STORMWATER POLLUTION CONTROL PLAN

Nutmeg Solar Project

PROJECT NAME AND LOCATION:

Name:	Nutmeg Solar Project Enfield, Connecticut
Latitude:	41° 58' 28.7"
Longitude:	-72° 30' 53.5"

OPERATOR:

Owner:	Nutmeg Solar, LLC 700 Universe Boulevard Juno Beach, FL 33408
General Contractor:	TBD

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SECTION 1

Section 1
Certification Statements

1.1 Permittee

Certification Statement

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

Signature: _____ Date: _____

Name: _____Title:_____

Company name: _____

Address: _____

Telephone:_____ Fax: _____

Project Site: Nutmeg Solar Project, Enfield, CT

1.2 Contractors and Subcontractors

Each Contractor and Subcontractor that will perform actions on the site which may reasonably be expected to cause or have the potential to cause pollution of the waters of the State shall sign the certification statement included in this plan.

Certification Statement

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

CONTRACTOR CERTIFICATION

Signature: _____ **Date:** _____

Name: _____**Title:**_____

Company name: _____

Address: _____

Telephone:_____ **Fax:** _____

Project Site: Nutmeg Solar Project, Enfield, CT

SUBCONTRACTOR CERTIFICATION

Signature: _____ **Date:** _____

Name: _____**Title:**_____

Company name: _____

Address: _____

Telephone:_____ **Fax:** _____

Project Site: Nutmeg Solar Project, Enfield, CT

SUBCONTRACTOR CERTIFICATION

Signature: _____ **Date:** _____

Name: _____**Title:**_____

Company name: _____

Address: _____

Telephone:_____ **Fax:** _____

Project Site: Nutmeg Solar Project, Enfield, CT

SUBCONTRACTOR CERTIFICATION

Signature: _____ **Date:** _____

Name: _____**Title:**_____

Company name: _____

Address: _____

Telephone:_____ **Fax:** _____

Project Site: Nutmeg Solar Project, Enfield, CT

SUBCONTRACTOR CERTIFICATION

Signature: _____ **Date:** _____

Name: _____**Title:**_____

Company name: _____

Address: _____

Telephone:_____ **Fax:** _____

Project Site: Nutmeg Solar Project, Enfield, CT

Definitions

Project Site: Parcels of land under lease or purchase option agreements that comprise the total area of proposed development described in this petition. The Project Site consists of 162 acres located east of Broad Brook Road.

Development Area: Locations within the Project Site that will be disturbed or altered during the construction and operation of the Project. The Development Area is approximately 129 acres and includes areas of vegetation clearing, site roads and Project infrastructure. The Development Area includes a western array and an eastern array. The western array is located within the western portion of the Development Area, which consists primarily of open agricultural fields. The eastern array is located within the eastern portion of the Development Area, which consists primarily of second-growth forest.

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SECTION 2

Section 2
Stormwater Pollution Control Plan

2.1 Introduction

This Stormwater Pollution Control Plan (SWPCP, or the Plan) is being submitted on behalf of Nutmeg Solar, LLC (Permittee) for a proposed 19.6 megawatt (MW_{AC}) ground-mounted solar photovoltaic (PV) facility to be constructed in the Town of Enfield (the Project). The Project Site is comprised of 9 privately-owned parcels controlled by the Permittee located south of Bailey Road and east of Route 191 (Broad Brook Road). Combined, the Project Site parcels total approximately 162 acres and, within that, the Development Area will occupy approximately 129 acres.

The Permittee submitted a Petition for Declaratory Ruling to the CT Siting Council on October 19, 2018. In an April 25, 2019 Opinion, Decision and Order, the CT Siting Council concluded there would be no substantial adverse environmental effect associated with the construction, maintenance and operation of the Project. The Decision and Order outlined the conditions of approval including the preparation of a Development and Management (D&M) Plan. A D&M Plan was submitted to the CT Siting Council on November 27, 2019.

2.2 Responsible Parties

The following Parties are identified in this Plan:

- Permittee: Nutmeg Solar, LLC. The Permittee is the party that initiates, creates or maintains a discharge in accordance with Section 3 of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit or GP).
- Owner: Nutmeg Solar, LLC. Owner of the proposed solar facility and associated stormwater management measures.
- Contractor: Engineering, Procurement, and Construction (EPC) Contractor hired by Nutmeg Solar, LLC to perform installation of the solar facility and appurtenances.
- Sub-Contractor: Specialty sub-contractor hired by Contractor or Nutmeg Solar, LLC to perform installation of the solar facility and appurtenances.
- Site Superintendent: Representative of Contractor tasked with overseeing daily operations at the site.
- Qualified Inspector: As defined in the GP, means an individual possessing either (1) a professional license or certification by a professional organization recognized by the Commissioner related to agronomy, civil engineering, landscape architecture, soil science, and two years of demonstrable and focused experience in erosion and sediment control plan reading, installation, inspection and/or report writing for residential and commercial construction projects in accordance with the Guidelines; or (2) five years of demonstrable and focused experience in erosion and sediment control plan reading, installation, inspection and/or report writing for

residential and commercial construction projects in accordance with the Guidelines; or (3) certification by the Connecticut Department of Transportation(DOT).

- Environmental Monitor: Representative of Nutmeg Solar, LLC on-site full time to provide construction and permit compliance oversight.
- Design Engineer: Professional Engineer in the state of CT who stamped the construction-period stormwater design.

2.3 Project Description

Nutmeg Solar, LLC (Permittee or Owner) is proposing to install a 19.6 megawatt alternating current (MW_{AC}) ground-mounted solar photovoltaic (PV) facility in the Town of Enfield, Connecticut (Project).

The Project Site consists of 9 separate and abutting parcels located in the southeast portion of the Town of Enfield, in Hartford County, Connecticut. The Project Site is generally bounded by Bailey Road to the north, Broad Brook Road to the west, forested areas to the south and the Eversource Scitico to Franconia 115 kV transmission line to the east. Figures depicting the Project Site are provided in Appendix A.

Surrounding land uses include residential development, agricultural, and industrial uses. The Scantic River is located to the north of the Project Site. The northern portion of the Project Site drains toward the Scantic River off-site to the north and northeast, while the southern portion generally drains to a forested wetland and eventually to Buckhorn Brook (a tributary of the Scantic River) off-site to the south.

The western portion of the Project Site consists of predominantly flat areas currently used as agricultural fields with accompanying outbuildings, most recently for the cultivation of tobacco and gourd (i.e., pumpkin and squash) crops. The eastern portion of the Project Site primarily consists of mixed second-growth forest. There is an existing network of recreational vehicle trails and tree stands indicating the current use of this land is primarily for hunting and recreational activities. There is evidence of past timber harvesting and gravel extraction activities on the property.

Site topography in the area proposed for development is generally uniform, with the agricultural fields in the western portion of the site at relatively shallow slopes. A ridgeline is located in the eastern portion of the site, which directs stormwater runoff radially from the Project Site. An area of substantial topographical change exists in the central portion of the Project Site. The Project has been designed to limit construction within the areas of steeper slopes with the exception of the access road needed to access the upper (eastern) array and substation.

No floodplains, inland wetlands or watercourses were found to occur within the limits of the Project Site. A vernal pool was observed within the Project Site, and the Project development footprint was designed to avoid this resource area. There are no mapped aquifer protection areas within the project site. The Project site is located in proximity to mapped Natural Diversity Database Areas (NDDB). The Permittee has received a Determination from NDDB on the Project, included in Appendix B.

In the post-construction or proposed condition, stormwater management will be accomplished through the conversion of agricultural fields to a grassy meadow condition and the construction of berms that direct stormwater flow towards basins, and in some cases, are used to create stormwater basins. The conversion of agricultural fields to a grassy meadow offsets the impacts of the proposed gravel access road and concrete equipment pads and conversion of woodland to grassy meadow. The construction of berms adds additional infiltration to attenuate the runoff rate and volume caused by a decrease in the time of concentration with the conversion of woods to meadow.

In the proposed condition, within the solar array, stormwater will fall onto the PV modules and will flow off the edge into the grassy ground cover. Stormwater runoff will continue to flow across the ground surface as under existing conditions along existing flow paths. To mitigate for the changes in stormwater flow patterns, engineered discharge locations from roadside swales are incorporated to reintroduce sheet flow to the flow pattern and mimic existing conditions. Stormwater runoff quantity will not be increased as part of the proposed development.

The Project is proposed to be constructed in phases to minimize disturbance. Within each Phase, sub-phases will be designed to be less than 10 acres and contain a temporary sediment basin or trap as required. The phased erosion control plan for construction activities can be found in Appendix C.

While a total of approximately 129 acres will be disturbed as part of the proposed project, approximately 91 acres of that area will require significant grading and/ or clearing activities. Selective vegetation management is proposed to be employed on approximately 4.8 acres within the critical terrestrial habitat of the vernal pool to minimize shading. In this area, vegetation that is capable of exceeding a canopy height limit of 20 to 40 feet will be removed, and clearing impacts will be minimized through the use of hand cutting. Approximately 10 acres (included in the 91 acres mentioned above) will be graded for roadway construction, substation, and stormwater basin construction.

The ground within the Development Area will be planted with a native seed mix to establish a meadow habitat that will be maintained for the life of the Project.

The proposed scope of work is shown on the drawings in Appendix C.

2.4 Estimated Total Site Area and Total Disturbed Area

Combined, the Project Site parcels encompass approximately 162 acres. As proposed, the Development Area/limit of work will occupy approximately 129 acres of the 162-acre Project Site. Of the 129-acre Development Area, approximately 91 acres will be cleared and grubbed. Grading activities will occur on approximately 10 acres.

2.5 Soils & Geology

The soils mapped within the Project site are included in the table below.

Table 1

Soil Association	Map Unit Designation	Additional Description	Hydrologic Soil Group (HSG)
Ninigret and Tisbury Association	21A	Fine sandy loam	C
Haven and Enfield Association	32A, 32B	Fine sandy loam	B
Manchester Association	37C	Gravelly sandy loam	A
Narragansett Association	66C	Silt loam	B
Narragansett Association	68D	Silt loam, extremely stony	B

2.5.1 Wetland Soils

The Project Site does not contain any soils desginated as hydric by National Resource Conservation Service (NRCS). The Site was not observed to contain jurisdicitonal inland wetlands or watercourses. The vernal pool observed on site was not found to contain hydric soils. Additional information is provided in the Connecticut Siting Council (CSC) Petition.

2.5.2 Non-Wetland Soils

The non-wetland soils contained on site are: Ninigret and Tisbury association, Haven and Enfield association, Manchester association, and Narragansett association.

2.5.3 Measured Infiltration Rate

An infiltration test was not performed to determine the infiltration capacity of the existing soils. Infiltration rates assumed in stormwater management calculations were determined in accordance with the National Resource Conservation Service (NRCS) Minimum Infiltration Rates of Hydrologic Soil Groups, as provided in the 2004 Connecticut Stormwater Quality Manual.

2.6 Runoff Curve Number

The weighted runoff curve number (CN) for the existing project is 61. The weighted runoff CN for the completed project will be 60.

2.7 Site Map

See Figure 1 for site location map and see Appendix C for detailed site plans.

2.8 Name of Receiving Water

The northern and eastern portion of the Project Site's stormwater runoff flows overland to the Scantic River located on the abutting properties to the north and northeast. The Connecticut Department of Energy and Environmental Protection (CT DEEP) 2016 Integrated Water Quality Report indicates this segment of the Scantic River (CT4200-00_02) includes the following impairments: fish and aquatic life habitat and presence of Escherichia coli.

The southern portion of the Project Site drains to Buckhorn Brook, located off-site. The CT DEEP 2016 Integrated Water Quality Report indicates this segment of Buckhorn Brook (CT4205-00_01) is listed with the following impairments: presence of Escherichia coli.

The proposed Project will not impact the quality of either receiving water as the stormwater discharges will not contain materials contributing to the identified impairments.

2.9 Sequence of Major Activities

The construction period stormwater design for the Project has been designed in accordance with the C T General Permit, the SESC Manual, and CT DEEP's September 8, 2017 Guidance Document on "*Stormwater Management for Solar Farm Construction Projects*". The SESC Manual indicates that construction phases should occur in 5-acre areas, with sediment traps designed to hold a volume of water. Large sub-phases up to 10 acres are allowed with the installation of temporary sediment basins.

When stormwater is directed to the trap or basin, particulates settle out of suspension, with a secondary volume to retain runoff during larger storm events. The trap or basin includes a spillway through which water is allowed to flow onto stable ground. Runoff from the construction area is diverted through use of swales equipped with checkdams to reduce the velocity of stormwater flow. The swales direct stormwater to the sediment trap or basin. Perimeter erosion control barriers will be installed along the downgradient edges of the phase, with other phase demarcation to be determined by the Contractor installed along the limit of work for each phase.

Once earth disturbing activities are complete, the ground surface will be considered stabilized once it has reached 80% vegetative coverage per the SESC Manual. Temporary stormwater controls may be removed once the contributing area can be considered stable.

For the purpose of this Stormwater Pollution Control Plan, the following activities are considered earth disturbing activities: solar infrastructure installation (i.e., driving piles for solar panel racking); vegetation grubbing; grading; roadway installation; concrete equipment pad installation; and subsurface utility infrastructure construction.

The Project is proposed to be constructed in phases to minimize disturbance: four major phases with a total of 33 sub-phases, as shown in Appendix C. Within each major phase, sub-phases will be designed to be less than 10 acres and each will have a temporary sediment basin or trap as required. The major phases include the following:

- Phase 1: Site Roads and Staging

- Phase 2: Eastern Array Grubbing and Stormwater Controls
- Phase 3: Western Array Stormwater Controls and Solar Equipment Installation
- Phase 4: Eastern Array Stormwater Controls and Solar Equipment Installation

Note that Phase 2 and Phase 4 occur in the same location, with differing construction activities. Phase 4 is the installation of solar infrastructure in the area that was grubbed and temporarily stabilized in Phase 2. Within each major phase, work in multiple sub-phases may occur with proper stormwater controls as described in this Plan.

Tree clearing is anticipated to begin in February 2020. Depending on weather and ground conditions, the civil contractor may use stormwater controls during the clearing phase. Construction of the Project will follow beginning in April 2020. Construction is anticipated to be complete in December 2020, but punch list items and final establishment of vegetation cover may be completed in Spring 2021. The following describes the sequence of construction activities:

Pre-Construction

1. Demarcation of clearing limits, selective cutting zones, and buffer areas.
2. Cut trees above ground (retain stumps) in frozen conditions.
3. Environmental restriction and safety training for all site personnel.
4. Preconstruction meeting.

Phase 1: Site Roads and Staging

1. Flag the limits of construction necessary to facilitate the preconstruction meeting.
2. Environmental restriction and safety training for all site personnel.
3. Preconstruction meeting.
4. Install construction entrance.
5. Install perimeter controls to establish phase work area in accordance with site plan and stormwater pollution control plan (SWPCP).
6. Prior to installing stormwater controls, such as temporary diversions and stone check dams, inspect existing conditions to ensure discharge locations are stable. If not stable, review discharge conditions with the Design Engineer and implement additional stabilized measures prior to installing surface water controls.
7. Construct temporary sediment traps and/or basins, diversion swales and berms with check dams.
8. Once temporary stormwater controls are established, clear and grub existing stumps.
9. Strip, re-distribute, and stabilize all topsoil that is within the footprint of the site road, site road appurtenances and the collector substation (see 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, Chapter 4, Part ii and the Farmland Soils Mitigation Plan in Exhibit E of the Nutmeg Solar Petition).
10. Construct site roads, roadside swales and buried utility conduits.

11. Stabilize site by hydroseeding with bonded fiber matrix or installing erosion control blanket in all disturbed areas. Monitor hydroseeded area and augment with additional seeding as needed.
12. Upon stabilization, temporary controls may be removed or relocated as necessary to construct subsequent sub-phases.

Phase 2: Eastern Array Grubbing and Stormwater Controls

1. Flag the limits of construction.
2. Install perimeter controls to establish phase work area in accordance with site plan and SWPCP plans.
3. Prior to installing surface water controls, such as temporary diversions and stone check dams, inspect existing conditions to ensure discharge locations are stable. If not stable, review discharge conditions with the Design Engineer and implement additional stabilized measures prior to installing surface water controls.
4. Construct temporary sediment traps and/or basins, diversion swales and berms with check dams.
5. Once temporary stormwater controls are established, grub existing stumps from previously cleared trees.
6. Stabilize site by hydroseeding with bonded fiber matrix or installing erosion control blanket in all ground-disturbed areas. Monitor hydroseeded area and augment with additional seeding as needed.
7. Check and repair temporary controls as needed. Temporary controls to remain in place through Phase 4 construction.

Phase 3: Western Array Stormwater Controls and Solar Equipment Installation

1. Flag the limits of construction.
2. Install perimeter controls to establish phase work area in accordance with site plan and SWPCP plans.
3. Prior to installing surface water controls, such as temporary diversions and stone check dams, inspect existing conditions to ensure discharge locations are stable. If not stable, review discharge conditions with the Design Engineer and implement additional stabilized measures prior to installing surface water controls.
4. Construct temporary sediment traps and/or basins, diversion swales and berms with check dams.
5. Clear and grub existing stumps as needed.
6. Install solar infrastructure, including racking, solar modules, utility connections, and equipment pads. Solar array construction will begin with posts or ground screws being driven into the ground; racking will then be affixed to the posts; and modules will be mounted and installed on the racks.
7. Stabilize site by hydroseeding with bonded fiber matrix or installing erosion control blanket in all disturbed areas. Monitor hydroseeded area daily and augment with additional seeding as needed.
8. After site is fully stabilized, remove temporary stormwater controls.

Phase 4: Eastern Array Stormwater Controls and Solar Equipment Installation

1. Inspect and install perimeter controls established in Phase 2 to ensure phase work area is in accordance with site plan and SWPCP plans.
2. Inspect and construct temporary sediment traps and/or basins, diversion swales and berms with check dams installed in Phase 2.
3. Install solar infrastructure, including racking, solar modules, utility connections, and equipment pads. Solar array construction will begin with posts or ground screws being driven into the ground; racking will then be affixed to the posts; and modules will be mounted and installed on the racks.
4. Construct collector substation.
5. Stabilize site by hydroseeding with bonded fiber matrix or installing erosion control blanket in all disturbed areas. Monitor hydroseeded area daily and augment with additional seeding as needed.
6. After site is fully stabilized, remove temporary stormwater controls.

2.10 Post-Construction Stormwater Management

2.10.1 Site Hydrology and Hydraulic Analysis

Under the proposed conditions, large portions of the Project Site in current use as agricultural fields will be converted into a solar array where panels will be installed using driven posts; in some areas, screws may be used in lieu of or in addition to the posts. Existing woodland within the eastern portion of the Project will be cleared and grubbed and stabilized prior to construction of solar infrastructure.

Following construction, stormwater will fall onto solar panels and will flow off the edge into the vegetated surface and flow along existing flow paths as under existing conditions. Therefore, the only solar panels that are considered impervious will be the most up-gradient panels in each subcatchment.[1] The remainder of the solar facility within the limit of work will be considered meadow, non-grazed. Concrete equipment pads or skids, existing and proposed gravel access roads, woodland, remaining agricultural fields and basins are also considered as final ground covers in the post-development hydrologic analysis.

Since the Project will not substantially alter topography of the Site, the Proposed Conditions Drainage Area Map, provided as Figure 4 in Appendix A, indicates that the ten existing conditions design points will be maintained under proposed conditions. The contributing drainage areas will convey stormwater runoff generally as under existing conditions.

The proposed Project will not substantially alter stormwater flow paths and will result in decreased peak discharge rates as a result of a reduction in the composite Curve Number (CN) under the proposed conditions analysis and additional infiltration. The existing Site

[1] Cook, L.M. & McCuen, R. H., (2013). Hydrologic Response of Solar Farms. *Journal of Hydrologic Engineering*, 18(5). pp.536-541

is primarily woodland and agricultural with existing buildings and paved and gravel roads. The CN value for the existing Site is 61 and the CN value for the proposed Site is 60. Additionally, infiltration to attenuate runoff rate and volume will be achieved through the construction of berms.

Table 2.5 presents the results of the pre-development stormwater runoff analysis versus the post-development stormwater runoff analysis for each design point.

Table 2.5

Peak Discharge Rate Comparison

		2-year Storm Event (cfs)	**10-year Storm Event (cfs)**	**25-year Storm Event (cfs)**	**100-year Storm Event (cfs)**
Design Point 1	Existing	9.7	24.6	33.7	50.9
	Proposed	4.0	13.3	19.6	32.1
Design Point 2	Existing	7.6	20.8	29.0	44.6
	Proposed	2.6	10.4	15.7	26.2
Design Point 3	Existing	6.9	14.5	18.9	26.9
	Proposed	1.4	6.5	9.9	16.7
Design Point 4	Existing	6.5	21.4	31.2	50.2
	Proposed	3.3	14.5	22.5	38.4
Design Point 5	Existing	0.8	4.7	7.7	14.0
	Proposed	0.8	4.3	7.0	12.4
Design Point 6	Existing	0.4	2.0	3.3	5.9
	Proposed	0.4	2.0	3.1	5.4
Design Point 7	Existing	2.6	15.0	24.8	44.8
	Proposed	2.7	13.2	21.0	37.0
Design Point 8	Existing	2.0	10.3	16.5	29.1
	Proposed	1.4	6.6	10.3	17.6
Design Point 9	Existing	0.2	1.0	1.6	2.8
	Proposed	0.2	0.9	1.4	2.4
Project Total	**Existing**	36.7	114.3	166.7	269.0
	Proposed	16.7	71.7	110.4	188.3

Table 2.5 indicates that existing peak discharge rates are reduced for the 2-, 10-, 25- and 100-year storm events.

2.10.2 Best Management Practices and Water Quality

The proposed conditions stormwater management plan for the Project is designed to remove a high percentage of sediments in accordance with the Ct DEEP "Stormwater General Permit Criteria."

The post-construction stormwater management plan for this Project uses Best Management Practices (BMPs) to meet or exceed the CT DEEP's goal of 80% removal of total suspended solids and Water Quality requirements. The BMPs include:

Groundwater Recharge: The Project is designed to utilize a "country drainage" scheme which allows stormwater runoff from impervious surfaces to flow into adjacent grassed areas and allowed to recharge to groundwater as under existing conditions. The Project does not include large, uninterrupted spans of impervious ground coverage. Concrete equipment pads are relatively small in comparison to the overall watershed and will not adversely impact groundwater recharge capabilities under the proposed conditions. The total Development Area (i.e., area within the limit of work) is 129 acres. Of that 129 acres, impervious ground coverage will increase from 0.72% of the entire Development Area to 2.05% of the entire Development Area. Since this increase is negligible in relation to the entire Development Area and larger watershed, no further calculations to determine the volume of required groundwater recharge are provided as part of this report.

The required Water Quality Volume (WQV) for the proposed conditions is based on the acreage of impervious surfaces including gravel access roads and impervious concrete pads. While the hydrologic analysis assumed that a portion of the solar panels in each drainage area are considered impervious in order to determine anticipated peak discharge rates, they have been excluded from WQV computations. The panels, as well as the concrete equipment pads, will not be subject to vehicular access, and therefore do not contribute any pollutants to stormwater runoff.

All other impervious surfaces, specifically gravel roads, will not be curbed in order to promote a "country drainage" scenario. The lack of curb and gutter will allow stormwater runoff from the roadways to flow through the adjacent grasses. This will remove any sediment from the runoff prior to potential discharge off-site. The Site Plans indicate that impervious surfaces will be located over 100 feet from any receiving water, providing suitable residence time within the grass to remove sediment from runoff.

2.10.3 Post-Construction Storm Water Management Measures

2.10.3.1 General Permit Coverage Termination

Upon the completion of all construction activities on site, the Permittee shall submit a Notice of Termination Form, to the CT DEEP to ensure the proper handling of the permit termination. See Appendix M for a blank form.

Upon completion of the construction activities the Owner (or their delegate) shall conduct monthly inspections of the BMPs which include all areas covered by the SWPCP and all stormwater structures and outfalls on the site for surface or floating debris, oil and sediment for the first 90 days. Following the initial 90 day inspection period, stormwater BMPs shall be inspected in accordance with the recommended schedule outlined in 2002 Connecticut Stormwater Quality Manual, or as further detailed in Section 2.8.3.2 below. The site shall be inspected bi-annually for trash accumulation and surface debris. Routine inspection forms can be found in Appendix I.

2.10.3.2 Operations and Maintenance

The Owner (or their delegate) will be responsible for implementing the Operations and Maintenance Plan on the entire property that shall cover the following:

Roadway Surface

Gravel roadway surfaces shall be observed periodically by the Owner to clean trash and other debris, and to identify areas where concentrated runoff may cause erosion of the roadway surface.

Perform a visual inspection of roadway areas four times per year with one inspection after the last snowfall, but no later than April 1. Repair roadway areas as necessary during the remainder of the year.

Landscape

Meadow vegetation surrounding and underneath the solar PV array will be inspected regularly and mowed twice per year to allow for healthy meadow cover, while preventing woody vegetation growth. The number of mows will be adjusted based on field conditions and actual vegetation growth.

Spill Containment

Any inadvertent oil or gasoline spills will be cleaned from the site immediately, and the stormwater management system components cleaned. The Owner will not wait until the next inspection to clean the components. A record of spills should be kept in a log book, and reported as required to CT DEEP. See Appendices F and G for reporting forms.

2.11 Pollution Controls

2.11.1 Stabilization Practices

Major erosion and sediment controls are shown on the plans in Appendix C. Stabilization practices include:

1. **Vehicle areas:** Stabilization of construction road access, staging, and parking areas using coarse aggregate.

2. **Temporary Stabilization:** Hydroseed with bonded fiber matrix or install erosion control blankets and broadcast seed areas.

3. **Permanent Vegetation:** Sodding and/or seeding of all disturbed areas.

2.11.2 Erosion and Sediment Controls

Construction-phase erosion and sediment controls will include structural controls such as conveyance swales, temporary sediment basins and temporary sediment traps in addition to perimeter controls, check dams, and other measures as required during construction to manage stormwater. Structural controls have been designed in accordance with the 2002 Guidelines for Soil Erosion and Sediment Control manual. Additional details regarding temporary basin and trap location and sizing are provided in Appendices B and C, respectively.

2.11.3 Sequence of Major Erosion and Sediment Control Activities

The construction will proceed in sequences as previously described in Section 2.7. The stabilized construction access, staging, and parking areas will be constructed first. The following pollution prevention controls and measures will be implemented throughout the Project:

1. Perimeter erosion controls, construction entrances, and silt fence will be constructed in predetermined locations.
2. Prior to installing surface water controls such as temporary diversions and stone check dam, inspect existing conditions to ensure discharge locations are stable. If not stable, review discharge conditions with the Design Engineer and implement additional stabilized measures prior to installing surface water controls.
3. Construct temporary sediment traps and/ or basins, diversion swales and berms with check dams.
4. Complete work designated to sequence sub-phase.
5. Stabilize site by hydroseeding with bonded fiber matrix or installing erosion control blanket in all disturbed areas. Monitor hydroseed and erosions control blanketed areas and amend with additional seeding as needed.
6. Temporary controls will be maintained throughout construction until permanent stabilization is achieved on each sub-phase

2.11.4 Waste Materials

All trash and construction debris from the site will be hauled to an approved landfill or other legal means of disposal. No construction waste material will be buried on the site. Employee waste and other loose materials will be collected so as to prevent the release of floatables during runoff events.

All personnel will receive instructions regarding the correct procedure for waste disposal. Notices describing these practices shall be posted in the construction office. The site superintendent will be responsible for seeing that these procedures are followed.

2.11.5 Hazardous Waste

No hazardous waste is expected to be generated or encountered during this Project. In the event that hazardous waste is encountered, all hazardous waste materials will be disposed of in the manner specified by local, state or federal regulation or by the manufacturer.

The site superintendent will be responsible for seeing that these practices are followed.

2.11.6 Sanitary Waste

Portable sanitary units will be provided for use by all workers throughout the life of the project. All sanitary waste will be regularly collected from the portable units by a licensed sanitary waste management contractor.

2.12 Maintenance

To maintain the erosion and sediment controls, the following procedures will be performed.

1. **Sediment Capture Devices:** Sediment will be removed from the upstream or upslope side of the perimeter erosion controls when the depth of accumulated sediment reaches about one-third the height of the structure. Sediment accumulations in temporary traps and basins shall be removed when sediment depth exceeds one half of the wet storage capacity of the basin or trap, or when the depth of the available pool in the basin is reduced to 18 inches.

2. **Temporary Controls:** All temporary controls will be removed after the disturbed areas have been stabilized.

The Contractor shall haul off-site and properly dispose of, or use as backfill, sediment that is removed from structural barriers. Sediment temporarily stockpiled on site will be placed in such areas and in such manner as to minimize wash-off into the local drainage system. Berms, perimeter erosion controls, and polyethylene or polypropylene covers are measures which may be utilized in minimizing wash-off.

2.12.1 Inspection Procedures

All construction activities submitting a registration for the General Permit shall be inspected initially for Plan implementation and then weekly for routine inspections. Weekly inspection forms can be found in Appendix J. Inspections will be conducted by a Qualified Inspector (defined below at Section 2.10.1.3). The Permittee will also have a full-time, on-site Environmental Monitor to oversee construction and ensure permit compliance. The Design Engineer will be on-site during the establishment of each major Phase to oversee compliance with the proposed design.

2.12.1.1 Plan Implementation Inspection

Within the first 30 days following commencement of the construction activity on the Site, the Permittee shall contact a qualified soil erosion and sediment control professional or a qualified professional engineer (a Qualified Inspector) to inspect the Site. The Site shall be inspected at least once and no more than three times during the first 90 days to confirm compliance with the General Permit and proper initial implementation of all controls measures designated in the Plan for the site for the initial phase of construction. The inspection forms can be found in Appendix I, J, and K.

2.12.1.2 Routine Inspections

The Permittee shall routinely inspect the site for compliance with the General Permit and the Plan for the site until a Notice of Termination has been submitted. Inspection procedures for these routine inspections shall be addressed and implemented in the following manner:

a. The Permittee shall maintain a rain gauge on-site to document rainfall amounts. At least once a week and within 24 hours of the end of a storm that generates a discharge, a Qualified Inspector (provided by the Permittee), as defined in the "Definitions" section (Section 2) of the General Permit, shall inspect, at a minimum, the following: disturbed areas of the construction activity that have not been finally stabilized; all erosion and sedimentation control measures; all structural control measures; soil stockpile areas; washout areas and locations where vehicles enter or exit the site. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to the receiving waters. Locations where vehicles enter or exit the site shall also be inspected for evidence of off-site sediment tracking. For storms that end on a weekend, holiday or other

time after which normal working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For storms of less than 0.5 inches, an inspection shall occur immediately upon the start of the subsequent normal working hours. For areas that have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

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

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

d. Inspectors from the CT DEEP may inspect the Site for compliance with the General Permit at any time construction activities are ongoing and upon completion of construction activities to verify the final stabilization of the site and/or the installation of post-construction stormwater management measures pursuant to Section 6(a).

e. Additional inspections, reports and documentation may also be required to comply with the "Monitoring Requirements" section (Section 5(c)) of the General Permit.

2.12.1.3 Inspection Personnel Qualifications

The site shall be inspected by a qualified soil erosion and sediment control professional or a qualified professional engineer (Qualified Inspector). The inspector shall be someone who:

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

b. has no ownership interest of any kind in the Project for which the registration is being submitted.

2.13 Monitoring

2.13.1 Turbidity Monitoring Requirements

Sampling shall be conducted in accordance with the requirements of the General Permit at least once every month, when there is a discharge of stormwater from the site while construction activity is ongoing, until final stabilization of the drainage area associated with each outfall is achieved.

The Permittee is only required to take samples during normal working hours as defined in Section 2 of the General Permit. The Site's normal working hours must be identified in the Plan pursuant to Section 5(b)(1)(B)(vii) of the General Permit. If sampling is discontinued due to the end of normal working hours, the Permittee shall resume sampling the following morning or the morning of the next working day following a weekend or holiday, as long as the discharge continues.

Sampling may be temporarily suspended any time conditions exist that may reasonably pose a threat to the safety of the person taking the sample. Such conditions may include high winds, lightning, impinging wave or tidal activity, intense rainfall or other hazardous condition. Once the unsafe condition is no longer present, sampling shall resume.

If there is no stormwater discharge during a month, sampling is not required, and the form must be submitted with a notation explaining that a rainfall event did not occur in coincidence with normal working hours.

2.13.2 Sample Collection

All samples shall be collected from discharges resulting from a storm event that occurs at least 24 hours after any previous storm event generating a stormwater discharge. Any sample containing snow or ice melt must be identified on the Stormwater Monitoring Report form. Sampling of snow or ice melt in the absence of a storm event is not a valid sample.

Samples shall be grab samples taken at least three separate times during a storm event and shall be representative of the flow and characteristics of the discharge(s). Samples may be taken manually or by an in-situ turbidity probe or other automatic sampling device equipped to take individual turbidity readings (i.e. not composite). The first sample shall be taken within the first hour of stormwater discharge from the site. In cases where samples are collected manually and the discharge begins outside of normal working hours, the first sample shall be taken at the start of normal working hours.

2.13.3 Sampling Locations

Sampling is required of all point source discharges of stormwater from disturbed areas except as may be modified for linear projects. Where there are two or more discharge points that discharge substantially identical runoff, based on similarities of the exposed soils, slope, and type of stormwater controls used, a sample may be taken from just one

of the discharge points. In such case, the Permittee shall report that the results also apply to the substantially identical discharge point(s). No more than 5 substantially identical outfalls may be identified for one representative discharge. Although not anticipated, if the Project construction continues for more than one year, the Permittee shall rotate twice per year the location where samples are taken so that a different discharge point is sampled every six months. The Plan must identify each outfall authorized by the permit and describe the rationale for any substantially identical outfall determinations.

All sampling point(s) shall be identified in the Plan and be clearly marked in the field with a flag, stake, or other visible marker. At a minimum, discharge locations from temporary sediment basins and traps will be identified as sampling points. Additional points will be identified during construction in the event that field conditions vary from the available plan information.

2.13.4 Analysis

Sampling and analysis shall be prescribed by 40 CFR Part 136 in accordance with the requirements of the General Permit.

2.13.5 Turbidity Values

The stormwater discharge turbidity value for each sampling point shall be determined by taking the average of the turbidity values of all samples taken at that sampling point during a given storm.

2.13.6 Monitoring Reports

a) Within thirty (30) days following the end of each month, the Permittee shall enter the stormwater sampling result(s) on the Stormwater Monitoring Report (SMR) form, Appendix L, (available at www.ct.gov/deep/stormwater) and submit it in accordance with the NetDMR provisions in subsection f, below, or, if the Permittee has opted out of NetDMR, to the following address:

   Bureau of Materials Management and Compliance Assurance
   Water Permitting and Enforcement Division (Attn: DMR Processing)
   Connecticut Department of Energy and Environmental Protection
   79 Elm Street
   Hartford, CT 06106-5127

b) If there was no discharge during any given monitoring period, the Permittee shall submit the form as required with the words "no discharge" entered in place of the monitoring results.

c) If the Permittee monitors any discharge more frequently than required by this General Permit, the results of this monitoring shall be included in additional SMRs for the month in which the samples were collected.

d) If sampling protocols are modified due to the limitations of normal working hours or unsafe conditions in accordance with Section 5(c1A ii) or (iii) in the General Permit, a description of and reason for the modifications shall be included with the SMR.

e) If the Permittee samples a discharge that is representative of two or more substantially identical discharge points, the Permittee shall include the names or locations of the other discharge points.

f) NetDMR Reporting Requirements

Prior to one-hundred and eighty (180) days after the issuance of the permit, the Permittee may either submit monitoring data and other reports to the Department in hard copy form or electronically using NetDMR, a web-based tool that allows Permittees to electronically submit stormwater monitoring reports through a secure internet connection. Unless otherwise approved in writing by the Commissioner, no later than one-hundred and eighty (180) days after the issuance of the permit the Permittee shall begin reporting electronically using NetDMR. Specific requirements regarding subscription to NetDMR and submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

i. Submittal of NetDMR Subscriber Agreement: On or before fifteen (15) days after the issuance of the permit, the Permittee and/or the person authorized to sign the Permittee's discharge monitoring reports ("Signatory Authority") as described in RCSA Section 22a-430-3(b2) shall contact the Department at deep.netdmr@ct.gov and initiate the NetDMR subscription process for electronic submission of Stormwater Monitoring Report information. Information on NetDMR is available on the Department's website at www.ct.gov/deep/netdmr. On or before ninety (90) days after issuance of this permit the Permittee shall submit a signed and notarized copy of the *Connecticut DEEP NetDMR Subscriber Agreement* to the Department.

ii. Submittal of Reports Using NetDMR: Unless otherwise approved by the Commissioner, on or before one-hundred and eighty (180) days after issuance of the permit, the Permittee and/or the Signatory Authority shall electronically submit SMRs required under the permit to the Department using NetDMR in satisfaction of the SMR submission requirements of Sections 5(c2A) of the permit. SMRs shall be submitted electronically to the Department no later than the 30th day of the month following the completed reporting period. Any additional monitoring conducted in accordance with 40 CFR 136 shall be submitted to the Department as an electronic attachment to the SMR in NetDMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of SMRs to the Department. NetDMR is accessed from: http://www.epa.gov/netdmr.

iii. Submittal of NetDMR Opt-Out Requests If the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for electronically submitting SMRs, the Commissioner may approve the submission of SMRs in hard copy form ("opt-out request"). Opt-out requests must be submitted in writing to the Department for written approval on or before fifteen (15) days prior to the date a Permittee would be required under the permit to begin filing SMRs using NetDMR. This demonstration shall be valid for twelve (12) months from the date of the Department's approval and shall thereupon expire. At such time, SMRs shall be submitted electronically to the

Department using NetDMR unless the Permittee submits a renewed opt-out request and such request is approved by the Department. All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at deep.netdmr@ct.gov:

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

2.14 Financial Assurance Mechanism

The Permittee will establish a Financial Assurance Mechanism (FAM) in the amount of $1,500,000 with the CT DEEP prior to initiating construction. The value of the construction period stormwater FAM is based on the cost of construction period stormwater control measures, as outlined in this Plan. A summary of the FAM elements is provided in Appendix N.

2.15 Non-Stormwater Discharges

It is not expected that non-stormwater discharges will occur at the Site during the construction period, however if groundwater is apparent then the following discharge may occur:

1. **Dewatering discharges:** Water pumped from the construction area during dewatering operations.

2.16 Significant-Materials Inventory

Significant materials expected to be found at the construction site include:

- Concrete mix (trucked to the site for proposed site improvements)
- Steel reinforcing bars and related materials
- Photovoltaic panels and related materials
- Diesel fuel and lubricating oils
- Paints
- Fertilizers

This list of significant materials may be reduced or expanded once a contractor has been selected and the materials to be used have been specified. If fewer, or additional, materials are required, the SWPCP will be amended to reflect these changes.

2.17 Spill Prevention and Response Procedures

Spill prevention and response include good housekeeping as well as specific practices for certain products and established procedures for responding to spills.

2.17.1 Good Housekeeping

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

1. **Minimize materials:** An effort will be made to store only enough material required to complete the job.

2. **Storage:** All materials stored on site will be stored in a neat, orderly manner in their appropriate containers in a covered area. If storage in a covered area is not possible, the materials shall be covered with polyethylene or polypropylene sheeting to protect them from the elements.

3. **Labeling:** Products will be stored in their original containers with the original manufacturer's label affixed to each container.

4. **Mixing:** Substances will not be mixed with one another unless this is recommended by the manufacturer.

5. **Disposal:** Whenever possible, all of a product will be used prior to disposal of the container. Manufacturers' recommendations for proper use and disposal will be followed.

6. **Inspections:** The site superintendent will inspect the site daily to ensure proper use and disposal of materials on site.

7. **Spoil materials:** Any excavated material that will not be used for fill material and all demolished pavement will be hauled off site and will be disposed of properly.

2.17.2 Product-Specific Practices

Petroleum products: All on-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used on site will be applied according to the manufacturer's recommendations.

Concrete trucks: Concrete trucks will <u>not</u> be allowed to wash out or discharge surplus concrete or drum wash water at the site.

Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will be properly disposed of according to manufacturers' instructions and state and local regulations.

Fertilizers: Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to storm water. Fertilizer will be stored in a covered area, and any partially used bags will be transferred to a sealable plastic bin to avoid spills.

2.17.3 Spill Control and Response Practices

A spill prevention and response team will be designated by the Owner or the site superintendent. In addition, the following practices will be followed for spill cleanup:

1. **Information:** Manufacturers' recommended methods for spill cleanup will be clearly posted, and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
2. **Equipment:** Materials and equipment necessary for spill cleanup will be present on the site at all times. Equipment and materials will include but not limited to brooms, shovels, rags, gloves, goggles, absorbent materials (sand, sawdust, etc.), and plastic or metal trash containers specifically designed for this purpose. The materials and equipment necessary for spill cleanup will be dependent upon the nature and quantity of the material stored on site.
3. **Response:** All spills will be cleaned up immediately upon discovery.
4. **Safety**: The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances.
5. **Reporting**: Spills of toxic or hazardous material will be reported to the appropriate state or local government agency, regardless of the spill's size, immediately upon discovery.
6. **Record keeping:** The spill prevention plan will be modified to include measures to prevent a spill from recurring as well as improved methods for cleaning up any future spills. A description of each spill, what caused it, and the cleanup measures used will be kept with the plan.

2.18 Plan Location and Public Access

This SWPCP must be available at the construction site from the date of project initiation to the date of final stabilization. The SWPCP and all reports required by the General Permit for permit must be retained by the Owner for at least three years from the date on which the site is finally stabilized.

2.19 Reporting and Record Keeping

The Permittee is responsible for keeping the Plan in compliance with the General Permit at all times. For a period of at least five (5) years from the date that construction is complete, the Permittee shall retain copies of the Plan and all reports required by this General Permit, and records of all data used to complete the registration for this General Permit, unless the Commissioner specifies another time period in writing. Inspection records must be retained as part of the Plan for a period of five (5) years after the date of inspection.

The Permittee shall retain an updated copy of the Plan required by the General Permit at the construction site from the date construction is initiated at the site until the date construction at the site is completed.

Revisions to the plan may involve the following actions:

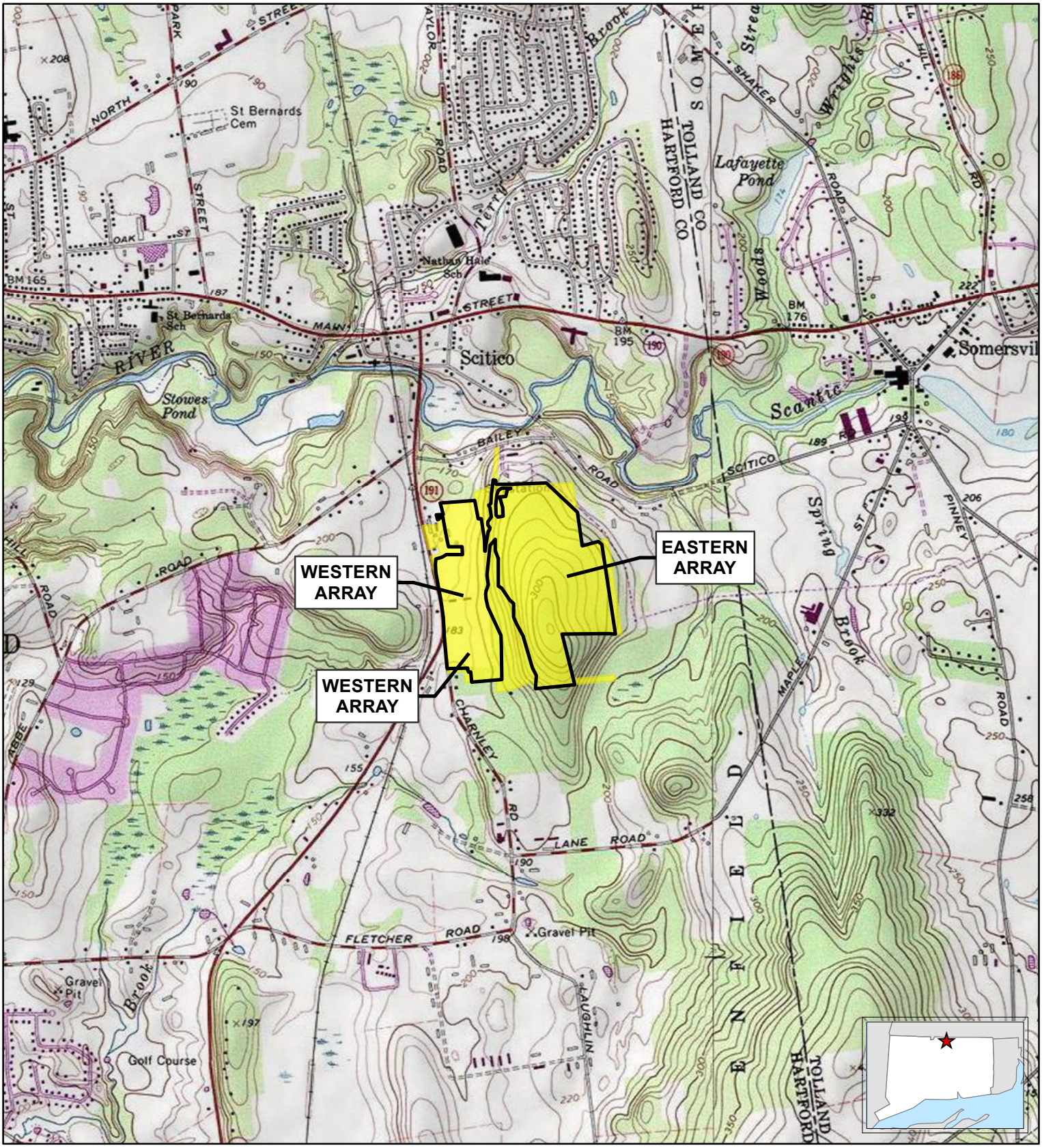
- The Permittee shall amend the Plan if the actions required by the Plan fail to prevent pollution or fail to otherwise comply with any other provision of the General Permit. The Plan shall also be amended whenever there is a change in contractors or subcontractors at the site, or a change in design, construction, operation, or

maintenance at the site which has the potential for the discharge of pollutants to the waters of the state and which has not otherwise been addressed in the Plan.

- The Commissioner may notify the Permittee at any time that the Plan and/or the site do not meet one or more of the minimum requirements of the General Permit. Within 7 days of such notice, or such other time as the Commissioner may allow, the Permittee shall make the required changes to the Plan and perform all actions required by such revised Plan. Within 15 days of such notice, or such other time as the Commissioner may allow, the Permittee shall submit to the Commissioner a written certification that the requested changes have been made and implemented and such other information as the Commissioner requires, in accordance with the "Duty to Provide Information" and "Certification of Documents" sections (subsections 5(h) and 5(i)) of the General Permit.

In no event shall failure to complete, maintain or update a Plan, in accordance with the "Development of Contents of the Plan" and "Keeping Plans Current" sections (subsections 5(b)(1) and 5(b)(5)) of the General Permit, relieve a Permittee of responsibility to implement any actions required to protect the waters of the state and to comply with all conditions of the permit.

APPENDIX A



Legend

Limit of Work/Development Area

Project Site

Tighe&Bond
Engineers | Environmental Specialists

Based on USGS Topographic Map for Broad Brook, & Ellington, CT

1:24,000

0 1,000 2,000
Feet

N

FIGURE 2
SITE LOCATION

Nutmeg Solar
Enfield, Connecticut

December 2019

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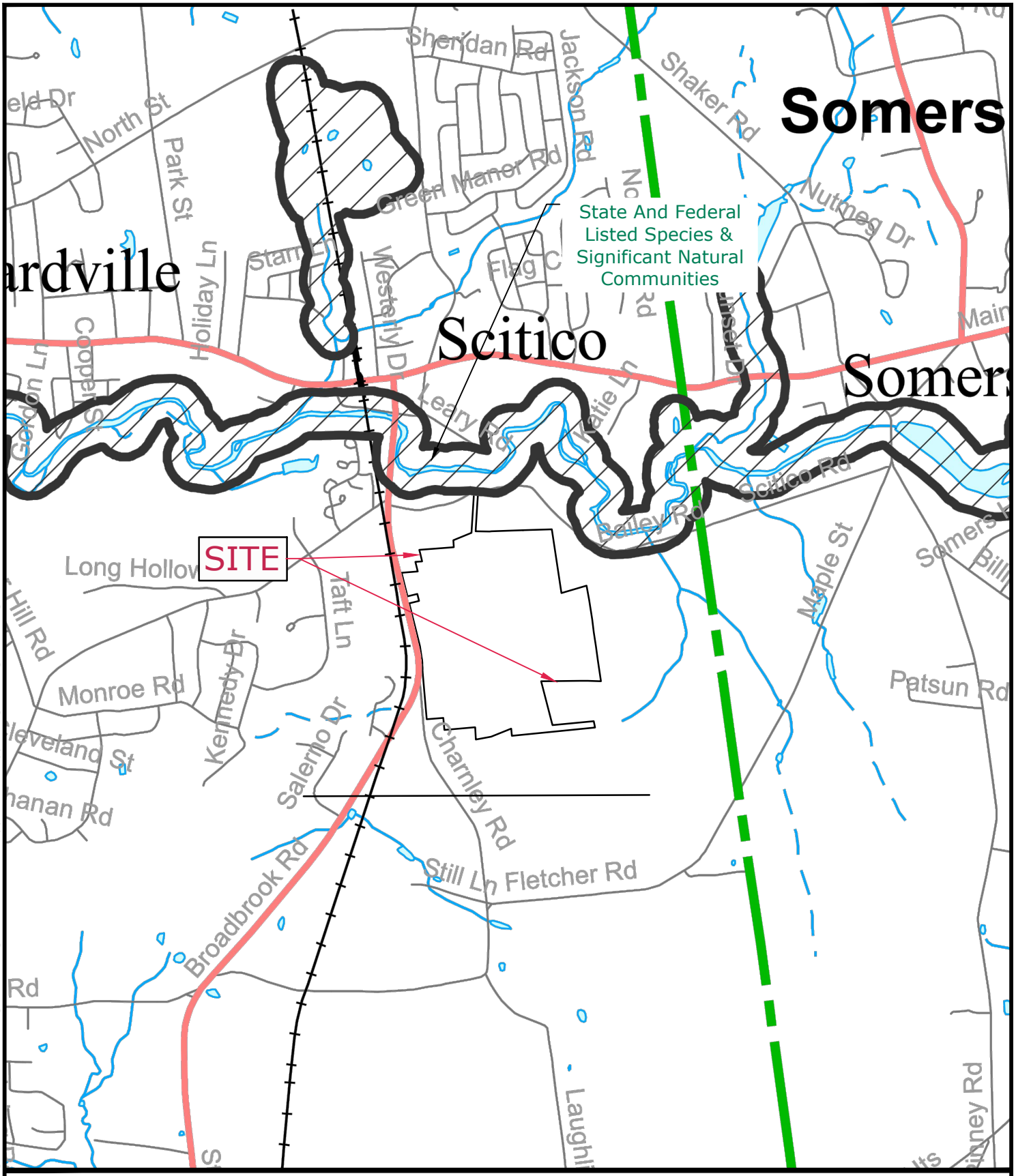
R-0317



Tighe&Bond

Nutmeg Solar Project

Enfield, Connecticut

NORTH

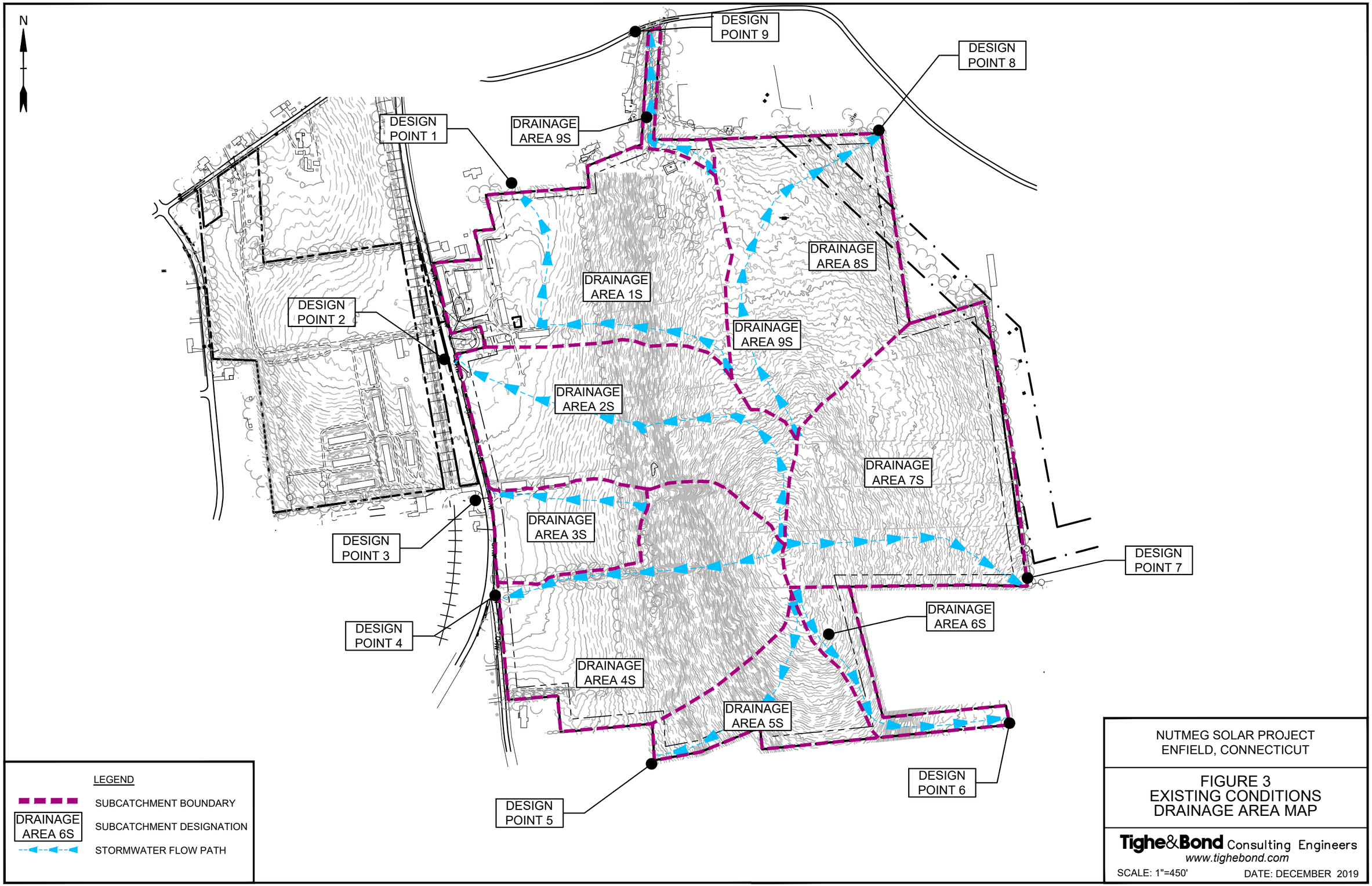
1" = 2000'

CT DEEP Endangered Species Map

FIGURE 2

09/16/2018

Tighe & Bond, Inc. J:\R\R0317 Ranger Solar\R-0317-4 Nutmeg\Permitting\Petition\SWPCP\Appendicies\App_A Figures\Figure 2.dwg



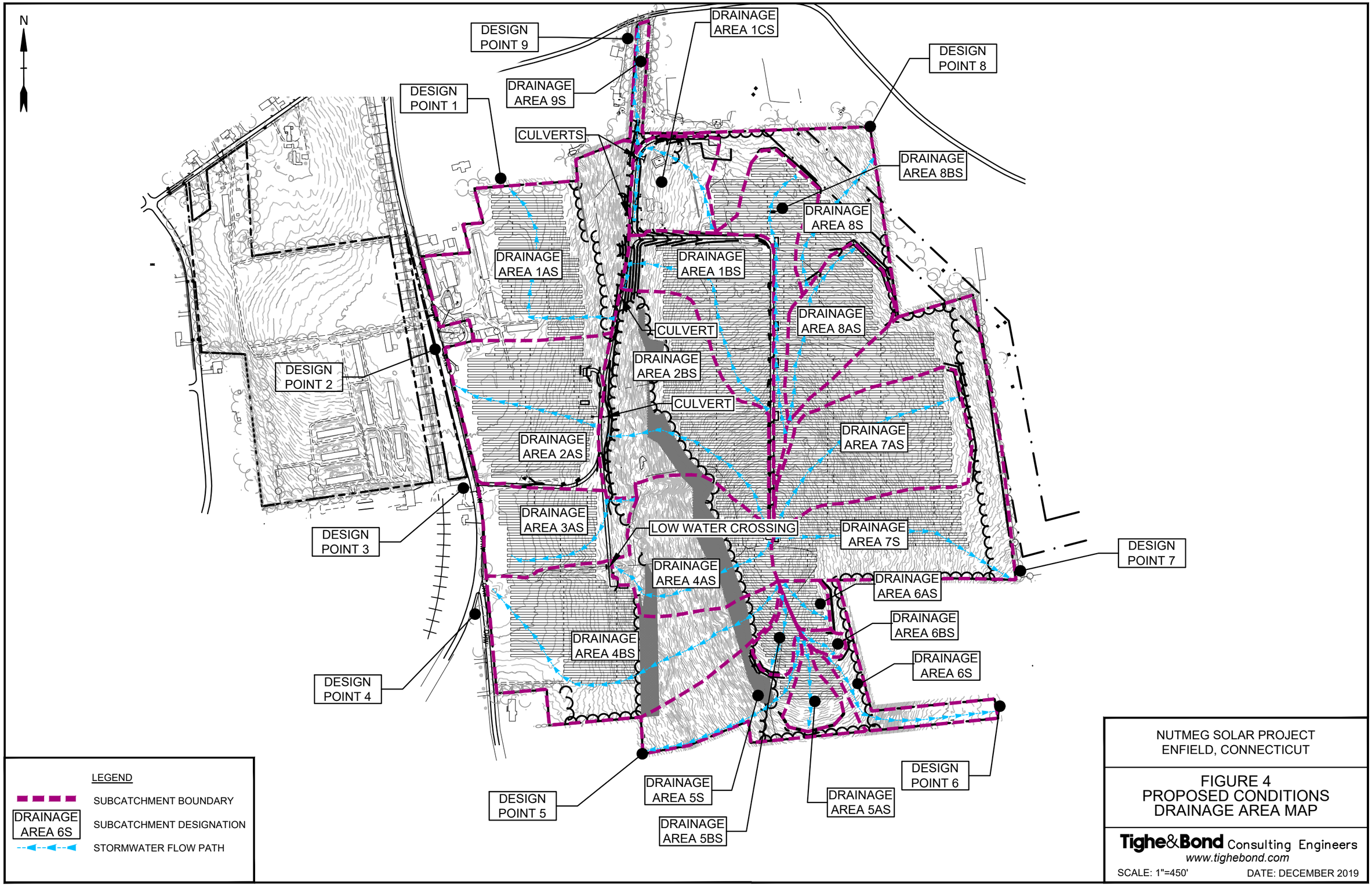
NUTMEG SOLAR PROJECT
ENFIELD, CONNECTICUT

FIGURE 3
EXISTING CONDITIONS
DRAINAGE AREA MAP

Tighe&Bond Consulting Engineers
www.tighebond.com

SCALE: 1"=450'

DATE: DECEMBER 2019



NUTMEG SOLAR PROJECT
ENFIELD, CONNECTICUT

FIGURE 4
PROPOSED CONDITIONS
DRAINAGE AREA MAP

Tighe&Bond Consulting Engineers
www.tighebond.com

SCALE: 1"=450'

DATE: DECEMBER 2019

Tighe&Bond

APPENDIX B

Connecticut Department of

ENERGY &
ENVIRONMENTAL
PROTECTION

August 3, 2018

Dale Knapp
Tetra Tech, Inc.
451 Presumpscot Street
Portland, ME 04103
dale.knapp@tetratech.com

Project: Nutmeg Solar a Utility Scale Solar PV Project on Broad Brook Road in Enfield, Connecticut
NDDB Determination No.: 20176175

Dear Dale Knapp,

I have re-reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for Nutmeg Solar a Utility Scale Solar PV Project on Broad Brook Road in Enfield, Connecticut. Thank you for providing the July 27, 2018 Supplemental Survey Report for the spring 2018 field work completed at the project site.

I concur with the best management practices included in the July 27, 2018 Herpetofauna Avoidance and Mitigation Plan that will be implemented to protect state listed amphibians and reptiles from project impacts. I have attached a copy of the proposed plan for this project and included with your NDDB materials. If these strategies are implemented it will lessen the impacts of this project on any amphibian or reptile that may occur within this project footprint.

This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by August 3, 2020.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3

Tighe&Bond

APPENDIX C

Tighe&Bond

APPENDIX D

Temporary Sediment Basin and Trap Sizing Calculations

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **Nutmeg Solar Project**
Project Number: **R0317**
Project Location: **Enfield, CT**
Description: **Temporary Sediment Trap Sizing Calculation**
Prepared By: **JEC/ELD** Date: **November 2019**

Phase 1A - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	1.98	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**265**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	2,104	Sq. Ft.
D_W=	2	feet
V_W=	**3,577**	**Cu. Ft.**
V_W=	**132**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	2,104	Sq. Ft.
A_d=	2,910	Sq. Ft.
D_d=	2	feet
V_d=	**5,014**	**Cu. Ft.**
V_d=	**186**	**Cu. Yd.**

Provided Storage

Wet Storage	3,577	Cu. Ft.
	132	Cu. Yd.
Dry Storage	5,014	Cu. Ft.
	186	Cu. Yd.
Total Storage	**8,591**	**Cu. Ft.**
	318	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **Nutmeg Solar Project**
Project Number: **R0317**
Project Location: **Enfield, CT**
Description: **Temporary Sediment Trap Sizing Calculation**
Prepared By: **JEC/ELD** Date: **November 2019**

Phase 1B - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	3.57	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**478**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	3,801	Sq. Ft.
D_W=	2	feet

V_W=	**6,462**	**Cu. Ft.**
V_W=	**239**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	3,801	Sq. Ft.
A_d=	5,070	Sq. Ft.
D_d=	2	feet

V_d=	**8,871**	**Cu. Ft.**
V_d=	**329**	**Cu. Yd.**

Provided Storage

Wet Storage	6,462	Cu. Ft.
	239	Cu. Yd.
Dry Storage	8,871	Cu. Ft.
	329	Cu. Yd.
Total Storage	**15,333**	**Cu. Ft.**
	568	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **Nutmeg Solar Project**
Project Number: **R0317**
Project Location: **Enfield, CT**
Description: **Temporary Sediment Trap Sizing Calculation**
Prepared By: **JEC/ELD** Date: **November 2019**

Phase 1C - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	4.74	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**635**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	3,767	Sq. Ft.
D_W=	3	feet

V_W=	**9,606**	**Cu. Ft.**
V_W=	**356**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	3,767	Sq. Ft.
A_d=	4,812	Sq. Ft.
D_d=	2	feet

V_d=	**8,579**	**Cu. Ft.**
V_d=	**318**	**Cu. Yd.**

Provided Storage

Wet Storage	9,606	Cu. Ft.
	356	Cu. Yd.
Dry Storage	8,579	Cu. Ft.
	318	Cu. Yd.
Total Storage	**18,185**	**Cu. Ft.**
	674	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **Nutmeg Solar Project**
Project Number: **R0317**
Project Location: **Enfield, CT**
Description: **Temporary Sediment Trap Sizing Calculation**
Prepared By: **JEC/ELD** Date: **November 2019**

Phase 1D - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	1.58	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**212**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	1,980	Sq. Ft.
D_w=	2	feet

V_w=	**3,366**	**Cu. Ft.**
V_w=	**125**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	1,980	Sq. Ft.
A_d=	2,902	Sq. Ft.
D_d=	2	feet

V_d=	**4,882**	**Cu. Ft.**
V_d=	**181**	**Cu. Yd.**

Provided Storage

Wet Storage	3,366	Cu. Ft.
	125	Cu. Yd.
Dry Storage	4,882	Cu. Ft.
	181	Cu. Yd.
Total Storage	**8,248**	**Cu. Ft.**
	305	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC** Date: **September 2018**

Phase 2A - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	2.45	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**328**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	2,688	Sq. Ft.
D_W=	2	feet
V_W=	**4,570**	**Cu. Ft.**
V_W=	**169**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	2,688	Sq. Ft.
A_d=	3,600	Sq. Ft.
D_d=	2	feet
V_d=	**6,288**	**Cu. Ft.**
V_d=	**233**	**Cu. Yd.**

Provided Storage

Wet Storage	4,570	Cu. Ft.
	169	Cu. Yd.
Dry Storage	6,288	Cu. Ft.
	233	Cu. Yd.
Total Storage	**10,858**	**Cu. Ft.**
	402	**Cu. Yd.**

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2B/4B

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 7.11 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

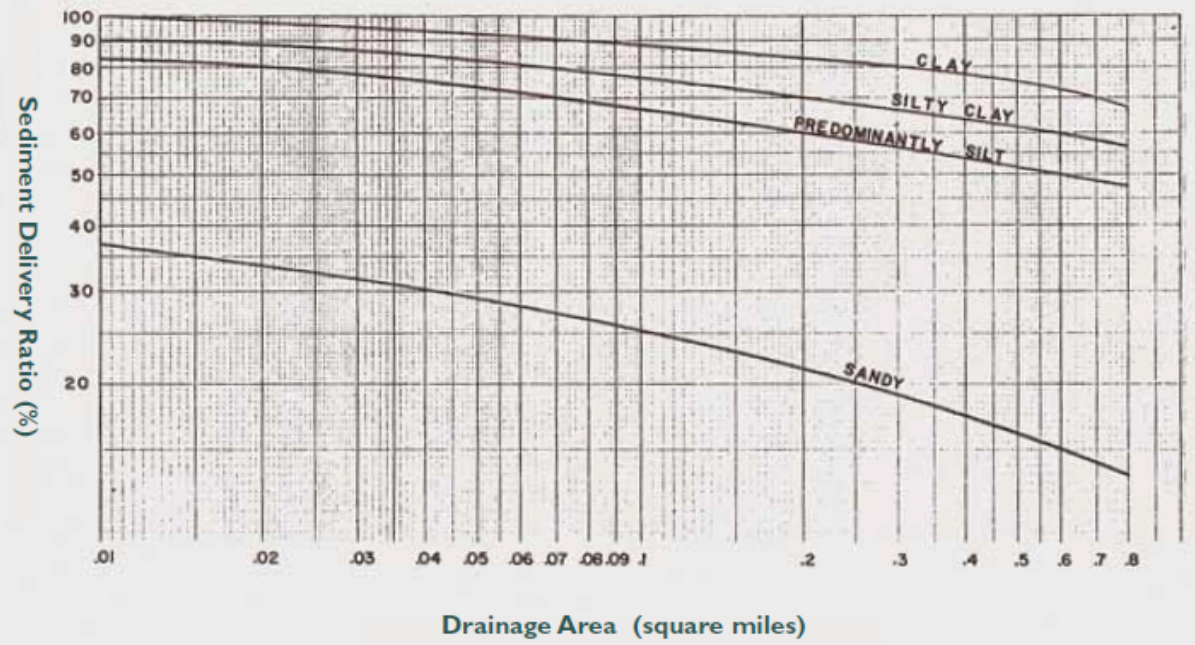
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.081 Acre Ft
V_S = 3546.64 Cu. Ft
131.36 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 7093 Cu. Ft
262.71 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 13253 Cu. Ft.
491 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2C/4C

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 9.53 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

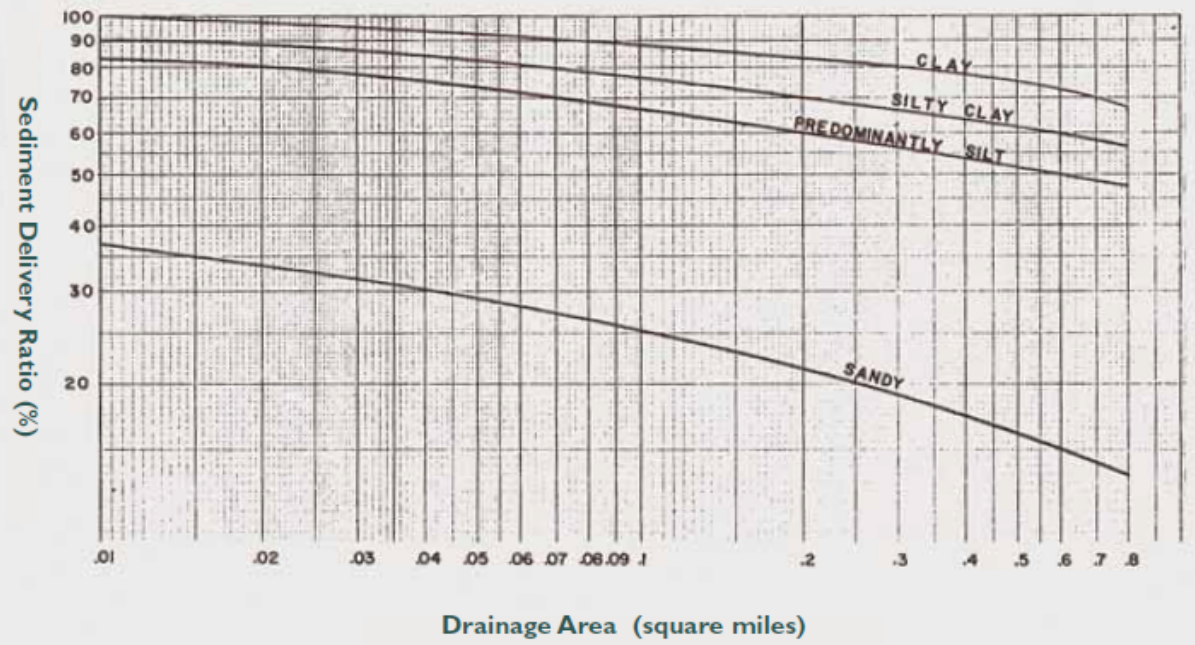
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.109 Acre Ft
V_S = 4753.79 Cu. Ft
176.07 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9508 Cu. Ft
352.13 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 16874 Cu. Ft.
625 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2D/4D

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 9.91 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

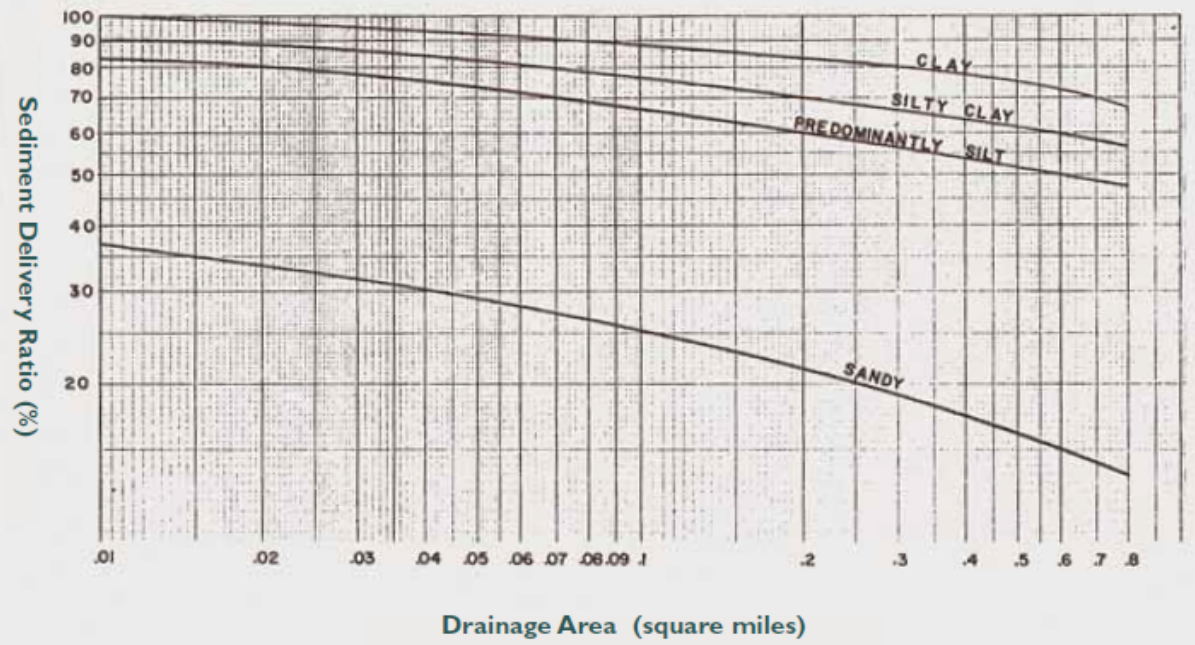
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.113 Acre Ft
V_S = 4943.34 Cu. Ft
183.09 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9887 Cu. Ft
366.17 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 17443 Cu. Ft.
646 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2E/4E

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 9.55 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

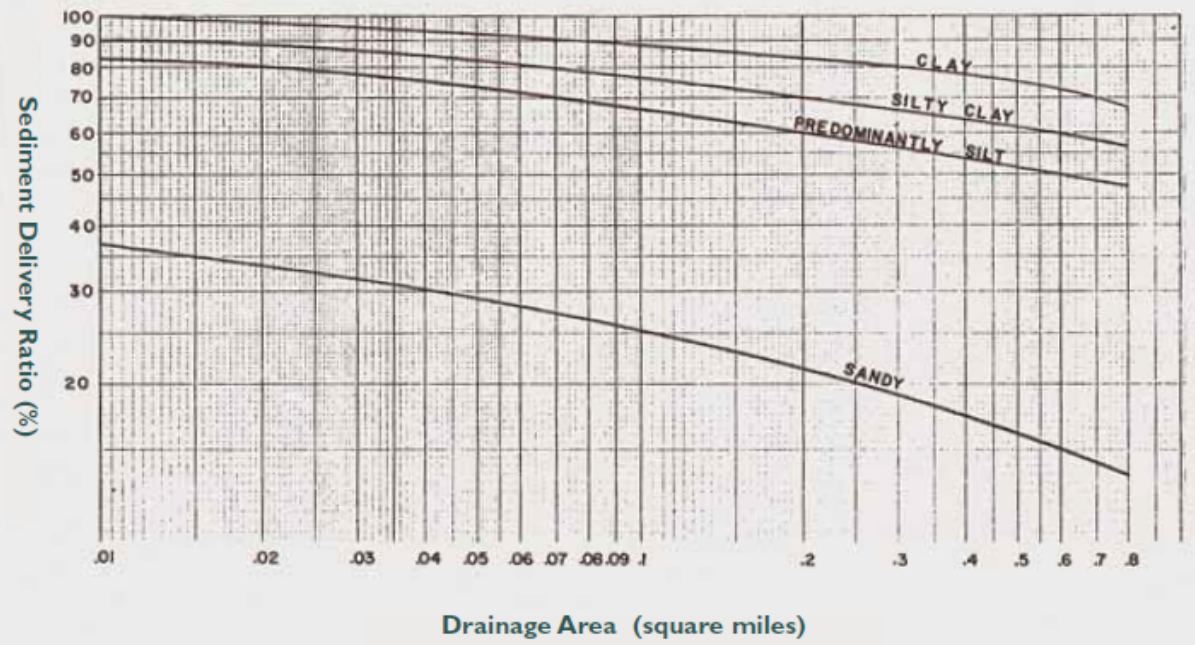
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.109 Acre Ft
V_S = 4763.76 Cu. Ft
176.44 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9528 Cu. Ft
352.87 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 16904 Cu. Ft.
626 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2F/4F

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 9.92 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

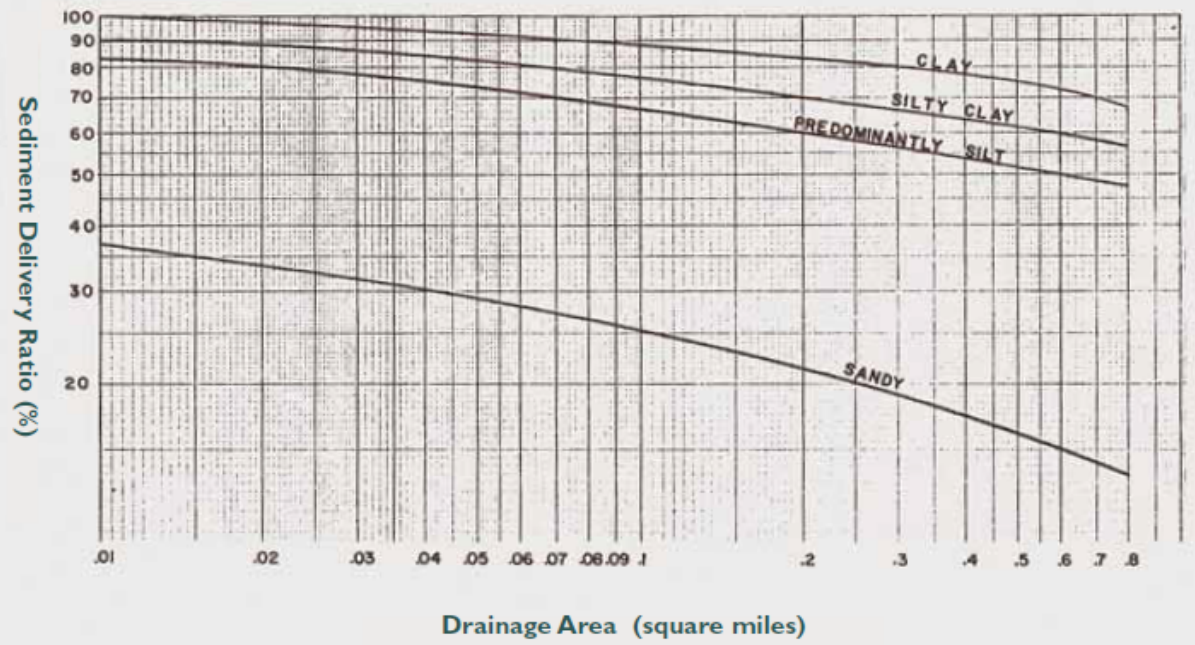
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.114 Acre Ft
V_S = 4948.33 Cu. Ft
183.27 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9897 Cu. Ft
366.54 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 17458 Cu. Ft.
647 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC** Date: **September 2018**

Phase 2G - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	5.00	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**670**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	4,717	Sq. Ft.
D_W=	3	feet
V_W=	**12,028**	**Cu. Ft.**
V_W=	**445**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	4,717	Sq. Ft.
A_d=	5,860	Sq. Ft.
D_d=	2	feet
V_d=	**10,577**	**Cu. Ft.**
V_d=	**392**	**Cu. Yd.**

Provided Storage

Wet Storage	12,028	Cu. Ft.
	445	Cu. Yd.
Dry Storage	10,577	Cu. Ft.
	392	Cu. Yd.
Total Storage	**22,605**	**Cu. Ft.**
	837	**Cu. Yd.**

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2H/4H

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 7.51 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

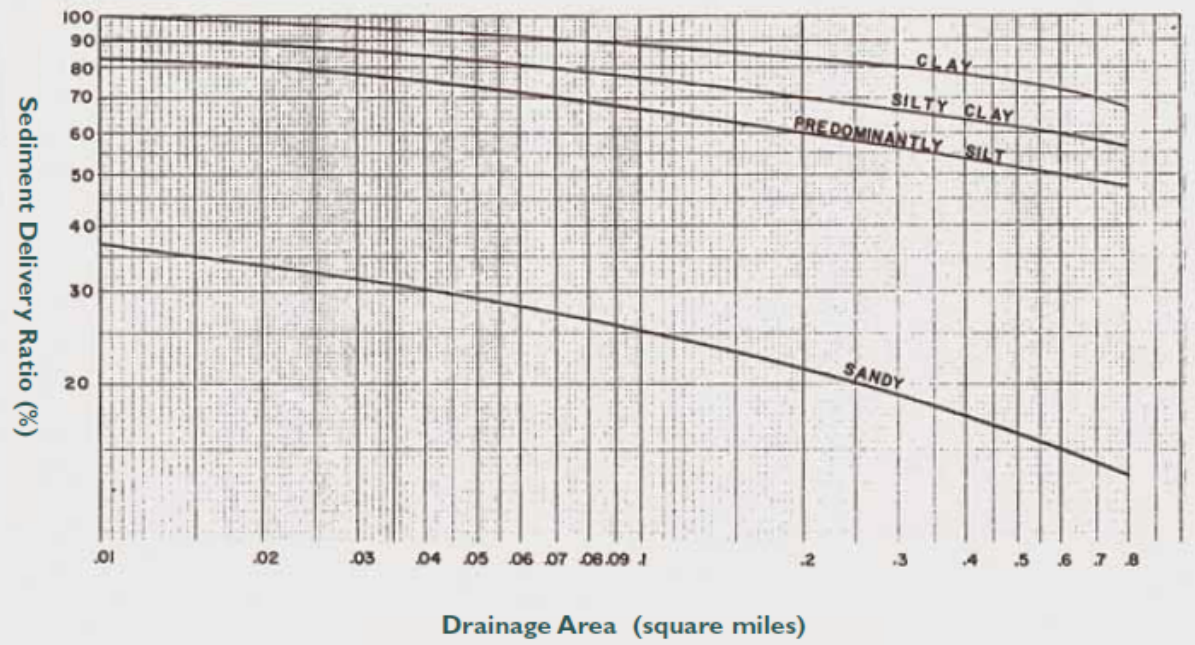
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.086 Acre Ft
V_S = 3746.16 Cu. Ft
138.75 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 7492 Cu. Ft
277.49 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 13851 Cu. Ft.
513 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2I/4I

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 9.97 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

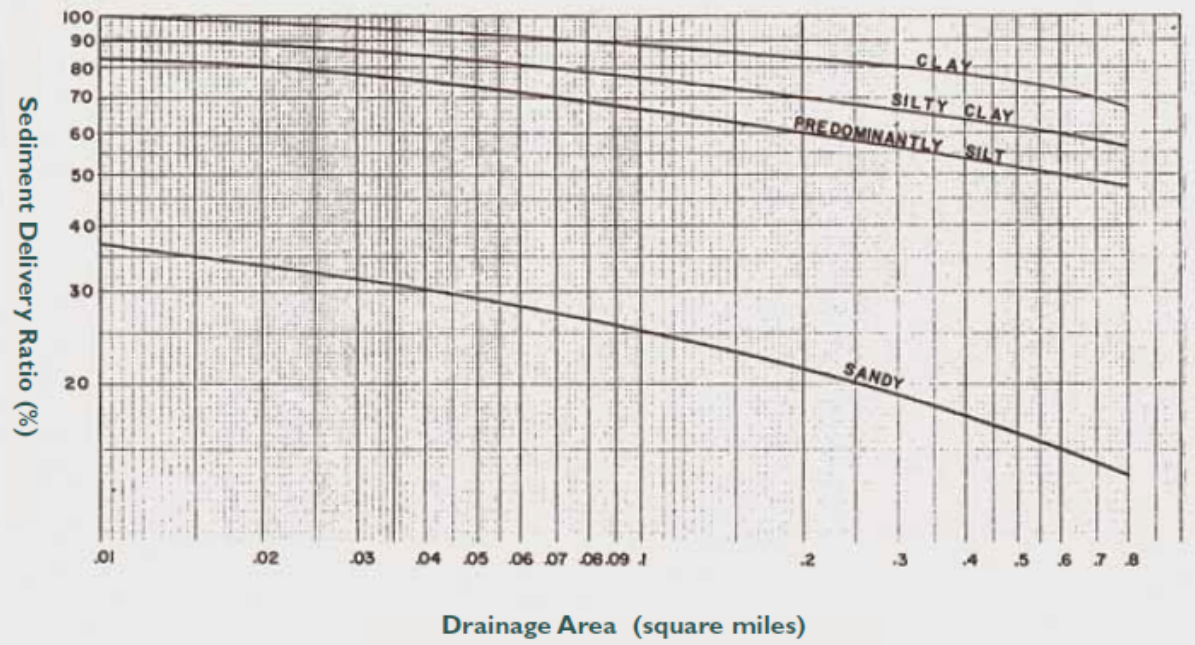
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.114 Acre Ft
V_S = 4973.27 Cu. Ft
184.20 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9947 Cu. Ft
368.39 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,614 Cu. Ft. as determined by HydroCAD

Total Volume = 17533 Cu. Ft.
649 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

Temporary Sediment Basin 2J/4J

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 10 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

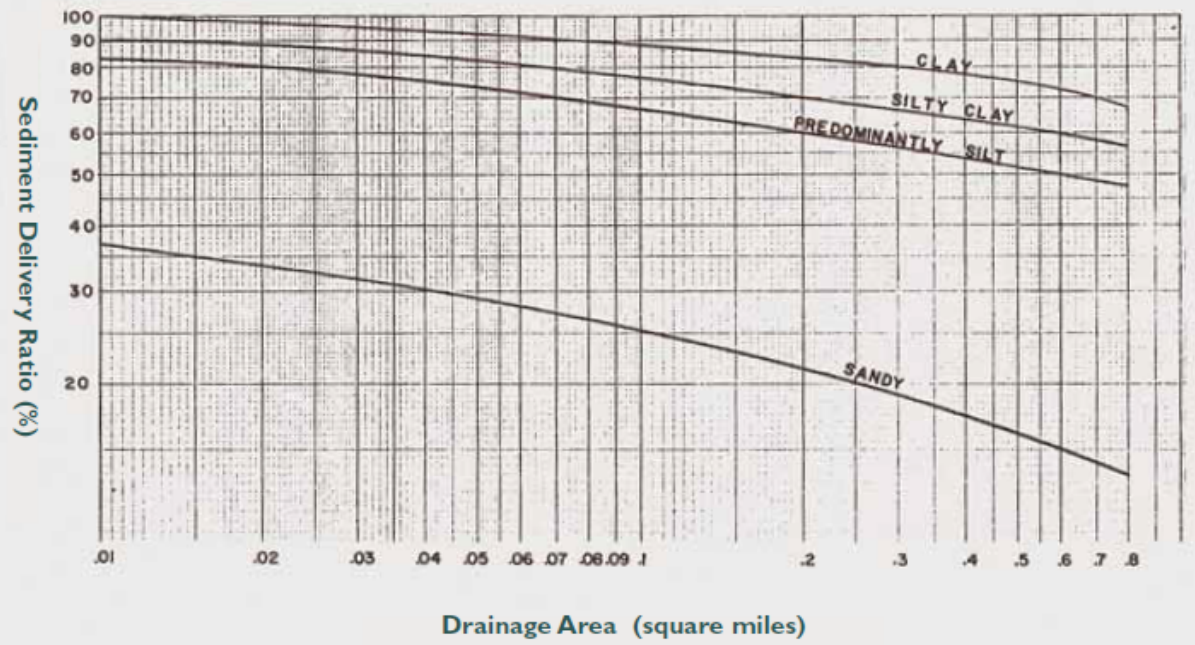
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **September 2018**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.115 Acre Ft
V_S = 4988.24 Cu. Ft
184.75 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 9976 Cu. Ft
369.50 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 17578 Cu. Ft.
651 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3A - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	5.00	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**670**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	5,347	Sq. Ft.
D_w=	2	feet
V_w=	**9,090**	**Cu. Ft.**
V_w=	**337**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	5,347	Sq. Ft.
A_d=	6,612	Sq. Ft.
D_d=	2	feet
V_d=	**11,959**	**Cu. Ft.**
V_d=	**443**	**Cu. Yd.**

Provided Storage

Wet Storage	9,090	Cu. Ft.
	337	Cu. Yd.
Dry Storage	11,959	Cu. Ft.
	443	Cu. Yd.
Total Storage	**21,049**	**Cu. Ft.**
	780	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3B - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	4.73	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**634**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	5,044	Sq. Ft.
D_w=	2	feet
V_w=	**8,575**	**Cu. Ft.**
V_w=	**318**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	5,044	Sq. Ft.
A_d=	6,269	Sq. Ft.
D_d=	2	feet
V_d=	**11,313**	**Cu. Ft.**
V_d=	**419**	**Cu. Yd.**

Provided Storage

Wet Storage	8,575	Cu. Ft.
	318	Cu. Yd.
Dry Storage	11,313	Cu. Ft.
	419	Cu. Yd.
Total Storage	**19,888**	**Cu. Ft.**
	737	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3C - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	4.07	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**545**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	4,417	Sq. Ft.
D_w=	2	feet
V_w=	**7,509**	**Cu. Ft.**
V_w=	**278**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	4,417	Sq. Ft.
A_d=	5,490	Sq. Ft.
D_d=	2	feet
V_d=	**9,907**	**Cu. Ft.**
V_d=	**367**	**Cu. Yd.**

Provided Storage

Wet Storage	7,509	Cu. Ft.
	278	Cu. Yd.
Dry Storage	9,907	Cu. Ft.
	367	Cu. Yd.
Total Storage	**17,416**	**Cu. Ft.**
	645	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3D - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	4.88	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**654**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	5,200	Sq. Ft.
D_w=	2	feet
V_w=	**8,840**	**Cu. Ft.**
V_w=	**327**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	5,200	Sq. Ft.
A_d=	6,462	Sq. Ft.
D_d=	2	feet
V_d=	**11,662**	**Cu. Ft.**
V_d=	**432**	**Cu. Yd.**

Provided Storage

Wet Storage	9,234	Cu. Ft.
	342	Cu. Yd.
Dry Storage	11,648	Cu. Ft.
	431	Cu. Yd.
Total Storage	**20,882**	**Cu. Ft.**
	773	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3E - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	3.19	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**427**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	3,801	Sq. Ft.
D_w=	2	feet
V_w=	**6,462**	**Cu. Ft.**
V_w=	**239**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	3,801	Sq. Ft.
A_d=	5,070	Sq. Ft.
D_d=	2	feet
V_d=	**8,871**	**Cu. Ft.**
V_d=	**329**	**Cu. Yd.**

Provided Storage

Wet Storage	6,462	Cu. Ft.
	239	Cu. Yd.
Dry Storage	8,871	Cu. Ft.
	329	Cu. Yd.
Total Storage	**15,333**	**Cu. Ft.**
	568	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3F - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	3.70	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**496**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_W=	3,950	Sq. Ft.
D_W=	2	feet
V_W=	**6,715**	**Cu. Ft.**
V_W=	**249**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_W=	3,950	Sq. Ft.
A_d=	5,496	Sq. Ft.
D_d=	2	feet
V_d=	**9,446**	**Cu. Ft.**
V_d=	**350**	**Cu. Yd.**

Provided Storage

Wet Storage	6,715	Cu. Ft.
	249	Cu. Yd.
Dry Storage	9,446	Cu. Ft.
	350	Cu. Yd.
Total Storage	**16,161**	**Cu. Ft.**
	599	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3G - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	3.48	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**466**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \times A_w \times D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	3,733	Sq. Ft.
D_w=	2	feet

V_w=	**6,346**	**Cu. Ft.**
V_w=	**235**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \times D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	3,733	Sq. Ft.
A_d=	5,181	Sq. Ft.
D_d=	2	feet

V_d=	**8,914**	**Cu. Ft.**
V_d=	**330**	**Cu. Yd.**

Provided Storage

Wet Storage	6,346	Cu. Ft.
	235	Cu. Yd.
Dry Storage	8,914	Cu. Ft.
	330	Cu. Yd.
Total Storage	**15,260**	**Cu. Ft.**
	565	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **November 2019**

Temporary Sediment Basin 3H

Sediment Storage Volume

$$V = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

where:

V = the volume of sediment trapped in ac. ft./yr.
DA = the total drainage area in acres
A = the average annual erosion in tons per acre per year using either values from the Universal Soil Loss Equation, the Revised Universal Soil Loss Equation or the values in **Figure SB-1** for the listed land use.
DR = the delivery ratio determined from **Figure SB-12**.
TE = the trap efficiency as given above. (Use 0.8)
γ = the estimated sediment density in the sediment basin in lbs/cu. ft. (from **Figure SB-2**).

DA = 7.47 Acres

A = Site will be considered a construction area

A = 50.0 ton/acre/yr

Figure SB-1 Determining Erosion Rates

Land Use	Ave. Annual Erosion
Wooded area	0.2 ton/ac/yr
Developed urban areas, grassed areas, pastures, hay fields, abandoned fields with good cover	1.0 ton/ac/yr
Clean tilled cropland (corn, vegetables, etc.)	10 ton/ac/yr
Construction Areas	50 ton/ac/yr

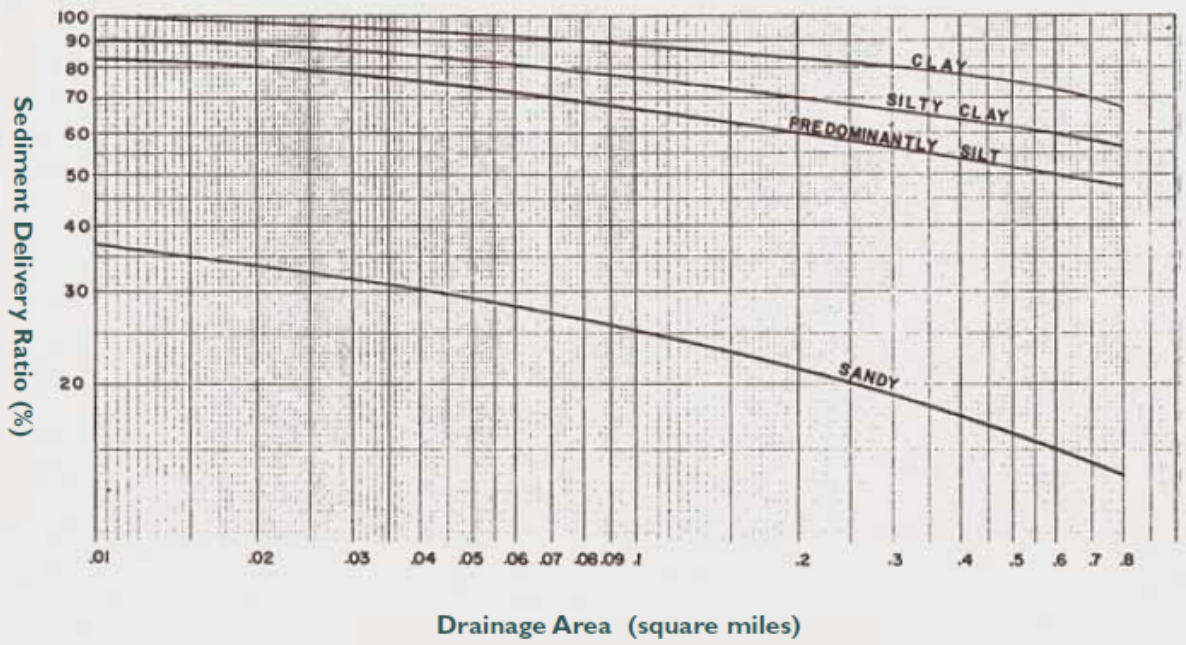
Source: USDA-SCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **November 2019**

DR = From figure SB-12 below
Sandy-silt Soil with 0.015625 square miles disturbed

DR = 0.53

Figure SB-12 Sediment Delivery Ratio Vs. Drainage Area Graph



Source: USDA-NRCS

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R-0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Basin Sizing Calculation** Prepared By: **ELD** Date: **November 2019**

γ = Soil Texture is Sand-silt mixtur

γ = 85

Figure SB-2 Estimated Sediment Density

Soil Texture *	γ_s Submerged (lbs/cu. ft.)
Clay	40-60
Silt	55-75
Clay-silt mixtures (equal parts)	40-65
Sand-silt mixtures (equal parts)	75-95
Clay-silt-sand mixtures (equal parts)	50-80
Sand	85-100
Gravel	85-125
Poorly sorted sand and gravel	95-130

* Use USDA soil data from county soil surveys or sieve analysis to determine soil texture.

Source: USDA-NRCS.

Sediment Storage Volume

$$V_S = \frac{(DA)(A)(DR)(TE)(2{,}000\text{lbs./ton})}{(\gamma)(43{,}560\text{sq.ft./ac})}$$

V_S = 0.086 Acre Ft
V_S = 3726.21 Cu. Ft
138.01 Cu. Yd.

Wet Storage Volume

$V_W = 2 * V$
V_W = 7452 Cu. Ft
276.02 Cu Yd

Total Required Basin Capacity

Total Volume = $V_S + V_W$ + Residence Storage

Residence Storage = volume to provide 10 hours residence time for a 10 year frequency 24 hour duration, type III distribution storm

Residence Storage = 2,613 Cu. Ft. as determined by HydroCAD

Total Volume = 13792 Cu. Ft.
511 Cu. Yd.

Calculated in accordence with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Tighe&Bond Consulting Engineers Environmental Specialists	Project Name: **Nutmeg Solar Project** Project Number: **R0317** Project Location: **Enfield, CT** Description: **Temporary Sediment Trap Sizing Calculation** Prepared By: **JEC/ELD** Date: **November 2019**

Phase 3I - Sediment Trap Sizing Calculations

Sediment Storage Volume

Drainage Area =	2.40	Acres
Required Storage=	134	Cu. Yds / Acre
Total Required Storage=	**322**	Cu. Yds

Required Wet Storage

Wet storage volume may be approximated as follows:

$$Vw = 0.85 \text{ x } A_w \text{ x } D_w$$

where,

V_w = the wet storage volume in cubic feet
A_w = the surface area of the flooded area at the base of the stone outlet in square feet
D_w = the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

A_w=	2,734	Sq. Ft.
D_w=	2	feet
V_w=	**4,648**	**Cu. Ft.**
V_w=	**172**	**Cu. Yd.**

Required Dry Storage

Dry storage volume may be approximated as follows:

$$V_d = \frac{(A_w + A_d)}{2} \text{ x } D_d$$

where,

V_d = the dry storage volume
A_w = the surface area of the flooded area at the base of the stone outlet in square feet.
A_d = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in square feet
D_d = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

A_w=	2,734	Sq. Ft.
A_d=	3,751	Sq. Ft.
D_d=	2	feet
V_d=	**6,485**	**Cu. Ft.**
V_d=	**240**	**Cu. Yd.**

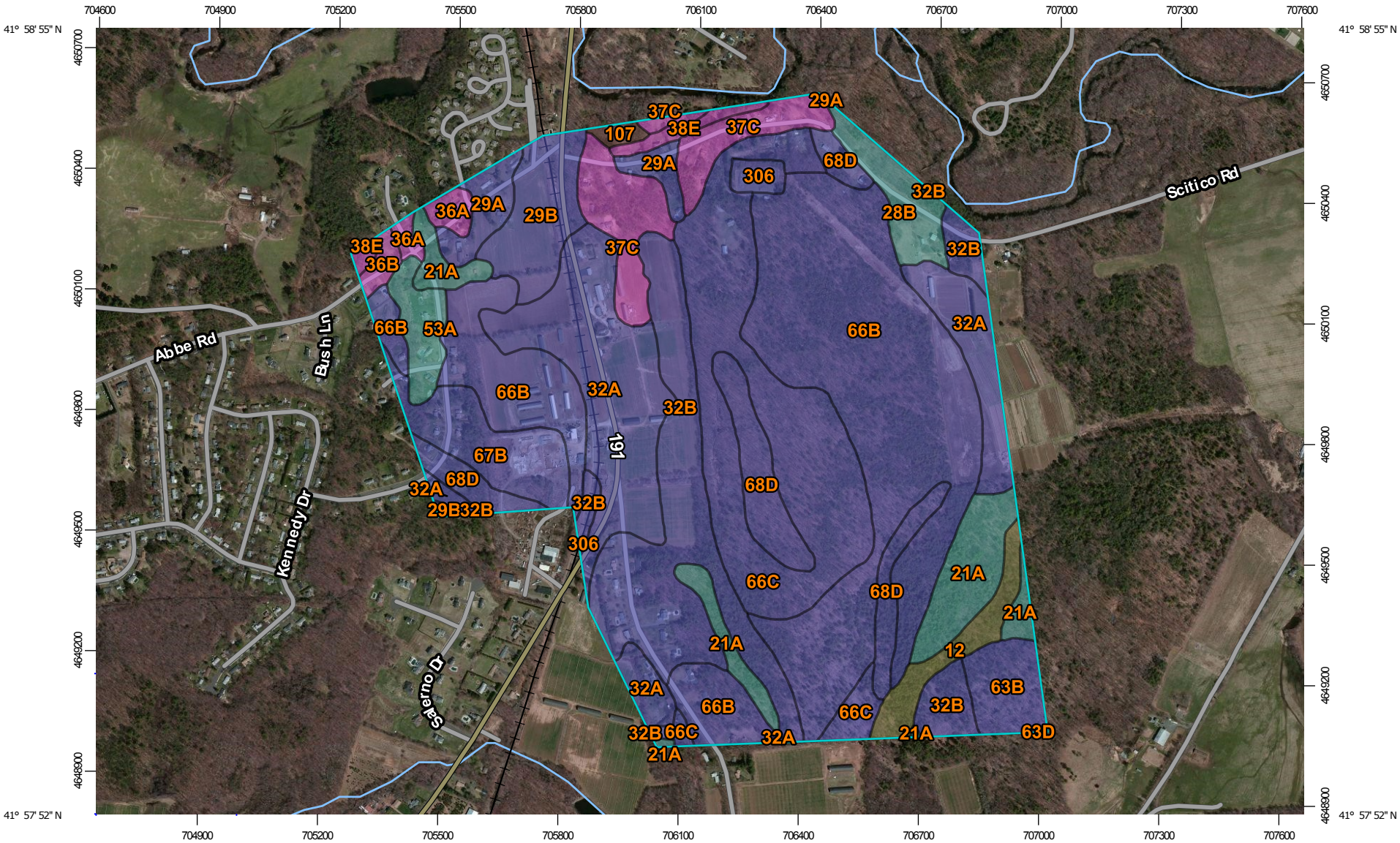
Provided Storage

Wet Storage	4,648	Cu. Ft.
	172	Cu. Yd.
Dry Storage	6,485	Cu. Ft.
	240	Cu. Yd.
Total Storage	**11,133**	**Cu. Ft.**
	412	**Cu. Yd.**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

NRCS Soils Report

Hydrologic Soil Group—State of Connecticut
(Nutmeg Soil Project)



Map Scale: 1:13,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 15, Sep 28, 2016

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
12	Raypol silt loam	C/D	9.5	1.9%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	C	24.6	5.0%
28B	Elmridge fine sandy loam, 3 to 8 percent slopes	C	10.1	2.1%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	B	10.1	2.1%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	16.7	3.4%
32A	Haven and Enfield soils, 0 to 3 percent slopes	B	59.6	12.1%
32B	Haven and Enfield soils, 3 to 8 percent slopes	B	57.4	11.7%
36A	Windsor loamy sand, 0 to 3 percent slopes	A	3.9	0.8%
36B	Windsor loamy sand, 3 to 8 percent slopes	A	2.3	0.5%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	A	23.7	4.8%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	3.7	0.7%
53A	Wapping very fine sandy loam, 0 to 3 percent slopes	C	7.9	1.6%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	B	9.9	2.0%
63D	Cheshire fine sandy loam, 15 to 25 percent slopes	B	0.1	0.0%
66B	Narragansett silt loam, 2 to 8 percent slopes	B	137.3	28.0%
66C	Narragansett silt loam, 8 to 15 percent slopes	B	67.8	13.8%
67B	Narragansett silt loam, 3 to 8 percent slopes, very stony	B	16.7	3.4%

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
68D	Narragansett silt loam, 15 to 25 percent slopes, extremely stony	B	25.4	5.2%
107	Limerick and Lim soils	B/D	1.5	0.3%
306	Udorthents-Urban land complex	B	2.8	0.6%
Totals for Area of Interest			**491.0**	**100.0%**

Description

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

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

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

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

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

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

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

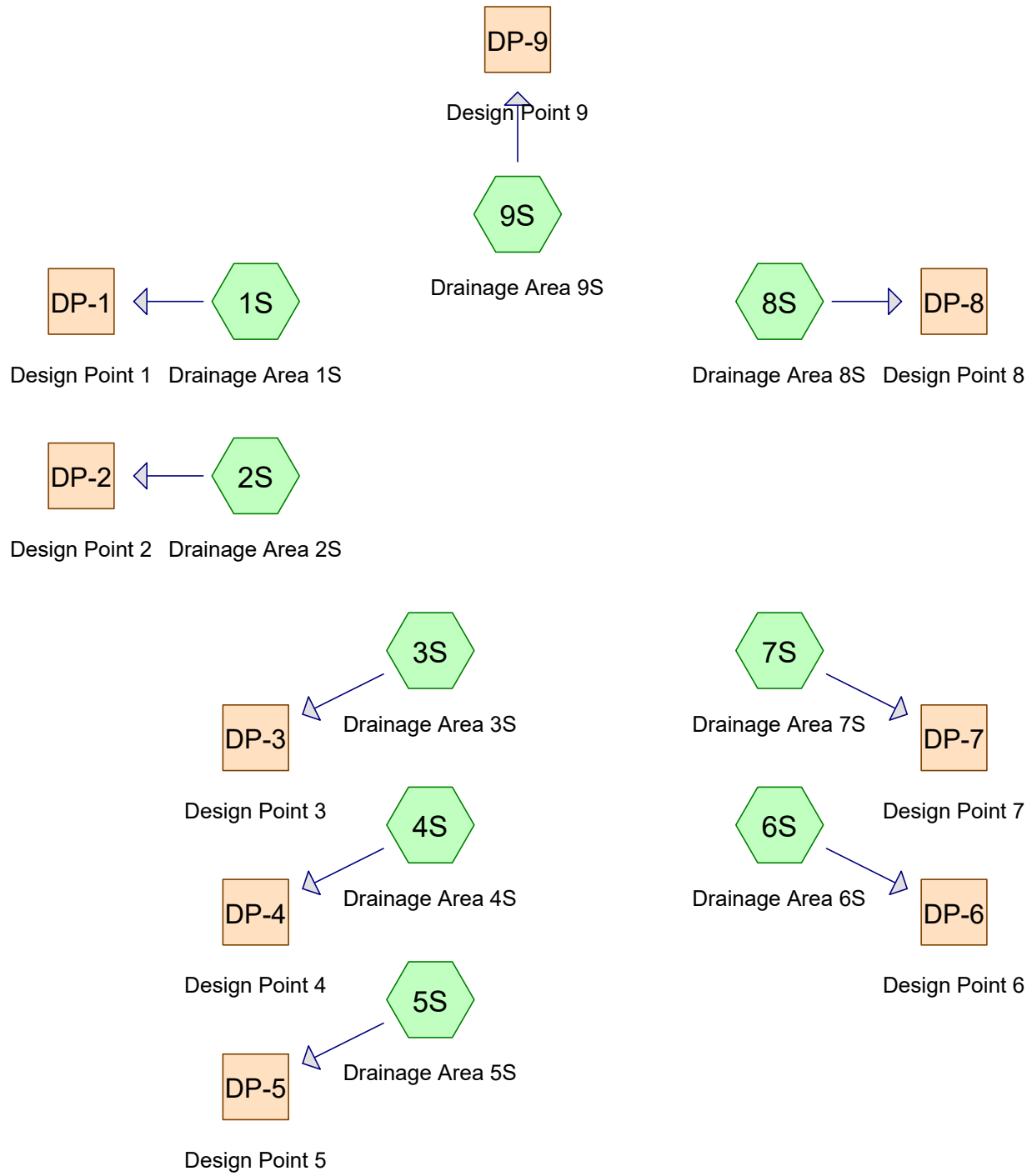
Rating Options

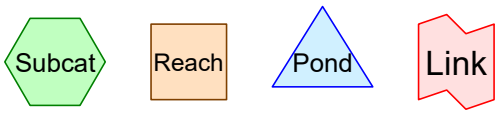
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Long-Term Existing Conditions Hydrology





Routing Diagram for Existing Hydrology-Nutmeg-Cons
Prepared by Tighe & Bond, Printed 12/20/2019
HydroCAD® 10.00-20 s/n 01580 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.262	98	Existing Structure, HSG A (1S)
0.897	98	Existing Structure, HSG B (1S, 2S)
0.479	96	Gravel surface, HSG A (1S, 9S)
3.024	96	Gravel surface, HSG B (1S, 9S)
3.050	67	Row crops, straight row, Good, HSG A (1S)
34.391	78	Row crops, straight row, Good, HSG B (1S, 2S, 3S, 4S, 8S)
0.187	30	Woods, Good, HSG A (9S)
120.037	55	Woods, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
0.380	70	Woods, Good, HSG C (4S)

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.978	HSG A	1S, 9S
158.349	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
0.380	HSG C	4S
0.000	HSG D	
0.000	Other	

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Drainage Area 1S Runoff Area=27.183 ac 3.29% Impervious Runoff Depth=0.73"
Flow Length=1,752' Tc=41.6 min CN=68 Runoff=9.69 cfs 1.660 af

Subcatchment2S: Drainage Area 2S Runoff Area=25.407 ac 1.05% Impervious Runoff Depth=0.64"
Flow Length=2,263' Tc=41.3 min CN=66 Runoff=7.60 cfs 1.361 af

Subcatchment3S: Drainage Area 3S Runoff Area=8.003 ac 0.00% Impervious Runoff Depth=1.09"
Flow Length=836' Tc=17.7 min CN=75 Runoff=6.90 cfs 0.730 af

Subcatchment4S: Drainage Area 4S Runoff Area=28.046 ac 0.00% Impervious Runoff Depth=0.48"
Flow Length=1,476' Tc=29.0 min CN=62 Runoff=6.46 cfs 1.124 af

Subcatchment5S: Drainage Area 5S Runoff Area=9.675 ac 0.00% Impervious Runoff Depth=0.25"
Flow Length=1,196' Tc=21.8 min CN=55 Runoff=0.82 cfs 0.202 af

Subcatchment6S: Drainage Area 6S Runoff Area=4.792 ac 0.00% Impervious Runoff Depth=0.25"
Flow Length=1,486' Tc=32.4 min CN=55 Runoff=0.35 cfs 0.100 af

Subcatchment7S: Drainage Area 7S Runoff Area=31.477 ac 0.00% Impervious Runoff Depth=0.25"
Flow Length=1,268' Tc=22.8 min CN=55 Runoff=2.63 cfs 0.658 af

Subcatchment8S: Drainage Area 8S Runoff Area=26.597 ac 0.00% Impervious Runoff Depth=0.28"
Flow Length=1,941' Tc=44.8 min CN=56 Runoff=2.04 cfs 0.620 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.527 ac 0.00% Impervious Runoff Depth=0.31"
Flow Length=925' Tc=16.0 min CN=57 Runoff=0.20 cfs 0.039 af

Reach DP-1: Design Point 1 Inflow=9.69 cfs 1.660 af
Outflow=9.69 cfs 1.660 af

Reach DP-2: Design Point 2 Inflow=7.60 cfs 1.361 af
Outflow=7.60 cfs 1.361 af

Reach DP-3: Design Point 3 Inflow=6.90 cfs 0.730 af
Outflow=6.90 cfs 0.730 af

Reach DP-4: Design Point 4 Inflow=6.46 cfs 1.124 af
Outflow=6.46 cfs 1.124 af

Reach DP-5: Design Point 5 Inflow=0.82 cfs 0.202 af
Outflow=0.82 cfs 0.202 af

Reach DP-6: Design Point 6 Inflow=0.35 cfs 0.100 af
Outflow=0.35 cfs 0.100 af

Reach DP-7: Design Point 7 Inflow=2.63 cfs 0.658 af
Outflow=2.63 cfs 0.658 af

Reach DP-8: Design Point 8 Inflow=2.04 cfs 0.620 af
Outflow=2.04 cfs 0.620 af

Reach DP-9: Design Point 9 Inflow=0.20 cfs 0.039 af
Outflow=0.20 cfs 0.039 af

Summary for Subcatchment 1S: Drainage Area 1S

Runoff = 9.69 cfs @ 12.66 hrs, Volume= 1.660 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.631	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.446	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	3.050	67	Row crops, straight row, Good, HSG A
	6.478	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.431	96	Gravel surface, HSG A
	2.885	96	Gravel surface, HSG B
	27.183	68	Weighted Average
	26.290		96.71% Pervious Area
	0.893		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	154	0.0292	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	564	0.1277	1.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	271	0.0664	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.3	713	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.6	1,752	Total			

Summary for Subcatchment 2S: Drainage Area 2S

Runoff = 7.60 cfs @ 12.67 hrs, Volume= 1.361 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.266	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.916	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	67	Row crops, straight row, Good, HSG A
	11.225	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	25.407	66	Weighted Average
	25.141		98.95% Pervious Area
	0.266		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
13.5	1,037	0.0656	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	311	0.1768	2.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	304	0.0559	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.9	561	0.0107	0.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.3	2,263	Total			

Summary for Subcatchment 3S: Drainage Area 3S

Runoff = 6.90 cfs @ 12.26 hrs, Volume= 0.730 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.083	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	6.920	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	8.003	75	Weighted Average
	8.003		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	85	0.1059	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	296	0.0574	1.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	405	0.0148	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.7	836	Total			

Summary for Subcatchment 4S: Drainage Area 4S

Runoff = 6.46 cfs @ 12.53 hrs, Volume= 1.124 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	19.262	55	Woods, Good, HSG B
	0.380	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	8.404	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	28.046	62	Weighted Average
	28.046		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	65	0.0462	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	581	0.1773	2.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	306	0.0686	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	321	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	153	0.0098	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.0	1,476	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 0.82 cfs @ 12.57 hrs, Volume= 0.202 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	9.675	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	9.675	55	Weighted Average
	9.675		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	95	0.0421	1.03		**Shallow Concentrated Flow, SF1** Woodland Kv= 5.0 fps
11.0	1,051	0.1018	1.60		**Shallow Concentrated Flow, SF2** Woodland Kv= 5.0 fps
21.8	1,196	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 0.35 cfs @ 12.72 hrs, Volume= 0.100 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.792	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	4.792	55	Weighted Average
	4.792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.3	236	0.0339	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	554	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.4	1,486	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 2.63 cfs @ 12.58 hrs, Volume= 0.658 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	31.477	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	31.477	55	Weighted Average
	31.477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
14.9	1,218	0.0747	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	1,268	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 2.04 cfs @ 12.89 hrs, Volume= 0.620 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	25.233	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	1.364	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	26.597	56	Weighted Average
	26.597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	288	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.8	283	0.0389	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	176	0.0227	0.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.3	646	0.0155	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	173	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	89	0.0899	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	236	0.0975	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
44.8	1,941	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 0.20 cfs @ 12.44 hrs, Volume= 0.039 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	1.153	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.139	96	Gravel surface, HSG B
	1.527	57	Weighted Average
	1.527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	388	0.0696	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	487	0.0801	4.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.0	925	Total			

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 27.183 ac, 3.29% Impervious, Inflow Depth = 0.73" for 2-Year event
Inflow = 9.69 cfs @ 12.66 hrs, Volume= 1.660 af
Outflow = 9.69 cfs @ 12.66 hrs, Volume= 1.660 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 25.407 ac, 1.05% Impervious, Inflow Depth = 0.64" for 2-Year event
Inflow = 7.60 cfs @ 12.67 hrs, Volume= 1.361 af
Outflow = 7.60 cfs @ 12.67 hrs, Volume= 1.361 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.003 ac, 0.00% Impervious, Inflow Depth = 1.09" for 2-Year event
Inflow = 6.90 cfs @ 12.26 hrs, Volume= 0.730 af
Outflow = 6.90 cfs @ 12.26 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.046 ac, 0.00% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 6.46 cfs @ 12.53 hrs, Volume= 1.124 af
Outflow = 6.46 cfs @ 12.53 hrs, Volume= 1.124 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.675 ac, 0.00% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 0.82 cfs @ 12.57 hrs, Volume= 0.202 af
Outflow = 0.82 cfs @ 12.57 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 0.00% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 0.35 cfs @ 12.72 hrs, Volume= 0.100 af
Outflow = 0.35 cfs @ 12.72 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.00% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 2.63 cfs @ 12.58 hrs, Volume= 0.658 af
Outflow = 2.63 cfs @ 12.58 hrs, Volume= 0.658 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	26.597 ac,	0.00% Impervious,	Inflow Depth =	0.28"	for 2-Year event
Inflow =	2.04 cfs @	12.89 hrs,	Volume=	0.620 af	
Outflow =	2.04 cfs @	12.89 hrs,	Volume=	0.620 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1.527 ac,	0.00% Impervious,	Inflow Depth =	0.31"	for 2-Year event
Inflow =	0.20 cfs @	12.44 hrs,	Volume=	0.039 af	
Outflow =	0.20 cfs @	12.44 hrs,	Volume=	0.039 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Drainage Area 1S Runoff Area=27.183 ac 3.29% Impervious Runoff Depth=1.67"
Flow Length=1,752' Tc=41.6 min CN=68 Runoff=24.62 cfs 3.781 af

Subcatchment2S: Drainage Area 2S Runoff Area=25.407 ac 1.05% Impervious Runoff Depth=1.53"
Flow Length=2,263' Tc=41.3 min CN=66 Runoff=20.79 cfs 3.232 af

Subcatchment3S: Drainage Area 3S Runoff Area=8.003 ac 0.00% Impervious Runoff Depth=2.21"
Flow Length=836' Tc=17.7 min CN=75 Runoff=14.52 cfs 1.473 af

Subcatchment4S: Drainage Area 4S Runoff Area=28.046 ac 0.00% Impervious Runoff Depth=1.26"
Flow Length=1,476' Tc=29.0 min CN=62 Runoff=21.40 cfs 2.938 af

Subcatchment5S: Drainage Area 5S Runoff Area=9.675 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,196' Tc=21.8 min CN=55 Runoff=4.68 cfs 0.673 af

Subcatchment6S: Drainage Area 6S Runoff Area=4.792 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,486' Tc=32.4 min CN=55 Runoff=1.99 cfs 0.333 af

Subcatchment7S: Drainage Area 7S Runoff Area=31.477 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,268' Tc=22.8 min CN=55 Runoff=15.01 cfs 2.189 af

Subcatchment8S: Drainage Area 8S Runoff Area=26.597 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=1,941' Tc=44.8 min CN=56 Runoff=10.29 cfs 1.975 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.527 ac 0.00% Impervious Runoff Depth=0.95"
Flow Length=925' Tc=16.0 min CN=57 Runoff=1.00 cfs 0.121 af

Reach DP-1: Design Point 1 Inflow=24.62 cfs 3.781 af
Outflow=24.62 cfs 3.781 af

Reach DP-2: Design Point 2 Inflow=20.79 cfs 3.232 af
Outflow=20.79 cfs 3.232 af

Reach DP-3: Design Point 3 Inflow=14.52 cfs 1.473 af
Outflow=14.52 cfs 1.473 af

Reach DP-4: Design Point 4 Inflow=21.40 cfs 2.938 af
Outflow=21.40 cfs 2.938 af

Reach DP-5: Design Point 5 Inflow=4.68 cfs 0.673 af
Outflow=4.68 cfs 0.673 af

Reach DP-6: Design Point 6 Inflow=1.99 cfs 0.333 af
Outflow=1.99 cfs 0.333 af

Reach DP-7: Design Point 7 Inflow=15.01 cfs 2.189 af
Outflow=15.01 cfs 2.189 af

Reach DP-8: Design Point 8 Inflow=10.29 cfs 1.975 af
Outflow=10.29 cfs 1.975 af

Reach DP-9: Design Point 9 Inflow=1.00 cfs 0.121 af
Outflow=1.00 cfs 0.121 af

Summary for Subcatchment 1S: Drainage Area 1S

Runoff = 24.62 cfs @ 12.61 hrs, Volume= 3.781 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.631	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.446	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	3.050	67	Row crops, straight row, Good, HSG A
	6.478	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.431	96	Gravel surface, HSG A
	2.885	96	Gravel surface, HSG B
	27.183	68	Weighted Average
	26.290		96.71% Pervious Area
	0.893		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	154	0.0292	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	564	0.1277	1.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	271	0.0664	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.3	713	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.6	1,752	Total			

Summary for Subcatchment 2S: Drainage Area 2S

Runoff = 20.79 cfs @ 12.62 hrs, Volume= 3.232 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.266	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.916	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	67	Row crops, straight row, Good, HSG A
	11.225	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	25.407	66	Weighted Average
	25.141		98.95% Pervious Area
	0.266		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
13.5	1,037	0.0656	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	311	0.1768	2.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	304	0.0559	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.9	561	0.0107	0.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.3	2,263	Total			

Summary for Subcatchment 3S: Drainage Area 3S

Runoff = 14.52 cfs @ 12.25 hrs, Volume= 1.473 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.083	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	6.920	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	8.003	75	Weighted Average
	8.003		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	85	0.1059	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	296	0.0574	1.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	405	0.0148	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.7	836	Total			

Summary for Subcatchment 4S: Drainage Area 4S

Runoff = 21.40 cfs @ 12.46 hrs, Volume= 2.938 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	19.262	55	Woods, Good, HSG B
	0.380	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	8.404	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	28.046	62	Weighted Average
	28.046		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	65	0.0462	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	581	0.1773	2.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	306	0.0686	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	321	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	153	0.0098	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.0	1,476	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 4.68 cfs @ 12.39 hrs, Volume= 0.673 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	9.675	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	9.675	55	Weighted Average
	9.675		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	95	0.0421	1.03		**Shallow Concentrated Flow, SF1** Woodland Kv= 5.0 fps
11.0	1,051	0.1018	1.60		**Shallow Concentrated Flow, SF2** Woodland Kv= 5.0 fps
21.8	1,196	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 1.99 cfs @ 12.56 hrs, Volume= 0.333 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.792	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	4.792	55	Weighted Average
	4.792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.3	236	0.0339	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	554	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.4	1,486	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 15.01 cfs @ 12.41 hrs, Volume= 2.189 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	31.477	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	31.477	55	Weighted Average
	31.477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
14.9	1,218	0.0747	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	1,268	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 10.29 cfs @ 12.73 hrs, Volume= 1.975 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	25.233	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	1.364	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	26.597	56	Weighted Average
	26.597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	288	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.8	283	0.0389	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	176	0.0227	0.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.3	646	0.0155	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	173	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	89	0.0899	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	236	0.0975	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
44.8	1,941	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 1.00 cfs @ 12.27 hrs, Volume= 0.121 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	1.153	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.139	96	Gravel surface, HSG B
	1.527	57	Weighted Average
	1.527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	388	0.0696	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	487	0.0801	4.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.0	925	Total			

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 27.183 ac, 3.29% Impervious, Inflow Depth = 1.67" for 10-Year event
Inflow = 24.62 cfs @ 12.61 hrs, Volume= 3.781 af
Outflow = 24.62 cfs @ 12.61 hrs, Volume= 3.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 25.407 ac, 1.05% Impervious, Inflow Depth = 1.53" for 10-Year event
Inflow = 20.79 cfs @ 12.62 hrs, Volume= 3.232 af
Outflow = 20.79 cfs @ 12.62 hrs, Volume= 3.232 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.003 ac, 0.00% Impervious, Inflow Depth = 2.21" for 10-Year event
Inflow = 14.52 cfs @ 12.25 hrs, Volume= 1.473 af
Outflow = 14.52 cfs @ 12.25 hrs, Volume= 1.473 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.046 ac, 0.00% Impervious, Inflow Depth = 1.26" for 10-Year event
Inflow = 21.40 cfs @ 12.46 hrs, Volume= 2.938 af
Outflow = 21.40 cfs @ 12.46 hrs, Volume= 2.938 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.675 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year event
Inflow = 4.68 cfs @ 12.39 hrs, Volume= 0.673 af
Outflow = 4.68 cfs @ 12.39 hrs, Volume= 0.673 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year event
Inflow = 1.99 cfs @ 12.56 hrs, Volume= 0.333 af
Outflow = 1.99 cfs @ 12.56 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year event
Inflow = 15.01 cfs @ 12.41 hrs, Volume= 2.189 af
Outflow = 15.01 cfs @ 12.41 hrs, Volume= 2.189 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.597 ac, 0.00% Impervious, Inflow Depth = 0.89" for 10-Year event
Inflow = 10.29 cfs @ 12.73 hrs, Volume= 1.975 af
Outflow = 10.29 cfs @ 12.73 hrs, Volume= 1.975 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.527 ac, 0.00% Impervious, Inflow Depth = 0.95" for 10-Year event
Inflow = 1.00 cfs @ 12.27 hrs, Volume= 0.121 af
Outflow = 1.00 cfs @ 12.27 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Drainage Area 1S Runoff Area=27.183 ac 3.29% Impervious Runoff Depth=2.24"
Flow Length=1,752' Tc=41.6 min CN=68 Runoff=33.74 cfs 5.081 af

Subcatchment2S: Drainage Area 2S Runoff Area=25.407 ac 1.05% Impervious Runoff Depth=2.08"
Flow Length=2,263' Tc=41.3 min CN=66 Runoff=29.00 cfs 4.396 af

Subcatchment3S: Drainage Area 3S Runoff Area=8.003 ac 0.00% Impervious Runoff Depth=2.86"
Flow Length=836' Tc=17.7 min CN=75 Runoff=18.91 cfs 1.908 af

Subcatchment4S: Drainage Area 4S Runoff Area=28.046 ac 0.00% Impervious Runoff Depth=1.76"
Flow Length=1,476' Tc=29.0 min CN=62 Runoff=31.18 cfs 4.104 af

Subcatchment5S: Drainage Area 5S Runoff Area=9.675 ac 0.00% Impervious Runoff Depth=1.24"
Flow Length=1,196' Tc=21.8 min CN=55 Runoff=7.74 cfs 0.999 af

Subcatchment6S: Drainage Area 6S Runoff Area=4.792 ac 0.00% Impervious Runoff Depth=1.24"
Flow Length=1,486' Tc=32.4 min CN=55 Runoff=3.25 cfs 0.495 af

Subcatchment7S: Drainage Area 7S Runoff Area=31.477 ac 0.00% Impervious Runoff Depth=1.24"
Flow Length=1,268' Tc=22.8 min CN=55 Runoff=24.75 cfs 3.251 af

Subcatchment8S: Drainage Area 8S Runoff Area=26.597 ac 0.00% Impervious Runoff Depth=1.31"
Flow Length=1,941' Tc=44.8 min CN=56 Runoff=16.49 cfs 2.902 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.527 ac 0.00% Impervious Runoff Depth=1.38"
Flow Length=925' Tc=16.0 min CN=57 Runoff=1.59 cfs 0.176 af

Reach DP-1: Design Point 1 Inflow=33.74 cfs 5.081 af
Outflow=33.74 cfs 5.081 af

Reach DP-2: Design Point 2 Inflow=29.00 cfs 4.396 af
Outflow=29.00 cfs 4.396 af

Reach DP-3: Design Point 3 Inflow=18.91 cfs 1.908 af
Outflow=18.91 cfs 1.908 af

Reach DP-4: Design Point 4 Inflow=31.18 cfs 4.104 af
Outflow=31.18 cfs 4.104 af

Reach DP-5: Design Point 5 Inflow=7.74 cfs 0.999 af
Outflow=7.74 cfs 0.999 af

Reach DP-6: Design Point 6 Inflow=3.25 cfs 0.495 af
Outflow=3.25 cfs 0.495 af

Reach DP-7: Design Point 7 Inflow=24.75 cfs 3.251 af
Outflow=24.75 cfs 3.251 af

Reach DP-8: Design Point 8 Inflow=16.49 cfs 2.902 af
Outflow=16.49 cfs 2.902 af

Reach DP-9: Design Point 9 Inflow=1.59 cfs 0.176 af
Outflow=1.59 cfs 0.176 af

Summary for Subcatchment 1S: Drainage Area 1S

Runoff = 33.74 cfs @ 12.60 hrs, Volume= 5.081 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.631	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.446	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	3.050	67	Row crops, straight row, Good, HSG A
	6.478	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.431	96	Gravel surface, HSG A
	2.885	96	Gravel surface, HSG B
	27.183	68	Weighted Average
	26.290		96.71% Pervious Area
	0.893		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	154	0.0292	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	564	0.1277	1.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	271	0.0664	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.3	713	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.6	1,752	Total			

Summary for Subcatchment 2S: Drainage Area 2S

Runoff = 29.00 cfs @ 12.60 hrs, Volume= 4.396 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.266	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.916	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	67	Row crops, straight row, Good, HSG A
	11.225	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	25.407	66	Weighted Average
	25.141		98.95% Pervious Area
	0.266		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
13.5	1,037	0.0656	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	311	0.1768	2.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	304	0.0559	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.9	561	0.0107	0.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.3	2,263	Total			

Summary for Subcatchment 3S: Drainage Area 3S

Runoff = 18.91 cfs @ 12.25 hrs, Volume= 1.908 af, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.083	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	6.920	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	8.003	75	Weighted Average
	8.003		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	85	0.1059	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	296	0.0574	1.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	405	0.0148	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.7	836	Total			

Summary for Subcatchment 4S: Drainage Area 4S

Runoff = 31.18 cfs @ 12.44 hrs, Volume= 4.104 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	19.262	55	Woods, Good, HSG B
	0.380	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	8.404	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	28.046	62	Weighted Average
	28.046		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	65	0.0462	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	581	0.1773	2.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	306	0.0686	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	321	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	153	0.0098	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.0	1,476	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 7.74 cfs @ 12.36 hrs, Volume= 0.999 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	9.675	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	9.675	55	Weighted Average
	9.675		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	95	0.0421	1.03		**Shallow Concentrated Flow, SF1** Woodland Kv= 5.0 fps
11.0	1,051	0.1018	1.60		**Shallow Concentrated Flow, SF2** Woodland Kv= 5.0 fps
21.8	1,196	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 3.25 cfs @ 12.53 hrs, Volume= 0.495 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.792	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	4.792	55	Weighted Average
	4.792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.3	236	0.0339	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	554	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.4	1,486	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 24.75 cfs @ 12.37 hrs, Volume= 3.251 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	31.477	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	31.477	55	Weighted Average
	31.477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
14.9	1,218	0.0747	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	1,268	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 16.49 cfs @ 12.70 hrs, Volume= 2.902 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	25.233	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	1.364	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	26.597	56	Weighted Average
	26.597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	288	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.8	283	0.0389	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	176	0.0227	0.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.3	646	0.0155	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	173	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	89	0.0899	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	236	0.0975	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
44.8	1,941	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 1.59 cfs @ 12.25 hrs, Volume= 0.176 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	1.153	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.139	96	Gravel surface, HSG B
	1.527	57	Weighted Average
	1.527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	388	0.0696	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	487	0.0801	4.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.0	925	Total			

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 27.183 ac, 3.29% Impervious, Inflow Depth = 2.24" for 25-Year event
Inflow = 33.74 cfs @ 12.60 hrs, Volume= 5.081 af
Outflow = 33.74 cfs @ 12.60 hrs, Volume= 5.081 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 25.407 ac, 1.05% Impervious, Inflow Depth = 2.08" for 25-Year event
Inflow = 29.00 cfs @ 12.60 hrs, Volume= 4.396 af
Outflow = 29.00 cfs @ 12.60 hrs, Volume= 4.396 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.003 ac, 0.00% Impervious, Inflow Depth = 2.86" for 25-Year event
Inflow = 18.91 cfs @ 12.25 hrs, Volume= 1.908 af
Outflow = 18.91 cfs @ 12.25 hrs, Volume= 1.908 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.046 ac, 0.00% Impervious, Inflow Depth = 1.76" for 25-Year event
Inflow = 31.18 cfs @ 12.44 hrs, Volume= 4.104 af
Outflow = 31.18 cfs @ 12.44 hrs, Volume= 4.104 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.675 ac, 0.00% Impervious, Inflow Depth = 1.24" for 25-Year event
Inflow = 7.74 cfs @ 12.36 hrs, Volume= 0.999 af
Outflow = 7.74 cfs @ 12.36 hrs, Volume= 0.999 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 0.00% Impervious, Inflow Depth = 1.24" for 25-Year event
Inflow = 3.25 cfs @ 12.53 hrs, Volume= 0.495 af
Outflow = 3.25 cfs @ 12.53 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.00% Impervious, Inflow Depth = 1.24" for 25-Year event
Inflow = 24.75 cfs @ 12.37 hrs, Volume= 3.251 af
Outflow = 24.75 cfs @ 12.37 hrs, Volume= 3.251 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 26.597 ac, 0.00% Impervious, Inflow Depth = 1.31" for 25-Year event
Inflow = 16.49 cfs @ 12.70 hrs, Volume= 2.902 af
Outflow = 16.49 cfs @ 12.70 hrs, Volume= 2.902 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.527 ac, 0.00% Impervious, Inflow Depth = 1.38" for 25-Year event
Inflow = 1.59 cfs @ 12.25 hrs, Volume= 0.176 af
Outflow = 1.59 cfs @ 12.25 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Drainage Area 1S Runoff Area=27.183 ac 3.29% Impervious Runoff Depth=3.33"
Flow Length=1,752' Tc=41.6 min CN=68 Runoff=50.85 cfs 7.542 af

Subcatchment2S: Drainage Area 2S Runoff Area=25.407 ac 1.05% Impervious Runoff Depth=3.13"
Flow Length=2,263' Tc=41.3 min CN=66 Runoff=44.58 cfs 6.619 af

Subcatchment3S: Drainage Area 3S Runoff Area=8.003 ac 0.00% Impervious Runoff Depth=4.06"
Flow Length=836' Tc=17.7 min CN=75 Runoff=26.90 cfs 2.709 af

Subcatchment4S: Drainage Area 4S Runoff Area=28.046 ac 0.00% Impervious Runoff Depth=2.73"
Flow Length=1,476' Tc=29.0 min CN=62 Runoff=50.15 cfs 6.375 af

Subcatchment5S: Drainage Area 5S Runoff Area=9.675 ac 0.00% Impervious Runoff Depth=2.06"
Flow Length=1,196' Tc=21.8 min CN=55 Runoff=14.00 cfs 1.661 af

Subcatchment6S: Drainage Area 6S Runoff Area=4.792 ac 0.00% Impervious Runoff Depth=2.06"
Flow Length=1,486' Tc=32.4 min CN=55 Runoff=5.86 cfs 0.823 af

Subcatchment7S: Drainage Area 7S Runoff Area=31.477 ac 0.00% Impervious Runoff Depth=2.06"
Flow Length=1,268' Tc=22.8 min CN=55 Runoff=44.78 cfs 5.405 af

Subcatchment8S: Drainage Area 8S Runoff Area=26.597 ac 0.00% Impervious Runoff Depth=2.15"
Flow Length=1,941' Tc=44.8 min CN=56 Runoff=29.13 cfs 4.773 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.527 ac 0.00% Impervious Runoff Depth=2.25"
Flow Length=925' Tc=16.0 min CN=57 Runoff=2.78 cfs 0.286 af

Reach DP-1: Design Point 1 Inflow=50.85 cfs 7.542 af
Outflow=50.85 cfs 7.542 af

Reach DP-2: Design Point 2 Inflow=44.58 cfs 6.619 af
Outflow=44.58 cfs 6.619 af

Reach DP-3: Design Point 3 Inflow=26.90 cfs 2.709 af
Outflow=26.90 cfs 2.709 af

Reach DP-4: Design Point 4 Inflow=50.15 cfs 6.375 af
Outflow=50.15 cfs 6.375 af

Reach DP-5: Design Point 5 Inflow=14.00 cfs 1.661 af
Outflow=14.00 cfs 1.661 af

Reach DP-6: Design Point 6 Inflow=5.86 cfs 0.823 af
Outflow=5.86 cfs 0.823 af

Reach DP-7: Design Point 7 Inflow=44.78 cfs 5.405 af
Outflow=44.78 cfs 5.405 af

Reach DP-8: Design Point 8 Inflow=29.13 cfs 4.773 af
Outflow=29.13 cfs 4.773 af

Reach DP-9: Design Point 9 Inflow=2.78 cfs 0.286 af
Outflow=2.78 cfs 0.286 af

Summary for Subcatchment 1S: Drainage Area 1S

Runoff = 50.85 cfs @ 12.59 hrs, Volume= 7.542 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.631	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.446	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	3.050	67	Row crops, straight row, Good, HSG A
	6.478	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.431	96	Gravel surface, HSG A
	2.885	96	Gravel surface, HSG B
	27.183	68	Weighted Average
	26.290		96.71% Pervious Area
	0.893		3.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	154	0.0292	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	564	0.1277	1.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	271	0.0664	1.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.3	713	0.0070	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.6	1,752	Total			

Summary for Subcatchment 2S: Drainage Area 2S

Runoff = 44.58 cfs @ 12.59 hrs, Volume= 6.619 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.266	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	13.916	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	67	Row crops, straight row, Good, HSG A
	11.225	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	25.407	66	Weighted Average
	25.141		98.95% Pervious Area
	0.266		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
13.5	1,037	0.0656	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	311	0.1768	2.10		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	304	0.0559	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.9	561	0.0107	0.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
41.3	2,263	Total			

Summary for Subcatchment 3S: Drainage Area 3S

Runoff = 26.90 cfs @ 12.25 hrs, Volume= 2.709 af, Depth= 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.083	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	6.920	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	8.003	75	Weighted Average
	8.003		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	85	0.1059	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	296	0.0574	1.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	405	0.0148	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.7	836	Total			

Summary for Subcatchment 4S: Drainage Area 4S

Runoff = 50.15 cfs @ 12.43 hrs, Volume= 6.375 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	19.262	55	Woods, Good, HSG B
	0.380	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	8.404	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	28.046	62	Weighted Average
	28.046		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	65	0.0462	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.6	581	0.1773	2.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	306	0.0686	1.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	321	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	153	0.0098	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
29.0	1,476	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 14.00 cfs @ 12.33 hrs, Volume= 1.661 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	9.675	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	9.675	55	Weighted Average
	9.675		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	95	0.0421	1.03		**Shallow Concentrated Flow, SF1** Woodland Kv= 5.0 fps
11.0	1,051	0.1018	1.60		**Shallow Concentrated Flow, SF2** Woodland Kv= 5.0 fps
21.8	1,196	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 5.86 cfs @ 12.50 hrs, Volume= 0.823 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.792	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	4.792	55	Weighted Average
	4.792		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.3	236	0.0339	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	554	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.4	1,486	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 44.78 cfs @ 12.35 hrs, Volume= 5.405 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	31.477	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	31.477	55	Weighted Average
	31.477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
14.9	1,218	0.0747	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	1,268	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 29.13 cfs @ 12.67 hrs, Volume= 4.773 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	25.233	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	1.364	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	26.597	56	Weighted Average
	26.597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.8	288	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.8	283	0.0389	0.99		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.9	176	0.0227	0.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.3	646	0.0155	0.62		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	173	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	89	0.0899	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	236	0.0975	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
44.8	1,941	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 2.78 cfs @ 12.24 hrs, Volume= 0.286 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	1.153	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	98	Paved parking, HSG B
	0.000	67	Row crops, straight row, Good, HSG A
	0.000	78	Row crops, straight row, Good, HSG B
	0.000	85	Row crops, straight row, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.139	96	Gravel surface, HSG B
	1.527	57	Weighted Average
	1.527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	388	0.0696	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	487	0.0801	4.56		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.0	925	Total			

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 27.183 ac, 3.29% Impervious, Inflow Depth = 3.33" for 100-Year event
Inflow = 50.85 cfs @ 12.59 hrs, Volume= 7.542 af
Outflow = 50.85 cfs @ 12.59 hrs, Volume= 7.542 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 25.407 ac, 1.05% Impervious, Inflow Depth = 3.13" for 100-Year event
Inflow = 44.58 cfs @ 12.59 hrs, Volume= 6.619 af
Outflow = 44.58 cfs @ 12.59 hrs, Volume= 6.619 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.003 ac, 0.00% Impervious, Inflow Depth = 4.06" for 100-Year event
Inflow = 26.90 cfs @ 12.25 hrs, Volume= 2.709 af
Outflow = 26.90 cfs @ 12.25 hrs, Volume= 2.709 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.046 ac, 0.00% Impervious, Inflow Depth = 2.73" for 100-Year event
Inflow = 50.15 cfs @ 12.43 hrs, Volume= 6.375 af
Outflow = 50.15 cfs @ 12.43 hrs, Volume= 6.375 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.675 ac, 0.00% Impervious, Inflow Depth = 2.06" for 100-Year event
Inflow = 14.00 cfs @ 12.33 hrs, Volume= 1.661 af
Outflow = 14.00 cfs @ 12.33 hrs, Volume= 1.661 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 0.00% Impervious, Inflow Depth = 2.06" for 100-Year event
Inflow = 5.86 cfs @ 12.50 hrs, Volume= 0.823 af
Outflow = 5.86 cfs @ 12.50 hrs, Volume= 0.823 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.00% Impervious, Inflow Depth = 2.06" for 100-Year event
Inflow = 44.78 cfs @ 12.35 hrs, Volume= 5.405 af
Outflow = 44.78 cfs @ 12.35 hrs, Volume= 5.405 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	26.597 ac,	0.00% Impervious,	Inflow Depth =	2.15"	for 100-Year event
Inflow =	29.13 cfs @	12.67 hrs,	Volume=	4.773 af	
Outflow =	29.13 cfs @	12.67 hrs,	Volume=	4.773 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

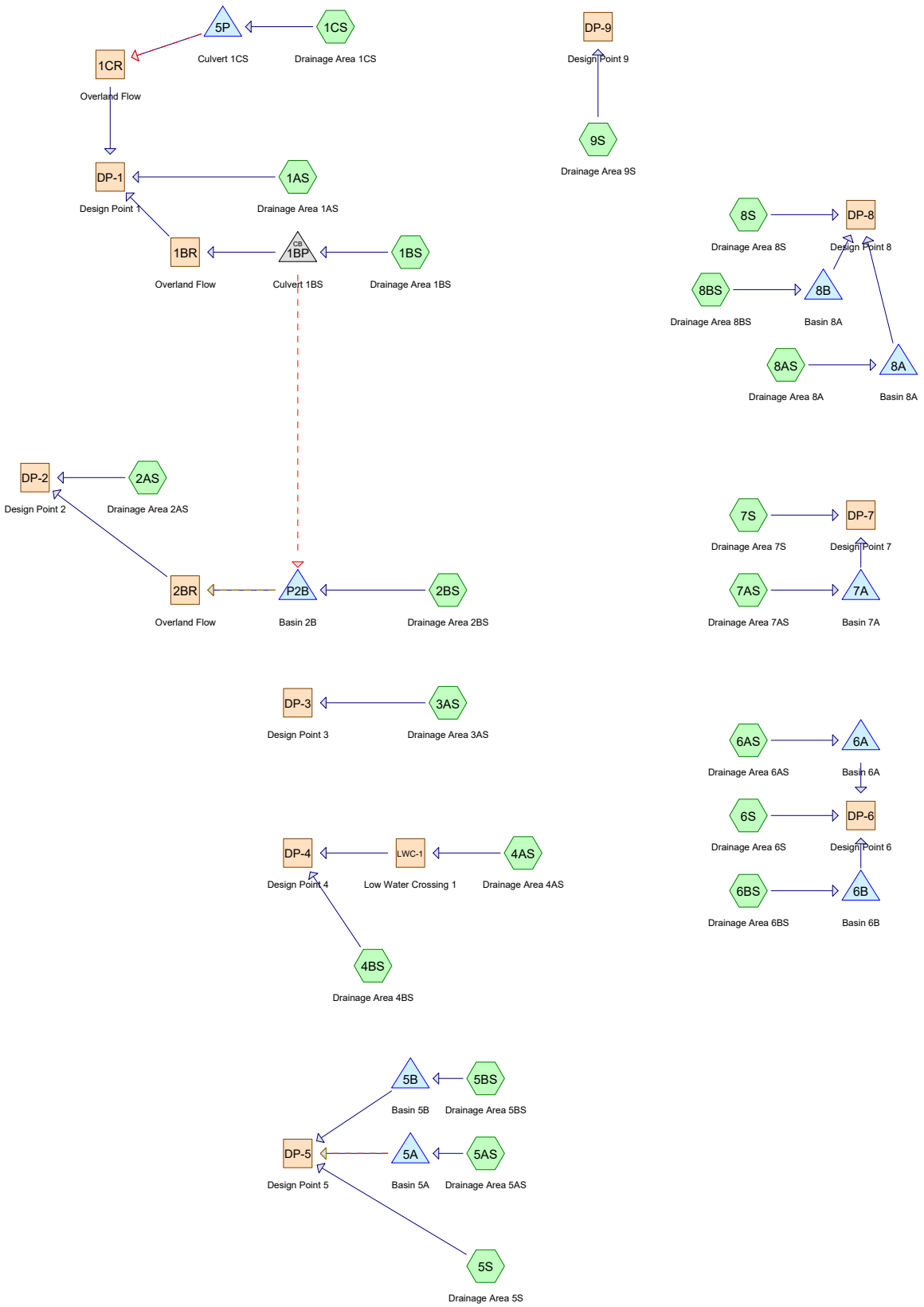
Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1.527 ac,	0.00% Impervious,	Inflow Depth =	2.25"	for 100-Year event
Inflow =	2.78 cfs @	12.24 hrs,	Volume=	0.286 af	
Outflow =	2.78 cfs @	12.24 hrs,	Volume=	0.286 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Long-Term Proposed Conditions Hydrology



Routing Diagram for Proposed Hydrolog_Nutmeg-Cons
Prepared by Tighe & Bond, Printed 12/20/2019
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.262	98	Existing Structure, HSG A (1AS)
0.656	98	Existing Structure, HSG B (1AS, 1CS, 2AS)
0.727	96	Gravel surface, HSG A (1AS, 9S)
7.033	96	Gravel surface, HSG B (1AS, 1BS, 1CS, 2AS, 2BS, 3AS, 4AS, 4BS, 8S, 9S)
2.802	30	Meadow, non-grazed, HSG A (1AS)
114.194	58	Meadow, non-grazed, HSG B (1AS, 1BS, 1CS, 2AS, 2BS, 3AS, 4AS, 4BS, 5AS, 5BS, 5S, 6AS, 6BS, 6S, 7AS, 7S, 8AS, 8BS, 8S, 9S)
0.380	71	Meadow, non-grazed, HSG C (4BS)
2.318	98	Unconnected pavement, HSG B (1AS, 1BS, 1CS, 2AS, 2BS, 3AS, 4AS, 4BS, 6AS, 6BS, 7AS, 7S, 8AS, 8BS, 8S)
0.081	98	Water Surface, HSG B (2BS)
0.187	30	Woods, Good, HSG A (9S)
32.778	55	Woods, Good, HSG B (1AS, 1CS, 2BS, 3AS, 4AS, 4BS, 5S, 6S, 7S, 8S, 9S)
0.145	43	Woods/grass comb., Fair, HSG A (1AS)
1.104	65	Woods/grass comb., Fair, HSG B (1AS, 2AS, 2BS, 4BS)
0.218	65	woods/grass (3AS)

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.123	HSG A	1AS, 9S
158.164	HSG B	1AS, 1BS, 1CS, 2AS, 2BS, 3AS, 4AS, 4BS, 5AS, 5BS, 5S, 6AS, 6BS, 6S, 7AS, 7S, 8AS, 8BS, 8S, 9S
0.380	HSG C	4BS
0.000	HSG D	
0.218	Other	3AS

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1AS: Drainage Area 1AS Runoff Area=17.571 ac 6.39% Impervious Runoff Depth=0.48"
Flow Length=1,146' Tc=30.1 min CN=62 Runoff=3.99 cfs 0.704 af

Subcatchment1BS: Drainage Area 1BS Runoff Area=9.778 ac 2.17% Impervious Runoff Depth=0.48"
Flow Length=1,301' Tc=16.4 min CN=62 Runoff=2.72 cfs 0.392 af

Subcatchment1CS: Drainage Area 1CS Runoff Area=4.622 ac 5.11% Impervious Runoff Depth=1.47"
Flow Length=871' Tc=15.7 min CN=81 Runoff=5.84 cfs 0.566 af

Subcatchment2AS: Drainage Area 2AS Runoff Area=12.542 ac 2.73% Impervious Runoff Depth=0.41"
Flow Length=747' Tc=16.5 min CN=60 Runoff=2.64 cfs 0.427 af

Subcatchment2BS: Drainage Area 2BS Runoff Area=15.624 ac 1.00% Impervious Runoff Depth=0.34"
Flow Length=1,098' Tc=14.2 min UI Adjusted CN=58 Runoff=2.50 cfs 0.444 af

Subcatchment3AS: Drainage Area 3AS Runoff Area=7.008 ac 2.50% Impervious Runoff Depth=0.37"
Flow Length=813' Tc=9.9 min UI Adjusted CN=59 Runoff=1.39 cfs 0.218 af

Subcatchment4AS: Drainage Area 4AS Runoff Area=10.217 ac 1.47% Impervious Runoff Depth=0.28"
Flow Length=938' Tc=13.2 min UI Adjusted CN=56 Runoff=1.19 cfs 0.238 af

Subcatchment4BS: Drainage Area 4BS Runoff Area=17.834 ac 1.50% Impervious Runoff Depth=0.34"
Flow Length=1,843' Tc=30.6 min CN=58 Runoff=2.30 cfs 0.507 af

Subcatchment5AS: Drainage Area 5AS Runoff Area=1.754 ac 0.00% Impervious Runoff Depth=0.34"
Flow Length=445' Tc=6.6 min CN=58 Runoff=0.31 cfs 0.050 af

Subcatchment5BS: Drainage Area 5BS Runoff Area=1.232 ac 0.00% Impervious Runoff Depth=0.34"
Flow Length=395' Tc=7.6 min CN=58 Runoff=0.21 cfs 0.035 af

Subcatchment5S: Drainage Area 5S Runoff Area=6.687 ac 0.00% Impervious Runoff Depth=0.28"
Flow Length=1,088' Tc=13.3 min CN=56 Runoff=0.78 cfs 0.156 af

Subcatchment6AS: Drainage Area 6AS Runoff Area=1.171 ac 6.40% Impervious Runoff Depth=0.37"
Flow Length=290' Tc=7.3 min UI Adjusted CN=59 Runoff=0.25 cfs 0.037 af

Subcatchment6BS: Drainage Area 6BS Runoff Area=0.524 ac 2.29% Impervious Runoff Depth=0.34"
Flow Length=217' Tc=5.6 min UI Adjusted CN=58 Runoff=0.10 cfs 0.015 af

Subcatchment6S: Drainage Area 6S Runoff Area=3.097 ac 0.00% Impervious Runoff Depth=0.31"
Flow Length=1,041' Tc=17.7 min CN=57 Runoff=0.40 cfs 0.080 af

Subcatchment7AS: Drainage Area 7AS Runoff Area=11.944 ac 0.52% Impervious Runoff Depth=0.34"
Flow Length=1,207' Tc=15.1 min CN=58 Runoff=1.89 cfs 0.340 af

Subcatchment7S: Drainage Area 7S Runoff Area=19.533 ac 0.35% Impervious Runoff Depth=0.31"
Flow Length=1,268' Tc=14.5 min UI Adjusted CN=57 Runoff=2.65 cfs 0.504 af

Subcatchment8AS: Drainage Area 8A Runoff Area=6.452 ac 0.57% Impervious Runoff Depth=0.34"
Flow Length=985' Tc=16.1 min CN=58 Runoff=1.01 cfs 0.183 af

Subcatchment8BS: Drainage Area 8BS Runoff Area=5.612 ac 3.08% Impervious Runoff Depth=0.37"
Flow Length=1,381' Tc=22.5 min CN=59 Runoff=0.94 cfs 0.175 af

Subcatchment8S: Drainage Area 8S Runoff Area=8.652 ac 2.65% Impervious Runoff Depth=0.34"
Flow Length=775' Tc=13.6 min UI Adjusted CN=58 Runoff=1.39 cfs 0.246 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.031 ac 0.00% Impervious Runoff Depth=0.37"
Flow Length=613' Tc=10.3 min CN=59 Runoff=0.20 cfs 0.032 af

Reach 1BR: Overland Flow Avg. Flow Depth=0.01' Max Vel=0.36 fps Inflow=2.72 cfs 0.392 af
n=0.030 L=940.0' S=0.0426 '/' Capacity=0.71 cfs Outflow=1.25 cfs 0.391 af

Reach 1CR: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.54 fps Inflow=5.54 cfs 0.566 af
n=0.030 L=6,700.0' S=0.0084 '/' Capacity=17.41 cfs Outflow=0.92 cfs 0.515 af

Reach 2BR: Overland Flow Avg. Flow Depth=0.02' Max Vel=0.31 fps Inflow=2.06 cfs 0.286 af
n=0.030 L=785.0' S=0.0280 '/' Capacity=0.46 cfs Outflow=0.99 cfs 0.285 af

Reach DP-1: Design Point 1 Inflow=3.99 cfs 1.610 af
Outflow=3.99 cfs 1.610 af

Reach DP-2: Design Point 2 Inflow=2.64 cfs 0.712 af
Outflow=2.64 cfs 0.712 af

Reach DP-3: Design Point 3 Inflow=1.39 cfs 0.218 af
Outflow=1.39 cfs 0.218 af

Reach DP-4: Design Point 4 Inflow=3.27 cfs 0.745 af
Outflow=3.27 cfs 0.745 af

Reach DP-5: Design Point 5 Inflow=0.78 cfs 0.156 af
Outflow=0.78 cfs 0.156 af

Reach DP-6: Design Point 6 Inflow=0.40 cfs 0.080 af
Outflow=0.40 cfs 0.080 af

Reach DP-7: Design Point 7 Inflow=2.65 cfs 0.504 af
Outflow=2.65 cfs 0.504 af

Reach DP-8: Design Point 8 Inflow=1.39 cfs 0.246 af
Outflow=1.39 cfs 0.246 af

Reach DP-9: Design Point 9 Inflow=0.20 cfs 0.032 af
Outflow=0.20 cfs 0.032 af

Reach LWC-1: Low Water Crossing 1 Avg. Flow Depth=0.02' Max Vel=0.85 fps Inflow=1.19 cfs 0.238 af
n=0.034 L=16.0' S=0.0625 '/' Capacity=229.98 cfs Outflow=1.18 cfs 0.238 af

Pond 1BP: Culvert 1BS Peak Elev=213.06' Inflow=2.72 cfs 0.392 af
Primary=2.72 cfs 0.392 af Secondary=0.00 cfs 0.000 af Outflow=2.72 cfs 0.392 af

Pond 5A: Basin 5A Peak Elev=273.04' Storage=140 cf Inflow=0.31 cfs 0.050 af
Discarded=0.22 cfs 0.050 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.050 af

Pond 5B: Basin 5B Peak Elev=290.03' Storage=346 cf Inflow=0.21 cfs 0.035 af
Discarded=0.06 cfs 0.035 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.035 af

Pond 5P: Culvert 1CS Peak Elev=226.29' Storage=579 cf Inflow=5.84 cfs 0.566 af
Primary=5.54 cfs 0.566 af Secondary=0.00 cfs 0.000 af Outflow=5.54 cfs 0.566 af

Pond 6A: Basin 6A Peak Elev=302.02' Storage=77 cf Inflow=0.25 cfs 0.037 af
Discarded=0.22 cfs 0.037 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.037 af

Pond 6B: Basin 6B Peak Elev=292.36' Storage=119 cf Inflow=0.10 cfs 0.015 af
Discarded=0.03 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.015 af

Pond 7A: Basin 7A Peak Elev=250.83' Storage=5,154 cf Inflow=1.89 cfs 0.340 af
Discarded=0.37 cfs 0.334 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.334 af

Pond 8A: Basin 8A Peak Elev=249.21' Storage=2,262 cf Inflow=1.01 cfs 0.183 af
Discarded=0.23 cfs 0.183 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.183 af

Pond 8B: Basin 8A Peak Elev=245.80' Storage=2,212 cf Inflow=0.94 cfs 0.175 af
Discarded=0.22 cfs 0.175 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.175 af

Pond P2B: Basin 2B Peak Elev=196.45' Storage=1,234 cf Inflow=2.50 cfs 0.444 af
Discarded=0.20 cfs 0.158 af Primary=2.06 cfs 0.286 af Secondary=0.00 cfs 0.000 af Outflow=2.26 cfs 0.444 af

Summary for Subcatchment 1AS: Drainage Area 1AS

Runoff = 3.99 cfs @ 12.55 hrs, Volume= 0.704 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.511	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	3.149	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.679	96	Gravel surface, HSG A
	2.489	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	2.802	30	Meadow, non-grazed, HSG A
	7.017	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.349	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.168	65	Woods/grass comb., Fair, HSG B
	0.145	43	Woods/grass comb., Fair, HSG A
	17.571	62	Weighted Average
	16.449		93.61% Pervious Area
	1.122		6.39% Impervious Area
	0.349		31.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	82	0.1463	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	236	0.0763	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	68	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	445	0.0079	0.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	265	0.0057	0.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.1	1,146	Total			

Summary for Subcatchment 1BS: Drainage Area 1BS

Runoff = 2.72 cfs @ 12.32 hrs, Volume= 0.392 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.922	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	8.644	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.212	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	9.778	62	Weighted Average
	9.566		97.83% Pervious Area
	0.212		2.17% Impervious Area
	0.212		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.1	765	0.0327	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	278	0.0576	2.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.4	82	0.2561	3.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	126	0.0476	3.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	1,301	Total			

Summary for Subcatchment 1CS: Drainage Area 1CS

Runoff = 5.84 cfs @ 12.22 hrs, Volume= 0.566 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.120	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.230	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	2.541	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.615	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.116	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	4.622	81	Weighted Average
	4.386		94.89% Pervious Area
	0.236		5.11% Impervious Area
	0.116		49.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.8	160	0.0063	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	122	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	222	0.0676	4.19		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	33	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	284	0.0141	1.91		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.7	871	Total			

Summary for Subcatchment 2AS: Drainage Area 2AS

Runoff = 2.64 cfs @ 12.36 hrs, Volume= 0.427 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.025	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.340	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.843	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.317	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.017	65	Woods/grass comb., Fair, HSG B
	12.542	60	Weighted Average
	12.200		97.27% Pervious Area
	0.342		2.73% Impervious Area
	0.317		92.69% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.9	284	0.0528	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	80	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	333	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	747	Total			

Summary for Subcatchment 2BS: Drainage Area 2BS

Runoff = 2.50 cfs @ 12.38 hrs, Volume= 0.444 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	4.993	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.340	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	9.581	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.081	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.554	65		Woods/grass comb., Fair, HSG B
	15.624	59	58	Weighted Average, UI Adjusted
	15.468			99.00% Pervious Area
	0.156			1.00% Impervious Area
	0.075			48.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	182	0.0549	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.0879	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.1083	2.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	291	0.1684	2.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	45	0.2444	3.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.2	1,098	Total			

Summary for Subcatchment 3AS: Drainage Area 3AS

Runoff = 1.39 cfs @ 12.23 hrs, Volume= 0.218 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.153	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.130	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.332	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.175	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
*	0.218	65		woods/grass
	0.000	98		Water Surface, HSG C
	7.008	60	59	Weighted Average, UI Adjusted
	6.833			97.50% Pervious Area
	0.175			2.50% Impervious Area
	0.175			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.3	38	0.1316	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	57	0.0877	2.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	436	0.0390	3.18		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	232	0.0302	2.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.9	813	Total			

Summary for Subcatchment 4AS: Drainage Area 4AS

Runoff = 1.19 cfs @ 12.42 hrs, Volume= 0.238 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	6.934	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.021	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	3.112	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.150	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	10.217	57	56	Weighted Average, UI Adjusted
	10.067			98.53% Pervious Area
	0.150			1.47% Impervious Area
	0.150			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	107	0.0935	2.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	481	0.1850	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	101	0.0396	1.39		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0917	2.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	938	Total			

Summary for Subcatchment 4BS: Drainage Area 4BS

Runoff = 2.30 cfs @ 12.62 hrs, Volume= 0.507 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	5.341	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.072	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.408	58	Meadow, non-grazed, HSG B
	0.380	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.268	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.365	65	Woods/grass comb., Fair, HSG B
	17.834	58	Weighted Average
	17.566		98.50% Pervious Area
	0.268		1.50% Impervious Area
	0.268		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.4	173	0.0809	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	620	0.1452	1.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	313	0.0607	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	687	0.0116	0.75		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.6	1,843	Total			

Summary for Subcatchment 5AS: Drainage Area 5AS

Runoff = 0.31 cfs @ 12.15 hrs, Volume= 0.050 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.754	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.754	58	Weighted Average
	1.754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.4	395	0.0785	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	445	Total			

Summary for Subcatchment 5BS: Drainage Area 5BS

Runoff = 0.21 cfs @ 12.22 hrs, Volume= 0.035 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.232	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.232	58	Weighted Average
	1.232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.1	95	0.0421	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	250	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	395	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 0.78 cfs @ 12.42 hrs, Volume= 0.156 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.693	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.994	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.687	56	Weighted Average
	6.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.0	396	0.0959	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	435	0.1172	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	1,088	Total			

Summary for Subcatchment 6AS: Drainage Area 6AS

Runoff = 0.25 cfs @ 12.17 hrs, Volume= 0.037 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	1.096	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	1.171	61	59	Weighted Average, UI Adjusted
	1.096			93.60% Pervious Area
	0.075			6.40% Impervious Area
	0.075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.5	240	0.0542	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	290	Total			

Summary for Subcatchment 6BS: Drainage Area 6BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.10 cfs @ 12.16 hrs, Volume= 0.015 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	0.512	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.012	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.524	59	58	Weighted Average, UI Adjusted
	0.512			97.71% Pervious Area
	0.012			2.29% Impervious Area
	0.012			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	167	0.2575	3.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	217	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 0.40 cfs @ 12.47 hrs, Volume= 0.080 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.445	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.652	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	3.097	57	Weighted Average
	3.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	345	0.0841	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.7	1,041	Total			

Summary for Subcatchment 7AS: Drainage Area 7AS

Runoff = 1.89 cfs @ 12.40 hrs, Volume= 0.340 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.882	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.062	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	11.944	58	Weighted Average
	11.882		99.48% Pervious Area
	0.062		0.52% Impervious Area
	0.062		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
11.5	1,157	0.0570	1.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.1	1,207	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 2.65 cfs @ 12.42 hrs, Volume= 0.504 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	3.886	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	15.579	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.068	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	19.533	58	57	Weighted Average, UI Adjusted
	19.465			99.65% Pervious Area
	0.068			0.35% Impervious Area
	0.068			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
9.8	1,125	0.0747	1.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	93	0.0753	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	1,268	Total			

Summary for Subcatchment 8AS: Drainage Area 8A

Runoff = 1.01 cfs @ 12.42 hrs, Volume= 0.183 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	6.415	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.037	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.452	58	Weighted Average
	6.415		99.43% Pervious Area
	0.037		0.57% Impervious Area
	0.037		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.5	935	0.0449	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.1	985	Total			

Summary for Subcatchment 8BS: Drainage Area 8BS

Runoff = 0.94 cfs @ 12.49 hrs, Volume= 0.175 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	5.439	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.173	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	5.612	59	Weighted Average
	5.439		96.92% Pervious Area
	0.173		3.08% Impervious Area
	0.173		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	145	0.0484	1.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	506	0.0494	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	251	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	429	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.5	1,381	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 1.39 cfs @ 12.37 hrs, Volume= 0.246 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	1.527	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.017	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.879	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.229	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	8.652	59	58	Weighted Average, UI Adjusted
	8.423			97.35% Pervious Area
	0.229			2.65% Impervious Area
	0.229			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	175	0.0229	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	413	0.0696	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	137	0.0876	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	775	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 0.20 cfs @ 12.25 hrs, Volume= 0.032 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	0.427	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.161	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	0.208	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.031	59	Weighted Average
	1.031		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	70	0.0854	4.70		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	82	0.0854	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	411	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	613	Total			

Summary for Reach 1BR: Overland Flow

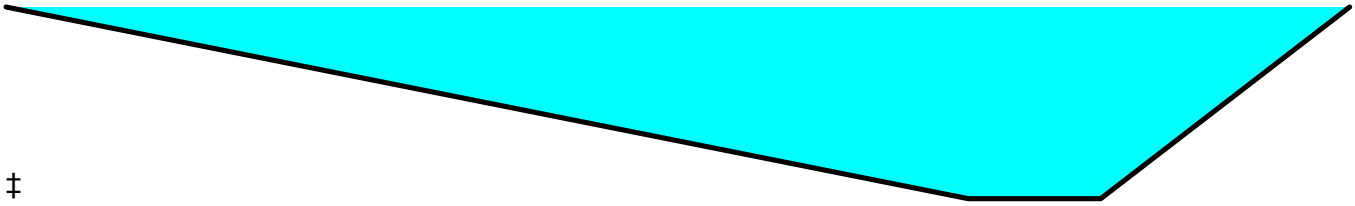
[55] Hint: Peak inflow is 384% of Manning's capacity

Inflow Area = 9.778 ac, 2.17% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 2.72 cfs @ 12.32 hrs, Volume= 0.392 af
Outflow = 1.25 cfs @ 13.49 hrs, Volume= 0.391 af, Atten= 54%, Lag= 70.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 43.9 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 73.9 min

Peak Storage= 3,302 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.01' Flow Area= 2.2 sf, Capacity= 0.71 cfs

Custom cross-section, Length= 940.0' Slope= 0.0426 '/'
Constant n= 0.030 Short grass
Inlet Invert= 209.00', Outlet Invert= 169.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
290.00	-0.01	0.01
330.00	-0.01	0.01
405.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0	0.00
0.01	2.2	405.0	2,092	0.71

Summary for Reach 1CR: Overland Flow

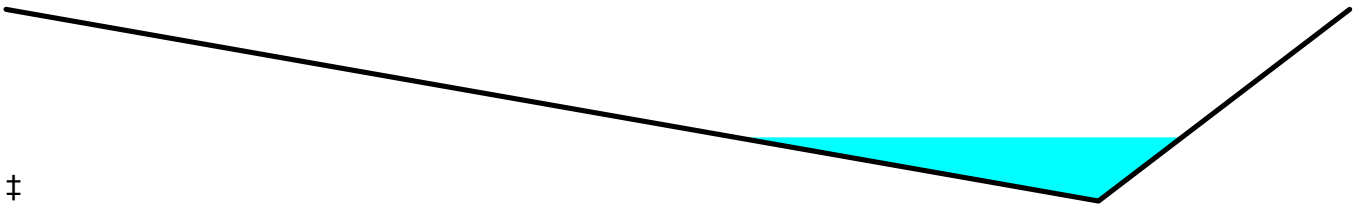
[79] Warning: Submerged Pond 5P Primary device # 1 OUTLET by 0.08'

Inflow Area = 4.622 ac, 5.11% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 5.54 cfs @ 12.28 hrs, Volume= 0.566 af
Outflow = 0.92 cfs @ 16.52 hrs, Volume= 0.515 af, Atten= 83%, Lag= 254.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 205.5 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 300.0 min

Peak Storage= 11,387 cf @ 13.09 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.25' Flow Area= 15.4 sf, Capacity= 17.41 cfs

Custom cross-section, Length= 6,700.0' Slope= 0.0084 '/'
Constant n= 0.030 Short grass
Inlet Invert= 224.00', Outlet Invert= 168.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
100.00	-0.25	0.25
123.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.25	15.4	123.0	103,013	17.41

Summary for Reach 2BR: Overland Flow

[91] Warning: Storage range exceeded by 0.01'
[55] Hint: Peak inflow is 450% of Manning's capacity

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 0.22" for 2-Year event
Inflow = 2.06 cfs @ 12.51 hrs, Volume= 0.286 af
Outflow = 0.99 cfs @ 13.67 hrs, Volume= 0.285 af, Atten= 52%, Lag= 69.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 42.0 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 76.5 min

Peak Storage= 2,481 cf @ 12.97 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.01' Flow Area= 1.7 sf, Capacity= 0.46 cfs

Custom cross-section, Length= 785.0' Slope= 0.0280 '/'
Constant n= 0.030 Short grass
Inlet Invert= 194.00', Outlet Invert= 172.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
120.00	-0.01	0.01
170.00	-0.01	0.01
290.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	50.0	0	0.00
0.01	1.7	290.0	1,335	0.46

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.971 ac, 4.91% Impervious, Inflow Depth > 0.60" for 2-Year event
Inflow = 3.99 cfs @ 12.55 hrs, Volume= 1.610 af
Outflow = 3.99 cfs @ 12.55 hrs, Volume= 1.610 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.166 ac, 1.77% Impervious, Inflow Depth > 0.30" for 2-Year event
Inflow = 2.64 cfs @ 12.36 hrs, Volume= 0.712 af
Outflow = 2.64 cfs @ 12.36 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.008 ac, 2.50% Impervious, Inflow Depth = 0.37" for 2-Year event
Inflow = 1.39 cfs @ 12.23 hrs, Volume= 0.218 af
Outflow = 1.39 cfs @ 12.23 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.051 ac, 1.49% Impervious, Inflow Depth = 0.32" for 2-Year event
Inflow = 3.27 cfs @ 12.56 hrs, Volume= 0.745 af
Outflow = 3.27 cfs @ 12.56 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.673 ac, 0.00% Impervious, Inflow Depth = 0.19" for 2-Year event
Inflow = 0.78 cfs @ 12.42 hrs, Volume= 0.156 af
Outflow = 0.78 cfs @ 12.42 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 1.82% Impervious, Inflow Depth = 0.20" for 2-Year event
Inflow = 0.40 cfs @ 12.47 hrs, Volume= 0.080 af
Outflow = 0.40 cfs @ 12.47 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.41% Impervious, Inflow Depth = 0.19" for 2-Year event
Inflow = 2.65 cfs @ 12.42 hrs, Volume= 0.504 af
Outflow = 2.65 cfs @ 12.42 hrs, Volume= 0.504 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 20.716 ac, 2.12% Impervious, Inflow Depth = 0.14" for 2-Year event
Inflow = 1.39 cfs @ 12.37 hrs, Volume= 0.246 af
Outflow = 1.39 cfs @ 12.37 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.031 ac, 0.00% Impervious, Inflow Depth = 0.37" for 2-Year event
Inflow = 0.20 cfs @ 12.25 hrs, Volume= 0.032 af
Outflow = 0.20 cfs @ 12.25 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach LWC-1: Low Water Crossing 1

Inflow Area = 10.217 ac, 1.47% Impervious, Inflow Depth = 0.28" for 2-Year event
Inflow = 1.19 cfs @ 12.42 hrs, Volume= 0.238 af
Outflow = 1.18 cfs @ 12.43 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 0.6 min

Peak Storage= 22 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 0.50' Flow Area= 35.0 sf, Capacity= 229.98 cfs

65.00' x 0.50' deep channel, n= 0.034
Side Slope Z-value= 10.0 '/' Top Width= 75.00'
Length= 16.0' Slope= 0.0625 '/'
Inlet Invert= 203.00', Outlet Invert= 202.00'

Summary for Pond 1BP: Culvert 1BS

Inflow Area =	9.778 ac,	2.17% Impervious,	Inflow Depth =	0.48"	for 2-Year event
Inflow =	2.72 cfs @	12.32 hrs,	Volume=	0.392 af	
Outflow =	2.72 cfs @	12.32 hrs,	Volume=	0.392 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.72 cfs @	12.32 hrs,	Volume=	0.392 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 213.06' @ 12.32 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round Culvert X 2.00** L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 212.50' / 210.00' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	214.25'	**6.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.70 cfs @ 12.32 hrs HW=213.06' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.70 cfs @ 2.25 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=212.50' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5A: Basin 5A

Inflow Area = 1.754 ac, 0.00% Impervious, Inflow Depth = 0.34" for 2-Year event
Inflow = 0.31 cfs @ 12.15 hrs, Volume= 0.050 af
Outflow = 0.22 cfs @ 12.48 hrs, Volume= 0.050 af, Atten= 30%, Lag= 20.0 min
Discarded = 0.22 cfs @ 12.48 hrs, Volume= 0.050 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 273.04' @ 12.48 hrs Surf.Area= 3,892 sf Storage= 140 cf
Flood Elev= 275.00' Surf.Area= 13,145 sf Storage= 16,477 cf

Plug-Flow detention time= 6.6 min calculated for 0.050 af (100% of inflow)
Center-of-Mass det. time= 6.5 min (939.9 - 933.4)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	16,477 cf	**5A (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	3,758	574.0	0	0	3,758
274.00	8,266	669.0	5,866	5,866	13,175
275.00	13,145	728.0	10,612	16,477	19,772

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	274.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.22 cfs @ 12.48 hrs HW=273.04' (Free Discharge)
└**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=273.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5B: Basin 5B

Inflow Area = 1.232 ac, 0.00% Impervious, Inflow Depth = 0.34" for 2-Year event
Inflow = 0.21 cfs @ 12.22 hrs, Volume= 0.035 af
Outflow = 0.06 cfs @ 13.77 hrs, Volume= 0.035 af, Atten= 74%, Lag= 93.5 min
Discarded = 0.06 cfs @ 13.77 hrs, Volume= 0.035 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 290.03' @ 13.77 hrs Surf.Area= 993 sf Storage= 346 cf
Flood Elev= 293.00' Surf.Area= 10,174 sf Storage= 15,212 cf

Plug-Flow detention time= 84.9 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 84.8 min (1,019.1 - 934.3)

Volume	Invert	Avail.Storage	Storage Description
#1	289.00'	15,212 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
289.00	0	0.0	0	0	0
290.00	938	245.0	313	313	4,778
291.00	3,185	372.0	1,950	2,263	11,021
292.00	6,435	496.0	4,716	6,979	19,598
293.00	10,174	529.0	8,233	15,212	22,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	289.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	292.30'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.06 cfs @ 13.77 hrs HW=290.03' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=289.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Culvert 1CS

Inflow Area =	4.622 ac,	5.11% Impervious,	Inflow Depth = 1.47"	for 2-Year event
Inflow =	5.84 cfs @	12.22 hrs, Volume=	0.566 af	
Outflow =	5.54 cfs @	12.28 hrs, Volume=	0.566 af, Atten= 5%, Lag= 3.2 min	
Primary =	5.54 cfs @	12.28 hrs, Volume=	0.566 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 226.29' @ 12.28 hrs Surf.Area= 1,261 sf Storage= 579 cf

Plug-Flow detention time= 0.7 min calculated for 0.565 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (849.3 - 848.5)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	8,119 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.00	0	0.0	0	0	0
226.00	823	554.8	274	274	24,496
227.00	2,690	609.2	1,667	1,941	29,568
228.00	4,726	653.1	3,661	5,602	34,023
228.50	5,351	662.0	2,518	8,119	35,011

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**18.0" Round Culvert** L= 54.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 225.00' / 224.00' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	228.40'	**7.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.50 cfs @ 12.28 hrs HW=226.29' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.50 cfs @ 3.41 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=225.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6A: Basin 6A

Inflow Area = 1.171 ac, 6.40% Impervious, Inflow Depth = 0.37" for 2-Year event
Inflow = 0.25 cfs @ 12.17 hrs, Volume= 0.037 af
Outflow = 0.22 cfs @ 12.35 hrs, Volume= 0.037 af, Atten= 15%, Lag= 10.9 min
Discarded = 0.22 cfs @ 12.35 hrs, Volume= 0.037 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 302.02' @ 12.35 hrs Surf.Area= 3,960 sf Storage= 77 cf
Flood Elev= 304.00' Surf.Area= 12,494 sf Storage= 15,891 cf

Plug-Flow detention time= 5.9 min calculated for 0.036 af (100% of inflow)
Center-of-Mass det. time= 5.9 min (933.5 - 927.6)

Volume	Invert	Avail.Storage	Storage Description
#1	302.00'	15,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.00	3,895	498.0	0	0	3,895
303.00	7,901	548.0	5,781	5,781	8,090
304.00	12,494	630.0	10,110	15,891	15,799

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	303.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.22 cfs @ 12.35 hrs HW=302.02' (Free Discharge)
└**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=302.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6B: Basin 6B

Inflow Area =	0.524 ac,	2.29% Impervious,	Inflow Depth =	0.34"	for 2-Year event
Inflow =	0.10 cfs @	12.16 hrs,	Volume=	0.015 af	
Outflow =	0.03 cfs @	13.06 hrs,	Volume=	0.015 af,	Atten= 71%, Lag= 53.8 min
Discarded =	0.03 cfs @	13.06 hrs,	Volume=	0.015 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 292.36' @ 13.06 hrs Surf.Area= 474 sf Storage= 119 cf
Flood Elev= 294.00' Surf.Area= 2,686 sf Storage= 2,540 cf

Plug-Flow detention time= 43.5 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 43.4 min (975.8 - 932.4)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	2,540 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
292.00	214	119.6	0	0	214
293.00	1,206	200.7	643	643	2,287
294.00	2,686	286.0	1,897	2,540	5,600

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'
#2	Primary	293.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.03 cfs @ 13.06 hrs HW=292.36' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=292.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: Basin 7A

Inflow Area = 11.944 ac, 0.52% Impervious, Inflow Depth = 0.34" for 2-Year event
Inflow = 1.89 cfs @ 12.40 hrs, Volume= 0.340 af
Outflow = 0.37 cfs @ 15.59 hrs, Volume= 0.334 af, Atten= 81%, Lag= 191.5 min
Discarded = 0.37 cfs @ 15.59 hrs, Volume= 0.334 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 250.83' @ 15.59 hrs Surf.Area= 6,495 sf Storage= 5,154 cf
Flood Elev= 254.00' Surf.Area= 46,750 sf Storage= 82,044 cf

Plug-Flow detention time= 209.7 min calculated for 0.334 af (98% of inflow)
Center-of-Mass det. time= 200.6 min (1,141.9 - 941.2)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	82,044 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	0	0.0	0	0	0
249.00	670	165.0	223	223	2,168
250.00	2,333	360.0	1,418	1,641	10,319
251.00	7,617	845.0	4,722	6,363	56,830
252.00	17,894	1,358.0	12,395	18,758	146,770
253.00	31,533	1,525.0	24,394	43,152	185,111
254.00	46,750	1,596.0	38,893	82,044	202,813

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	253.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.37 cfs @ 15.59 hrs HW=250.83' (Free Discharge)
└─**1=Exfiltration** (Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8A: Basin 8A

Inflow Area = 6.452 ac, 0.57% Impervious, Inflow Depth = 0.34" for 2-Year event
Inflow = 1.01 cfs @ 12.42 hrs, Volume= 0.183 af
Outflow = 0.23 cfs @ 14.97 hrs, Volume= 0.183 af, Atten= 77%, Lag= 153.3 min
Discarded = 0.23 cfs @ 14.97 hrs, Volume= 0.183 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 249.21' @ 14.97 hrs Surf.Area= 4,101 sf Storage= 2,262 cf
Flood Elev= 252.00' Surf.Area= 17,882 sf Storage= 31,582 cf

Plug-Flow detention time= 130.7 min calculated for 0.183 af (100% of inflow)
Center-of-Mass det. time= 130.8 min (1,073.0 - 942.2)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	31,582 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	188	98.0	0	0	188
249.00	3,394	552.0	1,460	1,460	23,674
250.00	7,263	630.0	5,207	6,668	31,034
251.00	12,540	807.0	9,782	16,450	51,287
252.00	17,882	846.0	15,132	31,582	56,484

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	251.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.23 cfs @ 14.97 hrs HW=249.21' (Free Discharge)
└**1=Exfiltration** (Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8B: Basin 8A

Inflow Area =	5.612 ac,	3.08% Impervious,	Inflow Depth =	0.37" for 2-Year event
Inflow =	0.94 cfs @	12.49 hrs,	Volume=	0.175 af
Outflow =	0.22 cfs @	15.07 hrs,	Volume=	0.175 af, Atten= 77%, Lag= 154.6 min
Discarded =	0.22 cfs @	15.07 hrs,	Volume=	0.175 af
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 245.80' @ 15.07 hrs Surf.Area= 3,808 sf Storage= 2,212 cf
Flood Elev= 247.25' Surf.Area= 16,693 sf Storage= 15,645 cf

Plug-Flow detention time= 125.9 min calculated for 0.175 af (100% of inflow)
Center-of-Mass det. time= 125.7 min (1,067.3 - 941.7)

Volume	Invert	Avail.Storage	Storage Description
#1	245.00'	20,167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
245.00	1,812	266.0	0	0	1,812
246.00	4,404	724.0	3,014	3,014	37,897
247.00	14,086	1,051.0	8,789	11,802	84,095
247.50	19,522	1,032.0	8,365	20,167	87,287

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 199.00'
#2	Primary	246.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.22 cfs @ 15.07 hrs HW=245.80' (Free Discharge)
└─**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=245.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P2B: Basin 2B

Inflow Area =	15.624 ac,	1.00% Impervious,	Inflow Depth =	0.34" for 2-Year event
Inflow =	2.50 cfs @	12.38 hrs,	Volume=	0.444 af
Outflow =	2.26 cfs @	12.51 hrs,	Volume=	0.444 af, Atten= 10%, Lag= 7.7 min
Discarded =	0.20 cfs @	12.51 hrs,	Volume=	0.158 af
Primary =	2.06 cfs @	12.51 hrs,	Volume=	0.286 af
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 196.45' @ 12.51 hrs Surf.Area= 3,006 sf Storage= 1,234 cf
Flood Elev= 198.50' Surf.Area= 6,749 sf Storage= 10,528 cf

Plug-Flow detention time= 13.4 min calculated for 0.443 af (100% of inflow)
Center-of-Mass det. time= 13.4 min (953.8 - 940.4)

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	10,528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.00	2,453	396.9	0	0	2,453
197.00	3,748	465.9	3,078	3,078	7,210
198.00	5,223	506.0	4,465	7,543	10,349
198.50	6,749	523.0	2,985	10,528	11,765

Device	Routing	Invert	Outlet Devices
#1	Primary	195.50'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 195.50' / 195.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#3	Secondary	198.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	196.00'	**18.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	198.00'	**27.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.20 cfs @ 12.51 hrs HW=196.45' (Free Discharge)
└─**2=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=2.05 cfs @ 12.51 hrs HW=196.45' (Free Discharge)
└─**1=Culvert** (Passes 2.05 cfs of 4.32 cfs potential flow)
  ├─**4=Orifice/Grate** (Orifice Controls 2.05 cfs @ 2.29 fps)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=196.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1AS: Drainage Area 1AS Runoff Area=17.571 ac 6.39% Impervious Runoff Depth=1.26"
Flow Length=1,146' Tc=30.1 min CN=62 Runoff=13.19 cfs 1.840 af

Subcatchment1BS: Drainage Area 1BS Runoff Area=9.778 ac 2.17% Impervious Runoff Depth=1.26"
Flow Length=1,301' Tc=16.4 min CN=62 Runoff=9.39 cfs 1.024 af

Subcatchment1CS: Drainage Area 1CS Runoff Area=4.622 ac 5.11% Impervious Runoff Depth=2.72"
Flow Length=871' Tc=15.7 min CN=81 Runoff=10.93 cfs 1.048 af

Subcatchment2AS: Drainage Area 2AS Runoff Area=12.542 ac 2.73% Impervious Runoff Depth=1.13"
Flow Length=747' Tc=16.5 min CN=60 Runoff=10.43 cfs 1.181 af

Subcatchment2BS: Drainage Area 2BS Runoff Area=15.624 ac 1.00% Impervious Runoff Depth=1.01"
Flow Length=1,098' Tc=14.2 min UI Adjusted CN=58 Runoff=11.63 cfs 1.312 af

Subcatchment3AS: Drainage Area 3AS Runoff Area=7.008 ac 2.50% Impervious Runoff Depth=1.07"
Flow Length=813' Tc=9.9 min UI Adjusted CN=59 Runoff=6.47 cfs 0.624 af

Subcatchment4AS: Drainage Area 4AS Runoff Area=10.217 ac 1.47% Impervious Runoff Depth=0.89"
Flow Length=938' Tc=13.2 min UI Adjusted CN=56 Runoff=6.55 cfs 0.759 af

Subcatchment4BS: Drainage Area 4BS Runoff Area=17.834 ac 1.50% Impervious Runoff Depth=1.01"
Flow Length=1,843' Tc=30.6 min CN=58 Runoff=9.92 cfs 1.498 af

Subcatchment5AS: Drainage Area 5AS Runoff Area=1.754 ac 0.00% Impervious Runoff Depth=1.01"
Flow Length=445' Tc=6.6 min CN=58 Runoff=1.67 cfs 0.147 af

Subcatchment5BS: Drainage Area 5BS Runoff Area=1.232 ac 0.00% Impervious Runoff Depth=1.01"
Flow Length=395' Tc=7.6 min CN=58 Runoff=1.11 cfs 0.103 af

Subcatchment5S: Drainage Area 5S Runoff Area=6.687 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=1,088' Tc=13.3 min CN=56 Runoff=4.27 cfs 0.496 af

Subcatchment6AS: Drainage Area 6AS Runoff Area=1.171 ac 6.40% Impervious Runoff Depth=1.07"
Flow Length=290' Tc=7.3 min UI Adjusted CN=59 Runoff=1.18 cfs 0.104 af

Subcatchment6BS: Drainage Area 6BS Runoff Area=0.524 ac 2.29% Impervious Runoff Depth=1.01"
Flow Length=217' Tc=5.6 min UI Adjusted CN=58 Runoff=0.52 cfs 0.044 af

Subcatchment6S: Drainage Area 6S Runoff Area=3.097 ac 0.00% Impervious Runoff Depth=0.95"
Flow Length=1,041' Tc=17.7 min CN=57 Runoff=1.96 cfs 0.245 af

Subcatchment7AS: Drainage Area 7AS Runoff Area=11.944 ac 0.52% Impervious Runoff Depth=1.01"
Flow Length=1,207' Tc=15.1 min CN=58 Runoff=8.72 cfs 1.003 af

Subcatchment7S: Drainage Area 7S Runoff Area=19.533 ac 0.35% Impervious Runoff Depth=0.95"
Flow Length=1,268' Tc=14.5 min UI Adjusted CN=57 Runoff=13.24 cfs 1.544 af

Subcatchment8AS: Drainage Area 8A Runoff Area=6.452 ac 0.57% Impervious Runoff Depth=1.01"
Flow Length=985' Tc=16.1 min CN=58 Runoff=4.61 cfs 0.542 af

Subcatchment8BS: Drainage Area 8BS Runoff Area=5.612 ac 3.08% Impervious Runoff Depth=1.07"
Flow Length=1,381' Tc=22.5 min CN=59 Runoff=3.83 cfs 0.499 af

Subcatchment8S: Drainage Area 8S Runoff Area=8.652 ac 2.65% Impervious Runoff Depth=1.01"
Flow Length=775' Tc=13.6 min UI Adjusted CN=58 Runoff=6.59 cfs 0.727 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.031 ac 0.00% Impervious Runoff Depth=1.07"
Flow Length=613' Tc=10.3 min CN=59 Runoff=0.94 cfs 0.092 af

Reach 1BR: Overland Flow Avg. Flow Depth=0.03' Max Vel=0.40 fps Inflow=9.39 cfs 1.024 af
n=0.030 L=940.0' S=0.0426 '/' Capacity=0.71 cfs Outflow=4.43 cfs 1.023 af

Reach 1CR: Overland Flow Avg. Flow Depth=0.11' Max Vel=0.67 fps Inflow=8.90 cfs 1.048 af
n=0.030 L=6,700.0' S=0.0084 '/' Capacity=17.41 cfs Outflow=2.14 cfs 0.989 af

Reach 2BR: Overland Flow Avg. Flow Depth=0.05' Max Vel=0.35 fps Inflow=10.27 cfs 1.125 af
n=0.030 L=785.0' S=0.0280 '/' Capacity=0.46 cfs Outflow=4.98 cfs 1.124 af

Reach DP-1: Design Point 1 Inflow=13.27 cfs 3.852 af
Outflow=13.27 cfs 3.852 af

Reach DP-2: Design Point 2 Inflow=10.43 cfs 2.305 af
Outflow=10.43 cfs 2.305 af

Reach DP-3: Design Point 3 Inflow=6.47 cfs 0.624 af
Outflow=6.47 cfs 0.624 af

Reach DP-4: Design Point 4 Inflow=14.48 cfs 2.256 af
Outflow=14.48 cfs 2.256 af

Reach DP-5: Design Point 5 Inflow=4.27 cfs 0.496 af
Outflow=4.27 cfs 0.496 af

Reach DP-6: Design Point 6 Inflow=1.96 cfs 0.245 af
Outflow=1.96 cfs 0.245 af

Reach DP-7: Design Point 7 Inflow=13.24 cfs 1.544 af
Outflow=13.24 cfs 1.544 af

Reach DP-8: Design Point 8 Inflow=6.59 cfs 0.727 af
Outflow=6.59 cfs 0.727 af

Reach DP-9: Design Point 9 Inflow=0.94 cfs 0.092 af
Outflow=0.94 cfs 0.092 af

Reach LWC-1: Low Water Crossing 1 Avg. Flow Depth=0.06' Max Vel=1.65 fps Inflow=6.55 cfs 0.759 af
n=0.034 L=16.0' S=0.0625 '/' Capacity=229.98 cfs Outflow=6.46 cfs 0.759 af

Pond 1BP: Culvert 1BS Peak Elev=213.65' Inflow=9.39 cfs 1.024 af
Primary=9.39 cfs 1.024 af Secondary=0.00 cfs 0.000 af Outflow=9.39 cfs 1.024 af

Pond 5A: Basin 5A Peak Elev=273.39' Storage=1,747 cf Inflow=1.67 cfs 0.147 af
Discarded=0.30 cfs 0.147 af Primary=0.00 cfs 0.000 af Outflow=0.30 cfs 0.147 af

Pond 5B: Basin 5B Peak Elev=290.77' Storage=1,617 cf Inflow=1.11 cfs 0.103 af
Discarded=0.14 cfs 0.103 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.103 af

Pond 5P: Culvert 1CS Peak Elev=227.16' Storage=2,381 cf Inflow=10.93 cfs 1.048 af
Primary=8.90 cfs 1.048 af Secondary=0.00 cfs 0.000 af Outflow=8.90 cfs 1.048 af

Pond 6A: Basin 6A Peak Elev=302.25' Storage=1,094 cf Inflow=1.18 cfs 0.104 af
Discarded=0.27 cfs 0.104 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.104 af

Pond 6B: Basin 6B Peak Elev=292.98' Storage=619 cf Inflow=0.52 cfs 0.044 af
Discarded=0.07 cfs 0.044 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.044 af

Pond 7A: Basin 7A Peak Elev=252.01' Storage=18,916 cf Inflow=8.72 cfs 1.003 af
Discarded=1.02 cfs 0.965 af Primary=0.00 cfs 0.000 af Outflow=1.02 cfs 0.965 af

Pond 8A: Basin 8A Peak Elev=250.43' Storage=10,266 cf Inflow=4.61 cfs 0.542 af
Discarded=0.53 cfs 0.536 af Primary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.536 af

Pond 8B: Basin 8A Peak Elev=246.73' Storage=8,468 cf Inflow=3.83 cfs 0.499 af
Discarded=0.62 cfs 0.499 af Primary=0.00 cfs 0.000 af Outflow=0.62 cfs 0.499 af

Pond P2B: Basin 2B Peak Elev=197.13' Storage=3,566 cf Inflow=11.63 cfs 1.312 af
Discarded=0.31 cfs 0.187 af Primary=10.27 cfs 1.125 af Secondary=0.00 cfs 0.000 af Outflow=10.59 cfs 1.312 af

Summary for Subcatchment 1AS: Drainage Area 1AS

Runoff = 13.19 cfs @ 12.47 hrs, Volume= 1.840 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.511	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	3.149	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.679	96	Gravel surface, HSG A
	2.489	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	2.802	30	Meadow, non-grazed, HSG A
	7.017	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.349	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.168	65	Woods/grass comb., Fair, HSG B
	0.145	43	Woods/grass comb., Fair, HSG A
	17.571	62	Weighted Average
	16.449		93.61% Pervious Area
	1.122		6.39% Impervious Area
	0.349		31.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	82	0.1463	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	236	0.0763	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	68	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	445	0.0079	0.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	265	0.0057	0.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.1	1,146	Total			

Summary for Subcatchment 1BS: Drainage Area 1BS

Runoff = 9.39 cfs @ 12.26 hrs, Volume= 1.024 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.922	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	8.644	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.212	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	9.778	62	Weighted Average
	9.566		97.83% Pervious Area
	0.212		2.17% Impervious Area
	0.212		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.1	765	0.0327	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	278	0.0576	2.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.4	82	0.2561	3.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	126	0.0476	3.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	1,301	Total			

Summary for Subcatchment 1CS: Drainage Area 1CS

Runoff = 10.93 cfs @ 12.22 hrs, Volume= 1.048 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.120	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.230	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	2.541	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.615	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.116	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	4.622	81	Weighted Average
	4.386		94.89% Pervious Area
	0.236		5.11% Impervious Area
	0.116		49.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.8	160	0.0063	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	122	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	222	0.0676	4.19		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	33	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	284	0.0141	1.91		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.7	871	Total			

Summary for Subcatchment 2AS: Drainage Area 2AS

Runoff = 10.43 cfs @ 12.26 hrs, Volume= 1.181 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.025	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.340	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.843	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.317	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.017	65	Woods/grass comb., Fair, HSG B
	12.542	60	Weighted Average
	12.200		97.27% Pervious Area
	0.342		2.73% Impervious Area
	0.317		92.69% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.9	284	0.0528	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	80	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	333	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	747	Total			

Summary for Subcatchment 2BS: Drainage Area 2BS

Runoff = 11.63 cfs @ 12.23 hrs, Volume= 1.312 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	4.993	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.340	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	9.581	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.081	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.554	65		Woods/grass comb., Fair, HSG B
	15.624	59	58	Weighted Average, UI Adjusted
	15.468			99.00% Pervious Area
	0.156			1.00% Impervious Area
	0.075			48.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	182	0.0549	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.0879	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.1083	2.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	291	0.1684	2.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	45	0.2444	3.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.2	1,098	Total			

Summary for Subcatchment 3AS: Drainage Area 3AS

Runoff = 6.47 cfs @ 12.16 hrs, Volume= 0.624 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.153	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.130	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.332	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.175	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
*	0.218	65		woods/grass
	0.000	98		Water Surface, HSG C
	7.008	60	59	Weighted Average, UI Adjusted
	6.833			97.50% Pervious Area
	0.175			2.50% Impervious Area
	0.175			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.3	38	0.1316	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	57	0.0877	2.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	436	0.0390	3.18		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	232	0.0302	2.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.9	813	Total			

Summary for Subcatchment 4AS: Drainage Area 4AS

Runoff = 6.55 cfs @ 12.22 hrs, Volume= 0.759 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	6.934	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.021	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	3.112	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.150	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	10.217	57	56	Weighted Average, UI Adjusted
	10.067			98.53% Pervious Area
	0.150			1.47% Impervious Area
	0.150			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	107	0.0935	2.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	481	0.1850	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	101	0.0396	1.39		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0917	2.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	938	Total			

Summary for Subcatchment 4BS: Drainage Area 4BS

Runoff = 9.92 cfs @ 12.51 hrs, Volume= 1.498 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	5.341	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.072	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.408	58	Meadow, non-grazed, HSG B
	0.380	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.268	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.365	65	Woods/grass comb., Fair, HSG B
	17.834	58	Weighted Average
	17.566		98.50% Pervious Area
	0.268		1.50% Impervious Area
	0.268		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.4	173	0.0809	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	620	0.1452	1.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	313	0.0607	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	687	0.0116	0.75		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.6	1,843	Total			

Summary for Subcatchment 5AS: Drainage Area 5AS

Runoff = 1.67 cfs @ 12.12 hrs, Volume= 0.147 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.754	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.754	58	Weighted Average
	1.754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.4	395	0.0785	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	445	Total			

Summary for Subcatchment 5BS: Drainage Area 5BS

Runoff = 1.11 cfs @ 12.13 hrs, Volume= 0.103 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.232	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.232	58	Weighted Average
	1.232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.1	95	0.0421	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	250	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	395	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 4.27 cfs @ 12.22 hrs, Volume= 0.496 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.693	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.994	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.687	56	Weighted Average
	6.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.0	396	0.0959	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	435	0.1172	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	1,088	Total			

Summary for Subcatchment 6AS: Drainage Area 6AS

Runoff = 1.18 cfs @ 12.12 hrs, Volume= 0.104 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	1.096	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	1.171	61	59	Weighted Average, UI Adjusted
	1.096			93.60% Pervious Area
	0.075			6.40% Impervious Area
	0.075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.5	240	0.0542	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	290	Total			

Summary for Subcatchment 6BS: Drainage Area 6BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.044 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	0.512	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.012	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.524	59	58	Weighted Average, UI Adjusted
	0.512			97.71% Pervious Area
	0.012			2.29% Impervious Area
	0.012			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	167	0.2575	3.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	217	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 1.96 cfs @ 12.30 hrs, Volume= 0.245 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.445	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.652	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	3.097	57	Weighted Average
	3.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	345	0.0841	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.7	1,041	Total			

Summary for Subcatchment 7AS: Drainage Area 7AS

Runoff = 8.72 cfs @ 12.25 hrs, Volume= 1.003 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.882	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.062	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	11.944	58	Weighted Average
	11.882		99.48% Pervious Area
	0.062		0.52% Impervious Area
	0.062		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
11.5	1,157	0.0570	1.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.1	1,207	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 13.24 cfs @ 12.24 hrs, Volume= 1.544 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	3.886	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	15.579	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.068	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	19.533	58	57	Weighted Average, UI Adjusted
	19.465			99.65% Pervious Area
	0.068			0.35% Impervious Area
	0.068			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
9.8	1,125	0.0747	1.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	93	0.0753	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	1,268	Total			

Summary for Subcatchment 8AS: Drainage Area 8A

Runoff = 4.61 cfs @ 12.26 hrs, Volume= 0.542 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	6.415	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.037	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.452	58	Weighted Average
	6.415		99.43% Pervious Area
	0.037		0.57% Impervious Area
	0.037		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.5	935	0.0449	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.1	985	Total			

Summary for Subcatchment 8BS: Drainage Area 8BS

Runoff = 3.83 cfs @ 12.37 hrs, Volume= 0.499 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	5.439	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.173	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	5.612	59	Weighted Average
	5.439		96.92% Pervious Area
	0.173		3.08% Impervious Area
	0.173		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	145	0.0484	1.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	506	0.0494	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	251	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	429	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.5	1,381	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 6.59 cfs @ 12.22 hrs, Volume= 0.727 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	1.527	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.017	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.879	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.229	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	8.652	59	58	Weighted Average, UI Adjusted
	8.423			97.35% Pervious Area
	0.229			2.65% Impervious Area
	0.229			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	175	0.0229	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	413	0.0696	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	137	0.0876	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	775	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 0.94 cfs @ 12.17 hrs, Volume= 0.092 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	0.427	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.161	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	0.208	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.031	59	Weighted Average
	1.031		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	70	0.0854	4.70		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	82	0.0854	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	411	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	613	Total			

Summary for Reach 1BR: Overland Flow

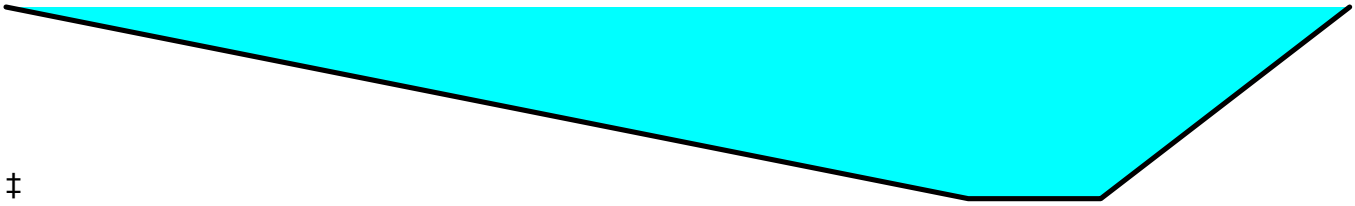
[91] Warning: Storage range exceeded by 0.02'
[55] Hint: Peak inflow is 1326% of Manning's capacity

Inflow Area = 9.778 ac, 2.17% Impervious, Inflow Depth = 1.26" for 10-Year event
Inflow = 9.39 cfs @ 12.26 hrs, Volume= 1.024 af
Outflow = 4.43 cfs @ 13.28 hrs, Volume= 1.023 af, Atten= 53%, Lag= 61.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 38.9 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 63.2 min

Peak Storage= 10,342 cf @ 12.64 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.01' Flow Area= 2.2 sf, Capacity= 0.71 cfs

Custom cross-section, Length= 940.0' Slope= 0.0426 '/'
Constant n= 0.030 Short grass
Inlet Invert= 209.00', Outlet Invert= 169.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
290.00	-0.01	0.01
330.00	-0.01	0.01
405.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0	0.00
0.01	2.2	405.0	2,092	0.71

Summary for Reach 1CR: Overland Flow

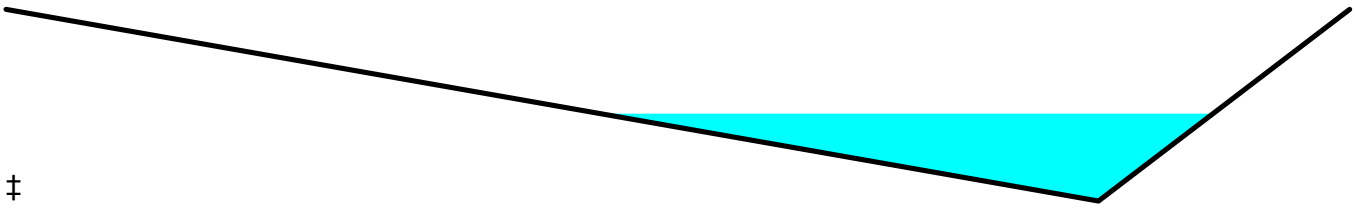
[79] Warning: Submerged Pond 5P Primary device # 1 OUTLET by 0.11'

Inflow Area = 4.622 ac, 5.11% Impervious, Inflow Depth = 2.72" for 10-Year event
Inflow = 8.90 cfs @ 12.34 hrs, Volume= 1.048 af
Outflow = 2.14 cfs @ 15.66 hrs, Volume= 0.989 af, Atten= 76%, Lag= 199.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.67 fps, Min. Travel Time= 166.6 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 269.4 min

Peak Storage= 21,370 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.25' Flow Area= 15.4 sf, Capacity= 17.41 cfs

Custom cross-section, Length= 6,700.0' Slope= 0.0084 '/'
Constant n= 0.030 Short grass
Inlet Invert= 224.00', Outlet Invert= 168.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
100.00	-0.25	0.25
123.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.25	15.4	123.0	103,013	17.41

Summary for Reach 2BR: Overland Flow

[91] Warning: Storage range exceeded by 0.04'
[55] Hint: Peak inflow is 2242% of Manning's capacity

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 0.86" for 10-Year event
Inflow = 10.27 cfs @ 12.32 hrs, Volume= 1.125 af
Outflow = 4.98 cfs @ 13.34 hrs, Volume= 1.124 af, Atten= 52%, Lag= 60.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.35 fps, Min. Travel Time= 37.4 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 57.5 min

Peak Storage= 11,176 cf @ 12.71 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 0.01' Flow Area= 1.7 sf, Capacity= 0.46 cfs

Custom cross-section, Length= 785.0' Slope= 0.0280 '/'
Constant n= 0.030 Short grass
Inlet Invert= 194.00', Outlet Invert= 172.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
120.00	-0.01	0.01
170.00	-0.01	0.01
290.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	50.0	0	0.00
0.01	1.7	290.0	1,335	0.46

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.971 ac, 4.91% Impervious, Inflow Depth > 1.45" for 10-Year event
Inflow = 13.27 cfs @ 12.48 hrs, Volume= 3.852 af
Outflow = 13.27 cfs @ 12.48 hrs, Volume= 3.852 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.166 ac, 1.77% Impervious, Inflow Depth > 0.98" for 10-Year event
Inflow = 10.43 cfs @ 12.26 hrs, Volume= 2.305 af
Outflow = 10.43 cfs @ 12.26 hrs, Volume= 2.305 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.008 ac, 2.50% Impervious, Inflow Depth = 1.07" for 10-Year event
Inflow = 6.47 cfs @ 12.16 hrs, Volume= 0.624 af
Outflow = 6.47 cfs @ 12.16 hrs, Volume= 0.624 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.051 ac, 1.49% Impervious, Inflow Depth = 0.97" for 10-Year event
Inflow = 14.48 cfs @ 12.44 hrs, Volume= 2.256 af
Outflow = 14.48 cfs @ 12.44 hrs, Volume= 2.256 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.673 ac, 0.00% Impervious, Inflow Depth = 0.62" for 10-Year event
Inflow = 4.27 cfs @ 12.22 hrs, Volume= 0.496 af
Outflow = 4.27 cfs @ 12.22 hrs, Volume= 0.496 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 1.82% Impervious, Inflow Depth = 0.61" for 10-Year event
Inflow = 1.96 cfs @ 12.30 hrs, Volume= 0.245 af
Outflow = 1.96 cfs @ 12.30 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.41% Impervious, Inflow Depth = 0.59" for 10-Year event
Inflow = 13.24 cfs @ 12.24 hrs, Volume= 1.544 af
Outflow = 13.24 cfs @ 12.24 hrs, Volume= 1.544 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 20.716 ac, 2.12% Impervious, Inflow Depth = 0.42" for 10-Year event
Inflow = 6.59 cfs @ 12.22 hrs, Volume= 0.727 af
Outflow = 6.59 cfs @ 12.22 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.031 ac, 0.00% Impervious, Inflow Depth = 1.07" for 10-Year event
Inflow = 0.94 cfs @ 12.17 hrs, Volume= 0.092 af
Outflow = 0.94 cfs @ 12.17 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach LWC-1: Low Water Crossing 1

Inflow Area = 10.217 ac, 1.47% Impervious, Inflow Depth = 0.89" for 10-Year event
Inflow = 6.55 cfs @ 12.22 hrs, Volume= 0.759 af
Outflow = 6.46 cfs @ 12.23 hrs, Volume= 0.759 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.65 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.62 fps, Avg. Travel Time= 0.4 min

Peak Storage= 63 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 35.0 sf, Capacity= 229.98 cfs

65.00' x 0.50' deep channel, n= 0.034
Side Slope Z-value= 10.0 '/' Top Width= 75.00'
Length= 16.0' Slope= 0.0625 '/'
Inlet Invert= 203.00', Outlet Invert= 202.00'

Summary for Pond 1BP: Culvert 1BS

Inflow Area =	9.778 ac,	2.17% Impervious,	Inflow Depth =	1.26"	for 10-Year event
Inflow =	9.39 cfs @	12.26 hrs,	Volume=	1.024 af	
Outflow =	9.39 cfs @	12.26 hrs,	Volume=	1.024 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.39 cfs @	12.26 hrs,	Volume=	1.024 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 213.65' @ 12.26 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round Culvert X 2.00** L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 212.50' / 210.00' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	214.25'	**6.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=9.34 cfs @ 12.26 hrs HW=213.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.34 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=212.50' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5A: Basin 5A

Inflow Area = 1.754 ac, 0.00% Impervious, Inflow Depth = 1.01" for 10-Year event
Inflow = 1.67 cfs @ 12.12 hrs, Volume= 0.147 af
Outflow = 0.30 cfs @ 12.89 hrs, Volume= 0.147 af, Atten= 82%, Lag= 46.3 min
Discarded = 0.30 cfs @ 12.89 hrs, Volume= 0.147 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 273.39' @ 12.89 hrs Surf.Area= 5,298 sf Storage= 1,747 cf
Flood Elev= 275.00' Surf.Area= 13,145 sf Storage= 16,477 cf

Plug-Flow detention time= 53.0 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 52.9 min (940.6 - 887.7)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	16,477 cf	**5A (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	3,758	574.0	0	0	3,758
274.00	8,266	669.0	5,866	5,866	13,175
275.00	13,145	728.0	10,612	16,477	19,772

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	274.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.30 cfs @ 12.89 hrs HW=273.39' (Free Discharge)
└**1=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=273.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5B: Basin 5B

Inflow Area = 1.232 ac, 0.00% Impervious, Inflow Depth = 1.01" for 10-Year event
Inflow = 1.11 cfs @ 12.13 hrs, Volume= 0.103 af
Outflow = 0.14 cfs @ 13.71 hrs, Volume= 0.103 af, Atten= 87%, Lag= 94.6 min
Discarded = 0.14 cfs @ 13.71 hrs, Volume= 0.103 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 290.77' @ 13.71 hrs Surf.Area= 2,562 sf Storage= 1,617 cf
Flood Elev= 293.00' Surf.Area= 10,174 sf Storage= 15,212 cf

Plug-Flow detention time= 153.1 min calculated for 0.103 af (100% of inflow)
Center-of-Mass det. time= 153.2 min (1,041.8 - 888.6)

Volume	Invert	Avail.Storage	Storage Description
#1	289.00'	15,212 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
289.00	0	0.0	0	0	0
290.00	938	245.0	313	313	4,778
291.00	3,185	372.0	1,950	2,263	11,021
292.00	6,435	496.0	4,716	6,979	19,598
293.00	10,174	529.0	8,233	15,212	22,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	289.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	292.30'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.14 cfs @ 13.71 hrs HW=290.77' (Free Discharge)
└─**1=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=289.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Culvert 1CS

Inflow Area =	4.622 ac,	5.11% Impervious,	Inflow Depth =	2.72"	for 10-Year event
Inflow =	10.93 cfs @	12.22 hrs,	Volume=	1.048 af	
Outflow =	8.90 cfs @	12.34 hrs,	Volume=	1.048 af,	Atten= 19%, Lag= 7.1 min
Primary =	8.90 cfs @	12.34 hrs,	Volume=	1.048 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 227.16' @ 12.34 hrs Surf.Area= 2,969 sf Storage= 2,381 cf

Plug-Flow detention time= 1.6 min calculated for 1.046 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (832.3 - 830.7)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	8,119 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.00	0	0.0	0	0	0
226.00	823	554.8	274	274	24,496
227.00	2,690	609.2	1,667	1,941	29,568
228.00	4,726	653.1	3,661	5,602	34,023
228.50	5,351	662.0	2,518	8,119	35,011

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**18.0" Round Culvert** L= 54.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 225.00' / 224.00' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	228.40'	**7.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.88 cfs @ 12.34 hrs HW=227.15' (Free Discharge)
└─**1=Culvert** (Inlet Controls 8.88 cfs @ 5.03 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=225.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6A: Basin 6A

Inflow Area = 1.171 ac, 6.40% Impervious, Inflow Depth = 1.07" for 10-Year event
Inflow = 1.18 cfs @ 12.12 hrs, Volume= 0.104 af
Outflow = 0.27 cfs @ 12.65 hrs, Volume= 0.104 af, Atten= 77%, Lag= 31.8 min
Discarded = 0.27 cfs @ 12.65 hrs, Volume= 0.104 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 302.25' @ 12.65 hrs Surf.Area= 4,776 sf Storage= 1,094 cf
Flood Elev= 304.00' Surf.Area= 12,494 sf Storage= 15,891 cf

Plug-Flow detention time= 31.5 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 31.3 min (916.1 - 884.8)

Volume	Invert	Avail.Storage	Storage Description
#1	302.00'	15,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.00	3,895	498.0	0	0	3,895
303.00	7,901	548.0	5,781	5,781	8,090
304.00	12,494	630.0	10,110	15,891	15,799

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	303.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.27 cfs @ 12.65 hrs HW=302.25' (Free Discharge)
└**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=302.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6B: Basin 6B

Inflow Area =	0.524 ac,	2.29% Impervious,	Inflow Depth =	1.01"	for 10-Year event
Inflow =	0.52 cfs @	12.10 hrs,	Volume=	0.044 af	
Outflow =	0.07 cfs @	13.07 hrs,	Volume=	0.044 af,	Atten= 86%, Lag= 58.1 min
Discarded =	0.07 cfs @	13.07 hrs,	Volume=	0.044 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 292.98' @ 13.07 hrs Surf.Area= 1,179 sf Storage= 619 cf
Flood Elev= 294.00' Surf.Area= 2,686 sf Storage= 2,540 cf

Plug-Flow detention time= 107.7 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 107.5 min (994.3 - 886.8)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	2,540 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
292.00	214	119.6	0	0	214
293.00	1,206	200.7	643	643	2,287
294.00	2,686	286.0	1,897	2,540	5,600

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'
#2	Primary	293.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.07 cfs @ 13.07 hrs HW=292.98' (Free Discharge)
└**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=292.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: Basin 7A

Inflow Area = 11.944 ac, 0.52% Impervious, Inflow Depth = 1.01" for 10-Year event
Inflow = 8.72 cfs @ 12.25 hrs, Volume= 1.003 af
Outflow = 1.02 cfs @ 15.01 hrs, Volume= 0.965 af, Atten= 88%, Lag= 165.3 min
Discarded = 1.02 cfs @ 15.01 hrs, Volume= 0.965 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 252.01' @ 15.01 hrs Surf.Area= 17,997 sf Storage= 18,916 cf
Flood Elev= 254.00' Surf.Area= 46,750 sf Storage= 82,044 cf

Plug-Flow detention time= 264.5 min calculated for 0.965 af (96% of inflow)
Center-of-Mass det. time= 244.3 min (1,139.9 - 895.6)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	82,044 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	0	0.0	0	0	0
249.00	670	165.0	223	223	2,168
250.00	2,333	360.0	1,418	1,641	10,319
251.00	7,617	845.0	4,722	6,363	56,830
252.00	17,894	1,358.0	12,395	18,758	146,770
253.00	31,533	1,525.0	24,394	43,152	185,111
254.00	46,750	1,596.0	38,893	82,044	202,813

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	253.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=1.02 cfs @ 15.01 hrs HW=252.01' (Free Discharge)
└**1=Exfiltration** (Controls 1.02 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8A: Basin 8A

Inflow Area = 6.452 ac, 0.57% Impervious, Inflow Depth = 1.01" for 10-Year event
Inflow = 4.61 cfs @ 12.26 hrs, Volume= 0.542 af
Outflow = 0.53 cfs @ 15.16 hrs, Volume= 0.536 af, Atten= 88%, Lag= 173.8 min
Discarded = 0.53 cfs @ 15.16 hrs, Volume= 0.536 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 250.43' @ 15.16 hrs Surf.Area= 9,376 sf Storage= 10,266 cf
Flood Elev= 252.00' Surf.Area= 17,882 sf Storage= 31,582 cf

Plug-Flow detention time= 261.8 min calculated for 0.535 af (99% of inflow)
Center-of-Mass det. time= 256.4 min (1,152.9 - 896.5)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	31,582 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	188	98.0	0	0	188
249.00	3,394	552.0	1,460	1,460	23,674
250.00	7,263	630.0	5,207	6,668	31,034
251.00	12,540	807.0	9,782	16,450	51,287
252.00	17,882	846.0	15,132	31,582	56,484

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	251.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.53 cfs @ 15.16 hrs HW=250.43' (Free Discharge)
└**1=Exfiltration** (Controls 0.53 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8B: Basin 8A

Inflow Area =	5.612 ac,	3.08% Impervious,	Inflow Depth =	1.07" for 10-Year event
Inflow =	3.83 cfs @	12.37 hrs,	Volume=	0.499 af
Outflow =	0.62 cfs @	14.21 hrs,	Volume=	0.499 af, Atten= 84%, Lag= 110.5 min
Discarded =	0.62 cfs @	14.21 hrs,	Volume=	0.499 af
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 246.73' @ 14.21 hrs Surf.Area= 10,967 sf Storage= 8,468 cf
Flood Elev= 247.25' Surf.Area= 16,693 sf Storage= 15,645 cf

Plug-Flow detention time= 201.0 min calculated for 0.498 af (100% of inflow)
Center-of-Mass det. time= 201.1 min (1,100.0 - 898.9)

Volume	Invert	Avail.Storage	Storage Description
#1	245.00'	20,167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
245.00	1,812	266.0	0	0	1,812
246.00	4,404	724.0	3,014	3,014	37,897
247.00	14,086	1,051.0	8,789	11,802	84,095
247.50	19,522	1,032.0	8,365	20,167	87,287

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 199.00'
#2	Primary	246.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.62 cfs @ 14.21 hrs HW=246.73' (Free Discharge)
└**1=Exfiltration** (Controls 0.62 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=245.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P2B: Basin 2B

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 1.01" for 10-Year event
Inflow = 11.63 cfs @ 12.23 hrs, Volume= 1.312 af
Outflow = 10.59 cfs @ 12.32 hrs, Volume= 1.312 af, Atten= 9%, Lag= 5.4 min
Discarded = 0.31 cfs @ 12.32 hrs, Volume= 0.187 af
Primary = 10.27 cfs @ 12.32 hrs, Volume= 1.125 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 197.13' @ 12.32 hrs Surf.Area= 3,922 sf Storage= 3,566 cf
Flood Elev= 198.50' Surf.Area= 6,749 sf Storage= 10,528 cf

Plug-Flow detention time= 9.9 min calculated for 1.309 af (100% of inflow)
Center-of-Mass det. time= 9.9 min (904.6 - 894.7)

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	10,528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.00	2,453	396.9	0	0	2,453
197.00	3,748	465.9	3,078	3,078	7,210
198.00	5,223	506.0	4,465	7,543	10,349
198.50	6,749	523.0	2,985	10,528	11,765

Device	Routing	Invert	Outlet Devices
#1	Primary	195.50'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 195.50' / 195.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#3	Secondary	198.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	196.00'	**18.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	198.00'	**27.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 12.32 hrs HW=197.12' (Free Discharge)
└─**2=Exfiltration** (Controls 0.31 cfs)

Primary OutFlow Max=10.20 cfs @ 12.32 hrs HW=197.12' (Free Discharge)
└─**1=Culvert** (Barrel Controls 10.20 cfs @ 5.10 fps)
  ├─**4=Orifice/Grate** (Passes 10.20 cfs of 10.21 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=196.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1AS: Drainage Area 1AS Runoff Area=17.571 ac 6.39% Impervious Runoff Depth=1.76"
Flow Length=1,146' Tc=30.1 min CN=62 Runoff=19.21 cfs 2.571 af

Subcatchment1BS: Drainage Area 1BS Runoff Area=9.778 ac 2.17% Impervious Runoff Depth=1.76"
Flow Length=1,301' Tc=16.4 min CN=62 Runoff=13.72 cfs 1.431 af

Subcatchment1CS: Drainage Area 1CS Runoff Area=4.622 ac 5.11% Impervious Runoff Depth=3.43"
Flow Length=871' Tc=15.7 min CN=81 Runoff=13.75 cfs 1.322 af

Subcatchment2AS: Drainage Area 2AS Runoff Area=12.542 ac 2.73% Impervious Runoff Depth=1.60"
Flow Length=747' Tc=16.5 min CN=60 Runoff=15.69 cfs 1.675 af

Subcatchment2BS: Drainage Area 2BS Runoff Area=15.624 ac 1.00% Impervious Runoff Depth=1.45"
Flow Length=1,098' Tc=14.2 min UI Adjusted CN=58 Runoff=18.28 cfs 1.893 af

Subcatchment3AS: Drainage Area 3AS Runoff Area=7.008 ac 2.50% Impervious Runoff Depth=1.53"
Flow Length=813' Tc=9.9 min UI Adjusted CN=59 Runoff=9.90 cfs 0.892 af

Subcatchment4AS: Drainage Area 4AS Runoff Area=10.217 ac 1.47% Impervious Runoff Depth=1.31"
Flow Length=938' Tc=13.2 min UI Adjusted CN=56 Runoff=10.66 cfs 1.115 af

Subcatchment4BS: Drainage Area 4BS Runoff Area=17.834 ac 1.50% Impervious Runoff Depth=1.45"
Flow Length=1,843' Tc=30.6 min CN=58 Runoff=15.31 cfs 2.160 af

Subcatchment5AS: Drainage Area 5AS Runoff Area=1.754 ac 0.00% Impervious Runoff Depth=1.45"
Flow Length=445' Tc=6.6 min CN=58 Runoff=2.60 cfs 0.212 af

Subcatchment5BS: Drainage Area 5BS Runoff Area=1.232 ac 0.00% Impervious Runoff Depth=1.45"
Flow Length=395' Tc=7.6 min CN=58 Runoff=1.76 cfs 0.149 af

Subcatchment5S: Drainage Area 5S Runoff Area=6.687 ac 0.00% Impervious Runoff Depth=1.31"
Flow Length=1,088' Tc=13.3 min CN=56 Runoff=6.96 cfs 0.730 af

Subcatchment6AS: Drainage Area 6AS Runoff Area=1.171 ac 6.40% Impervious Runoff Depth=1.53"
Flow Length=290' Tc=7.3 min UI Adjusted CN=59 Runoff=1.80 cfs 0.149 af

Subcatchment6BS: Drainage Area 6BS Runoff Area=0.524 ac 2.29% Impervious Runoff Depth=1.45"
Flow Length=217' Tc=5.6 min UI Adjusted CN=58 Runoff=0.80 cfs 0.063 af

Subcatchment6S: Drainage Area 6S Runoff Area=3.097 ac 0.00% Impervious Runoff Depth=1.38"
Flow Length=1,041' Tc=17.7 min CN=57 Runoff=3.10 cfs 0.356 af

Subcatchment7AS: Drainage Area 7AS Runoff Area=11.944 ac 0.52% Impervious Runoff Depth=1.45"
Flow Length=1,207' Tc=15.1 min CN=58 Runoff=13.58 cfs 1.447 af

Subcatchment7S: Drainage Area 7S Runoff Area=19.533 ac 0.35% Impervious Runoff Depth=1.38"
Flow Length=1,268' Tc=14.5 min UI Adjusted CN=57 Runoff=21.03 cfs 2.248 af

Subcatchment8AS: Drainage Area 8A Runoff Area=6.452 ac 0.57% Impervious Runoff Depth=1.45"
Flow Length=985' Tc=16.1 min CN=58 Runoff=7.18 cfs 0.782 af

Subcatchment8BS: Drainage Area 8BS Runoff Area=5.612 ac 3.08% Impervious Runoff Depth=1.53"
Flow Length=1,381' Tc=22.5 min CN=59 Runoff=5.84 cfs 0.714 af

Subcatchment8S: Drainage Area 8S Runoff Area=8.652 ac 2.65% Impervious Runoff Depth=1.45"
Flow Length=775' Tc=13.6 min UI Adjusted CN=58 Runoff=10.28 cfs 1.048 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.031 ac 0.00% Impervious Runoff Depth=1.53"
Flow Length=613' Tc=10.3 min CN=59 Runoff=1.44 cfs 0.131 af

Reach 1BR: Overland Flow Avg. Flow Depth=0.04' Max Vel=0.41 fps Inflow=13.72 cfs 1.431 af
n=0.030 L=940.0' S=0.0426 '/' Capacity=0.71 cfs Outflow=6.55 cfs 1.429 af

Reach 1CR: Overland Flow Avg. Flow Depth=0.13' Max Vel=0.72 fps Inflow=10.29 cfs 1.322 af
n=0.030 L=6,700.0' S=0.0084 '/' Capacity=17.41 cfs Outflow=2.93 cfs 1.258 af

Reach 2BR: Overland Flow Avg. Flow Depth=0.08' Max Vel=0.35 fps Inflow=14.53 cfs 1.689 af
n=0.030 L=785.0' S=0.0280 '/' Capacity=0.46 cfs Outflow=8.00 cfs 1.688 af

Reach DP-1: Design Point 1 Inflow=19.58 cfs 5.259 af
Outflow=19.58 cfs 5.259 af

Reach DP-2: Design Point 2 Inflow=15.69 cfs 3.363 af
Outflow=15.69 cfs 3.363 af

Reach DP-3: Design Point 3 Inflow=9.90 cfs 0.892 af
Outflow=9.90 cfs 0.892 af

Reach DP-4: Design Point 4 Inflow=22.45 cfs 3.275 af
Outflow=22.45 cfs 3.275 af

Reach DP-5: Design Point 5 Inflow=6.96 cfs 0.730 af
Outflow=6.96 cfs 0.730 af

Reach DP-6: Design Point 6 Inflow=3.10 cfs 0.356 af
Outflow=3.10 cfs 0.356 af

Reach DP-7: Design Point 7 Inflow=21.03 cfs 2.248 af
Outflow=21.03 cfs 2.248 af

Reach DP-8: Design Point 8 Inflow=10.28 cfs 1.173 af
Outflow=10.28 cfs 1.173 af

Reach DP-9: Design Point 9 Inflow=1.44 cfs 0.131 af
Outflow=1.44 cfs 0.131 af

Reach LWC-1: Low Water Crossing 1 Avg. Flow Depth=0.08' Max Vel=2.01 fps Inflow=10.66 cfs 1.115 af
n=0.034 L=16.0' S=0.0625 '/' Capacity=229.98 cfs Outflow=10.64 cfs 1.115 af

Pond 1BP: Culvert 1BS Peak Elev=214.08' Inflow=13.72 cfs 1.431 af
Primary=13.72 cfs 1.431 af Secondary=0.00 cfs 0.000 af Outflow=13.72 cfs 1.431 af

Pond 5A: Basin 5A Peak Elev=273.61' Storage=3,058 cf Inflow=2.60 cfs 0.212 af
Discarded=0.35 cfs 0.212 af Primary=0.00 cfs 0.000 af Outflow=0.35 cfs 0.212 af

Pond 5B: Basin 5B Peak Elev=291.10' Storage=2,590 cf Inflow=1.76 cfs 0.149 af
Discarded=0.19 cfs 0.149 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.149 af

Pond 5P: Culvert 1CS Peak Elev=227.63' Storage=4,008 cf Inflow=13.75 cfs 1.322 af
Primary=10.29 cfs 1.322 af Secondary=0.00 cfs 0.000 af Outflow=10.29 cfs 1.322 af

Pond 6A: Basin 6A Peak Elev=302.42' Storage=1,941 cf Inflow=1.80 cfs 0.149 af
Discarded=0.30 cfs 0.149 af Primary=0.00 cfs 0.000 af Outflow=0.30 cfs 0.149 af

Pond 6B: Basin 6B Peak Elev=293.26' Storage=1,005 cf Inflow=0.80 cfs 0.063 af
Discarded=0.10 cfs 0.063 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.063 af

Pond 7A: Basin 7A Peak Elev=252.51' Storage=29,445 cf Inflow=13.58 cfs 1.447 af
Discarded=1.39 cfs 1.375 af Primary=0.00 cfs 0.000 af Outflow=1.39 cfs 1.375 af

Pond 8A: Basin 8A Peak Elev=250.98' Storage=16,192 cf Inflow=7.18 cfs 0.782 af
Discarded=0.71 cfs 0.752 af Primary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.752 af

Pond 8B: Basin 8A Peak Elev=246.88' Storage=10,158 cf Inflow=5.84 cfs 0.714 af
Discarded=0.71 cfs 0.589 af Primary=1.64 cfs 0.125 af Outflow=2.36 cfs 0.714 af

Pond P2B: Basin 2B Peak Elev=197.69' Storage=5,979 cf Inflow=18.28 cfs 1.893 af
Discarded=0.42 cfs 0.204 af Primary=14.53 cfs 1.689 af Secondary=0.00 cfs 0.000 af Outflow=14.95 cfs 1.893 af

Summary for Subcatchment 1AS: Drainage Area 1AS

Runoff = 19.21 cfs @ 12.46 hrs, Volume= 2.571 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.511	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	3.149	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.679	96	Gravel surface, HSG A
	2.489	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	2.802	30	Meadow, non-grazed, HSG A
	7.017	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.349	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.168	65	Woods/grass comb., Fair, HSG B
	0.145	43	Woods/grass comb., Fair, HSG A
	17.571	62	Weighted Average
	16.449		93.61% Pervious Area
	1.122		6.39% Impervious Area
	0.349		31.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	82	0.1463	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	236	0.0763	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	68	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	445	0.0079	0.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	265	0.0057	0.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.1	1,146	Total			

Summary for Subcatchment 1BS: Drainage Area 1BS

Runoff = 13.72 cfs @ 12.25 hrs, Volume= 1.431 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.922	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	8.644	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.212	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	9.778	62	Weighted Average
	9.566		97.83% Pervious Area
	0.212		2.17% Impervious Area
	0.212		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.1	765	0.0327	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	278	0.0576	2.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.4	82	0.2561	3.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	126	0.0476	3.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	1,301	Total			

Summary for Subcatchment 1CS: Drainage Area 1CS

Runoff = 13.75 cfs @ 12.22 hrs, Volume= 1.322 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.120	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.230	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	2.541	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.615	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.116	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	4.622	81	Weighted Average
	4.386		94.89% Pervious Area
	0.236		5.11% Impervious Area
	0.116		49.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.8	160	0.0063	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	122	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	222	0.0676	4.19		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	33	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	284	0.0141	1.91		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.7	871	Total			

Summary for Subcatchment 2AS: Drainage Area 2AS

Runoff = 15.69 cfs @ 12.25 hrs, Volume= 1.675 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.025	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.340	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.843	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.317	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.017	65	Woods/grass comb., Fair, HSG B
	12.542	60	Weighted Average
	12.200		97.27% Pervious Area
	0.342		2.73% Impervious Area
	0.317		92.69% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.9	284	0.0528	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	80	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	333	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	747	Total			

Summary for Subcatchment 2BS: Drainage Area 2BS

Runoff = 18.28 cfs @ 12.22 hrs, Volume= 1.893 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	4.993	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.340	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	9.581	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.081	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.554	65		Woods/grass comb., Fair, HSG B
	15.624	59	58	Weighted Average, UI Adjusted
	15.468			99.00% Pervious Area
	0.156			1.00% Impervious Area
	0.075			48.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	182	0.0549	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.0879	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.1083	2.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	291	0.1684	2.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	45	0.2444	3.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.2	1,098	Total			

Summary for Subcatchment 3AS: Drainage Area 3AS

Runoff = 9.90 cfs @ 12.16 hrs, Volume= 0.892 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.153	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.130	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.332	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.175	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
*	0.218	65		woods/grass
	0.000	98		Water Surface, HSG C
	7.008	60	59	Weighted Average, UI Adjusted
	6.833			97.50% Pervious Area
	0.175			2.50% Impervious Area
	0.175			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.3	38	0.1316	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	57	0.0877	2.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	436	0.0390	3.18		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	232	0.0302	2.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.9	813	Total			

Summary for Subcatchment 4AS: Drainage Area 4AS

Runoff = 10.66 cfs @ 12.21 hrs, Volume= 1.115 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	6.934	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.021	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	3.112	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.150	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	10.217	57	56	Weighted Average, UI Adjusted
	10.067			98.53% Pervious Area
	0.150			1.47% Impervious Area
	0.150			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	107	0.0935	2.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	481	0.1850	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	101	0.0396	1.39		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0917	2.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	938	Total			

Summary for Subcatchment 4BS: Drainage Area 4BS

Runoff = 15.31 cfs @ 12.48 hrs, Volume= 2.160 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	5.341	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.072	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.408	58	Meadow, non-grazed, HSG B
	0.380	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.268	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.365	65	Woods/grass comb., Fair, HSG B
	17.834	58	Weighted Average
	17.566		98.50% Pervious Area
	0.268		1.50% Impervious Area
	0.268		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.4	173	0.0809	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	620	0.1452	1.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	313	0.0607	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	687	0.0116	0.75		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.6	1,843	Total			

Summary for Subcatchment 5AS: Drainage Area 5AS

Runoff = 2.60 cfs @ 12.11 hrs, Volume= 0.212 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.754	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.754	58	Weighted Average
	1.754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.4	395	0.0785	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	445	Total			

Summary for Subcatchment 5BS: Drainage Area 5BS

Runoff = 1.76 cfs @ 12.12 hrs, Volume= 0.149 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.232	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.232	58	Weighted Average
	1.232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.1	95	0.0421	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	250	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	395	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 6.96 cfs @ 12.21 hrs, Volume= 0.730 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.693	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.994	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.687	56	Weighted Average
	6.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.0	396	0.0959	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	435	0.1172	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	1,088	Total			

Summary for Subcatchment 6AS: Drainage Area 6AS

Runoff = 1.80 cfs @ 12.12 hrs, Volume= 0.149 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	1.096	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	1.171	61	59	Weighted Average, UI Adjusted
	1.096			93.60% Pervious Area
	0.075			6.40% Impervious Area
	0.075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.5	240	0.0542	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	290	Total			

Summary for Subcatchment 6BS: Drainage Area 6BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.063 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	0.512	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.012	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.524	59	58	Weighted Average, UI Adjusted
	0.512			97.71% Pervious Area
	0.012			2.29% Impervious Area
	0.012			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	167	0.2575	3.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	217	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 3.10 cfs @ 12.28 hrs, Volume= 0.356 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.445	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.652	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	3.097	57	Weighted Average
	3.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	345	0.0841	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.7	1,041	Total			

Summary for Subcatchment 7AS: Drainage Area 7AS

Runoff = 13.58 cfs @ 12.24 hrs, Volume= 1.447 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.882	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.062	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	11.944	58	Weighted Average
	11.882		99.48% Pervious Area
	0.062		0.52% Impervious Area
	0.062		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
11.5	1,157	0.0570	1.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.1	1,207	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 21.03 cfs @ 12.23 hrs, Volume= 2.248 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	3.886	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	15.579	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.068	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	19.533	58	57	Weighted Average, UI Adjusted
	19.465			99.65% Pervious Area
	0.068			0.35% Impervious Area
	0.068			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
9.8	1,125	0.0747	1.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	93	0.0753	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	1,268	Total			

Summary for Subcatchment 8AS: Drainage Area 8A

Runoff = 7.18 cfs @ 12.25 hrs, Volume= 0.782 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	6.415	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.037	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.452	58	Weighted Average
	6.415		99.43% Pervious Area
	0.037		0.57% Impervious Area
	0.037		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.5	935	0.0449	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.1	985	Total			

Summary for Subcatchment 8BS: Drainage Area 8BS

Runoff = 5.84 cfs @ 12.35 hrs, Volume= 0.714 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	5.439	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.173	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	5.612	59	Weighted Average
	5.439		96.92% Pervious Area
	0.173		3.08% Impervious Area
	0.173		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	145	0.0484	1.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	506	0.0494	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	251	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	429	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.5	1,381	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 10.28 cfs @ 12.21 hrs, Volume= 1.048 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	1.527	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.017	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.879	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.229	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	8.652	59	58	Weighted Average, UI Adjusted
	8.423			97.35% Pervious Area
	0.229			2.65% Impervious Area
	0.229			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	175	0.0229	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	413	0.0696	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	137	0.0876	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	775	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 1.44 cfs @ 12.16 hrs, Volume= 0.131 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	0.427	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.161	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	0.208	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.031	59	Weighted Average
	1.031		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	70	0.0854	4.70		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	82	0.0854	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	411	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	613	Total			

Summary for Reach 1BR: Overland Flow

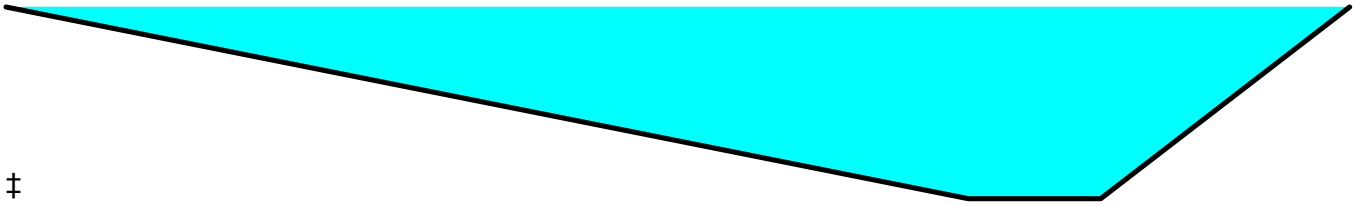
[91] Warning: Storage range exceeded by 0.03'
[55] Hint: Peak inflow is 1938% of Manning's capacity

Inflow Area = 9.778 ac, 2.17% Impervious, Inflow Depth = 1.76" for 25-Year event
Inflow = 13.72 cfs @ 12.25 hrs, Volume= 1.431 af
Outflow = 6.55 cfs @ 13.25 hrs, Volume= 1.429 af, Atten= 52%, Lag= 60.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.41 fps, Min. Travel Time= 38.3 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 60.5 min

Peak Storage= 15,059 cf @ 12.61 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.01' Flow Area= 2.2 sf, Capacity= 0.71 cfs

Custom cross-section, Length= 940.0' Slope= 0.0426 '/'
Constant n= 0.030 Short grass
Inlet Invert= 209.00', Outlet Invert= 169.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
290.00	-0.01	0.01
330.00	-0.01	0.01
405.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0	0.00
0.01	2.2	405.0	2,092	0.71

Summary for Reach 1CR: Overland Flow

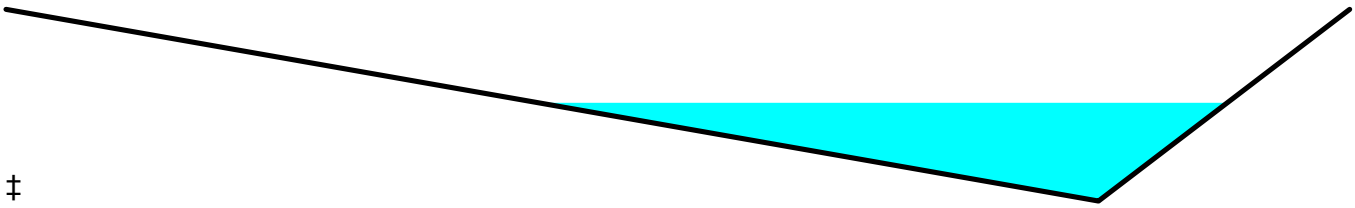
[79] Warning: Submerged Pond 5P Primary device # 1 OUTLET by 0.13'

Inflow Area = 4.622 ac, 5.11% Impervious, Inflow Depth = 3.43" for 25-Year event
Inflow = 10.29 cfs @ 12.37 hrs, Volume= 1.322 af
Outflow = 2.93 cfs @ 15.42 hrs, Volume= 1.258 af, Atten= 72%, Lag= 183.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.72 fps, Min. Travel Time= 154.0 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 258.5 min

Peak Storage= 27,044 cf @ 12.86 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.25' Flow Area= 15.4 sf, Capacity= 17.41 cfs

Custom cross-section, Length= 6,700.0' Slope= 0.0084 '/'
Constant n= 0.030 Short grass
Inlet Invert= 224.00', Outlet Invert= 168.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
100.00	-0.25	0.25
123.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.25	15.4	123.0	103,013	17.41

Summary for Reach 2BR: Overland Flow

[91] Warning: Storage range exceeded by 0.07'
[55] Hint: Peak inflow is 3171% of Manning's capacity

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 1.30" for 25-Year event
Inflow = 14.53 cfs @ 12.35 hrs, Volume= 1.689 af
Outflow = 8.00 cfs @ 13.32 hrs, Volume= 1.688 af, Atten= 45%, Lag= 57.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.35 fps, Min. Travel Time= 36.9 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 54.5 min

Peak Storage= 17,765 cf @ 12.70 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.01' Flow Area= 1.7 sf, Capacity= 0.46 cfs

Custom cross-section, Length= 785.0' Slope= 0.0280 '/'
Constant n= 0.030 Short grass
Inlet Invert= 194.00', Outlet Invert= 172.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
120.00	-0.01	0.01
170.00	-0.01	0.01
290.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	50.0	0	0.00
0.01	1.7	290.0	1,335	0.46

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.971 ac, 4.91% Impervious, Inflow Depth > 1.97" for 25-Year event
Inflow = 19.58 cfs @ 12.47 hrs, Volume= 5.259 af
Outflow = 19.58 cfs @ 12.47 hrs, Volume= 5.259 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.166 ac, 1.77% Impervious, Inflow Depth > 1.43" for 25-Year event
Inflow = 15.69 cfs @ 12.25 hrs, Volume= 3.363 af
Outflow = 15.69 cfs @ 12.25 hrs, Volume= 3.363 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.008 ac, 2.50% Impervious, Inflow Depth = 1.53" for 25-Year event
Inflow = 9.90 cfs @ 12.16 hrs, Volume= 0.892 af
Outflow = 9.90 cfs @ 12.16 hrs, Volume= 0.892 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.051 ac, 1.49% Impervious, Inflow Depth = 1.40" for 25-Year event
Inflow = 22.45 cfs @ 12.41 hrs, Volume= 3.275 af
Outflow = 22.45 cfs @ 12.41 hrs, Volume= 3.275 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.673 ac, 0.00% Impervious, Inflow Depth = 0.91" for 25-Year event
Inflow = 6.96 cfs @ 12.21 hrs, Volume= 0.730 af
Outflow = 6.96 cfs @ 12.21 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 1.82% Impervious, Inflow Depth = 0.89" for 25-Year event
Inflow = 3.10 cfs @ 12.28 hrs, Volume= 0.356 af
Outflow = 3.10 cfs @ 12.28 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.41% Impervious, Inflow Depth = 0.86" for 25-Year event
Inflow = 21.03 cfs @ 12.23 hrs, Volume= 2.248 af
Outflow = 21.03 cfs @ 12.23 hrs, Volume= 2.248 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 20.716 ac, 2.12% Impervious, Inflow Depth = 0.68" for 25-Year event
Inflow = 10.28 cfs @ 12.21 hrs, Volume= 1.173 af
Outflow = 10.28 cfs @ 12.21 hrs, Volume= 1.173 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.031 ac, 0.00% Impervious, Inflow Depth = 1.53" for 25-Year event
Inflow = 1.44 cfs @ 12.16 hrs, Volume= 0.131 af
Outflow = 1.44 cfs @ 12.16 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach LWC-1: Low Water Crossing 1

Inflow Area = 10.217 ac, 1.47% Impervious, Inflow Depth = 1.31" for 25-Year event
Inflow = 10.66 cfs @ 12.21 hrs, Volume= 1.115 af
Outflow = 10.64 cfs @ 12.21 hrs, Volume= 1.115 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 0.4 min

Peak Storage= 85 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 35.0 sf, Capacity= 229.98 cfs

65.00' x 0.50' deep channel, n= 0.034
Side Slope Z-value= 10.0 '/' Top Width= 75.00'
Length= 16.0' Slope= 0.0625 '/'
Inlet Invert= 203.00', Outlet Invert= 202.00'

Summary for Pond 1BP: Culvert 1BS

Inflow Area =	9.778 ac,	2.17% Impervious,	Inflow Depth =	1.76"	for 25-Year event
Inflow =	13.72 cfs @	12.25 hrs,	Volume=	1.431 af	
Outflow =	13.72 cfs @	12.25 hrs,	Volume=	1.431 af,	Atten= 0%, Lag= 0.0 min
Primary =	13.72 cfs @	12.25 hrs,	Volume=	1.431 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 214.08' @ 12.25 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round Culvert X 2.00** L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 212.50' / 210.00' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	214.25'	**6.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=13.70 cfs @ 12.25 hrs HW=214.08' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.70 cfs @ 3.88 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=212.50' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5A: Basin 5A

Inflow Area = 1.754 ac, 0.00% Impervious, Inflow Depth = 1.45" for 25-Year event
Inflow = 2.60 cfs @ 12.11 hrs, Volume= 0.212 af
Outflow = 0.35 cfs @ 13.05 hrs, Volume= 0.212 af, Atten= 86%, Lag= 56.1 min
Discarded = 0.35 cfs @ 13.05 hrs, Volume= 0.212 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 273.61' @ 13.05 hrs Surf.Area= 6,317 sf Storage= 3,058 cf
Flood Elev= 275.00' Surf.Area= 13,145 sf Storage= 16,477 cf

Plug-Flow detention time= 88.0 min calculated for 0.212 af (100% of inflow)
Center-of-Mass det. time= 87.9 min (962.9 - 875.0)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	16,477 cf	**5A (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	3,758	574.0	0	0	3,758
274.00	8,266	669.0	5,866	5,866	13,175
275.00	13,145	728.0	10,612	16,477	19,772

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	274.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.35 cfs @ 13.05 hrs HW=273.61' (Free Discharge)
└**1=Exfiltration** (Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=273.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5B: Basin 5B

Inflow Area = 1.232 ac, 0.00% Impervious, Inflow Depth = 1.45" for 25-Year event
Inflow = 1.76 cfs @ 12.12 hrs, Volume= 0.149 af
Outflow = 0.19 cfs @ 13.74 hrs, Volume= 0.149 af, Atten= 89%, Lag= 97.2 min
Discarded = 0.19 cfs @ 13.74 hrs, Volume= 0.149 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 291.10' @ 13.74 hrs Surf.Area= 3,455 sf Storage= 2,590 cf
Flood Elev= 293.00' Surf.Area= 10,174 sf Storage= 15,212 cf

Plug-Flow detention time= 182.2 min calculated for 0.149 af (100% of inflow)
Center-of-Mass det. time= 182.3 min (1,058.3 - 875.9)

Volume	Invert	Avail.Storage	Storage Description
#1	289.00'	15,212 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
289.00	0	0.0	0	0	0
290.00	938	245.0	313	313	4,778
291.00	3,185	372.0	1,950	2,263	11,021
292.00	6,435	496.0	4,716	6,979	19,598
293.00	10,174	529.0	8,233	15,212	22,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	289.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	292.30'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.19 cfs @ 13.74 hrs HW=291.10' (Free Discharge)
└**1=Exfiltration** (Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=289.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Culvert 1CS

Inflow Area =	4.622 ac,	5.11% Impervious,	Inflow Depth =	3.43"	for 25-Year event
Inflow =	13.75 cfs @	12.22 hrs,	Volume=	1.322 af	
Outflow =	10.29 cfs @	12.37 hrs,	Volume=	1.322 af,	Atten= 25%, Lag= 9.0 min
Primary =	10.29 cfs @	12.37 hrs,	Volume=	1.322 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 227.63' @ 12.37 hrs Surf.Area= 3,907 sf Storage= 4,008 cf

Plug-Flow detention time= 2.2 min calculated for 1.319 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (826.3 - 824.1)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	8,119 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.00	0	0.0	0	0	0
226.00	823	554.8	274	274	24,496
227.00	2,690	609.2	1,667	1,941	29,568
228.00	4,726	653.1	3,661	5,602	34,023
228.50	5,351	662.0	2,518	8,119	35,011

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**18.0" Round Culvert** L= 54.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 225.00' / 224.00' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	228.40'	**7.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.27 cfs @ 12.37 hrs HW=227.62' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.27 cfs @ 5.81 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=225.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6A: Basin 6A

Inflow Area = 1.171 ac, 6.40% Impervious, Inflow Depth = 1.53" for 25-Year event
Inflow = 1.80 cfs @ 12.12 hrs, Volume= 0.149 af
Outflow = 0.30 cfs @ 12.83 hrs, Volume= 0.149 af, Atten= 83%, Lag= 42.8 min
Discarded = 0.30 cfs @ 12.83 hrs, Volume= 0.149 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 302.42' @ 12.83 hrs Surf.Area= 5,404 sf Storage= 1,941 cf
Flood Elev= 304.00' Surf.Area= 12,494 sf Storage= 15,891 cf

Plug-Flow detention time= 57.1 min calculated for 0.149 af (100% of inflow)
Center-of-Mass det. time= 57.0 min (929.7 - 872.7)

Volume	Invert	Avail.Storage	Storage Description
#1	302.00'	15,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.00	3,895	498.0	0	0	3,895
303.00	7,901	548.0	5,781	5,781	8,090
304.00	12,494	630.0	10,110	15,891	15,799

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	303.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.30 cfs @ 12.83 hrs HW=302.42' (Free Discharge)
└**1=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=302.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6B: Basin 6B

Inflow Area =	0.524 ac,	2.29% Impervious,	Inflow Depth =	1.45"	for 25-Year event
Inflow =	0.80 cfs @	12.10 hrs,	Volume=	0.063 af	
Outflow =	0.10 cfs @	13.13 hrs,	Volume=	0.063 af,	Atten= 88%, Lag= 61.7 min
Discarded =	0.10 cfs @	13.13 hrs,	Volume=	0.063 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 293.26' @ 13.13 hrs Surf.Area= 1,541 sf Storage= 1,005 cf
Flood Elev= 294.00' Surf.Area= 2,686 sf Storage= 2,540 cf

Plug-Flow detention time= 132.8 min calculated for 0.063 af (100% of inflow)
Center-of-Mass det. time= 132.7 min (1,006.8 - 874.1)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	2,540 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
292.00	214	119.6	0	0	214
293.00	1,206	200.7	643	643	2,287
294.00	2,686	286.0	1,897	2,540	5,600

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'
#2	Primary	293.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.10 cfs @ 13.13 hrs HW=293.26' (Free Discharge)
└**1=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=292.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: Basin 7A

Inflow Area = 11.944 ac, 0.52% Impervious, Inflow Depth = 1.45" for 25-Year event
Inflow = 13.58 cfs @ 12.24 hrs, Volume= 1.447 af
Outflow = 1.39 cfs @ 14.98 hrs, Volume= 1.375 af, Atten= 90%, Lag= 164.9 min
Discarded = 1.39 cfs @ 14.98 hrs, Volume= 1.375 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 252.51' @ 14.98 hrs Surf.Area= 24,343 sf Storage= 29,445 cf
Flood Elev= 254.00' Surf.Area= 46,750 sf Storage= 82,044 cf

Plug-Flow detention time= 293.9 min calculated for 1.375 af (95% of inflow)
Center-of-Mass det. time= 267.8 min (1,150.7 - 882.9)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	82,044 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	0	0.0	0	0	0
249.00	670	165.0	223	223	2,168
250.00	2,333	360.0	1,418	1,641	10,319
251.00	7,617	845.0	4,722	6,363	56,830
252.00	17,894	1,358.0	12,395	18,758	146,770
253.00	31,533	1,525.0	24,394	43,152	185,111
254.00	46,750	1,596.0	38,893	82,044	202,813

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	253.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=1.39 cfs @ 14.98 hrs HW=252.51' (Free Discharge)
└─**1=Exfiltration** (Controls 1.39 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8A: Basin 8A

Inflow Area = 6.452 ac, 0.57% Impervious, Inflow Depth = 1.45" for 25-Year event
Inflow = 7.18 cfs @ 12.25 hrs, Volume= 0.782 af
Outflow = 0.71 cfs @ 15.22 hrs, Volume= 0.752 af, Atten= 90%, Lag= 177.8 min
Discarded = 0.71 cfs @ 15.22 hrs, Volume= 0.752 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 250.98' @ 15.22 hrs Surf.Area= 12,416 sf Storage= 16,192 cf
Flood Elev= 252.00' Surf.Area= 17,882 sf Storage= 31,582 cf

Plug-Flow detention time= 307.3 min calculated for 0.752 af (96% of inflow)
Center-of-Mass det. time= 287.3 min (1,171.1 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	31,582 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	188	98.0	0	0	188
249.00	3,394	552.0	1,460	1,460	23,674
250.00	7,263	630.0	5,207	6,668	31,034
251.00	12,540	807.0	9,782	16,450	51,287
252.00	17,882	846.0	15,132	31,582	56,484

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	251.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.71 cfs @ 15.22 hrs HW=250.98' (Free Discharge)
└**1=Exfiltration** (Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8B: Basin 8A

Inflow Area = 5.612 ac, 3.08% Impervious, Inflow Depth = 1.53" for 25-Year event
Inflow = 5.84 cfs @ 12.35 hrs, Volume= 0.714 af
Outflow = 2.36 cfs @ 12.84 hrs, Volume= 0.714 af, Atten= 60%, Lag= 29.3 min
Discarded = 0.71 cfs @ 12.84 hrs, Volume= 0.589 af
Primary = 1.64 cfs @ 12.84 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 246.88' @ 12.84 hrs Surf.Area= 12,596 sf Storage= 10,158 cf
Flood Elev= 247.25' Surf.Area= 16,693 sf Storage= 15,645 cf

Plug-Flow detention time= 170.5 min calculated for 0.714 af (100% of inflow)
Center-of-Mass det. time= 170.5 min (1,057.3 - 886.8)

Volume	Invert	Avail.Storage	Storage Description
#1	245.00'	20,167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
245.00	1,812	266.0	0	0	1,812
246.00	4,404	724.0	3,014	3,014	37,897
247.00	14,086	1,051.0	8,789	11,802	84,095
247.50	19,522	1,032.0	8,365	20,167	87,287

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 199.00'
#2	Primary	246.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.71 cfs @ 12.84 hrs HW=246.88' (Free Discharge)
└─**1=Exfiltration** (Controls 0.71 cfs)

Primary OutFlow Max=1.64 cfs @ 12.84 hrs HW=246.88' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.64 cfs @ 0.86 fps)

Summary for Pond P2B: Basin 2B

Inflow Area =	15.624 ac,	1.00% Impervious,	Inflow Depth =	1.45" for 25-Year event
Inflow =	18.28 cfs @	12.22 hrs,	Volume=	1.893 af
Outflow =	14.95 cfs @	12.35 hrs,	Volume=	1.893 af, Atten= 18%, Lag= 8.0 min
Discarded =	0.42 cfs @	12.35 hrs,	Volume=	0.204 af
Primary =	14.53 cfs @	12.35 hrs,	Volume=	1.689 af
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 197.69' @ 12.35 hrs Surf.Area= 4,733 sf Storage= 5,979 cf
Flood Elev= 198.50' Surf.Area= 6,749 sf Storage= 10,528 cf

Plug-Flow detention time= 9.0 min calculated for 1.889 af (100% of inflow)
Center-of-Mass det. time= 9.1 min (891.1 - 882.1)

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	10,528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.00	2,453	396.9	0	0	2,453
197.00	3,748	465.9	3,078	3,078	7,210
198.00	5,223	506.0	4,465	7,543	10,349
198.50	6,749	523.0	2,985	10,528	11,765

Device	Routing	Invert	Outlet Devices
#1	Primary	195.50'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 195.50' / 195.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#3	Secondary	198.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	196.00'	**18.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	198.00'	**27.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.42 cfs @ 12.35 hrs HW=197.68' (Free Discharge)
└─**2=Exfiltration** (Controls 0.42 cfs)

Primary OutFlow Max=14.52 cfs @ 12.35 hrs HW=197.68' (Free Discharge)
└─**1=Culvert** (Inlet Controls 14.52 cfs @ 4.62 fps)
  ├─**4=Orifice/Grate** (Passes 14.52 cfs of 16.45 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=196.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1AS: Drainage Area 1AS Runoff Area=17.571 ac 6.39% Impervious Runoff Depth=2.73"
Flow Length=1,146' Tc=30.1 min CN=62 Runoff=30.90 cfs 3.994 af

Subcatchment1BS: Drainage Area 1BS Runoff Area=9.778 ac 2.17% Impervious Runoff Depth=2.73"
Flow Length=1,301' Tc=16.4 min CN=62 Runoff=22.12 cfs 2.223 af

Subcatchment1CS: Drainage Area 1CS Runoff Area=4.622 ac 5.11% Impervious Runoff Depth=4.71"
Flow Length=871' Tc=15.7 min CN=81 Runoff=18.75 cfs 1.815 af

Subcatchment2AS: Drainage Area 2AS Runoff Area=12.542 ac 2.73% Impervious Runoff Depth=2.53"
Flow Length=747' Tc=16.5 min CN=60 Runoff=26.00 cfs 2.647 af

Subcatchment2BS: Drainage Area 2BS Runoff Area=15.624 ac 1.00% Impervious Runoff Depth=2.34"
Flow Length=1,098' Tc=14.2 min UI Adjusted CN=58 Runoff=31.33 cfs 3.049 af

Subcatchment3AS: Drainage Area 3AS Runoff Area=7.008 ac 2.50% Impervious Runoff Depth=2.44"
Flow Length=813' Tc=9.9 min UI Adjusted CN=59 Runoff=16.66 cfs 1.423 af

Subcatchment4AS: Drainage Area 4AS Runoff Area=10.217 ac 1.47% Impervious Runoff Depth=2.15"
Flow Length=938' Tc=13.2 min UI Adjusted CN=56 Runoff=18.98 cfs 1.833 af

Subcatchment4BS: Drainage Area 4BS Runoff Area=17.834 ac 1.50% Impervious Runoff Depth=2.34"
Flow Length=1,843' Tc=30.6 min CN=58 Runoff=26.10 cfs 3.480 af

Subcatchment5AS: Drainage Area 5AS Runoff Area=1.754 ac 0.00% Impervious Runoff Depth=2.34"
Flow Length=445' Tc=6.6 min CN=58 Runoff=4.45 cfs 0.342 af

Subcatchment5BS: Drainage Area 5BS Runoff Area=1.232 ac 0.00% Impervious Runoff Depth=2.34"
Flow Length=395' Tc=7.6 min CN=58 Runoff=3.01 cfs 0.240 af

Subcatchment5S: Drainage Area 5S Runoff Area=6.687 ac 0.00% Impervious Runoff Depth=2.15"
Flow Length=1,088' Tc=13.3 min CN=56 Runoff=12.39 cfs 1.200 af

Subcatchment6AS: Drainage Area 6AS Runoff Area=1.171 ac 6.40% Impervious Runoff Depth=2.44"
Flow Length=290' Tc=7.3 min UI Adjusted CN=59 Runoff=3.04 cfs 0.238 af

Subcatchment6BS: Drainage Area 6BS Runoff Area=0.524 ac 2.29% Impervious Runoff Depth=2.34"
Flow Length=217' Tc=5.6 min UI Adjusted CN=58 Runoff=1.37 cfs 0.102 af

Subcatchment6S: Drainage Area 6S Runoff Area=3.097 ac 0.00% Impervious Runoff Depth=2.25"
Flow Length=1,041' Tc=17.7 min CN=57 Runoff=5.43 cfs 0.580 af

Subcatchment7AS: Drainage Area 7AS Runoff Area=11.944 ac 0.52% Impervious Runoff Depth=2.34"
Flow Length=1,207' Tc=15.1 min CN=58 Runoff=23.41 cfs 2.331 af

Subcatchment7S: Drainage Area 7S Runoff Area=19.533 ac 0.35% Impervious Runoff Depth=2.25"
Flow Length=1,268' Tc=14.5 min UI Adjusted CN=57 Runoff=36.99 cfs 3.658 af

Subcatchment8AS: Drainage Area 8A Runoff Area=6.452 ac 0.57% Impervious Runoff Depth=2.34"
Flow Length=985' Tc=16.1 min CN=58 Runoff=12.30 cfs 1.259 af

Subcatchment8BS: Drainage Area 8BS Runoff Area=5.612 ac 3.08% Impervious Runoff Depth=2.44"
Flow Length=1,381' Tc=22.5 min CN=59 Runoff=9.82 cfs 1.140 af

Subcatchment8S: Drainage Area 8S Runoff Area=8.652 ac 2.65% Impervious Runoff Depth=2.34"
Flow Length=775' Tc=13.6 min UI Adjusted CN=58 Runoff=17.61 cfs 1.688 af

Subcatchment9S: Drainage Area 9S Runoff Area=1.031 ac 0.00% Impervious Runoff Depth=2.44"
Flow Length=613' Tc=10.3 min CN=59 Runoff=2.42 cfs 0.209 af

Reach 1BR: Overland Flow Avg. Flow Depth=0.06' Max Vel=0.41 fps Inflow=17.92 cfs 2.157 af
n=0.030 L=940.0' S=0.0426 '/' Capacity=0.71 cfs Outflow=9.94 cfs 2.156 af

Reach 1CR: Overland Flow Avg. Flow Depth=0.15' Max Vel=0.80 fps Inflow=12.37 cfs 1.815 af
n=0.030 L=6,700.0' S=0.0084 '/' Capacity=17.41 cfs Outflow=4.41 cfs 1.746 af

Reach 2BR: Overland Flow Avg. Flow Depth=0.14' Max Vel=0.36 fps Inflow=35.44 cfs 2.880 af
n=0.030 L=785.0' S=0.0280 '/' Capacity=0.46 cfs Outflow=14.09 cfs 2.878 af

Reach DP-1: Design Point 1 Inflow=32.13 cfs 7.895 af
Outflow=32.13 cfs 7.895 af

Reach DP-2: Design Point 2 Inflow=26.22 cfs 5.526 af
Outflow=26.22 cfs 5.526 af

Reach DP-3: Design Point 3 Inflow=16.66 cfs 1.423 af
Outflow=16.66 cfs 1.423 af

Reach DP-4: Design Point 4 Inflow=38.44 cfs 5.313 af
Outflow=38.44 cfs 5.313 af

Reach DP-5: Design Point 5 Inflow=12.39 cfs 1.200 af
Outflow=12.39 cfs 1.200 af

Reach DP-6: Design Point 6 Inflow=5.43 cfs 0.580 af
Outflow=5.43 cfs 0.580 af

Reach DP-7: Design Point 7 Inflow=36.99 cfs 3.658 af
Outflow=36.99 cfs 3.658 af

Reach DP-8: Design Point 8 Inflow=17.61 cfs 2.166 af
Outflow=17.61 cfs 2.166 af

Reach DP-9: Design Point 9 Inflow=2.42 cfs 0.209 af
Outflow=2.42 cfs 0.209 af

Reach LWC-1: Low Water Crossing 1 Avg. Flow Depth=0.11' Max Vel=2.53 fps Inflow=18.98 cfs 1.833 af
n=0.034 L=16.0' S=0.0625 '/' Capacity=229.98 cfs Outflow=18.94 cfs 1.833 af

Pond 1BP: Culvert 1BS Peak Elev=214.67' Inflow=22.12 cfs 2.223 af
Primary=17.92 cfs 2.157 af Secondary=4.20 cfs 0.065 af Outflow=22.12 cfs 2.223 af

Pond 5A: Basin 5A Peak Elev=274.00' Storage=5,855 cf Inflow=4.45 cfs 0.342 af
Discarded=0.46 cfs 0.342 af Primary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.342 af

Pond 5B: Basin 5B Peak Elev=291.60' Storage=4,677 cf Inflow=3.01 cfs 0.240 af
Discarded=0.28 cfs 0.240 af Primary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.240 af

Pond 5P: Culvert 1CS Peak Elev=228.43' Storage=7,738 cf Inflow=18.75 cfs 1.815 af
Primary=12.29 cfs 1.814 af Secondary=0.09 cfs 0.000 af Outflow=12.37 cfs 1.815 af

Pond 6A: Basin 6A Peak Elev=302.73' Storage=3,784 cf Inflow=3.04 cfs 0.238 af
Discarded=0.37 cfs 0.238 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.238 af

Pond 6B: Basin 6B Peak Elev=293.71' Storage=1,824 cf Inflow=1.37 cfs 0.102 af
Discarded=0.14 cfs 0.102 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.102 af

Pond 7A: Basin 7A Peak Elev=253.26' Storage=51,901 cf Inflow=23.41 cfs 2.331 af
Discarded=2.02 cfs 2.154 af Primary=0.00 cfs 0.000 af Outflow=2.02 cfs 2.154 af

Pond 8A: Basin 8A Peak Elev=251.79' Storage=27,945 cf Inflow=12.30 cfs 1.259 af
Discarded=0.96 cfs 1.109 af Primary=0.31 cfs 0.037 af Outflow=1.27 cfs 1.147 af

Pond 8B: Basin 8A Peak Elev=247.05' Storage=12,485 cf Inflow=9.82 cfs 1.140 af
Discarded=0.83 cfs 0.694 af Primary=6.05 cfs 0.441 af Outflow=6.88 cfs 1.134 af

Pond P2B: Basin 2B Peak Elev=198.26' Storage=8,996 cf Inflow=35.41 cfs 3.114 af
Discarded=0.56 cfs 0.234 af Primary=17.70 cfs 2.616 af Secondary=17.74 cfs 0.264 af Outflow=36.00 cfs 3.114 af

Summary for Subcatchment 1AS: Drainage Area 1AS

Runoff = 30.90 cfs @ 12.44 hrs, Volume= 3.994 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.262	98	Existing Structure, HSG A
*	0.511	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	3.149	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.679	96	Gravel surface, HSG A
	2.489	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	2.802	30	Meadow, non-grazed, HSG A
	7.017	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.349	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.168	65	Woods/grass comb., Fair, HSG B
	0.145	43	Woods/grass comb., Fair, HSG A
	17.571	62	Weighted Average
	16.449		93.61% Pervious Area
	1.122		6.39% Impervious Area
	0.349		31.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	82	0.1463	2.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	236	0.0763	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	68	0.0147	0.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.9	445	0.0079	0.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	265	0.0057	0.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.1	1,146	Total			

Summary for Subcatchment 1BS: Drainage Area 1BS

Runoff = 22.12 cfs @ 12.24 hrs, Volume= 2.223 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.922	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	8.644	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.212	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	9.778	62	Weighted Average
	9.566		97.83% Pervious Area
	0.212		2.17% Impervious Area
	0.212		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.1	765	0.0327	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	278	0.0576	2.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.4	82	0.2561	3.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	126	0.0476	3.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
16.4	1,301	Total			

Summary for Subcatchment 1CS: Drainage Area 1CS

Runoff = 18.75 cfs @ 12.21 hrs, Volume= 1.815 af, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.120	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.230	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	2.541	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.615	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.116	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	4.622	81	Weighted Average
	4.386		94.89% Pervious Area
	0.236		5.11% Impervious Area
	0.116		49.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
4.8	160	0.0063	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.6	122	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	222	0.0676	4.19		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	33	0.0909	2.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.5	284	0.0141	1.91		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.7	871	Total			

Summary for Subcatchment 2AS: Drainage Area 2AS

Runoff = 26.00 cfs @ 12.24 hrs, Volume= 2.647 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.025	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.340	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.843	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.317	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.017	65	Woods/grass comb., Fair, HSG B
	12.542	60	Weighted Average
	12.200		97.27% Pervious Area
	0.342		2.73% Impervious Area
	0.317		92.69% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.9	284	0.0528	1.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	80	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	333	0.0075	0.61		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	747	Total			

Summary for Subcatchment 2BS: Drainage Area 2BS

Runoff = 31.33 cfs @ 12.21 hrs, Volume= 3.049 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	4.993	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.340	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	9.581	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.081	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.554	65		Woods/grass comb., Fair, HSG B
	15.624	59	58	Weighted Average, UI Adjusted
	15.468			99.00% Pervious Area
	0.156			1.00% Impervious Area
	0.075			48.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.8	182	0.0549	1.64		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.0879	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.1083	2.30		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	291	0.1684	2.05		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	45	0.2444	3.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.2	1,098	Total			

Summary for Subcatchment 3AS: Drainage Area 3AS

Runoff = 16.66 cfs @ 12.15 hrs, Volume= 1.423 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.153	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.130	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.332	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.175	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
*	0.218	65		woods/grass
	0.000	98		Water Surface, HSG C
	7.008	60	59	Weighted Average, UI Adjusted
	6.833			97.50% Pervious Area
	0.175			2.50% Impervious Area
	0.175			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
0.3	38	0.1316	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	57	0.0877	2.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	436	0.0390	3.18		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	232	0.0302	2.80		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.9	813	Total			

Summary for Subcatchment 4AS: Drainage Area 4AS

Runoff = 18.98 cfs @ 12.20 hrs, Volume= 1.833 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	6.934	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.021	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	3.112	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.150	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	10.217	57	56	Weighted Average, UI Adjusted
	10.067			98.53% Pervious Area
	0.150			1.47% Impervious Area
	0.150			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.0	79	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	107	0.0935	2.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	481	0.1850	2.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	101	0.0396	1.39		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0917	2.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.2	938	Total			

Summary for Subcatchment 4BS: Drainage Area 4BS

Runoff = 26.10 cfs @ 12.46 hrs, Volume= 3.480 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	5.341	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.072	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.408	58	Meadow, non-grazed, HSG B
	0.380	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.268	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	0.365	65	Woods/grass comb., Fair, HSG B
	17.834	58	Weighted Average
	17.566		98.50% Pervious Area
	0.268		1.50% Impervious Area
	0.268		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.4	173	0.0809	1.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	620	0.1452	1.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	313	0.0607	1.72		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	687	0.0116	0.75		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.6	1,843	Total			

Summary for Subcatchment 5AS: Drainage Area 5AS

Runoff = 4.45 cfs @ 12.11 hrs, Volume= 0.342 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.754	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.754	58	Weighted Average
	1.754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0800	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.4	395	0.0785	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	445	Total			

Summary for Subcatchment 5BS: Drainage Area 5BS

Runoff = 3.01 cfs @ 12.12 hrs, Volume= 0.240 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.232	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.232	58	Weighted Average
	1.232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.1	95	0.0421	1.44		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	250	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	395	Total			

Summary for Subcatchment 5S: Drainage Area 5S

Runoff = 12.39 cfs @ 12.20 hrs, Volume= 1.200 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	4.693	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.994	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.687	56	Weighted Average
	6.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
3.0	396	0.0959	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	435	0.1172	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.3	1,088	Total			

Summary for Subcatchment 6AS: Drainage Area 6AS

Runoff = 3.04 cfs @ 12.11 hrs, Volume= 0.238 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	1.096	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.075	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	1.171	61	59	Weighted Average, UI Adjusted
	1.096			93.60% Pervious Area
	0.075			6.40% Impervious Area
	0.075			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.5	240	0.0542	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	290	Total			

Summary for Subcatchment 6BS: Drainage Area 6BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.37 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	0.000	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	0.512	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.012	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	0.524	59	58	Weighted Average, UI Adjusted
	0.512			97.71% Pervious Area
	0.012			2.29% Impervious Area
	0.012			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.8	167	0.2575	3.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	217	Total			

Summary for Subcatchment 6S: Drainage Area 6S

Runoff = 5.43 cfs @ 12.27 hrs, Volume= 0.580 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	1.445	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	1.652	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	3.097	57	Weighted Average
	3.097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	345	0.0841	2.03		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	187	0.2406	2.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.0	459	0.0370	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.7	1,041	Total			

Summary for Subcatchment 7AS: Drainage Area 7AS

Runoff = 23.41 cfs @ 12.22 hrs, Volume= 2.331 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	11.882	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.062	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	11.944	58	Weighted Average
	11.882		99.48% Pervious Area
	0.062		0.52% Impervious Area
	0.062		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
11.5	1,157	0.0570	1.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.1	1,207	Total			

Summary for Subcatchment 7S: Drainage Area 7S

Runoff = 36.99 cfs @ 12.22 hrs, Volume= 3.658 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	3.886	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.000	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	15.579	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.068	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	19.533	58	57	Weighted Average, UI Adjusted
	19.465			99.65% Pervious Area
	0.068			0.35% Impervious Area
	0.068			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
9.8	1,125	0.0747	1.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	93	0.0753	1.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	1,268	Total			

Summary for Subcatchment 8AS: Drainage Area 8A

Runoff = 12.30 cfs @ 12.24 hrs, Volume= 1.259 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	6.415	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.037	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	6.452	58	Weighted Average
	6.415		99.43% Pervious Area
	0.037		0.57% Impervious Area
	0.037		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
10.5	935	0.0449	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.1	985	Total			

Summary for Subcatchment 8BS: Drainage Area 8BS

Runoff = 9.82 cfs @ 12.34 hrs, Volume= 1.140 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.000	30	Woods, Good, HSG A
	0.000	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.000	96	Gravel surface, HSG A
	0.000	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	5.439	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.173	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	5.612	59	Weighted Average
	5.439		96.92% Pervious Area
	0.173		3.08% Impervious Area
	0.173		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
1.6	145	0.0484	1.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	506	0.0494	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	251	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.0	429	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.5	1,381	Total			

Summary for Subcatchment 8S: Drainage Area 8S

Runoff = 17.61 cfs @ 12.20 hrs, Volume= 1.688 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Adj	Description
*	0.000	98		Existing Structure, HSG A
*	0.000	98		Existing Structure, HSG B
	0.000	30		Woods, Good, HSG A
	1.527	55		Woods, Good, HSG B
	0.000	70		Woods, Good, HSG C
	0.000	96		Gravel surface, HSG A
	0.017	96		Gravel surface, HSG B
	0.000	96		Gravel surface, HSG C
	0.000	30		Meadow, non-grazed, HSG A
	6.879	58		Meadow, non-grazed, HSG B
	0.000	71		Meadow, non-grazed, HSG C
	0.000	98		Unconnected pavement, HSG A
	0.229	98		Unconnected pavement, HSG B
	0.000	98		Unconnected pavement, HSG C
	0.000	98		Water Surface, HSG A
	0.000	98		Water Surface, HSG B
	0.000	98		Water Surface, HSG C
	8.652	59	58	Weighted Average, UI Adjusted
	8.423			97.35% Pervious Area
	0.229			2.65% Impervious Area
	0.229			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.8	175	0.0229	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	413	0.0696	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	137	0.0876	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	775	Total			

Summary for Subcatchment 9S: Drainage Area 9S

Runoff = 2.42 cfs @ 12.16 hrs, Volume= 0.209 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

	Area (ac)	CN	Description
*	0.000	98	Existing Structure, HSG A
*	0.000	98	Existing Structure, HSG B
	0.187	30	Woods, Good, HSG A
	0.427	55	Woods, Good, HSG B
	0.000	70	Woods, Good, HSG C
	0.048	96	Gravel surface, HSG A
	0.161	96	Gravel surface, HSG B
	0.000	96	Gravel surface, HSG C
	0.000	30	Meadow, non-grazed, HSG A
	0.208	58	Meadow, non-grazed, HSG B
	0.000	71	Meadow, non-grazed, HSG C
	0.000	98	Unconnected pavement, HSG A
	0.000	98	Unconnected pavement, HSG B
	0.000	98	Unconnected pavement, HSG C
	0.000	98	Water Surface, HSG A
	0.000	98	Water Surface, HSG B
	0.000	98	Water Surface, HSG C
	1.031	59	Weighted Average
	1.031		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.2	70	0.0854	4.70		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	82	0.0854	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.9	411	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.3	613	Total			

Summary for Reach 1BR: Overland Flow

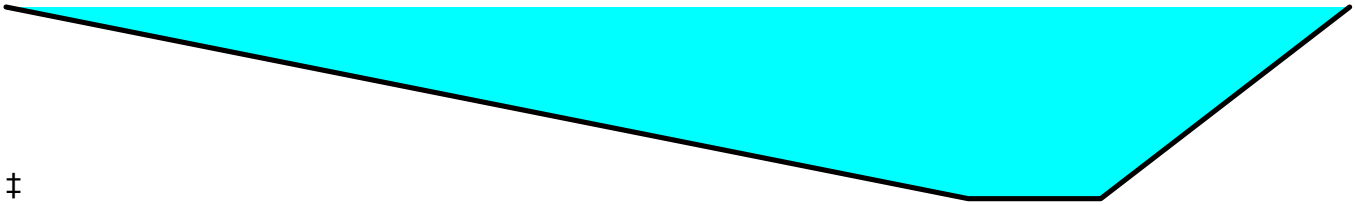
[91] Warning: Storage range exceeded by 0.05'
[55] Hint: Peak inflow is 2532% of Manning's capacity

Inflow Area = 9.778 ac, 2.17% Impervious, Inflow Depth = 2.65" for 100-Year event
Inflow = 17.92 cfs @ 12.24 hrs, Volume= 2.157 af
Outflow = 9.94 cfs @ 13.24 hrs, Volume= 2.156 af, Atten= 45%, Lag= 60.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.41 fps, Min. Travel Time= 37.8 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 57.1 min

Peak Storage= 22,596 cf @ 12.61 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.01' Flow Area= 2.2 sf, Capacity= 0.71 cfs

Custom cross-section, Length= 940.0' Slope= 0.0426 '/'
Constant n= 0.030 Short grass
Inlet Invert= 209.00', Outlet Invert= 169.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
290.00	-0.01	0.01
330.00	-0.01	0.01
405.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0	0.00
0.01	2.2	405.0	2,092	0.71

Summary for Reach 1CR: Overland Flow

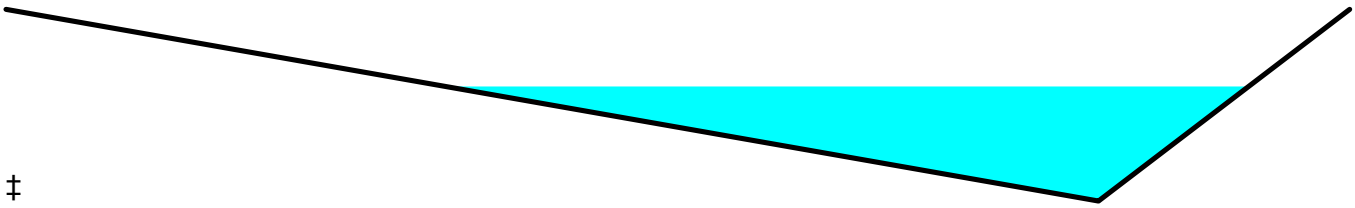
[79] Warning: Submerged Pond 5P Primary device # 1 OUTLET by 0.15'

Inflow Area = 4.622 ac, 5.11% Impervious, Inflow Depth = 4.71" for 100-Year event
Inflow = 12.37 cfs @ 12.41 hrs, Volume= 1.815 af
Outflow = 4.41 cfs @ 15.27 hrs, Volume= 1.746 af, Atten= 64%, Lag= 172.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.80 fps, Min. Travel Time= 139.0 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 244.5 min

Peak Storage= 36,838 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.25' Flow Area= 15.4 sf, Capacity= 17.41 cfs

Custom cross-section, Length= 6,700.0' Slope= 0.0084 '/'
Constant n= 0.030 Short grass
Inlet Invert= 224.00', Outlet Invert= 168.00'



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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
100.00	-0.25	0.25
123.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.25	15.4	123.0	103,013	17.41

Summary for Reach 2BR: Overland Flow

[91] Warning: Storage range exceeded by 0.13'
[55] Hint: Peak inflow is 7733% of Manning's capacity

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 2.21" for 100-Year event
Inflow = 35.44 cfs @ 12.26 hrs, Volume= 2.880 af
Outflow = 14.09 cfs @ 13.30 hrs, Volume= 2.878 af, Atten= 60%, Lag= 62.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 36.6 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 51.7 min

Peak Storage= 30,978 cf @ 12.69 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.01' Flow Area= 1.7 sf, Capacity= 0.46 cfs

Custom cross-section, Length= 785.0' Slope= 0.0280 '/'
Constant n= 0.030 Short grass
Inlet Invert= 194.00', Outlet Invert= 172.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
120.00	-0.01	0.01
170.00	-0.01	0.01
290.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	50.0	0	0.00
0.01	1.7	290.0	1,335	0.46

Summary for Reach DP-1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.971 ac, 4.91% Impervious, Inflow Depth > 2.96" for 100-Year event
Inflow = 32.13 cfs @ 12.45 hrs, Volume= 7.895 af
Outflow = 32.13 cfs @ 12.45 hrs, Volume= 7.895 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.166 ac, 1.77% Impervious, Inflow Depth > 2.35" for 100-Year event
Inflow = 26.22 cfs @ 12.25 hrs, Volume= 5.526 af
Outflow = 26.22 cfs @ 12.25 hrs, Volume= 5.526 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.008 ac, 2.50% Impervious, Inflow Depth = 2.44" for 100-Year event
Inflow = 16.66 cfs @ 12.15 hrs, Volume= 1.423 af
Outflow = 16.66 cfs @ 12.15 hrs, Volume= 1.423 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Design Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 28.051 ac, 1.49% Impervious, Inflow Depth = 2.27" for 100-Year event
Inflow = 38.44 cfs @ 12.38 hrs, Volume= 5.313 af
Outflow = 38.44 cfs @ 12.38 hrs, Volume= 5.313 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Design Point 5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.673 ac, 0.00% Impervious, Inflow Depth = 1.49" for 100-Year event
Inflow = 12.39 cfs @ 12.20 hrs, Volume= 1.200 af
Outflow = 12.39 cfs @ 12.20 hrs, Volume= 1.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Design Point 6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.792 ac, 1.82% Impervious, Inflow Depth = 1.45" for 100-Year event
Inflow = 5.43 cfs @ 12.27 hrs, Volume= 0.580 af
Outflow = 5.43 cfs @ 12.27 hrs, Volume= 0.580 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: Design Point 7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 31.477 ac, 0.41% Impervious, Inflow Depth = 1.39" for 100-Year event
Inflow = 36.99 cfs @ 12.22 hrs, Volume= 3.658 af
Outflow = 36.99 cfs @ 12.22 hrs, Volume= 3.658 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Design Point 8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 20.716 ac, 2.12% Impervious, Inflow Depth = 1.25" for 100-Year event
Inflow = 17.61 cfs @ 12.20 hrs, Volume= 2.166 af
Outflow = 17.61 cfs @ 12.20 hrs, Volume= 2.166 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach DP-9: Design Point 9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.031 ac, 0.00% Impervious, Inflow Depth = 2.44" for 100-Year event
Inflow = 2.42 cfs @ 12.16 hrs, Volume= 0.209 af
Outflow = 2.42 cfs @ 12.16 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach LWC-1: Low Water Crossing 1

Inflow Area = 10.217 ac, 1.47% Impervious, Inflow Depth = 2.15" for 100-Year event
Inflow = 18.98 cfs @ 12.20 hrs, Volume= 1.833 af
Outflow = 18.94 cfs @ 12.20 hrs, Volume= 1.833 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 0.3 min

Peak Storage= 120 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.50' Flow Area= 35.0 sf, Capacity= 229.98 cfs

65.00' x 0.50' deep channel, n= 0.034
Side Slope Z-value= 10.0 '/' Top Width= 75.00'
Length= 16.0' Slope= 0.0625 '/'
Inlet Invert= 203.00', Outlet Invert= 202.00'

Summary for Pond 1BP: Culvert 1BS

Inflow Area =	9.778 ac,	2.17% Impervious,	Inflow Depth =	2.73"	for 100-Year event
Inflow =	22.12 cfs @	12.24 hrs,	Volume=	2.223 af	
Outflow =	22.12 cfs @	12.24 hrs,	Volume=	2.223 af,	Atten= 0%, Lag= 0.0 min
Primary =	17.92 cfs @	12.24 hrs,	Volume=	2.157 af	
Secondary =	4.20 cfs @	12.24 hrs,	Volume=	0.065 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 214.67' @ 12.24 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.50'	**18.0" Round Culvert X 2.00** L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 212.50' / 210.00' S= 0.0347 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	214.25'	**6.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=17.88 cfs @ 12.24 hrs HW=214.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.88 cfs @ 5.06 fps)

Secondary OutFlow Max=4.09 cfs @ 12.24 hrs HW=214.67' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 4.09 cfs @ 1.63 fps)

Summary for Pond 5A: Basin 5A

Inflow Area = 1.754 ac, 0.00% Impervious, Inflow Depth = 2.34" for 100-Year event
Inflow = 4.45 cfs @ 12.11 hrs, Volume= 0.342 af
Outflow = 0.46 cfs @ 13.38 hrs, Volume= 0.342 af, Atten= 90%, Lag= 76.5 min
Discarded = 0.46 cfs @ 13.38 hrs, Volume= 0.342 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 274.00' @ 13.38 hrs Surf.Area= 8,259 sf Storage= 5,855 cf
Flood Elev= 275.00' Surf.Area= 13,145 sf Storage= 16,477 cf

Plug-Flow detention time= 143.6 min calculated for 0.342 af (100% of inflow)
Center-of-Mass det. time= 143.3 min (1,003.2 - 859.8)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	16,477 cf	**5A (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	3,758	574.0	0	0	3,758
274.00	8,266	669.0	5,866	5,866	13,175
275.00	13,145	728.0	10,612	16,477	19,772

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	274.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.46 cfs @ 13.38 hrs HW=274.00' (Free Discharge)
└**1=Exfiltration** (Controls 0.46 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=273.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5B: Basin 5B

Inflow Area = 1.232 ac, 0.00% Impervious, Inflow Depth = 2.34" for 100-Year event
Inflow = 3.01 cfs @ 12.12 hrs, Volume= 0.240 af
Outflow = 0.28 cfs @ 13.84 hrs, Volume= 0.240 af, Atten= 91%, Lag= 103.3 min
Discarded = 0.28 cfs @ 13.84 hrs, Volume= 0.240 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 291.60' @ 13.84 hrs Surf.Area= 4,985 sf Storage= 4,677 cf
Flood Elev= 293.00' Surf.Area= 10,174 sf Storage= 15,212 cf

Plug-Flow detention time= 227.0 min calculated for 0.240 af (100% of inflow)
Center-of-Mass det. time= 226.1 min (1,086.9 - 860.8)

Volume	Invert	Avail.Storage	Storage Description
#1	289.00'	15,212 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
289.00	0	0.0	0	0	0
290.00	938	245.0	313	313	4,778
291.00	3,185	372.0	1,950	2,263	11,021
292.00	6,435	496.0	4,716	6,979	19,598
293.00	10,174	529.0	8,233	15,212	22,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	289.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	292.30'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.28 cfs @ 13.84 hrs HW=291.60' (Free Discharge)
└**1=Exfiltration** (Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=289.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Culvert 1CS

Inflow Area =	4.622 ac,	5.11% Impervious,	Inflow Depth =	4.71"	for 100-Year event
Inflow =	18.75 cfs @	12.21 hrs,	Volume=	1.815 af	
Outflow =	12.37 cfs @	12.41 hrs,	Volume=	1.815 af,	Atten= 34%, Lag= 11.6 min
Primary =	12.29 cfs @	12.41 hrs,	Volume=	1.814 af	
Secondary =	0.09 cfs @	12.40 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 228.43' @ 12.41 hrs Surf.Area= 5,259 sf Storage= 7,738 cf

Plug-Flow detention time= 3.6 min calculated for 1.811 af (100% of inflow)
Center-of-Mass det. time= 3.6 min (818.7 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	225.00'	8,119 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.00	0	0.0	0	0	0
226.00	823	554.8	274	274	24,496
227.00	2,690	609.2	1,667	1,941	29,568
228.00	4,726	653.1	3,661	5,602	34,023
228.50	5,351	662.0	2,518	8,119	35,011

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**18.0" Round Culvert** L= 54.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 225.00' / 224.00' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	228.40'	**7.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=12.28 cfs @ 12.41 hrs HW=228.42' (Free Discharge)
└─**1=Culvert** (Inlet Controls 12.28 cfs @ 6.95 fps)

Secondary OutFlow Max=0.08 cfs @ 12.40 hrs HW=228.43' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.43 fps)

Summary for Pond 6A: Basin 6A

Inflow Area = 1.171 ac, 6.40% Impervious, Inflow Depth = 2.44" for 100-Year event
Inflow = 3.04 cfs @ 12.11 hrs, Volume= 0.238 af
Outflow = 0.37 cfs @ 13.05 hrs, Volume= 0.238 af, Atten= 88%, Lag= 56.0 min
Discarded = 0.37 cfs @ 13.05 hrs, Volume= 0.238 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 302.73' @ 13.05 hrs Surf.Area= 6,661 sf Storage= 3,784 cf
Flood Elev= 304.00' Surf.Area= 12,494 sf Storage= 15,891 cf

Plug-Flow detention time= 103.6 min calculated for 0.237 af (100% of inflow)
Center-of-Mass det. time= 103.4 min (961.4 - 858.0)

Volume	Invert	Avail.Storage	Storage Description
#1	302.00'	15,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.00	3,895	498.0	0	0	3,895
303.00	7,901	548.0	5,781	5,781	8,090
304.00	12,494	630.0	10,110	15,891	15,799

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	303.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.37 cfs @ 13.05 hrs HW=302.73' (Free Discharge)
└**1=Exfiltration** (Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=302.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6B: Basin 6B

Inflow Area =	0.524 ac,	2.29% Impervious,	Inflow Depth =	2.34"	for 100-Year event
Inflow =	1.37 cfs @	12.09 hrs,	Volume=	0.102 af	
Outflow =	0.14 cfs @	13.23 hrs,	Volume=	0.102 af,	Atten= 89%, Lag= 68.0 min
Discarded =	0.14 cfs @	13.23 hrs,	Volume=	0.102 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 293.71' @ 13.23 hrs Surf.Area= 2,190 sf Storage= 1,824 cf
Flood Elev= 294.00' Surf.Area= 2,686 sf Storage= 2,540 cf

Plug-Flow detention time= 167.9 min calculated for 0.102 af (100% of inflow)
Center-of-Mass det. time= 167.8 min (1,026.7 - 858.9)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	2,540 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
292.00	214	119.6	0	0	214
293.00	1,206	200.7	643	643	2,287
294.00	2,686	286.0	1,897	2,540	5,600

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'
#2	Primary	293.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.14 cfs @ 13.23 hrs HW=293.71' (Free Discharge)
└**1=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=292.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7A: Basin 7A

Inflow Area = 11.944 ac, 0.52% Impervious, Inflow Depth = 2.34" for 100-Year event
Inflow = 23.41 cfs @ 12.22 hrs, Volume= 2.331 af
Outflow = 2.02 cfs @ 15.05 hrs, Volume= 2.154 af, Atten= 91%, Lag= 169.8 min
Discarded = 2.02 cfs @ 15.05 hrs, Volume= 2.154 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 253.26' @ 15.05 hrs Surf.Area= 35,234 sf Storage= 51,901 cf
Flood Elev= 254.00' Surf.Area= 46,750 sf Storage= 82,044 cf

Plug-Flow detention time= 339.4 min calculated for 2.154 af (92% of inflow)
Center-of-Mass det. time= 300.9 min (1,168.6 - 867.7)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	82,044 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	0	0.0	0	0	0
249.00	670	165.0	223	223	2,168
250.00	2,333	360.0	1,418	1,641	10,319
251.00	7,617	845.0	4,722	6,363	56,830
252.00	17,894	1,358.0	12,395	18,758	146,770
253.00	31,533	1,525.0	24,394	43,152	185,111
254.00	46,750	1,596.0	38,893	82,044	202,813

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	253.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=2.02 cfs @ 15.05 hrs HW=253.26' (Free Discharge)
└**1=Exfiltration** (Controls 2.02 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=248.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8A: Basin 8A

Inflow Area = 6.452 ac, 0.57% Impervious, Inflow Depth = 2.34" for 100-Year event
Inflow = 12.30 cfs @ 12.24 hrs, Volume= 1.259 af
Outflow = 1.27 cfs @ 14.42 hrs, Volume= 1.147 af, Atten= 90%, Lag= 130.9 min
Discarded = 0.96 cfs @ 14.42 hrs, Volume= 1.109 af
Primary = 0.31 cfs @ 14.42 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 251.79' @ 14.42 hrs Surf.Area= 16,679 sf Storage= 27,945 cf
Flood Elev= 252.00' Surf.Area= 17,882 sf Storage= 31,582 cf

Plug-Flow detention time= 354.5 min calculated for 1.144 af (91% of inflow)
Center-of-Mass det. time= 310.7 min (1,179.4 - 868.6)

Volume	Invert	Avail.Storage	Storage Description
#1	248.00'	31,582 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
248.00	188	98.0	0	0	188
249.00	3,394	552.0	1,460	1,460	23,674
250.00	7,263	630.0	5,207	6,668	31,034
251.00	12,540	807.0	9,782	16,450	51,287
252.00	17,882	846.0	15,132	31,582	56,484

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#2	Primary	251.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.96 cfs @ 14.42 hrs HW=251.79' (Free Discharge)
└**1=Exfiltration** (Controls 0.96 cfs)

Primary OutFlow Max=0.29 cfs @ 14.42 hrs HW=251.79' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 0.48 fps)

Summary for Pond 8B: Basin 8A

Inflow Area = 5.612 ac, 3.08% Impervious, Inflow Depth = 2.44" for 100-Year event
Inflow = 9.82 cfs @ 12.34 hrs, Volume= 1.140 af
Outflow = 6.88 cfs @ 12.59 hrs, Volume= 1.134 af, Atten= 30%, Lag= 15.2 min
Discarded = 0.83 cfs @ 12.59 hrs, Volume= 0.694 af
Primary = 6.05 cfs @ 12.59 hrs, Volume= 0.441 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 247.05' @ 12.59 hrs Surf.Area= 14,566 sf Storage= 12,485 cf
Flood Elev= 247.25' Surf.Area= 16,693 sf Storage= 15,645 cf

Plug-Flow detention time= 127.8 min calculated for 1.132 af (99% of inflow)
Center-of-Mass det. time= 125.4 min (997.5 - 872.1)

Volume	Invert	Avail.Storage	Storage Description
#1	245.00'	20,167 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
245.00	1,812	266.0	0	0	1,812
246.00	4,404	724.0	3,014	3,014	37,897
247.00	14,086	1,051.0	8,789	11,802	84,095
247.50	19,522	1,032.0	8,365	20,167	87,287

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 199.00'
#2	Primary	246.75'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.83 cfs @ 12.59 hrs HW=247.05' (Free Discharge)
└─**1=Exfiltration** (Controls 0.83 cfs)

Primary OutFlow Max=6.03 cfs @ 12.59 hrs HW=247.05' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 6.03 cfs @ 1.35 fps)

Summary for Pond P2B: Basin 2B

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 15.624 ac, 1.00% Impervious, Inflow Depth = 2.39" for 100-Year event
Inflow = 35.41 cfs @ 12.22 hrs, Volume= 3.114 af
Outflow = 36.00 cfs @ 12.26 hrs, Volume= 3.114 af, Atten= 0%, Lag= 2.2 min
Discarded = 0.56 cfs @ 12.26 hrs, Volume= 0.234 af
Primary = 17.70 cfs @ 12.26 hrs, Volume= 2.616 af
Secondary = 17.74 cfs @ 12.26 hrs, Volume= 0.264 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 198.26' @ 12.26 hrs Surf.Area= 5,990 sf Storage= 8,996 cf
Flood Elev= 198.50' Surf.Area= 6,749 sf Storage= 10,528 cf

Plug-Flow detention time= 7.9 min calculated for 3.108 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (872.0 - 864.1)

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	10,528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
196.00	2,453	396.9	0	0	2,453
197.00	3,748	465.9	3,078	3,078	7,210
198.00	5,223	506.0	4,465	7,543	10,349
198.50	6,749	523.0	2,985	10,528	11,765

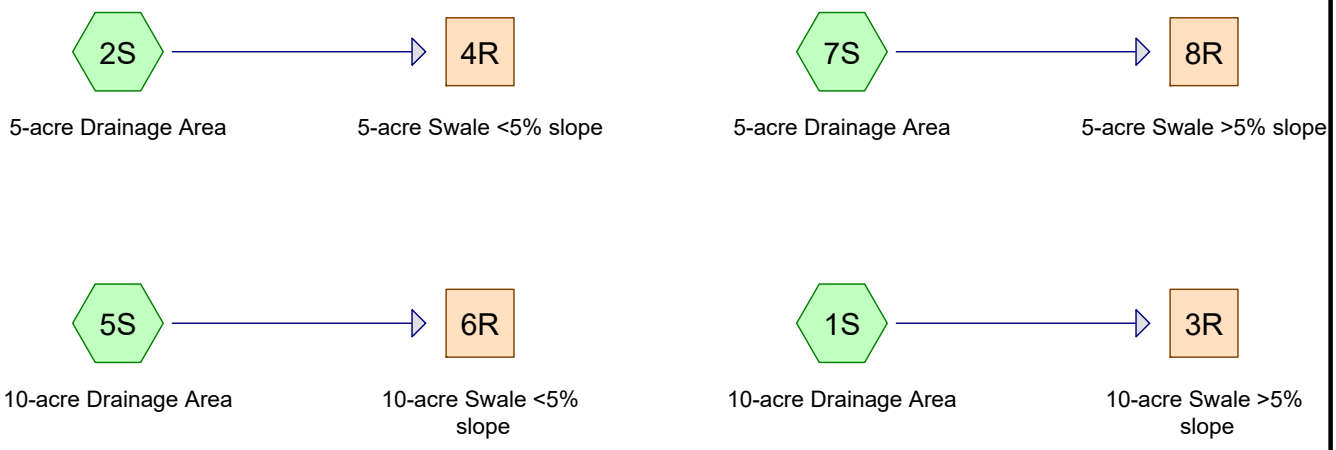
Device	Routing	Invert	Outlet Devices
#1	Primary	195.50'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 195.50' / 195.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 194.00'
#3	Secondary	198.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#4	Device 1	196.00'	**18.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	198.00'	**27.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

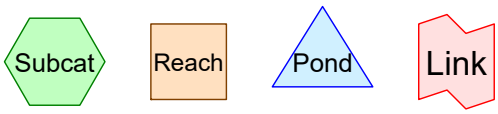
Discarded OutFlow Max=0.56 cfs @ 12.26 hrs HW=198.25' (Free Discharge)
└─**2=Exfiltration** (Controls 0.56 cfs)

Primary OutFlow Max=17.67 cfs @ 12.26 hrs HW=198.25' (Free Discharge)
└─**1=Culvert** (Inlet Controls 17.67 cfs @ 5.63 fps)
  ├─**4=Orifice/Grate** (Passes < 20.86 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 2.94 cfs potential flow)

Secondary OutFlow Max=17.13 cfs @ 12.26 hrs HW=198.25' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir**(Weir Controls 17.13 cfs @ 1.35 fps)

Temporary Swale
Design Hydrology





Routing Diagram for Temp Swale Design Calcs
Prepared by Tighe & Bond, Printed 11/7/2018
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
30.000	82	Dirt roads, HSG B (1S, 2S, 5S, 7S)

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
30.000	HSG B	1S, 2S, 5S, 7S
0.000	HSG C	
0.000	HSG D	
0.000	Other	

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

Subcatchment 1S: 10-acre Drainage Area Runoff Area=10.000 ac 0.00% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=82 Runoff=32.26 cfs 2.192 af

Subcatchment 2S: 5-acre Drainage Area Runoff Area=5.000 ac 0.00% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=82 Runoff=16.13 cfs 1.096 af

Subcatchment 5S: 10-acre Drainage Area Runoff Area=10.000 ac 0.00% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=82 Runoff=32.26 cfs 2.192 af

Subcatchment 7S: 5-acre Drainage Area Runoff Area=5.000 ac 0.00% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=82 Runoff=16.13 cfs 1.096 af

Reach 3R: 10-acre Swale >5% slope Avg. Flow Depth=0.81' Max Vel=7.35 fps Inflow=32.26 cfs 2.192 af
n=0.030 L=100.0' S=0.0500 '/' Capacity=49.53 cfs Outflow=32.00 cfs 2.191 af

Reach 4R: 5-acre Swale <5% slope Avg. Flow Depth=0.92' Max Vel=2.59 fps Inflow=16.13 cfs 1.096 af
n=0.030 L=100.0' S=0.0050 '/' Capacity=18.92 cfs Outflow=15.68 cfs 1.095 af

Reach 6R: 10-acre Swale <5% slope Avg. Flow Depth=1.41' Max Vel=3.16 fps Inflow=32.26 cfs 2.192 af
n=0.030 L=100.0' S=0.0050 '/' Capacity=36.76 cfs Outflow=31.55 cfs 2.190 af

Reach 8R: 5-acre Swale >5% slope Avg. Flow Depth=0.77' Max Vel=6.35 fps Inflow=16.13 cfs 1.096 af
n=0.030 L=100.0' S=0.0500 '/' Capacity=29.60 cfs Outflow=15.98 cfs 1.096 af

Summary for Subcatchment 1S: 10-acre Drainage Area

Runoff = 32.26 cfs @ 12.09 hrs, Volume= 2.192 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
10.000	82	Dirt roads, HSG B
10.000		100.00% Pervious Area

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

Summary for Subcatchment 2S: 5-acre Drainage Area

Runoff = 16.13 cfs @ 12.09 hrs, Volume= 1.096 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
5.000	82	Dirt roads, HSG B
5.000		100.00% Pervious Area

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

Summary for Subcatchment 5S: 10-acre Drainage Area

Runoff = 32.26 cfs @ 12.09 hrs, Volume= 2.192 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
10.000	82	Dirt roads, HSG B
10.000		100.00% Pervious Area

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

Summary for Subcatchment 7S: 5-acre Drainage Area

Runoff = 16.13 cfs @ 12.09 hrs, Volume= 1.096 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
5.000	82	Dirt roads, HSG B
5.000		100.00% Pervious Area

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

Summary for Reach 3R: 10-acre Swale >5% slope

Inflow Area = 10.000 ac, 0.00% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 32.26 cfs @ 12.09 hrs, Volume= 2.192 af
Outflow = 32.00 cfs @ 12.10 hrs, Volume= 2.191 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.35 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 0.6 min

Peak Storage= 440 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 49.53 cfs

Custom cross-section, Length= 100.0' Slope= 0.0500 '/'
Constant n= 0.030 Short grass
Inlet Invert= 5.00', Outlet Invert= 0.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
3.00	-1.00	1.00
6.00	-1.00	1.00
9.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	3.0	0	0.00
1.00	6.0	9.3	600	49.53

Summary for Reach 4R: 5-acre Swale <5% slope

Inflow Area = 5.000 ac, 0.00% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 16.13 cfs @ 12.09 hrs, Volume= 1.096 af
Outflow = 15.68 cfs @ 12.11 hrs, Volume= 1.095 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.59 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.90 fps, Avg. Travel Time= 1.9 min

Peak Storage= 624 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 18.92 cfs

Custom cross-section, Length= 100.0' Slope= 0.0050 '/'
Constant n= 0.030 Short grass
Inlet Invert= 0.50', Outlet Invert= 0.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
3.00	-1.00	1.00
7.00	-1.00	1.00
10.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	7.0	10.3	700	18.92

Summary for Reach 6R: 10-acre Swale <5% slope

Inflow Area = 10.000 ac, 0.00% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 32.26 cfs @ 12.09 hrs, Volume= 2.192 af
Outflow = 31.55 cfs @ 12.11 hrs, Volume= 2.190 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.16 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1,023 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 1.50' Flow Area= 11.3 sf, Capacity= 36.76 cfs

Custom cross-section, Length= 100.0' Slope= 0.0050 '/'
Constant n= 0.030 Short grass
Inlet Invert= 0.50', Outlet Invert= 0.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
4.50	-1.50	1.50
7.50	-1.50	1.50
12.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	3.0	0	0.00
1.50	11.3	12.5	1,125	36.76

Summary for Reach 8R: 5-acre Swale >5% slope

Inflow Area = 5.000 ac, 0.00% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 16.13 cfs @ 12.09 hrs, Volume= 1.096 af
Outflow = 15.98 cfs @ 12.10 hrs, Volume= 1.096 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.35 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.55 fps, Avg. Travel Time= 0.7 min

Peak Storage= 255 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 29.60 cfs

Custom cross-section, Length= 100.0' Slope= 0.0500 '/'
Constant n= 0.030 Short grass
Inlet Invert= 5.00', Outlet Invert= 0.00'

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
3.00	-1.00	1.00
4.00	-1.00	1.00
7.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	1.0	0	0.00
1.00	4.0	7.3	400	29.60

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APPENDIX E

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Sweeping Schedule and Reciepts

All parking areas, sidewalks, driveways and other impervious surfaces (except roofs) shall be swept clean of sand, litter and any other pollutants at least twice a year, once between November 14 and December 15 (after leaf fall) and once during the month of April (after snow melt) and at other times as may be necessary. The following table shall be completed by a member of the Pollution Prevention Team (PPT) after each sweeping. Reciepts shall be kept in a pocket accompanying the schedule sheets in this attachment

Date (MM/DD/YY)	Company/Person Sweeping	Supervising Team Member	Comments

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APPENDIX F

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Potential Spill Location Information

Spill cleanup equipment is kept

_____

(where)

And includes-

_____

(what; speedi-dri, brooms, etc.)

And all personal are instructed in its location and use.

Types of materials present on-site which could potentially spill and discharge to stormwater include:
1.
2.
3.
4.
5.
6.

Areas where spills may potentially occur and discharge to stormwater include:
1.
2.
3.
4.
5.
6.

Measures used to minimize the possibility of spills include:
1.
2.
3.
4.
5.
6.

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APPENDIX G

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Spill Incident Recording Form

A history of spills and/or leaks is shown below. (*Make additional copies of table if needed).*

Date (MM/DD/YY)	(check one)		Location (as indicated	Description				Response Procedures	Measures to prevent reoccurance
	Spill	Leak		Type of Material	Quantity	Source if Known	Reason		

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APPENDIX H

Connecticut Department of Environmental Protection
Oil and Chemical Spill Response Division
Report of Petroleum or Chemical Product Discharge, Spillage or Release

1. When did the incident occur? Date___/___/___ Time
month/day/year

2. Where did the incident occur?

_____

_____

3. How did the incident occur? (describe the cause)

_____

_____

4. Under whose control was the hazardous material at the time of the incident?
Name: _____

Mailing & Street Address: _____

Town:_____State: _____ Zip:_____Phone:_____

5. Who is the owner of the property onto which the spill occurred?

_____

If this is a corporate property or jointly owned property, who represents the owner?

Corporate Property ☐ Jointly-owned property ☐

Name:_____

Mailing & Street address_____

Town:_____ State:____ Zip:_____ Phone:_____

6. When was the incident verbally reported to the Department of Environmental Protection?
Date___/___/____ Time ____:____
Month/day/year

7. Who reported the incident and whom were they representing?
Name:_____

Mailing & Street Address:_____

Town:_____State: ____ Zip:_____Phone:_____

8. What were the chemicals or petroleum products, etc. released, spilled or discharged? Give an exact description of each of the materials involved in the incident, including chemical names, percent concentrations, trade names, etc.

   If the chemicals are Extremely Hazardous substances or CERCLA hazardous substances they must be identified as such and include the reportable quantity (RQ). Please attach a Material Safety Data Sheet (MSDS) for each chemical involved.

   What were the quantities of hazardous materials that were released, spilled or discharged to each environmental medium (air, surface water, soil, and/or ground water)? [NOTE: Connecticut General Statutes requires the reporting of any amount of any substance or material released to the environment].

9. Did any of these hazardous materials travel beyond the property line? [NOTE: Materials that enter the ground water are considered to have gone beyond the property line.]

10. What actions were taken to respond to and contain the release, spill or discharge?

11. What actions are being taken to prevent reoccurrence of an incident of this type? (Attach additional sheets if necessary.)

_____
_____
_____

12. Were there any injuries as a result of the incident? If so, list the names of injured individuals, their addresses, phone numbers and describe their injuries. (Attach additional sheets if necessary)

Name:_____

Mailing & Street Address:_____

Town:_____State:_____Zip:_____Telephone:_____

13. What is the appropriate advice regarding medical attention necessary for exposed individuals?

_____
_____
_____

14. Are there any known or anticipated health risks, acute or chronic, associated with the release of these hazardous materials or medical advice that should be communicated?

_____
_____
_____

15. Was the incident completely cleaned up by the time this report was submitted? If not, what are the anticipated remedial actions and their duration?

_____
_____
_____

16. CERTIFICATION: I hereby affirm that the foregoing statement is true to the best of my knowledge.

_____
Signature Title Date

_____
Print Name Telephone

_____
Street Address/P.O. Box City/Town State & Zip

This form may be reproduced as long as it contains all of the information requested and is on an 81/2 X 11 sheet of white paper, black type format. For serious incidents the questions may be answered in narrative format which must include the preparer's affidavit.

Mail to:

State of Connecticut
Department of Environmental Protection
Bureau of Waste Management
Oil and Chemical Response Division
79 Elm Street
Hartford, CT 06106-5127
www.dep.state.ct.us

Phone: Routine calls (860) 424-3024
Emergency 24 hrs (860) 424-3338

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APPENDIX I

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Monthly Inspection Checklist for Year 20___

The site is inspected weekly for trash and debris. The table on this page is initialed each month by a member of the PPT. If any problems are observed, write "No" in the "OK?" column and note the problem and measures taken in the space in the following table. Make a new copy of this table for each new year.

Date (List Day	Initials	OK?	Problems Noted and Measures Taken
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Drainage Structures and outfalls were cleaned on _____ ___, _____ (Month, day, year)			

By

_____

(Company)

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APPENDIX J

Project Name: Nutmeg Solar Project

Report Number:	Page:

Stormwater Pollution Control Plan

Weekly Inspection Checklist for Year 20___

The site is inspected weekly for trash and debris. The table on this page is initialed each week by a member of the PPT. If any problems are observed, write "No" in the "OK?" column and note the problem and measures taken in the space following the table. Make a new copy of this table for each new year

Date (MM/DD/YY)	Initials	OK?	Date (MM/DD/YY)	Initials	OK?	Date (MM/DD/YY)	Initials	OK?

Comments or problems and measures taken:

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Inspection Report Form for Stabilization Measures

Report Number:	Page:

Project Phase:

☐ Initial ☐ Intermediate ☐ Final

Inspector: _____ **Date:** _____

No. of Days Since Last Rainfall: _____ **Inches:** _____

Area	Date Last Disturbed	Date of Next Disturbance	Stabilized?	Stabilized With	Condition

Stabilization Notes:

Stabilization Key

CE = Construction Entrance TV = Temporary Vegetation

PV = Permanent Vegetation

To be performed by: _____ **On or before:** _____

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Inspection Report Form for Stabilization Measures

Report Number:	Page:

Project Phase:

☐ Initial ☐ Intermediate ☐ Final

Inspector: _____ **Date:** _____

No. of Days Since Last Rainfall: _____ **Inches:** _____

Control Location	In Place?	Condition	Sediment Depth	Washed Out/ Overtopped?

Structural Notes:

To be performed by: _____ **On or before:** _____

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Inspection Report Form for Stabilization Measures

Report Number:	Page:

Project Phase:

☐ Initial ☐ Intermediate ☐ Final

Inspector: _____ **Date:** _____

No. of Days Since Last Rainfall: _____ **Inches:** _____

Summary of Required Changes

Reasons for Change

To be performed by: _____ **On or before:** _____

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Inspection Report Form for Stabilization Measures

Report Number:	Page:

Project Phase:

☐ Initial ☐ Intermediate ☐ Final

Inspector: _____ **Date:** _____

No. of Days Since Last Rainfall: _____ **Inches:** _____

Comments

Maintenance and Other Actions Required (Not Noted Elsewhere):

To be performed by: _____ **On or before:** _____

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Inspection Report Form for Stabilization Measures

Report Number:	Page:

This certification must be completed after each inspection to signify that the inspection has been properly completed and the site has been found to be in compliance with the Storm ater Pollution Control Plan.

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

Signed: _____

Name: _____

Title: _____

Company: _____

Address: _____

Telephone: _____

Date: _____

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APPENDIX K

Project Name: Nutmeg Solar Project

Stormwater Pollution Control Plan

Comprehensive Annual Stormwater Evaluation and Inspection Report

Once a year, a member of the PPT shall conduct a Comprehensive Annual Stormwater Evaluation and Inspection of all aspects and provisions of the SWPCP. The following report is prepared and a copy maintained on site in the files of the facility. The Comprehensive Annual Stormwater Evaluation and Inspection Report is reviewed and signed by the same party who signed the registration or by their replacement of equivalent position.

Inspection:

Date of Inspection:

Reviewed By:

Update the PPT if necessary. PPT updated? [ ] Yes [ ] No

Review the SMP. Areas of SMP need to be updated? [ ] Yes [ ] No

Review the checklists within the Attachments K & L of the SWPCP. Update the checklists, spill plan and maintenance practices as necessary. Changes to the checklists, spill plan or maintenance practices are noted here and in the appropriate section of the Plan. (Copy this sheet as necessary).

Additional Comments:

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APPENDIX L

Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, issued 8/21/13, effective 10/1/13
Stormwater Monitoring Report

SITE INFORMATION

Permittee: _____

Mailing Address: _____

Business Phone: _____ ext.: _____ Fax: _____

Contact Person: _____ Title: _____

Site Name: _____

Site Address: _____

Receiving Water (name, basin): _____

Stormwater Permit No. GSN _____

SAMPLING INFORMATION (Submit a separate form for each outfall)

Outfall Designation: _____ Date/Time Collected: _____

Outfall Location(s) (lat/lon or map link): _____

Person Collecting Sample: _____

Storm Magnitude (inches): _____ Storm Duration (hours): _____

Size of Disturbed Area at any time: _____

MONITORING RESULTS

Sample #	Parameter	Method	Results (units)	Laboratory (if applicable)
1	Turbidity			
2	Turbidity			
3	Turbidity			
4	Turbidity			

(provide an attachment if more than 4 samples were taken for this outfall) Avg =

STATEMENT OF ACKNOWLEDGMENT

I certify that the data reported on this document were prepared under my direction or supervision in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The information submitted is, to the best of my knowledge and belief, true, accurate and complete.

Authorized Official: _____

Signature: _____ Date: _____

Please send completed form to:

DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE ASSURANCE
79 ELM STREET
HARTFORD, CT 06106-5127
ATTN: NEAL WILLIAMS

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APPENDIX M

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

Notice of Termination Form

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

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

Part I: Registrant Information

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

   Registrant:
3. Site Address:

   City/Town: State: Zip Code:
4. Date all storm drainage structures were cleaned of construction sediment:

   Date of Completion of Construction:

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

   ☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill

   ☐ Other (describe):

Part II: Certification

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

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

Note: Please submit this Notice of Termination Form to:

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

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APPENDIX N

NEER - Nutmeg - Estimated Stormwater Control Measure Costs							
Description	**Quantity**	**Unit**	**Unit price[$]**	**Total [$]**	**Comments**		
Temporary Erosion & Sediment Control	39,000	lf	$8.92	$347,719.44			
Silt Fencing	78,000	lf	$3.40	$265,434.69			
Furnish & Install Straw Wattles	19,500	lf	$3.40	$66,358.67			
Furnish & Install Hay or Straw Bales	780	Ea.	$20.42	$15,926.08			
Drainage Pipe 18"	300	lf	$47.64	$14,292.64			
Drainage Pipe 6"	70	lf	$42.88	$3,001.45			
Hydroseed	120	Ac.	$988.23	$118,588.05			
Mulch	120	Ac.	$2,264.70	$271,764.28			
Outlet Protection	6	Ea.	$2,041.81	$12,250.83			
Temporary Sediment Trap	11	Ea.	$12,869.56	$141,565.17	Assume	2101.01	Cy/ Sediment Trap
Temporary Sediment Basin	10	Ea.	$28,313.03	$283,130.33	Assume	4622.22	Cy/ Sediment Basin
Temporary Soil Stockpiling	1	LS	$20,000.00	$20,000.00			
DEEP Approved Monitor Visit	26	Ea.	$1,500.00	$39,000.00			
Sub Total				**$1,251,312.19**			
Contingency (10%)				$125,131.22			
Contractor G&A (10%)				$125,131.22			
Grand Total				**$1,501,574.63**			