DRAINAGE REPORT

For

32 NORTH PEAK STREET

BLOCK 35, LOTS 8 & 9

BOROUGH OF HIGHLANDS

MONMOUTH COUNTY, NEW JERSEY

GROTTO ENGINEERING ASSOCIATES

Richard O'Connor, P.E., P.P., C.M.E
77 Brant Avenue – Suite 105
Clark, New Jersey 07066

Frank W. Farrell, P.E., C.M.E.
New Jersey Professional Engineer, License No. GE51556

August 22, 2024

INTRODUCTION

This report provides a description of the impacts to the existing drainage system due to the site improvements being proposed for the subject project known as 32 North Peak Street.

The "project" consists of 13,423 sf or 0.31 acres of land located in the Borough of Highlands, Monmouth County, New Jersey, and will be identified as Block 35, Lots 8 & 9 or 32 North Peak Street.

The existing Lots 8 & 9 are developed with various impervious surfaces. The total lot areas equate to 13,423 sf or 0.31 acres. The topography of the Lots slope south and east towards Valley Avenue. The proposed site improvements consist of two new residential dwellings with driveways and retaining walls, resulting in a reduction in impervious surface and grade across the site. Additionally, the proposed driveways have been designed as gravel surfaces, filtering surface runoff and increasing groundwater recharge.

A "major development", as defined in the ordinance, is any development that provides for ultimately disturbing one or more acres of land or increasing the impervious coverage by an area greater than one-quarter acre. Since the total disturbance is less than 1 acre and there is no increase in impervious area, the requirements of the stormwater management provisions do not apply.

The maximum discharge and total volume of runoff for Pre and Post development conditions have been calculated and provided herein. Volumes and rates have been controlled so that after development, the site will generate no greater peak runoff from the site than prior to development for the 2-, 10-, and 100-year storms considered individually. The design of the detention system has been based on the maximum storage volumes generated by the various storms described above.

EXISTING SITE

At the time of the survey, Lots 8 & 9 contained a 1-1/2 story dwelling, various retaining walls, patios, walkways, and other impervious surfaces totaling 5,603 sf (41.7%). The area of the Lots is approximately 13,423 sf or 0.31 acres. Based on various sources of aerial imagery, this analysis conservatively considers approximately 1,979 sf (14.7%) of the site to be "wooded". No stormwater management existed on site at the time of the survey.

The lot consists of one soil type as shown on the NRCS Soil Survey. The following information will provide a synopsis of the sites' soil characteristics.

The entirety of the tract for each respective lot is made up of Phalanx loamy sand with 10 to 25 percent slopes (PhbE), hydrologic soil group A. The Phalanx series consists of mildly sloping, well drained soils. A typical profile consists of 0-17 inches of loamy sand, followed by 0-21 inches of sandy loam, and then 0-22 inches of very flaggy loamy sand. Permeability is high to very high, with a rate of 2.00 to 20.00 in/hr. The depth to the water table is estimated to be between 48 inches (4') and 118 inches (9.8') below the ground surface.

On Lots 8 & 9, the tract slopes from west to east towards Valley Avenue. The approximate elevations of the project area range from 150' from the north corner of Lot 9 to 116' at the south of Lot 8.

Table 1: Pre-Development Drainage Area (Both Lots)

Drainage Area	Area (SF)	Area (Acres)	%	Tc (MIN)
Uncontrolled Area				
Grass (A), CN = 39	5,811.3	0.133	43.3	10
Woods (A), CN = 30	1,979.0	0.045	14.7	10
Impervious (Roof) CN = 98	1,071.9	0.025	8.0	10
Impervious (Other) CN = 98	4,563.8	0.105	34.0	10
TOTAL	**13,426.0**	**0.308**	**100**	

PROPOSED DRAINAGE IMPROVEMENTS

Two 2-story residential structures, driveways, and appurtenances are to be constructed on Lots 8 & 9 for a total of 4,913 sf. of impervious surface (36.6%). The proposed improvements and site grading will reduce the pre-development impervious area therefore reducing runoff. Additionally, roof runoff from both proposed structures will be piped directly into two underground stormwater basins, reducing the overall quantity of runoff from the property by at least 50% (see Table 4 below).

The two proposed driveways will constructed of gravel, filtering surface runoff and increasing groundwater recharge. Should the subsurface stone beds become fully saturated or experience runoff rates which exceed the permeability of the gravel area, the additional runoff from upstream and from the front yards will be directed to a depression between both driveways. This depression then drains to a swale between the two dwellings. Two stone check dams are proposed along the center of the swale at the top and bottom of the slope. This will dissipate the energy of the runoff.

Although the gravel driveway is considered pervious surface, and gravel driveways are explicitly excluded from the Borough's Lot, Coverage definition, this office has conservatively chosen to perform the runoff calculations as though the driveway were "impervious".

The remaining areas shall mimic existing drainage patterns and will continue to flow towards Valley Avenue. The redevelopment of this site will not substantially alter the drainage pattern in the area. No adverse impacts to neighboring or downstream properties are anticipated. The observations made herein are based on land survey data, various sources of aerial imagery, and Monmouth county topographic information. Datum of various sources has been considered and adjusted as necessary.

Table 2: Post Development Drainage Area

Drainage Area	Area (SF)	Area (Acres)	%	Tc (MIN)
Uncontrolled Area				
Grass (A), CN = 39	8,511.0	0.195	63.4	10
Impervious (Other) CN = 98	1,605.0	0.037	12.0	10
Controlled Areas				
Impervious (Roof Lot 8) CN = 98	2,032.0	0.047	15.1	10
Impervious (Roof Lot 9) CN = 98	1,276.0	0.029	9.5	10
TOTAL	**13,424**	**0.308**	**100**	

Table 3: Rainfall Depths for the 2-, 10-, and 100-Year Storms

Frequency of Storms	NOAA NWS PFDS Precipitation Depth (inches)
2-year	3.33
10-year	5.10
100-year	8.61

Table 4: Rainfall Peak Flows (Both Lots)

Frequency of Storms	Pre-Development Peak Flow (cfs)	Proposed Peak Flow (cfs)	Proposed Flow is Less Than Existing Flow?	Percent Reduced
2-year	0.285	0.094	✓	67
10-year	0.444	0.126	✓	71.6
100-year	0.877	0.400	✓	54.4

All stormwater runoff rates for various storm events will be reduced as a result of the proposed improvements on Lots 8 and 9. The amount of impervious area is being reduced and runoff will be further reduced by the construction of two underground stormwater management basins (Stormtech SC-740) with a length of approximately 78 linear feet and corresponding volume providing over 800 cubic feet of storage. The systems shall have open bottoms and be set on and encased in gravel to allow stormwater to infiltrate the ground. Pop-up emitter drains shall be installed at the ground surface above each basin to safely discharge any additional flow, which shall not occur during the 2- or 10-year storm events.
Publicly available soil reports document that the existing soils have an infiltration rate between 2 in/hr and 20 in/hr; 2 in/hr was used in the exfiltration calculations.

STORMWATER QUALITY

As per the New Jersey Department of Environmental Protection (NJDEP), an increase of one quarter (1/4) of an acre (or 10,890 sf.) of impervious surface, an increase of one quarter (1/4) of an acre (or 10,890 sf.) of regulated motor vehicle surface, or one (1) acre of disturbance would signify a major development and require that stormwater runoff quality be assessed. Since the increase in impervious area is less than the threshold of one-quarter acre (10,890 sf.), the water quality requirements of the stormwater management provisions do not apply.

Regulated motor vehicle surface will decrease in the post-development condition by 1,047 sf from 1,847 sf to 800 sf; this will be an improvement to stormwater runoff quality.

Additionally, the proposed driveways have been designed as gravel, which is not considered to be an impervious surface and provides some water quality benefit.

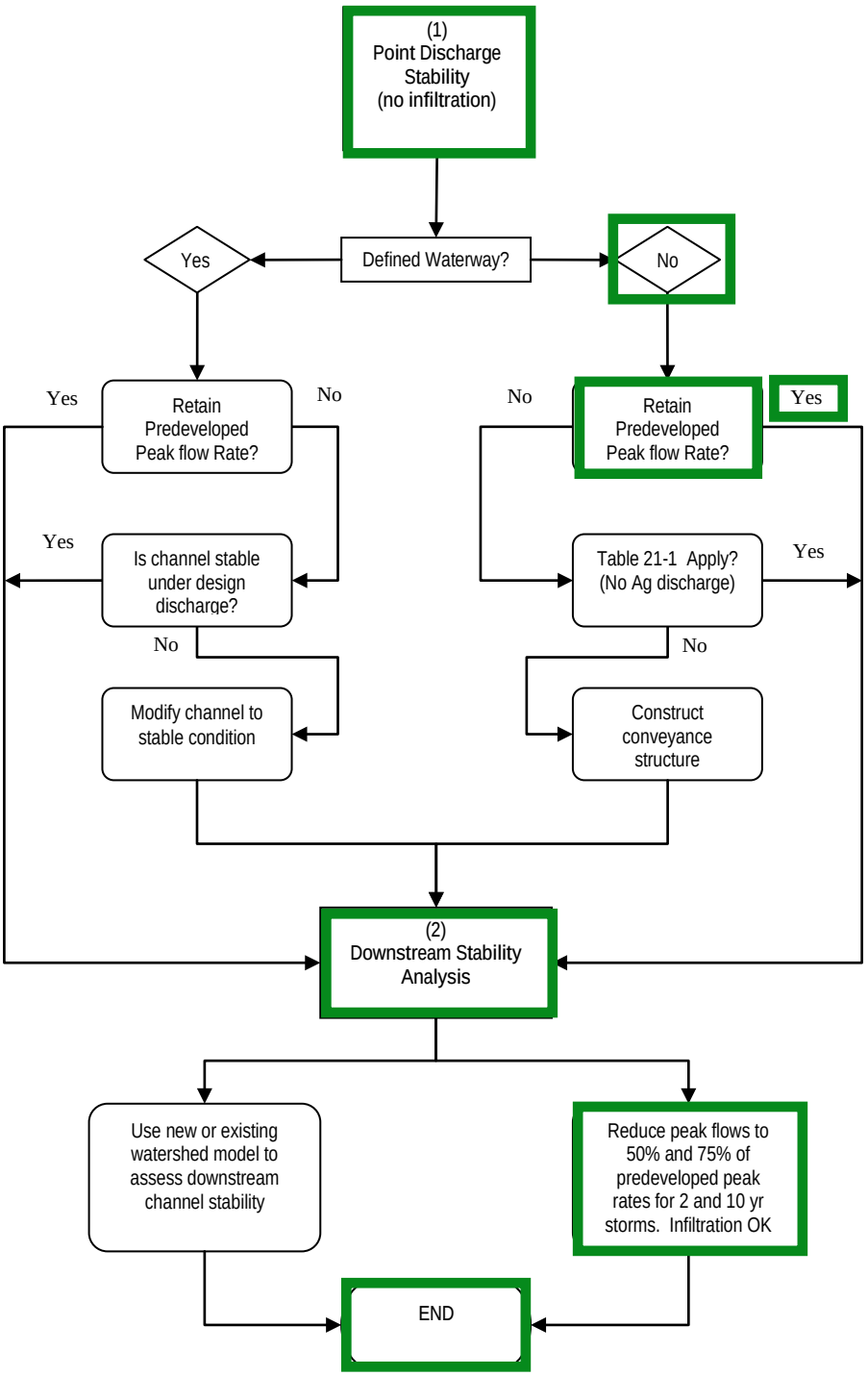
SOIL STABILITY

The site has been designed with provisions for safe and efficient control of stormwater runoff in a manner which will not adversely affect the existing drainage patterns found in the downstream areas. The proposed discharge locations follow similar paths as pre-development runoff. The runoff is not directed to any nearby outfalls, as none exists in proximity to the site. Runoff is conveyed downstream where it becomes part of the general runoff associated with the wider area. Furthermore, no concentrated runoff is directed to the sloped portions of the site. The retaining walls shall be engineered so that surface runoff drains safely behind the walls and discharges through drainpipes or weep holes. Groundwater mounding shall be accounted for in the design. The proposed improvements will have no significant effect on flooding at or downstream of the site. No known erosion issues exist downstream. The proposed improvements will reduce the impervious area and slopes of the site when compared to pre-development conditions, reducing runoff quantity. A depression between both proposed driveways collects runoff from upstream and the front yard, directing it to a swale between the two dwellings. Two stone check dams are proposed along the center of the swale at the top and bottom of the slope to dissipate the energy of the runoff, reducing surface runoff velocities. Based on the information shown herein and on the attached Soil Erosion and Sediment Control Plan, soil stability will be improved. Refer to Figure 21-1, provided below.

CONCLUSIONS

The reduced impervious area in Block 35 Lots 8 & 9 coupled with the construction of the proposed Stormtech chambers and gravel driveways will improve stormwater characteristics of the properties. The proposed improvements and site grading will reduce runoff from the site relative to the predevelopment condition by over 50%. No additional stormwater runoff will be discharged to neighboring properties or the adjoining roadways, therefore, no adverse impacts to neighboring or downstream properties are anticipated.

Figure 21–1
Point Discharge and Downstream Stability Analysis Procedure



Return to TOC

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.056	6	1452	44	------	------	------	Existing - Grass (A)
2	SCS Runoff	0.052	6	1452	42	------	------	------	Existing - Woods (A)
3	SCS Runoff	0.055	6	732	395	------	------	------	Existing - Impervious (Roof)
4	SCS Runoff	0.230	6	732	1,659	------	------	------	Existing - Impervious (Other)
5	Combine	0.285	6	732	2,139	1, 2, 3, 4	------	------	Exisiting Conditions
7	SCS Runoff	0.082	6	1452	64	------	------	------	Post Dev Uncontrolled - Grass (A)
8	SCS Runoff	0.081	6	732	585	------	------	------	Post Dev Uncontrolled - Imp (Other)
9	Combine	0.094	6	1452	648	7, 8	------	------	Post Development - Uncontrolled Are
11	SCS Runoff	0.103	6	732	743	------	------	------	Post Dev Controlled - Imp (Roof 1)
12	Reservoir	0.000	6	n/a	0	11	128.09	160	Underground Chamber 1
14	SCS Runoff	0.064	6	732	458	------	------	------	Post Dev Controlled - Imp (Roof 2)
15	Reservoir	0.000	6	n/a	0	14	128.22	103	Underground Chamber 2
17	Combine	0.094	6	1452	648	9, 12, 15,	------	------	Total Discharge

Hydrograph Report

Hyd. No. 1

Existing - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 2 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 44 cuft
Drainage area	= 0.133 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)
24.10	0.032

...End

Hydrograph Report

Hyd. No. 2

Existing - Woods (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 42 cuft
Drainage area	= 0.045 ac	Curve number	= 30.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)
24.10	0.028

...End

Hydrograph Report

Hyd. No. 3

Existing - Impervious (Roof)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.055 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 395 cuft
Drainage area	= 0.025 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
3.20	0.001	14.00	0.004	24.80	0.009	35.60	0.001
3.80	0.001	14.60	0.003	25.40	0.005	36.20	0.001
4.40	0.001	15.20	0.002	26.00	0.004	36.80	0.001
5.00	0.001	15.80	0.002	26.60	0.003	37.40	0.001
5.60	0.001	16.40	0.002	27.20	0.002	38.00	0.001
6.20	0.001	17.00	0.002	27.80	0.002	38.60	0.001
6.80	0.001	17.60	0.002	28.40	0.002	39.20	0.001
7.40	0.002	18.20	0.001	29.00	0.002	39.80	0.001
8.00	0.002	18.80	0.001	29.60	0.001	40.40	0.001
8.60	0.002	19.40	0.001	30.20	0.001	41.00	0.001
9.20	0.002	20.00	0.001	30.80	0.001	41.60	0.001
9.80	0.003	20.60	0.001	31.40	0.001	42.20	0.001
10.40	0.004	21.20	0.001	32.00	0.001		
11.00	0.006	21.80	0.001	32.60	0.001	*...End*	
11.60	0.011	22.40	0.001	33.20	0.001		
12.20	0.055	23.00	0.001	33.80	0.001		
12.80	0.010	23.60	0.001	34.40	0.001		
13.40	0.006	24.20	0.008	35.00	0.001		

<<

Hydrograph Report

Hyd. No. 4

Existing - Impervious (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.230 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,659 cuft
Drainage area	= 0.105 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
3.20	0.002	14.00	0.017	24.80	0.036	35.60	0.003
3.80	0.003	14.60	0.013	25.40	0.021	36.20	0.003
4.40	0.003	15.20	0.010	26.00	0.016	36.80	0.003
5.00	0.004	15.80	0.009	26.60	0.012	37.40	0.003
5.60	0.004	16.40	0.008	27.20	0.009	38.00	0.003
6.20	0.005	17.00	0.008	27.80	0.008	38.60	0.003
6.80	0.006	17.60	0.007	28.40	0.008	39.20	0.003
7.40	0.007	18.20	0.006	29.00	0.007	39.80	0.003
8.00	0.007	18.80	0.006	29.60	0.006	40.40	0.003
8.60	0.008	19.40	0.005	30.20	0.005	41.00	0.002
9.20	0.010	20.00	0.005	30.80	0.005	41.60	0.002
9.80	0.013	20.60	0.005	31.40	0.005	42.20	0.002
10.40	0.016	21.20	0.005	32.00	0.004		
11.00	0.024	21.80	0.004	32.60	0.004	*...End*	
11.60	0.044	22.40	0.004	33.20	0.004		
12.20	0.230	23.00	0.004	33.80	0.004		
12.80	0.044	23.60	0.004	34.40	0.004		
13.40	0.024	24.20	0.034	35.00	0.003		

<<

Hydrograph Report

Hyd. No. 5

Exisiting Conditions

Hydrograph type	= Combine	Peak discharge	= 0.285 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,139 cuft
Inflow hyds.	= 1, 2, 3, 4	Contrib. drain. area	= 0.308 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
3.60	0.000	0.000	0.001	0.003	0.003
4.20	0.000	0.000	0.001	0.003	0.004
4.80	0.000	0.000	0.001	0.004	0.005
5.40	0.000	0.000	0.001	0.004	0.005
6.00	0.000	0.000	0.001	0.004	0.006
6.60	0.000	0.000	0.001	0.005	0.007
7.20	0.000	0.000	0.001	0.006	0.008
7.80	0.000	0.000	0.002	0.007	0.009
8.40	0.000	0.000	0.002	0.008	0.010
9.00	0.000	0.000	0.002	0.009	0.011
9.60	0.000	0.000	0.003	0.012	0.014
10.20	0.000	0.000	0.004	0.015	0.018
10.80	0.000	0.000	0.005	0.020	0.025
11.40	0.000	0.000	0.008	0.035	0.044
12.00	0.000	0.000	0.028	0.118	0.147
12.60	0.000	0.000	0.014	0.061	0.075
13.20	0.000	0.000	0.007	0.029	0.036
13.80	0.000	0.000	0.004	0.018	0.022
14.40	0.000	0.000	0.003	0.014	0.018
15.00	0.000	0.000	0.003	0.011	0.014
15.60	0.000	0.000	0.002	0.010	0.012

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
16.20	0.000	0.000	0.002	0.009	0.011
16.80	0.000	0.000	0.002	0.008	0.010
17.40	0.000	0.000	0.002	0.007	0.009
18.00	0.000	0.000	0.001	0.006	0.008
18.60	0.000	0.000	0.001	0.006	0.007
19.20	0.000	0.000	0.001	0.005	0.007
19.80	0.000	0.000	0.001	0.005	0.006
20.40	0.000	0.000	0.001	0.005	0.006
21.00	0.000	0.000	0.001	0.005	0.006
21.60	0.000	0.000	0.001	0.005	0.006
22.20	0.000	0.000	0.001	0.004	0.005
22.80	0.000	0.000	0.001	0.004	0.005
23.40	0.000	0.000	0.001	0.004	0.005
24.00	0.000	0.000	0.001	0.004	0.005
24.60	0.000	0.000	0.012	0.049	0.061
25.20	0.000	0.000	0.006	0.025	0.031
25.80	0.000	0.000	0.004	0.018	0.022
26.40	0.000	0.000	0.003	0.013	0.016
27.00	0.000	0.000	0.002	0.010	0.013
27.60	0.000	0.000	0.002	0.009	0.011
28.20	0.000	0.000	0.002	0.008	0.010
28.80	0.000	0.000	0.002	0.007	0.009
29.40	0.000	0.000	0.001	0.006	0.008
30.00	0.000	0.000	0.001	0.005	0.007
30.60	0.000	0.000	0.001	0.005	0.006
31.20	0.000	0.000	0.001	0.005	0.006
31.80	0.000	0.000	0.001	0.005	0.006

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
32.40	0.000	0.000	0.001	0.004	0.005
33.00	0.000	0.000	0.001	0.004	0.005
33.60	0.000	0.000	0.001	0.004	0.005
34.20	0.000	0.000	0.001	0.004	0.005
34.80	0.000	0.000	0.001	0.003	0.004
35.40	0.000	0.000	0.001	0.003	0.004
36.00	0.000	0.000	0.001	0.003	0.004
36.60	0.000	0.000	0.001	0.003	0.004
37.20	0.000	0.000	0.001	0.003	0.003
37.80	0.000	0.000	0.001	0.003	0.003
38.40	0.000	0.000	0.001	0.003	0.003
39.00	0.000	0.000	0.001	0.003	0.003
39.60	0.000	0.000	0.001	0.003	0.003
40.20	0.000	0.000	0.001	0.003	0.003
40.80	0.000	0.000	0.001	0.002	0.003
41.40	0.000	0.000	0.001	0.002	0.003
42.00	0.000	0.000	0.001	0.002	0.003
42.60	0.000	0.000	0.001	0.002	0.003

...End

Hydrograph Report

Hyd. No. 7

Post Dev Uncontrolled - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.082 cfs
Storm frequency	= 2 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 64 cuft
Drainage area	= 0.195 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)
24.10	0.047

...End

Hydrograph Report

Hyd. No. 8

Post Dev Uncontrolled - Imp (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.081 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 585 cuft
Drainage area	= 0.037 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
3.20	0.001	14.00	0.006	24.80	0.013	35.60	0.001
3.80	0.001	14.60	0.005	25.40	0.007	36.20	0.001
4.40	0.001	15.20	0.004	26.00	0.006	36.80	0.001
5.00	0.001	15.80	0.003	26.60	0.004	37.40	0.001
5.60	0.001	16.40	0.003	27.20	0.003	38.00	0.001
6.20	0.002	17.00	0.003	27.80	0.003	38.60	0.001
6.80	0.002	17.60	0.002	28.40	0.003	39.20	0.001
7.40	0.002	18.20	0.002	29.00	0.002	39.80	0.001
8.00	0.003	18.80	0.002	29.60	0.002	40.40	0.001
8.60	0.003	19.40	0.002	30.20	0.002	41.00	0.001
9.20	0.003	20.00	0.002	30.80	0.002	41.60	0.001
9.80	0.004	20.60	0.002	31.40	0.002	42.20	0.001
10.40	0.006	21.20	0.002	32.00	0.002		
11.00	0.008	21.80	0.002	32.60	0.001	*...End*	
11.60	0.016	22.40	0.001	33.20	0.001		
12.20	0.081	23.00	0.001	33.80	0.001		
12.80	0.015	23.60	0.001	34.40	0.001		
13.40	0.009	24.20	0.012	35.00	0.001		

<<

Hydrograph Report

Hyd. No. 9

Post Development - Uncontrolled Area

Hydrograph type	= Combine	Peak discharge	= 0.094 cfs
Storm frequency	= 2 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 648 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 0.232 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
3.60	0.000	0.001	0.001
4.20	0.000	0.001	0.001
4.80	0.000	0.001	0.001
5.40	0.000	0.001	0.001
6.00	0.000	0.002	0.002
6.60	0.000	0.002	0.002
7.20	0.000	0.002	0.002
7.80	0.000	0.003	0.003
8.40	0.000	0.003	0.003
9.00	0.000	0.003	0.003
9.60	0.000	0.004	0.004
10.20	0.000	0.005	0.005
10.80	0.000	0.007	0.007
11.40	0.000	0.012	0.012
12.00	0.000	0.042	0.042
12.60	0.000	0.021	0.021
13.20	0.000	0.010	0.010
13.80	0.000	0.006	0.006
14.40	0.000	0.005	0.005
15.00	0.000	0.004	0.004
15.60	0.000	0.003	0.003

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
16.20	0.000	0.003	0.003
16.80	0.000	0.003	0.003
17.40	0.000	0.002	0.002
18.00	0.000	0.002	0.002
18.60	0.000	0.002	0.002
19.20	0.000	0.002	0.002
19.80	0.000	0.002	0.002
20.40	0.000	0.002	0.002
21.00	0.000	0.002	0.002
21.60	0.000	0.002	0.002
22.20	0.000	0.002	0.002
22.80	0.000	0.001	0.002
23.40	0.000	0.001	0.002
24.00	0.000	0.001	0.001
24.60	0.000	0.017	0.017
25.20	0.000	0.009	0.009
25.80	0.000	0.006	0.006
26.40	0.000	0.005	0.005
27.00	0.000	0.004	0.004
27.60	0.000	0.003	0.003
28.20	0.000	0.003	0.003
28.80	0.000	0.002	0.002
29.40	0.000	0.002	0.002
30.00	0.000	0.002	0.002
30.60	0.000	0.002	0.002
31.20	0.000	0.002	0.002
31.80	0.000	0.002	0.002

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
32.40	0.000	0.002	0.002
33.00	0.000	0.001	0.001
33.60	0.000	0.001	0.001
34.20	0.000	0.001	0.001
34.80	0.000	0.001	0.001
35.40	0.000	0.001	0.001
36.00	0.000	0.001	0.001
36.60	0.000	0.001	0.001
37.20	0.000	0.001	0.001
37.80	0.000	0.001	0.001
38.40	0.000	0.001	0.001

...End

Hydrograph Report

Hyd. No. 11

Post Dev Controlled - Imp (Roof 1)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.103 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 743 cuft
Drainage area	= 0.047 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
3.20	0.001	14.00	0.007	24.80	0.016	35.60	0.001
3.80	0.001	14.60	0.006	25.40	0.009	36.20	0.001
4.40	0.002	15.20	0.005	26.00	0.007	36.80	0.001
5.00	0.002	15.80	0.004	26.60	0.005	37.40	0.001
5.60	0.002	16.40	0.004	27.20	0.004	38.00	0.001
6.20	0.002	17.00	0.003	27.80	0.004	38.60	0.001
6.80	0.002	17.60	0.003	28.40	0.003	39.20	0.001
7.40	0.003	18.20	0.003	29.00	0.003	39.80	0.001
8.00	0.003	18.80	0.002	29.60	0.003	40.40	0.001
8.60	0.004	19.40	0.002	30.20	0.002	41.00	0.001
9.20	0.004	20.00	0.002	30.80	0.002	41.60	0.001
9.80	0.006	20.60	0.002	31.40	0.002	42.20	0.001
10.40	0.007	21.20	0.002	32.00	0.002		
11.00	0.011	21.80	0.002	32.60	0.002	*...End*	
11.60	0.020	22.40	0.002	33.20	0.002		
12.20	0.103	23.00	0.002	33.80	0.002		
12.80	0.019	23.60	0.002	34.40	0.002		
13.40	0.011	24.20	0.015	35.00	0.001		

<<

Hydrograph Report

Hyd. No. 12

Underground Chamber 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 6 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - Post Dev Controlled Runoff	Reservoir name	= Stormtech SC-740
Max. Elevation	= 128.09 ft	Max. Storage	= 160 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Pond Report

Pond No. 1 - Stormtech SC-740 Left Roof

Pond Data

UG Chambers -Invert elev. = 127.50 ft, Rise x Span = 2.50 x 3.50 ft, Barrel Len = 50.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 127.00 ft, Width = 4.50 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	127.00	n/a	0	0
0.35	127.35	n/a	32	32
0.70	127.70	n/a	52	84
1.05	128.05	n/a	68	152
1.40	128.40	n/a	67	218
1.75	128.75	n/a	65	283
2.10	129.10	n/a	62	345
2.45	129.45	n/a	57	402
2.80	129.80	n/a	51	453
3.15	130.15	n/a	37	490
3.50	130.50	n/a	32	521

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	4.00	0.00	0.00
Span (in)	= 0.00	4.00	0.00	0.00
No. Barrels	= 0	2	0	0
Invert El. (ft)	= 0.00	130.10	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	127.00	---	0.00	---	---	---	---	---	---	0.000	---	0.000
0.35	32	127.35	---	0.00	---	---	---	---	---	---	0.012	---	0.012
0.70	84	127.70	---	0.00	---	---	---	---	---	---	0.014	---	0.014
1.05	152	128.05	---	0.00	---	---	---	---	---	---	0.015	---	0.015
1.40	218	128.40	---	0.00	---	---	---	---	---	---	0.017	---	0.017
1.75	283	128.75	---	0.00	---	---	---	---	---	---	0.019	---	0.019
2.10	345	129.10	---	0.00	---	---	---	---	---	---	0.020	---	0.020
2.45	402	129.45	---	0.00	---	---	---	---	---	---	0.022	---	0.022
2.80	453	129.80	---	0.00	---	---	---	---	---	---	0.023	---	0.023
3.15	490	130.15	---	0.01 ic	---	---	---	---	---	---	0.025	---	0.038
3.50	521	130.50	---	0.41 ic	---	---	---	---	---	---	0.027	---	0.433

Hydrograph Report

Hyd. No. 14

Post Dev Controlled - Imp (Roof 2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.064 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 458 cuft
Drainage area	= 0.029 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.33 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
3.20	0.001	14.00	0.005	24.80	0.010	35.60	0.001
3.80	0.001	14.60	0.004	25.40	0.006	36.20	0.001
4.40	0.001	15.20	0.003	26.00	0.004	36.80	0.001
5.00	0.001	15.80	0.003	26.60	0.003	37.40	0.001
5.60	0.001	16.40	0.002	27.20	0.003	38.00	0.001
6.20	0.001	17.00	0.002	27.80	0.002	38.60	0.001
6.80	0.002	17.60	0.002	28.40	0.002	39.20	0.001
7.40	0.002	18.20	0.002	29.00	0.002	39.80	0.001
8.00	0.002	18.80	0.002	29.60	0.002	40.40	0.001
8.60	0.002	19.40	0.001	30.20	0.001	41.00	0.001
9.20	0.003	20.00	0.001	30.80	0.001	41.60	0.001
9.80	0.004	20.60	0.001	31.40	0.001	42.20	0.001
10.40	0.004	21.20	0.001	32.00	0.001		
11.00	0.007	21.80	0.001	32.60	0.001	*...End*	
11.60	0.012	22.40	0.001	33.20	0.001		
12.20	0.064	23.00	0.001	33.80	0.001		
12.80	0.012	23.60	0.001	34.40	0.001		
13.40	0.007	24.20	0.009	35.00	0.001		

<<

Hydrograph Report

Hyd. No. 15

Underground Chamber 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 6 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - Post Dev Controlled Runoff (Roof 2)	Reservoir name	= Stormtech SC-740
Max. Elevation	= 128.22 ft	Max. Storage	= 103 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Pond Report

Pond No. 2 - Stormtech SC-740 Right Roof

Pond Data

UG Chambers -Invert elev. = 127.50 ft, Rise x Span = 2.50 x 3.50 ft, Barrel Len = 28.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 127.00 ft, Width = 4.50 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	127.00	n/a	0	0
0.35	127.35	n/a	18	18
0.70	127.70	n/a	29	47
1.05	128.05	n/a	38	85
1.40	128.40	n/a	37	122
1.75	128.75	n/a	36	159
2.10	129.10	n/a	35	193
2.45	129.45	n/a	32	225
2.80	129.80	n/a	28	254
3.15	130.15	n/a	21	274
3.50	130.50	n/a	18	292

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	4.00	0.00	0.00
Span (in)	= 0.00	4.00	0.00	0.00
No. Barrels	= 0	2	0	0
Invert El. (ft)	= 0.00	130.10	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	127.00	---	0.00	---	---	---	---	---	---	0.000	---	0.000
0.35	18	127.35	---	0.00	---	---	---	---	---	---	0.007	---	0.007
0.70	47	127.70	---	0.00	---	---	---	---	---	---	0.008	---	0.008
1.05	85	128.05	---	0.00	---	---	---	---	---	---	0.009	---	0.009
1.40	122	128.40	---	0.00	---	---	---	---	---	---	0.009	---	0.009
1.75	159	128.75	---	0.00	---	---	---	---	---	---	0.010	---	0.010
2.10	193	129.10	---	0.00	---	---	---	---	---	---	0.011	---	0.011
2.45	225	129.45	---	0.00	---	---	---	---	---	---	0.012	---	0.012
2.80	254	129.80	---	0.00	---	---	---	---	---	---	0.013	---	0.013
3.15	274	130.15	---	0.01 ic	---	---	---	---	---	---	0.014	---	0.027
3.50	292	130.50	---	0.41 ic	---	---	---	---	---	---	0.015	---	0.421

Hydrograph Report

Hyd. No. 17

Total Discharge

Hydrograph type	= Combine	Peak discharge	= 0.094 cfs
Storm frequency	= 2 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 648 cuft
Inflow hyds.	= 9, 12, 15	Contrib. drain. area	= 0.000 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
3.60	0.001	0.000 <<	0.000 <<	0.001
4.20	0.001	0.000 <<	0.000 <<	0.001
4.80	0.001	0.000 <<	0.000 <<	0.001
5.40	0.001	0.000 <<	0.000	0.001
6.00	0.002	0.000 <<	0.000	0.002
6.60	0.002	0.000 <<	0.000 <<	0.002
7.20	0.002	0.000 <<	0.000 <<	0.002
7.80	0.003	0.000	0.000 <<	0.003
8.40	0.003	0.000 <<	0.000 <<	0.003
9.00	0.003	0.000 <<	0.000 <<	0.003
9.60	0.004	0.000	0.000	0.004
10.20	0.005	0.000 <<	0.000 <<	0.005
10.80	0.007	0.000 <<	0.000 <<	0.007
11.40	0.012	0.000 <<	0.000 <<	0.012
12.00	0.042	0.000 <<	0.000 <<	0.042
12.60	0.021	0.000 <<	0.000 <<	0.021
13.20	0.010	0.000 <<	0.000 <<	0.010
13.80	0.006	0.000 <<	0.000 <<	0.006
14.40	0.005	0.000 <<	0.000 <<	0.005
15.00	0.004	0.000 <<	0.000 <<	0.004
15.60	0.003	0.000 <<	0.000 <<	0.003

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
16.20	0.003	0.000 <<	0.000 <<	0.003
16.80	0.003	0.000 <<	0.000 <<	0.003
17.40	0.002	0.000 <<	0.000 <<	0.002
18.00	0.002	0.000 <<	0.000 <<	0.002
18.60	0.002	0.000 <<	0.000 <<	0.002
19.20	0.002	0.000 <<	0.000	0.002
19.80	0.002	0.000 <<	0.000 <<	0.002
20.40	0.002	0.000 <<	0.000 <<	0.002
21.00	0.002	0.000 <<	0.000 <<	0.002
21.60	0.002	0.000 <<	0.000 <<	0.002
22.20	0.002	0.000	0.000	0.002
22.80	0.002	0.000 <<	0.000	0.002
23.40	0.002	0.000	0.000 <<	0.002
24.00	0.001	0.000	0.000 <<	0.001
24.60	0.017	0.000 <<	0.000 <<	0.017
25.20	0.009	0.000 <<	0.000 <<	0.009
25.80	0.006	0.000 <<	0.000 <<	0.006
26.40	0.005	0.000 <<	0.000 <<	0.005
27.00	0.004	0.000 <<	0.000 <<	0.004
27.60	0.003	0.000 <<	0.000 <<	0.003
28.20	0.003	0.000 <<	0.000	0.003
28.80	0.002	0.000 <<	0.000 <<	0.002
29.40	0.002	0.000 <<	0.000 <<	0.002
30.00	0.002	0.000	0.000 <<	0.002
30.60	0.002	0.000 <<	0.000 <<	0.002
31.20	0.002	0.000 <<	0.000 <<	0.002
31.80	0.002	0.000 <<	0.000	0.002

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
32.40	0.002	0.000	0.000 <<	0.002
33.00	0.001	0.000	0.000 <<	0.001
33.60	0.001	0.000	0.000 <<	0.001
34.20	0.001	0.000	0.000 <<	0.001
34.80	0.001	0.000	0.000 <<	0.001
35.40	0.001	0.000 <<	0.000 <<	0.001
36.00	0.001	0.000	0.000 <<	0.001
36.60	0.001	0.000 <<	0.000 <<	0.001
37.20	0.001	0.000	0.000 <<	0.001
37.80	0.001	0.000 <<	0.000 <<	0.001
38.40	0.001	0.000	0.000 <<	0.001

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.005	6	780	209	------	------	------	Existing - Grass (A)
2	SCS Runoff	0.024	6	1452	20	------	------	------	Existing - Woods (A)
3	SCS Runoff	0.085	6	732	622	------	------	------	Existing - Impervious (Roof)
4	SCS Runoff	0.358	6	732	2,613	------	------	------	Existing - Impervious (Other)
5	Combine	0.444	6	732	3,464	1, 2, 3, 4	------	------	Exisiting Conditions
7	SCS Runoff	0.007	6	780	306	------	------	------	Post Dev Uncontrolled - Grass (A)
8	SCS Runoff	0.126	6	732	921	------	------	------	Post Dev Uncontrolled - Imp (Other)
9	Combine	0.126	6	732	1,227	7, 8	------	------	Post Development - Uncontrolled Are
11	SCS Runoff	0.160	6	732	1,170	------	------	------	Post Dev Controlled - Imp (Roof 1)
12	Reservoir	0.000	6	n/a	0	11	128.82	296	Underground Chamber 1
14	SCS Runoff	0.099	6	732	722	------	------	------	Post Dev Controlled - Imp (Roof 2)
15	Reservoir	0.000	6	n/a	0	14	129.05	189	Underground Chamber 2
17	Combine	0.126	6	732	1,227	9, 12, 15,	------	------	Total Discharge

Hydrograph Report

Hyd. No. 1

Existing - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.005 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.00 hrs
Time interval	= 6 min	Hyd. volume	= 209 cuft
Drainage area	= 0.133 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
12.30	0.001	23.10	0.002
12.90	0.005	23.70	0.002
13.50	0.004		
14.10	0.004	*...End*	
14.70	0.003		
15.30	0.003		
15.90	0.003		
16.50	0.003		
17.10	0.002		
17.70	0.002		
18.30	0.002		
18.90	0.002		
19.50	0.002		
20.10	0.002		
20.70	0.002		
21.30	0.002		
21.90	0.002		
22.50	0.002		

Hydrograph Report

Hyd. No. 2

Existing - Woods (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.024 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.20 hrs
Time interval	= 6 min	Hyd. volume	= 20 cuft
Drainage area	= 0.045 ac	Curve number	= 30.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)
24.10	0.014

...End

Hydrograph Report

Hyd. No. 3

Existing - Impervious (Roof)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.085 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 622 cuft
Drainage area	= 0.025 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
2.40	0.001	13.20	0.011	24.00	0.001	34.80	0.001
3.00	0.001	13.80	0.007	24.60	0.018	35.40	0.001
3.60	0.001	14.40	0.005	25.20	0.009	36.00	0.001
4.20	0.001	15.00	0.004	25.80	0.007	36.60	0.001
4.80	0.002	15.60	0.004	26.40	0.005	37.20	0.001
5.40	0.002	16.20	0.003	27.00	0.004	37.80	0.001
6.00	0.002	16.80	0.003	27.60	0.003	38.40	0.001
6.60	0.002	17.40	0.003	28.20	0.003	39.00	0.001
7.20	0.002	18.00	0.002	28.80	0.003	39.60	0.001
7.80	0.003	18.60	0.002	29.40	0.002	40.20	0.001
8.40	0.003	19.20	0.002	30.00	0.002	40.80	0.001
9.00	0.004	19.80	0.002	30.60	0.002	41.40	0.001
9.60	0.004	20.40	0.002	31.20	0.002	42.00	0.001
10.20	0.006	21.00	0.002	31.80	0.002		
10.80	0.008	21.60	0.002	32.40	0.002	*...End*	
11.40	0.013	22.20	0.002	33.00	0.002		
12.00	0.044	22.80	0.002	33.60	0.001		
12.60	0.022	23.40	0.001	34.20	0.001		

Hydrograph Report

Hyd. No. 4

Existing - Impervious (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.358 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,613 cuft
Drainage area	= 0.105 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
2.40	0.004	13.20	0.045	24.00	0.006	34.80	0.005
3.00	0.005	13.80	0.028	24.60	0.077	35.40	0.005
3.60	0.005	14.40	0.022	25.20	0.039	36.00	0.005
4.20	0.006	15.00	0.018	25.80	0.028	36.60	0.004
4.80	0.007	15.60	0.015	26.40	0.020	37.20	0.004
5.40	0.007	16.20	0.014	27.00	0.016	37.80	0.004
6.00	0.008	16.80	0.012	27.60	0.013	38.40	0.004
6.60	0.009	17.40	0.011	28.20	0.012	39.00	0.004
7.20	0.010	18.00	0.009	28.80	0.011	39.60	0.004
7.80	0.012	18.60	0.009	29.40	0.010	40.20	0.004
8.40	0.013	19.20	0.008	30.00	0.008	40.80	0.004
9.00	0.015	19.80	0.008	30.60	0.008	41.40	0.004
9.60	0.019	20.40	0.008	31.20	0.007	42.00	0.004
10.20	0.024	21.00	0.007	31.80	0.007		
10.80	0.032	21.60	0.007	32.40	0.007	*...End*	
11.40	0.056	22.20	0.007	33.00	0.006		
12.00	0.185	22.80	0.006	33.60	0.006		
12.60	0.094	23.40	0.006	34.20	0.006		

Hydrograph Report

Hyd. No. 5

Exisiting Conditions

Hydrograph type	= Combine	Peak discharge	= 0.444 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 3,464 cuft
Inflow hyds.	= 1, 2, 3, 4	Contrib. drain. area	= 0.308 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
2.40	0.000	0.000	0.001	0.004	0.005
3.00	0.000	0.000	0.001	0.005	0.006
3.60	0.000	0.000	0.001	0.005	0.007
4.20	0.000	0.000	0.001	0.006	0.008
4.80	0.000	0.000	0.002	0.007	0.008
5.40	0.000	0.000	0.002	0.007	0.009
6.00	0.000	0.000	0.002	0.008	0.010
6.60	0.000	0.000	0.002	0.009	0.011
7.20	0.000	0.000	0.002	0.010	0.013
7.80	0.000	0.000	0.003	0.012	0.015
8.40	0.000	0.000	0.003	0.013	0.016
9.00	0.000	0.000	0.004	0.015	0.018
9.60	0.000	0.000	0.004	0.019	0.023
10.20	0.000	0.000	0.006	0.024	0.029
10.80	0.000	0.000	0.008	0.032	0.040
11.40	0.000	0.000	0.013	0.056	0.069
12.00	0.000	0.000	0.044	0.185	0.229
12.60	0.004	0.000	0.022	0.094	0.121
13.20	0.005	0.000	0.011	0.045	0.060
13.80	0.004	0.000	0.007	0.028	0.038
14.40	0.003	0.000	0.005	0.022	0.031

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
15.00	0.003	0.000	0.004	0.018	0.025
15.60	0.003	0.000	0.004	0.015	0.021
16.20	0.003	0.000	0.003	0.014	0.019
16.80	0.002	0.000	0.003	0.012	0.018
17.40	0.002	0.000	0.003	0.011	0.016
18.00	0.002	0.000	0.002	0.009	0.014
18.60	0.002	0.000	0.002	0.009	0.013
19.20	0.002	0.000	0.002	0.008	0.012
19.80	0.002	0.000	0.002	0.008	0.012
20.40	0.002	0.000	0.002	0.008	0.011
21.00	0.002	0.000	0.002	0.007	0.011
21.60	0.002	0.000	0.002	0.007	0.011
22.20	0.002	0.000	0.002	0.007	0.010
22.80	0.002	0.000	0.002	0.006	0.010
23.40	0.002	0.000	0.001	0.006	0.009
24.00	0.002	0.000	0.001	0.006	0.009
24.60	0.001	0.000	0.018	0.077	0.096
25.20	0.002	0.000	0.009	0.039	0.051
25.80	0.002	0.000	0.007	0.028	0.037
26.40	0.002	0.000	0.005	0.020	0.028
27.00	0.002	0.000	0.004	0.016	0.022
27.60	0.002	0.000	0.003	0.013	0.018
28.20	0.002	0.000	0.003	0.012	0.017
28.80	0.002	0.000	0.003	0.011	0.015
29.40	0.002	0.000	0.002	0.010	0.014
30.00	0.001	0.000	0.002	0.008	0.012
30.60	0.001	0.000	0.002	0.008	0.011

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
31.20	0.001	0.000	0.002	0.007	0.010
31.80	0.001	0.000	0.002	0.007	0.010
32.40	0.001	0.000	0.002	0.007	0.010
33.00	0.001	0.000	0.002	0.006	0.009
33.60	0.001	0.000	0.001	0.006	0.009
34.20	0.001	0.000	0.001	0.006	0.008
34.80	0.001	0.000	0.001	0.005	0.008
35.40	0.001	0.000	0.001	0.005	0.007
36.00	0.001	0.000	0.001	0.005	0.007
36.60	0.001	0.000	0.001	0.004	0.006
37.20	0.001	0.000	0.001	0.004	0.006
37.80	0.001	0.000	0.001	0.004	0.006
38.40	0.001	0.000	0.001	0.004	0.006
39.00	0.001	0.000	0.001	0.004	0.006
39.60	0.001	0.000	0.001	0.004	0.006
40.20	0.001	0.000	0.001	0.004	0.006
40.80	0.001	0.000	0.001	0.004	0.006
41.40	0.001	0.000	0.001	0.004	0.006
42.00	0.001	0.000	0.001	0.004	0.005
42.60	0.001	0.000	0.001	0.004	0.005
43.20	0.001	0.000	0.001	0.003	0.005
43.80	0.001	0.000	0.001	0.003	0.005
44.40	0.001	0.000	0.001	0.003	0.005
45.00	0.001	0.000	0.001	0.003	0.005
45.60	0.001	0.000	0.001	0.003	0.005
46.20	0.001	0.000	0.001	0.003	0.005
46.80	0.001	0.000	0.001	0.003	0.005

Continues on next page...

...End

Hydrograph Report

Hyd. No. 7

Post Dev Uncontrolled - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.007 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.00 hrs
Time interval	= 6 min	Hyd. volume	= 306 cuft
Drainage area	= 0.195 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type II Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
12.30	0.001	23.10	0.002
12.90	0.007	23.70	0.002
13.50	0.006		
14.10	0.005	*...End*	
14.70	0.005		
15.30	0.004		
15.90	0.004		
16.50	0.004		
17.10	0.004		
17.70	0.003		
18.30	0.003		
18.90	0.003		
19.50	0.003		
20.10	0.003		
20.70	0.003		
21.30	0.003		
21.90	0.003		
22.50	0.003		

Hydrograph Report

Hyd. No. 8

Post Dev Uncontrolled - Imp (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.126 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 921 cuft
Drainage area	= 0.037 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
2.40	0.001	13.20	0.016	24.00	0.002	34.80	0.002
3.00	0.002	13.80	0.010	24.60	0.027	35.40	0.002
3.60	0.002	14.40	0.008	25.20	0.014	36.00	0.002
4.20	0.002	15.00	0.006	25.80	0.010	36.60	0.002
4.80	0.002	15.60	0.005	26.40	0.007	37.20	0.002
5.40	0.003	16.20	0.005	27.00	0.006	37.80	0.001
6.00	0.003	16.80	0.004	27.60	0.005	38.40	0.001
6.60	0.003	17.40	0.004	28.20	0.004	39.00	0.001
7.20	0.004	18.00	0.003	28.80	0.004	39.60	0.001
7.80	0.004	18.60	0.003	29.40	0.003	40.20	0.001
8.40	0.005	19.20	0.003	30.00	0.003	40.80	0.001
9.00	0.005	19.80	0.003	30.60	0.003	41.40	0.001
9.60	0.007	20.40	0.003	31.20	0.003	42.00	0.001
10.20	0.008	21.00	0.003	31.80	0.002		
10.80	0.011	21.60	0.002	32.40	0.002	*...End*	
11.40	0.020	22.20	0.002	33.00	0.002		
12.00	0.065	22.80	0.002	33.60	0.002		
12.60	0.033	23.40	0.002	34.20	0.002		

Hydrograph Report

Hyd. No. 9

Post Development - Uncontrolled Area

Hydrograph type	= Combine	Peak discharge	= 0.126 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,227 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 0.232 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
2.40	0.000	0.001	0.001
3.00	0.000	0.002	0.002
3.60	0.000	0.002	0.002
4.20	0.000	0.002	0.002
4.80	0.000	0.002	0.002
5.40	0.000	0.003	0.003
6.00	0.000	0.003	0.003
6.60	0.000	0.003	0.003
7.20	0.000	0.004	0.004
7.80	0.000	0.004	0.004
8.40	0.000	0.005	0.005
9.00	0.000	0.005	0.005
9.60	0.000	0.007	0.007
10.20	0.000	0.008	0.008
10.80	0.000	0.011	0.011
11.40	0.000	0.020	0.020
12.00	0.000	0.065	0.065
12.60	0.006	0.033	0.039
13.20	0.007	0.016	0.023
13.80	0.005	0.010	0.015
14.40	0.005	0.008	0.013

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
15.00	0.004	0.006	0.011
15.60	0.004	0.005	0.009
16.20	0.004	0.005	0.009
16.80	0.004	0.004	0.008
17.40	0.003	0.004	0.007
18.00	0.003	0.003	0.006
18.60	0.003	0.003	0.006
19.20	0.003	0.003	0.006
19.80	0.003	0.003	0.006
20.40	0.003	0.003	0.005
21.00	0.003	0.003	0.005
21.60	0.003	0.002	0.005
22.20	0.003	0.002	0.005
22.80	0.002	0.002	0.005
23.40	0.002	0.002	0.004
24.00	0.002	0.002	0.004
24.60	0.001	0.027	0.028
25.20	0.003	0.014	0.017
25.80	0.004	0.010	0.013
26.40	0.003	0.007	0.011
27.00	0.003	0.006	0.009
27.60	0.003	0.005	0.007
28.20	0.003	0.004	0.007
28.80	0.003	0.004	0.006
29.40	0.002	0.003	0.006
30.00	0.002	0.003	0.005
30.60	0.002	0.003	0.005

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
31.20	0.002	0.003	0.005
31.80	0.002	0.002	0.004
32.40	0.002	0.002	0.004
33.00	0.002	0.002	0.004
33.60	0.002	0.002	0.004
34.20	0.002	0.002	0.004
34.80	0.002	0.002	0.004
35.40	0.002	0.002	0.003
36.00	0.002	0.002	0.003
36.60	0.001	0.002	0.003
37.20	0.001	0.002	0.003
37.80	0.001	0.001	0.003
38.40	0.001	0.001	0.003
39.00	0.001	0.001	0.003
39.60	0.001	0.001	0.003
40.20	0.001	0.001	0.003
40.80	0.001	0.001	0.003
41.40	0.001	0.001	0.003
42.00	0.001	0.001	0.003
42.60	0.001	0.001	0.003
43.20	0.001	0.001	0.003
43.80	0.001	0.001	0.002
44.40	0.001	0.001	0.002
45.00	0.001	0.001	0.002
45.60	0.001	0.001	0.002
46.20	0.001	0.001	0.002
46.80	0.001	0.001	0.002

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
47.40	0.001	0.001	0.002
48.00	0.001	0.001	0.002

...End

Hydrograph Report

Hyd. No. 11

Post Dev Controlled - Imp (Roof 1)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.160 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,170 cuft
Drainage area	= 0.047 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
2.40	0.002	13.20	0.020	24.00	0.003	34.80	0.002
3.00	0.002	13.80	0.012	24.60	0.034	35.40	0.002
3.60	0.002	14.40	0.010	25.20	0.017	36.00	0.002
4.20	0.003	15.00	0.008	25.80	0.012	36.60	0.002
4.80	0.003	15.60	0.007	26.40	0.009	37.20	0.002
5.40	0.003	16.20	0.006	27.00	0.007	37.80	0.002
6.00	0.003	16.80	0.005	27.60	0.006	38.40	0.002
6.60	0.004	17.40	0.005	28.20	0.005	39.00	0.002
7.20	0.005	18.00	0.004	28.80	0.005	39.60	0.002
7.80	0.005	18.60	0.004	29.40	0.004	40.20	0.002
8.40	0.006	19.20	0.004	30.00	0.004	40.80	0.002
9.00	0.007	19.80	0.004	30.60	0.003	41.40	0.002
9.60	0.008	20.40	0.003	31.20	0.003	42.00	0.002
10.20	0.011	21.00	0.003	31.80	0.003		
10.80	0.014	21.60	0.003	32.40	0.003	*...End*	
11.40	0.025	22.20	0.003	33.00	0.003		
12.00	0.083	22.80	0.003	33.60	0.003		
12.60	0.042	23.40	0.003	34.20	0.003		

Hydrograph Report

Hyd. No. 12

Underground Chamber 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 6 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - Post Dev Controlled Inflow (Roof)	Reservoir name	= Stormtech SC-740
Max. Elevation	= 128.82 ft	Max. Storage	= 296 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Hydrograph Report

Hyd. No. 14

Post Dev Controlled - Imp (Roof 2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.099 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 722 cuft
Drainage area	= 0.029 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.15 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSHapefileDistribution.csv	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
2.40	0.001	13.20	0.012	24.00	0.002	34.80	0.001
3.00	0.001	13.80	0.008	24.60	0.021	35.40	0.001
3.60	0.002	14.40	0.006	25.20	0.011	36.00	0.001
4.20	0.002	15.00	0.005	25.80	0.008	36.60	0.001
4.80	0.002	15.60	0.004	26.40	0.006	37.20	0.001
5.40	0.002	16.20	0.004	27.00	0.004	37.80	0.001
6.00	0.002	16.80	0.003	27.60	0.004	38.40	0.001
6.60	0.002	17.40	0.003	28.20	0.003	39.00	0.001
7.20	0.003	18.00	0.003	28.80	0.003	39.60	0.001
7.80	0.003	18.60	0.002	29.40	0.003	40.20	0.001
8.40	0.004	19.20	0.002	30.00	0.002	40.80	0.001
9.00	0.004	19.80	0.002	30.60	0.002	41.40	0.001
9.60	0.005	20.40	0.002	31.20	0.002	42.00	0.001
10.20	0.007	21.00	0.002	31.80	0.002		
10.80	0.009	21.60	0.002	32.40	0.002	*...End*	
11.40	0.015	22.20	0.002	33.00	0.002		
12.00	0.051	22.80	0.002	33.60	0.002		
12.60	0.026	23.40	0.002	34.20	0.002		

Hydrograph Report

Hyd. No. 15

Underground Chamber 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 6 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - Post Dev Controlled Runoff (Roof 2)	Reservoir name	= Stormtech SC-740
Max. Elevation	= 129.05 ft	Max. Storage	= 189 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Hydrograph Report

Hyd. No. 17

Total Discharge

Hydrograph type	= Combine	Peak discharge	= 0.126 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,227 cuft
Inflow hyds.	= 9, 12, 15	Contrib. drain. area	= 0.000 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
2.40	0.001	0.000	0.000	0.001
3.00	0.002	0.000 <<	0.000 <<	0.002
3.60	0.002	0.000	0.000 <<	0.002
4.20	0.002	0.000	0.000	0.002
4.80	0.002	0.000 <<	0.000	0.002
5.40	0.003	0.000 <<	0.000	0.003
6.00	0.003	0.000 <<	0.000 <<	0.003
6.60	0.003	0.000 <<	0.000	0.003
7.20	0.004	0.000 <<	0.000 <<	0.004
7.80	0.004	0.000 <<	0.000	0.004
8.40	0.005	0.000	0.000 <<	0.005
9.00	0.005	0.000	0.000	0.005
9.60	0.007	0.000 <<	0.000 <<	0.007
10.20	0.008	0.000 <<	0.000 <<	0.008
10.80	0.011	0.000 <<	0.000 <<	0.011
11.40	0.020	0.000 <<	0.000 <<	0.020
12.00	0.065	0.000 <<	0.000 <<	0.065
12.60	0.039	0.000 <<	0.000 <<	0.039
13.20	0.023	0.000 <<	0.000 <<	0.023
13.80	0.015	0.000 <<	0.000 <<	0.015
14.40	0.013	0.000 <<	0.000 <<	0.013

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
15.00	0.011	0.000 <<	0.000 <<	0.011
15.60	0.009	0.000 <<	0.000 <<	0.009
16.20	0.009	0.000 <<	0.000 <<	0.009
16.80	0.008	0.000 <<	0.000 <<	0.008
17.40	0.007	0.000 <<	0.000 <<	0.007
18.00	0.006	0.000 <<	0.000 <<	0.006
18.60	0.006	0.000 <<	0.000 <<	0.006
19.20	0.006	0.000 <<	0.000 <<	0.006
19.80	0.006	0.000 <<	0.000 <<	0.006
20.40	0.005	0.000 <<	0.000 <<	0.005
21.00	0.005	0.000 <<	0.000 <<	0.005
21.60	0.005	0.000 <<	0.000 <<	0.005
22.20	0.005	0.000	0.000 <<	0.005
22.80	0.005	0.000	0.000 <<	0.005
23.40	0.004	0.000 <<	0.000	0.004
24.00	0.004	0.000 <<	0.000	0.004
24.60	0.028	0.000 <<	0.000 <<	0.028
25.20	0.017	0.000 <<	0.000 <<	0.017
25.80	0.013	0.000 <<	0.000 <<	0.013
26.40	0.011	0.000 <<	0.000 <<	0.011
27.00	0.009	0.000 <<	0.000 <<	0.009
27.60	0.007	0.000 <<	0.000 <<	0.007
28.20	0.007	0.000 <<	0.000 <<	0.007
28.80	0.006	0.000 <<	0.000 <<	0.006
29.40	0.006	0.000 <<	0.000 <<	0.006
30.00	0.005	0.000	0.000 <<	0.005
30.60	0.005	0.000	0.000	0.005

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
31.20	0.005	0.000 <<	0.000 <<	0.005
31.80	0.004	0.000	0.000	0.004
32.40	0.004	0.000 <<	0.000 <<	0.004
33.00	0.004	0.000 <<	0.000 <<	0.004
33.60	0.004	0.000 <<	0.000 <<	0.004
34.20	0.004	0.000 <<	0.000	0.004
34.80	0.004	0.000	0.000	0.004
35.40	0.003	0.000 <<	0.000 <<	0.003
36.00	0.003	0.000 <<	0.000 <<	0.003
36.60	0.003	0.000 <<	0.000 <<	0.003
37.20	0.003	0.000	0.000	0.003
37.80	0.003	0.000 <<	0.000 <<	0.003
38.40	0.003	0.000 <<	0.000 <<	0.003
39.00	0.003	0.000	0.000 <<	0.003
39.60	0.003	0.000 <<	0.000 <<	0.003
40.20	0.003	0.000 <<	0.000 <<	0.003
40.80	0.003	0.000 <<	0.000 <<	0.003
41.40	0.003	0.000 <<	0.000	0.003
42.00	0.003	0.000	0.000 <<	0.003
42.60	0.003	0.000 <<	0.000 <<	0.003
43.20	0.003	0.000	0.000 <<	0.003
43.80	0.002	0.000 <<	0.000 <<	0.002
44.40	0.002	0.000 <<	0.000 <<	0.002
45.00	0.002	0.000 <<	0.000 <<	0.002
45.60	0.002	0.000 <<	0.000 <<	0.002
46.20	0.002	0.000 <<	0.000 <<	0.002
46.80	0.002	0.000 <<	0.000	0.002

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
47.40	0.002	0.000 <<	0.000 <<	0.002
48.00	0.002	0.000 <<	0.000 <<	0.002

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.117	6	732	1,293	------	------	------	Existing - Grass (A)
2	SCS Runoff	0.007	6	750	187	------	------	------	Existing - Woods (A)
3	SCS Runoff	0.146	6	732	1,075	------	------	------	Existing - Impervious (Roof)
4	SCS Runoff	0.613	6	732	4,516	------	------	------	Existing - Impervious (Other)
5	Combine	0.877	6	732	7,071	1, 2, 3, 4	------	------	Exisiting Conditions
7	SCS Runoff	0.171	6	732	1,896	------	------	------	Post Dev Uncontrolled - Grass (A)
8	SCS Runoff	0.216	6	732	1,591	------	------	------	Post Dev Uncontrolled - Imp (Other)
9	Combine	0.387	6	732	3,487	7, 8	------	------	Post Development - Uncontrolled Are
11	SCS Runoff	0.275	6	732	2,021	------	------	------	Post Dev Controlled - Imp (Roof 1)
12	Reservoir	0.113	6	750	112	11	130.26	500	Underground Chamber 1
14	SCS Runoff	0.169	6	732	1,247	------	------	------	Post Dev Controlled - Imp (Roof 2)
15	Reservoir	0.146	6	744	111	14	130.29	281	Underground Chamber 2
17	Combine	0.400	6	744	3,711	9, 12, 15,	------	------	Total Discharge

Hydrograph Report

Hyd. No. 1

Existing - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.117 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,293 cuft
Drainage area	= 0.133 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
11.90	0.005	22.70	0.006	33.50	0.005	44.30	0.003
12.50	0.065	23.30	0.006	34.10	0.005	44.90	0.003
13.10	0.034	23.90	0.006	34.70	0.005	45.50	0.003
13.70	0.022	24.50	0.052	35.30	0.005	46.10	0.003
14.30	0.018	25.10	0.027	35.90	0.004	46.70	0.003
14.90	0.015	25.70	0.019	36.50	0.004	47.30	0.003
15.50	0.013	26.30	0.015	37.10	0.004	47.90	0.003
16.10	0.012	26.90	0.012	37.70	0.004		
16.70	0.011	27.50	0.010	38.30	0.004	*...End*	
17.30	0.010	28.10	0.010	38.90	0.004		
17.90	0.009	28.70	0.009	39.50	0.004		
18.50	0.008	29.30	0.008	40.10	0.004		
19.10	0.008	29.90	0.007	40.70	0.004		
19.70	0.008	30.50	0.006	41.30	0.004		
20.30	0.007	31.10	0.006	41.90	0.004		
20.90	0.007	31.70	0.006	42.50	0.003		
21.50	0.007	32.30	0.006	43.10	0.003		
22.10	0.007	32.90	0.006	43.70	0.003		

Hydrograph Report

Hyd. No. 2

Existing - Woods (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.007 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.50 hrs
Time interval	= 6 min	Hyd. volume	= 187 cuft
Drainage area	= 0.045 ac	Curve number	= 30.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
12.20	0.001	23.00	0.001	33.80	0.001	44.60	0.001
12.80	0.006	23.60	0.001	34.40	0.001	45.20	0.001
13.40	0.004	24.20	0.001	35.00	0.001	45.80	0.001
14.00	0.003	24.80	0.003	35.60	0.001	46.40	0.001
14.60	0.003	25.40	0.003	36.20	0.001	47.00	0.001
15.20	0.002	26.00	0.002	36.80	0.001	47.60	0.001
15.80	0.002	26.60	0.002	37.40	0.001	48.20	0.000
16.40	0.002	27.20	0.002	38.00	0.001		
17.00	0.002	27.80	0.002	38.60	0.001	*...End*	
17.60	0.002	28.40	0.002	39.20	0.001		
18.20	0.002	29.00	0.001	39.80	0.001		
18.80	0.002	29.60	0.001	40.40	0.001		
19.40	0.001	30.20	0.001	41.00	0.001		
20.00	0.001	30.80	0.001	41.60	0.001		
20.60	0.001	31.40	0.001	42.20	0.001		
21.20	0.001	32.00	0.001	42.80	0.001		
21.80	0.001	32.60	0.001	43.40	0.001		
22.40	0.001	33.20	0.001	44.00	0.001		

Hydrograph Report

Hyd. No. 3

Existing - Impervious (Roof)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.146 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,075 cuft
Drainage area	= 0.025 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
1.70	0.002	12.50	0.048	23.30	0.002	34.10	0.002
2.30	0.002	13.10	0.020	23.90	0.002	34.70	0.002
2.90	0.002	13.70	0.012	24.50	0.045	35.30	0.002
3.50	0.003	14.30	0.009	25.10	0.018	35.90	0.002
4.10	0.003	14.90	0.008	25.70	0.012	36.50	0.002
4.70	0.003	15.50	0.006	26.30	0.009	37.10	0.002
5.30	0.003	16.10	0.006	26.90	0.007	37.70	0.002
5.90	0.003	16.70	0.005	27.50	0.005	38.30	0.002
6.50	0.004	17.30	0.004	28.10	0.005	38.90	0.002
7.10	0.004	17.90	0.004	28.70	0.005	39.50	0.002
7.70	0.005	18.50	0.004	29.30	0.004	40.10	0.002
8.30	0.006	19.10	0.003	29.90	0.004	40.70	0.002
8.90	0.006	19.70	0.003	30.50	0.003	41.30	0.002
9.50	0.007	20.30	0.003	31.10	0.003	41.90	0.001
10.10	0.009	20.90	0.003	31.70	0.003		
10.70	0.012	21.50	0.003	32.30	0.003	*...End*	
11.30	0.021	22.10	0.003	32.90	0.003		
11.90	0.052	22.70	0.003	33.50	0.002		

Hydrograph Report

Hyd. No. 4

Existing - Impervious (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.613 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 4,516 cuft
Drainage area	= 0.105 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
1.70	0.006	12.50	0.201	23.30	0.010	34.10	0.010
2.30	0.008	13.10	0.085	23.90	0.010	34.70	0.009
2.90	0.010	13.70	0.050	24.50	0.188	35.30	0.009
3.50	0.011	14.30	0.040	25.10	0.075	35.90	0.008
4.10	0.012	14.90	0.032	25.70	0.049	36.50	0.008
4.70	0.013	15.50	0.026	26.30	0.036	37.10	0.007
5.30	0.013	16.10	0.024	26.90	0.029	37.70	0.007
5.90	0.014	16.70	0.021	27.50	0.023	38.30	0.007
6.50	0.016	17.30	0.019	28.10	0.021	38.90	0.007
7.10	0.018	17.90	0.017	28.70	0.019	39.50	0.007
7.70	0.021	18.50	0.015	29.30	0.017	40.10	0.007
8.30	0.023	19.10	0.014	29.90	0.015	40.70	0.007
8.90	0.026	19.70	0.014	30.50	0.013	41.30	0.006
9.50	0.031	20.30	0.013	31.10	0.013	41.90	0.006
10.10	0.040	20.90	0.013	31.70	0.012		
10.70	0.051	21.50	0.012	32.30	0.012	*...End*	
11.30	0.087	22.10	0.012	32.90	0.011		
11.90	0.219	22.70	0.011	33.50	0.010		

Hydrograph Report

Hyd. No. 5

Exisiting Conditions

Hydrograph type	= Combine	Peak discharge	= 0.877 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 7,071 cuft
Inflow hyds.	= 1, 2, 3, 4	Contrib. drain. area	= 0.308 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
2.40	0.000	0.000	0.002	0.009	0.011
3.00	0.000	0.000	0.002	0.010	0.012
3.60	0.000	0.000	0.003	0.011	0.014
4.20	0.000	0.000	0.003	0.012	0.015
4.80	0.000	0.000	0.003	0.013	0.016
5.40	0.000	0.000	0.003	0.014	0.017
6.00	0.000	0.000	0.003	0.014	0.018
6.60	0.000	0.000	0.004	0.016	0.020
7.20	0.000	0.000	0.004	0.019	0.023
7.80	0.000	0.000	0.005	0.021	0.026
8.40	0.000	0.000	0.006	0.024	0.029
9.00	0.000	0.000	0.006	0.026	0.032
9.60	0.000	0.000	0.008	0.033	0.041
10.20	0.000	0.000	0.010	0.041	0.051
10.80	0.000	0.000	0.013	0.056	0.069
11.40	0.000	0.000	0.023	0.096	0.119
12.00	0.021	0.000	0.076	0.317	0.414
12.60	0.056	0.006	0.038	0.161	0.261
13.20	0.031	0.005	0.018	0.076	0.131
13.80	0.021	0.003	0.011	0.047	0.082
14.40	0.018	0.003	0.009	0.038	0.068

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
15.00	0.014	0.003	0.007	0.030	0.054
15.60	0.013	0.002	0.006	0.025	0.046
16.20	0.012	0.002	0.006	0.023	0.042
16.80	0.011	0.002	0.005	0.021	0.038
17.40	0.010	0.002	0.004	0.018	0.034
18.00	0.009	0.002	0.004	0.016	0.030
18.60	0.008	0.002	0.004	0.015	0.028
19.20	0.008	0.002	0.003	0.014	0.027
19.80	0.008	0.001	0.003	0.014	0.026
20.40	0.007	0.001	0.003	0.013	0.025
21.00	0.007	0.001	0.003	0.013	0.024
21.60	0.007	0.001	0.003	0.012	0.023
22.20	0.006	0.001	0.003	0.011	0.022
22.80	0.006	0.001	0.003	0.011	0.021
23.40	0.006	0.001	0.002	0.010	0.020
24.00	0.006	0.001	0.002	0.010	0.019
24.60	0.040	0.003	0.031	0.131	0.206
25.20	0.024	0.003	0.016	0.067	0.110
25.80	0.019	0.003	0.011	0.047	0.079
26.40	0.015	0.002	0.008	0.035	0.060
27.00	0.012	0.002	0.007	0.027	0.047
27.60	0.010	0.002	0.005	0.023	0.040
28.20	0.009	0.002	0.005	0.021	0.036
28.80	0.009	0.001	0.004	0.019	0.033
29.40	0.008	0.001	0.004	0.016	0.030
30.00	0.007	0.001	0.003	0.014	0.026
30.60	0.006	0.001	0.003	0.013	0.024

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
31.20	0.006	0.001	0.003	0.013	0.023
31.80	0.006	0.001	0.003	0.012	0.022
32.40	0.006	0.001	0.003	0.011	0.021
33.00	0.006	0.001	0.003	0.011	0.020
33.60	0.005	0.001	0.002	0.010	0.019
34.20	0.005	0.001	0.002	0.010	0.018
34.80	0.005	0.001	0.002	0.009	0.017
35.40	0.004	0.001	0.002	0.008	0.016
36.00	0.004	0.001	0.002	0.008	0.015
36.60	0.004	0.001	0.002	0.008	0.014
37.20	0.004	0.001	0.002	0.007	0.014
37.80	0.004	0.001	0.002	0.007	0.014
38.40	0.004	0.001	0.002	0.007	0.013
39.00	0.004	0.001	0.002	0.007	0.013
39.60	0.004	0.001	0.002	0.007	0.013
40.20	0.004	0.001	0.002	0.007	0.013
40.80	0.004	0.001	0.002	0.007	0.012
41.40	0.004	0.001	0.002	0.006	0.012
42.00	0.004	0.001	0.001	0.006	0.012
42.60	0.003	0.001	0.001	0.006	0.012
43.20	0.003	0.001	0.001	0.006	0.011
43.80	0.003	0.001	0.001	0.006	0.011
44.40	0.003	0.001	0.001	0.006	0.011
45.00	0.003	0.001	0.001	0.006	0.011
45.60	0.003	0.001	0.001	0.005	0.010
46.20	0.003	0.001	0.001	0.005	0.010
46.80	0.003	0.001	0.001	0.005	0.010

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 + (cfs)	Hyd. 3 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
47.40	0.003	0.001	0.001	0.005	0.010
48.00	0.003	0.001	0.001	0.005	0.009

...End

Hydrograph Report

Hyd. No. 7

Post Dev Uncontrolled - Grass (A)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.171 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,896 cuft
Drainage area	= 0.195 ac	Curve number	= 39.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
11.90	0.007	22.70	0.009	33.50	0.008	44.30	0.005
12.50	0.095	23.30	0.009	34.10	0.007	44.90	0.005
13.10	0.050	23.90	0.008	34.70	0.007	45.50	0.005
13.70	0.032	24.50	0.077	35.30	0.007	46.10	0.004
14.30	0.027	25.10	0.039	35.90	0.006	46.70	0.004
14.90	0.022	25.70	0.028	36.50	0.006	47.30	0.004
15.50	0.019	26.30	0.022	37.10	0.006	47.90	0.004
16.10	0.017	26.90	0.018	37.70	0.006		
16.70	0.016	27.50	0.015	38.30	0.006	*...End*	
17.30	0.014	28.10	0.014	38.90	0.006		
17.90	0.013	28.70	0.013	39.50	0.006		
18.50	0.012	29.30	0.012	40.10	0.005		
19.10	0.011	29.90	0.010	40.70	0.005		
19.70	0.011	30.50	0.009	41.30	0.005		
20.30	0.011	31.10	0.009	41.90	0.005		
20.90	0.010	31.70	0.009	42.50	0.005		
21.50	0.010	32.30	0.009	43.10	0.005		
22.10	0.010	32.90	0.008	43.70	0.005		

Hydrograph Report

Hyd. No. 8

Post Dev Uncontrolled - Imp (Other)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.216 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,591 cuft
Drainage area	= 0.037 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
1.70	0.002	12.50	0.071	23.30	0.004	34.10	0.003
2.30	0.003	13.10	0.030	23.90	0.003	34.70	0.003
2.90	0.003	13.70	0.018	24.50	0.066	35.30	0.003
3.50	0.004	14.30	0.014	25.10	0.027	35.90	0.003
4.10	0.004	14.90	0.011	25.70	0.017	36.50	0.003
4.70	0.004	15.50	0.009	26.30	0.013	37.10	0.003
5.30	0.005	16.10	0.008	26.90	0.010	37.70	0.003
5.90	0.005	16.70	0.007	27.50	0.008	38.30	0.003
6.50	0.006	17.30	0.007	28.10	0.007	38.90	0.002
7.10	0.006	17.90	0.006	28.70	0.007	39.50	0.002
7.70	0.007	18.50	0.005	29.30	0.006	40.10	0.002
8.30	0.008	19.10	0.005	29.90	0.005	40.70	0.002
8.90	0.009	19.70	0.005	30.50	0.005	41.30	0.002
9.50	0.011	20.30	0.005	31.10	0.004	41.90	0.002
10.10	0.014	20.90	0.004	31.70	0.004		
10.70	0.018	21.50	0.004	32.30	0.004	*...End*	
11.30	0.031	22.10	0.004	32.90	0.004		
11.90	0.077	22.70	0.004	33.50	0.004		

Hydrograph Report

Hyd. No. 9

Post Development - Uncontrolled Area

Hydrograph type	= Combine	Peak discharge	= 0.387 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 3,487 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 0.232 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
3.60	0.000	0.004	0.004
4.20	0.000	0.004	0.004
4.80	0.000	0.005	0.005
5.40	0.000	0.005	0.005
6.00	0.000	0.005	0.005
6.60	0.000	0.006	0.006
7.20	0.000	0.007	0.007
7.80	0.000	0.007	0.007
8.40	0.000	0.008	0.008
9.00	0.000	0.009	0.009
9.60	0.000	0.012	0.012
10.20	0.000	0.014	0.014
10.80	0.000	0.020	0.020
11.40	0.000	0.034	0.034
12.00	0.031	0.112	0.143
12.60	0.081	0.057	0.138
13.20	0.046	0.027	0.073
13.80	0.031	0.017	0.047
14.40	0.026	0.014	0.040
15.00	0.021	0.011	0.032
15.60	0.018	0.009	0.027

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
16.20	0.017	0.008	0.025
16.80	0.016	0.007	0.023
17.40	0.014	0.007	0.021
18.00	0.013	0.006	0.018
18.60	0.012	0.005	0.017
19.20	0.011	0.005	0.016
19.80	0.011	0.005	0.016
20.40	0.011	0.005	0.015
21.00	0.010	0.004	0.015
21.60	0.010	0.004	0.014
22.20	0.010	0.004	0.014
22.80	0.009	0.004	0.013
23.40	0.009	0.004	0.012
24.00	0.008	0.003	0.012
24.60	0.059	0.046	0.105
25.20	0.035	0.023	0.059
25.80	0.027	0.017	0.044
26.40	0.021	0.012	0.034
27.00	0.017	0.010	0.027
27.60	0.015	0.008	0.023
28.20	0.014	0.007	0.021
28.80	0.013	0.007	0.019
29.40	0.011	0.006	0.017
30.00	0.010	0.005	0.015
30.60	0.009	0.005	0.014
31.20	0.009	0.004	0.014
31.80	0.009	0.004	0.013

Continues on next page...

Post Development - Uncontrolled Area

Hydrograph Discharge Table

Time (hrs)	Hyd. 7 + (cfs)	Hyd. 8 = (cfs)	Outflow (cfs)
32.40	0.008	0.004	0.012
33.00	0.008	0.004	0.012
33.60	0.008	0.004	0.011
34.20	0.007	0.003	0.011
34.80	0.007	0.003	0.010
35.40	0.007	0.003	0.010
36.00	0.006	0.003	0.009
36.60	0.006	0.003	0.009
37.20	0.006	0.003	0.008
37.80	0.006	0.003	0.008
38.40	0.006	0.003	0.008
39.00	0.006	0.002	0.008
39.60	0.006	0.002	0.008
40.20	0.005	0.002	0.008
40.80	0.005	0.002	0.008
41.40	0.005	0.002	0.007
42.00	0.005	0.002	0.007
42.60	0.005	0.002	0.007
43.20	0.005	0.002	0.007
43.80	0.005	0.002	0.007
44.40	0.005	0.002	0.007
45.00	0.005	0.002	0.007
45.60	0.005	0.002	0.006
46.20	0.004	0.002	0.006
46.80	0.004	0.002	0.006
47.40	0.004	0.002	0.006
48.00	0.004	0.002	0.006

Continues on next page...

...End

Hydrograph Report

Hyd. No. 11

Post Dev Controlled - Imp (Roof 1)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.275 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,021 cuft
Drainage area	= 0.047 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 1D Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
1.70	0.003	12.50	0.090	23.30	0.005	34.10	0.004
2.30	0.004	13.10	0.038	23.90	0.004	34.70	0.004
2.90	0.004	13.70	0.022	24.50	0.084	35.30	0.004
3.50	0.005	14.30	0.018	25.10	0.034	35.90	0.004
4.10	0.005	14.90	0.014	25.70	0.022	36.50	0.003
4.70	0.006	15.50	0.012	26.30	0.016	37.10	0.003
5.30	0.006	16.10	0.011	26.90	0.013	37.70	0.003
5.90	0.006	16.70	0.009	27.50	0.010	38.30	0.003
6.50	0.007	17.30	0.008	28.10	0.009	38.90	0.003
7.10	0.008	17.90	0.007	28.70	0.008	39.50	0.003
7.70	0.009	18.50	0.007	29.30	0.008	40.10	0.003
8.30	0.010	19.10	0.006	29.90	0.007	40.70	0.003
8.90	0.011	19.70	0.006	30.50	0.006	41.30	0.003
9.50	0.014	20.30	0.006	31.10	0.006	41.90	0.003
10.10	0.018	20.90	0.006	31.70	0.005		
10.70	0.023	21.50	0.005	32.30	0.005	*...End*	
11.30	0.039	22.10	0.005	32.90	0.005		
11.90	0.098	22.70	0.005	33.50	0.005		

Hydrograph Report

Hyd. No. 12

Underground Chamber 1

Hydrograph type	= Reservoir	Peak discharge	= 0.113 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.50 hrs
Time interval	= 6 min	Hyd. volume	= 112 cuft
Inflow hyd. No.	= 11 - Post Dev Controlled Runoff (Roof)	Reservoir name	= Stormtech SC-740
Max. Elevation	= 130.26 ft	Max. Storage	= 500 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.60	0.072	130.19	-----	0.035	-----	-----	-----	-----	-----	-----	0.025	0.035
13.20	0.034	130.15	-----	0.011	-----	-----	-----	-----	-----	-----	0.025	0.011

...End

Hydrograph Report

Hyd. No. 14

Post Dev Controlled - Imp (Roof 2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.169 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,247 cuft
Drainage area	= 0.029 ac	Curve number	= 98.000
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.0 min
Total precip.	= 8.78 in	Distribution	= Custom
Storm duration	= G:\Users\A Castelli\DUSH\Type 2 Distribution.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
1.70	0.002	12.50	0.055	23.30	0.003	34.10	0.003
2.30	0.002	13.10	0.023	23.90	0.003	34.70	0.003
2.90	0.003	13.70	0.014	24.50	0.052	35.30	0.002
3.50	0.003	14.30	0.011	25.10	0.021	35.90	0.002
4.10	0.003	14.90	0.009	25.70	0.014	36.50	0.002
4.70	0.004	15.50	0.007	26.30	0.010	37.10	0.002
5.30	0.004	16.10	0.007	26.90	0.008	37.70	0.002
5.90	0.004	16.70	0.006	27.50	0.006	38.30	0.002
6.50	0.004	17.30	0.005	28.10	0.006	38.90	0.002
7.10	0.005	17.90	0.005	28.70	0.005	39.50	0.002
7.70	0.006	18.50	0.004	29.30	0.005	40.10	0.002
8.30	0.006	19.10	0.004	29.90	0.004	40.70	0.002
8.90	0.007	19.70	0.004	30.50	0.004	41.30	0.002
9.50	0.009	20.30	0.004	31.10	0.003	41.90	0.002
10.10	0.011	20.90	0.003	31.70	0.003		
10.70	0.014	21.50	0.003	32.30	0.003	*...End*	
11.30	0.024	22.10	0.003	32.90	0.003		
11.90	0.060	22.70	0.003	33.50	0.003		

Hydrograph Report

Hyd. No. 15

Underground Chamber 2

Hydrograph type	= Reservoir	Peak discharge	= 0.146 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 6 min	Hyd. volume	= 111 cuft
Inflow hyd. No.	= 14 - Post Dev Controlled Runoff (Roof 2)	Reservoir name	= Stormtech SC-740
Max. Elevation	= 130.29 ft	Max. Storage	= 281 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.60	0.044	130.20	-----	0.046	-----	-----	-----	-----	-----	-----	0.014	0.046
13.20	0.021	130.14	-----	0.008	-----	-----	-----	-----	-----	-----	0.014	0.008

...End

Hydrograph Report

Hyd. No. 17

Total Discharge

Hydrograph type	= Combine	Peak discharge	= 0.400 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 6 min	Hyd. volume	= 3,711 cuft
Inflow hyds.	= 9, 12, 15	Contrib. drain. area	= 0.000 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 6)

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
4.20	0.004	0.000	0.000	0.004
4.80	0.005	0.000	0.000	0.005
5.40	0.005	0.000	0.000	0.005
6.00	0.005	0.000	0.000	0.005
6.60	0.006	0.000	0.000	0.006
7.20	0.007	0.000	0.000	0.007
7.80	0.007	0.000	0.000	0.007
8.40	0.008	0.000	0.000	0.008
9.00	0.009	0.000	0.000	0.009
9.60	0.012	0.000	0.000	0.012
10.20	0.014	0.000	0.000	0.014
10.80	0.020	0.000	0.000	0.020
11.40	0.034	0.000	0.000	0.034
12.00	0.143	0.000	0.000	0.143
12.60	0.138	0.035	0.046	0.219
13.20	0.073	0.011	0.008	0.092
13.80	0.047	0.000	0.001	0.048
14.40	0.040	0.000	0.000	0.040
15.00	0.032	0.000	0.000	0.032
15.60	0.027	0.000	0.000	0.027
16.20	0.025	0.000	0.000	0.025

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
16.80	0.023	0.000	0.000	0.023
17.40	0.021	0.000	0.000	0.021
18.00	0.018	0.000	0.000	0.018
18.60	0.017	0.000	0.000	0.017
19.20	0.016	0.000	0.000	0.016
19.80	0.016	0.000	0.000	0.016
20.40	0.015	0.000	0.000	0.015
21.00	0.015	0.000	0.000	0.015
21.60	0.014	0.000	0.000	0.014
22.20	0.014	0.000	0.000	0.014
22.80	0.013	0.000	0.000	0.013
23.40	0.012	0.000	0.000	0.012
24.00	0.012	0.000	0.000	0.012
24.60	0.105	0.000	0.000	0.105
25.20	0.059	0.000	0.000	0.059
25.80	0.044	0.000	0.000	0.044
26.40	0.034	0.000	0.000	0.034
27.00	0.027	0.000	0.000	0.027
27.60	0.023	0.000	0.000	0.023
28.20	0.021	0.000	0.000	0.021
28.80	0.019	0.000	0.000	0.019
29.40	0.017	0.000	0.000	0.017
30.00	0.015	0.000	0.000	0.015
30.60	0.014	0.000	0.000	0.014
31.20	0.014	0.000	0.000	0.014
31.80	0.013	0.000	0.000	0.013
32.40	0.012	0.000	0.000	0.012

Continues on next page...

Total Discharge

Hydrograph Discharge Table

Time (hrs)	Hyd. 9 + (cfs)	Hyd. 12 + (cfs)	Hyd. 15 + (cfs)	Outflow (cfs)
33.00	0.012	0.000	0.000	0.012
33.60	0.011	0.000	0.000	0.011
34.20	0.011	0.000	0.000	0.011
34.80	0.010	0.000	0.000	0.010
35.40	0.010	0.000	0.000	0.010
36.00	0.009	0.000	0.000	0.009
36.60	0.009	0.000	0.000	0.009
37.20	0.008	0.000	0.000	0.008
37.80	0.008	0.000	0.000	0.008
38.40	0.008	0.000	0.000	0.008
39.00	0.008	0.000	0.000	0.008
39.60	0.008	0.000	0.000	0.008
40.20	0.008	0.000	0.000	0.008
40.80	0.008	0.000	0.000	0.008
41.40	0.007	0.000	0.000	0.007
42.00	0.007	0.000	0.000	0.007
42.60	0.007	0.000	0.000	0.007
43.20	0.007	0.000	0.000	0.007
43.80	0.007	0.000	0.000	0.007
44.40	0.007	0.000	0.000	0.007
45.00	0.007	0.000	0.000	0.007
45.60	0.006	0.000	0.000	0.006
46.20	0.006	0.000	0.000	0.006
46.80	0.006	0.000	0.000	0.006
47.40	0.006	0.000	0.000	0.006
48.00	0.006	0.000	0.000	0.006

...End