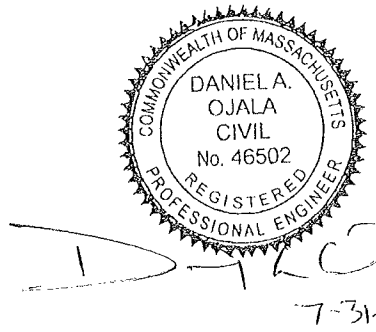
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939 MAIN ST / ROUTE 6A YARMOUTHPORT, MA 02675
(508) 362-4541 FAX (508) 362-9880

STORMWATER REPORT

Project 2022

#27 Park Street
Hyannis, MA



DATE: 7-31-2019

PREPARED FOR: Cape Cod Hospital

STORMWATER REPORT

 # 27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

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1. Overview of Stormwater Management System/Compliance
2. Stormwater Operations and Maintenance Plan (also see full size project plans for system layout)
3. Drainage Calculations with Drainage Area sketch plan
4. Construction General Permit filing and construction period SWPPP

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939 MAIN ST / ROUTE 6A YARMOUTHPORT, MA 02675
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STORMWATER NARRATIVE:
Cape Cod Hospital- Project 2022
#27 Park Street, Hyannis, MA 7-31-19 **© 2019 down cape engineering, inc.**

OVERVIEW OF STORMWATER MANAGEMENT SYSTEM/ NARRATIVE INDICATING STORMWATER STANDARDS COMPLIANCE:

The drainage systems specified for proposed addition and related parking areas at the Cape Cod Hospital have been designed in accordance with Town of Barnstable Subdivision Rules and Regulations, the State Stormwater Management Guidelines, and the Cape Cod Commission guidelines. The project consists of a Hospital addition associated utilities and parking. Full compliance with all Stormwater Standards is met by the design. The proposed use is an institutional type use in a MS Business zoning district located in a downtown zoning district in Hyannis (Barnstable), MA, and is connected to municipal sewer. The site is not a "Land Use with Higher Potential Pollutant Load" per the State Stormwater Management Guidelines, so infiltration is utilized. The underlying material is sand, hydrologic group A under the guidelines.
During construction, the existing drainage systems, a temporary construction period stormwater area, and the installation of a silt fence near the downgradient border and construction aprons will provide full protection of the adjacent roadways and the wetland resources across the street from the property. The erosion control fence is to be inspected after every rain event and is to be maintained until the site is stabilized and ready for occupancy. A Stormwater Pollution Prevention plan has been prepared and a NPDES General Permit for Storm Water Discharges form Construction Activities (Construction General Permit, or CGP), will be obtained and submitted during the Notice of Intent process.

The proposed rain gardens overflow to deep sump hooded catch basins installed in an off-line configurations, and the design meets the 44% TSS removal prior to infiltration. The systems are designed to contain and infiltrate the design storm event onsite and provide the required Total Suspended Solids (TSS) removal mandated by the State Stormwater Management Guidelines. The parking lot is to be swept free of sand each spring, on or about April 1st.

Best Management Practices incorporated in the project are as follows:

-Bioretention Areas/Rain Gardens (90% TSS Removal)
-Deep Sump Hooded Catch Basins offline (25% TSS Removal)
-Infiltration Trenches/Pit (80% TSS Removal)
-Street Sweeping (10% TSS Removal)

Compliance with the 10 State Stormwater Standards (in order in bold with explanation in lighter font following the numbered Standards) is as follows:

1. **No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.**
   The project prevents existing stormwater from entering waters of the Commonwealth, and no new outfalls are proposed. All additions and parking areas are infiltrated onsite. Only existing clean roof runoff from interior areas of the Hospital discharge roof runoff to an existing outfall pipe, so this standard is met and exceeded. The local regulation require a 25 year storm be infiltrated 100% onsite, exceeding the State requirements.

2. **Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.**
   The sandy soils permit onsite infiltration, as shown by the attached calculations, the proposed drainage system will infiltrate a 25 year storm event onsite per the attached calculations, so this Standard is easily met by the proposal. Coastal storm flowage is expected on the Southern fringe of the site but the standard is met nonetheless.

3. **Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.**
   Local Town of Barnstable requirements call for all stormwater to be infiltrated onsite for commercial sites, and the proposed development complies with this standard, so the annual recharge is easily met. Rain gardens are utilized wherever practicable, and the impervious surfaces are all infiltrated onsite to recharge the aquifer.

4. **Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:**

   a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
   b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
   c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

   A long term pollution prevention plan is attached, in excess of the correct volumes are captured, and pretreatment is provided per the Handbook, so compliance with #4 is assured.

5. For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00. The typical parking areas and roof of the Hospital redevelopment is not applicable to

higher potential pollutant loads per the Handbook, so this standard is "Not Applicable" for this site. (note that 44% TSS removal pretreatment is provided prior to infiltration).

6. Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply. The site is not within a Zone 2 to a public well, and no new stormwater discharges are proposed, and 44% TSS removal prior to infiltration is provided, hence the project is compliant with the standard.

7. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions. This project does not qualify as a redevelopment, and fully complies with the standards.

8. A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented. A Stormwater Pollution Prevention plan has been prepared and a NPDES General Permit for Storm Water Discharges form Construction Activities (Construction General Permit, or CGP), will be obtained and submitted during the Notice of Intent process. A reduced copy of the SWPPP is attached.

9. A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed. The long term O&M plan is attached.

10. All illicit discharges to the stormwater management system are prohibited. No illicit discharges are allowed or planned related to this site. Additional documentation will be filed per the stormwater instructions.

As shown above and in the following calculations, the development Project 2022 at #27 Park Street is compliant with the State Stormwater Management Guidelines.

STORMWATER
OPERATIONS AND MAINTENANCE PLAN:
Cape Cod Hospital

#27 Park Street, Hyannis, MA

DATE: 7-31-19

Prepared by: down cape engineering, inc.
939 Route 6a Yarmouthport, MA 02675
Ph. 1-508-362-4541
Fax 1-508-362-9880

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

 # 27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

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1. Owner of Stormwater System and Responsible Party for Operation and Maintenance
2. Overview of Stormwater Management System
3. Schedule of Inspection and Maintenance of System
4. Source Control Best Management Practices
5. Plans of Stormwater BMPs location for maintenance
6. Emergency Spill Contingency Plan
7. Pollution prevention plan
8. Estimated operations and maintenance budget
9. Operations and maintenance Log Forms
10. Overview of Construction Period Stormwater Management System
11. Plans of Construction Period Pollution Prevention and Erosion and Sedimentation Control

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

 # 27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

OWNER OF STORMWATER SYSTEM AND RESPONSIBLE PARTY FOR OPERATIONS AND MAINTENANCE:

OWNER:

Cape Cod Hospital
Attn: William Hafferty
P.O.Box 640
27 Park Street
Hyannis, MA 02601
Phone: 1-508-862-5104

RESPONSIBLE PARTY:

Cape Cod Hospital
Attn: William Hafferty
P.O.Box 640
27 Park Street
Hyannis, MA 02601
Phone: 1-508-862-5104

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

 # 27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

OVERVIEW OF STORMWATER MANAGEMENT SYSTEM:

The drainage systems specified for proposed redevelopment area have been designed in accordance with Town of Barnstable Subdivision Rules and Regulations and engineering department guidelines. The system has been designed to fully comply with the Stormwater Stormwater Management Guidelines.
The system utilizes various drainage systems. In many areas curb inlets lead to traprock swales leading to vegetated rain garden drainage area. Deep sump hooded catch basins leading to stone filled infiltration trenches and leach pits are used for overflow infiltration. The proposed uses are a typical parking lots, and are not a "Land Use with Higher Potential Pollutant Load" per the State Stormwater Management Guidelines, and onsite infiltration of the full design storm is utilized. The underlying material is sand, hydrologic group A under the guidelines.
During construction, the existing drainage systems and temporary retention areas and the installation of silt controls near the down gradient border will provide protection. The erosion control fence and retention area is to be inspected after every rain event and is to be maintained until the site is stabilized.
Where practicable, the stormwater is directed to swales and a rain garden, overflow to deep sump hooded catch basins installed in an off-line configurations, removing in excess of the 44% TSS removal prior to direct infiltration. The system is designed to contain and infiltrate the design storm event onsite and provide the required Total Suspended Solids (TSS) removal mandated by the State Stormwater Management Guidelines. The parking lot is to be swept free of sand each spring, on or about April 1st.

Best Management Practices incorporated in the project are as follows:

-Deep Sump Hooded Catch Basins offline (25% TSS Removal)
-Secondary offline deep sump hooded basin (25% TSS Removal)
-Infiltration Trenches/Pit/Rain garden (80% TSS Removal)
-Street Sweeping (10% TSS Removal)

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

SCHEDULE OF INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM:

SCHEDULE OF INSPECTION AND MAINTENANCE:

The stormwater management system proposed for the site requires regular inspection and maintenance to ensure proper operation and effectiveness.

1. It is recommended that the stormwater system proposed for the site be inspected twice annually, and sediment removed from the catch basins as required. The inspection should involve physical inspection of the catch basins and manholes for sediment buildup and inspecting the trenches for solids carryover. If significant solids are found in the basins (more than 2'), basins shall be mechanically cleaned and the sediment disposed of offsite in compliance with all local, state, and federal regulations. If slow infiltration is noted during storm events, the infiltration trenches or drywells should be repaired or rebuilt as necessary to restore function. If standing water is observed in the bottom of the bioinfiltration areas, any fines shall be removed and the bottom scarified to increase infiltration as needed to prevent standing water more than 72 hours after a rain event. Trash shall be removed from bioinfiltration areas as required. Plants shall be inspected annually and replanted if dead.

2. The parking areas shall be swept free of sand after the last snowfall of each season, generally on or about April 1st.

3. Any soils tracked into public ways shall be promptly swept up.

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

SOURCE CONTROL BEST MANAGEMENT PRACTICES:

1. The pavement should be swept after the last snowfall of the season (sweep on or about April 1st) and when necessary to remove accumulated debris, trenches and drywells to be inspected annually.
2. No illicit discharges of any type are allowed into the storm water drainage system or septic/sewer system. Personnel should be instructed in proper disposal of any cleaning materials, paints, chemicals, or other potentially harmful substances utilized on or about the property.

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

34 PARK STREET, HYANNIS, CAPE COD HOSPITAL

EMERGENCY SPILL CONTIGENCY PLAN:

1. The owner of the facility shall have a designated person with overall responsibility for spill response.

2. A summary of this plan shall be posted in a prominent location in the building. The Summary shall identify the phone numbers of regulatory agencies and individuals to be contacted in the event of a spill.

3. In the event of a spill, the following shall be notified:

a) Hyannis Fire Department (for a gasoline or hazardous materials spill)	1-508- 775-1300
b) Department of Environmental Protection Emergency Response	1-508-946-2850
c) Barnstable Water Pollution Control	1-508-790-6335
d) Barnstable Board of Health	1-508-862-4664
e) Barnstable Conservation Department	1-508-862-4093

4. Notification of authorities for the cleanup of spills shall be done immediately upon discovery of a spill.

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

34 PARK STREET, HYANNIS, CAPE COD HOSPITAL

POLLUTION PREVENTION PLAN:

#34 Park Street, Hyannis, MA

1. **Construction Period: During Construction, fueling of vehicles shall be limited to the paved surface of the site, and a spill control kit shall be stored onsite during construction. No maintenance of construction vehicles is allowed onsite except for refueling and greasing of fittings.**

2. **Any loose debris shall be cleaned up daily.**

3. **Illicit discharges to the stormwater management system or waters of the Commonwealth are prohibited, and personnel shall be instructed that no such discharges are allowed.**

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

34 PARK STREET, HYANNIS, CAPE COD HOSPITAL

ESTIMATED OPERATIONS AND MAINTENANCE BUDGET:

Inspections: Twice yearly inspection of drainage system:
Visual inspection, probe sediment depth, review for signs of drainage issues, ...Est. $250/visit x 2 = $500/year.

Catch Basin Cleaning: Est. 8 basins/year: $1,600.00

Street Sweeping: Est. $2,000/visit.

CONSTRUCTION PERIOD STORMATER POLLUTION PREVENTION INSPECTION AND MAINTENANCE LOG FORM-

Project Name: #27Park Street, Hyannis, MA
Owner: Cape Cod Hospital
Attn: William Hafferty
Phone: 508-862-5104

Date	Description of Inspection or Maintenance (sweep lot, clean basins, remove silt from temp areas, etc.)	Person	Comments

Long Term Stormwater Maintenance/Evaluation Checklist
#27 Park Stree, Hyannis, MA 02601 Date: 7-31-2019

Best Management Practice	Maintenance Item and Key Items to Check	Frequency of Inspection	Date Inspected	Insp. Initials	Frequency of Cleaning	Cleaning or Repair Needed? ☐ Yes ☐ No	Date of Cleaning or Repair	Performed By:
Street Sweeping	Vacuum Sweeper all paved surfaces	1X per year	/ /		1X per year	☐ Yes ☐ No	/ /	
Deep Sump and Hooded Catch Basins	Remove sediment 1X / YR if req.'d	4X per year	/ /		1X per year if req.'d	☐ Yes ☐ No	/ /	
Bioinfiltration Swales	Inspect Inlets, vegetation, overflow outlets, drain time <4 days, remove trash 2X/YR.remove sediment as req.	2X per year	/ /		2X first year then 1X per year	☐ Yes ☐ No	/ /	
Infiltration Fields	Inspect for signs of backup	1X per year	/ /		replace as req.'d	☐ Yes ☐ No	/ /	
Other:						☐ Yes ☐ No	/ /	

Note: Duplicate Checklist Form as required.

off 508-362-4541
fax 508 362-9880

down cape engineering, inc.
CIVIL ENGINEERS
LAND SURVEYORS
939 Main Street — YARMOUTHPORT, MASS.

LONG TERM STORMATER POLLUTION PREVENTION INSPECTION AND MAINTENANCE LOG FORM-

Project Name: #27 Park Street, Hyannis, MA
Owner: Cape Cod Hospital
Attn: William Hafferty
Phone: 508-862-5104

Date	Description of Inspection or Maintenance (sweep lot, clean basins, plant maintenance in rain gardens, etc.)	Person	Comments

STORMWATER OPERATIONS AND MAINTENANCE PLAN:

27 PARK STREET, HYANNIS, CAPE COD HOSPITAL

CONSTRUCTION PERIOD STORMWATER OPERATIONS AND MAINTENANCE PLAN:

#27 Park Street, Hyannis, MA

OVERVIEW OF CONSTRUCTION PERIOD STORMWATER MANAGEMENT SYSTEM:

The construction period drainage system for the proposed development area will be to excavate and utilize a proposed temporary retention area in an interim area south of the addition. This area as well as the existing drainage systems until the final drainage areas can be constructed. These systems can continue to be utilized while the site is redeveloped. The underlying material is sand, hydrologic group A under the guidelines.
During construction, the existing drainage system and the installation of silt controls near the down gradient border will provide protection. The erosion control fence is to be inspected after every rain event and is to be maintained until the site is stabilized.
See attached SWPPP and CGP filing for additional information.

down cape engineering, inc.
CIVIL ENGINEERS & LAND SURVEYORS
939 MAIN ST / ROUTE 6A YARMOUTHPORT, MA 02675
(508) 362-4541 FAX (508) 362-9880

COMMONWEALTH OF MASSACHUSETTS
DANIEL A. OJALA
CIVIL
No. 46502
REGISTERED PROFESSIONAL ENGINEER

7-31-19

DRAINAGE CALCULATIONS:
Cape Cod Hospital- Project 2022
#27 Park Street, Hyannis, MA 7-31-19 **© 2019 down cape engineering, inc.**

DRAINAGE CALCULATIONS:

The drainage systems specified for proposed addition and related parking areas at the Project 2022 Addition to the Cape Cod Hospital have been designed in accordance with Town of Barnstable Subdivision Rules and Regulations, the State Stormwater Management Guidelines, and the Cape Cod Commission guidelines. The project consists of a Hospital addition associated utilities and parking. Full compliance with all Stormwater Standards is met by the design. The underlying material is sand, hydrologic group A under the guidelines, multiple testhole and soil borings were performed on the site.

The proposed rain gardens overflow to deep sump hooded catch basins installed in an off-line configurations, and the design meets the 44% TSS removal prior to infiltration. The systems are designed to contain and infiltrate the design storm event onsite and provide the required Total Suspended Solids (TSS) removal mandated by the State Stormwater Management Guidelines.

The drainage areas are as delineated on the attached Drainage Area Sketch Plan, which covers the 17 acre main campus, the relevant areas under consideration/modification are shown as DA1- DA12.

The roof drainage is collected and infiltrated directly to recharge the aquifer, the main roof is shown on the attached Drainage Area Sketch Plan as Drainage Area 4, or DA4.

The Northern portions of the site are handled by systems designed during the Emergency Center addition, the southern end of the main parking's infiltration system is being adjusted by removing a section on the south and adding a section of leaching field on the North. The contributing drainage area for this system is shown as DA1 on the plan and attached HydroCAD calculations.

The drainage was designed utilizing bioretention where practicable, and deep sump hooded catch basins with secondary deep sump hooded manholes to remove the 44% TSS removal mandated by the State Stormwater Management guidelines. HydroCAD was utilized to model the stage/storage/discharge of the systems. The attached calculations indicate the systems are capable of fully infiltrating a 100 year storm onsite, as well as the design 25 year storm event. The main roof of the hospital utilizes an existing drain line which outfalls to the Hyannis inner harbor, this was installed in 1973, all discharges except for clean roof runoff have been eliminated from this line, and all new and redeveloped roof areas are being infiltrated directly onsite.

The southern parking areas which are redeveloped continue to utilize the extensive subsurface leaching, and have additional leaching fields or trenches attached as necessary. The bottom of the leaching systems are designed to maintain the required two feet of separation above the adjusted groundwater levels. As expected in an area adjacent tidal waters, the groundwater levels drop from north to south across the campus.

Drainage areas DA10, DA11, and DA12 are unchanged and the systems are functioning well, so calculations for these areas were not included. DA EC1, EC3, EC3, and EC4 are existing unchanged systems from the Emergency Center redevelopment, so are not included in the calculations either.

Best Management Practices incorporated in the project are as follows:

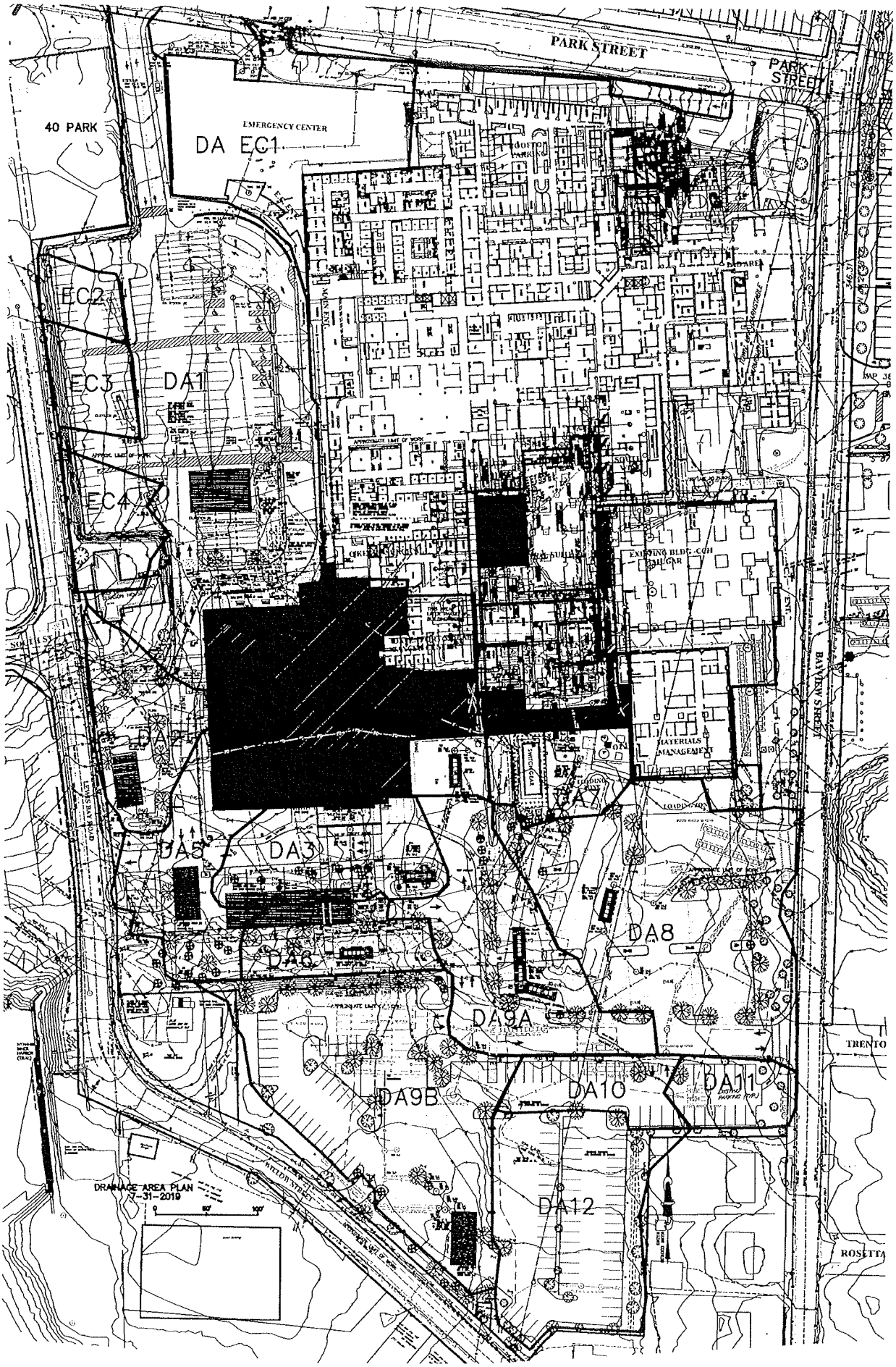
-Bioretention Areas/Rain Gardens (90% TSS Removal)
-Deep Sump Hooded Catch Basins offline (25% TSS Removal)
-Infiltration Trenches/Pit (80% TSS Removal)
-Street Sweeping (10% TSS Removal)

Compliance with the 10 State Stormwater Standards is shown with an attached summary.

The HydroCAD calculations show the highest modeled levels reached during a 100 year reoccurance events do not overtop the drainage structures, showing a very conservative and safe drainage design.

The predevelopment flow is mainly contained onsite, and the situation is improved by the newer fully compliant systems as shown in the attached calculations.

As shown in the following calculations, the development Project 2022 at #27 Park Street is compliant with the State Stormwater Management Guidelines, and local and regional standards.


PARK STREET
PARK STREET
40 PARK
EMERGENCY CENTER
DA EC1
EC2
EC3
DA1
EC4
DA2
DA5
DA3
DA6
DA8
DA9A
DA9B
DA10
DA11
DA12
TRENTO
ROSETTA
DRAINAGE AREA PLAN
7-31-2019

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA1

LEACHING FIELD - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
-FIELD ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF FIELD:	98	(FT.)
WIDTH OF FIELD:	60	(FT.)
INVERT OF STRUCTURES:	12.3	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	14.30	BOTTOM CATCH BASINS	7.63
		BOTTOM FIELD EL.	11.30

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
11.30	0.0	9.18
12.30	1822.8	9.48
13.30	3645.6	9.79
14.30	5468.4	10.10 (OVER)

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA2

LEACHING FIELD - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
-FIELD ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF FIELD:	50	(FT.)
WIDTH OF FIELD:	24	(FT.)
INVERT OF STRUCTURES:	14	(EL. ABOVE DATUM)
EFFECTIVE DIAMETER PITS:	14	(STONE + LPIT O.A. DIA)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	16.00	BOTTOM CATCH BASINS ELEV.	9.33
		BOTTOM FIELD EL.	13.00

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
13.00	0.0	1.87
14.00	372.0	2.03
15.00	744.0	2.19
16.00	1116.0	2.34 (OVER)

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA3

LEACHING TRENCH - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
TRENCH ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF TRENCH:	64	(FT.)
WIDTH OF TRENCH:	12	(FT.)
INVERT OF STRUCTURES:	13.5	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	15.50	BOTTOM CATCH BASINS	8.83
		BOTTOM TRENCH EL.	11.50

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
11.50	0.0	1.20
12.50	238.1	1.40
13.50	476.2	1.60
14.50	714.2	1.80
15.50	952.3	2.00

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA4

LEACHING FIELD - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
-FIELD ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF FIELD:	120	(FT.)
WIDTH OF FIELD:	35	(FT.)
INVERT OF STRUCTURES:	13	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	15.00	BOTTOM CATCH BASINS	8.33
		BOTTOM FIELD EL.	12.00

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
12.00	0.0	6.56
13.00	1302.0	6.93
14.00	2604.0	7.31
15.00	3906.0	7.68 (OVER)

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA5

LEACHING FIELD - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
-FIELD ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF FIELD:	50	(FT.)
WIDTH OF FIELD:	24	(FT.)
INVERT OF STRUCTURES:	12	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	14.00	BOTTOM CATCH BASINS	7.33
		BOTTOM FIELD EL.	11.00

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
11.00	0.0	1.87
12.00	372.0	2.03
13.00	744.0	2.19
14.00	1116.0	2.34 (OVER)

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA6

LEACHING TRENCH - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
TRENCH ONLY THIS DESIGN

INPUT VARIABLES:

LENGTH OF TRENCH:	32	(FT.)
WIDTH OF TRENCH:	12	(FT.)
INVERT OF STRUCTURES:	11.5	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	13.50	BOTTOM CATCH BASINS	6.83
		BOTTOM FIELD EL.	9.50

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
9.50	0.0	0.46
10.50	119.0	0.60
11.50	238.1	0.80
12.50	357.1	0.90
13.50	476.2	1.00

7/31/2019

HYDRO-CAD DRAINAGE ANALYSIS INFORMATION
STAGE-DISCHARGE AND STAGE STORAGE TABLE DA7

LEACHING TRENCH - SEE PLAN SECTION
3/4" - 1-1/2" WASHED STONE FOR SIZE SELECTED
TRENCH ONLY THIS DESIGN

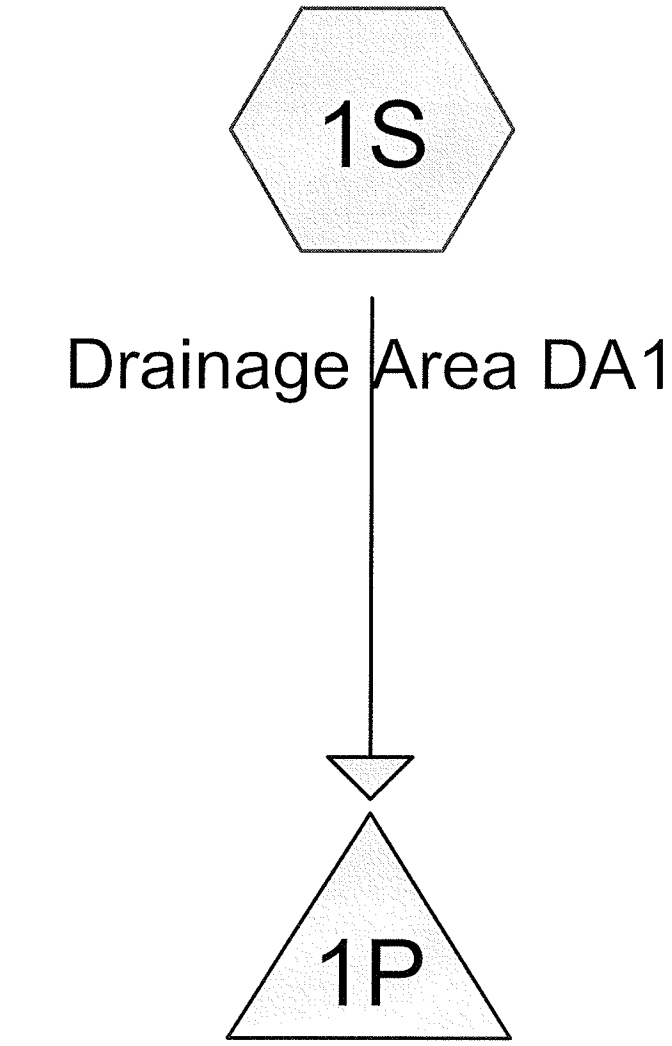
INPUT VARIABLES:

LENGTH OF TRENCH:	85	(FT.)
WIDTH OF TRENCH:	12	(FT.)
INVERT OF STRUCTURES:	10	(EL. ABOVE DATUM)
STONE VOID RATIO, E:	0.31	(FT3/FT3)
TOWN LEACH RATE:	0.7	(GPM/SF)

CALCULATED VALUES:

TOP OF PRECAST STRUCTURES ELEV.:	12.00	BOTTOM CATCH BASINS	5.33
		BOTTOM TRENCH EL.	8.00

ELEVATION (FT)	STORAGE (CU.FT.)	DISCHARGE (CFS)
8.00	0.0	1.59
9.00	316.2	1.86
10.00	632.4	2.12
11.00	948.6	2.39
12.00	1264.8	2.65



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA1
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.129	32	Woods/grass comb., Good, HSG A (1S)
1.814	98	Paved parking (1S)
1.943		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA1 Runoff Area=84,624 sf Runoff Depth>4.75"
Tc=5.0 min CN=94 Runoff=10.84 cfs 0.769 af

Pond 1P: Infiltration Storage Model Peak Elev=11.51' Storage=377 cf Inflow=10.84 cfs 0.769 af
Outflow=9.24 cfs 0.768 af

Total Runoff Area = 1.943 ac Runoff Volume = 0.769 af Average Runoff Depth = 4.75"
6.62% Pervious Area = 0.129 ac 93.38% Impervious Area = 1.814 ac

Subcatchment 1S: Drainage Area DA1

Time of Concentration

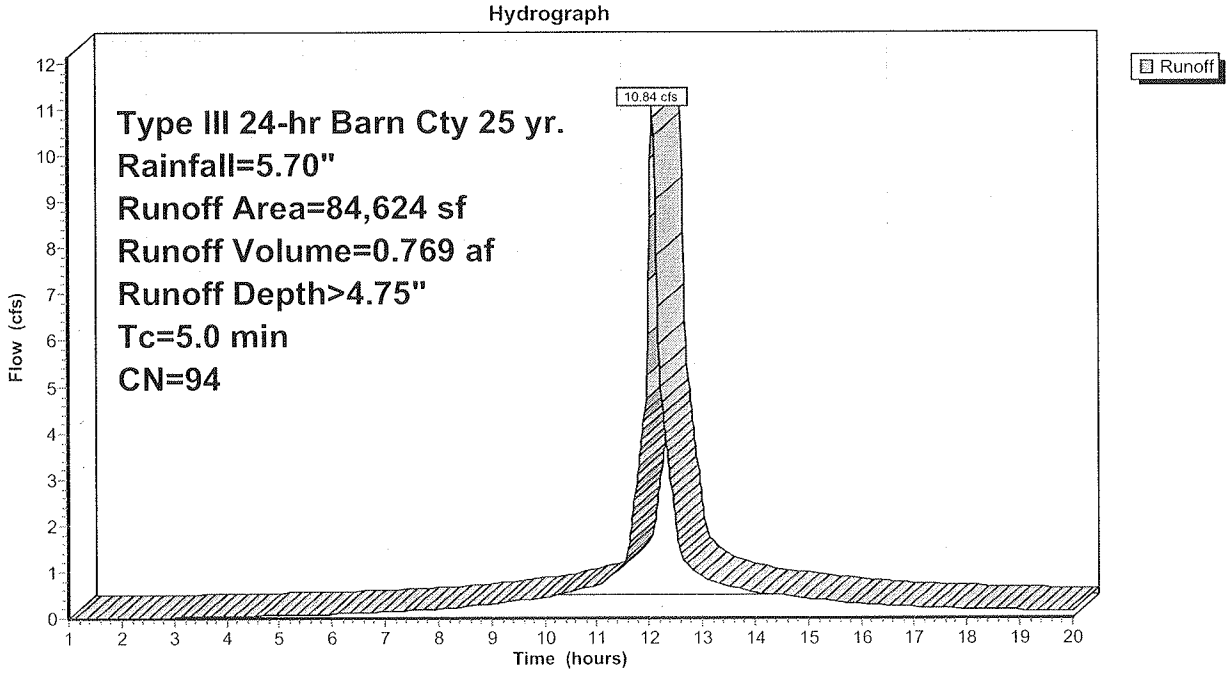
Runoff = 10.84 cfs @ 12.07 hrs, Volume= 0.769 af, Depth> 4.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
79,024	98	Paved parking
5,600	32	Woods/grass comb., Good, HSG A
84,624	94	Weighted Average
5,600		Pervious Area
79,024		Impervious Area

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

Subcatchment 1S: Drainage Area DA1



Hydrograph for Subcatchment 1S: Drainage Area DA1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	1.52	3.29
1.20	0.07	0.00	0.00	12.00	2.85	2.21	**7.30**
1.40	0.08	0.00	0.00	12.20	3.57	2.91	**5.36**
1.60	0.09	0.00	0.00	12.40	3.91	3.23	3.00
1.80	0.10	0.00	0.00	12.60	4.07	3.39	1.34
2.00	0.11	0.00	0.00	12.80	4.18	3.50	1.08
2.20	0.13	0.00	0.00	13.00	4.27	3.59	0.88
2.40	0.14	0.00	0.00	13.20	4.36	3.67	0.77
2.60	0.15	0.00	0.01	13.40	4.43	3.75	0.72
2.80	0.16	0.00	0.01	13.60	4.50	3.82	0.66
3.00	0.18	0.00	0.02	13.80	4.56	3.88	0.61
3.20	0.19	0.01	0.02	14.00	4.62	3.94	0.56
3.40	0.20	0.01	0.02	14.20	4.68	3.99	0.52
3.60	0.22	0.01	0.03	14.40	4.73	4.04	0.50
3.80	0.23	0.01	0.03	14.60	4.78	4.09	0.47
4.00	0.25	0.02	0.04	14.80	4.83	4.14	0.45
4.20	0.26	0.02	0.04	15.00	4.87	4.18	0.42
4.40	0.28	0.03	0.05	15.20	4.91	4.22	0.40
4.60	0.29	0.03	0.05	15.40	4.95	4.26	0.37
4.80	0.31	0.04	0.06	15.60	4.99	4.29	0.35
5.00	0.32	0.05	0.07	15.80	5.02	4.33	0.32
5.20	0.34	0.05	0.07	16.00	5.05	4.36	0.30
5.40	0.36	0.06	0.08	16.20	5.08	4.39	0.28
5.60	0.37	0.07	0.08	16.40	5.11	4.41	0.27
5.80	0.39	0.08	0.09	16.60	5.13	4.44	0.26
6.00	0.41	0.09	0.09	16.80	5.16	4.47	0.25
6.20	0.43	0.10	0.10	17.00	5.18	4.49	0.24
6.40	0.45	0.11	0.11	17.20	5.21	4.51	0.22
6.60	0.47	0.12	0.12	17.40	5.23	4.53	0.21
6.80	0.49	0.13	0.13	17.60	5.25	4.56	0.20
7.00	0.52	0.15	0.14	17.80	5.27	4.58	0.19
7.20	0.54	0.16	0.15	18.00	5.29	4.59	0.18
7.40	0.57	0.18	0.16	18.20	5.31	4.61	0.17
7.60	0.59	0.20	0.17	18.40	5.33	4.63	0.17
7.80	0.62	0.21	0.19	18.60	5.34	4.65	0.17
8.00	0.65	0.23	0.20	18.80	5.36	4.66	0.16
8.20	0.68	0.26	0.22	19.00	5.38	4.68	0.16
8.40	0.71	0.28	0.24	19.20	5.39	4.70	0.16
8.60	0.75	0.31	0.26	19.40	5.41	4.71	0.15
8.80	0.79	0.34	0.29	19.60	5.42	4.73	0.15
9.00	0.83	0.37	0.31	19.80	5.44	4.74	0.15
9.20	0.87	0.40	0.34	20.00	**5.45**	**4.76**	0.14
9.40	0.92	0.44	0.37				
9.60	0.97	0.48	0.39				
9.80	1.02	0.52	0.42				
10.00	1.08	0.57	0.45				
10.20	1.14	0.62	0.49				
10.40	1.20	0.67	0.54				
10.60	1.27	0.73	0.60				
10.80	1.34	0.80	0.65				
11.00	1.42	0.87	0.71				
11.20	1.52	0.95	0.84				
11.40	1.63	1.06	1.04				
11.60	1.79	1.20	1.48				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 1.943 ac, Inflow Depth > 4.75" for Barn Cty 25 yr. event
Inflow = 10.84 cfs @ 12.07 hrs, Volume= 0.769 af
Outflow = 9.24 cfs @ 12.12 hrs, Volume= 0.768 af, Atten= 15%, Lag= 2.7 min
Primary = 9.24 cfs @ 12.12 hrs, Volume= 0.768 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.51' @ 12.12 hrs Surf.Area= 0 sf Storage= 377 cf

Plug-Flow detention time=1.2 min calculated for 0.767 af (100% of inflow)
Center-of-Mass det. time=0.2 min (740.7 - 740.6)

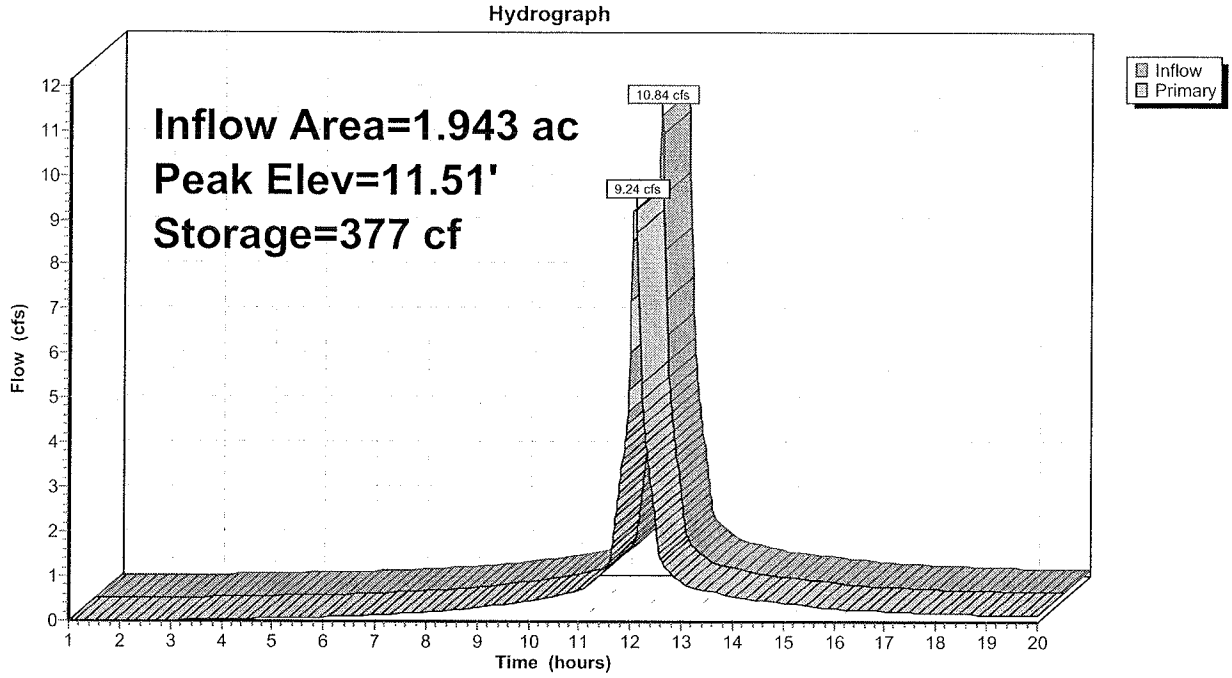
Volume	Invert	Avail.Storage	Storage Description
#1	11.30'	5,468 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.30	0
12.30	1,823
13.30	3,645
14.30	5,468

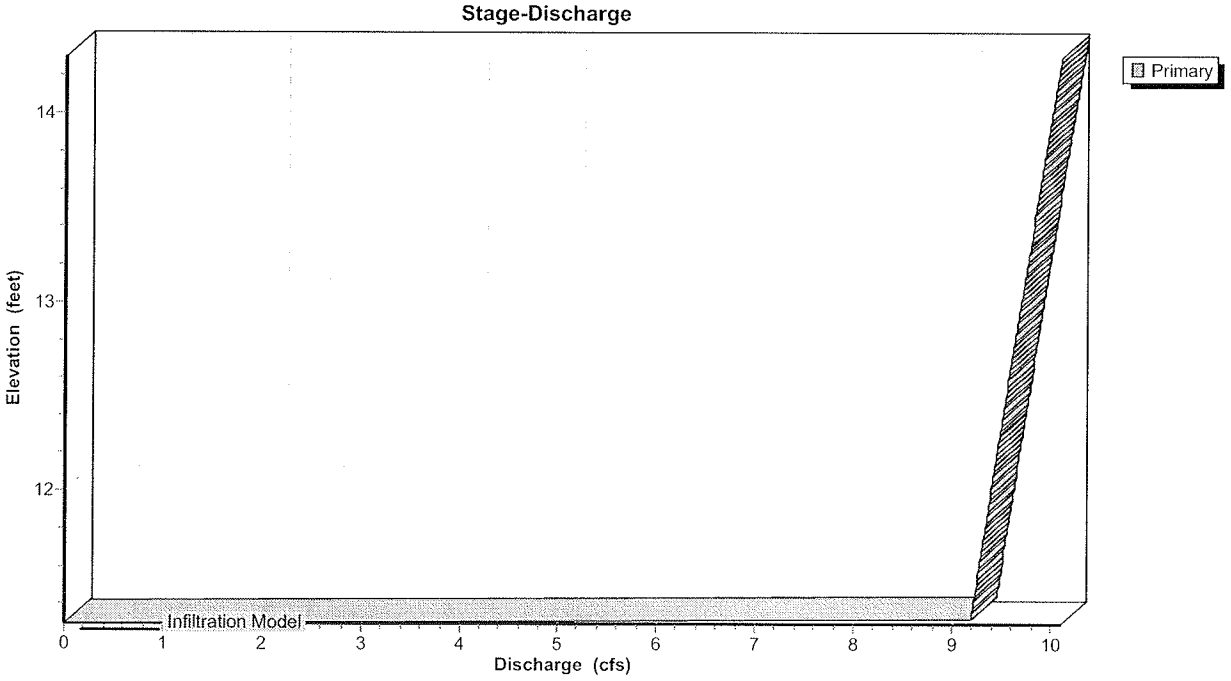
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 11.20 11.30 12.30 13.30 14.30 Disch. (cfs) 0.000 9.180 9.480 9.790 10.100

Primary OutFlow Max=9.24 cfs @ 12.12 hrs HW=11.50' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 9.24 cfs)

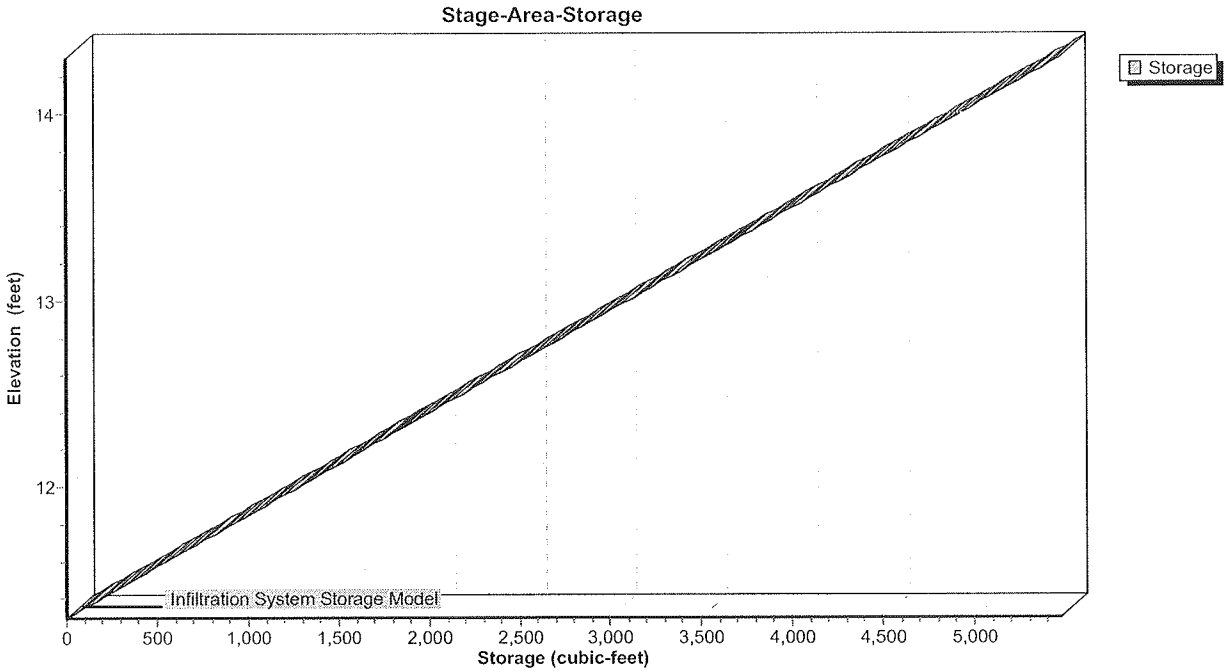
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

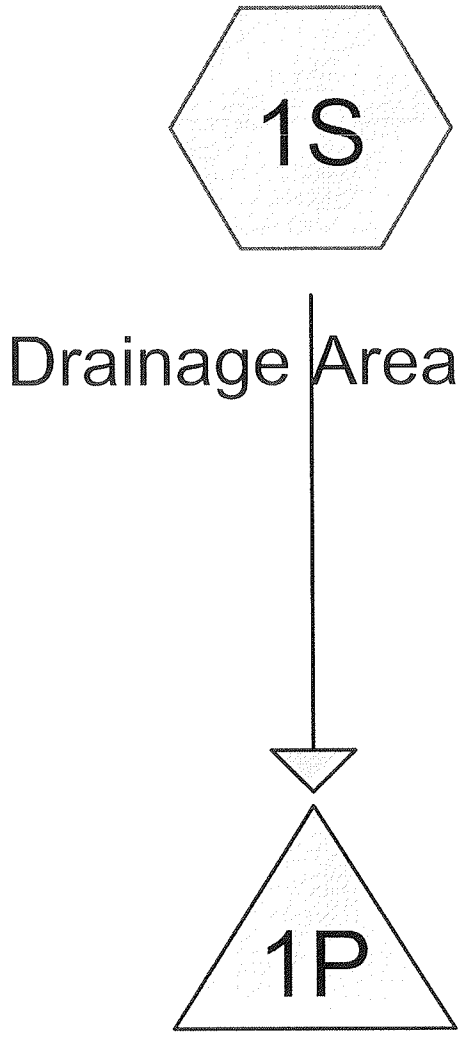
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.30	0.00
1.20	0.00	0	11.30	0.00
1.40	0.00	0	11.30	0.00
1.60	0.00	0	11.30	0.00
1.80	0.00	0	11.30	0.00
2.00	0.00	0	11.30	0.00
2.20	0.00	0	11.30	0.00
2.40	0.00	0	11.30	0.00
2.60	0.01	0	11.30	0.01
2.80	0.01	0	11.30	0.01
3.00	0.02	0	11.30	0.02
3.20	0.02	0	11.30	0.02
3.40	0.02	0	11.30	0.02
3.60	0.03	0	11.30	0.03
3.80	0.03	0	11.30	0.03
4.00	0.04	0	11.30	0.04
4.20	0.04	0	11.30	0.04
4.40	0.05	0	11.30	0.05
4.60	0.05	0	11.30	0.05
4.80	0.06	0	11.30	0.06
5.00	0.07	0	11.30	0.07
5.20	0.07	0	11.30	0.07
5.40	0.08	0	11.30	0.08
5.60	0.08	0	11.30	0.08
5.80	0.09	1	11.30	0.09
6.00	0.09	1	11.30	0.09
6.20	0.10	1	11.30	0.10
6.40	0.11	1	11.30	0.11
6.60	0.12	1	11.30	0.12
6.80	0.13	1	11.30	0.13
7.00	0.14	1	11.30	0.14
7.20	0.15	1	11.30	0.15
7.40	0.16	1	11.30	0.16
7.60	0.17	1	11.30	0.17
7.80	0.19	1	11.30	0.19
8.00	0.20	1	11.30	0.20
8.20	0.22	1	11.30	0.22
8.40	0.24	1	11.30	0.24
8.60	0.26	2	11.30	0.26
8.80	0.29	2	11.30	0.29
9.00	0.31	2	11.30	0.31
9.20	0.34	2	11.30	0.34
9.40	0.37	2	11.30	0.37
9.60	0.39	2	11.30	0.39
9.80	0.42	3	11.30	0.42
10.00	0.45	3	11.30	0.45
10.20	0.49	3	11.30	0.49
10.40	0.54	3	11.30	0.54
10.60	0.60	4	11.30	0.60
10.80	0.65	4	11.30	0.65
11.00	0.71	4	11.30	0.70
11.20	0.84	5	11.30	0.84
11.40	1.04	6	11.30	1.04
11.60	1.48	9	11.30	1.47
11.80	3.29	19	11.31	3.27
12.00	**7.30**	**43**	**11.32**	**7.22**
12.20	**5.36**	**32**	**11.32**	**5.35**
12.40	3.00	18	11.31	3.02
12.60	1.34	8	11.30	1.35
12.80	1.08	6	11.30	1.08
13.00	0.88	5	11.30	0.88
13.20	0.77	5	11.30	0.77
13.40	0.72	4	11.30	0.72
13.60	0.66	4	11.30	0.66
13.80	0.61	4	11.30	0.61
14.00	0.56	3	11.30	0.56
14.20	0.52	3	11.30	0.52
14.40	0.50	3	11.30	0.50
14.60	0.47	3	11.30	0.47
14.80	0.45	3	11.30	0.45
15.00	0.42	3	11.30	0.42
15.20	0.40	2	11.30	0.40
15.40	0.37	2	11.30	0.37
15.60	0.35	2	11.30	0.35
15.80	0.32	2	11.30	0.32
16.00	0.30	2	11.30	0.30
16.20	0.28	2	11.30	0.28
16.40	0.27	2	11.30	0.27
16.60	0.26	2	11.30	0.26
16.80	0.25	1	11.30	0.25
17.00	0.24	1	11.30	0.24
17.20	0.22	1	11.30	0.22
17.40	0.21	1	11.30	0.21
17.60	0.20	1	11.30	0.20
17.80	0.19	1	11.30	0.19
18.00	0.18	1	11.30	0.18
18.20	0.17	1	11.30	0.17
18.40	0.17	1	11.30	0.17
18.60	0.17	1	11.30	0.17
18.80	0.16	1	11.30	0.16
19.00	0.16	1	11.30	0.16
19.20	0.16	1	11.30	0.16
19.40	0.15	1	11.30	0.15
19.60	0.15	1	11.30	0.15
19.80	0.15	1	11.30	0.15
20.00	0.14	1	11.30	0.14

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.30	0.00	12.38	9.50	13.46	9.84
11.32	9.19	12.40	9.51	13.48	9.85
11.34	9.19	12.42	9.52	13.50	9.85
11.36	9.20	12.44	9.52	13.52	9.86
11.38	9.20	12.46	9.53	13.54	9.86
11.40	9.21	12.48	9.54	13.56	9.87
11.42	9.22	12.50	9.54	13.58	9.88
11.44	9.22	12.52	9.55	13.60	9.88
11.46	9.23	12.54	9.55	13.62	9.89
11.48	9.23	12.56	9.56	13.64	9.90
11.50	9.24	12.58	9.57	13.66	9.90
11.52	9.25	12.60	9.57	13.68	9.91
11.54	9.25	12.62	9.58	13.70	9.91
11.56	9.26	12.64	9.59	13.72	9.92
11.58	9.26	12.66	9.59	13.74	9.93
11.60	9.27	12.68	9.60	13.76	9.93
11.62	9.28	12.70	9.60	13.78	9.94
11.64	9.28	12.72	9.61	13.80	9.95
11.66	9.29	12.74	9.62	13.82	9.95
11.68	9.29	12.76	9.62	13.84	9.96
11.70	9.30	12.78	9.63	13.86	9.96
11.72	9.31	12.80	9.64	13.88	9.97
11.74	9.31	12.82	9.64	13.90	9.98
11.76	9.32	12.84	9.65	13.92	9.98
11.78	9.32	12.86	9.65	13.94	9.99
11.80	9.33	12.88	9.66	13.96	9.99
11.82	9.34	12.90	9.67	13.98	10.00
11.84	9.34	12.92	9.67	14.00	10.01
11.86	9.35	12.94	9.68	14.02	10.01
11.88	9.35	12.96	9.68	14.04	10.02
11.90	9.36	12.98	9.69	14.06	10.03
11.92	9.37	13.00	9.70	14.08	10.03
11.94	9.37	13.02	9.70	14.10	10.04
11.96	9.38	13.04	9.71	14.12	10.04
11.98	9.38	13.06	9.72	14.14	10.05
12.00	9.39	13.08	9.72	14.16	10.06
12.02	9.40	13.10	9.73	14.18	10.06
12.04	9.40	13.12	9.73	14.20	10.07
12.06	9.41	13.14	9.74	14.22	10.08
12.08	9.41	13.16	9.75	14.24	10.08
12.10	9.42	13.18	9.75	14.26	10.09
12.12	9.43	13.20	9.76	14.28	10.09
12.14	9.43	13.22	9.77	14.30	**10.10**
12.16	9.44	13.24	9.77		
12.18	9.44	13.26	9.78		
12.20	9.45	13.28	9.78		
12.22	9.46	13.30	9.79		
12.24	9.46	13.32	9.80		
12.26	9.47	13.34	9.80		
12.28	9.47	13.36	9.81		
12.30	9.48	13.38	9.81		
12.32	9.49	13.40	9.82		
12.34	9.49	13.42	9.83		
12.36	9.50	13.44	9.83		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.30	0	12.38	1,969	13.46	3,937
11.32	36	12.40	2,005	13.48	3,973
11.34	73	12.42	2,042	13.50	4,010
11.36	109	12.44	2,078	13.52	4,046
11.38	146	12.46	2,115	13.54	4,083
11.40	182	12.48	2,151	13.56	4,119
11.42	219	12.50	2,187	13.58	4,155
11.44	255	12.52	2,224	13.60	4,192
11.46	292	12.54	2,260	13.62	4,228
11.48	328	12.56	2,297	13.64	4,265
11.50	365	12.58	2,333	13.66	4,301
11.52	401	12.60	2,370	13.68	4,338
11.54	438	12.62	2,406	13.70	4,374
11.56	474	12.64	2,442	13.72	4,411
11.58	510	12.66	2,479	13.74	4,447
11.60	547	12.68	2,515	13.76	4,484
11.62	583	12.70	2,552	13.78	4,520
11.64	620	12.72	2,588	13.80	4,557
11.66	656	12.74	2,625	13.82	4,593
11.68	693	12.76	2,661	13.84	4,629
11.70	729	12.78	2,698	13.86	4,666
11.72	766	12.80	2,734	13.88	4,702
11.74	802	12.82	2,770	13.90	4,739
11.76	839	12.84	2,807	13.92	4,775
11.78	875	12.86	2,843	13.94	4,812
11.80	912	12.88	2,880	13.96	4,848
11.82	948	12.90	2,916	13.98	4,885
11.84	984	12.92	2,953	14.00	4,921
11.86	1,021	12.94	2,989	14.02	4,958
11.88	1,057	12.96	3,026	14.04	4,994
11.90	1,094	12.98	3,062	14.06	5,030
11.92	1,130	13.00	3,098	14.08	5,067
11.94	1,167	13.02	3,135	14.10	5,103
11.96	1,203	13.04	3,171	14.12	5,140
11.98	1,240	13.06	3,208	14.14	5,176
12.00	1,276	13.08	3,244	14.16	5,213
12.02	1,313	13.10	3,281	14.18	5,249
12.04	1,349	13.12	3,317	14.20	5,286
12.06	1,385	13.14	3,353	14.22	5,322
12.08	1,422	13.16	3,390	14.24	5,359
12.10	1,458	13.18	3,426	14.26	5,395
12.12	1,495	13.20	3,463	14.28	5,432
12.14	1,531	13.22	3,499	14.30	**5,468**
12.16	1,568	13.24	3,536		
12.18	1,604	13.26	3,572		
12.20	1,641	13.28	3,609		
12.22	1,677	13.30	3,645		
12.24	1,714	13.32	3,681		
12.26	1,750	13.34	3,718		
12.28	1,787	13.36	3,754		
12.30	1,823	13.38	3,791		
12.32	1,859	13.40	3,827		
12.34	1,896	13.42	3,864		
12.36	1,932	13.44	3,900		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA1
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.129	32	Woods/grass comb., Good, HSG A (1S)
1.814	98	Paved parking (1S)
1.943		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA1 Runoff Area=84,624 sf Runoff Depth>6.74"
Tc=5.0 min CN=94 Runoff=15.07 cfs 1.092 af

Pond 1P: Infiltration Storage Model Peak Elev=12.45' Storage=2,097 cf Inflow=15.07 cfs 1.092 af
Outflow=9.53 cfs 1.087 af

Total Runoff Area = 1.943 ac Runoff Volume = 1.092 af Average Runoff Depth = 6.74"
6.62% Pervious Area = 0.129 ac 93.38% Impervious Area = 1.814 ac

Subcatchment 1S: Drainage Area DA1

Time of Concentration

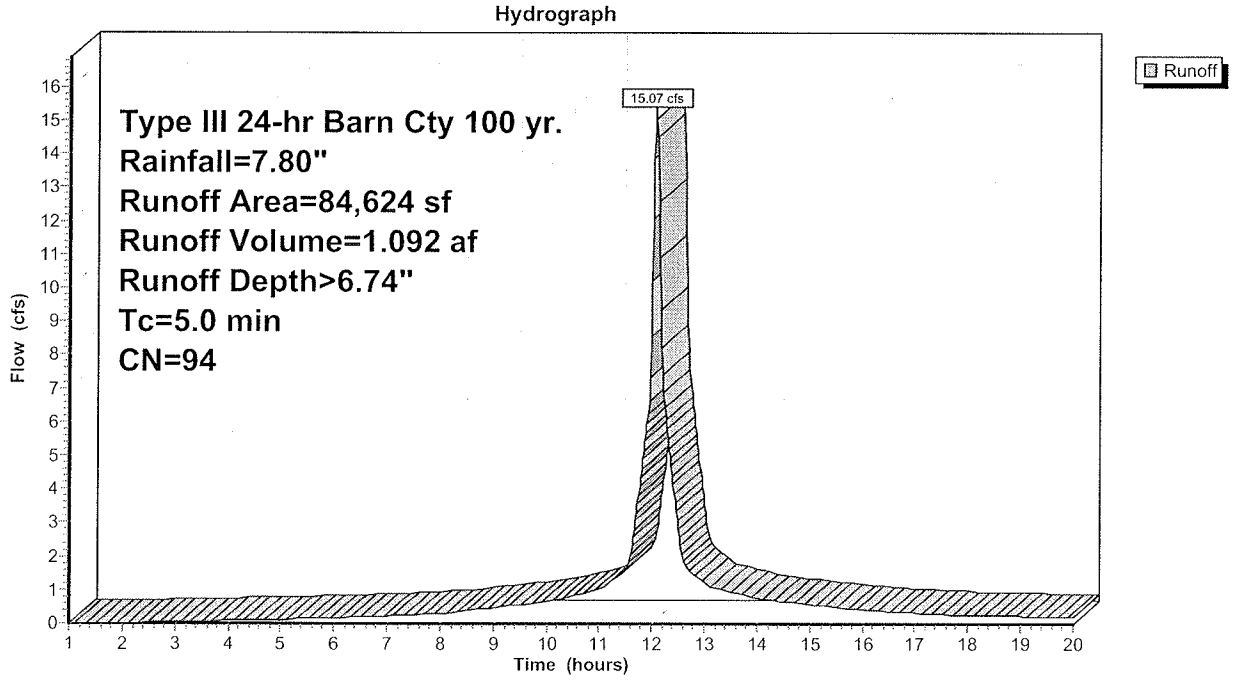
Runoff = 15.07 cfs @ 12.07 hrs, Volume= 1.092 af, Depth> 6.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
79,024	98	Paved parking
5,600	32	Woods/grass comb., Good, HSG A
84,624	94	Weighted Average
5,600		Pervious Area
79,024		Impervious Area

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

Subcatchment 1S: Drainage Area DA1



Hydrograph for Subcatchment 1S: Drainage Area DA1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	2.26	4.62
1.20	0.09	0.00	0.00	12.00	3.90	3.23	**10.19**
1.40	0.11	0.00	0.00	12.20	4.89	4.20	**7.42**
1.60	0.12	0.00	0.00	12.40	5.35	4.65	4.15
1.80	0.14	0.00	0.00	12.60	5.56	4.87	1.85
2.00	0.16	0.00	0.01	12.80	5.72	5.02	1.49
2.20	0.17	0.00	0.02	13.00	5.85	5.15	1.21
2.40	0.19	0.01	0.02	13.20	5.96	5.26	1.06
2.60	0.20	0.01	0.03	13.40	6.06	5.36	0.99
2.80	0.22	0.01	0.04	13.60	6.16	5.45	0.92
3.00	0.24	0.02	0.05	13.80	6.25	5.54	0.84
3.20	0.26	0.02	0.05	14.00	6.33	5.62	0.77
3.40	0.28	0.03	0.06	14.20	6.40	5.69	0.72
3.60	0.30	0.04	0.07	14.40	6.47	5.76	0.69
3.80	0.32	0.04	0.08	14.60	6.54	5.83	0.65
4.00	0.34	0.05	0.08	14.80	6.60	5.89	0.62
4.20	0.36	0.06	0.09	15.00	6.66	5.95	0.58
4.40	0.38	0.07	0.10	15.20	6.72	6.01	0.55
4.60	0.40	0.08	0.10	15.40	6.77	6.06	0.51
4.80	0.42	0.09	0.11	15.60	6.82	6.11	0.48
5.00	0.44	0.10	0.12	15.80	6.87	6.16	0.44
5.20	0.47	0.12	0.13	16.00	6.91	6.20	0.41
5.40	0.49	0.13	0.13	16.20	6.95	6.24	0.39
5.60	0.51	0.14	0.14	16.40	6.99	6.28	0.37
5.80	0.54	0.16	0.15	16.60	7.03	6.31	0.35
6.00	0.56	0.18	0.16	16.80	7.06	6.35	0.34
6.20	0.59	0.19	0.17	17.00	7.09	6.38	0.32
6.40	0.61	0.21	0.18	17.20	7.13	6.41	0.31
6.60	0.64	0.23	0.20	17.40	7.16	6.44	0.29
6.80	0.67	0.25	0.21	17.60	7.19	6.47	0.28
7.00	0.71	0.27	0.23	17.80	7.21	6.50	0.26
7.20	0.74	0.30	0.24	18.00	7.24	6.53	0.25
7.40	0.77	0.33	0.26	18.20	7.26	6.55	0.24
7.60	0.81	0.35	0.27	18.40	7.29	6.57	0.24
7.80	0.85	0.38	0.29	18.60	7.31	6.60	0.23
8.00	0.89	0.41	0.31	18.80	7.33	6.62	0.23
8.20	0.93	0.45	0.33	19.00	7.36	6.64	0.22
8.40	0.98	0.49	0.37	19.20	7.38	6.67	0.22
8.60	1.03	0.53	0.40	19.40	7.40	6.69	0.21
8.80	1.08	0.57	0.44	19.60	7.42	6.71	0.21
9.00	1.14	0.62	0.47	19.80	7.44	6.73	0.20
9.20	1.20	0.67	0.51	20.00	**7.46**	**6.75**	0.20
9.40	1.26	0.73	0.55				
9.60	1.33	0.78	0.58				
9.80	1.40	0.85	0.62				
10.00	1.47	0.91	0.66				
10.20	1.55	0.99	0.72				
10.40	1.64	1.07	0.79				
10.60	1.74	1.15	0.86				
10.80	1.84	1.25	0.94				
11.00	1.95	1.35	1.01				
11.20	2.08	1.47	1.21				
11.40	2.24	1.62	1.48				
11.60	2.45	1.82	2.10				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 1.943 ac, Inflow Depth > 6.74" for Barn Cty 100 yr. event
Inflow = 15.07 cfs @ 12.07 hrs, Volume= 1.092 af
Outflow = 9.53 cfs @ 12.16 hrs, Volume= 1.087 af, Atten= 37%, Lag= 5.3 min
Primary = 9.53 cfs @ 12.16 hrs, Volume= 1.087 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 12.45' @ 12.16 hrs Surf.Area= 0 sf Storage= 2,097 cf

Plug-Flow detention time=2.4 min calculated for 1.086 af (99% of inflow)
Center-of-Mass det. time=0.6 min (733.7 - 733.1)

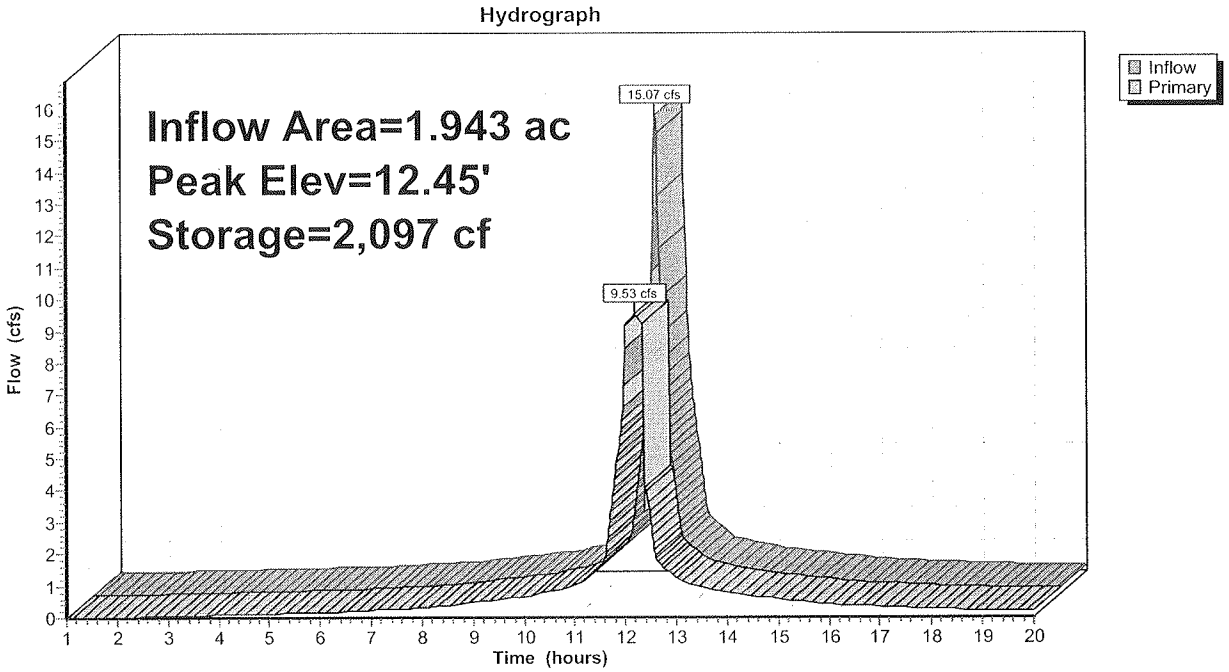
Volume	Invert	Avail.Storage	Storage Description
#1	11.30'	5,468 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.30	0
12.30	1,823
13.30	3,645
14.30	5,468

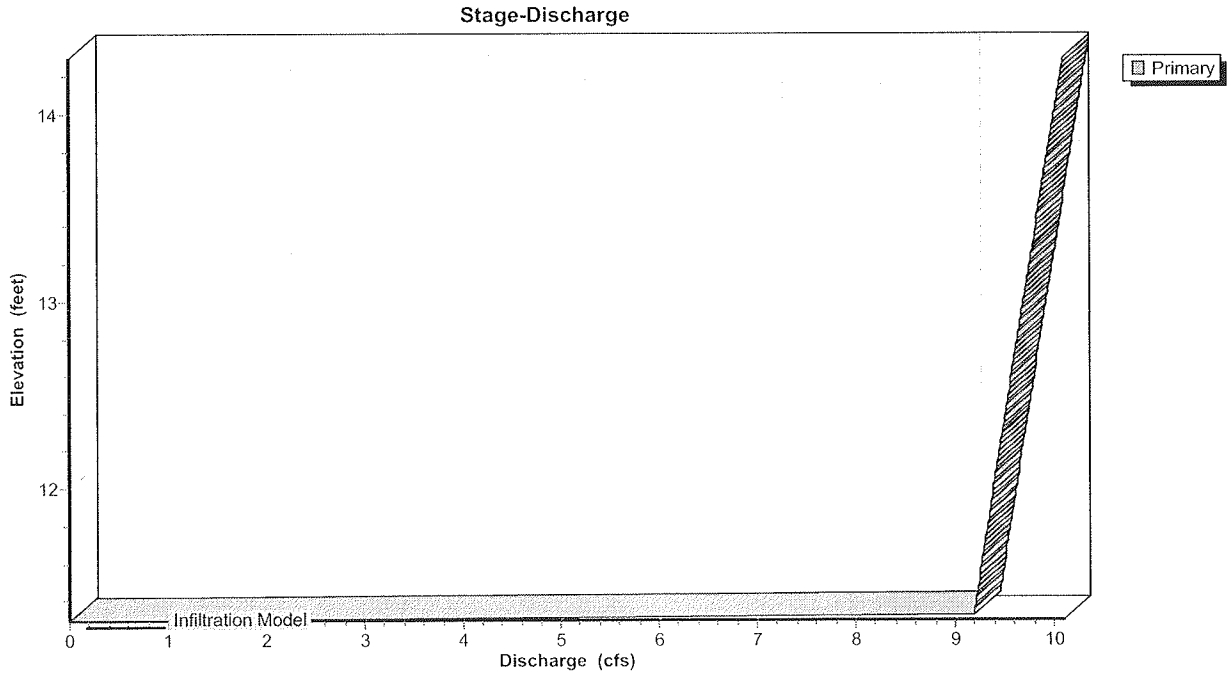
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 11.20 11.30 12.30 13.30 14.30 Disch. (cfs) 0.000 9.180 9.480 9.790 10.100

Primary OutFlow Max=9.53 cfs @ 12.16 hrs HW=12.45' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 9.53 cfs)

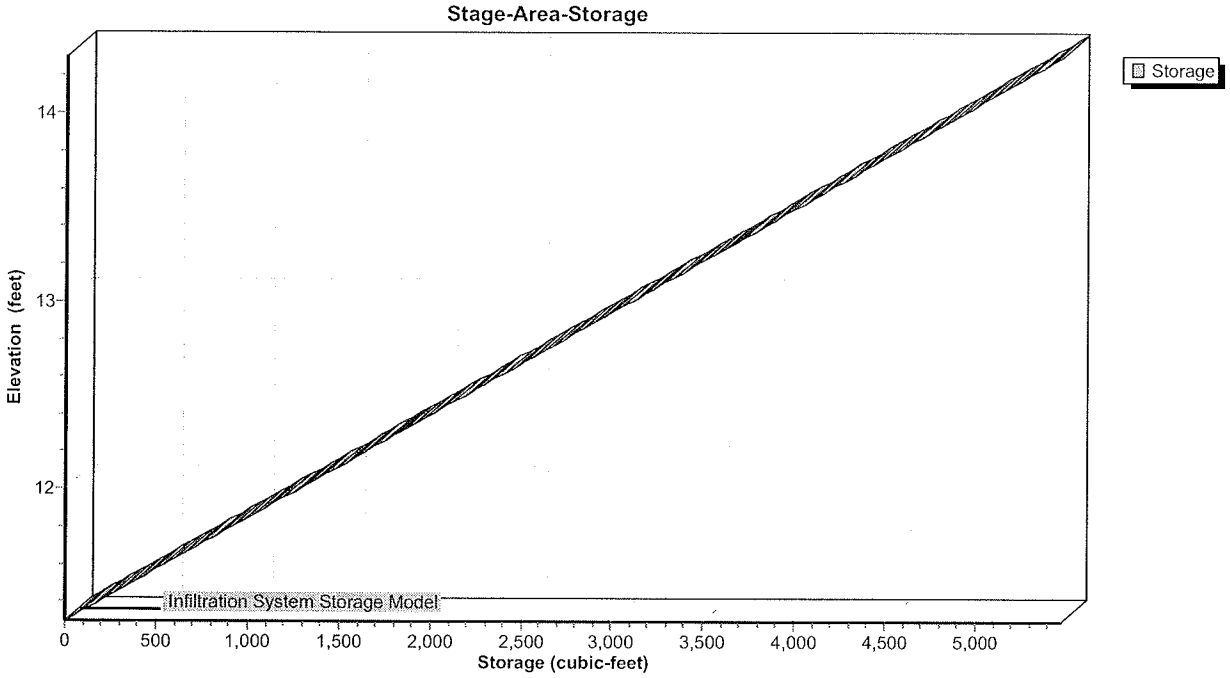
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

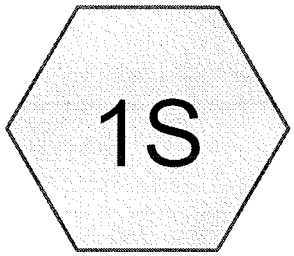
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.30	0.00
1.20	0.00	0	11.30	0.00
1.40	0.00	0	11.30	0.00
1.60	0.00	0	11.30	0.00
1.80	0.00	0	11.30	0.00
2.00	0.01	0	11.30	0.01
2.20	0.02	0	11.30	0.02
2.40	0.02	0	11.30	0.02
2.60	0.03	0	11.30	0.03
2.80	0.04	0	11.30	0.04
3.00	0.05	0	11.30	0.05
3.20	0.05	0	11.30	0.05
3.40	0.06	0	11.30	0.06
3.60	0.07	0	11.30	0.07
3.80	0.08	0	11.30	0.08
4.00	0.08	0	11.30	0.08
4.20	0.09	1	11.30	0.09
4.40	0.10	1	11.30	0.10
4.60	0.10	1	11.30	0.10
4.80	0.11	1	11.30	0.11
5.00	0.12	1	11.30	0.12
5.20	0.13	1	11.30	0.13
5.40	0.13	1	11.30	0.13
5.60	0.14	1	11.30	0.14
5.80	0.15	1	11.30	0.15
6.00	0.16	1	11.30	0.16
6.20	0.17	1	11.30	0.17
6.40	0.18	1	11.30	0.18
6.60	0.20	1	11.30	0.20
6.80	0.21	1	11.30	0.21
7.00	0.23	1	11.30	0.23
7.20	0.24	1	11.30	0.24
7.40	0.26	2	11.30	0.26
7.60	0.27	2	11.30	0.27
7.80	0.29	2	11.30	0.29
8.00	0.31	2	11.30	0.31
8.20	0.33	2	11.30	0.33
8.40	0.37	2	11.30	0.37
8.60	0.40	2	11.30	0.40
8.80	0.44	3	11.30	0.44
9.00	0.47	3	11.30	0.47
9.20	0.51	3	11.30	0.51
9.40	0.55	3	11.30	0.55
9.60	0.58	3	11.30	0.58
9.80	0.62	4	11.30	0.62
10.00	0.66	4	11.30	0.66
10.20	0.72	4	11.30	0.71
10.40	0.79	5	11.30	0.79
10.60	0.86	5	11.30	0.86
10.80	0.94	6	11.30	0.94
11.00	1.01	6	11.30	1.01
11.20	1.21	7	11.30	1.20
11.40	1.48	9	11.30	1.48
11.60	2.10	12	11.31	2.09
11.80	4.62	27	11.32	4.60
12.00	**10.19**	**77**	**11.34**	**9.19**
12.20	**7.42**	**1,920**	**12.35**	**9.50**
12.40	4.15	24	11.31	4.08
12.60	1.85	11	11.31	1.86
12.80	1.49	9	11.30	1.49
13.00	1.21	7	11.30	1.21
13.20	1.06	6	11.30	1.06
13.40	0.99	6	11.30	0.99
13.60	0.92	5	11.30	0.92
13.80	0.84	5	11.30	0.84
14.00	0.77	5	11.30	0.77
14.20	0.72	4	11.30	0.72
14.40	0.69	4	11.30	0.69
14.60	0.65	4	11.30	0.65
14.80	0.62	4	11.30	0.62
15.00	0.58	3	11.30	0.58
15.20	0.55	3	11.30	0.55
15.40	0.51	3	11.30	0.51
15.60	0.48	3	11.30	0.48
15.80	0.44	3	11.30	0.44
16.00	0.41	2	11.30	0.41
16.20	0.39	2	11.30	0.39
16.40	0.37	2	11.30	0.37
16.60	0.35	2	11.30	0.35
16.80	0.34	2	11.30	0.34
17.00	0.32	2	11.30	0.32
17.20	0.31	2	11.30	0.31
17.40	0.29	2	11.30	0.29
17.60	0.28	2	11.30	0.28
17.80	0.26	2	11.30	0.26
18.00	0.25	1	11.30	0.25
18.20	0.24	1	11.30	0.24
18.40	0.24	1	11.30	0.24
18.60	0.23	1	11.30	0.23
18.80	0.23	1	11.30	0.23
19.00	0.22	1	11.30	0.22
19.20	0.22	1	11.30	0.22
19.40	0.21	1	11.30	0.21
19.60	0.21	1	11.30	0.21
19.80	0.20	1	11.30	0.20
20.00	0.20	1	11.30	0.20

Stage-Discharge for Pond 1P: Infiltration Storage Model

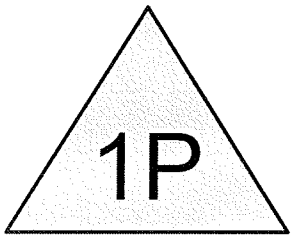
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.30	0.00	12.38	9.50	13.46	9.84
11.32	9.19	12.40	9.51	13.48	9.85
11.34	9.19	12.42	9.52	13.50	9.85
11.36	9.20	12.44	9.52	13.52	9.86
11.38	9.20	12.46	9.53	13.54	9.86
11.40	9.21	12.48	9.54	13.56	9.87
11.42	9.22	12.50	9.54	13.58	9.88
11.44	9.22	12.52	9.55	13.60	9.88
11.46	9.23	12.54	9.55	13.62	9.89
11.48	9.23	12.56	9.56	13.64	9.90
11.50	9.24	12.58	9.57	13.66	9.90
11.52	9.25	12.60	9.57	13.68	9.91
11.54	9.25	12.62	9.58	13.70	9.91
11.56	9.26	12.64	9.59	13.72	9.92
11.58	9.26	12.66	9.59	13.74	9.93
11.60	9.27	12.68	9.60	13.76	9.93
11.62	9.28	12.70	9.60	13.78	9.94
11.64	9.28	12.72	9.61	13.80	9.95
11.66	9.29	12.74	9.62	13.82	9.95
11.68	9.29	12.76	9.62	13.84	9.96
11.70	9.30	12.78	9.63	13.86	9.96
11.72	9.31	12.80	9.64	13.88	9.97
11.74	9.31	12.82	9.64	13.90	9.98
11.76	9.32	12.84	9.65	13.92	9.98
11.78	9.32	12.86	9.65	13.94	9.99
11.80	9.33	12.88	9.66	13.96	9.99
11.82	9.34	12.90	9.67	13.98	10.00
11.84	9.34	12.92	9.67	14.00	10.01
11.86	9.35	12.94	9.68	14.02	10.01
11.88	9.35	12.96	9.68	14.04	10.02
11.90	9.36	12.98	9.69	14.06	10.03
11.92	9.37	13.00	9.70	14.08	10.03
11.94	9.37	13.02	9.70	14.10	10.04
11.96	9.38	13.04	9.71	14.12	10.04
11.98	9.38	13.06	9.72	14.14	10.05
12.00	9.39	13.08	9.72	14.16	10.06
12.02	9.40	13.10	9.73	14.18	10.06
12.04	9.40	13.12	9.73	14.20	10.07
12.06	9.41	13.14	9.74	14.22	10.08
12.08	9.41	13.16	9.75	14.24	10.08
12.10	9.42	13.18	9.75	14.26	10.09
12.12	9.43	13.20	9.76	14.28	10.09
12.14	9.43	13.22	9.77	14.30	**10.10**
12.16	9.44	13.24	9.77		
12.18	9.44	13.26	9.78		
12.20	9.45	13.28	9.78		
12.22	9.46	13.30	9.79		
12.24	9.46	13.32	9.80		
12.26	9.47	13.34	9.80		
12.28	9.47	13.36	9.81		
12.30	9.48	13.38	9.81		
12.32	9.49	13.40	9.82		
12.34	9.49	13.42	9.83		
12.36	9.50	13.44	9.83		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.30	0	12.38	1,969	13.46	3,937
11.32	36	12.40	2,005	13.48	3,973
11.34	73	12.42	2,042	13.50	4,010
11.36	109	12.44	2,078	13.52	4,046
11.38	146	12.46	2,115	13.54	4,083
11.40	182	12.48	2,151	13.56	4,119
11.42	219	12.50	2,187	13.58	4,155
11.44	255	12.52	2,224	13.60	4,192
11.46	292	12.54	2,260	13.62	4,228
11.48	328	12.56	2,297	13.64	4,265
11.50	365	12.58	2,333	13.66	4,301
11.52	401	12.60	2,370	13.68	4,338
11.54	438	12.62	2,406	13.70	4,374
11.56	474	12.64	2,442	13.72	4,411
11.58	510	12.66	2,479	13.74	4,447
11.60	547	12.68	2,515	13.76	4,484
11.62	583	12.70	2,552	13.78	4,520
11.64	620	12.72	2,588	13.80	4,557
11.66	656	12.74	2,625	13.82	4,593
11.68	693	12.76	2,661	13.84	4,629
11.70	729	12.78	2,698	13.86	4,666
11.72	766	12.80	2,734	13.88	4,702
11.74	802	12.82	2,770	13.90	4,739
11.76	839	12.84	2,807	13.92	4,775
11.78	875	12.86	2,843	13.94	4,812
11.80	912	12.88	2,880	13.96	4,848
11.82	948	12.90	2,916	13.98	4,885
11.84	984	12.92	2,953	14.00	4,921
11.86	1,021	12.94	2,989	14.02	4,958
11.88	1,057	12.96	3,026	14.04	4,994
11.90	1,094	12.98	3,062	14.06	5,030
11.92	1,130	13.00	3,098	14.08	5,067
11.94	1,167	13.02	3,135	14.10	5,103
11.96	1,203	13.04	3,171	14.12	5,140
11.98	1,240	13.06	3,208	14.14	5,176
12.00	1,276	13.08	3,244	14.16	5,213
12.02	1,313	13.10	3,281	14.18	5,249
12.04	1,349	13.12	3,317	14.20	5,286
12.06	1,385	13.14	3,353	14.22	5,322
12.08	1,422	13.16	3,390	14.24	5,359
12.10	1,458	13.18	3,426	14.26	5,395
12.12	1,495	13.20	3,463	14.28	5,432
12.14	1,531	13.22	3,499	14.30	**5,468**
12.16	1,568	13.24	3,536		
12.18	1,604	13.26	3,572		
12.20	1,641	13.28	3,609		
12.22	1,677	13.30	3,645		
12.24	1,714	13.32	3,681		
12.26	1,750	13.34	3,718		
12.28	1,787	13.36	3,754		
12.30	1,823	13.38	3,791		
12.32	1,859	13.40	3,827		
12.34	1,896	13.42	3,864		
12.36	1,932	13.44	3,900		



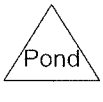
Drainage Area DA2



Infiltration Storage Model









Drainage Diagram for 17-005 CCH Project 2022 DA3
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.153	32	Woods/grass comb., Good, HSG A (1S)
0.213	98	Paved parking (1S)
0.367		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA2 Runoff Area=15,986 sf Runoff Depth>4.00"
Tc=5.0 min CN=70 Runoff=1.91 cfs 0.122 af

Pond 1P: Infiltration Storage Model Peak Elev=13.03' Storage=12 cf Inflow=1.91 cfs 0.122 af
Outflow=1.88 cfs 0.122 af

Total Runoff Area = 0.367 ac Runoff Volume = 0.122 af Average Runoff Depth = 4.00"
41.82% Pervious Area = 0.153 ac 58.18% Impervious Area = 0.213 ac

Subcatchment 1S: Drainage Area DA2

Time of Concentration

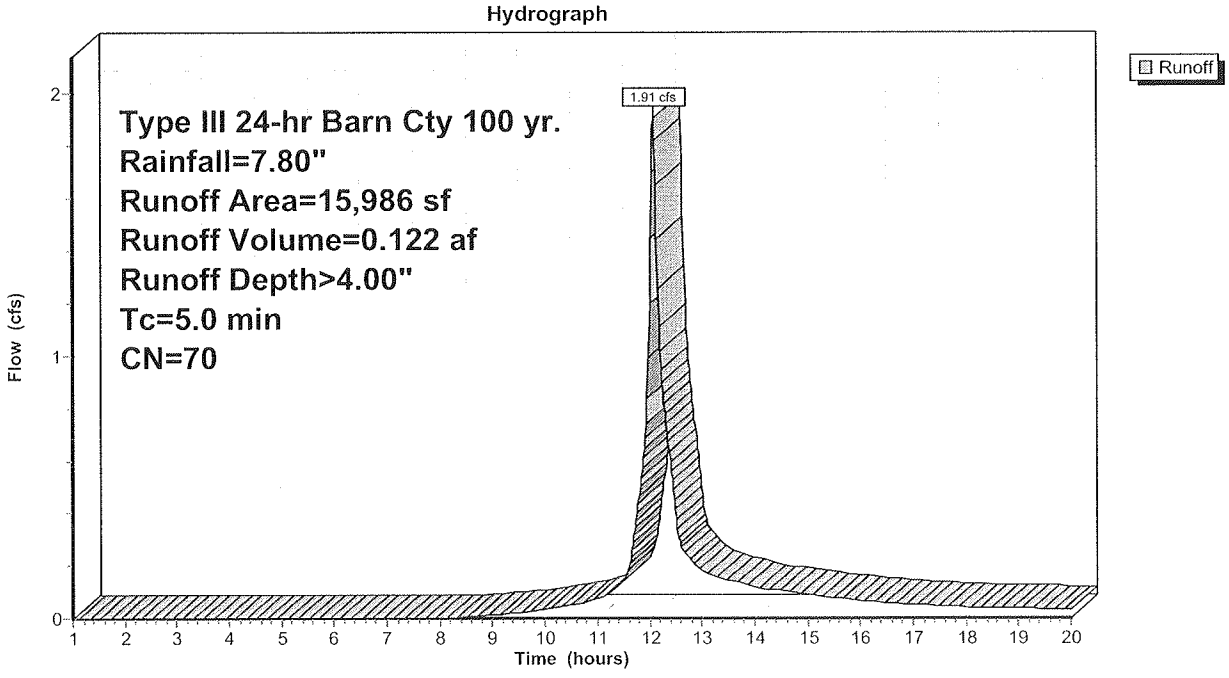
Runoff = 1.91 cfs @ 12.08 hrs, Volume= 0.122 af, Depth> 4.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
9,300	98	Paved parking
6,686	32	Woods/grass comb., Good, HSG A
15,986	70	Weighted Average
6,686		Pervious Area
9,300		Impervious Area

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

Subcatchment 1S: Drainage Area DA2



Hydrograph for Subcatchment 1S: Drainage Area DA2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	0.67	0.47
1.20	0.09	0.00	0.00	12.00	3.90	1.26	**1.20**
1.40	0.11	0.00	0.00	12.20	4.89	1.95	**1.02**
1.60	0.12	0.00	0.00	12.40	5.35	2.30	0.60
1.80	0.14	0.00	0.00	12.60	5.56	2.46	0.27
2.00	0.16	0.00	0.00	12.80	5.72	2.59	0.22
2.20	0.17	0.00	0.00	13.00	5.85	2.69	0.18
2.40	0.19	0.00	0.00	13.20	5.96	2.77	0.16
2.60	0.20	0.00	0.00	13.40	6.06	2.86	0.15
2.80	0.22	0.00	0.00	13.60	6.16	2.93	0.14
3.00	0.24	0.00	0.00	13.80	6.25	3.00	0.13
3.20	0.26	0.00	0.00	14.00	6.33	3.07	0.12
3.40	0.28	0.00	0.00	14.20	6.40	3.13	0.11
3.60	0.30	0.00	0.00	14.40	6.47	3.18	0.11
3.80	0.32	0.00	0.00	14.60	6.54	3.24	0.10
4.00	0.34	0.00	0.00	14.80	6.60	3.29	0.10
4.20	0.36	0.00	0.00	15.00	6.66	3.34	0.09
4.40	0.38	0.00	0.00	15.20	6.72	3.39	0.09
4.60	0.40	0.00	0.00	15.40	6.77	3.43	0.08
4.80	0.42	0.00	0.00	15.60	6.82	3.47	0.07
5.00	0.44	0.00	0.00	15.80	6.87	3.51	0.07
5.20	0.47	0.00	0.00	16.00	6.91	3.54	0.06
5.40	0.49	0.00	0.00	16.20	6.95	3.58	0.06
5.60	0.51	0.00	0.00	16.40	6.99	3.61	0.06
5.80	0.54	0.00	0.00	16.60	7.03	3.64	0.06
6.00	0.56	0.00	0.00	16.80	7.06	3.67	0.05
6.20	0.59	0.00	0.00	17.00	7.09	3.70	0.05
6.40	0.61	0.00	0.00	17.20	7.13	3.72	0.05
6.60	0.64	0.00	0.00	17.40	7.16	3.75	0.05
6.80	0.67	0.00	0.00	17.60	7.19	3.77	0.04
7.00	0.71	0.00	0.00	17.80	7.21	3.80	0.04
7.20	0.74	0.00	0.00	18.00	7.24	3.82	0.04
7.40	0.77	0.00	0.00	18.20	7.26	3.84	0.04
7.60	0.81	0.00	0.00	18.40	7.29	3.86	0.04
7.80	0.85	0.00	0.00	18.60	7.31	3.88	0.04
8.00	0.89	0.00	0.00	18.80	7.33	3.90	0.04
8.20	0.93	0.00	0.00	19.00	7.36	3.92	0.04
8.40	0.98	0.00	0.00	19.20	7.38	3.94	0.03
8.60	1.03	0.01	0.01	19.40	7.40	3.95	0.03
8.80	1.08	0.01	0.01	19.60	7.42	3.97	0.03
9.00	1.14	0.02	0.01	19.80	7.44	3.99	0.03
9.20	1.20	0.02	0.01	20.00	**7.46**	**4.01**	0.03
9.40	1.26	0.03	0.02				
9.60	1.33	0.05	0.02				
9.80	1.40	0.06	0.03				
10.00	1.47	0.08	0.03				
10.20	1.55	0.10	0.04				
10.40	1.64	0.12	0.05				
10.60	1.74	0.15	0.05				
10.80	1.84	0.18	0.06				
11.00	1.95	0.22	0.07				
11.20	2.08	0.27	0.09				
11.40	2.24	0.34	0.12				
11.60	2.45	0.43	0.19				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.367 ac, Inflow Depth > 4.00" for Barn Cty 100 yr. event
Inflow = 1.91 cfs @ 12.08 hrs, Volume= 0.122 af
Outflow = 1.88 cfs @ 12.08 hrs, Volume= 0.122 af, Atten= 2%, Lag= 0.5 min
Primary = 1.88 cfs @ 12.08 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 13.03' @ 12.08 hrs Surf.Area= 0 sf Storage= 12 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=0.0 min (789.5 - 789.5)

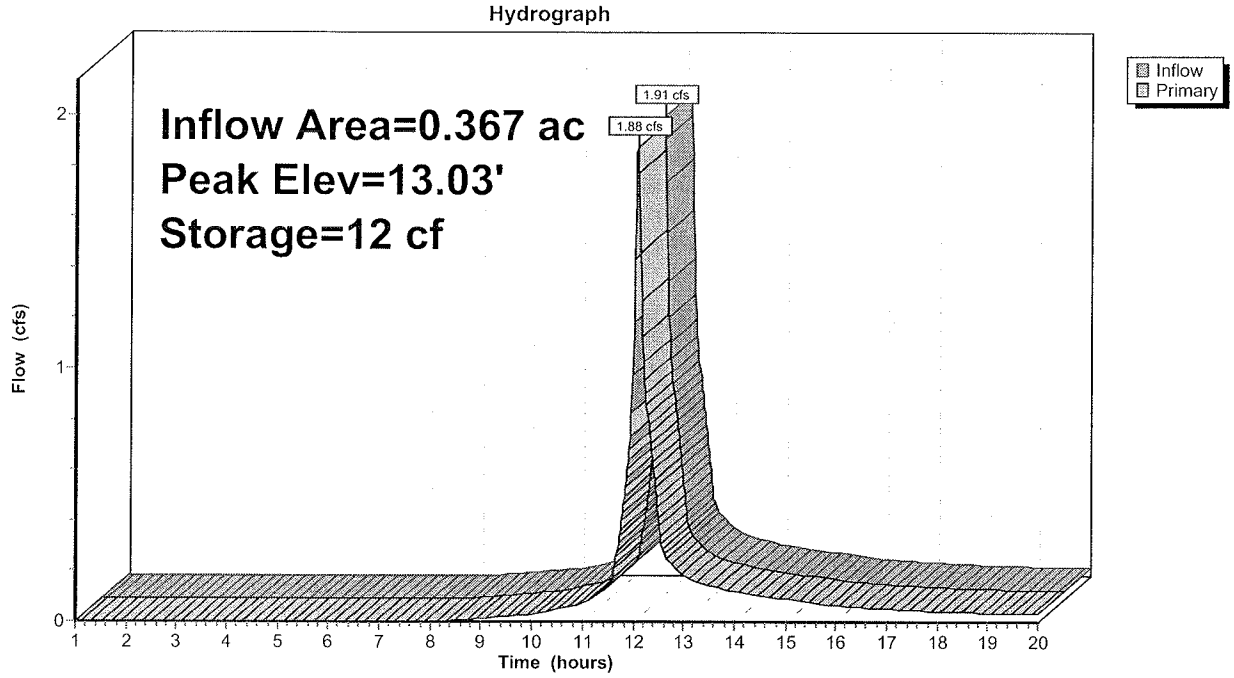
Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	1,116 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
13.00	0
14.00	372
15.00	744
16.00	1,116

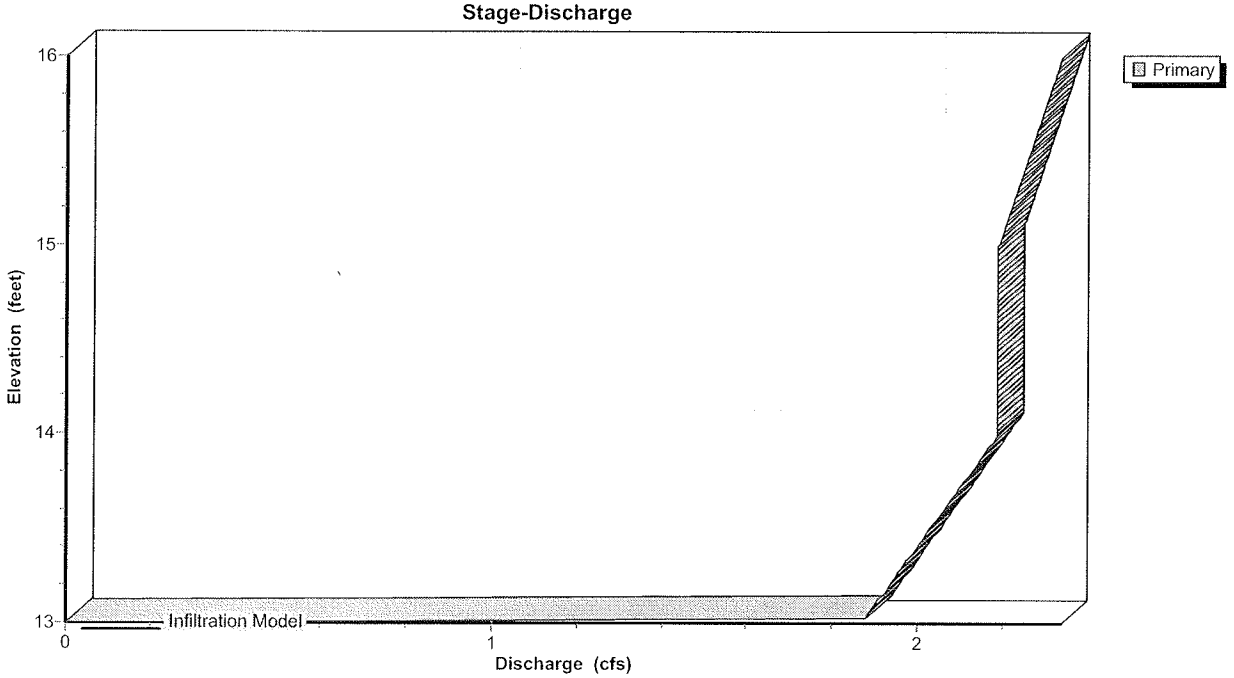
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model**
			Elev. (feet) 12.90 13.00 14.00 15.00 16.00
			Disch. (cfs) 0.000 1.870 2.190 2.190 2.340

Primary OutFlow Max=1.88 cfs @ 12.08 hrs HW=13.03' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.88 cfs)

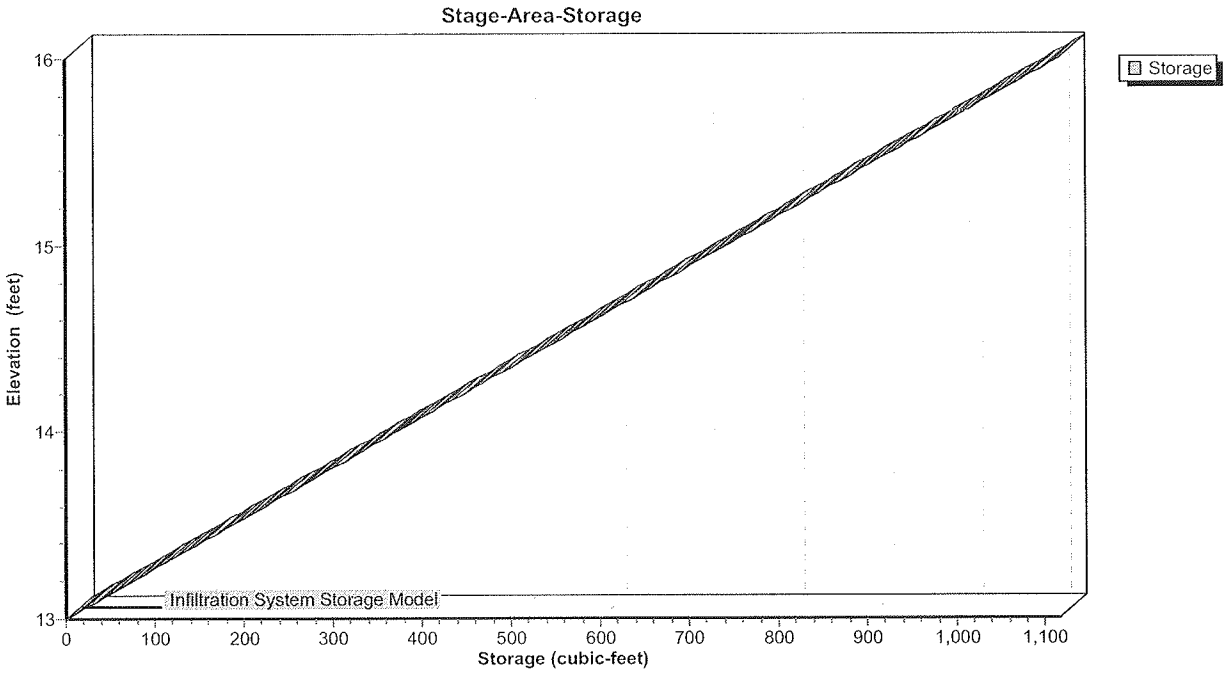
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	13.00	0.00
1.20	0.00	0	13.00	0.00
1.40	0.00	0	13.00	0.00
1.60	0.00	0	13.00	0.00
1.80	0.00	0	13.00	0.00
2.00	0.00	0	13.00	0.00
2.20	0.00	0	13.00	0.00
2.40	0.00	0	13.00	0.00
2.60	0.00	0	13.00	0.00
2.80	0.00	0	13.00	0.00
3.00	0.00	0	13.00	0.00
3.20	0.00	0	13.00	0.00
3.40	0.00	0	13.00	0.00
3.60	0.00	0	13.00	0.00
3.80	0.00	0	13.00	0.00
4.00	0.00	0	13.00	0.00
4.20	0.00	0	13.00	0.00
4.40	0.00	0	13.00	0.00
4.60	0.00	0	13.00	0.00
4.80	0.00	0	13.00	0.00
5.00	0.00	0	13.00	0.00
5.20	0.00	0	13.00	0.00
5.40	0.00	0	13.00	0.00
5.60	0.00	0	13.00	0.00
5.80	0.00	0	13.00	0.00
6.00	0.00	0	13.00	0.00
6.20	0.00	0	13.00	0.00
6.40	0.00	0	13.00	0.00
6.60	0.00	0	13.00	0.00
6.80	0.00	0	13.00	0.00
7.00	0.00	0	13.00	0.00
7.20	0.00	0	13.00	0.00
7.40	0.00	0	13.00	0.00
7.60	0.00	0	13.00	0.00
7.80	0.00	0	13.00	0.00
8.00	0.00	0	13.00	0.00
8.20	0.00	0	13.00	0.00
8.40	0.00	0	13.00	0.00
8.60	0.01	0	13.00	0.01
8.80	0.01	0	13.00	0.01
9.00	0.01	0	13.00	0.01
9.20	0.01	0	13.00	0.01
9.40	0.02	0	13.00	0.02
9.60	0.02	0	13.00	0.02
9.80	0.03	0	13.00	0.03
10.00	0.03	0	13.00	0.03
10.20	0.04	0	13.00	0.04
10.40	0.05	0	13.00	0.05
10.60	0.05	0	13.00	0.05
10.80	0.06	0	13.00	0.06
11.00	0.07	0	13.00	0.07
11.20	0.09	1	13.00	0.09
11.40	0.12	1	13.00	0.12
11.60	0.19	1	13.00	0.19
11.80	0.47	3	13.01	0.46
12.00	**1.20**	**7**	**13.02**	**1.19**
12.20	**1.02**	**6**	**13.02**	**1.02**
12.40	0.60	4	13.01	0.60
12.60	0.27	2	13.00	0.27
12.80	0.22	1	13.00	0.22
13.00	0.18	1	13.00	0.18
13.20	0.16	1	13.00	0.16
13.40	0.15	1	13.00	0.15
13.60	0.14	1	13.00	0.14
13.80	0.13	1	13.00	0.13
14.00	0.12	1	13.00	0.12
14.20	0.11	1	13.00	0.11
14.40	0.11	1	13.00	0.11
14.60	0.10	1	13.00	0.10
14.80	0.10	1	13.00	0.10
15.00	0.09	1	13.00	0.09
15.20	0.09	1	13.00	0.09
15.40	0.08	0	13.00	0.08
15.60	0.07	0	13.00	0.07
15.80	0.07	0	13.00	0.07
16.00	0.06	0	13.00	0.06
16.20	0.06	0	13.00	0.06
16.40	0.06	0	13.00	0.06
16.60	0.06	0	13.00	0.06
16.80	0.05	0	13.00	0.05
17.00	0.05	0	13.00	0.05
17.20	0.05	0	13.00	0.05
17.40	0.05	0	13.00	0.05
17.60	0.04	0	13.00	0.04
17.80	0.04	0	13.00	0.04
18.00	0.04	0	13.00	0.04
18.20	0.04	0	13.00	0.04
18.40	0.04	0	13.00	0.04
18.60	0.04	0	13.00	0.04
18.80	0.04	0	13.00	0.04
19.00	0.04	0	13.00	0.04
19.20	0.03	0	13.00	0.03
19.40	0.03	0	13.00	0.03
19.60	0.03	0	13.00	0.03
19.80	0.03	0	13.00	0.03
20.00	0.03	0	13.00	0.03

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
13.00	0.00	14.08	2.19	15.16	2.21
13.02	1.88	14.10	2.19	15.18	2.22
13.04	1.88	14.12	2.19	15.20	2.22
13.06	1.89	14.14	2.19	15.22	2.22
13.08	1.90	14.16	2.19	15.24	2.23
13.10	1.90	14.18	2.19	15.26	2.23
13.12	1.91	14.20	2.19	15.28	2.23
13.14	1.91	14.22	2.19	15.30	2.23
13.16	1.92	14.24	2.19	15.32	2.24
13.18	1.93	14.26	2.19	15.34	2.24
13.20	1.93	14.28	2.19	15.36	2.24
13.22	1.94	14.30	2.19	15.38	2.25
13.24	1.95	14.32	2.19	15.40	2.25
13.26	1.95	14.34	2.19	15.42	2.25
13.28	1.96	14.36	2.19	15.44	2.26
13.30	1.97	14.38	2.19	15.46	2.26
13.32	1.97	14.40	2.19	15.48	2.26
13.34	1.98	14.42	2.19	15.50	2.26
13.36	1.99	14.44	2.19	15.52	2.27
13.38	1.99	14.46	2.19	15.54	2.27
13.40	2.00	14.48	2.19	15.56	2.27
13.42	2.00	14.50	2.19	15.58	2.28
13.44	2.01	14.52	2.19	15.60	2.28
13.46	2.02	14.54	2.19	15.62	2.28
13.48	2.02	14.56	2.19	15.64	2.29
13.50	2.03	14.58	2.19	15.66	2.29
13.52	2.04	14.60	2.19	15.68	2.29
13.54	2.04	14.62	2.19	15.70	2.29
13.56	2.05	14.64	2.19	15.72	2.30
13.58	2.06	14.66	2.19	15.74	2.30
13.60	2.06	14.68	2.19	15.76	2.30
13.62	2.07	14.70	2.19	15.78	2.31
13.64	2.07	14.72	2.19	15.80	2.31
13.66	2.08	14.74	2.19	15.82	2.31
13.68	2.09	14.76	2.19	15.84	2.32
13.70	2.09	14.78	2.19	15.86	2.32
13.72	2.10	14.80	2.19	15.88	2.32
13.74	2.11	14.82	2.19	15.90	2.32
13.76	2.11	14.84	2.19	15.92	2.33
13.78	2.12	14.86	2.19	15.94	2.33
13.80	2.13	14.88	2.19	15.96	2.33
13.82	2.13	14.90	2.19	15.98	2.34
13.84	2.14	14.92	2.19	16.00	**2.34**
13.86	2.15	14.94	2.19		
13.88	2.15	14.96	2.19		
13.90	2.16	14.98	2.19		
13.92	2.16	15.00	2.19		
13.94	2.17	15.02	2.19		
13.96	2.18	15.04	2.20		
13.98	2.18	15.06	2.20		
14.00	2.19	15.08	2.20		
14.02	2.19	15.10	2.21		
14.04	2.19	15.12	2.21		
14.06	2.19	15.14	2.21		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
13.00	0	14.08	402	15.16	804
13.02	7	14.10	409	15.18	811
13.04	15	14.12	417	15.20	818
13.06	22	14.14	424	15.22	826
13.08	30	14.16	432	15.24	833
13.10	37	14.18	439	15.26	841
13.12	45	14.20	446	15.28	848
13.14	52	14.22	454	15.30	856
13.16	60	14.24	461	15.32	863
13.18	67	14.26	469	15.34	870
13.20	74	14.28	476	15.36	878
13.22	82	14.30	484	15.38	885
13.24	89	14.32	491	15.40	893
13.26	97	14.34	498	15.42	900
13.28	104	14.36	506	15.44	908
13.30	112	14.38	513	15.46	915
13.32	119	14.40	521	15.48	923
13.34	126	14.42	528	15.50	930
13.36	134	14.44	536	15.52	937
13.38	141	14.46	543	15.54	945
13.40	149	14.48	551	15.56	952
13.42	156	14.50	558	15.58	960
13.44	164	14.52	565	15.60	967
13.46	171	14.54	573	15.62	975
13.48	179	14.56	580	15.64	982
13.50	186	14.58	588	15.66	990
13.52	193	14.60	595	15.68	997
13.54	201	14.62	603	15.70	1,004
13.56	208	14.64	610	15.72	1,012
13.58	216	14.66	618	15.74	1,019
13.60	223	14.68	625	15.76	1,027
13.62	231	14.70	632	15.78	1,034
13.64	238	14.72	640	15.80	1,042
13.66	246	14.74	647	15.82	1,049
13.68	253	14.76	655	15.84	1,056
13.70	260	14.78	662	15.86	1,064
13.72	268	14.80	670	15.88	1,071
13.74	275	14.82	677	15.90	1,079
13.76	283	14.84	684	15.92	1,086
13.78	290	14.86	692	15.94	1,094
13.80	298	14.88	699	15.96	1,101
13.82	305	14.90	707	15.98	1,109
13.84	312	14.92	714	16.00	**1,116**
13.86	320	14.94	722		
13.88	327	14.96	729		
13.90	335	14.98	737		
13.92	342	15.00	744		
13.94	350	15.02	751		
13.96	357	15.04	759		
13.98	365	15.06	766		
14.00	372	15.08	774		
14.02	379	15.10	781		
14.04	387	15.12	789		
14.06	394	15.14	796		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA2 Runoff Area=15,986 sf Runoff Depth>2.38"
Tc=5.0 min CN=70 Runoff=1.13 cfs 0.073 af

Pond 1P: Infiltration Storage Model Peak Elev=13.02' Storage=7 cf Inflow=1.13 cfs 0.073 af
Outflow=1.13 cfs 0.073 af

Total Runoff Area = 0.367 ac Runoff Volume = 0.073 af Average Runoff Depth = 2.38"
41.82% Pervious Area = 0.153 ac 58.18% Impervious Area = 0.213 ac

Subcatchment 1S: Drainage Area DA2

Time of Concentration

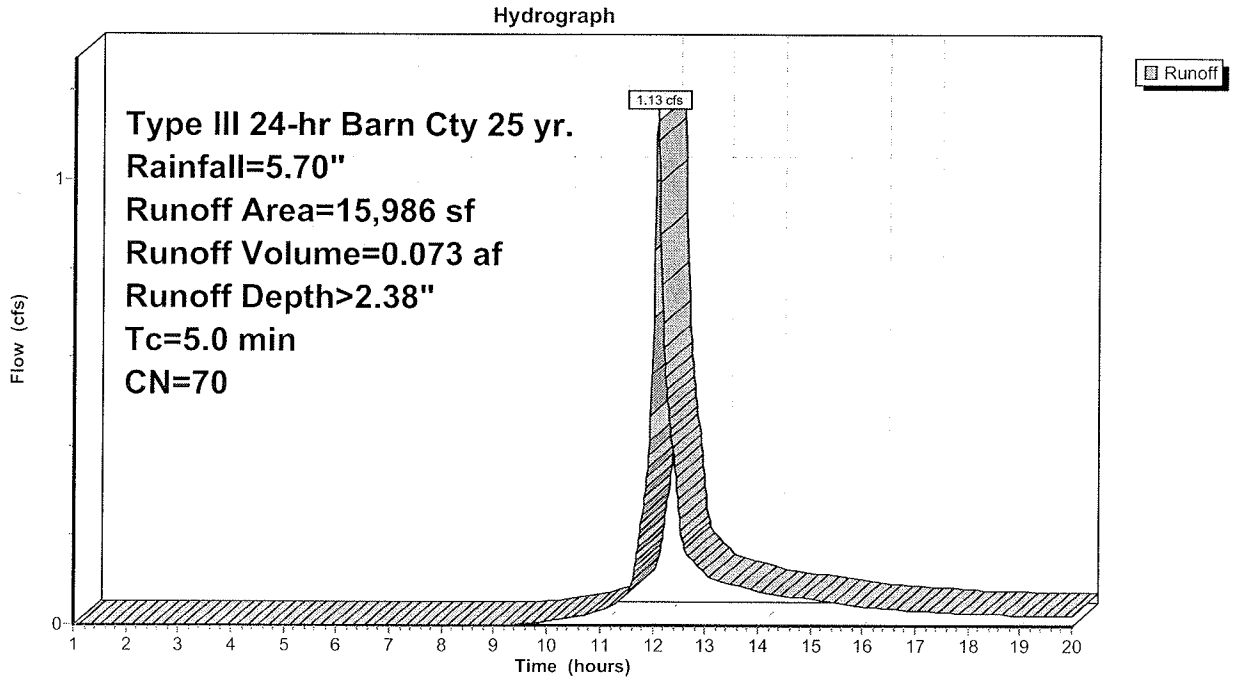
Runoff = 1.13 cfs @ 12.08 hrs, Volume= 0.073 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
9,300	98	Paved parking
6,686	32	Woods/grass comb., Good, HSG A
15,986	70	Weighted Average
6,686		Pervious Area
9,300		Impervious Area

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

Subcatchment 1S: Drainage Area DA2



Hydrograph for Subcatchment 1S: Drainage Area DA2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	0.29	0.25
1.20	0.07	0.00	0.00	12.00	2.85	0.63	**0.69**
1.40	0.08	0.00	0.00	12.20	3.57	1.05	**0.62**
1.60	0.09	0.00	0.00	12.40	3.91	1.27	0.38
1.80	0.10	0.00	0.00	12.60	4.07	1.37	0.17
2.00	0.11	0.00	0.00	12.80	4.18	1.45	0.14
2.20	0.13	0.00	0.00	13.00	4.27	1.52	0.12
2.40	0.14	0.00	0.00	13.20	4.36	1.57	0.10
2.60	0.15	0.00	0.00	13.40	4.43	1.62	0.10
2.80	0.16	0.00	0.00	13.60	4.50	1.67	0.09
3.00	0.18	0.00	0.00	13.80	4.56	1.72	0.08
3.20	0.19	0.00	0.00	14.00	4.62	1.76	0.08
3.40	0.20	0.00	0.00	14.20	4.68	1.80	0.07
3.60	0.22	0.00	0.00	14.40	4.73	1.84	0.07
3.80	0.23	0.00	0.00	14.60	4.78	1.87	0.07
4.00	0.25	0.00	0.00	14.80	4.83	1.91	0.06
4.20	0.26	0.00	0.00	15.00	4.87	1.94	0.06
4.40	0.28	0.00	0.00	15.20	4.91	1.97	0.06
4.60	0.29	0.00	0.00	15.40	4.95	2.00	0.05
4.80	0.31	0.00	0.00	15.60	4.99	2.03	0.05
5.00	0.32	0.00	0.00	15.80	5.02	2.05	0.05
5.20	0.34	0.00	0.00	16.00	5.05	2.07	0.04
5.40	0.36	0.00	0.00	16.20	5.08	2.10	0.04
5.60	0.37	0.00	0.00	16.40	5.11	2.12	0.04
5.80	0.39	0.00	0.00	16.60	5.13	2.14	0.04
6.00	0.41	0.00	0.00	16.80	5.16	2.16	0.04
6.20	0.43	0.00	0.00	17.00	5.18	2.17	0.03
6.40	0.45	0.00	0.00	17.20	5.21	2.19	0.03
6.60	0.47	0.00	0.00	17.40	5.23	2.21	0.03
6.80	0.49	0.00	0.00	17.60	5.25	2.22	0.03
7.00	0.52	0.00	0.00	17.80	5.27	2.24	0.03
7.20	0.54	0.00	0.00	18.00	5.29	2.25	0.03
7.40	0.57	0.00	0.00	18.20	5.31	2.27	0.03
7.60	0.59	0.00	0.00	18.40	5.33	2.28	0.02
7.80	0.62	0.00	0.00	18.60	5.34	2.29	0.02
8.00	0.65	0.00	0.00	18.80	5.36	2.31	0.02
8.20	0.68	0.00	0.00	19.00	5.38	2.32	0.02
8.40	0.71	0.00	0.00	19.20	5.39	2.33	0.02
8.60	0.75	0.00	0.00	19.40	5.41	2.34	0.02
8.80	0.79	0.00	0.00	19.60	5.42	2.36	0.02
9.00	0.83	0.00	0.00	19.80	5.44	2.37	0.02
9.20	0.87	0.00	0.00	20.00	**5.45**	**2.38**	0.02
9.40	0.92	0.00	0.00				
9.60	0.97	0.00	0.00				
9.80	1.02	0.01	0.01				
10.00	1.08	0.01	0.01				
10.20	1.14	0.02	0.01				
10.40	1.20	0.03	0.02				
10.60	1.27	0.04	0.02				
10.80	1.34	0.05	0.03				
11.00	1.42	0.07	0.03				
11.20	1.52	0.09	0.04				
11.40	1.63	0.12	0.06				
11.60	1.79	0.17	0.09				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.367 ac, Inflow Depth > 2.38" for Barn Cty 25 yr. event
Inflow = 1.13 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 1.13 cfs @ 12.08 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.1 min
Primary = 1.13 cfs @ 12.08 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 13.02' @ 12.08 hrs Surf.Area= 0 sf Storage= 7 cf

Plug-Flow detention time=0.1 min calculated for 0.073 af (100% of inflow)
Center-of-Mass det. time=0.1 min (801.3 - 801.3)

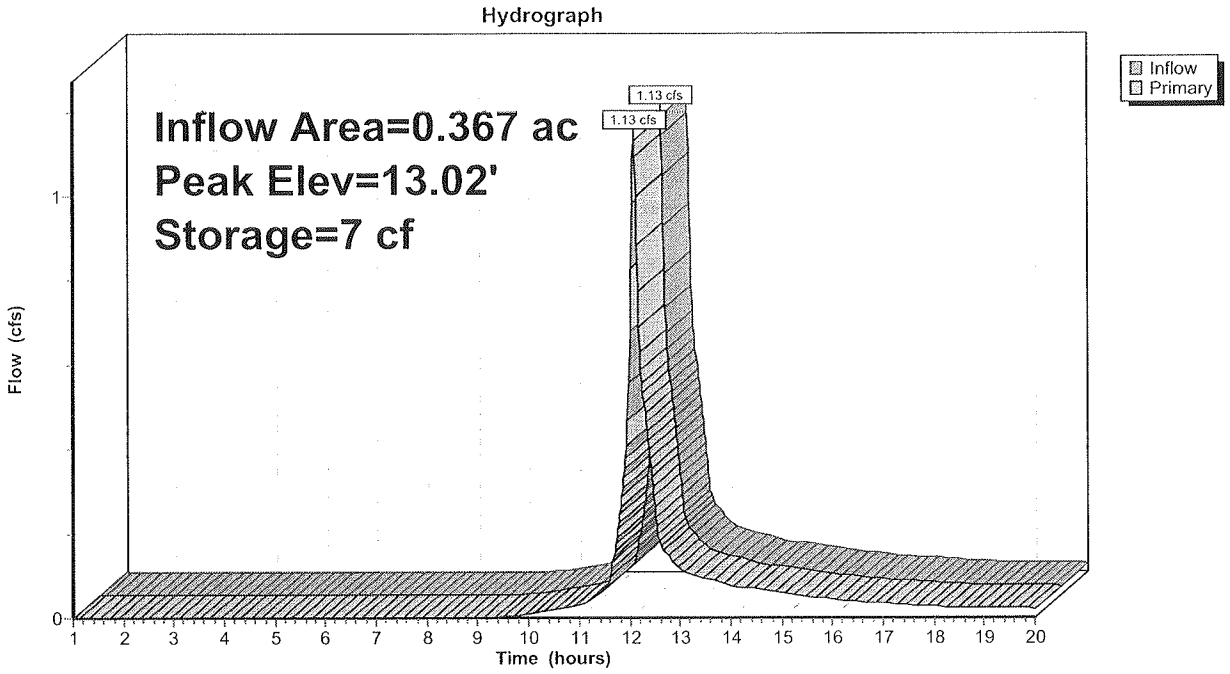
Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	1,116 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
13.00	0
14.00	372
15.00	744
16.00	1,116

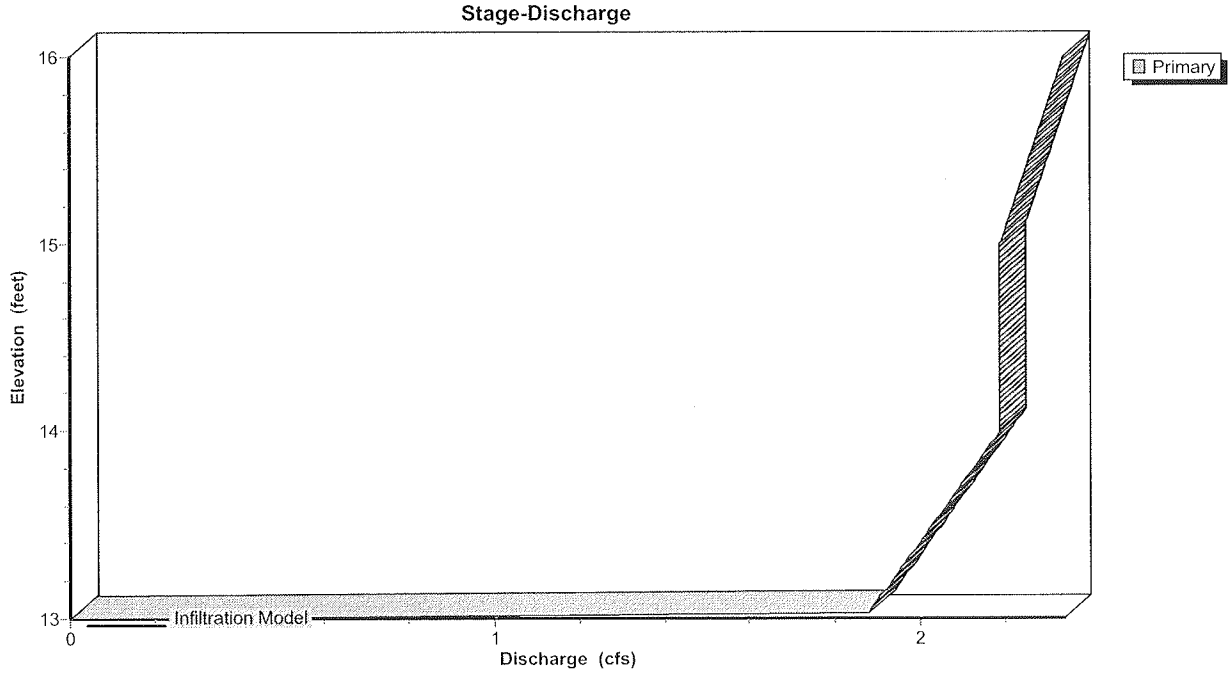
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 12.90 13.00 14.00 15.00 16.00 Disch. (cfs) 0.000 1.870 2.190 2.190 2.340

Primary OutFlow Max=1.88 cfs @ 12.08 hrs HW=13.02' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.88 cfs)

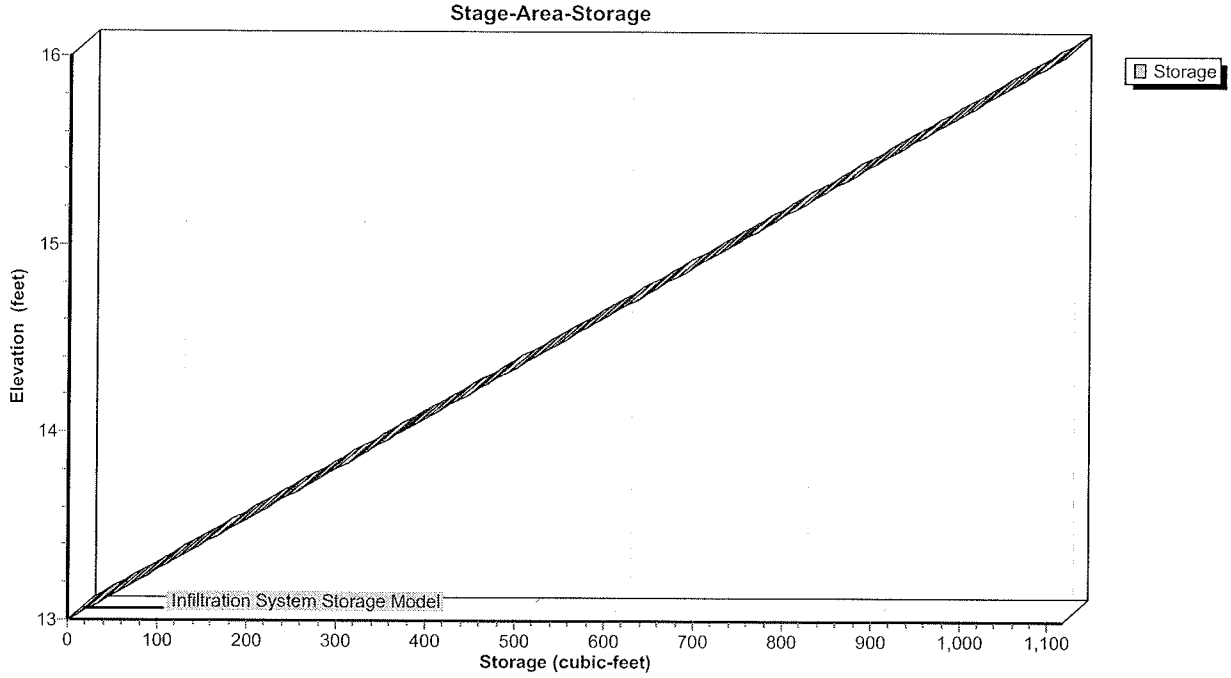
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

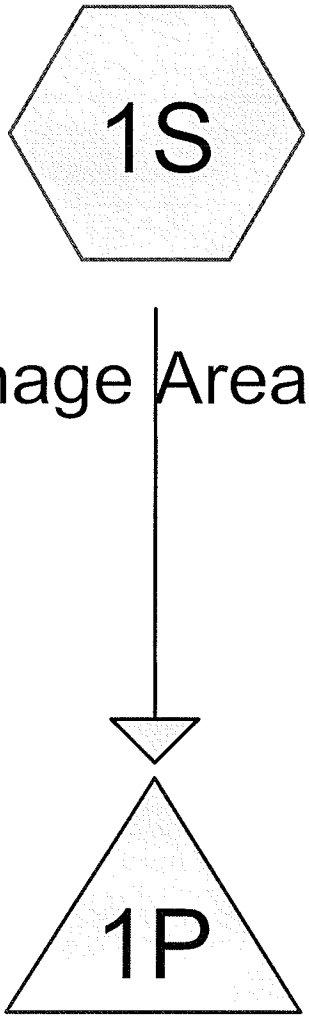
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	13.00	0.00
1.20	0.00	0	13.00	0.00
1.40	0.00	0	13.00	0.00
1.60	0.00	0	13.00	0.00
1.80	0.00	0	13.00	0.00
2.00	0.00	0	13.00	0.00
2.20	0.00	0	13.00	0.00
2.40	0.00	0	13.00	0.00
2.60	0.00	0	13.00	0.00
2.80	0.00	0	13.00	0.00
3.00	0.00	0	13.00	0.00
3.20	0.00	0	13.00	0.00
3.40	0.00	0	13.00	0.00
3.60	0.00	0	13.00	0.00
3.80	0.00	0	13.00	0.00
4.00	0.00	0	13.00	0.00
4.20	0.00	0	13.00	0.00
4.40	0.00	0	13.00	0.00
4.60	0.00	0	13.00	0.00
4.80	0.00	0	13.00	0.00
5.00	0.00	0	13.00	0.00
5.20	0.00	0	13.00	0.00
5.40	0.00	0	13.00	0.00
5.60	0.00	0	13.00	0.00
5.80	0.00	0	13.00	0.00
6.00	0.00	0	13.00	0.00
6.20	0.00	0	13.00	0.00
6.40	0.00	0	13.00	0.00
6.60	0.00	0	13.00	0.00
6.80	0.00	0	13.00	0.00
7.00	0.00	0	13.00	0.00
7.20	0.00	0	13.00	0.00
7.40	0.00	0	13.00	0.00
7.60	0.00	0	13.00	0.00
7.80	0.00	0	13.00	0.00
8.00	0.00	0	13.00	0.00
8.20	0.00	0	13.00	0.00
8.40	0.00	0	13.00	0.00
8.60	0.00	0	13.00	0.00
8.80	0.00	0	13.00	0.00
9.00	0.00	0	13.00	0.00
9.20	0.00	0	13.00	0.00
9.40	0.00	0	13.00	0.00
9.60	0.00	0	13.00	0.00
9.80	0.01	0	13.00	0.01
10.00	0.01	0	13.00	0.01
10.20	0.01	0	13.00	0.01
10.40	0.02	0	13.00	0.02
10.60	0.02	0	13.00	0.02
10.80	0.03	0	13.00	0.03
11.00	0.03	0	13.00	0.03
11.20	0.04	0	13.00	0.04
11.40	0.06	0	13.00	0.06
11.60	0.09	1	13.00	0.09
11.80	0.25	1	13.00	0.25
12.00	**0.69**	**4**	**13.01**	**0.68**
12.20	**0.62**	**4**	**13.01**	**0.63**
12.40	0.38	2	13.01	0.38
12.60	0.17	1	13.00	0.17
12.80	0.14	1	13.00	0.14
13.00	0.12	1	13.00	0.12
13.20	0.10	1	13.00	0.10
13.40	0.10	1	13.00	0.10
13.60	0.09	1	13.00	0.09
13.80	0.08	0	13.00	0.08
14.00	0.08	0	13.00	0.08
14.20	0.07	0	13.00	0.07
14.40	0.07	0	13.00	0.07
14.60	0.07	0	13.00	0.07
14.80	0.06	0	13.00	0.06
15.00	0.06	0	13.00	0.06
15.20	0.06	0	13.00	0.06
15.40	0.05	0	13.00	0.05
15.60	0.05	0	13.00	0.05
15.80	0.05	0	13.00	0.05
16.00	0.04	0	13.00	0.04
16.20	0.04	0	13.00	0.04
16.40	0.04	0	13.00	0.04
16.60	0.04	0	13.00	0.04
16.80	0.04	0	13.00	0.04
17.00	0.03	0	13.00	0.03
17.20	0.03	0	13.00	0.03
17.40	0.03	0	13.00	0.03
17.60	0.03	0	13.00	0.03
17.80	0.03	0	13.00	0.03
18.00	0.03	0	13.00	0.03
18.20	0.03	0	13.00	0.03
18.40	0.02	0	13.00	0.02
18.60	0.02	0	13.00	0.02
18.80	0.02	0	13.00	0.02
19.00	0.02	0	13.00	0.02
19.20	0.02	0	13.00	0.02
19.40	0.02	0	13.00	0.02
19.60	0.02	0	13.00	0.02
19.80	0.02	0	13.00	0.02
20.00	0.02	0	13.00	0.02

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
13.00	0.00	14.08	2.19	15.16	2.21
13.02	1.88	14.10	2.19	15.18	2.22
13.04	1.88	14.12	2.19	15.20	2.22
13.06	1.89	14.14	2.19	15.22	2.22
13.08	1.90	14.16	2.19	15.24	2.23
13.10	1.90	14.18	2.19	15.26	2.23
13.12	1.91	14.20	2.19	15.28	2.23
13.14	1.91	14.22	2.19	15.30	2.23
13.16	1.92	14.24	2.19	15.32	2.24
13.18	1.93	14.26	2.19	15.34	2.24
13.20	1.93	14.28	2.19	15.36	2.24
13.22	1.94	14.30	2.19	15.38	2.25
13.24	1.95	14.32	2.19	15.40	2.25
13.26	1.95	14.34	2.19	15.42	2.25
13.28	1.96	14.36	2.19	15.44	2.26
13.30	1.97	14.38	2.19	15.46	2.26
13.32	1.97	14.40	2.19	15.48	2.26
13.34	1.98	14.42	2.19	15.50	2.26
13.36	1.99	14.44	2.19	15.52	2.27
13.38	1.99	14.46	2.19	15.54	2.27
13.40	2.00	14.48	2.19	15.56	2.27
13.42	2.00	14.50	2.19	15.58	2.28
13.44	2.01	14.52	2.19	15.60	2.28
13.46	2.02	14.54	2.19	15.62	2.28
13.48	2.02	14.56	2.19	15.64	2.29
13.50	2.03	14.58	2.19	15.66	2.29
13.52	2.04	14.60	2.19	15.68	2.29
13.54	2.04	14.62	2.19	15.70	2.29
13.56	2.05	14.64	2.19	15.72	2.30
13.58	2.06	14.66	2.19	15.74	2.30
13.60	2.06	14.68	2.19	15.76	2.30
13.62	2.07	14.70	2.19	15.78	2.31
13.64	2.07	14.72	2.19	15.80	2.31
13.66	2.08	14.74	2.19	15.82	2.31
13.68	2.09	14.76	2.19	15.84	2.32
13.70	2.09	14.78	2.19	15.86	2.32
13.72	2.10	14.80	2.19	15.88	2.32
13.74	2.11	14.82	2.19	15.90	2.32
13.76	2.11	14.84	2.19	15.92	2.33
13.78	2.12	14.86	2.19	15.94	2.33
13.80	2.13	14.88	2.19	15.96	2.33
13.82	2.13	14.90	2.19	15.98	2.34
13.84	2.14	14.92	2.19	16.00	**2.34**
13.86	2.15	14.94	2.19		
13.88	2.15	14.96	2.19		
13.90	2.16	14.98	2.19		
13.92	2.16	15.00	2.19		
13.94	2.17	15.02	2.19		
13.96	2.18	15.04	2.20		
13.98	2.18	15.06	2.20		
14.00	2.19	15.08	2.20		
14.02	2.19	15.10	2.21		
14.04	2.19	15.12	2.21		
14.06	2.19	15.14	2.21		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
13.00	0	14.08	402	15.16	804
13.02	7	14.10	409	15.18	811
13.04	15	14.12	417	15.20	818
13.06	22	14.14	424	15.22	826
13.08	30	14.16	432	15.24	833
13.10	37	14.18	439	15.26	841
13.12	45	14.20	446	15.28	848
13.14	52	14.22	454	15.30	856
13.16	60	14.24	461	15.32	863
13.18	67	14.26	469	15.34	870
13.20	74	14.28	476	15.36	878
13.22	82	14.30	484	15.38	885
13.24	89	14.32	491	15.40	893
13.26	97	14.34	498	15.42	900
13.28	104	14.36	506	15.44	908
13.30	112	14.38	513	15.46	915
13.32	119	14.40	521	15.48	923
13.34	126	14.42	528	15.50	930
13.36	134	14.44	536	15.52	937
13.38	141	14.46	543	15.54	945
13.40	149	14.48	551	15.56	952
13.42	156	14.50	558	15.58	960
13.44	164	14.52	565	15.60	967
13.46	171	14.54	573	15.62	975
13.48	179	14.56	580	15.64	982
13.50	186	14.58	588	15.66	990
13.52	193	14.60	595	15.68	997
13.54	201	14.62	603	15.70	1,004
13.56	208	14.64	610	15.72	1,012
13.58	216	14.66	618	15.74	1,019
13.60	223	14.68	625	15.76	1,027
13.62	231	14.70	632	15.78	1,034
13.64	238	14.72	640	15.80	1,042
13.66	246	14.74	647	15.82	1,049
13.68	253	14.76	655	15.84	1,056
13.70	260	14.78	662	15.86	1,064
13.72	268	14.80	670	15.88	1,071
13.74	275	14.82	677	15.90	1,079
13.76	283	14.84	684	15.92	1,086
13.78	290	14.86	692	15.94	1,094
13.80	298	14.88	699	15.96	1,101
13.82	305	14.90	707	15.98	1,109
13.84	312	14.92	714	16.00	**1,116**
13.86	320	14.94	722		
13.88	327	14.96	729		
13.90	335	14.98	737		
13.92	342	15.00	744		
13.94	350	15.02	751		
13.96	357	15.04	759		
13.98	365	15.06	766		
14.00	372	15.08	774		
14.02	379	15.10	781		
14.04	387	15.12	789		
14.06	394	15.14	796		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA3
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.167	32	Woods/grass comb., Good, HSG A (1S)
0.369	98	Paved parking (1S)
0.537		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA3 Runoff Area=23,372 sf Runoff Depth>4.78"
Tc=5.0 min CN=77 Runoff=3.29 cfs 0.214 af

Pond 1P: Infiltration Storage Model Peak Elev=14.89' Storage=806 cf Inflow=3.29 cfs 0.214 af
Outflow=1.88 cfs 0.214 af

Total Runoff Area = 0.537 ac Runoff Volume = 0.214 af Average Runoff Depth = 4.78"
31.20% Pervious Area = 0.167 ac 68.80% Impervious Area = 0.369 ac

Subcatchment 1S: Drainage Area DA3

Time of Concentration

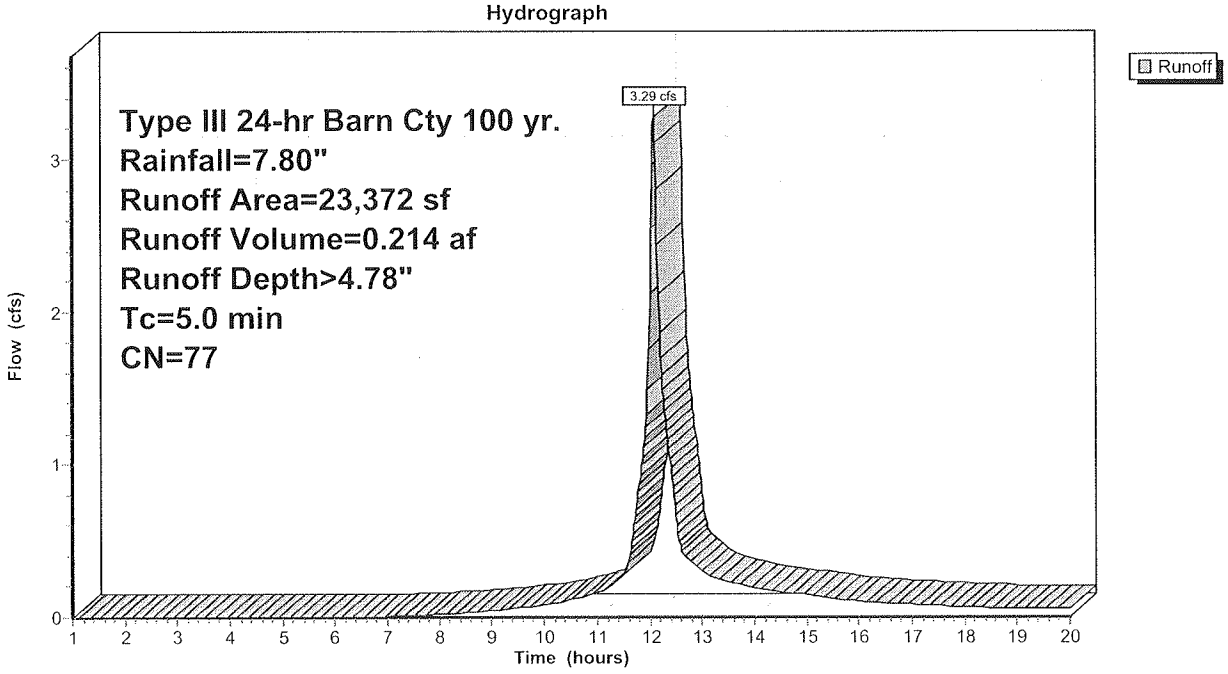
Runoff = 3.29 cfs @ 12.07 hrs, Volume= 0.214 af, Depth> 4.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
16,081	98	Paved parking
7,291	32	Woods/grass comb., Good, HSG A
23,372	77	Weighted Average
7,291		Pervious Area
16,081		Impervious Area

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

Subcatchment 1S: Drainage Area DA3



Hydrograph for Subcatchment 1S: Drainage Area DA3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	1.01	0.87
1.20	0.09	0.00	0.00	12.00	3.90	1.73	**2.12**
1.40	0.11	0.00	0.00	12.20	4.89	2.53	**1.70**
1.60	0.12	0.00	0.00	12.40	5.35	2.92	0.98
1.80	0.14	0.00	0.00	12.60	5.56	3.10	0.44
2.00	0.16	0.00	0.00	12.80	5.72	3.24	0.36
2.20	0.17	0.00	0.00	13.00	5.85	3.35	0.29
2.40	0.19	0.00	0.00	13.20	5.96	3.44	0.26
2.60	0.20	0.00	0.00	13.40	6.06	3.53	0.24
2.80	0.22	0.00	0.00	13.60	6.16	3.62	0.22
3.00	0.24	0.00	0.00	13.80	6.25	3.69	0.21
3.20	0.26	0.00	0.00	14.00	6.33	3.77	0.19
3.40	0.28	0.00	0.00	14.20	6.40	3.83	0.18
3.60	0.30	0.00	0.00	14.40	6.47	3.89	0.17
3.80	0.32	0.00	0.00	14.60	6.54	3.95	0.16
4.00	0.34	0.00	0.00	14.80	6.60	4.01	0.15
4.20	0.36	0.00	0.00	15.00	6.66	4.06	0.14
4.40	0.38	0.00	0.00	15.20	6.72	4.11	0.14
4.60	0.40	0.00	0.00	15.40	6.77	4.16	0.13
4.80	0.42	0.00	0.00	15.60	6.82	4.21	0.12
5.00	0.44	0.00	0.00	15.80	6.87	4.25	0.11
5.20	0.47	0.00	0.00	16.00	6.91	4.29	0.10
5.40	0.49	0.00	0.00	16.20	6.95	4.32	0.10
5.60	0.51	0.00	0.00	16.40	6.99	4.36	0.09
5.80	0.54	0.00	0.00	16.60	7.03	4.39	0.09
6.00	0.56	0.00	0.00	16.80	7.06	4.42	0.09
6.20	0.59	0.00	0.00	17.00	7.09	4.45	0.08
6.40	0.61	0.00	0.00	17.20	7.13	4.48	0.08
6.60	0.64	0.00	0.00	17.40	7.16	4.51	0.07
6.80	0.67	0.00	0.00	17.60	7.19	4.53	0.07
7.00	0.71	0.00	0.01	17.80	7.21	4.56	0.07
7.20	0.74	0.01	0.01	18.00	7.24	4.58	0.06
7.40	0.77	0.01	0.01	18.20	7.26	4.60	0.06
7.60	0.81	0.01	0.01	18.40	7.29	4.62	0.06
7.80	0.85	0.02	0.01	18.60	7.31	4.65	0.06
8.00	0.89	0.03	0.02	18.80	7.33	4.67	0.06
8.20	0.93	0.03	0.02	19.00	7.36	4.69	0.06
8.40	0.98	0.04	0.03	19.20	7.38	4.71	0.05
8.60	1.03	0.05	0.03	19.40	7.40	4.73	0.05
8.80	1.08	0.07	0.04	19.60	7.42	4.75	0.05
9.00	1.14	0.08	0.04	19.80	7.44	4.77	0.05
9.20	1.20	0.10	0.05	20.00	**7.46**	**4.79**	0.05
9.40	1.26	0.12	0.06				
9.60	1.33	0.14	0.06				
9.80	1.40	0.17	0.07				
10.00	1.47	0.20	0.08				
10.20	1.55	0.23	0.09				
10.40	1.64	0.27	0.11				
10.60	1.74	0.31	0.12				
10.80	1.84	0.36	0.14				
11.00	1.95	0.42	0.16				
11.20	2.08	0.49	0.19				
11.40	2.24	0.58	0.25				
11.60	2.45	0.71	0.37				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.537 ac, Inflow Depth > 4.78" for Barn Cty 100 yr. event
Inflow = 3.29 cfs @ 12.07 hrs, Volume= 0.214 af
Outflow = 1.88 cfs @ 12.18 hrs, Volume= 0.214 af, Atten= 43%, Lag= 6.4 min
Primary = 1.88 cfs @ 12.18 hrs, Volume= 0.214 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 14.89' @ 12.18 hrs Surf.Area= 0 sf Storage= 806 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=1.9 min (778.8 - 776.9)

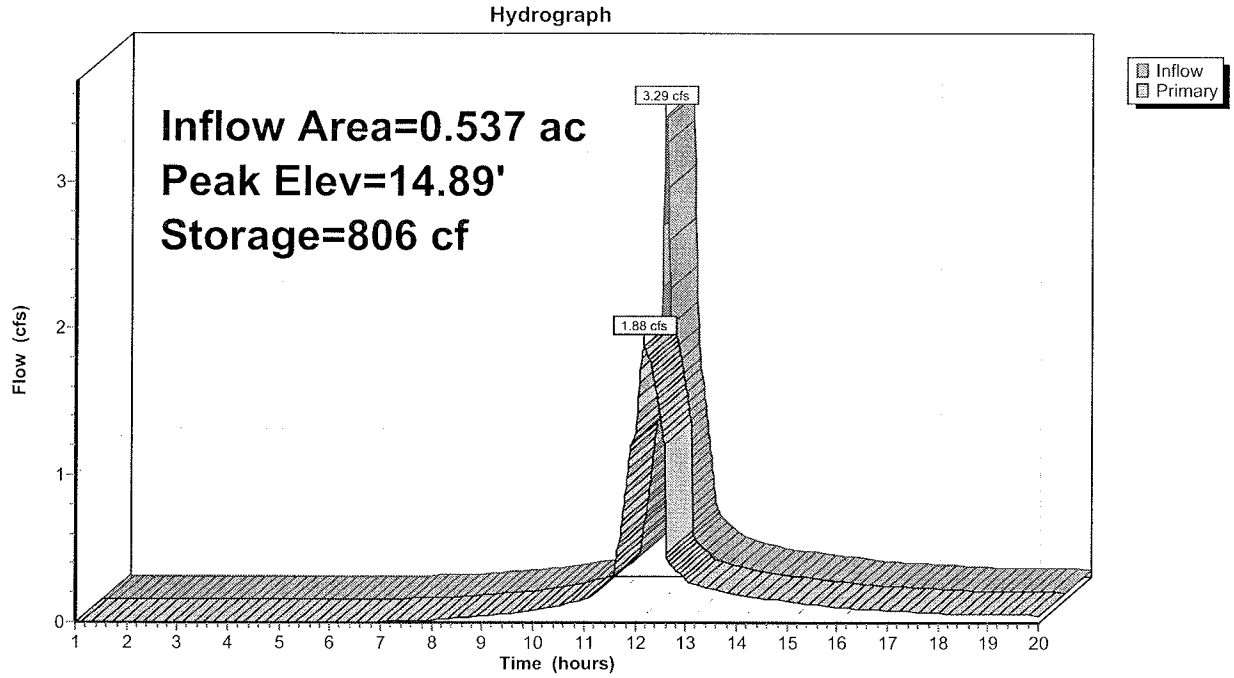
Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	952 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.50	0
12.50	238
13.50	476
14.50	714
15.50	952

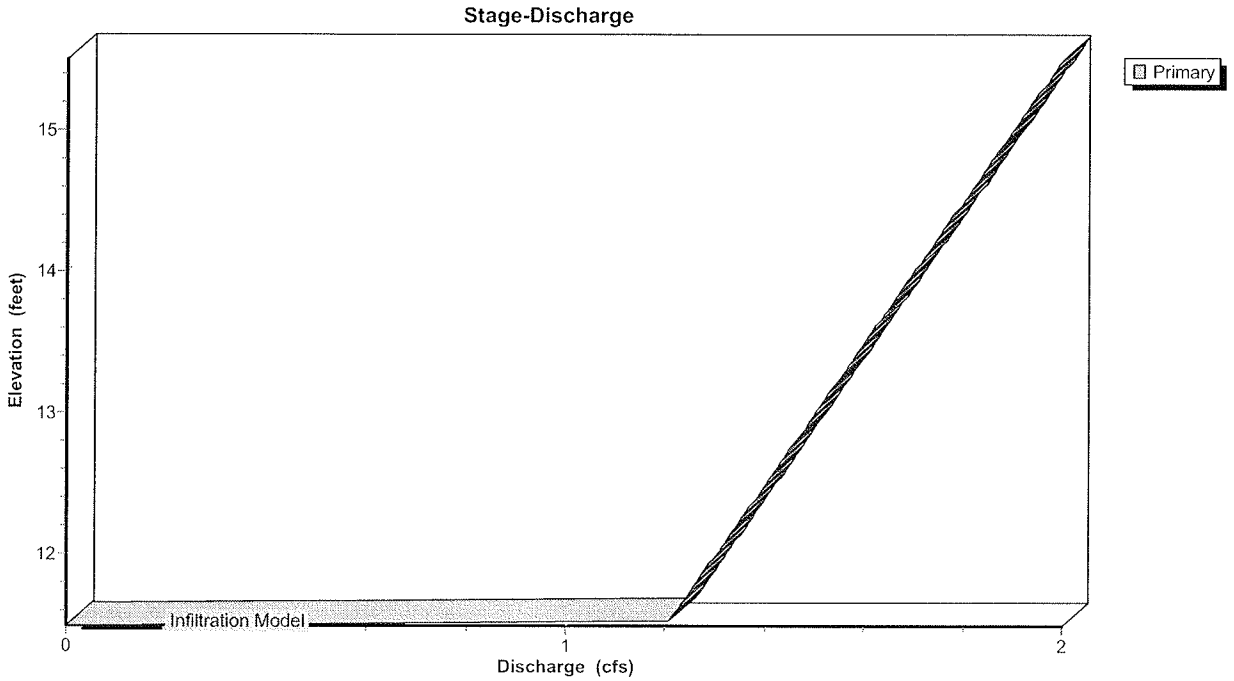
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model**
			Elev. (feet) 11.40 11.50 12.50 13.50 14.50 15.50
			Disch. (cfs) 0.000 1.200 1.400 1.600 1.800 2.000

Primary OutFlow Max=1.88 cfs @ 12.18 hrs HW=14.88' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.88 cfs)

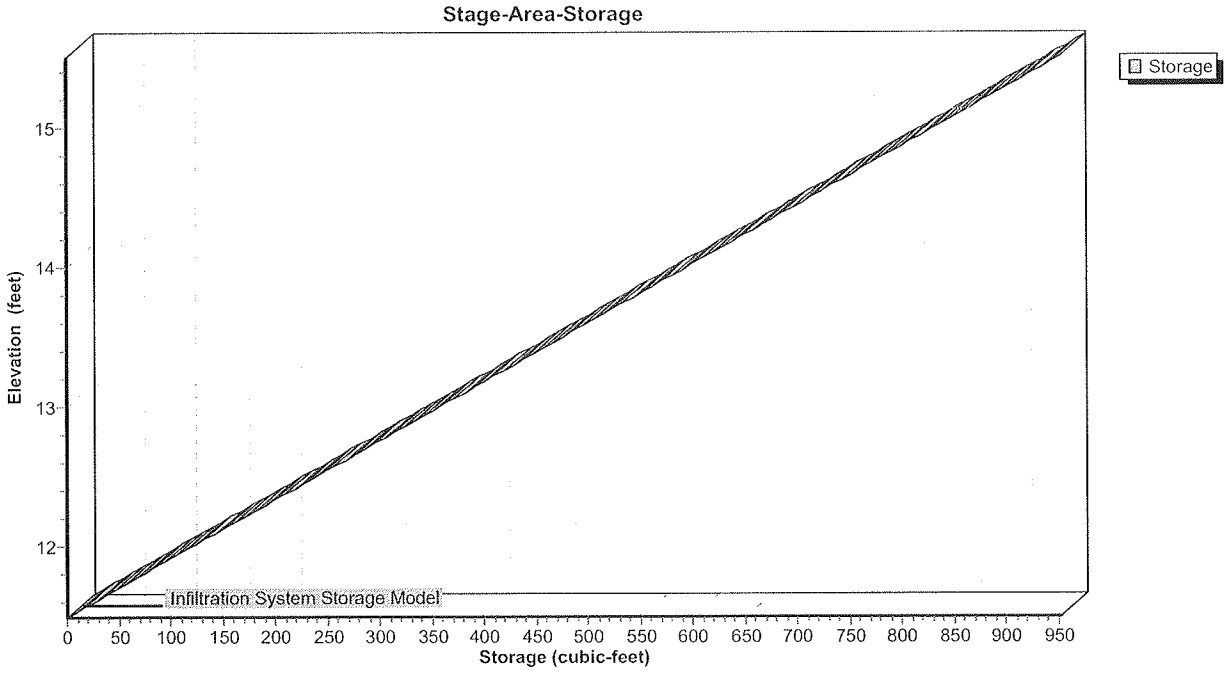
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.50	0.00
1.20	0.00	0	11.50	0.00
1.40	0.00	0	11.50	0.00
1.60	0.00	0	11.50	0.00
1.80	0.00	0	11.50	0.00
2.00	0.00	0	11.50	0.00
2.20	0.00	0	11.50	0.00
2.40	0.00	0	11.50	0.00
2.60	0.00	0	11.50	0.00
2.80	0.00	0	11.50	0.00
3.00	0.00	0	11.50	0.00
3.20	0.00	0	11.50	0.00
3.40	0.00	0	11.50	0.00
3.60	0.00	0	11.50	0.00
3.80	0.00	0	11.50	0.00
4.00	0.00	0	11.50	0.00
4.20	0.00	0	11.50	0.00
4.40	0.00	0	11.50	0.00
4.60	0.00	0	11.50	0.00
4.80	0.00	0	11.50	0.00
5.00	0.00	0	11.50	0.00
5.20	0.00	0	11.50	0.00
5.40	0.00	0	11.50	0.00
5.60	0.00	0	11.50	0.00
5.80	0.00	0	11.50	0.00
6.00	0.00	0	11.50	0.00
6.20	0.00	0	11.50	0.00
6.40	0.00	0	11.50	0.00
6.60	0.00	0	11.50	0.00
6.80	0.00	0	11.50	0.00
7.00	0.01	0	11.50	0.01
7.20	0.01	0	11.50	0.01
7.40	0.01	0	11.50	0.01
7.60	0.01	0	11.50	0.01
7.80	0.01	0	11.50	0.01
8.00	0.02	0	11.50	0.02
8.20	0.02	0	11.50	0.02
8.40	0.03	0	11.50	0.03
8.60	0.03	0	11.50	0.03
8.80	0.04	0	11.50	0.04
9.00	0.04	0	11.50	0.04
9.20	0.05	0	11.50	0.05
9.40	0.06	0	11.50	0.06
9.60	0.06	0	11.50	0.06
9.80	0.07	1	11.50	0.07
10.00	0.08	1	11.50	0.08
10.20	0.09	1	11.50	0.09
10.40	0.11	1	11.50	0.11
10.60	0.12	1	11.50	0.12
10.80	0.14	1	11.50	0.14
11.00	0.16	1	11.51	0.15
11.20	0.19	2	11.51	0.19
11.40	0.25	2	11.51	0.25
11.60	0.37	3	11.51	0.36
11.80	0.87	7	11.53	0.87
12.00	**2.12**	**107**	**11.95**	**1.29**
12.20	**1.70**	**799**	**14.86**	**1.87**
12.40	0.98	471	13.48	1.60
12.60	0.44	4	11.52	0.48
12.80	0.36	3	11.51	0.36
13.00	0.29	2	11.51	0.29
13.20	0.26	2	11.51	0.26
13.40	0.24	2	11.51	0.24
13.60	0.22	2	11.51	0.22
13.80	0.21	2	11.51	0.21
14.00	0.19	1	11.51	0.19
14.20	0.18	1	11.51	0.18
14.40	0.17	1	11.51	0.17
14.60	0.16	1	11.51	0.16
14.80	0.15	1	11.51	0.15
15.00	0.14	1	11.50	0.14
15.20	0.14	1	11.50	0.14
15.40	0.13	1	11.50	0.13
15.60	0.12	1	11.50	0.12
15.80	0.11	1	11.50	0.11
16.00	0.10	1	11.50	0.10
16.20	0.10	1	11.50	0.10
16.40	0.09	1	11.50	0.09
16.60	0.09	1	11.50	0.09
16.80	0.09	1	11.50	0.09
17.00	0.08	1	11.50	0.08
17.20	0.08	1	11.50	0.08
17.40	0.07	1	11.50	0.07
17.60	0.07	1	11.50	0.07
17.80	0.07	1	11.50	0.07
18.00	0.06	0	11.50	0.06
18.20	0.06	0	11.50	0.06
18.40	0.06	0	11.50	0.06
18.60	0.06	0	11.50	0.06
18.80	0.06	0	11.50	0.06
19.00	0.06	0	11.50	0.06
19.20	0.05	0	11.50	0.05
19.40	0.05	0	11.50	0.05
19.60	0.05	0	11.50	0.05
19.80	0.05	0	11.50	0.05
20.00	0.05	0	11.50	0.05

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.50	0.00	12.58	1.42	13.66	1.63	14.74	1.85
11.52	1.20	12.60	1.42	13.68	1.64	14.76	1.85
11.54	1.21	12.62	1.42	13.70	1.64	14.78	1.86
11.56	1.21	12.64	1.43	13.72	1.64	14.80	1.86
11.58	1.22	12.66	1.43	13.74	1.65	14.82	1.86
11.60	1.22	12.68	1.44	13.76	1.65	14.84	1.87
11.62	1.22	12.70	1.44	13.78	1.66	14.86	1.87
11.64	1.23	12.72	1.44	13.80	1.66	14.88	1.88
11.66	1.23	12.74	1.45	13.82	1.66	14.90	1.88
11.68	1.24	12.76	1.45	13.84	1.67	14.92	1.88
11.70	1.24	12.78	1.46	13.86	1.67	14.94	1.89
11.72	1.24	12.80	1.46	13.88	1.68	14.96	1.89
11.74	1.25	12.82	1.46	13.90	1.68	14.98	1.90
11.76	1.25	12.84	1.47	13.92	1.68	15.00	1.90
11.78	1.26	12.86	1.47	13.94	1.69	15.02	1.90
11.80	1.26	12.88	1.48	13.96	1.69	15.04	1.91
11.82	1.26	12.90	1.48	13.98	1.70	15.06	1.91
11.84	1.27	12.92	1.48	14.00	1.70	15.08	1.92
11.86	1.27	12.94	1.49	14.02	1.70	15.10	1.92
11.88	1.28	12.96	1.49	14.04	1.71	15.12	1.92
11.90	1.28	12.98	1.50	14.06	1.71	15.14	1.93
11.92	1.28	13.00	1.50	14.08	1.72	15.16	1.93
11.94	1.29	13.02	1.50	14.10	1.72	15.18	1.94
11.96	1.29	13.04	1.51	14.12	1.72	15.20	1.94
11.98	1.30	13.06	1.51	14.14	1.73	15.22	1.94
12.00	1.30	13.08	1.52	14.16	1.73	15.24	1.95
12.02	1.30	13.10	1.52	14.18	1.74	15.26	1.95
12.04	1.31	13.12	1.52	14.20	1.74	15.28	1.96
12.06	1.31	13.14	1.53	14.22	1.74	15.30	1.96
12.08	1.32	13.16	1.53	14.24	1.75	15.32	1.96
12.10	1.32	13.18	1.54	14.26	1.75	15.34	1.97
12.12	1.32	13.20	1.54	14.28	1.76	15.36	1.97
12.14	1.33	13.22	1.54	14.30	1.76	15.38	1.98
12.16	1.33	13.24	1.55	14.32	1.76	15.40	1.98
12.18	1.34	13.26	1.55	14.34	1.77	15.42	1.98
12.20	1.34	13.28	1.56	14.36	1.77	15.44	1.99
12.22	1.34	13.30	1.56	14.38	1.78	15.46	1.99
12.24	1.35	13.32	1.56	14.40	1.78	15.48	2.00
12.26	1.35	13.34	1.57	14.42	1.78	15.50	**2.00**
12.28	1.36	13.36	1.57	14.44	1.79		
12.30	1.36	13.38	1.58	14.46	1.79		
12.32	1.36	13.40	1.58	14.48	1.80		
12.34	1.37	13.42	1.58	14.50	1.80		
12.36	1.37	13.44	1.59	14.52	1.80		
12.38	1.38	13.46	1.59	14.54	1.81		
12.40	1.38	13.48	1.60	14.56	1.81		
12.42	1.38	13.50	1.60	14.58	1.82		
12.44	1.39	13.52	1.60	14.60	1.82		
12.46	1.39	13.54	1.61	14.62	1.82		
12.48	1.40	13.56	1.61	14.64	1.83		
12.50	1.40	13.58	1.62	14.66	1.83		
12.52	1.40	13.60	1.62	14.68	1.84		
12.54	1.41	13.62	1.62	14.70	1.84		
12.56	1.41	13.64	1.63	14.72	1.84		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.50	0	12.58	257	13.66	514	14.74	771
11.52	5	12.60	262	13.68	519	14.76	776
11.54	10	12.62	267	13.70	524	14.78	781
11.56	14	12.64	271	13.72	528	14.80	785
11.58	19	12.66	276	13.74	533	14.82	790
11.60	24	12.68	281	13.76	538	14.84	795
11.62	29	12.70	286	13.78	543	14.86	800
11.64	33	12.72	290	13.80	547	14.88	804
11.66	38	12.74	295	13.82	552	14.90	809
11.68	43	12.76	300	13.84	557	14.92	814
11.70	48	12.78	305	13.86	562	14.94	819
11.72	52	12.80	309	13.88	566	14.96	823
11.74	57	12.82	314	13.90	571	14.98	828
11.76	62	12.84	319	13.92	576	15.00	833
11.78	67	12.86	324	13.94	581	15.02	838
11.80	71	12.88	328	13.96	585	15.04	843
11.82	76	12.90	333	13.98	590	15.06	847
11.84	81	12.92	338	14.00	595	15.08	852
11.86	86	12.94	343	14.02	600	15.10	857
11.88	90	12.96	347	14.04	605	15.12	862
11.90	95	12.98	352	14.06	609	15.14	866
11.92	100	13.00	357	14.08	614	15.16	871
11.94	105	13.02	362	14.10	619	15.18	876
11.96	109	13.04	367	14.12	624	15.20	881
11.98	114	13.06	371	14.14	628	15.22	885
12.00	119	13.08	376	14.16	633	15.24	890
12.02	124	13.10	381	14.18	638	15.26	895
12.04	129	13.12	386	14.20	643	15.28	900
12.06	133	13.14	390	14.22	647	15.30	904
12.08	138	13.16	395	14.24	652	15.32	909
12.10	143	13.18	400	14.26	657	15.34	914
12.12	148	13.20	405	14.28	662	15.36	919
12.14	152	13.22	409	14.30	666	15.38	923
12.16	157	13.24	414	14.32	671	15.40	928
12.18	162	13.26	419	14.34	676	15.42	933
12.20	167	13.28	424	14.36	681	15.44	938
12.22	171	13.30	428	14.38	685	15.46	942
12.24	176	13.32	433	14.40	690	15.48	947
12.26	181	13.34	438	14.42	695	15.50	**952**
12.28	186	13.36	443	14.44	700		
12.30	190	13.38	447	14.46	704		
12.32	195	13.40	452	14.48	709		
12.34	200	13.42	457	14.50	714		
12.36	205	13.44	462	14.52	719		
12.38	209	13.46	466	14.54	724		
12.40	214	13.48	471	14.56	728		
12.42	219	13.50	476	14.58	733		
12.44	224	13.52	481	14.60	738		
12.46	228	13.54	486	14.62	743		
12.48	233	13.56	490	14.64	747		
12.50	238	13.58	495	14.66	752		
12.52	243	13.60	500	14.68	757		
12.54	248	13.62	505	14.70	762		
12.56	252	13.64	509	14.72	766		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA3 Runoff Area=23,372 sf Runoff Depth>3.00"
Tc=5.0 min CN=77 Runoff=2.09 cfs 0.134 af

Pond 1P: Infiltration Storage Model Peak Elev=12.66' Storage=276 cf Inflow=2.09 cfs 0.134 af
Outflow=1.43 cfs 0.135 af

Total Runoff Area = 0.537 ac Runoff Volume = 0.134 af Average Runoff Depth = 3.00"
31.20% Pervious Area = 0.167 ac 68.80% Impervious Area = 0.369 ac

Subcatchment 1S: Drainage Area DA3

Time of Concentration

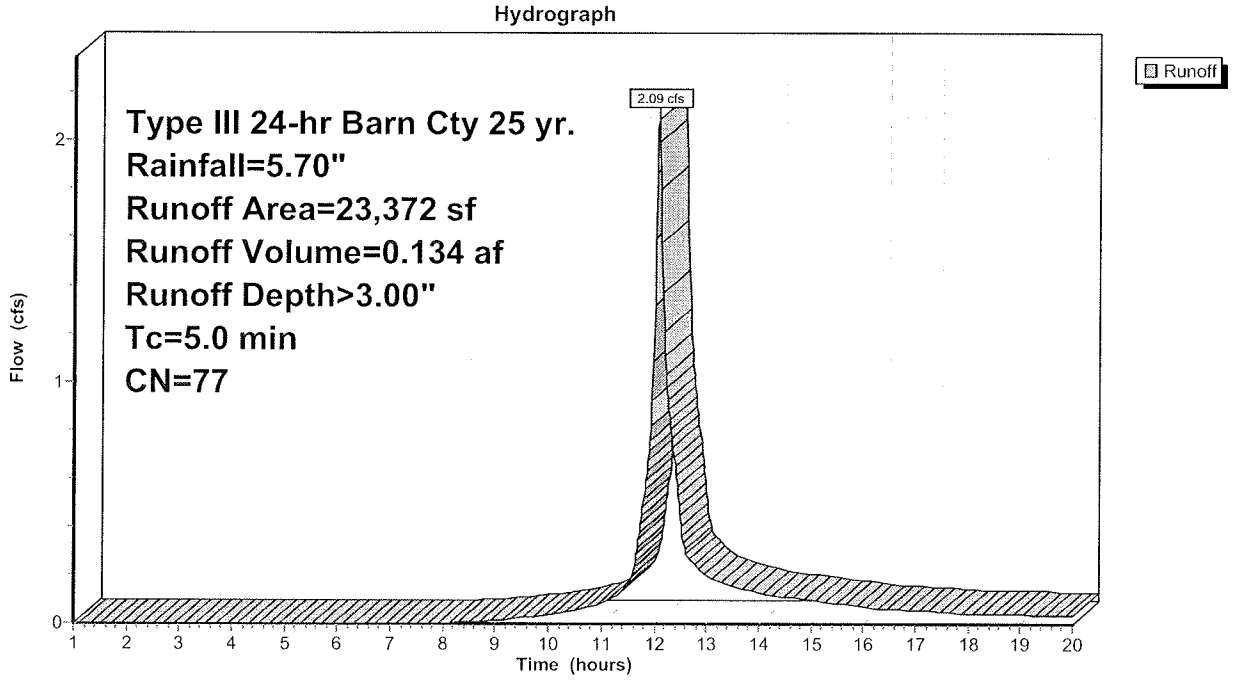
Runoff = 2.09 cfs @ 12.08 hrs, Volume= 0.134 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
16,081	98	Paved parking
7,291	32	Woods/grass comb., Good, HSG A
23,372	77	Weighted Average
7,291		Pervious Area
16,081		Impervious Area

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

Subcatchment 1S: Drainage Area DA3



Hydrograph for Subcatchment 1S: Drainage Area DA3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	0.52	0.52
1.20	0.07	0.00	0.00	12.00	2.85	0.97	**1.32**
1.40	0.08	0.00	0.00	12.20	3.57	1.48	**1.11**
1.60	0.09	0.00	0.00	12.40	3.91	1.74	0.65
1.80	0.10	0.00	0.00	12.60	4.07	1.86	0.30
2.00	0.11	0.00	0.00	12.80	4.18	1.95	0.24
2.20	0.13	0.00	0.00	13.00	4.27	2.03	0.20
2.40	0.14	0.00	0.00	13.20	4.36	2.09	0.17
2.60	0.15	0.00	0.00	13.40	4.43	2.15	0.16
2.80	0.16	0.00	0.00	13.60	4.50	2.21	0.15
3.00	0.18	0.00	0.00	13.80	4.56	2.26	0.14
3.20	0.19	0.00	0.00	14.00	4.62	2.31	0.13
3.40	0.20	0.00	0.00	14.20	4.68	2.36	0.12
3.60	0.22	0.00	0.00	14.40	4.73	2.40	0.11
3.80	0.23	0.00	0.00	14.60	4.78	2.44	0.11
4.00	0.25	0.00	0.00	14.80	4.83	2.48	0.10
4.20	0.26	0.00	0.00	15.00	4.87	2.51	0.10
4.40	0.28	0.00	0.00	15.20	4.91	2.55	0.09
4.60	0.29	0.00	0.00	15.40	4.95	2.58	0.09
4.80	0.31	0.00	0.00	15.60	4.99	2.61	0.08
5.00	0.32	0.00	0.00	15.80	5.02	2.64	0.08
5.20	0.34	0.00	0.00	16.00	5.05	2.67	0.07
5.40	0.36	0.00	0.00	16.20	5.08	2.69	0.07
5.60	0.37	0.00	0.00	16.40	5.11	2.71	0.06
5.80	0.39	0.00	0.00	16.60	5.13	2.74	0.06
6.00	0.41	0.00	0.00	16.80	5.16	2.76	0.06
6.20	0.43	0.00	0.00	17.00	5.18	2.78	0.06
6.40	0.45	0.00	0.00	17.20	5.21	2.80	0.05
6.60	0.47	0.00	0.00	17.40	5.23	2.82	0.05
6.80	0.49	0.00	0.00	17.60	5.25	2.83	0.05
7.00	0.52	0.00	0.00	17.80	5.27	2.85	0.05
7.20	0.54	0.00	0.00	18.00	5.29	2.87	0.04
7.40	0.57	0.00	0.00	18.20	5.31	2.88	0.04
7.60	0.59	0.00	0.00	18.40	5.33	2.90	0.04
7.80	0.62	0.00	0.00	18.60	5.34	2.91	0.04
8.00	0.65	0.00	0.00	18.80	5.36	2.93	0.04
8.20	0.68	0.00	0.00	19.00	5.38	2.94	0.04
8.40	0.71	0.00	0.01	19.20	5.39	2.95	0.04
8.60	0.75	0.01	0.01	19.40	5.41	2.97	0.04
8.80	0.79	0.01	0.01	19.60	5.42	2.98	0.04
9.00	0.83	0.02	0.01	19.80	5.44	3.00	0.04
9.20	0.87	0.02	0.02	20.00	**5.45**	**3.01**	0.03
9.40	0.92	0.03	0.02				
9.60	0.97	0.04	0.03				
9.80	1.02	0.05	0.03				
10.00	1.08	0.07	0.04				
10.20	1.14	0.08	0.04				
10.40	1.20	0.10	0.05				
10.60	1.27	0.12	0.06				
10.80	1.34	0.15	0.07				
11.00	1.42	0.18	0.08				
11.20	1.52	0.22	0.11				
11.40	1.63	0.27	0.14				
11.60	1.79	0.34	0.21				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.537 ac, Inflow Depth > 3.00" for Barn Cty 25 yr. event
Inflow = 2.09 cfs @ 12.08 hrs, Volume= 0.134 af
Outflow = 1.43 cfs @ 12.15 hrs, Volume= 0.135 af, Atten= 32%, Lag= 4.8 min
Primary = 1.43 cfs @ 12.15 hrs, Volume= 0.135 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 12.66' @ 12.15 hrs Surf.Area= 0 sf Storage= 276 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=0.6 min (788.3 - 787.8)

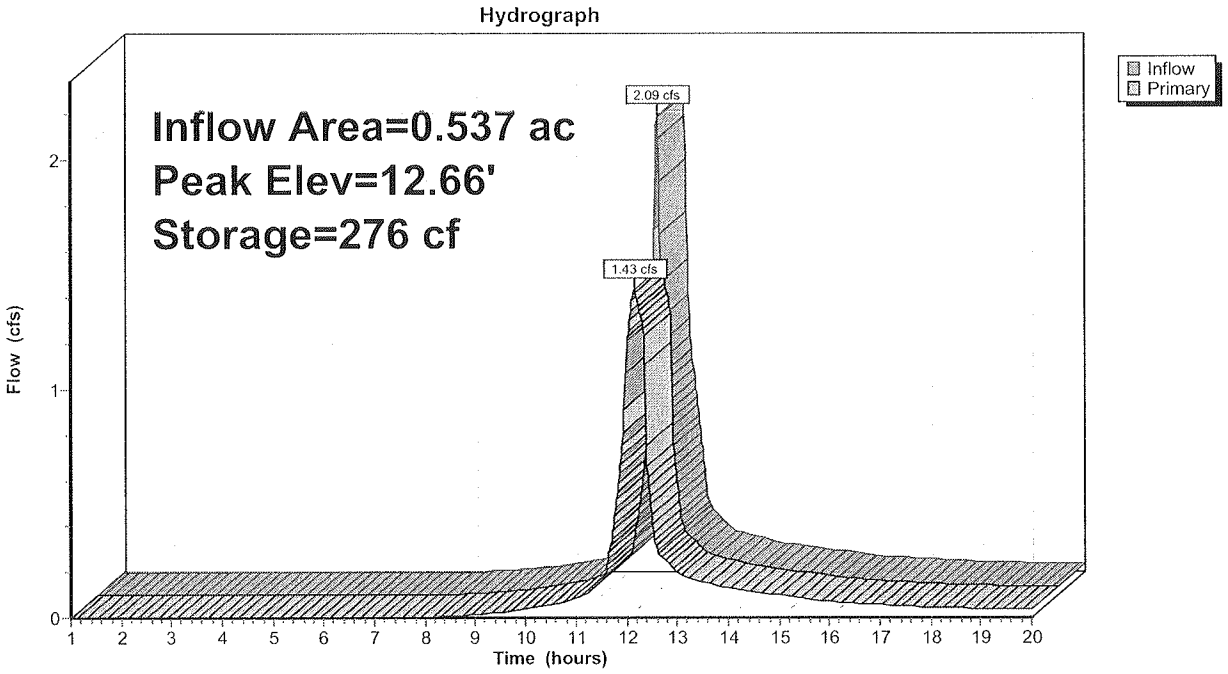
Volume	Invert	Avail.Storage	Storage Description
#1	11.50'	952 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.50	0
12.50	238
13.50	476
14.50	714
15.50	952

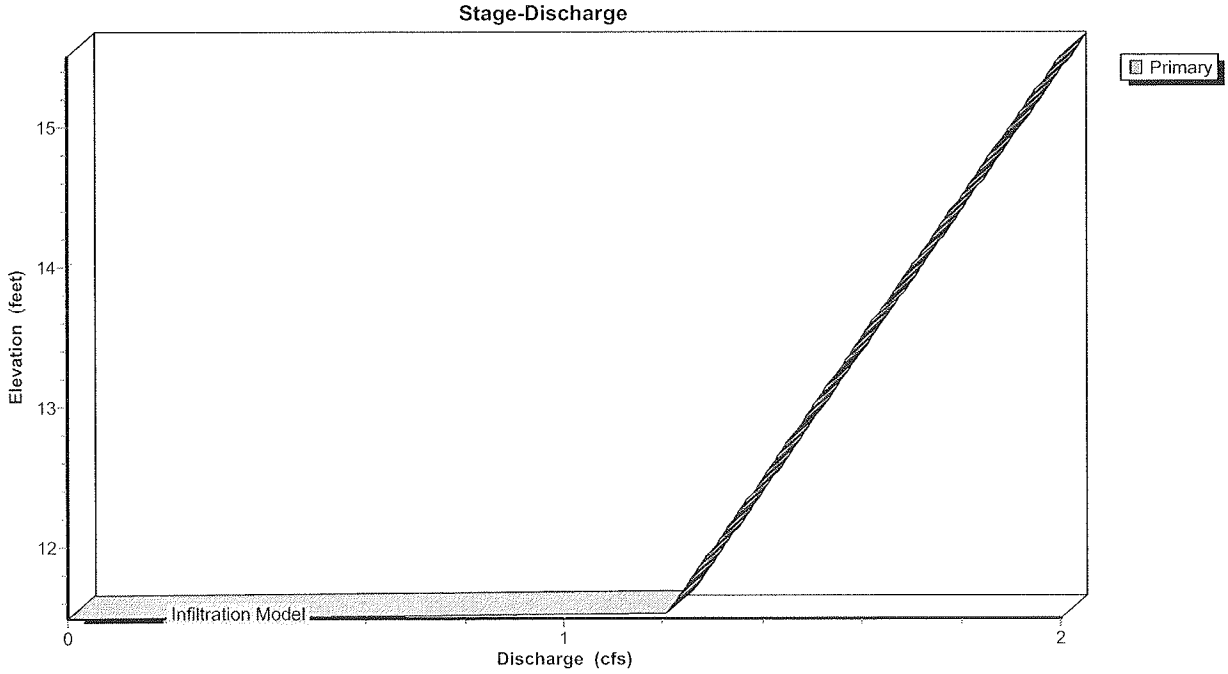
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model**
			Elev. (feet) 11.40 11.50 12.50 13.50 14.50 15.50
			Disch. (cfs) 0.000 1.200 1.400 1.600 1.800 2.000

Primary OutFlow Max=1.43 cfs @ 12.15 hrs HW=12.65' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.43 cfs)

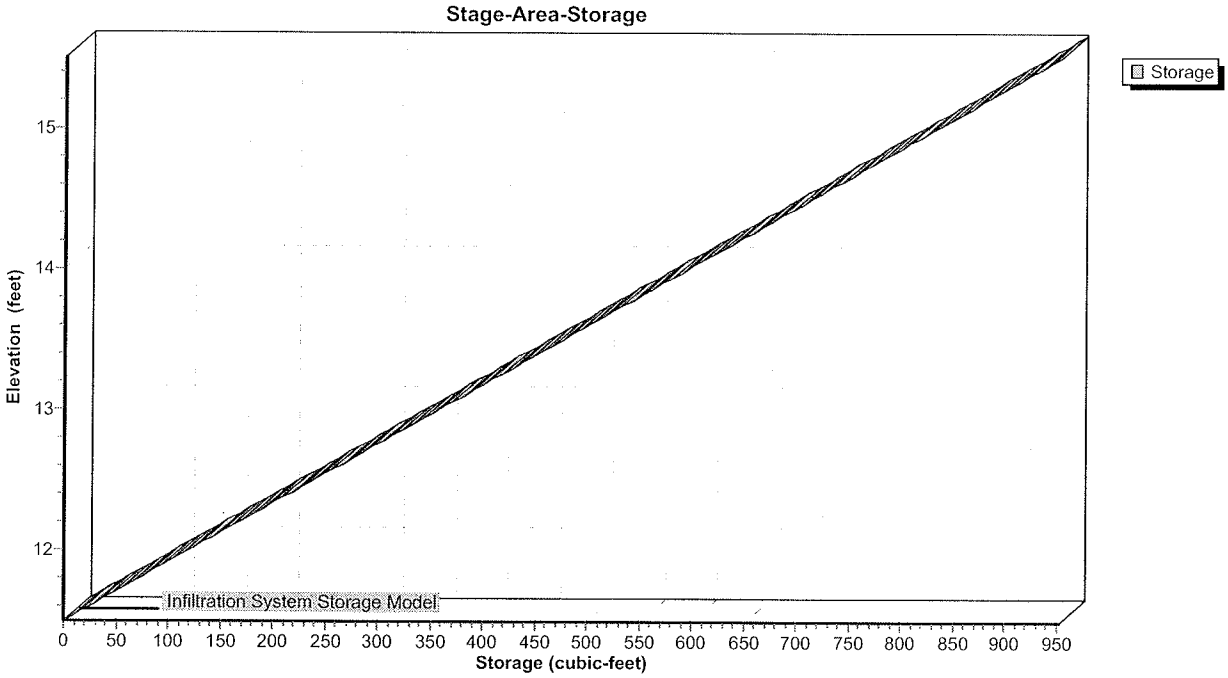
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

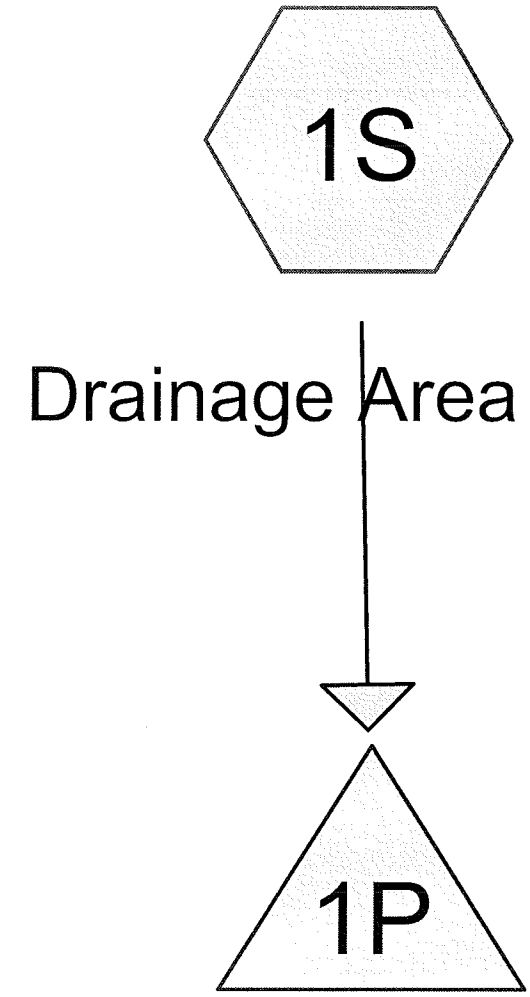
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.50	0.00
1.20	0.00	0	11.50	0.00
1.40	0.00	0	11.50	0.00
1.60	0.00	0	11.50	0.00
1.80	0.00	0	11.50	0.00
2.00	0.00	0	11.50	0.00
2.20	0.00	0	11.50	0.00
2.40	0.00	0	11.50	0.00
2.60	0.00	0	11.50	0.00
2.80	0.00	0	11.50	0.00
3.00	0.00	0	11.50	0.00
3.20	0.00	0	11.50	0.00
3.40	0.00	0	11.50	0.00
3.60	0.00	0	11.50	0.00
3.80	0.00	0	11.50	0.00
4.00	0.00	0	11.50	0.00
4.20	0.00	0	11.50	0.00
4.40	0.00	0	11.50	0.00
4.60	0.00	0	11.50	0.00
4.80	0.00	0	11.50	0.00
5.00	0.00	0	11.50	0.00
5.20	0.00	0	11.50	0.00
5.40	0.00	0	11.50	0.00
5.60	0.00	0	11.50	0.00
5.80	0.00	0	11.50	0.00
6.00	0.00	0	11.50	0.00
6.20	0.00	0	11.50	0.00
6.40	0.00	0	11.50	0.00
6.60	0.00	0	11.50	0.00
6.80	0.00	0	11.50	0.00
7.00	0.00	0	11.50	0.00
7.20	0.00	0	11.50	0.00
7.40	0.00	0	11.50	0.00
7.60	0.00	0	11.50	0.00
7.80	0.00	0	11.50	0.00
8.00	0.00	0	11.50	0.00
8.20	0.00	0	11.50	0.00
8.40	0.01	0	11.50	0.01
8.60	0.01	0	11.50	0.01
8.80	0.01	0	11.50	0.01
9.00	0.01	0	11.50	0.01
9.20	0.02	0	11.50	0.02
9.40	0.02	0	11.50	0.02
9.60	0.03	0	11.50	0.03
9.80	0.03	0	11.50	0.03
10.00	0.04	0	11.50	0.04
10.20	0.04	0	11.50	0.04
10.40	0.05	0	11.50	0.05
10.60	0.06	0	11.50	0.06
10.80	0.07	1	11.50	0.07
11.00	0.08	1	11.50	0.08
11.20	0.11	1	11.50	0.10
11.40	0.14	1	11.50	0.14
11.60	0.21	2	11.51	0.21
11.80	0.52	4	11.52	0.51
12.00	**1.32**	**12**	**11.55**	**1.21**
12.20	**1.11**	**247**	**12.54**	**1.41**
12.40	0.65	5	11.52	0.66
12.60	0.30	2	11.51	0.30
12.80	0.24	2	11.51	0.24
13.00	0.20	2	11.51	0.20
13.20	0.17	1	11.51	0.17
13.40	0.16	1	11.51	0.16
13.60	0.15	1	11.51	0.15
13.80	0.14	1	11.50	0.14
14.00	0.13	1	11.50	0.13
14.20	0.12	1	11.50	0.12
14.40	0.11	1	11.50	0.12
14.60	0.11	1	11.50	0.11
14.80	0.10	1	11.50	0.10
15.00	0.10	1	11.50	0.10
15.20	0.09	1	11.50	0.09
15.40	0.09	1	11.50	0.09
15.60	0.08	1	11.50	0.08
15.80	0.08	1	11.50	0.08
16.00	0.07	1	11.50	0.07
16.20	0.07	1	11.50	0.07
16.40	0.06	0	11.50	0.06
16.60	0.06	0	11.50	0.06
16.80	0.06	0	11.50	0.06
17.00	0.06	0	11.50	0.06
17.20	0.05	0	11.50	0.05
17.40	0.05	0	11.50	0.05
17.60	0.05	0	11.50	0.05
17.80	0.05	0	11.50	0.05
18.00	0.04	0	11.50	0.04
18.20	0.04	0	11.50	0.04
18.40	0.04	0	11.50	0.04
18.60	0.04	0	11.50	0.04
18.80	0.04	0	11.50	0.04
19.00	0.04	0	11.50	0.04
19.20	0.04	0	11.50	0.04
19.40	0.04	0	11.50	0.04
19.60	0.04	0	11.50	0.04
19.80	0.04	0	11.50	0.04
20.00	0.03	0	11.50	0.03

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.50	0.00	12.58	1.42	13.66	1.63	14.74	1.85
11.52	1.20	12.60	1.42	13.68	1.64	14.76	1.85
11.54	1.21	12.62	1.42	13.70	1.64	14.78	1.86
11.56	1.21	12.64	1.43	13.72	1.64	14.80	1.86
11.58	1.22	12.66	1.43	13.74	1.65	14.82	1.86
11.60	1.22	12.68	1.44	13.76	1.65	14.84	1.87
11.62	1.22	12.70	1.44	13.78	1.66	14.86	1.87
11.64	1.23	12.72	1.44	13.80	1.66	14.88	1.88
11.66	1.23	12.74	1.45	13.82	1.66	14.90	1.88
11.68	1.24	12.76	1.45	13.84	1.67	14.92	1.88
11.70	1.24	12.78	1.46	13.86	1.67	14.94	1.89
11.72	1.24	12.80	1.46	13.88	1.68	14.96	1.89
11.74	1.25	12.82	1.46	13.90	1.68	14.98	1.90
11.76	1.25	12.84	1.47	13.92	1.68	15.00	1.90
11.78	1.26	12.86	1.47	13.94	1.69	15.02	1.90
11.80	1.26	12.88	1.48	13.96	1.69	15.04	1.91
11.82	1.26	12.90	1.48	13.98	1.70	15.06	1.91
11.84	1.27	12.92	1.48	14.00	1.70	15.08	1.92
11.86	1.27	12.94	1.49	14.02	1.70	15.10	1.92
11.88	1.28	12.96	1.49	14.04	1.71	15.12	1.92
11.90	1.28	12.98	1.50	14.06	1.71	15.14	1.93
11.92	1.28	13.00	1.50	14.08	1.72	15.16	1.93
11.94	1.29	13.02	1.50	14.10	1.72	15.18	1.94
11.96	1.29	13.04	1.51	14.12	1.72	15.20	1.94
11.98	1.30	13.06	1.51	14.14	1.73	15.22	1.94
12.00	1.30	13.08	1.52	14.16	1.73	15.24	1.95
12.02	1.30	13.10	1.52	14.18	1.74	15.26	1.95
12.04	1.31	13.12	1.52	14.20	1.74	15.28	1.96
12.06	1.31	13.14	1.53	14.22	1.74	15.30	1.96
12.08	1.32	13.16	1.53	14.24	1.75	15.32	1.96
12.10	1.32	13.18	1.54	14.26	1.75	15.34	1.97
12.12	1.32	13.20	1.54	14.28	1.76	15.36	1.97
12.14	1.33	13.22	1.54	14.30	1.76	15.38	1.98
12.16	1.33	13.24	1.55	14.32	1.76	15.40	1.98
12.18	1.34	13.26	1.55	14.34	1.77	15.42	1.98
12.20	1.34	13.28	1.56	14.36	1.77	15.44	1.99
12.22	1.34	13.30	1.56	14.38	1.78	15.46	1.99
12.24	1.35	13.32	1.56	14.40	1.78	15.48	2.00
12.26	1.35	13.34	1.57	14.42	1.78	15.50	**2.00**
12.28	1.36	13.36	1.57	14.44	1.79		
12.30	1.36	13.38	1.58	14.46	1.79		
12.32	1.36	13.40	1.58	14.48	1.80		
12.34	1.37	13.42	1.58	14.50	1.80		
12.36	1.37	13.44	1.59	14.52	1.80		
12.38	1.38	13.46	1.59	14.54	1.81		
12.40	1.38	13.48	1.60	14.56	1.81		
12.42	1.38	13.50	1.60	14.58	1.82		
12.44	1.39	13.52	1.60	14.60	1.82		
12.46	1.39	13.54	1.61	14.62	1.82		
12.48	1.40	13.56	1.61	14.64	1.83		
12.50	1.40	13.58	1.62	14.66	1.83		
12.52	1.40	13.60	1.62	14.68	1.84		
12.54	1.41	13.62	1.62	14.70	1.84		
12.56	1.41	13.64	1.63	14.72	1.84		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.50	0	12.58	257	13.66	514	14.74	771
11.52	5	12.60	262	13.68	519	14.76	776
11.54	10	12.62	267	13.70	524	14.78	781
11.56	14	12.64	271	13.72	528	14.80	785
11.58	19	12.66	276	13.74	533	14.82	790
11.60	24	12.68	281	13.76	538	14.84	795
11.62	29	12.70	286	13.78	543	14.86	800
11.64	33	12.72	290	13.80	547	14.88	804
11.66	38	12.74	295	13.82	552	14.90	809
11.68	43	12.76	300	13.84	557	14.92	814
11.70	48	12.78	305	13.86	562	14.94	819
11.72	52	12.80	309	13.88	566	14.96	823
11.74	57	12.82	314	13.90	571	14.98	828
11.76	62	12.84	319	13.92	576	15.00	833
11.78	67	12.86	324	13.94	581	15.02	838
11.80	71	12.88	328	13.96	585	15.04	843
11.82	76	12.90	333	13.98	590	15.06	847
11.84	81	12.92	338	14.00	595	15.08	852
11.86	86	12.94	343	14.02	600	15.10	857
11.88	90	12.96	347	14.04	605	15.12	862
11.90	95	12.98	352	14.06	609	15.14	866
11.92	100	13.00	357	14.08	614	15.16	871
11.94	105	13.02	362	14.10	619	15.18	876
11.96	109	13.04	367	14.12	624	15.20	881
11.98	114	13.06	371	14.14	628	15.22	885
12.00	119	13.08	376	14.16	633	15.24	890
12.02	124	13.10	381	14.18	638	15.26	895
12.04	129	13.12	386	14.20	643	15.28	900
12.06	133	13.14	390	14.22	647	15.30	904
12.08	138	13.16	395	14.24	652	15.32	909
12.10	143	13.18	400	14.26	657	15.34	914
12.12	148	13.20	405	14.28	662	15.36	919
12.14	152	13.22	409	14.30	666	15.38	923
12.16	157	13.24	414	14.32	671	15.40	928
12.18	162	13.26	419	14.34	676	15.42	933
12.20	167	13.28	424	14.36	681	15.44	938
12.22	171	13.30	428	14.38	685	15.46	942
12.24	176	13.32	433	14.40	690	15.48	947
12.26	181	13.34	438	14.42	695	15.50	**952**
12.28	186	13.36	443	14.44	700		
12.30	190	13.38	447	14.46	704		
12.32	195	13.40	452	14.48	709		
12.34	200	13.42	457	14.50	714		
12.36	205	13.44	462	14.52	719		
12.38	209	13.46	466	14.54	724		
12.40	214	13.48	471	14.56	728		
12.42	219	13.50	476	14.58	733		
12.44	224	13.52	481	14.60	738		
12.46	228	13.54	486	14.62	743		
12.48	233	13.56	490	14.64	747		
12.50	238	13.58	495	14.66	752		
12.52	243	13.60	500	14.68	757		
12.54	248	13.62	505	14.70	762		
12.56	252	13.64	509	14.72	766		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA4
Prepared by down cape engineering, inc. 7/31/2019
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Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.000	32	Woods/grass comb., Good, HSG A (1S)
1.154	98	Roof Area (1S)
1.154		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA4 Runoff Area=50,255 sf Runoff Depth>7.21"
Tc=5.0 min CN=98 Runoff=9.12 cfs 0.694 af

Pond 1P: Infiltration Storage Model Peak Elev=12.59' Storage=814 cf Inflow=9.12 cfs 0.694 af
Outflow=6.78 cfs 0.694 af

Total Runoff Area = 1.154 ac Runoff Volume = 0.694 af Average Runoff Depth = 7.21"
0.00% Pervious Area = 0.000 ac 100.00% Impervious Area = 1.154 ac

Subcatchment 1S: Drainage Area DA4

Time of Concentration

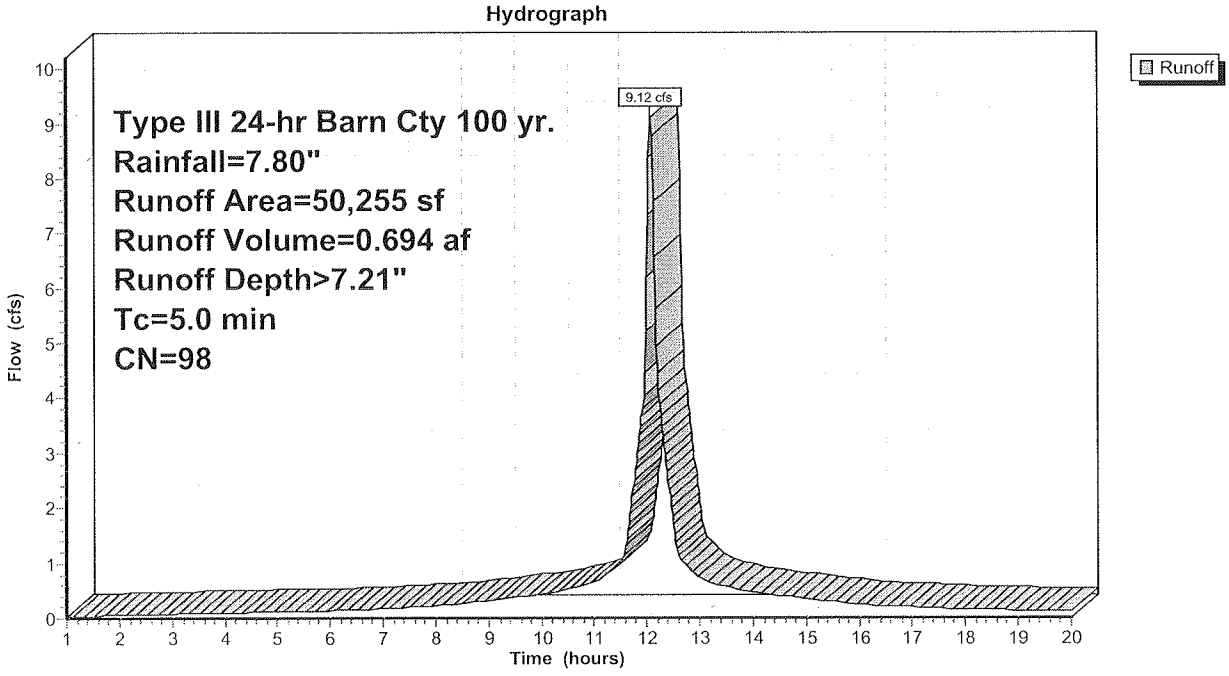
Runoff = 9.12 cfs @ 12.07 hrs, Volume= 0.694 af, Depth> 7.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
50,255	98	Roof Area
0	32	Woods/grass comb., Good, HSG A
50,255	98	Weighted Average
50,255		Impervious Area

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

Subcatchment 1S: Drainage Area DA4



Hydrograph for Subcatchment 1S: Drainage Area DA4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.01	0.02	11.80	2.91	2.68	2.84
1.20	0.09	0.01	0.03	12.00	3.90	3.67	**6.20**
1.40	0.11	0.02	0.04	12.20	4.89	4.65	**4.47**
1.60	0.12	0.02	0.04	12.40	5.35	5.11	2.49
1.80	0.14	0.03	0.05	12.60	5.56	5.33	1.11
2.00	0.16	0.04	0.05	12.80	5.72	5.48	0.89
2.20	0.17	0.05	0.06	13.00	5.85	5.61	0.73
2.40	0.19	0.06	0.06	13.20	5.96	5.72	0.64
2.60	0.20	0.07	0.07	13.40	6.06	5.82	0.59
2.80	0.22	0.09	0.07	13.60	6.16	5.92	0.55
3.00	0.24	0.10	0.08	13.80	6.25	6.01	0.50
3.20	0.26	0.11	0.08	14.00	6.33	6.09	0.46
3.40	0.28	0.13	0.08	14.20	6.40	6.16	0.43
3.60	0.30	0.14	0.09	14.40	6.47	6.23	0.41
3.80	0.32	0.16	0.09	14.60	6.54	6.30	0.39
4.00	0.34	0.17	0.10	14.80	6.60	6.36	0.37
4.20	0.36	0.19	0.10	15.00	6.66	6.42	0.35
4.40	0.38	0.21	0.10	15.20	6.72	6.48	0.33
4.60	0.40	0.23	0.11	15.40	6.77	6.53	0.31
4.80	0.42	0.25	0.11	15.60	6.82	6.58	0.29
5.00	0.44	0.27	0.12	15.80	6.87	6.63	0.26
5.20	0.47	0.29	0.12	16.00	6.91	6.67	0.24
5.40	0.49	0.31	0.12	16.20	6.95	6.71	0.23
5.60	0.51	0.33	0.13	16.40	6.99	6.75	0.22
5.80	0.54	0.35	0.13	16.60	7.03	6.79	0.21
6.00	0.56	0.37	0.13	16.80	7.06	6.82	0.20
6.20	0.59	0.40	0.14	17.00	7.09	6.85	0.19
6.40	0.61	0.42	0.15	17.20	7.13	6.89	0.18
6.60	0.64	0.45	0.16	17.40	7.16	6.92	0.18
6.80	0.67	0.48	0.17	17.60	7.19	6.95	0.17
7.00	0.71	0.51	0.18	17.80	7.21	6.97	0.16
7.20	0.74	0.54	0.19	18.00	7.24	7.00	0.15
7.40	0.77	0.57	0.20	18.20	7.26	7.02	0.14
7.60	0.81	0.61	0.20	18.40	7.29	7.05	0.14
7.80	0.85	0.65	0.21	18.60	7.31	7.07	0.14
8.00	0.89	0.68	0.22	18.80	7.33	7.10	0.14
8.20	0.93	0.72	0.24	19.00	7.36	7.12	0.13
8.40	0.98	0.77	0.26	19.20	7.38	7.14	0.13
8.60	1.03	0.82	0.28	19.40	7.40	7.16	0.13
8.80	1.08	0.87	0.30	19.60	7.42	7.18	0.12
9.00	1.14	0.92	0.32	19.80	7.44	7.20	0.12
9.20	1.20	0.98	0.34	20.00	**7.46**	**7.23**	0.12
9.40	1.26	1.05	0.37				
9.60	1.33	1.11	0.39				
9.80	1.40	1.18	0.41				
10.00	1.47	1.25	0.43				
10.20	1.55	1.33	0.46				
10.40	1.64	1.42	0.51				
10.60	1.74	1.51	0.55				
10.80	1.84	1.62	0.60				
11.00	1.95	1.72	0.64				
11.20	2.08	1.85	0.76				
11.40	2.24	2.01	0.92				
11.60	2.45	2.22	1.30				

Pond 1P: Infiltration Storage Model

Roof runoff clean- direct infiltration provided

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.154 ac, Inflow Depth > 7.21" for Barn Cty 100 yr. event
Inflow = 9.12 cfs @ 12.07 hrs, Volume= 0.694 af
Outflow = 6.78 cfs @ 12.14 hrs, Volume= 0.694 af, Atten= 26%, Lag= 4.0 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 0.694 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 12.59' @ 12.14 hrs Surf.Area= 0 sf Storage= 814 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=0.5 min (714.3 - 713.8)

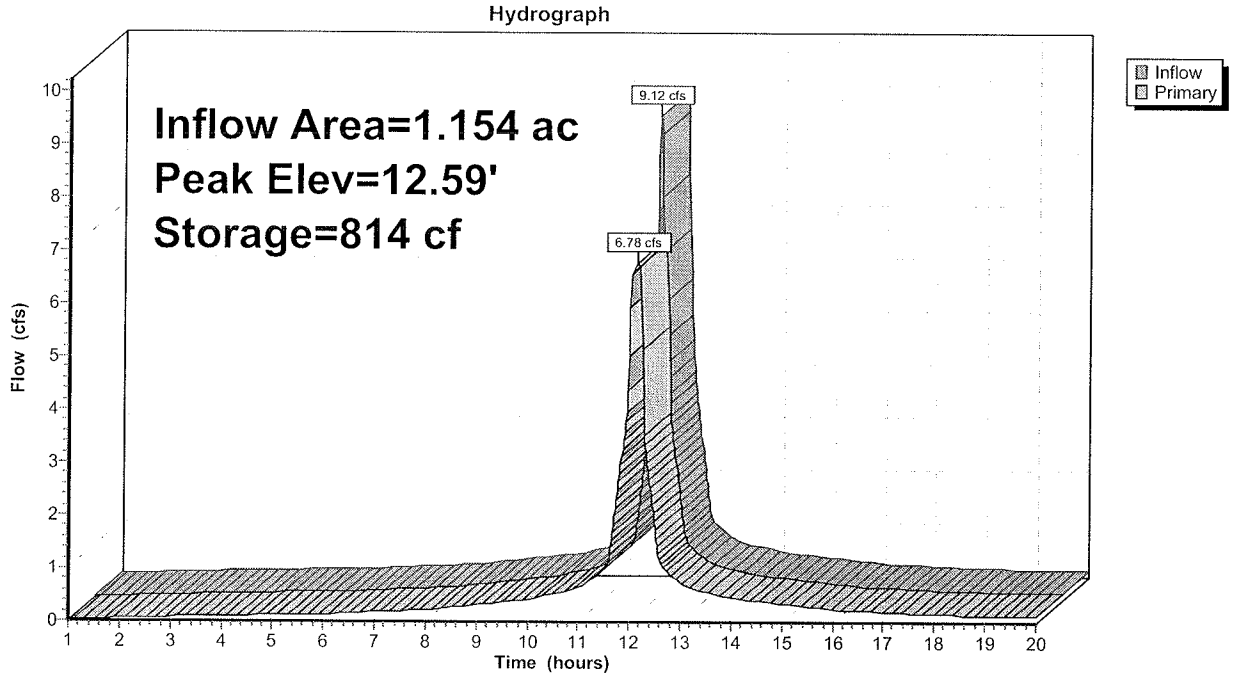
Volume	Invert	Avail.Storage	Storage Description
#1	11.90'	3,906 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.90	0
13.00	1,302
14.00	2,604
15.00	3,906

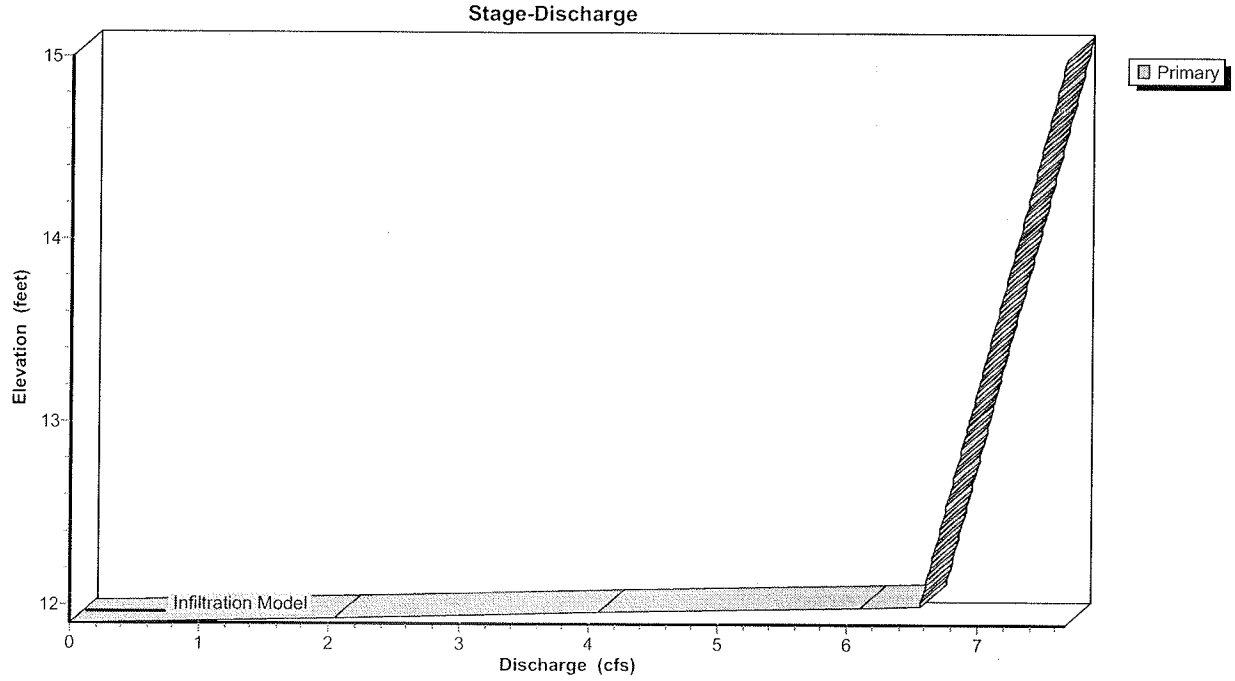
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model**
			Elev. (feet) 11.90 12.00 13.00 14.00 15.00
			Disch. (cfs) 0.000 6.560 6.930 7.310 7.680

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=12.58' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 6.78 cfs)

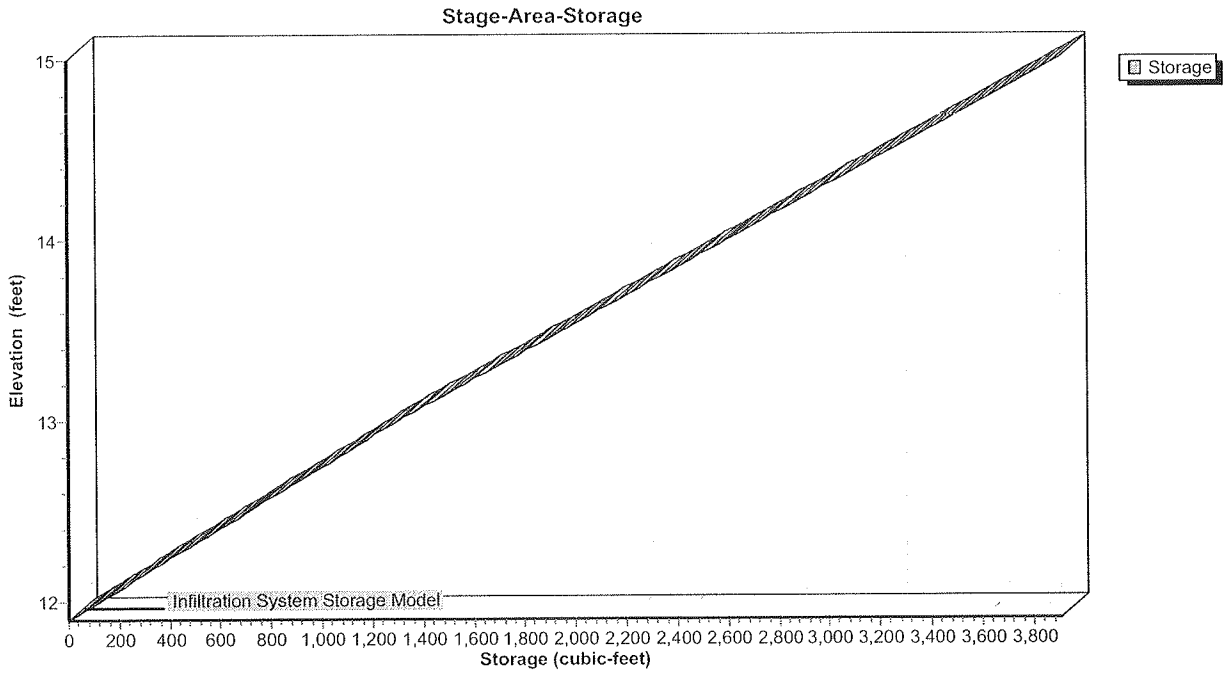
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.02	0	11.90	0.01
1.20	0.03	1	11.90	0.03
1.40	0.04	1	11.90	0.04
1.60	0.04	1	11.90	0.04
1.80	0.05	1	11.90	0.05
2.00	0.05	1	11.90	0.05
2.20	0.06	1	11.90	0.06
2.40	0.06	1	11.90	0.06
2.60	0.07	1	11.90	0.07
2.80	0.07	1	11.90	0.07
3.00	0.08	1	11.90	0.08
3.20	0.08	1	11.90	0.08
3.40	0.08	2	11.90	0.08
3.60	0.09	2	11.90	0.09
3.80	0.09	2	11.90	0.09
4.00	0.10	2	11.90	0.10
4.20	0.10	2	11.90	0.10
4.40	0.10	2	11.90	0.10
4.60	0.11	2	11.90	0.11
4.80	0.11	2	11.90	0.11
5.00	0.12	2	11.90	0.12
5.20	0.12	2	11.90	0.12
5.40	0.12	2	11.90	0.12
5.60	0.13	2	11.90	0.13
5.80	0.13	2	11.90	0.13
6.00	0.13	2	11.90	0.13
6.20	0.14	3	11.90	0.14
6.40	0.15	3	11.90	0.15
6.60	0.16	3	11.90	0.16
6.80	0.17	3	11.90	0.17
7.00	0.18	3	11.90	0.18
7.20	0.19	3	11.90	0.19
7.40	0.20	4	11.90	0.19
7.60	0.20	4	11.90	0.20
7.80	0.21	4	11.90	0.21
8.00	0.22	4	11.90	0.22
8.20	0.24	4	11.90	0.24
8.40	0.26	5	11.90	0.26
8.60	0.28	5	11.90	0.28
8.80	0.30	5	11.90	0.30
9.00	0.32	6	11.90	0.32
9.20	0.34	6	11.91	0.34
9.40	0.37	7	11.91	0.37
9.60	0.39	7	11.91	0.39
9.80	0.41	7	11.91	0.41
10.00	0.43	8	11.91	0.43
10.20	0.46	8	11.91	0.46
10.40	0.51	9	11.91	0.51
10.60	0.55	10	11.91	0.55
10.80	0.60	11	11.91	0.59
11.00	0.64	12	11.91	0.64
11.20	0.76	14	11.91	0.75
11.40	0.92	17	11.91	0.92
11.60	1.30	23	11.92	1.27
11.80	2.84	51	11.94	2.80
12.00	**6.20**	**107**	**11.99**	**5.95**
12.20	**4.47**	**514**	**12.33**	**6.68**
12.40	2.49	46	11.94	2.53
12.60	1.11	20	11.92	1.13
12.80	0.89	16	11.91	0.90
13.00	0.73	13	11.91	0.73
13.20	0.64	11	11.91	0.64
13.40	0.59	11	11.91	0.59
13.60	0.55	10	11.91	0.55
13.80	0.50	9	11.91	0.51
14.00	0.46	8	11.91	0.46
14.20	0.43	8	11.91	0.43
14.40	0.41	7	11.91	0.41
14.60	0.39	7	11.91	0.39
14.80	0.37	7	11.91	0.37
15.00	0.35	6	11.91	0.35
15.20	0.33	6	11.90	0.33
15.40	0.31	6	11.90	0.31
15.60	0.29	5	11.90	0.29
15.80	0.26	5	11.90	0.27
16.00	0.24	4	11.90	0.24
16.20	0.23	4	11.90	0.23
16.40	0.22	4	11.90	0.22
16.60	0.21	4	11.90	0.21
16.80	0.20	4	11.90	0.20
17.00	0.19	4	11.90	0.19
17.20	0.18	3	11.90	0.19
17.40	0.18	3	11.90	0.18
17.60	0.17	3	11.90	0.17
17.80	0.16	3	11.90	0.16
18.00	0.15	3	11.90	0.15
18.20	0.14	3	11.90	0.14
18.40	0.14	3	11.90	0.14
18.60	0.14	2	11.90	0.14
18.80	0.14	2	11.90	0.14
19.00	0.13	2	11.90	0.13
19.20	0.13	2	11.90	0.13
19.40	0.13	2	11.90	0.13
19.60	0.12	2	11.90	0.12
19.80	0.12	2	11.90	0.12
20.00	0.12	2	11.90	0.12

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.90	0.00	12.98	6.92	14.06	7.33
11.92	1.31	13.00	6.93	14.08	7.34
11.94	2.62	13.02	6.94	14.10	7.35
11.96	3.94	13.04	6.95	14.12	7.35
11.98	5.25	13.06	6.95	14.14	7.36
12.00	6.56	13.08	6.96	14.16	7.37
12.02	6.57	13.10	6.97	14.18	7.38
12.04	6.57	13.12	6.98	14.20	7.38
12.06	6.58	13.14	6.98	14.22	7.39
12.08	6.59	13.16	6.99	14.24	7.40
12.10	6.60	13.18	7.00	14.26	7.41
12.12	6.60	13.20	7.01	14.28	7.41
12.14	6.61	13.22	7.01	14.30	7.42
12.16	6.62	13.24	7.02	14.32	7.43
12.18	6.63	13.26	7.03	14.34	7.44
12.20	6.63	13.28	7.04	14.36	7.44
12.22	6.64	13.30	7.04	14.38	7.45
12.24	6.65	13.32	7.05	14.40	7.46
12.26	6.66	13.34	7.06	14.42	7.47
12.28	6.66	13.36	7.07	14.44	7.47
12.30	6.67	13.38	7.07	14.46	7.48
12.32	6.68	13.40	7.08	14.48	7.49
12.34	6.69	13.42	7.09	14.50	7.50
12.36	6.69	13.44	7.10	14.52	7.50
12.38	6.70	13.46	7.10	14.54	7.51
12.40	6.71	13.48	7.11	14.56	7.52
12.42	6.72	13.50	7.12	14.58	7.52
12.44	6.72	13.52	7.13	14.60	7.53
12.46	6.73	13.54	7.14	14.62	7.54
12.48	6.74	13.56	7.14	14.64	7.55
12.50	6.75	13.58	7.15	14.66	7.55
12.52	6.75	13.60	7.16	14.68	7.56
12.54	6.76	13.62	7.17	14.70	7.57
12.56	6.77	13.64	7.17	14.72	7.58
12.58	6.77	13.66	7.18	14.74	7.58
12.60	6.78	13.68	7.19	14.76	7.59
12.62	6.79	13.70	7.20	14.78	7.60
12.64	6.80	13.72	7.20	14.80	7.61
12.66	6.80	13.74	7.21	14.82	7.61
12.68	6.81	13.76	7.22	14.84	7.62
12.70	6.82	13.78	7.23	14.86	7.63
12.72	6.83	13.80	7.23	14.88	7.64
12.74	6.83	13.82	7.24	14.90	7.64
12.76	6.84	13.84	7.25	14.92	7.65
12.78	6.85	13.86	7.26	14.94	7.66
12.80	6.86	13.88	7.26	14.96	7.67
12.82	6.86	13.90	7.27	14.98	7.67
12.84	6.87	13.92	7.28	15.00	**7.68**
12.86	6.88	13.94	7.29		
12.88	6.89	13.96	7.29		
12.90	6.89	13.98	7.30		
12.92	6.90	14.00	7.31		
12.94	6.91	14.02	7.32		
12.96	6.92	14.04	7.32		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.90	0	12.98	1,278	14.06	2,682
11.92	24	13.00	1,302	14.08	2,708
11.94	47	13.02	1,328	14.10	2,734
11.96	71	13.04	1,354	14.12	2,760
11.98	95	13.06	1,380	14.14	2,786
12.00	118	13.08	1,406	14.16	2,812
12.02	142	13.10	1,432	14.18	2,838
12.04	166	13.12	1,458	14.20	2,864
12.06	189	13.14	1,484	14.22	2,890
12.08	213	13.16	1,510	14.24	2,916
12.10	237	13.18	1,536	14.26	2,943
12.12	260	13.20	1,562	14.28	2,969
12.14	284	13.22	1,588	14.30	2,995
12.16	308	13.24	1,614	14.32	3,021
12.18	331	13.26	1,641	14.34	3,047
12.20	355	13.28	1,667	14.36	3,073
12.22	379	13.30	1,693	14.38	3,099
12.24	402	13.32	1,719	14.40	3,125
12.26	426	13.34	1,745	14.42	3,151
12.28	450	13.36	1,771	14.44	3,177
12.30	473	13.38	1,797	14.46	3,203
12.32	497	13.40	1,823	14.48	3,229
12.34	521	13.42	1,849	14.50	3,255
12.36	544	13.44	1,875	14.52	3,281
12.38	568	13.46	1,901	14.54	3,307
12.40	592	13.48	1,927	14.56	3,333
12.42	615	13.50	1,953	14.58	3,359
12.44	639	13.52	1,979	14.60	3,385
12.46	663	13.54	2,005	14.62	3,411
12.48	687	13.56	2,031	14.64	3,437
12.50	710	13.58	2,057	14.66	3,463
12.52	734	13.60	2,083	14.68	3,489
12.54	758	13.62	2,109	14.70	3,515
12.56	781	13.64	2,135	14.72	3,541
12.58	805	13.66	2,161	14.74	3,567
12.60	829	13.68	2,187	14.76	3,594
12.62	852	13.70	2,213	14.78	3,620
12.64	876	13.72	2,239	14.80	3,646
12.66	900	13.74	2,265	14.82	3,672
12.68	923	13.76	2,292	14.84	3,698
12.70	947	13.78	2,318	14.86	3,724
12.72	971	13.80	2,344	14.88	3,750
12.74	994	13.82	2,370	14.90	3,776
12.76	1,018	13.84	2,396	14.92	3,802
12.78	1,042	13.86	2,422	14.94	3,828
12.80	1,065	13.88	2,448	14.96	3,854
12.82	1,089	13.90	2,474	14.98	3,880
12.84	1,113	13.92	2,500	15.00	**3,906**
12.86	1,136	13.94	2,526		
12.88	1,160	13.96	2,552		
12.90	1,184	13.98	2,578		
12.92	1,207	14.00	2,604		
12.94	1,231	14.02	2,630		
12.96	1,255	14.04	2,656		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA4 Runoff Area=50,255 sf Runoff Depth>5.21"
Tc=5.0 min CN=98 Runoff=6.65 cfs 0.501 af

Pond 1P: Infiltration Storage Model Peak Elev=12.00' Storage=121 cf Inflow=6.65 cfs 0.501 af
Outflow=6.57 cfs 0.501 af

Total Runoff Area = 1.154 ac Runoff Volume = 0.501 af Average Runoff Depth = 5.21"
0.00% Pervious Area = 0.000 ac 100.00% Impervious Area = 1.154 ac

Subcatchment 1S: Drainage Area DA4

Time of Concentration

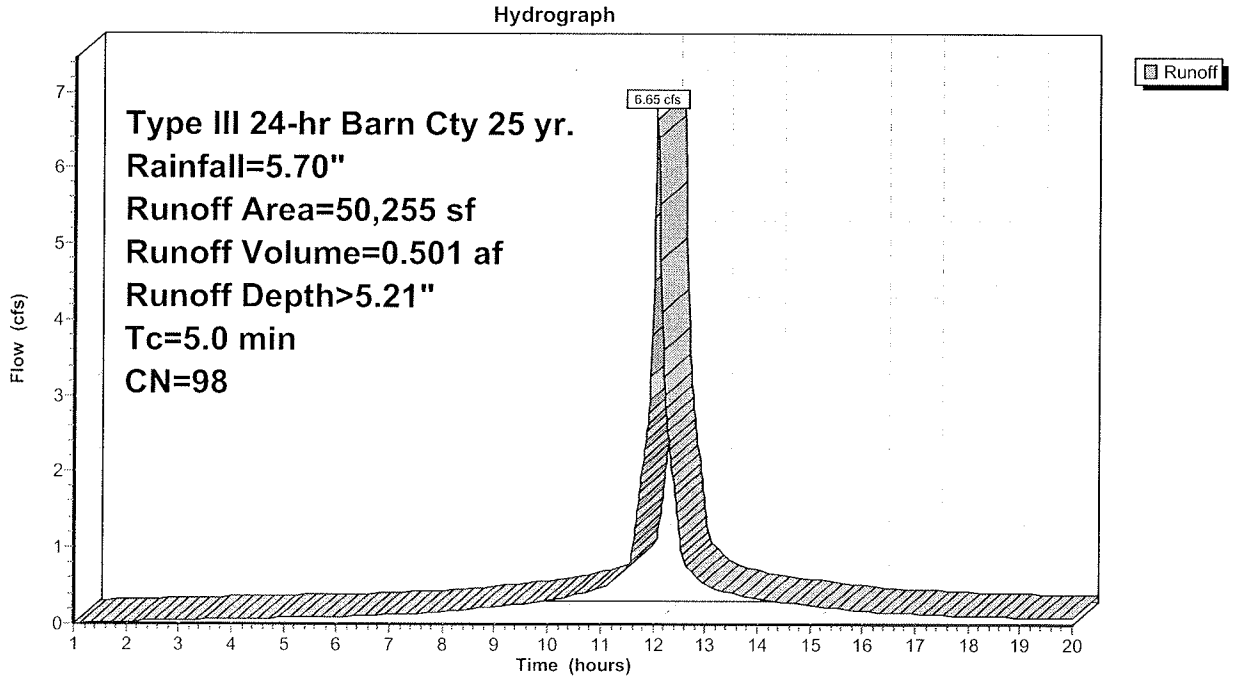
Runoff = 6.65 cfs @ 12.07 hrs, Volume= 0.501 af, Depth> 5.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
50,255	98	Roof Area
0	32	Woods/grass comb., Good, HSG A
50,255	98	Weighted Average
50,255		Impervious Area

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

Subcatchment 1S: Drainage Area DA4



Hydrograph for Subcatchment 1S: Drainage Area DA4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.01	11.80	2.13	1.90	2.07
1.20	0.07	0.00	0.01	12.00	2.85	2.62	**4.52**
1.40	0.08	0.01	0.02	12.20	3.57	3.34	**3.26**
1.60	0.09	0.01	0.02	12.40	3.91	3.67	1.82
1.80	0.10	0.01	0.03	12.60	4.07	3.83	0.81
2.00	0.11	0.02	0.03	12.80	4.18	3.95	0.65
2.20	0.13	0.02	0.03	13.00	4.27	4.04	0.53
2.40	0.14	0.03	0.04	13.20	4.36	4.12	0.46
2.60	0.15	0.04	0.04	13.40	4.43	4.19	0.43
2.80	0.16	0.05	0.04	13.60	4.50	4.26	0.40
3.00	0.18	0.05	0.05	13.80	4.56	4.33	0.37
3.20	0.19	0.06	0.05	14.00	4.62	4.39	0.34
3.40	0.20	0.07	0.05	14.20	4.68	4.44	0.32
3.60	0.22	0.08	0.06	14.40	4.73	4.49	0.30
3.80	0.23	0.09	0.06	14.60	4.78	4.54	0.28
4.00	0.25	0.10	0.06	14.80	4.83	4.59	0.27
4.20	0.26	0.11	0.07	15.00	4.87	4.63	0.25
4.40	0.28	0.13	0.07	15.20	4.91	4.67	0.24
4.60	0.29	0.14	0.07	15.40	4.95	4.71	0.22
4.80	0.31	0.15	0.08	15.60	4.99	4.75	0.21
5.00	0.32	0.16	0.08	15.80	5.02	4.78	0.19
5.20	0.34	0.18	0.08	16.00	5.05	4.81	0.18
5.40	0.36	0.19	0.08	16.20	5.08	4.84	0.17
5.60	0.37	0.21	0.09	16.40	5.11	4.87	0.16
5.80	0.39	0.22	0.09	16.60	5.13	4.90	0.15
6.00	0.41	0.24	0.09	16.80	5.16	4.92	0.15
6.20	0.43	0.25	0.10	17.00	5.18	4.95	0.14
6.40	0.45	0.27	0.10	17.20	5.21	4.97	0.13
6.60	0.47	0.29	0.11	17.40	5.23	4.99	0.13
6.80	0.49	0.31	0.12	17.60	5.25	5.01	0.12
7.00	0.52	0.33	0.12	17.80	5.27	5.03	0.12
7.20	0.54	0.35	0.13	18.00	5.29	5.05	0.11
7.40	0.57	0.38	0.14	18.20	5.31	5.07	0.10
7.60	0.59	0.40	0.14	18.40	5.33	5.09	0.10
7.80	0.62	0.43	0.15	18.60	5.34	5.11	0.10
8.00	0.65	0.46	0.16	18.80	5.36	5.12	0.10
8.20	0.68	0.49	0.17	19.00	5.38	5.14	0.10
8.40	0.71	0.52	0.19	19.20	5.39	5.16	0.09
8.60	0.75	0.55	0.20	19.40	5.41	5.17	0.09
8.80	0.79	0.59	0.22	19.60	5.42	5.19	0.09
9.00	0.83	0.63	0.23	19.80	5.44	5.20	0.09
9.20	0.87	0.67	0.25	20.00	**5.45**	**5.22**	0.09
9.40	0.92	0.72	0.26				
9.60	0.97	0.76	0.28				
9.80	1.02	0.81	0.29				
10.00	1.08	0.87	0.31				
10.20	1.14	0.92	0.34				
10.40	1.20	0.99	0.37				
10.60	1.27	1.05	0.40				
10.80	1.34	1.13	0.43				
11.00	1.42	1.21	0.46				
11.20	1.52	1.30	0.55				
11.40	1.63	1.41	0.67				
11.60	1.79	1.57	0.95				

Pond 1P: Infiltration Storage Model

Roof runoff clean- direct infiltration provided

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.154 ac, Inflow Depth > 5.21" for Barn Cty 25 yr. event
Inflow = 6.65 cfs @ 12.07 hrs, Volume= 0.501 af
Outflow = 6.57 cfs @ 12.07 hrs, Volume= 0.501 af, Atten= 1%, Lag= 0.3 min
Primary = 6.57 cfs @ 12.07 hrs, Volume= 0.501 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 12.00' @ 12.08 hrs Surf.Area= 0 sf Storage= 121 cf

Plug-Flow detention time=0.3 min calculated for 0.500 af (100% of inflow)
Center-of-Mass det. time=0.3 min (718.1 - 717.8)

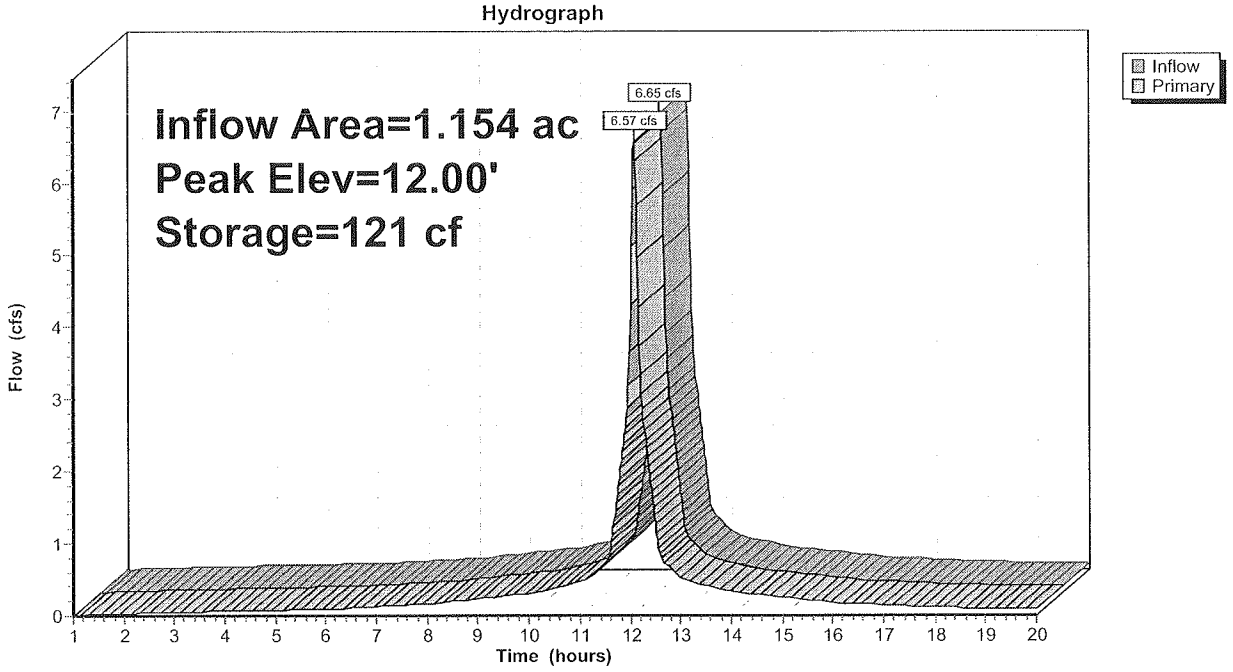
Volume	Invert	Avail.Storage	Storage Description
#1	11.90'	3,906 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.90	0
13.00	1,302
14.00	2,604
15.00	3,906

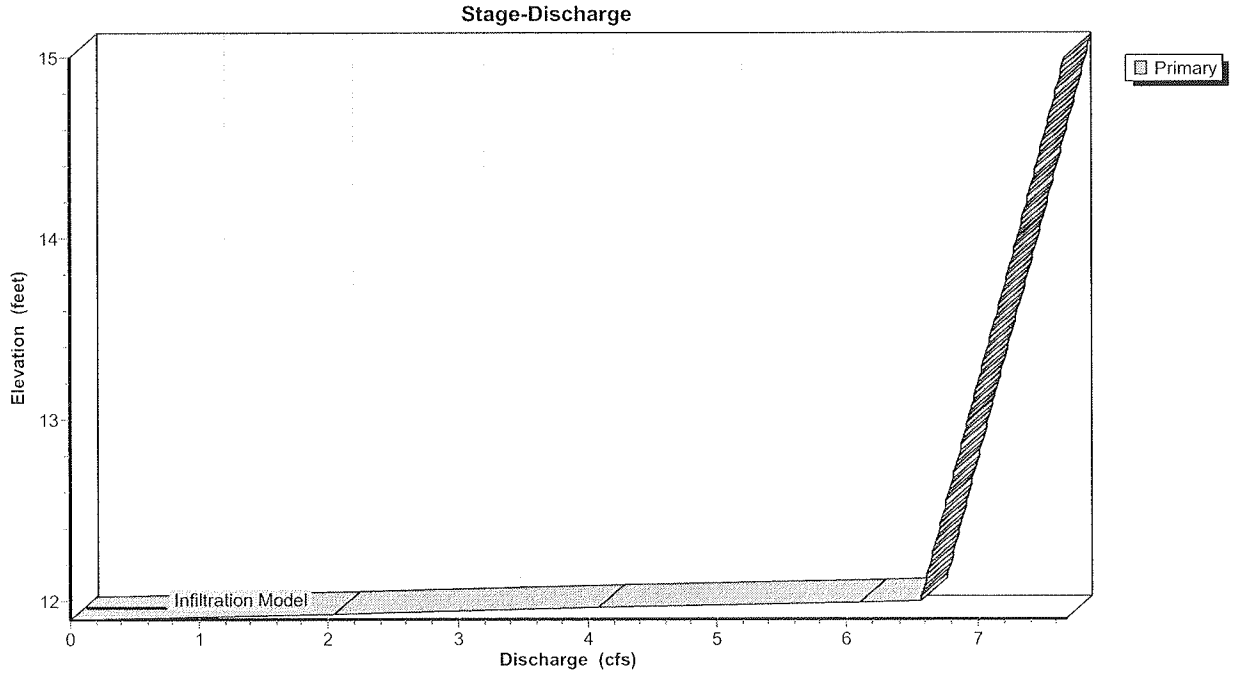
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 11.90 12.00 13.00 14.00 15.00 Disch. (cfs) 0.000 6.560 6.930 7.310 7.680

Primary OutFlow Max=6.56 cfs @ 12.07 hrs HW=12.00' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 6.56 cfs)

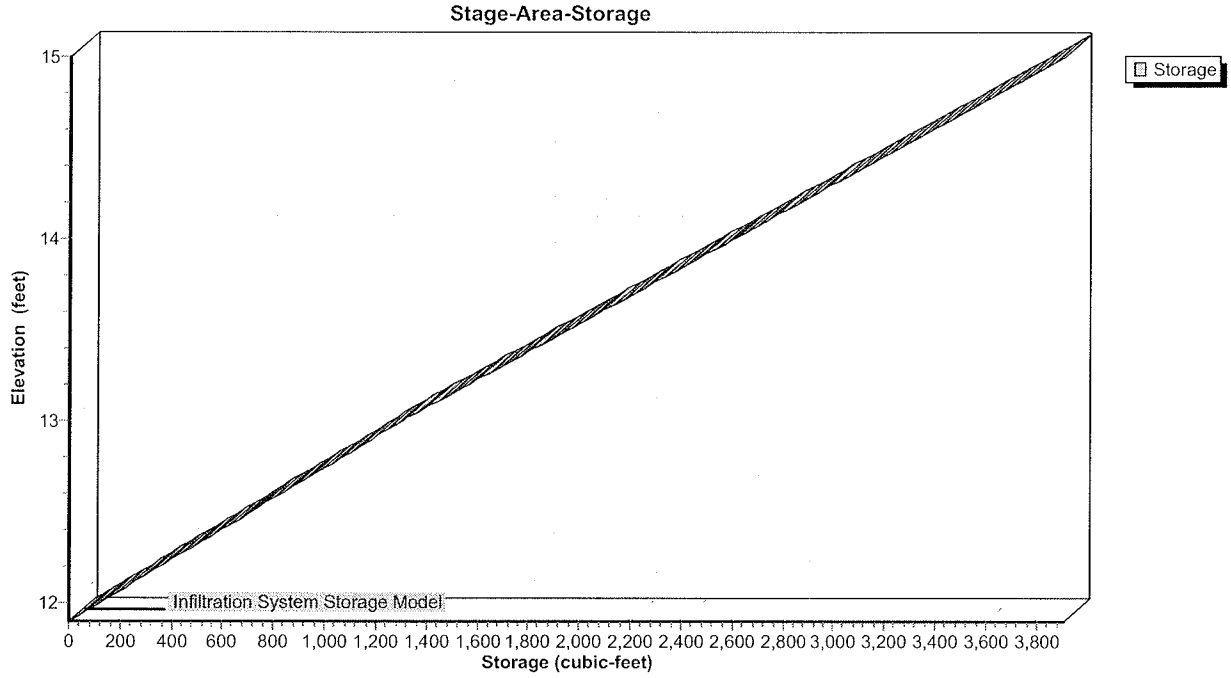
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

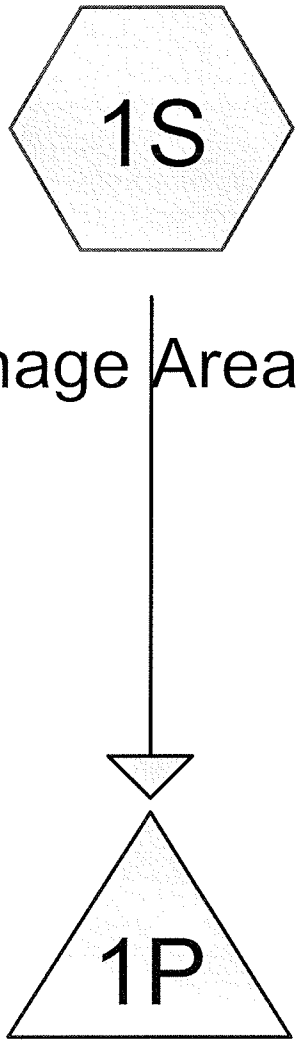
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.01	0	11.90	0.00
1.20	0.01	0	11.90	0.01
1.40	0.02	0	11.90	0.02
1.60	0.02	0	11.90	0.02
1.80	0.03	0	11.90	0.03
2.00	0.03	1	11.90	0.03
2.20	0.03	1	11.90	0.03
2.40	0.04	1	11.90	0.04
2.60	0.04	1	11.90	0.04
2.80	0.04	1	11.90	0.04
3.00	0.05	1	11.90	0.05
3.20	0.05	1	11.90	0.05
3.40	0.05	1	11.90	0.05
3.60	0.06	1	11.90	0.06
3.80	0.06	1	11.90	0.06
4.00	0.06	1	11.90	0.06
4.20	0.07	1	11.90	0.07
4.40	0.07	1	11.90	0.07
4.60	0.07	1	11.90	0.07
4.80	0.08	1	11.90	0.08
5.00	0.08	1	11.90	0.08
5.20	0.08	1	11.90	0.08
5.40	0.08	2	11.90	0.08
5.60	0.09	2	11.90	0.09
5.80	0.09	2	11.90	0.09
6.00	0.09	2	11.90	0.09
6.20	0.10	2	11.90	0.10
6.40	0.10	2	11.90	0.10
6.60	0.11	2	11.90	0.11
6.80	0.12	2	11.90	0.12
7.00	0.12	2	11.90	0.12
7.20	0.13	2	11.90	0.13
7.40	0.14	2	11.90	0.14
7.60	0.14	3	11.90	0.14
7.80	0.15	3	11.90	0.15
8.00	0.16	3	11.90	0.16
8.20	0.17	3	11.90	0.17
8.40	0.19	3	11.90	0.19
8.60	0.20	4	11.90	0.20
8.80	0.22	4	11.90	0.22
9.00	0.23	4	11.90	0.23
9.20	0.25	4	11.90	0.25
9.40	0.26	5	11.90	0.26
9.60	0.28	5	11.90	0.28
9.80	0.29	5	11.90	0.29
10.00	0.31	6	11.90	0.31
10.20	0.34	6	11.91	0.33
10.40	0.37	7	11.91	0.37
10.60	0.40	7	11.91	0.40
10.80	0.43	8	11.91	0.43
11.00	0.46	8	11.91	0.46
11.20	0.55	10	11.91	0.55
11.40	0.67	12	11.91	0.67
11.60	0.95	17	11.91	0.93
11.80	2.07	37	11.93	2.04
12.00	**4.52**	**78**	**11.97**	**4.34**
12.20	**3.26**	**60**	**11.95**	**3.35**
12.40	1.82	33	11.93	1.85
12.60	0.81	15	11.91	0.82
12.80	0.65	12	11.91	0.65
13.00	0.53	10	11.91	0.53
13.20	0.46	8	11.91	0.46
13.40	0.43	8	11.91	0.43
13.60	0.40	7	11.91	0.40
13.80	0.37	7	11.91	0.37
14.00	0.34	6	11.91	0.34
14.20	0.32	6	11.90	0.32
14.40	0.30	5	11.90	0.30
14.60	0.28	5	11.90	0.28
14.80	0.27	5	11.90	0.27
15.00	0.25	5	11.90	0.25
15.20	0.24	4	11.90	0.24
15.40	0.22	4	11.90	0.22
15.60	0.21	4	11.90	0.21
15.80	0.19	3	11.90	0.19
16.00	0.18	3	11.90	0.18
16.20	0.17	3	11.90	0.17
16.40	0.16	3	11.90	0.16
16.60	0.15	3	11.90	0.16
16.80	0.15	3	11.90	0.15
17.00	0.14	3	11.90	0.14
17.20	0.13	2	11.90	0.14
17.40	0.13	2	11.90	0.13
17.60	0.12	2	11.90	0.12
17.80	0.12	2	11.90	0.12
18.00	0.11	2	11.90	0.11
18.20	0.10	2	11.90	0.10
18.40	0.10	2	11.90	0.10
18.60	0.10	2	11.90	0.10
18.80	0.10	2	11.90	0.10
19.00	0.10	2	11.90	0.10
19.20	0.09	2	11.90	0.09
19.40	0.09	2	11.90	0.09
19.60	0.09	2	11.90	0.09
19.80	0.09	2	11.90	0.09
20.00	0.09	2	11.90	0.09

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.90	0.00	12.98	6.92	14.06	7.33
11.92	1.31	13.00	6.93	14.08	7.34
11.94	2.62	13.02	6.94	14.10	7.35
11.96	3.94	13.04	6.95	14.12	7.35
11.98	5.25	13.06	6.95	14.14	7.36
12.00	6.56	13.08	6.96	14.16	7.37
12.02	6.57	13.10	6.97	14.18	7.38
12.04	6.57	13.12	6.98	14.20	7.38
12.06	6.58	13.14	6.98	14.22	7.39
12.08	6.59	13.16	6.99	14.24	7.40
12.10	6.60	13.18	7.00	14.26	7.41
12.12	6.60	13.20	7.01	14.28	7.41
12.14	6.61	13.22	7.01	14.30	7.42
12.16	6.62	13.24	7.02	14.32	7.43
12.18	6.63	13.26	7.03	14.34	7.44
12.20	6.63	13.28	7.04	14.36	7.44
12.22	6.64	13.30	7.04	14.38	7.45
12.24	6.65	13.32	7.05	14.40	7.46
12.26	6.66	13.34	7.06	14.42	7.47
12.28	6.66	13.36	7.07	14.44	7.47
12.30	6.67	13.38	7.07	14.46	7.48
12.32	6.68	13.40	7.08	14.48	7.49
12.34	6.69	13.42	7.09	14.50	7.50
12.36	6.69	13.44	7.10	14.52	7.50
12.38	6.70	13.46	7.10	14.54	7.51
12.40	6.71	13.48	7.11	14.56	7.52
12.42	6.72	13.50	7.12	14.58	7.52
12.44	6.72	13.52	7.13	14.60	7.53
12.46	6.73	13.54	7.14	14.62	7.54
12.48	6.74	13.56	7.14	14.64	7.55
12.50	6.75	13.58	7.15	14.66	7.55
12.52	6.75	13.60	7.16	14.68	7.56
12.54	6.76	13.62	7.17	14.70	7.57
12.56	6.77	13.64	7.17	14.72	7.58
12.58	6.77	13.66	7.18	14.74	7.58
12.60	6.78	13.68	7.19	14.76	7.59
12.62	6.79	13.70	7.20	14.78	7.60
12.64	6.80	13.72	7.20	14.80	7.61
12.66	6.80	13.74	7.21	14.82	7.61
12.68	6.81	13.76	7.22	14.84	7.62
12.70	6.82	13.78	7.23	14.86	7.63
12.72	6.83	13.80	7.23	14.88	7.64
12.74	6.83	13.82	7.24	14.90	7.64
12.76	6.84	13.84	7.25	14.92	7.65
12.78	6.85	13.86	7.26	14.94	7.66
12.80	6.86	13.88	7.26	14.96	7.67
12.82	6.86	13.90	7.27	14.98	7.67
12.84	6.87	13.92	7.28	15.00	**7.68**
12.86	6.88	13.94	7.29		
12.88	6.89	13.96	7.29		
12.90	6.89	13.98	7.30		
12.92	6.90	14.00	7.31		
12.94	6.91	14.02	7.32		
12.96	6.92	14.04	7.32		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.90	0	12.98	1,278	14.06	2,682
11.92	24	13.00	1,302	14.08	2,708
11.94	47	13.02	1,328	14.10	2,734
11.96	71	13.04	1,354	14.12	2,760
11.98	95	13.06	1,380	14.14	2,786
12.00	118	13.08	1,406	14.16	2,812
12.02	142	13.10	1,432	14.18	2,838
12.04	166	13.12	1,458	14.20	2,864
12.06	189	13.14	1,484	14.22	2,890
12.08	213	13.16	1,510	14.24	2,916
12.10	237	13.18	1,536	14.26	2,943
12.12	260	13.20	1,562	14.28	2,969
12.14	284	13.22	1,588	14.30	2,995
12.16	308	13.24	1,614	14.32	3,021
12.18	331	13.26	1,641	14.34	3,047
12.20	355	13.28	1,667	14.36	3,073
12.22	379	13.30	1,693	14.38	3,099
12.24	402	13.32	1,719	14.40	3,125
12.26	426	13.34	1,745	14.42	3,151
12.28	450	13.36	1,771	14.44	3,177
12.30	473	13.38	1,797	14.46	3,203
12.32	497	13.40	1,823	14.48	3,229
12.34	521	13.42	1,849	14.50	3,255
12.36	544	13.44	1,875	14.52	3,281
12.38	568	13.46	1,901	14.54	3,307
12.40	592	13.48	1,927	14.56	3,333
12.42	615	13.50	1,953	14.58	3,359
12.44	639	13.52	1,979	14.60	3,385
12.46	663	13.54	2,005	14.62	3,411
12.48	687	13.56	2,031	14.64	3,437
12.50	710	13.58	2,057	14.66	3,463
12.52	734	13.60	2,083	14.68	3,489
12.54	758	13.62	2,109	14.70	3,515
12.56	781	13.64	2,135	14.72	3,541
12.58	805	13.66	2,161	14.74	3,567
12.60	829	13.68	2,187	14.76	3,594
12.62	852	13.70	2,213	14.78	3,620
12.64	876	13.72	2,239	14.80	3,646
12.66	900	13.74	2,265	14.82	3,672
12.68	923	13.76	2,292	14.84	3,698
12.70	947	13.78	2,318	14.86	3,724
12.72	971	13.80	2,344	14.88	3,750
12.74	994	13.82	2,370	14.90	3,776
12.76	1,018	13.84	2,396	14.92	3,802
12.78	1,042	13.86	2,422	14.94	3,828
12.80	1,065	13.88	2,448	14.96	3,854
12.82	1,089	13.90	2,474	14.98	3,880
12.84	1,113	13.92	2,500	15.00	**3,906**
12.86	1,136	13.94	2,526		
12.88	1,160	13.96	2,552		
12.90	1,184	13.98	2,578		
12.92	1,207	14.00	2,604		
12.94	1,231	14.02	2,630		
12.96	1,255	14.04	2,656		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA5
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.102	32	Woods/grass comb., Good, HSG A (1S)
0.306	98	Paved parking (1S)
0.408		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA5 Runoff Area=17,766 sf Runoff Depth>5.35"
Tc=5.0 min CN=82 Runoff=2.74 cfs 0.182 af

Pond 1P: Infiltration Storage Model Peak Elev=11.69' Storage=257 cf Inflow=2.74 cfs 0.182 af
Outflow=1.98 cfs 0.181 af

Total Runoff Area = 0.408 ac Runoff Volume = 0.182 af Average Runoff Depth = 5.35"
24.91% Pervious Area = 0.102 ac 75.09% Impervious Area = 0.306 ac

Subcatchment 1S: Drainage Area DA5

Time of Concentration

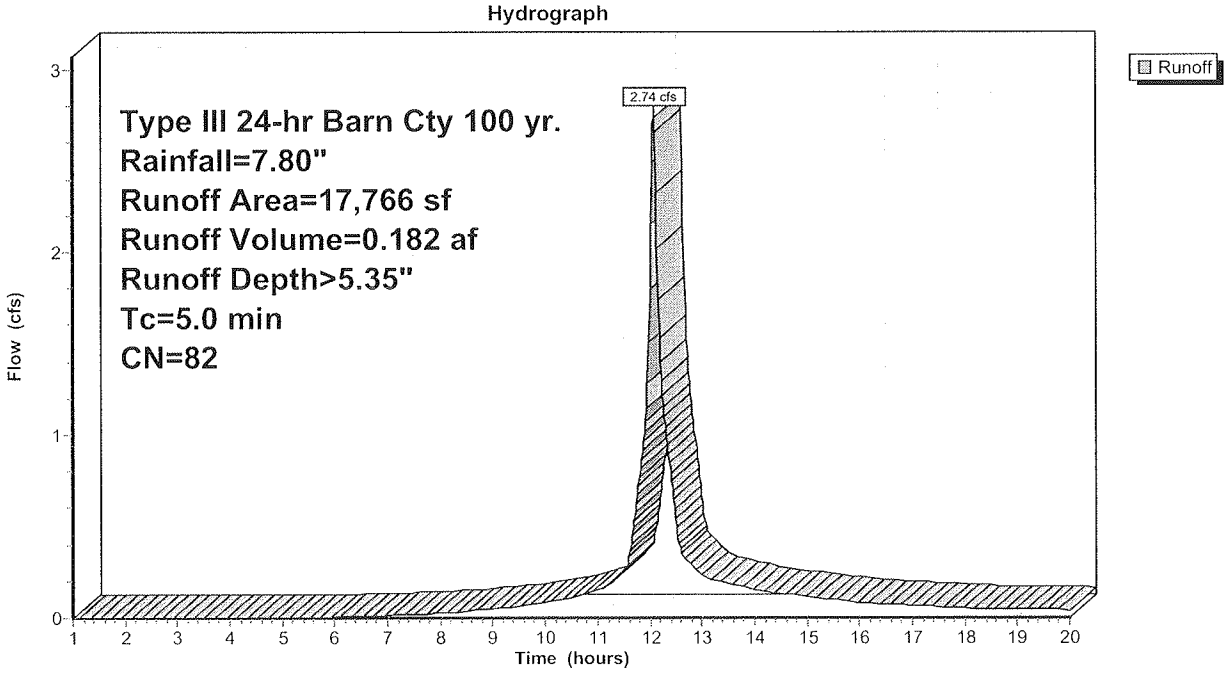
Runoff = 2.74 cfs @ 12.07 hrs, Volume= 0.182 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
13,341	98	Paved parking
4,425	32	Woods/grass comb., Good, HSG A
17,766	82	Weighted Average
4,425		Pervious Area
13,341		Impervious Area

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

Subcatchment 1S: Drainage Area DA5



Hydrograph for Subcatchment 1S: Drainage Area DA5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	1.31	0.77
1.20	0.09	0.00	0.00	12.00	3.90	2.12	**1.80**
1.40	0.11	0.00	0.00	12.20	4.89	2.98	**1.39**
1.60	0.12	0.00	0.00	12.40	5.35	3.39	0.79
1.80	0.14	0.00	0.00	12.60	5.56	3.59	0.36
2.00	0.16	0.00	0.00	12.80	5.72	3.73	0.29
2.20	0.17	0.00	0.00	13.00	5.85	3.85	0.24
2.40	0.19	0.00	0.00	13.20	5.96	3.95	0.21
2.60	0.20	0.00	0.00	13.40	6.06	4.04	0.19
2.80	0.22	0.00	0.00	13.60	6.16	4.13	0.18
3.00	0.24	0.00	0.00	13.80	6.25	4.21	0.16
3.20	0.26	0.00	0.00	14.00	6.33	4.29	0.15
3.40	0.28	0.00	0.00	14.20	6.40	4.36	0.14
3.60	0.30	0.00	0.00	14.40	6.47	4.42	0.13
3.80	0.32	0.00	0.00	14.60	6.54	4.49	0.13
4.00	0.34	0.00	0.00	14.80	6.60	4.55	0.12
4.20	0.36	0.00	0.00	15.00	6.66	4.60	0.11
4.40	0.38	0.00	0.00	15.20	6.72	4.65	0.11
4.60	0.40	0.00	0.00	15.40	6.77	4.70	0.10
4.80	0.42	0.00	0.00	15.60	6.82	4.75	0.09
5.00	0.44	0.00	0.00	15.80	6.87	4.79	0.09
5.20	0.47	0.00	0.00	16.00	6.91	4.83	0.08
5.40	0.49	0.00	0.00	16.20	6.95	4.87	0.08
5.60	0.51	0.00	0.00	16.40	6.99	4.91	0.07
5.80	0.54	0.00	0.00	16.60	7.03	4.94	0.07
6.00	0.56	0.01	0.00	16.80	7.06	4.97	0.07
6.20	0.59	0.01	0.01	17.00	7.09	5.00	0.06
6.40	0.61	0.01	0.01	17.20	7.13	5.03	0.06
6.60	0.64	0.02	0.01	17.40	7.16	5.06	0.06
6.80	0.67	0.02	0.01	17.60	7.19	5.09	0.06
7.00	0.71	0.03	0.01	17.80	7.21	5.12	0.05
7.20	0.74	0.04	0.02	18.00	7.24	5.14	0.05
7.40	0.77	0.04	0.02	18.20	7.26	5.16	0.05
7.60	0.81	0.05	0.02	18.40	7.29	5.19	0.05
7.80	0.85	0.06	0.02	18.60	7.31	5.21	0.05
8.00	0.89	0.08	0.02	18.80	7.33	5.23	0.05
8.20	0.93	0.09	0.03	19.00	7.36	5.25	0.04
8.40	0.98	0.11	0.03	19.20	7.38	5.27	0.04
8.60	1.03	0.12	0.04	19.40	7.40	5.29	0.04
8.80	1.08	0.14	0.04	19.60	7.42	5.31	0.04
9.00	1.14	0.17	0.05	19.80	7.44	5.33	0.04
9.20	1.20	0.19	0.05	20.00	**7.46**	**5.35**	0.04
9.40	1.26	0.22	0.06				
9.60	1.33	0.26	0.07				
9.80	1.40	0.29	0.07				
10.00	1.47	0.33	0.08				
10.20	1.55	0.38	0.09				
10.40	1.64	0.43	0.10				
10.60	1.74	0.48	0.12				
10.80	1.84	0.55	0.13				
11.00	1.95	0.62	0.15				
11.20	2.08	0.70	0.18				
11.40	2.24	0.81	0.23				
11.60	2.45	0.96	0.33				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.408 ac, Inflow Depth > 5.35" for Barn Cty 100 yr. event
Inflow = 2.74 cfs @ 12.07 hrs, Volume= 0.182 af
Outflow = 1.98 cfs @ 12.14 hrs, Volume= 0.181 af, Atten= 28%, Lag= 4.2 min
Primary = 1.98 cfs @ 12.14 hrs, Volume= 0.181 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.69' @ 12.14 hrs Surf.Area= 0 sf Storage= 257 cf

Plug-Flow detention time=1.3 min calculated for 0.181 af (100% of inflow)
Center-of-Mass det. time=0.4 min (767.3 - 766.9)

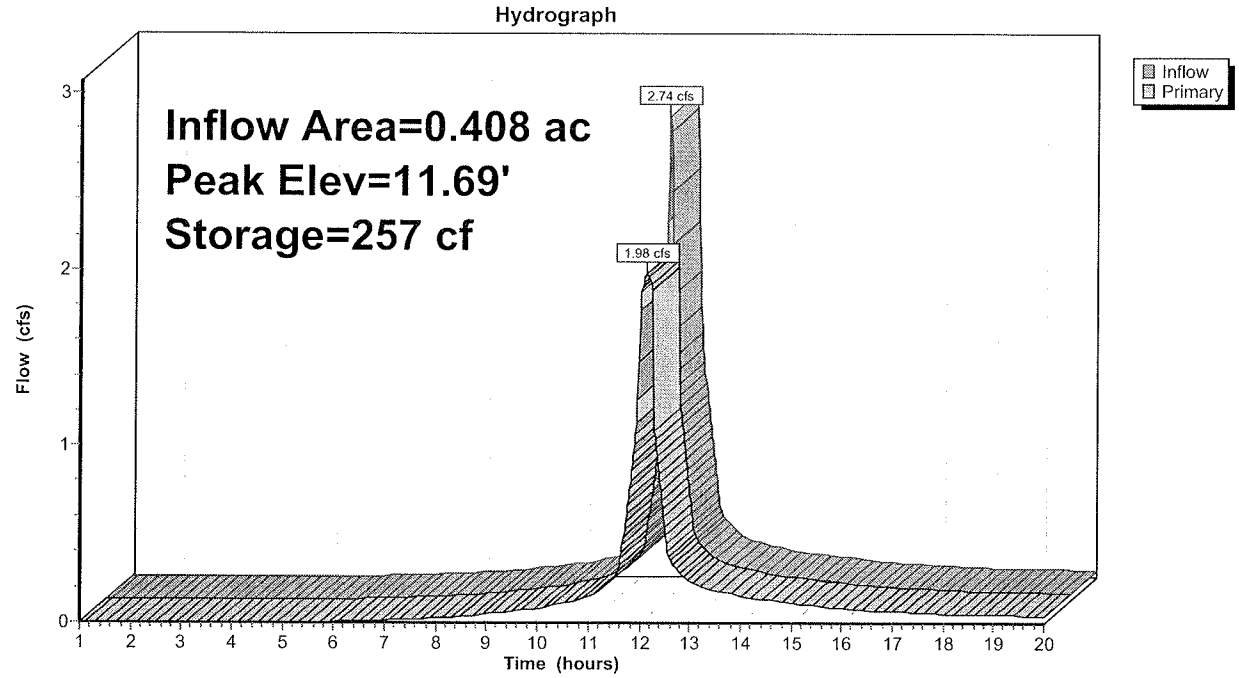
Volume	Invert	Avail.Storage	Storage Description
#1	11.00'	1,116 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.00	0
12.00	372
13.00	744
14.00	1,116

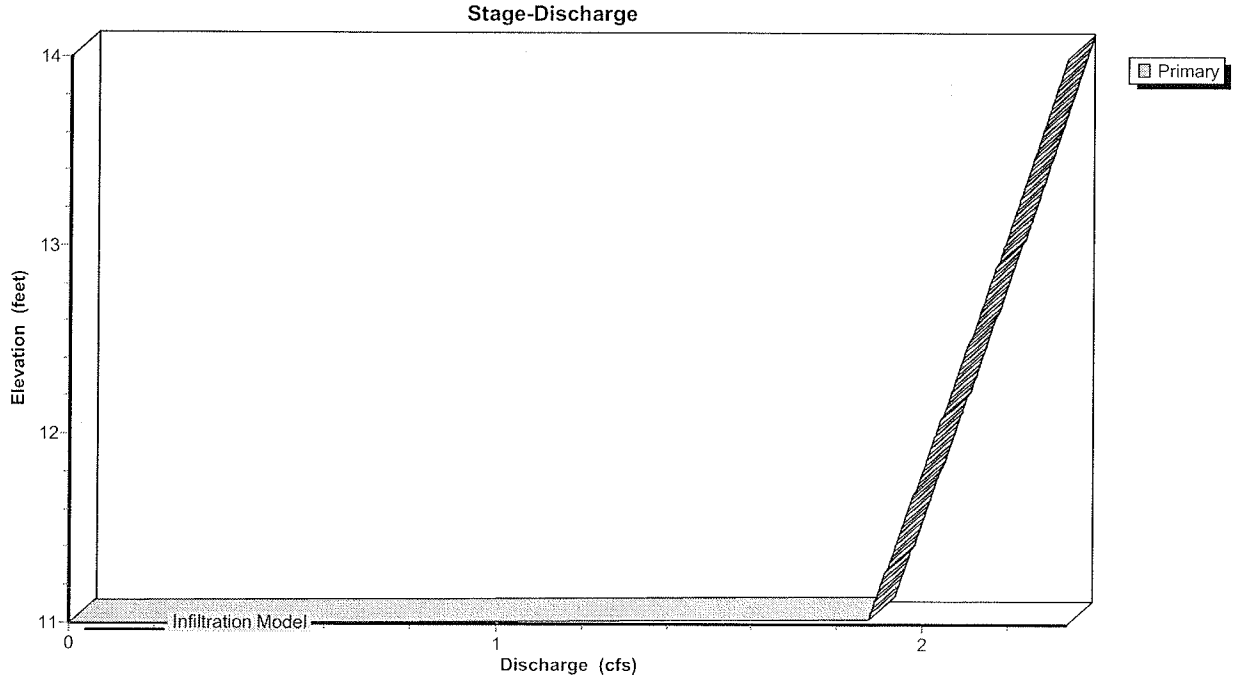
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 10.90 11.00 12.00 13.00 14.00 Disch. (cfs) 0.000 1.870 2.030 2.190 2.340

Primary OutFlow Max=1.98 cfs @ 12.14 hrs HW=11.69' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.98 cfs)

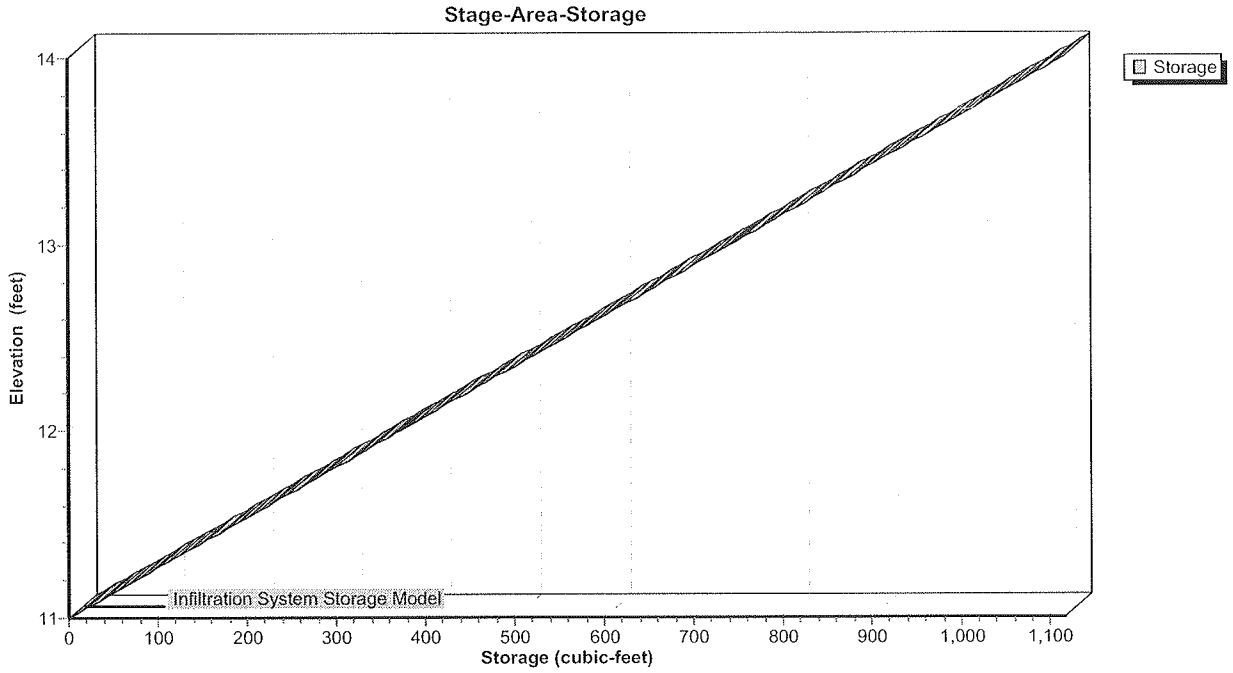
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.00	0.00
1.20	0.00	0	11.00	0.00
1.40	0.00	0	11.00	0.00
1.60	0.00	0	11.00	0.00
1.80	0.00	0	11.00	0.00
2.00	0.00	0	11.00	0.00
2.20	0.00	0	11.00	0.00
2.40	0.00	0	11.00	0.00
2.60	0.00	0	11.00	0.00
2.80	0.00	0	11.00	0.00
3.00	0.00	0	11.00	0.00
3.20	0.00	0	11.00	0.00
3.40	0.00	0	11.00	0.00
3.60	0.00	0	11.00	0.00
3.80	0.00	0	11.00	0.00
4.00	0.00	0	11.00	0.00
4.20	0.00	0	11.00	0.00
4.40	0.00	0	11.00	0.00
4.60	0.00	0	11.00	0.00
4.80	0.00	0	11.00	0.00
5.00	0.00	0	11.00	0.00
5.20	0.00	0	11.00	0.00
5.40	0.00	0	11.00	0.00
5.60	0.00	0	11.00	0.00
5.80	0.00	0	11.00	0.00
6.00	0.00	0	11.00	0.00
6.20	0.01	0	11.00	0.01
6.40	0.01	0	11.00	0.01
6.60	0.01	0	11.00	0.01
6.80	0.01	0	11.00	0.01
7.00	0.01	0	11.00	0.01
7.20	0.02	0	11.00	0.02
7.40	0.02	0	11.00	0.02
7.60	0.02	0	11.00	0.02
7.80	0.02	0	11.00	0.02
8.00	0.02	0	11.00	0.02
8.20	0.03	0	11.00	0.03
8.40	0.03	0	11.00	0.03
8.60	0.04	0	11.00	0.04
8.80	0.04	0	11.00	0.04
9.00	0.05	0	11.00	0.05
9.20	0.05	0	11.00	0.05
9.40	0.06	0	11.00	0.06
9.60	0.07	0	11.00	0.07
9.80	0.07	0	11.00	0.07
10.00	0.08	0	11.00	0.08
10.20	0.09	1	11.00	0.09
10.40	0.10	1	11.00	0.10
10.60	0.12	1	11.00	0.12
10.80	0.13	1	11.00	0.13
11.00	0.15	1	11.00	0.15
11.20	0.18	1	11.00	0.18
11.40	0.23	1	11.00	0.23
11.60	0.33	2	11.01	0.33
11.80	0.77	5	11.01	0.76
12.00	**1.80**	**11**	**11.03**	**1.78**
12.20	**1.39**	**189**	**11.51**	**1.95**
12.40	0.79	5	11.01	0.80
12.60	0.36	2	11.01	0.36
12.80	0.29	2	11.00	0.29
13.00	0.24	1	11.00	0.24
13.20	0.21	1	11.00	0.21
13.40	0.19	1	11.00	0.19
13.60	0.18	1	11.00	0.18
13.80	0.16	1	11.00	0.17
14.00	0.15	1	11.00	0.15
14.20	0.14	1	11.00	0.14
14.40	0.13	1	11.00	0.13
14.60	0.13	1	11.00	0.13
14.80	0.12	1	11.00	0.12
15.00	0.11	1	11.00	0.11
15.20	0.11	1	11.00	0.11
15.40	0.10	1	11.00	0.10
15.60	0.09	1	11.00	0.09
15.80	0.09	1	11.00	0.09
16.00	0.08	0	11.00	0.08
16.20	0.08	0	11.00	0.08
16.40	0.07	0	11.00	0.07
16.60	0.07	0	11.00	0.07
16.80	0.07	0	11.00	0.07
17.00	0.06	0	11.00	0.06
17.20	0.06	0	11.00	0.06
17.40	0.06	0	11.00	0.06
17.60	0.06	0	11.00	0.06
17.80	0.05	0	11.00	0.05
18.00	0.05	0	11.00	0.05
18.20	0.05	0	11.00	0.05
18.40	0.05	0	11.00	0.05
18.60	0.05	0	11.00	0.05
18.80	0.05	0	11.00	0.05
19.00	0.04	0	11.00	0.04
19.20	0.04	0	11.00	0.04
19.40	0.04	0	11.00	0.04
19.60	0.04	0	11.00	0.04
19.80	0.04	0	11.00	0.04
20.00	0.04	0	11.00	0.04

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.00	0.00	12.08	2.04	13.16	2.21
11.02	1.87	12.10	2.05	13.18	2.22
11.04	1.88	12.12	2.05	13.20	2.22
11.06	1.88	12.14	2.05	13.22	2.22
11.08	1.88	12.16	2.06	13.24	2.23
11.10	1.89	12.18	2.06	13.26	2.23
11.12	1.89	12.20	2.06	13.28	2.23
11.14	1.89	12.22	2.07	13.30	2.23
11.16	1.90	12.24	2.07	13.32	2.24
11.18	1.90	12.26	2.07	13.34	2.24
11.20	1.90	12.28	2.07	13.36	2.24
11.22	1.91	12.30	2.08	13.38	2.25
11.24	1.91	12.32	2.08	13.40	2.25
11.26	1.91	12.34	2.08	13.42	2.25
11.28	1.91	12.36	2.09	13.44	2.26
11.30	1.92	12.38	2.09	13.46	2.26
11.32	1.92	12.40	2.09	13.48	2.26
11.34	1.92	12.42	2.10	13.50	2.26
11.36	1.93	12.44	2.10	13.52	2.27
11.38	1.93	12.46	2.10	13.54	2.27
11.40	1.93	12.48	2.11	13.56	2.27
11.42	1.94	12.50	2.11	13.58	2.28
11.44	1.94	12.52	2.11	13.60	2.28
11.46	1.94	12.54	2.12	13.62	2.28
11.48	1.95	12.56	2.12	13.64	2.29
11.50	1.95	12.58	2.12	13.66	2.29
11.52	1.95	12.60	2.13	13.68	2.29
11.54	1.96	12.62	2.13	13.70	2.29
11.56	1.96	12.64	2.13	13.72	2.30
11.58	1.96	12.66	2.14	13.74	2.30
11.60	1.97	12.68	2.14	13.76	2.30
11.62	1.97	12.70	2.14	13.78	2.31
11.64	1.97	12.72	2.15	13.80	2.31
11.66	1.98	12.74	2.15	13.82	2.31
11.68	1.98	12.76	2.15	13.84	2.32
11.70	1.98	12.78	2.15	13.86	2.32
11.72	1.99	12.80	2.16	13.88	2.32
11.74	1.99	12.82	2.16	13.90	2.32
11.76	1.99	12.84	2.16	13.92	2.33
11.78	1.99	12.86	2.17	13.94	2.33
11.80	2.00	12.88	2.17	13.96	2.33
11.82	2.00	12.90	2.17	13.98	2.34
11.84	2.00	12.92	2.18	14.00	**2.34**
11.86	2.01	12.94	2.18		
11.88	2.01	12.96	2.18		
11.90	2.01	12.98	2.19		
11.92	2.02	13.00	2.19		
11.94	2.02	13.02	2.19		
11.96	2.02	13.04	2.20		
11.98	2.03	13.06	2.20		
12.00	2.03	13.08	2.20		
12.02	2.03	13.10	2.21		
12.04	2.04	13.12	2.21		
12.06	2.04	13.14	2.21		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.00	0	12.08	402	13.16	804
11.02	7	12.10	409	13.18	811
11.04	15	12.12	417	13.20	818
11.06	22	12.14	424	13.22	826
11.08	30	12.16	432	13.24	833
11.10	37	12.18	439	13.26	841
11.12	45	12.20	446	13.28	848
11.14	52	12.22	454	13.30	856
11.16	60	12.24	461	13.32	863
11.18	67	12.26	469	13.34	870
11.20	74	12.28	476	13.36	878
11.22	82	12.30	484	13.38	885
11.24	89	12.32	491	13.40	893
11.26	97	12.34	498	13.42	900
11.28	104	12.36	506	13.44	908
11.30	112	12.38	513	13.46	915
11.32	119	12.40	521	13.48	923
11.34	126	12.42	528	13.50	930
11.36	134	12.44	536	13.52	937
11.38	141	12.46	543	13.54	945
11.40	149	12.48	551	13.56	952
11.42	156	12.50	558	13.58	960
11.44	164	12.52	565	13.60	967
11.46	171	12.54	573	13.62	975
11.48	179	12.56	580	13.64	982
11.50	186	12.58	588	13.66	990
11.52	193	12.60	595	13.68	997
11.54	201	12.62	603	13.70	1,004
11.56	208	12.64	610	13.72	1,012
11.58	216	12.66	618	13.74	1,019
11.60	223	12.68	625	13.76	1,027
11.62	231	12.70	632	13.78	1,034
11.64	238	12.72	640	13.80	1,042
11.66	246	12.74	647	13.82	1,049
11.68	253	12.76	655	13.84	1,056
11.70	260	12.78	662	13.86	1,064
11.72	268	12.80	670	13.88	1,071
11.74	275	12.82	677	13.90	1,079
11.76	283	12.84	684	13.92	1,086
11.78	290	12.86	692	13.94	1,094
11.80	298	12.88	699	13.96	1,101
11.82	305	12.90	707	13.98	1,109
11.84	312	12.92	714	14.00	**1,116**
11.86	320	12.94	722		
11.88	327	12.96	729		
11.90	335	12.98	737		
11.92	342	13.00	744		
11.94	350	13.02	751		
11.96	357	13.04	759		
11.98	365	13.06	766		
12.00	372	13.08	774		
12.02	379	13.10	781		
12.04	387	13.12	789		
12.06	394	13.14	796		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA5 Runoff Area=17,766 sf Runoff Depth>3.48"
Tc=5.0 min CN=82 Runoff=1.82 cfs 0.118 af

Pond 1P: Infiltration Storage Model Peak Elev=11.03' Storage=11 cf Inflow=1.82 cfs 0.118 af
Outflow=1.81 cfs 0.118 af

Total Runoff Area = 0.408 ac Runoff Volume = 0.118 af Average Runoff Depth = 3.48"
24.91% Pervious Area = 0.102 ac 75.09% Impervious Area = 0.306 ac

Subcatchment 1S: Drainage Area DA5

Time of Concentration

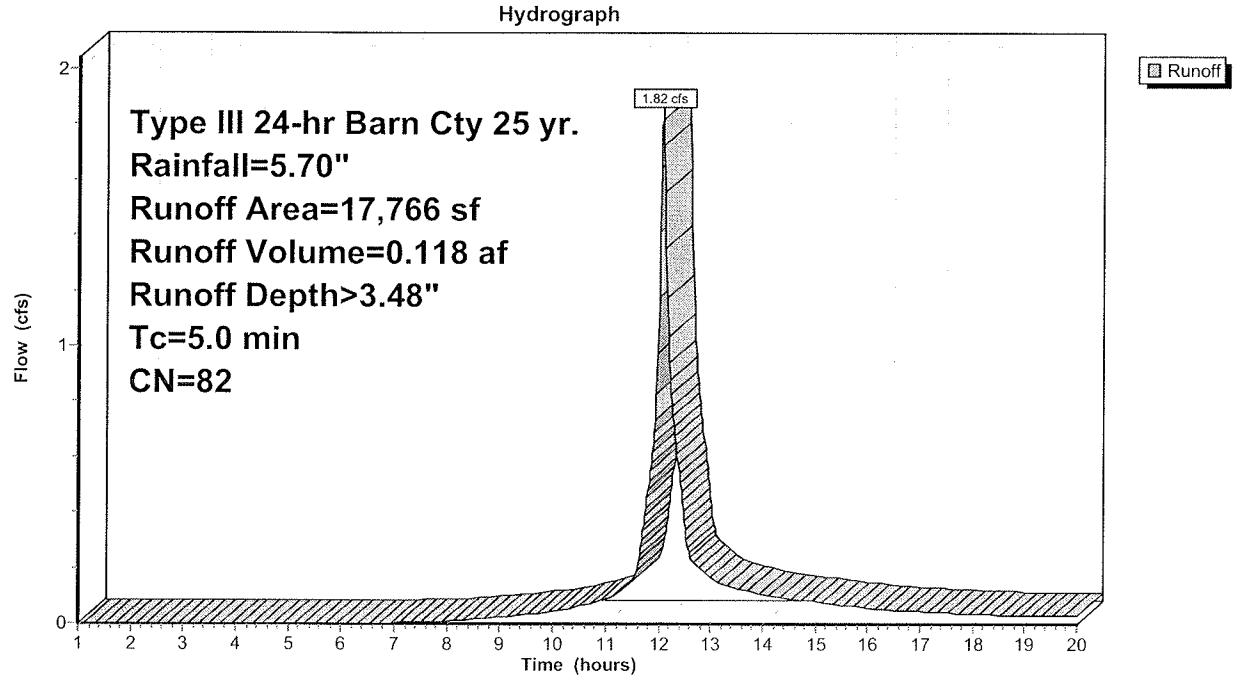
Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.118 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
13,341	98	Paved parking
4,425	32	Woods/grass comb., Good, HSG A
17,766	82	Weighted Average
4,425		Pervious Area
13,341		Impervious Area

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

Subcatchment 1S: Drainage Area DA5



Hydrograph for Subcatchment 1S: Drainage Area DA5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	0.73	0.48
1.20	0.07	0.00	0.00	12.00	2.85	1.26	**1.18**
1.40	0.08	0.00	0.00	12.20	3.57	1.84	**0.94**
1.60	0.09	0.00	0.00	12.40	3.91	2.12	0.54
1.80	0.10	0.00	0.00	12.60	4.07	2.26	0.25
2.00	0.11	0.00	0.00	12.80	4.18	2.36	0.20
2.20	0.13	0.00	0.00	13.00	4.27	2.44	0.16
2.40	0.14	0.00	0.00	13.20	4.36	2.51	0.14
2.60	0.15	0.00	0.00	13.40	4.43	2.58	0.13
2.80	0.16	0.00	0.00	13.60	4.50	2.64	0.12
3.00	0.18	0.00	0.00	13.80	4.56	2.69	0.11
3.20	0.19	0.00	0.00	14.00	4.62	2.74	0.11
3.40	0.20	0.00	0.00	14.20	4.68	2.79	0.10
3.60	0.22	0.00	0.00	14.40	4.73	2.84	0.09
3.80	0.23	0.00	0.00	14.60	4.78	2.88	0.09
4.00	0.25	0.00	0.00	14.80	4.83	2.92	0.08
4.20	0.26	0.00	0.00	15.00	4.87	2.96	0.08
4.40	0.28	0.00	0.00	15.20	4.91	3.00	0.08
4.60	0.29	0.00	0.00	15.40	4.95	3.03	0.07
4.80	0.31	0.00	0.00	15.60	4.99	3.07	0.07
5.00	0.32	0.00	0.00	15.80	5.02	3.10	0.06
5.20	0.34	0.00	0.00	16.00	5.05	3.12	0.06
5.40	0.36	0.00	0.00	16.20	5.08	3.15	0.05
5.60	0.37	0.00	0.00	16.40	5.11	3.18	0.05
5.80	0.39	0.00	0.00	16.60	5.13	3.20	0.05
6.00	0.41	0.00	0.00	16.80	5.16	3.22	0.05
6.20	0.43	0.00	0.00	17.00	5.18	3.24	0.05
6.40	0.45	0.00	0.00	17.20	5.21	3.27	0.04
6.60	0.47	0.00	0.00	17.40	5.23	3.29	0.04
6.80	0.49	0.00	0.00	17.60	5.25	3.30	0.04
7.00	0.52	0.00	0.00	17.80	5.27	3.32	0.04
7.20	0.54	0.00	0.00	18.00	5.29	3.34	0.03
7.40	0.57	0.01	0.01	18.20	5.31	3.36	0.03
7.60	0.59	0.01	0.01	18.40	5.33	3.37	0.03
7.80	0.62	0.01	0.01	18.60	5.34	3.39	0.03
8.00	0.65	0.02	0.01	18.80	5.36	3.40	0.03
8.20	0.68	0.02	0.01	19.00	5.38	3.42	0.03
8.40	0.71	0.03	0.01	19.20	5.39	3.43	0.03
8.60	0.75	0.04	0.02	19.40	5.41	3.45	0.03
8.80	0.79	0.05	0.02	19.60	5.42	3.46	0.03
9.00	0.83	0.06	0.02	19.80	5.44	3.48	0.03
9.20	0.87	0.07	0.03	20.00	**5.45**	**3.49**	0.03
9.40	0.92	0.09	0.03				
9.60	0.97	0.10	0.03				
9.80	1.02	0.12	0.04				
10.00	1.08	0.14	0.04				
10.20	1.14	0.17	0.05				
10.40	1.20	0.20	0.06				
10.60	1.27	0.23	0.07				
10.80	1.34	0.26	0.08				
11.00	1.42	0.31	0.09				
11.20	1.52	0.36	0.11				
11.40	1.63	0.42	0.14				
11.60	1.79	0.52	0.20				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.408 ac, Inflow Depth > 3.48" for Barn Cty 25 yr. event
Inflow = 1.82 cfs @ 12.07 hrs, Volume= 0.118 af
Outflow = 1.81 cfs @ 12.08 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.1 min
Primary = 1.81 cfs @ 12.08 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.03' @ 12.08 hrs Surf.Area= 0 sf Storage= 11 cf

Plug-Flow detention time=0.1 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time=0.1 min (777.2 - 777.1)

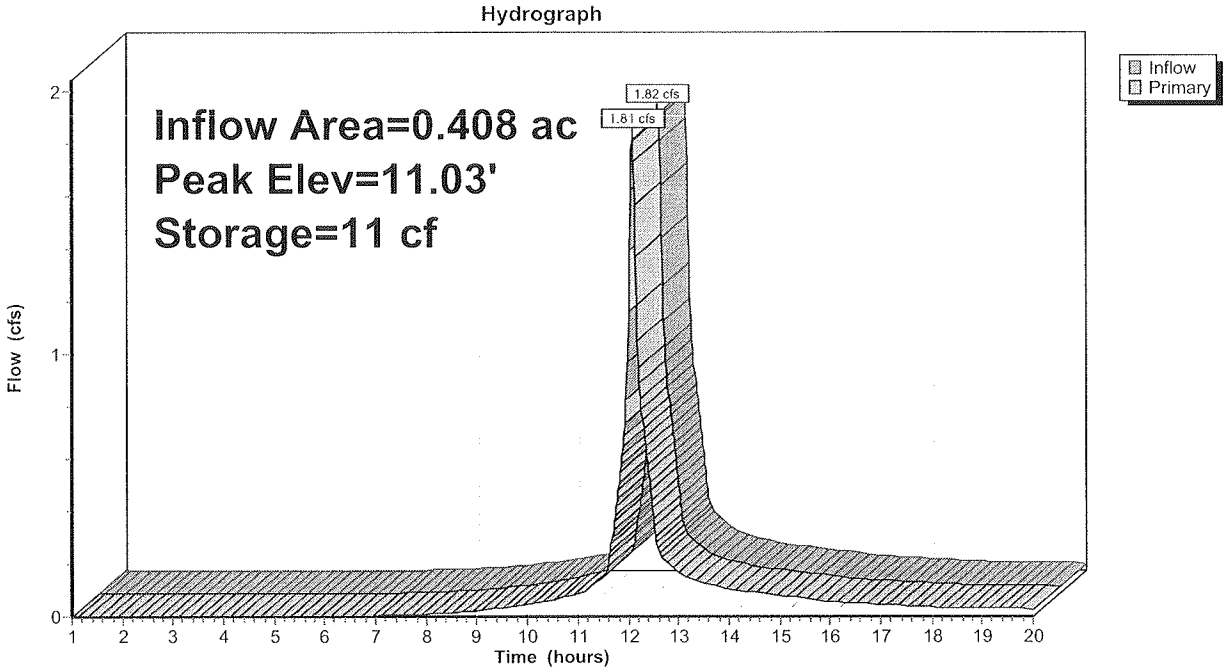
Volume	Invert	Avail.Storage	Storage Description
#1	11.00'	1,116 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
11.00	0
12.00	372
13.00	744
14.00	1,116

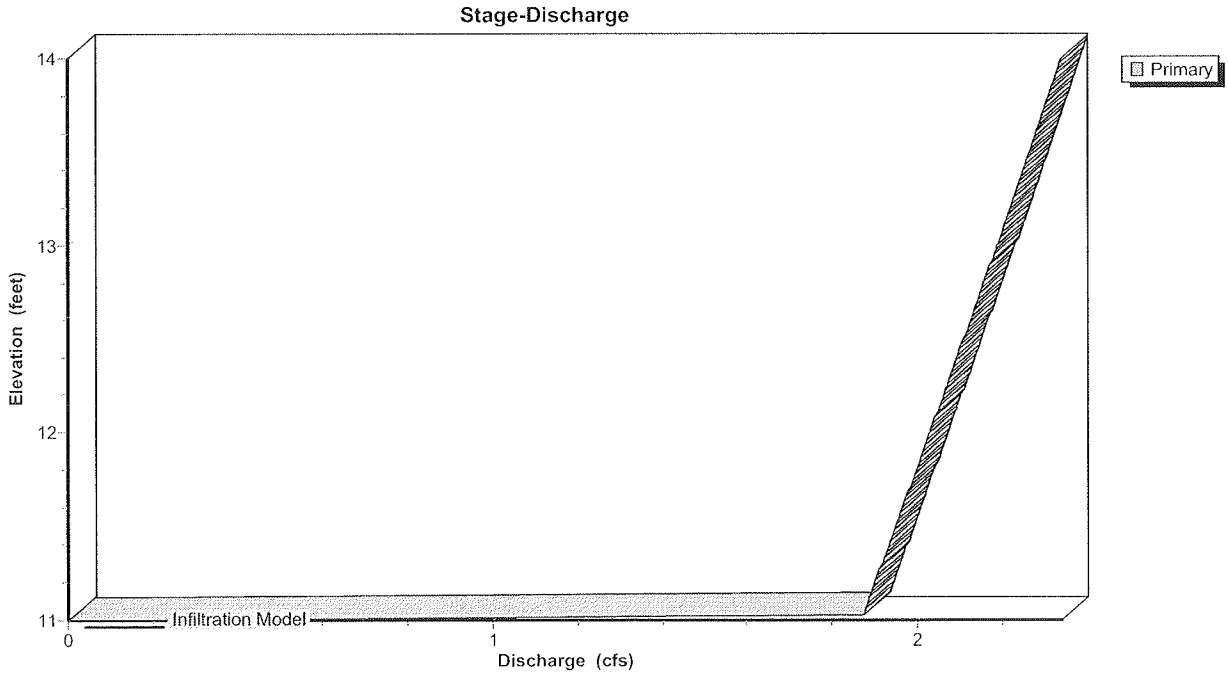
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 10.90 11.00 12.00 13.00 14.00 Disch. (cfs) 0.000 1.870 2.030 2.190 2.340

Primary OutFlow Max=1.87 cfs @ 12.08 hrs HW=11.03' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 1.87 cfs)

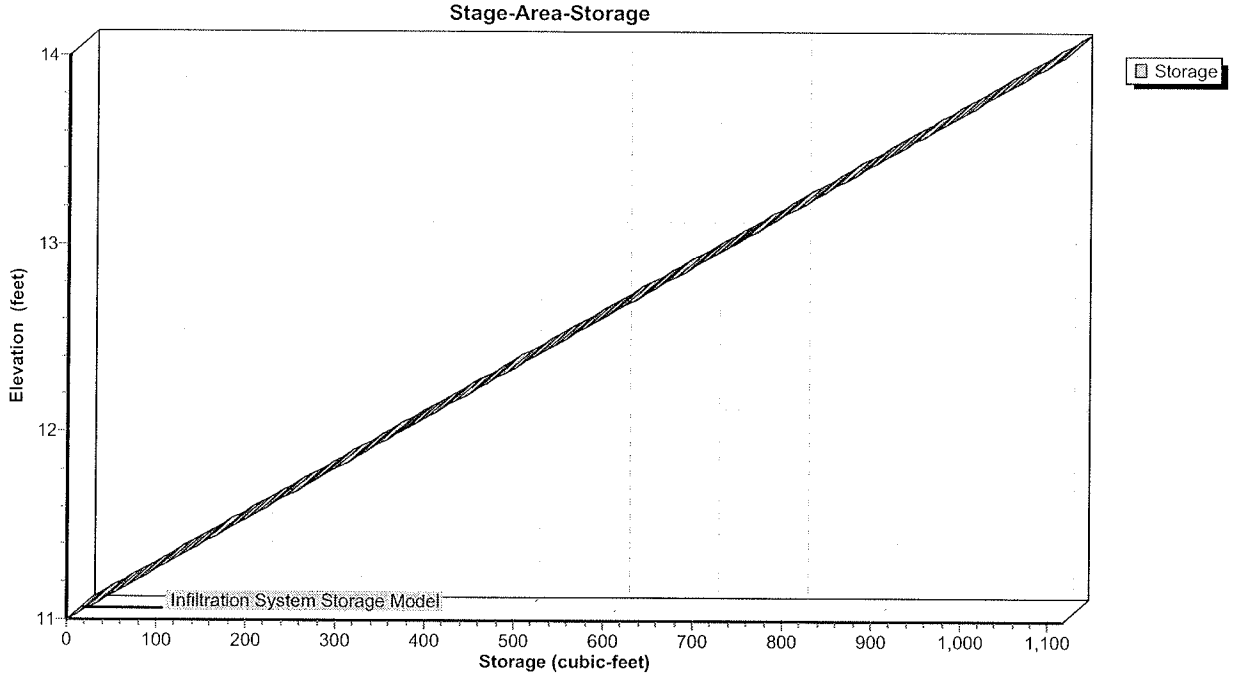
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

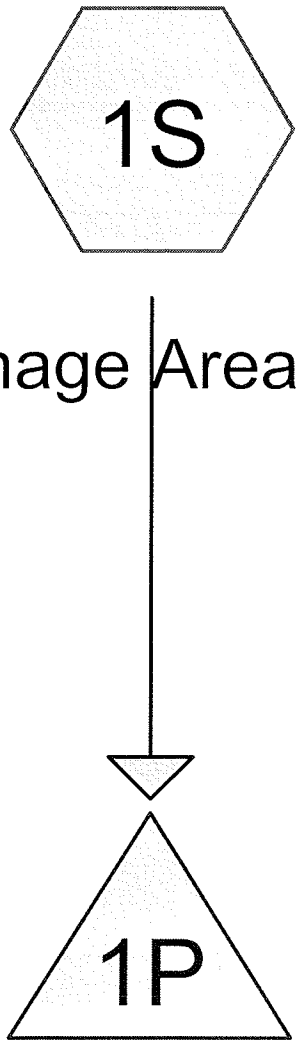
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	11.00	0.00
1.20	0.00	0	11.00	0.00
1.40	0.00	0	11.00	0.00
1.60	0.00	0	11.00	0.00
1.80	0.00	0	11.00	0.00
2.00	0.00	0	11.00	0.00
2.20	0.00	0	11.00	0.00
2.40	0.00	0	11.00	0.00
2.60	0.00	0	11.00	0.00
2.80	0.00	0	11.00	0.00
3.00	0.00	0	11.00	0.00
3.20	0.00	0	11.00	0.00
3.40	0.00	0	11.00	0.00
3.60	0.00	0	11.00	0.00
3.80	0.00	0	11.00	0.00
4.00	0.00	0	11.00	0.00
4.20	0.00	0	11.00	0.00
4.40	0.00	0	11.00	0.00
4.60	0.00	0	11.00	0.00
4.80	0.00	0	11.00	0.00
5.00	0.00	0	11.00	0.00
5.20	0.00	0	11.00	0.00
5.40	0.00	0	11.00	0.00
5.60	0.00	0	11.00	0.00
5.80	0.00	0	11.00	0.00
6.00	0.00	0	11.00	0.00
6.20	0.00	0	11.00	0.00
6.40	0.00	0	11.00	0.00
6.60	0.00	0	11.00	0.00
6.80	0.00	0	11.00	0.00
7.00	0.00	0	11.00	0.00
7.20	0.00	0	11.00	0.00
7.40	0.01	0	11.00	0.01
7.60	0.01	0	11.00	0.01
7.80	0.01	0	11.00	0.01
8.00	0.01	0	11.00	0.01
8.20	0.01	0	11.00	0.01
8.40	0.01	0	11.00	0.01
8.60	0.02	0	11.00	0.02
8.80	0.02	0	11.00	0.02
9.00	0.02	0	11.00	0.02
9.20	0.03	0	11.00	0.03
9.40	0.03	0	11.00	0.03
9.60	0.03	0	11.00	0.03
9.80	0.04	0	11.00	0.04
10.00	0.04	0	11.00	0.04
10.20	0.05	0	11.00	0.05
10.40	0.06	0	11.00	0.06
10.60	0.07	0	11.00	0.07
10.80	0.08	0	11.00	0.08
11.00	0.09	1	11.00	0.09
11.20	0.11	1	11.00	0.11
11.40	0.14	1	11.00	0.14
11.60	0.20	1	11.00	0.20
11.80	0.48	3	11.01	0.48
12.00	**1.18**	**7**	**11.02**	**1.16**
12.20	**0.94**	**6**	**11.02**	**0.95**
12.40	0.54	3	11.01	0.55
12.60	0.25	1	11.00	0.25
12.80	0.20	1	11.00	0.20
13.00	0.16	1	11.00	0.16
13.20	0.14	1	11.00	0.14
13.40	0.13	1	11.00	0.13
13.60	0.12	1	11.00	0.12
13.80	0.11	1	11.00	0.11
14.00	0.11	1	11.00	0.11
14.20	0.10	1	11.00	0.10
14.40	0.09	1	11.00	0.09
14.60	0.09	1	11.00	0.09
14.80	0.08	1	11.00	0.08
15.00	0.08	0	11.00	0.08
15.20	0.08	0	11.00	0.08
15.40	0.07	0	11.00	0.07
15.60	0.07	0	11.00	0.07
15.80	0.06	0	11.00	0.06
16.00	0.06	0	11.00	0.06
16.20	0.05	0	11.00	0.05
16.40	0.05	0	11.00	0.05
16.60	0.05	0	11.00	0.05
16.80	0.05	0	11.00	0.05
17.00	0.05	0	11.00	0.05
17.20	0.04	0	11.00	0.04
17.40	0.04	0	11.00	0.04
17.60	0.04	0	11.00	0.04
17.80	0.04	0	11.00	0.04
18.00	0.03	0	11.00	0.03
18.20	0.03	0	11.00	0.03
18.40	0.03	0	11.00	0.03
18.60	0.03	0	11.00	0.03
18.80	0.03	0	11.00	0.03
19.00	0.03	0	11.00	0.03
19.20	0.03	0	11.00	0.03
19.40	0.03	0	11.00	0.03
19.60	0.03	0	11.00	0.03
19.80	0.03	0	11.00	0.03
20.00	0.03	0	11.00	0.03

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
11.00	0.00	12.08	2.04	13.16	2.21
11.02	1.87	12.10	2.05	13.18	2.22
11.04	1.88	12.12	2.05	13.20	2.22
11.06	1.88	12.14	2.05	13.22	2.22
11.08	1.88	12.16	2.06	13.24	2.23
11.10	1.89	12.18	2.06	13.26	2.23
11.12	1.89	12.20	2.06	13.28	2.23
11.14	1.89	12.22	2.07	13.30	2.23
11.16	1.90	12.24	2.07	13.32	2.24
11.18	1.90	12.26	2.07	13.34	2.24
11.20	1.90	12.28	2.07	13.36	2.24
11.22	1.91	12.30	2.08	13.38	2.25
11.24	1.91	12.32	2.08	13.40	2.25
11.26	1.91	12.34	2.08	13.42	2.25
11.28	1.91	12.36	2.09	13.44	2.26
11.30	1.92	12.38	2.09	13.46	2.26
11.32	1.92	12.40	2.09	13.48	2.26
11.34	1.92	12.42	2.10	13.50	2.26
11.36	1.93	12.44	2.10	13.52	2.27
11.38	1.93	12.46	2.10	13.54	2.27
11.40	1.93	12.48	2.11	13.56	2.27
11.42	1.94	12.50	2.11	13.58	2.28
11.44	1.94	12.52	2.11	13.60	2.28
11.46	1.94	12.54	2.12	13.62	2.28
11.48	1.95	12.56	2.12	13.64	2.29
11.50	1.95	12.58	2.12	13.66	2.29
11.52	1.95	12.60	2.13	13.68	2.29
11.54	1.96	12.62	2.13	13.70	2.29
11.56	1.96	12.64	2.13	13.72	2.30
11.58	1.96	12.66	2.14	13.74	2.30
11.60	1.97	12.68	2.14	13.76	2.30
11.62	1.97	12.70	2.14	13.78	2.31
11.64	1.97	12.72	2.15	13.80	2.31
11.66	1.98	12.74	2.15	13.82	2.31
11.68	1.98	12.76	2.15	13.84	2.32
11.70	1.98	12.78	2.15	13.86	2.32
11.72	1.99	12.80	2.16	13.88	2.32
11.74	1.99	12.82	2.16	13.90	2.32
11.76	1.99	12.84	2.16	13.92	2.33
11.78	1.99	12.86	2.17	13.94	2.33
11.80	2.00	12.88	2.17	13.96	2.33
11.82	2.00	12.90	2.17	13.98	2.34
11.84	2.00	12.92	2.18	14.00	**2.34**
11.86	2.01	12.94	2.18		
11.88	2.01	12.96	2.18		
11.90	2.01	12.98	2.19		
11.92	2.02	13.00	2.19		
11.94	2.02	13.02	2.19		
11.96	2.02	13.04	2.20		
11.98	2.03	13.06	2.20		
12.00	2.03	13.08	2.20		
12.02	2.03	13.10	2.21		
12.04	2.04	13.12	2.21		
12.06	2.04	13.14	2.21		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
11.00	0	12.08	402	13.16	804
11.02	7	12.10	409	13.18	811
11.04	15	12.12	417	13.20	818
11.06	22	12.14	424	13.22	826
11.08	30	12.16	432	13.24	833
11.10	37	12.18	439	13.26	841
11.12	45	12.20	446	13.28	848
11.14	52	12.22	454	13.30	856
11.16	60	12.24	461	13.32	863
11.18	67	12.26	469	13.34	870
11.20	74	12.28	476	13.36	878
11.22	82	12.30	484	13.38	885
11.24	89	12.32	491	13.40	893
11.26	97	12.34	498	13.42	900
11.28	104	12.36	506	13.44	908
11.30	112	12.38	513	13.46	915
11.32	119	12.40	521	13.48	923
11.34	126	12.42	528	13.50	930
11.36	134	12.44	536	13.52	937
11.38	141	12.46	543	13.54	945
11.40	149	12.48	551	13.56	952
11.42	156	12.50	558	13.58	960
11.44	164	12.52	565	13.60	967
11.46	171	12.54	573	13.62	975
11.48	179	12.56	580	13.64	982
11.50	186	12.58	588	13.66	990
11.52	193	12.60	595	13.68	997
11.54	201	12.62	603	13.70	1,004
11.56	208	12.64	610	13.72	1,012
11.58	216	12.66	618	13.74	1,019
11.60	223	12.68	625	13.76	1,027
11.62	231	12.70	632	13.78	1,034
11.64	238	12.72	640	13.80	1,042
11.66	246	12.74	647	13.82	1,049
11.68	253	12.76	655	13.84	1,056
11.70	260	12.78	662	13.86	1,064
11.72	268	12.80	670	13.88	1,071
11.74	275	12.82	677	13.90	1,079
11.76	283	12.84	684	13.92	1,086
11.78	290	12.86	692	13.94	1,094
11.80	298	12.88	699	13.96	1,101
11.82	305	12.90	707	13.98	1,109
11.84	312	12.92	714	14.00	**1,116**
11.86	320	12.94	722		
11.88	327	12.96	729		
11.90	335	12.98	737		
11.92	342	13.00	744		
11.94	350	13.02	751		
11.96	357	13.04	759		
11.98	365	13.06	766		
12.00	372	13.08	774		
12.02	379	13.10	781		
12.04	387	13.12	789		
12.06	394	13.14	796		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA6
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.026	32	Woods/grass comb., Good, HSG A (1S)
0.250	98	Paved parking (1S)
0.277		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA6 Runoff Area=12,049 sf Runoff Depth>4.53"
Tc=5.0 min CN=92 Runoff=1.50 cfs 0.104 af

Pond 1P: Infiltration Storage Model Peak Elev=12.70' Storage=381 cf Inflow=1.50 cfs 0.104 af
Outflow=0.90 cfs 0.105 af

Total Runoff Area = 0.277 ac Runoff Volume = 0.104 af Average Runoff Depth = 4.53"
9.49% Pervious Area = 0.026 ac 90.51% Impervious Area = 0.250 ac

Subcatchment 1S: Drainage Area DA6

Time of Concentration

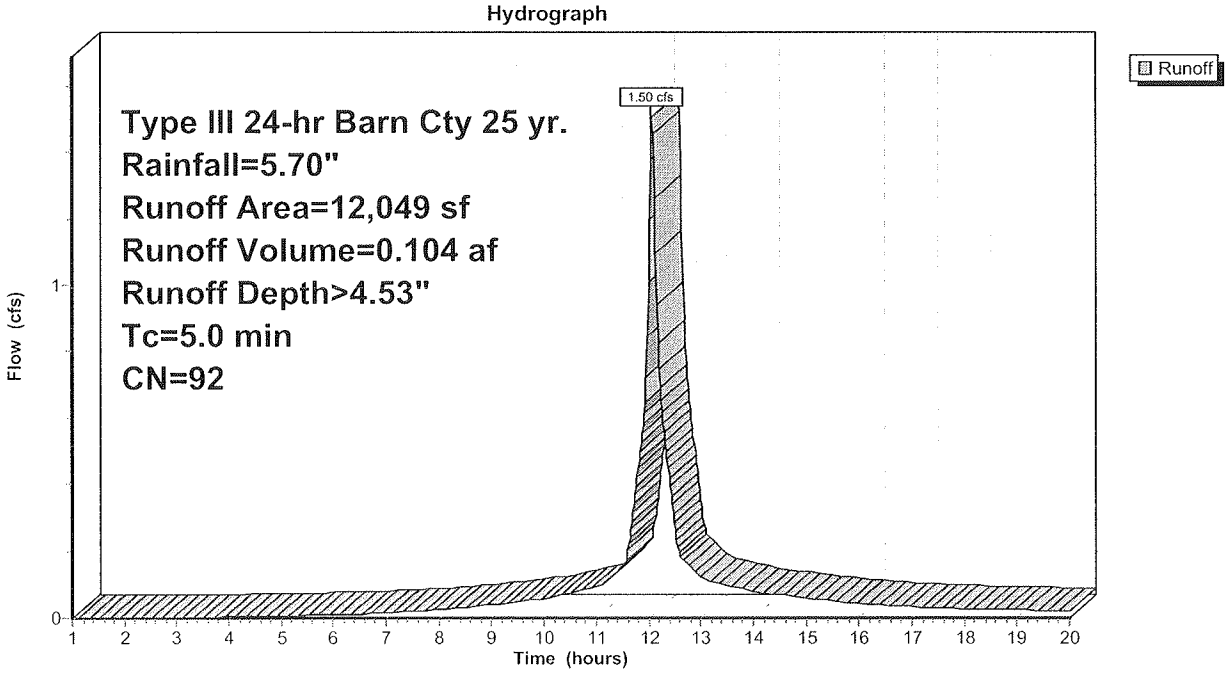
Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.104 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
10,905	98	Paved parking
1,144	32	Woods/grass comb., Good, HSG A
12,049	92	Weighted Average
1,144		Pervious Area
10,905		Impervious Area

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

Subcatchment 1S: Drainage Area DA6



Hydrograph for Subcatchment 1S: Drainage Area DA6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	1.35	0.45
1.20	0.07	0.00	0.00	12.00	2.85	2.02	**1.01**
1.40	0.08	0.00	0.00	12.20	3.57	2.71	**0.75**
1.60	0.09	0.00	0.00	12.40	3.91	3.03	0.42
1.80	0.10	0.00	0.00	12.60	4.07	3.18	0.19
2.00	0.11	0.00	0.00	12.80	4.18	3.29	0.15
2.20	0.13	0.00	0.00	13.00	4.27	3.38	0.12
2.40	0.14	0.00	0.00	13.20	4.36	3.46	0.11
2.60	0.15	0.00	0.00	13.40	4.43	3.53	0.10
2.80	0.16	0.00	0.00	13.60	4.50	3.60	0.09
3.00	0.18	0.00	0.00	13.80	4.56	3.66	0.09
3.20	0.19	0.00	0.00	14.00	4.62	3.72	0.08
3.40	0.20	0.00	0.00	14.20	4.68	3.77	0.07
3.60	0.22	0.00	0.00	14.40	4.73	3.83	0.07
3.80	0.23	0.00	0.00	14.60	4.78	3.87	0.07
4.00	0.25	0.01	0.00	14.80	4.83	3.92	0.06
4.20	0.26	0.01	0.00	15.00	4.87	3.96	0.06
4.40	0.28	0.01	0.00	15.20	4.91	4.00	0.06
4.60	0.29	0.01	0.00	15.40	4.95	4.04	0.05
4.80	0.31	0.02	0.01	15.60	4.99	4.08	0.05
5.00	0.32	0.02	0.01	15.80	5.02	4.11	0.05
5.20	0.34	0.03	0.01	16.00	5.05	4.14	0.04
5.40	0.36	0.03	0.01	16.20	5.08	4.17	0.04
5.60	0.37	0.04	0.01	16.40	5.11	4.19	0.04
5.80	0.39	0.04	0.01	16.60	5.13	4.22	0.04
6.00	0.41	0.05	0.01	16.80	5.16	4.25	0.03
6.20	0.43	0.06	0.01	17.00	5.18	4.27	0.03
6.40	0.45	0.07	0.01	17.20	5.21	4.29	0.03
6.60	0.47	0.08	0.01	17.40	5.23	4.31	0.03
6.80	0.49	0.09	0.01	17.60	5.25	4.33	0.03
7.00	0.52	0.10	0.02	17.80	5.27	4.35	0.03
7.20	0.54	0.11	0.02	18.00	5.29	4.37	0.03
7.40	0.57	0.12	0.02	18.20	5.31	4.39	0.02
7.60	0.59	0.14	0.02	18.40	5.33	4.41	0.02
7.80	0.62	0.15	0.02	18.60	5.34	4.42	0.02
8.00	0.65	0.17	0.02	18.80	5.36	4.44	0.02
8.20	0.68	0.19	0.03	19.00	5.38	4.46	0.02
8.40	0.71	0.21	0.03	19.20	5.39	4.47	0.02
8.60	0.75	0.23	0.03	19.40	5.41	4.49	0.02
8.80	0.79	0.26	0.04	19.60	5.42	4.50	0.02
9.00	0.83	0.28	0.04	19.80	5.44	4.52	0.02
9.20	0.87	0.31	0.04	20.00	**5.45**	**4.53**	0.02
9.40	0.92	0.35	0.05				
9.60	0.97	0.38	0.05				
9.80	1.02	0.42	0.05				
10.00	1.08	0.46	0.06				
10.20	1.14	0.51	0.06				
10.40	1.20	0.56	0.07				
10.60	1.27	0.61	0.08				
10.80	1.34	0.67	0.09				
11.00	1.42	0.74	0.09				
11.20	1.52	0.82	0.11				
11.40	1.63	0.91	0.14				
11.60	1.79	1.05	0.20				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.277 ac, Inflow Depth > 4.53" for Barn Cty 25 yr. event
Inflow = 1.50 cfs @ 12.07 hrs, Volume= 0.104 af
Outflow = 0.90 cfs @ 12.14 hrs, Volume= 0.105 af, Atten= 40%, Lag= 4.1 min
Primary = 0.90 cfs @ 12.14 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 12.70' @ 12.17 hrs Surf.Area= 0 sf Storage= 381 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=1.9 min (750.6 - 748.7)

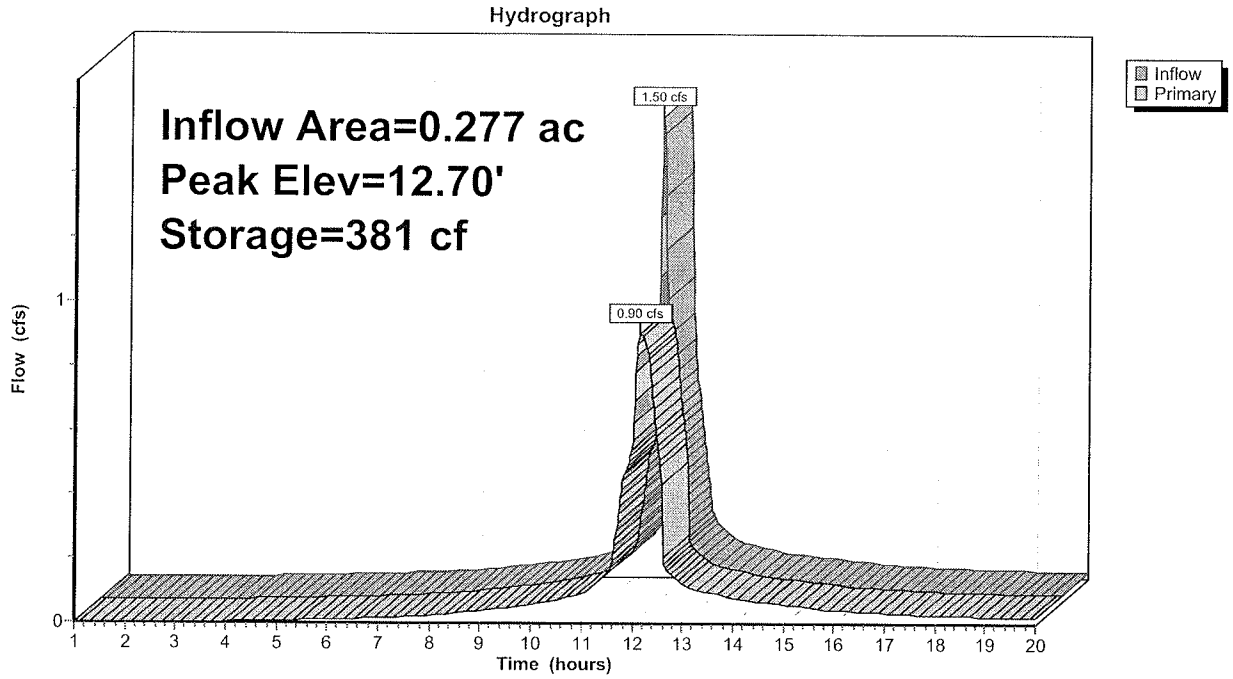
Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	476 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
9.50	0
10.50	119
12.50	357
13.50	476

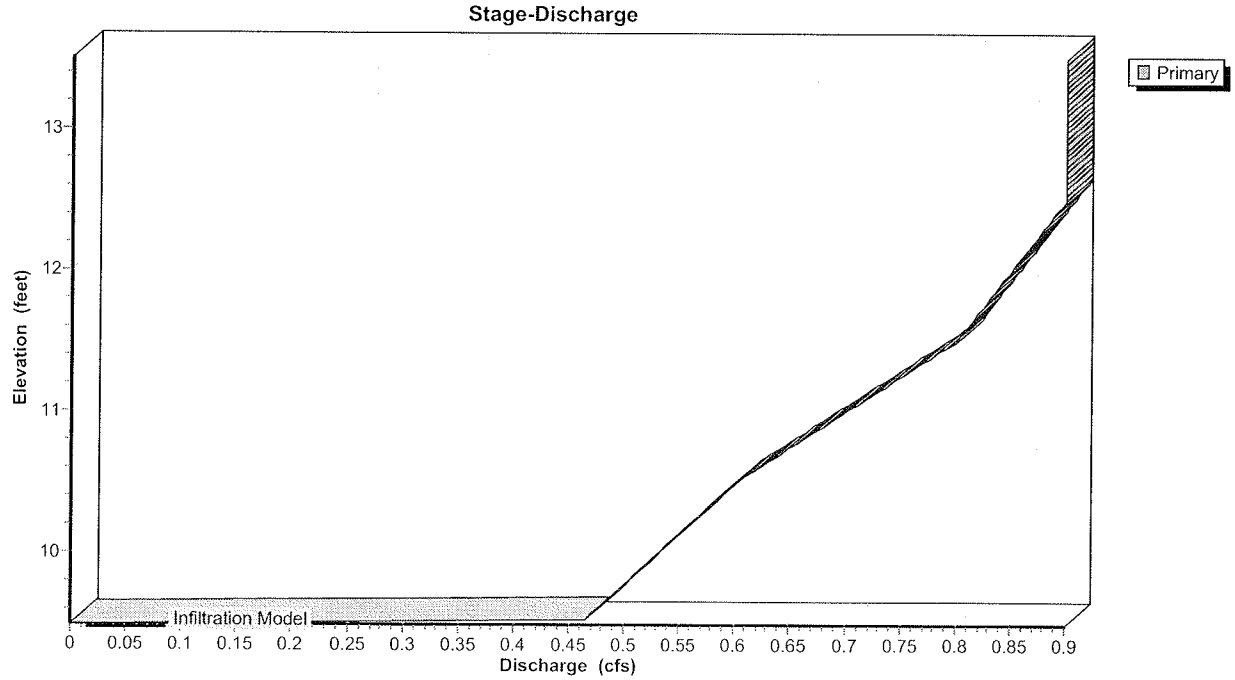
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 9.40 9.50 10.50 11.50 12.50 Disch. (cfs) 0.000 0.460 0.600 0.800 0.900

Primary OutFlow Max=0.90 cfs @ 12.14 hrs HW=12.63' (Free Discharge)
↑**1=Infiltration Model** (Custom Controls 0.90 cfs)

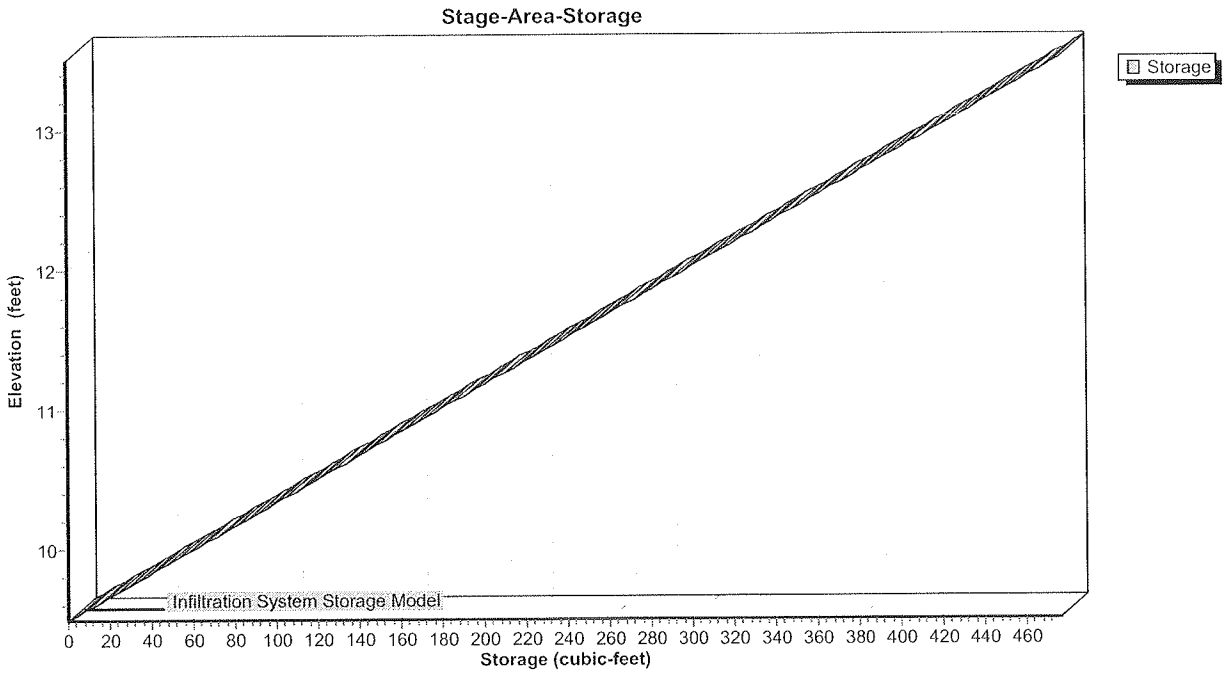
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

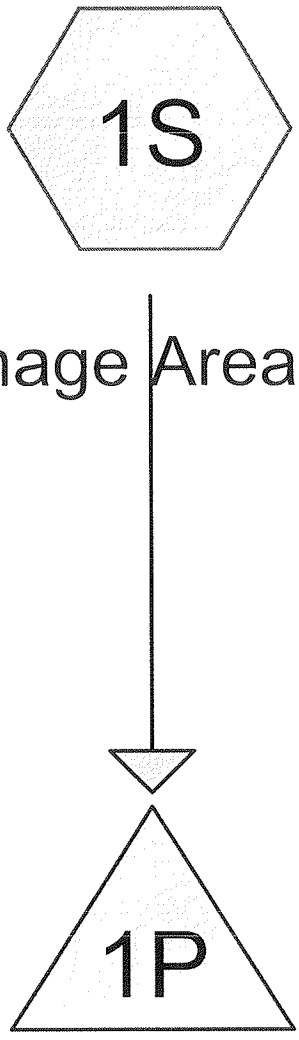
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	9.50	0.00
1.20	0.00	0	9.50	0.00
1.40	0.00	0	9.50	0.00
1.60	0.00	0	9.50	0.00
1.80	0.00	0	9.50	0.00
2.00	0.00	0	9.50	0.00
2.20	0.00	0	9.50	0.00
2.40	0.00	0	9.50	0.00
2.60	0.00	0	9.50	0.00
2.80	0.00	0	9.50	0.00
3.00	0.00	0	9.50	0.00
3.20	0.00	0	9.50	0.00
3.40	0.00	0	9.50	0.00
3.60	0.00	0	9.50	0.00
3.80	0.00	0	9.50	0.00
4.00	0.00	0	9.50	0.00
4.20	0.00	0	9.50	0.00
4.40	0.00	0	9.50	0.00
4.60	0.00	0	9.50	0.00
4.80	0.01	0	9.50	0.01
5.00	0.01	0	9.50	0.01
5.20	0.01	0	9.50	0.01
5.40	0.01	0	9.50	0.01
5.60	0.01	0	9.50	0.01
5.80	0.01	0	9.50	0.01
6.00	0.01	0	9.50	0.01
6.20	0.01	0	9.50	0.01
6.40	0.01	0	9.50	0.01
6.60	0.01	0	9.50	0.01
6.80	0.01	0	9.50	0.01
7.00	0.02	0	9.50	0.02
7.20	0.02	0	9.50	0.02
7.40	0.02	0	9.50	0.02
7.60	0.02	0	9.50	0.02
7.80	0.02	0	9.50	0.02
8.00	0.02	0	9.50	0.02
8.20	0.03	0	9.50	0.03
8.40	0.03	0	9.50	0.03
8.60	0.03	0	9.50	0.03
8.80	0.04	0	9.50	0.04
9.00	0.04	0	9.50	0.04
9.20	0.04	0	9.50	0.04
9.40	0.05	0	9.50	0.05
9.60	0.05	1	9.50	0.05
9.80	0.05	1	9.50	0.05
10.00	0.06	1	9.50	0.06
10.20	0.06	1	9.51	0.06
10.40	0.07	1	9.51	0.07
10.60	0.08	1	9.51	0.08
10.80	0.09	1	9.51	0.09
11.00	0.09	1	9.51	0.09
11.20	0.11	1	9.51	0.11
11.40	0.14	1	9.51	0.14
11.60	0.20	2	9.52	0.20
11.80	0.45	5	9.54	0.44
12.00	**1.01**	**95**	**10.30**	**0.57**
12.20	**0.75**	**371**	**12.62**	**0.90**
12.40	0.42	180	11.01	0.70
12.60	0.19	2	9.52	0.21
12.80	0.15	2	9.51	0.15
13.00	0.12	1	9.51	0.12
13.20	0.11	1	9.51	0.11
13.40	0.10	1	9.51	0.10
13.60	0.09	1	9.51	0.09
13.80	0.09	1	9.51	0.09
14.00	0.08	1	9.51	0.08
14.20	0.07	1	9.51	0.07
14.40	0.07	1	9.51	0.07
14.60	0.07	1	9.51	0.07
14.80	0.06	1	9.51	0.06
15.00	0.06	1	9.51	0.06
15.20	0.06	1	9.50	0.06
15.40	0.05	1	9.50	0.05
15.60	0.05	1	9.50	0.05
15.80	0.05	0	9.50	0.05
16.00	0.04	0	9.50	0.04
16.20	0.04	0	9.50	0.04
16.40	0.04	0	9.50	0.04
16.60	0.04	0	9.50	0.04
16.80	0.03	0	9.50	0.03
17.00	0.03	0	9.50	0.03
17.20	0.03	0	9.50	0.03
17.40	0.03	0	9.50	0.03
17.60	0.03	0	9.50	0.03
17.80	0.03	0	9.50	0.03
18.00	0.03	0	9.50	0.03
18.20	0.02	0	9.50	0.02
18.40	0.02	0	9.50	0.02
18.60	0.02	0	9.50	0.02
18.80	0.02	0	9.50	0.02
19.00	0.02	0	9.50	0.02
19.20	0.02	0	9.50	0.02
19.40	0.02	0	9.50	0.02
19.60	0.02	0	9.50	0.02
19.80	0.02	0	9.50	0.02
20.00	0.02	0	9.50	0.02

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
9.50	0.00	10.58	0.62	11.66	0.82	12.74	0.90
9.52	0.46	10.60	0.62	11.68	0.82	12.76	0.90
9.54	0.47	10.62	0.62	11.70	0.82	12.78	0.90
9.56	0.47	10.64	0.63	11.72	0.82	12.80	0.90
9.58	0.47	10.66	0.63	11.74	0.82	12.82	0.90
9.60	0.47	10.68	0.64	11.76	0.83	12.84	0.90
9.62	0.48	10.70	0.64	11.78	0.83	12.86	0.90
9.64	0.48	10.72	0.64	11.80	0.83	12.88	0.90
9.66	0.48	10.74	0.65	11.82	0.83	12.90	0.90
9.68	0.49	10.76	0.65	11.84	0.83	12.92	0.90
9.70	0.49	10.78	0.66	11.86	0.84	12.94	0.90
9.72	0.49	10.80	0.66	11.88	0.84	12.96	0.90
9.74	0.49	10.82	0.66	11.90	0.84	12.98	0.90
9.76	0.50	10.84	0.67	11.92	0.84	13.00	0.90
9.78	0.50	10.86	0.67	11.94	0.84	13.02	0.90
9.80	0.50	10.88	0.68	11.96	0.85	13.04	0.90
9.82	0.50	10.90	0.68	11.98	0.85	13.06	0.90
9.84	0.51	10.92	0.68	12.00	0.85	13.08	0.90
9.86	0.51	10.94	0.69	12.02	0.85	13.10	0.90
9.88	0.51	10.96	0.69	12.04	0.85	13.12	0.90
9.90	0.52	10.98	0.70	12.06	0.86	13.14	0.90
9.92	0.52	11.00	0.70	12.08	0.86	13.16	0.90
9.94	0.52	11.02	0.70	12.10	0.86	13.18	0.90
9.96	0.52	11.04	0.71	12.12	0.86	13.20	0.90
9.98	0.53	11.06	0.71	12.14	0.86	13.22	0.90
10.00	0.53	11.08	0.72	12.16	0.87	13.24	0.90
10.02	0.53	11.10	0.72	12.18	0.87	13.26	0.90
10.04	0.54	11.12	0.72	12.20	0.87	13.28	0.90
10.06	0.54	11.14	0.73	12.22	0.87	13.30	0.90
10.08	0.54	11.16	0.73	12.24	0.87	13.32	0.90
10.10	0.54	11.18	0.74	12.26	0.88	13.34	0.90
10.12	0.55	11.20	0.74	12.28	0.88	13.36	0.90
10.14	0.55	11.22	0.74	12.30	0.88	13.38	0.90
10.16	0.55	11.24	0.75	12.32	0.88	13.40	0.90
10.18	0.56	11.26	0.75	12.34	0.88	13.42	0.90
10.20	0.56	11.28	0.76	12.36	0.89	13.44	0.90
10.22	0.56	11.30	0.76	12.38	0.89	13.46	0.90
10.24	0.56	11.32	0.76	12.40	0.89	13.48	0.90
10.26	0.57	11.34	0.77	12.42	0.89	13.50	0.90
10.28	0.57	11.36	0.77	12.44	0.89		
10.30	0.57	11.38	0.78	12.46	0.90		
10.32	0.57	11.40	0.78	12.48	0.90		
10.34	0.58	11.42	0.78	12.50	**0.90**		
10.36	0.58	11.44	0.79	12.52	0.90		
10.38	0.58	11.46	0.79	12.54	0.90		
10.40	0.59	11.48	0.80	12.56	0.90		
10.42	0.59	11.50	0.80	12.58	0.90		
10.44	0.59	11.52	0.80	12.60	0.90		
10.46	0.59	11.54	0.80	12.62	0.90		
10.48	0.60	11.56	0.81	12.64	0.90		
10.50	0.60	11.58	0.81	12.66	0.90		
10.52	0.60	11.60	0.81	12.68	0.90		
10.54	0.61	11.62	0.81	12.70	0.90		
10.56	0.61	11.64	0.81	12.72	0.90		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
9.50	0	10.58	129	11.66	257	12.74	386
9.52	2	10.60	131	11.68	259	12.76	388
9.54	5	10.62	133	11.70	262	12.78	390
9.56	7	10.64	136	11.72	264	12.80	393
9.58	10	10.66	138	11.74	267	12.82	395
9.60	12	10.68	140	11.76	269	12.84	397
9.62	14	10.70	143	11.78	271	12.86	400
9.64	17	10.72	145	11.80	274	12.88	402
9.66	19	10.74	148	11.82	276	12.90	405
9.68	21	10.76	150	11.84	278	12.92	407
9.70	24	10.78	152	11.86	281	12.94	409
9.72	26	10.80	155	11.88	283	12.96	412
9.74	29	10.82	157	11.90	286	12.98	414
9.76	31	10.84	159	11.92	288	13.00	417
9.78	33	10.86	162	11.94	290	13.02	419
9.80	36	10.88	164	11.96	293	13.04	421
9.82	38	10.90	167	11.98	295	13.06	424
9.84	40	10.92	169	12.00	298	13.08	426
9.86	43	10.94	171	12.02	300	13.10	428
9.88	45	10.96	174	12.04	302	13.12	431
9.90	48	10.98	176	12.06	305	13.14	433
9.92	50	11.00	179	12.08	307	13.16	436
9.94	52	11.02	181	12.10	309	13.18	438
9.96	55	11.04	183	12.12	312	13.20	440
9.98	57	11.06	186	12.14	314	13.22	443
10.00	60	11.08	188	12.16	317	13.24	445
10.02	62	11.10	190	12.18	319	13.26	447
10.04	64	11.12	193	12.20	321	13.28	450
10.06	67	11.14	195	12.22	324	13.30	452
10.08	69	11.16	198	12.24	326	13.32	455
10.10	71	11.18	200	12.26	328	13.34	457
10.12	74	11.20	202	12.28	331	13.36	459
10.14	76	11.22	205	12.30	333	13.38	462
10.16	79	11.24	207	12.32	336	13.40	464
10.18	81	11.26	209	12.34	338	13.42	466
10.20	83	11.28	212	12.36	340	13.44	469
10.22	86	11.30	214	12.38	343	13.46	471
10.24	88	11.32	217	12.40	345	13.48	474
10.26	90	11.34	219	12.42	347	13.50	**476**
10.28	93	11.36	221	12.44	350		
10.30	95	11.38	224	12.46	352		
10.32	98	11.40	226	12.48	355		
10.34	100	11.42	228	12.50	357		
10.36	102	11.44	231	12.52	359		
10.38	105	11.46	233	12.54	362		
10.40	107	11.48	236	12.56	364		
10.42	109	11.50	238	12.58	367		
10.44	112	11.52	240	12.60	369		
10.46	114	11.54	243	12.62	371		
10.48	117	11.56	245	12.64	374		
10.50	119	11.58	248	12.66	376		
10.52	121	11.60	250	12.68	378		
10.54	124	11.62	252	12.70	381		
10.56	126	11.64	255	12.72	383		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA7
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.025	32	Woods/grass comb., Good, HSG A (1S)
0.514	98	Paved parking (1S)
0.539		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA7 Runoff Area=23,472 sf Runoff Depth>6.86"
Tc=5.0 min CN=95 Runoff=4.21 cfs 0.308 af

Pond 1P: Infiltration Storage Model Peak Elev=11.19' Storage=1,009 cf Inflow=4.21 cfs 0.308 af
Outflow=2.44 cfs 0.308 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.308 af Average Runoff Depth = 6.86"
4.69% Pervious Area = 0.025 ac 95.31% Impervious Area = 0.514 ac

Subcatchment 1S: Drainage Area DA7

Time of Concentration

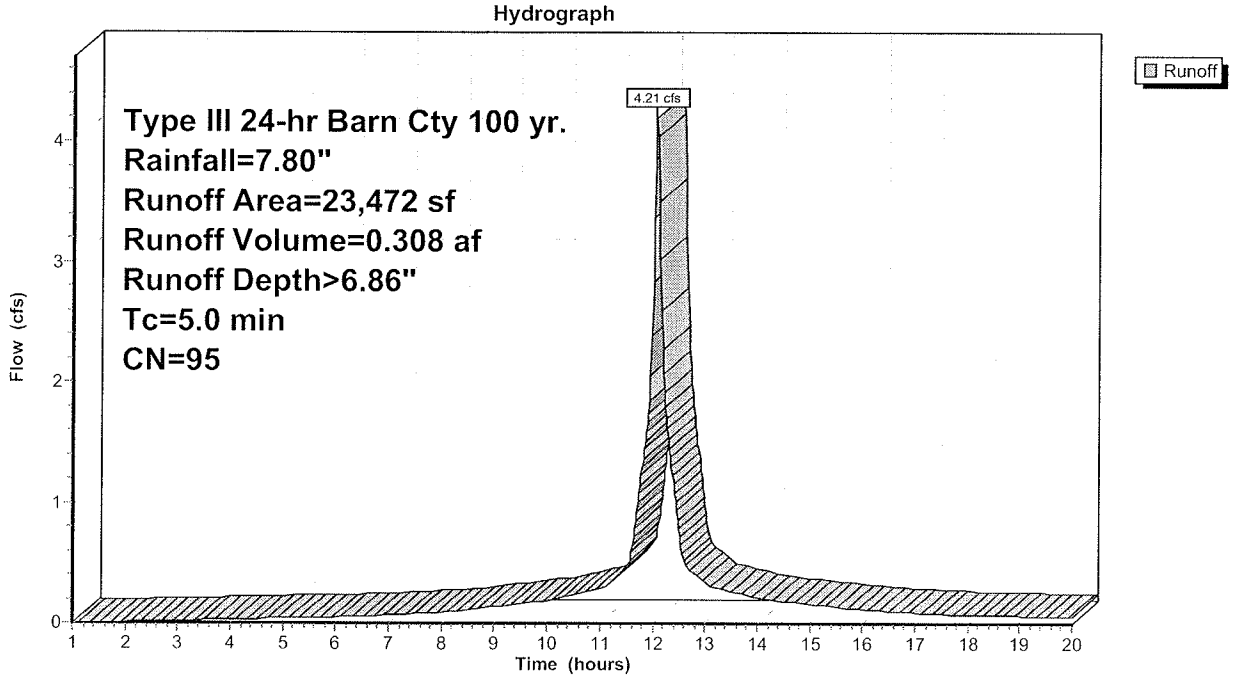
Runoff = 4.21 cfs @ 12.07 hrs, Volume= 0.308 af, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
22,372	98	Paved parking
1,100	32	Woods/grass comb., Good, HSG A
23,472	95	Weighted Average
1,100		Pervious Area
22,372		Impervious Area

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

Subcatchment 1S: Drainage Area DA7



Hydrograph for Subcatchment 1S: Drainage Area DA7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	2.36	1.30
1.20	0.09	0.00	0.00	12.00	3.90	3.33	**2.85**
1.40	0.11	0.00	0.00	12.20	4.89	4.31	**2.07**
1.60	0.12	0.00	0.00	12.40	5.35	4.76	1.16
1.80	0.14	0.00	0.00	12.60	5.56	4.98	0.52
2.00	0.16	0.00	0.01	12.80	5.72	5.14	0.41
2.20	0.17	0.01	0.01	13.00	5.85	5.26	0.34
2.40	0.19	0.01	0.01	13.20	5.96	5.37	0.29
2.60	0.20	0.02	0.01	13.40	6.06	5.47	0.27
2.80	0.22	0.02	0.01	13.60	6.16	5.57	0.25
3.00	0.24	0.03	0.02	13.80	6.25	5.66	0.23
3.20	0.26	0.03	0.02	14.00	6.33	5.74	0.21
3.40	0.28	0.04	0.02	14.20	6.40	5.81	0.20
3.60	0.30	0.05	0.02	14.40	6.47	5.88	0.19
3.80	0.32	0.06	0.03	14.60	6.54	5.95	0.18
4.00	0.34	0.07	0.03	14.80	6.60	6.01	0.17
4.20	0.36	0.08	0.03	15.00	6.66	6.07	0.16
4.40	0.38	0.09	0.03	15.20	6.72	6.13	0.15
4.60	0.40	0.10	0.03	15.40	6.77	6.18	0.14
4.80	0.42	0.12	0.04	15.60	6.82	6.23	0.13
5.00	0.44	0.13	0.04	15.80	6.87	6.27	0.12
5.20	0.47	0.15	0.04	16.00	6.91	6.32	0.11
5.40	0.49	0.16	0.04	16.20	6.95	6.36	0.11
5.60	0.51	0.18	0.04	16.40	6.99	6.39	0.10
5.80	0.54	0.19	0.05	16.60	7.03	6.43	0.10
6.00	0.56	0.21	0.05	16.80	7.06	6.47	0.09
6.20	0.59	0.23	0.05	17.00	7.09	6.50	0.09
6.40	0.61	0.25	0.05	17.20	7.13	6.53	0.09
6.60	0.64	0.27	0.06	17.40	7.16	6.56	0.08
6.80	0.67	0.30	0.06	17.60	7.19	6.59	0.08
7.00	0.71	0.32	0.07	17.80	7.21	6.62	0.07
7.20	0.74	0.35	0.07	18.00	7.24	6.64	0.07
7.40	0.77	0.37	0.08	18.20	7.26	6.67	0.07
7.60	0.81	0.40	0.08	18.40	7.29	6.69	0.07
7.80	0.85	0.44	0.09	18.60	7.31	6.72	0.06
8.00	0.89	0.47	0.09	18.80	7.33	6.74	0.06
8.20	0.93	0.50	0.10	19.00	7.36	6.76	0.06
8.40	0.98	0.54	0.11	19.20	7.38	6.78	0.06
8.60	1.03	0.59	0.12	19.40	7.40	6.81	0.06
8.80	1.08	0.63	0.13	19.60	7.42	6.83	0.06
9.00	1.14	0.68	0.14	19.80	7.44	6.85	0.06
9.20	1.20	0.74	0.15	20.00	**7.46**	**6.87**	0.06
9.40	1.26	0.79	0.16				
9.60	1.33	0.86	0.17				
9.80	1.40	0.92	0.18				
10.00	1.47	0.99	0.19				
10.20	1.55	1.06	0.20				
10.40	1.64	1.14	0.22				
10.60	1.74	1.23	0.24				
10.80	1.84	1.33	0.27				
11.00	1.95	1.44	0.29				
11.20	2.08	1.56	0.34				
11.40	2.24	1.71	0.42				
11.60	2.45	1.92	0.59				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.539 ac, Inflow Depth > 6.86" for Barn Cty 100 yr. event
Inflow = 4.21 cfs @ 12.07 hrs, Volume= 0.308 af
Outflow = 2.44 cfs @ 12.17 hrs, Volume= 0.308 af, Atten= 42%, Lag= 6.0 min
Primary = 2.44 cfs @ 12.17 hrs, Volume= 0.308 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.19' @ 12.17 hrs Surf.Area= 0 sf Storage= 1,009 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=1.6 min (730.6 - 729.0)

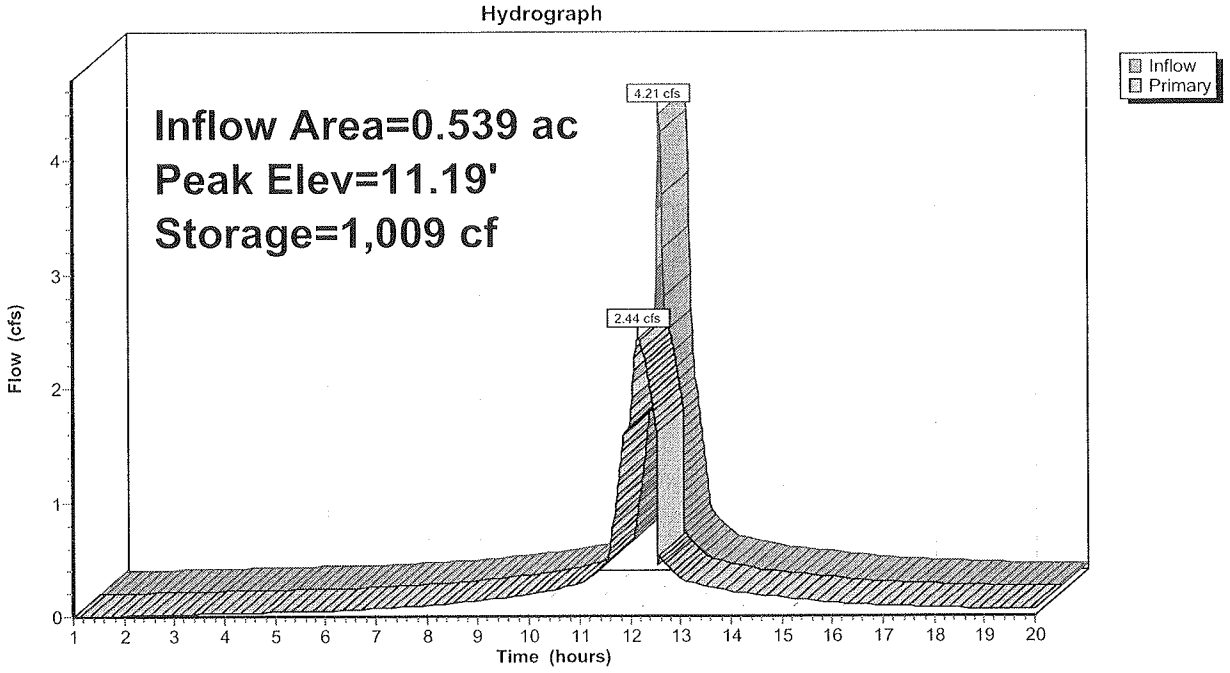
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	1,264 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.00	0
9.00	316
10.00	632
11.00	948
12.00	1,264

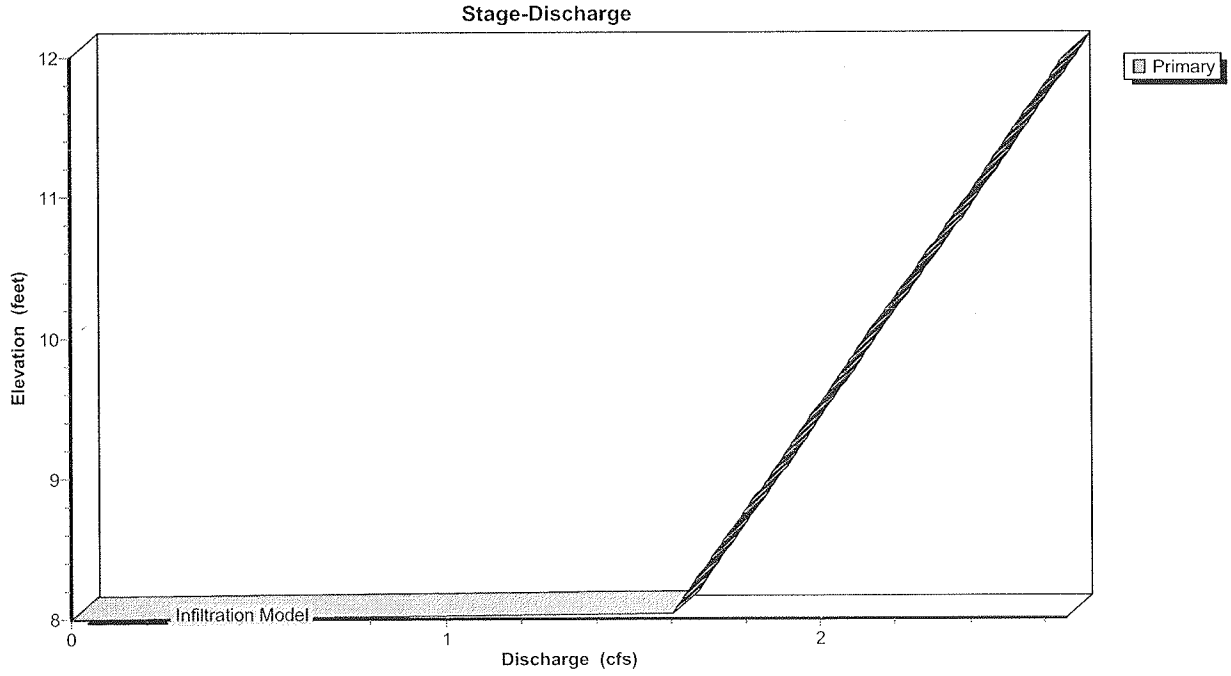
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 7.90 8.00 9.00 10.00 11.00 12.00 Disch. (cfs) 0.000 1.590 1.860 2.120 2.390 2.650

Primary OutFlow Max=2.44 cfs @ 12.17 hrs HW=11.19' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 2.44 cfs)

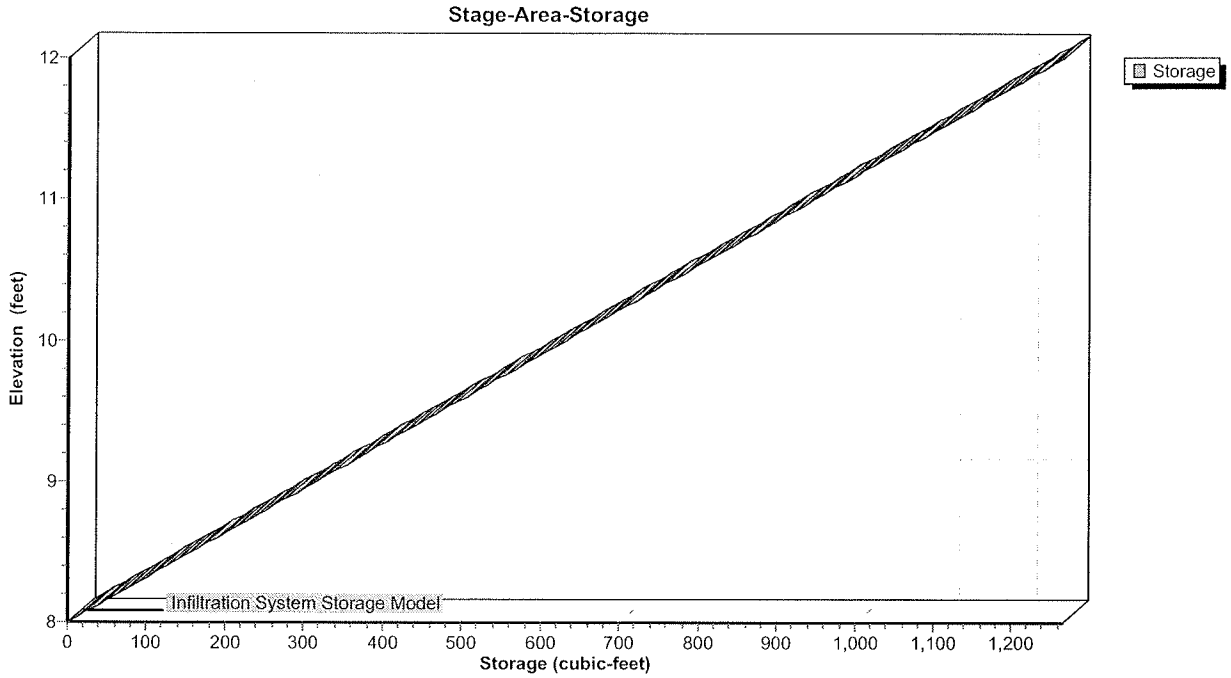
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.00	0.00
1.20	0.00	0	8.00	0.00
1.40	0.00	0	8.00	0.00
1.60	0.00	0	8.00	0.00
1.80	0.00	0	8.00	0.00
2.00	0.01	0	8.00	0.01
2.20	0.01	0	8.00	0.01
2.40	0.01	0	8.00	0.01
2.60	0.01	0	8.00	0.01
2.80	0.01	0	8.00	0.01
3.00	0.02	0	8.00	0.02
3.20	0.02	0	8.00	0.02
3.40	0.02	0	8.00	0.02
3.60	0.02	0	8.00	0.02
3.80	0.03	0	8.00	0.03
4.00	0.03	0	8.00	0.03
4.20	0.03	0	8.00	0.03
4.40	0.03	0	8.00	0.03
4.60	0.03	0	8.00	0.03
4.80	0.04	0	8.00	0.04
5.00	0.04	0	8.00	0.04
5.20	0.04	0	8.00	0.04
5.40	0.04	0	8.00	0.04
5.60	0.04	0	8.00	0.04
5.80	0.05	0	8.00	0.05
6.00	0.05	0	8.00	0.05
6.20	0.05	0	8.00	0.05
6.40	0.05	0	8.00	0.05
6.60	0.06	0	8.00	0.06
6.80	0.06	1	8.00	0.06
7.00	0.07	1	8.00	0.07
7.20	0.07	1	8.00	0.07
7.40	0.08	1	8.00	0.08
7.60	0.08	1	8.00	0.08
7.80	0.09	1	8.00	0.09
8.00	0.09	1	8.00	0.09
8.20	0.10	1	8.00	0.10
8.40	0.11	1	8.00	0.11
8.60	0.12	1	8.00	0.12
8.80	0.13	1	8.00	0.13
9.00	0.14	1	8.00	0.14
9.20	0.15	1	8.00	0.15
9.40	0.16	1	8.00	0.16
9.60	0.17	1	8.00	0.17
9.80	0.18	1	8.00	0.18
10.00	0.19	1	8.00	0.19
10.20	0.20	2	8.01	0.20
10.40	0.22	2	8.01	0.22
10.60	0.24	2	8.01	0.24
10.80	0.27	2	8.01	0.27
11.00	0.29	2	8.01	0.29
11.20	0.34	3	8.01	0.34
11.40	0.42	3	8.01	0.42
11.60	0.59	5	8.01	0.59
11.80	1.30	10	8.03	1.29
12.00	**2.85**	**165**	**8.52**	**1.73**
12.20	**2.07**	**989**	**11.13**	**2.42**
12.40	1.16	496	9.57	2.01
12.60	0.52	4	8.01	0.52
12.80	0.41	3	8.01	0.42
13.00	0.34	3	8.01	0.34
13.20	0.29	2	8.01	0.30
13.40	0.27	2	8.01	0.27
13.60	0.25	2	8.01	0.25
13.80	0.23	2	8.01	0.23
14.00	0.21	2	8.01	0.21
14.20	0.20	2	8.01	0.20
14.40	0.19	2	8.00	0.19
14.60	0.18	1	8.00	0.18
14.80	0.17	1	8.00	0.17
15.00	0.16	1	8.00	0.16
15.20	0.15	1	8.00	0.15
15.40	0.14	1	8.00	0.14
15.60	0.13	1	8.00	0.13
15.80	0.12	1	8.00	0.12
16.00	0.11	1	8.00	0.11
16.20	0.11	1	8.00	0.11
16.40	0.10	1	8.00	0.10
16.60	0.10	1	8.00	0.10
16.80	0.09	1	8.00	0.09
17.00	0.09	1	8.00	0.09
17.20	0.09	1	8.00	0.09
17.40	0.08	1	8.00	0.08
17.60	0.08	1	8.00	0.08
17.80	0.07	1	8.00	0.07
18.00	0.07	1	8.00	0.07
18.20	0.07	1	8.00	0.07
18.40	0.07	1	8.00	0.07
18.60	0.06	1	8.00	0.06
18.80	0.06	0	8.00	0.06
19.00	0.06	0	8.00	0.06
19.20	0.06	0	8.00	0.06
19.40	0.06	0	8.00	0.06
19.60	0.06	0	8.00	0.06
19.80	0.06	0	8.00	0.06
20.00	0.06	0	8.00	0.06

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.00	0.00	9.08	1.88	10.16	2.16	11.24	2.45
8.02	1.60	9.10	1.89	10.18	2.17	11.26	2.46
8.04	1.60	9.12	1.89	10.20	2.17	11.28	2.46
8.06	1.61	9.14	1.90	10.22	2.18	11.30	2.47
8.08	1.61	9.16	1.90	10.24	2.18	11.32	2.47
8.10	1.62	9.18	1.91	10.26	2.19	11.34	2.48
8.12	1.62	9.20	1.91	10.28	2.20	11.36	2.48
8.14	1.63	9.22	1.92	10.30	2.20	11.38	2.49
8.16	1.63	9.24	1.92	10.32	2.21	11.40	2.49
8.18	1.64	9.26	1.93	10.34	2.21	11.42	2.50
8.20	1.64	9.28	1.93	10.36	2.22	11.44	2.50
8.22	1.65	9.30	1.94	10.38	2.22	11.46	2.51
8.24	1.65	9.32	1.94	10.40	2.23	11.48	2.51
8.26	1.66	9.34	1.95	10.42	2.23	11.50	2.52
8.28	1.67	9.36	1.95	10.44	2.24	11.52	2.53
8.30	1.67	9.38	1.96	10.46	2.24	11.54	2.53
8.32	1.68	9.40	1.96	10.48	2.25	11.56	2.54
8.34	1.68	9.42	1.97	10.50	2.25	11.58	2.54
8.36	1.69	9.44	1.97	10.52	2.26	11.60	2.55
8.38	1.69	9.46	1.98	10.54	2.27	11.62	2.55
8.40	1.70	9.48	1.98	10.56	2.27	11.64	2.56
8.42	1.70	9.50	1.99	10.58	2.28	11.66	2.56
8.44	1.71	9.52	2.00	10.60	2.28	11.68	2.57
8.46	1.71	9.54	2.00	10.62	2.29	11.70	2.57
8.48	1.72	9.56	2.01	10.64	2.29	11.72	2.58
8.50	1.73	9.58	2.01	10.66	2.30	11.74	2.58
8.52	1.73	9.60	2.02	10.68	2.30	11.76	2.59
8.54	1.74	9.62	2.02	10.70	2.31	11.78	2.59
8.56	1.74	9.64	2.03	10.72	2.31	11.80	2.60
8.58	1.75	9.66	2.03	10.74	2.32	11.82	2.60
8.60	1.75	9.68	2.04	10.76	2.33	11.84	2.61
8.62	1.76	9.70	2.04	10.78	2.33	11.86	2.61
8.64	1.76	9.72	2.05	10.80	2.34	11.88	2.62
8.66	1.77	9.74	2.05	10.82	2.34	11.90	2.62
8.68	1.77	9.76	2.06	10.84	2.35	11.92	2.63
8.70	1.78	9.78	2.06	10.86	2.35	11.94	2.63
8.72	1.78	9.80	2.07	10.88	2.36	11.96	2.64
8.74	1.79	9.82	2.07	10.90	2.36	11.98	2.64
8.76	1.80	9.84	2.08	10.92	2.37	12.00	**2.65**
8.78	1.80	9.86	2.08	10.94	2.37		
8.80	1.81	9.88	2.09	10.96	2.38		
8.82	1.81	9.90	2.09	10.98	2.38		
8.84	1.82	9.92	2.10	11.00	2.39		
8.86	1.82	9.94	2.10	11.02	2.40		
8.88	1.83	9.96	2.11	11.04	2.40		
8.90	1.83	9.98	2.11	11.06	2.41		
8.92	1.84	10.00	2.12	11.08	2.41		
8.94	1.84	10.02	2.13	11.10	2.42		
8.96	1.85	10.04	2.13	11.12	2.42		
8.98	1.85	10.06	2.14	11.14	2.43		
9.00	1.86	10.08	2.14	11.16	2.43		
9.02	1.87	10.10	2.15	11.18	2.44		
9.04	1.87	10.12	2.15	11.20	2.44		
9.06	1.88	10.14	2.16	11.22	2.45		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.00	0	9.08	341	10.16	683	11.24	1,024
8.02	6	9.10	348	10.18	689	11.26	1,030
8.04	13	9.12	354	10.20	695	11.28	1,036
8.06	19	9.14	360	10.22	702	11.30	1,043
8.08	25	9.16	367	10.24	708	11.32	1,049
8.10	32	9.18	373	10.26	714	11.34	1,055
8.12	38	9.20	379	10.28	720	11.36	1,062
8.14	44	9.22	386	10.30	727	11.38	1,068
8.16	51	9.24	392	10.32	733	11.40	1,074
8.18	57	9.26	398	10.34	739	11.42	1,081
8.20	63	9.28	404	10.36	746	11.44	1,087
8.22	70	9.30	411	10.38	752	11.46	1,093
8.24	76	9.32	417	10.40	758	11.48	1,100
8.26	82	9.34	423	10.42	765	11.50	1,106
8.28	88	9.36	430	10.44	771	11.52	1,112
8.30	95	9.38	436	10.46	777	11.54	1,119
8.32	101	9.40	442	10.48	784	11.56	1,125
8.34	107	9.42	449	10.50	790	11.58	1,131
8.36	114	9.44	455	10.52	796	11.60	1,138
8.38	120	9.46	461	10.54	803	11.62	1,144
8.40	126	9.48	468	10.56	809	11.64	1,150
8.42	133	9.50	474	10.58	815	11.66	1,157
8.44	139	9.52	480	10.60	822	11.68	1,163
8.46	145	9.54	487	10.62	828	11.70	1,169
8.48	152	9.56	493	10.64	834	11.72	1,176
8.50	158	9.58	499	10.66	841	11.74	1,182
8.52	164	9.60	506	10.68	847	11.76	1,188
8.54	171	9.62	512	10.70	853	11.78	1,194
8.56	177	9.64	518	10.72	860	11.80	1,201
8.58	183	9.66	525	10.74	866	11.82	1,207
8.60	190	9.68	531	10.76	872	11.84	1,213
8.62	196	9.70	537	10.78	878	11.86	1,220
8.64	202	9.72	544	10.80	885	11.88	1,226
8.66	209	9.74	550	10.82	891	11.90	1,232
8.68	215	9.76	556	10.84	897	11.92	1,239
8.70	221	9.78	562	10.86	904	11.94	1,245
8.72	228	9.80	569	10.88	910	11.96	1,251
8.74	234	9.82	575	10.90	916	11.98	1,258
8.76	240	9.84	581	10.92	923	12.00	**1,264**
8.78	246	9.86	588	10.94	929		
8.80	253	9.88	594	10.96	935		
8.82	259	9.90	600	10.98	942		
8.84	265	9.92	607	11.00	948		
8.86	272	9.94	613	11.02	954		
8.88	278	9.96	619	11.04	961		
8.90	284	9.98	626	11.06	967		
8.92	291	10.00	632	11.08	973		
8.94	297	10.02	638	11.10	980		
8.96	303	10.04	645	11.12	986		
8.98	310	10.06	651	11.14	992		
9.00	316	10.08	657	11.16	999		
9.02	322	10.10	664	11.18	1,005		
9.04	329	10.12	670	11.20	1,011		
9.06	335	10.14	676	11.22	1,018		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA7 Runoff Area=23,472 sf Runoff Depth>4.87"
Tc=5.0 min CN=95 Runoff=3.04 cfs 0.218 af

Pond 1P: Infiltration Storage Model Peak Elev=9.50' Storage=474 cf Inflow=3.04 cfs 0.218 af
Outflow=1.99 cfs 0.219 af

Total Runoff Area = 0.539 ac Runoff Volume = 0.218 af Average Runoff Depth = 4.87"
4.69% Pervious Area = 0.025 ac 95.31% Impervious Area = 0.514 ac

Subcatchment 1S: Drainage Area DA7

Time of Concentration

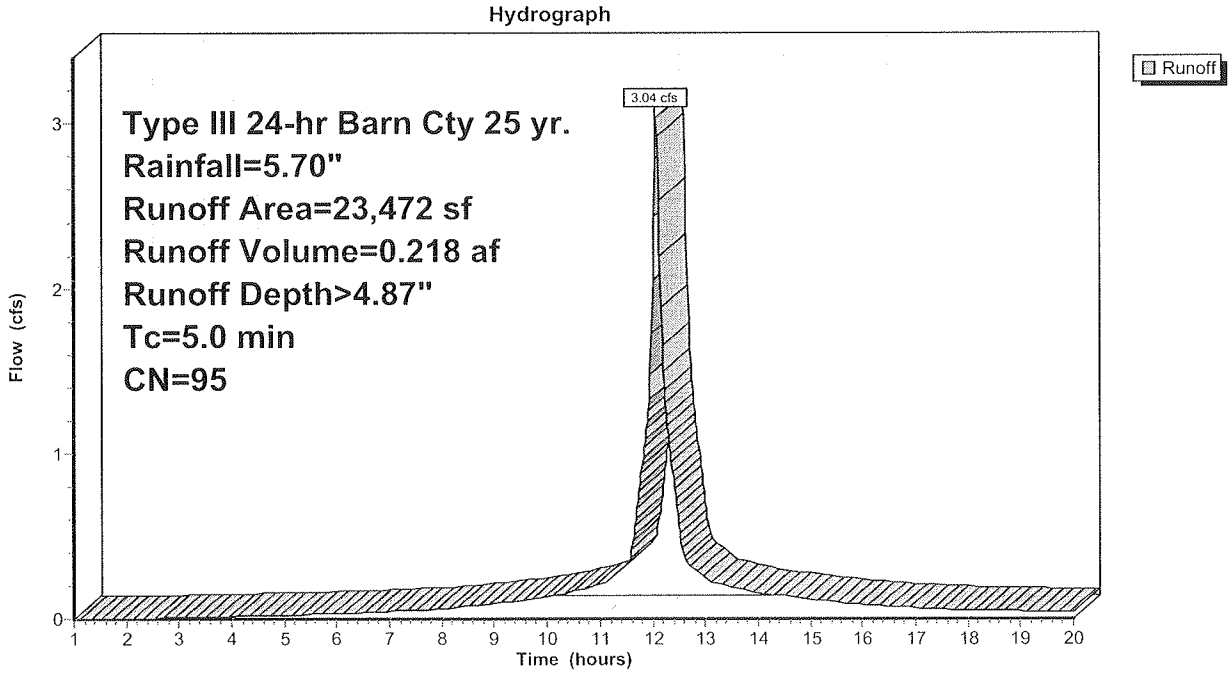
Runoff = 3.04 cfs @ 12.07 hrs, Volume= 0.218 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
22,372	98	Paved parking
1,100	32	Woods/grass comb., Good, HSG A
23,472	95	Weighted Average
1,100		Pervious Area
22,372		Impervious Area

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

Subcatchment 1S: Drainage Area DA7



Hydrograph for Subcatchment 1S: Drainage Area DA7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	1.60	0.93
1.20	0.07	0.00	0.00	12.00	2.85	2.30	**2.05**
1.40	0.08	0.00	0.00	12.20	3.57	3.01	**1.50**
1.60	0.09	0.00	0.00	12.40	3.91	3.34	0.84
1.80	0.10	0.00	0.00	12.60	4.07	3.50	0.37
2.00	0.11	0.00	0.00	12.80	4.18	3.61	0.30
2.20	0.13	0.00	0.00	13.00	4.27	3.70	0.24
2.40	0.14	0.00	0.00	13.20	4.36	3.78	0.21
2.60	0.15	0.00	0.00	13.40	4.43	3.86	0.20
2.80	0.16	0.01	0.01	13.60	4.50	3.92	0.19
3.00	0.18	0.01	0.01	13.80	4.56	3.99	0.17
3.20	0.19	0.01	0.01	14.00	4.62	4.05	0.16
3.40	0.20	0.02	0.01	14.20	4.68	4.10	0.15
3.60	0.22	0.02	0.01	14.40	4.73	4.15	0.14
3.80	0.23	0.02	0.01	14.60	4.78	4.20	0.13
4.00	0.25	0.03	0.01	14.80	4.83	4.25	0.12
4.20	0.26	0.04	0.02	15.00	4.87	4.29	0.12
4.40	0.28	0.04	0.02	15.20	4.91	4.33	0.11
4.60	0.29	0.05	0.02	15.40	4.95	4.37	0.10
4.80	0.31	0.06	0.02	15.60	4.99	4.41	0.10
5.00	0.32	0.06	0.02	15.80	5.02	4.44	0.09
5.20	0.34	0.07	0.02	16.00	5.05	4.47	0.08
5.40	0.36	0.08	0.02	16.20	5.08	4.50	0.08
5.60	0.37	0.09	0.03	16.40	5.11	4.53	0.07
5.80	0.39	0.10	0.03	16.60	5.13	4.55	0.07
6.00	0.41	0.11	0.03	16.80	5.16	4.58	0.07
6.20	0.43	0.12	0.03	17.00	5.18	4.60	0.07
6.40	0.45	0.14	0.03	17.20	5.21	4.63	0.06
6.60	0.47	0.15	0.04	17.40	5.23	4.65	0.06
6.80	0.49	0.16	0.04	17.60	5.25	4.67	0.06
7.00	0.52	0.18	0.04	17.80	5.27	4.69	0.05
7.20	0.54	0.20	0.05	18.00	5.29	4.71	0.05
7.40	0.57	0.22	0.05	18.20	5.31	4.72	0.05
7.60	0.59	0.23	0.05	18.40	5.33	4.74	0.05
7.80	0.62	0.26	0.06	18.60	5.34	4.76	0.05
8.00	0.65	0.28	0.06	18.80	5.36	4.78	0.05
8.20	0.68	0.30	0.07	19.00	5.38	4.79	0.04
8.40	0.71	0.33	0.07	19.20	5.39	4.81	0.04
8.60	0.75	0.36	0.08	19.40	5.41	4.82	0.04
8.80	0.79	0.39	0.09	19.60	5.42	4.84	0.04
9.00	0.83	0.42	0.09	19.80	5.44	4.86	0.04
9.20	0.87	0.46	0.10	20.00	**5.45**	**4.87**	0.04
9.40	0.92	0.50	0.11				
9.60	0.97	0.54	0.11				
9.80	1.02	0.58	0.12				
10.00	1.08	0.63	0.13				
10.20	1.14	0.68	0.14				
10.40	1.20	0.74	0.16				
10.60	1.27	0.80	0.17				
10.80	1.34	0.87	0.19				
11.00	1.42	0.94	0.20				
11.20	1.52	1.03	0.24				
11.40	1.63	1.14	0.30				
11.60	1.79	1.29	0.42				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.539 ac, Inflow Depth > 4.87" for Barn Cty 25 yr. event
Inflow = 3.04 cfs @ 12.07 hrs, Volume= 0.218 af
Outflow = 1.99 cfs @ 12.15 hrs, Volume= 0.219 af, Atten= 34%, Lag= 5.0 min
Primary = 1.99 cfs @ 12.15 hrs, Volume= 0.219 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 9.50' @ 12.15 hrs Surf.Area= 0 sf Storage= 474 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=0.8 min (736.7 - 735.9)

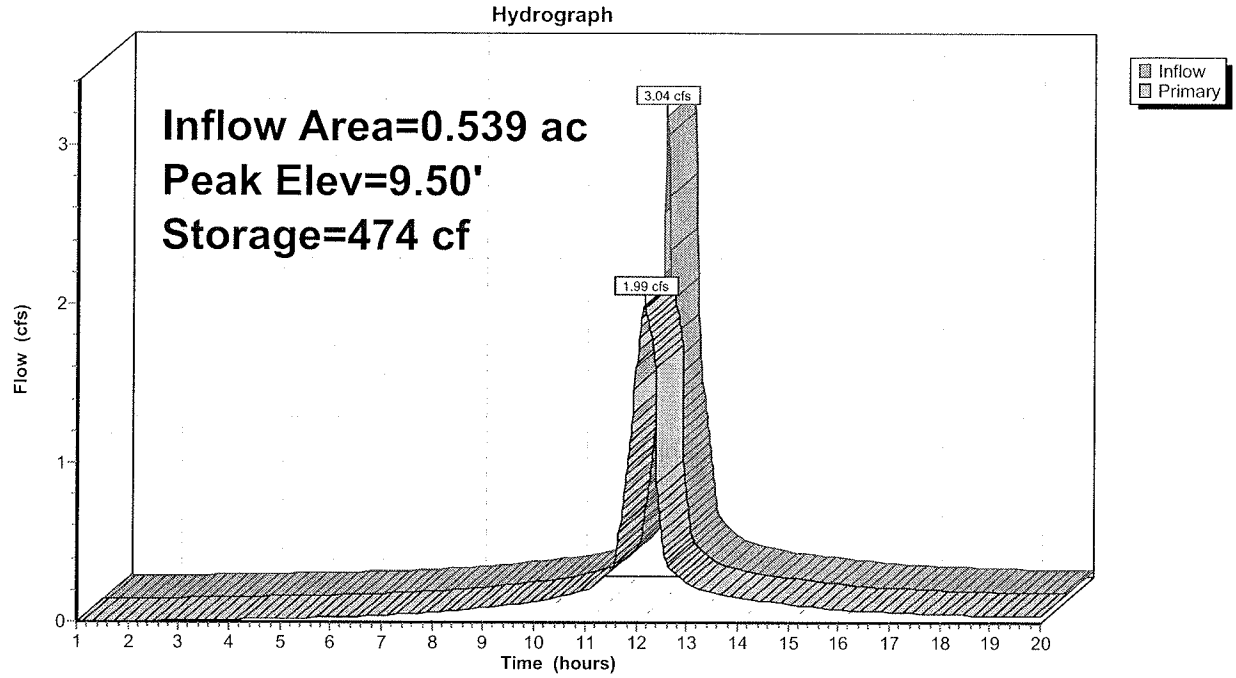
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	1,264 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.00	0
9.00	316
10.00	632
11.00	948
12.00	1,264

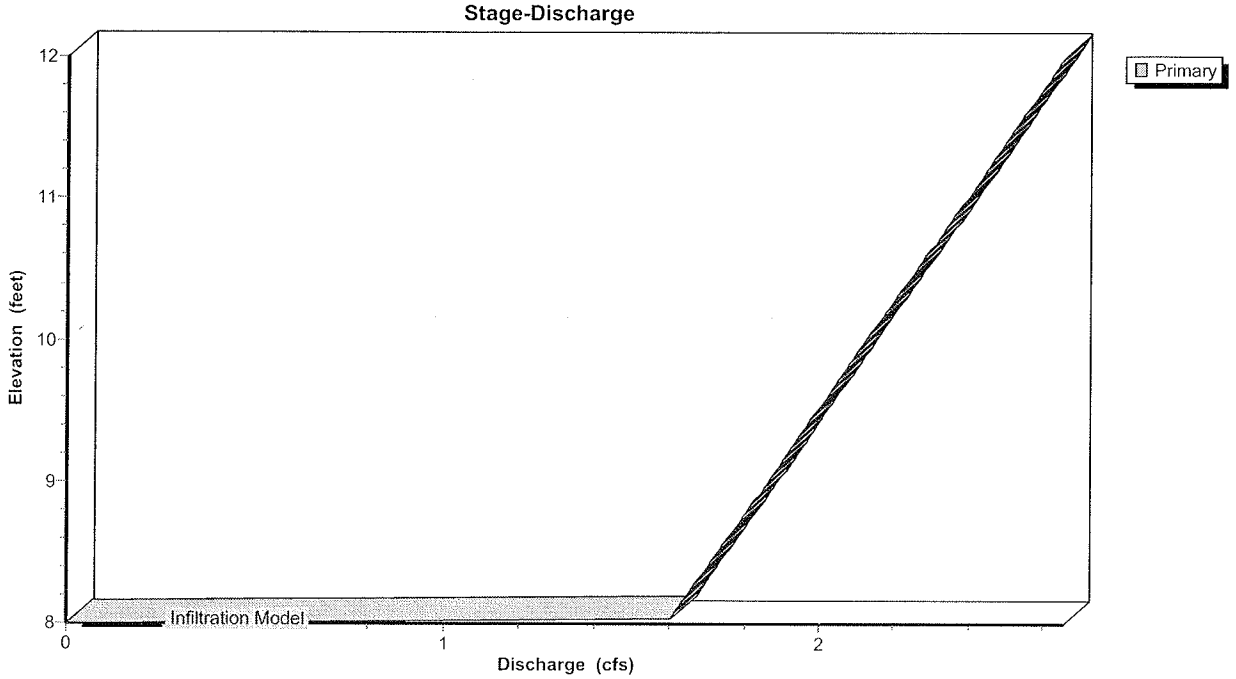
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 7.90 8.00 9.00 10.00 11.00 12.00 Disch. (cfs) 0.000 1.590 1.860 2.120 2.390 2.650

Primary OutFlow Max=1.99 cfs @ 12.15 hrs HW=9.49' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 1.99 cfs)

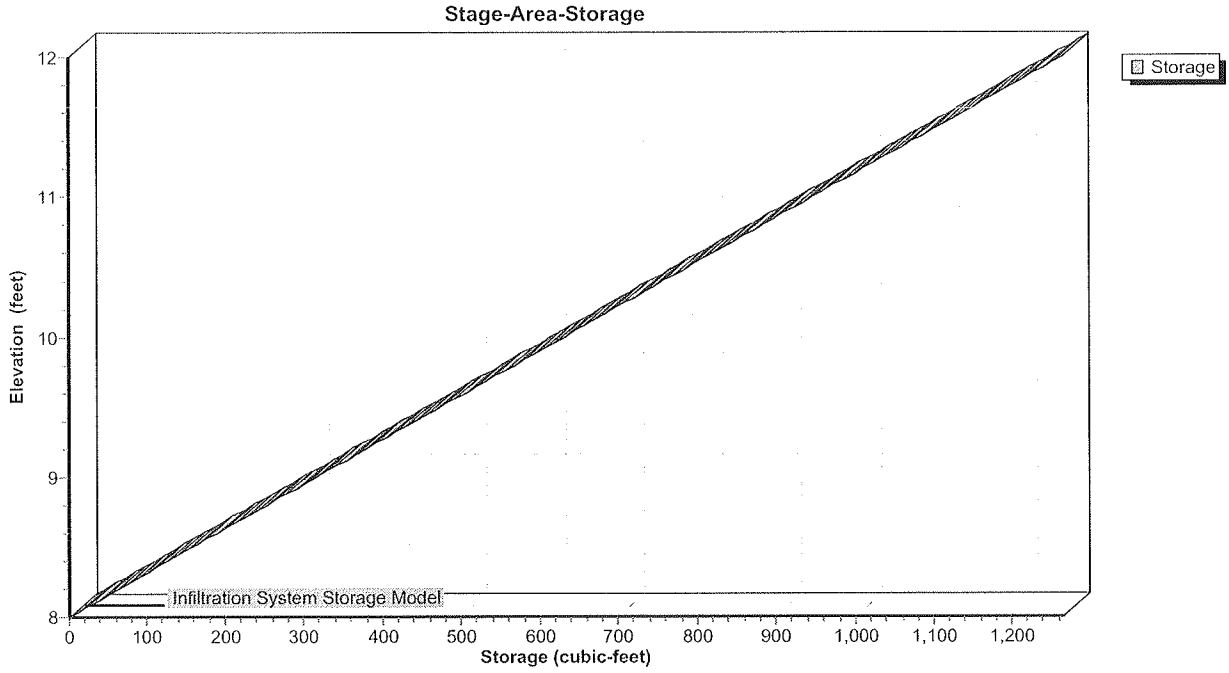
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

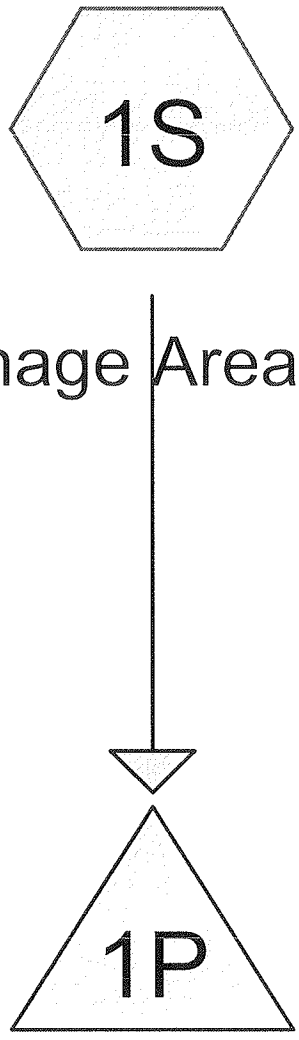
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.00	0.00
1.20	0.00	0	8.00	0.00
1.40	0.00	0	8.00	0.00
1.60	0.00	0	8.00	0.00
1.80	0.00	0	8.00	0.00
2.00	0.00	0	8.00	0.00
2.20	0.00	0	8.00	0.00
2.40	0.00	0	8.00	0.00
2.60	0.00	0	8.00	0.00
2.80	0.01	0	8.00	0.01
3.00	0.01	0	8.00	0.01
3.20	0.01	0	8.00	0.01
3.40	0.01	0	8.00	0.01
3.60	0.01	0	8.00	0.01
3.80	0.01	0	8.00	0.01
4.00	0.01	0	8.00	0.01
4.20	0.02	0	8.00	0.02
4.40	0.02	0	8.00	0.02
4.60	0.02	0	8.00	0.02
4.80	0.02	0	8.00	0.02
5.00	0.02	0	8.00	0.02
5.20	0.02	0	8.00	0.02
5.40	0.02	0	8.00	0.02
5.60	0.03	0	8.00	0.03
5.80	0.03	0	8.00	0.03
6.00	0.03	0	8.00	0.03
6.20	0.03	0	8.00	0.03
6.40	0.03	0	8.00	0.03
6.60	0.04	0	8.00	0.04
6.80	0.04	0	8.00	0.04
7.00	0.04	0	8.00	0.04
7.20	0.05	0	8.00	0.05
7.40	0.05	0	8.00	0.05
7.60	0.05	0	8.00	0.05
7.80	0.06	0	8.00	0.06
8.00	0.06	0	8.00	0.06
8.20	0.07	1	8.00	0.07
8.40	0.07	1	8.00	0.07
8.60	0.08	1	8.00	0.08
8.80	0.09	1	8.00	0.09
9.00	0.09	1	8.00	0.09
9.20	0.10	1	8.00	0.10
9.40	0.11	1	8.00	0.11
9.60	0.11	1	8.00	0.11
9.80	0.12	1	8.00	0.12
10.00	0.13	1	8.00	0.13
10.20	0.14	1	8.00	0.14
10.40	0.16	1	8.00	0.16
10.60	0.17	1	8.00	0.17
10.80	0.19	1	8.00	0.19
11.00	0.20	2	8.01	0.20
11.20	0.24	2	8.01	0.24
11.40	0.30	2	8.01	0.30
11.60	0.42	3	8.01	0.42
11.80	0.93	7	8.02	0.92
12.00	**2.05**	**35**	**8.11**	**1.62**
12.20	**1.50**	**430**	**9.36**	**1.95**
12.40	0.84	7	8.02	0.87
12.60	0.37	3	8.01	0.38
12.80	0.30	2	8.01	0.30
13.00	0.24	2	8.01	0.25
13.20	0.21	2	8.01	0.21
13.40	0.20	2	8.00	0.20
13.60	0.19	1	8.00	0.19
13.80	0.17	1	8.00	0.17
14.00	0.16	1	8.00	0.16
14.20	0.15	1	8.00	0.15
14.40	0.14	1	8.00	0.14
14.60	0.13	1	8.00	0.13
14.80	0.12	1	8.00	0.12
15.00	0.12	1	8.00	0.12
15.20	0.11	1	8.00	0.11
15.40	0.10	1	8.00	0.10
15.60	0.10	1	8.00	0.10
15.80	0.09	1	8.00	0.09
16.00	0.08	1	8.00	0.08
16.20	0.08	1	8.00	0.08
16.40	0.07	1	8.00	0.07
16.60	0.07	1	8.00	0.07
16.80	0.07	1	8.00	0.07
17.00	0.07	1	8.00	0.07
17.20	0.06	0	8.00	0.06
17.40	0.06	0	8.00	0.06
17.60	0.06	0	8.00	0.06
17.80	0.05	0	8.00	0.05
18.00	0.05	0	8.00	0.05
18.20	0.05	0	8.00	0.05
18.40	0.05	0	8.00	0.05
18.60	0.05	0	8.00	0.05
18.80	0.05	0	8.00	0.05
19.00	0.04	0	8.00	0.04
19.20	0.04	0	8.00	0.04
19.40	0.04	0	8.00	0.04
19.60	0.04	0	8.00	0.04
19.80	0.04	0	8.00	0.04
20.00	0.04	0	8.00	0.04

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.00	0.00	9.08	1.88	10.16	2.16	11.24	2.45
8.02	1.60	9.10	1.89	10.18	2.17	11.26	2.46
8.04	1.60	9.12	1.89	10.20	2.17	11.28	2.46
8.06	1.61	9.14	1.90	10.22	2.18	11.30	2.47
8.08	1.61	9.16	1.90	10.24	2.18	11.32	2.47
8.10	1.62	9.18	1.91	10.26	2.19	11.34	2.48
8.12	1.62	9.20	1.91	10.28	2.20	11.36	2.48
8.14	1.63	9.22	1.92	10.30	2.20	11.38	2.49
8.16	1.63	9.24	1.92	10.32	2.21	11.40	2.49
8.18	1.64	9.26	1.93	10.34	2.21	11.42	2.50
8.20	1.64	9.28	1.93	10.36	2.22	11.44	2.50
8.22	1.65	9.30	1.94	10.38	2.22	11.46	2.51
8.24	1.65	9.32	1.94	10.40	2.23	11.48	2.51
8.26	1.66	9.34	1.95	10.42	2.23	11.50	2.52
8.28	1.67	9.36	1.95	10.44	2.24	11.52	2.53
8.30	1.67	9.38	1.96	10.46	2.24	11.54	2.53
8.32	1.68	9.40	1.96	10.48	2.25	11.56	2.54
8.34	1.68	9.42	1.97	10.50	2.25	11.58	2.54
8.36	1.69	9.44	1.97	10.52	2.26	11.60	2.55
8.38	1.69	9.46	1.98	10.54	2.27	11.62	2.55
8.40	1.70	9.48	1.98	10.56	2.27	11.64	2.56
8.42	1.70	9.50	1.99	10.58	2.28	11.66	2.56
8.44	1.71	9.52	2.00	10.60	2.28	11.68	2.57
8.46	1.71	9.54	2.00	10.62	2.29	11.70	2.57
8.48	1.72	9.56	2.01	10.64	2.29	11.72	2.58
8.50	1.73	9.58	2.01	10.66	2.30	11.74	2.58
8.52	1.73	9.60	2.02	10.68	2.30	11.76	2.59
8.54	1.74	9.62	2.02	10.70	2.31	11.78	2.59
8.56	1.74	9.64	2.03	10.72	2.31	11.80	2.60
8.58	1.75	9.66	2.03	10.74	2.32	11.82	2.60
8.60	1.75	9.68	2.04	10.76	2.33	11.84	2.61
8.62	1.76	9.70	2.04	10.78	2.33	11.86	2.61
8.64	1.76	9.72	2.05	10.80	2.34	11.88	2.62
8.66	1.77	9.74	2.05	10.82	2.34	11.90	2.62
8.68	1.77	9.76	2.06	10.84	2.35	11.92	2.63
8.70	1.78	9.78	2.06	10.86	2.35	11.94	2.63
8.72	1.78	9.80	2.07	10.88	2.36	11.96	2.64
8.74	1.79	9.82	2.07	10.90	2.36	11.98	2.64
8.76	1.80	9.84	2.08	10.92	2.37	12.00	**2.65**
8.78	1.80	9.86	2.08	10.94	2.37		
8.80	1.81	9.88	2.09	10.96	2.38		
8.82	1.81	9.90	2.09	10.98	2.38		
8.84	1.82	9.92	2.10	11.00	2.39		
8.86	1.82	9.94	2.10	11.02	2.40		
8.88	1.83	9.96	2.11	11.04	2.40		
8.90	1.83	9.98	2.11	11.06	2.41		
8.92	1.84	10.00	2.12	11.08	2.41		
8.94	1.84	10.02	2.13	11.10	2.42		
8.96	1.85	10.04	2.13	11.12	2.42		
8.98	1.85	10.06	2.14	11.14	2.43		
9.00	1.86	10.08	2.14	11.16	2.43		
9.02	1.87	10.10	2.15	11.18	2.44		
9.04	1.87	10.12	2.15	11.20	2.44		
9.06	1.88	10.14	2.16	11.22	2.45		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.00	0	9.08	341	10.16	683	11.24	1,024
8.02	6	9.10	348	10.18	689	11.26	1,030
8.04	13	9.12	354	10.20	695	11.28	1,036
8.06	19	9.14	360	10.22	702	11.30	1,043
8.08	25	9.16	367	10.24	708	11.32	1,049
8.10	32	9.18	373	10.26	714	11.34	1,055
8.12	38	9.20	379	10.28	720	11.36	1,062
8.14	44	9.22	386	10.30	727	11.38	1,068
8.16	51	9.24	392	10.32	733	11.40	1,074
8.18	57	9.26	398	10.34	739	11.42	1,081
8.20	63	9.28	404	10.36	746	11.44	1,087
8.22	70	9.30	411	10.38	752	11.46	1,093
8.24	76	9.32	417	10.40	758	11.48	1,100
8.26	82	9.34	423	10.42	765	11.50	1,106
8.28	88	9.36	430	10.44	771	11.52	1,112
8.30	95	9.38	436	10.46	777	11.54	1,119
8.32	101	9.40	442	10.48	784	11.56	1,125
8.34	107	9.42	449	10.50	790	11.58	1,131
8.36	114	9.44	455	10.52	796	11.60	1,138
8.38	120	9.46	461	10.54	803	11.62	1,144
8.40	126	9.48	468	10.56	809	11.64	1,150
8.42	133	9.50	474	10.58	815	11.66	1,157
8.44	139	9.52	480	10.60	822	11.68	1,163
8.46	145	9.54	487	10.62	828	11.70	1,169
8.48	152	9.56	493	10.64	834	11.72	1,176
8.50	158	9.58	499	10.66	841	11.74	1,182
8.52	164	9.60	506	10.68	847	11.76	1,188
8.54	171	9.62	512	10.70	853	11.78	1,194
8.56	177	9.64	518	10.72	860	11.80	1,201
8.58	183	9.66	525	10.74	866	11.82	1,207
8.60	190	9.68	531	10.76	872	11.84	1,213
8.62	196	9.70	537	10.78	878	11.86	1,220
8.64	202	9.72	544	10.80	885	11.88	1,226
8.66	209	9.74	550	10.82	891	11.90	1,232
8.68	215	9.76	556	10.84	897	11.92	1,239
8.70	221	9.78	562	10.86	904	11.94	1,245
8.72	228	9.80	569	10.88	910	11.96	1,251
8.74	234	9.82	575	10.90	916	11.98	1,258
8.76	240	9.84	581	10.92	923	12.00	**1,264**
8.78	246	9.86	588	10.94	929		
8.80	253	9.88	594	10.96	935		
8.82	259	9.90	600	10.98	942		
8.84	265	9.92	607	11.00	948		
8.86	272	9.94	613	11.02	954		
8.88	278	9.96	619	11.04	961		
8.90	284	9.98	626	11.06	967		
8.92	291	10.00	632	11.08	973		
8.94	297	10.02	638	11.10	980		
8.96	303	10.04	645	11.12	986		
8.98	310	10.06	651	11.14	992		
9.00	316	10.08	657	11.16	999		
9.02	322	10.10	664	11.18	1,005		
9.04	329	10.12	670	11.20	1,011		
9.06	335	10.14	676	11.22	1,018		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA8
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.120	32	Woods/grass comb., Good, HSG A (1S)
0.464	98	Paved parking (1S)
0.584		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA8 Runoff Area=25,458 sf Runoff Depth>5.58"
Tc=5.0 min CN=84 Runoff=4.05 cfs 0.272 af

Pond 1P: Infiltration Storage Model Peak Elev=11.08' Storage=698 cf Inflow=4.05 cfs 0.272 af
Outflow=2.48 cfs 0.271 af

Total Runoff Area = 0.584 ac Runoff Volume = 0.272 af Average Runoff Depth = 5.58"
20.56% Pervious Area = 0.120 ac 79.44% Impervious Area = 0.464 ac

Subcatchment 1S: Drainage Area DA8

Time of Concentration

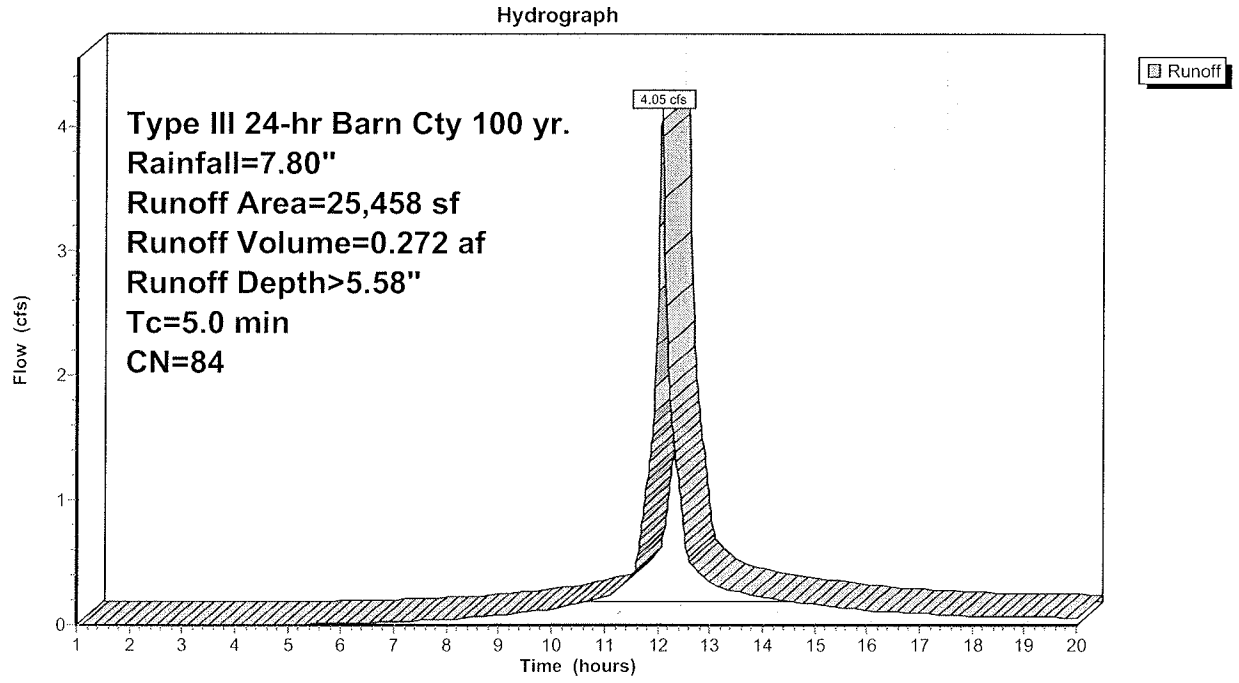
Runoff = 4.05 cfs @ 12.07 hrs, Volume= 0.272 af, Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
20,224	98	Paved parking
5,234	32	Woods/grass comb., Good, HSG A
25,458	84	Weighted Average
5,234		Pervious Area
20,224		Impervious Area

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

Subcatchment 1S: Drainage Area DA8



Hydrograph for Subcatchment 1S: Drainage Area DA8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	1.44	1.16
1.20	0.09	0.00	0.00	12.00	3.90	2.28	**2.68**
1.40	0.11	0.00	0.00	12.20	4.89	3.17	**2.05**
1.60	0.12	0.00	0.00	12.40	5.35	3.59	1.16
1.80	0.14	0.00	0.00	12.60	5.56	3.79	0.52
2.00	0.16	0.00	0.00	12.80	5.72	3.94	0.42
2.20	0.17	0.00	0.00	13.00	5.85	4.06	0.34
2.40	0.19	0.00	0.00	13.20	5.96	4.16	0.30
2.60	0.20	0.00	0.00	13.40	6.06	4.26	0.28
2.80	0.22	0.00	0.00	13.60	6.16	4.34	0.26
3.00	0.24	0.00	0.00	13.80	6.25	4.43	0.24
3.20	0.26	0.00	0.00	14.00	6.33	4.50	0.22
3.40	0.28	0.00	0.00	14.20	6.40	4.57	0.21
3.60	0.30	0.00	0.00	14.40	6.47	4.64	0.20
3.80	0.32	0.00	0.00	14.60	6.54	4.70	0.19
4.00	0.34	0.00	0.00	14.80	6.60	4.76	0.18
4.20	0.36	0.00	0.00	15.00	6.66	4.82	0.17
4.40	0.38	0.00	0.00	15.20	6.72	4.87	0.16
4.60	0.40	0.00	0.00	15.40	6.77	4.92	0.15
4.80	0.42	0.00	0.00	15.60	6.82	4.97	0.14
5.00	0.44	0.00	0.00	15.80	6.87	5.02	0.13
5.20	0.47	0.00	0.01	16.00	6.91	5.06	0.12
5.40	0.49	0.01	0.01	16.20	6.95	5.09	0.11
5.60	0.51	0.01	0.01	16.40	6.99	5.13	0.11
5.80	0.54	0.01	0.01	16.60	7.03	5.16	0.10
6.00	0.56	0.02	0.01	16.80	7.06	5.20	0.10
6.20	0.59	0.02	0.01	17.00	7.09	5.23	0.09
6.40	0.61	0.03	0.02	17.20	7.13	5.26	0.09
6.60	0.64	0.03	0.02	17.40	7.16	5.29	0.08
6.80	0.67	0.04	0.02	17.60	7.19	5.32	0.08
7.00	0.71	0.05	0.02	17.80	7.21	5.34	0.08
7.20	0.74	0.06	0.03	18.00	7.24	5.37	0.07
7.40	0.77	0.07	0.03	18.20	7.26	5.39	0.07
7.60	0.81	0.08	0.04	18.40	7.29	5.41	0.07
7.80	0.85	0.09	0.04	18.60	7.31	5.44	0.07
8.00	0.89	0.11	0.04	18.80	7.33	5.46	0.07
8.20	0.93	0.12	0.05	19.00	7.36	5.48	0.06
8.40	0.98	0.14	0.06	19.20	7.38	5.50	0.06
8.60	1.03	0.16	0.06	19.40	7.40	5.52	0.06
8.80	1.08	0.19	0.07	19.60	7.42	5.54	0.06
9.00	1.14	0.21	0.08	19.80	7.44	5.56	0.06
9.20	1.20	0.24	0.09	20.00	**7.46**	**5.58**	0.06
9.40	1.26	0.28	0.10				
9.60	1.33	0.31	0.11				
9.80	1.40	0.35	0.12				
10.00	1.47	0.40	0.13				
10.20	1.55	0.45	0.15				
10.40	1.64	0.50	0.16				
10.60	1.74	0.56	0.18				
10.80	1.84	0.63	0.20				
11.00	1.95	0.71	0.23				
11.20	2.08	0.80	0.28				
11.40	2.24	0.91	0.35				
11.60	2.45	1.08	0.50				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.584 ac, Inflow Depth > 5.58" for Barn Cty 100 yr. event
Inflow = 4.05 cfs @ 12.07 hrs, Volume= 0.272 af
Outflow = 2.48 cfs @ 12.17 hrs, Volume= 0.271 af, Atten= 39%, Lag= 5.6 min
Primary = 2.48 cfs @ 12.17 hrs, Volume= 0.271 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.08' @ 12.17 hrs Surf.Area= 0 sf Storage= 698 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=1.0 min (763.4 - 762.4)

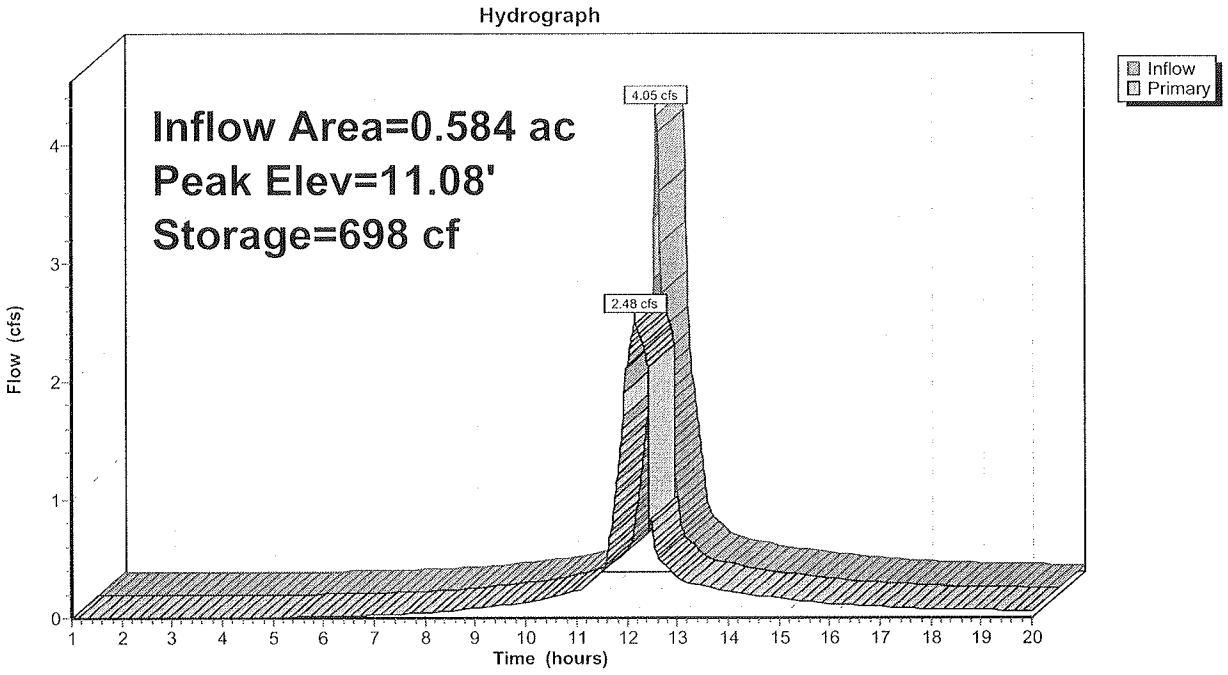
Volume	Invert	Avail.Storage	Storage Description
#1	8.80'	1,200 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.80	0
9.80	220
10.80	600
11.80	950
12.80	1,200

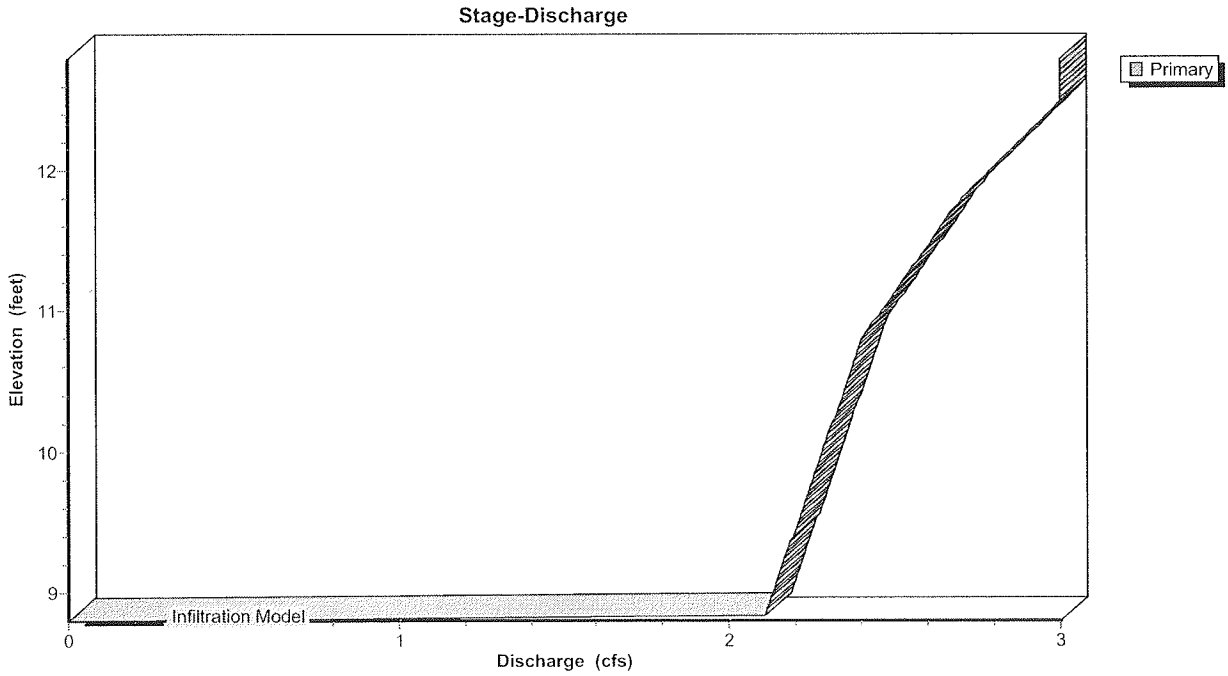
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 8.70 8.80 10.80 11.80 12.50 Disch. (cfs) 0.000 2.100 2.400 2.700 3.000

Primary OutFlow Max=2.48 cfs @ 12.17 hrs HW=11.07' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 2.48 cfs)

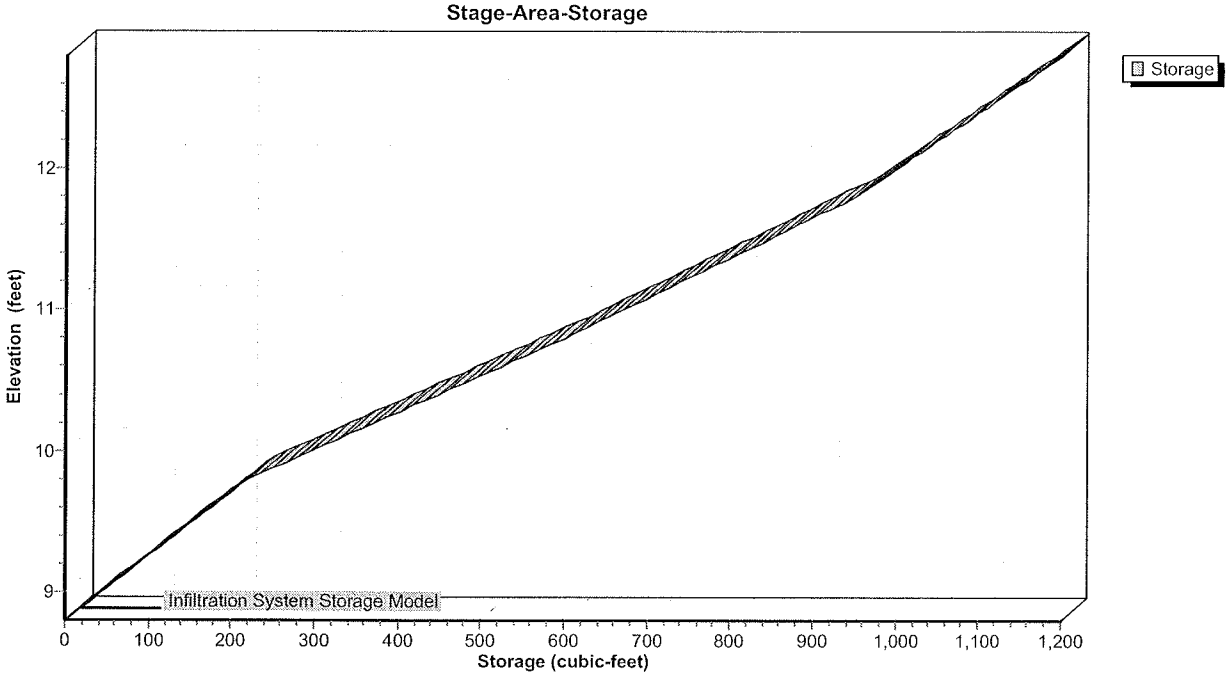
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.80	0.00	11.80	1.16	5	8.82	1.15
1.20	0.00	0	8.80	0.00	12.00	**2.68**	**36**	**8.96**	**2.12**
1.40	0.00	0	8.80	0.00	12.20	**2.05**	**668**	**11.00**	**2.46**
1.60	0.00	0	8.80	0.00	12.40	1.16	107	9.29	2.17
1.80	0.00	0	8.80	0.00	12.60	0.52	2	8.81	0.52
2.00	0.00	0	8.80	0.00	12.80	0.42	2	8.81	0.42
2.20	0.00	0	8.80	0.00	13.00	0.34	1	8.81	0.34
2.40	0.00	0	8.80	0.00	13.20	0.30	1	8.81	0.30
2.60	0.00	0	8.80	0.00	13.40	0.28	1	8.81	0.28
2.80	0.00	0	8.80	0.00	13.60	0.26	1	8.80	0.26
3.00	0.00	0	8.80	0.00	13.80	0.24	1	8.80	0.24
3.20	0.00	0	8.80	0.00	14.00	0.22	1	8.80	0.22
3.40	0.00	0	8.80	0.00	14.20	0.21	1	8.80	0.21
3.60	0.00	0	8.80	0.00	14.40	0.20	1	8.80	0.20
3.80	0.00	0	8.80	0.00	14.60	0.19	1	8.80	0.19
4.00	0.00	0	8.80	0.00	14.80	0.18	1	8.80	0.18
4.20	0.00	0	8.80	0.00	15.00	0.17	1	8.80	0.17
4.40	0.00	0	8.80	0.00	15.20	0.16	1	8.80	0.16
4.60	0.00	0	8.80	0.00	15.40	0.15	1	8.80	0.15
4.80	0.00	0	8.80	0.00	15.60	0.14	1	8.80	0.14
5.00	0.00	0	8.80	0.00	15.80	0.13	1	8.80	0.13
5.20	0.01	0	8.80	0.01	16.00	0.12	0	8.80	0.12
5.40	0.01	0	8.80	0.01	16.20	0.11	0	8.80	0.11
5.60	0.01	0	8.80	0.01	16.40	0.11	0	8.80	0.11
5.80	0.01	0	8.80	0.01	16.60	0.10	0	8.80	0.10
6.00	0.01	0	8.80	0.01	16.80	0.10	0	8.80	0.10
6.20	0.01	0	8.80	0.01	17.00	0.09	0	8.80	0.09
6.40	0.02	0	8.80	0.02	17.20	0.09	0	8.80	0.09
6.60	0.02	0	8.80	0.02	17.40	0.08	0	8.80	0.08
6.80	0.02	0	8.80	0.02	17.60	0.08	0	8.80	0.08
7.00	0.02	0	8.80	0.02	17.80	0.08	0	8.80	0.08
7.20	0.03	0	8.80	0.03	18.00	0.07	0	8.80	0.07
7.40	0.03	0	8.80	0.03	18.20	0.07	0	8.80	0.07
7.60	0.04	0	8.80	0.04	18.40	0.07	0	8.80	0.07
7.80	0.04	0	8.80	0.04	18.60	0.07	0	8.80	0.07
8.00	0.04	0	8.80	0.04	18.80	0.07	0	8.80	0.07
8.20	0.05	0	8.80	0.05	19.00	0.06	0	8.80	0.06
8.40	0.06	0	8.80	0.06	19.20	0.06	0	8.80	0.06
8.60	0.06	0	8.80	0.06	19.40	0.06	0	8.80	0.06
8.80	0.07	0	8.80	0.07	19.60	0.06	0	8.80	0.06
9.00	0.08	0	8.80	0.08	19.80	0.06	0	8.80	0.06
9.20	0.09	0	8.80	0.09	20.00	0.06	0	8.80	0.06
9.40	0.10	0	8.80	0.10					
9.60	0.11	0	8.80	0.11					
9.80	0.12	0	8.80	0.12					
10.00	0.13	1	8.80	0.13					
10.20	0.15	1	8.80	0.15					
10.40	0.16	1	8.80	0.16					
10.60	0.18	1	8.80	0.18					
10.80	0.20	1	8.80	0.20					
11.00	0.23	1	8.80	0.23					
11.20	0.28	1	8.81	0.28					
11.40	0.35	1	8.81	0.35					
11.60	0.50	2	8.81	0.50					

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.80	0.00	9.88	2.26	10.96	2.45	12.04	2.80
8.82	2.10	9.90	2.27	10.98	2.45	12.06	2.81
8.84	2.11	9.92	2.27	11.00	2.46	12.08	2.82
8.86	2.11	9.94	2.27	11.02	2.47	12.10	2.83
8.88	2.11	9.96	2.27	11.04	2.47	12.12	2.84
8.90	2.12	9.98	2.28	11.06	2.48	12.14	2.85
8.92	2.12	10.00	2.28	11.08	2.48	12.16	2.85
8.94	2.12	10.02	2.28	11.10	2.49	12.18	2.86
8.96	2.12	10.04	2.29	11.12	2.50	12.20	2.87
8.98	2.13	10.06	2.29	11.14	2.50	12.22	2.88
9.00	2.13	10.08	2.29	11.16	2.51	12.24	2.89
9.02	2.13	10.10	2.29	11.18	2.51	12.26	2.90
9.04	2.14	10.12	2.30	11.20	2.52	12.28	2.91
9.06	2.14	10.14	2.30	11.22	2.53	12.30	2.91
9.08	2.14	10.16	2.30	11.24	2.53	12.32	2.92
9.10	2.15	10.18	2.31	11.26	2.54	12.34	2.93
9.12	2.15	10.20	2.31	11.28	2.54	12.36	2.94
9.14	2.15	10.22	2.31	11.30	2.55	12.38	2.95
9.16	2.15	10.24	2.32	11.32	2.56	12.40	2.96
9.18	2.16	10.26	2.32	11.34	2.56	12.42	2.97
9.20	2.16	10.28	2.32	11.36	2.57	12.44	2.97
9.22	2.16	10.30	2.33	11.38	2.57	12.46	2.98
9.24	2.17	10.32	2.33	11.40	2.58	12.48	2.99
9.26	2.17	10.34	2.33	11.42	2.59	12.50	**3.00**
9.28	2.17	10.36	2.33	11.44	2.59	12.52	3.00
9.30	2.17	10.38	2.34	11.46	2.60	12.54	3.00
9.32	2.18	10.40	2.34	11.48	2.60	12.56	3.00
9.34	2.18	10.42	2.34	11.50	2.61	12.58	3.00
9.36	2.18	10.44	2.35	11.52	2.62	12.60	3.00
9.38	2.19	10.46	2.35	11.54	2.62	12.62	3.00
9.40	2.19	10.48	2.35	11.56	2.63	12.64	3.00
9.42	2.19	10.50	2.35	11.58	2.63	12.66	3.00
9.44	2.20	10.52	2.36	11.60	2.64	12.68	3.00
9.46	2.20	10.54	2.36	11.62	2.65	12.70	3.00
9.48	2.20	10.56	2.36	11.64	2.65	12.72	3.00
9.50	2.21	10.58	2.37	11.66	2.66	12.74	3.00
9.52	2.21	10.60	2.37	11.68	2.66	12.76	3.00
9.54	2.21	10.62	2.37	11.70	2.67	12.78	3.00
9.56	2.21	10.64	2.38	11.72	2.68	12.80	3.00
9.58	2.22	10.66	2.38	11.74	2.68		
9.60	2.22	10.68	2.38	11.76	2.69		
9.62	2.22	10.70	2.38	11.78	2.69		
9.64	2.23	10.72	2.39	11.80	2.70		
9.66	2.23	10.74	2.39	11.82	2.71		
9.68	2.23	10.76	2.39	11.84	2.72		
9.70	2.23	10.78	2.40	11.86	2.73		
9.72	2.24	10.80	2.40	11.88	2.73		
9.74	2.24	10.82	2.41	11.90	2.74		
9.76	2.24	10.84	2.41	11.92	2.75		
9.78	2.25	10.86	2.42	11.94	2.76		
9.80	2.25	10.88	2.42	11.96	2.77		
9.82	2.25	10.90	2.43	11.98	2.78		
9.84	2.26	10.92	2.44	12.00	2.79		
9.86	2.26	10.94	2.44	12.02	2.79		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.80	0	9.88	250	10.96	656	12.04	1,010
8.82	4	9.90	258	10.98	663	12.06	1,015
8.84	9	9.92	266	11.00	670	12.08	1,020
8.86	13	9.94	273	11.02	677	12.10	1,025
8.88	18	9.96	281	11.04	684	12.12	1,030
8.90	22	9.98	288	11.06	691	12.14	1,035
8.92	26	10.00	296	11.08	698	12.16	1,040
8.94	31	10.02	304	11.10	705	12.18	1,045
8.96	35	10.04	311	11.12	712	12.20	1,050
8.98	40	10.06	319	11.14	719	12.22	1,055
9.00	44	10.08	326	11.16	726	12.24	1,060
9.02	48	10.10	334	11.18	733	12.26	1,065
9.04	53	10.12	342	11.20	740	12.28	1,070
9.06	57	10.14	349	11.22	747	12.30	1,075
9.08	62	10.16	357	11.24	754	12.32	1,080
9.10	66	10.18	364	11.26	761	12.34	1,085
9.12	70	10.20	372	11.28	768	12.36	1,090
9.14	75	10.22	380	11.30	775	12.38	1,095
9.16	79	10.24	387	11.32	782	12.40	1,100
9.18	84	10.26	395	11.34	789	12.42	1,105
9.20	88	10.28	402	11.36	796	12.44	1,110
9.22	92	10.30	410	11.38	803	12.46	1,115
9.24	97	10.32	418	11.40	810	12.48	1,120
9.26	101	10.34	425	11.42	817	12.50	1,125
9.28	106	10.36	433	11.44	824	12.52	1,130
9.30	110	10.38	440	11.46	831	12.54	1,135
9.32	114	10.40	448	11.48	838	12.56	1,140
9.34	119	10.42	456	11.50	845	12.58	1,145
9.36	123	10.44	463	11.52	852	12.60	1,150
9.38	128	10.46	471	11.54	859	12.62	1,155
9.40	132	10.48	478	11.56	866	12.64	1,160
9.42	136	10.50	486	11.58	873	12.66	1,165
9.44	141	10.52	494	11.60	880	12.68	1,170
9.46	145	10.54	501	11.62	887	12.70	1,175
9.48	150	10.56	509	11.64	894	12.72	1,180
9.50	154	10.58	516	11.66	901	12.74	1,185
9.52	158	10.60	524	11.68	908	12.76	1,190
9.54	163	10.62	532	11.70	915	12.78	1,195
9.56	167	10.64	539	11.72	922	12.80	**1,200**
9.58	172	10.66	547	11.74	929		
9.60	176	10.68	554	11.76	936		
9.62	180	10.70	562	11.78	943		
9.64	185	10.72	570	11.80	950		
9.66	189	10.74	577	11.82	955		
9.68	194	10.76	585	11.84	960		
9.70	198	10.78	592	11.86	965		
9.72	202	10.80	600	11.88	970		
9.74	207	10.82	607	11.90	975		
9.76	211	10.84	614	11.92	980		
9.78	216	10.86	621	11.94	985		
9.80	220	10.88	628	11.96	990		
9.82	228	10.90	635	11.98	995		
9.84	235	10.92	642	12.00	1,000		
9.86	243	10.94	649	12.02	1,005		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA8 Runoff Area=25,458 sf Runoff Depth>3.68"
Tc=5.0 min CN=84 Runoff=2.74 cfs 0.179 af

Pond 1P: Infiltration Storage Model Peak Elev=9.49' Storage=151 cf Inflow=2.74 cfs 0.179 af
Outflow=2.20 cfs 0.178 af

Total Runoff Area = 0.584 ac Runoff Volume = 0.179 af Average Runoff Depth = 3.68"
20.56% Pervious Area = 0.120 ac 79.44% Impervious Area = 0.464 ac

Subcatchment 1S: Drainage Area DA8

Time of Concentration

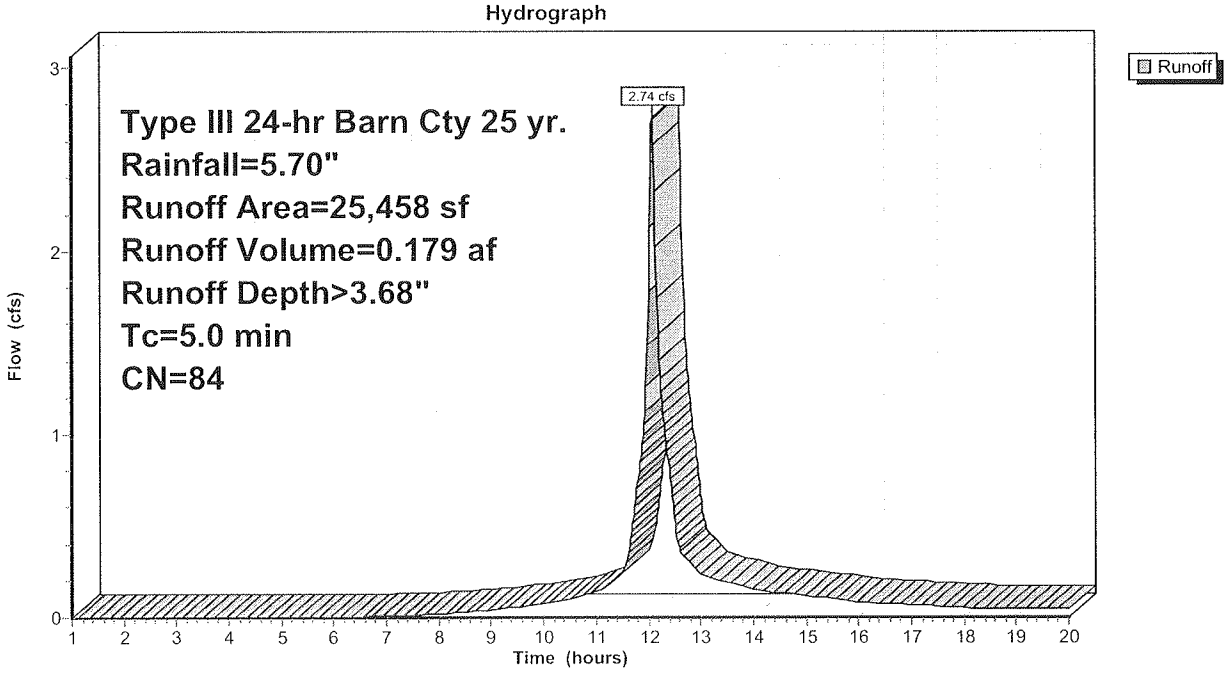
Runoff = 2.74 cfs @ 12.07 hrs, Volume= 0.179 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
20,224	98	Paved parking
5,234	32	Woods/grass comb., Good, HSG A
25,458	84	Weighted Average
5,234		Pervious Area
20,224		Impervious Area

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

Subcatchment 1S: Drainage Area DA8



Hydrograph for Subcatchment 1S: Drainage Area DA8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	0.84	0.75
1.20	0.07	0.00	0.00	12.00	2.85	1.39	**1.78**
1.40	0.08	0.00	0.00	12.20	3.57	2.00	**1.40**
1.60	0.09	0.00	0.00	12.40	3.91	2.29	0.81
1.80	0.10	0.00	0.00	12.60	4.07	2.43	0.36
2.00	0.11	0.00	0.00	12.80	4.18	2.53	0.29
2.20	0.13	0.00	0.00	13.00	4.27	2.61	0.24
2.40	0.14	0.00	0.00	13.20	4.36	2.69	0.21
2.60	0.15	0.00	0.00	13.40	4.43	2.75	0.20
2.80	0.16	0.00	0.00	13.60	4.50	2.82	0.18
3.00	0.18	0.00	0.00	13.80	4.56	2.87	0.17
3.20	0.19	0.00	0.00	14.00	4.62	2.93	0.15
3.40	0.20	0.00	0.00	14.20	4.68	2.98	0.14
3.60	0.22	0.00	0.00	14.40	4.73	3.02	0.14
3.80	0.23	0.00	0.00	14.60	4.78	3.07	0.13
4.00	0.25	0.00	0.00	14.80	4.83	3.11	0.12
4.20	0.26	0.00	0.00	15.00	4.87	3.15	0.12
4.40	0.28	0.00	0.00	15.20	4.91	3.19	0.11
4.60	0.29	0.00	0.00	15.40	4.95	3.22	0.10
4.80	0.31	0.00	0.00	15.60	4.99	3.26	0.10
5.00	0.32	0.00	0.00	15.80	5.02	3.29	0.09
5.20	0.34	0.00	0.00	16.00	5.05	3.32	0.08
5.40	0.36	0.00	0.00	16.20	5.08	3.34	0.08
5.60	0.37	0.00	0.00	16.40	5.11	3.37	0.08
5.80	0.39	0.00	0.00	16.60	5.13	3.39	0.07
6.00	0.41	0.00	0.00	16.80	5.16	3.42	0.07
6.20	0.43	0.00	0.00	17.00	5.18	3.44	0.07
6.40	0.45	0.00	0.00	17.20	5.21	3.46	0.06
6.60	0.47	0.00	0.01	17.40	5.23	3.48	0.06
6.80	0.49	0.01	0.01	17.60	5.25	3.50	0.06
7.00	0.52	0.01	0.01	17.80	5.27	3.52	0.05
7.20	0.54	0.01	0.01	18.00	5.29	3.54	0.05
7.40	0.57	0.02	0.01	18.20	5.31	3.55	0.05
7.60	0.59	0.02	0.01	18.40	5.33	3.57	0.05
7.80	0.62	0.03	0.02	18.60	5.34	3.59	0.05
8.00	0.65	0.03	0.02	18.80	5.36	3.60	0.05
8.20	0.68	0.04	0.02	19.00	5.38	3.62	0.05
8.40	0.71	0.05	0.03	19.20	5.39	3.63	0.04
8.60	0.75	0.06	0.03	19.40	5.41	3.65	0.04
8.80	0.79	0.07	0.04	19.60	5.42	3.66	0.04
9.00	0.83	0.09	0.04	19.80	5.44	3.68	0.04
9.20	0.87	0.10	0.05	20.00	**5.45**	**3.69**	0.04
9.40	0.92	0.12	0.05				
9.60	0.97	0.14	0.06				
9.80	1.02	0.16	0.07				
10.00	1.08	0.19	0.07				
10.20	1.14	0.21	0.08				
10.40	1.20	0.25	0.10				
10.60	1.27	0.28	0.11				
10.80	1.34	0.32	0.12				
11.00	1.42	0.37	0.14				
11.20	1.52	0.43	0.17				
11.40	1.63	0.50	0.22				
11.60	1.79	0.60	0.32				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 0.584 ac, Inflow Depth > 3.68" for Barn Cty 25 yr. event
Inflow = 2.74 cfs @ 12.07 hrs, Volume= 0.179 af
Outflow = 2.20 cfs @ 12.13 hrs, Volume= 0.178 af, Atten= 20%, Lag= 3.3 min
Primary = 2.20 cfs @ 12.13 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 9.49' @ 12.13 hrs Surf.Area= 0 sf Storage= 151 cf

Plug-Flow detention time=2.6 min calculated for 0.178 af (99% of inflow)
Center-of-Mass det. time=0.4 min (772.8 - 772.4)

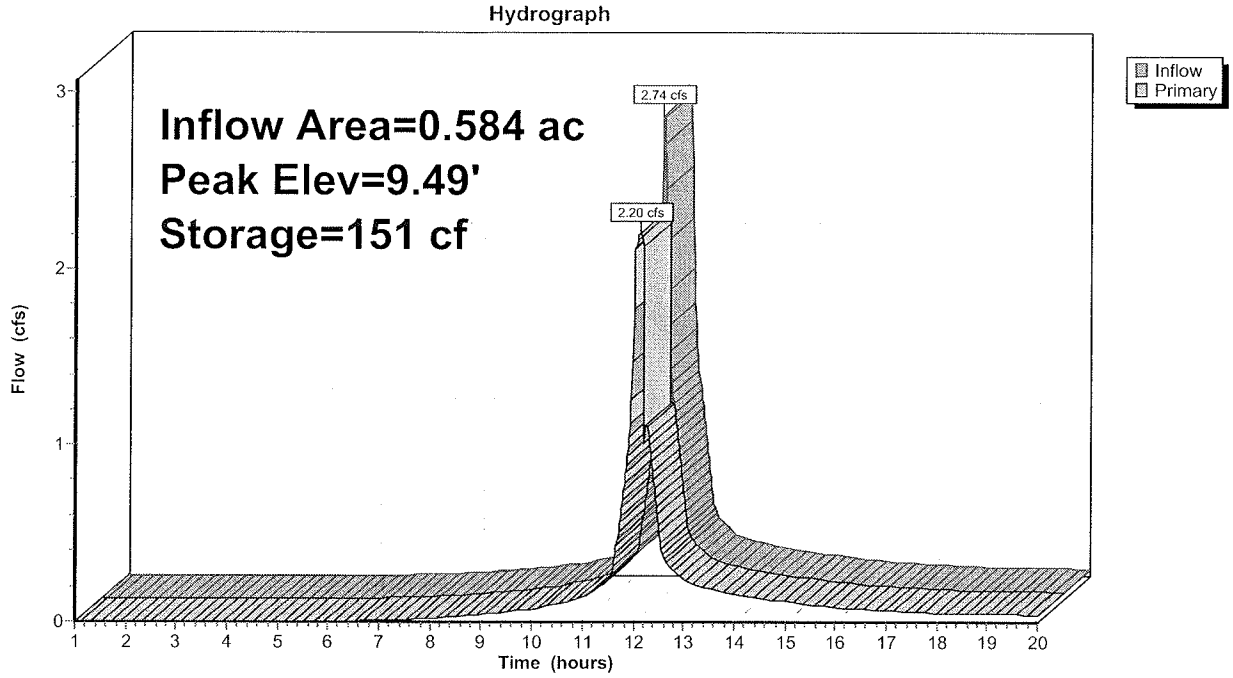
Volume	Invert	Avail.Storage	Storage Description
#1	8.80'	1,200 cf	**Infiltration System Storage Model** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.80	0
9.80	220
10.80	600
11.80	950
12.80	1,200

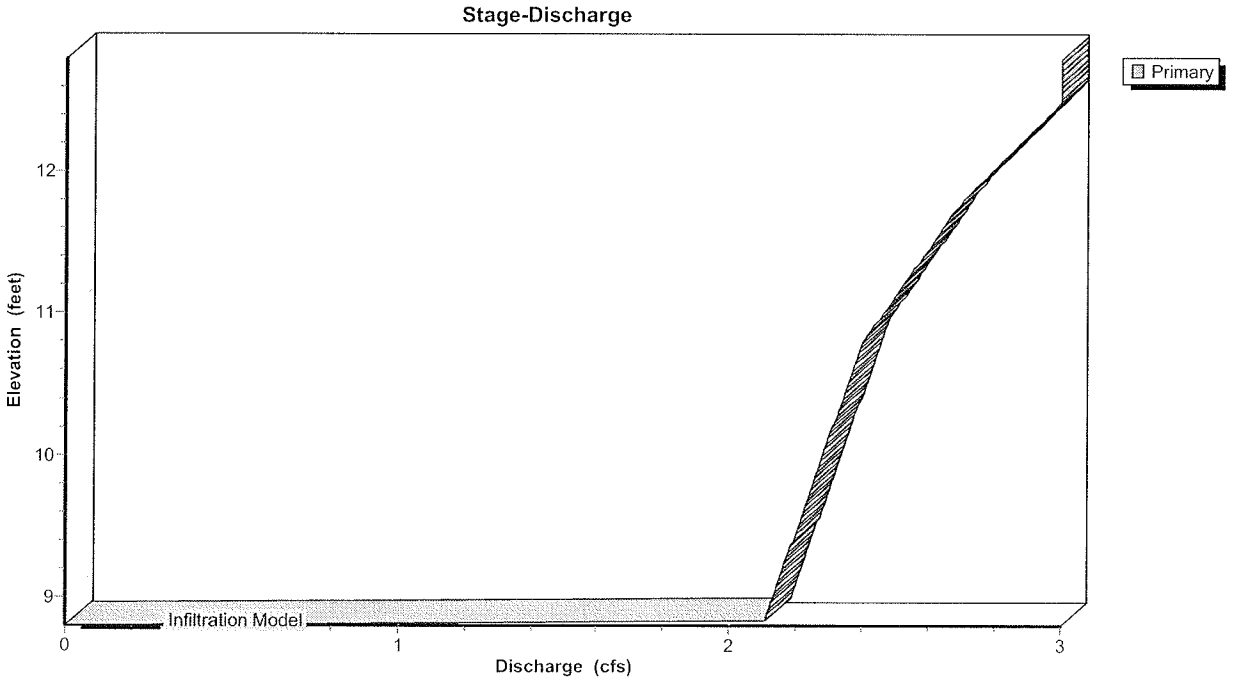
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 8.70 8.80 10.80 11.80 12.50 Disch. (cfs) 0.000 2.100 2.400 2.700 3.000

Primary OutFlow Max=2.20 cfs @ 12.13 hrs HW=9.48' (Free Discharge)
↑—1=**Infiltration Model** (Custom Controls 2.20 cfs)

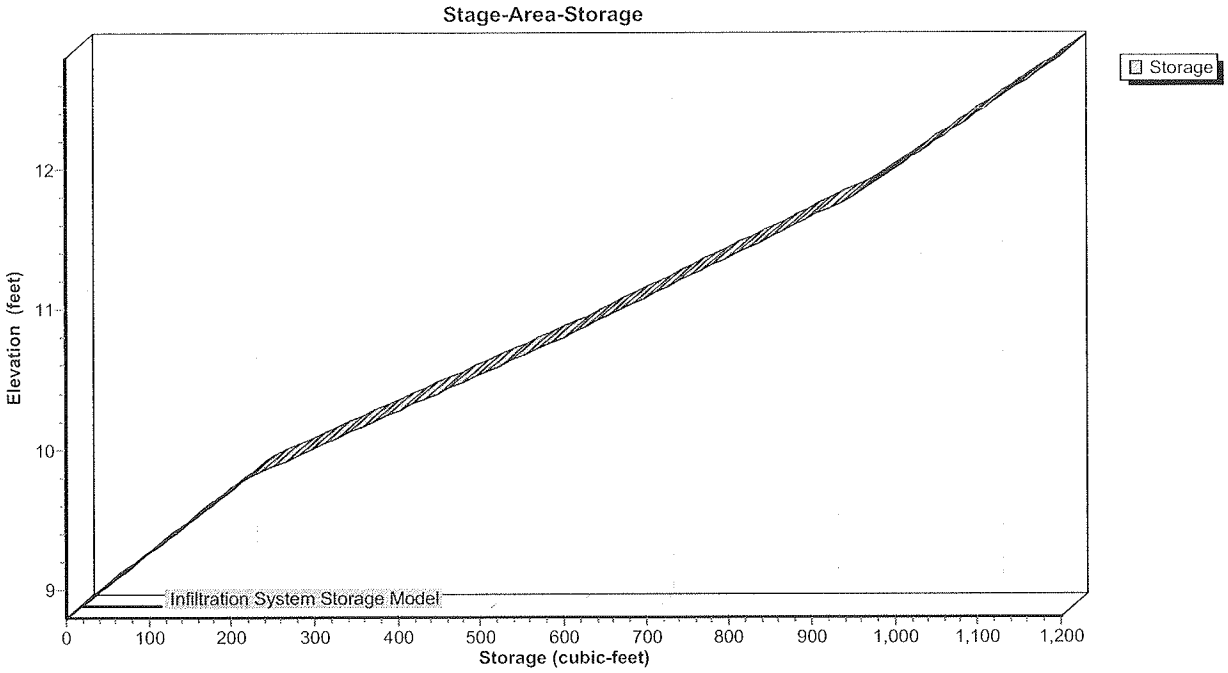
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

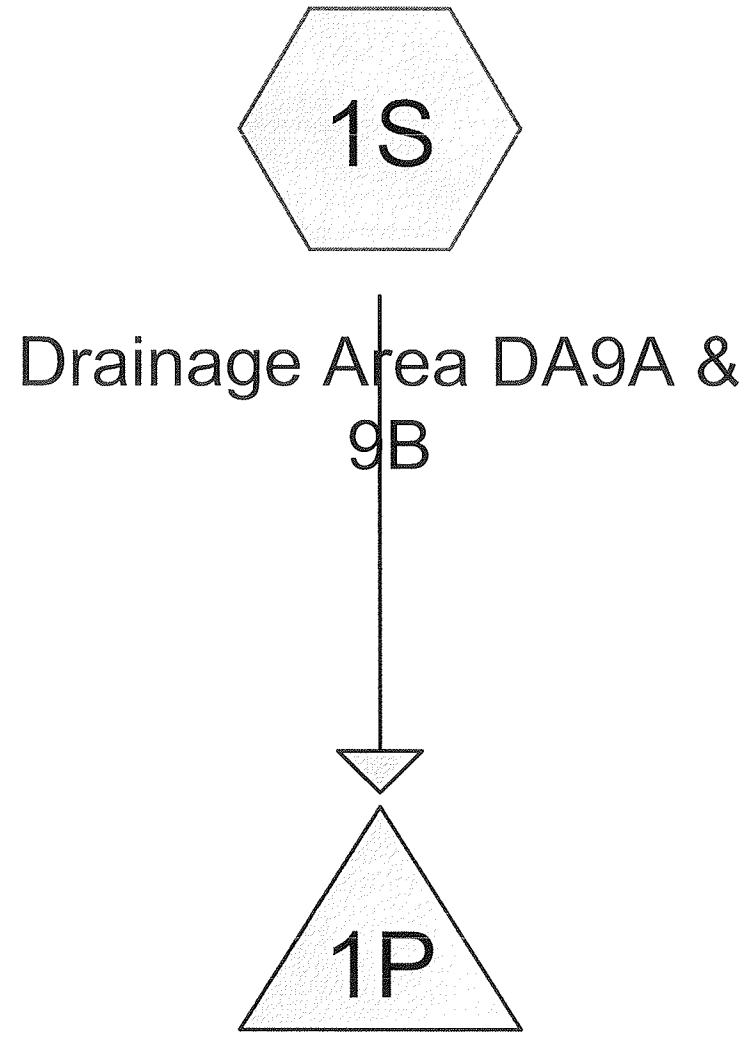
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.80	0.00
1.20	0.00	0	8.80	0.00
1.40	0.00	0	8.80	0.00
1.60	0.00	0	8.80	0.00
1.80	0.00	0	8.80	0.00
2.00	0.00	0	8.80	0.00
2.20	0.00	0	8.80	0.00
2.40	0.00	0	8.80	0.00
2.60	0.00	0	8.80	0.00
2.80	0.00	0	8.80	0.00
3.00	0.00	0	8.80	0.00
3.20	0.00	0	8.80	0.00
3.40	0.00	0	8.80	0.00
3.60	0.00	0	8.80	0.00
3.80	0.00	0	8.80	0.00
4.00	0.00	0	8.80	0.00
4.20	0.00	0	8.80	0.00
4.40	0.00	0	8.80	0.00
4.60	0.00	0	8.80	0.00
4.80	0.00	0	8.80	0.00
5.00	0.00	0	8.80	0.00
5.20	0.00	0	8.80	0.00
5.40	0.00	0	8.80	0.00
5.60	0.00	0	8.80	0.00
5.80	0.00	0	8.80	0.00
6.00	0.00	0	8.80	0.00
6.20	0.00	0	8.80	0.00
6.40	0.00	0	8.80	0.00
6.60	0.01	0	8.80	0.00
6.80	0.01	0	8.80	0.01
7.00	0.01	0	8.80	0.01
7.20	0.01	0	8.80	0.01
7.40	0.01	0	8.80	0.01
7.60	0.01	0	8.80	0.01
7.80	0.02	0	8.80	0.02
8.00	0.02	0	8.80	0.02
8.20	0.02	0	8.80	0.02
8.40	0.03	0	8.80	0.03
8.60	0.03	0	8.80	0.03
8.80	0.04	0	8.80	0.04
9.00	0.04	0	8.80	0.04
9.20	0.05	0	8.80	0.05
9.40	0.05	0	8.80	0.05
9.60	0.06	0	8.80	0.06
9.80	0.07	0	8.80	0.07
10.00	0.07	0	8.80	0.07
10.20	0.08	0	8.80	0.08
10.40	0.10	0	8.80	0.10
10.60	0.11	0	8.80	0.11
10.80	0.12	1	8.80	0.12
11.00	0.14	1	8.80	0.14
11.20	0.17	1	8.80	0.17
11.40	0.22	1	8.80	0.22
11.60	0.32	1	8.81	0.32
11.80	0.75	3	8.81	0.74
12.00	**1.78**	**7**	**8.83**	**1.77**
12.20	**1.40**	**39**	**8.98**	**2.13**
12.40	0.81	3	8.82	0.81
12.60	0.36	2	8.81	0.36
12.80	0.29	1	8.81	0.29
13.00	0.24	1	8.80	0.24
13.20	0.21	1	8.80	0.21
13.40	0.20	1	8.80	0.20
13.60	0.18	1	8.80	0.18
13.80	0.17	1	8.80	0.17
14.00	0.15	1	8.80	0.15
14.20	0.14	1	8.80	0.14
14.40	0.14	1	8.80	0.14
14.60	0.13	1	8.80	0.13
14.80	0.12	1	8.80	0.12
15.00	0.12	0	8.80	0.12
15.20	0.11	0	8.80	0.11
15.40	0.10	0	8.80	0.10
15.60	0.10	0	8.80	0.10
15.80	0.09	0	8.80	0.09
16.00	0.08	0	8.80	0.08
16.20	0.08	0	8.80	0.08
16.40	0.08	0	8.80	0.08
16.60	0.07	0	8.80	0.07
16.80	0.07	0	8.80	0.07
17.00	0.07	0	8.80	0.07
17.20	0.06	0	8.80	0.06
17.40	0.06	0	8.80	0.06
17.60	0.06	0	8.80	0.06
17.80	0.05	0	8.80	0.05
18.00	0.05	0	8.80	0.05
18.20	0.05	0	8.80	0.05
18.40	0.05	0	8.80	0.05
18.60	0.05	0	8.80	0.05
18.80	0.05	0	8.80	0.05
19.00	0.05	0	8.80	0.05
19.20	0.04	0	8.80	0.04
19.40	0.04	0	8.80	0.04
19.60	0.04	0	8.80	0.04
19.80	0.04	0	8.80	0.04
20.00	0.04	0	8.80	0.04

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.80	0.00	9.88	2.26	10.96	2.45	12.04	2.80
8.82	2.10	9.90	2.27	10.98	2.45	12.06	2.81
8.84	2.11	9.92	2.27	11.00	2.46	12.08	2.82
8.86	2.11	9.94	2.27	11.02	2.47	12.10	2.83
8.88	2.11	9.96	2.27	11.04	2.47	12.12	2.84
8.90	2.12	9.98	2.28	11.06	2.48	12.14	2.85
8.92	2.12	10.00	2.28	11.08	2.48	12.16	2.85
8.94	2.12	10.02	2.28	11.10	2.49	12.18	2.86
8.96	2.12	10.04	2.29	11.12	2.50	12.20	2.87
8.98	2.13	10.06	2.29	11.14	2.50	12.22	2.88
9.00	2.13	10.08	2.29	11.16	2.51	12.24	2.89
9.02	2.13	10.10	2.29	11.18	2.51	12.26	2.90
9.04	2.14	10.12	2.30	11.20	2.52	12.28	2.91
9.06	2.14	10.14	2.30	11.22	2.53	12.30	2.91
9.08	2.14	10.16	2.30	11.24	2.53	12.32	2.92
9.10	2.15	10.18	2.31	11.26	2.54	12.34	2.93
9.12	2.15	10.20	2.31	11.28	2.54	12.36	2.94
9.14	2.15	10.22	2.31	11.30	2.55	12.38	2.95
9.16	2.15	10.24	2.32	11.32	2.56	12.40	2.96
9.18	2.16	10.26	2.32	11.34	2.56	12.42	2.97
9.20	2.16	10.28	2.32	11.36	2.57	12.44	2.97
9.22	2.16	10.30	2.33	11.38	2.57	12.46	2.98
9.24	2.17	10.32	2.33	11.40	2.58	12.48	2.99
9.26	2.17	10.34	2.33	11.42	2.59	12.50	**3.00**
9.28	2.17	10.36	2.33	11.44	2.59	12.52	3.00
9.30	2.17	10.38	2.34	11.46	2.60	12.54	3.00
9.32	2.18	10.40	2.34	11.48	2.60	12.56	3.00
9.34	2.18	10.42	2.34	11.50	2.61	12.58	3.00
9.36	2.18	10.44	2.35	11.52	2.62	12.60	3.00
9.38	2.19	10.46	2.35	11.54	2.62	12.62	3.00
9.40	2.19	10.48	2.35	11.56	2.63	12.64	3.00
9.42	2.19	10.50	2.35	11.58	2.63	12.66	3.00
9.44	2.20	10.52	2.36	11.60	2.64	12.68	3.00
9.46	2.20	10.54	2.36	11.62	2.65	12.70	3.00
9.48	2.20	10.56	2.36	11.64	2.65	12.72	3.00
9.50	2.21	10.58	2.37	11.66	2.66	12.74	3.00
9.52	2.21	10.60	2.37	11.68	2.66	12.76	3.00
9.54	2.21	10.62	2.37	11.70	2.67	12.78	3.00
9.56	2.21	10.64	2.38	11.72	2.68	12.80	3.00
9.58	2.22	10.66	2.38	11.74	2.68		
9.60	2.22	10.68	2.38	11.76	2.69		
9.62	2.22	10.70	2.38	11.78	2.69		
9.64	2.23	10.72	2.39	11.80	2.70		
9.66	2.23	10.74	2.39	11.82	2.71		
9.68	2.23	10.76	2.39	11.84	2.72		
9.70	2.23	10.78	2.40	11.86	2.73		
9.72	2.24	10.80	2.40	11.88	2.73		
9.74	2.24	10.82	2.41	11.90	2.74		
9.76	2.24	10.84	2.41	11.92	2.75		
9.78	2.25	10.86	2.42	11.94	2.76		
9.80	2.25	10.88	2.42	11.96	2.77		
9.82	2.25	10.90	2.43	11.98	2.78		
9.84	2.26	10.92	2.44	12.00	2.79		
9.86	2.26	10.94	2.44	12.02	2.79		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.80	0	9.88	250	10.96	656	12.04	1,010
8.82	4	9.90	258	10.98	663	12.06	1,015
8.84	9	9.92	266	11.00	670	12.08	1,020
8.86	13	9.94	273	11.02	677	12.10	1,025
8.88	18	9.96	281	11.04	684	12.12	1,030
8.90	22	9.98	288	11.06	691	12.14	1,035
8.92	26	10.00	296	11.08	698	12.16	1,040
8.94	31	10.02	304	11.10	705	12.18	1,045
8.96	35	10.04	311	11.12	712	12.20	1,050
8.98	40	10.06	319	11.14	719	12.22	1,055
9.00	44	10.08	326	11.16	726	12.24	1,060
9.02	48	10.10	334	11.18	733	12.26	1,065
9.04	53	10.12	342	11.20	740	12.28	1,070
9.06	57	10.14	349	11.22	747	12.30	1,075
9.08	62	10.16	357	11.24	754	12.32	1,080
9.10	66	10.18	364	11.26	761	12.34	1,085
9.12	70	10.20	372	11.28	768	12.36	1,090
9.14	75	10.22	380	11.30	775	12.38	1,095
9.16	79	10.24	387	11.32	782	12.40	1,100
9.18	84	10.26	395	11.34	789	12.42	1,105
9.20	88	10.28	402	11.36	796	12.44	1,110
9.22	92	10.30	410	11.38	803	12.46	1,115
9.24	97	10.32	418	11.40	810	12.48	1,120
9.26	101	10.34	425	11.42	817	12.50	1,125
9.28	106	10.36	433	11.44	824	12.52	1,130
9.30	110	10.38	440	11.46	831	12.54	1,135
9.32	114	10.40	448	11.48	838	12.56	1,140
9.34	119	10.42	456	11.50	845	12.58	1,145
9.36	123	10.44	463	11.52	852	12.60	1,150
9.38	128	10.46	471	11.54	859	12.62	1,155
9.40	132	10.48	478	11.56	866	12.64	1,160
9.42	136	10.50	486	11.58	873	12.66	1,165
9.44	141	10.52	494	11.60	880	12.68	1,170
9.46	145	10.54	501	11.62	887	12.70	1,175
9.48	150	10.56	509	11.64	894	12.72	1,180
9.50	154	10.58	516	11.66	901	12.74	1,185
9.52	158	10.60	524	11.68	908	12.76	1,190
9.54	163	10.62	532	11.70	915	12.78	1,195
9.56	167	10.64	539	11.72	922	12.80	**1,200**
9.58	172	10.66	547	11.74	929		
9.60	176	10.68	554	11.76	936		
9.62	180	10.70	562	11.78	943		
9.64	185	10.72	570	11.80	950		
9.66	189	10.74	577	11.82	955		
9.68	194	10.76	585	11.84	960		
9.70	198	10.78	592	11.86	965		
9.72	202	10.80	600	11.88	970		
9.74	207	10.82	607	11.90	975		
9.76	211	10.84	614	11.92	980		
9.78	216	10.86	621	11.94	985		
9.80	220	10.88	628	11.96	990		
9.82	228	10.90	635	11.98	995		
9.84	235	10.92	642	12.00	1,000		
9.86	243	10.94	649	12.02	1,005		



Infiltration Storage Model

Subcat Reach Pond Link

Drainage Diagram for 17-005 CCH Project 2022 DA9
Prepared by down cape engineering, inc. 7/31/2019
HydroCAD® 8.00 s/n 004007 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
0.185	32	Woods/grass comb., Good, HSG A (1S)
1.662	98	Paved parking (1S)
1.847		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA9A & 9B Runoff Area=80,447 sf Runoff Depth>6.39"
Tc=5.0 min CN=91 Runoff=13.97 cfs 0.983 af

Pond 1P: Infiltration Storage Model Peak Elev=11.00' Storage=780 cf Inflow=13.97 cfs 0.983 af
Outflow=13.20 cfs 0.983 af

Total Runoff Area = 1.847 ac Runoff Volume = 0.983 af Average Runoff Depth = 6.39"
10.00% Pervious Area = 0.185 ac 90.00% Impervious Area = 1.662 ac

Subcatchment 1S: Drainage Area DA9A & 9B

Time of Concentration

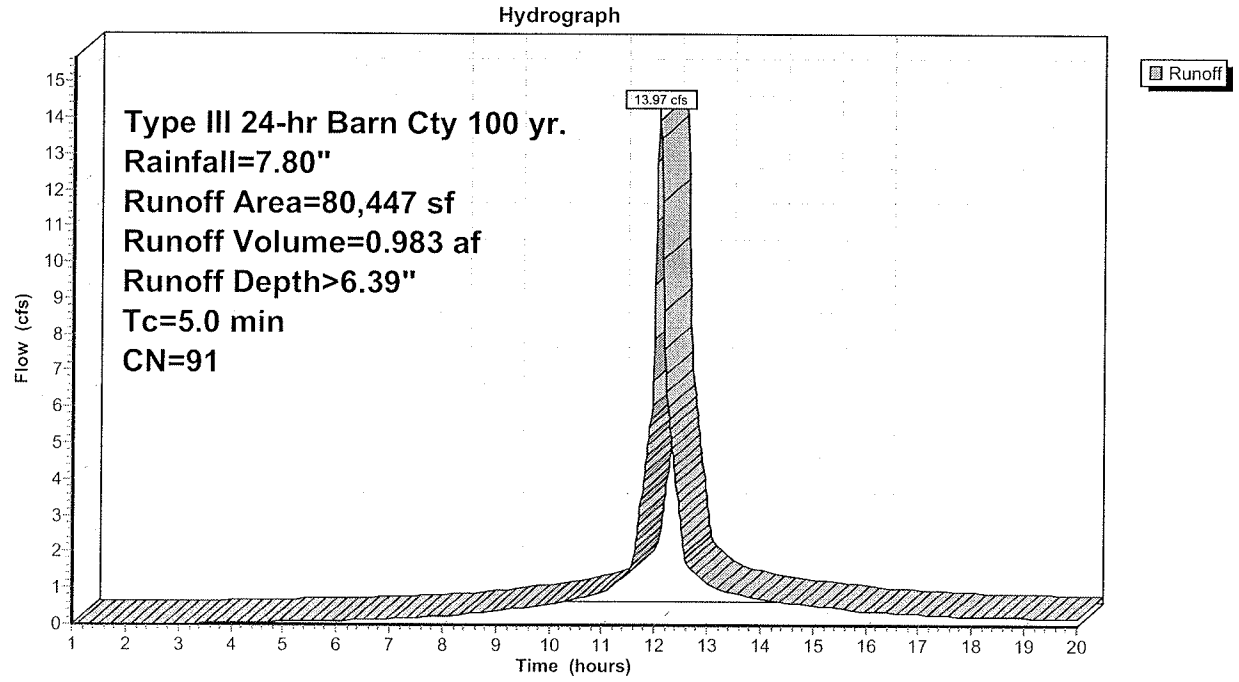
Runoff = 13.97 cfs @ 12.07 hrs, Volume= 0.983 af, Depth> 6.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 100 yr. Rainfall=7.80"

Area (sf)	CN	Description
72,403	98	Paved parking
8,044	32	Woods/grass comb., Good, HSG A
80,447	91	Weighted Average
8,044		Pervious Area
72,403		Impervious Area

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

Subcatchment 1S: Drainage Area DA9A & 9B



Hydrograph for Subcatchment 1S: Drainage Area DA9A & 9B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.08	0.00	0.00	11.80	2.91	1.99	4.21
1.20	0.09	0.00	0.00	12.00	3.90	2.92	**9.40**
1.40	0.11	0.00	0.00	12.20	4.89	3.87	**6.93**
1.60	0.12	0.00	0.00	12.40	5.35	4.32	3.89
1.80	0.14	0.00	0.00	12.60	5.56	4.53	1.74
2.00	0.16	0.00	0.00	12.80	5.72	4.69	1.40
2.20	0.17	0.00	0.00	13.00	5.85	4.81	1.14
2.40	0.19	0.00	0.00	13.20	5.96	4.92	1.00
2.60	0.20	0.00	0.00	13.40	6.06	5.02	0.93
2.80	0.22	0.00	0.01	13.60	6.16	5.11	0.86
3.00	0.24	0.00	0.01	13.80	6.25	5.20	0.79
3.20	0.26	0.00	0.02	14.00	6.33	5.28	0.72
3.40	0.28	0.01	0.02	14.20	6.40	5.35	0.68
3.60	0.30	0.01	0.03	14.40	6.47	5.42	0.65
3.80	0.32	0.01	0.03	14.60	6.54	5.49	0.61
4.00	0.34	0.02	0.04	14.80	6.60	5.55	0.58
4.20	0.36	0.02	0.05	15.00	6.66	5.61	0.55
4.40	0.38	0.03	0.05	15.20	6.72	5.66	0.52
4.60	0.40	0.03	0.06	15.40	6.77	5.72	0.48
4.80	0.42	0.04	0.07	15.60	6.82	5.76	0.45
5.00	0.44	0.05	0.07	15.80	6.87	5.81	0.42
5.20	0.47	0.06	0.08	16.00	6.91	5.85	0.38
5.40	0.49	0.07	0.09	16.20	6.95	5.89	0.36
5.60	0.51	0.08	0.09	16.40	6.99	5.93	0.35
5.80	0.54	0.09	0.10	16.60	7.03	5.96	0.33
6.00	0.56	0.10	0.11	16.80	7.06	6.00	0.32
6.20	0.59	0.11	0.12	17.00	7.09	6.03	0.31
6.40	0.61	0.12	0.13	17.20	7.13	6.06	0.29
6.60	0.64	0.14	0.14	17.40	7.16	6.09	0.28
6.80	0.67	0.15	0.15	17.60	7.19	6.12	0.26
7.00	0.71	0.17	0.17	17.80	7.21	6.15	0.25
7.20	0.74	0.19	0.18	18.00	7.24	6.17	0.23
7.40	0.77	0.21	0.20	18.20	7.26	6.20	0.23
7.60	0.81	0.23	0.21	18.40	7.29	6.22	0.22
7.80	0.85	0.26	0.23	18.60	7.31	6.25	0.22
8.00	0.89	0.28	0.24	18.80	7.33	6.27	0.21
8.20	0.93	0.31	0.26	19.00	7.36	6.29	0.21
8.40	0.98	0.34	0.29	19.20	7.38	6.31	0.20
8.60	1.03	0.38	0.32	19.40	7.40	6.33	0.20
8.80	1.08	0.42	0.36	19.60	7.42	6.36	0.20
9.00	1.14	0.46	0.39	19.80	7.44	6.38	0.19
9.20	1.20	0.50	0.42	20.00	**7.46**	**6.40**	0.19
9.40	1.26	0.55	0.46				
9.60	1.33	0.60	0.49				
9.80	1.40	0.66	0.53				
10.00	1.47	0.72	0.56				
10.20	1.55	0.78	0.62				
10.40	1.64	0.86	0.68				
10.60	1.74	0.94	0.75				
10.80	1.84	1.02	0.82				
11.00	1.95	1.12	0.89				
11.20	2.08	1.23	1.07				
11.40	2.24	1.37	1.33				
11.60	2.45	1.57	1.89				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 1.847 ac, Inflow Depth > 6.39" for Barn Cty 100 yr. event
Inflow = 13.97 cfs @ 12.07 hrs, Volume= 0.983 af
Outflow = 13.20 cfs @ 12.10 hrs, Volume= 0.983 af, Atten= 6%, Lag= 1.5 min
Primary = 13.20 cfs @ 12.10 hrs, Volume= 0.983 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 11.00' @ 12.10 hrs Surf.Area= 0 sf Storage= 780 cf

Plug-Flow detention time=(not calculated: outflow precedes inflow)
Center-of-Mass det. time=0.4 min (744.2 - 743.8)

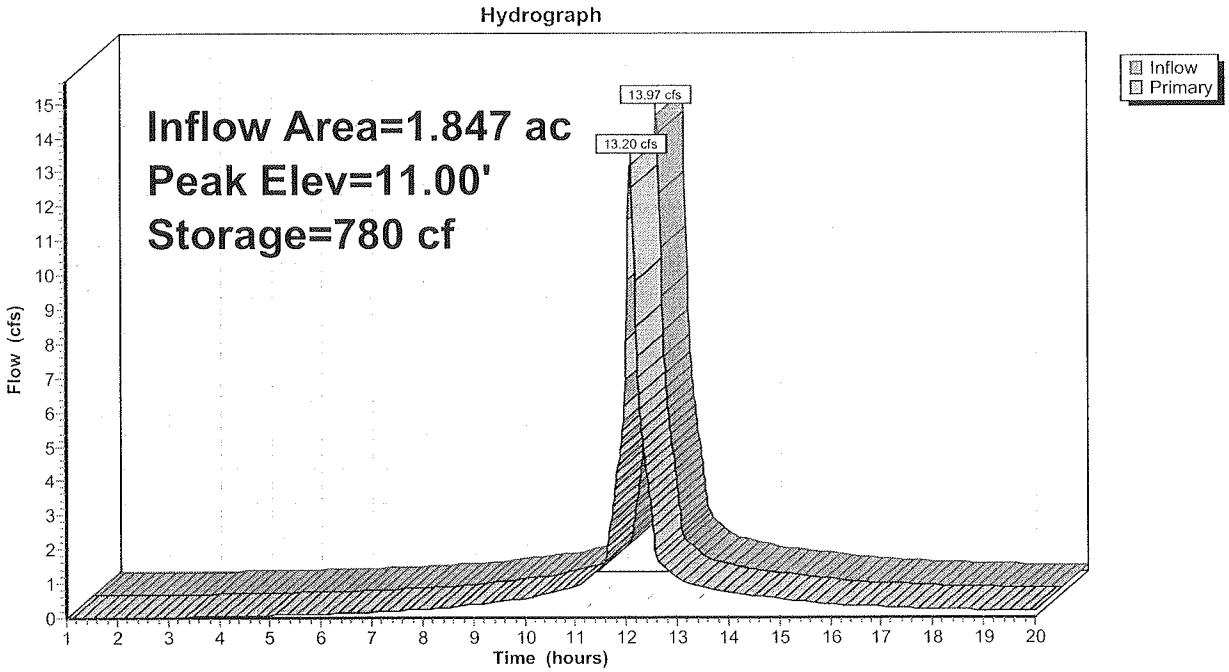
Volume	Invert	Avail.Storage	Storage Description
#1	8.80'	1,400 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.80	0
9.80	440
10.80	700
11.80	1,100
12.80	1,400

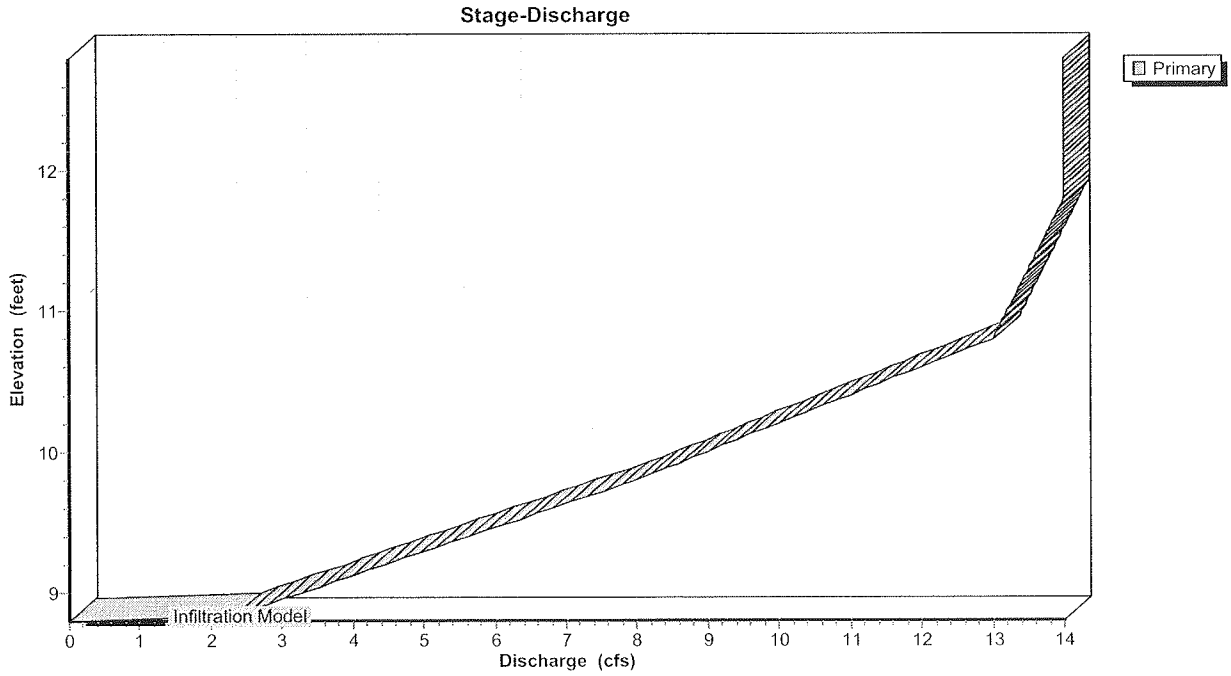
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 8.70 8.80 9.80 10.80 11.80 Disch. (cfs) 0.000 2.100 8.000 13.000 14.000

Primary OutFlow Max=13.18 cfs @ 12.10 hrs HW=10.98' (Free Discharge)
↳**1=Infiltration Model** (Custom Controls 13.18 cfs)

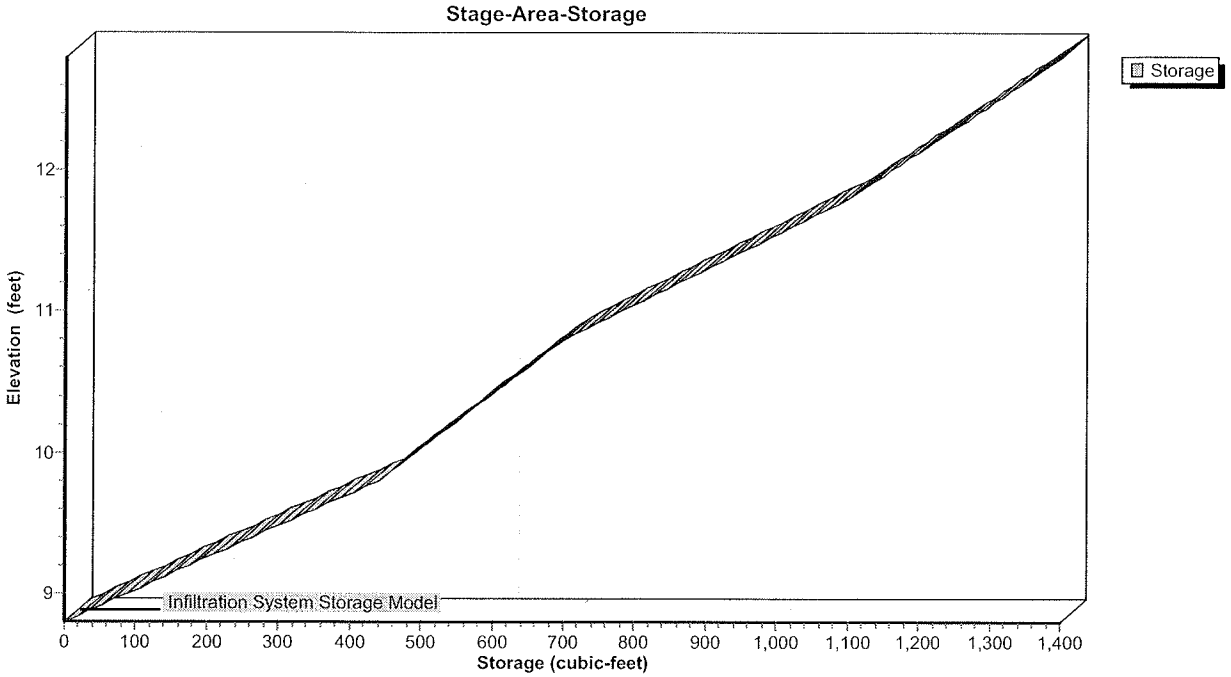
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.80	0.00
1.20	0.00	0	8.80	0.00
1.40	0.00	0	8.80	0.00
1.60	0.00	0	8.80	0.00
1.80	0.00	0	8.80	0.00
2.00	0.00	0	8.80	0.00
2.20	0.00	0	8.80	0.00
2.40	0.00	0	8.80	0.00
2.60	0.00	0	8.80	0.00
2.80	0.01	0	8.80	0.01
3.00	0.01	0	8.80	0.01
3.20	0.02	0	8.80	0.02
3.40	0.02	0	8.80	0.02
3.60	0.03	0	8.80	0.03
3.80	0.03	0	8.80	0.03
4.00	0.04	0	8.80	0.04
4.20	0.05	0	8.80	0.05
4.40	0.05	0	8.80	0.05
4.60	0.06	0	8.80	0.06
4.80	0.07	0	8.80	0.07
5.00	0.07	1	8.80	0.07
5.20	0.08	1	8.80	0.08
5.40	0.09	1	8.80	0.09
5.60	0.09	1	8.80	0.09
5.80	0.10	1	8.80	0.10
6.00	0.11	1	8.80	0.11
6.20	0.12	1	8.80	0.12
6.40	0.13	1	8.80	0.13
6.60	0.14	1	8.80	0.14
6.80	0.15	1	8.80	0.15
7.00	0.17	1	8.80	0.17
7.20	0.18	1	8.80	0.18
7.40	0.20	1	8.80	0.19
7.60	0.21	2	8.80	0.21
7.80	0.23	2	8.80	0.23
8.00	0.24	2	8.80	0.24
8.20	0.26	2	8.80	0.26
8.40	0.29	2	8.81	0.29
8.60	0.32	2	8.81	0.32
8.80	0.36	3	8.81	0.36
9.00	0.39	3	8.81	0.39
9.20	0.42	3	8.81	0.42
9.40	0.46	3	8.81	0.46
9.60	0.49	4	8.81	0.49
9.80	0.53	4	8.81	0.53
10.00	0.56	4	8.81	0.56
10.20	0.62	5	8.81	0.62
10.40	0.68	5	8.81	0.68
10.60	0.75	6	8.81	0.75
10.80	0.82	6	8.81	0.82
11.00	0.89	7	8.82	0.89
11.20	1.07	8	8.82	1.07
11.40	1.33	10	8.82	1.32
11.60	1.89	14	8.83	1.88
11.80	4.21	139	9.11	3.96
12.00	**9.40**	**444**	**9.82**	**8.08**
12.20	**6.93**	**413**	**9.74**	**7.63**
12.40	3.89	152	9.15	4.14
12.60	1.74	13	8.83	1.75
12.80	1.40	11	8.82	1.40
13.00	1.14	9	8.82	1.14
13.20	1.00	8	8.82	1.00
13.40	0.93	7	8.82	0.93
13.60	0.86	6	8.81	0.86
13.80	0.79	6	8.81	0.79
14.00	0.72	5	8.81	0.73
14.20	0.68	5	8.81	0.68
14.40	0.65	5	8.81	0.65
14.60	0.61	5	8.81	0.61
14.80	0.58	4	8.81	0.58
15.00	0.55	4	8.81	0.55
15.20	0.52	4	8.81	0.52
15.40	0.48	4	8.81	0.48
15.60	0.45	3	8.81	0.45
15.80	0.42	3	8.81	0.42
16.00	0.38	3	8.81	0.38
16.20	0.36	3	8.81	0.36
16.40	0.35	3	8.81	0.35
16.60	0.33	3	8.81	0.33
16.80	0.32	2	8.81	0.32
17.00	0.31	2	8.81	0.31
17.20	0.29	2	8.80	0.29
17.40	0.28	2	8.80	0.28
17.60	0.26	2	8.80	0.26
17.80	0.25	2	8.80	0.25
18.00	0.23	2	8.80	0.23
18.20	0.23	2	8.80	0.23
18.40	0.22	2	8.80	0.22
18.60	0.22	2	8.80	0.22
18.80	0.21	2	8.80	0.21
19.00	0.21	2	8.80	0.21
19.20	0.20	2	8.80	0.20
19.40	0.20	2	8.80	0.20
19.60	0.20	1	8.80	0.20
19.80	0.19	1	8.80	0.19
20.00	0.19	1	8.80	0.19

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.80	0.00	9.88	8.40	10.96	13.16	12.04	14.00
8.82	2.22	9.90	8.50	10.98	13.18	12.06	14.00
8.84	2.34	9.92	8.60	11.00	13.20	12.08	14.00
8.86	2.45	9.94	8.70	11.02	13.22	12.10	14.00
8.88	2.57	9.96	8.80	11.04	13.24	12.12	14.00
8.90	2.69	9.98	8.90	11.06	13.26	12.14	14.00
8.92	2.81	10.00	9.00	11.08	13.28	12.16	14.00
8.94	2.93	10.02	9.10	11.10	13.30	12.18	14.00
8.96	3.04	10.04	9.20	11.12	13.32	12.20	14.00
8.98	3.16	10.06	9.30	11.14	13.34	12.22	14.00
9.00	3.28	10.08	9.40	11.16	13.36	12.24	14.00
9.02	3.40	10.10	9.50	11.18	13.38	12.26	14.00
9.04	3.52	10.12	9.60	11.20	13.40	12.28	14.00
9.06	3.63	10.14	9.70	11.22	13.42	12.30	14.00
9.08	3.75	10.16	9.80	11.24	13.44	12.32	14.00
9.10	3.87	10.18	9.90	11.26	13.46	12.34	14.00
9.12	3.99	10.20	10.00	11.28	13.48	12.36	14.00
9.14	4.11	10.22	10.10	11.30	13.50	12.38	14.00
9.16	4.22	10.24	10.20	11.32	13.52	12.40	14.00
9.18	4.34	10.26	10.30	11.34	13.54	12.42	14.00
9.20	4.46	10.28	10.40	11.36	13.56	12.44	14.00
9.22	4.58	10.30	10.50	11.38	13.58	12.46	14.00
9.24	4.70	10.32	10.60	11.40	13.60	12.48	14.00
9.26	4.81	10.34	10.70	11.42	13.62	12.50	14.00
9.28	4.93	10.36	10.80	11.44	13.64	12.52	14.00
9.30	5.05	10.38	10.90	11.46	13.66	12.54	14.00
9.32	5.17	10.40	11.00	11.48	13.68	12.56	14.00
9.34	5.29	10.42	11.10	11.50	13.70	12.58	14.00
9.36	5.40	10.44	11.20	11.52	13.72	12.60	14.00
9.38	5.52	10.46	11.30	11.54	13.74	12.62	14.00
9.40	5.64	10.48	11.40	11.56	13.76	12.64	14.00
9.42	5.76	10.50	11.50	11.58	13.78	12.66	14.00
9.44	5.88	10.52	11.60	11.60	13.80	12.68	14.00
9.46	5.99	10.54	11.70	11.62	13.82	12.70	14.00
9.48	6.11	10.56	11.80	11.64	13.84	12.72	14.00
9.50	6.23	10.58	11.90	11.66	13.86	12.74	14.00
9.52	6.35	10.60	12.00	11.68	13.88	12.76	14.00
9.54	6.47	10.62	12.10	11.70	13.90	12.78	14.00
9.56	6.58	10.64	12.20	11.72	13.92	12.80	14.00
9.58	6.70	10.66	12.30	11.74	13.94		
9.60	6.82	10.68	12.40	11.76	13.96		
9.62	6.94	10.70	12.50	11.78	13.98		
9.64	7.06	10.72	12.60	11.80	**14.00**		
9.66	7.17	10.74	12.70	11.82	14.00		
9.68	7.29	10.76	12.80	11.84	14.00		
9.70	7.41	10.78	12.90	11.86	14.00		
9.72	7.53	10.80	13.00	11.88	14.00		
9.74	7.65	10.82	13.02	11.90	14.00		
9.76	7.76	10.84	13.04	11.92	14.00		
9.78	7.88	10.86	13.06	11.94	14.00		
9.80	8.00	10.88	13.08	11.96	14.00		
9.82	8.10	10.90	13.10	11.98	14.00		
9.84	8.20	10.92	13.12	12.00	14.00		
9.86	8.30	10.94	13.14	12.02	14.00		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.80	0	9.88	461	10.96	764	12.04	1,172
8.82	9	9.90	466	10.98	772	12.06	1,178
8.84	18	9.92	471	11.00	780	12.08	1,184
8.86	26	9.94	476	11.02	788	12.10	1,190
8.88	35	9.96	482	11.04	796	12.12	1,196
8.90	44	9.98	487	11.06	804	12.14	1,202
8.92	53	10.00	492	11.08	812	12.16	1,208
8.94	62	10.02	497	11.10	820	12.18	1,214
8.96	70	10.04	502	11.12	828	12.20	1,220
8.98	79	10.06	508	11.14	836	12.22	1,226
9.00	88	10.08	513	11.16	844	12.24	1,232
9.02	97	10.10	518	11.18	852	12.26	1,238
9.04	106	10.12	523	11.20	860	12.28	1,244
9.06	114	10.14	528	11.22	868	12.30	1,250
9.08	123	10.16	534	11.24	876	12.32	1,256
9.10	132	10.18	539	11.26	884	12.34	1,262
9.12	141	10.20	544	11.28	892	12.36	1,268
9.14	150	10.22	549	11.30	900	12.38	1,274
9.16	158	10.24	554	11.32	908	12.40	1,280
9.18	167	10.26	560	11.34	916	12.42	1,286
9.20	176	10.28	565	11.36	924	12.44	1,292
9.22	185	10.30	570	11.38	932	12.46	1,298
9.24	194	10.32	575	11.40	940	12.48	1,304
9.26	202	10.34	580	11.42	948	12.50	1,310
9.28	211	10.36	586	11.44	956	12.52	1,316
9.30	220	10.38	591	11.46	964	12.54	1,322
9.32	229	10.40	596	11.48	972	12.56	1,328
9.34	238	10.42	601	11.50	980	12.58	1,334
9.36	246	10.44	606	11.52	988	12.60	1,340
9.38	255	10.46	612	11.54	996	12.62	1,346
9.40	264	10.48	617	11.56	1,004	12.64	1,352
9.42	273	10.50	622	11.58	1,012	12.66	1,358
9.44	282	10.52	627	11.60	1,020	12.68	1,364
9.46	290	10.54	632	11.62	1,028	12.70	1,370
9.48	299	10.56	638	11.64	1,036	12.72	1,376
9.50	308	10.58	643	11.66	1,044	12.74	1,382
9.52	317	10.60	648	11.68	1,052	12.76	1,388
9.54	326	10.62	653	11.70	1,060	12.78	1,394
9.56	334	10.64	658	11.72	1,068	12.80	**1,400**
9.58	343	10.66	664	11.74	1,076		
9.60	352	10.68	669	11.76	1,084		
9.62	361	10.70	674	11.78	1,092		
9.64	370	10.72	679	11.80	1,100		
9.66	378	10.74	684	11.82	1,106		
9.68	387	10.76	690	11.84	1,112		
9.70	396	10.78	695	11.86	1,118		
9.72	405	10.80	700	11.88	1,124		
9.74	414	10.82	708	11.90	1,130		
9.76	422	10.84	716	11.92	1,136		
9.78	431	10.86	724	11.94	1,142		
9.80	440	10.88	732	11.96	1,148		
9.82	445	10.90	740	11.98	1,154		
9.84	450	10.92	748	12.00	1,160		
9.86	456	10.94	756	12.02	1,166		

Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area DA9A & 9B Runoff Area=80,447 sf Runoff Depth>4.42"
Tc=5.0 min CN=91 Runoff=9.90 cfs 0.680 af

Pond 1P: Infiltration Storage Model Peak Elev=10.14' Storage=528 cf Inflow=9.90 cfs 0.680 af
Outflow=9.68 cfs 0.680 af

Total Runoff Area = 1.847 ac Runoff Volume = 0.680 af Average Runoff Depth = 4.42"
10.00% Pervious Area = 0.185 ac 90.00% Impervious Area = 1.662 ac

Subcatchment 1S: Drainage Area DA9A & 9B

Time of Concentration

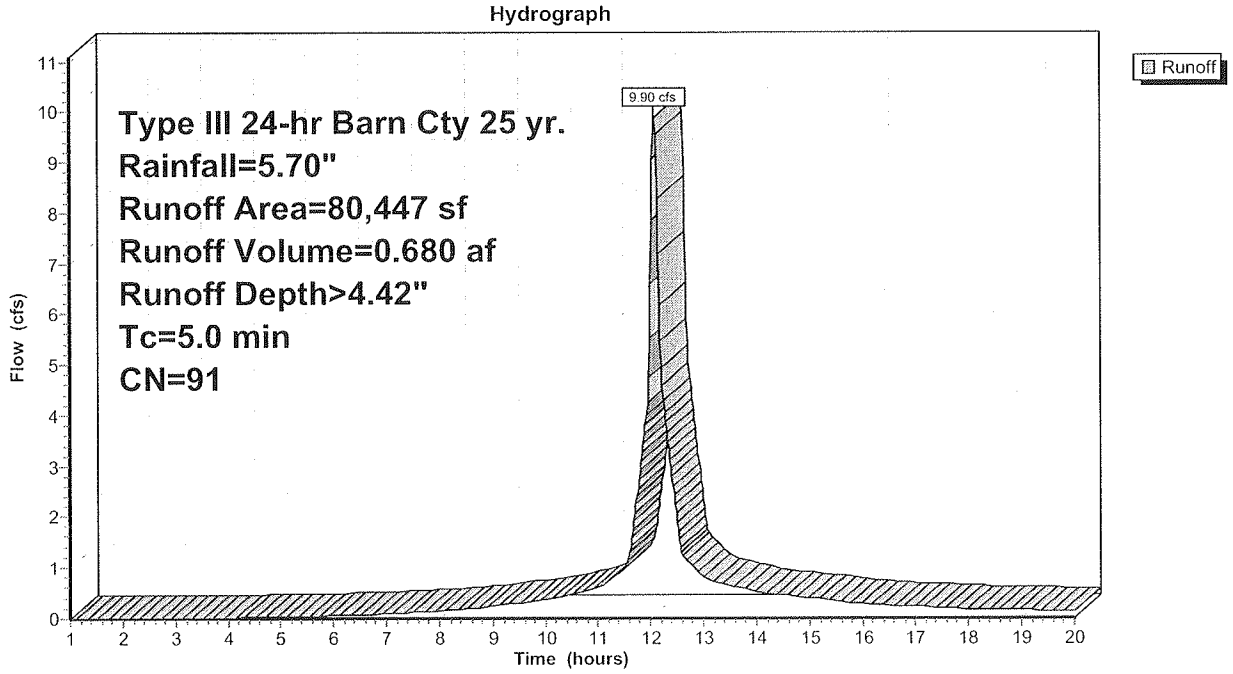
Runoff = 9.90 cfs @ 12.07 hrs, Volume= 0.680 af, Depth> 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr Barn Cty 25 yr. Rainfall=5.70"

Area (sf)	CN	Description
72,403	98	Paved parking
8,044	32	Woods/grass comb., Good, HSG A
80,447	91	Weighted Average
8,044		Pervious Area
72,403		Impervious Area

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

Subcatchment 1S: Drainage Area DA9A & 9B



Hydrograph for Subcatchment 1S: Drainage Area DA9A & 9B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.06	0.00	0.00	11.80	2.13	1.28	2.92
1.20	0.07	0.00	0.00	12.00	2.85	1.93	**6.61**
1.40	0.08	0.00	0.00	12.20	3.57	2.61	**4.94**
1.60	0.09	0.00	0.00	12.40	3.91	2.93	2.78
1.80	0.10	0.00	0.00	12.60	4.07	3.08	1.25
2.00	0.11	0.00	0.00	12.80	4.18	3.19	1.00
2.20	0.13	0.00	0.00	13.00	4.27	3.28	0.82
2.40	0.14	0.00	0.00	13.20	4.36	3.36	0.72
2.60	0.15	0.00	0.00	13.40	4.43	3.43	0.67
2.80	0.16	0.00	0.00	13.60	4.50	3.50	0.62
3.00	0.18	0.00	0.00	13.80	4.56	3.56	0.57
3.20	0.19	0.00	0.00	14.00	4.62	3.62	0.52
3.40	0.20	0.00	0.00	14.20	4.68	3.67	0.49
3.60	0.22	0.00	0.00	14.40	4.73	3.72	0.47
3.80	0.23	0.00	0.01	14.60	4.78	3.77	0.44
4.00	0.25	0.00	0.01	14.80	4.83	3.81	0.42
4.20	0.26	0.00	0.01	15.00	4.87	3.86	0.39
4.40	0.28	0.01	0.02	15.20	4.91	3.90	0.37
4.60	0.29	0.01	0.02	15.40	4.95	3.93	0.35
4.80	0.31	0.01	0.03	15.60	4.99	3.97	0.32
5.00	0.32	0.01	0.03	15.80	5.02	4.00	0.30
5.20	0.34	0.02	0.04	16.00	5.05	4.03	0.28
5.40	0.36	0.02	0.04	16.20	5.08	4.06	0.26
5.60	0.37	0.03	0.04	16.40	5.11	4.09	0.25
5.80	0.39	0.03	0.05	16.60	5.13	4.11	0.24
6.00	0.41	0.04	0.05	16.80	5.16	4.14	0.23
6.20	0.43	0.04	0.06	17.00	5.18	4.16	0.22
6.40	0.45	0.05	0.07	17.20	5.21	4.18	0.21
6.60	0.47	0.06	0.07	17.40	5.23	4.21	0.20
6.80	0.49	0.07	0.08	17.60	5.25	4.23	0.19
7.00	0.52	0.08	0.09	17.80	5.27	4.25	0.18
7.20	0.54	0.09	0.10	18.00	5.29	4.26	0.17
7.40	0.57	0.10	0.11	18.20	5.31	4.28	0.16
7.60	0.59	0.11	0.12	18.40	5.33	4.30	0.16
7.80	0.62	0.13	0.13	18.60	5.34	4.32	0.16
8.00	0.65	0.14	0.14	18.80	5.36	4.33	0.15
8.20	0.68	0.16	0.16	19.00	5.38	4.35	0.15
8.40	0.71	0.18	0.18	19.20	5.39	4.36	0.15
8.60	0.75	0.20	0.20	19.40	5.41	4.38	0.14
8.80	0.79	0.22	0.22	19.60	5.42	4.40	0.14
9.00	0.83	0.25	0.24	19.80	5.44	4.41	0.14
9.20	0.87	0.28	0.26	20.00	**5.45**	**4.42**	0.14
9.40	0.92	0.31	0.29				
9.60	0.97	0.34	0.31				
9.80	1.02	0.38	0.34				
10.00	1.08	0.41	0.36				
10.20	1.14	0.46	0.40				
10.40	1.20	0.50	0.45				
10.60	1.27	0.56	0.50				
10.80	1.34	0.62	0.55				
11.00	1.42	0.68	0.60				
11.20	1.52	0.76	0.73				
11.40	1.63	0.85	0.90				
11.60	1.79	0.98	1.30				

Pond 1P: Infiltration Storage Model

44% TSS removal prior to infiltration provided

Inflow Area = 1.847 ac, Inflow Depth > 4.42" for Barn Cty 25 yr. event
Inflow = 9.90 cfs @ 12.07 hrs, Volume= 0.680 af
Outflow = 9.68 cfs @ 12.09 hrs, Volume= 0.680 af, Atten= 2%, Lag= 0.9 min
Primary = 9.68 cfs @ 12.09 hrs, Volume= 0.680 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 10.14' @ 12.09 hrs Surf.Area= 0 sf Storage= 528 cf

Plug-Flow detention time=0.5 min calculated for 0.679 af (100% of inflow)
Center-of-Mass det. time=0.3 min (752.7 - 752.3)

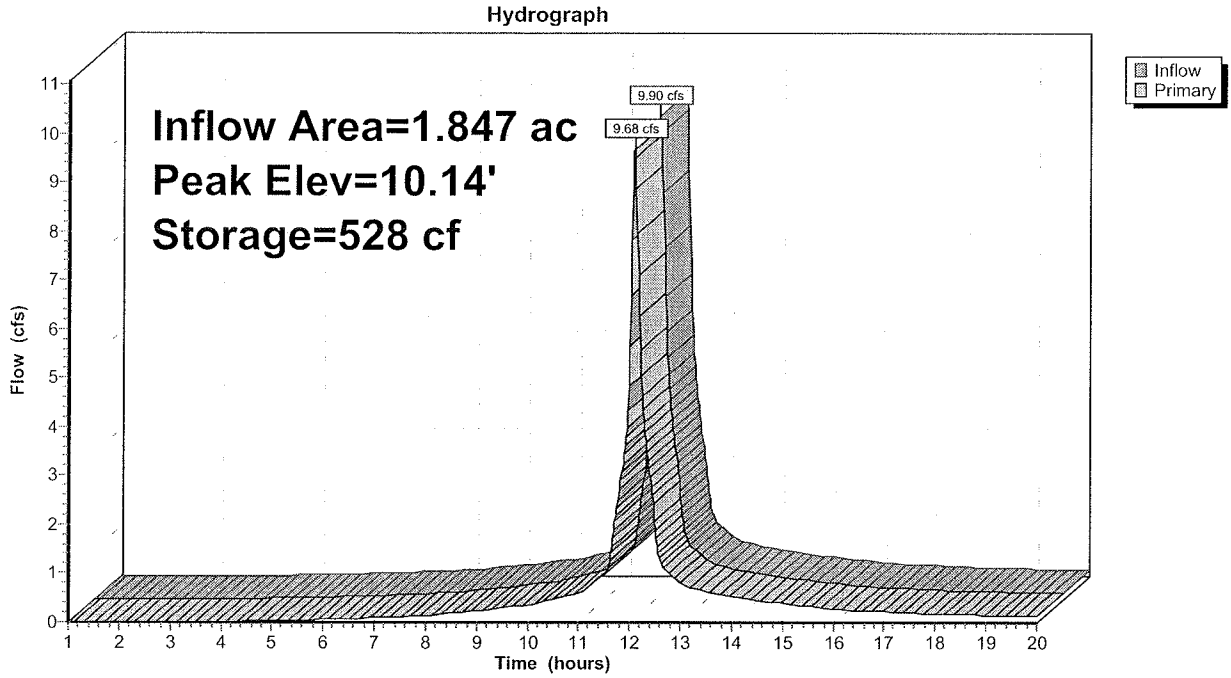
Volume	Invert	Avail.Storage	Storage Description
#1	8.80'	1,400 cf	**Infiltration System Storage Model**Listed below

Elevation (feet)	Cum.Store (cubic-feet)
8.80	0
9.80	440
10.80	700
11.80	1,100
12.80	1,400

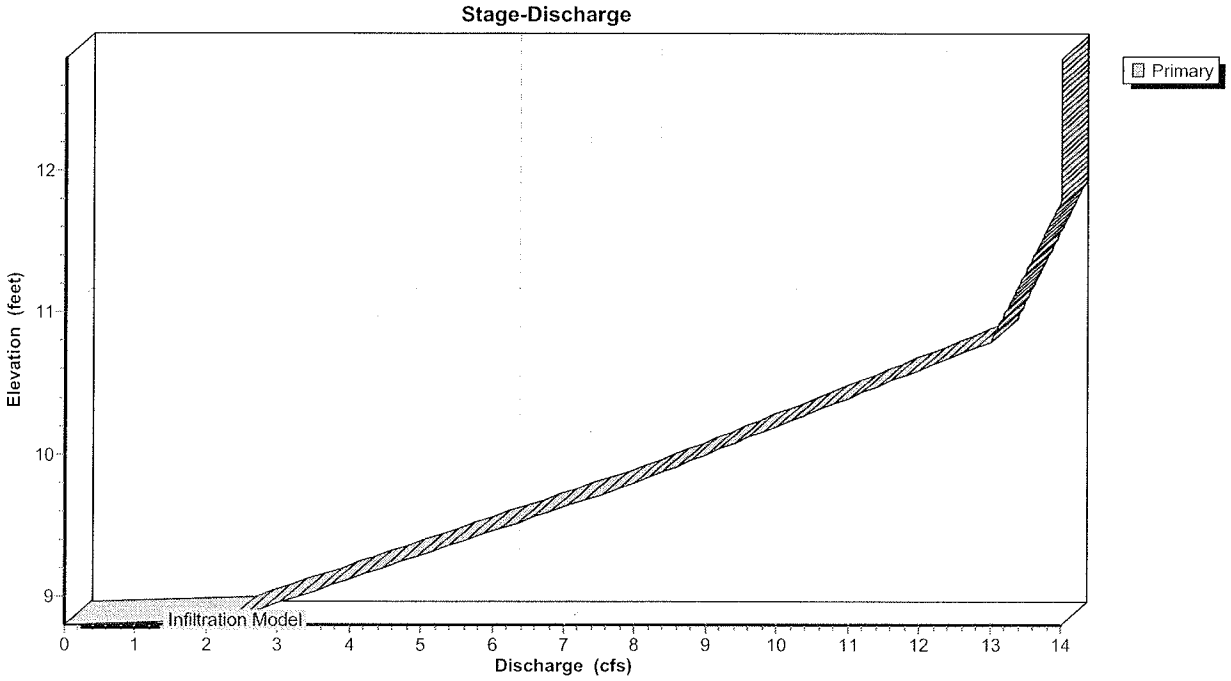
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**Infiltration Model** Elev. (feet) 8.70 8.80 9.80 10.80 11.80 Disch. (cfs) 0.000 2.100 8.000 13.000 14.000

Primary OutFlow Max=9.61 cfs @ 12.09 hrs HW=10.12' (Free Discharge)
↑—**1=Infiltration Model** (Custom Controls 9.61 cfs)

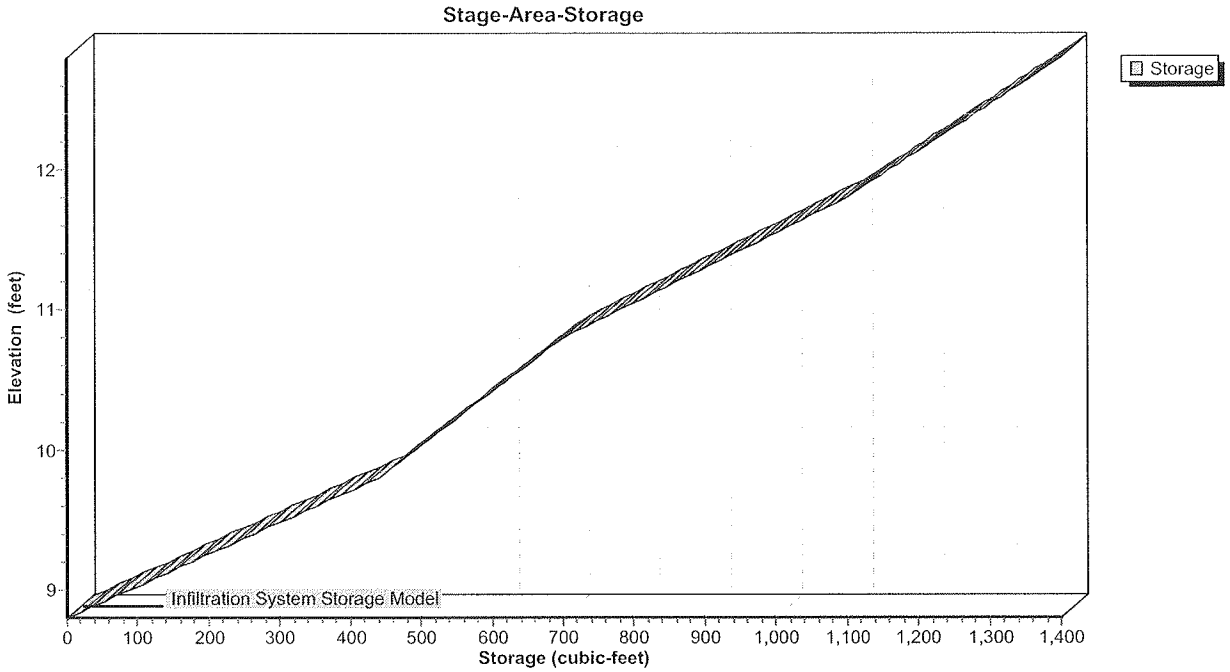
Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Pond 1P: Infiltration Storage Model



Hydrograph for Pond 1P: Infiltration Storage Model

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
1.00	0.00	0	8.80	0.00
1.20	0.00	0	8.80	0.00
1.40	0.00	0	8.80	0.00
1.60	0.00	0	8.80	0.00
1.80	0.00	0	8.80	0.00
2.00	0.00	0	8.80	0.00
2.20	0.00	0	8.80	0.00
2.40	0.00	0	8.80	0.00
2.60	0.00	0	8.80	0.00
2.80	0.00	0	8.80	0.00
3.00	0.00	0	8.80	0.00
3.20	0.00	0	8.80	0.00
3.40	0.00	0	8.80	0.00
3.60	0.00	0	8.80	0.00
3.80	0.01	0	8.80	0.01
4.00	0.01	0	8.80	0.01
4.20	0.01	0	8.80	0.01
4.40	0.02	0	8.80	0.02
4.60	0.02	0	8.80	0.02
4.80	0.03	0	8.80	0.03
5.00	0.03	0	8.80	0.03
5.20	0.04	0	8.80	0.04
5.40	0.04	0	8.80	0.04
5.60	0.04	0	8.80	0.04
5.80	0.05	0	8.80	0.05
6.00	0.05	0	8.80	0.05
6.20	0.06	0	8.80	0.06
6.40	0.07	1	8.80	0.07
6.60	0.07	1	8.80	0.07
6.80	0.08	1	8.80	0.08
7.00	0.09	1	8.80	0.09
7.20	0.10	1	8.80	0.10
7.40	0.11	1	8.80	0.11
7.60	0.12	1	8.80	0.12
7.80	0.13	1	8.80	0.13
8.00	0.14	1	8.80	0.14
8.20	0.16	1	8.80	0.16
8.40	0.18	1	8.80	0.18
8.60	0.20	1	8.80	0.20
8.80	0.22	2	8.80	0.22
9.00	0.24	2	8.80	0.24
9.20	0.26	2	8.80	0.26
9.40	0.29	2	8.80	0.29
9.60	0.31	2	8.81	0.31
9.80	0.34	3	8.81	0.34
10.00	0.36	3	8.81	0.36
10.20	0.40	3	8.81	0.40
10.40	0.45	3	8.81	0.45
10.60	0.50	4	8.81	0.50
10.80	0.55	4	8.81	0.55
11.00	0.60	5	8.81	0.60
11.20	0.73	5	8.81	0.72
11.40	0.90	7	8.82	0.90
11.60	1.30	10	8.82	1.29
11.80	2.92	48	8.91	2.75
12.00	**6.61**	**266**	**9.40**	**5.66**
12.20	**4.94**	**259**	**9.39**	**5.58**
12.40	2.78	65	8.95	2.97
12.60	1.25	9	8.82	1.25
12.80	1.00	8	8.82	1.01
13.00	0.82	6	8.81	0.82
13.20	0.72	5	8.81	0.72
13.40	0.67	5	8.81	0.67
13.60	0.62	5	8.81	0.62
13.80	0.57	4	8.81	0.57
14.00	0.52	4	8.81	0.52
14.20	0.49	4	8.81	0.49
14.40	0.47	4	8.81	0.47
14.60	0.44	3	8.81	0.44
14.80	0.42	3	8.81	0.42
15.00	0.39	3	8.81	0.40
15.20	0.37	3	8.81	0.37
15.40	0.35	3	8.81	0.35
15.60	0.32	2	8.81	0.32
15.80	0.30	2	8.81	0.30
16.00	0.28	2	8.80	0.28
16.20	0.26	2	8.80	0.26
16.40	0.25	2	8.80	0.25
16.60	0.24	2	8.80	0.24
16.80	0.23	2	8.80	0.23
17.00	0.22	2	8.80	0.22
17.20	0.21	2	8.80	0.21
17.40	0.20	2	8.80	0.20
17.60	0.19	1	8.80	0.19
17.80	0.18	1	8.80	0.18
18.00	0.17	1	8.80	0.17
18.20	0.16	1	8.80	0.16
18.40	0.16	1	8.80	0.16
18.60	0.16	1	8.80	0.16
18.80	0.15	1	8.80	0.15
19.00	0.15	1	8.80	0.15
19.20	0.15	1	8.80	0.15
19.40	0.14	1	8.80	0.15
19.60	0.14	1	8.80	0.14
19.80	0.14	1	8.80	0.14
20.00	0.14	1	8.80	0.14

Stage-Discharge for Pond 1P: Infiltration Storage Model

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.80	0.00	9.88	8.40	10.96	13.16	12.04	14.00
8.82	2.22	9.90	8.50	10.98	13.18	12.06	14.00
8.84	2.34	9.92	8.60	11.00	13.20	12.08	14.00
8.86	2.45	9.94	8.70	11.02	13.22	12.10	14.00
8.88	2.57	9.96	8.80	11.04	13.24	12.12	14.00
8.90	2.69	9.98	8.90	11.06	13.26	12.14	14.00
8.92	2.81	10.00	9.00	11.08	13.28	12.16	14.00
8.94	2.93	10.02	9.10	11.10	13.30	12.18	14.00
8.96	3.04	10.04	9.20	11.12	13.32	12.20	14.00
8.98	3.16	10.06	9.30	11.14	13.34	12.22	14.00
9.00	3.28	10.08	9.40	11.16	13.36	12.24	14.00
9.02	3.40	10.10	9.50	11.18	13.38	12.26	14.00
9.04	3.52	10.12	9.60	11.20	13.40	12.28	14.00
9.06	3.63	10.14	9.70	11.22	13.42	12.30	14.00
9.08	3.75	10.16	9.80	11.24	13.44	12.32	14.00
9.10	3.87	10.18	9.90	11.26	13.46	12.34	14.00
9.12	3.99	10.20	10.00	11.28	13.48	12.36	14.00
9.14	4.11	10.22	10.10	11.30	13.50	12.38	14.00
9.16	4.22	10.24	10.20	11.32	13.52	12.40	14.00
9.18	4.34	10.26	10.30	11.34	13.54	12.42	14.00
9.20	4.46	10.28	10.40	11.36	13.56	12.44	14.00
9.22	4.58	10.30	10.50	11.38	13.58	12.46	14.00
9.24	4.70	10.32	10.60	11.40	13.60	12.48	14.00
9.26	4.81	10.34	10.70	11.42	13.62	12.50	14.00
9.28	4.93	10.36	10.80	11.44	13.64	12.52	14.00
9.30	5.05	10.38	10.90	11.46	13.66	12.54	14.00
9.32	5.17	10.40	11.00	11.48	13.68	12.56	14.00
9.34	5.29	10.42	11.10	11.50	13.70	12.58	14.00
9.36	5.40	10.44	11.20	11.52	13.72	12.60	14.00
9.38	5.52	10.46	11.30	11.54	13.74	12.62	14.00
9.40	5.64	10.48	11.40	11.56	13.76	12.64	14.00
9.42	5.76	10.50	11.50	11.58	13.78	12.66	14.00
9.44	5.88	10.52	11.60	11.60	13.80	12.68	14.00
9.46	5.99	10.54	11.70	11.62	13.82	12.70	14.00
9.48	6.11	10.56	11.80	11.64	13.84	12.72	14.00
9.50	6.23	10.58	11.90	11.66	13.86	12.74	14.00
9.52	6.35	10.60	12.00	11.68	13.88	12.76	14.00
9.54	6.47	10.62	12.10	11.70	13.90	12.78	14.00
9.56	6.58	10.64	12.20	11.72	13.92	12.80	14.00
9.58	6.70	10.66	12.30	11.74	13.94		
9.60	6.82	10.68	12.40	11.76	13.96		
9.62	6.94	10.70	12.50	11.78	13.98		
9.64	7.06	10.72	12.60	11.80	**14.00**		
9.66	7.17	10.74	12.70	11.82	14.00		
9.68	7.29	10.76	12.80	11.84	14.00		
9.70	7.41	10.78	12.90	11.86	14.00		
9.72	7.53	10.80	13.00	11.88	14.00		
9.74	7.65	10.82	13.02	11.90	14.00		
9.76	7.76	10.84	13.04	11.92	14.00		
9.78	7.88	10.86	13.06	11.94	14.00		
9.80	8.00	10.88	13.08	11.96	14.00		
9.82	8.10	10.90	13.10	11.98	14.00		
9.84	8.20	10.92	13.12	12.00	14.00		
9.86	8.30	10.94	13.14	12.02	14.00		

Stage-Area-Storage for Pond 1P: Infiltration Storage Model

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
8.80	0	9.88	461	10.96	764	12.04	1,172
8.82	9	9.90	466	10.98	772	12.06	1,178
8.84	18	9.92	471	11.00	780	12.08	1,184
8.86	26	9.94	476	11.02	788	12.10	1,190
8.88	35	9.96	482	11.04	796	12.12	1,196
8.90	44	9.98	487	11.06	804	12.14	1,202
8.92	53	10.00	492	11.08	812	12.16	1,208
8.94	62	10.02	497	11.10	820	12.18	1,214
8.96	70	10.04	502	11.12	828	12.20	1,220
8.98	79	10.06	508	11.14	836	12.22	1,226
9.00	88	10.08	513	11.16	844	12.24	1,232
9.02	97	10.10	518	11.18	852	12.26	1,238
9.04	106	10.12	523	11.20	860	12.28	1,244
9.06	114	10.14	528	11.22	868	12.30	1,250
9.08	123	10.16	534	11.24	876	12.32	1,256
9.10	132	10.18	539	11.26	884	12.34	1,262
9.12	141	10.20	544	11.28	892	12.36	1,268
9.14	150	10.22	549	11.30	900	12.38	1,274
9.16	158	10.24	554	11.32	908	12.40	1,280
9.18	167	10.26	560	11.34	916	12.42	1,286
9.20	176	10.28	565	11.36	924	12.44	1,292
9.22	185	10.30	570	11.38	932	12.46	1,298
9.24	194	10.32	575	11.40	940	12.48	1,304
9.26	202	10.34	580	11.42	948	12.50	1,310
9.28	211	10.36	586	11.44	956	12.52	1,316
9.30	220	10.38	591	11.46	964	12.54	1,322
9.32	229	10.40	596	11.48	972	12.56	1,328
9.34	238	10.42	601	11.50	980	12.58	1,334
9.36	246	10.44	606	11.52	988	12.60	1,340
9.38	255	10.46	612	11.54	996	12.62	1,346
9.40	264	10.48	617	11.56	1,004	12.64	1,352
9.42	273	10.50	622	11.58	1,012	12.66	1,358
9.44	282	10.52	627	11.60	1,020	12.68	1,364
9.46	290	10.54	632	11.62	1,028	12.70	1,370
9.48	299	10.56	638	11.64	1,036	12.72	1,376
9.50	308	10.58	643	11.66	1,044	12.74	1,382
9.52	317	10.60	648	11.68	1,052	12.76	1,388
9.54	326	10.62	653	11.70	1,060	12.78	1,394
9.56	334	10.64	658	11.72	1,068	12.80	**1,400**
9.58	343	10.66	664	11.74	1,076		
9.60	352	10.68	669	11.76	1,084		
9.62	361	10.70	674	11.78	1,092		
9.64	370	10.72	679	11.80	1,100		
9.66	378	10.74	684	11.82	1,106		
9.68	387	10.76	690	11.84	1,112		
9.70	396	10.78	695	11.86	1,118		
9.72	405	10.80	700	11.88	1,124		
9.74	414	10.82	708	11.90	1,130		
9.76	422	10.84	716	11.92	1,136		
9.78	431	10.86	724	11.94	1,142		
9.80	440	10.88	732	11.96	1,148		
9.82	445	10.90	740	11.98	1,154		
9.84	450	10.92	748	12.00	1,160		
9.86	456	10.94	756	12.02	1,166		

Stormwater Pollution Prevention Plan

For:

Cape Cod Hospital
27 Park Street
Hyannis, MA

Operator(s):

Name
Company
Address
Phone
Email:

Stormwater Manager and SWPPP Contact(s):

Name
Company
Address
Phone
Email:

SWPPP Preparation Date:

6-28-2019

Estimated Project Dates:

Start of Construction: 8-5-2019
Completion of Construction: 9-30-2020

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SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project/Site Information

Project Information:

Project/Site Name: Project 2022 Addition to Cape Cod Hospital

Project Street/Location: 27 Park Street Hyannis, MA

City: Hyannis State: MA Zip Code: 02601

County or Similar Subdivision: Barnstable County

Latitude/Longitude (Use **one** of three possible formats, and specify method)

Latitude:	Longitude:
1. 41°39'8.10"N (degrees, minutes, seconds)	1. 70°16'26.43"W (degrees, minutes, seconds)
2. _ _ ° _ _ . _ _ ' N (degrees, minutes, decimal)	2. _ _ ° _ _ . _ _ ' W (degrees, minutes, decimal)
3. _ _ . _ _ _ _ ° N (decimal)	3. _ _ . _ _ _ _ ° W (decimal)

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: __1 ☐ EPA Web site ☒ GPS

☒ Other (please specify):___Google Earth/Mass GIS data_____

Is the project located in Indian country? ☐ Yes ☒ No

If yes, name of Reservation, or if not part of a Reservation, indicate "not applicable."

_____

Is this project considered a federal facility? ☐ Yes ☒ No

NPDES project or permit tracking number:_____tbd_____

(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate NPDES construction general permit.)

1.2 Contact Information/Responsable Parties

Instructions:

- List the operator(s), project managers, stormwater manager, and person or organization that prepared the SWPPP. Indicate respective responsibilities, where appropriate.
- Also, list subcontractors expected to work on-site. Notify subcontractors of stormwater requirements applicable to their work.
- See SWPPP Guide, Chapter 2.B. and your construction general permit for the definition of *operator*.

Project Information:

Operator(s):

Name
Company
Address
Phone
Email:

Project Manager(s) or Site Supervisor(s):

Name
Company
Address
Phone
Email:

Stormwater Manager and SWPPP Contact(s):

Name
Company
Address
Phone
Email:

This SWPPP Was Prepared By:

Daniel A. Ojala PE, PLS
down cape engineering, Inc.
939 Main St. (Rt. 6a)
Yarmouthport, MA 02675
1-508-362-4541 fax 508-362-4541
email: downcape@downcape.com copies available by PDF upon request to this email address.

Subcontractor(s):

Name
Company
Address
Phone
Email:

Emergency 24 hour contact:

Name
Company
Address
Phone
Email:

1.3 Nature and Sequence of Construction Activity

Instructions:

- Briefly describe the nature of the construction activity and approximate timeframes (one or more paragraphs, depending on the nature and complexity of the project).

Project Information:

- Describe the general scope of the work for the project, major phases of construction, etc:

Demolition of existing Whitcomb Medical building and surrounding site features. Construction of new utility lines. Construction of building addition and paved parking areas. Demolition of CCMedical Building and paved parking east side.

What is the function of the construction activity?

☐ Residential ☒ Commercial ☐ Industrial ☐ Road Construction

☐ Linear Utility

☐ Other (please specify):_____

Estimated Project Start Date: 11/5/2019

Estimated Project Completion Date: 9/30/2022

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Project Information:

Soil type(s):

- **Glacial Outwash Plain- Carver Coarse Sand, excessively drained. See attached soil maps.**

Slopes (describe current slopes and note any changes due to grading or fill activities):

- **0-10%, fairly level site, slopes to south.**

Drainage Patterns (describe current drainage patterns and note any changes dues to grading or fill activities):

- **Site is currently heavily developed with medical buildings and parking.**
- **Subsurface drainage is to be provided to infiltrate all runoff.**
- **Vegetation: Landscaped around buildings and parking.**

Other:

- **Site has very well drained soils due to sandy glacial outwash and level grades, see erosion and sedimentation control plan for temporary construction period BMPs.**

1.5 Construction Site Estimates

Project Information:

The following are estimates of the construction site:

Construction Site Area to be disturbed	4.7 acres
Total Project Area	4.7 acres
Percentage impervious area before construction	85 %
Runoff coefficient before construction	93
Percentage impervious area after construction	85 %
Runoff coefficient after construction	93

1.6 Receiving Waters

Project Information:

Description of receiving waters: Hyannis Harbor

Description of storm sewer systems: Roof runoff directs to storm drains, all drainage others infiltrated on-site

Description of impaired waters or waters subject to TMDLs: n/a

1.7 Site Features and Sensitive Areas to be Protected

Project Information:

Description of unique features and measures to protect them:

- Site is relatively level, subsurface stormwater infiltration trenches will be used per local stormwater requirements for recharging 25 year storm onsite. Groundwater will be recharged from onsite precipitation. Silt fence and construction aprons to protect buffers to wetland areas (coastal bank, land subject to coastal storm flowage, land under ocean).

1.8 Potential Sources of Pollution

Project Information:

Potentials sources of sediment to stormwater runoff:

- Silt from disturbed topsoil and subsoil, site construction.

- Stockpiled soils, especially topsoil or subsoil, underlying material sand and not subject to forming silt.

1.9 Endangered Species Certification

Project Information:

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

Describe how this determination was made: Review of Mass GIS Mapping of Estimated and Priority Habitat for Rare Species under Mass Environmental Protection Act (MEPA/NHESP)

If yes, describe the species and/or critical habitat: n/a

If yes, describe or refer to documentation which determines the likelihood of an impact on identified species and/or habitat and the steps taken to address that impact. (Note, if species are present on or near your project site, EPA strongly recommends that the site operator work closely with the appropriate field office of the U.S. Fish and Wildlife Service or National Marine Fisheries Service. Please contact a state or tribal official for concerns related to state or tribal listing of species.)

1.10 Historic Preservation

Project Information:

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

- Describe how this determination was made: Previously developed site
- If yes, describe or refer to documentation which determines the likelihood of an impact on this historic site and the steps taken to address that impact.

1.11 Maps

Instructions:

- Attach at least two site maps. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or the major phases of development, for more complicated sites.

These maps should include:

- ☐ Direction(s) of stormwater flow and approximate slopes before and after major grading activities
- ☐ Areas and timing of soil disturbance and areas that will not be disturbed
- ☐ Natural features to be preserved
- ☐ Locations of major structural and non-structural BMPs identified in the SWPPP
- ☐ Locations and timing of stabilization measures
- ☐ Locations of off-site material, waste, borrow, or equipment storage areas
- ☐ Locations of all waters of the U.S., including wetlands
- ☐ Locations where stormwater discharges to a surface water
- ☐ Locations of storm drain inlets
- ☐ Areas where final stabilization has been accomplished
- ☐ For more information, see SWPPP Guide, Chapter 3.C.

Project Information:

- Include the site maps with the SWPPP. SEE ATTACHED MAPS/PLANS

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

Project Information:

1. Minimize Disturbed Area and Protect Natural Features and Soil:

Describe the areas that will be disturbed with each phase of construction and the methods (signs, fences, etc.) that you will use to protect those areas that should not be disturbed. Describe natural features identified earlier and how each will be protected during construction activity. Also describe how topsoil will be preserved. Include these areas and associated BMPs on your site map(s) also. (See SWPPP Guide, Chapter 4, ESC Principle 1 for more information.)

- Silt fence shall be installed per plan prior to other work on the site. Temporary retention areas are to be constructed. Site demolition of existing structures and pavement. Site utilities including drainage, lighting, water, gas and electric planned. Site will be stabilized with loam and seed, and vegetation established prior to silt fence removal and project Notice Of Termination filed.
- Phase Construction Activity:

Describe the intended construction sequencing and timing of major activities, including grading activities, road and utility installation, and building phases

- Phase I
  - ☐ Silt fence installation, temporary erosion control basins.
  - ☐ Signage per DEP/RDA/NOI
  - ☐ Site Demolition

- Phase II
  - ☐ Installation of drainage and utilities
  - ☐ Installation of washed stone construction aprons prior to work.

- Phase III
  - ☐ Construction of buildings, utilities, grading, parking, sitework. Work, site will be loamed and seeded, with grass stable, plantings in prior to filing Notice of Termination of coverage.

2. *Control Stormwater Flowing Onto and Through the Project:*

Describe structural practices (i.e., diversions, berms, ditches, storage basins) including design specifications and details used to divert flows from exposed soils, retain or detain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. (See SWPPP Guide, Chapter 4, ESC Principle 3 for more information.)

- Silt fence in select locations, temporary stormwater retention basins, sandy soils allow high infiltration rates on site.

4. *Stabilize Soils:*

Describe controls (i.e., temporary seeding with native vegetation, hydroseeding, etc.) to stabilize exposed soils where construction activities have temporarily or permanently ceased. Also describe measures to control dust generation. Use of impervious surfaces for stabilization should be avoided whenever possible. (See SWPPP Guide, Chapter 4, ESC Principle 4 for more information.)

- BMP Description: Loam and Seed, Erosion control netting
  ☒ Permanent ☐ Temporary
- Installation Schedule: Prior to project completion
- Maintenance and Inspection: Ensure grass germination and growth.
- Responsible Staff: Site Operator/Contractor

- BMP Description: Stockpile Silt Fence
  ☐ Permanent ☒ Temporary
- Installation Schedule: Silt fence around all materials upon creation of pile
- Maintenance and Inspection: Operator to inspect with regular inspections (see inspections)
- Responsible Staff: Site Operator/Contractor

5. Protect Slopes:

Describe controls (i.e., erosion control blankets, tackifiers, etc.) including design specifications and details that will be implemented to protect all slopes. (See SWPPP Guide, Chapter 4, ESC Principle 5 for more information.)

- BMP Description: Silt Fence, Erosion Control netting on all exposed slopes.
- Installation Schedule: After site clearing complete, after loaming for netting.
- Maintenance and Inspection: After any rain event 0.5" or greater.
- Responsible Staff: Site Operator/Contractor

6. Protect Storm Drain Inlets:

Describe controls (i.e., inserts, rock-filled bags, or block and gravel, etc.) including design specifications and details that will be implemented to protect all inlets receiving stormwater from the project during the entire duration of the project. (See SWPPP Guide, Chapter 4, ESC Principle 6 for more information.)

- BMP Description: Filter fabric between frame and grate, haybales around
- Installation Schedule: After new drainage installed, no offsite storm water discharge anticipated
- Maintenance and Inspection: After any rain event 0.5" or greater
- Responsible Staff: Site Operator/Contractor

7. Establish perimeter controls and sediment barriers:

Describe structural practices (i.e., silt fences or fiber rolls) including design specifications and details to filter and trap sediment before it leaves the construction site. (See SWPPP Guide, Chapter 4, ESC Principle 7 for more information.)

- BMP Description: Silt Fence Installation per plan
- Installation Schedule: As soon as practical after sitework begins.
- Maintenance and Inspection: Inspect after each rain event in excess of 0.5".
- Responsible Staff: Site Operator/Contractor

- BMP Description: Temporary infiltration basins
- Installation Schedule: As soon as practical after sitework begins
- Maintenance and Inspection: Inspect after each rain event in excess of 0.5", remove construction silt as required to maintain infiltration capacity.
- Responsible Staff: Site Operator/Contractor

8. Retain Sediment On-Site and Control Dewatering Practices:

Describe sediment control practices (i.e., sediment trap or sediment basin), including design specifications and details (volume, dimensions, outlet structure) that will be implemented at the construction site to retain sediments on-site. Describe dewatering practices that will be implemented if water must be removed from an area so that construction activity can continue. (See SWPPP Guide, Chapter 4, ESC Principle 8 for more information.)

- BMP Description: Sediment Trap/Retention Basin per plan specs.
- Installation Schedule: Prior to demolition work
- Maintenance and Inspection: Inspect after each rain event in excess of 0.5", Remove sediment to prevent standing water, and maintain infiltration capacity.
- Responsible Staff: Site Operator/Contractor

9. Establish Stabilized Construction Exits:

Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (i.e., vehicle tracking), and stabilization practices (i.e., stone pads and/or wash racks) to minimize off-site vehicle tracking of sediments and discharges to stormwater. (See SWPPP Guide, Chapter 4, ESC Principle 9 for more information.)

- BMP Description: Washed Stone Construction Apron.
- Installation Schedule: Prior to other construction activity on site.
- Maintenance and Inspection: Inspect after every rain event 0.5" or greater, replenish or replace if aprons clog with silt, sweep apron as required. see plan.
- Responsible Staff: Site Operator/Contractor
-

10. Additional BMPs:

Describe additional BMPs that may not fit into the above categories.

- n/a

SECTION 3: GOOD HOUSEKEEPING BMPS

3.1 Good Housekeeping BMP

Project Information:

1. Material Handling and Waste Management:

Describe measures (i.e., trash disposal, sanitary wastes, recycling, and proper material handling) to prevent the discharge of solid materials to waters of the U.S., except as authorized by a permit issued under section 404 of the CWA. (See SWPPP Guide, Chapter 5, P2 Principle 1)

- BMP Description: Temporary Sanitary Facilities
- Installation Schedule: Prior to regular construction on site
- Maintenance and Inspection: Per contract with provider
- Responsible Staff: Operator/Contractor

- BMP Description: Street Sweeping
- Installation Schedule: As required by site conditions.
- Maintenance and Inspection: visual inspection of tracking
- Responsible Staff: Operator/contractor

2. *Establish Proper Building Material Staging Areas:*

Describe construction materials expected to be stored on-site and procedures for storage of materials to minimize exposure of the materials to stormwater. (See SWPPP Guide, Chapter 5, P2 Principle 2 for more information.)

- BMP Description: Store any paint etc. under cover of tarps or roof.
- Installation Schedule: as required, constructing one water tower
- Maintenance and Inspection: as required by construction
- Responsible Staff: Operator/Contracor

3. *Designate Washout Areas:*

Describe location(s) and controls to minimize the potential for stormwater pollution from washout areas for concrete mixers, paint, stucco, etc. (See SWPPP Guide, Chapter 5, P2 Principle 3 for more information.)

- BMP Description: Concrete washout Area- utilize premanufactured unit or construct with 10 mil plastic- onsite constructed requires frequent inspection.
- Installation Schedule: Prior to concrete being poured onsite
- Maintenance and Inspection: -As required by industry standard
- Responsible Staff: Operator/Contractor

- BMP Description: Paint Washout- utilize premanufactured unit
- Installation Schedule: Prior to painting onsite
- Maintenance and Inspection: As required by industry standard
- Responsible Staff: Operator/Contractor

4. Establish proper equipment/vehicle fueling and maintenance practices:

Describe equipment/vehicle fueling and maintenance practices that will be implemented to control pollutants to stormwater (e.g., secondary containment, drip pans, spill kits, etc.) (See SWPPP Guide, Chapter 5, P2 Principle 4 for more information.)

- BMP Description: Fuel over bare ground in designated area, have drip pan available. Spill Kit shall be available.
- Installation Schedule: drip pan and spill kit onsite prior to refueling
- Maintenance and Inspection: inspect refueling area for signs of staining after every rainstorm of 0.5" or greater.
- Responsible Staff: Owner/Contractor

5. Allowable non-stormwater discharges and control equipment/vehicle washing:

For the allowable non-stormwater discharge(s) associated with construction industrial activity identified, describe controls and measures that will be implemented at those sites to minimize pollutant discharges. (See SWPPP Guide, Chapter 5, P2 Principle 5 for more information.)

- BMP Description: Vehicle Washing Area- designate on plan
- Installation Schedule: Wash only if required, avoid detergents.
- Maintenance and Inspection: Inspect area after every rain event of 0.5" or greater
- Responsible Staff: Owner/Contractor (vehicle washing discouraged onsite)

6. Spill Prevention and Control Plan:

Describe the spill prevention and control plan to include ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control. (See SWPPP Guide, Chapter 5, P2 Principle 6 for more information.)

- REFERENCE ATTACHMENT I, SPILL KIT REQ'D.

7. Any Additional BMPs: N/A

3.2 Allowable Non-Stormwater Discharge Management

Instructions:

- Identify all allowable sources of non-stormwater discharges (except flows from firefighting activities) that are not identified above.
- Identify measures used to eliminate or reduce these discharges and the BMPs used to prevent them from becoming contaminated.
- For more information, see SWPPP Guide, Chapter 3.A. Also, review your permit for exact details.

Project Information:

List allowable non-stormwater discharges and the measures used to eliminate or reduce them and to prevent them from becoming contaminated:

- N/A

SECTION 4: SELECTING POST-CONSTRUCTION BMPs

Instructions:

- Describe all post-construction stormwater management measures that will be installed during the construction process to control pollutants in stormwater discharges after construction operations have been completed. Examples of post-construction BMPs include:

  - ☒ Biofilters
  - ☐ Detention/retention devices
  - ☐ Earth dikes, drainage swales, and lined ditches
  - ☒ Infiltration Basins
  - ☐ Porous Pavement
  - ☒ Other proprietary permanent structural BMPs
  - ☐ Outlet protection/velocity dissipation devices
  - ☒ Slope protection
  - ☒ Vegetated strips and/or swales

- Identify any applicable federal, state, local, or tribal requirements for design or installation.
- Describe how low impact designs or smart growth considerations have been incorporated into the design.
- Any structural BMPs should have design specifications and details referred to and attached as appendices to the SWPPP.
- For more information on this topic, please refer to your state's stormwater manual.
- You may also want to consult one of the references listed in Appendix D of the SWPPP Guide.
- Visit the post-construction section of EPA's Menu of BMPs at: www.epa.gov/npes/menuofbmps

Project Information:

- BMP Description: Rain gardens, deep sump hooded catch basins and secondary deep sump hooded manholes prior to subsurface infiltration of all stormwater required per local requirements.
- Installation Schedule: subsurface drainage to be installed prior to t-base and pavement on the site.
- Maintenance and Inspection: Per Stormwater Operations and Maintenance Plan for site.
- Responsible Staff: Owner

SECTION 5: INSPECTIONS and MAINTENANCE

5.1 Inspections

Project Information:

1. Inspection Personnel:

Identify the person(s) who will be responsible for conducting inspections and describe their qualifications.

- Site Operator/Contractor, (experienced site contractor) is the responsible person to review all SWPPP documentation. Will conduct review with owner's engineer.

2. Inspection Schedule and Procedures:

i. Describe the inspection schedules and procedures you have developed for your site (include frequency of inspections for each BMP or group of BMPs, indicate when you will inspect, e.g. before/during/and after rain events, spot inspections, etc.).

- Inspect all BMP's after every rain event in excess of 0.5" during construction period, or every two weeks, whichever occurs sooner. See inspection logs for required information.

ii. Describe the general procedures for correcting problems when they are identified. Include responsible staff and timeframes for making corrections.

- All BMP's will be repaired as required, deficiencies discovered during inspections shall be remedied as soon as possible after discovery.

iii. Attach a copy of the inspection report you will use for your site.

- REFERENCE ATTACHMENT E

5.2 Maintenance of Controls

Project Information:

- Maintenance Procedures: Site Operator/Contractor will replenish/replace stone aprons and repair silt fence, remove silt from basins and accumulated silt at fence per plan, properly operate washout stations, and repair any deficiencies to original specifications. Operator shall ensure spill kit and drip pan onsite at all times. Document all repairs in corrective actions log see Section 5.3 and document maintenance per inspection reports in 6.1 below.

5.3 Corrective Action Log

Instructions:

Project Information:

Corrective Action Log: *REFERENCE ATTACHMENT*

SECTION 6: Recordkeeping and Training

6.1 Recordkeeping

Instructions:

The following is a list of records you should keep at your project site available for inspectors to review:

- Dates of grading, construction activity, (and stabilization which is covered in Section 7).
- A copy of the construction general permit (attach).
- The signed and certified NOI form or permit application form (attach).
- A copy of the letter from the EPA/State notifying you of their receipt of your complete NOI/application (attach).
- Inspection reports (attach).
- Records relating to endangered species and historic preservation (attach).
- Check your permit for additional details.
- For more on this subject, see SWPPP Guide, Chapter 6.C.

Project Information:

Dates when major grading activities occur:

- To be noted-

Dates when construction activities temporarily or permanently cease on a portion of the site

- To be noted

6.2 Log of Changes to the SWPPP

Instructions:

Create a log here, or as an attachment, of changes and updates to the SWPPP. You should include additions of new BMPs, replacement of failed BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, and updates to site maps, etc.

Project Information:

Log of changes and updates to the SWPPP

- OPERATOR TO UTILIZE ATTACHMENT APP.G

6.3 *Training*

Instructions:

- Training your staff and subcontractors is an effective BMP. As with the other steps you take to prevent stormwater problems at your site, you should document the training that you conduct for your staff, for those with specific stormwater responsibilities (e.g. installing, inspecting, and maintaining BMPs), and for subcontractors.
- Include dates, number of attendees, subjects covered, and length of training.
- For more on this subject, see SWPPP Guide, Chapter 8.

Project Information:

Describe Training Conducted:

- General stormwater and BMP awareness training for staff and subcontractorss Reading and familiarization of SWPPP and plans and view of BMP's at site.
- Detailed training for staff and subcontractors with specific stormwater responsibilities Operator/Contractor to be familiar with SWPPP and capable of performing maintenance described in 5.2

Individual(s) Responsible for Training:

- Operator/Contractor-....Owners engineer also available 1-508-362-4541 x108 downcape@downcape.com Daniel A. Ojala PE, PLS

SECTION 7: FINAL STABILIZATION

Instructions:

- Describe procedures for final stabilization. If you complete major construction activities on part of your site, you can document your final stabilization efforts for that portion of the site. Many permits will allow you to then discontinue inspection activities in these areas (be sure to check your permit for exact requirements.) You can amend or add to this section as areas of your project are finally stabilized.
- Update your site plans to indicate areas that have achieved final stabilization.
- For more on this topic, see SWPPP Guide, Chapter 9.

Project Information:

- All areas not covered by the building or paving will be loamed and seeded, and the site vegetation established prior to Notice of Termination and silt fence removal. Level site, sandy soils. See plans.

SECTION 8: CERTIFICATION AND NOTIFICATION

Instructions:

- The SWPPP should be signed and certified by the construction operator(s). Attach a copy of the NOI and permit authorization letter received from EPA or the State in Appendix D.

Project Information: Cape Cod Hospital #27 Park Street, Hyannis, MA 02601

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

App A –Soil Maps, Area Maps

App B – Site Plan, Construction Period Erosion Control Plan

App C - Copy of Construction General Permit

App D - Copy of RDA and acknowledgement letter from EPA

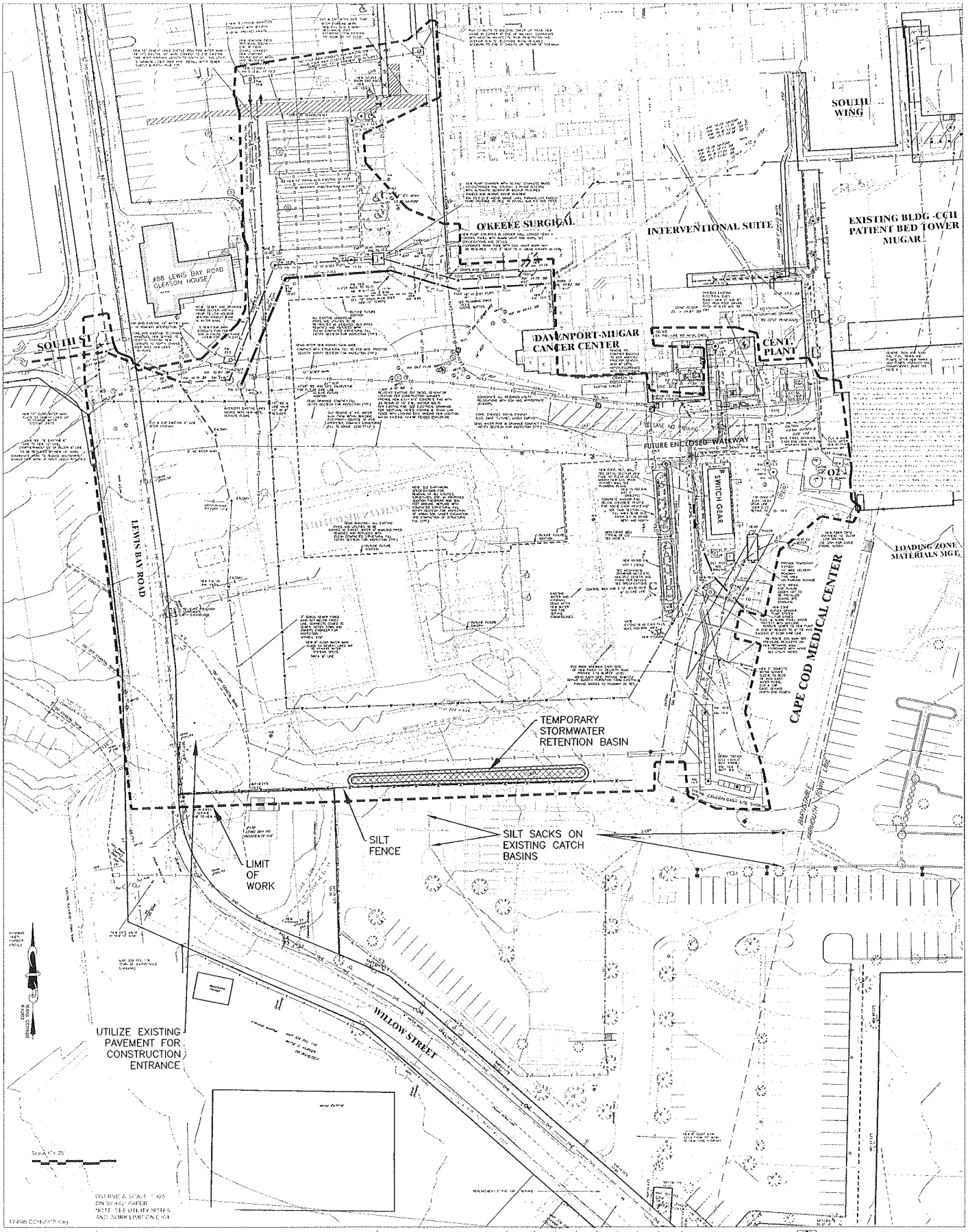
App E - Inspection Reports

App F - Corrective Action Log

App G - Log of Changes and Updates to SWPPP

App H - Subcontractor Certifications/Agreements

App I- Spill Contingency Plan



TSOI KOBUS DESIGN

CAPE COD HEALTHCARE

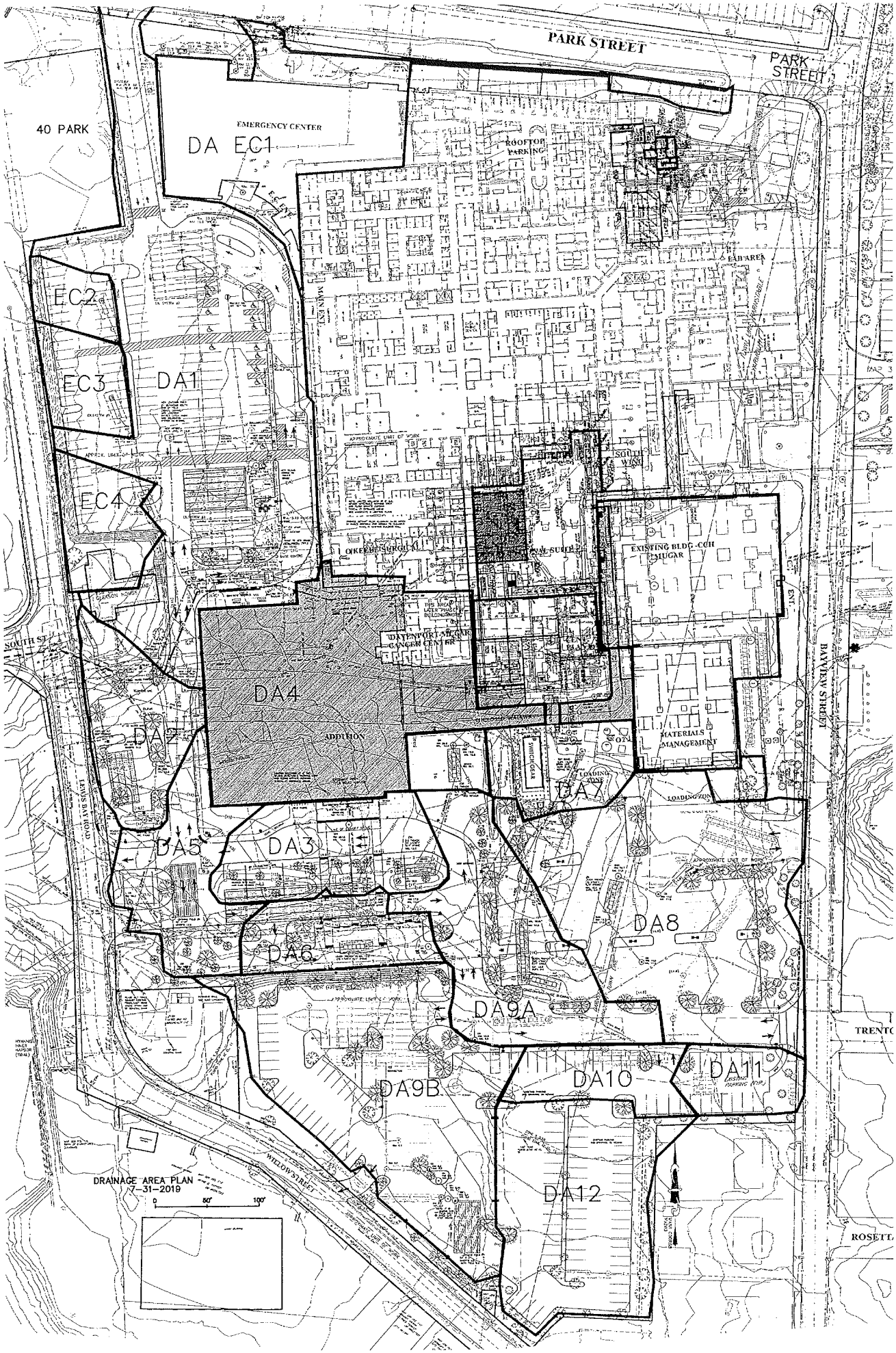
CAPE COD HOSPITAL
27 Park Street
Hyannis, MA 02601

SITE ENABLING SUBMISSION

STORMWATER POLLUTION PREVENTION PLAN

down cape engineering inc.
civil engineers
land surveyors

C 300


PARK STREET
PARK STREET
40 PARK
EMERGENCY CENTER
DA EC1
ROOFTOP PARKING
EC2
EC3
DA1
EC4
MAIN ENTRY
LIBRARY
SOUTH WING
EXISTING BLDG-CCH LIUGAR
DAVENPORT ARCUS CANCER CENTER
DA4
ADDITION
SOUTH ST
DA7
MATERIALS MANAGEMENT
LOADING ZONE
DA5
DA3
DA6
DA8
DA9A
DA9B
DA10
DA11
DA12
WILLOW STREET
BAYVIEW STREET
DRAINAGE AREA PLAN
7-31-2019
0
50'
100'