this a phased project?

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

Start Date

03/01/2016

End Date

03/01/2017

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

Pocantico River

9a. Type of waterbody identified in question 9?

River Off Site

Other Waterbody Type Off Site Description

NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002?

No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002?

No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?

Yes

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?

No

If Yes, what is the acreage to be disturbed?

NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

Yes

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

Town of Ossining

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?

No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?

No

19. Is this property owned by a state authority, state agency, federal government or local government?

No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)

No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?

Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?

Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?

Yes

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

Professional Engineer (P.E.)

SWPPP Preparer

Kellard Sessions Consulting, P.C.

Contact Name (Last, Space, First)

Kellard, John

Mailing Address

500 Main Street

City

Armonk

State

NY

Zip

10504

Phone

914-273-2323

Email

jkellard@kelses.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form: 1) Click on the link below to download a blank certification form 2) The certified SWPPP preparer should sign this form 3) Scan the signed form 4) Upload the scanned doc

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification - Attachment

NONE PROVIDED
Comment: NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?

Yes

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

Temporary Structural
Dust
Control
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet
Protection

Biotechnical
NONE
PROVIDED

Vegetative Measures

Mulching
Seeding
Topsoiling

Permanent Structural
Land
Grading

Other

NONE PROVIDED

Post-Construction Criteria

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

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

Reduction of Clearing and Grading
Locating Development in Less Sensitive
Areas
Parking Reduction

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

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

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

0.108

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28). Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice. Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

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

0.283

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

Yes

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

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

NONE PROVIDED

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

If Yes, go to question 33.

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

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30). Also, provide the total impervious area that contributes runoff to each practice selected. NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

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

NONE PROVIDED

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

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

NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?

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

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

CPv Required (acre-feet)

0.212

CPv Provided (acre-feet)

0.283

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

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)

4.420

Post-Development (CFS)

3.840

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)

8.600

Post-Development (CFS)

6.550

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

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?

Yes

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

Artis Senior Living, LLC

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

NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)

NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)

NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)

NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)

NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)

NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)

NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)

NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)

NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)

NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)

NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)

NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)

NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)

NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)

NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)

NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)

1.02

Total Contributing Impervious Acres for Bioretention (F-5)

NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)

NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)

NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)

NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)

NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)

NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)

NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)

NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)

NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)

NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)

NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)

NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)

NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)

NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)

NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)

NONE PROVIDED

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

Total Contributing Impervious Area for Hydrodynamic

NONE PROVIDED

Total Contributing Impervious Area for Wet Vault

NONE PROVIDED

Total Contributing Impervious Area for Media Filter

NONE PROVIDED

"Other" Alternative SMP?

NONE PROVIDED

Total Contributing Impervious Area for "Other"

NONE PROVIDED

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

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

Manufacturer of Alternative SMP

NONE PROVIDED

Name of Alternative SMP

NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID

NONE PROVIDED

If Other, then identify

NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?

No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth

NONE PROVIDED

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

NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?

No

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

Yes

MS4 Acceptance Form Download

Download form from the link below. Complete, sign, and upload.

MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload - Attachment

NONE
PROVIDED
Comment: NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form * - Attachment

NONE
PROVIDED
Comment: NONE PROVIDED

Attachments

Date	Attachment Name	Context

Status History

Date	User	Processing Status
None		

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted - Review	Toni Cioffi	
Deemed Complete	Toni Cioffi	

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-15-002)

Project Site Information

Project/Site Name

Artis Senior Living, LLC

Owner/Operator Information

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

Artis Senior Living, LLC

Certification Statement – SWPPP Preparer

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

John		Kellard
First name	MI	Last Name

Signature

Date

Revised: April 2015

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-15-002)

Project/Site Name: Artis Senior Living, LLC

eNOI Submission Number: 28Z-OG3M-XTSF

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

Certification Statement - Owner/Operator

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

Owner/Operator First Name Max M.I. Last Name Ferentinos

Signature

Date

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Artis Senior Living, LLC
2. Contact Person:	Max Ferentinos
3. Street Address:	1651 Old Meadow Road
4. City/State/Zip:	McLean, VA 22101
II. Project Site Information	
5. Project/Site Name:	Artis Senior Living, LLC
6. Street Address:	553 North State Road
7. City/State/Zip:	Ossining, New York 10562
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

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

CONTRACTOR CERTIFICATION

Each contractor and subcontractor identified in the Stormwater Pollution Prevention Plan (SWPPP) involved in soil disturbance and/or stormwater management practices shall sign and date a copy of the following certification statement prior to undertaking any land development activity.

Project Name: _____

Project Location: _____

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

_____ _____

Signature Date

Contractor Name: _____

Contractor Title: _____

Contracting Firm: _____

Firm Location: _____

Firm Telephone Number: _____

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

Trained Contractor Name: _____

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

_____

_____

_____

_____

_____

_____

Actions to be Taken:

_____

_____

_____

_____

_____

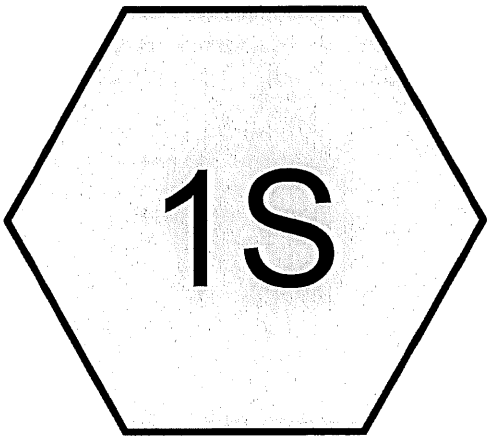
_____

APPENDIX

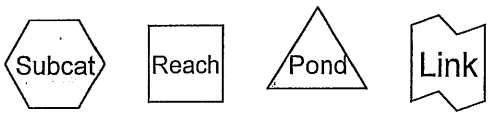
SECTION I

HYDROLOGICAL CALCULATIONS

A. EXISTING CONDITIONS



PRE



Routing Diagram for ART100-PRE
Prepared by Microsoft, Printed 8/27/2015
HydroCAD® 10.00 s/n 01808 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.260	61	>75% Grass cover, Good, HSG B (1S)
0.270	98	Paved parking, HSG C (1S)
1.530	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.260	HSG B	1S
0.270	HSG C	1S
0.000	HSG D	
0.000	Other	
1.530		**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	1.260	0.000	0.000	0.000	1.260	>75% Grass cover, Good	1S
0.000	0.000	0.270	0.000	0.000	0.270	Paved parking	1S
0.000	**1.260**	**0.270**	**0.000**	**0.000**	**1.530**	**TOTAL AREA**	

Summary for Subcatchment 1S: PRE

Runoff = 0.74 cfs @ 12.22 hrs, Volume= 0.080 af, Depth= 0.63"

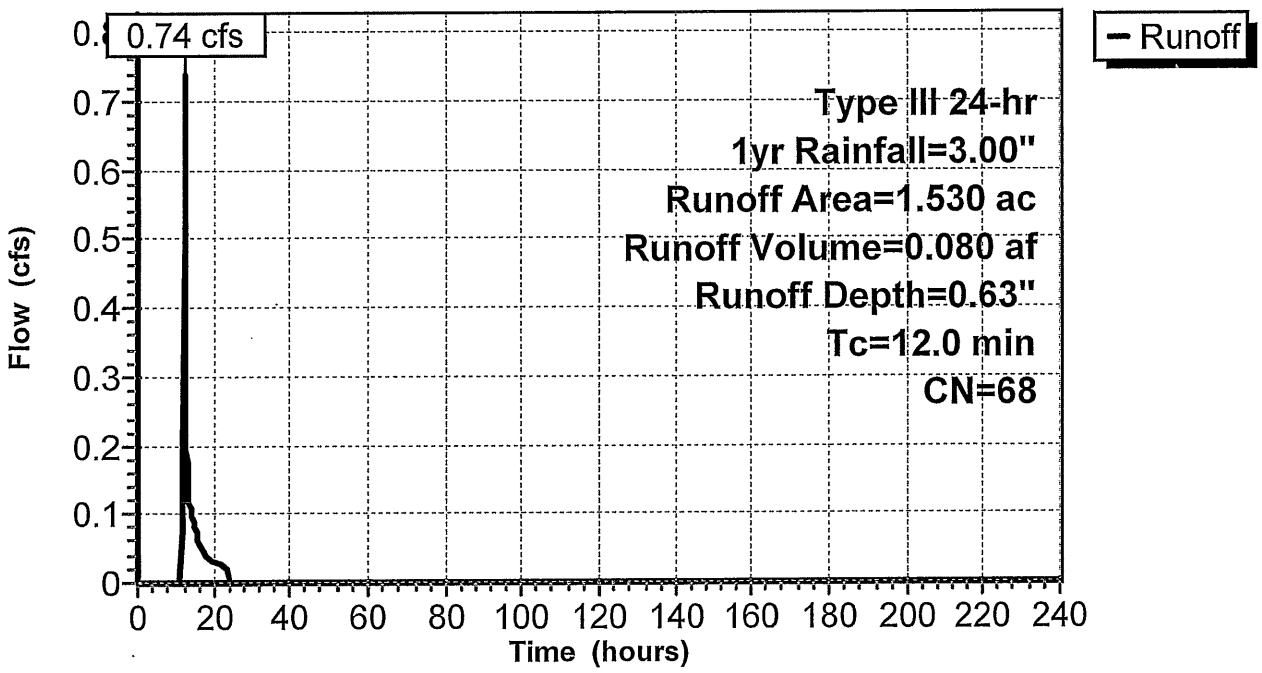
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 1yr Rainfall=3.00"

Area (ac)	CN	Description
1.260	61	>75% Grass cover, Good, HSG B
0.270	98	Paved parking, HSG C
1.530	68	Weighted Average
1.260		82.35% Pervious Area
0.270		17.65% Impervious Area

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

Subcatchment 1S: PRE

Hydrograph



Summary for Subcatchment 1S: PRE

Runoff = 2.57 cfs @ 12.20 hrs, Volume= 0.240 af, Depth= 1.88"

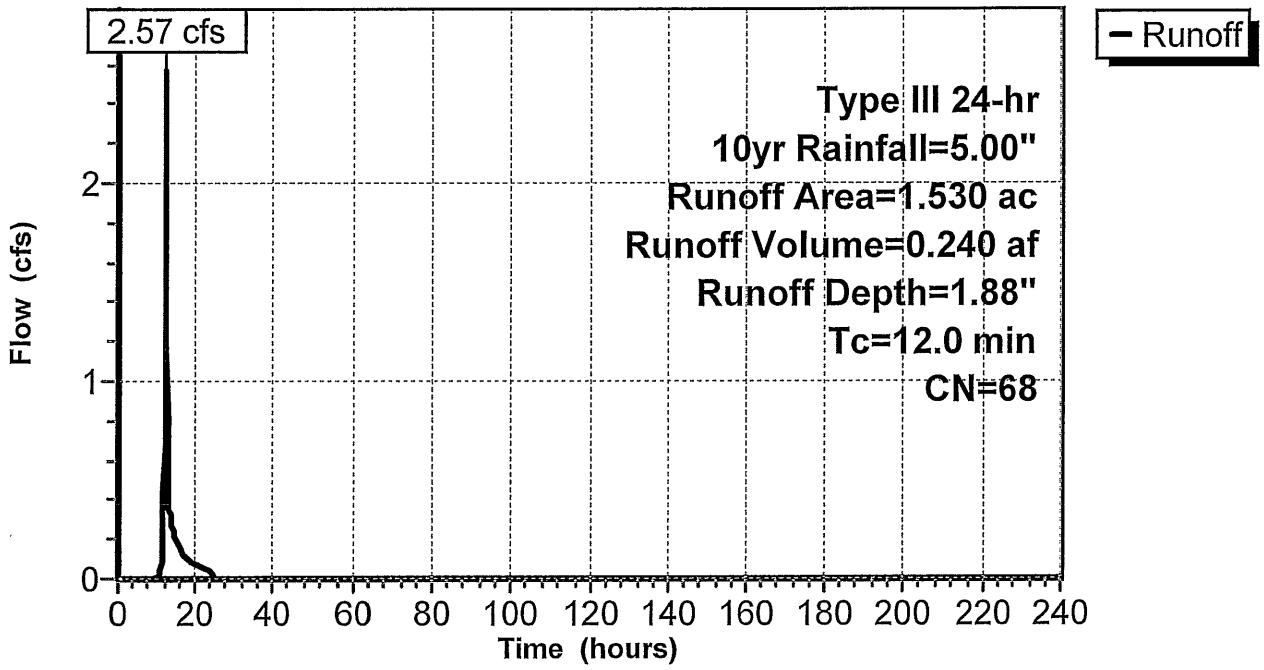
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 10yr Rainfall=5.00"

Area (ac)	CN	Description
1.260	61	>75% Grass cover, Good, HSG B
0.270	98	Paved parking, HSG C
1.530	68	Weighted Average
1.260		82.35% Pervious Area
0.270		17.65% Impervious Area

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

Subcatchment 1S: PRE

Hydrograph



Summary for Subcatchment 1S: PRE

Runoff = 7.13 cfs @ 12.18 hrs, Volume= 0.649 af, Depth= 5.09"

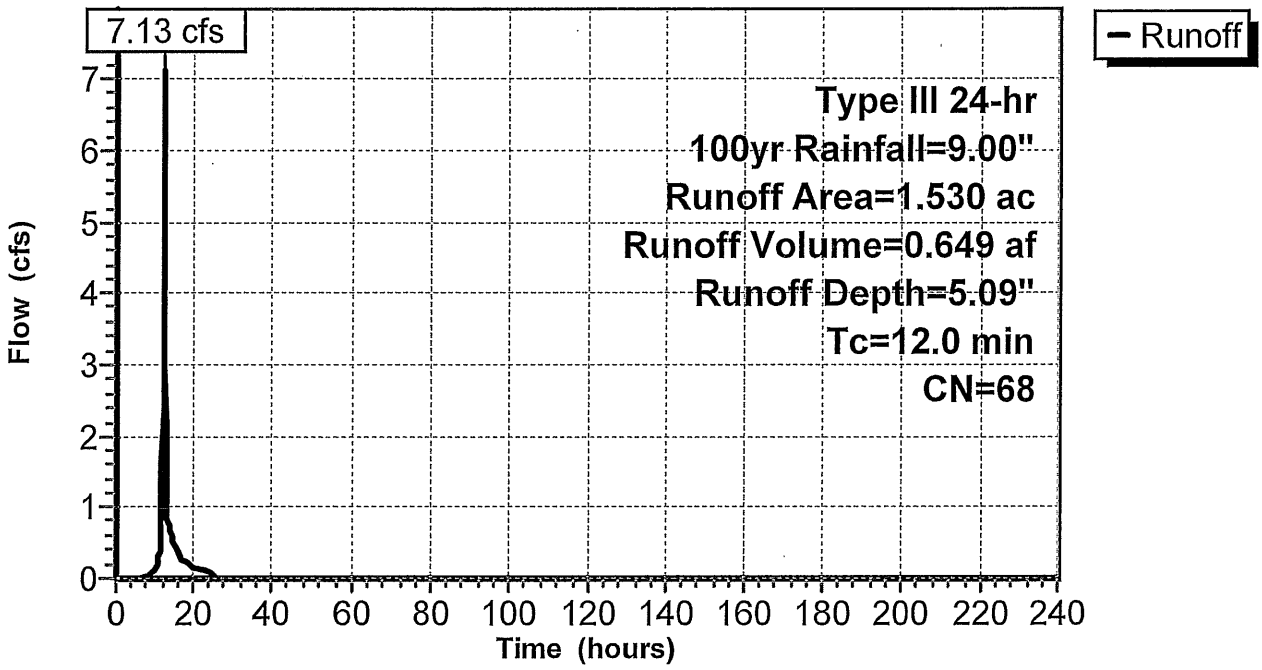
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 100yr Rainfall=9.00"

Area (ac)	CN	Description
1.260	61	>75% Grass cover, Good, HSG B
0.270	98	Paved parking, HSG C
1.530	68	Weighted Average
1.260		82.35% Pervious Area
0.270		17.65% Impervious Area

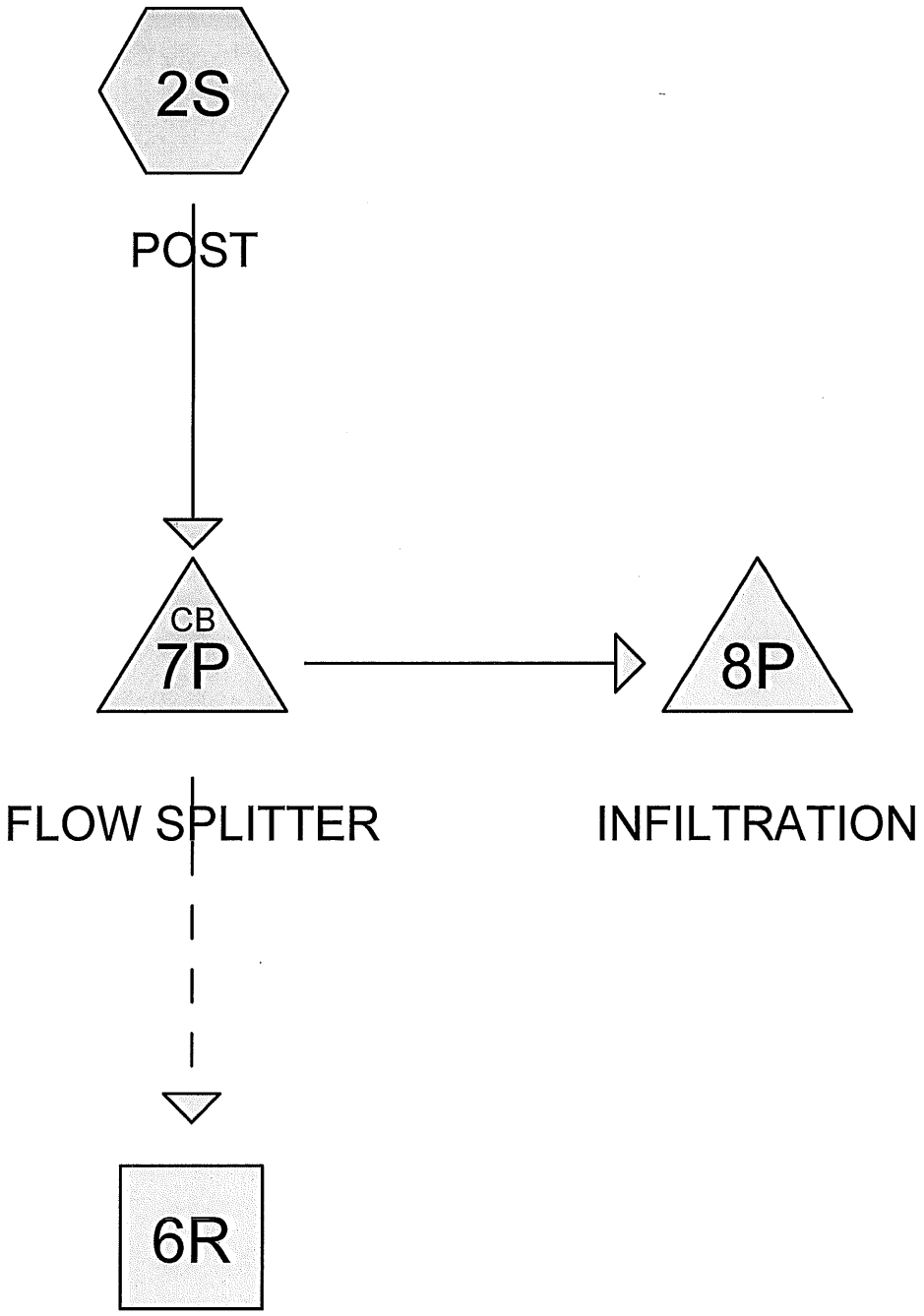
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry,**

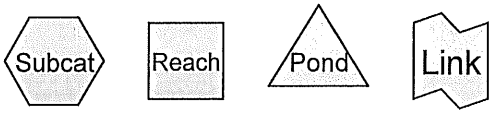
Subcatchment 1S: PRE

Hydrograph



B. PROPOSED CONDITIONS





Routing Diagram for ART100-POST
Prepared by Microsoft, Printed 1/8/2016
HydroCAD® 10.00 s/n 01808 © 2011 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.510	61	>75% Grass cover, Good, HSG B (2S)
1.020	98	Paved parking, HSG D (2S)
1.530	**86**	**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	7P	341.00	340.90	3.0	0.0333	0.013	12.0	0.0	0.0
2	7P	341.00	340.50	80.0	0.0063	0.013	12.0	0.0	0.0
3	8P	342.50	342.25	25.0	0.0100	0.013	12.0	0.0	0.0

Summary for Subcatchment 2S: POST

Runoff = 2.64 cfs @ 12.12 hrs, Volume= 0.212 af, Depth= 1.66"

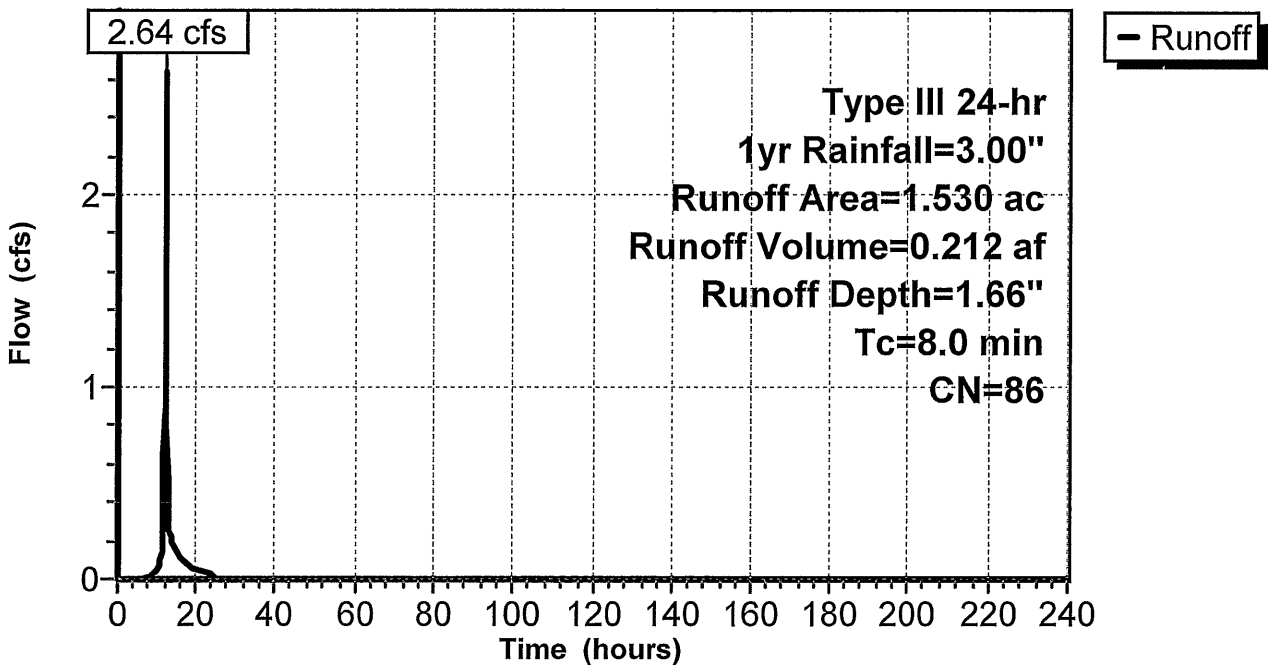
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 1yr Rainfall=3.00"

Area (ac)	CN	Description
0.510	61	>75% Grass cover, Good, HSG B
1.020	98	Paved parking, HSG D
1.530	86	Weighted Average
0.510		33.33% Pervious Area
1.020		66.67% Impervious Area

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

Subcatchment 2S: POST

Hydrograph

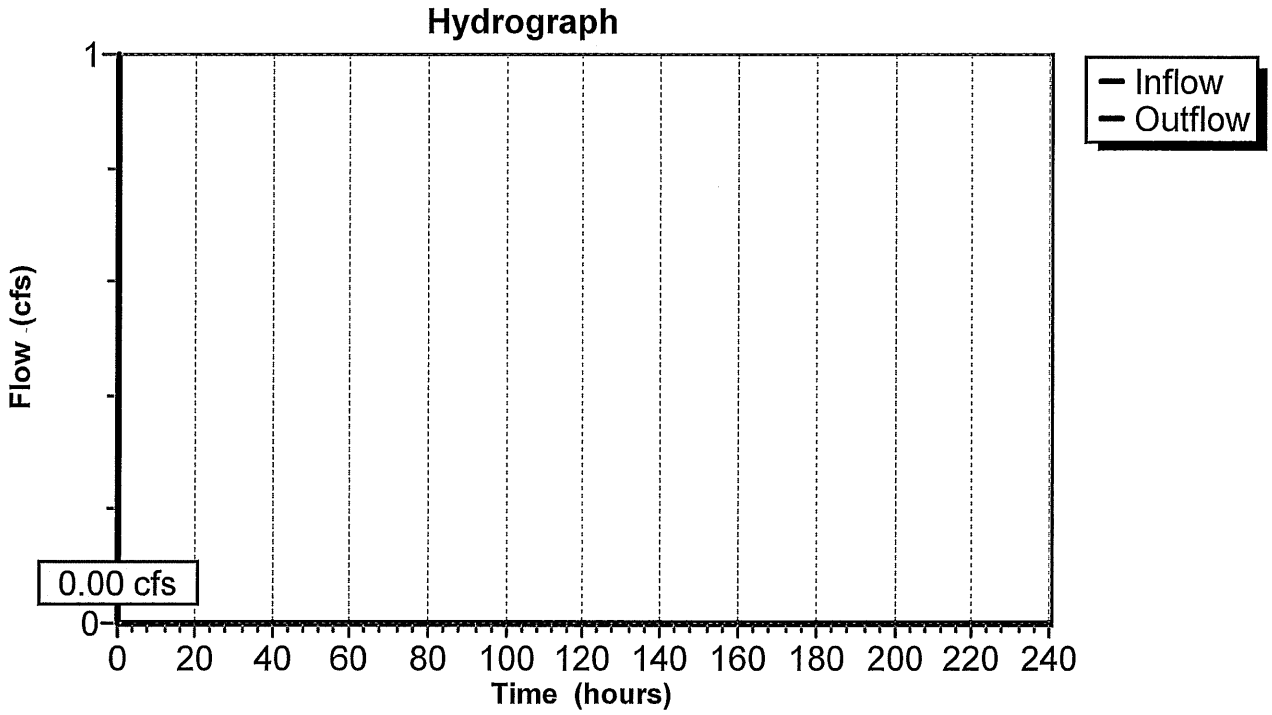


Summary for Reach 6R:

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs

Reach 6R:



Summary for Pond 7P: FLOW SPLITTER

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 1.66" for 1yr event				
Inflow =	2.64 cfs @	12.12 hrs,	Volume=	0.212 af	
Outflow =	2.64 cfs @	12.12 hrs,	Volume=	0.212 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.64 cfs @	12.12 hrs,	Volume=	0.212 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 342.27' @ 12.11 hrs
Flood Elev= 348.00'

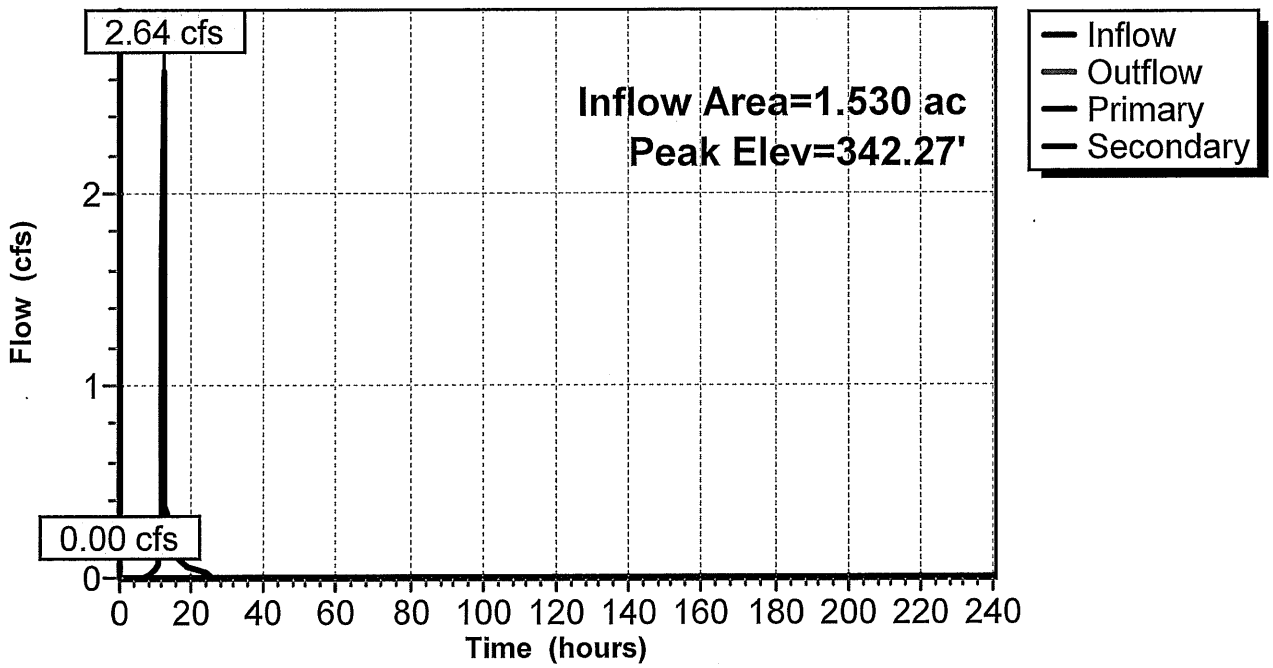
Device	Routing	Invert	Outlet Devices
#1	Primary	341.00'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.90' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	341.00'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	343.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.53 cfs @ 12.12 hrs HW=342.22' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.53 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=341.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: FLOW SPLITTER

Hydrograph



Summary for Pond 8P: INFILTRATION

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 1.66" for 1yr event				
Inflow =	2.64 cfs @	12.12 hrs,	Volume=	0.212 af	
Outflow =	0.71 cfs @	12.54 hrs,	Volume=	0.212 af,	Atten= 73%, Lag= 25.1 min
Discarded =	0.71 cfs @	12.54 hrs,	Volume=	0.212 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 340.67' @ 12.54 hrs Surf.Area= 0.051 ac Storage= 0.048 af

Plug-Flow detention time= 17.3 min calculated for 0.212 af (100% of inflow)
Center-of-Mass det. time= 17.3 min (844.5 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	339.00'	0.056 af	**30.00'W x 73.64'L x 4.00'H Field A** 0.203 af Overall - 0.064 af Embedded = 0.139 af x 40.0% Voids
#2A	340.00'	0.064 af	**StormTech SC-740** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	339.00'	**12.000 in/hr Exfiltration over Wetted area**
#2	Primary	342.50'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.50' / 342.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.71 cfs @ 12.54 hrs HW=340.67' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=339.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond 8P: INFILTRATION - Chamber Wizard Field A

Chamber Model = StormTech SC-740
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 6 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

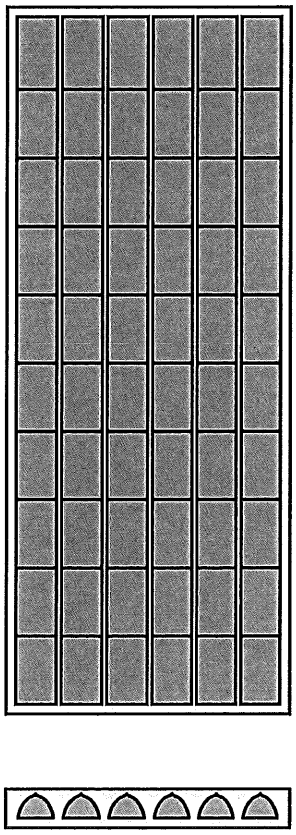
10 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 71.64' Row Length +12.0" End Stone x 2 = 73.64' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

60 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 6 Rows = 2,773.4 cf Chamber Storage

8,836.6 cf Field - 2,773.4 cf Chambers = 6,063.2 cf Stone x 40.0% Voids = 2,425.3 cf Stone Storage

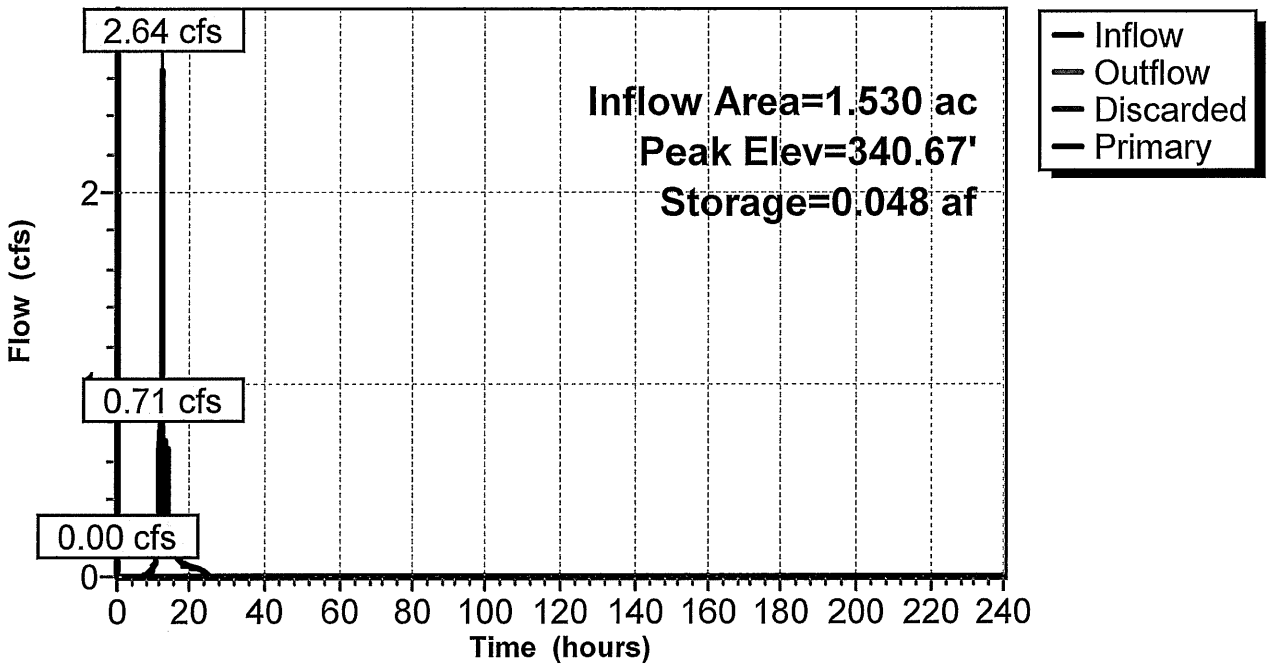
Stone + Chamber Storage = 5,198.7 cf = 0.119 af
Overall Storage Efficiency = 58.8%

60 Chambers
327.3 cy Field
224.6 cy Stone



Pond 8P: INFILTRATION

Hydrograph



Summary for Subcatchment 2S: POST

Runoff = 6.86 cfs @ 12.11 hrs, Volume= 0.562 af, Depth= 4.41"

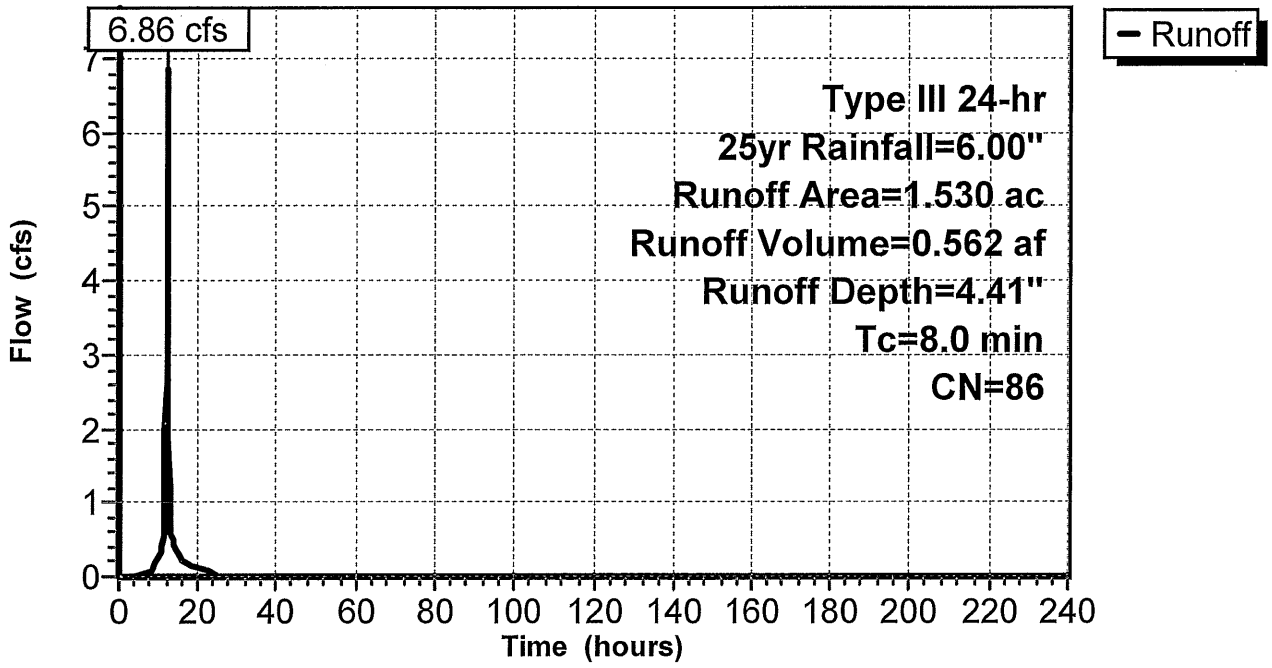
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 25yr Rainfall=6.00"

Area (ac)	CN	Description
0.510	61	>75% Grass cover, Good, HSG B
1.020	98	Paved parking, HSG D
1.530	86	Weighted Average
0.510		33.33% Pervious Area
1.020		66.67% Impervious Area

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

Subcatchment 2S: POST

Hydrograph



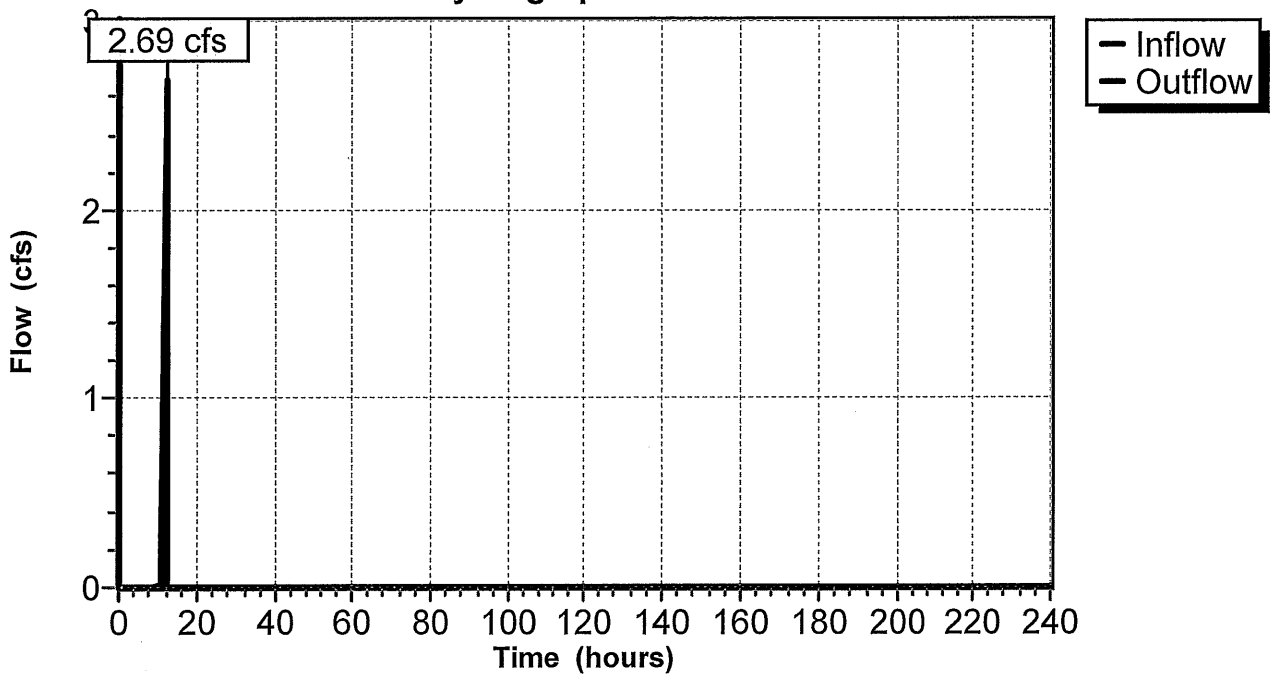
Summary for Reach 6R:

Inflow	=	2.69 cfs @	12.11 hrs, Volume=	0.035 af
Outflow	=	2.69 cfs @	12.11 hrs, Volume=	0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs

Reach 6R:

Hydrograph



Summary for Pond 7P: FLOW SPLITTER

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 4.41" for 25yr event				
Inflow =	6.86 cfs @	12.11 hrs, Volume=	0.562 af		
Outflow =	6.86 cfs @	12.11 hrs, Volume=	0.562 af, Atten= 0%, Lag= 0.0 min		
Primary =	4.18 cfs @	12.12 hrs, Volume=	0.527 af		
Secondary =	2.69 cfs @	12.11 hrs, Volume=	0.035 af		

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 343.45' @ 12.12 hrs
Flood Elev= 348.00'

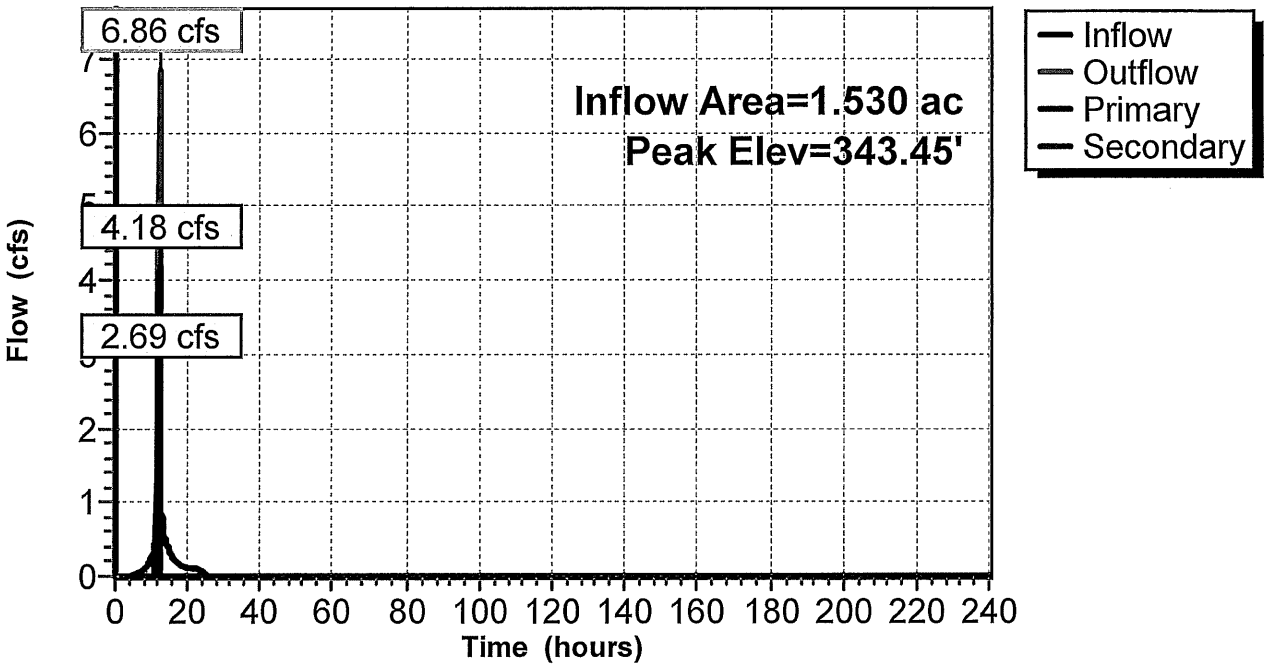
Device	Routing	Invert	Outlet Devices
#1	Primary	341.00'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.90' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	341.00'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	343.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.13 cfs @ 12.12 hrs HW=343.42' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.13 cfs @ 5.26 fps)

Secondary OutFlow Max=2.45 cfs @ 12.11 hrs HW=343.43' (Free Discharge)
└─**2=Culvert** (Passes 2.45 cfs of 4.14 cfs potential flow)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 2.45 cfs @ 1.92 fps)

Pond 7P: FLOW SPLITTER

Hydrograph



Summary for Pond 8P: INFILTRATION

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 4.13" for 25yr event				
Inflow =	4.18 cfs @	12.12 hrs,	Volume=	0.527 af	
Outflow =	3.57 cfs @	12.38 hrs,	Volume=	0.527 af,	Atten= 14%, Lag= 15.5 min
Discarded =	0.84 cfs @	12.30 hrs,	Volume=	0.472 af	
Primary =	2.73 cfs @	12.38 hrs,	Volume=	0.055 af	

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 343.81' @ 12.38 hrs Surf.Area= 0.051 ac Storage= 0.119 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 40.0 min (844.3 - 804.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	339.00'	0.056 af	**30.00'W x 73.64'L x 4.00'H Field A** 0.203 af Overall - 0.064 af Embedded = 0.139 af x 40.0% Voids
#2A	340.00'	0.064 af	**StormTech SC-740** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	339.00'	**12.000 in/hr Exfiltration over Wetted area**
#2	Primary	342.50'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.50' / 342.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.84 cfs @ 12.30 hrs HW=343.40' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.84 cfs)

Primary OutFlow Max=2.49 cfs @ 12.38 hrs HW=343.70' (Free Discharge)
└─**2=Culvert** (Inlet Controls 2.49 cfs @ 3.17 fps)

Pond 8P: INFILTRATION - Chamber Wizard Field A

Chamber Model = StormTech SC-740
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 6 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

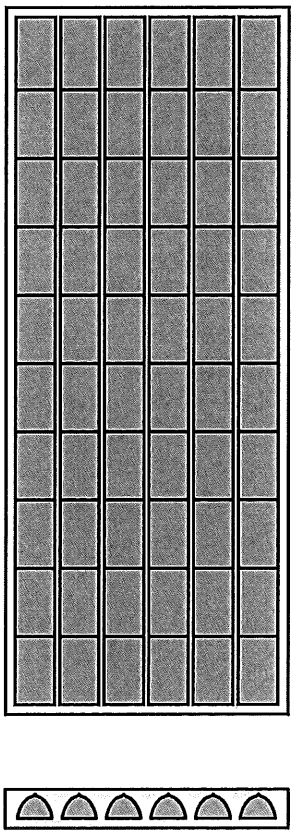
10 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 71.64' Row Length +12.0" End Stone x 2 = 73.64' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

60 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 6 Rows = 2,773.4 cf Chamber Storage

8,836.6 cf Field - 2,773.4 cf Chambers = 6,063.2 cf Stone x 40.0% Voids = 2,425.3 cf Stone Storage

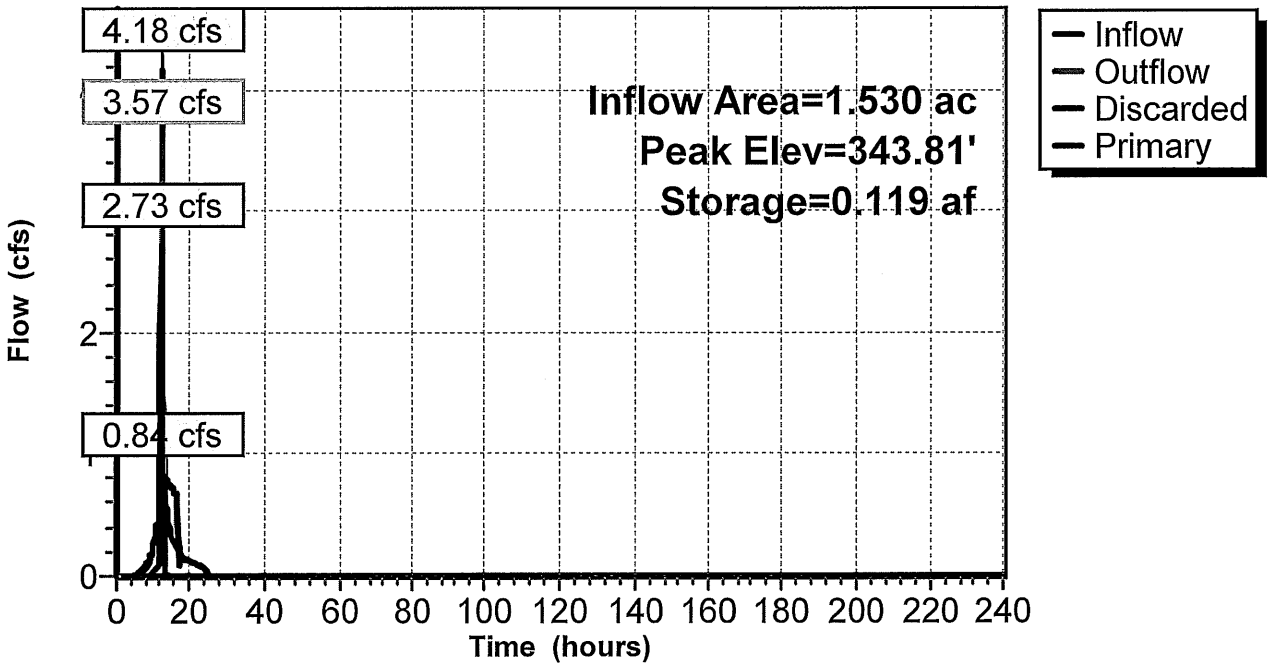
Stone + Chamber Storage = 5,198.7 cf = 0.119 af
Overall Storage Efficiency = 58.8%

60 Chambers
327.3 cy Field
224.6 cy Stone



Pond 8P: INFILTRATION

Hydrograph



Summary for Subcatchment 2S: POST

Runoff = 11.09 cfs @ 12.11 hrs, Volume= 0.931 af, Depth= 7.30"

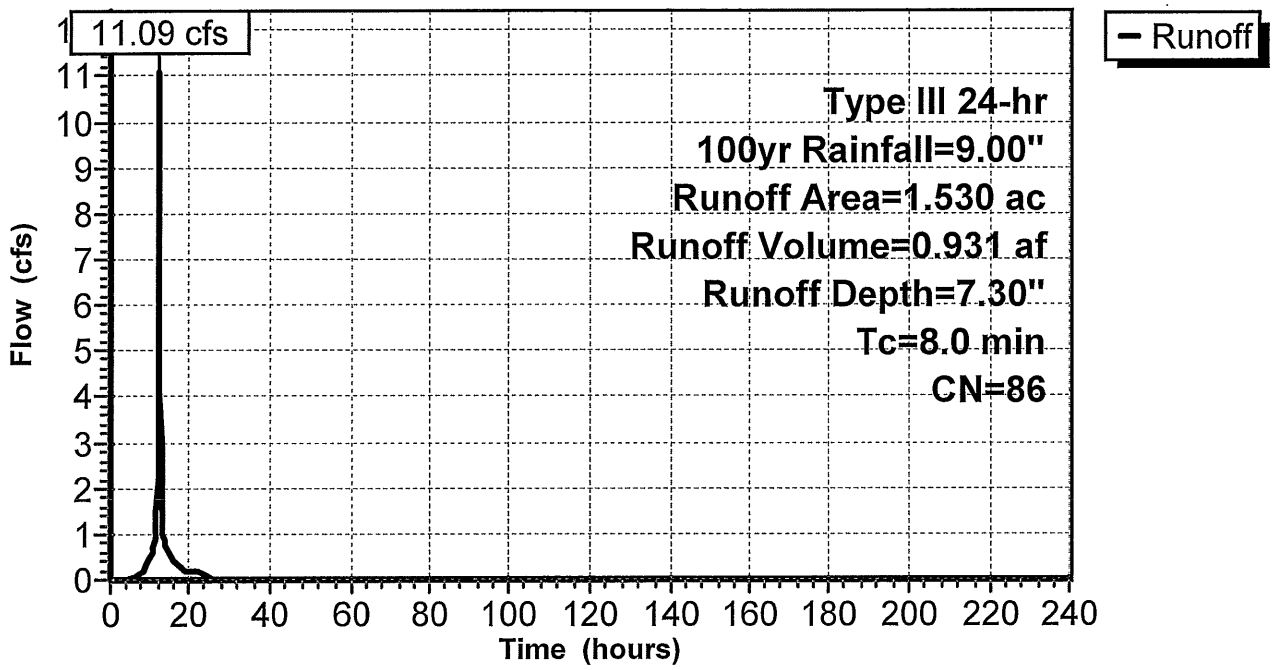
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 100yr Rainfall=9.00"

Area (ac)	CN	Description
0.510	61	>75% Grass cover, Good, HSG B
1.020	98	Paved parking, HSG D
1.530	86	Weighted Average
0.510		33.33% Pervious Area
1.020		66.67% Impervious Area

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

Subcatchment 2S: POST

Hydrograph



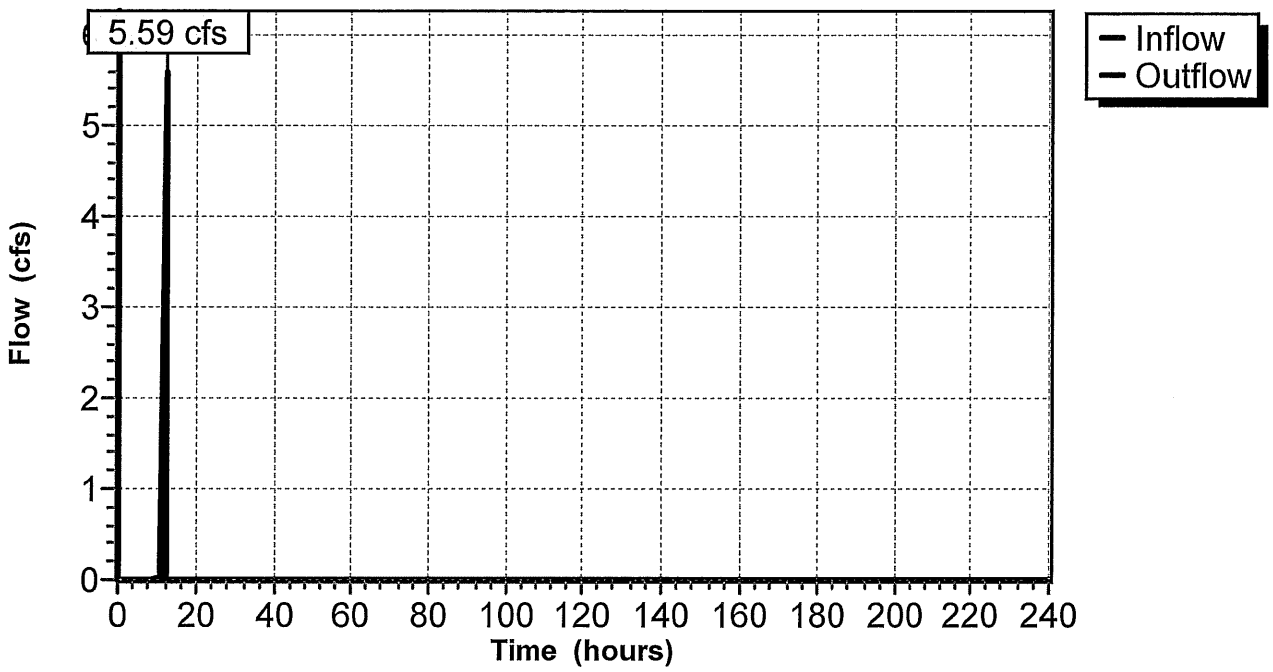
Summary for Reach 6R:

Inflow	=	5.59 cfs @	12.12 hrs,	Volume=	0.122 af
Outflow	=	5.59 cfs @	12.12 hrs,	Volume=	0.122 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs

Reach 6R:

Hydrograph



Summary for Pond 7P: FLOW SPLITTER

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 7.30" for 100yr event				
Inflow =	11.09 cfs @	12.11 hrs,	Volume=	0.931 af	
Outflow =	11.09 cfs @	12.11 hrs,	Volume=	0.931 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.52 cfs @	12.10 hrs,	Volume=	0.809 af	
Secondary =	5.59 cfs @	12.12 hrs,	Volume=	0.122 af	

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 344.92' @ 12.10 hrs
Flood Elev= 348.00'

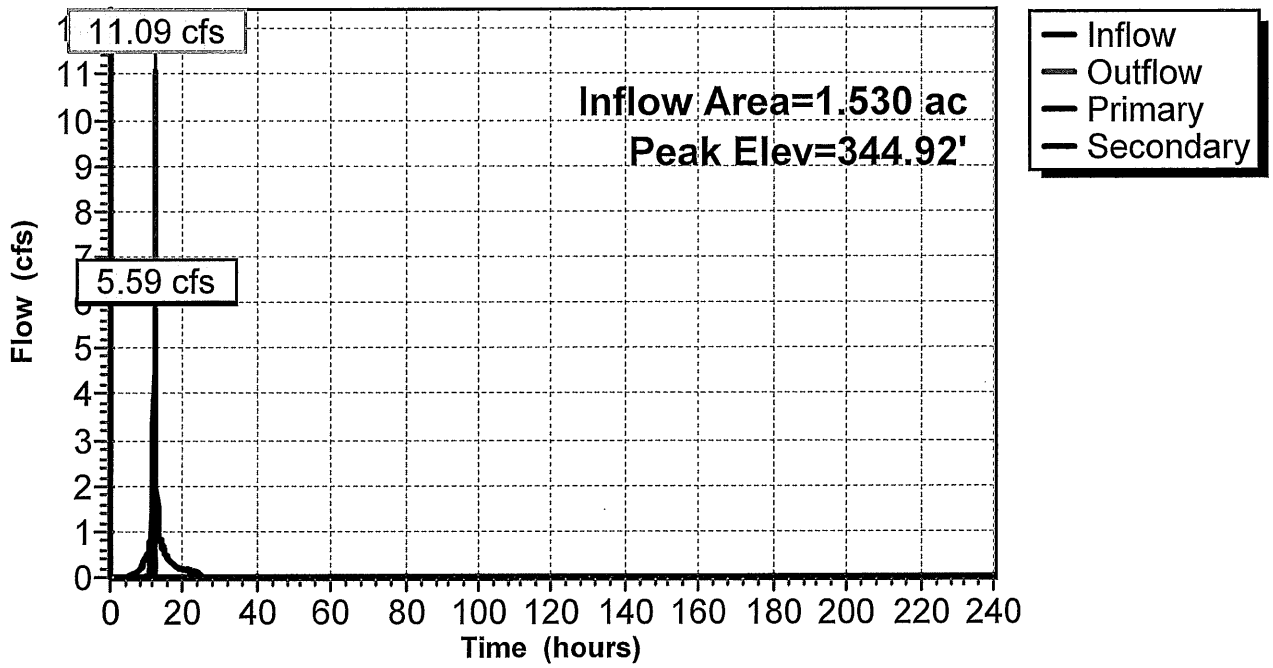
Device	Routing	Invert	Outlet Devices
#1	Primary	341.00'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.90' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	341.00'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 341.00' / 340.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	343.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.49 cfs @ 12.10 hrs HW=344.88' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.49 cfs @ 6.99 fps)

Secondary OutFlow Max=5.32 cfs @ 12.12 hrs HW=344.68' (Free Discharge)
└─**2=Culvert** (Inlet Controls 5.32 cfs @ 6.78 fps)
└─**3=Broad-Crested Rectangular Weir** (Passes 5.32 cfs of 21.67 cfs potential flow)

Pond 7P: FLOW SPLITTER

Hydrograph



Summary for Pond 8P: INFILTRATION

Inflow Area =	1.530 ac, 66.67% Impervious, Inflow Depth = 6.35" for 100yr event				
Inflow =	5.52 cfs @	12.10 hrs,	Volume=	0.809 af	
Outflow =	5.86 cfs @	12.19 hrs,	Volume=	0.809 af,	Atten= 0%, Lag= 4.9 min
Discarded =	0.84 cfs @	12.10 hrs,	Volume=	0.641 af	
Primary =	5.02 cfs @	12.19 hrs,	Volume=	0.168 af	

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 345.79' @ 12.19 hrs Surf.Area= 0.051 ac Storage= 0.119 af

Plug-Flow detention time= 38.1 min calculated for 0.809 af (100% of inflow)
Center-of-Mass det. time= 38.1 min (832.6 - 794.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	339.00'	0.056 af	**30.00'W x 73.64'L x 4.00'H Field A** 0.203 af Overall - 0.064 af Embedded = 0.139 af x 40.0% Voids
#2A	340.00'	0.064 af	**StormTech SC-740** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
		0.119 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	339.00'	**12.000 in/hr Exfiltration over Wetted area**
#2	Primary	342.50'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.50' / 342.25' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.84 cfs @ 12.10 hrs HW=344.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.84 cfs)

Primary OutFlow Max=4.74 cfs @ 12.19 hrs HW=345.53' (Free Discharge)
└**2=Culvert** (Inlet Controls 4.74 cfs @ 6.04 fps)

Pond 8P: INFILTRATION - Chamber Wizard Field A

Chamber Model = StormTech SC-740
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
Row Length Adjustment= +0.44' x 6.45 sf x 6 rows

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

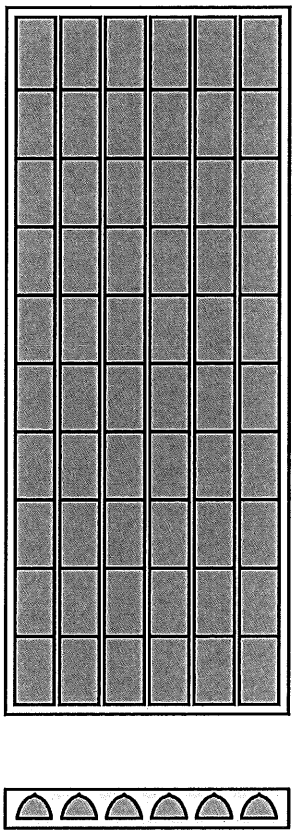
10 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 71.64' Row Length +12.0" End Stone x 2 = 73.64' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

60 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 6 Rows = 2,773.4 cf Chamber Storage

8,836.6 cf Field - 2,773.4 cf Chambers = 6,063.2 cf Stone x 40.0% Voids = 2,425.3 cf Stone Storage

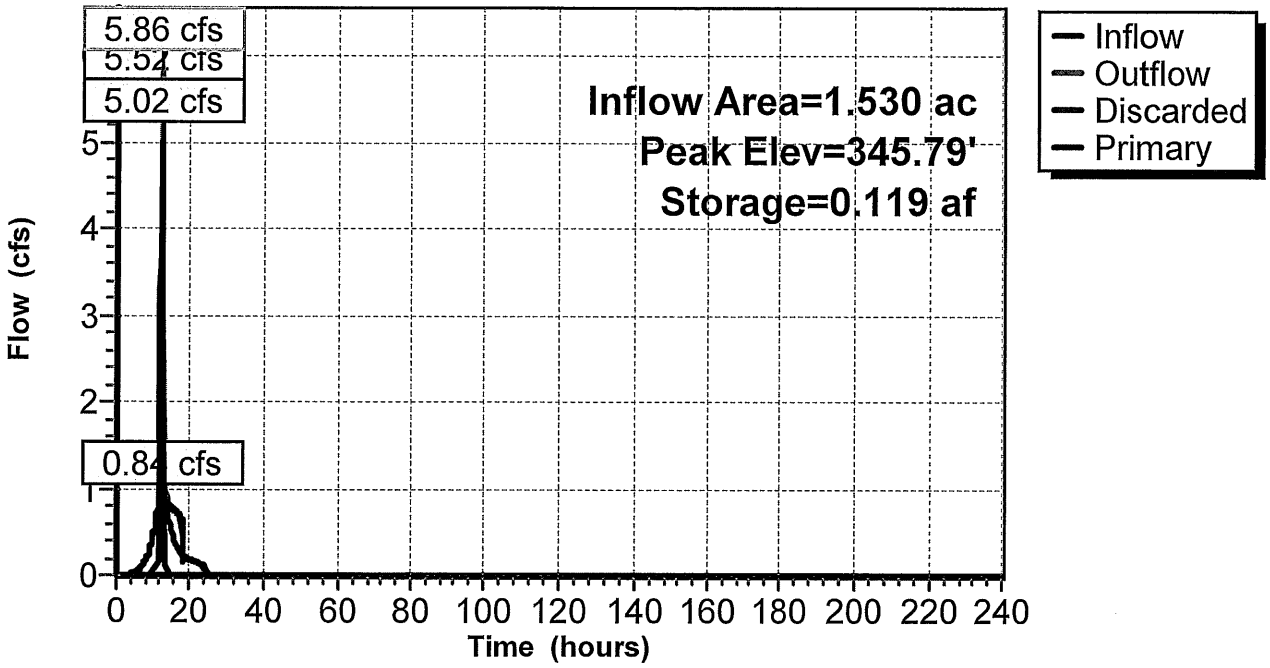
Stone + Chamber Storage = 5,198.7 cf = 0.119 af
Overall Storage Efficiency = 58.8%

60 Chambers
327.3 cy Field
224.6 cy Stone



Pond 8P: INFILTRATION

Hydrograph



SECTION II

DESIGN CALCULATIONS

A. WATER QUALITY VOLUME (WQV) CALCULATION

NYSDEC Water Quality Volume (WQv) Calculation

PROJECT: Artis Senior Living
BMP Location: Infiltration Area #1

Enter Total Watershed Area:	1.53	*Acres*
Enter Impervious Area:	1.020	*Acres*
% Impervious is:	66.67	
Enter Value of P:	1.3	*Inches*

Rv = 0.05 + (0.009 x I)

RV = (or min. 0.2)	0.6500	

WQv = P x Rv x A / 12

WQv =	0.1077	*Acre-Feet*
	4693	*Cubic Feet*

B. RUNOFF REDUCTION CALCULATIONS

Kellard Sessions Consulting, P.C.
500 Main Street
Armonk, New York 10504
914-273-2323

Date:_____
Calculated by:_____

Minimum Runoff Reduction Calculation Worksheet
Project: ART100 - Artis Senior Living
Practice Designation: Infiltration

Initial WQv						
	Area (ac)	Impervious (ac)	% Imp	R_v	P (in)	**WQv (cf)**
Total	1.53	1.02	66.67%	0.65	1.3	**4,693**

Minimum RRv Required						
S=	40%		HSG A 55%	HSG B 40%	HSG C 30%	HSG D 20%
		Units				
A_{ic}=Imp Area =	1.02	*ac*				
A_i =	0.408	$A_I = (S)(A_{ic})$				
% Imp	100					
R_v* =	0.95					
P =	1.3	*in*				
Minimum RRv =	**1,829**	***cf***				

Formulas used for Calculations of WQv and RRv:

$$WQv = \frac{(P)(R_v)(A)}{12}$$

OR

WQv = Estimated runoff volume resulting from the 1 year, 24 hour design storm over the post development watershed

$$RRv = \frac{(P)(R_v*)(A_i)}{12}$$

C. GREEN PRACTICES TABLES

Application of Green Infrastructure and Water Quality Volume Calculation Worksheet
Project: ART100 - Artis Senior Living
Practice Designation: Infiltration Area

Step 1: Plan to protect natural resources and reduce impervious cover

Step 2: Determine Water Quality Treatment Volume (WQv)

Input WQv from "Initial WQv Calculation"	4,693

Step 3: Determine Adjusted WQv and minimum RRv

Input Minimum RRv from "Minimum RRv Calculation"	1,490
Input Adjusted WQv	-

Step 4: Calculate Water Quality Volume for the Green Infrastructure Techniques (GI)

GI Practice	WQv	
Rain Garden	-	
Green Roof (intensive)	-	
Stormwater Planter (infiltration)	-	
Stormwater Planter (flow through)	-	
Cistern	-	
Permeable Pavement	-	
Infiltration Area	5183	As Calculated in Appendix IIIA
Bioretention #1	-	
Dry Swale	-	
Vegetated Swale	-	
Total WQv for GI Techniques	5183	

Step 5: Apply Standard Practices

Is Total WQv for GI Tech. > Initial WQv?	yes
Is Total WQv for GI Tech. > minimum RRv?	yes

Step 6: Apply Peak Flow Attenuation

Entire Wqv and peak flow for new impervious are treated and attenuated within the Infiltration Area.

GREEN INFRASTRUCTURE TECHNIQUES ACCEPTABLE FOR RUNOFF REDUCTION FOR ARTIS SENIOR LIVING			
GROUP	PRACTICE	DESCRIPTION OF PRACTICE	APPLICATION OF PRACTICE
RUNOFF REDUCTION TECHNIQUES	Conservation of Natural Areas	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/ or permanently conserving these areas on a site.	A limit of disturbance has been provided on the plans to minimize the impacts on the natural characteristics of undisturbed natural areas, streams and wetland buffers.
	Sheetflow to Riparian Buffers or Filter Strips	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of development project.	The proposed landscaping buffer will implemented around the property perimeter we applicable
	Vegetated Open Swale	The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge and provide infiltration.	Not Applicable
	Tree Planting/ Tree Box	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake and provide bank stabilization. Tress can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.	There were be several tree planted as part of the landscaping design
	Disconnection of Rooftop Runoff	Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.	To limit disturbance roof top areas are proposed to be discharged directly into the underground infiltration stormwater management systems.
	Stream Daylighting for Redevelopment Projects	Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.	Not Applicable

GREEN INFRASTRUCTURE TECHNIQUES ACCEPTABLE FOR RUNOFF REDUCTION FOR FORTUNE RIDGE HORSE BARN			
GROUP	PRACTICE	DESCRIPTION OF PRACTICE	APPLICATION OF PRACTICE
RUNOFF REDUCTION TECHNIQUES	Rain Garden	Manage and treat small volumes of stormwater runoff using a condition planting soil bed and planting materials to filter runoff stored within a shallow depression.	Not Applicable
	Green Roof	Capture runoff by a layer vegetation and soil installed on top of conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.	Not Applicable
	Stormwater Planter	Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.	Not Applicable
	Rain Tank/ Cistern	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.	Not Applicable
	Porous Pavement	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.	Not Applicable

D. SOIL TEST DATA SHEETS

KELLARD SESSIONS
CONSULTING, P.C.

DESIGN DATA SHEET - STORM WATER SYSTEM

OWNER _____ ADDRESS _____

PROPERTY LOCATION: 553 North State Road SEC. _____ BLK. _____ LOT. _____

MUNICIPALITY: Town of Ossining NYCDEP: JOINT REVIEW _____ DELEGATED _____

WATERSHED _____

SOIL PERCOLATION TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

PRESOAK DATE: _____ RUN DATE: November 2011

HOLE#		CLOCK TIME			PERCOLATION			
					DEPTH TO WATER FROM GROUND SURFACES			
HOLE NUMBER	RUN NO.	START	STOP	ELAPSE TIME MIN.	START INCHES	STOP INCHES	WATER LEVEL DROP IN INCHES	SOIL RATE MIN./IN DROP
1	1	10:01	10:19	18	6	9	3	6
	2	10:20	10:38	18	6	9	3	6
	3							
	4							
	5							
2	1	10:05	10:20	15	12	15	3	5
	2	10:40	10:55	15	12	15	3	5
	3	10:56	11:11	15	12	15	3	5
	4							
	5							
4	1	11:30	11:45	15	12	15	3	5
	2	12:00	12:16	16	12	15	3	6
	3	12:17	12:32	15	12	15	3	5
	4							
	5							

PERC TEST DONE BY: BH

NOTES:

1. TESTS TO BE REPEATED AT SAME DEPTH UNTIL APPROXIMATELY EQUAL SOIL RATES ARE OBTAINED AT EACH PERCOLATION TEST HOLE. ALL DATA TO BE SUBMITTED FOR REVIEW.

2. DEPTH MEASUREMENTS TO BE MADE FROM TOP OF HOLE. DO NOT REPORT INCREMENTS OF LESS THAN ONE INCH.

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. TP-1	HOLE NO. TP-2	HOLE NO. TP-3	HOLE NO. TP-4
G.L.	0" to 8"	0-4"	0-4"	0 to 6"
6"	Topsoil	Topsoil	Topsoil	
12"				6" to 36"
18"	8" to 24"			
24"	SL Comp Red	4" to 84"	4" to 48"	Brown Sandy Loam
30"	Silt Loam		Brown Sand	
36"		Compact Brown	Some Silt	36 to 72"
42"		Sand		
48"	24" to 84"	some silt	48" +	Slight Compact
54"	Brown Sand	cobbles		Brown Sand
60"	w/ silt		Weathered Bedrock	
66"			Very Compact	72" +
72"				groundwater
78"				
84"				
90"				
96"				

WAS GROUNDWATER ENCOUNTERED? YES / NO Hole TP-4

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED 72" FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: BH DATE OF DEEP TESTS Nov 2011

SOIL RATE USED _____ MIN. / 1" DROP: S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____

_____ SEAL

E. PRETREATMENT DESIGN CALCULATIONS

Pretreatment Sizing calculations.

Infiltration System

Per Section 6.3.3 of the Design Manual:

Fc of the area is 12.00 in/hr, therefore 100% of the total Wqv needs to be pretreated.

Total WQv = 4,693 c.f. per Appendix IIB (90% Rain Event)

Sizing a settling chamber per Section 6.4.3 of the Design Manual

As = Sedimentation chamber surface area (sq ft)
E = Chamber efficiency (90%)
W = Particle settling velocity (ft/sec)
Qo = Discharge rate from chamber = Wqv/24hr/3600 sec)
Wqv = Water Quality volume = (cf)

According to the design manual this equation reduces to :

(1) As = (0.066) (Wqv) sq ft for I < 75%
(2) As = (0.0081) (Wqv) sq ft for I > 75%

We will use equation (2) since infiltration is sized to mitigate impervious increase

As = 0.0081*4,693 c.f.*sq.ft = 38.0 sq.ft

Each proposed Drain Inlet and/or Catch Basin will have interior dimensions of 4'x3' (12 sq. ft). There are a total of nine (9) inlets proposed, or 108 sq. ft. which is greater than the required 38 sq. ft.

All inlets will be equipped with a 24" sump for sediment storage.

The inlet directly upstream of the infiltration will be equipped with a hooded outlet to removed floating debris.

SECTION III

EXHIBIT FROM THE NEW YORK STATE OFFICE OF PARKS, RECREATION AND HISTORIC PRESERVATION

NEW YORK STATE OF OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

August 14, 2015

Mr. Brian Hildenbrand
500 Main Street
Armonk, NY 10504

Re: DEC
Artis Senior Living - Ossining
553 North State Road, Briarcliff Manor, NY
15PR04440

Dear Mr. Hildenbrand:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

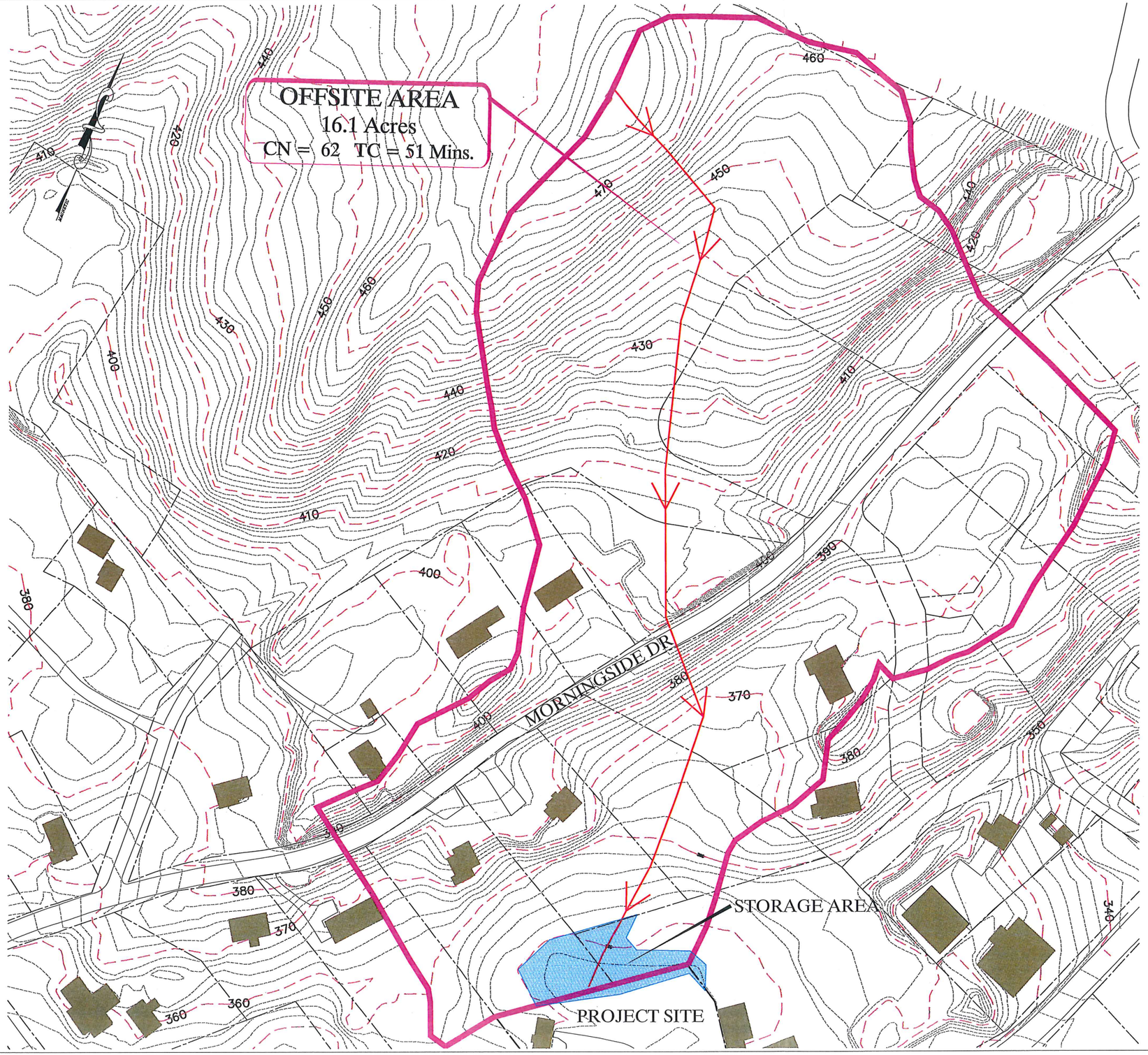
Ruth L. Pierpont

Ruth L. Pierpont

Deputy Commissioner for Historic Preservation

SECTION IV

OFF-SITE DRAINAGE CONVEYANCE DESIGN



LEGEND

- EXISTING PROPERTY LINE
- 380 EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- CONTRIBUTING DRAINAGE AREA TO EXISTING WETLAND AREA TO REAR OF THE PROJECT
- TIME OF CONCENTRATION FLOWPATH

GENERAL NOTES:

1. AERIAL PHOTOGRAPHY, PROPERTY LINES AND TOPOGRAPHY OBTAINED FROM WESTCHESTER COUNTY G.I.S. DATABASE. PROPERTY LINES AND TOPOGRAPHY SHOULD BE CONSIDERED APPROXIMATE.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KELLARD SESSIONS
CONSULTING

ENGINEERING, LANDSCAPE ARCHITECTURE & PLANNING, P.C.

500 MAIN STREET
ARMONK, N.Y. 10504
P: (914) 273-2323
F: (914) 273-2329

WWW.KELSES.COM

OFF-SITE DRAINAGE ANALYSIS

ARTIS SENIOR LIVING

TOWN OF OSSINING — WESTCHESTER COUNTY, NEW YORK

REVISIONS	
10.	
9.	
8.	
7.	
6.	
5.	
4.	
3.	
2.	
1.	NOVEMBER 9, 2015

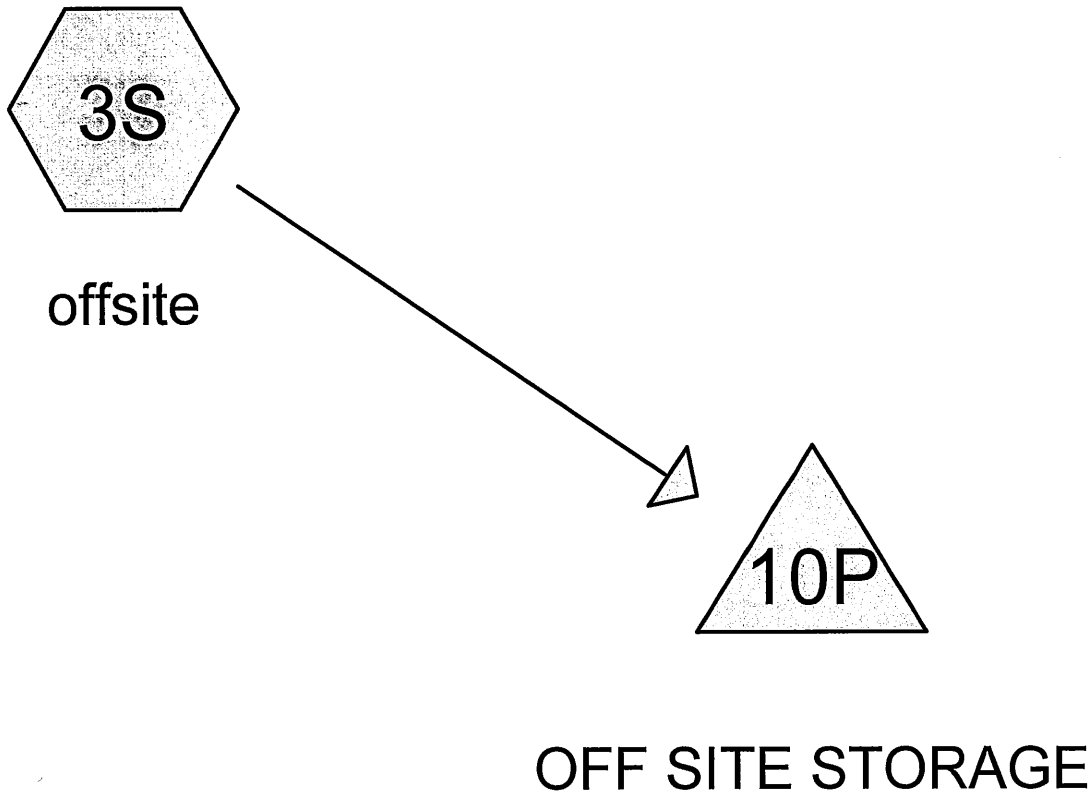
1 / 1

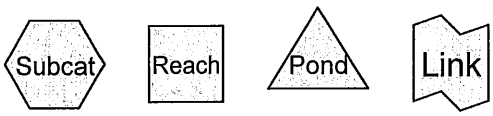
PROJECT I.D.: ART100

DATE: AUGUST 2015

COPYRIGHT © 2015 KELLARD SESSIONS CONSULTING, ENGINEERING, LANDSCAPE ARCHITECTURE & PLANNING, P.C. ALL RIGHTS RESERVED. UNAUTHORIZED REPLICATION IS A VIOLATION OF APPLICABLE LAWS

UNAUTHORIZED ADDITIONS, MODIFICATIONS AND / OR ALTERATIONS TO THESE PLANS IS A VIOLATION OF SECTION 7209(2) OF THE NEW YORK STATE EDUCATION LAW





Routing Diagram for ART100-OFFSITE
Prepared by Microsoft, Printed 1/8/2016
HydroCAD® 10.00 s/n 01808 © 2011 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.900	55	Woods, Good, HSG B (3S)
7.000	70	1/2 acre lots, 25% imp, HSG B (3S)
0.200	98	Paved parking, HSG C (3S)
16.100	**62**	**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	10P	346.00	345.60	100.0	0.0040	0.013	18.0	0.0	0.0

Summary for Subcatchment 3S: offsite

Runoff = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af, Depth= 2.09"

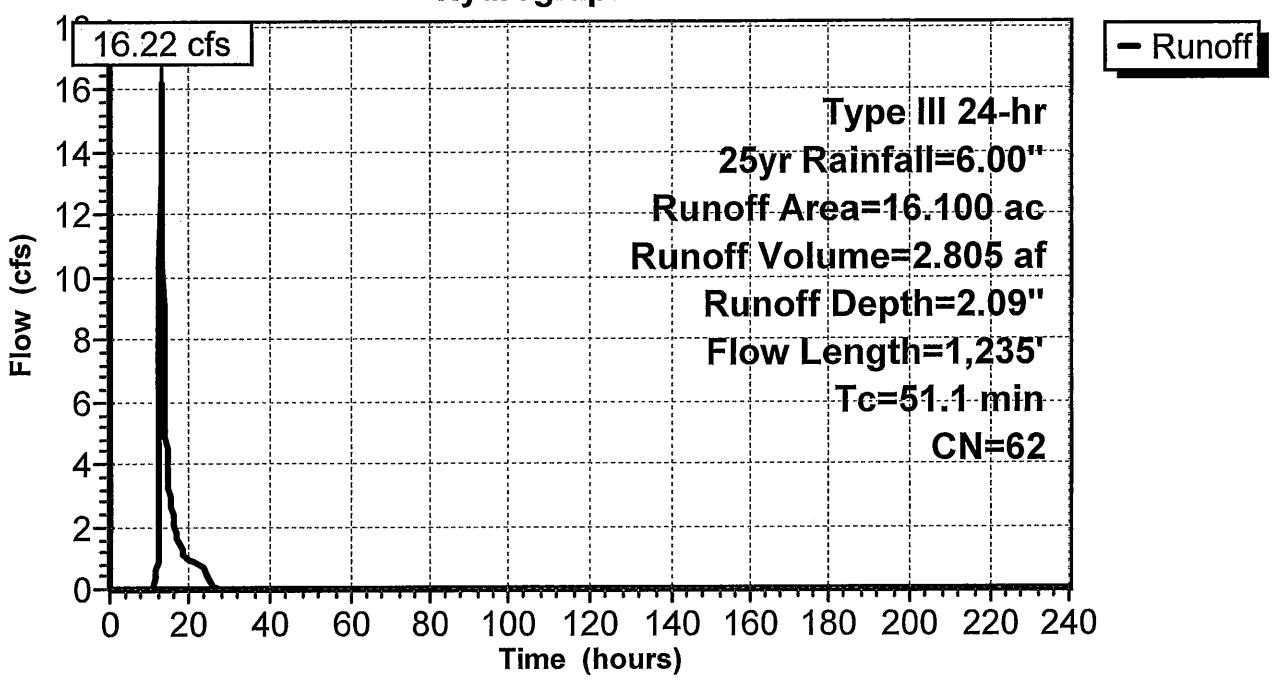
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 25yr Rainfall=6.00"

Area (ac)	CN	Description
8.900	55	Woods, Good, HSG B
0.200	98	Paved parking, HSG C
7.000	70	1/2 acre lots, 25% imp, HSG B
16.100	62	Weighted Average
14.150		87.89% Pervious Area
1.950		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
15.1	640	0.0800	0.71		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.1	470	0.0800	0.71		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
51.1	1,235	Total			

Subcatchment 3S: offsite

Hydrograph



Summary for Pond 10P: OFF SITE STORAGE

Inflow Area = 16.100 ac, 12.11% Impervious, Inflow Depth = 2.09" for 25yr event
Inflow = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af
Outflow = 10.81 cfs @ 13.18 hrs, Volume= 2.805 af, Atten= 33%, Lag= 25.9 min
Primary = 10.81 cfs @ 13.18 hrs, Volume= 2.805 af

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 349.03' @ 13.18 hrs Surf.Area= 12,401 sf Storage= 20,126 cf

Plug-Flow detention time= 33.6 min calculated for 2.805 af (100% of inflow)
Center-of-Mass det. time= 31.4 min (930.9 - 899.4)

Volume	Invert	Avail.Storage	Storage Description
#1	346.00'	34,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

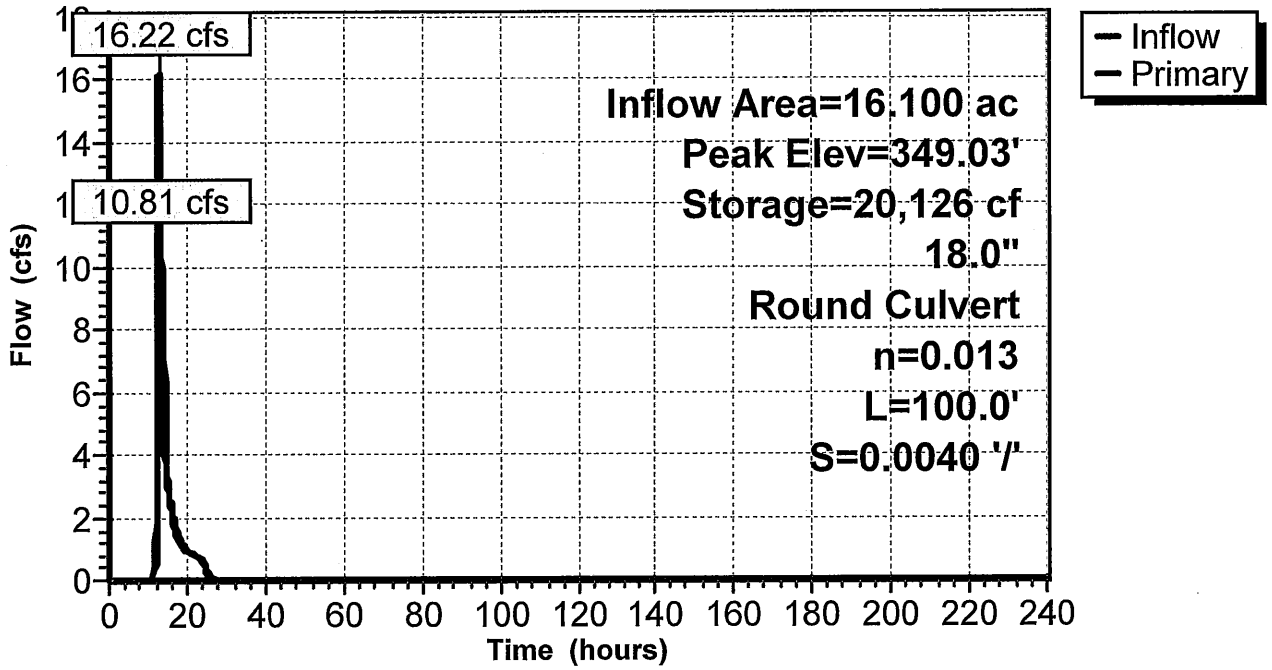
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
346.00	4,000	0	0
348.00	6,400	10,400	10,400
350.00	18,000	24,400	34,800

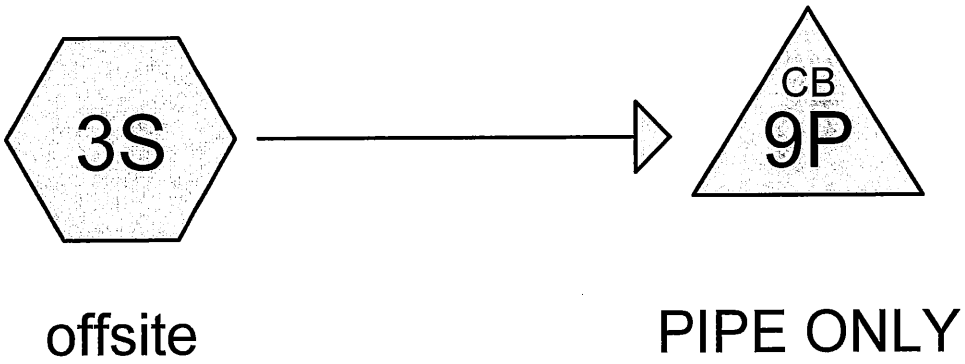
Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	**18.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 346.00' / 345.60' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

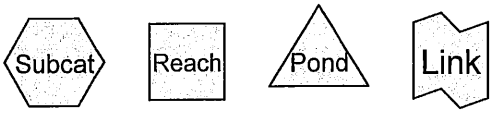
Primary OutFlow Max=10.80 cfs @ 13.18 hrs HW=349.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 10.80 cfs @ 6.11 fps)

Pond 10P: OFF SITE STORAGE

Hydrograph







Routing Diagram for ART100-OFFSITE
Prepared by Microsoft, Printed 1/8/2016
HydroCAD® 10.00 s/n 01808 © 2011 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.900	55	Woods, Good, HSG B (3S)
7.000	70	1/2 acre lots, 25% imp, HSG B (3S)
0.200	98	Paved parking, HSG C (3S)
16.100	**62**	**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	9P	343.65	341.55	477.0	0.0044	0.013	18.0	0.0	0.0

Summary for Subcatchment 3S: offsite

Runoff = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af, Depth= 2.09"

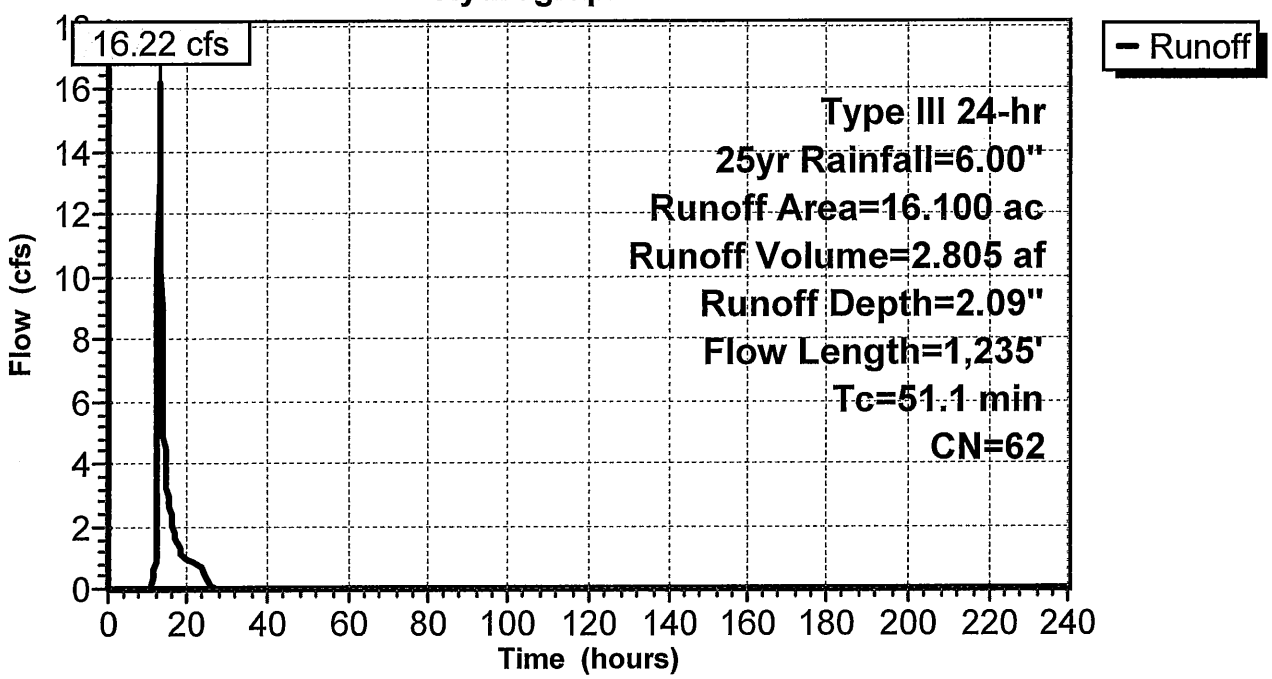
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Type III 24-hr 25yr Rainfall=6.00"

Area (ac)	CN	Description
8.900	55	Woods, Good, HSG B
0.200	98	Paved parking, HSG C
7.000	70	1/2 acre lots, 25% imp, HSG B
16.100	62	Weighted Average
14.150		87.89% Pervious Area
1.950		12.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0500	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
15.1	640	0.0800	0.71		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.1	470	0.0800	0.71		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
51.1	1,235	Total			

Subcatchment 3S: offsite

Hydrograph



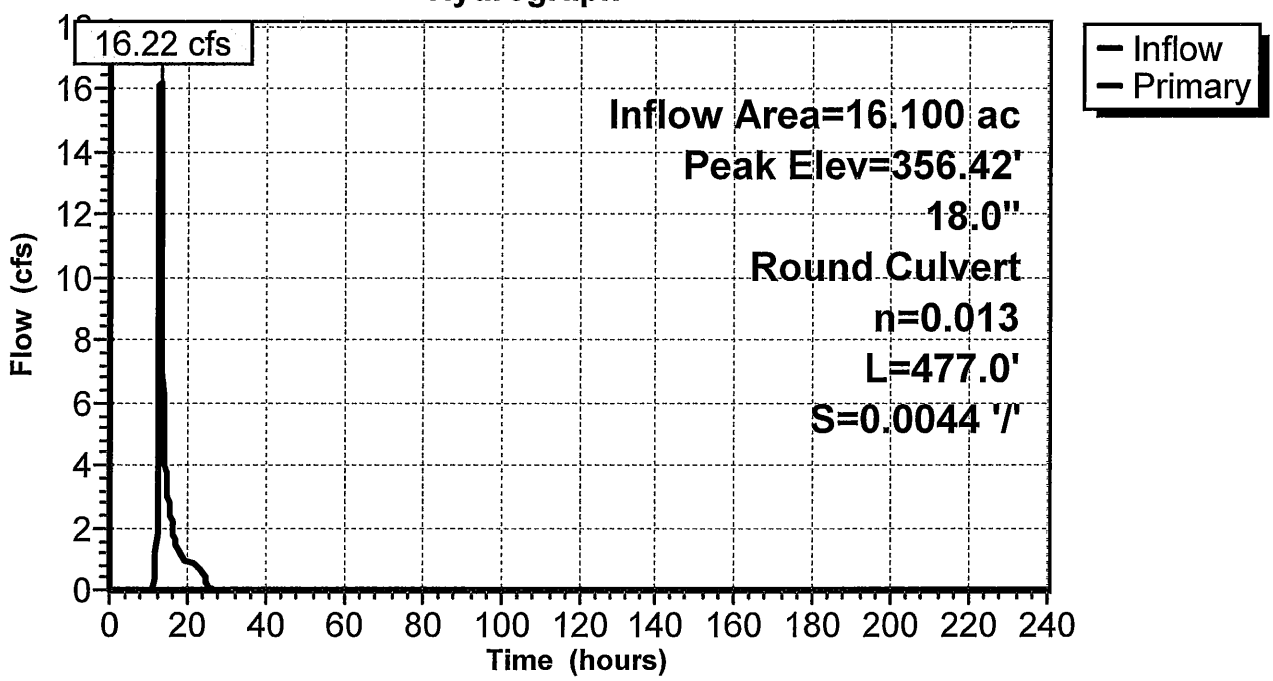
Summary for Pond 9P: PIPE ONLY

Inflow Area = 16.100 ac, 12.11% Impervious, Inflow Depth = 2.09" for 25yr event
Inflow = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af
Outflow = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af, Atten= 0%, Lag= 0.0 min
Primary = 16.22 cfs @ 12.74 hrs, Volume= 2.805 af

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.10 hrs
Peak Elev= 356.42' @ 12.74 hrs
Flood Elev= 353.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	343.65'	**18.0" Round Culvert** L= 477.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.65' / 341.55' S= 0.0044 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=16.09 cfs @ 12.74 hrs HW=356.21' (Free Discharge)
└**1=Culvert** (Barrel Controls 16.09 cfs @ 9.11 fps)

Pond 9P: PIPE ONLY

Hydrograph