

HANCOCK ASSOCIATES

Stormwater Report *In Support of*

The Coolidge at Sudbury Phase 2
187-189 Boston Post Road
Sudbury, Ma



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INTRODUCTION

Excerpt from MADEP Stormwater Management Standards Chapter 1:

Stormwater runoff results from rainfall and snow melt and represents the single largest source responsible for water quality impairments in the Commonwealth's rivers, lakes, ponds, and marine waters. New and existing development typically adds impervious surfaces and, if not properly managed, may alter natural drainage features, increase peak discharge rates and volumes, reduce recharge to wetlands and streams, and increase the discharge of pollutants to wetlands and water bodies.

The Stormwater Management Standards address water quality (pollutants) and water quantity (flooding, low base flow and recharge) by establishing standards that require the implementation of a wide variety of stormwater management strategies. These strategies include environmentally sensitive site design and LID techniques to minimize impervious surface and land disturbance, source control and pollution prevention, structural BMPs, construction period erosion and sedimentation control, and the long-term operation and maintenance of stormwater management systems.

EXISTING CONDITIONS

The approximate 6 acre site is located on the south side of Boston Post Road and East of Landham Road. The site currently has a 64 unit senior housing facility known as the Coolidge at Sudbury. Topography on site ranges from a high elevation of 160 adjacent to Landham Road to a low of elevation 136 at the wetland area to the southeast. Stormwater runoff generally flows toward the wetland area at the southwest corner of the site. Soils on site have been classified by the USDA Natural Resource Conservation Service as Udorthents-Urban land complex with adjacent areas of Class A and Class C soils. Hancock Associates performed soil testing on site and determined the site to contain areas of both these soil classes. See predevelopment watershed mapping for additional information. The Coolidge project was built in 2013. The stormwater management system includes a large detention basin, rain garden, grassed swale, and roof drain infiltration system.

PROPOSED CONDITIONS

The proposal calls for the construction of a second 56 unit senior housing building (Coolidge at Sudbury Phase 2) with parking beneath and an expansion of the existing parking lot utilizing the existing access from Boston Post Road. The proposed buildings will be served by town water, gas, underground electric, cable and telephone, and onsite sewage. The six acre site will be subdivided into two approximately three acre parcels.

Stormwater will be managed on site in compliance with the Massachusetts DEP Stormwater Regulations. The existing system will be modified with the elimination of the rain garden to the east of the existing parking lot and grassed swale. The treatment and small amount of attenuation will be replaced with a new system. The eastern parking area will be collected via a standard catch basin/manhole system with the addition of a trench drain collecting drainage from the parking garage entrance area. Runoff from the eastern lot will be routed through a closed Stormtech MC-3500 isolator row for treatment prior to discharging to the infiltration basin behind the building. Roof runoff from the new building will be infiltrated via same infiltration basin behind the building. The western parking area will continue to be collected via a standard catchbasin/manhole system and discharged to an extended detention basin.

The original drainage model has been updated to reflect the phase 1 as-built conditions and the phase 2 project details. The predevelopment conditions reflect the site conditions prior to phase 1. The analysis demonstrating compliance with MASS DEP stormwater standards reflects both phase 1 and 2 together.

STORMWATER MANAGEMENT DESIGN – DOCUMENTING COMPLIANCE
In accordance with the Massachusetts Stormwater Handbook Volume 3

STANDARD 1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

No untreated discharges are proposed and therefore the standard is met.

STANDARD 2. PEAK RATE ATTENUATION

To prevent storm damage and downstream and off-site flooding, *Section 8.A.3f of the Sudbury Stormwater Management Bylaw Regulations* requires that the post-development peak discharge rate is equal to or less than the pre-development rate from the 1-inch, 2-year, 10-year, and 25-year 24-hour storms. If this evaluation shows that increased off-site flooding will result from peak discharges from the 100-year 24-hour storms, BMPs must also be provided to attenuate these discharges.

Peak Flow Summary Table

	1-Inch Storm	2-year 24-hour Storm (3.2 inches)	10-year 24-hour Storm (4.8 inches)	25-year 24-hour Storm (6.0 inches)	100-year 24-hour Storm (8.6 inches)
Pre-development to Street (1s)	0.0 cfs 0.0 af	0.0 cfs 0.0 af	0.1 cfs 0.017 af	0.32 cfs 0.040 af	1.5 cfs 0.0113af
Post-development to Street (92r)	0.0 cfs 0.0 af	0.0 cfs 0.002 af	0.1 cfs 0.012 af	0.31 cfs 0.027 af	1.0 cfs 0.059 af
Pre-development into Wetland (5p)	0.4 cfs 0.031 af	1.4 cfs 0.173 af	3.4 cfs 0.426 af	6.2 cfs 0.678 af	13.7 cfs 1.346 af
Post-development to Wetland (4p)	0.5 cfs 0.053 af	1.5 cfs 0.238 af	2.3 cfs 0.492 af	3.8 cfs 0.738 af	9.7 cfs 1.365 af

In accordance with *Section 8.0 A.3i of the Sudbury Stormwater Management Bylaw Regulations* the runoff volume has also been evaluated. Increases of less than 0.1 cfs are considered within the tolerances of the analysis method, as shown in the table above runoff volumes to the street have been maintained or reduced in all storms. To ensure that runoff volumes to the isolated wetlands do not increase off-site flooding the “pocket” wetland was modeled as a pond in the drainage calculations and the peak staging elevation compared for each storm event. The results are listed below and show no significant change in peak elevation in all storm events.

Peak Wetland Elevation

	1-Inch Storm	2-year 24-hour Storm (3.2 inches)	10-year 24-hour Storm (4.8 inches)	25-year 24-hour Storm (6.0 inches)	100-year 24-hour Storm (8.6 inches)
Pre-development	135.45	136.05	136.68	137.03	137.17
Post-development	135.58	136.24	136.81	137.04	137.15

We feel the stage increase of less than 3 inches are negligible and will not adversely impact the wetlands.

Thus, the requirements of the standard are met.

STANDARD 3. STORMWATER RECHARGE

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of 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.

A Soils new Impervious Area = 75,294sq.ft x 0.60 inches x 1/12 = 3,765 cubic feet

C Soils new Impervious Area = 20,100sq.ft x 0.25 inches x 1/12 = 419 cubic feet

Total Recharge Volume = 4,181 cubic feet

Total new impervious area = 95,394sq.ft

Total new impervious area to recharge facilities = 83,461

Capture Area Adjustment

*95,394sq.ft /83,461sq.ft = 1.14 x 4,181 cubic feet = **4,770 cubic feet.***

Static Volume Provided

Front system (Phase 1)

System Volume = 15' x 120' x 3' = 5,400 cubic feet

Pipe volume = 3.14 x 1'^2 x 120 x 4 pipes = 1,500 cubic feet

Stone Volume = (5,400-1,500) x 0.4 = 1,560 cubic feet

Total Volume = 1,500 + 1,560 = 3,000 cubic feet

300' long Reservoir Below Porous Fire Road (Phase 1)

4059 square feet x 0.5' deep x 0.4 = 811 cubic feet

Infiltration Basin Behind East Building (Phase 2)

Volume below outlet = 1,204 cubic feet (Below outlet orifice)

*Total Volume Provided = **5,016 cubic feet***

Thus, the requirements of the standard are met.

Drawdown Analysis

The Massachusetts Stormwater Handbook states that the recharge volume must drain within 72 hours. Hydraulic Conductivity tests done on site discovered that the in-situ hydraulic conductivity of the southeastern area of the site where the detention basin is proposed to be 62 in/hr. The “Dynamic Field” method for recharge calculations allows a system to be designed using a drawdown rate of 50% of that found in the field, therefore the following drawdown calculation assumes a rate of 31 inches per hour.

$$\begin{aligned}\text{East Infiltration Basin} &= 1,204 \pm \text{ft}^3 / ((31 \text{ in/hour} * / 12 \text{ in/ft}) * 4,700 \pm \text{ft}^2) \\ &= \mathbf{6 \pm \text{ minutes}}\end{aligned}$$

Because the infiltration system for the roof drain of the building on the western side of the property is located in HSG type “A” soil, the Rawl's Rate for saturated hydraulic conductivity (2.41 in/hour for HSG "A"-type soil) is used for the following calculation.

$$\begin{aligned}\text{Infiltration System} &= 3,065 \pm \text{ft}^3 / ((2.41 \text{ in/hour} / 12 \text{ in/ft}) * 1,800 \pm \text{ft}^2) \\ &= \mathbf{8 \pm \text{ hours}}\end{aligned}$$

Because the pervious pavement reservoir on the south western side of the property is located in HSG type “C” soil, the Rawl's Rate for saturated hydraulic conductivity (0.27 in/hour for HSG "C"-type soil) is used for the following calculation.

$$\begin{aligned}\text{Reservoir} &= 811 \pm \text{ft}^3 / ((0.27 \text{ in/hour} / 12 \text{ in/ft}) * 4,059 \pm \text{ft}^2) \\ &= \mathbf{9 \pm \text{ hours}}\end{aligned}$$

$$\begin{aligned}\text{West Stormwater Basin} &= 8,736 \pm \text{ft}^3 / ((2.41 \text{ in/hour} / 12 \text{ in/ft}) * 1,453 \pm \text{ft}^2) \\ &= \mathbf{30 \pm \text{ hours}}\end{aligned}$$

This Standard is met.

**NOTE: For Phase 2 infiltration basin GZA performed*

STANDARD 4. WATER QUALITY

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

Treatment Chain

1		Removal Rate	Remains	
1st Link	Deep sump hooded catch basins	25%	75.00%	
2nd Link	Extended Detention Basin	50%	37.50%	
3rd Link	Grass Channel	50%	18.75%	
Final Rate			81.25%	removal

2		Removal Rate	Remains	
1st Link	Deep sump hooded catch basins	25%	75.00%	
2nd Link	Isolator row	80%	15.00%	
3rd Link	Infiltration Basin	70%	4.50%	
Final Rate			95.50%	removal

Thus, the requirements of the standard are met.

In addition the "water quality volume for sizing of BMPs shall be based on 1-inch of runoff from the tributary area" per the Town of Sudbury Stormwater Management Bylaw.

Isolator Row

The isolator row, consisting of Stormtech MC-3500 chambers wrapped in filter fabric has been sized to provide 80% TSS removal per the Stormtech Isolator Row Sizing Chart (Attached) and the DEP's Equivalent Water Quality Peak Flow Rate guidelines:

System "A"

Time of Concentration, $T_c = 0.083$ Hours

Unit Peak Discharge, $q_u = 773$ csm/in

Impervious Surface Area, $A = 0.0011078$ mi²

Water Quality Volume, $WQV = 1$ Inches

Water Quality Flow, $WQF = 0.86$ cfs

Isolator Row Chambers Required = $0.86 \text{ cfs} / 0.24 \text{ cfs} = 4$ Chambers

Isolator Row Chambers Provided = 4 Chambers

Rate Based - For sites with where a combination of infiltration and detention/retention is used, at rate based approach is typically used. The treatments rates are based on available surface treatment area and factors of safety that were developed from extensive testing. 80% TSS removal and 40% TP removal can be achieved by sizing the Isolator Rows base on these maximum flows per chamber:

Chamber	Specific Flow Rate	Bottom Area	Flow Per Chamber
SC-310	2.5 gpm/sf	17.7 sf	0.10 cfs
RC-310	2.5 gpm/sf	17.7 sf	0.10 cfs
SC-740	2.5 gpm/sf	27.8 sf	0.15 cfs
RC-750	2.5 gpm/sf	27.8 sf	0.15 cfs
DC-780	2.5 gpm/sf	27.8 sf	0.15 cfs
MC-3500	2.5 gpm/sf	43.2 sf	0.24 cfs
MC-4500	2.5 gpm/sf	30.1 sf	0.17 cfs

Table 2 – Treatment Rate per Chamber

STANDARD 5.) LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS

The proposed use is not considered a use with a higher potential pollutant load as defined by the Stormwater Management Standards.

STANDARD 6.) CRITICAL AREAS

"Standard 6 applies to discharges within a Zone II, Interim Wellhead Protection Areas or near or to other Critical Areas: Shellfish Growing Areas, Bathing Beaches, Outstanding Resource Waters Special Resource Waters, and Cold-Water Fisheries" per Volume 3: Documenting Compliance with the Massachusetts Stormwater Management Standards Chapter 1.

This site is not located within or adjacent to a Critical Area.

STANDARD 7.) REDEVELOPMENT

This project is not being proposed as redevelopment.

STANDARD 8.) CONSTRUCTION PERIOD CONTROLS

Construction Period controls will be included in the stormwater pollution prevention plan in the final submittal.

STANDARD 9.) OPERATION AND MAINTENANCE PLAN

A preliminary Operation and Maintenance Plan has been developed and included in Appendix.

STANDARD 10.) ILLICIT DISCHARGES TO DRAINAGE SYSTEM

This standard is not applicable to a site without a centralized collection system.

EROSION AND SEDIMENTATION PLAN

Best management practices (BMP) for erosion and sedimentation control are staked straw bales, filter fences, hydro seeding, and phased development. Many stormwater BMP technologies (e.g., infiltration technologies) are not designed to handle the high concentrations of sediments typically found in construction runoff and must be protected from construction-related sediment loadings. Construction BMP's must be maintained.

In developing the proposed project, certain measures will be implemented to minimize impacts which erosion and sedimentation could have on surrounding areas. This section addresses items that involve proper construction techniques, close surveillance of workmanship, and immediate response to emergency situations. The developer must be prepared to provide whatever reasonable measures are necessary to protect the environment during construction and to stabilize all disturbed areas as soon as construction ends.

Pre-Construction

1. The contractor shall have a stockpile of materials required to control erosion on-site to be used to supplement or repair erosion control devices. These materials shall include, but are not limited to straw bales, silt fence and crushed stone.
2. The contractor is responsible for erosion control on site and shall utilize erosion control measures where needed, regardless of whether the measures are specified on the plan or in the Order of Conditions.

Preliminary Site Work

1. Materials such as gravel to be removed should be stockpiled, separating the topsoil for future use on the site. Erosion control shall be utilized along the down slope side of the piles if the piles are to remain for more than three weeks.
2. If intense rainfall is anticipated, the installation of supplemental straw bale dikes, silt fences, or armored dikes shall be considered.

Landscaping

1. Landscaping shall occur as soon as practical to provide permanent stabilization of disturbed surfaces.
2. If the season or adverse weather conditions do not allow the establishment of vegetation, temporary mulching with straw, wood chips weighted with snow fence or branches, or other methods shall be provided.
3. A minimum of 4 inches of topsoil shall be placed and its surface smoothed to the specified grades.
4. The use of herbicides is strongly discouraged.
5. Hydro seeding is encouraged for steep slopes. Application rates on slopes greater than 3:1 shall have a minimum seeding rate of 5-lbs/1000 SF. A latex or fiber tackifier shall be used on these slopes at a minimum rate of 50 lbs. of tackifier per 500 gallons of water used.

STORMWATER OPERATION AND MAINTENANCE PLAN

Stormwater management system owner: Affiliate B'nai B'rith Housing of New England, Inc.

The party or parties responsible for operation and maintenance: Affiliate B'nai B'rith Housing of New England, Inc.

- **The town of Sudbury shall be allowed to enter the property at reasonable times and in a reasonable manner for the purpose of inspecting the stormwater system.**
- **The responsible parties shall maintain a log of all operation and maintenance activities, including without limitation, inspections, repairs, replacement and disposal.**
- **All drainage components shall be maintained to function as designed.**

Deep Sump Hooded Catch Basins

Inspect or clean deep sump catch basins four times per year at the end of the foliage and snow removal seasons. Sediments must also be removed four times per year or when the depth of deposits is greater than or equal to one half the depth from the bottom of the lowest pipe in the basin. Vacuum trucks are to be used to remove trapped sediment and supernatant.

Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Any contaminated materials must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.00, and handled as hazardous waste. MassDEP regulations prohibit landfills from accepting materials that contain free draining liquids.

Sediment Forebay

Inspect sediment forebay monthly and clean out at least four times per year. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullyng and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or resodding.

When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.

Detention Basin

Inspect to ensure proper functioning after every major storm during first 3 months of operation and twice a year thereafter and when there are discharges through the high outlet orifice. Mow the buffer area, side slopes, and basin bottom grassed floor, remove trash and debris; remove grass clippings and accumulated organic matter twice per year. Inspect and clean pretreatment devices, every other month recommended and at least twice a year and after every major storm event.

Swale

Inspect semi-annually the first year, and at least once a year thereafter. Inspect the grass for growth and the side slopes for signs of erosion and formation of rills and gullies. Plant an alternative grass species if the original grass cover is not successfully established. If grass growth is impaired by winter road salt or other deicer use, re-establish the grass in the spring.

Trash/Debris Removal: Remove accumulated trash and debris prior to mowing. *Sediment removal:* Check on a yearly basis and clean as needed. Use hand methods (i.e., a person with a shovel) when cleaning to minimize disturbance to vegetation and underlying soils. Mow on an as-needed basis during the growing season so that the grass height does not exceed 6 inches.

Infiltration BMP

The infiltration BMP (subsurface chamber system) shall be inspected after every major storm for the first few months to ensure it is stabilized and functioning properly. If necessary, corrective action shall be taken until the system functions properly. Inspectors should note how long water remains standing in the inspection port after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging. Thereafter, inspect the infiltration BMP at least twice per year.

Infiltration Basin Area

Inspect for sediment build-up, structural damage, and standing water in the spring and fall. Sediment shall be removed and any damage repaired. Inspect soil and repair eroded areas monthly. Re-mulch void areas with hardwood mulch (no dye) as needed. Remove litter and debris monthly. Treat diseased vegetation as needed. Remove and replace dead vegetation twice per year (spring and fall). Vegetation shall be trimmed biannually as appropriate. If a major incident/spill occurs that fouls the sandy soil at the bottom of the infiltration basin area to a degree requiring removal to the sand, perform the following. First, place straw wattles completely around the affected area at the top of embankment. Second, place an anchored filter fabric over the pipe overflow and inflow. Third, carefully excavate the affected area by hand with a flat tip shovel; place in transport vehicle for proper disposal offsite in manner compliant with all pertinent regulations. Fourth, replace all removed material with clean sand. All work should be performed in the dry anticipating no significant wet weather during the work period.

Isolator Row

Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be inspected a minimum of one time. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

Roof Drain Leaders

Routine roof inspections shall be performed two times per year. The roof shall be kept clean and free of debris, and the roof drainage systems shall be kept clear. Gutters and downspouts shall be cleaned at least twice per year, or more frequently as necessary.

Construction Site Inspections

Construction site inspections, including those for erosion/sedimentation control purposes, shall be conducted within 24 hours of the end of a storm event of 0.5 inches of precipitation or more in order to prevent an impervious organic mat from forming. Remove trash and debris at the same time, use deep tilling to break up clogged surfaces, and revegetate immediately.

- **STORMWATER BEST MANAGEMENT PRACTICES (BMP) YEARLY MAINTENANCE LOG**

See Operation and Maintenance Plan for required frequency.

Site Owner: _____

Site Address: _____

Stormwater BMP's On-site: _____

Deep Sump Hooded Catch Basins

Maintenance Schedule: 4 times per year

Date	Inspector	Depth of Sediment	Sediment Disposal Site	Notes

Detention Basin

Maintenance Schedule: 2 times per year

Date	Inspector	Problem Observed	Action taken	Notes

Swale

Maintenance Schedule: 1 times per year

Date	Inspector	Problem Observed	Action taken	Notes

Roof Drain leaders**Maintenance Schedule: 2 times per year**

Date	Inspector	Problem Observed	Action taken	Notes

Infiltration Structures**Maintenance Schedule: 2 times per year**

Date	Inspector	Problem Observed	Action taken	Notes

Infiltration Basin**Maintenance Schedule: 2 times per year**

Date	Inspector	Problem Observed	Action taken	Notes

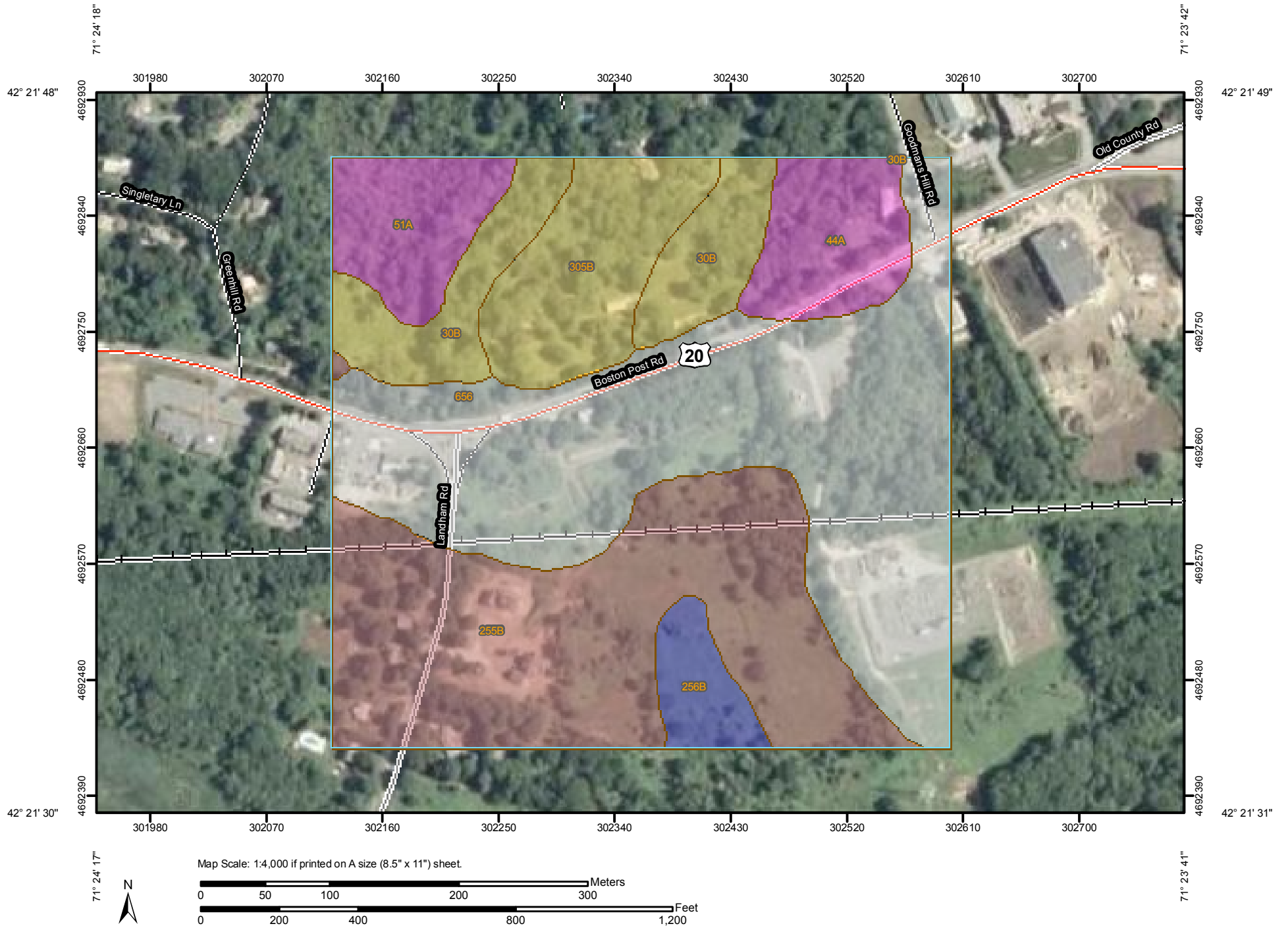
Isolator Row**Maintenance Schedule: 2 times per year**

Date	Inspector	Problem Observed	Action taken	Notes

APPENDIX I HydroCAD Output


APPENDIX II NRCS Soils Mapping

Hydrologic Soil Group—Middlesex County, Massachusetts



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Soil Ratings

 A

 A/D

 B

 B/D

 C

 C/D

 D


 Not rated or not available

Political Features

 Cities


Water Features

 Oceans

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

MAP INFORMATION

Map Scale: 1:4,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 19N NAD83

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 12, Feb 26, 2010

Date(s) aerial images were photographed: 7/10/2003

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Middlesex County, Massachusetts				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
30B	Raynham silt loam, 0 to 5 percent slopes	C	5.1	9.4%
44A	Birdsall mucky silt loam, 0 to 1 percent slopes	D	3.3	6.1%
51A	Swansea muck, 0 to 1 percent slopes	D	3.2	5.8%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	15.7	29.0%
256B	Deerfield loamy sand, 3 to 8 percent slopes	B	1.6	3.0%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	4.8	8.8%
656	Udorthents-Urban land complex		20.5	37.8%
Totals for Area of Interest			54.3	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

Prepared by Hancock Assoc.

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Summary for Subcatchment 1S: TO STREET (PRE)

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.060	49	50-75% Grass cover, Fair, HSG A
0.670	35	Brush, Fair, HSG A
0.820	43	Weighted Average
0.730		89.02% Pervious Area
0.090		10.98% Impervious Area

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

Summary for Subcatchment 2S: TO WETLANDS (PRE)

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (sf)	CN	Description
6,970	98	Paved parking & roofs
60,113	49	50-75% Grass cover, Fair, HSG A
73,834	35	Brush, Fair, HSG A
62,726	70	Brush, Fair, HSG C
203,643	52	Weighted Average
196,673		96.58% Pervious Area
6,970		3.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
2.1	170	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.7	320	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.2	540	Total			

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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HydroCAD® 10.00 s/n 00821 © 2013 HydroCAD Software Solutions LLC

Summary for Subcatchment 3S: wetlands

Runoff = 0.39 cfs @ 12.14 hrs, Volume= 0.031 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description		
*	22,018	98	wetland		
	22,018		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		
10.2	330	Total			Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: wetlands (PRE)

Runoff = 0.39 cfs @ 12.14 hrs, Volume= 0.031 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description		
*	22,018	98	wetland		
	22,018		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		
10.2	330	Total			Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 10(A): TO STREET

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

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Type III 24-hr 1 INCH Rainfall=1.00"

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	Area (sf)	CN	Description
	12,917	39	>75% Grass cover, Good, HSG A
*	923	98	Paved
	13,840	43	Weighted Average
	12,917		93.33% Pervious Area
	923		6.67% Impervious Area

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

Summary for Subcatchment 10(B): TO STREET

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
	2,032	39	>75% Grass cover, Good, HSG A
*	1,360	98	Paved
	3,392	63	Weighted Average
	2,032		59.91% Pervious Area
	1,360		40.09% Impervious Area

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

Summary for Subcatchment 18S: TO PROP CB-2

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af, Depth> 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
*	14,524	98	Paved
	3,789	39	>75% Grass cover, Good, HSG A
	18,313	86	Weighted Average
	3,789		20.69% Pervious Area
	14,524		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5

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Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Subcatchment 19S A: TO PCB3

Runoff = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
*	1,329	98	Paved
	1,329		100.00% Impervious Area

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

Summary for Subcatchment 19S B: TO PCB4

Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
	1,073	39	>75% Grass cover, Good, HSG A
*	1,197	98	PAVED
	2,270	70	Weighted Average
	1,073		47.27% Pervious Area
	1,197		52.73% Impervious Area

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

Summary for Subcatchment 20f: front of building

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
*	8,322	98	
	8,322		100.00% Impervious Area

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

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Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Subcatchment 20r: rear of building

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (sf)	CN	Description
11,678	98	Paved parking & roofs
11,678		100.00% Impervious Area

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

Summary for Subcatchment 21S: fire road

Runoff = 0.02 cfs @ 12.13 hrs, Volume= 0.003 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (ac)	CN	Description
* 0.170	98	pervious pavement
* 0.030	98	patio
0.060	39	>75% Grass cover, Good, HSG A
0.060	74	>75% Grass cover, Good, HSG C
0.320	82	Weighted Average
0.120		37.50% Pervious Area
0.200		62.50% Impervious Area

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

Summary for Subcatchment 23S: AREA AROUND BASIN

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (sf)	CN	Description
* 5,518	98	POND
11,914	39	>75% Grass cover, Good, HSG A
17,432	58	Weighted Average
11,914		68.35% Pervious Area
5,518		31.65% Impervious Area

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Type III 24-hr 1 INCH Rainfall=1.00"

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

Summary for Subcatchment 24S: TO PROP CB-1

Runoff = 0.04 cfs @ 12.12 hrs, Volume= 0.004 af, Depth> 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
*	13,415	98	Paved
	4,691	39	>75% Grass cover, Good, HSG A
	18,106	83	Weighted Average
	4,691		25.91% Pervious Area
	13,415		74.09% Impervious Area

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

Summary for Subcatchment 25S: TO ROOF DRAIN

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (sf)	CN	Description
	18,814	98	Roofs, HSG A
	18,814		100.00% Impervious Area

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

Summary for Subcatchment 30s: to cb 1

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.004 af, Depth> 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

	Area (ac)	CN	Description
	0.240	98	Paved parking & roofs
	0.060	39	>75% Grass cover, Good, HSG A
	0.300	86	Weighted Average
	0.060		20.00% Pervious Area
	0.240		80.00% Impervious Area

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Type III 24-hr 1 INCH Rainfall=1.00"

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

Summary for Subcatchment 31S: to cb 4&5

Runoff = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (sf)	CN	Description
1,005	98	Paved parking & roofs
1,005		100.00% Impervious Area

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

Summary for Subcatchment 32S: to cb 2

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.010	39	>75% Grass cover, Good, HSG A
0.080	91	Weighted Average
0.010		12.50% Pervious Area
0.070		87.50% Impervious Area

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

Summary for Subcatchment 35S: area around swm pond

Runoff = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

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Type III 24-hr 1 INCH Rainfall=1.00"

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Area (ac)	CN	Description
* 0.160	98	pond & forebay
0.080	39	>75% Grass cover, Good, HSG A
0.080	74	>75% Grass cover, Good, HSG C
0.320	77	Weighted Average
0.160		50.00% Pervious Area
0.160		50.00% Impervious Area

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

Summary for Subcatchment 40S: remaining area

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

Area (sf)	CN	Adj	Description
* 2,178	98		Unconnected pavement, HSG C
10,019	74		>75% Grass cover, Good, HSG C
1,307	39		>75% Grass cover, Good, HSG A
17,424	70		Brush, Fair, HSG C
47,021	35		Brush, Fair, HSG A
77,949	50	49	Weighted Average, UI Adjusted
75,771			97.21% Pervious Area
2,178			2.79% Impervious Area
2,178			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0100	0.08		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.20"
23.3	700	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
34.1	750	Total			

Summary for Subcatchment 50s: TO PROP TRENCH DRAIN

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 INCH Rainfall=1.00"

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Type III 24-hr 1 INCH Rainfall=1.00"

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	Area (sf)	CN	Description
*	1,597	98	Paved
	981	39	>75% Grass cover, Good, HSG A
	2,578	76	Weighted Average
	981		38.05% Pervious Area
	1,597		61.95% Impervious Area

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

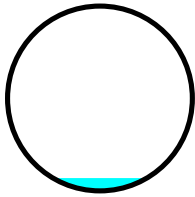
Summary for Reach 21R: DMH 2 TO FE

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 0.16" for 1 INCH event
 Inflow = 0.11 cfs @ 12.10 hrs, Volume= 0.008 af
 Outflow = 0.11 cfs @ 12.11 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.02 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 0.79 fps, Avg. Travel Time= 0.8 min

Peak Storage= 2 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.10'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
 n= 0.012 Concrete pipe, finished
 Length= 40.0' Slope= 0.0100 '/'
 Inlet Invert= 144.19', Outlet Invert= 143.79'

**Summary for Reach 22R: DMH 3 TO 2**

Inflow Area = 0.514 ac, 88.33% Impervious, Inflow Depth > 0.14" for 1 INCH event
 Inflow = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af
 Outflow = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.54 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 0.98 fps, Avg. Travel Time= 1.1 min

Peak Storage= 2 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.08'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

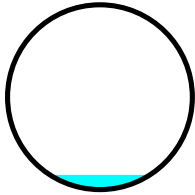
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 62.0' Slope= 0.0224 '/'

Inlet Invert= 145.68', Outlet Invert= 144.29'



Summary for Reach 24R: DMH 4 TO 3

Inflow Area = 0.214 ac, 100.00% Impervious, Inflow Depth > 0.08" for 1 INCH event
Inflow = 0.02 cfs @ 12.12 hrs, Volume= 0.001 af
Outflow = 0.02 cfs @ 12.15 hrs, Volume= 0.001 af, Atten= 4%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.98 fps, Min. Travel Time= 2.2 min

Avg. Velocity= 0.39 fps, Avg. Travel Time= 5.6 min

Peak Storage= 2 cf @ 12.15 hrs

Average Depth at Peak Storage= 0.06'

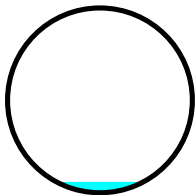
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 132.0' Slope= 0.0050 '/'

Inlet Invert= 146.44', Outlet Invert= 145.78'



Summary for Reach 25R: DMH 5 TO DMH 4

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
Inflow = 0.02 cfs @ 12.07 hrs, Volume= 0.001 af
Outflow = 0.02 cfs @ 12.12 hrs, Volume= 0.001 af, Atten= 10%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.02 fps, Min. Travel Time= 4.0 min

Avg. Velocity= 0.40 fps, Avg. Travel Time= 10.0 min

Peak Storage= 4 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.06'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.84 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

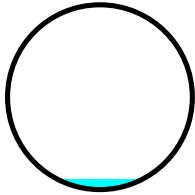
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 242.0' Slope= 0.0054 '/'

Inlet Invert= 147.75', Outlet Invert= 146.44'



Summary for Reach 45R: (new Reach)

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af
Outflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.46 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.12'

Bank-Full Depth= 0.50' Flow Area= 0.4 sf, Capacity= 1.46 cfs

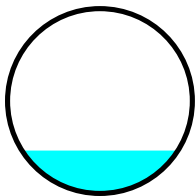
A factor of 2.00 has been applied to the storage and discharge capacity

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 153.10', Outlet Invert= 153.00'



Summary for Reach 46R: to pond

Inflow Area = 0.268 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af
Outflow = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.63 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.12'

Bank-Full Depth= 0.67' Flow Area= 0.7 sf, Capacity= 3.14 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

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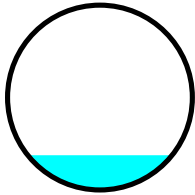
A factor of 2.00 has been applied to the storage and discharge capacity

8.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 145.10', Outlet Invert= 145.00'



Summary for Reach 47R: PTD TO PDMH-3

Inflow Area = 0.059 ac, 61.95% Impervious, Inflow Depth > 0.03" for 1 INCH event
Inflow = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.48 hrs, Volume= 0.000 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.47 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 0.39 fps, Avg. Travel Time= 1.5 min

Peak Storage= 0 cf @ 12.48 hrs

Average Depth at Peak Storage= 0.01'

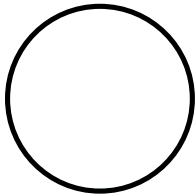
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.44 cfs

8.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 35.0' Slope= 0.0143 '/'

Inlet Invert= 143.20', Outlet Invert= 142.70'



Summary for Reach 49R: (new Reach)

Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 1.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.57 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

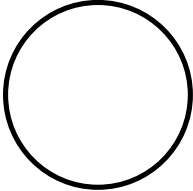
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12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 20.0' Slope= 0.0175 '/'

Inlet Invert= 138.25', Outlet Invert= 137.90'



Summary for Reach 50R: ROOF DRAIN TO BASIN

Inflow Area = 0.432 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
Inflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af
Outflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.48 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.21 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.20'

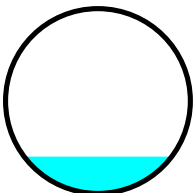
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 26.0' Slope= 0.0115 '/'

Inlet Invert= 139.30', Outlet Invert= 139.00'



Summary for Reach 51R: PCB 3 TO PDMH 2

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
Inflow = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.07 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.44 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 0.56 fps, Avg. Travel Time= 0.2 min

Peak Storage= 0 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.06'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.98 cfs

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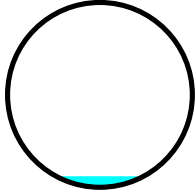
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 8.0' Slope= 0.0125 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 52R: PDMH-2 TO PDMH-3

Inflow Area = 0.919 ac, 76.13% Impervious, Inflow Depth > 0.16" for 1 INCH event
Inflow = 0.14 cfs @ 12.11 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.12 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.37 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 0.93 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.11'

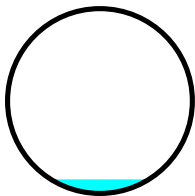
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.56 cfs

18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 70.0' Slope= 0.0143 '/'

Inlet Invert= 143.70', Outlet Invert= 142.70'



Summary for Reach 53R: PDMH-3 TO PDMH-4

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 0.15" for 1 INCH event
Inflow = 0.14 cfs @ 12.12 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.12 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.32 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.27 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

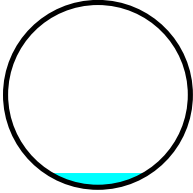
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18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 22.0' Slope= 0.0136 '/'

Inlet Invert= 142.60', Outlet Invert= 142.30'



Summary for Reach 54R: PCB 4 TO PDMH 2

Inflow Area = 0.052 ac, 52.73% Impervious, Inflow Depth > 0.00" for 1 INCH event
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 20.00 hrs

Average Depth at Peak Storage= 0.00'

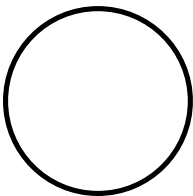
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.60 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 6.0' Slope= 0.0167 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 55R: PCB-2 TO PDMH-1

Inflow Area = 0.420 ac, 79.31% Impervious, Inflow Depth > 0.18" for 1 INCH event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af
Outflow = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.91 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.39 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.76 cfs

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Type III 24-hr 1 INCH Rainfall=1.00"

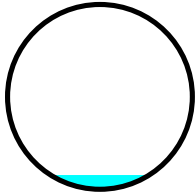
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 50.0' Slope= 0.0360 '/'

Inlet Invert= 148.90', Outlet Invert= 147.10'



Summary for Reach 56R: PDMH-1 TO PDMH-2

Inflow Area = 0.836 ac, 76.72% Impervious, Inflow Depth > 0.15" for 1 INCH event
Inflow = 0.12 cfs @ 12.11 hrs, Volume= 0.010 af
Outflow = 0.12 cfs @ 12.12 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.17 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.11'

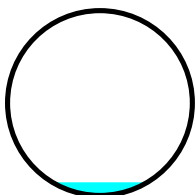
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe

n= 0.013 Concrete pipe, bends & connections

Length= 76.0' Slope= 0.0132 '/'

Inlet Invert= 144.80', Outlet Invert= 143.80'



Summary for Reach 58R: PCB-1 TO PDMH-1

Inflow Area = 0.416 ac, 74.09% Impervious, Inflow Depth > 0.12" for 1 INCH event
Inflow = 0.04 cfs @ 12.12 hrs, Volume= 0.004 af
Outflow = 0.04 cfs @ 12.12 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.49 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.80 fps, Avg. Travel Time= 0.8 min

Peak Storage= 1 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.56 cfs

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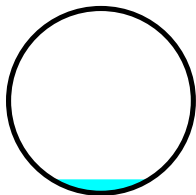
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0100 '/'

Inlet Invert= 147.50', Outlet Invert= 147.10'



Summary for Reach 89R: ISO. TO BASIN

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth = 0.00" for 1 INCH event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 1.00 hrs

Average Depth at Peak Storage= 0.00'

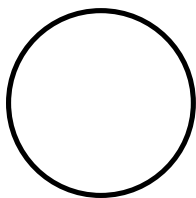
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.47 cfs

15.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0154 '/'

Inlet Invert= 141.50', Outlet Invert= 139.50'



Summary for Reach 92R: street

Inflow Area = 0.396 ac, 13.25% Impervious, Inflow Depth = 0.00" for 1 INCH event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 0.11" for 1 INCH event
 Inflow = 0.45 cfs @ 12.14 hrs, Volume= 0.053 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 135.58' @ 20.00 hrs Surf.Area= 7,898 sf Storage= 2,294 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.07" for 1 INCH event
 Inflow = 0.39 cfs @ 12.14 hrs, Volume= 0.031 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 135.45' @ 20.00 hrs Surf.Area= 6,107 sf Storage= 1,371 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 1 INCH Rainfall=1.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 0.16" for 1 INCH event
 Inflow = 0.11 cfs @ 12.11 hrs, Volume= 0.008 af
 Outflow = 0.01 cfs @ 13.32 hrs, Volume= 0.003 af, Atten= 88%, Lag= 72.9 min
 Primary = 0.01 cfs @ 13.32 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.09' @ 13.32 hrs Surf.Area= 386 sf Storage= 202 cf

Plug-Flow detention time= 222.4 min calculated for 0.003 af (43% of inflow)

Center-of-Mass det. time= 122.1 min (942.1 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.01 cfs @ 13.32 hrs HW=143.09' TW=140.53' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.20 fps)

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Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
 Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 150.72' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 519 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 0.10" for 1 INCH event
 Inflow = 0.02 cfs @ 12.13 hrs, Volume= 0.003 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.07' @ 20.00 hrs Surf.Area= 4,059 sf Storage= 114 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

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Type III 24-hr 1 INCH Rainfall=1.00"

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Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' TW=140.50' (Dynamic Tailwater)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 0.17" for 1 INCH event
 Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.021 af
 Outflow = 0.07 cfs @ 12.43 hrs, Volume= 0.021 af, Atten= 72%, Lag= 21.6 min
 Primary = 0.07 cfs @ 12.43 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 140.60' @ 12.43 hrs Surf.Area= 1,666 sf Storage= 148 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 9.6 min (804.5 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 1 INCH Rainfall=1.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.07 cfs @ 12.43 hrs HW=140.60' TW=135.41' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.07 cfs @ 3.05 fps)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area = 1.810 ac, 71.53% Impervious, Inflow Depth > 0.18" for 1 INCH event
 Inflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af
 Outflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.00' @ 1.00 hrs Surf.Area= 4,700 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.0 min (757.3 - 757.3)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=138.00' (Free Discharge)↑**1=Exfiltration** (Passes 0.00 cfs of 3.37 cfs potential flow)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 0.15" for 1 INCH event
 Inflow = 0.14 cfs @ 12.12 hrs, Volume= 0.012 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 144.33' @ 20.00 hrs Surf.Area= 290 sf Storage= 531 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.50' TW=141.50' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Subcatchment 1S: TO STREET (PRE)

Runoff = 0.00 cfs @ 17.15 hrs, Volume= 0.001 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.060	49	50-75% Grass cover, Fair, HSG A
0.670	35	Brush, Fair, HSG A
0.820	43	Weighted Average
0.730		89.02% Pervious Area
0.090		10.98% Impervious Area

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

Summary for Subcatchment 2S: TO WETLANDS (PRE)

Runoff = 0.20 cfs @ 12.57 hrs, Volume= 0.054 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
6,970	98	Paved parking & roofs
60,113	49	50-75% Grass cover, Fair, HSG A
73,834	35	Brush, Fair, HSG A
62,726	70	Brush, Fair, HSG C
203,643	52	Weighted Average
196,673		96.58% Pervious Area
6,970		3.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
2.1	170	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.7	320	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.2	540	Total			

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Subcatchment 3S: wetlands

Runoff = 1.35 cfs @ 12.14 hrs, Volume= 0.119 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 4S: wetlands (PRE)

Runoff = 1.35 cfs @ 12.14 hrs, Volume= 0.119 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 10(A): TO STREET

Runoff = 0.00 cfs @ 17.15 hrs, Volume= 0.000 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

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Type III 24-hr 2 YEAR Rainfall=3.20"

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	Area (sf)	CN	Description
	12,917	39	>75% Grass cover, Good, HSG A
*	923	98	Paved
	13,840	43	Weighted Average
	12,917		93.33% Pervious Area
	923		6.67% Impervious Area

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

Summary for Subcatchment 10(B): TO STREET

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af, Depth> 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
	2,032	39	>75% Grass cover, Good, HSG A
*	1,360	98	Paved
	3,392	63	Weighted Average
	2,032		59.91% Pervious Area
	1,360		40.09% Impervious Area

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

Summary for Subcatchment 18S: TO PROP CB-2

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 0.060 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
*	14,524	98	Paved
	3,789	39	>75% Grass cover, Good, HSG A
	18,313	86	Weighted Average
	3,789		20.69% Pervious Area
	14,524		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Subcatchment 19S A: TO PCB3

Runoff = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
*	1,329	98	Paved
	1,329		100.00% Impervious Area

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

Summary for Subcatchment 19S B: TO PCB4

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
	1,073	39	>75% Grass cover, Good, HSG A
*	1,197	98	PAVED
	2,270	70	Weighted Average
	1,073		47.27% Pervious Area
	1,197		52.73% Impervious Area

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

Summary for Subcatchment 20f: front of building

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
*	8,322	98	
	8,322		100.00% Impervious Area

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

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Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Subcatchment 20r: rear of building

Runoff = 0.84 cfs @ 12.07 hrs, Volume= 0.063 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
11,678	98	Paved parking & roofs
11,678		100.00% Impervious Area

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

Summary for Subcatchment 21S: fire road

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.038 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (ac)	CN	Description
* 0.170	98	pervious pavement
* 0.030	98	patio
0.060	39	>75% Grass cover, Good, HSG A
0.060	74	>75% Grass cover, Good, HSG C
0.320	82	Weighted Average
0.120		37.50% Pervious Area
0.200		62.50% Impervious Area

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

Summary for Subcatchment 23S: AREA AROUND BASIN

Runoff = 0.07 cfs @ 12.15 hrs, Volume= 0.010 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
* 5,518	98	POND
11,914	39	>75% Grass cover, Good, HSG A
17,432	58	Weighted Average
11,914		68.35% Pervious Area
5,518		31.65% Impervious Area

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Type III 24-hr 2 YEAR Rainfall=3.20"

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

Summary for Subcatchment 24S: TO PROP CB-1

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 0.052 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
*	13,415	98	Paved
	4,691	39	>75% Grass cover, Good, HSG A
	18,106	83	Weighted Average
	4,691		25.91% Pervious Area
	13,415		74.09% Impervious Area

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

Summary for Subcatchment 25S: TO ROOF DRAIN

Runoff = 1.35 cfs @ 12.07 hrs, Volume= 0.102 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (sf)	CN	Description
	18,814	98	Roofs, HSG A
	18,814		100.00% Impervious Area

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

Summary for Subcatchment 30s: to cb 1

Runoff = 0.65 cfs @ 12.08 hrs, Volume= 0.043 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

	Area (ac)	CN	Description
	0.240	98	Paved parking & roofs
	0.060	39	>75% Grass cover, Good, HSG A
	0.300	86	Weighted Average
	0.060		20.00% Pervious Area
	0.240		80.00% Impervious Area

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Type III 24-hr 2 YEAR Rainfall=3.20"

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

Summary for Subcatchment 31S: to cb 4&5

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Description
1,005	98	Paved parking & roofs
1,005		100.00% Impervious Area

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

Summary for Subcatchment 32S: to cb 2

Runoff = 0.21 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.010	39	>75% Grass cover, Good, HSG A
0.080	91	Weighted Average
0.010		12.50% Pervious Area
0.070		87.50% Impervious Area

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

Summary for Subcatchment 35S: area around swm pond

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

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Type III 24-hr 2 YEAR Rainfall=3.20"

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Area (ac)	CN	Description
* 0.160	98	pond & forebay
0.080	39	>75% Grass cover, Good, HSG A
0.080	74	>75% Grass cover, Good, HSG C
0.320	77	Weighted Average
0.160		50.00% Pervious Area
0.160		50.00% Impervious Area

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

Summary for Subcatchment 40S: remaining area

Runoff = 0.03 cfs @ 14.07 hrs, Volume= 0.012 af, Depth> 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

Area (sf)	CN	Adj	Description
* 2,178	98		Unconnected pavement, HSG C
10,019	74		>75% Grass cover, Good, HSG C
1,307	39		>75% Grass cover, Good, HSG A
17,424	70		Brush, Fair, HSG C
47,021	35		Brush, Fair, HSG A
77,949	50	49	Weighted Average, UI Adjusted
75,771			97.21% Pervious Area
2,178			2.79% Impervious Area
2,178			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0100	0.08		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.20"
23.3	700	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
34.1	750	Total			

Summary for Subcatchment 50s: TO PROP TRENCH DRAIN

Runoff = 0.08 cfs @ 12.08 hrs, Volume= 0.005 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.20"

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Type III 24-hr 2 YEAR Rainfall=3.20"

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	Area (sf)	CN	Description
*	1,597	98	Paved
	981	39	>75% Grass cover, Good, HSG A
	2,578	76	Weighted Average
	981		38.05% Pervious Area
	1,597		61.95% Impervious Area

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

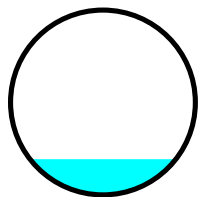
Summary for Reach 21R: DMH 2 TO FE

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 1.26" for 2 YEAR event
 Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.062 af
 Outflow = 0.92 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.85 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.19 fps, Avg. Travel Time= 0.6 min

Peak Storage= 9 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.29'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
 n= 0.012 Concrete pipe, finished
 Length= 40.0' Slope= 0.0100 '/'
 Inlet Invert= 144.19', Outlet Invert= 143.79'

**Summary for Reach 22R: DMH 3 TO 2**

Inflow Area = 0.514 ac, 88.33% Impervious, Inflow Depth > 1.13" for 2 YEAR event
 Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.048 af
 Outflow = 0.71 cfs @ 12.08 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.97 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.52 fps, Avg. Travel Time= 0.7 min

Peak Storage= 9 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.24'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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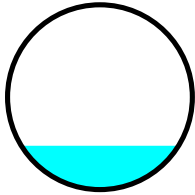
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 62.0' Slope= 0.0224 '/'

Inlet Invert= 145.68', Outlet Invert= 144.29'

**Summary for Reach 24R: DMH 4 TO 3**

Inflow Area = 0.214 ac, 100.00% Impervious, Inflow Depth > 0.30" for 2 YEAR event
Inflow = 0.07 cfs @ 12.10 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af, Atten= 3%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.45 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 0.52 fps, Avg. Travel Time= 4.2 min

Peak Storage= 6 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.11'

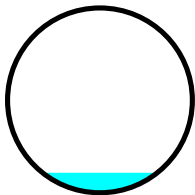
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 132.0' Slope= 0.0050 '/'

Inlet Invert= 146.44', Outlet Invert= 145.78'

**Summary for Reach 25R: DMH 5 TO DMH 4**

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
Inflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.10 hrs, Volume= 0.005 af, Atten= 6%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.51 fps, Min. Travel Time= 2.7 min

Avg. Velocity = 0.54 fps, Avg. Travel Time= 7.5 min

Peak Storage= 11 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.84 cfs

Coolidge at Sudbury Phase2-1-16-17

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Type III 24-hr 2 YEAR Rainfall=3.20"

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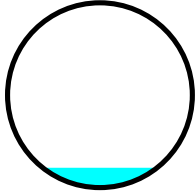
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 242.0' Slope= 0.0054 '/'

Inlet Invert= 147.75', Outlet Invert= 146.44'



Summary for Reach 45R: (new Reach)

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
Inflow = 0.60 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.60 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.50 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.23 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.22'

Bank-Full Depth= 0.50' Flow Area= 0.4 sf, Capacity= 1.46 cfs

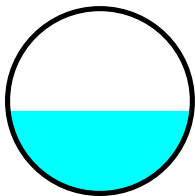
A factor of 2.00 has been applied to the storage and discharge capacity

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 153.10', Outlet Invert= 153.00'



Summary for Reach 46R: to pond

Inflow Area = 0.268 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
Inflow = 0.84 cfs @ 12.07 hrs, Volume= 0.063 af
Outflow = 0.84 cfs @ 12.07 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.78 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.31 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.24'

Bank-Full Depth= 0.67' Flow Area= 0.7 sf, Capacity= 3.14 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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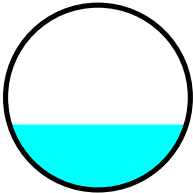
A factor of 2.00 has been applied to the storage and discharge capacity

8.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 145.10', Outlet Invert= 145.00'



Summary for Reach 47R: PTD TO PDMH-3

Inflow Area = 0.059 ac, 61.95% Impervious, Inflow Depth > 1.06" for 2 YEAR event
Inflow = 0.08 cfs @ 12.08 hrs, Volume= 0.005 af
Outflow = 0.08 cfs @ 12.09 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.20 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.11'

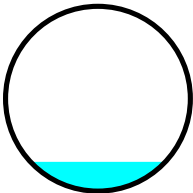
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.44 cfs

8.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 35.0' Slope= 0.0143 '/'

Inlet Invert= 143.20', Outlet Invert= 142.70'



Summary for Reach 49R: (new Reach)

Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 1.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.57 cfs

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Type III 24-hr 2 YEAR Rainfall=3.20"

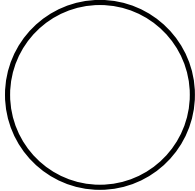
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12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 20.0' Slope= 0.0175 '/'

Inlet Invert= 138.25', Outlet Invert= 137.90'



Summary for Reach 50R: ROOF DRAIN TO BASIN

Inflow Area = 0.432 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
Inflow = 1.35 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.35 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.99 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.74 fps, Avg. Travel Time= 0.2 min

Peak Storage= 7 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.37'

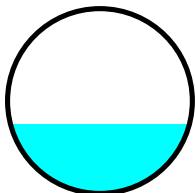
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 26.0' Slope= 0.0115 '/'

Inlet Invert= 139.30', Outlet Invert= 139.00'



Summary for Reach 51R: PCB 3 TO PDMH 2

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
Inflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af
Outflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.10 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.74 fps, Avg. Travel Time= 0.2 min

Peak Storage= 0 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.98 cfs

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Type III 24-hr 2 YEAR Rainfall=3.20"

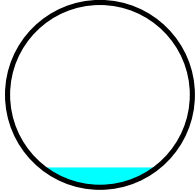
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 8.0' Slope= 0.0125 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 52R: PDMH-2 TO PDMH-3

Inflow Area = 0.919 ac, 76.13% Impervious, Inflow Depth > 1.60" for 2 YEAR event
Inflow = 1.84 cfs @ 12.09 hrs, Volume= 0.122 af
Outflow = 1.84 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.07 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.8 min

Peak Storage= 25 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.39'

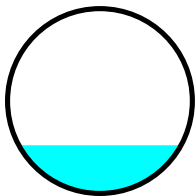
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.56 cfs

18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 70.0' Slope= 0.0143 '/'

Inlet Invert= 143.70', Outlet Invert= 142.70'



Summary for Reach 53R: PDMH-3 TO PDMH-4

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 1.56" for 2 YEAR event
Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.127 af
Outflow = 1.92 cfs @ 12.09 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.05 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.47 fps, Avg. Travel Time= 0.2 min

Peak Storage= 8 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.40'

Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.27 cfs

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Type III 24-hr 2 YEAR Rainfall=3.20"

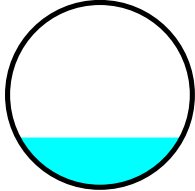
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18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 22.0' Slope= 0.0136 '/'

Inlet Invert= 142.60', Outlet Invert= 142.30'



Summary for Reach 54R: PCB 4 TO PDMH 2

Inflow Area = 0.052 ac, 52.73% Impervious, Inflow Depth > 0.75" for 2 YEAR event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.88 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.07'

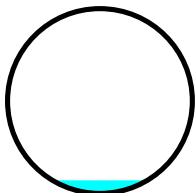
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.60 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 6.0' Slope= 0.0167 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 55R: PCB-2 TO PDMH-1

Inflow Area = 0.420 ac, 79.31% Impervious, Inflow Depth > 1.71" for 2 YEAR event
Inflow = 0.90 cfs @ 12.08 hrs, Volume= 0.060 af
Outflow = 0.91 cfs @ 12.08 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.96 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.24 fps, Avg. Travel Time= 0.4 min

Peak Storage= 8 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.25'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.76 cfs

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Type III 24-hr 2 YEAR Rainfall=3.20"

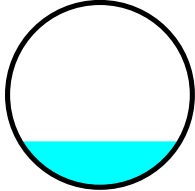
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 50.0' Slope= 0.0360 '/'

Inlet Invert= 148.90', Outlet Invert= 147.10'



Summary for Reach 56R: PDMH-1 TO PDMH-2

Inflow Area = 0.836 ac, 76.72% Impervious, Inflow Depth > 1.61" for 2 YEAR event
Inflow = 1.69 cfs @ 12.08 hrs, Volume= 0.112 af
Outflow = 1.70 cfs @ 12.09 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.80 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.7 min

Peak Storage= 27 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.38'

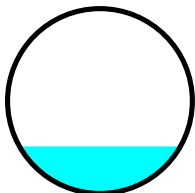
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe

n= 0.013 Concrete pipe, bends & connections

Length= 76.0' Slope= 0.0132 '/'

Inlet Invert= 144.80', Outlet Invert= 143.80'



Summary for Reach 58R: PCB-1 TO PDMH-1

Inflow Area = 0.416 ac, 74.09% Impervious, Inflow Depth > 1.50" for 2 YEAR event
Inflow = 0.78 cfs @ 12.08 hrs, Volume= 0.052 af
Outflow = 0.79 cfs @ 12.08 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.62 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.42 fps, Avg. Travel Time= 0.5 min

Peak Storage= 9 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.32'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.56 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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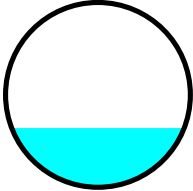
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0100 '/'

Inlet Invert= 147.50', Outlet Invert= 147.10'



Summary for Reach 89R: ISO. TO BASIN

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 1.41" for 2 YEAR event
Inflow = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af
Outflow = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.06 fps, Min. Travel Time= 0.4 min

Avg. Velocity= 2.57 fps, Avg. Travel Time= 0.8 min

Peak Storage= 41 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.38'

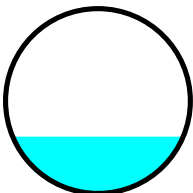
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.47 cfs

15.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0154 '/'

Inlet Invert= 141.50', Outlet Invert= 139.50'



Summary for Reach 92R: street

Inflow Area = 0.396 ac, 13.25% Impervious, Inflow Depth > 0.10" for 2 YEAR event
Inflow = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af
Outflow = 0.03 cfs @ 12.11 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 0.50" for 2 YEAR event
 Inflow = 1.46 cfs @ 12.14 hrs, Volume= 0.235 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.23' @ 20.00 hrs Surf.Area= 16,159 sf Storage= 10,230 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.40" for 2 YEAR event
 Inflow = 1.35 cfs @ 12.14 hrs, Volume= 0.173 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.05' @ 20.00 hrs Surf.Area= 14,195 sf Storage= 7,545 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 2 YEAR Rainfall=3.20"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 1.26" for 2 YEAR event
 Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.062 af
 Outflow = 0.93 cfs @ 12.10 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.8 min
 Primary = 0.93 cfs @ 12.10 hrs, Volume= 0.058 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.20' @ 12.10 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 42.6 min calculated for 0.058 af (92% of inflow)

Center-of-Mass det. time= 17.6 min (796.6 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.92 cfs @ 12.10 hrs HW=143.20' TW=141.22' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.92 cfs @ 0.83 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
 Inflow = 0.60 cfs @ 12.07 hrs, Volume= 0.045 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 152.05' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 1,961 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 1.43" for 2 YEAR event
 Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.03 cfs @ 18.25 hrs, Volume= 0.017 af, Atten= 94%, Lag= 370.2 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.03 cfs @ 18.25 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.74' @ 14.97 hrs Surf.Area= 4,059 sf Storage= 1,200 cf

Plug-Flow detention time= 300.1 min calculated for 0.017 af (45% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Center-of-Mass det. time= 213.6 min (1,011.4 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 18.25 hrs HW=141.65' TW=141.64' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 0.29 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 1.34" for 2 YEAR event
 Inflow = 2.18 cfs @ 12.09 hrs, Volume= 0.168 af
 Outflow = 0.14 cfs @ 14.91 hrs, Volume= 0.104 af, Atten= 94%, Lag= 169.3 min
 Primary = 0.14 cfs @ 14.91 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.74' @ 14.91 hrs Surf.Area= 3,928 sf Storage= 3,477 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 93.2 min (888.3 - 795.1)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.14 cfs @ 14.91 hrs HW=141.74' TW=136.01' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.13 cfs @ 5.98 fps)
 2=Orifice/Grate (Orifice Controls 0.01 cfs @ 0.66 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 1.50" for 2 YEAR event
Inflow =	3.29 cfs @ 12.09 hrs, Volume= 0.227 af
Outflow =	3.24 cfs @ 12.10 hrs, Volume= 0.226 af, Atten= 2%, Lag= 0.1 min
Discarded =	3.24 cfs @ 12.10 hrs, Volume= 0.226 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.00' @ 12.10 hrs Surf.Area= 4,701 sf Storage= 5 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.37 cfs @ 12.10 hrs HW=138.00' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.37 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 1.56" for 2 YEAR event
 Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.127 af
 Outflow = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.5 min
 Primary = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.73' @ 12.10 hrs Surf.Area= 290 sf Storage= 608 cf

Plug-Flow detention time= 49.3 min calculated for 0.115 af (90% of inflow)

Center-of-Mass det. time= 17.9 min (807.9 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=1.92 cfs @ 12.10 hrs HW=144.73' TW=141.88' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.92 cfs @ 1.68 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Subcatchment 1S: TO STREET (PRE)

Runoff = 0.09 cfs @ 12.36 hrs, Volume= 0.017 af, Depth> 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.060	49	50-75% Grass cover, Fair, HSG A
0.670	35	Brush, Fair, HSG A
0.820	43	Weighted Average
0.730		89.02% Pervious Area
0.090		10.98% Impervious Area

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

Summary for Subcatchment 2S: TO WETLANDS (PRE)

Runoff = 1.93 cfs @ 12.31 hrs, Volume= 0.243 af, Depth> 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
6,970	98	Paved parking & roofs
60,113	49	50-75% Grass cover, Fair, HSG A
73,834	35	Brush, Fair, HSG A
62,726	70	Brush, Fair, HSG C
203,643	52	Weighted Average
196,673		96.58% Pervious Area
6,970		3.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
2.1	170	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.7	320	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.2	540	Total			

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Subcatchment 3S: wetlands

Runoff = 2.04 cfs @ 12.14 hrs, Volume= 0.183 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 4S: wetlands (PRE)

Runoff = 2.04 cfs @ 12.14 hrs, Volume= 0.183 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 10(A): TO STREET

Runoff = 0.03 cfs @ 12.36 hrs, Volume= 0.007 af, Depth> 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

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Type III 24-hr 10 YEAR Rainfall=4.80"

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	Area (sf)	CN	Description
	12,917	39	>75% Grass cover, Good, HSG A
*	923	98	Paved
	13,840	43	Weighted Average
	12,917		93.33% Pervious Area
	923		6.67% Impervious Area

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

Summary for Subcatchment 10(B): TO STREET

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

	Area (sf)	CN	Description
	2,032	39	>75% Grass cover, Good, HSG A
*	1,360	98	Paved
	3,392	63	Weighted Average
	2,032		59.91% Pervious Area
	1,360		40.09% Impervious Area

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

Summary for Subcatchment 18S: TO PROP CB-2

Runoff = 1.61 cfs @ 12.07 hrs, Volume= 0.108 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

	Area (sf)	CN	Description
*	14,524	98	Paved
	3,789	39	>75% Grass cover, Good, HSG A
	18,313	86	Weighted Average
	3,789		20.69% Pervious Area
	14,524		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Subcatchment 19S A: TO PCB3

Runoff = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
* 1,329	98	Paved
1,329		100.00% Impervious Area

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

Summary for Subcatchment 19S B: TO PCB4

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.008 af, Depth> 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
1,073	39	>75% Grass cover, Good, HSG A
* 1,197	98	PAVED
2,270	70	Weighted Average
1,073		47.27% Pervious Area
1,197		52.73% Impervious Area

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

Summary for Subcatchment 20f: front of building

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.069 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
* 8,322	98	
8,322		100.00% Impervious Area

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

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Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Subcatchment 20r: rear of building

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.097 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
11,678	98	Paved parking & roofs
11,678		100.00% Impervious Area

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

Summary for Subcatchment 21S: fire road

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.072 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (ac)	CN	Description
* 0.170	98	pervious pavement
* 0.030	98	patio
0.060	39	>75% Grass cover, Good, HSG A
0.060	74	>75% Grass cover, Good, HSG C
0.320	82	Weighted Average
0.120		37.50% Pervious Area
0.200		62.50% Impervious Area

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

Summary for Subcatchment 23S: AREA AROUND BASIN

Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
* 5,518	98	POND
11,914	39	>75% Grass cover, Good, HSG A
17,432	58	Weighted Average
11,914		68.35% Pervious Area
5,518		31.65% Impervious Area

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Type III 24-hr 10 YEAR Rainfall=4.80"

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

Summary for Subcatchment 24S: TO PROP CB-1

Runoff = 1.45 cfs @ 12.08 hrs, Volume= 0.097 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

	Area (sf)	CN	Description
*	13,415	98	Paved
	4,691	39	>75% Grass cover, Good, HSG A
	18,106	83	Weighted Average
	4,691		25.91% Pervious Area
	13,415		74.09% Impervious Area

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

Summary for Subcatchment 25S: TO ROOF DRAIN

Runoff = 2.04 cfs @ 12.07 hrs, Volume= 0.157 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

	Area (sf)	CN	Description
	18,814	98	Roofs, HSG A
	18,814		100.00% Impervious Area

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

Summary for Subcatchment 30s: to cb 1

Runoff = 1.15 cfs @ 12.07 hrs, Volume= 0.077 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

	Area (ac)	CN	Description
	0.240	98	Paved parking & roofs
	0.060	39	>75% Grass cover, Good, HSG A
	0.300	86	Weighted Average
	0.060		20.00% Pervious Area
	0.240		80.00% Impervious Area

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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

Summary for Subcatchment 31S: to cb 4&5

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Description
1,005	98	Paved parking & roofs
1,005		100.00% Impervious Area

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

Summary for Subcatchment 32S: to cb 2

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 0.024 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.010	39	>75% Grass cover, Good, HSG A
0.080	91	Weighted Average
0.010		12.50% Pervious Area
0.070		87.50% Impervious Area

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

Summary for Subcatchment 35S: area around swm pond

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.061 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

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Type III 24-hr 10 YEAR Rainfall=4.80"

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Area (ac)	CN	Description
* 0.160	98	pond & forebay
0.080	39	>75% Grass cover, Good, HSG A
0.080	74	>75% Grass cover, Good, HSG C
0.320	77	Weighted Average
0.160		50.00% Pervious Area
0.160		50.00% Impervious Area

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

Summary for Subcatchment 40S: remaining area

Runoff = 0.39 cfs @ 12.66 hrs, Volume= 0.071 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

Area (sf)	CN	Adj	Description
* 2,178	98		Unconnected pavement, HSG C
10,019	74		>75% Grass cover, Good, HSG C
1,307	39		>75% Grass cover, Good, HSG A
17,424	70		Brush, Fair, HSG C
47,021	35		Brush, Fair, HSG A
77,949	50	49	Weighted Average, UI Adjusted
75,771			97.21% Pervious Area
2,178			2.79% Impervious Area
2,178			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0100	0.08		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.20"
23.3	700	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
34.1	750	Total			

Summary for Subcatchment 50s: TO PROP TRENCH DRAIN

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.011 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.80"

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Type III 24-hr 10 YEAR Rainfall=4.80"

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	Area (sf)	CN	Description
*	1,597	98	Paved
	981	39	>75% Grass cover, Good, HSG A
	2,578	76	Weighted Average
	981		38.05% Pervious Area
	1,597		61.95% Impervious Area

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

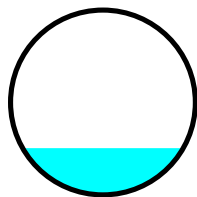
Summary for Reach 21R: DMH 2 TO FE

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 2.21" for 10 YEAR event
 Inflow = 1.57 cfs @ 12.08 hrs, Volume= 0.109 af
 Outflow = 1.58 cfs @ 12.08 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.50 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.39 fps, Avg. Travel Time= 0.5 min

Peak Storage= 14 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.38'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
 n= 0.012 Concrete pipe, finished
 Length= 40.0' Slope= 0.0100 '/'
 Inlet Invert= 144.19', Outlet Invert= 143.79'

**Summary for Reach 22R: DMH 3 TO 2**

Inflow Area = 0.514 ac, 88.33% Impervious, Inflow Depth > 2.00" for 10 YEAR event
 Inflow = 1.23 cfs @ 12.08 hrs, Volume= 0.086 af
 Outflow = 1.23 cfs @ 12.08 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.82 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.79 fps, Avg. Travel Time= 0.6 min

Peak Storage= 13 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.31'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

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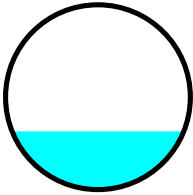
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 62.0' Slope= 0.0224 '/'

Inlet Invert= 145.68', Outlet Invert= 144.29'



Summary for Reach 24R: DMH 4 TO 3

Inflow Area = 0.214 ac, 100.00% Impervious, Inflow Depth > 0.47" for 10 YEAR event
Inflow = 0.10 cfs @ 12.10 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.65 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 0.59 fps, Avg. Travel Time= 3.8 min

Peak Storage= 8 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.13'

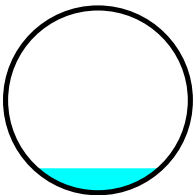
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 132.0' Slope= 0.0050 '/'

Inlet Invert= 146.44', Outlet Invert= 145.78'



Summary for Reach 25R: DMH 5 TO DMH 4

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 5%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.72 fps, Min. Travel Time= 2.4 min

Avg. Velocity = 0.60 fps, Avg. Travel Time= 6.7 min

Peak Storage= 15 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.13'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.84 cfs

Coolidge at Sudbury Phase2-1-16-17

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Type III 24-hr 10 YEAR Rainfall=4.80"

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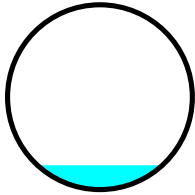
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 242.0' Slope= 0.0054 '/'

Inlet Invert= 147.75', Outlet Invert= 146.44'



Summary for Reach 45R: (new Reach)

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
Inflow = 0.90 cfs @ 12.07 hrs, Volume= 0.069 af
Outflow = 0.90 cfs @ 12.07 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.89 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.41 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.28'

Bank-Full Depth= 0.50' Flow Area= 0.4 sf, Capacity= 1.46 cfs

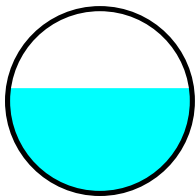
A factor of 2.00 has been applied to the storage and discharge capacity

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 153.10', Outlet Invert= 153.00'



Summary for Reach 46R: to pond

Inflow Area = 0.268 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
Inflow = 1.27 cfs @ 12.07 hrs, Volume= 0.097 af
Outflow = 1.27 cfs @ 12.07 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.23 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.50 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.29'

Bank-Full Depth= 0.67' Flow Area= 0.7 sf, Capacity= 3.14 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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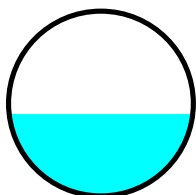
A factor of 2.00 has been applied to the storage and discharge capacity

8.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 145.10', Outlet Invert= 145.00'



Summary for Reach 47R: PTD TO PDMH-3

Inflow Area = 0.059 ac, 61.95% Impervious, Inflow Depth > 2.20" for 10 YEAR event
Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.16 cfs @ 12.08 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.74 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.5 min

Peak Storage= 2 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.15'

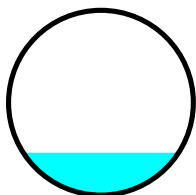
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.44 cfs

8.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 35.0' Slope= 0.0143 '/'

Inlet Invert= 143.20', Outlet Invert= 142.70'



Summary for Reach 49R: (new Reach)

Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 1.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.57 cfs

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Type III 24-hr 10 YEAR Rainfall=4.80"

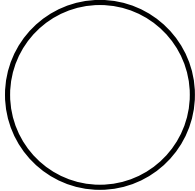
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12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 20.0' Slope= 0.0175 '/'

Inlet Invert= 138.25', Outlet Invert= 137.90'



Summary for Reach 50R: ROOF DRAIN TO BASIN

Inflow Area = 0.432 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
Inflow = 2.04 cfs @ 12.07 hrs, Volume= 0.157 af
Outflow = 2.04 cfs @ 12.07 hrs, Volume= 0.157 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.57 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.98 fps, Avg. Travel Time= 0.2 min

Peak Storage= 9 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.47'

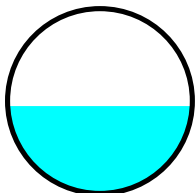
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 26.0' Slope= 0.0115 '/'

Inlet Invert= 139.30', Outlet Invert= 139.00'



Summary for Reach 51R: PCB 3 TO PDMH 2

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
Inflow = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.38 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.83 fps, Avg. Travel Time= 0.2 min

Peak Storage= 0 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.13'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.98 cfs

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Type III 24-hr 10 YEAR Rainfall=4.80"

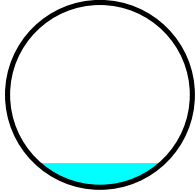
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 8.0' Slope= 0.0125 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 52R: PDMH-2 TO PDMH-3

Inflow Area = 0.919 ac, 76.13% Impervious, Inflow Depth > 2.92" for 10 YEAR event
Inflow = 3.32 cfs @ 12.08 hrs, Volume= 0.224 af
Outflow = 3.33 cfs @ 12.09 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.98 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.7 min

Peak Storage= 39 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.53'

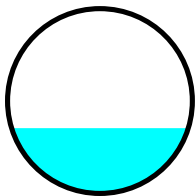
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.56 cfs

18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 70.0' Slope= 0.0143 '/'

Inlet Invert= 143.70', Outlet Invert= 142.70'



Summary for Reach 53R: PDMH-3 TO PDMH-4

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 2.88" for 10 YEAR event
Inflow = 3.49 cfs @ 12.09 hrs, Volume= 0.235 af
Outflow = 3.50 cfs @ 12.09 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.96 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.2 min

Peak Storage= 13 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.55'

Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.27 cfs

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Type III 24-hr 10 YEAR Rainfall=4.80"

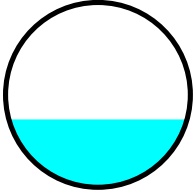
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18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 22.0' Slope= 0.0136 '/'

Inlet Invert= 142.60', Outlet Invert= 142.30'



Summary for Reach 54R: PCB 4 TO PDMH 2

Inflow Area = 0.052 ac, 52.73% Impervious, Inflow Depth > 1.74" for 10 YEAR event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.008 af
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.46 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.11'

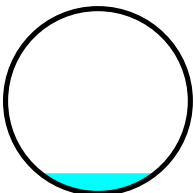
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.60 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 6.0' Slope= 0.0167 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 55R: PCB-2 TO PDMH-1

Inflow Area = 0.420 ac, 79.31% Impervious, Inflow Depth > 3.09" for 10 YEAR event
Inflow = 1.61 cfs @ 12.07 hrs, Volume= 0.108 af
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.108 af, Atten= 1%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.99 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.52 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.76 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

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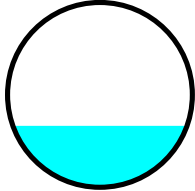
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 50.0' Slope= 0.0360 '/'

Inlet Invert= 148.90', Outlet Invert= 147.10'



Summary for Reach 56R: PDMH-1 TO PDMH-2

Inflow Area = 0.836 ac, 76.72% Impervious, Inflow Depth > 2.95" for 10 YEAR event
Inflow = 3.05 cfs @ 12.08 hrs, Volume= 0.205 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.67 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.02 fps, Avg. Travel Time= 0.6 min

Peak Storage= 41 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.52'

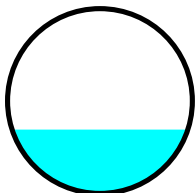
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe

n= 0.013 Concrete pipe, bends & connections

Length= 76.0' Slope= 0.0132 '/'

Inlet Invert= 144.80', Outlet Invert= 143.80'



Summary for Reach 58R: PCB-1 TO PDMH-1

Inflow Area = 0.416 ac, 74.09% Impervious, Inflow Depth > 2.81" for 10 YEAR event
Inflow = 1.45 cfs @ 12.08 hrs, Volume= 0.097 af
Outflow = 1.46 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.28 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.61 fps, Avg. Travel Time= 0.4 min

Peak Storage= 14 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.56 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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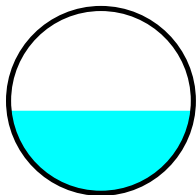
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0100 '/'

Inlet Invert= 147.50', Outlet Invert= 147.10'



Summary for Reach 89R: ISO. TO BASIN

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 2.73" for 10 YEAR event
Inflow = 3.51 cfs @ 12.09 hrs, Volume= 0.222 af
Outflow = 3.52 cfs @ 12.10 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.15 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 3.00 fps, Avg. Travel Time= 0.7 min

Peak Storage= 64 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.53'

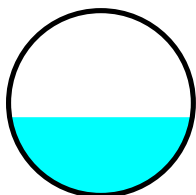
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.47 cfs

15.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0154 '/'

Inlet Invert= 141.50', Outlet Invert= 139.50'



Summary for Reach 92R: street

Inflow Area = 0.396 ac, 13.25% Impervious, Inflow Depth > 0.45" for 10 YEAR event
Inflow = 0.12 cfs @ 12.10 hrs, Volume= 0.015 af
Outflow = 0.12 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 1.04" for 10 YEAR event
 Inflow = 2.33 cfs @ 12.16 hrs, Volume= 0.486 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.80' @ 20.00 hrs Surf.Area= 22,430 sf Storage= 21,131 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.99" for 10 YEAR event
 Inflow = 3.35 cfs @ 12.21 hrs, Volume= 0.426 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.68' @ 20.00 hrs Surf.Area= 21,121 sf Storage= 18,562 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 2.21" for 10 YEAR event
 Inflow = 1.58 cfs @ 12.08 hrs, Volume= 0.109 af
 Outflow = 1.61 cfs @ 12.07 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.61 cfs @ 12.07 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.26' @ 12.07 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 30.1 min calculated for 0.104 af (95% of inflow)

Center-of-Mass det. time= 13.8 min (780.2 - 766.5)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.53 cfs @ 12.07 hrs HW=143.25' TW=141.65' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 1.53 cfs @ 0.99 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
 Inflow = 0.90 cfs @ 12.07 hrs, Volume= 0.069 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 152.95' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 3,018 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 2.72" for 10 YEAR event
 Inflow = 1.09 cfs @ 12.08 hrs, Volume= 0.072 af
 Outflow = 0.31 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 72%, Lag= 1.2 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.31 cfs @ 12.10 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.17' @ 12.73 hrs Surf.Area= 4,059 sf Storage= 1,901 cf

Plug-Flow detention time= 198.1 min calculated for 0.046 af (63% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Center-of-Mass det. time= 125.2 min (908.3 - 783.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=141.68' TW=141.74' (Dynamic Tailwater)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 2.47" for 10 YEAR event
 Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.309 af
 Outflow = 0.77 cfs @ 12.51 hrs, Volume= 0.231 af, Atten= 81%, Lag= 26.2 min
 Primary = 0.77 cfs @ 12.51 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.17' @ 12.51 hrs Surf.Area= 4,368 sf Storage= 5,283 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 63.1 min (846.3 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.77 cfs @ 12.51 hrs HW=142.17' TW=136.08' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.15 cfs @ 6.77 fps)
 2=Orifice/Grate (Orifice Controls 0.62 cfs @ 2.34 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 2.72" for 10 YEAR event
Inflow =	5.92 cfs @ 12.09 hrs, Volume= 0.411 af
Outflow =	3.52 cfs @ 12.20 hrs, Volume= 0.413 af, Atten= 41%, Lag= 6.7 min
Discarded =	3.52 cfs @ 12.20 hrs, Volume= 0.413 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.21' @ 12.20 hrs Surf.Area= 4,895 sf Storage= 1,014 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (768.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.52 cfs @ 12.20 hrs HW=138.21' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.52 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 2.88" for 10 YEAR event
 Inflow = 3.50 cfs @ 12.09 hrs, Volume= 0.235 af
 Outflow = 3.51 cfs @ 12.09 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.4 min
 Primary = 3.51 cfs @ 12.09 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.92' @ 12.09 hrs Surf.Area= 290 sf Storage= 642 cf

Plug-Flow detention time= 33.6 min calculated for 0.222 af (95% of inflow)

Center-of-Mass det. time= 13.8 min (790.6 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=144.91' TW=142.02' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.44 cfs @ 2.05 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Subcatchment 1S: TO STREET (PRE)

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 0.040 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.060	49	50-75% Grass cover, Fair, HSG A
0.670	35	Brush, Fair, HSG A
0.820	43	Weighted Average
0.730		89.02% Pervious Area
0.090		10.98% Impervious Area

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

Summary for Subcatchment 2S: TO WETLANDS (PRE)

Runoff = 4.27 cfs @ 12.27 hrs, Volume= 0.447 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)	CN	Description
6,970	98	Paved parking & roofs
60,113	49	50-75% Grass cover, Fair, HSG A
73,834	35	Brush, Fair, HSG A
62,726	70	Brush, Fair, HSG C
203,643	52	Weighted Average
196,673		96.58% Pervious Area
6,970		3.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
2.1	170	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.7	320	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.2	540	Total			

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Subcatchment 3S: wetlands

Runoff = 2.56 cfs @ 12.14 hrs, Volume= 0.231 af, Depth> 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)		CN	Description		
*	22,018	98	wetland		
	22,018		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		
10.2	330	Total			Shallow Concentrated Flow, Woodland Kv= 5.0 fps

Summary for Subcatchment 4S: wetlands (PRE)

Runoff = 2.56 cfs @ 12.14 hrs, Volume= 0.231 af, Depth> 5.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description		
*	22,018	98	wetland		
	22,018		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.4	280	0.0300	0.87		
10.2	330	Total			

Summary for Subcatchment 10(A): TO STREET

Runoff = 0.12 cfs @ 12.13 hrs, Volume= 0.015 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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	Area (sf)	CN	Description
	12,917	39	>75% Grass cover, Good, HSG A
*	923	98	Paved
	13,840	43	Weighted Average
	12,917		93.33% Pervious Area
	923		6.67% Impervious Area

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

Summary for Subcatchment 10(B): TO STREET

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.013 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	2,032	39	>75% Grass cover, Good, HSG A
*	1,360	98	Paved
	3,392	63	Weighted Average
	2,032		59.91% Pervious Area
	1,360		40.09% Impervious Area

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

Summary for Subcatchment 18S: TO PROP CB-2

Runoff = 2.13 cfs @ 12.07 hrs, Volume= 0.146 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	14,524	98	Paved
	3,789	39	>75% Grass cover, Good, HSG A
	18,313	86	Weighted Average
	3,789		20.69% Pervious Area
	14,524		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Subcatchment 19S A: TO PCB3

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	1,329	98	Paved
	1,329		100.00% Impervious Area

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

Summary for Subcatchment 19S B: TO PCB4

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.011 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	1,073	39	>75% Grass cover, Good, HSG A
*	1,197	98	PAVED
	2,270	70	Weighted Average
	1,073		47.27% Pervious Area
	1,197		52.73% Impervious Area

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

Summary for Subcatchment 20f: front of building

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.088 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	8,322	98	
	8,322		100.00% Impervious Area

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

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Subcatchment 20r: rear of building

Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.123 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)	CN	Description
11,678	98	Paved parking & roofs
11,678		100.00% Impervious Area

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

Summary for Subcatchment 21S: fire road

Runoff = 1.49 cfs @ 12.07 hrs, Volume= 0.100 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (ac)	CN	Description
* 0.170	98	pervious pavement
* 0.030	98	patio
0.060	39	>75% Grass cover, Good, HSG A
0.060	74	>75% Grass cover, Good, HSG C
0.320	82	Weighted Average
0.120		37.50% Pervious Area
0.200		62.50% Impervious Area

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

Summary for Subcatchment 23S: AREA AROUND BASIN

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.053 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)	CN	Description
* 5,518	98	POND
11,914	39	>75% Grass cover, Good, HSG A
17,432	58	Weighted Average
11,914		68.35% Pervious Area
5,518		31.65% Impervious Area

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Type III 24-hr 25 YEAR Rainfall=6.00"

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

Summary for Subcatchment 24S: TO PROP CB-1

Runoff = 1.98 cfs @ 12.07 hrs, Volume= 0.133 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
*	13,415	98	Paved
	4,691	39	>75% Grass cover, Good, HSG A
	18,106	83	Weighted Average
	4,691		25.91% Pervious Area
	13,415		74.09% Impervious Area

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

Summary for Subcatchment 25S: TO ROOF DRAIN

Runoff = 2.56 cfs @ 12.07 hrs, Volume= 0.198 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (sf)	CN	Description
	18,814	98	Roofs, HSG A
	18,814		100.00% Impervious Area

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

Summary for Subcatchment 30s: to cb 1

Runoff = 1.52 cfs @ 12.07 hrs, Volume= 0.104 af, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

	Area (ac)	CN	Description
	0.240	98	Paved parking & roofs
	0.060	39	>75% Grass cover, Good, HSG A
	0.300	86	Weighted Average
	0.060		20.00% Pervious Area
	0.240		80.00% Impervious Area

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Type III 24-hr 25 YEAR Rainfall=6.00"

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

Summary for Subcatchment 31S: to cb 4&5

Runoff = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)	CN	Description
1,005	98	Paved parking & roofs
1,005		100.00% Impervious Area

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

Summary for Subcatchment 32S: to cb 2

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 0.031 af, Depth> 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.010	39	>75% Grass cover, Good, HSG A
0.080	91	Weighted Average
0.010		12.50% Pervious Area
0.070		87.50% Impervious Area

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

Summary for Subcatchment 35S: area around swm pond

Runoff = 1.31 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

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Type III 24-hr 25 YEAR Rainfall=6.00"

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Area (ac)	CN	Description
* 0.160	98	pond & forebay
0.080	39	>75% Grass cover, Good, HSG A
0.080	74	>75% Grass cover, Good, HSG C
0.320	77	Weighted Average
0.160		50.00% Pervious Area
0.160		50.00% Impervious Area

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

Summary for Subcatchment 40S: remaining area

Runoff = 0.93 cfs @ 12.58 hrs, Volume= 0.139 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

Area (sf)	CN	Adj	Description
* 2,178	98		Unconnected pavement, HSG C
10,019	74		>75% Grass cover, Good, HSG C
1,307	39		>75% Grass cover, Good, HSG A
17,424	70		Brush, Fair, HSG C
47,021	35		Brush, Fair, HSG A
77,949	50	49	Weighted Average, UI Adjusted
75,771			97.21% Pervious Area
2,178			2.79% Impervious Area
2,178			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0100	0.08		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.20"
23.3	700	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
34.1	750	Total			

Summary for Subcatchment 50s: TO PROP TRENCH DRAIN

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth> 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.00"

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Type III 24-hr 25 YEAR Rainfall=6.00"

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	Area (sf)	CN	Description
*	1,597	98	Paved
	981	39	>75% Grass cover, Good, HSG A
	2,578	76	Weighted Average
	981		38.05% Pervious Area
	1,597		61.95% Impervious Area

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

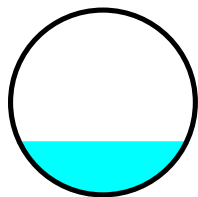
Summary for Reach 21R: DMH 2 TO FE

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 3.29" for 25 YEAR event
 Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.163 af
 Outflow = 2.07 cfs @ 12.08 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.87 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.60 fps, Avg. Travel Time= 0.4 min

Peak Storage= 17 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.43'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
 n= 0.012 Concrete pipe, finished
 Length= 40.0' Slope= 0.0100 '/'
 Inlet Invert= 144.19', Outlet Invert= 143.79'

**Summary for Reach 22R: DMH 3 TO 2**

Inflow Area = 0.514 ac, 88.33% Impervious, Inflow Depth > 3.07" for 25 YEAR event
 Inflow = 1.63 cfs @ 12.08 hrs, Volume= 0.132 af
 Outflow = 1.63 cfs @ 12.08 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.29 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 2.08 fps, Avg. Travel Time= 0.5 min

Peak Storage= 16 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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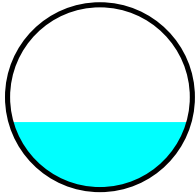
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 62.0' Slope= 0.0224 '/'

Inlet Invert= 145.68', Outlet Invert= 144.29'



Summary for Reach 24R: DMH 4 TO 3

Inflow Area = 0.214 ac, 100.00% Impervious, Inflow Depth > 1.55" for 25 YEAR event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.028 af
Outflow = 0.13 cfs @ 12.11 hrs, Volume= 0.028 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.77 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 0.82 fps, Avg. Travel Time= 2.7 min

Peak Storage= 10 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.15'

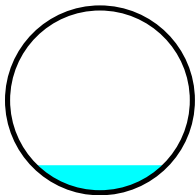
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 132.0' Slope= 0.0050 '/'

Inlet Invert= 146.44', Outlet Invert= 145.78'



Summary for Reach 25R: DMH 5 TO DMH 4

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
Inflow = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.13 cfs @ 12.10 hrs, Volume= 0.011 af, Atten= 4%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.84 fps, Min. Travel Time= 2.2 min

Avg. Velocity = 0.64 fps, Avg. Travel Time= 6.3 min

Peak Storage= 17 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.84 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

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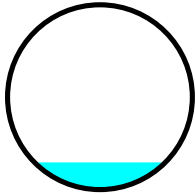
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 242.0' Slope= 0.0054 '/'

Inlet Invert= 147.75', Outlet Invert= 146.44'



Summary for Reach 45R: (new Reach)

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.088 af
Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.08 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.52 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 0.50' Flow Area= 0.4 sf, Capacity= 1.46 cfs

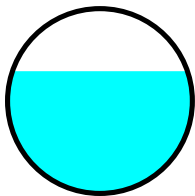
A factor of 2.00 has been applied to the storage and discharge capacity

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 153.10', Outlet Invert= 153.00'



Summary for Reach 46R: to pond

Inflow Area = 0.268 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
Inflow = 1.59 cfs @ 12.07 hrs, Volume= 0.123 af
Outflow = 1.59 cfs @ 12.07 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.48 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.62 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.34'

Bank-Full Depth= 0.67' Flow Area= 0.7 sf, Capacity= 3.14 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

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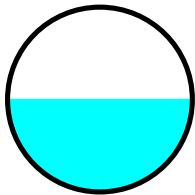
A factor of 2.00 has been applied to the storage and discharge capacity

8.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 145.10', Outlet Invert= 145.00'



Summary for Reach 47R: PTD TO PDMH-3

Inflow Area = 0.059 ac, 61.95% Impervious, Inflow Depth > 3.16" for 25 YEAR event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af
Outflow = 0.24 cfs @ 12.08 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.03 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.15 fps, Avg. Travel Time= 0.5 min

Peak Storage= 3 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.18'

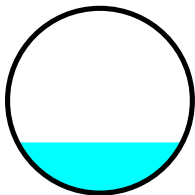
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.44 cfs

8.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 35.0' Slope= 0.0143 '/'

Inlet Invert= 143.20', Outlet Invert= 142.70'



Summary for Reach 49R: (new Reach)

Inflow = 0.13 cfs @ 12.25 hrs, Volume= 0.003 af
Outflow = 0.13 cfs @ 12.25 hrs, Volume= 0.003 af, Atten= 1%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.96 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.20 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.25 hrs

Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.57 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

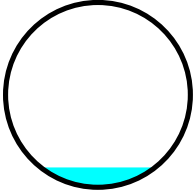
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12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 20.0' Slope= 0.0175 '/'

Inlet Invert= 138.25', Outlet Invert= 137.90'



Summary for Reach 50R: ROOF DRAIN TO BASIN

Inflow Area = 0.432 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
Inflow = 2.56 cfs @ 12.07 hrs, Volume= 0.198 af
Outflow = 2.55 cfs @ 12.07 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.89 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.14 fps, Avg. Travel Time= 0.2 min

Peak Storage= 11 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.54'

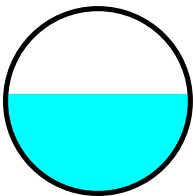
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 26.0' Slope= 0.0115 '/'

Inlet Invert= 139.30', Outlet Invert= 139.00'



Summary for Reach 51R: PCB 3 TO PDMH 2

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.55 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 0.89 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.98 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

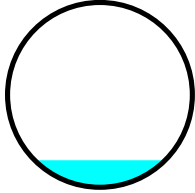
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 8.0' Slope= 0.0125 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 52R: PDMH-2 TO PDMH-3

Inflow Area = 0.919 ac, 76.13% Impervious, Inflow Depth > 3.97" for 25 YEAR event
Inflow = 4.45 cfs @ 12.08 hrs, Volume= 0.304 af
Outflow = 4.46 cfs @ 12.08 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.48 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.6 min

Peak Storage= 48 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.62'

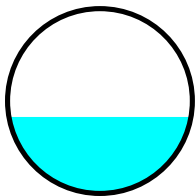
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.56 cfs

18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 70.0' Slope= 0.0143 '/'

Inlet Invert= 143.70', Outlet Invert= 142.70'



Summary for Reach 53R: PDMH-3 TO PDMH-4

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 3.92" for 25 YEAR event
Inflow = 4.70 cfs @ 12.08 hrs, Volume= 0.320 af
Outflow = 4.70 cfs @ 12.08 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.46 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.94 fps, Avg. Travel Time= 0.2 min

Peak Storage= 16 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.64'

Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.27 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

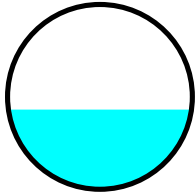
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18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 22.0' Slope= 0.0136 '/'

Inlet Invert= 142.60', Outlet Invert= 142.30'



Summary for Reach 54R: PCB 4 TO PDMH 2

Inflow Area = 0.052 ac, 52.73% Impervious, Inflow Depth > 2.60" for 25 YEAR event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.011 af
Outflow = 0.17 cfs @ 12.08 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.78 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.10 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.13'

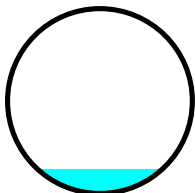
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.60 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 6.0' Slope= 0.0167 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 55R: PCB-2 TO PDMH-1

Inflow Area = 0.420 ac, 79.31% Impervious, Inflow Depth > 4.16" for 25 YEAR event
Inflow = 2.13 cfs @ 12.07 hrs, Volume= 0.146 af
Outflow = 2.12 cfs @ 12.08 hrs, Volume= 0.146 af, Atten= 1%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.55 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.70 fps, Avg. Travel Time= 0.3 min

Peak Storage= 14 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.39'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.76 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

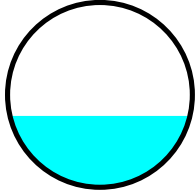
Printed 1/17/2017

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 50.0' Slope= 0.0360 '/'

Inlet Invert= 148.90', Outlet Invert= 147.10'



Summary for Reach 56R: PDMH-1 TO PDMH-2

Inflow Area = 0.836 ac, 76.72% Impervious, Inflow Depth > 4.01" for 25 YEAR event
Inflow = 4.09 cfs @ 12.08 hrs, Volume= 0.279 af
Outflow = 4.10 cfs @ 12.08 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.13 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.16 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.60'

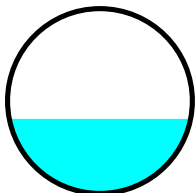
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe

n= 0.013 Concrete pipe, bends & connections

Length= 76.0' Slope= 0.0132 '/'

Inlet Invert= 144.80', Outlet Invert= 143.80'



Summary for Reach 58R: PCB-1 TO PDMH-1

Inflow Area = 0.416 ac, 74.09% Impervious, Inflow Depth > 3.85" for 25 YEAR event
Inflow = 1.98 cfs @ 12.07 hrs, Volume= 0.133 af
Outflow = 1.97 cfs @ 12.08 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.62 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.4 min

Peak Storage= 17 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.56 cfs

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Type III 24-hr 25 YEAR Rainfall=6.00"

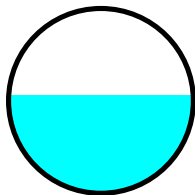
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0100 '/'

Inlet Invert= 147.50', Outlet Invert= 147.10'



Summary for Reach 89R: ISO. TO BASIN

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 3.77" for 25 YEAR event
Inflow = 4.73 cfs @ 12.09 hrs, Volume= 0.307 af
Outflow = 4.74 cfs @ 12.09 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.71 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 3.22 fps, Avg. Travel Time= 0.7 min

Peak Storage= 80 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.63'

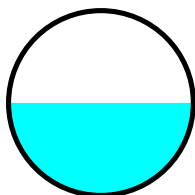
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.47 cfs

15.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0154 '/'

Inlet Invert= 141.50', Outlet Invert= 139.50'



Summary for Reach 92R: street

Inflow Area = 0.396 ac, 13.25% Impervious, Inflow Depth > 0.86" for 25 YEAR event
Inflow = 0.31 cfs @ 12.11 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.11 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 1.56" for 25 YEAR event
 Inflow = 3.80 cfs @ 12.17 hrs, Volume= 0.728 af
 Outflow = 0.42 cfs @ 17.18 hrs, Volume= 0.114 af, Atten= 89%, Lag= 300.5 min
 Primary = 0.42 cfs @ 17.18 hrs, Volume= 0.114 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.04' @ 17.18 hrs Surf.Area= 24,926 sf Storage= 27,009 cf

Plug-Flow detention time= 528.5 min calculated for 0.114 af (16% of inflow)
 Center-of-Mass det. time= 272.9 min (1,078.7 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.42 cfs @ 17.18 hrs HW=137.04' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 0.42 cfs @ 0.49 fps)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 1.57" for 25 YEAR event
 Inflow = 6.18 cfs @ 12.22 hrs, Volume= 0.678 af
 Outflow = 0.28 cfs @ 18.07 hrs, Volume= 0.066 af, Atten= 95%, Lag= 351.3 min
 Primary = 0.28 cfs @ 18.07 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.03' @ 18.07 hrs Surf.Area= 24,875 sf Storage= 26,767 cf

Plug-Flow detention time= 579.1 min calculated for 0.066 af (10% of inflow)
 Center-of-Mass det. time= 308.0 min (1,110.3 - 802.2)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25 YEAR Rainfall=6.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.28 cfs @ 18.07 hrs HW=137.03' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.28 cfs @ 0.43 fps)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 3.29" for 25 YEAR event
 Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.163 af
 Outflow = 2.10 cfs @ 12.08 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.2 min
 Primary = 2.10 cfs @ 12.08 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.29' @ 12.08 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 22.9 min calculated for 0.158 af (97% of inflow)

Center-of-Mass det. time= 11.3 min (791.7 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.02 cfs @ 12.08 hrs HW=143.29' TW=142.08' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 2.02 cfs @ 1.09 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
 Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.088 af
 Outflow = 0.07 cfs @ 13.67 hrs, Volume= 0.017 af, Atten= 94%, Lag= 96.1 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.07 cfs @ 13.67 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 153.03' @ 13.67 hrs Surf.Area= 1,261 sf Storage= 3,083 cf

Plug-Flow detention time= 491.9 min calculated for 0.017 af (19% of inflow)
 Center-of-Mass det. time= 237.0 min (954.3 - 717.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.07 cfs @ 13.67 hrs HW=153.03' TW=146.55' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 0.07 cfs @ 0.57 fps)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 3.75" for 25 YEAR event
 Inflow = 1.49 cfs @ 12.07 hrs, Volume= 0.100 af
 Outflow = 0.28 cfs @ 12.96 hrs, Volume= 0.071 af, Atten= 81%, Lag= 53.3 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.28 cfs @ 12.96 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.54' @ 12.60 hrs Surf.Area= 4,059 sf Storage= 2,498 cf

Plug-Flow detention time= 169.9 min calculated for 0.071 af (71% of inflow)

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Type III 24-hr 25 YEAR Rainfall=6.00"

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Center-of-Mass det. time= 105.3 min (880.9 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 12.96 hrs HW=142.47' TW=142.37' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.53 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 3.50" for 25 YEAR event
 Inflow = 5.09 cfs @ 12.07 hrs, Volume= 0.438 af
 Outflow = 1.30 cfs @ 12.48 hrs, Volume= 0.355 af, Atten= 74%, Lag= 24.5 min
 Primary = 1.30 cfs @ 12.48 hrs, Volume= 0.355 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.49' @ 12.48 hrs Surf.Area= 4,696 sf Storage= 6,732 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 53.9 min (838.0 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Type III 24-hr 25 YEAR Rainfall=6.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.30 cfs @ 12.48 hrs HW=142.49' TW=136.28' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.30 fps)
 2=Orifice/Grate (Orifice Controls 1.14 cfs @ 3.26 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 3.70" for 25 YEAR event
Inflow =	7.99 cfs @ 12.09 hrs, Volume= 0.558 af
Outflow =	3.83 cfs @ 12.25 hrs, Volume= 0.559 af, Atten= 52%, Lag= 9.6 min
Discarded =	3.70 cfs @ 12.25 hrs, Volume= 0.556 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.13 cfs @ 12.25 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.47' @ 12.25 hrs Surf.Area= 5,141 sf Storage= 2,316 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 2.9 min (765.9 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

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Type III 24-hr 25 YEAR Rainfall=6.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.70 cfs @ 12.25 hrs HW=138.47' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.70 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.01' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.13 cfs @ 12.25 hrs HW=138.47' TW=138.36' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.60 fps)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 3.92" for 25 YEAR event
 Inflow = 4.70 cfs @ 12.08 hrs, Volume= 0.320 af
 Outflow = 4.73 cfs @ 12.09 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.4 min
 Primary = 4.73 cfs @ 12.09 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.03' @ 12.09 hrs Surf.Area= 290 sf Storage= 663 cf

Plug-Flow detention time= 27.1 min calculated for 0.306 af (96% of inflow)

Center-of-Mass det. time= 12.0 min (781.8 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=4.61 cfs @ 12.09 hrs HW=145.02' TW=142.12' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.61 cfs @ 2.28 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Subcatchment 1S: TO STREET (PRE)

Runoff = 1.50 cfs @ 12.10 hrs, Volume= 0.113 af, Depth> 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.060	49	50-75% Grass cover, Fair, HSG A
0.670	35	Brush, Fair, HSG A
0.820	43	Weighted Average
0.730		89.02% Pervious Area
0.090		10.98% Impervious Area

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

Summary for Subcatchment 2S: TO WETLANDS (PRE)

Runoff = 10.79 cfs @ 12.24 hrs, Volume= 1.010 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
6,970	98	Paved parking & roofs
60,113	49	50-75% Grass cover, Fair, HSG A
73,834	35	Brush, Fair, HSG A
62,726	70	Brush, Fair, HSG C
203,643	52	Weighted Average
196,673		96.58% Pervious Area
6,970		3.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0700	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
2.1	170	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.7	320	0.0100	0.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.2	540	Total			

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Subcatchment 3S: wetlands

Runoff = 3.68 cfs @ 12.14 hrs, Volume= 0.336 af, Depth> 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 4S: wetlands (PRE)

Runoff = 3.68 cfs @ 12.14 hrs, Volume= 0.336 af, Depth> 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
* 22,018	98	wetland
22,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0300	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
5.4	280	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.2	330	Total			

Summary for Subcatchment 10(A): TO STREET

Runoff = 0.58 cfs @ 12.10 hrs, Volume= 0.044 af, Depth> 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

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Type III 24-hr 100 YEAR Rainfall=8.60"

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	Area (sf)	CN	Description
	12,917	39	>75% Grass cover, Good, HSG A
*	923	98	Paved
	13,840	43	Weighted Average
	12,917		93.33% Pervious Area
	923		6.67% Impervious Area

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

Summary for Subcatchment 10(B): TO STREET

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
	2,032	39	>75% Grass cover, Good, HSG A
*	1,360	98	Paved
	3,392	63	Weighted Average
	2,032		59.91% Pervious Area
	1,360		40.09% Impervious Area

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

Summary for Subcatchment 18S: TO PROP CB-2

Runoff = 3.27 cfs @ 12.07 hrs, Volume= 0.229 af, Depth> 6.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
*	14,524	98	Paved
	3,789	39	>75% Grass cover, Good, HSG A
	18,313	86	Weighted Average
	3,789		20.69% Pervious Area
	14,524		79.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Subcatchment 19S A: TO PCB3

Runoff = 0.26 cfs @ 12.07 hrs, Volume= 0.020 af, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
*	1,329	98	Paved
	1,329		100.00% Impervious Area

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

Summary for Subcatchment 19S B: TO PCB4

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.020 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
	1,073	39	>75% Grass cover, Good, HSG A
*	1,197	98	PAVED
	2,270	70	Weighted Average
	1,073		47.27% Pervious Area
	1,197		52.73% Impervious Area

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

Summary for Subcatchment 20f: front of building

Runoff = 1.62 cfs @ 12.07 hrs, Volume= 0.127 af, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
*	8,322	98	
	8,322		100.00% Impervious Area

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

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Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Subcatchment 20r: rear of building

Runoff = 2.28 cfs @ 12.07 hrs, Volume= 0.178 af, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
11,678	98	Paved parking & roofs
11,678		100.00% Impervious Area

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

Summary for Subcatchment 21S: fire road

Runoff = 2.36 cfs @ 12.07 hrs, Volume= 0.162 af, Depth> 6.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (ac)	CN	Description
* 0.170	98	pervious pavement
* 0.030	98	patio
0.060	39	>75% Grass cover, Good, HSG A
0.060	74	>75% Grass cover, Good, HSG C
0.320	82	Weighted Average
0.120		37.50% Pervious Area
0.200		62.50% Impervious Area

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

Summary for Subcatchment 23S: AREA AROUND BASIN

Runoff = 1.65 cfs @ 12.08 hrs, Volume= 0.109 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
* 5,518	98	POND
11,914	39	>75% Grass cover, Good, HSG A
17,432	58	Weighted Average
11,914		68.35% Pervious Area
5,518		31.65% Impervious Area

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Type III 24-hr 100 YEAR Rainfall=8.60"

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

Summary for Subcatchment 24S: TO PROP CB-1

Runoff = 3.11 cfs @ 12.07 hrs, Volume= 0.214 af, Depth> 6.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
*	13,415	98	Paved
	4,691	39	>75% Grass cover, Good, HSG A
	18,106	83	Weighted Average
	4,691		25.91% Pervious Area
	13,415		74.09% Impervious Area

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

Summary for Subcatchment 25S: TO ROOF DRAIN

Runoff = 3.67 cfs @ 12.07 hrs, Volume= 0.287 af, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (sf)	CN	Description
	18,814	98	Roofs, HSG A
	18,814		100.00% Impervious Area

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

Summary for Subcatchment 30s: to cb 1

Runoff = 2.34 cfs @ 12.07 hrs, Volume= 0.164 af, Depth> 6.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

	Area (ac)	CN	Description
	0.240	98	Paved parking & roofs
	0.060	39	>75% Grass cover, Good, HSG A
	0.300	86	Weighted Average
	0.060		20.00% Pervious Area
	0.240		80.00% Impervious Area

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Type III 24-hr 100 YEAR Rainfall=8.60"

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

Summary for Subcatchment 31S: to cb 4&5

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af, Depth> 7.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Description
1,005	98	Paved parking & roofs
1,005		100.00% Impervious Area

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

Summary for Subcatchment 32S: to cb 2

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.048 af, Depth> 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (ac)	CN	Description
0.070	98	Paved parking & roofs
0.010	39	>75% Grass cover, Good, HSG A
0.080	91	Weighted Average
0.010		12.50% Pervious Area
0.070		87.50% Impervious Area

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

Summary for Subcatchment 35S: area around swm pond

Runoff = 2.17 cfs @ 12.07 hrs, Volume= 0.146 af, Depth> 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

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Type III 24-hr 100 YEAR Rainfall=8.60"

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Area (ac)	CN	Description
* 0.160	98	pond & forebay
0.080	39	>75% Grass cover, Good, HSG A
0.080	74	>75% Grass cover, Good, HSG C
0.320	77	Weighted Average
0.160		50.00% Pervious Area
0.160		50.00% Impervious Area

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

Summary for Subcatchment 40S: remaining area

Runoff = 2.59 cfs @ 12.53 hrs, Volume= 0.335 af, Depth> 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

Area (sf)	CN	Adj	Description
* 2,178	98		Unconnected pavement, HSG C
10,019	74		>75% Grass cover, Good, HSG C
1,307	39		>75% Grass cover, Good, HSG A
17,424	70		Brush, Fair, HSG C
47,021	35		Brush, Fair, HSG A
77,949	50	49	Weighted Average, UI Adjusted
75,771			97.21% Pervious Area
2,178			2.79% Impervious Area
2,178			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0100	0.08		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.20"
23.3	700	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
34.1	750	Total			

Summary for Subcatchment 50s: TO PROP TRENCH DRAIN

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=8.60"

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Type III 24-hr 100 YEAR Rainfall=8.60"

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	Area (sf)	CN	Description
*	1,597	98	Paved
	981	39	>75% Grass cover, Good, HSG A
	2,578	76	Weighted Average
	981		38.05% Pervious Area
	1,597		61.95% Impervious Area

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

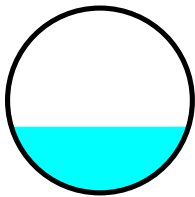
Summary for Reach 21R: DMH 2 TO FE

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 5.72" for 100 YEAR event
 Inflow = 3.08 cfs @ 12.08 hrs, Volume= 0.283 af
 Outflow = 3.09 cfs @ 12.08 hrs, Volume= 0.283 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.47 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.88 fps, Avg. Travel Time= 0.4 min

Peak Storage= 23 cf @ 12.08 hrs
 Average Depth at Peak Storage= 0.53'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
 n= 0.012 Concrete pipe, finished
 Length= 40.0' Slope= 0.0100 '/'
 Inlet Invert= 144.19', Outlet Invert= 143.79'

**Summary for Reach 22R: DMH 3 TO 2**

Inflow Area = 0.514 ac, 88.33% Impervious, Inflow Depth > 5.49" for 100 YEAR event
 Inflow = 2.73 cfs @ 12.19 hrs, Volume= 0.235 af
 Outflow = 2.70 cfs @ 12.19 hrs, Volume= 0.235 af, Atten= 1%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 7.21 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 2.46 fps, Avg. Travel Time= 0.4 min

Peak Storage= 23 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.48'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

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Type III 24-hr 100 YEAR Rainfall=8.60"

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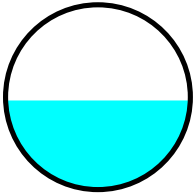
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 62.0' Slope= 0.0224 '/'

Inlet Invert= 145.68', Outlet Invert= 144.29'



Summary for Reach 24R: DMH 4 TO 3

Inflow Area = 0.214 ac, 100.00% Impervious, Inflow Depth > 4.02" for 100 YEAR event
Inflow = 1.57 cfs @ 12.19 hrs, Volume= 0.072 af
Outflow = 1.48 cfs @ 12.20 hrs, Volume= 0.072 af, Atten= 6%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.55 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 1.00 fps, Avg. Travel Time= 2.2 min

Peak Storage= 55 cf @ 12.20 hrs

Average Depth at Peak Storage= 0.52'

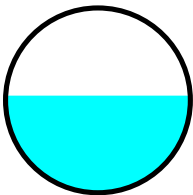
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 132.0' Slope= 0.0050 '/'

Inlet Invert= 146.44', Outlet Invert= 145.78'



Summary for Reach 25R: DMH 5 TO DMH 4

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
Inflow = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af
Outflow = 0.19 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 4%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 2.0 min

Avg. Velocity = 0.72 fps, Avg. Travel Time= 5.6 min

Peak Storage= 22 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.84 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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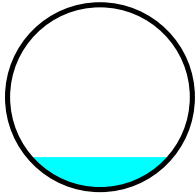
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12.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 242.0' Slope= 0.0054 '/'

Inlet Invert= 147.75', Outlet Invert= 146.44'

**Summary for Reach 45R: (new Reach)**

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
Inflow = 1.62 cfs @ 12.07 hrs, Volume= 0.127 af
Outflow = 1.50 cfs @ 12.08 hrs, Volume= 0.127 af, Atten= 8%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.21 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.70 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.50'

Bank-Full Depth= 0.50' Flow Area= 0.4 sf, Capacity= 1.46 cfs

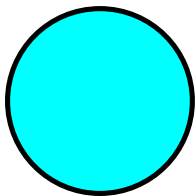
A factor of 2.00 has been applied to the storage and discharge capacity

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 153.10', Outlet Invert= 153.00'

**Summary for Reach 46R: to pond**

Inflow Area = 0.268 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
Inflow = 2.28 cfs @ 12.07 hrs, Volume= 0.178 af
Outflow = 2.28 cfs @ 12.07 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.88 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.42'

Bank-Full Depth= 0.67' Flow Area= 0.7 sf, Capacity= 3.14 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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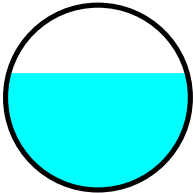
A factor of 2.00 has been applied to the storage and discharge capacity

8.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 10.0' Slope= 0.0100 '/'

Inlet Invert= 145.10', Outlet Invert= 145.00'



Summary for Reach 47R: PTD TO PDMH-3

Inflow Area = 0.059 ac, 61.95% Impervious, Inflow Depth > 5.36" for 100 YEAR event
Inflow = 0.39 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.39 cfs @ 12.08 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.50 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.5 min

Peak Storage= 4 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.24'

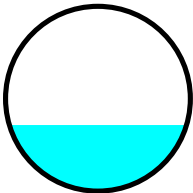
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.44 cfs

8.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 35.0' Slope= 0.0143 '/'

Inlet Invert= 143.20', Outlet Invert= 142.70'



Summary for Reach 49R: (new Reach)

Inflow = 0.75 cfs @ 12.31 hrs, Volume= 0.036 af
Outflow = 0.75 cfs @ 12.32 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.94 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 4.07 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.32 hrs

Average Depth at Peak Storage= 0.25'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.57 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

Prepared by Hancock Assoc.

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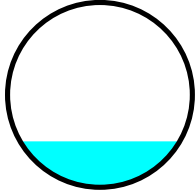
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12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 20.0' Slope= 0.0175 '/'

Inlet Invert= 138.25', Outlet Invert= 137.90'



Summary for Reach 50R: ROOF DRAIN TO BASIN

Inflow Area = 0.432 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
Inflow = 3.67 cfs @ 12.07 hrs, Volume= 0.287 af
Outflow = 3.67 cfs @ 12.07 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.38 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.41 fps, Avg. Travel Time= 0.2 min

Peak Storage= 15 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.68'

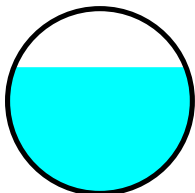
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.52 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 26.0' Slope= 0.0115 '/'

Inlet Invert= 139.30', Outlet Invert= 139.00'



Summary for Reach 51R: PCB 3 TO PDMH 2

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
Inflow = 0.26 cfs @ 12.07 hrs, Volume= 0.020 af
Outflow = 0.26 cfs @ 12.07 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.84 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.00 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.98 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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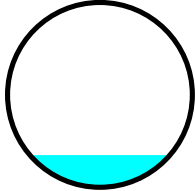
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 8.0' Slope= 0.0125 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 52R: PDMH-2 TO PDMH-3

Inflow Area = 0.919 ac, 76.13% Impervious, Inflow Depth > 6.33" for 100 YEAR event
Inflow = 6.92 cfs @ 12.08 hrs, Volume= 0.484 af
Outflow = 6.93 cfs @ 12.08 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.25 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.30 fps, Avg. Travel Time= 0.5 min

Peak Storage= 67 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.80'

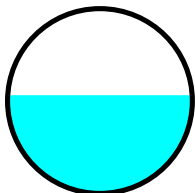
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.56 cfs

18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 70.0' Slope= 0.0143 '/'

Inlet Invert= 143.70', Outlet Invert= 142.70'



Summary for Reach 53R: PDMH-3 TO PDMH-4

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 6.27" for 100 YEAR event
Inflow = 7.33 cfs @ 12.08 hrs, Volume= 0.511 af
Outflow = 7.33 cfs @ 12.08 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.22 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.29 fps, Avg. Travel Time= 0.2 min

Peak Storage= 22 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.84'

Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.27 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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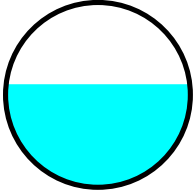
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18.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 22.0' Slope= 0.0136 '/'

Inlet Invert= 142.60', Outlet Invert= 142.30'



Summary for Reach 54R: PCB 4 TO PDMH 2

Inflow Area = 0.052 ac, 52.73% Impervious, Inflow Depth > 4.66" for 100 YEAR event
Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.020 af
Outflow = 0.30 cfs @ 12.08 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.29 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.17'

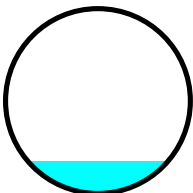
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.60 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 6.0' Slope= 0.0167 '/'

Inlet Invert= 144.60', Outlet Invert= 144.50'



Summary for Reach 55R: PCB-2 TO PDMH-1

Inflow Area = 0.420 ac, 79.31% Impervious, Inflow Depth > 6.55" for 100 YEAR event
Inflow = 3.27 cfs @ 12.07 hrs, Volume= 0.229 af
Outflow = 3.27 cfs @ 12.07 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.46 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.01 fps, Avg. Travel Time= 0.3 min

Peak Storage= 19 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.49'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.76 cfs

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Type III 24-hr 100 YEAR Rainfall=8.60"

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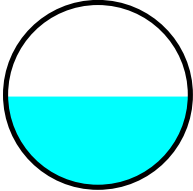
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 50.0' Slope= 0.0360 '/'

Inlet Invert= 148.90', Outlet Invert= 147.10'



Summary for Reach 56R: PDMH-1 TO PDMH-2

Inflow Area = 0.836 ac, 76.72% Impervious, Inflow Depth > 6.37" for 100 YEAR event
Inflow = 6.37 cfs @ 12.07 hrs, Volume= 0.444 af
Outflow = 6.36 cfs @ 12.08 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.87 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 2.42 fps, Avg. Travel Time= 0.5 min

Peak Storage= 70 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.77'

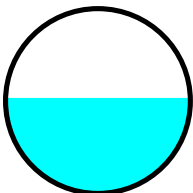
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe

n= 0.013 Concrete pipe, bends & connections

Length= 76.0' Slope= 0.0132 '/'

Inlet Invert= 144.80', Outlet Invert= 143.80'



Summary for Reach 58R: PCB-1 TO PDMH-1

Inflow Area = 0.416 ac, 74.09% Impervious, Inflow Depth > 6.19" for 100 YEAR event
Inflow = 3.11 cfs @ 12.07 hrs, Volume= 0.214 af
Outflow = 3.09 cfs @ 12.08 hrs, Volume= 0.214 af, Atten= 1%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.08 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.4 min

Peak Storage= 24 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.72'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.56 cfs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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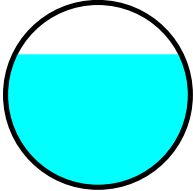
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12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0100 '/'

Inlet Invert= 147.50', Outlet Invert= 147.10'



Summary for Reach 89R: ISO. TO BASIN

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 6.11" for 100 YEAR event

Inflow = 7.36 cfs @ 12.09 hrs, Volume= 0.498 af

Outflow = 7.38 cfs @ 12.09 hrs, Volume= 0.498 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.52 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 3.57 fps, Avg. Travel Time= 0.6 min

Peak Storage= 112 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.83'

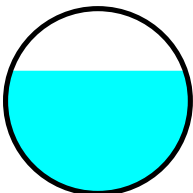
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.47 cfs

15.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 130.0' Slope= 0.0154 '/'

Inlet Invert= 141.50', Outlet Invert= 139.50'



Summary for Reach 92R: street

Inflow Area = 0.396 ac, 13.25% Impervious, Inflow Depth > 2.08" for 100 YEAR event

Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.069 af

Outflow = 0.96 cfs @ 12.09 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 2.89" for 100 YEAR event
 Inflow = 9.59 cfs @ 12.23 hrs, Volume= 1.351 af
 Outflow = 2.83 cfs @ 13.23 hrs, Volume= 0.731 af, Atten= 71%, Lag= 60.4 min
 Primary = 2.83 cfs @ 13.23 hrs, Volume= 0.731 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.15' @ 13.23 hrs Surf.Area= 25,507 sf Storage= 29,770 cf

Plug-Flow detention time= 211.6 min calculated for 0.731 af (54% of inflow)
 Center-of-Mass det. time= 110.7 min (910.6 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.82 cfs @ 13.23 hrs HW=137.15' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 2.82 cfs @ 0.93 fps)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 3.12" for 100 YEAR event
 Inflow = 13.69 cfs @ 12.21 hrs, Volume= 1.346 af
 Outflow = 3.48 cfs @ 12.79 hrs, Volume= 0.726 af, Atten= 75%, Lag= 34.8 min
 Primary = 3.48 cfs @ 12.79 hrs, Volume= 0.726 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.17' @ 12.79 hrs Surf.Area= 25,627 sf Storage= 30,350 cf

Plug-Flow detention time= 191.9 min calculated for 0.724 af (54% of inflow)
 Center-of-Mass det. time= 99.8 min (897.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.48 cfs @ 12.79 hrs HW=137.17' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 3.48 cfs @ 0.99 fps)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 5.72" for 100 YEAR event
 Inflow = 3.09 cfs @ 12.08 hrs, Volume= 0.283 af
 Outflow = 3.08 cfs @ 12.08 hrs, Volume= 0.278 af, Atten= 1%, Lag= 0.0 min
 Primary = 3.08 cfs @ 12.08 hrs, Volume= 0.278 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.35' @ 12.08 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 15.0 min calculated for 0.278 af (98% of inflow)

Center-of-Mass det. time= 7.9 min (775.9 - 768.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.04 cfs @ 12.08 hrs HW=143.35' TW=142.70' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 3.04 cfs @ 1.26 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
 Inflow = 1.50 cfs @ 12.08 hrs, Volume= 0.127 af
 Outflow = 1.45 cfs @ 12.19 hrs, Volume= 0.056 af, Atten= 3%, Lag= 7.1 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 1.45 cfs @ 12.19 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 153.23' @ 12.19 hrs Surf.Area= 12 sf Storage= 3,102 cf

Plug-Flow detention time= 254.5 min calculated for 0.056 af (44% of inflow)
 Center-of-Mass det. time= 126.5 min (839.4 - 712.9)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.32 cfs @ 12.19 hrs HW=153.22' TW=146.94' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 1.32 cfs @ 1.53 fps)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 6.07" for 100 YEAR event
 Inflow = 2.36 cfs @ 12.07 hrs, Volume= 0.162 af
 Outflow = 0.52 cfs @ 12.57 hrs, Volume= 0.130 af, Atten= 78%, Lag= 29.6 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.52 cfs @ 12.57 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.29' @ 12.49 hrs Surf.Area= 4,059 sf Storage= 3,720 cf

Plug-Flow detention time= 147.6 min calculated for 0.130 af (81% of inflow)

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Type III 24-hr 100 YEAR Rainfall=8.60"

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Center-of-Mass det. time= 95.5 min (859.5 - 763.9)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.53 cfs @ 12.57 hrs HW=143.27' TW=142.96' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.72 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 5.86" for 100 YEAR event
 Inflow = 7.91 cfs @ 12.07 hrs, Volume= 0.733 af
 Outflow = 4.74 cfs @ 12.24 hrs, Volume= 0.644 af, Atten= 40%, Lag= 10.2 min
 Primary = 4.74 cfs @ 12.24 hrs, Volume= 0.644 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.05' @ 12.24 hrs Surf.Area= 5,265 sf Storage= 9,532 cf

Plug-Flow detention time= 87.1 min calculated for 0.642 af (88% of inflow)
 Center-of-Mass det. time= 48.2 min (823.2 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.70 cfs @ 12.24 hrs HW=143.05' TW=136.48' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.14 fps)
 2=Orifice/Grate (Orifice Controls 1.70 cfs @ 4.86 fps)
 3=Orifice/Grate (Weir Controls 1.85 cfs @ 1.35 fps)
 4=Broad-Crested Rectangular Weir (Weir Controls 0.98 cfs @ 0.81 fps)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 5.93" for 100 YEAR event
Inflow =	12.61 cfs @ 12.09 hrs, Volume= 0.894 af
Outflow =	4.92 cfs @ 12.31 hrs, Volume= 0.895 af, Atten= 61%, Lag= 13.7 min
Discarded =	4.18 cfs @ 12.31 hrs, Volume= 0.859 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.75 cfs @ 12.31 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 139.12' @ 12.31 hrs Surf.Area= 5,781 sf Storage= 5,883 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 6.5 min (762.0 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

Prepared by Hancock Assoc.

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=4.17 cfs @ 12.31 hrs HW=139.12' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 4.17 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.01' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.75 cfs @ 12.31 hrs HW=139.12' TW=138.50' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.75 cfs @ 3.80 fps)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 6.27" for 100 YEAR event
 Inflow = 7.33 cfs @ 12.08 hrs, Volume= 0.511 af
 Outflow = 7.36 cfs @ 12.09 hrs, Volume= 0.498 af, Atten= 0%, Lag= 0.3 min
 Primary = 7.36 cfs @ 12.09 hrs, Volume= 0.498 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.24' @ 12.09 hrs Surf.Area= 290 sf Storage= 699 cf

Plug-Flow detention time= 19.8 min calculated for 0.498 af (98% of inflow)

Center-of-Mass det. time= 9.6 min (768.7 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=7.14 cfs @ 12.09 hrs HW=145.23' TW=142.31' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 7.14 cfs @ 2.71 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO STREET (PRE)	Runoff Area=0.820 ac 10.98% Impervious Runoff Depth=0.00" Tc=5.0 min CN=43 Runoff=0.00 cfs 0.000 af
Subcatchment 2S: TO WETLANDS (PRE)	Runoff Area=203,643 sf 3.42% Impervious Runoff Depth=0.00" Flow Length=540' Tc=16.2 min CN=52 Runoff=0.00 cfs 0.000 af
Subcatchment 3S: wetlands	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>0.75" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=0.39 cfs 0.031 af
Subcatchment 4S: wetlands (PRE)	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>0.75" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=0.39 cfs 0.031 af
Subcatchment 10(A): TO STREET	Runoff Area=13,840 sf 6.67% Impervious Runoff Depth=0.00" Tc=5.0 min CN=43 Runoff=0.00 cfs 0.000 af
Subcatchment 10(B): TO STREET	Runoff Area=3,392 sf 40.09% Impervious Runoff Depth=0.00" Tc=5.0 min CN=63 Runoff=0.00 cfs 0.000 af
Subcatchment 18S: TO PROP CB-2	Runoff Area=18,313 sf 79.31% Impervious Runoff Depth>0.18" Tc=5.0 min CN=86 Runoff=0.08 cfs 0.006 af
Subcatchment 19S A: TO PCB3	Runoff Area=1,329 sf 100.00% Impervious Runoff Depth>0.75" Tc=5.0 min CN=98 Runoff=0.03 cfs 0.002 af
Subcatchment 19S B: TO PCB4	Runoff Area=2,270 sf 52.73% Impervious Runoff Depth>0.00" Tc=5.0 min CN=70 Runoff=0.00 cfs 0.000 af
Subcatchment 20f: front of building	Runoff Area=8,322 sf 100.00% Impervious Runoff Depth>0.75" Tc=5.0 min CN=98 Runoff=0.17 cfs 0.012 af
Subcatchment 20r: rear of building	Runoff Area=11,678 sf 100.00% Impervious Runoff Depth>0.75" Tc=5.0 min CN=98 Runoff=0.24 cfs 0.017 af
Subcatchment 21S: fire road	Runoff Area=0.320 ac 62.50% Impervious Runoff Depth>0.10" Tc=5.0 min CN=82 Runoff=0.02 cfs 0.003 af
Subcatchment 23S: AREA AROUND BASIN	Runoff Area=17,432 sf 31.65% Impervious Runoff Depth=0.00" Tc=5.0 min CN=58 Runoff=0.00 cfs 0.000 af
Subcatchment 24S: TO PROP CB-1	Runoff Area=18,106 sf 74.09% Impervious Runoff Depth>0.12" Tc=5.0 min CN=83 Runoff=0.04 cfs 0.004 af
Subcatchment 25S: TO ROOF DRAIN	Runoff Area=18,814 sf 100.00% Impervious Runoff Depth>0.75" Tc=5.0 min CN=98 Runoff=0.39 cfs 0.027 af
Subcatchment 30s: to cb 1	Runoff Area=0.300 ac 80.00% Impervious Runoff Depth>0.18" Tc=5.0 min CN=86 Runoff=0.06 cfs 0.004 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

Prepared by Hancock Assoc.

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Subcatchment31S: to cb 4&5	Runoff Area=1,005 sf 100.00% Impervious Runoff Depth>0.75" Tc=5.0 min CN=98 Runoff=0.02 cfs 0.001 af
Subcatchment32S: to cb 2	Runoff Area=0.080 ac 87.50% Impervious Runoff Depth>0.33" Tc=5.0 min CN=91 Runoff=0.03 cfs 0.002 af
Subcatchment35S: area around swm pond	Runoff Area=0.320 ac 50.00% Impervious Runoff Depth>0.04" Tc=5.0 min CN=77 Runoff=0.00 cfs 0.001 af
Subcatchment40S: remaining area	Runoff Area=77,949 sf 2.79% Impervious Runoff Depth=0.00" Flow Length=750' Slope=0.0100 '/ Tc=34.1 min UI Adjusted CN=49 Runoff=0.00 cfs 0.000 af
Subcatchment50s: TO PROP TRENCH	Runoff Area=2,578 sf 61.95% Impervious Runoff Depth>0.03" Tc=5.0 min CN=76 Runoff=0.00 cfs 0.000 af
Reach 21R: DMH 2 TO FE	Avg. Flow Depth=0.10' Max Vel=2.02 fps Inflow=0.11 cfs 0.008 af 18.0" Round Pipe n=0.012 L=40.0' S=0.0100 '/ Capacity=11.38 cfs Outflow=0.11 cfs 0.008 af
Reach 22R: DMH 3 TO 2	Avg. Flow Depth=0.08' Max Vel=2.54 fps Inflow=0.07 cfs 0.006 af 12.0" Round Pipe n=0.012 L=62.0' S=0.0224 '/ Capacity=5.78 cfs Outflow=0.07 cfs 0.006 af
Reach 24R: DMH 4 TO 3	Avg. Flow Depth=0.06' Max Vel=0.98 fps Inflow=0.02 cfs 0.001 af 12.0" Round Pipe n=0.012 L=132.0' S=0.0050 '/ Capacity=2.73 cfs Outflow=0.02 cfs 0.001 af
Reach 25R: DMH 5 TO DMH 4	Avg. Flow Depth=0.06' Max Vel=1.02 fps Inflow=0.02 cfs 0.001 af 12.0" Round Pipe n=0.012 L=242.0' S=0.0054 '/ Capacity=2.84 cfs Outflow=0.02 cfs 0.001 af
Reach 45R: (new Reach)	Avg. Flow Depth=0.12' Max Vel=2.46 fps Inflow=0.17 cfs 0.012 af 6.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=1.46 cfs Outflow=0.17 cfs 0.012 af
Reach 46R: to pond	Avg. Flow Depth=0.12' Max Vel=2.63 fps Inflow=0.24 cfs 0.017 af 8.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=3.14 cfs Outflow=0.24 cfs 0.017 af
Reach 47R: PTD TO PDMH-3	Avg. Flow Depth=0.01' Max Vel=0.47 fps Inflow=0.00 cfs 0.000 af 8.0" Round Pipe n=0.013 L=35.0' S=0.0143 '/ Capacity=1.44 cfs Outflow=0.00 cfs 0.000 af
Reach 49R: (new Reach)	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 12.0" Round Pipe n=0.011 L=20.0' S=0.0175 '/ Capacity=5.57 cfs Outflow=0.00 cfs 0.000 af
Reach 50R: ROOF DRAIN TO BASIN	Avg. Flow Depth=0.20' Max Vel=3.48 fps Inflow=0.39 cfs 0.027 af 12.0" Round Pipe n=0.011 L=26.0' S=0.0115 '/ Capacity=4.52 cfs Outflow=0.39 cfs 0.027 af
Reach 51R: PCB 3 TO PDMH 2	Avg. Flow Depth=0.06' Max Vel=1.44 fps Inflow=0.03 cfs 0.002 af 12.0" Round Pipe n=0.013 L=8.0' S=0.0125 '/ Capacity=3.98 cfs Outflow=0.03 cfs 0.002 af
Reach 52R: PDMH-2 TO PDMH-3	Avg. Flow Depth=0.11' Max Vel=2.37 fps Inflow=0.14 cfs 0.012 af 18.0" Round Pipe n=0.013 L=70.0' S=0.0143 '/ Capacity=12.56 cfs Outflow=0.14 cfs 0.012 af
Reach 53R: PDMH-3 TO PDMH-4	Avg. Flow Depth=0.11' Max Vel=2.32 fps Inflow=0.14 cfs 0.012 af 18.0" Round Pipe n=0.013 L=22.0' S=0.0136 '/ Capacity=12.27 cfs Outflow=0.14 cfs 0.012 af
Reach 54R: PCB 4 TO PDMH 2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 12.0" Round Pipe n=0.013 L=6.0' S=0.0167 '/ Capacity=4.60 cfs Outflow=0.00 cfs 0.000 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Reach 55R: PCB-2 TO PDMH-1 Avg. Flow Depth=0.08' Max Vel=2.91 fps Inflow=0.08 cfs 0.006 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0360 '/ Capacity=6.76 cfs Outflow=0.08 cfs 0.006 af

Reach 56R: PDMH-1 TO PDMH-2 Avg. Flow Depth=0.11' Max Vel=2.17 fps Inflow=0.12 cfs 0.010 af
18.0" Round Pipe n=0.013 L=76.0' S=0.0132 '/ Capacity=12.05 cfs Outflow=0.12 cfs 0.010 af

Reach 58R: PCB-1 TO PDMH-1 Avg. Flow Depth=0.07' Max Vel=1.49 fps Inflow=0.04 cfs 0.004 af
12.0" Round Pipe n=0.013 L=40.0' S=0.0100 '/ Capacity=3.56 cfs Outflow=0.04 cfs 0.004 af

Reach 89R: ISO. TO BASIN Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
15.0" Round Pipe n=0.011 L=130.0' S=0.0154 '/ Capacity=9.47 cfs Outflow=0.00 cfs 0.000 af

Reach 92R: street Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 4P: wetlands Peak Elev=135.58' Storage=2,294 cf Inflow=0.45 cfs 0.053 af
Outflow=0.00 cfs 0.000 af

Pond 5P: wetlands(PRE) Peak Elev=135.45' Storage=1,371 cf Inflow=0.39 cfs 0.031 af
Outflow=0.00 cfs 0.000 af

Pond 13P: forebay Peak Elev=143.09' Storage=202 cf Inflow=0.11 cfs 0.008 af
Outflow=0.01 cfs 0.003 af

Pond 23P: infiltration Peak Elev=150.72' Storage=519 cf Inflow=0.17 cfs 0.012 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 44P: pervious pavement resevoir Peak Elev=141.07' Storage=114 cf Inflow=0.02 cfs 0.003 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 48P: swm pond Peak Elev=140.60' Storage=148 cf Inflow=0.24 cfs 0.021 af
Outflow=0.07 cfs 0.021 af

Pond 49P: Infiltration Basin Peak Elev=138.00' Storage=0 cf Inflow=0.39 cfs 0.027 af
Discarded=0.39 cfs 0.027 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.027 af

Pond 90P: ISOLATION CHAMBERS Peak Elev=144.33' Storage=531 cf Inflow=0.14 cfs 0.012 af
Outflow=0.00 cfs 0.000 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

Prepared by Hancock Assoc.

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO STREET (PRE)	Runoff Area=0.820 ac 10.98% Impervious Runoff Depth>0.01" Tc=5.0 min CN=43 Runoff=0.00 cfs 0.001 af
Subcatchment 2S: TO WETLANDS (PRE)	Runoff Area=203,643 sf 3.42% Impervious Runoff Depth>0.14" Flow Length=540' Tc=16.2 min CN=52 Runoff=0.20 cfs 0.054 af
Subcatchment 3S: wetlands	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>2.82" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=1.35 cfs 0.119 af
Subcatchment 4S: wetlands (PRE)	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>2.82" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=1.35 cfs 0.119 af
Subcatchment 10(A): TO STREET	Runoff Area=13,840 sf 6.67% Impervious Runoff Depth>0.01" Tc=5.0 min CN=43 Runoff=0.00 cfs 0.000 af
Subcatchment 10(B): TO STREET	Runoff Area=3,392 sf 40.09% Impervious Runoff Depth>0.46" Tc=5.0 min CN=63 Runoff=0.03 cfs 0.003 af
Subcatchment 18S: TO PROP CB-2	Runoff Area=18,313 sf 79.31% Impervious Runoff Depth>1.71" Tc=5.0 min CN=86 Runoff=0.90 cfs 0.060 af
Subcatchment 19S A: TO PCB3	Runoff Area=1,329 sf 100.00% Impervious Runoff Depth>2.83" Tc=5.0 min CN=98 Runoff=0.10 cfs 0.007 af
Subcatchment 19S B: TO PCB4	Runoff Area=2,270 sf 52.73% Impervious Runoff Depth>0.75" Tc=5.0 min CN=70 Runoff=0.05 cfs 0.003 af
Subcatchment 20f: front of building	Runoff Area=8,322 sf 100.00% Impervious Runoff Depth>2.83" Tc=5.0 min CN=98 Runoff=0.60 cfs 0.045 af
Subcatchment 20r: rear of building	Runoff Area=11,678 sf 100.00% Impervious Runoff Depth>2.83" Tc=5.0 min CN=98 Runoff=0.84 cfs 0.063 af
Subcatchment 21S: fire road	Runoff Area=0.320 ac 62.50% Impervious Runoff Depth>1.43" Tc=5.0 min CN=82 Runoff=0.58 cfs 0.038 af
Subcatchment 23S: AREA AROUND BASIN	Runoff Area=17,432 sf 31.65% Impervious Runoff Depth>0.29" Tc=5.0 min CN=58 Runoff=0.07 cfs 0.010 af
Subcatchment 24S: TO PROP CB-1	Runoff Area=18,106 sf 74.09% Impervious Runoff Depth>1.50" Tc=5.0 min CN=83 Runoff=0.78 cfs 0.052 af
Subcatchment 25S: TO ROOF DRAIN	Runoff Area=18,814 sf 100.00% Impervious Runoff Depth>2.83" Tc=5.0 min CN=98 Runoff=1.35 cfs 0.102 af
Subcatchment 30s: to cb 1	Runoff Area=0.300 ac 80.00% Impervious Runoff Depth>1.71" Tc=5.0 min CN=86 Runoff=0.65 cfs 0.043 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Subcatchment31S: to cb 4&5 Runoff Area=1,005 sf 100.00% Impervious Runoff Depth>2.83"
Tc=5.0 min CN=98 Runoff=0.07 cfs 0.005 af

Subcatchment32S: to cb 2 Runoff Area=0.080 ac 87.50% Impervious Runoff Depth>2.13"
Tc=5.0 min CN=91 Runoff=0.21 cfs 0.014 af

Subcatchment35S: area around swm pond Runoff Area=0.320 ac 50.00% Impervious Runoff Depth>1.11"
Tc=5.0 min CN=77 Runoff=0.44 cfs 0.030 af

Subcatchment40S: remaining area Runoff Area=77,949 sf 2.79% Impervious Runoff Depth>0.08"
Flow Length=750' Slope=0.0100 '/ Tc=34.1 min UI Adjusted CN=49 Runoff=0.03 cfs 0.012 af

Subcatchment50s: TO PROP TRENCH Runoff Area=2,578 sf 61.95% Impervious Runoff Depth>1.06"
Tc=5.0 min CN=76 Runoff=0.08 cfs 0.005 af

Reach 21R: DMH 2 TO FE Avg. Flow Depth=0.29' Max Vel=3.85 fps Inflow=0.91 cfs 0.062 af
18.0" Round Pipe n=0.012 L=40.0' S=0.0100 '/ Capacity=11.38 cfs Outflow=0.92 cfs 0.062 af

Reach 22R: DMH 3 TO 2 Avg. Flow Depth=0.24' Max Vel=4.97 fps Inflow=0.71 cfs 0.048 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0224 '/ Capacity=5.78 cfs Outflow=0.71 cfs 0.048 af

Reach 24R: DMH 4 TO 3 Avg. Flow Depth=0.11' Max Vel=1.45 fps Inflow=0.07 cfs 0.005 af
12.0" Round Pipe n=0.012 L=132.0' S=0.0050 '/ Capacity=2.73 cfs Outflow=0.07 cfs 0.005 af

Reach 25R: DMH 5 TO DMH 4 Avg. Flow Depth=0.11' Max Vel=1.51 fps Inflow=0.07 cfs 0.005 af
12.0" Round Pipe n=0.012 L=242.0' S=0.0054 '/ Capacity=2.84 cfs Outflow=0.07 cfs 0.005 af

Reach 45R: (new Reach) Avg. Flow Depth=0.22' Max Vel=3.50 fps Inflow=0.60 cfs 0.045 af
6.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=1.46 cfs Outflow=0.60 cfs 0.045 af

Reach 46R: to pond Avg. Flow Depth=0.24' Max Vel=3.78 fps Inflow=0.84 cfs 0.063 af
8.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=3.14 cfs Outflow=0.84 cfs 0.063 af

Reach 47R: PTD TO PDMH-3 Avg. Flow Depth=0.11' Max Vel=2.20 fps Inflow=0.08 cfs 0.005 af
8.0" Round Pipe n=0.013 L=35.0' S=0.0143 '/ Capacity=1.44 cfs Outflow=0.08 cfs 0.005 af

Reach 49R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
12.0" Round Pipe n=0.011 L=20.0' S=0.0175 '/ Capacity=5.57 cfs Outflow=0.00 cfs 0.000 af

Reach 50R: ROOF DRAIN TO BASIN Avg. Flow Depth=0.37' Max Vel=4.99 fps Inflow=1.35 cfs 0.102 af
12.0" Round Pipe n=0.011 L=26.0' S=0.0115 '/ Capacity=4.52 cfs Outflow=1.35 cfs 0.102 af

Reach 51R: PCB 3 TO PDMH 2 Avg. Flow Depth=0.11' Max Vel=2.10 fps Inflow=0.10 cfs 0.007 af
12.0" Round Pipe n=0.013 L=8.0' S=0.0125 '/ Capacity=3.98 cfs Outflow=0.10 cfs 0.007 af

Reach 52R: PDMH-2 TO PDMH-3 Avg. Flow Depth=0.39' Max Vel=5.07 fps Inflow=1.84 cfs 0.122 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0143 '/ Capacity=12.56 cfs Outflow=1.84 cfs 0.122 af

Reach 53R: PDMH-3 TO PDMH-4 Avg. Flow Depth=0.40' Max Vel=5.05 fps Inflow=1.92 cfs 0.127 af
18.0" Round Pipe n=0.013 L=22.0' S=0.0136 '/ Capacity=12.27 cfs Outflow=1.92 cfs 0.127 af

Reach 54R: PCB 4 TO PDMH 2 Avg. Flow Depth=0.07' Max Vel=1.88 fps Inflow=0.05 cfs 0.003 af
12.0" Round Pipe n=0.013 L=6.0' S=0.0167 '/ Capacity=4.60 cfs Outflow=0.05 cfs 0.003 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

Prepared by Hancock Assoc.

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Reach 55R: PCB-2 TO PDMH-1 Avg. Flow Depth=0.25' Max Vel=5.96 fps Inflow=0.90 cfs 0.060 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0360 '/ Capacity=6.76 cfs Outflow=0.91 cfs 0.060 af

Reach 56R: PDMH-1 TO PDMH-2 Avg. Flow Depth=0.38' Max Vel=4.80 fps Inflow=1.69 cfs 0.112 af
18.0" Round Pipe n=0.013 L=76.0' S=0.0132 '/ Capacity=12.05 cfs Outflow=1.70 cfs 0.112 af

Reach 58R: PCB-1 TO PDMH-1 Avg. Flow Depth=0.32' Max Vel=3.62 fps Inflow=0.78 cfs 0.052 af
12.0" Round Pipe n=0.013 L=40.0' S=0.0100 '/ Capacity=3.56 cfs Outflow=0.79 cfs 0.052 af

Reach 89R: ISO. TO BASIN Avg. Flow Depth=0.38' Max Vel=6.06 fps Inflow=1.93 cfs 0.115 af
15.0" Round Pipe n=0.011 L=130.0' S=0.0154 '/ Capacity=9.47 cfs Outflow=1.93 cfs 0.115 af

Reach 92R: street Inflow=0.03 cfs 0.003 af
Outflow=0.03 cfs 0.003 af

Pond 4P: wetlands Peak Elev=136.23' Storage=10,230 cf Inflow=1.46 cfs 0.235 af
Outflow=0.00 cfs 0.000 af

Pond 5P: wetlands(PRE) Peak Elev=136.05' Storage=7,545 cf Inflow=1.35 cfs 0.173 af
Outflow=0.00 cfs 0.000 af

Pond 13P: forebay Peak Elev=143.20' Storage=251 cf Inflow=0.92 cfs 0.062 af
Outflow=0.93 cfs 0.058 af

Pond 23P: infiltration Peak Elev=152.05' Storage=1,961 cf Inflow=0.60 cfs 0.045 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 44P: pervious pavement resevoir Peak Elev=141.74' Storage=1,200 cf Inflow=0.58 cfs 0.038 af
Discarded=0.00 cfs 0.000 af Primary=0.03 cfs 0.017 af Outflow=0.03 cfs 0.017 af

Pond 48P: swm pond Peak Elev=141.74' Storage=3,477 cf Inflow=2.18 cfs 0.168 af
Outflow=0.14 cfs 0.104 af

Pond 49P: Infiltration Basin Peak Elev=138.00' Storage=5 cf Inflow=3.29 cfs 0.227 af
Discarded=3.24 cfs 0.226 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=3.24 cfs 0.226 af

Pond 90P: ISOLATION CHAMBERS Peak Elev=144.73' Storage=608 cf Inflow=1.92 cfs 0.127 af
Outflow=1.93 cfs 0.115 af

Coolidge at Sudbury Phase2-1-16-17*Type III 24-hr 10 YEAR Rainfall=4.80"*

Prepared by Hancock Assoc.

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO STREET (PRE)	Runoff Area=0.820 ac 10.98% Impervious Runoff Depth>0.25" Tc=5.0 min CN=43 Runoff=0.09 cfs 0.017 af
Subcatchment 2S: TO WETLANDS (PRE)	Runoff Area=203,643 sf 3.42% Impervious Runoff Depth>0.62" Flow Length=540' Tc=16.2 min CN=52 Runoff=1.93 cfs 0.243 af
Subcatchment 3S: wetlands	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>4.35" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=2.04 cfs 0.183 af
Subcatchment 4S: wetlands (PRE)	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>4.35" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=2.04 cfs 0.183 af
Subcatchment 10(A): TO STREET	Runoff Area=13,840 sf 6.67% Impervious Runoff Depth>0.25" Tc=5.0 min CN=43 Runoff=0.03 cfs 0.007 af
Subcatchment 10(B): TO STREET	Runoff Area=3,392 sf 40.09% Impervious Runoff Depth>1.26" Tc=5.0 min CN=63 Runoff=0.12 cfs 0.008 af
Subcatchment 18S: TO PROP CB-2	Runoff Area=18,313 sf 79.31% Impervious Runoff Depth>3.09" Tc=5.0 min CN=86 Runoff=1.61 cfs 0.108 af
Subcatchment 19S A: TO PCB3	Runoff Area=1,329 sf 100.00% Impervious Runoff Depth>4.35" Tc=5.0 min CN=98 Runoff=0.14 cfs 0.011 af
Subcatchment 19S B: TO PCB4	Runoff Area=2,270 sf 52.73% Impervious Runoff Depth>1.74" Tc=5.0 min CN=70 Runoff=0.11 cfs 0.008 af
Subcatchment 20f: front of building	Runoff Area=8,322 sf 100.00% Impervious Runoff Depth>4.35" Tc=5.0 min CN=98 Runoff=0.90 cfs 0.069 af
Subcatchment 20r: rear of building	Runoff Area=11,678 sf 100.00% Impervious Runoff Depth>4.35" Tc=5.0 min CN=98 Runoff=1.27 cfs 0.097 af
Subcatchment 21S: fire road	Runoff Area=0.320 ac 62.50% Impervious Runoff Depth>2.72" Tc=5.0 min CN=82 Runoff=1.09 cfs 0.072 af
Subcatchment 23S: AREA AROUND BASIN	Runoff Area=17,432 sf 31.65% Impervious Runoff Depth>0.95" Tc=5.0 min CN=58 Runoff=0.43 cfs 0.032 af
Subcatchment 24S: TO PROP CB-1	Runoff Area=18,106 sf 74.09% Impervious Runoff Depth>2.81" Tc=5.0 min CN=83 Runoff=1.45 cfs 0.097 af
Subcatchment 25S: TO ROOF DRAIN	Runoff Area=18,814 sf 100.00% Impervious Runoff Depth>4.35" Tc=5.0 min CN=98 Runoff=2.04 cfs 0.157 af
Subcatchment 30s: to cb 1	Runoff Area=0.300 ac 80.00% Impervious Runoff Depth>3.09" Tc=5.0 min CN=86 Runoff=1.15 cfs 0.077 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

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Subcatchment31S: to cb 4&5	Runoff Area=1,005 sf 100.00% Impervious Runoff Depth>4.35" Tc=5.0 min CN=98 Runoff=0.11 cfs 0.008 af
Subcatchment32S: to cb 2	Runoff Area=0.080 ac 87.50% Impervious Runoff Depth>3.59" Tc=5.0 min CN=91 Runoff=0.34 cfs 0.024 af
Subcatchment35S: area around swm pond	Runoff Area=0.320 ac 50.00% Impervious Runoff Depth>2.28" Tc=5.0 min CN=77 Runoff=0.92 cfs 0.061 af
Subcatchment40S: remaining area	Runoff Area=77,949 sf 2.79% Impervious Runoff Depth>0.48" Flow Length=750' Slope=0.0100 '/ Tc=34.1 min UI Adjusted CN=49 Runoff=0.39 cfs 0.071 af
Subcatchment50s: TO PROP TRENCH	Runoff Area=2,578 sf 61.95% Impervious Runoff Depth>2.20" Tc=5.0 min CN=76 Runoff=0.16 cfs 0.011 af
Reach 21R: DMH 2 TO FE	Avg. Flow Depth=0.38' Max Vel=4.50 fps Inflow=1.57 cfs 0.109 af 18.0" Round Pipe n=0.012 L=40.0' S=0.0100 '/ Capacity=11.38 cfs Outflow=1.58 cfs 0.109 af
Reach 22R: DMH 3 TO 2	Avg. Flow Depth=0.31' Max Vel=5.82 fps Inflow=1.23 cfs 0.086 af 12.0" Round Pipe n=0.012 L=62.0' S=0.0224 '/ Capacity=5.78 cfs Outflow=1.23 cfs 0.085 af
Reach 24R: DMH 4 TO 3	Avg. Flow Depth=0.13' Max Vel=1.65 fps Inflow=0.10 cfs 0.008 af 12.0" Round Pipe n=0.012 L=132.0' S=0.0050 '/ Capacity=2.73 cfs Outflow=0.10 cfs 0.008 af
Reach 25R: DMH 5 TO DMH 4	Avg. Flow Depth=0.13' Max Vel=1.72 fps Inflow=0.11 cfs 0.008 af 12.0" Round Pipe n=0.012 L=242.0' S=0.0054 '/ Capacity=2.84 cfs Outflow=0.10 cfs 0.008 af
Reach 45R: (new Reach)	Avg. Flow Depth=0.28' Max Vel=3.89 fps Inflow=0.90 cfs 0.069 af 6.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=1.46 cfs Outflow=0.90 cfs 0.069 af
Reach 46R: to pond	Avg. Flow Depth=0.29' Max Vel=4.23 fps Inflow=1.27 cfs 0.097 af 8.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=3.14 cfs Outflow=1.27 cfs 0.097 af
Reach 47R: PTD TO PDMH-3	Avg. Flow Depth=0.15' Max Vel=2.74 fps Inflow=0.16 cfs 0.011 af 8.0" Round Pipe n=0.013 L=35.0' S=0.0143 '/ Capacity=1.44 cfs Outflow=0.16 cfs 0.011 af
Reach 49R: (new Reach)	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 12.0" Round Pipe n=0.011 L=20.0' S=0.0175 '/ Capacity=5.57 cfs Outflow=0.00 cfs 0.000 af
Reach 50R: ROOF DRAIN TO BASIN	Avg. Flow Depth=0.47' Max Vel=5.57 fps Inflow=2.04 cfs 0.157 af 12.0" Round Pipe n=0.011 L=26.0' S=0.0115 '/ Capacity=4.52 cfs Outflow=2.04 cfs 0.157 af
Reach 51R: PCB 3 TO PDMH 2	Avg. Flow Depth=0.13' Max Vel=2.38 fps Inflow=0.14 cfs 0.011 af 12.0" Round Pipe n=0.013 L=8.0' S=0.0125 '/ Capacity=3.98 cfs Outflow=0.14 cfs 0.011 af
Reach 52R: PDMH-2 TO PDMH-3	Avg. Flow Depth=0.53' Max Vel=5.98 fps Inflow=3.32 cfs 0.224 af 18.0" Round Pipe n=0.013 L=70.0' S=0.0143 '/ Capacity=12.56 cfs Outflow=3.33 cfs 0.224 af
Reach 53R: PDMH-3 TO PDMH-4	Avg. Flow Depth=0.55' Max Vel=5.96 fps Inflow=3.49 cfs 0.235 af 18.0" Round Pipe n=0.013 L=22.0' S=0.0136 '/ Capacity=12.27 cfs Outflow=3.50 cfs 0.235 af
Reach 54R: PCB 4 TO PDMH 2	Avg. Flow Depth=0.11' Max Vel=2.46 fps Inflow=0.11 cfs 0.008 af 12.0" Round Pipe n=0.013 L=6.0' S=0.0167 '/ Capacity=4.60 cfs Outflow=0.11 cfs 0.008 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

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Reach 55R: PCB-2 TO PDMH-1 Avg. Flow Depth=0.33' Max Vel=6.99 fps Inflow=1.61 cfs 0.108 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0360 '/ Capacity=6.76 cfs Outflow=1.60 cfs 0.108 af

Reach 56R: PDMH-1 TO PDMH-2 Avg. Flow Depth=0.52' Max Vel=5.67 fps Inflow=3.05 cfs 0.205 af
18.0" Round Pipe n=0.013 L=76.0' S=0.0132 '/ Capacity=12.05 cfs Outflow=3.06 cfs 0.205 af

Reach 58R: PCB-1 TO PDMH-1 Avg. Flow Depth=0.45' Max Vel=4.28 fps Inflow=1.45 cfs 0.097 af
12.0" Round Pipe n=0.013 L=40.0' S=0.0100 '/ Capacity=3.56 cfs Outflow=1.46 cfs 0.097 af

Reach 89R: ISO. TO BASIN Avg. Flow Depth=0.53' Max Vel=7.15 fps Inflow=3.51 cfs 0.222 af
15.0" Round Pipe n=0.011 L=130.0' S=0.0154 '/ Capacity=9.47 cfs Outflow=3.52 cfs 0.222 af

Reach 92R: street Inflow=0.12 cfs 0.015 af
Outflow=0.12 cfs 0.015 af

Pond 4P: wetlands Peak Elev=136.80' Storage=21,131 cf Inflow=2.33 cfs 0.486 af
Outflow=0.00 cfs 0.000 af

Pond 5P: wetlands(PRE) Peak Elev=136.68' Storage=18,562 cf Inflow=3.35 cfs 0.426 af
Outflow=0.00 cfs 0.000 af

Pond 13P: forebay Peak Elev=143.26' Storage=251 cf Inflow=1.58 cfs 0.109 af
Outflow=1.61 cfs 0.105 af

Pond 23P: infiltration Peak Elev=152.95' Storage=3,018 cf Inflow=0.90 cfs 0.069 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 44P: pervious pavement resevoir Peak Elev=142.17' Storage=1,901 cf Inflow=1.09 cfs 0.072 af
Discarded=0.00 cfs 0.000 af Primary=0.31 cfs 0.046 af Outflow=0.31 cfs 0.046 af

Pond 48P: swm pond Peak Elev=142.17' Storage=5,283 cf Inflow=3.98 cfs 0.309 af
Outflow=0.77 cfs 0.231 af

Pond 49P: Infiltration Basin Peak Elev=138.21' Storage=1,014 cf Inflow=5.92 cfs 0.411 af
Discarded=3.52 cfs 0.413 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=3.52 cfs 0.413 af

Pond 90P: ISOLATION CHAMBERS Peak Elev=144.92' Storage=642 cf Inflow=3.50 cfs 0.235 af
Outflow=3.51 cfs 0.222 af

Coolidge at Sudbury Phase2-1-16-17*Type III 24-hr 25 YEAR Rainfall=6.00"*

Prepared by Hancock Assoc.

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO STREET (PRE)	Runoff Area=0.820 ac 10.98% Impervious Runoff Depth>0.58" Tc=5.0 min CN=43 Runoff=0.32 cfs 0.040 af
Subcatchment 2S: TO WETLANDS (PRE)	Runoff Area=203,643 sf 3.42% Impervious Runoff Depth>1.15" Flow Length=540' Tc=16.2 min CN=52 Runoff=4.27 cfs 0.447 af
Subcatchment 3S: wetlands	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>5.49" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=2.56 cfs 0.231 af
Subcatchment 4S: wetlands (PRE)	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>5.49" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=2.56 cfs 0.231 af
Subcatchment 10(A): TO STREET	Runoff Area=13,840 sf 6.67% Impervious Runoff Depth>0.58" Tc=5.0 min CN=43 Runoff=0.12 cfs 0.015 af
Subcatchment 10(B): TO STREET	Runoff Area=3,392 sf 40.09% Impervious Runoff Depth>2.00" Tc=5.0 min CN=63 Runoff=0.19 cfs 0.013 af
Subcatchment 18S: TO PROP CB-2	Runoff Area=18,313 sf 79.31% Impervious Runoff Depth>4.16" Tc=5.0 min CN=86 Runoff=2.13 cfs 0.146 af
Subcatchment 19S A: TO PCB3	Runoff Area=1,329 sf 100.00% Impervious Runoff Depth>5.50" Tc=5.0 min CN=98 Runoff=0.18 cfs 0.014 af
Subcatchment 19S B: TO PCB4	Runoff Area=2,270 sf 52.73% Impervious Runoff Depth>2.60" Tc=5.0 min CN=70 Runoff=0.17 cfs 0.011 af
Subcatchment 20f: front of building	Runoff Area=8,322 sf 100.00% Impervious Runoff Depth>5.50" Tc=5.0 min CN=98 Runoff=1.13 cfs 0.088 af
Subcatchment 20r: rear of building	Runoff Area=11,678 sf 100.00% Impervious Runoff Depth>5.50" Tc=5.0 min CN=98 Runoff=1.59 cfs 0.123 af
Subcatchment 21S: fire road	Runoff Area=0.320 ac 62.50% Impervious Runoff Depth>3.75" Tc=5.0 min CN=82 Runoff=1.49 cfs 0.100 af
Subcatchment 23S: AREA AROUND BASIN	Runoff Area=17,432 sf 31.65% Impervious Runoff Depth>1.60" Tc=5.0 min CN=58 Runoff=0.77 cfs 0.053 af
Subcatchment 24S: TO PROP CB-1	Runoff Area=18,106 sf 74.09% Impervious Runoff Depth>3.85" Tc=5.0 min CN=83 Runoff=1.98 cfs 0.133 af
Subcatchment 25S: TO ROOF DRAIN	Runoff Area=18,814 sf 100.00% Impervious Runoff Depth>5.50" Tc=5.0 min CN=98 Runoff=2.56 cfs 0.198 af
Subcatchment 30s: to cb 1	Runoff Area=0.300 ac 80.00% Impervious Runoff Depth>4.16" Tc=5.0 min CN=86 Runoff=1.52 cfs 0.104 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Subcatchment31S: to cb 4&5 Runoff Area=1,005 sf 100.00% Impervious Runoff Depth>5.50"
Tc=5.0 min CN=98 Runoff=0.14 cfs 0.011 af

Subcatchment32S: to cb 2 Runoff Area=0.080 ac 87.50% Impervious Runoff Depth>4.70"
Tc=5.0 min CN=91 Runoff=0.44 cfs 0.031 af

Subcatchment35S: area around swm pond Runoff Area=0.320 ac 50.00% Impervious Runoff Depth>3.25"
Tc=5.0 min CN=77 Runoff=1.31 cfs 0.087 af

Subcatchment40S: remaining area Runoff Area=77,949 sf 2.79% Impervious Runoff Depth>0.93"
Flow Length=750' Slope=0.0100 '/ Tc=34.1 min UI Adjusted CN=49 Runoff=0.93 cfs 0.139 af

Subcatchment50s: TO PROP TRENCH Runoff Area=2,578 sf 61.95% Impervious Runoff Depth>3.16"
Tc=5.0 min CN=76 Runoff=0.23 cfs 0.016 af

Reach 21R: DMH 2 TO FE Avg. Flow Depth=0.43' Max Vel=4.87 fps Inflow=2.07 cfs 0.163 af
18.0" Round Pipe n=0.012 L=40.0' S=0.0100 '/ Capacity=11.38 cfs Outflow=2.07 cfs 0.163 af

Reach 22R: DMH 3 TO 2 Avg. Flow Depth=0.36' Max Vel=6.29 fps Inflow=1.63 cfs 0.132 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0224 '/ Capacity=5.78 cfs Outflow=1.63 cfs 0.132 af

Reach 24R: DMH 4 TO 3 Avg. Flow Depth=0.15' Max Vel=1.77 fps Inflow=0.13 cfs 0.028 af
12.0" Round Pipe n=0.012 L=132.0' S=0.0050 '/ Capacity=2.73 cfs Outflow=0.13 cfs 0.028 af

Reach 25R: DMH 5 TO DMH 4 Avg. Flow Depth=0.15' Max Vel=1.84 fps Inflow=0.14 cfs 0.011 af
12.0" Round Pipe n=0.012 L=242.0' S=0.0054 '/ Capacity=2.84 cfs Outflow=0.13 cfs 0.011 af

Reach 45R: (new Reach) Avg. Flow Depth=0.33' Max Vel=4.08 fps Inflow=1.13 cfs 0.088 af
6.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=1.46 cfs Outflow=1.13 cfs 0.088 af

Reach 46R: to pond Avg. Flow Depth=0.34' Max Vel=4.48 fps Inflow=1.59 cfs 0.123 af
8.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=3.14 cfs Outflow=1.59 cfs 0.123 af

Reach 47R: PTD TO PDMH-3 Avg. Flow Depth=0.18' Max Vel=3.03 fps Inflow=0.23 cfs 0.016 af
8.0" Round Pipe n=0.013 L=35.0' S=0.0143 '/ Capacity=1.44 cfs Outflow=0.24 cfs 0.016 af

Reach 49R: (new Reach) Avg. Flow Depth=0.11' Max Vel=2.96 fps Inflow=0.13 cfs 0.003 af
12.0" Round Pipe n=0.011 L=20.0' S=0.0175 '/ Capacity=5.57 cfs Outflow=0.13 cfs 0.003 af

Reach 50R: ROOF DRAIN TO BASIN Avg. Flow Depth=0.54' Max Vel=5.89 fps Inflow=2.56 cfs 0.198 af
12.0" Round Pipe n=0.011 L=26.0' S=0.0115 '/ Capacity=4.52 cfs Outflow=2.55 cfs 0.198 af

Reach 51R: PCB 3 TO PDMH 2 Avg. Flow Depth=0.15' Max Vel=2.55 fps Inflow=0.18 cfs 0.014 af
12.0" Round Pipe n=0.013 L=8.0' S=0.0125 '/ Capacity=3.98 cfs Outflow=0.18 cfs 0.014 af

Reach 52R: PDMH-2 TO PDMH-3 Avg. Flow Depth=0.62' Max Vel=6.48 fps Inflow=4.45 cfs 0.304 af
18.0" Round Pipe n=0.013 L=70.0' S=0.0143 '/ Capacity=12.56 cfs Outflow=4.46 cfs 0.304 af

Reach 53R: PDMH-3 TO PDMH-4 Avg. Flow Depth=0.64' Max Vel=6.46 fps Inflow=4.70 cfs 0.320 af
18.0" Round Pipe n=0.013 L=22.0' S=0.0136 '/ Capacity=12.27 cfs Outflow=4.70 cfs 0.320 af

Reach 54R: PCB 4 TO PDMH 2 Avg. Flow Depth=0.13' Max Vel=2.78 fps Inflow=0.17 cfs 0.011 af
12.0" Round Pipe n=0.013 L=6.0' S=0.0167 '/ Capacity=4.60 cfs Outflow=0.17 cfs 0.011 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Reach 55R: PCB-2 TO PDMH-1 Avg. Flow Depth=0.39' Max Vel=7.55 fps Inflow=2.13 cfs 0.146 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0360 '/ Capacity=6.76 cfs Outflow=2.12 cfs 0.146 af

Reach 56R: PDMH-1 TO PDMH-2 Avg. Flow Depth=0.60' Max Vel=6.13 fps Inflow=4.09 cfs 0.279 af
18.0" Round Pipe n=0.013 L=76.0' S=0.0132 '/ Capacity=12.05 cfs Outflow=4.10 cfs 0.279 af

Reach 58R: PCB-1 TO PDMH-1 Avg. Flow Depth=0.53' Max Vel=4.62 fps Inflow=1.98 cfs 0.133 af
12.0" Round Pipe n=0.013 L=40.0' S=0.0100 '/ Capacity=3.56 cfs Outflow=1.97 cfs 0.133 af

Reach 89R: ISO. TO BASIN Avg. Flow Depth=0.63' Max Vel=7.71 fps Inflow=4.73 cfs 0.307 af
15.0" Round Pipe n=0.011 L=130.0' S=0.0154 '/ Capacity=9.47 cfs Outflow=4.74 cfs 0.307 af

Reach 92R: street Inflow=0.31 cfs 0.028 af
Outflow=0.31 cfs 0.028 af

Pond 4P: wetlands Peak Elev=137.04' Storage=27,009 cf Inflow=3.80 cfs 0.728 af
Outflow=0.42 cfs 0.114 af

Pond 5P: wetlands(PRE) Peak Elev=137.03' Storage=26,767 cf Inflow=6.18 cfs 0.678 af
Outflow=0.28 cfs 0.066 af

Pond 13P: forebay Peak Elev=143.29' Storage=251 cf Inflow=2.07 cfs 0.163 af
Outflow=2.10 cfs 0.158 af

Pond 23P: infiltration Peak Elev=153.03' Storage=3,083 cf Inflow=1.13 cfs 0.088 af
Discarded=0.00 cfs 0.000 af Primary=0.07 cfs 0.017 af Outflow=0.07 cfs 0.017 af

Pond 44P: pervious pavement resevoir Peak Elev=142.54' Storage=2,498 cf Inflow=1.49 cfs 0.100 af
Discarded=0.00 cfs 0.000 af Primary=0.28 cfs 0.071 af Outflow=0.28 cfs 0.071 af

Pond 48P: swm pond Peak Elev=142.49' Storage=6,732 cf Inflow=5.09 cfs 0.438 af
Outflow=1.30 cfs 0.355 af

Pond 49P: Infiltration Basin Peak Elev=138.47' Storage=2,316 cf Inflow=7.99 cfs 0.558 af
Discarded=3.70 cfs 0.556 af Primary=0.00 cfs 0.000 af Secondary=0.13 cfs 0.003 af Outflow=3.83 cfs 0.559 af

Pond 90P: ISOLATION CHAMBERS Peak Elev=145.03' Storage=663 cf Inflow=4.70 cfs 0.320 af
Outflow=4.73 cfs 0.307 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Time span=1.00-20.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: TO STREET (PRE)	Runoff Area=0.820 ac 10.98% Impervious Runoff Depth>1.65" Tc=5.0 min CN=43 Runoff=1.50 cfs 0.113 af
Subcatchment 2S: TO WETLANDS (PRE)	Runoff Area=203,643 sf 3.42% Impervious Runoff Depth>2.59" Flow Length=540' Tc=16.2 min CN=52 Runoff=10.79 cfs 1.010 af
Subcatchment 3S: wetlands	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>7.97" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=3.68 cfs 0.336 af
Subcatchment 4S: wetlands (PRE)	Runoff Area=22,018 sf 100.00% Impervious Runoff Depth>7.97" Flow Length=330' Slope=0.0300 '/' Tc=10.2 min CN=98 Runoff=3.68 cfs 0.336 af
Subcatchment 10(A): TO STREET	Runoff Area=13,840 sf 6.67% Impervious Runoff Depth>1.65" Tc=5.0 min CN=43 Runoff=0.58 cfs 0.044 af
Subcatchment 10(B): TO STREET	Runoff Area=3,392 sf 40.09% Impervious Runoff Depth>3.85" Tc=5.0 min CN=63 Runoff=0.38 cfs 0.025 af
Subcatchment 18S: TO PROP CB-2	Runoff Area=18,313 sf 79.31% Impervious Runoff Depth>6.55" Tc=5.0 min CN=86 Runoff=3.27 cfs 0.229 af
Subcatchment 19S A: TO PCB3	Runoff Area=1,329 sf 100.00% Impervious Runoff Depth>7.98" Tc=5.0 min CN=98 Runoff=0.26 cfs 0.020 af
Subcatchment 19S B: TO PCB4	Runoff Area=2,270 sf 52.73% Impervious Runoff Depth>4.66" Tc=5.0 min CN=70 Runoff=0.30 cfs 0.020 af
Subcatchment 20f: front of building	Runoff Area=8,322 sf 100.00% Impervious Runoff Depth>7.98" Tc=5.0 min CN=98 Runoff=1.62 cfs 0.127 af
Subcatchment 20r: rear of building	Runoff Area=11,678 sf 100.00% Impervious Runoff Depth>7.98" Tc=5.0 min CN=98 Runoff=2.28 cfs 0.178 af
Subcatchment 21S: fire road	Runoff Area=0.320 ac 62.50% Impervious Runoff Depth>6.07" Tc=5.0 min CN=82 Runoff=2.36 cfs 0.162 af
Subcatchment 23S: AREA AROUND BASIN	Runoff Area=17,432 sf 31.65% Impervious Runoff Depth>3.28" Tc=5.0 min CN=58 Runoff=1.65 cfs 0.109 af
Subcatchment 24S: TO PROP CB-1	Runoff Area=18,106 sf 74.09% Impervious Runoff Depth>6.19" Tc=5.0 min CN=83 Runoff=3.11 cfs 0.214 af
Subcatchment 25S: TO ROOF DRAIN	Runoff Area=18,814 sf 100.00% Impervious Runoff Depth>7.98" Tc=5.0 min CN=98 Runoff=3.67 cfs 0.287 af
Subcatchment 30s: to cb 1	Runoff Area=0.300 ac 80.00% Impervious Runoff Depth>6.55" Tc=5.0 min CN=86 Runoff=2.34 cfs 0.164 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Subcatchment31S: to cb 4&5	Runoff Area=1,005 sf 100.00% Impervious Runoff Depth>7.98" Tc=5.0 min CN=98 Runoff=0.20 cfs 0.015 af
Subcatchment32S: to cb 2	Runoff Area=0.080 ac 87.50% Impervious Runoff Depth>7.15" Tc=5.0 min CN=91 Runoff=0.66 cfs 0.048 af
Subcatchment35S: area around swm pond	Runoff Area=0.320 ac 50.00% Impervious Runoff Depth>5.48" Tc=5.0 min CN=77 Runoff=2.17 cfs 0.146 af
Subcatchment40S: remaining area	Runoff Area=77,949 sf 2.79% Impervious Runoff Depth>2.25" Flow Length=750' Slope=0.0100 '/ Tc=34.1 min UI Adjusted CN=49 Runoff=2.59 cfs 0.335 af
Subcatchment50s: TO PROP TRENCH	Runoff Area=2,578 sf 61.95% Impervious Runoff Depth>5.36" Tc=5.0 min CN=76 Runoff=0.39 cfs 0.026 af
Reach 21R: DMH 2 TO FE	Avg. Flow Depth=0.53' Max Vel=5.47 fps Inflow=3.08 cfs 0.283 af 18.0" Round Pipe n=0.012 L=40.0' S=0.0100 '/ Capacity=11.38 cfs Outflow=3.09 cfs 0.283 af
Reach 22R: DMH 3 TO 2	Avg. Flow Depth=0.48' Max Vel=7.21 fps Inflow=2.73 cfs 0.235 af 12.0" Round Pipe n=0.012 L=62.0' S=0.0224 '/ Capacity=5.78 cfs Outflow=2.70 cfs 0.235 af
Reach 24R: DMH 4 TO 3	Avg. Flow Depth=0.52' Max Vel=3.55 fps Inflow=1.57 cfs 0.072 af 12.0" Round Pipe n=0.012 L=132.0' S=0.0050 '/ Capacity=2.73 cfs Outflow=1.48 cfs 0.072 af
Reach 25R: DMH 5 TO DMH 4	Avg. Flow Depth=0.17' Max Vel=2.05 fps Inflow=0.20 cfs 0.015 af 12.0" Round Pipe n=0.012 L=242.0' S=0.0054 '/ Capacity=2.84 cfs Outflow=0.19 cfs 0.015 af
Reach 45R: (new Reach)	Avg. Flow Depth=0.50' Max Vel=4.21 fps Inflow=1.62 cfs 0.127 af 6.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=1.46 cfs Outflow=1.50 cfs 0.127 af
Reach 46R: to pond	Avg. Flow Depth=0.42' Max Vel=4.88 fps Inflow=2.28 cfs 0.178 af 8.0" Round Pipe x 2.00 n=0.010 L=10.0' S=0.0100 '/ Capacity=3.14 cfs Outflow=2.28 cfs 0.178 af
Reach 47R: PTD TO PDMH-3	Avg. Flow Depth=0.24' Max Vel=3.50 fps Inflow=0.39 cfs 0.026 af 8.0" Round Pipe n=0.013 L=35.0' S=0.0143 '/ Capacity=1.44 cfs Outflow=0.39 cfs 0.026 af
Reach 49R: (new Reach)	Avg. Flow Depth=0.25' Max Vel=4.94 fps Inflow=0.75 cfs 0.036 af 12.0" Round Pipe n=0.011 L=20.0' S=0.0175 '/ Capacity=5.57 cfs Outflow=0.75 cfs 0.036 af
Reach 50R: ROOF DRAIN TO BASIN	Avg. Flow Depth=0.68' Max Vel=6.38 fps Inflow=3.67 cfs 0.287 af 12.0" Round Pipe n=0.011 L=26.0' S=0.0115 '/ Capacity=4.52 cfs Outflow=3.67 cfs 0.287 af
Reach 51R: PCB 3 TO PDMH 2	Avg. Flow Depth=0.17' Max Vel=2.84 fps Inflow=0.26 cfs 0.020 af 12.0" Round Pipe n=0.013 L=8.0' S=0.0125 '/ Capacity=3.98 cfs Outflow=0.26 cfs 0.020 af
Reach 52R: PDMH-2 TO PDMH-3	Avg. Flow Depth=0.80' Max Vel=7.25 fps Inflow=6.92 cfs 0.484 af 18.0" Round Pipe n=0.013 L=70.0' S=0.0143 '/ Capacity=12.56 cfs Outflow=6.93 cfs 0.484 af
Reach 53R: PDMH-3 TO PDMH-4	Avg. Flow Depth=0.84' Max Vel=7.22 fps Inflow=7.33 cfs 0.511 af 18.0" Round Pipe n=0.013 L=22.0' S=0.0136 '/ Capacity=12.27 cfs Outflow=7.33 cfs 0.511 af
Reach 54R: PCB 4 TO PDMH 2	Avg. Flow Depth=0.17' Max Vel=3.29 fps Inflow=0.30 cfs 0.020 af 12.0" Round Pipe n=0.013 L=6.0' S=0.0167 '/ Capacity=4.60 cfs Outflow=0.30 cfs 0.020 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Reach 55R: PCB-2 TO PDMH-1 Avg. Flow Depth=0.49' Max Vel=8.46 fps Inflow=3.27 cfs 0.229 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0360 '/ Capacity=6.76 cfs Outflow=3.27 cfs 0.229 af

Reach 56R: PDMH-1 TO PDMH-2 Avg. Flow Depth=0.77' Max Vel=6.87 fps Inflow=6.37 cfs 0.444 af
18.0" Round Pipe n=0.013 L=76.0' S=0.0132 '/ Capacity=12.05 cfs Outflow=6.36 cfs 0.444 af

Reach 58R: PCB-1 TO PDMH-1 Avg. Flow Depth=0.72' Max Vel=5.08 fps Inflow=3.11 cfs 0.214 af
12.0" Round Pipe n=0.013 L=40.0' S=0.0100 '/ Capacity=3.56 cfs Outflow=3.09 cfs 0.214 af

Reach 89R: ISO. TO BASIN Avg. Flow Depth=0.83' Max Vel=8.52 fps Inflow=7.36 cfs 0.498 af
15.0" Round Pipe n=0.011 L=130.0' S=0.0154 '/ Capacity=9.47 cfs Outflow=7.38 cfs 0.498 af

Reach 92R: street Inflow=0.96 cfs 0.069 af
Outflow=0.96 cfs 0.069 af

Pond 4P: wetlands Peak Elev=137.15' Storage=29,770 cf Inflow=9.59 cfs 1.351 af
Outflow=2.83 cfs 0.731 af

Pond 5P: wetlands(PRE) Peak Elev=137.17' Storage=30,350 cf Inflow=13.69 cfs 1.346 af
Outflow=3.48 cfs 0.726 af

Pond 13P: forebay Peak Elev=143.35' Storage=251 cf Inflow=3.09 cfs 0.283 af
Outflow=3.08 cfs 0.278 af

Pond 23P: infiltration Peak Elev=153.23' Storage=3,102 cf Inflow=1.50 cfs 0.127 af
Discarded=0.00 cfs 0.000 af Primary=1.45 cfs 0.056 af Outflow=1.45 cfs 0.056 af

Pond 44P: pervious pavement resevoir Peak Elev=143.29' Storage=3,720 cf Inflow=2.36 cfs 0.162 af
Discarded=0.00 cfs 0.000 af Primary=0.52 cfs 0.130 af Outflow=0.52 cfs 0.130 af

Pond 48P: swm pond Peak Elev=143.05' Storage=9,532 cf Inflow=7.91 cfs 0.733 af
Outflow=4.74 cfs 0.644 af

Pond 49P: Infiltration Basin Peak Elev=139.12' Storage=5,883 cf Inflow=12.61 cfs 0.894 af
Discarded=4.18 cfs 0.859 af Primary=0.00 cfs 0.000 af Secondary=0.75 cfs 0.036 af Outflow=4.92 cfs 0.895 af

Pond 90P: ISOLATION CHAMBERS Peak Elev=145.24' Storage=699 cf Inflow=7.33 cfs 0.511 af
Outflow=7.36 cfs 0.498 af

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 0.11" for 1 INCH event
 Inflow = 0.45 cfs @ 12.14 hrs, Volume= 0.053 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 135.58' @ 20.00 hrs Surf.Area= 7,898 sf Storage= 2,294 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.07" for 1 INCH event
 Inflow = 0.39 cfs @ 12.14 hrs, Volume= 0.031 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 135.45' @ 20.00 hrs Surf.Area= 6,107 sf Storage= 1,371 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 0.16" for 1 INCH event
 Inflow = 0.11 cfs @ 12.11 hrs, Volume= 0.008 af
 Outflow = 0.01 cfs @ 13.32 hrs, Volume= 0.003 af, Atten= 88%, Lag= 72.9 min
 Primary = 0.01 cfs @ 13.32 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.09' @ 13.32 hrs Surf.Area= 386 sf Storage= 202 cf

Plug-Flow detention time= 222.4 min calculated for 0.003 af (43% of inflow)

Center-of-Mass det. time= 122.1 min (942.1 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.01 cfs @ 13.32 hrs HW=143.09' TW=140.53' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.20 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 0.75" for 1 INCH event
 Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 150.72' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 519 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 0.10" for 1 INCH event
 Inflow = 0.02 cfs @ 12.13 hrs, Volume= 0.003 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.07' @ 20.00 hrs Surf.Area= 4,059 sf Storage= 114 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' TW=140.50' (Dynamic Tailwater)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 0.17" for 1 INCH event
 Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.021 af
 Outflow = 0.07 cfs @ 12.43 hrs, Volume= 0.021 af, Atten= 72%, Lag= 21.6 min
 Primary = 0.07 cfs @ 12.43 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 140.60' @ 12.43 hrs Surf.Area= 1,666 sf Storage= 148 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 9.6 min (804.5 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Prepared by Hancock Assoc.

Type III 24-hr 1 INCH Rainfall=1.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.07 cfs @ 12.43 hrs HW=140.60' TW=135.41' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.07 cfs @ 3.05 fps)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area = 1.810 ac, 71.53% Impervious, Inflow Depth > 0.18" for 1 INCH event
 Inflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af
 Outflow = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.39 cfs @ 12.07 hrs, Volume= 0.027 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.00' @ 1.00 hrs Surf.Area= 4,700 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.0 min (757.3 - 757.3)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 1 INCH Rainfall=1.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=0.00 cfs @ 12.07 hrs HW=138.00' (Free Discharge)↑**1=Exfiltration** (Passes 0.00 cfs of 3.37 cfs potential flow)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 0.15" for 1 INCH event
 Inflow = 0.14 cfs @ 12.12 hrs, Volume= 0.012 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 144.33' @ 20.00 hrs Surf.Area= 290 sf Storage= 531 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.50' TW=141.50' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 0.50" for 2 YEAR event
 Inflow = 1.46 cfs @ 12.14 hrs, Volume= 0.235 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.23' @ 20.00 hrs Surf.Area= 16,159 sf Storage= 10,230 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.40" for 2 YEAR event
 Inflow = 1.35 cfs @ 12.14 hrs, Volume= 0.173 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.05' @ 20.00 hrs Surf.Area= 14,195 sf Storage= 7,545 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 1.26" for 2 YEAR event
 Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.062 af
 Outflow = 0.93 cfs @ 12.10 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.8 min
 Primary = 0.93 cfs @ 12.10 hrs, Volume= 0.058 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.20' @ 12.10 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 42.6 min calculated for 0.058 af (92% of inflow)

Center-of-Mass det. time= 17.6 min (796.6 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.92 cfs @ 12.10 hrs HW=143.20' TW=141.22' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.92 cfs @ 0.83 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 2.83" for 2 YEAR event
 Inflow = 0.60 cfs @ 12.07 hrs, Volume= 0.045 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 152.05' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 1,961 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)

↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)

↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 1.43" for 2 YEAR event
 Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.03 cfs @ 18.25 hrs, Volume= 0.017 af, Atten= 94%, Lag= 370.2 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.03 cfs @ 18.25 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.74' @ 14.97 hrs Surf.Area= 4,059 sf Storage= 1,200 cf

Plug-Flow detention time= 300.1 min calculated for 0.017 af (45% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Center-of-Mass det. time= 213.6 min (1,011.4 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 18.25 hrs HW=141.65' TW=141.64' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 0.29 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 1.34" for 2 YEAR event
 Inflow = 2.18 cfs @ 12.09 hrs, Volume= 0.168 af
 Outflow = 0.14 cfs @ 14.91 hrs, Volume= 0.104 af, Atten= 94%, Lag= 169.3 min
 Primary = 0.14 cfs @ 14.91 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 141.74' @ 14.91 hrs Surf.Area= 3,928 sf Storage= 3,477 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 93.2 min (888.3 - 795.1)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.14 cfs @ 14.91 hrs HW=141.74' TW=136.01' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.13 cfs @ 5.98 fps)
 2=Orifice/Grate (Orifice Controls 0.01 cfs @ 0.66 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 1.50" for 2 YEAR event
Inflow =	3.29 cfs @ 12.09 hrs, Volume= 0.227 af
Outflow =	3.24 cfs @ 12.10 hrs, Volume= 0.226 af, Atten= 2%, Lag= 0.1 min
Discarded =	3.24 cfs @ 12.10 hrs, Volume= 0.226 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.00' @ 12.10 hrs Surf.Area= 4,701 sf Storage= 5 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 2 YEAR Rainfall=3.20"

Prepared by Hancock Assoc.

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.37 cfs @ 12.10 hrs HW=138.00' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.37 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 1.56" for 2 YEAR event
 Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.127 af
 Outflow = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.5 min
 Primary = 1.93 cfs @ 12.10 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.73' @ 12.10 hrs Surf.Area= 290 sf Storage= 608 cf

Plug-Flow detention time= 49.3 min calculated for 0.115 af (90% of inflow)

Center-of-Mass det. time= 17.9 min (807.9 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=1.92 cfs @ 12.10 hrs HW=144.73' TW=141.88' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.92 cfs @ 1.68 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

Printed 1/17/2017

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 1.04" for 10 YEAR event
 Inflow = 2.33 cfs @ 12.16 hrs, Volume= 0.486 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.80' @ 20.00 hrs Surf.Area= 22,430 sf Storage= 21,131 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 0.99" for 10 YEAR event
 Inflow = 3.35 cfs @ 12.21 hrs, Volume= 0.426 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 136.68' @ 20.00 hrs Surf.Area= 21,121 sf Storage= 18,562 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=135.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 2.21" for 10 YEAR event
 Inflow = 1.58 cfs @ 12.08 hrs, Volume= 0.109 af
 Outflow = 1.61 cfs @ 12.07 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.61 cfs @ 12.07 hrs, Volume= 0.105 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.26' @ 12.07 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 30.1 min calculated for 0.104 af (95% of inflow)

Center-of-Mass det. time= 13.8 min (780.2 - 766.5)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.53 cfs @ 12.07 hrs HW=143.25' TW=141.65' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 1.53 cfs @ 0.99 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

Prepared by Hancock Assoc.

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 4.35" for 10 YEAR event
 Inflow = 0.90 cfs @ 12.07 hrs, Volume= 0.069 af
 Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 152.95' @ 20.00 hrs Surf.Area= 1,800 sf Storage= 3,018 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' TW=146.44' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 2.72" for 10 YEAR event
 Inflow = 1.09 cfs @ 12.08 hrs, Volume= 0.072 af
 Outflow = 0.31 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 72%, Lag= 1.2 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.31 cfs @ 12.10 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.17' @ 12.73 hrs Surf.Area= 4,059 sf Storage= 1,901 cf

Plug-Flow detention time= 198.1 min calculated for 0.046 af (63% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Center-of-Mass det. time= 125.2 min (908.3 - 783.1)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=141.68' TW=141.74' (Dynamic Tailwater)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 2.47" for 10 YEAR event
 Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.309 af
 Outflow = 0.77 cfs @ 12.51 hrs, Volume= 0.231 af, Atten= 81%, Lag= 26.2 min
 Primary = 0.77 cfs @ 12.51 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.17' @ 12.51 hrs Surf.Area= 4,368 sf Storage= 5,283 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 63.1 min (846.3 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.77 cfs @ 12.51 hrs HW=142.17' TW=136.08' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.15 cfs @ 6.77 fps)
- 2=Orifice/Grate (Orifice Controls 0.62 cfs @ 2.34 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 2.72" for 10 YEAR event
Inflow =	5.92 cfs @ 12.09 hrs, Volume= 0.411 af
Outflow =	3.52 cfs @ 12.20 hrs, Volume= 0.413 af, Atten= 41%, Lag= 6.7 min
Discarded =	3.52 cfs @ 12.20 hrs, Volume= 0.413 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.21' @ 12.20 hrs Surf.Area= 4,895 sf Storage= 1,014 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (768.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 10 YEAR Rainfall=4.80"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.52 cfs @ 12.20 hrs HW=138.21' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.52 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.00' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=138.25' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 2.88" for 10 YEAR event
 Inflow = 3.50 cfs @ 12.09 hrs, Volume= 0.235 af
 Outflow = 3.51 cfs @ 12.09 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.4 min
 Primary = 3.51 cfs @ 12.09 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.92' @ 12.09 hrs Surf.Area= 290 sf Storage= 642 cf

Plug-Flow detention time= 33.6 min calculated for 0.222 af (95% of inflow)

Center-of-Mass det. time= 13.8 min (790.6 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=144.91' TW=142.02' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.44 cfs @ 2.05 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

Prepared by Hancock Assoc.

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 1.56" for 25 YEAR event
 Inflow = 3.80 cfs @ 12.17 hrs, Volume= 0.728 af
 Outflow = 0.42 cfs @ 17.18 hrs, Volume= 0.114 af, Atten= 89%, Lag= 300.5 min
 Primary = 0.42 cfs @ 17.18 hrs, Volume= 0.114 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.04' @ 17.18 hrs Surf.Area= 24,926 sf Storage= 27,009 cf

Plug-Flow detention time= 528.5 min calculated for 0.114 af (16% of inflow)
 Center-of-Mass det. time= 272.9 min (1,078.7 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.42 cfs @ 17.18 hrs HW=137.04' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 0.42 cfs @ 0.49 fps)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 1.57" for 25 YEAR event
 Inflow = 6.18 cfs @ 12.22 hrs, Volume= 0.678 af
 Outflow = 0.28 cfs @ 18.07 hrs, Volume= 0.066 af, Atten= 95%, Lag= 351.3 min
 Primary = 0.28 cfs @ 18.07 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.03' @ 18.07 hrs Surf.Area= 24,875 sf Storage= 26,767 cf

Plug-Flow detention time= 579.1 min calculated for 0.066 af (10% of inflow)
 Center-of-Mass det. time= 308.0 min (1,110.3 - 802.2)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.28 cfs @ 18.07 hrs HW=137.03' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.28 cfs @ 0.43 fps)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 3.29" for 25 YEAR event
 Inflow = 2.07 cfs @ 12.08 hrs, Volume= 0.163 af
 Outflow = 2.10 cfs @ 12.08 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.2 min
 Primary = 2.10 cfs @ 12.08 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.29' @ 12.08 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 22.9 min calculated for 0.158 af (97% of inflow)

Center-of-Mass det. time= 11.3 min (791.7 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.02 cfs @ 12.08 hrs HW=143.29' TW=142.08' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 2.02 cfs @ 1.09 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 5.50" for 25 YEAR event
 Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.088 af
 Outflow = 0.07 cfs @ 13.67 hrs, Volume= 0.017 af, Atten= 94%, Lag= 96.1 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.07 cfs @ 13.67 hrs, Volume= 0.017 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 153.03' @ 13.67 hrs Surf.Area= 1,261 sf Storage= 3,083 cf

Plug-Flow detention time= 491.9 min calculated for 0.017 af (19% of inflow)
 Center-of-Mass det. time= 237.0 min (954.3 - 717.2)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.07 cfs @ 13.67 hrs HW=153.03' TW=146.55' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 0.07 cfs @ 0.57 fps)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 3.75" for 25 YEAR event
 Inflow = 1.49 cfs @ 12.07 hrs, Volume= 0.100 af
 Outflow = 0.28 cfs @ 12.96 hrs, Volume= 0.071 af, Atten= 81%, Lag= 53.3 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.28 cfs @ 12.96 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.54' @ 12.60 hrs Surf.Area= 4,059 sf Storage= 2,498 cf

Plug-Flow detention time= 169.9 min calculated for 0.071 af (71% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Center-of-Mass det. time= 105.3 min (880.9 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.30 cfs @ 12.96 hrs HW=142.47' TW=142.37' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.53 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 3.50" for 25 YEAR event
 Inflow = 5.09 cfs @ 12.07 hrs, Volume= 0.438 af
 Outflow = 1.30 cfs @ 12.48 hrs, Volume= 0.355 af, Atten= 74%, Lag= 24.5 min
 Primary = 1.30 cfs @ 12.48 hrs, Volume= 0.355 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 142.49' @ 12.48 hrs Surf.Area= 4,696 sf Storage= 6,732 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 53.9 min (838.0 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.30 cfs @ 12.48 hrs HW=142.49' TW=136.28' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.30 fps)
- 2=Orifice/Grate (Orifice Controls 1.14 cfs @ 3.26 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 3.70" for 25 YEAR event
Inflow =	7.99 cfs @ 12.09 hrs, Volume= 0.558 af
Outflow =	3.83 cfs @ 12.25 hrs, Volume= 0.559 af, Atten= 52%, Lag= 9.6 min
Discarded =	3.70 cfs @ 12.25 hrs, Volume= 0.556 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.13 cfs @ 12.25 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.47' @ 12.25 hrs Surf.Area= 5,141 sf Storage= 2,316 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 2.9 min (765.9 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 25 YEAR Rainfall=6.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=3.70 cfs @ 12.25 hrs HW=138.47' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 3.70 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.01' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.13 cfs @ 12.25 hrs HW=138.47' TW=138.36' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.60 fps)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 3.92" for 25 YEAR event
 Inflow = 4.70 cfs @ 12.08 hrs, Volume= 0.320 af
 Outflow = 4.73 cfs @ 12.09 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.4 min
 Primary = 4.73 cfs @ 12.09 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.03' @ 12.09 hrs Surf.Area= 290 sf Storage= 663 cf

Plug-Flow detention time= 27.1 min calculated for 0.306 af (96% of inflow)

Center-of-Mass det. time= 12.0 min (781.8 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=4.61 cfs @ 12.09 hrs HW=145.02' TW=142.12' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.61 cfs @ 2.28 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Summary for Pond 4P: wetlands

Inflow Area = 5.607 ac, 53.54% Impervious, Inflow Depth > 2.89" for 100 YEAR event
 Inflow = 9.59 cfs @ 12.23 hrs, Volume= 1.351 af
 Outflow = 2.83 cfs @ 13.23 hrs, Volume= 0.731 af, Atten= 71%, Lag= 60.4 min
 Primary = 2.83 cfs @ 13.23 hrs, Volume= 0.731 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.15' @ 13.23 hrs Surf.Area= 25,507 sf Storage= 29,770 cf

Plug-Flow detention time= 211.6 min calculated for 0.731 af (54% of inflow)
 Center-of-Mass det. time= 110.7 min (910.6 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.82 cfs @ 13.23 hrs HW=137.15' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 2.82 cfs @ 0.93 fps)

Summary for Pond 5P: wetlands(PRE)

Inflow Area = 5.180 ac, 12.85% Impervious, Inflow Depth > 3.12" for 100 YEAR event
 Inflow = 13.69 cfs @ 12.21 hrs, Volume= 1.346 af
 Outflow = 3.48 cfs @ 12.79 hrs, Volume= 0.726 af, Atten= 75%, Lag= 34.8 min
 Primary = 3.48 cfs @ 12.79 hrs, Volume= 0.726 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 137.17' @ 12.79 hrs Surf.Area= 25,627 sf Storage= 30,350 cf

Plug-Flow detention time= 191.9 min calculated for 0.724 af (54% of inflow)
 Center-of-Mass det. time= 99.8 min (897.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	135.00'	53,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	31.000 in/hr Exfiltration over Wetted area
#2	Secondary	138.25'	6.0" Vert. Orifice/Grate C= 0.600
#3	Primary	139.60'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66			
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32			

Discarded OutFlow Max=4.17 cfs @ 12.31 hrs HW=139.12' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 4.17 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=138.00' TW=135.01' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.75 cfs @ 12.31 hrs HW=139.12' TW=138.50' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.75 cfs @ 3.80 fps)**Summary for Pond 90P: ISOLATION CHAMBERS**

Inflow Area = 0.978 ac, 75.27% Impervious, Inflow Depth > 6.27" for 100 YEAR event
 Inflow = 7.33 cfs @ 12.08 hrs, Volume= 0.511 af
 Outflow = 7.36 cfs @ 12.09 hrs, Volume= 0.498 af, Atten= 0%, Lag= 0.3 min
 Primary = 7.36 cfs @ 12.09 hrs, Volume= 0.498 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.24' @ 12.09 hrs Surf.Area= 290 sf Storage= 699 cf

Plug-Flow detention time= 19.8 min calculated for 0.498 af (98% of inflow)

Center-of-Mass det. time= 9.6 min (768.7 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	449 cf	8.42'W x 34.45'L x 5.50'H Field A
1,595 cf Overall - 471 cf Embedded = 1,124 cf x 40.0% Voids			
#2A	142.25'	471 cf	ADS StormTech MC-3500 c +Cap x 4 Inside #1
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf			
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap			
Cap Storage= +15.6 cf x 2 x 1 rows = 31.2 cf			
920 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	144.35'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Primary OutFlow Max=7.14 cfs @ 12.09 hrs HW=145.23' TW=142.31' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 7.14 cfs @ 2.71 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.00	0	0	0
136.00	13,600	6,800	6,800
137.00	24,700	19,150	25,950
138.00	30,000	27,350	53,300

Device	Routing	Invert	Outlet Devices
#1	Primary	137.00'	20.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.48 cfs @ 12.79 hrs HW=137.17' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 3.48 cfs @ 0.99 fps)

Summary for Pond 13P: forebay

Inflow Area = 0.594 ac, 88.22% Impervious, Inflow Depth > 5.72" for 100 YEAR event
 Inflow = 3.09 cfs @ 12.08 hrs, Volume= 0.283 af
 Outflow = 3.08 cfs @ 12.08 hrs, Volume= 0.278 af, Atten= 1%, Lag= 0.0 min
 Primary = 3.08 cfs @ 12.08 hrs, Volume= 0.278 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 143.35' @ 12.08 hrs Surf.Area= 480 sf Storage= 251 cf

Plug-Flow detention time= 15.0 min calculated for 0.278 af (98% of inflow)

Center-of-Mass det. time= 7.9 min (775.9 - 768.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	251 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	51	0	0
142.50	160	53	53
143.00	314	119	171
143.20	480	79	251

Device	Routing	Invert	Outlet Devices
#1	Primary	143.08'	9.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.04 cfs @ 12.08 hrs HW=143.35' TW=142.70' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 3.04 cfs @ 1.26 fps)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

Prepared by Hancock Assoc.

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Summary for Pond 23P: infiltration

Inflow Area = 0.191 ac, 100.00% Impervious, Inflow Depth > 7.98" for 100 YEAR event
 Inflow = 1.50 cfs @ 12.08 hrs, Volume= 0.127 af
 Outflow = 1.45 cfs @ 12.19 hrs, Volume= 0.056 af, Atten= 3%, Lag= 7.1 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 1.45 cfs @ 12.19 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 153.23' @ 12.19 hrs Surf.Area= 12 sf Storage= 3,102 cf

Plug-Flow detention time= 254.5 min calculated for 0.056 af (44% of inflow)
 Center-of-Mass det. time= 126.5 min (839.4 - 712.9)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	1,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 5,501 cf Overall - 1,508 cf Embedded = 3,993 cf x 40.0% Voids
#2	151.00'	1,508 cf	24.0" Round Pipe Storage x 4 Inside #1 L= 120.0'
		3,105 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	1,800	0	0
153.00	1,800	5,400	5,400
153.10	12	91	5,491
154.00	12	11	5,501

Device	Routing	Invert	Outlet Devices
#1	Discarded	150.00'	2.400 in/hr Exfiltration over Horizontal area above 150.00' Excluded Horizontal area = 1,800 sf
#2	Primary	153.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=150.00' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.32 cfs @ 12.19 hrs HW=153.22' TW=146.94' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 1.32 cfs @ 1.53 fps)

Summary for Pond 44P: pervious pavement resevoir

Inflow Area = 0.320 ac, 62.50% Impervious, Inflow Depth > 6.07" for 100 YEAR event
 Inflow = 2.36 cfs @ 12.07 hrs, Volume= 0.162 af
 Outflow = 0.52 cfs @ 12.57 hrs, Volume= 0.130 af, Atten= 78%, Lag= 29.6 min
 Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Primary = 0.52 cfs @ 12.57 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.29' @ 12.49 hrs Surf.Area= 4,059 sf Storage= 3,720 cf

Plug-Flow detention time= 147.6 min calculated for 0.130 af (81% of inflow)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

Prepared by Hancock Assoc.

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Center-of-Mass det. time= 95.5 min (859.5 - 763.9)

Volume	Invert	Avail.Storage	Storage Description
#1	141.00'	4,871 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 12,177 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
141.00	4,059	0	0
143.00	4,059	8,118	8,118
144.00	4,059	4,059	12,177

Device	Routing	Invert	Outlet Devices
#1	Primary	141.50'	6.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	143.70'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	141.00'	0.270 in/hr Exfiltration over Horizontal area above 141.00' Excluded Horizontal area = 4,059 sf

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=141.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.53 cfs @ 12.57 hrs HW=143.27' TW=142.96' (Dynamic Tailwater)
 ↳ **1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.72 fps)
 ↳ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 48P: swm pond

Inflow Area = 1.502 ac, 76.70% Impervious, Inflow Depth > 5.86" for 100 YEAR event
 Inflow = 7.91 cfs @ 12.07 hrs, Volume= 0.733 af
 Outflow = 4.74 cfs @ 12.24 hrs, Volume= 0.644 af, Atten= 40%, Lag= 10.2 min
 Primary = 4.74 cfs @ 12.24 hrs, Volume= 0.644 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 143.05' @ 12.24 hrs Surf.Area= 5,265 sf Storage= 9,532 cf

Plug-Flow detention time= 87.1 min calculated for 0.642 af (88% of inflow)
 Center-of-Mass det. time= 48.2 min (823.2 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	140.50'	11,889 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Coolidge at Sudbury Phase2-1-16-17

Type III 24-hr 100 YEAR Rainfall=8.60"

Prepared by Hancock Assoc.

Printed 1/17/2017

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
140.50	1,453	0	0
141.50	3,690	2,572	2,572
142.00	4,190	1,970	4,542
142.50	4,703	2,223	6,765
143.00	5,265	2,492	9,257
143.50	5,265	2,633	11,889

Device	Routing	Invert	Outlet Devices
#1	Primary	140.11'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	141.70'	8.0" Vert. Orifice/Grate C= 0.600
#3	Primary	142.88'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	142.93'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.70 cfs @ 12.24 hrs HW=143.05' TW=136.48' (Dynamic Tailwater)

- 1=Orifice/Grate (Orifice Controls 0.18 cfs @ 8.14 fps)
 2=Orifice/Grate (Orifice Controls 1.70 cfs @ 4.86 fps)
 3=Orifice/Grate (Weir Controls 1.85 cfs @ 1.35 fps)
 4=Broad-Crested Rectangular Weir (Weir Controls 0.98 cfs @ 0.81 fps)

Summary for Pond 49P: Infiltration Basin

Inflow Area =	1.810 ac, 71.53% Impervious, Inflow Depth > 5.93" for 100 YEAR event
Inflow =	12.61 cfs @ 12.09 hrs, Volume= 0.894 af
Outflow =	4.92 cfs @ 12.31 hrs, Volume= 0.895 af, Atten= 61%, Lag= 13.7 min
Discarded =	4.18 cfs @ 12.31 hrs, Volume= 0.859 af
Primary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary =	0.75 cfs @ 12.31 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 139.12' @ 12.31 hrs Surf.Area= 5,781 sf Storage= 5,883 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 6.5 min (762.0 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	11,331 cf	Custom Stage Data (Conic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
138.00	4,700	0	0	4,700
139.00	5,660	5,173	5,173	5,693
140.00	6,670	6,158	11,331	6,741

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NO.	BY	APP	DATE	ISSUE/REVISION	DESCRIPTION

DATE: 1-17-17	DRAWN BY: JT
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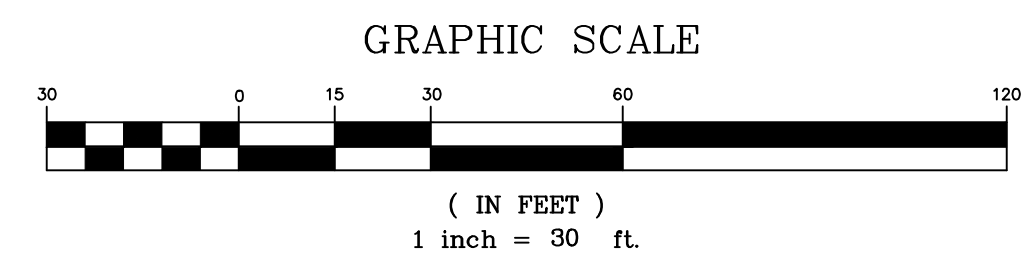
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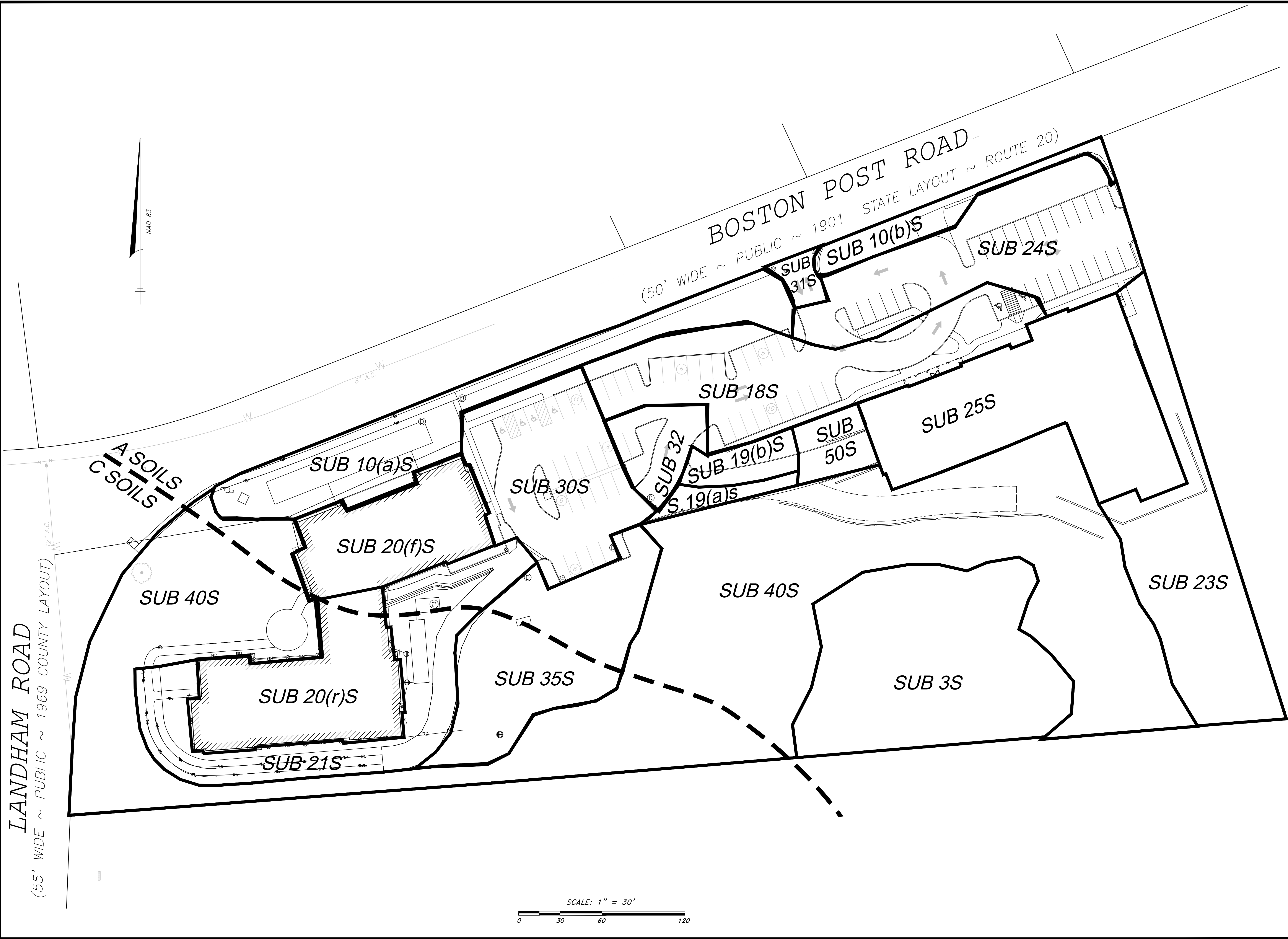
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1	JTL	JP	1/9/17	COMMENTS/REVISIONS
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DATE: 11/16/16 DRAWN BY: JTL
SCALE: 1" = 30' CHECK BY: JP

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LAYOUT: EX
SHEET: 1 OF 1

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