STORMWATER DRAINAGE STUDY

FOR

CAPITAL BUILDERS FLEX SPACE

Lee's Summit, Missouri

Prepared For:
Capital Builders
1507 NE Wall St.
Lee's Summit, MO 64086

07/14/2023

Prepared By:
Kimley-Horn
805 Pennsylvania Ave, Suite 150
Kansas City, MO 64105

July 14, 2023

Kimley»Horn

DRAINAGE REPORT CONTENTS

APPENDICES

GENERAL INFORMATION

This drainage study addresses the quantity and quality of stormwater runoff from a proposed development to be located Northeast of the intersection of SE Thompson Dr and SE Decker St. in Lee's Summit, Missouri. The proposed development is 2.13 acres, consisting of two warehouse-office flex space buildings. The proposed development is zoned PI (planned industrial). The property is located within the NW ¼ of Section 17, Township 47N, Range 31 West in the City of Lee's Summit, Jackson County, Missouri.

This site is currently undeveloped and consists of sparsely covered grassland, portions of thick scrub brush and grass areas, streams and channels, and a small concrete pad. The site is bounded to the West by Decker Street, to the North by an existing Industrial building, to the East another industrial building and to the south by cropland. Site topography is such that the site slopes gently from West to East. Big Creek runs North and South through the site along the Eastern edge. From meetings with the City, it is understood that there is a 60' stream buffer that exists on this property related to Big Creek. There is also a drainage swale that takes offsite water West to East through this site to the aforementioned Big Creek that runs along the Northern edge of this property.

The purpose of this report is to determine the impact of the development of this property on the existing drainage infrastructure and to show that the proposed development is in compliance with City standards. This report also addresses the water quality impact of the proposed development meeting the comprehensive control requirements of the City of Lee's Summit.

METHODOLOGY

The proposed project was analyzed utilizing the American Public Works Association section 5600 (2011 edition), comprehensive control strategy for control of stormwater. The analysis was conducted utilizing the PondPack Ver 10.02.00.01. An SCS Type-II 24-hr. rainfall distribution was utilized in computing TR-55 unit hydrographs for varying conditions. Refer to **Appendix D** for precipitation frequency information and **Appendix H** for a watershed model schematic and modeling output. The City of Lee's Summit requirement to detain and slowly release the water quality event over 40 hours was also

included in the design. The rainfall depths used in the analysis are shown below. Rainfall depths were obtained from Atlas 14.

TABLE 1: NOAA ATLAS 14 RAINFALL DEPTHS			
Storm Event	2-yr	10-yr	100-yr
Rainfall Depth (inches)	3.7	5.7	9.2

EXISTING CONDITIONS ANALYSIS

The existing site to be developed consist of grassland some previously paved areas and trees. Big Creek runs North and South along the Eastern property line. There is a 60 feet stream buffer associated with Big Creek along the Eastern side of this property. Within the buffer area, prior to and unrelated to this development, there has been dumping of construction debris. This debris consists of a mix of concrete rubble, asphalt rubble, rock and dirt. An outline of the property is shown below in Figure 1, note that this image depicts the area prior to the construction of Decker which shows the existing concrete slab still present.

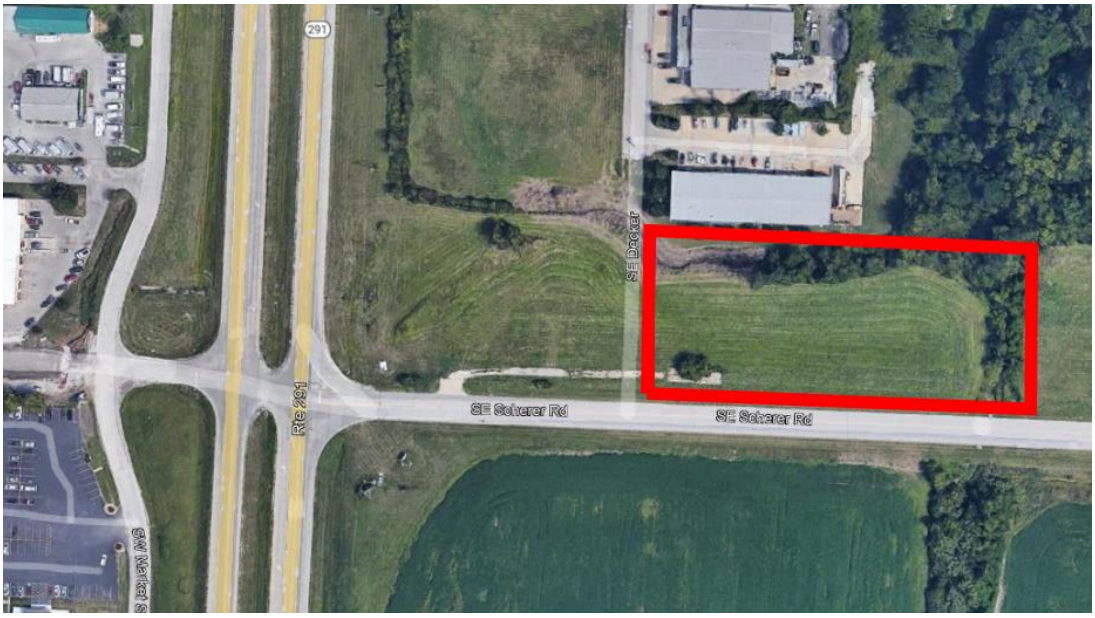


Fig 1. Existing Site

The Natural Resources Conservation Service (NRCS) Soil Survey Map classifies the soil type on site as Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes (Hydrologic Soil Class C/D) and Sampsel silty clay loam, 2 to 5 percent slopes (Hydrologic Soil Class C/D). Refer to **Appendix B** for a NRCS Web Soil Survey Map and associated data.

The proposed development is located entirely within an area of minimal flood hazard (Zone X) as depicted on FEMA Flood Insurance Rate Map (FIRM) 29095C0438G, effective date January 20, 2017, see **Appendix C** for FEMA information.

PROPOSED CONDITIONS ANALYSIS

The proposed development includes two industrial warehouse-office flex spaces, as well as a paved parking lot and private drives. Each building is proposed to be 12,000 square feet. The proposed development is required to meet the Comprehensive Control strategy adopted by the City of Lee's Summit. In accordance with these requirements, a stormwater model was developed to show the proposed conditions and their effects on the surrounding area.

Due to the limited availability of space on the site to do a detention basin to meet the City requirements an underground detention basin was modeled with an outlet structure. See **Appendix A** for a layout of the proposed underground detention basin. For this basin, ADS Stormtech chambers were utilized as the basis for design. Per City requirements a 30% void ratio was assumed in the granular material used. See **Appendix E** for a for the stage storage curve and additional details regarding the underground detention basin.

An outlet Structure downstream of the detention basin was also designed in the model to limit the stormwater release from the basin to the allowable release rates based on City required comprehensive control. A sketch of the outlet is included in **Appendix F**. A summary of the release rates from the detention model is shown below in **Table 2**. The release rates are based on the site acreage of 1.53 acres, which represents the developed site. The detention basin does not include any runoff from the adjacent properties or streams as they bypass the underground basin.

TABLE 2: 2-yr, 10-yr, 100-yr Allowable Release Rate vs. Design Storm Release Rate at Outlet			
Storm Event	2-yr Q_p (cfs)	10-yr Q_p (cfs)	100-yr Q_p (cfs)
Allowable Release Rate	0.77	3.06	4.59
Design Storm Release Rate	0.56	1.62	4.28
Maximum Water Surface Elevation (ft)	984.89	985.86	987.90

Comprehensive control also requires the 40-hour extended detention of runoff from the local 90% mean annual event (1.37"/24-hour rainfall). This volume was calculated to be 0.13 acre-feet of water (per Section 6.2 "Short-Cut Method" of the Mid-America Regional Councils Manual for Best Management Practices, 2011 edition). This volume of water is detained within the basin and released over the required 40 hours (per Section 5608.4 "Performance Criteria" part B3 of the American Public Works Association Storm Drainage Systems & Facilities, 2011 edition). See **Appendix G** for Calculations and graphic representing the release rate occurring just over 40 hours as required.

While there is no FEMA floodplain associated with Big Creek, additional analysis was performed on Big Creek to investigate the adequacy of the existing culvert beneath Thompson Drive. Big Creek was analyzed using streamstats for peak flows, see **Appendix I**. The 100 year event was shown to pass within the culvert under Thompson Drive. The roadway elevation of Thompson at the culvert is 989 feet which provides an additional 2.5' of elevation from the finish floor (991.5 feet).

PERMITTING

No potential wetlands or streams will be significantly impacted by this project. Therefore, no United States Army Corps of Engineers permits are anticipated to be required.

Due to the size of the disturbed area, it is anticipated that both a City and State Land Disturbance Permit will be required. All required permits will be obtained prior to any construction activities.

CONCLUSIONS AND RECOMMENDATIONS

Stormwater runoff for the Capital Builders Flex Space, an industrial development in Lee's Summit, MO, has been analyzed for release rate and water quality in this study. It has been shown that development of the site from its current condition to the proposed condition, if constructed as proposed with underground detention, will not release runoff at a rate greater what is allowed by the APWA 5600 Comprehensive Control strategy. This will be accomplished with a single underground detention system constructed on the site. This single underground detention system will also release the water quality event as required by the City. It is concluded that the proposed improvements, if constructed as outlined in this study and associated plans, will meet the stormwater requirements and development criteria of the City of Lee's Summit.

APPENDIX A: Proposed Site Plan

EXISTING DRAINAGE IN STREAM WILL NOT FLOW TO DETENTION BASIN

UNDISTURBED, UNDETAINED AREA

EXISTING DRAINAGE IN STREAM WILL NOT FLOW TO DETENTION BASIN

SE DECKER

CN = 89
AREA 1 = 1.53 AC.
TC = 5 MIN.

SE THOMPSON DRIVE

CN = 98
AREA 2 = 0.03 AC.
TC = 5 MIN.

LEGEND

- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED BUILDING
- PROPOSED DRAINAGE AREA
- EXISTING 60' STREAM BUFFER
- PROPOSED BUILDING OUTLINE
- PROPERTY LINE
- STANDARD CURB & GUTTER
- DRAINAGE PATH

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

No.	REVISIONS	DATE	BY

Kimley»Horn

855 PENNSYLVANIA AVENUE, SUITE 150
KANSAS CITY, MO 64105
PHONE: 816-607-0393
WWW.KIMLEY-HORN.COM

SCALE: AS NOTED
DESIGNED BY: LLG
DRAWN BY: LLG
CHECKED BY: PJJ

PROPOSED DRAINAGE PATTERNS

LEE'S SUMMIT FLEX SPACE

60 SE THOMPSON DR
LEE'S SUMMIT, MISSOURI 64081

ORIGINAL ISSUE:
XX/XX/2023

KHA PROJECT NO.
268442000

SHEET NUMBER

EXISTING CULVERT TRANSPORTS FLOW UNDER THOMPSON DR.

EXISTING OFFSITE DRAINAGE FLOWS THROUGH EXISTING CHANNEL

EXISTING CN = 80

EXISTING OFFSITE DRAINAGE FLOWS THROUGH EXISTING STREAM

EXISTING CULVERT TRANSPORTS FLOW UNDER THOMPSON DR.

SE DECKER

SE THOMPSON DRIVE

LEGEND

PROPERTY LINE

DRAINAGE PATH

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

No.	REVISIONS	DATE	BY

Kimley»Horn

865 PENNSYLVANIA AVENUE, SUITE 150
KANSAS CITY, MO 64105
PHONE: 816-404-2000
WWW.KIMLEY-HORN.COM

SCALE: AS NOTED
DESIGNED BY: LLG
DRAWN BY: LLG
CHECKED BY: PJJ

LEE'S SUMMIT FLEX SPACE

60 SE THOMPSON DR
LEE'S SUMMIT, MISSOURI 64081

PROPOSED DRAINAGE PATTERNS

ORIGINAL ISSUE:
XX/XX/2023

KHA PROJECT NO.
26842000

SHEET NUMBER

APPENDIX B: NRCS Soil Survey

Soil Map—Jackson County, Missouri
(CAPITAL BUILDERS - LEE'S SUMMIT)

Map Scale: 1:775 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Jackson County, Missouri
Survey Area Data: Version 24, Aug 31, 2022

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

Date(s) aerial images were photographed: Aug 30, 2022—Sep 8, 2022

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.

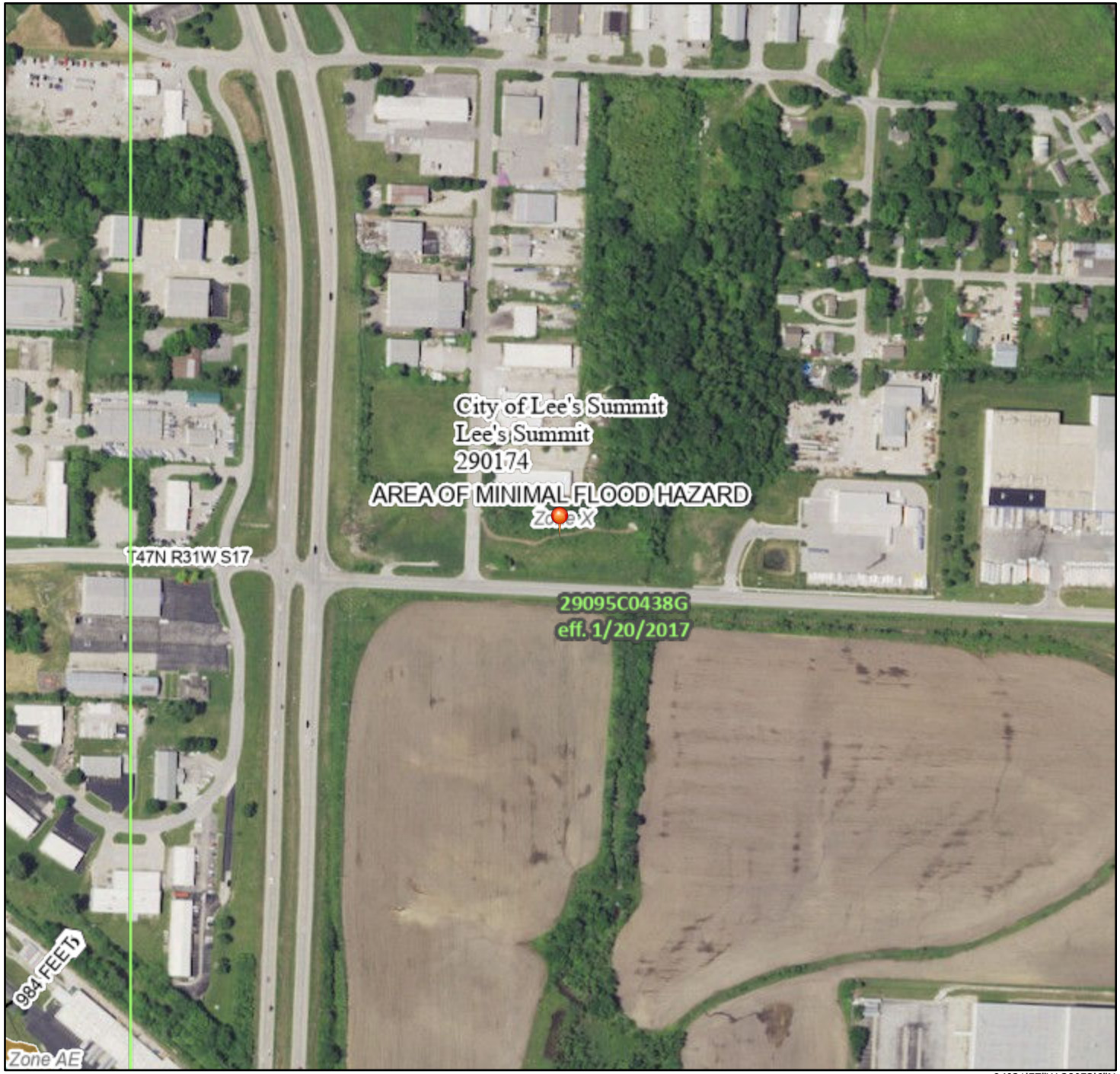
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10116	Sampsel silty clay loam, 2 to 5 percent slopes	0.2	8.9%
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	1.8	91.1%
Totals for Area of Interest		**1.9**	**100.0%**

APPENDIX C: FEMA Flood Map Information

National Flood Hazard Layer FIRMette

94°22'34"W 38°53'34"N



94°21'57"W 38°53'6"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/11/2023 at 11:39 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX D: Precipitation Frequency Information

NOAA Atlas 14, Volume 8, Version 2
Location name: Lees Summit, Missouri, USA*
Latitude: 38.8953°, Longitude: -94.369°
Elevation: 1031 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.414** (0.329-0.520)	**0.484** (0.383-0.608)	**0.599** (0.473-0.755)	**0.696** (0.547-0.881)	**0.833** (0.634-1.08)	**0.939** (0.700-1.24)	**1.05** (0.756-1.41)	**1.16** (0.804-1.60)	**1.31** (0.876-1.85)	**1.42** (0.930-2.04)
10-min	**0.606** (0.481-0.762)	**0.708** (0.561-0.891)	**0.877** (0.693-1.11)	**1.02** (0.801-1.29)	**1.22** (0.928-1.59)	**1.38** (1.02-1.81)	**1.53** (1.11-2.06)	**1.70** (1.18-2.34)	**1.92** (1.28-2.71)	**2.09** (1.36-2.99)
15-min	**0.740** (0.587-0.929)	**0.864** (0.684-1.09)	**1.07** (0.845-1.35)	**1.24** (0.977-1.57)	**1.49** (1.13-1.94)	**1.68** (1.25-2.21)	**1.87** (1.35-2.52)	**2.07** (1.44-2.85)	**2.34** (1.56-3.30)	**2.54** (1.66-3.64)
30-min	**1.02** (0.812-1.29)	**1.20** (0.953-1.51)	**1.50** (1.18-1.89)	**1.75** (1.37-2.21)	**2.09** (1.59-2.72)	**2.36** (1.76-3.11)	**2.63** (1.90-3.54)	**2.91** (2.02-4.01)	**3.28** (2.20-4.64)	**3.57** (2.33-5.11)
60-min	**1.34** (1.06-1.68)	**1.57** (1.24-1.98)	**1.96** (1.55-2.47)	**2.29** (1.80-2.90)	**2.76** (2.10-3.60)	**3.13** (2.33-4.13)	**3.51** (2.53-4.73)	**3.90** (2.71-5.38)	**4.43** (2.96-6.26)	**4.84** (3.16-6.93)
2-hr	**1.65** (1.32-2.06)	**1.94** (1.55-2.42)	**2.42** (1.93-3.03)	**2.84** (2.24-3.56)	**3.43** (2.63-4.45)	**3.90** (2.93-5.11)	**4.38** (3.19-5.87)	**4.88** (3.42-6.70)	**5.57** (3.76-7.83)	**6.11** (4.01-8.68)
3-hr	**1.87** (1.50-2.32)	**2.19** (1.76-2.73)	**2.75** (2.19-3.42)	**3.22** (2.56-4.03)	**3.91** (3.02-5.06)	**4.47** (3.37-5.84)	**5.04** (3.69-6.74)	**5.65** (3.97-7.73)	**6.48** (4.39-9.08)	**7.14** (4.71-10.1)
6-hr	**2.25** (1.82-2.77)	**2.66** (2.14-3.28)	**3.36** (2.70-4.15)	**3.97** (3.17-4.92)	**4.86** (3.78-6.26)	**5.58** (4.25-7.26)	**6.34** (4.67-8.43)	**7.15** (5.07-9.73)	**8.26** (5.65-11.5)	**9.15** (6.09-12.9)
12-hr	**2.65** (2.15-3.24)	**3.16** (2.56-3.86)	**4.04** (3.26-4.95)	**4.81** (3.87-5.92)	**5.94** (4.66-7.60)	**6.86** (5.25-8.86)	**7.82** (5.81-10.3)	**8.85** (6.32-12.0)	**10.3** (7.07-14.2)	**11.4** (7.64-15.9)
24-hr	**3.10** (2.54-3.76)	**3.70** (3.02-4.50)	**4.74** (3.86-5.77)	**5.66** (4.58-6.91)	**6.99** (5.52-8.88)	**8.08** (6.24-10.4)	**9.23** (6.90-12.1)	**10.4** (7.52-14.0)	**12.1** (8.43-16.7)	**13.5** (9.12-18.7)
2-day	**3.66** (3.01-4.40)	**4.30** (3.54-5.18)	**5.42** (4.44-6.54)	**6.41** (5.22-7.77)	**7.86** (6.26-9.91)	**9.05** (7.04-11.5)	**10.3** (7.77-13.4)	**11.6** (8.45-15.5)	**13.5** (9.46-18.5)	**15.0** (10.2-20.7)
3-day	**4.06** (3.36-4.86)	**4.70** (3.88-5.64)	**5.82** (4.79-7.00)	**6.82** (5.58-8.22)	**8.28** (6.63-10.4)	**9.49** (7.42-12.0)	**10.8** (8.15-14.0)	**12.1** (8.84-16.1)	**14.0** (9.87-19.1)	**15.6** (10.6-21.4)
4-day	**4.39** (3.64-5.24)	**5.03** (4.17-6.02)	**6.15** (5.08-7.37)	**7.14** (5.87-8.59)	**8.61** (6.90-10.8)	**9.81** (7.69-12.4)	**11.1** (8.41-14.3)	**12.4** (9.09-16.5)	**14.3** (10.1-19.5)	**15.8** (10.9-21.7)
7-day	**5.20** (4.33-6.16)	**5.88** (4.89-6.98)	**7.04** (5.84-8.38)	**8.05** (6.65-9.62)	**9.51** (7.65-11.8)	**10.7** (8.41-13.4)	**11.9** (9.09-15.3)	**13.2** (9.70-17.3)	**15.0** (10.6-20.2)	**16.4** (11.3-22.3)
10-day	**5.89** (4.92-6.96)	**6.64** (5.55-7.85)	**7.90** (6.58-9.36)	**8.96** (7.43-10.7)	**10.5** (8.44-12.9)	**11.7** (9.20-14.5)	**12.9** (9.85-16.4)	**14.1** (10.4-18.5)	**15.9** (11.3-21.2)	**17.2** (11.9-23.3)
20-day	**7.85** (6.61-9.20)	**8.87** (7.46-10.4)	**10.5** (8.81-12.4)	**11.8** (9.88-14.0)	**13.6** (11.0-16.5)	**15.0** (11.9-18.4)	**16.3** (12.5-20.5)	**17.6** (13.1-22.8)	**19.3** (13.8-25.6)	**20.6** (14.4-27.8)
30-day	**9.50** (8.03-11.1)	**10.7** (9.07-12.5)	**12.7** (10.7-14.9)	**14.3** (12.0-16.8)	**16.3** (13.2-19.6)	**17.8** (14.2-21.7)	**19.3** (14.9-24.1)	**20.7** (15.4-26.5)	**22.4** (16.1-29.5)	**23.7** (16.6-31.8)
45-day	**11.6** (9.85-13.5)	**13.1** (11.1-15.2)	**15.4** (13.1-18.0)	**17.3** (14.5-20.2)	**19.6** (15.9-23.4)	**21.3** (17.0-25.8)	**22.9** (17.7-28.4)	**24.4** (18.2-31.0)	**26.2** (18.8-34.3)	**27.4** (19.3-36.7)
60-day	**13.4** (11.4-15.5)	**15.1** (12.9-17.5)	**17.7** (15.1-20.6)	**19.8** (16.7-23.1)	**22.4** (18.2-26.5)	**24.2** (19.3-29.2)	**25.9** (20.0-31.9)	**27.4** (20.5-34.7)	**29.2** (21.1-38.0)	**30.4** (21.5-40.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

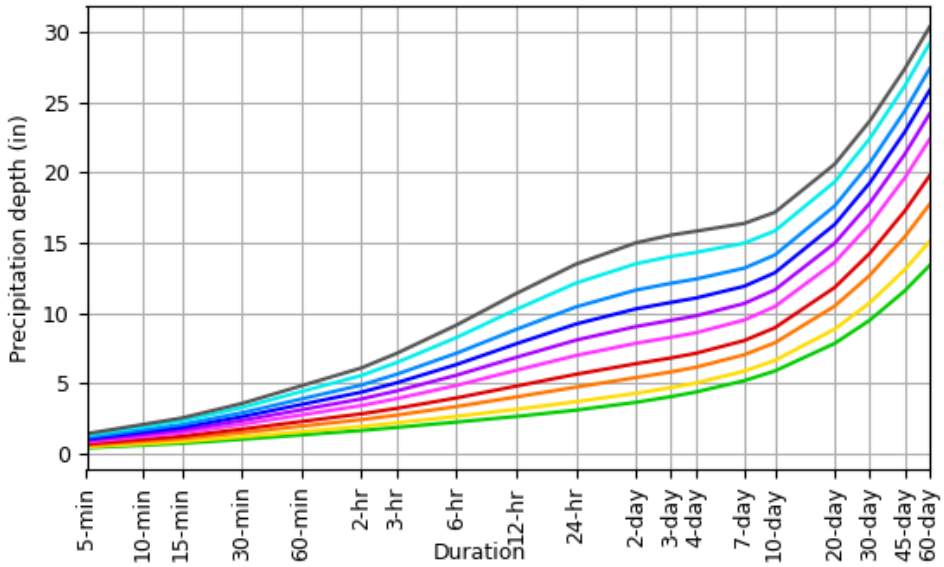
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

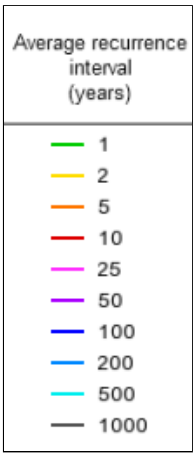
Please refer to NOAA Atlas 14 document for more information.

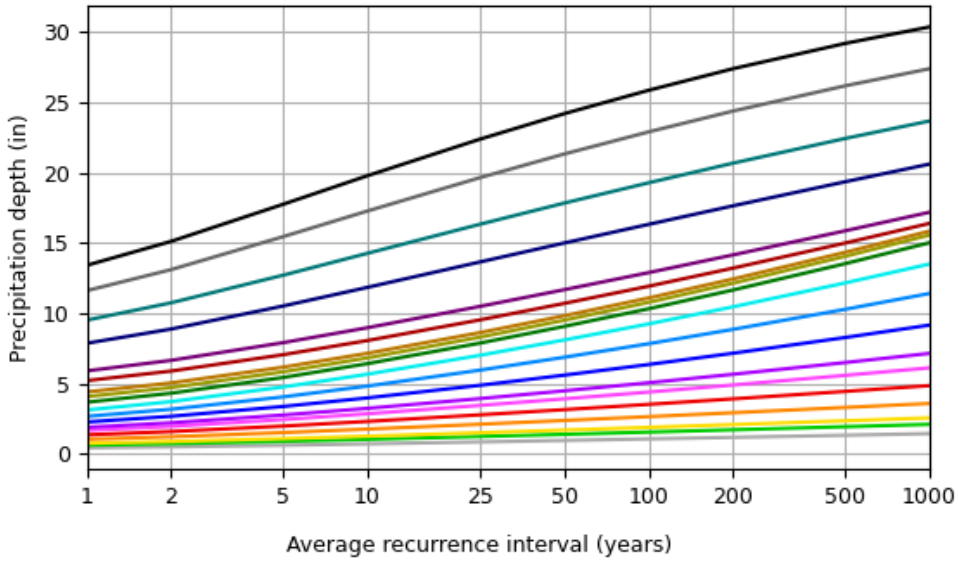
Back to Top

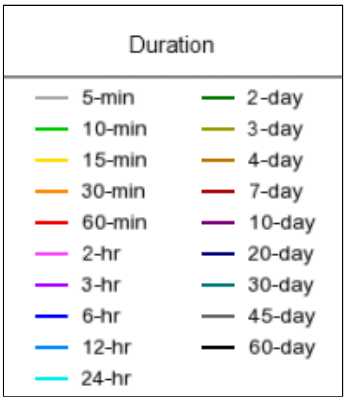
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 38.8953°, Longitude: -94.3690°







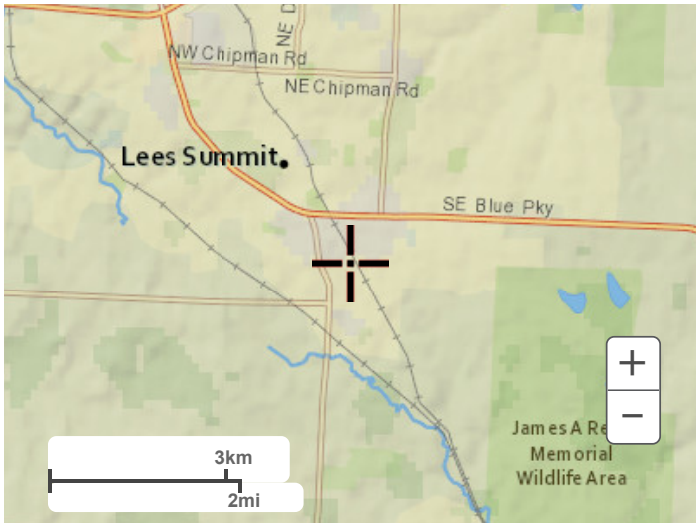


NOAA Atlas 14, Volume 8, Version 2 Created (GMT): Wed Jul 12 14:45:29 2023

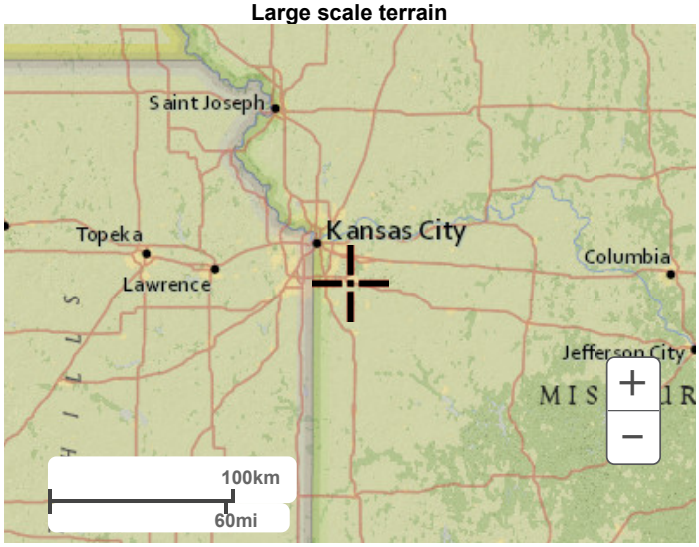
Back to Top

Maps & aerials

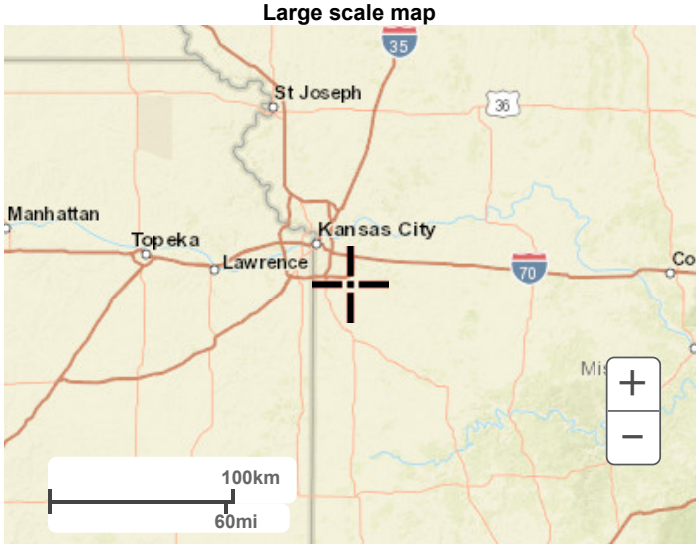
Small scale terrain



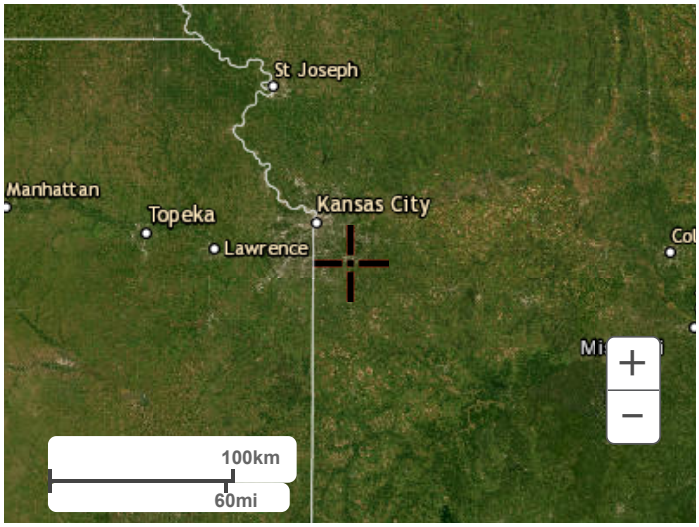
Large scale terrain



Large scale map



Large scale aerial



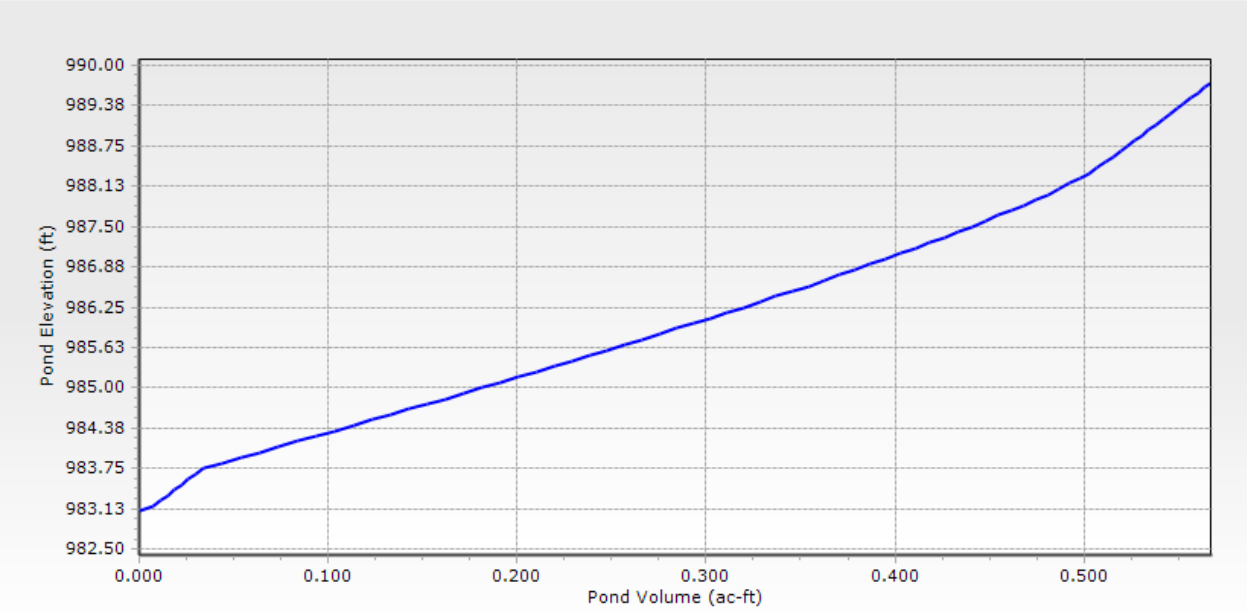
Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX E: ADS StormTech Design Information

Stage Storage Curve Underground Detention



Project: CAPITAL BUILDERS - LEE'S SUMMIT

Chamber Model -	MC-4500	
Units -	Imperial	
Number of Chambers -	153	
Number of End Caps -	6	
Voids in the stone (porosity) -	30	%
Base of Stone Elevation -	983.00	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in

Area of system - 6500 sf Min. Area - 5797 sf min. area

☑ Include Perimeter Stone in Calculations

☑ Click for Stage Area Data

☐ Click to Invert Stage Area Data

Click Here for Metric

StormTech MC-4500 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	162.50	162.50	24735.44	989.75
80	0.00	0.00	0.00	0.00	162.50	162.50	24572.94	989.67
79	0.00	0.00	0.00	0.00	162.50	162.50	24410.44	989.58
78	0.00	0.00	0.00	0.00	162.50	162.50	24247.94	989.50
77	0.00	0.00	0.00	0.00	162.50	162.50	24085.44	989.42
76	0.00	0.00	0.00	0.00	162.50	162.50	23922.94	989.33
75	0.00	0.00	0.00	0.00	162.50	162.50	23760.44	989.25
74	0.00	0.00	0.00	0.00	162.50	162.50	23597.94	989.17
73	0.00	0.00	0.00	0.00	162.50	162.50	23435.44	989.08
72	0.00	0.00	0.00	0.00	162.50	162.50	23272.94	989.00
71	0.00	0.00	0.00	0.00	162.50	162.50	23110.44	988.92
70	0.00	0.00	0.00	0.00	162.50	162.50	22947.94	988.83
69	0.04	0.01	6.27	0.08	160.60	166.94	22785.44	988.75
68	0.12	0.03	17.76	0.20	157.11	175.08	22618.50	988.67
67	0.16	0.05	25.20	0.31	154.85	180.36	22443.43	988.58
66	0.21	0.07	31.93	0.40	152.80	185.13	22263.07	988.50
65	0.27	0.08	41.06	0.50	150.03	191.59	22077.93	988.42
64	0.45	0.11	69.28	0.63	141.53	211.44	21886.34	988.33
63	0.67	0.13	101.78	0.79	131.73	234.31	21674.91	988.25
62	0.80	0.16	122.25	0.97	125.54	248.75	21440.60	988.17
61	0.91	0.19	138.94	1.13	120.48	260.55	21191.85	988.08
60	1.00	0.22	153.44	1.31	116.07	270.83	20931.30	988.00
59	1.09	0.25	166.36	1.48	112.15	279.99	20660.47	987.92
58	1.16	0.28	178.01	1.65	108.60	288.27	20380.48	987.83
57	1.23	0.30	188.80	1.81	105.32	295.93	20092.22	987.75
56	1.30	0.33	198.85	1.97	102.26	303.07	19796.28	987.67
55	1.36	0.35	208.24	2.13	99.39	309.76	19493.21	987.58
54	1.42	0.38	217.06	2.30	96.69	316.06	19183.46	987.50
53	1.47	0.41	225.42	2.46	94.14	322.01	18867.40	987.42
52	1.53	0.44	233.35	2.65	91.70	327.70	18545.39	987.33
51	1.57	0.47	240.90	2.81	89.39	333.10	18217.70	987.25
50	1.62	0.50	248.07	2.97	87.19	338.23	17884.60	987.17
49	1.67	0.52	254.93	3.12	85.08	343.14	17546.37	987.08
48	1.71	0.54	261.49	3.27	83.07	347.83	17203.23	987.00
47	1.75	0.57	267.76	3.40	81.15	352.31	16855.40	986.92
46	1.79	0.59	273.76	3.53	79.31	356.61	16503.08	986.83
45	1.83	0.61	279.56	3.66	77.53	360.75	16146.48	986.75
44	1.86	0.63	285.11	3.79	75.83	364.73	15785.72	986.67
43	1.90	0.64	290.44	3.86	74.21	368.51	15420.99	986.58
42	1.93	0.68	295.57	4.06	72.61	372.24	15052.48	986.50
41	1.96	0.70	300.50	4.20	71.09	375.79	14680.24	986.42
40	2.00	0.72	305.25	4.33	69.62	379.21	14304.44	986.33
39	2.03	0.74	309.83	4.46	68.21	382.50	13925.23	986.25
38	2.05	0.76	314.23	4.59	66.86	385.67	13542.73	986.17
37	2.08	0.79	318.47	4.71	65.55	388.73	13157.06	986.08
36	2.11	0.80	322.54	4.82	64.29	391.65	12768.33	986.00
35	2.13	0.82	326.48	4.92	63.08	394.48	12376.68	985.92
34	2.16	0.84	330.28	5.03	61.91	397.22	11982.21	985.83
33	2.18	0.85	333.93	5.11	60.79	399.83	11584.99	985.75
32	2.21	0.86	337.45	5.16	59.72	402.32	11185.16	985.67
31	2.23	0.89	340.83	5.34	58.65	404.82	10782.84	985.58
30	2.25	0.90	344.08	5.43	57.65	407.15	10378.03	985.50
29	2.27	0.92	347.21	5.50	56.69	409.40	9970.87	985.42
28	2.29	0.92	350.22	5.52	55.78	411.51	9561.47	985.33
27	2.31	0.94	353.10	5.66	54.87	413.63	9149.96	985.25
26	2.33	0.96	355.87	5.74	54.02	415.63	8736.33	985.17
25	2.34	0.97	358.52	5.81	53.20	417.54	8320.70	985.08
24	2.36	0.98	361.07	5.89	52.41	419.37	7903.17	985.00
23	2.38	0.97	363.50	5.83	51.70	421.03	7483.80	984.92
22	2.39	1.00	365.82	6.02	50.95	422.79	7062.77	984.83
21	2.41	1.01	368.04	6.07	50.27	424.37	6639.98	984.75
20	2.42	1.02	370.15	6.12	49.62	425.89	6215.61	984.67
19	2.43	1.03	372.15	6.18	49.00	427.34	5789.72	984.58
18	2.44	1.04	374.06	6.23	48.41	428.70	5362.39	984.50
17	2.46	1.05	375.87	6.28	47.86	430.00	4933.68	984.42
16	2.47	1.05	377.57	6.32	47.33	431.23	4503.68	984.33
15	2.48	1.05	379.18	6.30	46.86	432.34	4072.46	984.25
14	2.49	1.06	380.70	6.34	46.39	433.43	3640.12	984.17
13	2.50	1.08	382.15	6.45	45.92	434.52	3206.69	984.08
12	2.51	1.08	383.50	6.50	45.50	435.49	2772.17	984.00
11	2.51	1.09	384.75	6.53	45.12	436.40	2336.68	983.92
10	2.53	1.11	386.62	6.64	44.52	437.78	1900.28	983.83
9	0.00	0.00	0.00	0.00	162.50	162.50	1462.50	983.75
8	0.00	0.00	0.00	0.00	162.50	162.50	1300.00	983.67
7	0.00	0.00	0.00	0.00	162.50	162.50	1137.50	983.58
6	0.00	0.00	0.00	0.00	162.50	162.50	975.00	983.50
5	0.00	0.00	0.00	0.00	162.50	162.50	812.50	983.42
4	0.00	0.00	0.00	0.00	162.50	162.50	650.00	983.33
3	0.00	0.00	0.00	0.00	162.50	162.50	487.50	983.25
2	0.00	0.00	0.00	0.00	162.50	162.50	325.00	983.17
1	0.00	0.00	0.00	0.00	162.50	162.50	162.50	983.08

Stage Area Data

Depth (feet)	Elevation (feet)	Area (ft²)	Area (acres)
0.00	983.00	1950.00	0.0448
0.08	983.08	1950.00	0.0448
0.17	983.17	1950.00	0.0448
0.25	983.25	1950.00	0.0448
0.33	983.33	1950.00	0.0448
0.42	983.42	1950.00	0.0448
0.50	983.50	1950.00	0.0448
0.58	983.58	1950.00	0.0448
0.67	983.67	1950.00	0.0448
0.75	983.75	1950.00	0.0448
0.83	983.83	5253.37	0.1206
0.92	983.92	5236.76	0.1202
1.00	984.00	5225.94	0.1200
1.08	984.08	5214.23	0.1197
1.17	984.17	5201.16	0.1194
1.25	984.25	5188.03	0.1191
1.33	984.33	5174.72	0.1188
1.42	984.42	5160.00	0.1185
1.50	984.50	5144.46	0.1181
1.58	984.58	5128.03	0.1177
1.67	984.67	5110.66	0.1173
1.75	984.75	5092.46	0.1169
1.83	984.83	5073.45	0.1165
1.92	984.92	5052.32	0.1160
2.00	985.00	5032.42	0.1155
2.08	985.08	5010.42	0.1150
2.17	985.17	4987.51	0.1145
2.25	985.25	4963.60	0.1139
2.33	985.33	4938.16	0.1134
2.42	985.42	4912.80	0.1128
2.50	985.50	4885.82	0.1122
2.58	985.58	4857.81	0.1115
2.67	985.67	4827.86	0.1108
2.75	985.75	4797.90	0.1101
2.83	985.83	4766.59	0.1094
2.92	985.92	4733.75	0.1087
3.00	986.00	4699.76	0.1079
3.08	986.08	4664.73	0.1071
3.17	986.17	4628.06	0.1062
3.25	986.25	4590.02	0.1054
3.33	986.33	4550.53	0.1045
3.42	986.42	4509.51	0.1035
3.50	986.50	4466.93	0.1025
3.58	986.58	4422.14	0.1015
3.67	986.67	4376.75	0.1005
3.75	986.75	4329.06	0.0994
3.83	986.83	4279.26	0.0982
3.92	986.92	4227.78	0.0971
4.00	987.00	4173.99	0.0958
4.08	987.08	4117.68	0.0945
4.17	987.17	4058.77	0.0932
4.25	987.25	3997.16	0.0918
4.33	987.33	3932.35	0.0903
4.42	987.42	3864.14	0.0887
4.50	987.50	3792.67	0.0871
4.58	987.58	3717.06	0.0853
4.67	987.67	3636.85	0.0835
4.75	987.75	3551.16	0.0815
4.83	987.83	3459.18	0.0794
4.92	987.92	3359.89	0.0771
5.00	988.00	3249.95	0.0746
5.08	988.08	3126.63	0.0718
5.17	988.17	2985.01	0.0685
5.25	988.25	2811.67	0.0645
5.33	988.33	2537.24	0.0582
5.42	988.42	2299.06	0.0528
5.50	988.50	2221.58	0.0510
5.58	988.58	2164.33	0.0497
5.67	988.67	2100.92	0.0482
5.75	988.75	2003.30	0.0460
5.83	988.83	1950.00	0.0448
5.92	988.92	1950.00	0.0448
6.00	989.00	1950.00	0.0448
6.08	989.08	1950.00	0.0448
6.17	989.17	1950.00	0.0448
6.25	989.25	1950.00	0.0448
6.33	989.33	1950.00	0.0448
6.42	989.42	1950.00	0.0448
6.50	989.50	1950.00	0.0448
6.58	989.58	1950.00	0.0448
6.67	989.67	1950.00	0.0448
6.75	989.75	1950.00	0.0448

Advanced Drainage Systems, Inc.

SiteAssist®
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP

MC-4500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

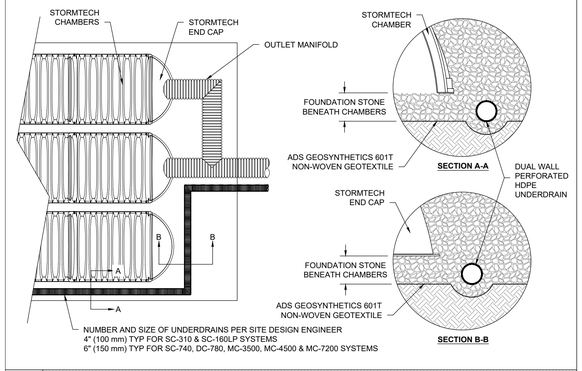
1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

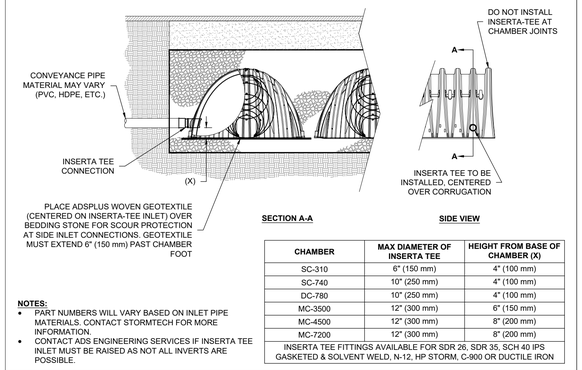
1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



5 UNDERDRAIN DETAIL

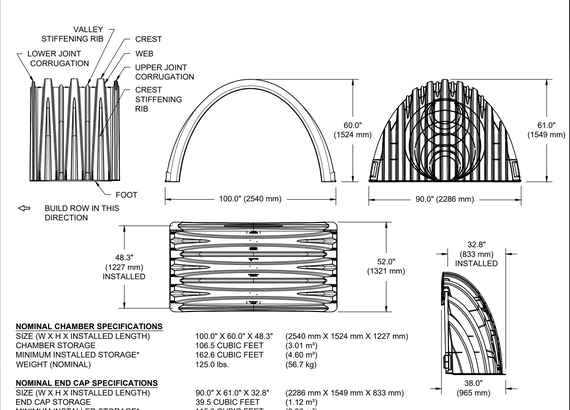


NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

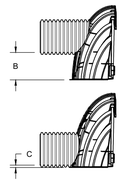
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC4500IEPP06B		---	0.86" (22 mm)
MC4500IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC4500IEPP08B		---	1.01" (26 mm)
MC4500IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC4500IEPP10B		---	1.33" (34 mm)
MC4500IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC4500IEPP12B		---	1.55" (39 mm)
MC4500IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC4500IEPP15B		---	1.70" (43 mm)
MC4500IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC4500IEPP18TW			
MC4500IEPP18B		---	1.97" (50 mm)
MC4500IEPP18BW			
MC4500IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC4500IEPP24TW			
MC4500IEPP24B		---	2.26" (57 mm)
MC4500IEPP24BW			
MC4500IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

2 MC-4500 TECHNICAL SPECIFICATIONS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

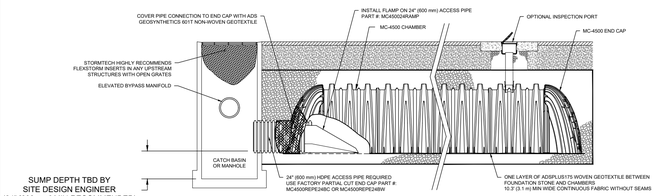
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

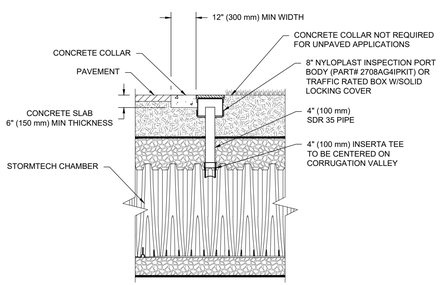
STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

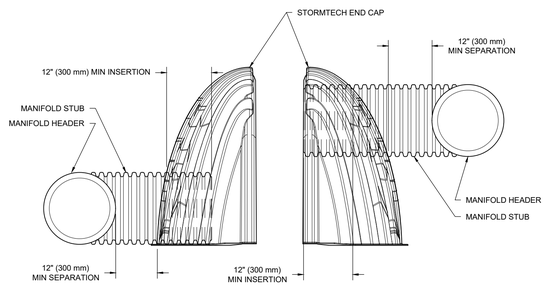


3 MC-4500 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

4 4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)



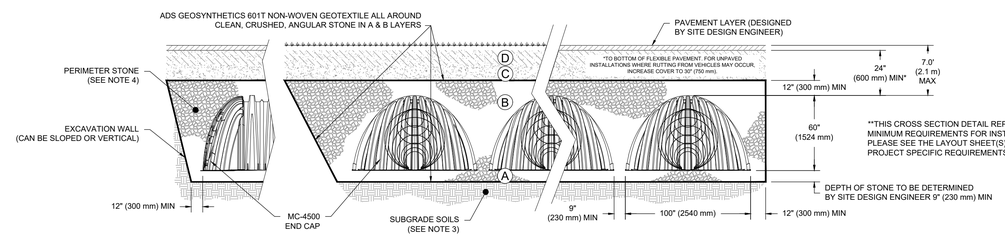
NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

7 MC-SERIES END CAP INSERTION DETAIL

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 MC-4500 CROSS SECTION DETAIL

DRAWN: | DATE:
REVIEWED: | PROJECT NO:
REV: | NOT TO SCALE

MC-4500 STANDARD DETAILS

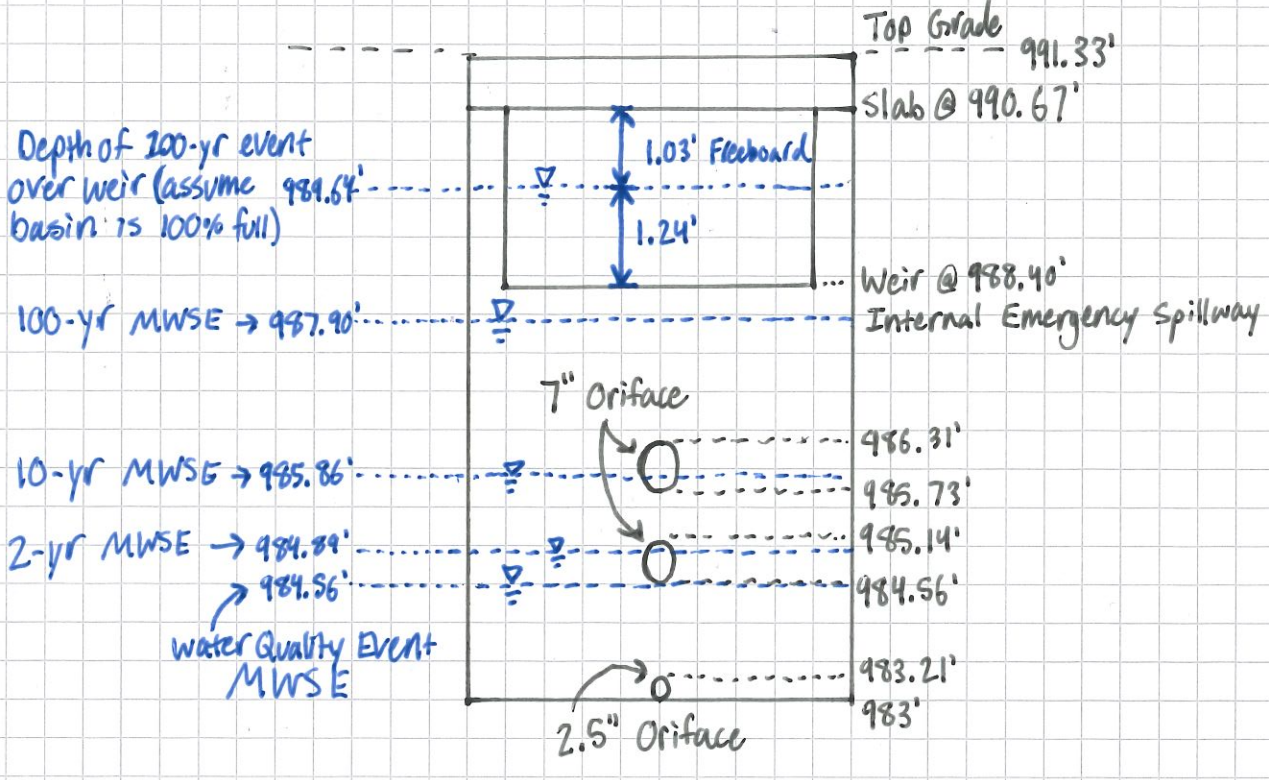
StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM

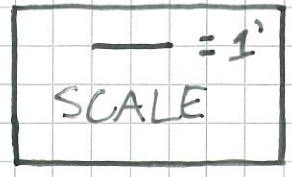
4640 TRUEMAN BLVD
HILLIARD, OH 43026

Advanced Drainage Systems, Inc.

SHEET

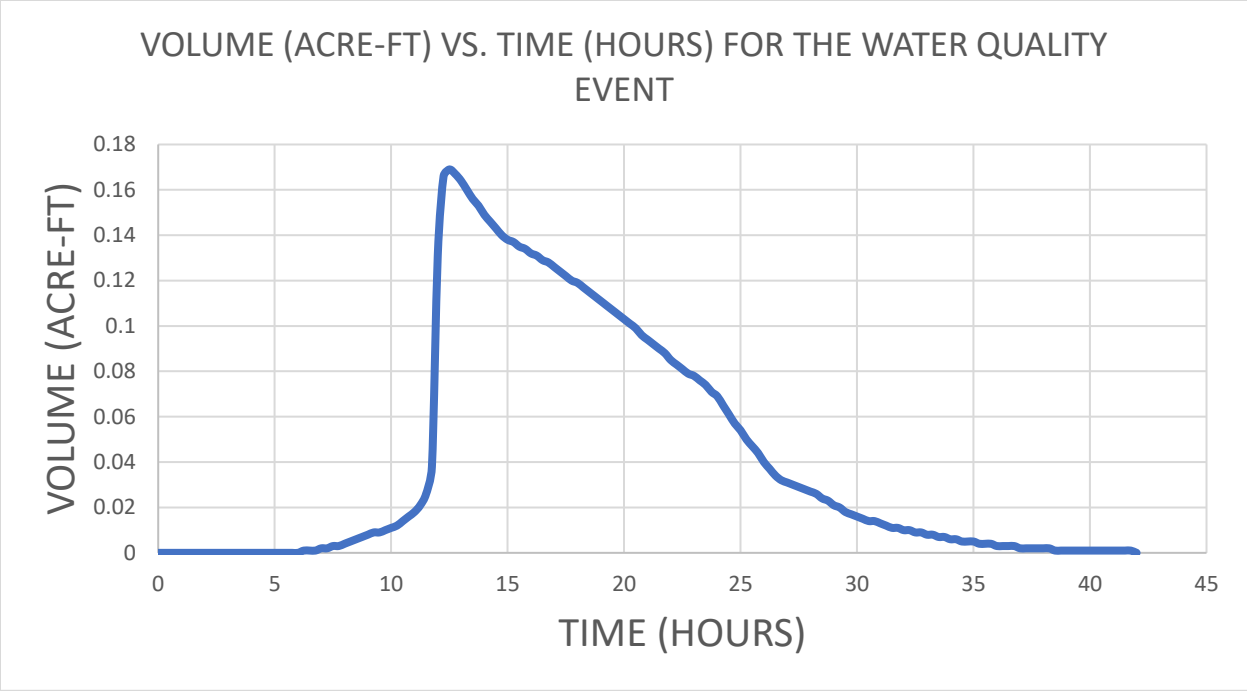
APPENDIX F: Outlet Structure Detail


Top Grade
991.33'
Slab @ 990.67'
Depth of 100-yr event over weir (assume basin is 100% full)
989.64'
1.03' Freeboard
1.24'
Weir @ 988.40'
Internal Emergency Spillway
100-yr MWSE → 987.90'
7" Orifice
986.31'
10-yr MWSE → 985.86'
985.73'
2-yr MWSE → 984.89'
985.14'
984.56'
984.56'
Water Quality Event MWSE
983.21'
983'
2.5" Orifice


= 1'
SCALE

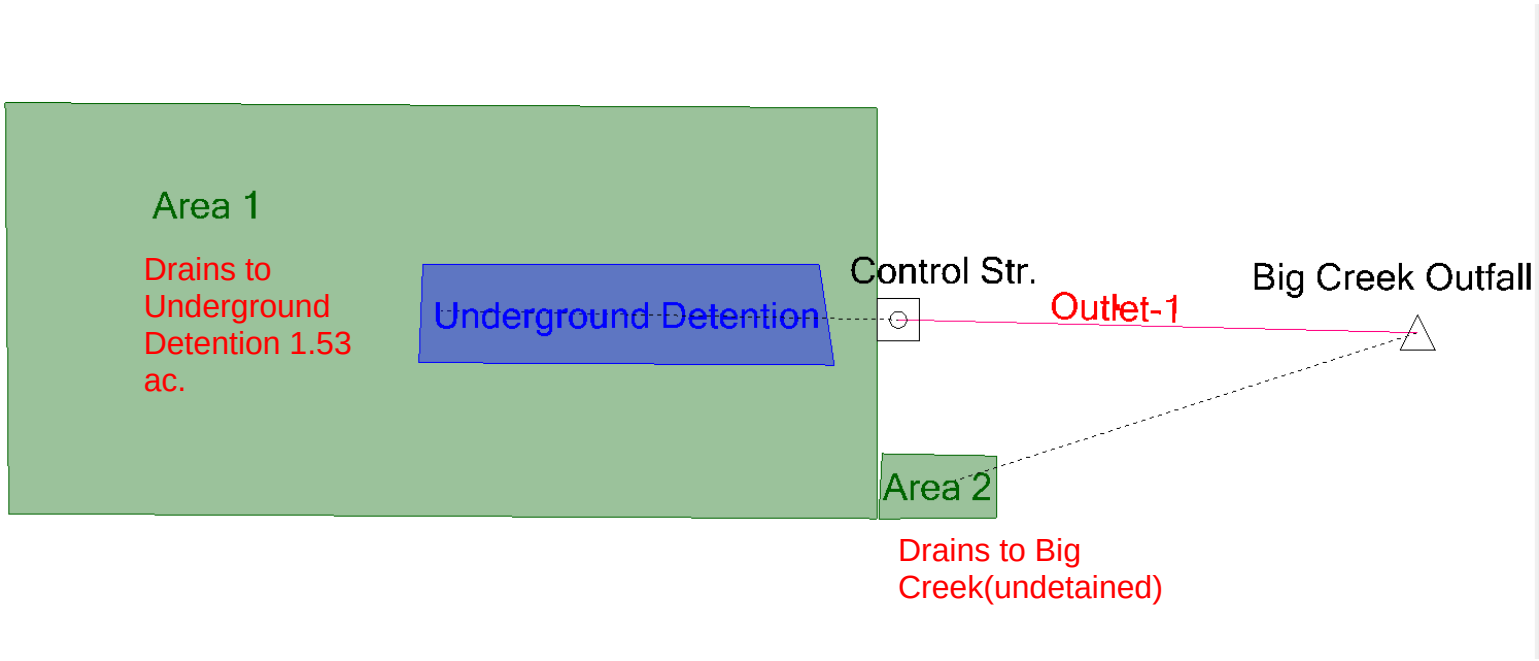
APPENDIX G: Water Quality Event Summary

Project:	Capital Builders		By:	LLG	Date:	6-Jul-23
Location:	Lee's Summit, MO		Checked:	PJJ	Date:	7-Jul-23
Required Volume Calculation						
*WQv = P * Rv * A / 12 (ac-ft)*						
P = Water Quality Storm rainfall depth = 1.37 in.						
A = Local Treatment Drainage Area (acres)						
*Rv = Volumetric Runoff Coefficient = 0.05 + 0.009 * I*						
I = Percent Site Imperviousness (%)						
Drainage Area:	1.53	acres		WQv (required):	0.130	ac-ft
% Impervious:	77	%				


VOLUME (ACRE-FT) VS. TIME (HOURS) FOR THE WATER QUALITY EVENT
VOLUME (ACRE-FT)
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
5
10
15
20
25
30
35
40
45
TIME (HOURS)

APPENDIX H: PondPack Modeling

Pondpack Model Layout



Project Summary	
Title	CAPITAL BUILDERS - LEE'S SUMMIT FLEX SPACE
Engineer	PATRICK J. JOYCE
Company	KIMLEY-HORN
Date	7/12/2023

Notes

Table of Contents

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Area 1	2 Year	2	0.320	11.950	5.60
Area 1	10 Year	10	0.554	11.950	9.42
Area 1	100 Year	100	0.992	11.950	16.26
Area 2	2 Year	2	0.006	11.950	0.10
Area 2	10 Year	10	0.010	11.950	0.15
Area 2	100 Year	100	0.016	11.950	0.25

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
Big Creek Outfall	2 Year	2	0.326	12.450	0.55
Big Creek Outfall	10 Year	10	0.563	12.200	1.60
Big Creek Outfall	100 Year	100	1.008	12.100	4.29

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Underground Detention (IN)	2 Year	2	0.320	11.950	5.60	(N/A)	(N/A)
Underground Detention (OUT)	2 Year	2	0.319	12.500	0.54	984.88	0.167
Underground Detention (IN)	10 Year	10	0.554	11.950	9.42	(N/A)	(N/A)
Underground Detention (OUT)	10 Year	10	0.554	12.200	1.57	985.83	0.275
Underground Detention (IN)	100 Year	100	0.992	11.950	16.26	(N/A)	(N/A)
Underground Detention (OUT)	100 Year	100	0.992	12.150	4.21	987.82	0.467

Time-Depth Curve: 10 Year	
Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.5	0.5	0.5	0.5	0.5
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.6	0.6	0.6	0.6	0.6
7.500	0.6	0.6	0.6	0.7	0.7
8.000	0.7	0.7	0.7	0.7	0.7
8.500	0.7	0.8	0.8	0.8	0.8
9.000	0.8	0.9	0.9	0.9	0.9
9.500	0.9	0.9	1.0	1.0	1.0
10.000	1.0	1.0	1.1	1.1	1.1
10.500	1.2	1.2	1.2	1.3	1.3
11.000	1.3	1.4	1.4	1.5	1.5
11.500	1.6	1.7	2.0	2.4	3.2
12.000	3.8	3.9	4.0	4.0	4.1
12.500	4.2	4.2	4.3	4.3	4.3
13.000	4.4	4.4	4.4	4.5	4.5
13.500	4.5	4.5	4.6	4.6	4.6
14.000	4.6	4.7	4.7	4.7	4.7
14.500	4.7	4.8	4.8	4.8	4.8
15.000	4.8	4.8	4.9	4.9	4.9
15.500	4.9	4.9	4.9	5.0	5.0
16.000	5.0	5.0	5.0	5.0	5.0
16.500	5.0	5.1	5.1	5.1	5.1
17.000	5.1	5.1	5.1	5.1	5.1

Subsection: Time-Depth Curve
Label: SCS TYPE II 24 HR
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	5.2	5.2	5.2	5.2	5.2
18.000	5.2	5.2	5.2	5.2	5.3
18.500	5.3	5.3	5.3	5.3	5.3
19.000	5.3	5.3	5.3	5.3	5.3
19.500	5.3	5.4	5.4	5.4	5.4
20.000	5.4	5.4	5.4	5.4	5.4
20.500	5.4	5.4	5.4	5.4	5.5
21.000	5.5	5.5	5.5	5.5	5.5
21.500	5.5	5.5	5.5	5.5	5.5
22.000	5.5	5.5	5.5	5.6	5.6
22.500	5.6	5.6	5.6	5.6	5.6
23.000	5.6	5.6	5.6	5.6	5.6
23.500	5.6	5.6	5.6	5.6	5.7
24.000	5.7	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: SCS TYPE II 24 HR
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time-Depth Curve: 100 Year	
Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.1	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.2	0.2	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.3	0.3	0.3	0.3	0.3
3.000	0.3	0.3	0.3	0.4	0.4
3.500	0.4	0.4	0.4	0.4	0.4
4.000	0.4	0.5	0.5	0.5	0.5
4.500	0.5	0.5	0.5	0.6	0.6
5.000	0.6	0.6	0.6	0.6	0.6
5.500	0.7	0.7	0.7	0.7	0.7
6.000	0.7	0.8	0.8	0.8	0.8
6.500	0.8	0.8	0.9	0.9	0.9
7.000	0.9	0.9	1.0	1.0	1.0
7.500	1.0	1.0	1.0	1.1	1.1
8.000	1.1	1.1	1.2	1.2	1.2
8.500	1.2	1.2	1.3	1.3	1.3
9.000	1.4	1.4	1.4	1.4	1.5
9.500	1.5	1.5	1.6	1.6	1.6
10.000	1.7	1.7	1.7	1.8	1.8
10.500	1.9	1.9	2.0	2.0	2.1
11.000	2.2	2.2	2.3	2.4	2.5
11.500	2.6	2.8	3.3	4.0	5.2
12.000	6.1	6.3	6.4	6.6	6.7
12.500	6.8	6.9	6.9	7.0	7.1
13.000	7.1	7.2	7.2	7.3	7.3
13.500	7.4	7.4	7.5	7.5	7.5
14.000	7.6	7.6	7.6	7.7	7.7
14.500	7.7	7.8	7.8	7.8	7.8
15.000	7.9	7.9	7.9	8.0	8.0
15.500	8.0	8.0	8.1	8.1	8.1
16.000	8.1	8.1	8.2	8.2	8.2
16.500	8.2	8.2	8.3	8.3	8.3
17.000	8.3	8.3	8.4	8.4	8.4

Subsection: Time-Depth Curve
Label: SCS TYPE II 24 HR
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	8.4	8.4	8.4	8.5	8.5
18.000	8.5	8.5	8.5	8.5	8.6
18.500	8.6	8.6	8.6	8.6	8.6
19.000	8.7	8.7	8.7	8.7	8.7
19.500	8.7	8.7	8.7	8.8	8.8
20.000	8.8	8.8	8.8	8.8	8.8
20.500	8.8	8.9	8.9	8.9	8.9
21.000	8.9	8.9	8.9	8.9	9.0
21.500	9.0	9.0	9.0	9.0	9.0
22.000	9.0	9.0	9.0	9.1	9.1
22.500	9.1	9.1	9.1	9.1	9.1
23.000	9.1	9.1	9.1	9.2	9.2
23.500	9.2	9.2	9.2	9.2	9.2
24.000	9.2	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
Label: SCS TYPE II 24 HR
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time-Depth Curve: 2 Year	
Label	2 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.5	0.6	0.6	0.6	0.6
9.500	0.6	0.6	0.6	0.6	0.7
10.000	0.7	0.7	0.7	0.7	0.7
10.500	0.8	0.8	0.8	0.8	0.8
11.000	0.9	0.9	0.9	1.0	1.0
11.500	1.0	1.1	1.3	1.6	2.1
12.000	2.5	2.5	2.6	2.6	2.7
12.500	2.7	2.8	2.8	2.8	2.8
13.000	2.9	2.9	2.9	2.9	2.9
13.500	3.0	3.0	3.0	3.0	3.0
14.000	3.0	3.0	3.1	3.1	3.1
14.500	3.1	3.1	3.1	3.1	3.1
15.000	3.2	3.2	3.2	3.2	3.2
15.500	3.2	3.2	3.2	3.2	3.2
16.000	3.3	3.3	3.3	3.3	3.3
16.500	3.3	3.3	3.3	3.3	3.3
17.000	3.3	3.3	3.4	3.4	3.4

Subsection: Time-Depth Curve
Label: SCS TYPE II 24 HR
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	3.4	3.4	3.4	3.4	3.4
18.000	3.4	3.4	3.4	3.4	3.4
18.500	3.4	3.4	3.5	3.5	3.5
19.000	3.5	3.5	3.5	3.5	3.5
19.500	3.5	3.5	3.5	3.5	3.5
20.000	3.5	3.5	3.5	3.5	3.5
20.500	3.5	3.6	3.6	3.6	3.6
21.000	3.6	3.6	3.6	3.6	3.6
21.500	3.6	3.6	3.6	3.6	3.6
22.000	3.6	3.6	3.6	3.6	3.6
22.500	3.6	3.6	3.6	3.6	3.7
23.000	3.7	3.7	3.7	3.7	3.7
23.500	3.7	3.7	3.7	3.7	3.7
24.000	3.7	(N/A)	(N/A)	(N/A)	(N/A)

Summary for Hydrograph Addition at 'Big Creek Outfall'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Area 2
Outlet-1	Underground Detention

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Area 2	0.016	11.950	0.25
Flow (From)	Outlet-1	0.992	12.150	4.21
Flow (In)	Big Creek Outfall	1.008	12.100	4.29

Summary for Hydrograph Addition at 'Big Creek Outfall'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Area 2
Outlet-1	Underground Detention

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Area 2	0.006	11.950	0.10
Flow (From)	Outlet-1	0.319	12.500	0.54
Flow (In)	Big Creek Outfall	0.326	12.450	0.55

Summary for Hydrograph Addition at 'Big Creek Outfall'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Area 2
Outlet-1	Underground Detention

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Area 2	0.010	11.950	0.15
Flow (From)	Outlet-1	0.554	12.200	1.57
Flow (In)	Big Creek Outfall	0.563	12.200	1.60

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	983.08	983.08	983.08	983.08	983.08
0.250	983.08	983.08	983.08	983.08	983.08
0.500	983.08	983.08	983.08	983.08	983.08
0.750	983.08	983.08	983.08	983.08	983.08
1.000	983.08	983.08	983.08	983.08	983.08
1.250	983.08	983.08	983.08	983.08	983.08
1.500	983.08	983.08	983.08	983.08	983.08
1.750	983.08	983.08	983.08	983.08	983.08
2.000	983.08	983.08	983.08	983.08	983.08
2.250	983.08	983.08	983.08	983.08	983.08
2.500	983.08	983.08	983.08	983.08	983.08
2.750	983.08	983.08	983.08	983.08	983.08
3.000	983.08	983.08	983.08	983.08	983.08
3.250	983.08	983.08	983.08	983.08	983.08
3.500	983.08	983.08	983.08	983.08	983.08
3.750	983.08	983.08	983.08	983.08	983.08
4.000	983.08	983.08	983.08	983.08	983.08
4.250	983.08	983.08	983.08	983.08	983.08
4.500	983.08	983.08	983.08	983.08	983.08
4.750	983.08	983.08	983.08	983.08	983.08
5.000	983.08	983.08	983.08	983.08	983.08
5.250	983.08	983.08	983.08	983.08	983.08
5.500	983.08	983.08	983.08	983.08	983.08
5.750	983.08	983.08	983.08	983.08	983.08
6.000	983.08	983.08	983.08	983.08	983.09
6.250	983.09	983.09	983.09	983.09	983.09
6.500	983.09	983.09	983.09	983.09	983.09
6.750	983.09	983.10	983.10	983.10	983.10
7.000	983.10	983.10	983.10	983.10	983.10
7.250	983.11	983.11	983.11	983.11	983.11
7.500	983.11	983.11	983.11	983.12	983.12
7.750	983.12	983.12	983.12	983.12	983.13
8.000	983.13	983.13	983.13	983.13	983.13
8.250	983.14	983.14	983.14	983.14	983.14
8.500	983.15	983.15	983.15	983.15	983.16
8.750	983.16	983.16	983.17	983.17	983.17
9.000	983.17	983.18	983.18	983.18	983.19
9.250	983.19	983.19	983.20	983.20	983.20
9.500	983.21	983.21	983.22	983.22	983.22
9.750	983.23	983.23	983.23	983.24	983.24
10.000	983.25	983.25	983.26	983.26	983.27
10.250	983.27	983.28	983.29	983.29	983.30

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.500	983.31	983.31	983.32	983.33	983.34
10.750	983.35	983.36	983.37	983.38	983.39
11.000	983.40	983.41	983.42	983.44	983.45
11.250	983.47	983.49	983.50	983.52	983.54
11.500	983.57	983.59	983.61	983.65	983.70
11.750	983.77	983.88	984.02	984.19	984.37
12.000	984.55	984.69	984.78	984.82	984.84
12.250	984.85	984.86	984.87	984.87	984.88
12.500	984.88	984.87	984.87	984.87	984.86
12.750	984.86	984.85	984.85	984.84	984.84
13.000	984.83	984.83	984.82	984.81	984.81
13.250	984.80	984.80	984.79	984.78	984.78
13.500	984.77	984.77	984.76	984.75	984.75
13.750	984.74	984.74	984.73	984.73	984.72
14.000	984.71	984.71	984.70	984.70	984.69
14.250	984.69	984.68	984.68	984.67	984.67
14.500	984.66	984.66	984.66	984.65	984.65
14.750	984.64	984.64	984.64	984.63	984.63
15.000	984.63	984.62	984.62	984.62	984.61
15.250	984.61	984.61	984.61	984.60	984.60
15.500	984.60	984.59	984.59	984.59	984.59
15.750	984.58	984.58	984.58	984.58	984.57
16.000	984.57	984.57	984.57	984.56	984.56
16.250	984.56	984.56	984.55	984.55	984.55
16.500	984.55	984.54	984.54	984.54	984.54
16.750	984.53	984.53	984.53	984.52	984.52
17.000	984.52	984.52	984.51	984.51	984.51
17.250	984.50	984.50	984.50	984.49	984.49
17.500	984.49	984.49	984.48	984.48	984.48
17.750	984.47	984.47	984.47	984.46	984.46
18.000	984.46	984.45	984.45	984.45	984.45
18.250	984.44	984.44	984.44	984.43	984.43
18.500	984.43	984.42	984.42	984.42	984.41
18.750	984.41	984.41	984.40	984.40	984.40
19.000	984.39	984.39	984.39	984.38	984.38
19.250	984.38	984.37	984.37	984.36	984.36
19.500	984.36	984.35	984.35	984.35	984.34
19.750	984.34	984.34	984.33	984.33	984.33
20.000	984.32	984.32	984.31	984.31	984.31
20.250	984.30	984.30	984.30	984.29	984.29
20.500	984.28	984.28	984.28	984.27	984.27
20.750	984.27	984.26	984.26	984.26	984.25

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
21.000	984.25	984.24	984.24	984.24	984.23
21.250	984.23	984.23	984.22	984.22	984.22
21.500	984.21	984.21	984.21	984.20	984.20
21.750	984.20	984.19	984.19	984.18	984.18
22.000	984.18	984.17	984.17	984.17	984.16
22.250	984.16	984.16	984.15	984.15	984.15
22.500	984.14	984.14	984.14	984.13	984.13
22.750	984.13	984.12	984.12	984.12	984.11
23.000	984.11	984.11	984.10	984.10	984.10
23.250	984.09	984.09	984.09	984.08	984.08
23.500	984.07	984.07	984.07	984.06	984.06
23.750	984.05	984.05	984.05	984.04	984.04
24.000	984.03	984.03	984.02	984.02	984.01
24.250	984.00	984.00	983.99	983.99	983.98
24.500	983.97	983.97	983.96	983.95	983.95
24.750	983.94	983.94	983.93	983.92	983.92
25.000	983.91	983.91	983.90	983.89	983.89
25.250	983.88	983.88	983.87	983.86	983.86
25.500	983.85	983.85	983.84	983.84	983.83
25.750	983.82	983.82	983.81	983.81	983.80
26.000	983.80	983.79	983.79	983.78	983.78
26.250	983.77	983.76	983.76	983.75	983.75
26.500	983.74	983.74	983.73	983.73	983.72
26.750	983.72	983.71	983.71	983.70	983.70
27.000	983.69	983.69	983.68	983.68	983.67
27.250	983.67	983.66	983.66	983.65	983.65
27.500	983.64	983.64	983.63	983.63	983.62
27.750	983.62	983.62	983.61	983.61	983.60
28.000	983.60	983.59	983.59	983.58	983.58
28.250	983.57	983.56	983.55	983.55	983.54
28.500	983.53	983.52	983.52	983.51	983.50
28.750	983.50	983.49	983.48	983.48	983.47
29.000	983.46	983.46	983.45	983.45	983.44
29.250	983.43	983.43	983.42	983.42	983.41
29.500	983.41	983.40	983.40	983.39	983.39
29.750	983.38	983.38	983.37	983.37	983.36
30.000	983.36	983.35	983.35	983.34	983.34
30.250	983.33	983.33	983.33	983.32	983.32
30.500	983.31	983.31	983.31	983.30	983.30
30.750	983.30	983.29	983.29	983.29	983.28
31.000	983.28	983.28	983.27	983.27	983.27
31.250	983.26	983.26	983.26	983.26	983.25

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
31.500	983.25	983.25	983.24	983.24	983.24
31.750	983.24	983.23	983.23	983.23	983.23
32.000	983.22	983.22	983.22	983.22	983.21
32.250	983.21	983.21	983.21	983.21	983.20
32.500	983.20	983.20	983.20	983.20	983.19
32.750	983.19	983.19	983.19	983.19	983.19
33.000	983.18	983.18	983.18	983.18	983.18
33.250	983.18	983.17	983.17	983.17	983.17
33.500	983.17	983.17	983.17	983.16	983.16
33.750	983.16	983.16	983.16	983.16	983.16
34.000	983.15	983.15	983.15	983.15	983.15
34.250	983.15	983.15	983.15	983.15	983.14
34.500	983.14	983.14	983.14	983.14	983.14
34.750	983.14	983.14	983.14	983.14	983.13
35.000	983.13	983.13	983.13	983.13	983.13
35.250	983.13	983.13	983.13	983.13	983.13
35.500	983.13	983.13	983.12	983.12	983.12
35.750	983.12	983.12	983.12	983.12	983.12
36.000	983.12	983.12	983.12	983.12	983.12
36.250	983.12	983.12	983.11	983.11	983.11
36.500	983.11	983.11	983.11	983.11	983.11
36.750	983.11	983.11	983.11	983.11	983.11
37.000	983.11	983.11	983.11	983.11	983.11
37.250	983.11	983.11	983.11	983.10	983.10
37.500	983.10	983.10	983.10	983.10	983.10
37.750	983.10	983.10	983.10	983.10	983.10
38.000	983.10	983.10	983.10	983.10	983.10
38.250	983.10	983.10	983.10	983.10	983.10
38.500	983.10	983.10	983.10	983.10	983.10
38.750	983.10	983.10	983.10	983.10	983.09
39.000	983.09	983.09	983.09	983.09	983.09
39.250	983.09	983.09	983.09	983.09	983.09
39.500	983.09	983.09	983.09	983.09	983.09
39.750	983.09	983.09	983.09	983.09	983.09
40.000	983.09	983.09	983.09	983.09	983.09
40.250	983.09	983.09	983.09	983.09	983.09
40.500	983.09	983.09	983.09	983.09	983.09
40.750	983.09	983.09	983.09	983.09	983.09
41.000	983.09	983.09	983.09	983.09	983.09
41.250	983.09	983.09	983.09	983.09	983.09
41.500	983.09	983.09	983.09	983.09	983.09
41.750	983.09	983.09	983.09	983.09	983.09

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
42.000	983.09	983.09	983.09	983.09	983.09
42.250	983.09	983.08	983.08	983.08	983.08
42.500	983.08	983.08	983.08	983.08	983.08
42.750	983.08	983.08	983.08	983.08	983.08
43.000	983.08	983.08	983.08	983.08	983.08
43.250	983.08	983.08	983.08	983.08	983.08
43.500	983.08	983.08	983.08	983.08	983.08
43.750	983.08	983.08	983.08	983.08	983.08
44.000	983.08	983.08	983.08	983.08	983.08
44.250	983.08	983.08	983.08	983.08	983.08
44.500	983.08	983.08	983.08	983.08	983.08
44.750	983.08	983.08	983.08	983.08	983.08
45.000	983.08	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	983.08	983.08	983.08	983.08	983.08
0.250	983.08	983.08	983.08	983.08	983.08
0.500	983.08	983.08	983.08	983.08	983.08
0.750	983.08	983.08	983.08	983.08	983.08
1.000	983.08	983.08	983.08	983.08	983.08
1.250	983.08	983.08	983.08	983.08	983.08
1.500	983.08	983.08	983.08	983.08	983.08
1.750	983.08	983.08	983.08	983.08	983.08
2.000	983.08	983.08	983.08	983.08	983.08
2.250	983.08	983.08	983.08	983.08	983.08
2.500	983.08	983.08	983.08	983.08	983.08
2.750	983.08	983.08	983.08	983.08	983.08
3.000	983.08	983.08	983.08	983.08	983.08
3.250	983.08	983.08	983.08	983.08	983.08
3.500	983.08	983.08	983.08	983.08	983.08
3.750	983.08	983.08	983.08	983.08	983.08
4.000	983.08	983.08	983.08	983.08	983.08
4.250	983.08	983.08	983.08	983.08	983.09
4.500	983.09	983.09	983.09	983.09	983.09
4.750	983.09	983.09	983.09	983.09	983.10
5.000	983.10	983.10	983.10	983.10	983.10
5.250	983.10	983.11	983.11	983.11	983.11
5.500	983.11	983.11	983.12	983.12	983.12
5.750	983.12	983.12	983.13	983.13	983.13
6.000	983.13	983.13	983.14	983.14	983.14
6.250	983.14	983.15	983.15	983.15	983.15
6.500	983.16	983.16	983.16	983.17	983.17
6.750	983.17	983.17	983.18	983.18	983.18
7.000	983.19	983.19	983.19	983.20	983.20
7.250	983.20	983.21	983.21	983.21	983.22
7.500	983.22	983.22	983.23	983.23	983.23
7.750	983.24	983.24	983.24	983.25	983.25
8.000	983.25	983.26	983.26	983.27	983.27
8.250	983.27	983.28	983.28	983.29	983.29
8.500	983.30	983.30	983.31	983.31	983.32
8.750	983.33	983.33	983.34	983.34	983.35
9.000	983.36	983.36	983.37	983.38	983.39
9.250	983.39	983.40	983.41	983.41	983.42
9.500	983.43	983.43	983.44	983.45	983.46
9.750	983.46	983.47	983.48	983.49	983.50
10.000	983.51	983.52	983.53	983.54	983.55
10.250	983.56	983.57	983.58	983.59	983.59

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.500	983.60	983.61	983.62	983.63	983.64
10.750	983.65	983.66	983.67	983.68	983.69
11.000	983.71	983.72	983.73	983.75	983.77
11.250	983.78	983.80	983.82	983.85	983.87
11.500	983.90	983.93	983.97	984.04	984.13
11.750	984.24	984.39	984.58	984.85	985.16
12.000	985.45	985.67	985.79	985.83	985.83
12.250	985.83	985.82	985.80	985.79	985.77
12.500	985.75	985.72	985.70	985.67	985.64
12.750	985.62	985.59	985.56	985.54	985.51
13.000	985.49	985.46	985.44	985.41	985.39
13.250	985.37	985.34	985.32	985.30	985.28
13.500	985.26	985.24	985.22	985.20	985.18
13.750	985.16	985.14	985.12	985.10	985.09
14.000	985.07	985.05	985.04	985.02	985.01
14.250	985.00	984.98	984.97	984.96	984.94
14.500	984.93	984.92	984.91	984.90	984.89
14.750	984.88	984.87	984.86	984.85	984.84
15.000	984.83	984.82	984.82	984.81	984.80
15.250	984.79	984.78	984.78	984.77	984.76
15.500	984.76	984.75	984.75	984.74	984.73
15.750	984.73	984.72	984.72	984.71	984.71
16.000	984.70	984.70	984.69	984.69	984.68
16.250	984.68	984.67	984.67	984.66	984.66
16.500	984.66	984.65	984.65	984.65	984.64
16.750	984.64	984.64	984.63	984.63	984.63
17.000	984.63	984.62	984.62	984.62	984.61
17.250	984.61	984.61	984.61	984.61	984.60
17.500	984.60	984.60	984.60	984.60	984.59
17.750	984.59	984.59	984.59	984.59	984.58
18.000	984.58	984.58	984.58	984.58	984.58
18.250	984.57	984.57	984.57	984.57	984.57
18.500	984.57	984.56	984.56	984.56	984.56
18.750	984.56	984.55	984.55	984.55	984.55
19.000	984.55	984.54	984.54	984.54	984.54
19.250	984.54	984.53	984.53	984.53	984.53
19.500	984.52	984.52	984.52	984.52	984.51
19.750	984.51	984.51	984.51	984.50	984.50
20.000	984.50	984.49	984.49	984.49	984.49
20.250	984.48	984.48	984.48	984.48	984.47
20.500	984.47	984.47	984.46	984.46	984.46
20.750	984.46	984.45	984.45	984.45	984.44

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
21.000	984.44	984.44	984.44	984.43	984.43
21.250	984.43	984.43	984.42	984.42	984.42
21.500	984.41	984.41	984.41	984.41	984.40
21.750	984.40	984.40	984.39	984.39	984.39
22.000	984.39	984.38	984.38	984.38	984.38
22.250	984.37	984.37	984.37	984.36	984.36
22.500	984.36	984.36	984.35	984.35	984.35
22.750	984.35	984.34	984.34	984.34	984.33
23.000	984.33	984.33	984.33	984.32	984.32
23.250	984.32	984.32	984.31	984.31	984.31
23.500	984.30	984.30	984.30	984.30	984.29
23.750	984.29	984.29	984.28	984.28	984.28
24.000	984.28	984.27	984.27	984.26	984.26
24.250	984.25	984.25	984.24	984.23	984.23
24.500	984.22	984.22	984.21	984.21	984.20
24.750	984.19	984.19	984.18	984.18	984.17
25.000	984.17	984.16	984.15	984.15	984.14
25.250	984.14	984.13	984.13	984.12	984.12
25.500	984.11	984.10	984.10	984.09	984.09
25.750	984.08	984.08	984.07	984.06	984.06
26.000	984.05	984.04	984.04	984.03	984.02
26.250	984.02	984.01	984.00	984.00	983.99
26.500	983.98	983.98	983.97	983.97	983.96
26.750	983.95	983.95	983.94	983.94	983.93
27.000	983.92	983.92	983.91	983.91	983.90
27.250	983.89	983.89	983.88	983.88	983.87
27.500	983.86	983.86	983.85	983.85	983.84
27.750	983.84	983.83	983.82	983.82	983.81
28.000	983.81	983.80	983.80	983.79	983.79
28.250	983.78	983.77	983.77	983.76	983.76
28.500	983.75	983.75	983.74	983.74	983.73
28.750	983.73	983.72	983.72	983.71	983.71
29.000	983.70	983.70	983.69	983.69	983.68
29.250	983.68	983.67	983.67	983.66	983.66
29.500	983.65	983.65	983.64	983.64	983.63
29.750	983.63	983.62	983.62	983.61	983.61
30.000	983.61	983.60	983.60	983.59	983.59
30.250	983.58	983.58	983.57	983.56	983.55
30.500	983.55	983.54	983.53	983.52	983.52
30.750	983.51	983.50	983.50	983.49	983.48
31.000	983.48	983.47	983.46	983.46	983.45
31.250	983.44	983.44	983.43	983.43	983.42

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
31.500	983.42	983.41	983.41	983.40	983.39
31.750	983.39	983.38	983.38	983.37	983.37
32.000	983.37	983.36	983.36	983.35	983.35
32.250	983.34	983.34	983.33	983.33	983.33
32.500	983.32	983.32	983.31	983.31	983.31
32.750	983.30	983.30	983.30	983.29	983.29
33.000	983.29	983.28	983.28	983.28	983.27
33.250	983.27	983.27	983.26	983.26	983.26
33.500	983.25	983.25	983.25	983.25	983.24
33.750	983.24	983.24	983.24	983.23	983.23
34.000	983.23	983.23	983.22	983.22	983.22
34.250	983.22	983.21	983.21	983.21	983.21
34.500	983.21	983.20	983.20	983.20	983.20
34.750	983.20	983.19	983.19	983.19	983.19
35.000	983.19	983.19	983.18	983.18	983.18
35.250	983.18	983.18	983.18	983.17	983.17
35.500	983.17	983.17	983.17	983.17	983.17
35.750	983.16	983.16	983.16	983.16	983.16
36.000	983.16	983.16	983.15	983.15	983.15
36.250	983.15	983.15	983.15	983.15	983.15
36.500	983.15	983.14	983.14	983.14	983.14
36.750	983.14	983.14	983.14	983.14	983.14
37.000	983.14	983.13	983.13	983.13	983.13
37.250	983.13	983.13	983.13	983.13	983.13
37.500	983.13	983.13	983.13	983.13	983.12
37.750	983.12	983.12	983.12	983.12	983.12
38.000	983.12	983.12	983.12	983.12	983.12
38.250	983.12	983.12	983.12	983.12	983.11
38.500	983.11	983.11	983.11	983.11	983.11
38.750	983.11	983.11	983.11	983.11	983.11
39.000	983.11	983.11	983.11	983.11	983.11
39.250	983.11	983.11	983.11	983.11	983.11
39.500	983.10	983.10	983.10	983.10	983.10
39.750	983.10	983.10	983.10	983.10	983.10
40.000	983.10	983.10	983.10	983.10	983.10
40.250	983.10	983.10	983.10	983.10	983.10
40.500	983.10	983.10	983.10	983.10	983.10
40.750	983.10	983.10	983.10	983.10	983.10
41.000	983.10	983.09	983.09	983.09	983.09
41.250	983.09	983.09	983.09	983.09	983.09
41.500	983.09	983.09	983.09	983.09	983.09
41.750	983.09	983.09	983.09	983.09	983.09

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
42.000	983.09	983.09	983.09	983.09	983.09
42.250	983.09	983.09	983.09	983.09	983.09
42.500	983.09	983.09	983.09	983.09	983.09
42.750	983.09	983.09	983.09	983.09	983.09
43.000	983.09	983.09	983.09	983.09	983.09
43.250	983.09	983.09	983.09	983.09	983.09
43.500	983.09	983.09	983.09	983.09	983.09
43.750	983.09	983.09	983.09	983.09	983.09
44.000	983.09	983.09	983.09	983.09	983.09
44.250	983.09	983.09	983.09	983.08	983.08
44.500	983.08	983.08	983.08	983.08	983.08
44.750	983.08	983.08	983.08	983.08	983.08
45.000	983.08	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	983.08	983.08	983.08	983.08	983.08
0.250	983.08	983.08	983.08	983.08	983.08
0.500	983.08	983.08	983.08	983.08	983.08
0.750	983.08	983.08	983.08	983.08	983.08
1.000	983.08	983.08	983.08	983.08	983.08
1.250	983.08	983.08	983.08	983.08	983.08
1.500	983.08	983.08	983.08	983.08	983.08
1.750	983.08	983.08	983.08	983.08	983.08
2.000	983.08	983.08	983.08	983.08	983.08
2.250	983.08	983.08	983.08	983.08	983.08
2.500	983.08	983.08	983.08	983.08	983.08
2.750	983.08	983.08	983.08	983.08	983.09
3.000	983.09	983.09	983.09	983.09	983.09
3.250	983.09	983.10	983.10	983.10	983.10
3.500	983.10	983.11	983.11	983.11	983.11
3.750	983.12	983.12	983.12	983.12	983.13
4.000	983.13	983.13	983.14	983.14	983.14
4.250	983.15	983.15	983.15	983.16	983.16
4.500	983.16	983.17	983.17	983.17	983.18
4.750	983.18	983.19	983.19	983.20	983.20
5.000	983.20	983.21	983.21	983.22	983.22
5.250	983.23	983.23	983.24	983.24	983.25
5.500	983.25	983.26	983.26	983.27	983.27
5.750	983.28	983.29	983.29	983.30	983.30
6.000	983.31	983.31	983.32	983.33	983.33
6.250	983.34	983.34	983.35	983.36	983.36
6.500	983.37	983.37	983.38	983.39	983.39
6.750	983.40	983.41	983.41	983.42	983.43
7.000	983.43	983.44	983.45	983.45	983.46
7.250	983.47	983.48	983.48	983.49	983.50
7.500	983.50	983.51	983.52	983.53	983.53
7.750	983.54	983.55	983.56	983.56	983.57
8.000	983.58	983.58	983.59	983.59	983.60
8.250	983.60	983.61	983.61	983.62	983.62
8.500	983.63	983.64	983.64	983.65	983.66
8.750	983.66	983.67	983.68	983.69	983.70
9.000	983.70	983.71	983.72	983.73	983.74
9.250	983.75	983.76	983.77	983.78	983.78
9.500	983.79	983.80	983.81	983.82	983.83
9.750	983.84	983.85	983.86	983.88	983.89
10.000	983.90	983.91	983.93	983.94	983.95
10.250	983.97	983.98	984.00	984.02	984.03

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.500	984.05	984.07	984.09	984.10	984.12
10.750	984.14	984.16	984.18	984.20	984.22
11.000	984.24	984.26	984.29	984.31	984.34
11.250	984.37	984.40	984.44	984.47	984.51
11.500	984.55	984.60	984.67	984.77	984.91
11.750	985.10	985.35	985.69	986.16	986.71
12.000	987.22	987.61	987.82	987.82	987.75
12.250	987.66	987.57	987.47	987.38	987.28
12.500	987.19	987.08	986.99	986.90	986.81
12.750	986.72	986.64	986.56	986.49	986.42
13.000	986.36	986.30	986.24	986.18	986.13
13.250	986.09	986.04	986.00	985.96	985.92
13.500	985.88	985.85	985.81	985.78	985.75
13.750	985.72	985.68	985.65	985.62	985.59
14.000	985.56	985.54	985.51	985.48	985.46
14.250	985.43	985.41	985.39	985.36	985.34
14.500	985.32	985.30	985.28	985.26	985.24
14.750	985.22	985.21	985.19	985.17	985.16
15.000	985.14	985.12	985.11	985.10	985.08
15.250	985.07	985.05	985.04	985.03	985.02
15.500	985.01	984.99	984.98	984.97	984.96
15.750	984.95	984.94	984.93	984.92	984.91
16.000	984.90	984.90	984.89	984.88	984.87
16.250	984.86	984.86	984.85	984.84	984.83
16.500	984.83	984.82	984.82	984.81	984.80
16.750	984.80	984.79	984.79	984.78	984.78
17.000	984.77	984.77	984.76	984.76	984.75
17.250	984.75	984.75	984.74	984.74	984.73
17.500	984.73	984.73	984.72	984.72	984.72
17.750	984.71	984.71	984.71	984.70	984.70
18.000	984.70	984.69	984.69	984.69	984.69
18.250	984.68	984.68	984.68	984.68	984.67
18.500	984.67	984.67	984.67	984.66	984.66
18.750	984.66	984.66	984.66	984.65	984.65
19.000	984.65	984.65	984.64	984.64	984.64
19.250	984.64	984.64	984.63	984.63	984.63
19.500	984.63	984.63	984.63	984.62	984.62
19.750	984.62	984.62	984.62	984.61	984.61
20.000	984.61	984.61	984.61	984.61	984.60
20.250	984.60	984.60	984.60	984.60	984.60
20.500	984.60	984.59	984.59	984.59	984.59
20.750	984.59	984.59	984.59	984.59	984.59

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
21.000	984.58	984.58	984.58	984.58	984.58
21.250	984.58	984.58	984.58	984.58	984.58
21.500	984.58	984.58	984.57	984.57	984.57
21.750	984.57	984.57	984.57	984.57	984.57
22.000	984.57	984.57	984.57	984.56	984.56
22.250	984.56	984.56	984.56	984.56	984.56
22.500	984.56	984.56	984.56	984.55	984.55
22.750	984.55	984.55	984.55	984.55	984.55
23.000	984.55	984.55	984.55	984.54	984.54
23.250	984.54	984.54	984.54	984.54	984.54
23.500	984.54	984.53	984.53	984.53	984.53
23.750	984.53	984.53	984.53	984.53	984.52
24.000	984.52	984.52	984.52	984.51	984.51
24.250	984.50	984.49	984.49	984.48	984.47
24.500	984.47	984.46	984.45	984.45	984.44
24.750	984.43	984.43	984.42	984.42	984.41
25.000	984.40	984.40	984.39	984.38	984.38
25.250	984.37	984.37	984.36	984.35	984.35
25.500	984.34	984.33	984.33	984.32	984.32
25.750	984.31	984.30	984.30	984.29	984.29
26.000	984.28	984.27	984.27	984.26	984.26
26.250	984.25	984.24	984.24	984.23	984.23
26.500	984.22	984.22	984.21	984.20	984.20
26.750	984.19	984.19	984.18	984.18	984.17
27.000	984.16	984.16	984.15	984.15	984.14
27.250	984.14	984.13	984.13	984.12	984.11
27.500	984.11	984.10	984.10	984.09	984.09
27.750	984.08	984.07	984.07	984.06	984.05
28.000	984.05	984.04	984.03	984.03	984.02
28.250	984.02	984.01	984.00	984.00	983.99
28.500	983.98	983.98	983.97	983.96	983.96
28.750	983.95	983.95	983.94	983.93	983.93
29.000	983.92	983.92	983.91	983.90	983.90
29.250	983.89	983.89	983.88	983.87	983.87
29.500	983.86	983.86	983.85	983.85	983.84
29.750	983.83	983.83	983.82	983.82	983.81
30.000	983.81	983.80	983.80	983.79	983.78
30.250	983.78	983.77	983.77	983.76	983.76
30.500	983.75	983.75	983.74	983.74	983.73
30.750	983.73	983.72	983.72	983.71	983.71
31.000	983.70	983.70	983.69	983.69	983.68
31.250	983.68	983.67	983.67	983.66	983.66

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
31.500	983.65	983.65	983.64	983.64	983.63
31.750	983.63	983.62	983.62	983.61	983.61
32.000	983.60	983.60	983.60	983.59	983.59
32.250	983.58	983.58	983.57	983.56	983.55
32.500	983.54	983.54	983.53	983.52	983.51
32.750	983.51	983.50	983.49	983.49	983.48
33.000	983.47	983.47	983.46	983.46	983.45
33.250	983.44	983.44	983.43	983.43	983.42
33.500	983.41	983.41	983.40	983.40	983.39
33.750	983.39	983.38	983.38	983.37	983.37
34.000	983.36	983.36	983.35	983.35	983.35
34.250	983.34	983.34	983.33	983.33	983.33
34.500	983.32	983.32	983.31	983.31	983.31
34.750	983.30	983.30	983.30	983.29	983.29
35.000	983.28	983.28	983.28	983.28	983.27
35.250	983.27	983.27	983.26	983.26	983.26
35.500	983.25	983.25	983.25	983.25	983.24
35.750	983.24	983.24	983.24	983.23	983.23
36.000	983.23	983.23	983.22	983.22	983.22
36.250	983.22	983.21	983.21	983.21	983.21
36.500	983.21	983.20	983.20	983.20	983.20
36.750	983.20	983.19	983.19	983.19	983.19
37.000	983.19	983.18	983.18	983.18	983.18
37.250	983.18	983.18	983.18	983.17	983.17
37.500	983.17	983.17	983.17	983.17	983.16
37.750	983.16	983.16	983.16	983.16	983.16
38.000	983.16	983.16	983.15	983.15	983.15
38.250	983.15	983.15	983.15	983.15	983.15
38.500	983.15	983.14	983.14	983.14	983.14
38.750	983.14	983.14	983.14	983.14	983.14
39.000	983.14	983.13	983.13	983.13	983.13
39.250	983.13	983.13	983.13	983.13	983.13
39.500	983.13	983.13	983.13	983.12	983.12
39.750	983.12	983.12	983.12	983.12	983.12
40.000	983.12	983.12	983.12	983.12	983.12
40.250	983.12	983.12	983.12	983.12	983.11
40.500	983.11	983.11	983.11	983.11	983.11
40.750	983.11	983.11	983.11	983.11	983.11
41.000	983.11	983.11	983.11	983.11	983.11
41.250	983.11	983.11	983.11	983.11	983.10
41.500	983.10	983.10	983.10	983.10	983.10
41.750	983.10	983.10	983.10	983.10	983.10

Subsection: Time vs. Elevation
Label: Underground Detention (OUT)
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
42.000	983.10	983.10	983.10	983.10	983.10
42.250	983.10	983.10	983.10	983.10	983.10
42.500	983.10	983.10	983.10	983.10	983.10
42.750	983.10	983.10	983.10	983.10	983.10
43.000	983.10	983.09	983.09	983.09	983.09
43.250	983.09	983.09	983.09	983.09	983.09
43.500	983.09	983.09	983.09	983.09	983.09
43.750	983.09	983.09	983.09	983.09	983.09
44.000	983.09	983.09	983.09	983.09	983.09
44.250	983.09	983.09	983.09	983.09	983.09
44.500	983.09	983.09	983.09	983.09	983.09
44.750	983.09	983.09	983.09	983.09	983.09
45.000	983.09	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.001	0.001	0.001	0.001	0.001
6.500	0.001	0.001	0.001	0.001	0.001
6.750	0.001	0.001	0.001	0.001	0.002
7.000	0.002	0.002	0.002	0.002	0.002
7.250	0.002	0.002	0.002	0.002	0.003
7.500	0.003	0.003	0.003	0.003	0.003
7.750	0.003	0.003	0.003	0.004	0.004
8.000	0.004	0.004	0.004	0.004	0.004
8.250	0.005	0.005	0.005	0.005	0.005
8.500	0.006	0.006	0.006	0.006	0.006
8.750	0.007	0.007	0.007	0.007	0.008
9.000	0.008	0.008	0.008	0.008	0.008
9.250	0.008	0.009	0.009	0.009	0.009
9.500	0.009	0.009	0.010	0.010	0.010
9.750	0.010	0.010	0.010	0.011	0.011
10.000	0.011	0.011	0.012	0.012	0.012
10.250	0.012	0.013	0.013	0.013	0.014

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.500	0.014	0.014	0.015	0.015	0.015
10.750	0.016	0.016	0.016	0.017	0.017
11.000	0.018	0.018	0.019	0.019	0.020
11.250	0.021	0.022	0.023	0.024	0.024
11.500	0.026	0.026	0.027	0.029	0.031
11.750	0.037	0.049	0.066	0.085	0.108
12.000	0.129	0.146	0.156	0.161	0.163
12.250	0.164	0.165	0.166	0.167	0.167
12.500	0.167	0.167	0.167	0.166	0.166
12.750	0.165	0.165	0.164	0.164	0.163
13.000	0.162	0.162	0.161	0.160	0.160
13.250	0.159	0.158	0.157	0.157	0.156
13.500	0.155	0.154	0.154	0.153	0.152
13.750	0.151	0.151	0.150	0.149	0.149
14.000	0.148	0.147	0.147	0.146	0.145
14.250	0.145	0.144	0.144	0.143	0.143
14.500	0.142	0.142	0.141	0.141	0.140
14.750	0.140	0.140	0.139	0.139	0.138
15.000	0.138	0.138	0.137	0.137	0.137
15.250	0.136	0.136	0.136	0.135	0.135
15.500	0.135	0.135	0.134	0.134	0.134
15.750	0.133	0.133	0.133	0.133	0.132
16.000	0.132	0.132	0.131	0.131	0.131
16.250	0.130	0.130	0.130	0.129	0.129
16.500	0.129	0.128	0.128	0.128	0.127
16.750	0.127	0.127	0.126	0.126	0.126
17.000	0.125	0.125	0.125	0.124	0.124
17.250	0.124	0.123	0.123	0.122	0.122
17.500	0.122	0.121	0.121	0.121	0.120
17.750	0.120	0.119	0.119	0.119	0.118
18.000	0.118	0.118	0.117	0.117	0.116
18.250	0.116	0.116	0.115	0.115	0.114
18.500	0.114	0.114	0.113	0.113	0.112
18.750	0.112	0.112	0.111	0.111	0.111
19.000	0.110	0.110	0.109	0.109	0.109
19.250	0.108	0.108	0.108	0.107	0.107
19.500	0.106	0.106	0.106	0.105	0.105
19.750	0.104	0.104	0.104	0.103	0.103
20.000	0.102	0.102	0.101	0.101	0.101
20.250	0.100	0.100	0.099	0.099	0.098
20.500	0.098	0.097	0.097	0.096	0.096
20.750	0.096	0.095	0.095	0.094	0.094

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
21.000	0.093	0.093	0.092	0.092	0.092
21.250	0.091	0.091	0.090	0.090	0.089
21.500	0.089	0.088	0.088	0.088	0.087
21.750	0.087	0.086	0.086	0.085	0.085
22.000	0.085	0.084	0.084	0.083	0.083
22.250	0.083	0.082	0.082	0.081	0.081
22.500	0.081	0.080	0.080	0.079	0.079
22.750	0.079	0.078	0.078	0.078	0.077
23.000	0.077	0.076	0.076	0.076	0.075
23.250	0.075	0.075	0.074	0.074	0.073
23.500	0.073	0.072	0.072	0.071	0.071
23.750	0.070	0.070	0.069	0.069	0.068
24.000	0.068	0.067	0.067	0.066	0.065
24.250	0.064	0.063	0.063	0.062	0.061
24.500	0.060	0.059	0.059	0.058	0.057
24.750	0.056	0.056	0.055	0.054	0.053
25.000	0.053	0.052	0.051	0.051	0.050
25.250	0.049	0.049	0.048	0.047	0.047
25.500	0.046	0.046	0.045	0.044	0.044
25.750	0.043	0.042	0.042	0.041	0.040
26.000	0.040	0.039	0.038	0.037	0.037
26.250	0.036	0.035	0.035	0.034	0.034
26.500	0.033	0.033	0.033	0.033	0.032
26.750	0.032	0.032	0.032	0.031	0.031
27.000	0.031	0.031	0.030	0.030	0.030
27.250	0.030	0.030	0.029	0.029	0.029
27.500	0.029	0.029	0.028	0.028	0.028
27.750	0.028	0.028	0.027	0.027	0.027
28.000	0.027	0.027	0.026	0.026	0.026
28.250	0.026	0.025	0.025	0.025	0.024
28.500	0.024	0.024	0.023	0.023	0.023
28.750	0.022	0.022	0.022	0.021	0.021
29.000	0.021	0.020	0.020	0.020	0.020
29.250	0.019	0.019	0.019	0.019	0.018
29.500	0.018	0.018	0.018	0.017	0.017
29.750	0.017	0.017	0.017	0.016	0.016
30.000	0.016	0.016	0.016	0.015	0.015
30.250	0.015	0.015	0.015	0.015	0.014
30.500	0.014	0.014	0.014	0.014	0.014
30.750	0.013	0.013	0.013	0.013	0.013
31.000	0.013	0.012	0.012	0.012	0.012
31.250	0.012	0.012	0.012	0.011	0.011

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
31.500	0.011	0.011	0.011	0.011	0.011
31.750	0.011	0.010	0.010	0.010	0.010
32.000	0.010	0.010	0.010	0.010	0.010
32.250	0.009	0.009	0.009	0.009	0.009
32.500	0.009	0.009	0.009	0.009	0.009
32.750	0.009	0.008	0.008	0.008	0.008
33.000	0.008	0.008	0.008	0.008	0.008
33.250	0.008	0.008	0.008	0.008	0.007
33.500	0.007	0.007	0.007	0.007	0.007
33.750	0.007	0.007	0.007	0.006	0.006
34.000	0.006	0.006	0.006	0.006	0.006
34.250	0.006	0.006	0.006	0.005	0.005
34.500	0.005	0.005	0.005	0.005	0.005
34.750	0.005	0.005	0.005	0.005	0.005
35.000	0.004	0.004	0.004	0.004	0.004
35.250	0.004	0.004	0.004	0.004	0.004
35.500	0.004	0.004	0.004	0.004	0.004
35.750	0.004	0.003	0.003	0.003	0.003
36.000	0.003	0.003	0.003	0.003	0.003
36.250	0.003	0.003	0.003	0.003	0.003
36.500	0.003	0.003	0.003	0.003	0.003
36.750	0.003	0.002	0.002	0.002	0.002
37.000	0.002	0.002	0.002	0.002	0.002
37.250	0.002	0.002	0.002	0.002	0.002
37.500	0.002	0.002	0.002	0.002	0.002
37.750	0.002	0.002	0.002	0.002	0.002
38.000	0.002	0.002	0.002	0.002	0.002
38.250	0.002	0.002	0.001	0.001	0.001
38.500	0.001	0.001	0.001	0.001	0.001
38.750	0.001	0.001	0.001	0.001	0.001
39.000	0.001	0.001	0.001	0.001	0.001
39.250	0.001	0.001	0.001	0.001	0.001
39.500	0.001	0.001	0.001	0.001	0.001
39.750	0.001	0.001	0.001	0.001	0.001
40.000	0.001	0.001	0.001	0.001	0.001
40.250	0.001	0.001	0.001	0.001	0.001
40.500	0.001	0.001	0.001	0.001	0.001
40.750	0.001	0.001	0.001	0.001	0.001
41.000	0.001	0.001	0.001	0.001	0.001
41.250	0.001	0.001	0.001	0.001	0.001
41.500	0.001	0.001	0.001	0.001	0.001
41.750	0.000	0.000	0.000	0.000	0.000

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
42.000	0.000	0.000	0.000	0.000	0.000
42.250	0.000	0.000	0.000	0.000	0.000
42.500	0.000	0.000	0.000	0.000	0.000
42.750	0.000	0.000	0.000	0.000	0.000
43.000	0.000	0.000	0.000	0.000	0.000
43.250	0.000	0.000	0.000	0.000	0.000
43.500	0.000	0.000	0.000	0.000	0.000
43.750	0.000	0.000	0.000	0.000	0.000
44.000	0.000	0.000	0.000	0.000	0.000
44.250	0.000	0.000	0.000	0.000	0.000
44.500	0.000	0.000	0.000	0.000	0.000
44.750	0.000	0.000	0.000	0.000	0.000
45.000	0.000	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.001	0.001	0.001	0.001	0.001
4.750	0.001	0.001	0.001	0.001	0.001
5.000	0.001	0.001	0.002	0.002	0.002
5.250	0.002	0.002	0.002	0.002	0.003
5.500	0.003	0.003	0.003	0.003	0.003
5.750	0.003	0.004	0.004	0.004	0.004
6.000	0.004	0.005	0.005	0.005	0.005
6.250	0.005	0.006	0.006	0.006	0.006
6.500	0.006	0.007	0.007	0.007	0.007
6.750	0.008	0.008	0.008	0.008	0.008
7.000	0.008	0.008	0.008	0.009	0.009
7.250	0.009	0.009	0.009	0.009	0.010
7.500	0.010	0.010	0.010	0.010	0.010
7.750	0.011	0.011	0.011	0.011	0.011
8.000	0.011	0.012	0.012	0.012	0.012
8.250	0.012	0.013	0.013	0.013	0.013
8.500	0.013	0.014	0.014	0.014	0.014
8.750	0.015	0.015	0.015	0.016	0.016
9.000	0.016	0.016	0.017	0.017	0.017
9.250	0.018	0.018	0.018	0.018	0.019
9.500	0.019	0.019	0.020	0.020	0.020
9.750	0.021	0.021	0.021	0.022	0.022
10.000	0.023	0.023	0.024	0.024	0.025
10.250	0.025	0.026	0.026	0.026	0.027

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.500	0.027	0.027	0.028	0.028	0.028
10.750	0.029	0.029	0.030	0.030	0.031
11.000	0.031	0.032	0.033	0.034	0.036
11.250	0.038	0.040	0.043	0.046	0.048
11.500	0.051	0.055	0.060	0.069	0.079
11.750	0.092	0.109	0.133	0.165	0.200
12.000	0.232	0.257	0.270	0.275	0.275
12.250	0.275	0.273	0.272	0.270	0.268
12.500	0.265	0.263	0.260	0.257	0.254
12.750	0.251	0.248	0.245	0.242	0.240
13.000	0.237	0.234	0.231	0.228	0.226
13.250	0.223	0.221	0.218	0.216	0.213
13.500	0.211	0.208	0.206	0.204	0.201
13.750	0.199	0.197	0.195	0.194	0.192
14.000	0.190	0.188	0.186	0.184	0.183
14.250	0.181	0.179	0.178	0.176	0.175
14.500	0.173	0.172	0.171	0.169	0.168
14.750	0.167	0.166	0.165	0.164	0.163
15.000	0.162	0.161	0.160	0.159	0.158
15.250	0.158	0.157	0.156	0.155	0.154
15.500	0.153	0.153	0.152	0.151	0.150
15.750	0.150	0.149	0.148	0.148	0.147
16.000	0.146	0.146	0.145	0.145	0.144
16.250	0.144	0.143	0.143	0.142	0.142
16.500	0.141	0.141	0.140	0.140	0.140
16.750	0.139	0.139	0.139	0.138	0.138
17.000	0.138	0.138	0.137	0.137	0.137
17.250	0.136	0.136	0.136	0.136	0.135
17.500	0.135	0.135	0.135	0.135	0.134
17.750	0.134	0.134	0.134	0.134	0.133
18.000	0.133	0.133	0.133	0.133	0.132
18.250	0.132	0.132	0.132	0.132	0.131
18.500	0.131	0.131	0.131	0.131	0.130
18.750	0.130	0.130	0.130	0.129	0.129
19.000	0.129	0.129	0.128	0.128	0.128
19.250	0.127	0.127	0.127	0.127	0.126
19.500	0.126	0.126	0.125	0.125	0.125
19.750	0.124	0.124	0.124	0.123	0.123
20.000	0.123	0.122	0.122	0.122	0.121
20.250	0.121	0.121	0.120	0.120	0.120
20.500	0.119	0.119	0.119	0.118	0.118
20.750	0.118	0.117	0.117	0.117	0.116

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
21.000	0.116	0.116	0.115	0.115	0.115
21.250	0.114	0.114	0.114	0.113	0.113
21.500	0.113	0.112	0.112	0.112	0.111
21.750	0.111	0.111	0.111	0.110	0.110
22.000	0.110	0.109	0.109	0.109	0.108
22.250	0.108	0.108	0.107	0.107	0.107
22.500	0.107	0.106	0.106	0.106	0.105
22.750	0.105	0.105	0.104	0.104	0.104
23.000	0.104	0.103	0.103	0.103	0.102
23.250	0.102	0.102	0.101	0.101	0.101
23.500	0.100	0.100	0.099	0.099	0.099
23.750	0.098	0.098	0.098	0.097	0.097
24.000	0.097	0.096	0.096	0.095	0.094
24.250	0.094	0.093	0.092	0.092	0.091
24.500	0.090	0.089	0.089	0.088	0.087
24.750	0.087	0.086	0.085	0.084	0.084
25.000	0.083	0.082	0.082	0.081	0.081
25.250	0.080	0.079	0.079	0.078	0.078
25.500	0.077	0.076	0.076	0.075	0.074
25.750	0.074	0.073	0.072	0.071	0.071
26.000	0.070	0.069	0.068	0.067	0.067
26.250	0.066	0.065	0.064	0.063	0.063
26.500	0.062	0.061	0.060	0.059	0.059
26.750	0.058	0.057	0.056	0.056	0.055
27.000	0.054	0.053	0.053	0.052	0.051
27.250	0.051	0.050	0.049	0.049	0.048
27.500	0.047	0.047	0.046	0.046	0.045
27.750	0.044	0.044	0.043	0.042	0.042
28.000	0.041	0.040	0.039	0.039	0.038
28.250	0.037	0.037	0.036	0.035	0.035
28.500	0.034	0.033	0.033	0.033	0.033
28.750	0.033	0.032	0.032	0.032	0.032
29.000	0.031	0.031	0.031	0.031	0.030
29.250	0.030	0.030	0.030	0.030	0.029
29.500	0.029	0.029	0.029	0.029	0.028
29.750	0.028	0.028	0.028	0.028	0.027
30.000	0.027	0.027	0.027	0.027	0.026
30.250	0.026	0.026	0.026	0.025	0.025
30.500	0.025	0.024	0.024	0.023	0.023
30.750	0.023	0.022	0.022	0.022	0.022
31.000	0.021	0.021	0.021	0.020	0.020
31.250	0.020	0.020	0.019	0.019	0.019

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
31.500	0.018	0.018	0.018	0.018	0.018
31.750	0.017	0.017	0.017	0.017	0.017
32.000	0.016	0.016	0.016	0.016	0.016
32.250	0.015	0.015	0.015	0.015	0.015
32.500	0.015	0.014	0.014	0.014	0.014
32.750	0.014	0.013	0.013	0.013	0.013
33.000	0.013	0.013	0.013	0.012	0.012
33.250	0.012	0.012	0.012	0.012	0.012
33.500	0.011	0.011	0.011	0.011	0.011
33.750	0.011	0.011	0.011	0.010	0.010
34.000	0.010	0.010	0.010	0.010	0.010
34.250	0.010	0.010	0.009	0.009	0.009
34.500	0.009	0.009	0.009	0.009	0.009
34.750	0.009	0.009	0.009	0.008	0.008
35.000	0.008	0.008	0.008	0.008	0.008
35.250	0.008	0.008	0.008	0.008	0.008
35.500	0.008	0.007	0.007	0.007	0.007
35.750	0.007	0.007	0.007	0.007	0.006
36.000	0.006	0.006	0.006	0.006	0.006
36.250	0.006	0.006	0.006	0.006	0.006
36.500	0.005	0.005	0.005	0.005	0.005
36.750	0.005	0.005	0.005	0.005	0.005
37.000	0.005	0.005	0.004	0.004	0.004
37.250	0.004	0.004	0.004	0.004	0.004
37.500	0.004	0.004	0.004	0.004	0.004
37.750	0.004	0.004	0.003	0.003	0.003
38.000	0.003	0.003	0.003	0.003	0.003
38.250	0.003	0.003	0.003	0.003	0.003
38.500	0.003	0.003	0.003	0.003	0.003
38.750	0.003	0.003	0.003	0.002	0.002
39.000	0.002	0.002	0.002	0.002	0.002
39.250	0.002	0.002	0.002	0.002	0.002
39.500	0.002	0.002	0.002	0.002	0.002
39.750	0.002	0.002	0.002	0.002	0.002
40.000	0.002	0.002	0.002	0.002	0.002
40.250	0.002	0.002	0.002	0.002	0.001
40.500	0.001	0.001	0.001	0.001	0.001
40.750	0.001	0.001	0.001	0.001	0.001
41.000	0.001	0.001	0.001	0.001	0.001
41.250	0.001	0.001	0.001	0.001	0.001
41.500	0.001	0.001	0.001	0.001	0.001
41.750	0.001	0.001	0.001	0.001	0.001

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
42.000	0.001	0.001	0.001	0.001	0.001
42.250	0.001	0.001	0.001	0.001	0.001
42.500	0.001	0.001	0.001	0.001	0.001
42.750	0.001	0.001	0.001	0.001	0.001
43.000	0.001	0.001	0.001	0.001	0.001
43.250	0.001	0.001	0.001	0.001	0.001
43.500	0.001	0.001	0.001	0.001	0.001
43.750	0.001	0.001	0.000	0.000	0.000
44.000	0.000	0.000	0.000	0.000	0.000
44.250	0.000	0.000	0.000	0.000	0.000
44.500	0.000	0.000	0.000	0.000	0.000
44.750	0.000	0.000	0.000	0.000	0.000
45.000	0.000	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.001	0.001	0.001	0.001	0.001
3.250	0.001	0.001	0.001	0.002	0.002
3.500	0.002	0.002	0.002	0.003	0.003
3.750	0.003	0.003	0.003	0.004	0.004
4.000	0.004	0.004	0.005	0.005	0.005
4.250	0.005	0.006	0.006	0.006	0.007
4.500	0.007	0.007	0.008	0.008	0.008
4.750	0.008	0.008	0.008	0.009	0.009
5.000	0.009	0.009	0.010	0.010	0.010
5.250	0.010	0.010	0.011	0.011	0.011
5.500	0.011	0.012	0.012	0.012	0.012
5.750	0.013	0.013	0.013	0.013	0.014
6.000	0.014	0.014	0.014	0.015	0.015
6.250	0.015	0.015	0.016	0.016	0.016
6.500	0.017	0.017	0.017	0.017	0.018
6.750	0.018	0.018	0.018	0.019	0.019
7.000	0.019	0.020	0.020	0.020	0.021
7.250	0.021	0.021	0.022	0.022	0.022
7.500	0.023	0.023	0.023	0.024	0.024
7.750	0.024	0.025	0.025	0.025	0.026
8.000	0.026	0.026	0.026	0.027	0.027
8.250	0.027	0.027	0.027	0.028	0.028
8.500	0.028	0.028	0.029	0.029	0.029
8.750	0.030	0.030	0.030	0.031	0.031
9.000	0.031	0.032	0.032	0.033	0.033
9.250	0.033	0.034	0.036	0.037	0.038
9.500	0.039	0.040	0.041	0.043	0.044
9.750	0.045	0.046	0.047	0.049	0.050
10.000	0.051	0.053	0.054	0.056	0.058
10.250	0.060	0.062	0.064	0.066	0.068

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.500	0.070	0.072	0.074	0.076	0.078
10.750	0.080	0.082	0.084	0.087	0.090
11.000	0.092	0.095	0.098	0.101	0.105
11.250	0.108	0.111	0.115	0.120	0.125
11.500	0.130	0.135	0.143	0.155	0.171
11.750	0.193	0.222	0.259	0.310	0.366
12.000	0.415	0.450	0.467	0.467	0.461
12.250	0.454	0.446	0.438	0.430	0.421
12.500	0.412	0.403	0.394	0.385	0.377
12.750	0.368	0.360	0.352	0.344	0.337
13.000	0.331	0.325	0.318	0.313	0.307
13.250	0.303	0.298	0.293	0.289	0.284
13.500	0.280	0.277	0.273	0.269	0.266
13.750	0.262	0.258	0.255	0.252	0.249
14.000	0.246	0.242	0.239	0.236	0.233
14.250	0.230	0.228	0.225	0.223	0.221
14.500	0.218	0.216	0.214	0.211	0.209
14.750	0.207	0.205	0.203	0.201	0.199
15.000	0.197	0.196	0.194	0.193	0.191
15.250	0.190	0.188	0.186	0.185	0.184
15.500	0.182	0.181	0.179	0.178	0.177
15.750	0.176	0.174	0.173	0.172	0.171
16.000	0.170	0.169	0.168	0.167	0.167
16.250	0.166	0.165	0.164	0.163	0.163
16.500	0.162	0.161	0.160	0.160	0.159
16.750	0.158	0.158	0.157	0.156	0.156
17.000	0.155	0.154	0.154	0.153	0.153
17.250	0.152	0.152	0.151	0.151	0.150
17.500	0.150	0.150	0.149	0.149	0.148
17.750	0.148	0.148	0.147	0.147	0.146
18.000	0.146	0.146	0.145	0.145	0.145
18.250	0.144	0.144	0.144	0.143	0.143
18.500	0.143	0.143	0.142	0.142	0.142
18.750	0.142	0.141	0.141	0.141	0.141
19.000	0.140	0.140	0.140	0.140	0.140
19.250	0.139	0.139	0.139	0.139	0.138
19.500	0.138	0.138	0.138	0.138	0.137
19.750	0.137	0.137	0.137	0.137	0.136
20.000	0.136	0.136	0.136	0.136	0.136
20.250	0.135	0.135	0.135	0.135	0.135
20.500	0.135	0.135	0.134	0.134	0.134
20.750	0.134	0.134	0.134	0.134	0.134

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
21.000	0.133	0.133	0.133	0.133	0.133
21.250	0.133	0.133	0.133	0.133	0.133
21.500	0.132	0.132	0.132	0.132	0.132
21.750	0.132	0.132	0.132	0.132	0.132
22.000	0.131	0.131	0.131	0.131	0.131
22.250	0.131	0.131	0.131	0.130	0.130
22.500	0.130	0.130	0.130	0.130	0.130
22.750	0.130	0.129	0.129	0.129	0.129
23.000	0.129	0.129	0.129	0.129	0.128
23.250	0.128	0.128	0.128	0.128	0.128
23.500	0.128	0.127	0.127	0.127	0.127
23.750	0.127	0.127	0.126	0.126	0.126
24.000	0.126	0.126	0.125	0.125	0.124
24.250	0.123	0.122	0.121	0.121	0.120
24.500	0.119	0.118	0.117	0.117	0.116
24.750	0.115	0.114	0.113	0.113	0.112
25.000	0.111	0.111	0.110	0.109	0.109
25.250	0.108	0.107	0.107	0.106	0.105
25.500	0.105	0.104	0.103	0.102	0.102
25.750	0.101	0.100	0.099	0.099	0.098
26.000	0.097	0.096	0.096	0.095	0.094
26.250	0.094	0.093	0.092	0.091	0.091
26.500	0.090	0.089	0.088	0.088	0.087
26.750	0.086	0.086	0.085	0.084	0.084
27.000	0.083	0.082	0.082	0.081	0.080
27.250	0.080	0.079	0.079	0.078	0.077
27.500	0.077	0.076	0.076	0.075	0.074
27.750	0.074	0.073	0.072	0.071	0.070
28.000	0.070	0.069	0.068	0.067	0.066
28.250	0.066	0.065	0.064	0.063	0.062
28.500	0.062	0.061	0.060	0.059	0.058
28.750	0.058	0.057	0.056	0.055	0.055
29.000	0.054	0.053	0.053	0.052	0.051
29.250	0.051	0.050	0.049	0.049	0.048
29.500	0.047	0.047	0.046	0.045	0.045
29.750	0.044	0.043	0.043	0.042	0.041
30.000	0.041	0.040	0.039	0.039	0.038
30.250	0.037	0.037	0.036	0.035	0.035
30.500	0.034	0.033	0.033	0.033	0.033
30.750	0.032	0.032	0.032	0.032	0.032
31.000	0.031	0.031	0.031	0.031	0.030
31.250	0.030	0.030	0.030	0.029	0.029

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
31.500	0.029	0.029	0.029	0.028	0.028
31.750	0.028	0.028	0.028	0.028	0.027
32.000	0.027	0.027	0.027	0.027	0.026
32.250	0.026	0.026	0.026	0.025	0.025
32.500	0.024	0.024	0.024	0.023	0.023
32.750	0.023	0.022	0.022	0.022	0.021
33.000	0.021	0.021	0.021	0.020	0.020
33.250	0.020	0.019	0.019	0.019	0.019
33.500	0.018	0.018	0.018	0.018	0.018
33.750	0.017	0.017	0.017	0.017	0.017
34.000	0.016	0.016	0.016	0.016	0.016
34.250	0.015	0.015	0.015	0.015	0.015
34.500	0.015	0.014	0.014	0.014	0.014
34.750	0.014	0.013	0.013	0.013	0.013
35.000	0.013	0.013	0.013	0.012	0.012
35.250	0.012	0.012	0.012	0.012	0.012
35.500	0.011	0.011	0.011	0.011	0.011
35.750	0.011	0.011	0.010	0.010	0.010
36.000	0.010	0.010	0.010	0.010	0.010
36.250	0.010	0.010	0.009	0.009	0.009
36.500	0.009	0.009	0.009	0.009	0.009
36.750	0.009	0.009	0.008	0.008	0.008
37.000	0.008	0.008	0.008	0.008	0.008
37.250	0.008	0.008	0.008	0.008	0.008
37.500	0.007	0.007	0.007	0.007	0.007
37.750	0.007	0.007	0.007	0.007	0.006
38.000	0.006	0.006	0.006	0.006	0.006
38.250	0.006	0.006	0.006	0.006	0.006
38.500	0.005	0.005	0.005	0.005	0.005
38.750	0.005	0.005	0.005	0.005	0.005
39.000	0.005	0.005	0.004	0.004	0.004
39.250	0.004	0.004	0.004	0.004	0.004
39.500	0.004	0.004	0.004	0.004	0.004
39.750	0.004	0.004	0.003	0.003	0.003
40.000	0.003	0.003	0.003	0.003	0.003
40.250	0.003	0.003	0.003	0.003	0.003
40.500	0.003	0.003	0.003	0.003	0.003
40.750	0.003	0.003	0.003	0.002	0.002
41.000	0.002	0.002	0.002	0.002	0.002
41.250	0.002	0.002	0.002	0.002	0.002
41.500	0.002	0.002	0.002	0.002	0.002
41.750	0.002	0.002	0.002	0.002	0.002

Subsection: Time vs. Volume
Label: Underground Detention
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
42.000	0.002	0.002	0.002	0.002	0.002
42.250	0.002	0.002	0.002	0.002	0.001
42.500	0.001	0.001	0.001	0.001	0.001
42.750	0.001	0.001	0.001	0.001	0.001
43.000	0.001	0.001	0.001	0.001	0.001
43.250	0.001	0.001	0.001	0.001	0.001
43.500	0.001	0.001	0.001	0.001	0.001
43.750	0.001	0.001	0.001	0.001	0.001
44.000	0.001	0.001	0.001	0.001	0.001
44.250	0.001	0.001	0.001	0.001	0.001
44.500	0.001	0.001	0.001	0.001	0.001
44.750	0.001	0.001	0.001	0.001	0.001
45.000	0.001	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
983.08	0.00	(N/A)	0.00
983.58	0.10	(N/A)	0.00
984.08	0.16	(N/A)	0.00
984.56	0.19	(N/A)	0.00
984.58	0.19	(N/A)	0.00
985.08	0.78	(N/A)	0.00
985.58	1.32	(N/A)	0.00
985.73	1.43	(N/A)	0.00
986.08	1.93	(N/A)	0.00
986.58	2.90	(N/A)	0.00
987.08	3.50	(N/A)	0.00
987.58	4.00	(N/A)	0.00
988.08	4.44	(N/A)	0.00
988.40	4.70	(N/A)	0.00
988.58	5.76	(N/A)	0.00
989.08	11.93	(N/A)	0.00
989.58	20.93	(N/A)	0.00
989.75	24.48	(N/A)	0.00

Contributing Structures
None Contributing
WQV
WQV
WQV
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Composite Outflow Summary

Contributing Structures
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
983.08	0.00	(N/A)	0.00
983.58	0.10	(N/A)	0.00
984.08	0.16	(N/A)	0.00
984.56	0.19	(N/A)	0.00
984.58	0.19	(N/A)	0.00
985.08	0.78	(N/A)	0.00
985.58	1.32	(N/A)	0.00
985.73	1.43	(N/A)	0.00
986.08	1.93	(N/A)	0.00
986.58	2.90	(N/A)	0.00
987.08	3.50	(N/A)	0.00
987.58	4.00	(N/A)	0.00
988.08	4.44	(N/A)	0.00
988.40	4.70	(N/A)	0.00
988.58	5.76	(N/A)	0.00
989.08	11.93	(N/A)	0.00
989.58	20.93	(N/A)	0.00
989.75	24.48	(N/A)	0.00

Contributing Structures
None Contributing
WQV
WQV
WQV
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Composite Outflow Summary

Contributing Structures
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
983.08	0.00	(N/A)	0.00
983.58	0.10	(N/A)	0.00
984.08	0.16	(N/A)	0.00
984.56	0.19	(N/A)	0.00
984.58	0.19	(N/A)	0.00
985.08	0.78	(N/A)	0.00
985.58	1.32	(N/A)	0.00
985.73	1.43	(N/A)	0.00
986.08	1.93	(N/A)	0.00
986.58	2.90	(N/A)	0.00
987.08	3.50	(N/A)	0.00
987.58	4.00	(N/A)	0.00
988.08	4.44	(N/A)	0.00
988.40	4.70	(N/A)	0.00
988.58	5.76	(N/A)	0.00
989.08	11.93	(N/A)	0.00
989.58	20.93	(N/A)	0.00
989.75	24.48	(N/A)	0.00

Contributing Structures
None Contributing
WQV
WQV
WQV
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Composite Outflow Summary

Contributing Structures
WQV + Orifice - 2 + Orifice - 3 + Weir - 1

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

Peak Discharge	0.54 ft³/s
Time to Peak	12.500 hours
Hydrograph Volume	0.319 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.150	0.00	0.00	0.00	0.00	0.00
6.400	0.00	0.00	0.00	0.00	0.00
6.650	0.00	0.00	0.00	0.00	0.00
6.900	0.00	0.00	0.00	0.00	0.00
7.150	0.00	0.00	0.01	0.01	0.01
7.400	0.01	0.01	0.01	0.01	0.01
7.650	0.01	0.01	0.01	0.01	0.01
7.900	0.01	0.01	0.01	0.01	0.01
8.150	0.01	0.01	0.01	0.01	0.01
8.400	0.01	0.01	0.01	0.01	0.01
8.650	0.02	0.02	0.02	0.02	0.02
8.900	0.02	0.02	0.02	0.02	0.02
9.150	0.02	0.02	0.02	0.02	0.02
9.400	0.03	0.03	0.03	0.03	0.03
9.650	0.03	0.03	0.03	0.03	0.03
9.900	0.03	0.03	0.03	0.04	0.04
10.150	0.04	0.04	0.04	0.04	0.04
10.400	0.04	0.05	0.05	0.05	0.05
10.650	0.05	0.05	0.06	0.06	0.06
10.900	0.06	0.06	0.07	0.07	0.07
11.150	0.07	0.08	0.08	0.08	0.09
11.400	0.09	0.10	0.10	0.10	0.11
11.650	0.11	0.12	0.12	0.13	0.15
11.900	0.16	0.18	0.19	0.33	0.43
12.150	0.47	0.50	0.51	0.52	0.53
12.400	0.54	0.54	0.54	0.54	0.54
12.650	0.53	0.53	0.52	0.52	0.51
12.900	0.50	0.50	0.49	0.48	0.48
13.150	0.47	0.46	0.46	0.45	0.44
13.400	0.43	0.43	0.42	0.41	0.41
13.650	0.40	0.39	0.39	0.38	0.37
13.900	0.37	0.36	0.35	0.35	0.34
14.150	0.33	0.33	0.32	0.32	0.31
14.400	0.30	0.30	0.29	0.29	0.28
14.650	0.28	0.28	0.27	0.27	0.26
14.900	0.26	0.25	0.25	0.25	0.24
15.150	0.24	0.23	0.23	0.23	0.22
15.400	0.22	0.22	0.21	0.21	0.21
15.650	0.21	0.20	0.20	0.20	0.19

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
15.900	0.19	0.19	0.19	0.19	0.19
16.150	0.19	0.19	0.19	0.19	0.19
16.400	0.19	0.19	0.19	0.19	0.19
16.650	0.19	0.19	0.19	0.19	0.19
16.900	0.19	0.19	0.19	0.19	0.19
17.150	0.19	0.19	0.19	0.19	0.19
17.400	0.19	0.19	0.19	0.19	0.19
17.650	0.19	0.19	0.19	0.19	0.19
17.900	0.19	0.18	0.18	0.18	0.18
18.150	0.18	0.18	0.18	0.18	0.18
18.400	0.18	0.18	0.18	0.18	0.18
18.650	0.18	0.18	0.18	0.18	0.18
18.900	0.18	0.18	0.18	0.18	0.18
19.150	0.18	0.18	0.18	0.18	0.18
19.400	0.18	0.18	0.18	0.18	0.18
19.650	0.18	0.18	0.18	0.18	0.17
19.900	0.17	0.17	0.17	0.17	0.17
20.150	0.17	0.17	0.17	0.17	0.17
20.400	0.17	0.17	0.17	0.17	0.17
20.650	0.17	0.17	0.17	0.17	0.17
20.900	0.17	0.17	0.17	0.17	0.17
21.150	0.17	0.17	0.17	0.17	0.17
21.400	0.17	0.17	0.17	0.17	0.17
21.650	0.16	0.16	0.16	0.16	0.16
21.900	0.16	0.16	0.16	0.16	0.16
22.150	0.16	0.16	0.16	0.16	0.16
22.400	0.16	0.16	0.16	0.16	0.16
22.650	0.16	0.16	0.16	0.16	0.16
22.900	0.16	0.16	0.16	0.16	0.16
23.150	0.16	0.16	0.16	0.16	0.16
23.400	0.16	0.16	0.15	0.15	0.15
23.650	0.15	0.15	0.15	0.15	0.15
23.900	0.15	0.15	0.15	0.15	0.15
24.150	0.15	0.15	0.15	0.15	0.15
24.400	0.15	0.14	0.14	0.14	0.14
24.650	0.14	0.14	0.14	0.14	0.14
24.900	0.14	0.14	0.14	0.14	0.14
25.150	0.14	0.14	0.13	0.13	0.13
25.400	0.13	0.13	0.13	0.13	0.13
25.650	0.13	0.13	0.13	0.13	0.13
25.900	0.13	0.13	0.13	0.13	0.12
26.150	0.12	0.12	0.12	0.12	0.12
26.400	0.12	0.12	0.12	0.12	0.12

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
26.650	0.12	0.12	0.12	0.12	0.12
26.900	0.12	0.12	0.11	0.11	0.11
27.150	0.11	0.11	0.11	0.11	0.11
27.400	0.11	0.11	0.11	0.11	0.11
27.650	0.11	0.11	0.11	0.11	0.11
27.900	0.11	0.11	0.10	0.10	0.10
28.150	0.10	0.10	0.10	0.10	0.10
28.400	0.10	0.09	0.09	0.09	0.09
28.650	0.09	0.09	0.09	0.08	0.08
28.900	0.08	0.08	0.08	0.08	0.08
29.150	0.08	0.07	0.07	0.07	0.07
29.400	0.07	0.07	0.07	0.07	0.07
29.650	0.06	0.06	0.06	0.06	0.06
29.900	0.06	0.06	0.06	0.06	0.06
30.150	0.05	0.05	0.05	0.05	0.05
30.400	0.05	0.05	0.05	0.05	0.05
30.650	0.05	0.05	0.04	0.04	0.04
30.900	0.04	0.04	0.04	0.04	0.04
31.150	0.04	0.04	0.04	0.04	0.04
31.400	0.04	0.04	0.03	0.03	0.03
31.650	0.03	0.03	0.03	0.03	0.03
31.900	0.03	0.03	0.03	0.03	0.03
32.150	0.03	0.03	0.03	0.03	0.03
32.400	0.03	0.03	0.03	0.02	0.02
32.650	0.02	0.02	0.02	0.02	0.02
32.900	0.02	0.02	0.02	0.02	0.02
33.150	0.02	0.02	0.02	0.02	0.02
33.400	0.02	0.02	0.02	0.02	0.02
33.650	0.02	0.02	0.02	0.02	0.02
33.900	0.02	0.02	0.02	0.02	0.01
34.150	0.01	0.01	0.01	0.01	0.01
34.400	0.01	0.01	0.01	0.01	0.01
34.650	0.01	0.01	0.01	0.01	0.01
34.900	0.01	0.01	0.01	0.01	0.01
35.150	0.01	0.01	0.01	0.01	0.01
35.400	0.01	0.01	0.01	0.01	0.01
35.650	0.01	0.01	0.01	0.01	0.01
35.900	0.01	0.01	0.01	0.01	0.01
36.150	0.01	0.01	0.01	0.01	0.01
36.400	0.01	0.01	0.01	0.01	0.01
36.650	0.01	0.01	0.01	0.01	0.01
36.900	0.01	0.01	0.01	0.01	0.01
37.150	0.01	0.01	0.01	0.01	0.01

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 2 Year

Return Event: 2 years
Storm Event: 2 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
37.400	0.01	0.01	0.00	0.00	0.00
37.650	0.00	0.00	0.00	0.00	0.00
37.900	0.00	0.00	0.00	0.00	0.00
38.150	0.00	0.00	0.00	0.00	0.00
38.400	0.00	0.00	0.00	0.00	0.00
38.650	0.00	0.00	0.00	0.00	0.00
38.900	0.00	0.00	0.00	0.00	0.00
39.150	0.00	0.00	0.00	0.00	0.00
39.400	0.00	0.00	0.00	0.00	0.00
39.650	0.00	0.00	0.00	0.00	0.00
39.900	0.00	0.00	0.00	0.00	0.00
40.150	0.00	0.00	0.00	0.00	0.00
40.400	0.00	0.00	0.00	0.00	0.00
40.650	0.00	0.00	0.00	0.00	0.00
40.900	0.00	0.00	0.00	0.00	0.00
41.150	0.00	0.00	0.00	0.00	0.00
41.400	0.00	0.00	0.00	0.00	0.00
41.650	0.00	0.00	0.00	0.00	0.00
41.900	0.00	0.00	0.00	0.00	0.00
42.150	0.00	0.00	0.00	(N/A)	(N/A)

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

Peak Discharge	1.57 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.553 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.400	0.00	0.00	0.00	0.00	0.00
4.650	0.00	0.00	0.00	0.00	0.00
4.900	0.00	0.00	0.00	0.00	0.00
5.150	0.00	0.00	0.00	0.01	0.01
5.400	0.01	0.01	0.01	0.01	0.01
5.650	0.01	0.01	0.01	0.01	0.01
5.900	0.01	0.01	0.01	0.01	0.01
6.150	0.01	0.01	0.01	0.01	0.01
6.400	0.01	0.02	0.02	0.02	0.02
6.650	0.02	0.02	0.02	0.02	0.02
6.900	0.02	0.02	0.02	0.02	0.02
7.150	0.02	0.02	0.03	0.03	0.03
7.400	0.03	0.03	0.03	0.03	0.03
7.650	0.03	0.03	0.03	0.03	0.03
7.900	0.03	0.04	0.04	0.04	0.04
8.150	0.04	0.04	0.04	0.04	0.04
8.400	0.04	0.04	0.05	0.05	0.05
8.650	0.05	0.05	0.05	0.05	0.05
8.900	0.05	0.06	0.06	0.06	0.06
9.150	0.06	0.06	0.06	0.07	0.07
9.400	0.07	0.07	0.07	0.07	0.07
9.650	0.08	0.08	0.08	0.08	0.08
9.900	0.08	0.09	0.09	0.09	0.09
10.150	0.09	0.10	0.10	0.10	0.10
10.400	0.10	0.10	0.11	0.11	0.11
10.650	0.11	0.11	0.11	0.11	0.11
10.900	0.11	0.11	0.12	0.12	0.12
11.150	0.12	0.12	0.12	0.13	0.13
11.400	0.13	0.13	0.14	0.14	0.14
11.650	0.15	0.16	0.17	0.18	0.20
11.900	0.52	0.87	1.17	1.38	1.51
12.150	1.57	1.57	1.57	1.55	1.53
12.400	1.51	1.48	1.45	1.42	1.40
12.650	1.38	1.36	1.34	1.32	1.30
12.900	1.27	1.24	1.21	1.19	1.16
13.150	1.14	1.11	1.09	1.06	1.04
13.400	1.02	0.99	0.97	0.95	0.93
13.650	0.91	0.89	0.87	0.85	0.83
13.900	0.81	0.79	0.77	0.75	0.73

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
14.150	0.72	0.70	0.68	0.67	0.65
14.400	0.64	0.62	0.61	0.59	0.58
14.650	0.57	0.56	0.54	0.53	0.52
14.900	0.51	0.50	0.49	0.48	0.47
15.150	0.46	0.45	0.44	0.44	0.43
15.400	0.42	0.41	0.40	0.40	0.39
15.650	0.38	0.37	0.37	0.36	0.35
15.900	0.35	0.34	0.34	0.33	0.32
16.150	0.32	0.31	0.31	0.30	0.30
16.400	0.29	0.29	0.29	0.28	0.28
16.650	0.27	0.27	0.26	0.26	0.26
16.900	0.25	0.25	0.25	0.24	0.24
17.150	0.24	0.24	0.23	0.23	0.23
17.400	0.22	0.22	0.22	0.22	0.21
17.650	0.21	0.21	0.21	0.21	0.20
17.900	0.20	0.20	0.20	0.20	0.19
18.150	0.19	0.19	0.19	0.19	0.19
18.400	0.19	0.19	0.19	0.19	0.19
18.650	0.19	0.19	0.19	0.19	0.19
18.900	0.19	0.19	0.19	0.19	0.19
19.150	0.19	0.19	0.19	0.19	0.19
19.400	0.19	0.19	0.19	0.19	0.19
19.650	0.19	0.19	0.19	0.19	0.19
19.900	0.19	0.19	0.19	0.19	0.19
20.150	0.19	0.19	0.19	0.19	0.19
20.400	0.19	0.19	0.19	0.19	0.19
20.650	0.18	0.18	0.18	0.18	0.18
20.900	0.18	0.18	0.18	0.18	0.18
21.150	0.18	0.18	0.18	0.18	0.18
21.400	0.18	0.18	0.18	0.18	0.18
21.650	0.18	0.18	0.18	0.18	0.18
21.900	0.18	0.18	0.18	0.18	0.18
22.150	0.18	0.18	0.18	0.18	0.18
22.400	0.18	0.18	0.18	0.18	0.18
22.650	0.18	0.18	0.18	0.18	0.18
22.900	0.18	0.17	0.17	0.17	0.17
23.150	0.17	0.17	0.17	0.17	0.17
23.400	0.17	0.17	0.17	0.17	0.17
23.650	0.17	0.17	0.17	0.17	0.17
23.900	0.17	0.17	0.17	0.17	0.17
24.150	0.17	0.17	0.17	0.17	0.17
24.400	0.17	0.17	0.17	0.17	0.17
24.650	0.17	0.16	0.16	0.16	0.16

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
24.900	0.16	0.16	0.16	0.16	0.16
25.150	0.16	0.16	0.16	0.16	0.16
25.400	0.16	0.16	0.16	0.16	0.16
25.650	0.16	0.16	0.16	0.15	0.15
25.900	0.15	0.15	0.15	0.15	0.15
26.150	0.15	0.15	0.15	0.15	0.15
26.400	0.15	0.15	0.15	0.14	0.14
26.650	0.14	0.14	0.14	0.14	0.14
26.900	0.14	0.14	0.14	0.14	0.14
27.150	0.14	0.14	0.14	0.14	0.13
27.400	0.13	0.13	0.13	0.13	0.13
27.650	0.13	0.13	0.13	0.13	0.13
27.900	0.13	0.13	0.13	0.13	0.13
28.150	0.13	0.12	0.12	0.12	0.12
28.400	0.12	0.12	0.12	0.12	0.12
28.650	0.12	0.12	0.12	0.12	0.12
28.900	0.12	0.12	0.12	0.12	0.11
29.150	0.11	0.11	0.11	0.11	0.11
29.400	0.11	0.11	0.11	0.11	0.11
29.650	0.11	0.11	0.11	0.11	0.11
29.900	0.11	0.11	0.11	0.11	0.10
30.150	0.10	0.10	0.10	0.10	0.10
30.400	0.10	0.10	0.10	0.09	0.09
30.650	0.09	0.09	0.09	0.09	0.09
30.900	0.08	0.08	0.08	0.08	0.08
31.150	0.08	0.08	0.08	0.07	0.07
31.400	0.07	0.07	0.07	0.07	0.07
31.650	0.07	0.06	0.06	0.06	0.06
31.900	0.06	0.06	0.06	0.06	0.06
32.150	0.06	0.06	0.05	0.05	0.05
32.400	0.05	0.05	0.05	0.05	0.05
32.650	0.05	0.05	0.05	0.05	0.04
32.900	0.04	0.04	0.04	0.04	0.04
33.150	0.04	0.04	0.04	0.04	0.04
33.400	0.04	0.04	0.04	0.04	0.03
33.650	0.03	0.03	0.03	0.03	0.03
33.900	0.03	0.03	0.03	0.03	0.03
34.150	0.03	0.03	0.03	0.03	0.03
34.400	0.03	0.03	0.03	0.03	0.03
34.650	0.02	0.02	0.02	0.02	0.02
34.900	0.02	0.02	0.02	0.02	0.02
35.150	0.02	0.02	0.02	0.02	0.02
35.400	0.02	0.02	0.02	0.02	0.02

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 10 Year

Return Event: 10 years
Storm Event: 10 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
35.650	0.02	0.02	0.02	0.02	0.02
35.900	0.02	0.02	0.02	0.02	0.02
36.150	0.02	0.01	0.01	0.01	0.01
36.400	0.01	0.01	0.01	0.01	0.01
36.650	0.01	0.01	0.01	0.01	0.01
36.900	0.01	0.01	0.01	0.01	0.01
37.150	0.01	0.01	0.01	0.01	0.01
37.400	0.01	0.01	0.01	0.01	0.01
37.650	0.01	0.01	0.01	0.01	0.01
37.900	0.01	0.01	0.01	0.01	0.01
38.150	0.01	0.01	0.01	0.01	0.01
38.400	0.01	0.01	0.01	0.01	0.01
38.650	0.01	0.01	0.01	0.01	0.01
38.900	0.01	0.01	0.01	0.01	0.01
39.150	0.01	0.01	0.01	0.01	0.01
39.400	0.01	0.01	0.01	0.00	0.00
39.650	0.00	0.00	0.00	0.00	0.00
39.900	0.00	0.00	0.00	0.00	0.00
40.150	0.00	0.00	0.00	0.00	0.00
40.400	0.00	0.00	0.00	0.00	0.00
40.650	0.00	0.00	0.00	0.00	0.00
40.900	0.00	0.00	0.00	0.00	0.00
41.150	0.00	0.00	0.00	0.00	0.00
41.400	0.00	0.00	0.00	0.00	0.00
41.650	0.00	0.00	0.00	0.00	0.00
41.900	0.00	0.00	0.00	0.00	0.00
42.150	0.00	0.00	0.00	0.00	0.00
42.400	0.00	0.00	0.00	0.00	0.00
42.650	0.00	0.00	0.00	0.00	0.00
42.900	0.00	0.00	0.00	0.00	0.00
43.150	0.00	0.00	0.00	0.00	0.00
43.400	0.00	0.00	0.00	0.00	0.00
43.650	0.00	0.00	0.00	0.00	0.00
43.900	0.00	0.00	0.00	0.00	0.00
44.150	0.00	0.00	0.00	0.00	0.00

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

Peak Discharge	4.21 ft³/s
Time to Peak	12.150 hours
Hydrograph Volume	0.992 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.900	0.00	0.00	0.00	0.00	0.00
3.150	0.00	0.00	0.00	0.00	0.00
3.400	0.00	0.00	0.00	0.01	0.01
3.650	0.01	0.01	0.01	0.01	0.01
3.900	0.01	0.01	0.01	0.01	0.01
4.150	0.01	0.01	0.01	0.01	0.01
4.400	0.02	0.02	0.02	0.02	0.02
4.650	0.02	0.02	0.02	0.02	0.02
4.900	0.02	0.02	0.03	0.03	0.03
5.150	0.03	0.03	0.03	0.03	0.03
5.400	0.03	0.03	0.04	0.04	0.04
5.650	0.04	0.04	0.04	0.04	0.04
5.900	0.04	0.05	0.05	0.05	0.05
6.150	0.05	0.05	0.05	0.05	0.06
6.400	0.06	0.06	0.06	0.06	0.06
6.650	0.06	0.06	0.07	0.07	0.07
6.900	0.07	0.07	0.07	0.07	0.08
7.150	0.08	0.08	0.08	0.08	0.08
7.400	0.08	0.09	0.09	0.09	0.09
7.650	0.09	0.09	0.10	0.10	0.10
7.900	0.10	0.10	0.10	0.10	0.10
8.150	0.10	0.10	0.11	0.11	0.11
8.400	0.11	0.11	0.11	0.11	0.11
8.650	0.11	0.11	0.11	0.11	0.11
8.900	0.11	0.12	0.12	0.12	0.12
9.150	0.12	0.12	0.12	0.12	0.12
9.400	0.12	0.12	0.13	0.13	0.13
9.650	0.13	0.13	0.13	0.13	0.13
9.900	0.13	0.14	0.14	0.14	0.14
10.150	0.14	0.14	0.14	0.15	0.15
10.400	0.15	0.15	0.15	0.15	0.16
10.650	0.16	0.16	0.16	0.16	0.16
10.900	0.16	0.17	0.17	0.17	0.17
11.150	0.17	0.18	0.18	0.18	0.18
11.400	0.19	0.19	0.19	0.22	0.30
11.650	0.42	0.58	0.80	1.07	1.40
11.900	2.08	3.05	3.64	4.03	4.21
12.150	4.21	4.16	4.08	3.99	3.90
12.400	3.80	3.71	3.61	3.51	3.40

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.650	3.29	3.18	3.07	2.97	2.86
12.900	2.72	2.59	2.47	2.35	2.24
13.150	2.14	2.04	1.94	1.88	1.82
13.400	1.76	1.70	1.65	1.60	1.55
13.650	1.50	1.45	1.42	1.39	1.37
13.900	1.35	1.32	1.30	1.27	1.24
14.150	1.21	1.18	1.16	1.13	1.11
14.400	1.08	1.06	1.04	1.02	0.99
14.650	0.97	0.95	0.93	0.92	0.90
14.900	0.88	0.86	0.85	0.83	0.81
15.150	0.80	0.78	0.77	0.75	0.74
15.400	0.72	0.71	0.70	0.68	0.67
15.650	0.66	0.64	0.63	0.62	0.61
15.900	0.60	0.59	0.58	0.57	0.56
16.150	0.55	0.54	0.53	0.52	0.51
16.400	0.50	0.49	0.49	0.48	0.47
16.650	0.46	0.46	0.45	0.44	0.44
16.900	0.43	0.43	0.42	0.41	0.41
17.150	0.40	0.40	0.39	0.39	0.38
17.400	0.38	0.38	0.37	0.37	0.36
17.650	0.36	0.35	0.35	0.35	0.34
17.900	0.34	0.34	0.33	0.33	0.33
18.150	0.32	0.32	0.32	0.31	0.31
18.400	0.31	0.30	0.30	0.30	0.30
18.650	0.29	0.29	0.29	0.29	0.28
18.900	0.28	0.28	0.28	0.27	0.27
19.150	0.27	0.27	0.26	0.26	0.26
19.400	0.26	0.25	0.25	0.25	0.25
19.650	0.25	0.24	0.24	0.24	0.24
19.900	0.24	0.23	0.23	0.23	0.23
20.150	0.23	0.22	0.22	0.22	0.22
20.400	0.22	0.21	0.21	0.21	0.21
20.650	0.21	0.21	0.21	0.20	0.20
20.900	0.20	0.20	0.20	0.20	0.20
21.150	0.20	0.20	0.19	0.19	0.19
21.400	0.19	0.19	0.19	0.19	0.19
21.650	0.19	0.19	0.19	0.19	0.19
21.900	0.19	0.19	0.19	0.19	0.19
22.150	0.19	0.19	0.19	0.19	0.19
22.400	0.19	0.19	0.19	0.19	0.19
22.650	0.19	0.19	0.19	0.19	0.19
22.900	0.19	0.19	0.19	0.19	0.19
23.150	0.19	0.19	0.19	0.19	0.19

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.400	0.19	0.19	0.19	0.19	0.19
23.650	0.19	0.19	0.19	0.19	0.19
23.900	0.19	0.19	0.19	0.19	0.19
24.150	0.19	0.19	0.19	0.19	0.19
24.400	0.19	0.19	0.19	0.18	0.18
24.650	0.18	0.18	0.18	0.18	0.18
24.900	0.18	0.18	0.18	0.18	0.18
25.150	0.18	0.18	0.18	0.18	0.18
25.400	0.18	0.18	0.18	0.17	0.17
25.650	0.17	0.17	0.17	0.17	0.17
25.900	0.17	0.17	0.17	0.17	0.17
26.150	0.17	0.17	0.17	0.17	0.17
26.400	0.17	0.17	0.17	0.17	0.17
26.650	0.16	0.16	0.16	0.16	0.16
26.900	0.16	0.16	0.16	0.16	0.16
27.150	0.16	0.16	0.16	0.16	0.16
27.400	0.16	0.16	0.16	0.16	0.16
27.650	0.16	0.16	0.16	0.15	0.15
27.900	0.15	0.15	0.15	0.15	0.15
28.150	0.15	0.15	0.15	0.15	0.15
28.400	0.15	0.15	0.15	0.14	0.14
28.650	0.14	0.14	0.14	0.14	0.14
28.900	0.14	0.14	0.14	0.14	0.14
29.150	0.14	0.14	0.14	0.14	0.13
29.400	0.13	0.13	0.13	0.13	0.13
29.650	0.13	0.13	0.13	0.13	0.13
29.900	0.13	0.13	0.13	0.13	0.13
30.150	0.13	0.12	0.12	0.12	0.12
30.400	0.12	0.12	0.12	0.12	0.12
30.650	0.12	0.12	0.12	0.12	0.12
30.900	0.12	0.12	0.12	0.12	0.11
31.150	0.11	0.11	0.11	0.11	0.11
31.400	0.11	0.11	0.11	0.11	0.11
31.650	0.11	0.11	0.11	0.11	0.11
31.900	0.11	0.11	0.11	0.11	0.10
32.150	0.10	0.10	0.10	0.10	0.10
32.400	0.10	0.10	0.10	0.09	0.09
32.650	0.09	0.09	0.09	0.09	0.09
32.900	0.08	0.08	0.08	0.08	0.08
33.150	0.08	0.08	0.07	0.07	0.07
33.400	0.07	0.07	0.07	0.07	0.07
33.650	0.07	0.06	0.06	0.06	0.06
33.900	0.06	0.06	0.06	0.06	0.06

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
34.150	0.06	0.05	0.05	0.05	0.05
34.400	0.05	0.05	0.05	0.05	0.05
34.650	0.05	0.05	0.05	0.05	0.04
34.900	0.04	0.04	0.04	0.04	0.04
35.150	0.04	0.04	0.04	0.04	0.04
35.400	0.04	0.04	0.04	0.04	0.03
35.650	0.03	0.03	0.03	0.03	0.03
35.900	0.03	0.03	0.03	0.03	0.03
36.150	0.03	0.03	0.03	0.03	0.03
36.400	0.03	0.03	0.03	0.03	0.03
36.650	0.02	0.02	0.02	0.02	0.02
36.900	0.02	0.02	0.02	0.02	0.02
37.150	0.02	0.02	0.02	0.02	0.02
37.400	0.02	0.02	0.02	0.02	0.02
37.650	0.02	0.02	0.02	0.02	0.02
37.900	0.02	0.02	0.02	0.02	0.02
38.150	0.02	0.01	0.01	0.01	0.01
38.400	0.01	0.01	0.01	0.01	0.01
38.650	0.01	0.01	0.01	0.01	0.01
38.900	0.01	0.01	0.01	0.01	0.01
39.150	0.01	0.01	0.01	0.01	0.01
39.400	0.01	0.01	0.01	0.01	0.01
39.650	0.01	0.01	0.01	0.01	0.01
39.900	0.01	0.01	0.01	0.01	0.01
40.150	0.01	0.01	0.01	0.01	0.01
40.400	0.01	0.01	0.01	0.01	0.01
40.650	0.01	0.01	0.01	0.01	0.01
40.900	0.01	0.01	0.01	0.01	0.01
41.150	0.01	0.01	0.01	0.01	0.01
41.400	0.01	0.01	0.01	0.00	0.00
41.650	0.00	0.00	0.00	0.00	0.00
41.900	0.00	0.00	0.00	0.00	0.00
42.150	0.00	0.00	0.00	0.00	0.00
42.400	0.00	0.00	0.00	0.00	0.00
42.650	0.00	0.00	0.00	0.00	0.00
42.900	0.00	0.00	0.00	0.00	0.00
43.150	0.00	0.00	0.00	0.00	0.00
43.400	0.00	0.00	0.00	0.00	0.00
43.650	0.00	0.00	0.00	0.00	0.00
43.900	0.00	0.00	0.00	0.00	0.00
44.150	0.00	0.00	0.00	0.00	0.00
44.400	0.00	0.00	0.00	0.00	0.00
44.650	0.00	0.00	0.00	0.00	0.00

Subsection: Diverted Hydrograph
Label: Outlet-1
Scenario: 100 Year

Return Event: 100 years
Storm Event: 100 Year

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
44.900	0.00	0.00	0.00	(N/A)	(N/A)

Index

APPENDIX I: Culvert Calculations

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 11 2023

Box Culvert

Invert Elev Dn (ft)	=	980.38
Pipe Length (ft)	=	75.00
Slope (%)	=	1.07
Invert Elev Up (ft)	=	981.18
Rise (in)	=	60.0
Shape	=	Box
Span (in)	=	144.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Rectagular Concrete
Culvert Entrance	=	Tapered inlet throat
Coeff. K,M,c,Y,k	=	0.475, 0.667, 0.0179, 0.97, 0.2

Embankment

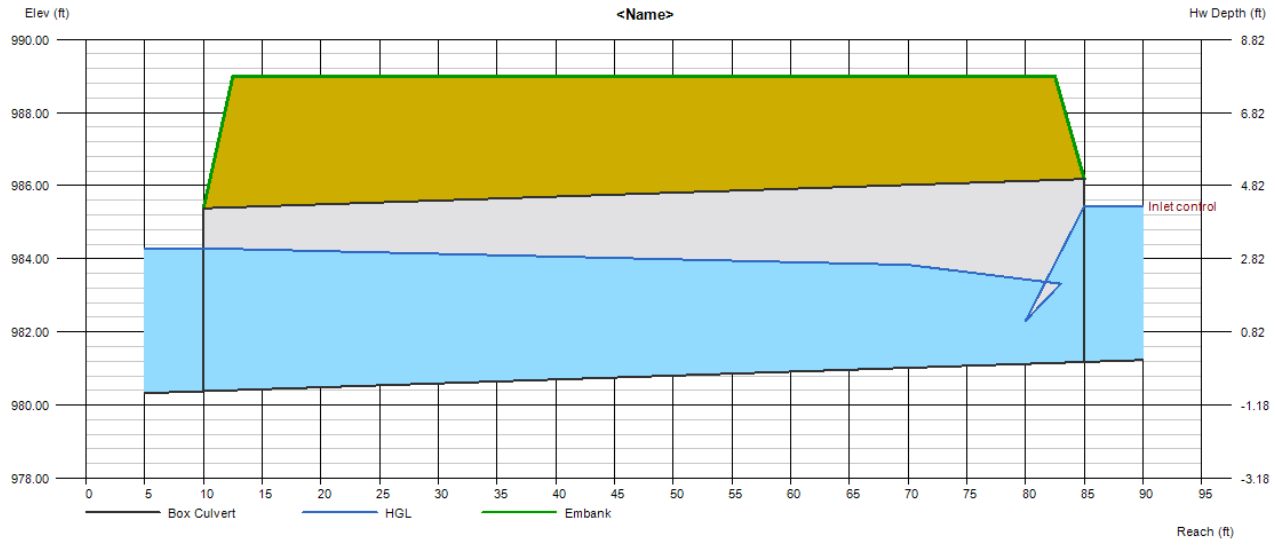
Top Elevation (ft)	=	989.00
Top Width (ft)	=	70.00
Crest Width (ft)	=	50.00

Calculations

Qmin (cfs)	=	644.00
Qmax (cfs)	=	644.00
Tailwater Elev (ft)	=	(dc+D)/2

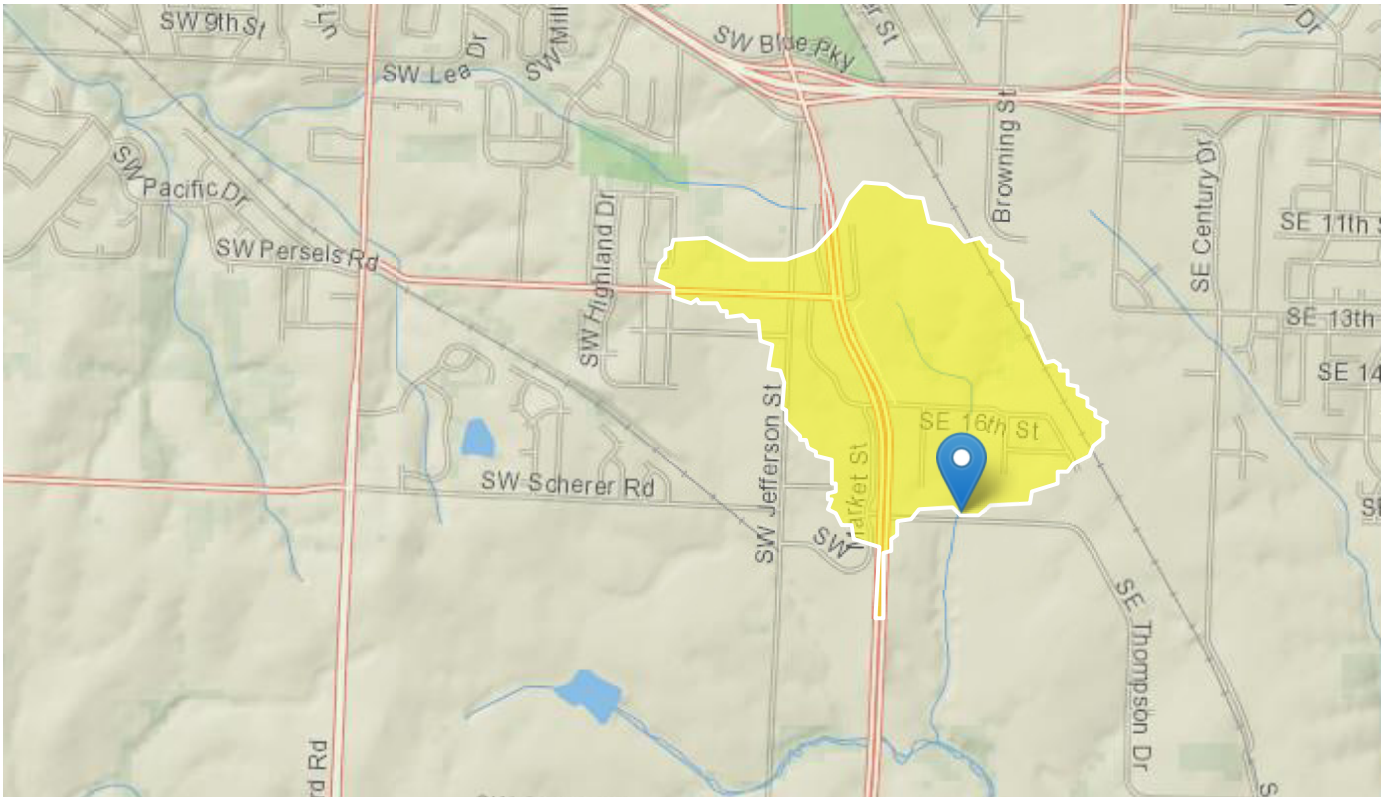
Highlighted

Qtotal (cfs)	=	644.00
Qpipe (cfs)	=	644.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.87
Veloc Up (ft/s)	=	9.53
HGL Dn (ft)	=	984.29
HGL Up (ft)	=	984.00
Hw Elev (ft)	=	985.44
Hw/D (ft)	=	0.85
Flow Regime	=	Inlet Control



StreamStats Report

Region ID: MO
Workspace ID: MO20230713134449188000
Clicked Point (Latitude, Longitude): 38.88881, -94.37005
Time: 2023-07-13 08:45:18 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSHAPE	Basin Shape Factor for Area	2.93	dimensionless
DRNAREA	Area that drains to a point on a stream	0.45	square miles
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	28.9	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Rural Statewide Region 1 SIR 2014 5165]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.45	square miles	0.11	8212.38
BSHAPE	Basin Shape Factor	2.93	dimensionless	2.25	26.59

Peak-Flow Statistics Parameters [Peak Urban Statewide SIR 2010 5073]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.45	square miles	0.28	189
IMPNLCD01	Percent Impervious NLCD2001	28.9	percent	2.3	46

Peak-Flow Statistics Flow Report [Peak Rural Statewide Region 1 SIR 2014 5165]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
50-percent AEP flood	177	ft^3/s	38.4
20-percent AEP flood	340	ft^3/s	30.8
10-percent AEP flood	466	ft^3/s	29.1
4-percent AEP flood	642	ft^3/s	28.8
2-percent AEP flood	780	ft^3/s	28.7
1-percent AEP flood	920	ft^3/s	29.8
0.5-percent AEP flood	1060	ft^3/s	31
0.2-percent AEP flood	1250	ft^3/s	33.2

Peak-Flow Statistics Flow Report [Peak Urban Statewide SIR 2010 5073]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	PIu	ASEp
50-percent AEP flood	296	ft^3/s	186	470	26.7