City Water, Light & Power
Springfield, Sangamon County, Illinois

Periodic Inflow Design Flood Control System Plan for Coal Combustion Residuals Surface Impoundments

July 2025

Prepared for:
City Water, Light & Power
3100 Stevenson Drive
Springfield, Illinois 62712

ANDREWS ENGINEERING

3300 Ginger Creek Drive, Springfield, IL 62711 | 217.787.2334

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TABLE OF CONTENTS

FIGURES

APPENDICES

1 INTRODUCTION

City Water, Light and Power (CWLP) ash ponds are coal combustion residuals (CCR) surface impoundments, which include both the Lakeside and Dallman ash ponds. A plan for the inflow design flood control system plan for the CCR surface impoundments was conducted as required by 40 CFR 257.82.

Andrews Engineering, Inc. (Andrews) performed the review of information, which included the following documents:

- Lidar Topographic Map (May 2023)
- FEMA – DSS-WISE HCOM Human Consequence Report (2023)
- Coal Ash Impoundment Site Assessment Final Report (May 2011)
- Historical Aerial Photographs (April 1995 – April 2024)
- FEMA Flood Insurance Study, Sangamon County, Illinois (2007)
- Engineering Report: Proposed Embankment Modification; CWLP Ash Disposal Area (July 1987)
- Construction Grading Plan for the Dallman Ash Pond (August 1976)

2 CCR UNIT INFORMATION

The CWLP CCR surface impoundments are located north and east of the former Lakeside Power Generating Station and Dallman Power Generating Station in the Eastern ½ of Section 12, Township 15 North, Range 5 West, in Springfield, Illinois (see Figure 1). These CCR surface impoundments are identified as the Lakeside Ash Pond and the Dallman Ash Pond (see Figure 2). Both the Lakeside Ash Pond and the Dallman Ash Pond are owned and operated by CWLP. The ponds are operated under National Pollutant Discharge Elimination System (NPDES) Permit Number IL0024767.

The former Lakeside Power Generating Station and Dallman Power Generating Station are situated on the northwestern bank of Lake Springfield in Springfield, Illinois. The Lakeside Ash Pond is immediately north of Spaulding Dam at the northern end of Lake Springfield. The Lakeside Ash Pond is primarily a diked embankment with some incising along the east perimeter and was placed into service prior to 1958. The original Lakeside Ash Pond was divided into four separate ponds since it was expanded vertically in 1988: three lime ponds and the settling pond. The current Lakeside Ash Pond is approximately 35.0 acres and ceased receiving ash in 2009. The three lime ponds were taken out of service in October 2023 with the completion of the construction of the new lime sludge-processing area.

The second impoundment, the Dallman Ash Pond, which is a diked embankment, was placed into service in approximately 1976. Dallman Ash Pond is approximately 34.5 acres and ceased receiving ash in 2021.

As of October 13, 2023, all CCR and non-CCR waste streams ceased flowing into the Lakeside Ash Pond and Dallman Ash Pond. Prior to inactivation of the impoundments, water from both the Dallman Ash Pond and Lakeside Ash Pond flowed into opposite sides of the approximate 10.38 acre Clarification Pond before being discharged to Sugar Creek at Outfall 004 pursuant to the aforementioned NPDES permit.

3 INFLOW

Both the Dallman Ash Pond and the Lakeside Ash Pond were built in a manner in which there is no surficial flow of stormwater into the impoundments during precipitation events. Therefore, the only water that would flow into the impoundment areas is that which falls directly within the perimeter of the impoundments and portions of the directly adjoining roadways. Ditches located adjacent to the south and east of the impoundments route surface water around the impoundment area ultimately discharging to the South Fork of Sugar Creek. The creek is present along the west and much of the north periphery of the Dallman Ash Pond. Additional information is provided in Section 4 below.

4 FLOOD CONTROL DESIGN

4.1 Inflow from Adjacent Areas

The surface impoundment hazard potential is classified as Significant Hazard Potential Classification requiring the inflow evaluation to utilize a 1,000-year, 24-hour storm event. According to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 2, Version 3, the 1000-year, 24-hour rainfall estimate for the site location is 8.37 inches. The Precipitation Frequency Data is located in Appendix A.

Both the Dallman Ash Pond and the Lakeside Ash Pond are diked surface impoundments built vertically above the existing grades and partially incised. Both CCR units are built in a manner in which there is no surficial flow of stormwater into the pond during precipitation events. Therefore, the only water that would flow into the pond during a precipitation event is that which falls directly into the ponds and directly adjoining roads. Ditches located adjacent to the south and east of the impoundments route surface water around the impoundment area ultimately discharging to the South Fork of Sugar Creek. Sugar Creek is present along the western edge and northern perimeters of ash impoundment area. The Lakeside Ash Pond is bound south by the Spaulding Dam. A map of the site is provided on Figure 2.

The watershed for Lake Springfield is approximately 267.5 square miles. Storm events rarely cover an entire watershed the size of Lake Springfield. However, water levels are monitored at the Lick Creek and Sugar Creek tributaries to Lake Springfield, allowing CWLP to adjust the floodgates if needed.

Full pool for Lake Springfield is 560 MSL, which is the spillway elevation. If monitoring stations leading into the lake indicated the lake level will substantially increase, up to five floodgates can be lowered a maximum of 8 feet each. The roadway adjacent to the Lakeside Ash Pond is approximately 570 MSL, 10 feet above the spillway. The highest lake water level ever recorded since it was first filled in 1935 occurred during a storm event on April 12, 1994, when the lake crested at 564.5 feet. Given the monitoring station information, watershed evaluations, and over 90 years of operation, Lake Springfield or receiving waters will not inundate the impoundment area due to a 1,000-year 24-hour storm event.

4.2 Capacity of the Surface Impoundments

The Dallman Ash Pond has a storage volume from approximately 549.02 feet. MSL with a maximum elevation of the dike walls of 552.0 feet MSL, yielding a total volume of 315,810 cubic feet as provided on Figure 3. The Lakeside Ash Pond and Lime Pond 3 have a total volume of 124,686 cubic feet at an elevation of 563 feet MSL as provided on Figure 4 and a maximum crest elevation of 565 feet MSL which allows for additional storage capacity. The Lakeside Ash Pond contained the lime ponds which received the lime sludge from the water treatment facility. Sluicing activities ceased in October 2023 effectively cutting off any liquids contributing to the water elevation of the pond. The Lime Pond 1 has a storage volume from approximately 565.04 to 568 feet MSL of 542,238 cubic feet and the Lime Pond 2 has a storage volume from approximately 564.52 to 568 feet MSL of 489,343 cubic feet as shown on Figures 5. The Clarification Pond has a normal pool elevation of 546.09 ft. MSL and a maximum dike elevation of 552 feet MSL for another 2,095,365 cubic feet of stormwater storage as shown on Figure 6. The total storage of the Dallman Ash Pond, the Lakeside Ash Pond, Lime Ponds 1, 2, & 3, and the Clarification Pond is 3,567,442 cubic feet.

4.3 Hydrologic Modeling

The onsite surface water drainage and storage was evaluated in detail using NRCS hydrologic methodology with two key parameters composite runoff curve number and Time of Concentration (TC). Modeling of the study area was completed using the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Watershed Hydrology Model (WinTR-20). The discharge structures were analyzed using the Federal Highway Administration (FHA) Culvert Hydraulic Analysis Program (HY-8).

4.3.1 Sub-Area Parameters

Dallman Ash Pond tributary includes the pond and all of the unpaved roadway surrounding the impoundment, a total of 37.79 acres. The areas of each ash pond are provided in Figure 2. The land surface is not vegetated. Based on the 2024 topography, soil and land surface conditions, the calculated the composite runoff curve number is 86.1, time of concentration is 53.79 minutes. The composite runoff curve number and time of concentration calculations are included in Appendix B. The Dallman Ash pond is a tributary area with quad-barreled 24-inch pipe as its outlet structure to the Clarification Pond.

The Lakeside Ash Pond and Lime Pond 3 comprise of a 25.13 acre tributary area. The calculated composite runoff curve is 73.24 and the Time of Concentration is 72 minutes. Lakeside Ash Pond has been filled up and heavily vegetated. Subsequent to cessation of sluicing operations to the lime ponds in October 2023, some areas of surface water are present within the defined area.

Lime Ponds 1 & 2 tributary includes the ponds with half of the unpaved roadway surrounding each pond, a total 9.01 of acres. This tributary area is primarily a water surface and small amount of unpaved roadway. The calculated runoff curve number is 98.52 for Lime Pond 1 and 98.77 for Lime Pond 2, and the time of concentration is 5 minutes. Lime Ponds 1 & 2 are also a well-defined pond with culvert pipes discharging to the center channel toward the north.

The lime stabilization decant structure is located to the east of Lakeside Ash Pond and the Clarification Pond. The tributary area is a concrete structure with a concrete storage pad to the south. The runoff curve has conservatively been assumed as 100 as the entire area is concrete. The time of concentration is 8.19 minutes. The assumption is that one of the larger cells of the structure is empty of lime sludge and would flow freely to the Clarification Pond. The other two cells would be in use with insignificant seepage flowing into the discharge pipe.

The Clarification Pond tributary includes the pond and half of the unpaved roadway surrounding the pond, a total of 10.38 acres. This tributary area is primarily a water surface and small amount of unpaved roadway. The calculated composite runoff curve is 93.67, and the time of concentration is 5 minutes. Clarification Pond is also a well-defined pond with a rectangle weir outlet structure discharging to Sugar Creek at permitted Outfall 004.

4.3.2 Discharge Structure Analyses

The culvert pipes connecting each pond with the channels and/or Clarification Pond were analyzed with the HY-8 Program. The structures were inspected and the report of each is included in the Periodic Structural Stability Assessment. The analysis for each culvert is included in Appendix C and the inspection of the culverts is included in Appendix D. Provided below are the stage-discharge-storage summaries for each sub-area.

The Dallman Ash Pond has four 24-inch culvert pipes for discharge from the Dallman Ash Pond to the Clarification Pond. Provided below in Table 1 is the stage-discharge-storage table for the Dallman Ash Pond with the stage-discharge from the four 24-inch culvert pipes and the stage-storage of the Dallman Ash Pond.

Table 1
Dallman Ash Pond Stage-Discharge-Storage

Elevation	Discharge	Storage Above 549.02 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
549.02	0	0
550	8.25	0.104
551	34.10	1.660
552	66.00	7.253

The Lakeside Ash Pond and Lime Pond 3 have a stormwater management pumping plan due to the existing culverting being blinded due to the planned closure of Lakeside and Lime Pond 3 CCR to be relocated, a temporary stormwater management plan of pumping from the Lakeside and Lime Pond 3 into the Clarification Pond is planned until adequate capacity within the Lakeside and Lime Pond 3 for storage of the 1000-yr storm event can be contained. CWLP rented a Pioneer model PP66S12L71 - 75 horsepower diesel powered variable speed 6-inch automatic priming trash pump. The information on this pump and the pumping curve are located in Attachment E. An electronic water level indicator will be placed within Lakeside to trigger an alarm if the water level exceeds an elevation of 558 feet MSL. The alarm will page a staff member that will start the pump within one hour of receiving the page. It is anticipated that the total head loss for pumping from Lakeside and Lime Pond 3 into the Clarification Pond will be no more than 50 feet of head. The pumping curve for the pump with a 75 horsepower engine provides in excess of 3,000 gallons per minute at those head pressures. The structure rating for Lakeside and Lime Pond 3 is based upon the pump being turned on at 559 feet MSL of water impounded and pumped at a rate of approximately 35 gallons per second. Provided below in Table 2 is the stage-discharge-storage table for the Lakeside Ash Pond and Lime Pond 3 with the stage-discharge from the pump and the stage-storage of the Lakeside Ash Pond and Lime Pond 3.

Table 2
Lakeside Ash Pond and Lime Pond 3 Stage-Discharge-Storage

Elevation	Discharge	Storage Above 558.5 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
559	0	0.0005
559.01	34.95	0.000501
560	34.96	0.008035

Elevation	Discharge	Storage Above 558.5 ft. MSL
561	34.97	0.0143
562	34.98	0.4605
563	34.99	2.8624

Lime Pond 1 has two 12-inch culvert pipes for discharge from the Lime Pond 1 to the Center Channel. Provided below in Table 3 is the stage-discharge-storage table for the Lime Pond 1 with the stage-discharge from the two 12-inch culvert pipes and the stage-storage of the Lime Pond 1.

Table 3
Lime Pond 1 Stage-Discharge-Storage

Elevation	Discharge	Storage Above 564.93 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
564.93	0	0
565	0.02	0.28524
566	4.08	4.40936
567	8.75	8.60849
568	11.86	12.89651

Lime Pond 2 has a 24-inch culvert pipe for discharge from the Lime Pond 2 to the Center Channel. Provided below in Table 4 is the stage-discharge-storage table for the Lime Pond 2 with the stage-discharge from the 24-inch culvert pipe and the stage-storage of the Lime Pond 2.

Table 4
Lime Pond 2 Stage-Discharge-Storage

Elevation	Discharge	Storage Above 564.52 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
564.52	0	0
565	0.9	1.496
566	7.5	4.668
567	12.9	7.914
568	16.49	11.234

The Center Channel has two 12-inch culvert pipes for discharge from the Center Channel to the West Settling Channel. Provided below in Table 5 is the stage-discharge-storage table for the Center Channel with the stage-discharge from the two 12-inch culvert pipes and the stage-storage of the Center Channel.

Table 5
Center Channel Stage-Discharge-Storage

Elevation	Discharge	Storage Above 561.26 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
561.26	0	0
562	2.46	0.05599
563	7.10	0.18650
564	9.78	0.37486

The West Settling Channel has a 12-inch culvert pipe for discharge from the West Settling Channel to the Clarification Pond. Provided below in Table 6 is the stage-discharge-storage table for the West Settling Channel with the stage-discharge from the 24-inch culvert pipe and the stage-storage of the West Settling Channel.

Table 6
West Settling Channel Stage-Discharge-Storage

Elevation	Discharge	Storage Above 559.45 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
559.45	0	0
560	1.0	0.13395
561	3.8	0.52801
562	5.47	1.18565
562.5	6.12	1.60184

The Lime Stabilization Decant has a 24-inch culvert pipe for discharge from the Lime Stabilization Decant to the Clarification Pond. Provided below in Table 7 is the stage-discharge-storage table for the Lime Stabilization Decant with the stage-discharge from the 24-inch culvert pipe and the stage-storage of the Lime Stabilization Decant. Storage is based upon one cell of 120 feet wide not in use allowing open flow for discharge.

Table 7
Lime Stabilization Decant Stage-Discharge-Storage

Elevation	Discharge	Storage Above 557.5 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
557.5	0	0
558.5	4.3	0.0008
559.5	12.75	0.001623
560.5	20.35	0.002466

The Clarification Pond has a weir structure ahead of the culvert pipe. Based upon the weir and culvert discharge analysis, the weir is the controlling discharge structure for the Clarification Pond. Provided below in Table 8 is the stage-discharge-storage table for the Clarification Pond with the stage-discharge of the weir structure and stage-storage of the Clarification Pond.

Table 8
Clarification Pond Stage-Discharge-Storage

Elevation	Discharge	Storage Above 546.09 ft. MSL
Feet MSL	Cubic Feet per Second	Arce-Feet
546.09	0	0
547	3.6528	7.0184
548	10.944	14.9050
549	20.408	22.9745
550	31.599	31.2278
551	44.264	39.6751
552	58.237	48.1030

4.3.3 Hydraulic Analysis

The WinTR-20 Model is a storm event surface water hydrologic model applied at a watershed scale. The model assists in the hydrologic evaluation of flood events for use in analysis of water resources projects. It can be used to analyze current watershed conditions as well as assess the impact of proposed changes (alternates) made within the watershed.

The Clarification Pond and Lime Ponds 1 & 2 are explicitly a pond structure with well-defined stage-discharge-storage rating curves. The areas of Lakeside Ash Pond, Dallman Ash Pond, Lime Ponds 3, and the Settling Channels are treated as drainage tributary areas. The runoff from the entire tributary area drains into the Clarification Pond.

All of the aforementioned data was utilized as inputs into the WinTR-20 Model for site-wide hydraulic analysis for the 1,000-year, 24-hour storm event. The WinTR-20 output is attached in Appendix F. Below is Table 9 summarizing the maximum storage elevations within each sub-area.

Table 9
Sub-Area Maximum Storage

Sub-Area	Maximum Elevation in Feet MSL	Crest Elevation in Feet MSL
Dallman Ash Pond	551.99	552.0
Lakeside Ash Pond and Lime Pond 3	562.61	563.0
Lime Pond 1	565.55	568.0

Sub-Area	Maximum Elevation in Feet MSL	Crest Elevation in Feet MSL
Lime Pond 2	565.15	568.0
Center Channel	562.56	564.0
West Settling Channel	561.98	562.5
Lime Stabilization Decant	557.91	580.0
Clarification Pond	549.74	552.0

The maximum stormwater elevations within each sub-area during the 1,000-year, 24-hour storm event is contained without overtopping.

The maximum discharge from the sub-areas directly adjoining the Clarification Pond as provided in Table 10 below. In addition to the sub-areas listed below, the Landfill Unit 2 and the associated Evaporation Pond are pumped directly into the Clarification Pond. WinTR-20 does not have the ability to model the pumped discharges from the Landfill Unit 2 and the Evaporation Pond. The maximum pumped discharge rate from the Landfill Unit 2 and the Evaporation Pond into the Clarification Pond is 1.421 cubic feet per second. This is statistically insignificant compared to the sum of the maximum discharge rates from Table 9 below of 123.27 cubic feet per second. It is projected that with the additional 1.421 cubic feet per second from the Landfill Unit 2 and the Evaporation Pond into the Clarification Pond that the Clarification Pond would remain below 549.80 feet MSL maximum elevation.

Table 10
Sub-Area Maximum Discharge Rates

Sub-Area	Maximum Discharge (cubic feet per second)
Dallman Ash Pond	65.8
Lakeside Ash Pond and Lime Pond 3	35.0
West Settling Channel	5.4
Lime Stabilization Decant	17.07

5 STATEMENT

This Periodic Inflow Design Flood Control System Plan for Coal Combustion Residuals Surface Impoundments was completed for CWLP by Andrews Engineering, Inc. in accordance with the requirements under 40 CFR 257.82(c).

Signature: Karl W. Finke

Illinois P.E. No.: 062.068571

Date: 07/11/25

Lic. Exp. 11/30/25

FIGURES:

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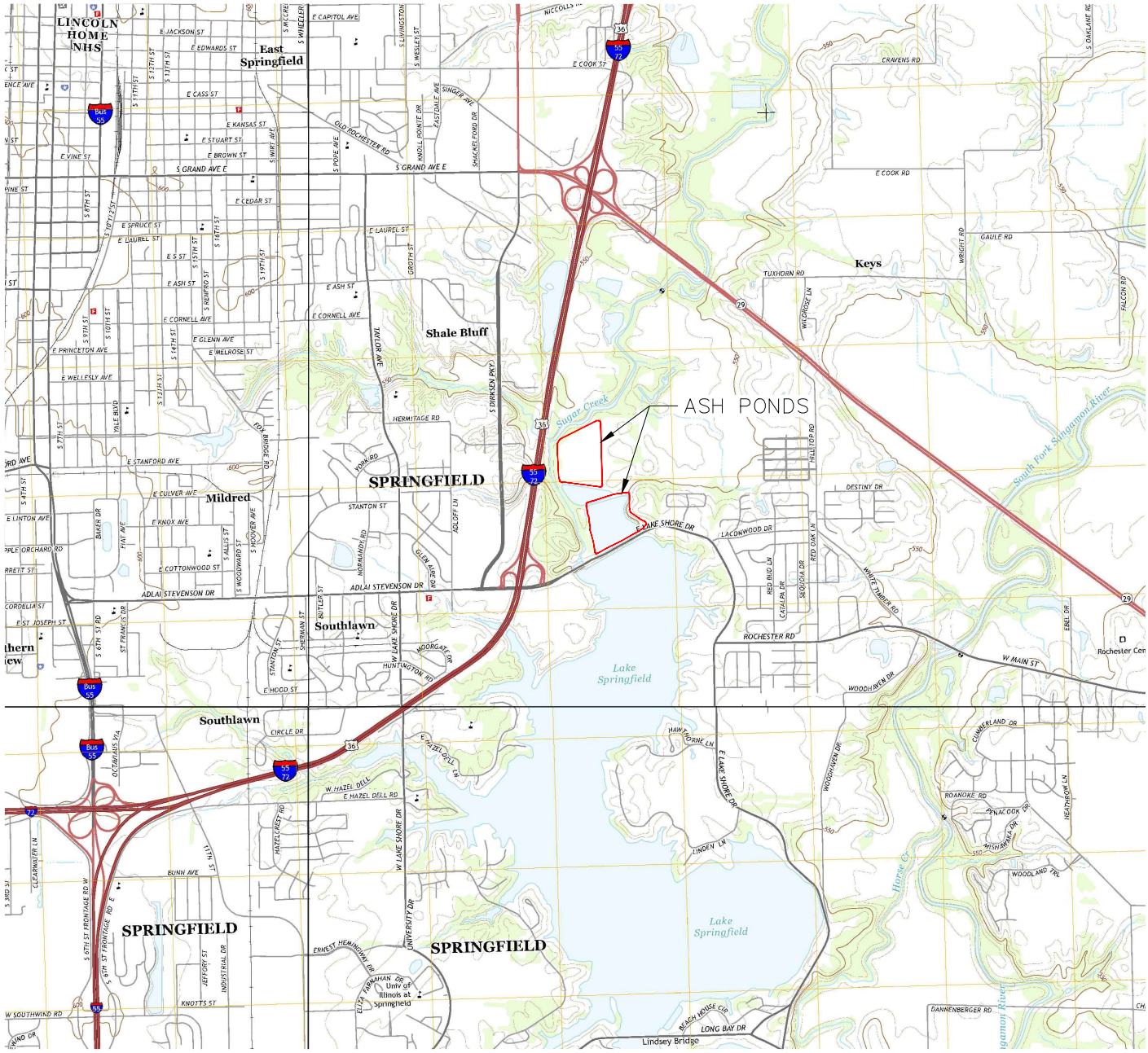

NOTE:
BACKGROUND IMAGE COURTESY OF
UNITED STATES GEOLOGICAL SURVEY.

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3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
PH (217) 787-2334 WWW.ANDREWS-ENG.COM
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APPROVED BY: KWF | DESIGNED BY: KWF | DRAWN BY: BCK

SITE LOCATION

PLANS PREPARED FOR
CITY, WATER, LIGHT & POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025
PROJECT ID: 240227/0006
SHEET NUMBER:
FIGURE 1

Tab: Layout1 Last Saved: January 17, 2025, by Ben Karpus Plotted: Tuesday, January 28, 2025 10:23:54 AM
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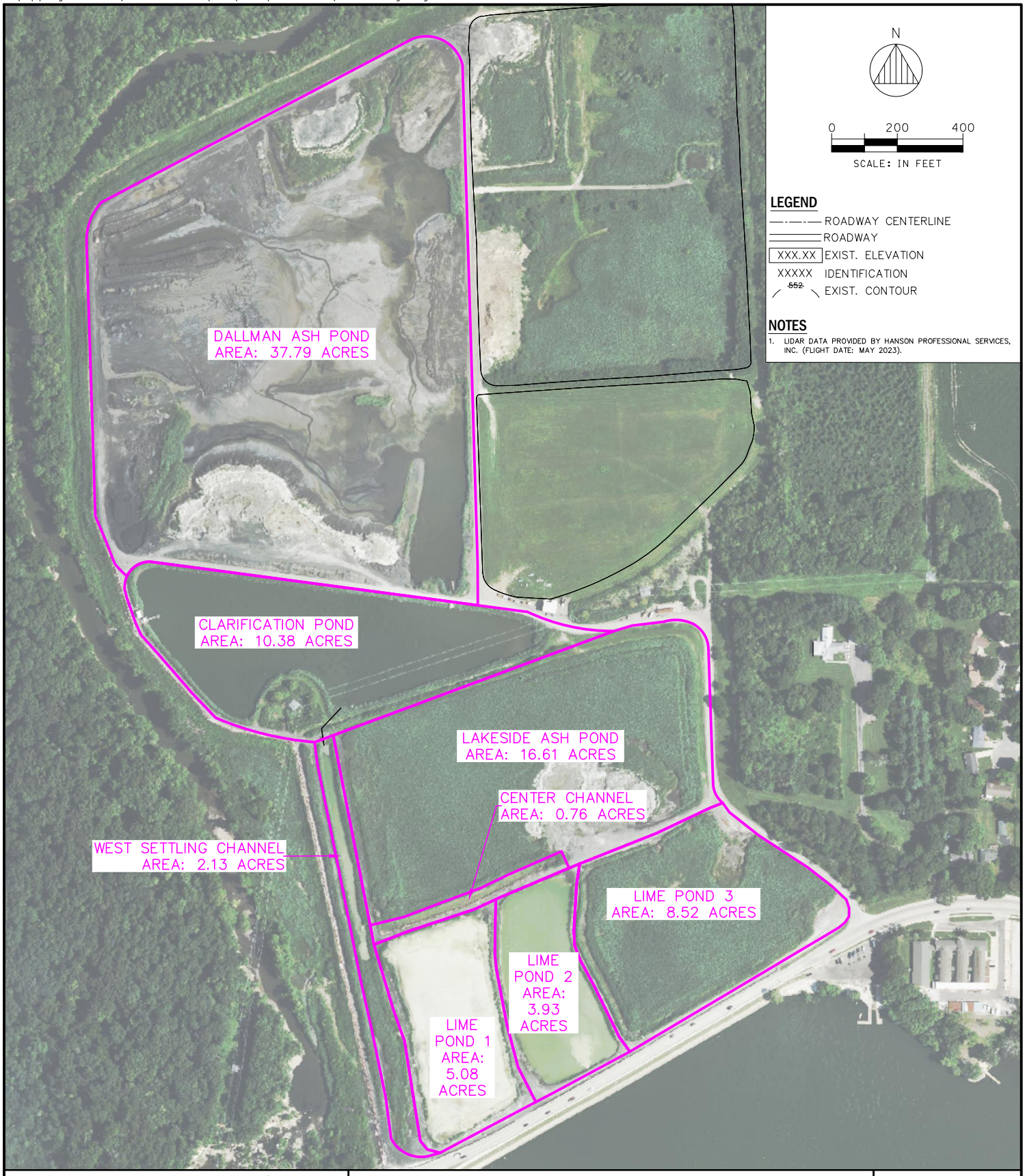

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APPROVED BY: KWF | DESIGNED BY: KWF | DRAWN BY: MPN

SITE MAP

PREPARED FOR

CITY WATER, LIGHT, AND POWER

SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025

PROJECT ID: 220408/0029

SHEET NUMBER:

FIG. 2

STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
549.02	8,913.02	N/A	N/A	0
550.00	299.04	0.98	4514	4514
550.00	37,510.24	0.00	0	4514
550.00	124.34	0.00	0	4514
551.00	135,496.13	1.00	67810	72324
551.00	121.30	0.00	0	72324
551.00	179.54	0.00	0	72324
551.00	383.38	0.00	0	72324
551.00	850.82	0.00	0	72324
552.00	201,542.60	1.00	101197	173521
552.00	311.48	0.00	0	173521
552.00	654.63	0.00	0	173521

STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
551.00	7,348.29	N/A	N/A	0
551.00	1,718.49	0.00	0	0
551.00	728.84	0.00	0	0
551.00	14,220.05	0.00	0	0
552.00	270,644.75	1.00	142432	142432
552.00	599.36	0.00	0	142432
552.00	350.54	0.00	0	142432

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0 60 120 240

SCALE: IN FEET

NOTES

1. BACKGROUND IMAGE DERIVED FROM GOOGLE EARTH; APRIL 7, 2024.
2. LIDAR DATA PROVIDED BY HANSON PROFESSIONAL SERVICES, INC. (FLIGHT DATE: MAY 2023).

NO.	DATE	REVISION DESCRIPTION	BY

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PH (217) 787-2334 WWW.ANDREWSENG.COM
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APPROVED BY: KWF | DESIGNED BY: KWF | DRAWN BY: MPN

DALLMAN ASH POND

PREPARED FOR
CITY WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025

PROJECT ID: 220408/0029

SHEET NUMBER: 3

Tab: Layout1 Last Saved: January 16, 2025, by Ben Karpus Plotted: Tuesday, January 28, 2025 10:24:14 AM
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STAGE STORAGE TABLE 1				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
559.00	266.65	N/A	N/A	0
560.00	432.61	1.00	350	350
561.00	112.81	1.00	273	622
561.00	104.29	0.00	0	622
561.00	1,104.85	0.00	0	622
561.00	103.23	0.00	0	622
561.00	669.33	0.00	0	622
561.00	99.91	0.00	0	622
561.00	826.02	0.00	0	622
561.00	208.84	0.00	0	622
561.00	485.41	0.00	0	622
562.00	38,385.77	1.00	19436	20058
562.00	238.80	0.00	0	20058
562.00	238.97	0.00	0	20058
562.00	401.44	0.00	0	20058
562.00	208.45	0.00	0	20058
562.00	147.46	0.00	0	20058
562.00	905.42	0.00	0	20058
562.00	169.75	0.00	0	20058
562.00	237.03	0.00	0	20058
562.00	1,072.18	0.00	0	20058
563.00	208,179.12	1.00	104626	124684
563.00	212.17	0.00	0	124684
563.00	177.01	0.00	0	124684
563.00	97.86	0.00	0	124684
563.00	375.51	0.00	0	124684
563.00	868.30	0.00	0	124684
563.00	132.51	0.00	0	124684

STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
555.00	280,788.04	N/A	N/A	0
556.00	284,923.57	1.00	282856	282856
557.00	289,084.13	1.00	287004	569860
558.00	293,269.64	1.00	291177	861037
559.00	297,480.08	1.00	295375	1156411
560.00	301,715.44	1.00	299598	1456009
561.00	305,975.70	1.00	303846	1759855
562.00	310,260.85	1.00	308118	2067973

STAGE STORAGE TABLE 2				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
564.00	2,066.17	N/A	N/A	0
564.00	516.28	0.00	0	0
565.00	9,172.09	1.00	4844	4844

STAGE STORAGE TABLE 3				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
563.00	220.28	N/A	N/A	0
564.00	1,927.19	1.00	1074	1074
565.00	3,104.13	1.00	2516	3589

STAGE STORAGE TABLE 4				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
562.00	189.62	N/A	N/A	0
563.00	5,789.12	1.00	2989	2989
564.00	9,634.65	1.00	7712	10701

NOTES

1. BACKGROUND IMAGE DERIVED FROM GOOGLE EARTH; APRIL 7, 2024.
2. LIDAR DATA PROVIDED BY HANSON PROFESSIONAL SERVICES, INC. (FLIGHT DATE: MAY 2023).

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0 80 160 320

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DESIGNED BY: KWF | DRAWN BY: MPN | APPROVED BY: KWF

LAKESIDE ASH POND AND LIME POND 3

PREPARED FOR

CITY WATER, LIGHT, AND POWER

SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025

PROJECT ID: 220408/0029

SHEET NUMBER: 4

Tab: Layout1 Last Saved: January 16, 2025, by Ben Karpus Plotted: Tuesday, January 28, 2025 10:24:27 AM
J:\S\Springfield CWLP\CWLP Ash Pond\DWG\2024\Stage Storage\LAKESIDE.dwg

556.00	284,923.57	1.00	282856	282856
557.00	289,084.13	1.00	287004	569860
558.00	293,269.64	1.00	291177	861037
559.00	297,480.08	1.00	295375	1156411
560.00	301,715.44	1.00	299598	1456009
561.00	305,975.70	1.00	303846	1759855
562.00	310,260.85	1.00	308118	2067973

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
564.52	135,032.38	N/A	N/A	0
565.00	136,560.99	0.48	65182	65182
566.00	139,763.97	1.00	138162	203345
567.00	142,991.79	1.00	141378	344723
568.00	146,248.23	1.00	144620	489343

N

0 60 120 240

SCALE: IN FEET

NOTES

1. BACKGROUND IMAGE DERIVED FROM GOOGLE EARTH; APRIL 7, 2024.
2. LIDAR DATA PROVIDED BY HANSON PROFESSIONAL SERVICES, INC. (FLIGHT DATE: MAY 2023).

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
564.93	177,379.57	N/A	N/A	0
565.00	177,633.47	0.07	12425	12425
566.00	181,273.94	1.00	179454	191879
567.00	184,939.17	1.00	183107	374986
568.00	188,633.47	1.00	186786	561772

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
561.26	2,015.69	N/A	N/A	0
562.00	4,575.02	0.74	2439	2439
563.00	6,794.93	1.00	5685	8124
564.00	9,616.00	1.00	8205	16329

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
559.45	10,030.11	N/A	N/A	0
560.00	11,186.74	0.55	5835	5835
561.00	23,143.32	1.00	17165	23000
562.00	34,150.94	1.00	28647	51647
562.50	38,365.49	0.50	18129	69776

NO.	DATE	REVISION DESCRIPTION	BY

ANDREWS ENGINEERING
3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
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DESIGNED BY: KWF | DRAWN BY: MPN | APPROVED BY: KWF

LIME POND 1 & 2, WEST SETTLING CHANNEL, AND CENTER CHANNEL

PREPARED FOR

CITY WATER, LIGHT, AND POWER

SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025

PROJECT ID: 220408/0029

SHEET NUMBER: 5

Tab: Layout1 Last Saved: January 20, 2025, by Ben Karpus Plotted: Tuesday, January 28, 2025 10:24:52 AM
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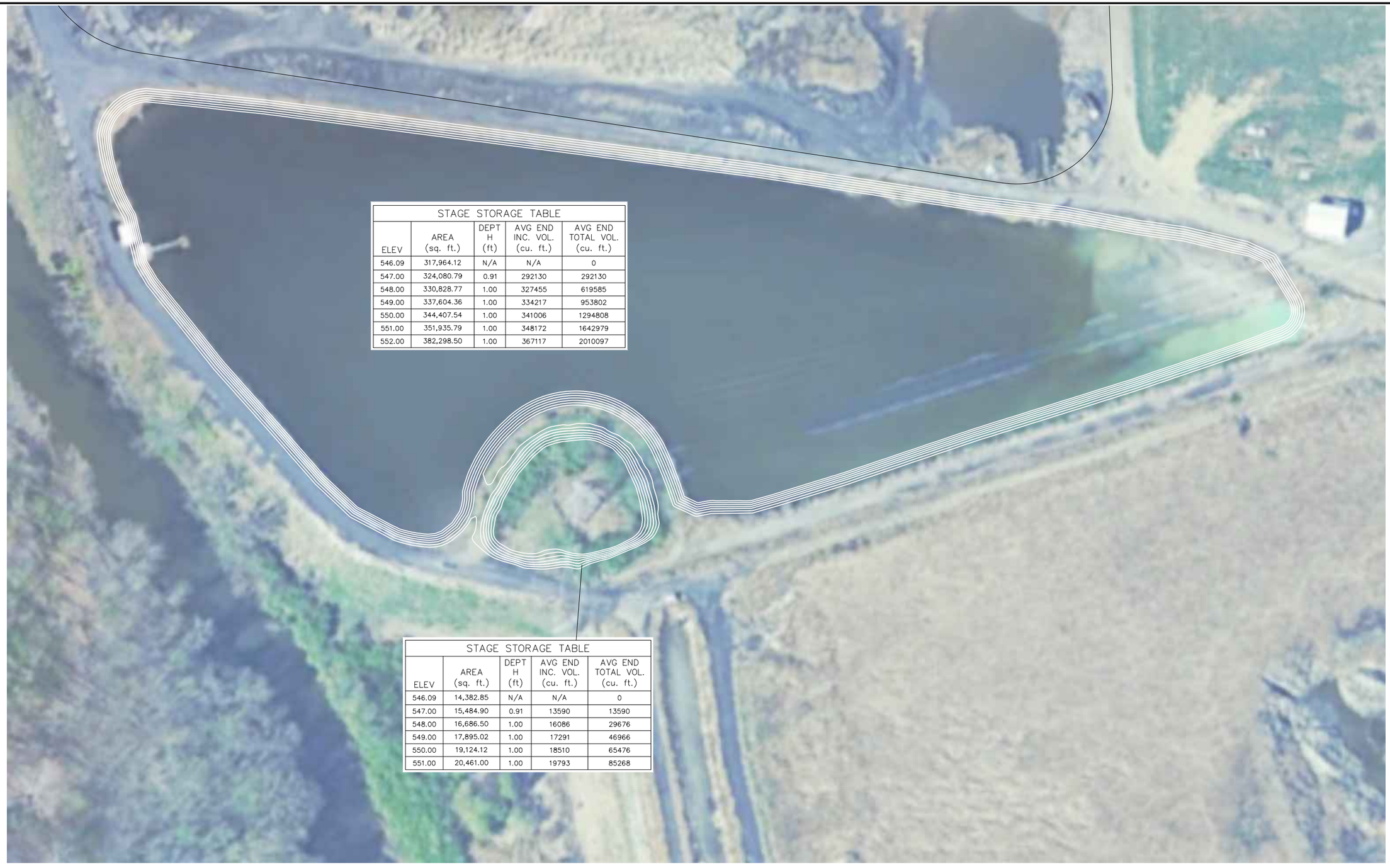

STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
546.09	317,964.12	N/A	N/A	0
547.00	324,080.79	0.91	292130	292130
548.00	330,828.77	1.00	327455	619585
549.00	337,604.36	1.00	334217	953802
550.00	344,407.54	1.00	341006	1294808
551.00	351,935.79	1.00	348172	1642979
552.00	382,298.50	1.00	367117	2010097

STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)
546.09	14,382.85	N/A	N/A	0
547.00	15,484.90	0.91	13590	13590
548.00	16,686.50	1.00	16086	29676
549.00	17,895.02	1.00	17291	46966
550.00	19,124.12	1.00	18510	65476
551.00	20,461.00	1.00	19793	85268

NOTES

1. BACKGROUND IMAGE DERIVED FROM GOOGLE EARTH; APRIL 7, 2024.
2. LIDAR DATA PROVIDED BY HANSON PROFESSIONAL SERVICES, INC. (FLIGHT DATE: MAY 2023).

N

0 50 100 200

SCALE: IN FEET

NO.	DATE	REVISION DESCRIPTION	BY

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DESIGNED BY: KWF | DRAWN BY: MPN | APPROVED BY: KWF

CLARIFICATION POND

PREPARED FOR
CITY WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2025

PROJECT ID: 220408/0029

SHEET NUMBER: 6

Tab: Layout1 Last Saved: January 16, 2025, by Ben Karpus Plotted: Tuesday, January 28, 2025 10:24:38 AM
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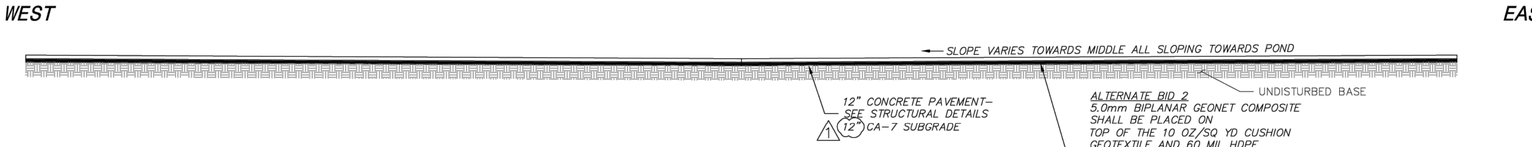
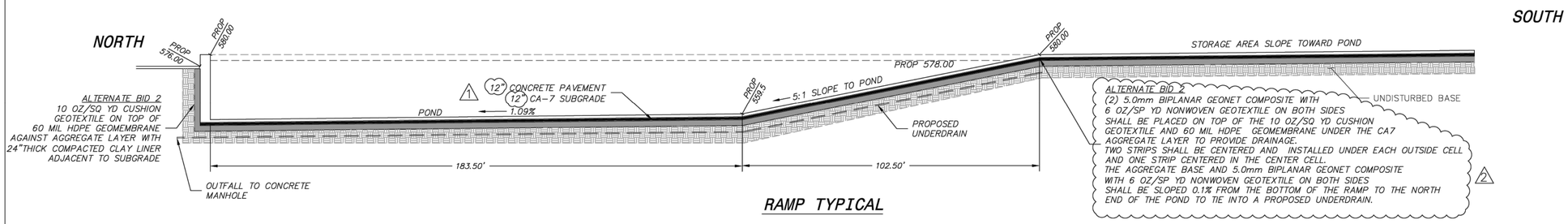
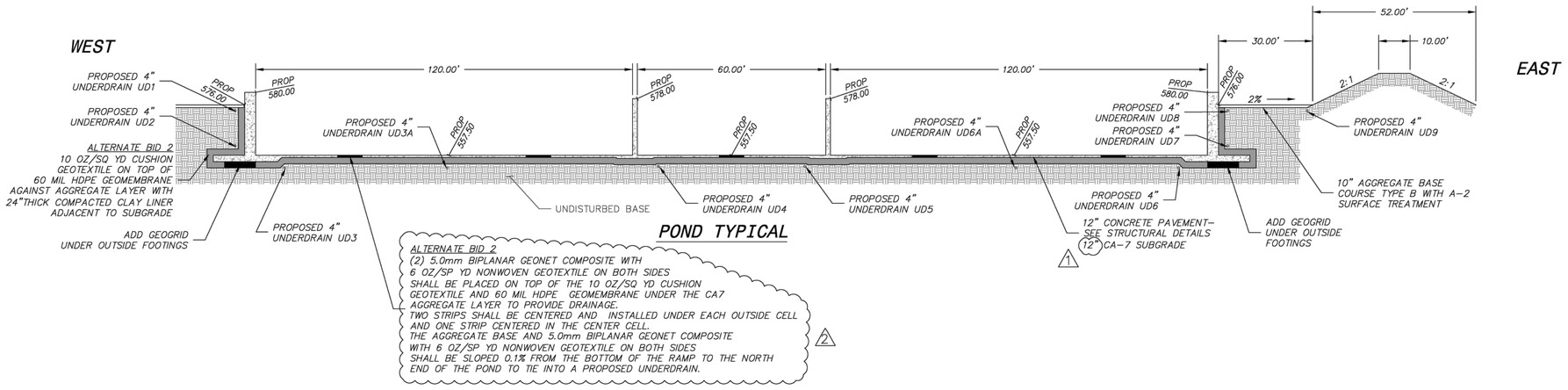


STORAGE AREA TYPICAL



RAMP TYPICAL



POND TYPICAL

NOTE:
TYPICAL CROSS–SECTIONS FROM CAD FILE: TYPICAL – SECTIONS.DWG, SHEET G–08, ISSUE DATED: 05–25–2022, PROVIDED BY HANSON PROFESSIONAL SERVICES INC.

NO.	DATE	REVISION DESCRIPTION	BY

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DESIGNED BY: KWF | DRAWN BY: MPN | APPROVED BY: KWF

LIME STABILIZATION DECANT

PREPARED FOR
CITY WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JULY 2025

PROJECT ID: 24033/0014

SHEET NUMBER:

FIG. 7

APPENDIX A:
Precipitation Frequency Data

NOAA Atlas 14, Volume 2, Version 3
Location name: Springfield, Illinois, USA*
Latitude: 39.765°, Longitude: -89.5946°
Elevation: 579 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

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	**0.398** (0.365-0.438)	**0.474** (0.434-0.522)	**0.566** (0.518-0.621)	**0.637** (0.581-0.699)	**0.726** (0.660-0.794)	**0.796** (0.721-0.872)	**0.863** (0.778-0.944)	**0.933** (0.837-1.02)	**1.03** (0.913-1.12)	**1.10** (0.969-1.20)
10-min	**0.619** (0.567-0.681)	**0.741** (0.677-0.814)	**0.879** (0.805-0.966)	**0.983** (0.897-1.08)	**1.11** (1.01-1.22)	**1.21** (1.09-1.32)	**1.30** (1.17-1.42)	**1.39** (1.25-1.52)	**1.51** (1.34-1.65)	**1.60** (1.41-1.74)
15-min	**0.759** (0.695-0.834)	**0.906** (0.828-0.996)	**1.08** (0.988-1.19)	**1.21** (1.10-1.33)	**1.37** (1.25-1.50)	**1.49** (1.35-1.64)	**1.61** (1.46-1.76)	**1.73** (1.55-1.89)	**1.88** (1.68-2.06)	**1.99** (1.76-2.18)
30-min	**1.00** (0.919-1.10)	**1.21** (1.11-1.33)	**1.48** (1.35-1.62)	**1.68** (1.53-1.84)	**1.94** (1.76-2.12)	**2.14** (1.93-2.34)	**2.33** (2.10-2.55)	**2.53** (2.27-2.76)	**2.79** (2.48-3.05)	**2.99** (2.64-3.27)
60-min	**1.23** (1.12-1.35)	**1.49** (1.36-1.64)	**1.86** (1.70-2.04)	**2.14** (1.95-2.34)	**2.51** (2.28-2.75)	**2.81** (2.55-3.08)	**3.12** (2.81-3.41)	**3.43** (3.08-3.75)	**3.86** (3.43-4.22)	**4.20** (3.71-4.59)
2-hr	**1.45** (1.33-1.59)	**1.76** (1.61-1.94)	**2.21** (2.02-2.42)	**2.56** (2.33-2.80)	**3.03** (2.76-3.32)	**3.42** (3.10-3.73)	**3.81** (3.44-4.16)	**4.23** (3.79-4.61)	**4.81** (4.28-5.24)	**5.28** (4.66-5.76)
3-hr	**1.54** (1.41-1.69)	**1.87** (1.71-2.05)	**2.34** (2.14-2.58)	**2.72** (2.48-2.99)	**3.25** (2.95-3.56)	**3.68** (3.32-4.03)	**4.13** (3.70-4.51)	**4.61** (4.11-5.04)	**5.29** (4.66-5.79)	**5.85** (5.12-6.40)
6-hr	**1.81** (1.66-1.98)	**2.18** (2.00-2.40)	**2.74** (2.51-3.00)	**3.18** (2.91-3.49)	**3.80** (3.46-4.15)	**4.31** (3.90-4.69)	**4.84** (4.35-5.27)	**5.40** (4.83-5.88)	**6.21** (5.49-6.75)	**6.87** (6.03-7.48)
12-hr	**2.11** (1.94-2.29)	**2.54** (2.34-2.77)	**3.16** (2.92-3.45)	**3.66** (3.37-3.99)	**4.35** (3.99-4.73)	**4.92** (4.48-5.34)	**5.50** (4.98-5.96)	**6.12** (5.51-6.63)	**6.99** (6.24-7.58)	**7.71** (6.82-8.35)
24-hr	**2.42** (2.26-2.61)	**2.93** (2.73-3.16)	**3.67** (3.42-3.95)	**4.24** (3.94-4.56)	**5.00** (4.65-5.38)	**5.61** (5.20-6.03)	**6.22** (5.76-6.68)	**6.85** (6.33-7.36)	**7.70** (7.10-8.28)	**8.38** (7.71-8.98)
2-day	**2.84** (2.64-3.06)	**3.43** (3.20-3.70)	**4.26** (3.97-4.60)	**4.91** (4.57-5.28)	**5.77** (5.35-6.20)	**6.44** (5.97-6.92)	**7.12** (6.58-7.65)	**7.82** (7.21-8.40)	**8.76** (8.06-9.40)	**9.49** (8.72-10.2)
3-day	**3.01** (2.80-3.23)	**3.63** (3.39-3.90)	**4.51** (4.20-4.84)	**5.18** (4.83-5.56)	**6.08** (5.65-6.52)	**6.79** (6.30-7.28)	**7.50** (6.95-8.04)	**8.23** (7.61-8.82)	**9.20** (8.49-9.86)	**9.97** (9.18-10.7)
4-day	**3.17** (2.96-3.40)	**3.82** (3.58-4.10)	**4.75** (4.44-5.09)	**5.45** (5.09-5.84)	**6.40** (5.96-6.85)	**7.14** (6.64-7.63)	**7.88** (7.31-8.43)	**8.64** (8.00-9.24)	**9.65** (8.92-10.3)	**10.4** (9.64-11.2)
7-day	**3.75** (3.51-4.00)	**4.50** (4.22-4.81)	**5.51** (5.16-5.89)	**6.27** (5.86-6.70)	**7.26** (6.77-7.75)	**8.02** (7.47-8.56)	**8.77** (8.16-9.36)	**9.53** (8.85-10.2)	**10.5** (9.76-11.2)	**11.3** (10.5-12.1)
10-day	**4.24** (3.98-4.52)	**5.08** (4.77-5.43)	**6.19** (5.81-6.61)	**7.01** (6.56-7.48)	**8.08** (7.56-8.62)	**8.90** (8.31-9.50)	**9.71** (9.06-10.4)	**10.5** (9.80-11.2)	**11.6** (10.8-12.4)	**12.4** (11.5-13.3)
20-day	**5.72** (5.41-6.06)	**6.84** (6.46-7.26)	**8.24** (7.78-8.75)	**9.25** (8.73-9.81)	**10.6** (9.94-11.2)	**11.6** (10.9-12.2)	**12.5** (11.8-13.3)	**13.5** (12.6-14.3)	**14.7** (13.8-15.6)	**15.7** (14.7-16.7)
30-day	**7.12** (6.74-7.53)	**8.50** (8.05-8.99)	**10.1** (9.60-10.7)	**11.3** (10.7-12.0)	**12.8** (12.1-13.5)	**13.9** (13.1-14.7)	**15.0** (14.1-15.9)	**16.1** (15.1-17.0)	**17.4** (16.3-18.5)	**18.5** (17.3-19.6)
45-day	**8.96** (8.51-9.44)	**10.7** (10.1-11.2)	**12.6** (12.0-13.3)	**14.0** (13.3-14.7)	**15.7** (14.9-16.5)	**17.0** (16.1-17.9)	**18.2** (17.2-19.2)	**19.4** (18.3-20.5)	**21.0** (19.8-22.1)	**22.1** (20.8-23.3)
60-day	**10.6** (10.1-11.2)	**12.6** (12.0-13.3)	**14.8** (14.1-15.6)	**16.4** (15.5-17.2)	**18.4** (17.4-19.3)	**19.8** (18.7-20.8)	**21.2** (20.0-22.3)	**22.5** (21.3-23.7)	**24.3** (22.9-25.6)	**25.6** (24.1-26.9)

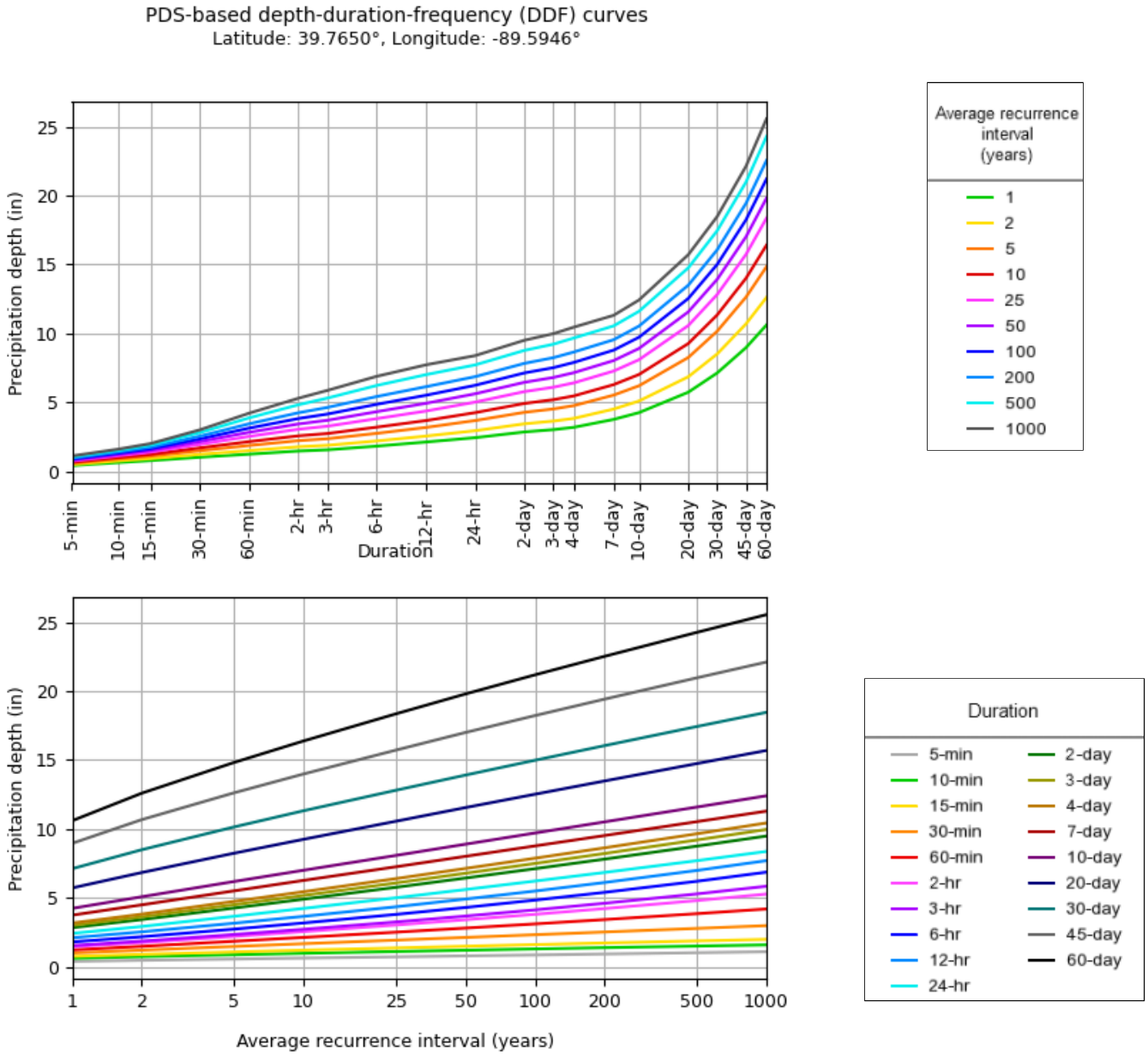
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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



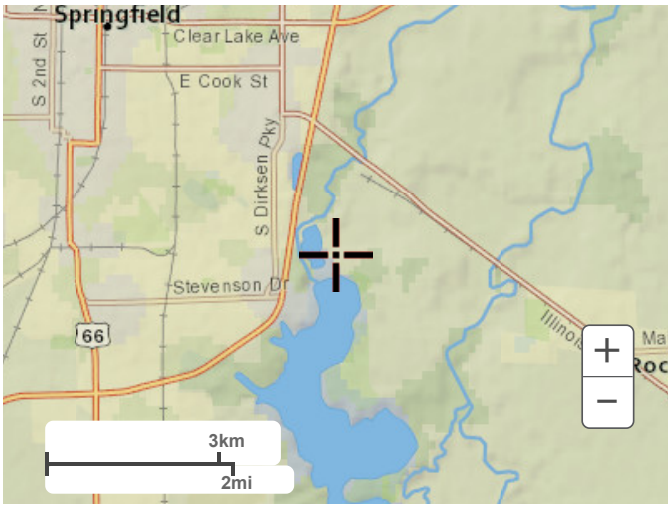
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Tue Jan 30 16:16:15 2024

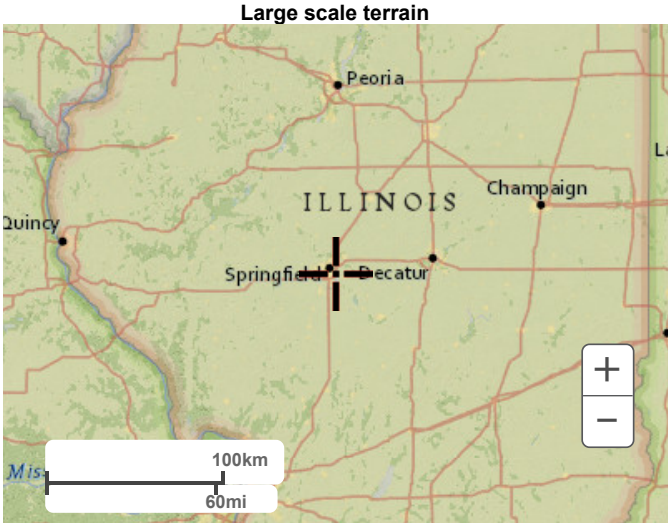
Back to Top

Maps & aerials

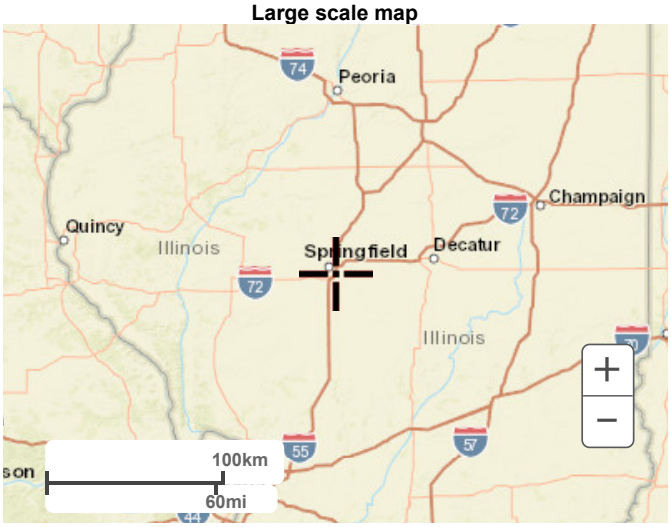
Small scale terrain



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

APPENDIX B:
Sub-Area Calculations

APPENDIX B-1:
Dallman Ash Pond Curve Number and Time of Concentration

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - Dalmann Ash Pond **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM

___ UNRESTRICTED AREA ___ OTHER:

X UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Dalmann Ash Pond	dense brush	71	9.49	673.79
Dalmann Ash Pond	graded area	91	27.78	2527.98
Dalmann Ash Pond	water surface	100	0.52	52.00
		TOTALS:	37.79	3253.77

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{3253.77}{37.79} \rightarrow \textbf{Composite CN} = \textbf{86.10}$$

NRCS TIME OF CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

PROJECT: CWLP - Dallman Ash Pond **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

CONDITION (SELECT FROM DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

SHEET FLOW

1. Segment ID		Dallman					
2. Surface description		Fallow					
3. Manning's roughness coefficient, *n*		0.05					
4. Flow length, *L* (≤ 100 ft)		100	ft				
5. 2-year, 24-hr rainfall, P_2		2.93	in				
6. Land slope, *s*		0.010	ft/ft				
7. Travel time, T_t	$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5}s^{0.4}}(60)$	5.61		+		=	5.61 min

SHALLOW CONCENTRATED FLOW

8. Segment ID		Dallman					
9. Surface description (drop-down list)		Unpaved					
10. Flow length, *L*		1475	ft				
11. Watercourse slope, *s*		0.001	ft/ft				
12. Average velocity, *V*		0.51	fps				
13. Travel time, T_t	$T_t = \frac{L}{60V}$	48.18		+		=	48.18 min

OPEN CHANNEL FLOW

14. Segment ID							
15. Cross-sectional flow area, *A*			ft^2				
16. Wetted Perimeter, P_w			ft				
17. Hydraulic radius, *R*			ft				
18. Flow Length, *L*			ft				
19. Channel slope, *S*			ft/ft				
20. Manning's roughness coefficient, *n*							
21. Average velocity, *V*	$V = \frac{1.486}{n}R^{\frac{2}{3}}S^{\frac{1}{2}}$		fps				
22. Travel time, T_t	$T_t = \frac{L}{60V}$			+		=	min

TIME-OF-CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

23. Time-of-Concentration, *Tc,* or Travel Time, *Tt*	$T_c, T_t = \sum T_t$					=	53.79 min

APPENDIX B-2:

Lakeside Ash and Lime Pond 3 Curve Number and Time of Concentration

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - Lime Pond 3 & Lakeside Ash Pond **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

X UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Lime Pond 3 & Lakeside Ash Pond	dense brush	71	22.35	1586.85
Lime Pond 3	graded area	91	1.48	134.68
Lakeside Ash Pond	graded area	91	0.88	80.08
Lime Pond 3	water surface	100	0.18	18.00
Lakeside Ash Pond	water surface	100	0.12	12.00
		TOTALS:	25.01	1831.61

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1831.61}{25.01} \rightarrow \textbf{Composite CN} = \textbf{73.24}$$

NRCS TIME OF CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

PROJECT: CWLP - SF- Lime Pond 3 to Lakeside Pond **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

CONDITION (SELECT FROM DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

SHEET FLOW

1. Segment ID		Lakeside					
2. Surface description		dense brush					
3. Manning's roughness coefficient, *n*		0.8					
4. Flow length, *L* (≤ 100 ft)		100	ft				
5. 2-year, 24-hr rainfall, P_2		3.34	in				
6. Land slope, *s*		0.008	ft/ft				
7. Travel time, T_t	$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5}s^{0.4}}(60)$	52.80	+		=	52.80	min

SHALLOW CONCENTRATED FLOW

8. Segment ID		Lakeside					
9. Surface description (drop-down list)		Unpaved					
10. Flow length, *L*		1665	ft				
11. Watercourse slope, *s*		0.008	ft/ft				
12. Average velocity, *V*		1.44	fps				
13. Travel time, T_t	$T_t = \frac{L}{60V}$	19.23	+		=	19.23	min

OPEN CHANNEL FLOW

14. Segment ID							
15. Cross-sectional flow area, *A*			ft^2				
16. Wetted Perimeter, P_w			ft				
17. Hydraulic radius, *R*			ft				
18. Flow Length, *L*			ft				
19. Channel slope, *S*			ft/ft				
20. Manning's roughness coefficient, *n*							
21. Average velocity, *V*	$V = \frac{1.486}{n}R^{\frac{2}{3}}S^{\frac{1}{2}}$		fps				
22. Travel time, T_t	$T_t = \frac{L}{60V}$		+		=		min

TIME-OF-CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

23. Time-of-Concentration, *Tc,* or Travel Time, *Tt*	$T_c, T_t = \sum T_t$	=	72.03	min

APPENDIX B-3:
Lime Pond 1 Curve Number

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - Lime Pond 1 **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

X UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Lime Pond 1	Water	100	4.71	471.00
Lime Pond 1	Graded Areas	91	0.17	15.47
Lime Pond 1	Native Plantings	70	0.20	14.00
		TOTALS:	5.08	500.47

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{500.47}{5.08} \rightarrow \textbf{Composite CN} = \textbf{98.52}$$

APPENDIX B-4:
Lime Pond 2 Curve Number

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - Lime Pond 2 **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM

___ UNRESTRICTED AREA ___ OTHER:

X UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Lime Pond 1	Water	100	3.65	365.00
Lime Pond 1	Graded Areas	91	0.17	15.47
Lime Pond 1	Native Plantings	70	0.11	7.70
		TOTALS:	3.93	388.17

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{388.17}{3.93} \rightarrow \textbf{Composite CN} = \textbf{98.77}$$

APPENDIX B-5:
West Settling Channel Curve Number

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - West Settling Channel **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

X UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Settling Channel	water	100	0.88	88.00
Settling Channel	dense brush	70	1.12	78.40
Settling Channel	graded area	91	0.63	57.33
		TOTALS:	2.63	223.73

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{223.73}{2.63} \rightarrow \textbf{Composite CN} = \textbf{85.07}$$

APPENDIX B-6:
Clarification Pond Curve Number

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: CWLP - Clarification Pond **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 1/2/2025

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

X UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Clarification Pond	Water	100	7.70	770.00
Clarification Pond	Graded Areas	91	0.70	63.70
Clarification Pond	Native Plantings	70	1.98	138.60
		TOTALS:	10.38	972.30

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{972.30}{10.38} \rightarrow \textbf{Composite CN} = \textbf{93.67}$$

APPENDIX B-7:
Lime Stabilization Decant Time of Concentration

NRCS TIME OF CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

PROJECT: CWLP - Decant **PERMIT NUMBER:**

LOCATION: Springfield, Sangamon County **DATE:** 7/6/2025

CONDITION (SELECT FROM DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

SHEET FLOW

1.	Segment ID		Sheet				
2.	Surface description		Storage Area				
3.	Manning's roughness coefficient, *n*		0.013				
4.	Flow length, *L* (≤ 100 ft)		385.8	ft			
5.	2-year, 24-hr rainfall, P_2		2.93	in			
6.	Land slope, *s*		0.010	ft/ft			
7.	Travel time, T_t	$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5}s^{0.4}}(60)$	5.62		+	=	5.62 min

SHALLOW CONCENTRATED FLOW

8.	Segment ID		Pond Slope				
9.	Surface description (drop-down list)		Paved				
10.	Flow length, *L*		102.5	ft			
11.	Watercourse slope, *s*		0.200	ft/ft			
12.	Average velocity, *V*		9.09	fps			
13.	Travel time, T_t	$T_t = \frac{L}{60V}$	0.19		+	=	0.19 min

OPEN CHANNEL FLOW

14.	Segment ID		Pond				
15.	Cross-sectional flow area, *A*		4.26	ft^2			
16.	Wetted Perimeter, P_w		120.07	ft			
17.	Hydraulic radius, *R*		0.04	ft			
18.	Flow Length, *L*		183.5	ft			
19.	Channel slope, *S*		0.011	ft/ft			
20.	Manning's roughness coefficient, *n*		0.013				
21.	Average velocity, *V*	$V = \frac{1.486}{n}R^{\frac{2}{3}}S^{\frac{1}{2}}$	1.29	fps			
22.	Travel time, T_t	$T_t = \frac{L}{60V}$	2.37		+	=	2.37 min

TIME-OF-CONCENTRATION (T_c) OR TRAVEL TIME (T_t)

23.	Time-of-Concentration, *Tc,* or Travel Time, *Tt*	$T_c, T_t = \sum T_t$	=	8.19 min

APPENDIX C:
Culvert Analysis

APPENDIX C-1:
Dallman Ash Pond Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

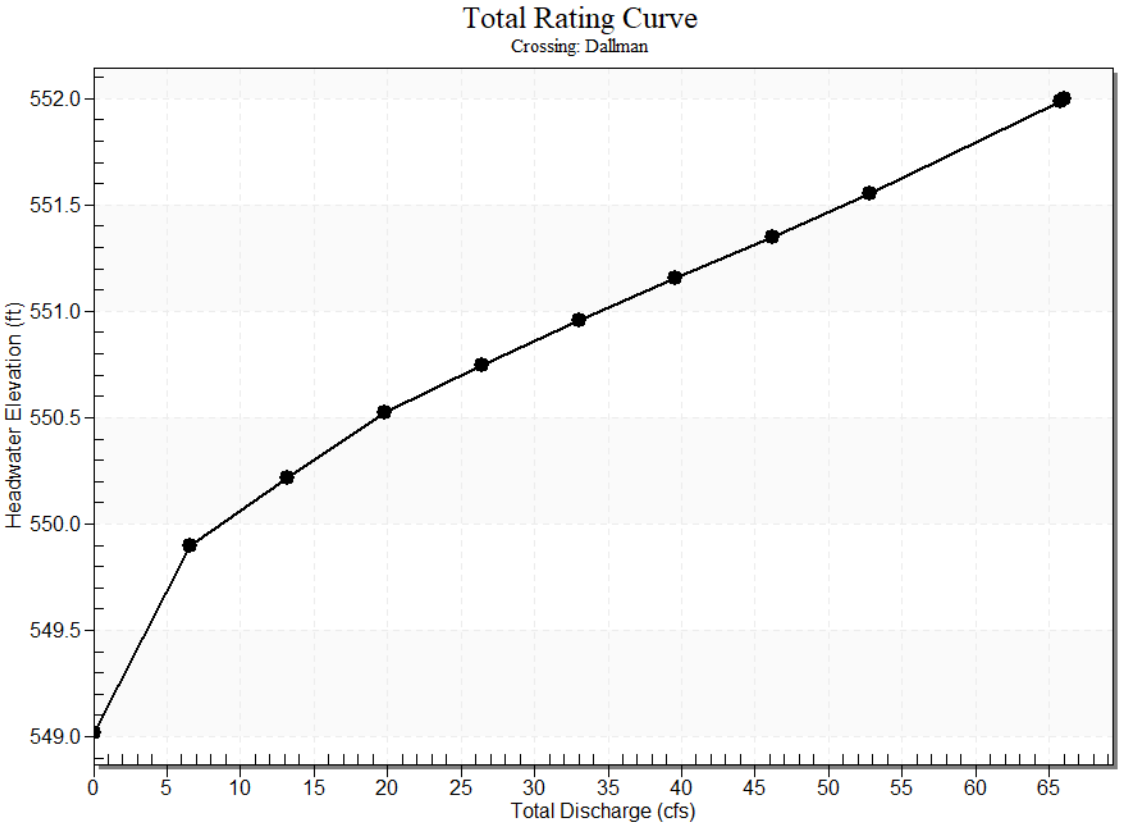
Design Flow: 65.80 cfs

Maximum Flow: 66.00 cfs

Table 1 - Summary of Culvert Flows at Crossing: Dallman

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Culvert 2 Discharge (cfs)	Culvert 3 Discharge (cfs)	Culvert 4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
549.02	0.00	0.00	0.00	0.00	0.00	0.00	0
549.90	6.60	2.93	1.73	1.66	0.28	0.00	5
550.22	13.20	5.14	3.40	3.30	1.35	0.00	5
550.52	19.80	6.08	5.38	5.30	3.04	0.00	6
550.75	26.40	7.84	6.99	6.99	4.58	0.00	4
550.95	33.00	9.61	8.55	8.70	6.13	0.00	3
551.15	39.60	11.43	10.06	10.42	7.69	0.00	4
551.35	46.20	13.28	11.52	12.15	9.25	0.00	7
551.56	52.80	15.11	12.90	13.89	10.85	0.00	13
551.99	65.80	17.64	17.27	16.78	13.96	0.00	26
552.00	66.00	17.68	17.32	16.83	14.02	0.00	8
552.00	65.91	17.70	17.33	16.84	14.04	0.00	Overtopping

Rating Curve Plot for Crossing: Dallman



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.30	0.00	0.00	0.00
6.60 cfs	2.93 cfs	549.90	0.88	0.138	1-S2n	0.59	0.60	0.59	0.31	3.78	9.27
13.20 cfs	5.14 cfs	550.22	1.19	0.416	1-S2n	0.80	0.80	0.80	0.46	4.41	11.56
19.80 cfs	6.08 cfs	550.52	1.32	1.502	3-M1t	0.87	0.87	0.89	0.59	4.49	13.06
26.40	7.84	550.75	1.54	1.72	2-	1.01	1.00	1.0	0.69	5.02	14.21

cfs	cfs			6	M2c			0			
33.00 cfs	9.61 cfs	550.95	1.77	1.934	2-M2c	1.14	1.11	1.11	0.78	5.38	15.14
39.60 cfs	11.43 cfs	551.15	2.00	2.134	7-M2c	1.28	1.21	1.21	0.87	5.73	15.93
46.20 cfs	13.28 cfs	551.35	2.26	2.331	7-M2c	1.43	1.31	1.31	0.94	6.08	16.62
52.80 cfs	15.11 cfs	551.56	2.54	2.529	7-M2c	1.61	1.40	1.40	1.02	6.43	17.24
65.80 cfs	17.64 cfs	551.99	2.97	2.843	7-M2c	2.00	1.51	1.51	1.14	6.92	18.29
66.00 cfs	17.68 cfs	552.00	2.98	2.850	7-M2c	2.00	1.52	1.52	1.15	6.93	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

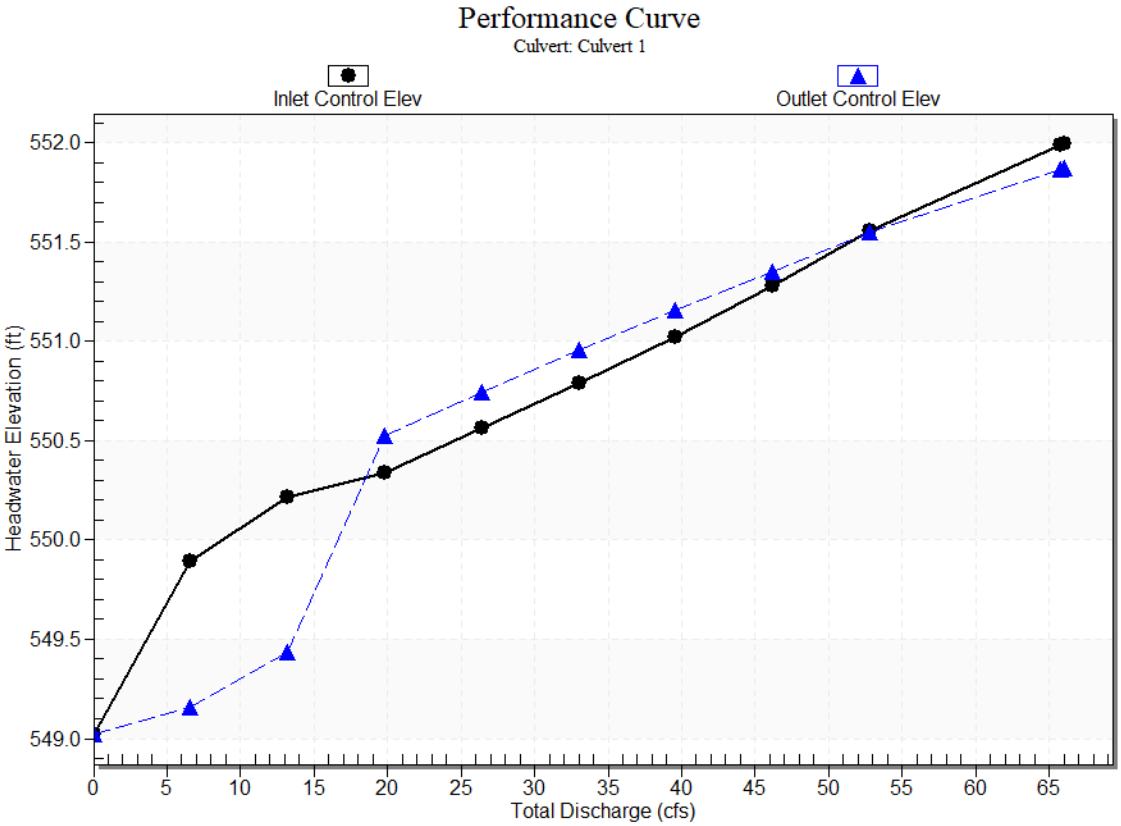
Inlet Elevation (invert): 549.02 ft,

Outlet Elevation (invert): 548.50 ft

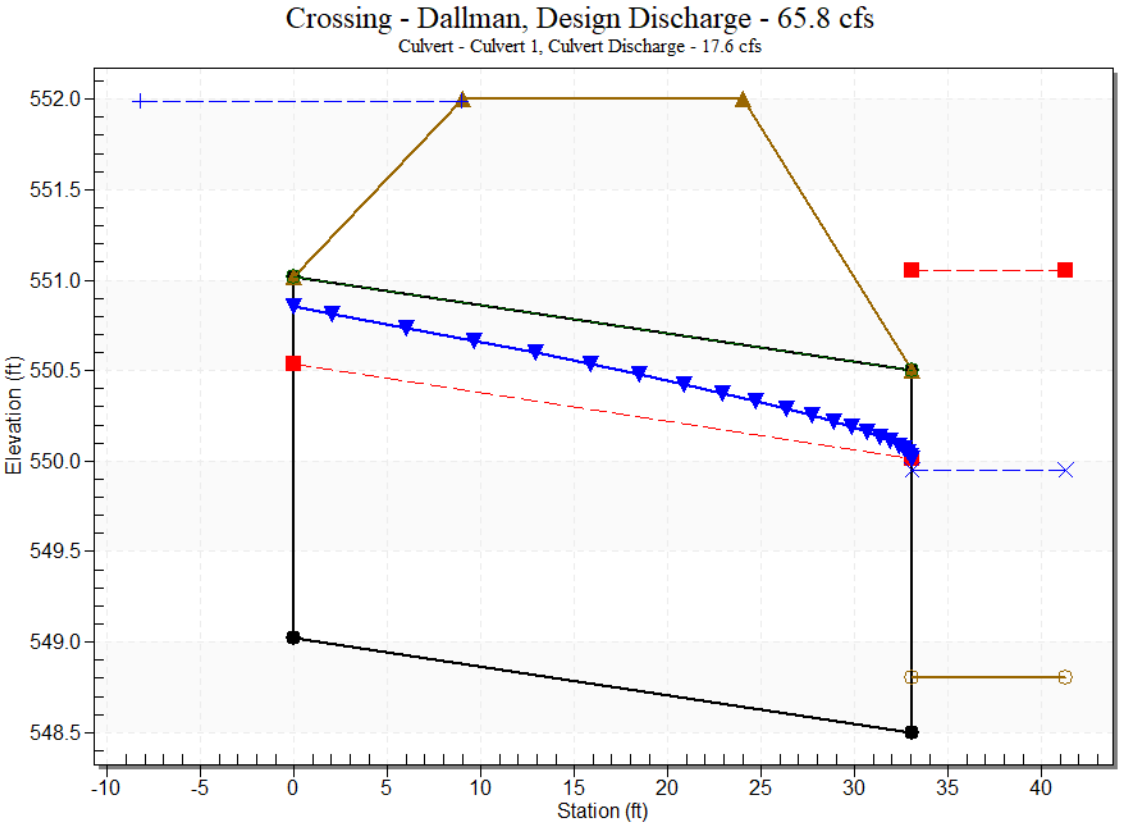
Culvert Length: 33.05 ft,

Culvert Slope: 0.0157

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.02 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.50 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Culvert Data: Culvert 2

Table 2 - Culvert Summary Table: Culvert 2

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
6.60 cfs	1.73 cfs	549.90	0.67	0.826	7-A2c	-1.00	0.45	0.45	0.31	3.21	9.27
13.20 cfs	3.40 cfs	550.22	0.96	1.146	7-A2c	-1.00	0.65	0.65	0.46	3.88	11.56
19.80 cfs	5.38 cfs	550.52	1.24	1.452	7-A2c	-1.00	0.82	0.82	0.59	4.45	13.06
26.40 cfs	6.99 cfs	550.75	1.45	1.676	7-A2c	-1.00	0.94	0.94	0.69	4.83	14.21
33.00 cfs	8.55 cfs	550.95	1.65	1.884	7-A2c	-1.00	1.04	1.04	0.78	5.17	15.14
39.60 cfs	10.06 cfs	551.15	1.84	2.083	7-A2c	-1.00	1.14	1.14	0.87	5.47	15.93
46.20 cfs	11.52 cfs	551.35	2.03	2.281	7-A2c	-1.00	1.22	1.22	0.94	5.75	16.62
52.80 cfs	12.90 cfs	551.56	2.22	2.487	7-A2c	-1.00	1.29	1.29	1.02	6.01	17.24
65.80 cfs	17.27 cfs	551.99	2.92	2.892	7-JA2c	-1.00	1.50	1.50	1.14	6.84	18.29
66.00 cfs	17.32 cfs	552.00	2.93	2.897	7-JA2t	-1.00	1.50	1.50	1.15	6.85	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

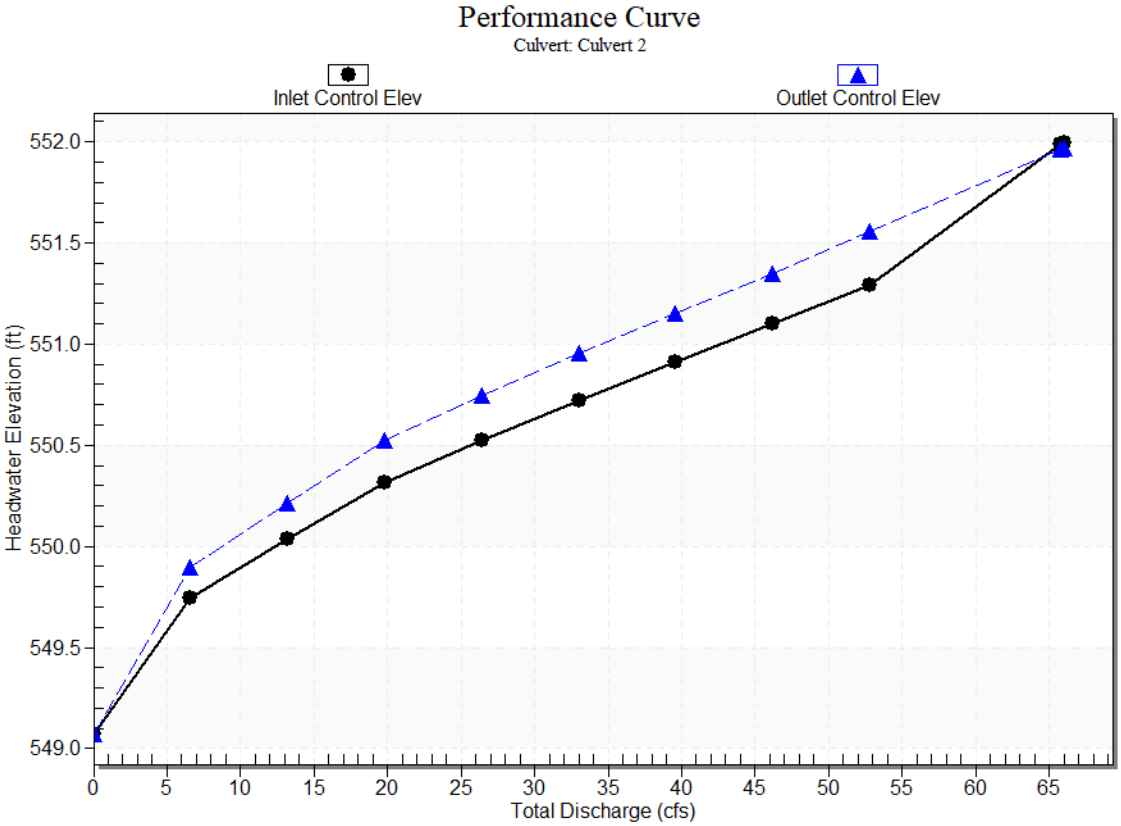
Inlet Elevation (invert): 549.07 ft,

Outlet Elevation (invert): 549.11 ft

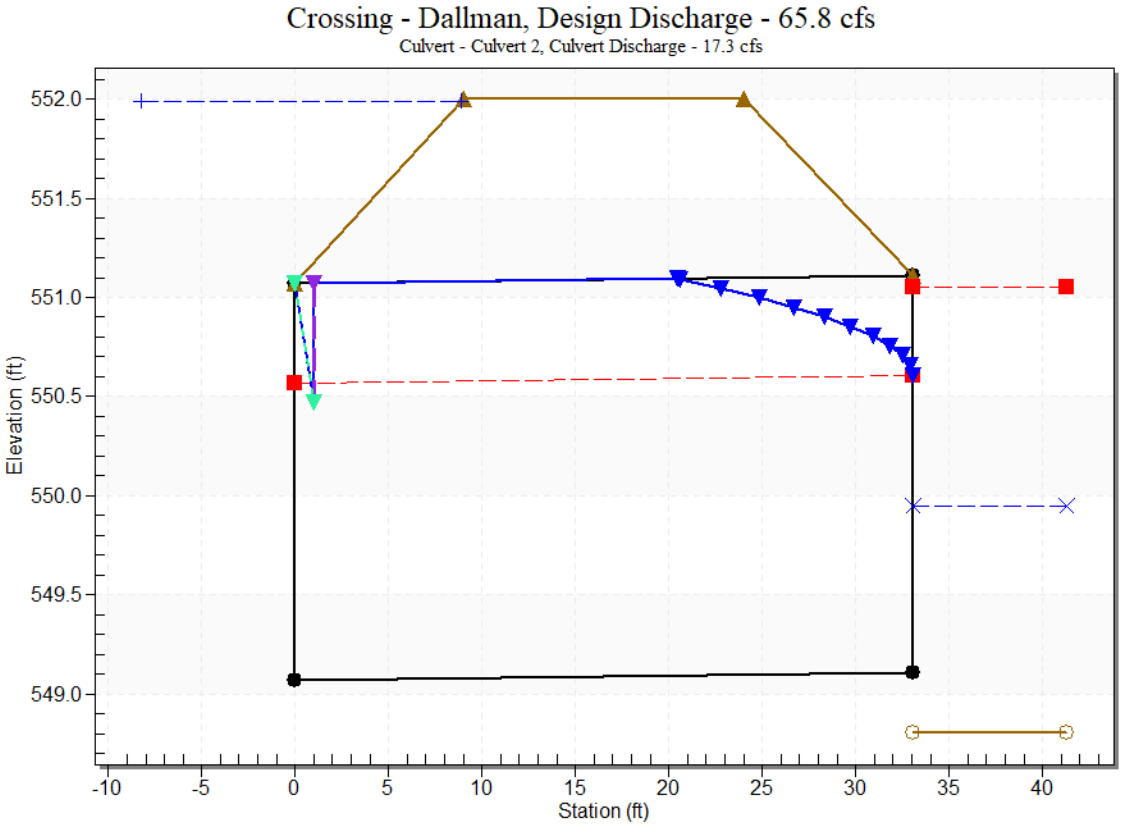
Culvert Length: 33.05 ft,

Culvert Slope: -0.0012

Culvert Performance Curve Plot: Culvert 2



Water Surface Profile Plot for Culvert: Culvert 2



Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.07 ft

Outlet Station: 33.05 ft

Outlet Elevation: 549.11 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Culvert Data: Culvert 3

Table 3 - Culvert Summary Table: Culvert 3

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.03	0.00	0.00	0.00
6.60 cfs	1.66 cfs	549.90	0.65	0.726	2-M2c	0.47	0.45	0.45	0.31	3.18	9.27
13.20 cfs	3.30 cfs	550.22	0.94	1.046	2-M2c	0.67	0.64	0.64	0.46	3.85	11.56
19.80 cfs	5.30 cfs	550.52	1.22	1.352	2-M2c	0.87	0.81	0.81	0.59	4.43	13.06
26.40 cfs	6.99 cfs	550.75	1.44	1.575	2-M2c	1.02	0.94	0.94	0.69	4.83	14.21
33.00 cfs	8.70 cfs	550.95	1.66	1.785	2-M2c	1.17	1.05	1.05	0.78	5.20	15.14
39.60 cfs	10.42 cfs	551.15	1.88	1.984	2-M2c	1.32	1.16	1.16	0.87	5.54	15.93
46.20 cfs	12.15 cfs	551.35	2.10	2.181	7-M2c	1.48	1.25	1.25	0.94	5.87	16.62
52.80 cfs	13.89 cfs	551.56	2.35	2.386	7-M2c	1.70	1.34	1.34	1.02	6.20	17.24
65.80 cfs	16.78 cfs	551.99	2.82	2.770	7-M2c	2.00	1.48	1.48	1.14	6.75	18.29
66.00 cfs	16.83 cfs	552.00	2.83	2.778	7-M2c	2.00	1.48	1.48	1.15	6.76	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

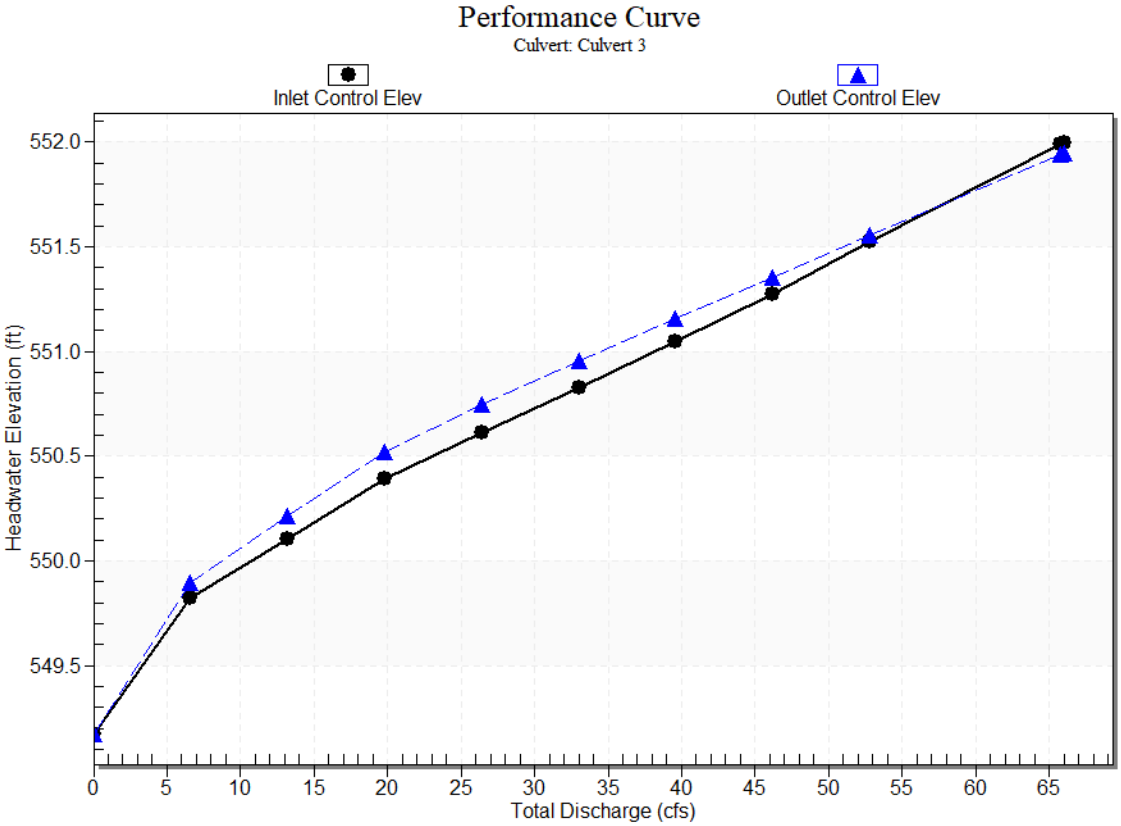
Inlet Elevation (invert): 549.17 ft,

Outlet Elevation (invert): 548.77 ft

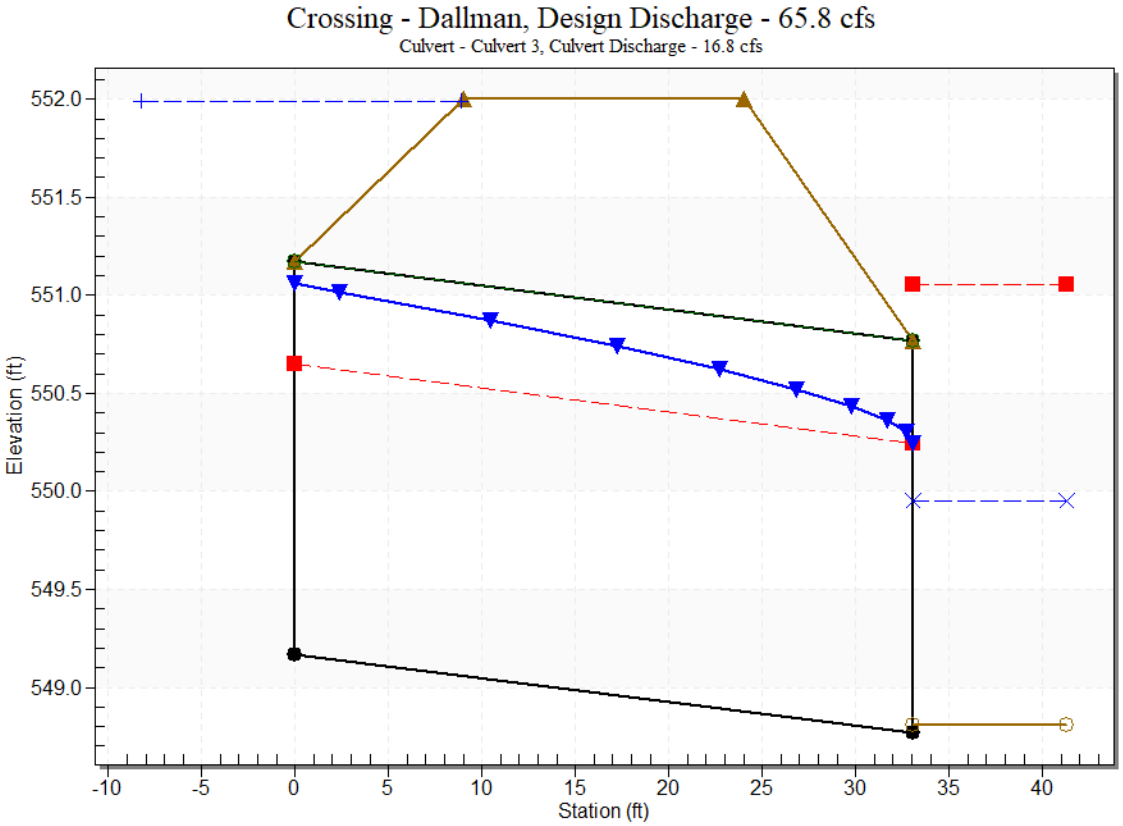
Culvert Length: 33.05 ft,

Culvert Slope: 0.0121

Culvert Performance Curve Plot: Culvert 3



Water Surface Profile Plot for Culvert: Culvert 3



Site Data - Culvert 3

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.17 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.77 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 3

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Culvert Data: Culvert 4

Table 4 - Culvert Summary Table: Culvert 4

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.06	0.00	0.00	0.00
6.60 cfs	0.28 cfs	549.90	0.26	0.0*	1-JS1t	0.16	0.18	0.37	0.31	0.69	9.27
13.20 cfs	1.35 cfs	550.22	0.58	0.0*	1-S2n	0.35	0.40	0.35	0.46	3.67	11.56
19.80 cfs	3.04 cfs	550.52	0.88	0.0*	1-S2n	0.52	0.61	0.52	0.59	4.64	13.06
26.40 cfs	4.58 cfs	550.75	1.11	0.0*	1-S2n	0.65	0.75	0.65	0.69	5.22	14.21
33.00 cfs	6.13 cfs	550.95	1.31	0.170	1-S2n	0.75	0.88	0.75	0.78	5.65	15.14
39.60 cfs	7.69 cfs	551.15	1.51	0.392	1-S2n	0.85	0.99	0.85	0.87	6.01	15.93
46.20 cfs	9.25 cfs	551.35	1.71	0.629	1-S2n	0.95	1.09	0.95	0.94	6.30	16.62
52.80 cfs	10.85 cfs	551.56	1.92	0.890	1-S2n	1.04	1.18	1.04	1.02	6.56	17.24
65.80 cfs	13.96 cfs	551.99	2.35	1.456	5-S2n	1.22	1.35	1.22	1.14	6.96	18.29
66.00 cfs	14.02 cfs	552.00	2.36	1.467	5-S2n	1.22	1.35	1.22	1.15	6.96	18.31

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

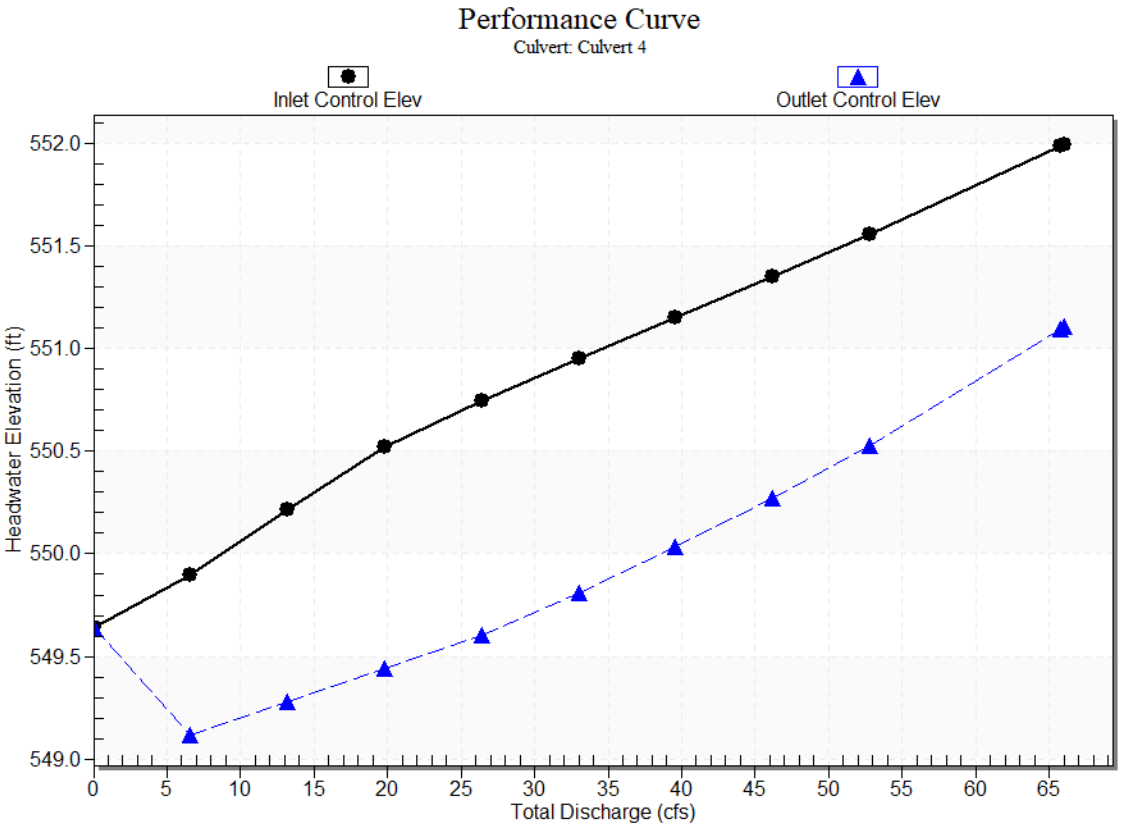
Inlet Elevation (invert): 549.64 ft,

Outlet Elevation (invert): 548.74 ft

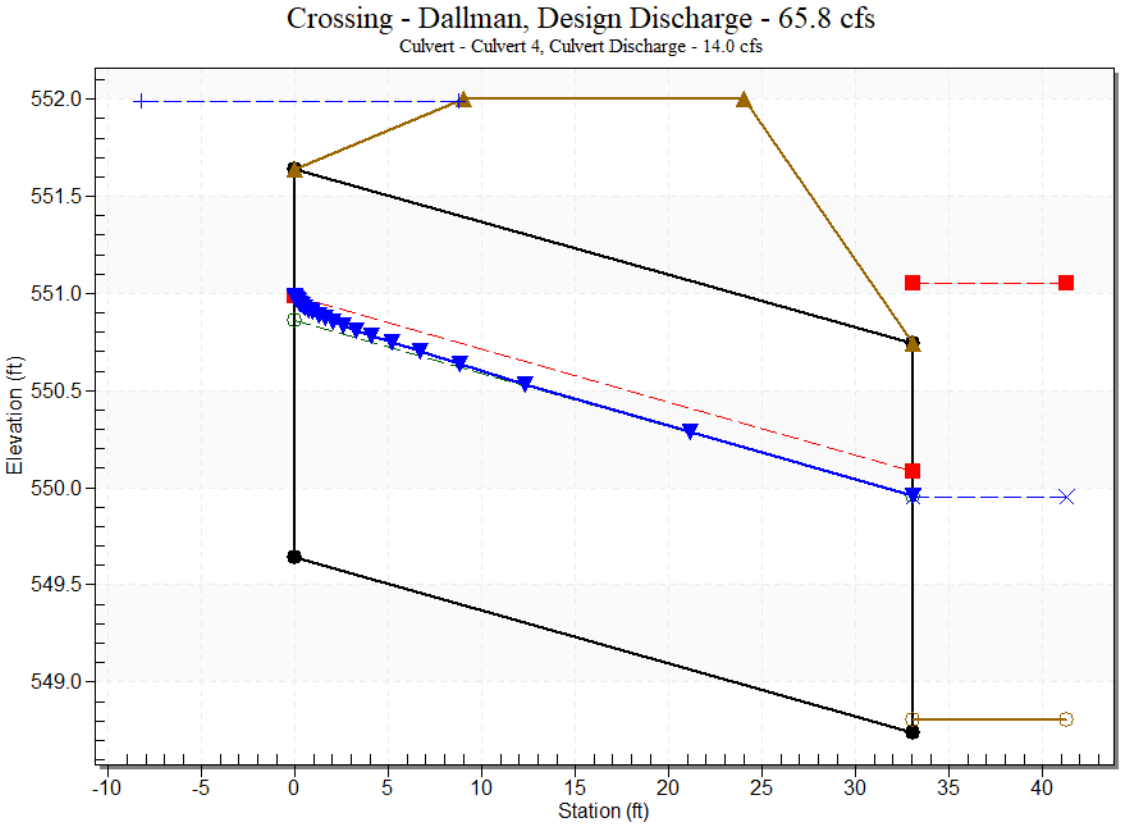
Culvert Length: 33.06 ft,

Culvert Slope: 0.0272

Culvert Performance Curve Plot: Culvert 4



Water Surface Profile Plot for Culvert: Culvert 4



Site Data - Culvert 4

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.64 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.74 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 4

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: Dallman

Table 2 - Downstream Channel Rating Curve (Crossing: Dallman)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	548.80	0.00	0.00	0.00	0.00
6.60	549.11	0.31	9.27	1.92	3.13
13.20	549.27	0.46	11.56	2.89	3.26
19.80	549.39	0.59	13.06	3.66	3.33
26.40	549.50	0.69	14.21	4.31	3.38
33.00	549.59	0.78	15.14	4.89	3.41
39.60	549.67	0.87	15.93	5.41	3.44
46.20	549.75	0.94	16.62	5.89	3.47
52.80	549.82	1.02	17.24	6.34	3.49
65.80	549.95	1.14	18.29	7.14	3.52
66.00	549.95	1.15	18.31	7.15	3.52

Tailwater Channel Data - Dallman

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 2.00 ft

Side Slope (H:V): 1.00 (_:1)

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 548.80 ft

Roadway Data for Crossing: Dallman

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 552.00 ft

Roadway Surface: Gravel

Roadway Top Width: 15.00 ft

APPENDIX C-2:
Lime Pond 1 Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

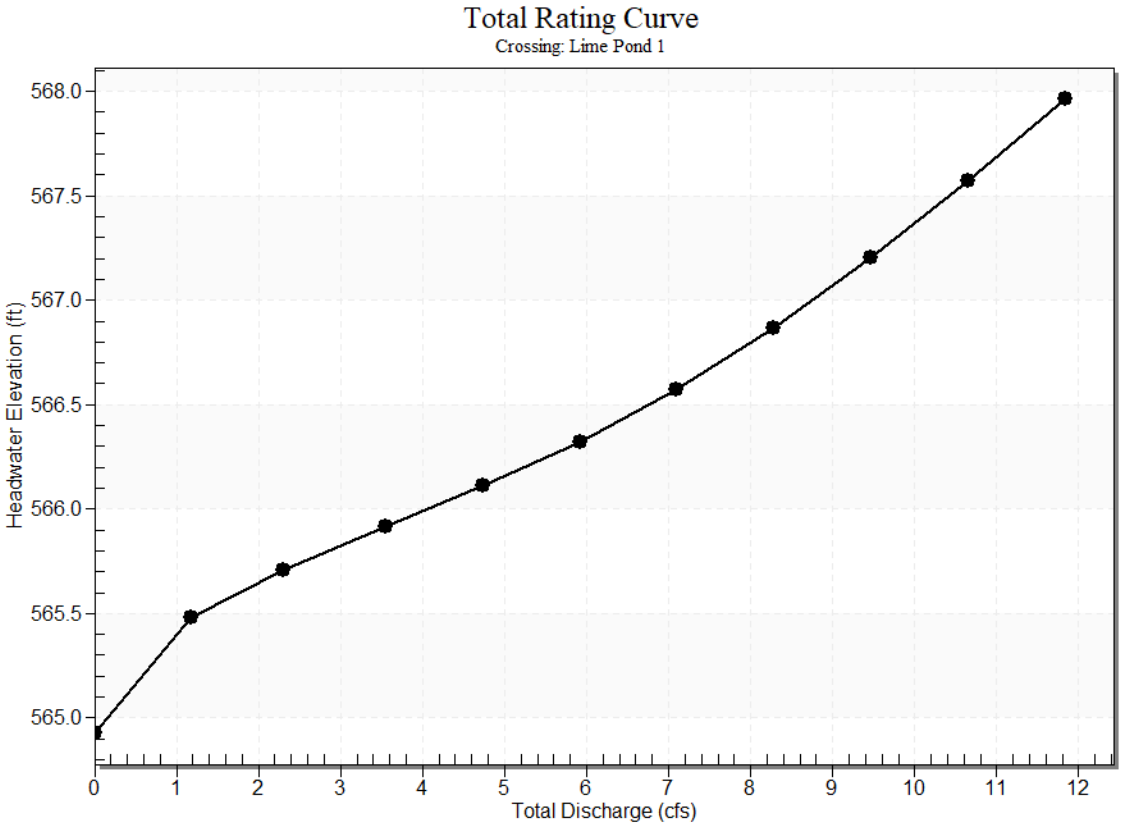
Design Flow: 2.30 cfs

Maximum Flow: 11.83 cfs

Table 1 - Summary of Culvert Flows at Crossing: Lime Pond 1

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert - Lime Pond 1 North Discharge (cfs)	Culvert - Lime Pond 1 South Discharge (cfs)	Roadway Discharge (cfs)	Iterations
564.93	0.00	0.00	0.00	0.00	0
565.48	1.18	0.26	0.92	0.00	7
565.71	2.30	0.72	1.58	0.00	4
565.92	3.55	1.28	2.27	0.00	4
566.11	4.73	1.88	2.85	0.00	4
566.32	5.92	2.52	3.39	0.00	5
566.57	7.10	3.15	3.93	0.00	6
566.87	8.28	3.80	4.49	0.00	5
567.20	9.46	4.44	5.03	0.00	5
567.57	10.65	5.07	5.56	0.00	28
567.96	11.83	5.69	6.08	0.00	49
568.00	11.86	5.74	6.12	0.00	Overtopping

Rating Curve Plot for Crossing: Lime Pond 1



Culvert Data: Culvert - Lime Pond 1 North

Table 1 - Culvert Summary Table: Culvert - Lime Pond 1 North

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	564.93	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
1.18 cfs	0.26 cfs	565.48	0.29	0.332	2-M2c	0.31	0.21	0.21	0.05	2.18	3.08
2.30 cfs	0.72 cfs	565.71	0.49	0.558	2-M2c	0.55	0.35	0.35	0.07	2.90	4.01
3.55 cfs	1.28 cfs	565.92	0.70	0.767	2-M2c	0.87	0.48	0.48	0.09	3.46	4.76
4.73	1.88	566.11	0.89	0.96	2-	1.00	0.58	0.5	0.11	3.94	5.33

cfs	cfs			2	M2c			8			
5.92 cfs	2.52 cfs	566.32	1.09	1.171	7-M2c	1.00	0.68	0.68	0.13	4.43	5.82
7.10 cfs	3.15 cfs	566.57	1.31	1.422	7-M2c	1.00	0.76	0.76	0.14	4.92	6.25
8.28 cfs	3.80 cfs	566.87	1.59	1.719	7-M2c	1.00	0.83	0.83	0.16	5.45	6.64
9.46 cfs	4.44 cfs	567.20	1.93	2.053	7-M2c	1.00	0.88	0.88	0.17	6.05	6.99
10.65 cfs	5.07 cfs	567.57	2.32	2.421	7-M2c	1.00	0.92	0.92	0.18	6.71	7.32
11.83 cfs	5.69 cfs	567.96	2.75	2.814	7-M2c	1.00	0.95	0.95	0.19	7.40	7.63

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

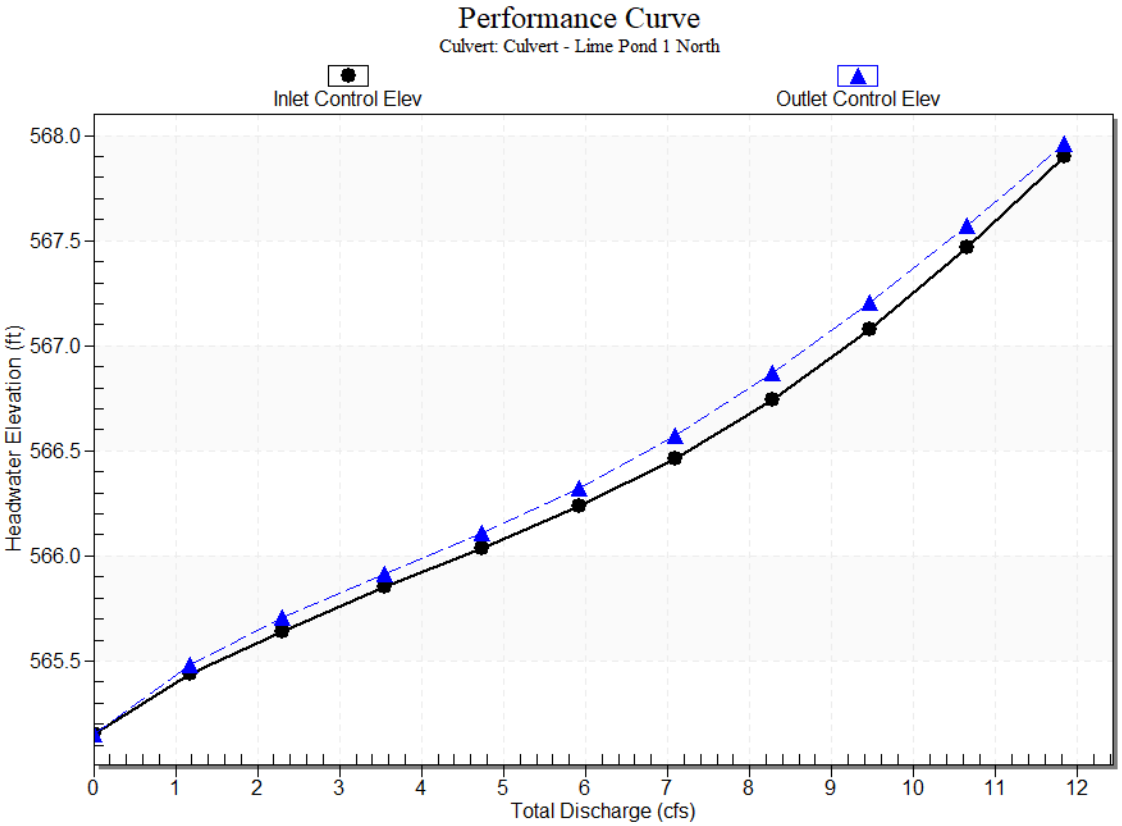
Inlet Elevation (invert): 565.15 ft,

Outlet Elevation (invert): 565.12 ft

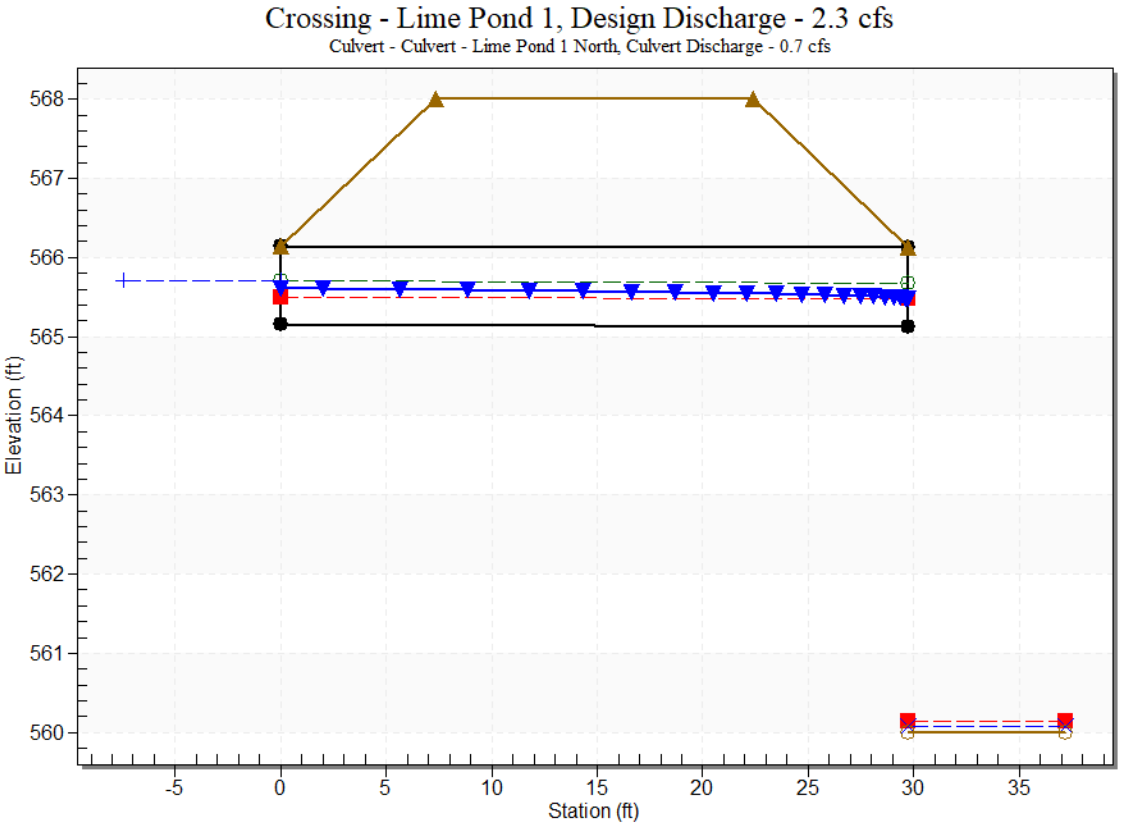
Culvert Length: 29.75 ft,

Culvert Slope: 0.0010

Culvert Performance Curve Plot: Culvert - Lime Pond 1 North



Water Surface Profile Plot for Culvert: Culvert - Lime Pond 1 North



Site Data - Culvert - Lime Pond 1 North

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 565.15 ft

Outlet Station: 29.75 ft

Outlet Elevation: 565.12 ft

Number of Barrels: 1

Culvert Data Summary - Culvert - Lime Pond 1 North

Barrel Shape: Circular

Barrel Diameter: 1.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: None

Culvert Data: Culvert - Lime Pond 1 South

Table 2 - Culvert Summary Table: Culvert - Lime Pond 1 South

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	564.93	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
1.18 cfs	0.92 cfs	565.48	0.55	0.0*	1-S2n	0.24	0.40	0.24	0.05	6.38	3.08
2.30 cfs	1.58 cfs	565.71	0.78	0.0*	1-S2n	0.31	0.53	0.33	0.07	7.09	4.01
3.55 cfs	2.27 cfs	565.92	0.99	0.0*	1-S2n	0.38	0.64	0.40	0.09	7.71	4.76
4.73 cfs	2.85 cfs	566.11	1.18	0.124	5-S2n	0.43	0.72	0.46	0.11	8.11	5.33
5.92 cfs	3.39 cfs	566.32	1.39	0.487	5-S2n	0.48	0.79	0.51	0.13	8.43	5.82
7.10 cfs	3.93 cfs	566.57	1.64	0.743	5-S2n	0.52	0.84	0.56	0.14	8.71	6.25
8.28 cfs	4.49 cfs	566.87	1.94	1.032	5-S2n	0.56	0.89	0.61	0.16	8.98	6.64
9.46 cfs	5.03 cfs	567.20	2.27	1.347	5-S2n	0.61	0.92	0.66	0.17	9.22	6.99
10.65 cfs	5.56 cfs	567.57	2.64	1.682	5-S2n	0.65	0.94	0.70	0.18	9.45	7.32
11.83 cfs	6.08 cfs	567.96	3.03	2.029	5-S2n	0.69	0.94	0.75	0.19	9.67	7.63

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

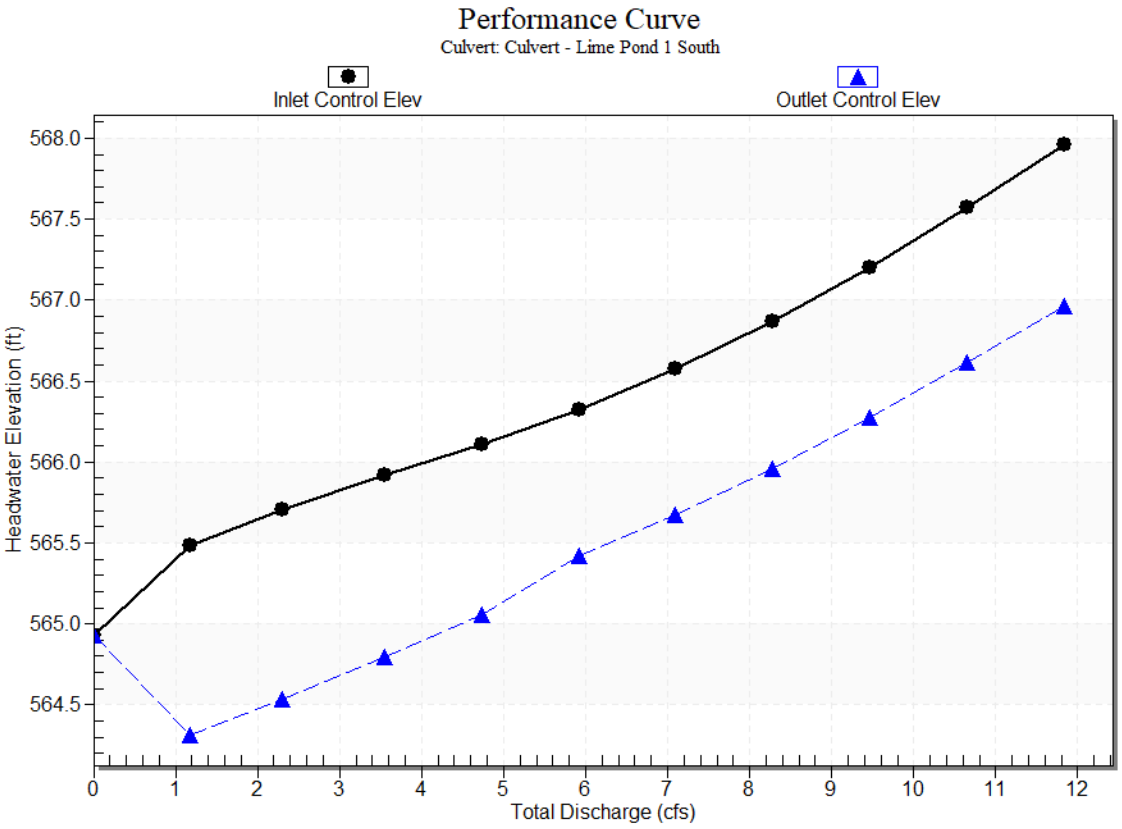
Inlet Elevation (invert): 564.93 ft,

Outlet Elevation (invert): 563.86 ft

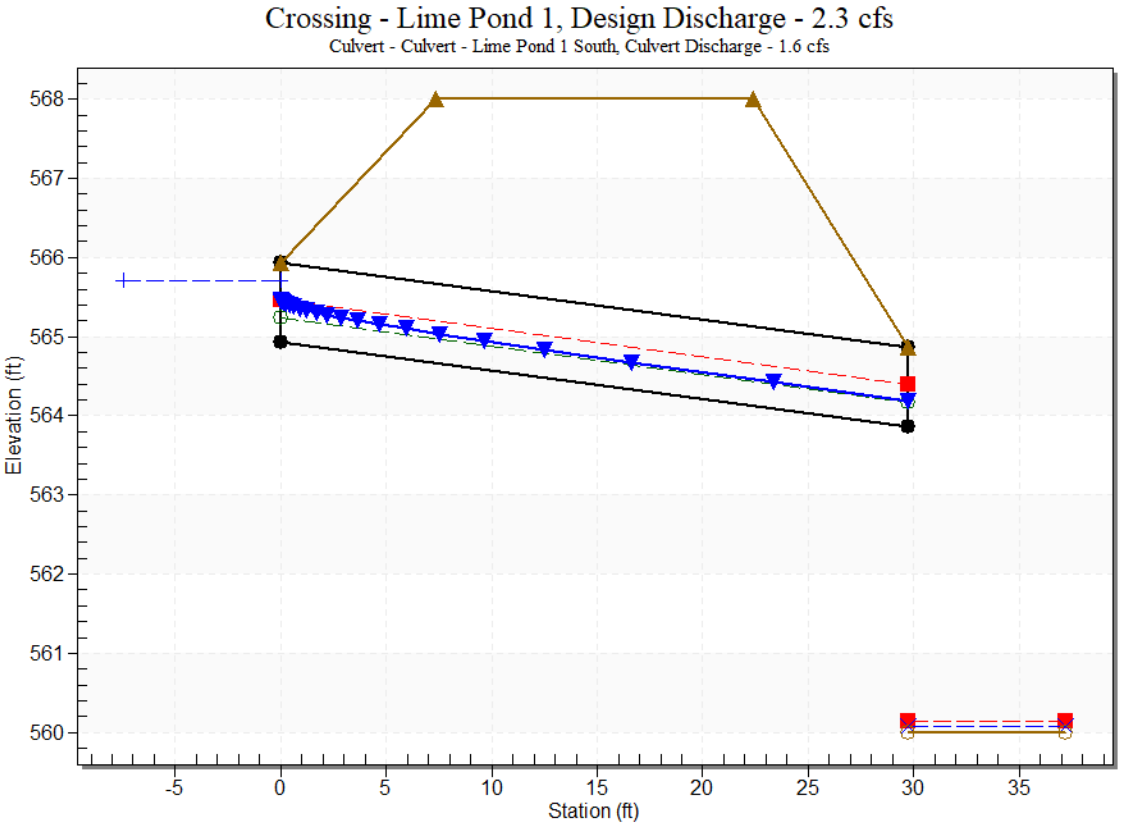
Culvert Length: 29.77 ft,

Culvert Slope: 0.0360

Culvert Performance Curve Plot: Culvert - Lime Pond 1 South



Water Surface Profile Plot for Culvert: Culvert - Lime Pond 1 South



Site Data - Culvert - Lime Pond 1 South

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 564.93 ft

Outlet Station: 29.75 ft

Outlet Elevation: 563.86 ft

Number of Barrels: 1

Culvert Data Summary - Culvert - Lime Pond 1 South

Barrel Shape: Circular

Barrel Diameter: 1.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: None

Tailwater Data for Crossing: Lime Pond 1

Table 2 - Downstream Channel Rating Curve (Crossing: Lime Pond 1)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	560.00	0.00	0.00	0.00	0.00
1.18	560.05	0.05	3.08	0.30	2.47
2.30	560.07	0.07	4.01	0.45	2.64
3.55	560.09	0.09	4.76	0.58	2.75
4.73	560.11	0.11	5.33	0.69	2.82
5.92	560.13	0.13	5.82	0.79	2.88
7.10	560.14	0.14	6.25	0.89	2.92
8.28	560.16	0.16	6.64	0.97	2.96
9.46	560.17	0.17	6.99	1.06	3.00
10.65	560.18	0.18	7.32	1.13	3.03
11.83	560.19	0.19	7.63	1.21	3.05

Tailwater Channel Data - Lime Pond 1

Tailwater Channel Option: Rectangular Channel

Bottom Width: 8.00 ft

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 560.00 ft

Roadway Data for Crossing: Lime Pond 1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 568.00 ft

Roadway Surface: Gravel

Roadway Top Width: 15.00 ft

APPENDIX C-3:
Lime Pond 2 Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

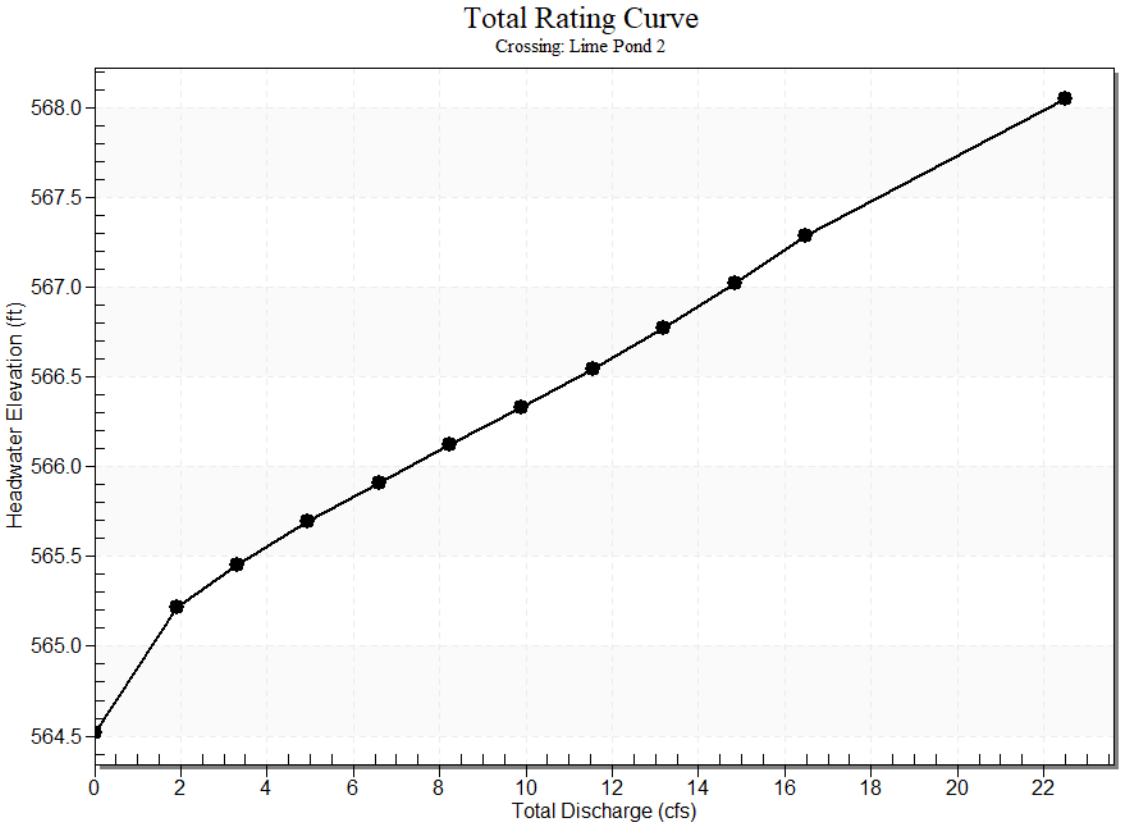
Design Flow: 1.90 cfs

Maximum Flow: 16.49 cfs

Table 1 - Summary of Culvert Flows at Crossing: Lime Pond 2

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
564.52	0.00	0.00	0.00	1
565.22	1.90	1.90	0.00	1
565.46	3.30	3.30	0.00	1
565.69	4.95	4.95	0.00	1
565.91	6.60	6.60	0.00	1
566.12	8.24	8.24	0.00	1
566.33	9.89	9.89	0.00	1
566.54	11.54	11.54	0.00	1
566.77	13.19	13.19	0.00	1
567.02	14.84	14.84	0.00	1
567.29	16.49	16.49	0.00	1
568.00	20.19	20.19	0.00	Overtopping

Rating Curve Plot for Crossing: Lime Pond 2



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	564.52	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
1.90 cfs	1.90 cfs	565.22	0.70	0.0*	1-S2n	0.36	0.48	0.36	0.09	4.96	4.45
3.30 cfs	3.30 cfs	565.46	0.94	0.076	1-S2n	0.47	0.63	0.48	0.12	5.71	5.52
4.95 cfs	4.95 cfs	565.69	1.17	0.276	1-S2n	0.58	0.78	0.59	0.15	6.35	6.46
6.60	6.60	565.91	1.39	0.47	1-	0.67	0.91	0.6	0.18	6.82	7.22

cfs	cfs			6	S2n			9			
8.24 cfs	8.24 cfs	566.12	1.60	0.682	1-S2n	0.76	1.02	0.78	0.21	7.21	7.86
9.89 cfs	9.89 cfs	566.33	1.81	0.898	1-S2n	0.84	1.13	0.87	0.23	7.53	8.42
11.54 cfs	11.54 cfs	566.54	2.02	1.127	5-S2n	0.91	1.22	0.95	0.26	7.82	8.93
13.19 cfs	13.19 cfs	566.77	2.25	1.370	5-S2n	0.99	1.31	1.03	0.28	8.07	9.39
14.84 cfs	14.84 cfs	567.02	2.50	1.627	5-S2n	1.06	1.39	1.11	0.30	8.31	9.81
16.49 cfs	16.49 cfs	567.29	2.77	1.899	5-S2n	1.13	1.46	1.18	0.32	8.52	10.20

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

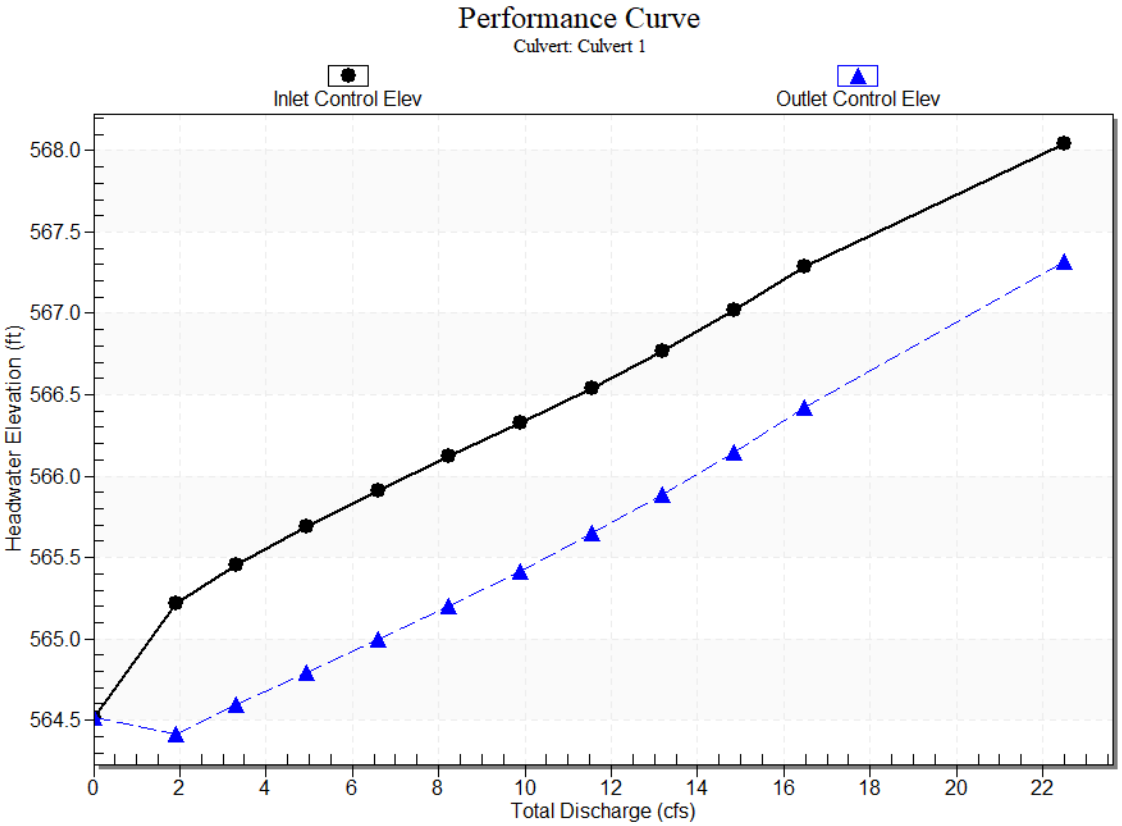
Inlet Elevation (invert): 564.52 ft,

Outlet Elevation (invert): 563.92 ft

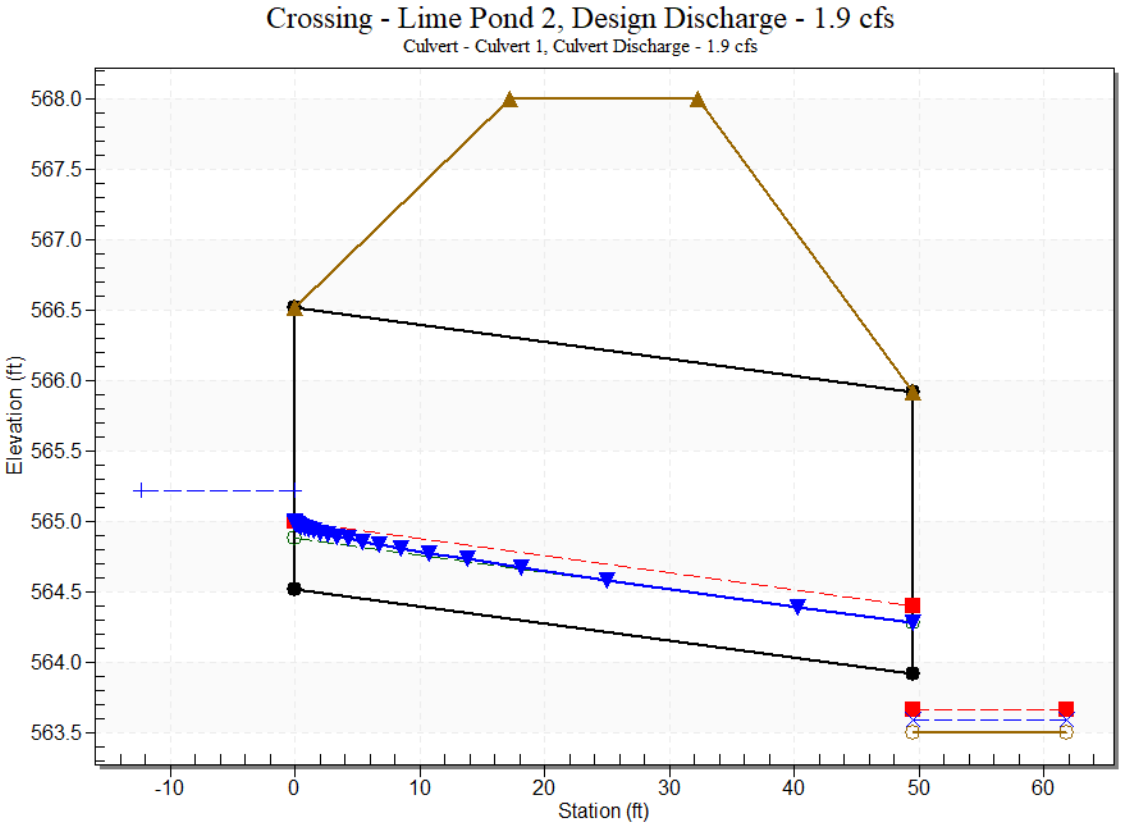
Culvert Length: 49.48 ft,

Culvert Slope: 0.0121

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 564.52 ft

Outlet Station: 49.48 ft

Outlet Elevation: 563.92 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: Lime Pond 2

Table 2 - Downstream Channel Rating Curve (Crossing: Lime Pond 2)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	563.50	0.00	0.00	0.00	0.00
1.90	563.59	0.09	4.45	0.53	2.68
3.30	563.62	0.12	5.52	0.74	2.82
4.95	563.65	0.15	6.46	0.96	2.91
6.60	563.68	0.18	7.22	1.14	2.97
8.24	563.71	0.21	7.86	1.31	3.02
9.89	563.73	0.23	8.42	1.47	3.06
11.54	563.76	0.26	8.93	1.61	3.10
13.19	563.78	0.28	9.39	1.75	3.12
14.84	563.80	0.30	9.81	1.89	3.14
16.49	563.82	0.32	10.20	2.02	3.16

Tailwater Channel Data - Lime Pond 2

Tailwater Channel Option: Rectangular Channel

Bottom Width: 5.00 ft

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 563.50 ft

Roadway Data for Crossing: Lime Pond 2

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 568.00 ft

Roadway Surface: Gravel

Roadway Top Width: 15.00 ft

APPENDIX C-4:
Center Channel Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

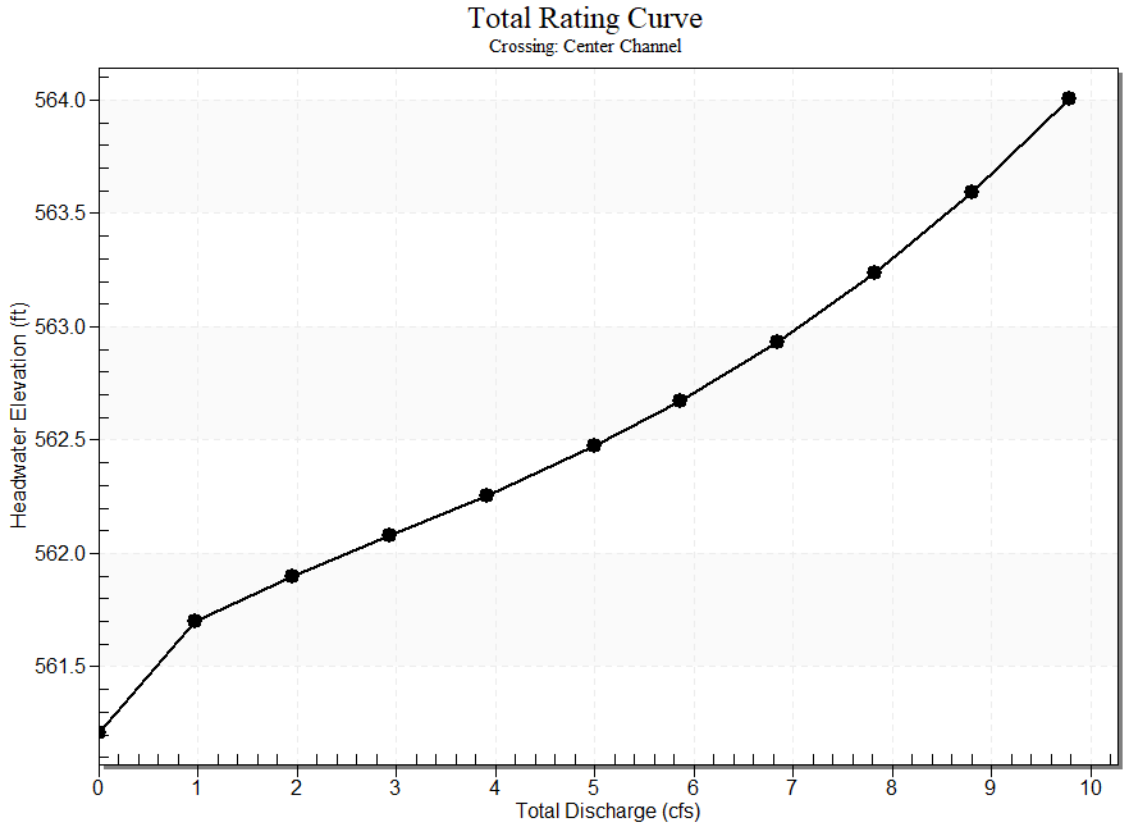
Design Flow: 5.00 cfs

Maximum Flow: 9.78 cfs

Table 1 - Summary of Culvert Flows at Crossing: Center Channel

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert - Center Channel North Discharge (cfs)	Culvert - Center Channel South Discharge (cfs)	Roadway Discharge (cfs)	Iterations
561.21	0.00	0.00	0.00	0.00	0
561.70	0.98	0.65	0.33	0.00	7
561.90	1.96	1.17	0.79	0.00	4
562.08	2.93	1.67	1.27	0.00	4
562.26	3.91	2.15	1.76	0.00	4
562.47	5.00	2.67	2.33	0.00	5
562.67	5.87	3.08	2.79	0.00	5
562.93	6.85	3.55	3.30	0.00	5
563.24	7.82	4.02	3.81	0.00	5
563.59	8.80	4.49	4.31	0.00	5
564.00	9.78	4.97	4.81	0.00	5
568.00	16.38	8.23	8.14	0.00	Overtopping

Rating Curve Plot for Crossing: Center Channel



Culvert Data: Culvert - Center Channel North

Table 1 - Culvert Summary Table: Culvert - Center Channel North

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	561.21	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
0.98 cfs	0.65 cfs	561.70	0.49	0.0*	1-S2n	0.22	0.33	0.22	0.04	4.96	2.84
1.96 cfs	1.17 cfs	561.90	0.69	0.0*	1-S2n	0.30	0.45	0.30	0.06	5.88	3.73
2.93 cfs	1.67 cfs	562.08	0.87	0.0*	1-S2n	0.36	0.55	0.37	0.08	6.31	4.37
3.91	2.15	562.26	1.05	0.10	5-	0.42	0.63	0.4	0.10	6.70	4.89

cfs	cfs			8	S2 n			3			
5.00 cfs	2.67 cfs	562.47	1.26	0.36 1	5-S2 n	0.47	0.70	0.4 8	0.11	7.07	5.37
5.87 cfs	3.08 cfs	562.67	1.46	0.70 8	5-S2 n	0.51	0.75	0.5 3	0.12	7.29	5.72
6.85 cfs	3.55 cfs	562.93	1.72	0.95 6	5-S2 n	0.56	0.80	0.5 8	0.14	7.53	6.07
7.82 cfs	4.02 cfs	563.24	2.03	1.23 4	5-S2 n	0.60	0.85	0.6 3	0.15	7.75	6.38
8.80 cfs	4.49 cfs	563.59	2.38	1.54 3	5-S2 n	0.65	0.89	0.6 8	0.16	7.95	6.68
9.78 cfs	4.97 cfs	564.00	2.79	1.88 3	5-S2 n	0.70	0.92	0.7 3	0.17	8.13	6.95

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

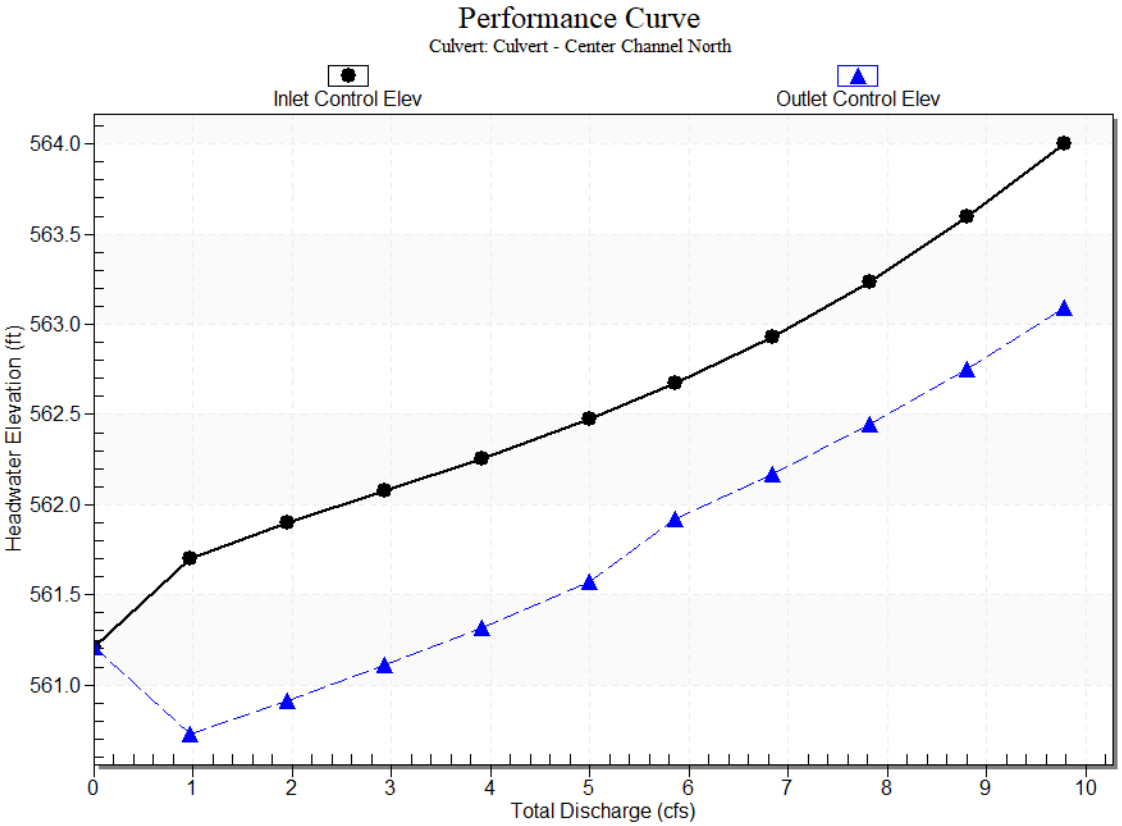
Inlet Elevation (invert): 561.21 ft,

Outlet Elevation (invert): 560.36 ft

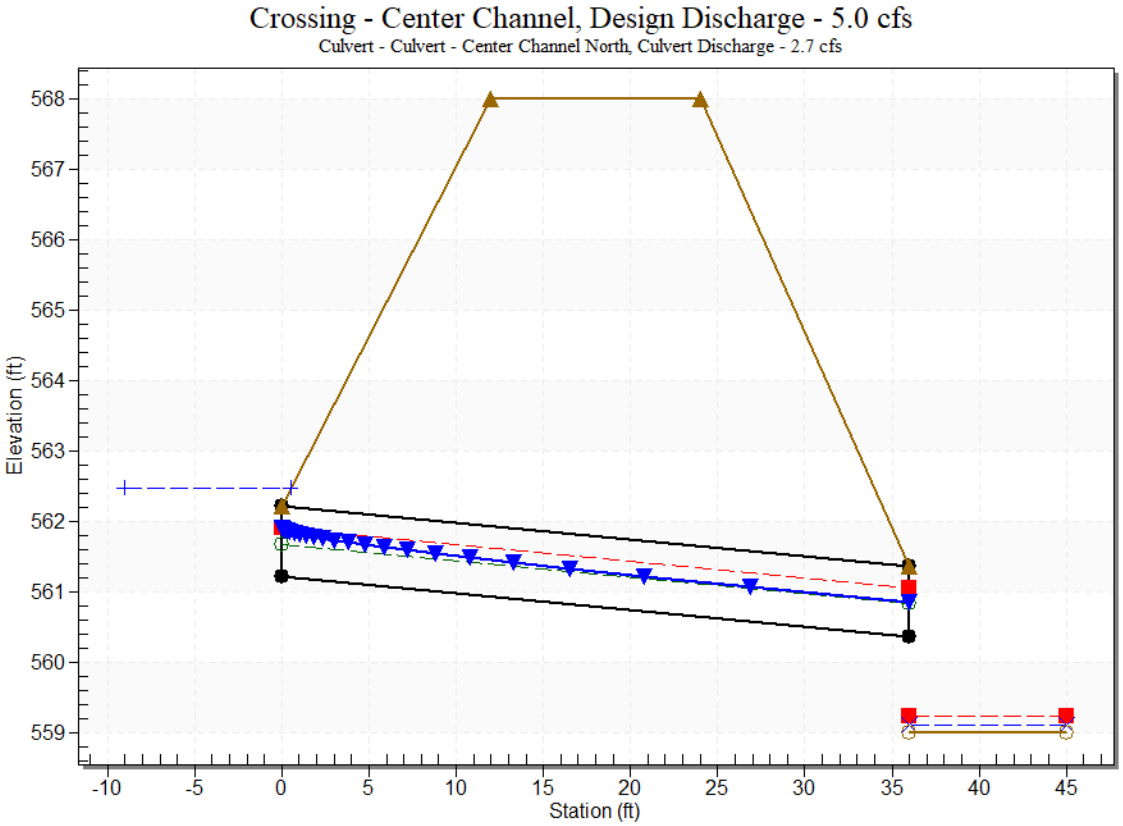
Culvert Length: 36.01 ft,

Culvert Slope: 0.0236

Culvert Performance Curve Plot: Culvert - Center Channel North



Water Surface Profile Plot for Culvert: Culvert - Center Channel North



Site Data - Culvert - Center Channel North

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 561.21 ft

Outlet Station: 36.00 ft

Outlet Elevation: 560.36 ft

Number of Barrels: 1

Culvert Data Summary - Culvert - Center Channel North

Barrel Shape: Circular

Barrel Diameter: 1.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Culvert Data: Culvert - Center Channel South

Table 2 - Culvert Summary Table: Culvert - Center Channel South

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	561.21	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
0.98 cfs	0.33 cfs	561.70	0.34	0.0*	1-S2n	0.14	0.24	0.14	0.04	4.81	2.84
1.96 cfs	0.79 cfs	561.90	0.54	0.0*	1-S2n	0.22	0.37	0.22	0.06	6.20	3.73
2.93 cfs	1.27 cfs	562.08	0.72	0.0*	1-S2n	0.28	0.48	0.28	0.08	6.89	4.37
3.91 cfs	1.76 cfs	562.26	0.90	0.0*	1-S2n	0.33	0.57	0.34	0.10	7.50	4.89
5.00 cfs	2.33 cfs	562.47	1.11	0.0*	5-S2n	0.38	0.65	0.40	0.11	8.01	5.37
5.87 cfs	2.79 cfs	562.67	1.31	0.0*	5-S2n	0.42	0.72	0.44	0.12	8.34	5.72
6.85 cfs	3.30 cfs	562.93	1.57	0.321	5-S2n	0.46	0.78	0.49	0.14	8.67	6.07
7.82 cfs	3.81 cfs	563.24	1.88	0.606	5-S2n	0.50	0.83	0.53	0.15	8.94	6.38
8.80 cfs	4.31 cfs	563.59	2.23	0.921	5-S2n	0.54	0.87	0.58	0.16	9.19	6.68
9.78 cfs	4.81 cfs	564.00	2.64	1.266	5-S2n	0.58	0.91	0.62	0.17	9.42	6.95

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

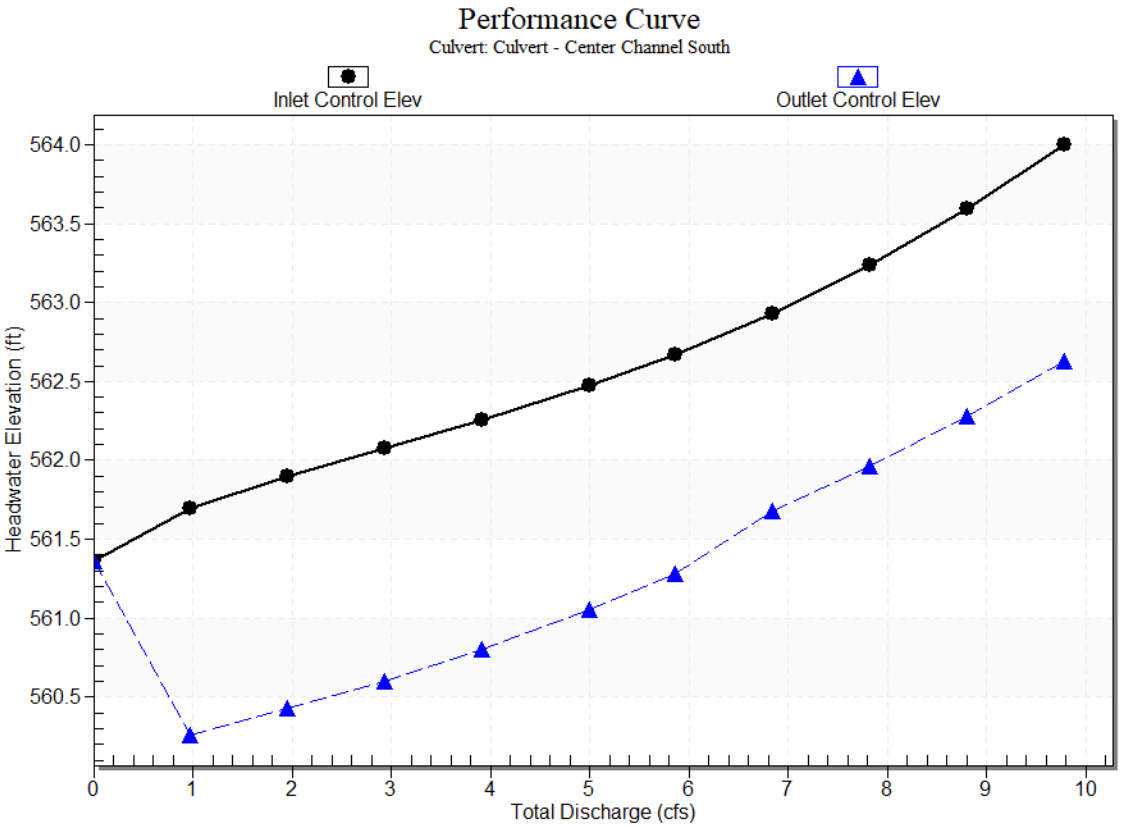
Inlet Elevation (invert): 561.36 ft,

Outlet Elevation (invert): 560.01 ft

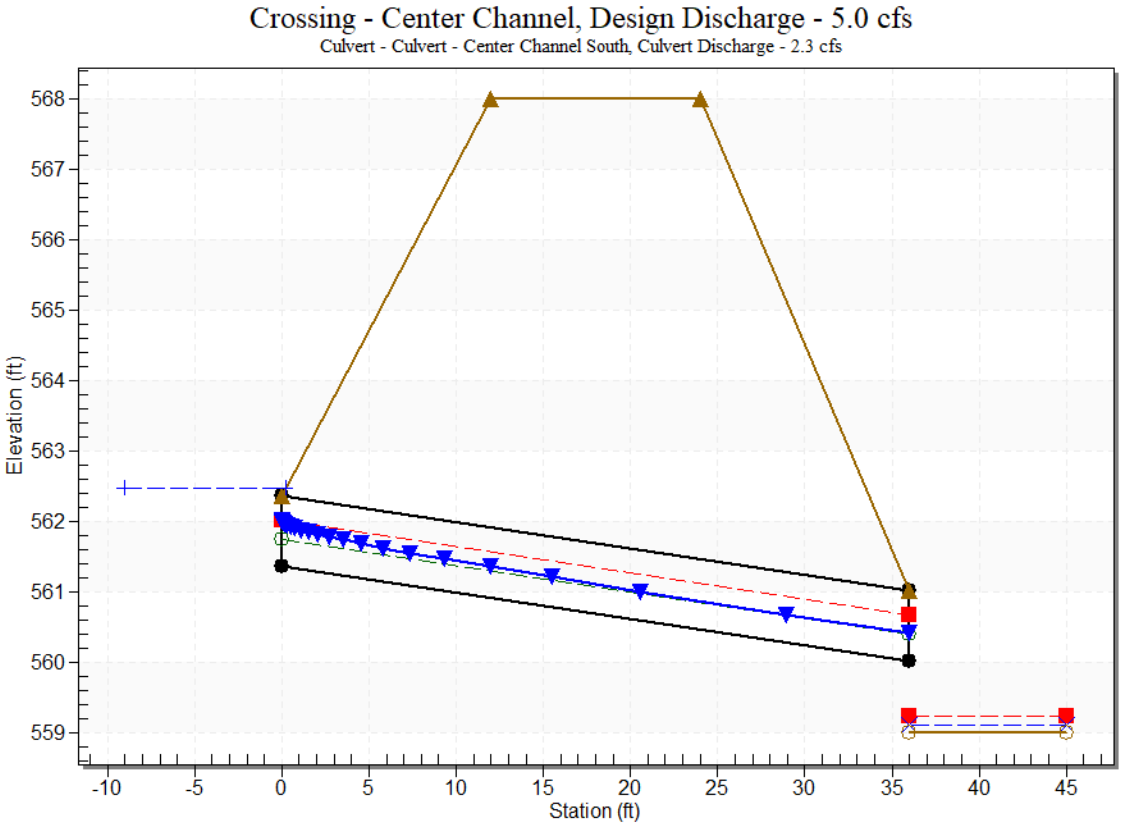
Culvert Length: 36.03 ft,

Culvert Slope: 0.0375

Culvert Performance Curve Plot: Culvert - Center Channel South



Water Surface Profile Plot for Culvert: Culvert - Center Channel South



Site Data - Culvert - Center Channel South

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 561.36 ft

Outlet Station: 36.00 ft

Outlet Elevation: 560.01 ft

Number of Barrels: 1

Culvert Data Summary - Culvert - Center Channel South

Barrel Shape: Circular

Barrel Diameter: 1.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting (Ke=0.9)

Inlet Depression: None

Tailwater Data for Crossing: Center Channel

Table 2 - Downstream Channel Rating Curve (Crossing: Center Channel)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	559.00	0.00	0.00	0.00	0.00
0.98	559.04	0.04	2.84	0.27	2.44
1.96	559.06	0.06	3.73	0.40	2.61
2.93	559.08	0.08	4.37	0.51	2.71
3.91	559.10	0.10	4.89	0.61	2.79
5.00	559.11	0.11	5.37	0.71	2.85
5.87	559.12	0.12	5.72	0.78	2.90
6.85	559.14	0.14	6.07	0.85	2.94
7.82	559.15	0.15	6.38	0.92	2.98
8.80	559.16	0.16	6.68	0.99	3.01
9.78	559.17	0.17	6.95	1.05	3.04

Tailwater Channel Data - Center Channel

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 8.00 ft

Side Slope (H:V): 2.00 (_:1)

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 559.00 ft

Roadway Data for Crossing: Center Channel

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 568.00 ft

Roadway Surface: Gravel

Roadway Top Width: 12.00 ft

APPENDIX C-5:
West Settling Channel Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

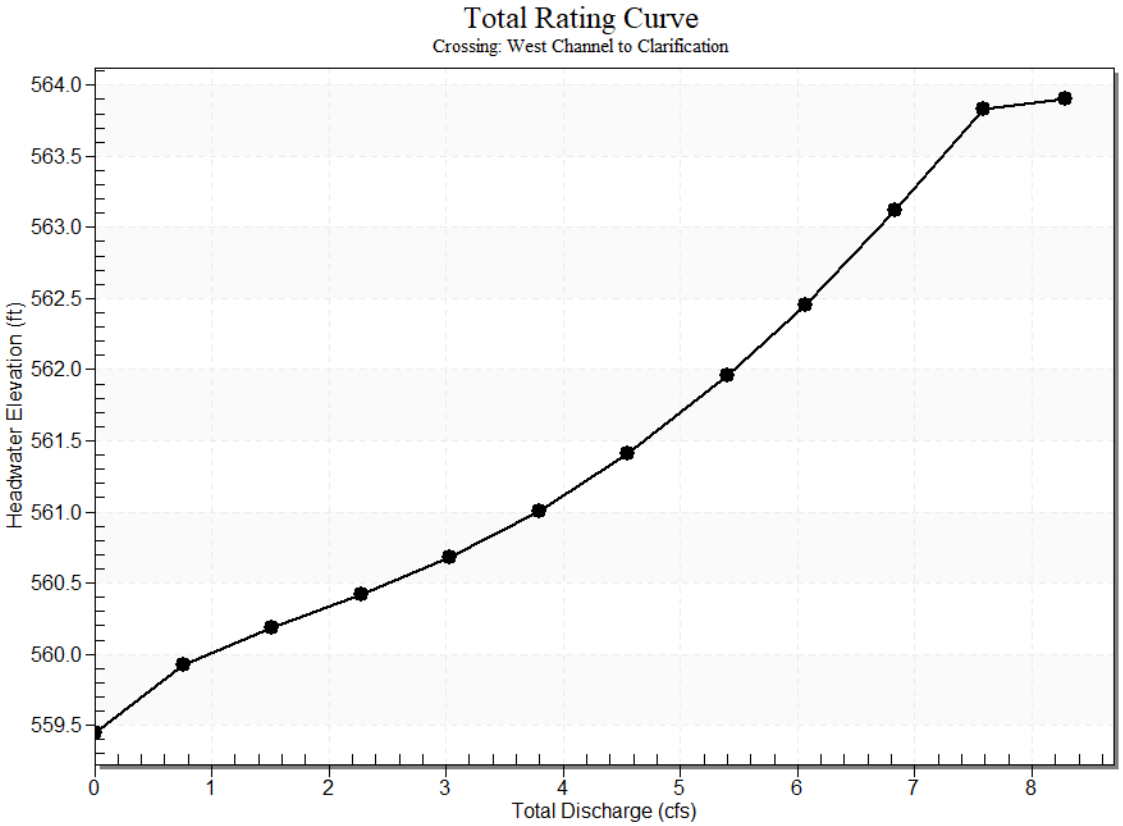
Design Flow: 5.40 cfs

Maximum Flow: 7.59 cfs

Table 1 - Summary of Culvert Flows at Crossing: West Channel to Clarification

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
559.45	0.00	0.00	0.00	1
559.92	0.76	0.76	0.00	1
560.19	1.52	1.52	0.00	1
560.42	2.28	2.28	0.00	1
560.68	3.04	3.04	0.00	1
561.00	3.79	3.79	0.00	1
561.41	4.55	4.55	0.00	1
561.95	5.40	5.40	0.00	1
562.46	6.07	6.07	0.00	1
563.12	6.83	6.83	0.00	1
563.83	7.59	7.56	0.00	68
563.86	7.59	7.59	0.00	Overtopping

Rating Curve Plot for Crossing: West Channel to Clarification



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	559.45	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
0.76 cfs	0.76 cfs	559.92	0.47	0.0*	1-S2n	0.18	0.36	0.18	0.07	7.97	1.29
1.52 cfs	1.52 cfs	560.19	0.74	0.0*	1-S2n	0.25	0.52	0.25	0.11	9.77	1.69
2.28 cfs	2.28 cfs	560.42	0.97	0.0*	1-S2n	0.31	0.65	0.31	0.14	10.96	1.98
3.04	3.04	560.68	1.23	0.0*	5-	0.36	0.75	0.3	0.17	11.4	2.21

cfs	cfs				S2 n			7		4	
3.79 cfs	3.79 cfs	561.00	1.55	0.0*	5-S2 n	0.41	0.83	0.41	0.19	12.62	2.41
4.55 cfs	4.55 cfs	561.41	1.96	0.0*	5-S2 n	0.45	0.89	0.45	0.21	13.36	2.58
5.40 cfs	5.40 cfs	561.95	2.50	0.0*	5-S2 n	0.50	0.94	0.50	0.24	13.61	2.76
6.07 cfs	6.07 cfs	562.46	3.01	0.0*	5-S2 n	0.53	0.94	0.53	0.26	14.24	2.88
6.83 cfs	6.83 cfs	563.12	3.67	0.0*	5-S2 n	0.57	1.00	0.61	0.27	13.67	3.01
7.59 cfs	7.56 cfs	563.83	4.38	0.0*	5-S2 n	0.61	1.00	0.63	0.29	14.54	3.14

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

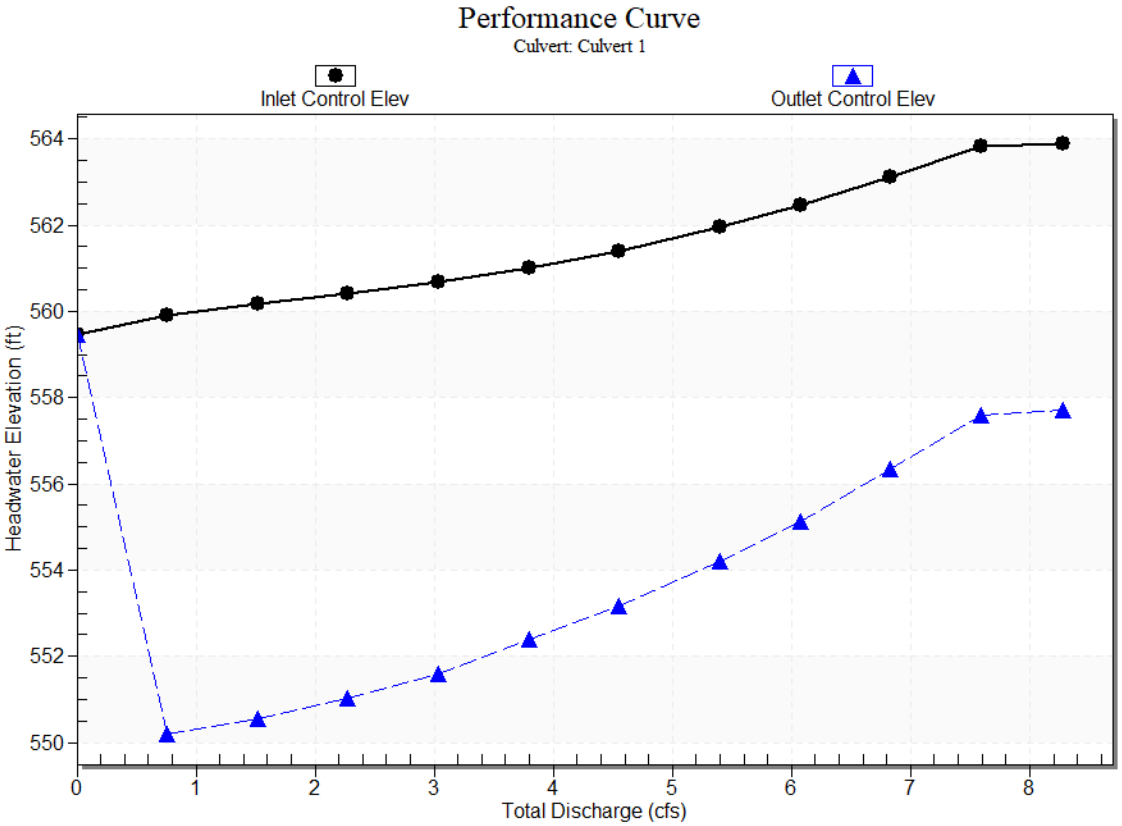
Inlet Elevation (invert): 559.45 ft,

Outlet Elevation (invert): 549.75 ft

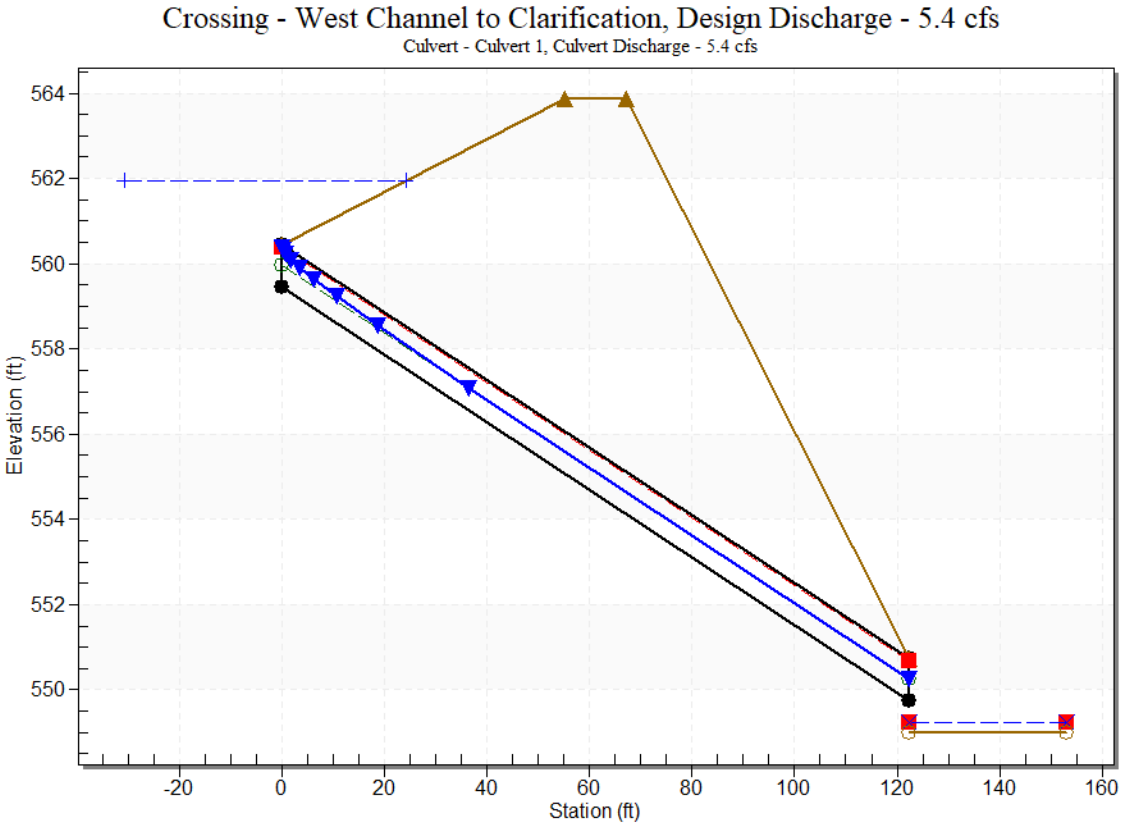
Culvert Length: 122.78 ft,

Culvert Slope: 0.0792

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 559.45 ft

Outlet Station: 122.40 ft

Outlet Elevation: 549.75 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 1.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: None

Tailwater Data for Crossing: West Channel to Clarification

Table 2 - Downstream Channel Rating Curve (Crossing: West Channel to Clarification)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	549.00	0.00	0.00	0.00	0.00
0.76	549.07	0.07	1.29	0.05	0.84
1.52	549.11	0.11	1.69	0.07	0.90
2.28	549.14	0.14	1.98	0.09	0.93
3.04	549.17	0.17	2.21	0.11	0.96
3.79	549.19	0.19	2.41	0.12	0.98
4.55	549.21	0.21	2.58	0.13	0.99
5.40	549.24	0.24	2.76	0.15	1.01
6.07	549.26	0.26	2.88	0.16	1.02
6.83	549.27	0.27	3.01	0.17	1.03
7.59	549.29	0.29	3.14	0.18	1.04

Tailwater Channel Data - West Channel to Clarification

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 8.00 ft

Side Slope (H:V): 1.00 (_:1)

Channel Slope: 0.0100

Channel Manning's n: 0.0200

Channel Invert Elevation: 549.00 ft

Roadway Data for Crossing: West Channel to Clarification

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 35.00 ft

Crest Elevation: 563.86 ft

Roadway Surface: Gravel

Roadway Top Width: 12.00 ft

APPENDIX C-6:
Clarification Pond Weir and Culvert Analysis

Clarification Pond Outlet Structure Calculations

The Clarification Pond outlet structure is a 6-foot long rectangular weir, starting elevation at 546.09 ft. The discharge rate is calculated using $Q = CLH^{1.48}$.

Q = discharge rate, cfs

C = Weir Coefficient, for this case, C is 0.7

L = The length of the weir, 6 ft

H = the head water above the crest of the weir

Elevation (feet MSL)	Head (feet)	Discharge (cubic feet per second)
546.09	0	0
547	0.91	3.652839
548	1.91	10.94407
549	2.91	20.40849
550	3.91	31.59882
551	4.91	44.26392
552	5.91	58.23697

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

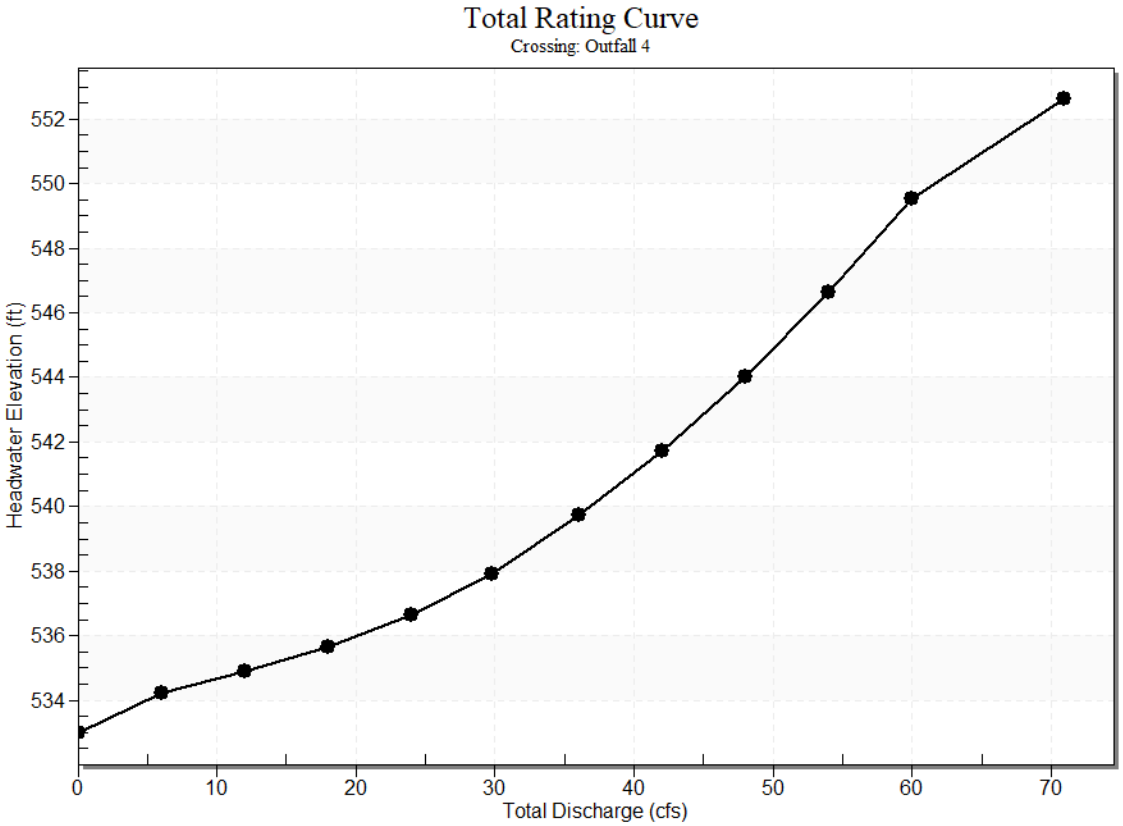
Design Flow: 29.80 cfs

Maximum Flow: 60.00 cfs

Table 1 - Summary of Culvert Flows at Crossing: Outfall 4

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
533.00	0.00	0.00	0.00	1
534.24	6.00	6.00	0.00	1
534.91	12.00	12.00	0.00	1
535.64	18.00	18.00	0.00	1
536.63	24.00	24.00	0.00	1
537.92	29.80	29.80	0.00	1
539.72	36.00	36.00	0.00	1
541.71	42.00	42.00	0.00	1
544.01	48.00	48.00	0.00	1
546.62	54.00	54.00	0.00	1
549.54	60.00	60.00	0.00	1
552.50	65.50	65.50	0.00	Overtopping

Rating Curve Plot for Crossing: Outfall 4



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	533.00	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
6.00 cfs	6.00 cfs	534.24	1.24	0.210	1-S2n	0.74	0.87	0.74	0.11	5.69	5.37
12.00 cfs	12.00 cfs	534.91	1.91	1.048	1-S2n	1.10	1.24	1.10	0.17	6.81	7.06
18.00 cfs	18.00 cfs	535.64	2.64	2.336	5-S2n	1.45	1.53	1.45	0.22	7.39	8.27
24.00	24.00	536.63	3.63	3.47	7-	2.00	1.73	1.7	0.26	8.29	9.25

cfs	cfs			5	M2 c			3			
29.80 cfs	29.80 cfs	537.92	4.90	4.916	7-M2 c	2.00	1.86	1.86	0.30	9.79	10.05
36.00 cfs	36.00 cfs	539.72	6.59	6.716	7-M2 c	2.00	1.81	1.81	0.33	12.06	10.81
42.00 cfs	42.00 cfs	541.71	8.61	8.712	6-FF c	2.00	2.00	2.00	0.37	13.37	11.47
48.00 cfs	48.00 cfs	544.01	10.93	11.014	6-FF c	2.00	2.00	2.00	0.40	15.28	12.07
54.00 cfs	54.00 cfs	546.62	13.57	13.624	6-FF c	2.00	2.00	2.00	0.43	17.19	12.63
60.00 cfs	60.00 cfs	549.54	16.52	16.540	6-FF c	2.00	2.00	2.00	0.46	19.10	13.14

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

Inlet Elevation (invert): 533.00 ft,

Outlet Elevation (invert): 532.19 ft

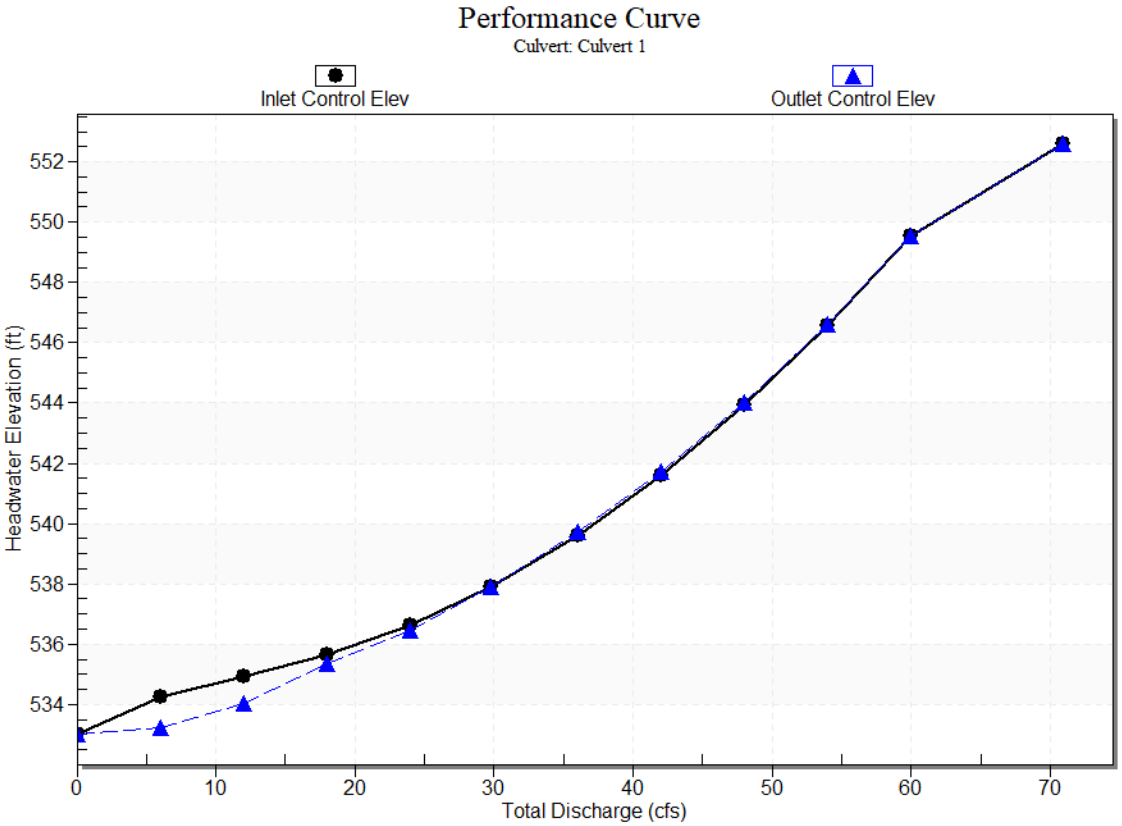
Culvert Length: 115.00 ft,

Culvert Slope: 0.0070

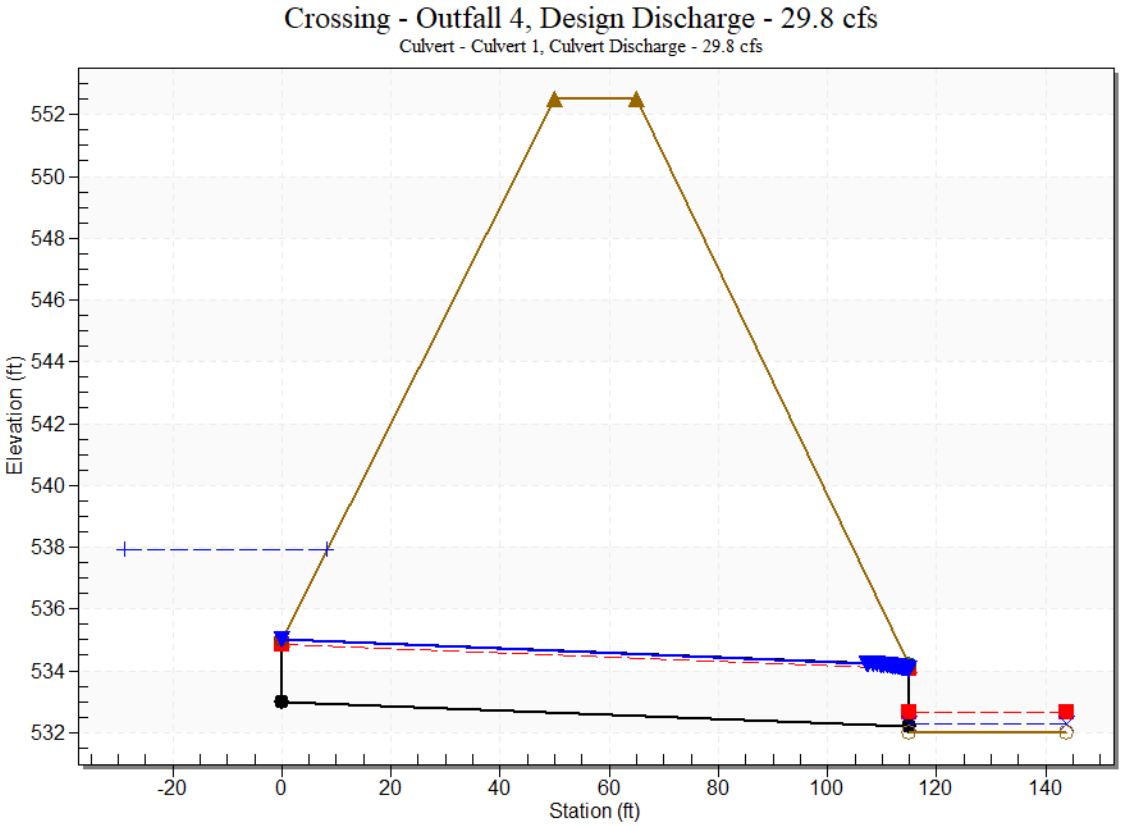
Inlet Throat Elevation: 533.00 ft,

Inlet Crest Elevation: 532.19 ft

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 533.00 ft

Outlet Station: 115.00 ft

Outlet Elevation: 532.19 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: Yes

Tailwater Data for Crossing: Outfall 4

Table 2 - Downstream Channel Rating Curve (Crossing: Outfall 4)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	532.00	0.00	0.00	0.00	0.00
6.00	532.11	0.11	5.37	0.70	2.83
12.00	532.17	0.17	7.06	1.06	3.02
18.00	532.22	0.22	8.27	1.36	3.12
24.00	532.26	0.26	9.25	1.62	3.20
29.80	532.30	0.30	10.05	1.85	3.25
36.00	532.33	0.33	10.81	2.08	3.30
42.00	532.37	0.37	11.47	2.28	3.34
48.00	532.40	0.40	12.07	2.48	3.37
54.00	532.43	0.43	12.63	2.67	3.40
60.00	532.46	0.46	13.14	2.85	3.43

Tailwater Channel Data - Outfall 4

Tailwater Channel Option: Rectangular Channel

Bottom Width: 10.00 ft

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 532.00 ft

Roadway Data for Crossing: Outfall 4

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 552.50 ft

Roadway Surface: Gravel

Roadway Top Width: 15.00 ft

APPENDIX C-7:
Lime Stabilization Decant Culvert Analysis

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0.00 cfs

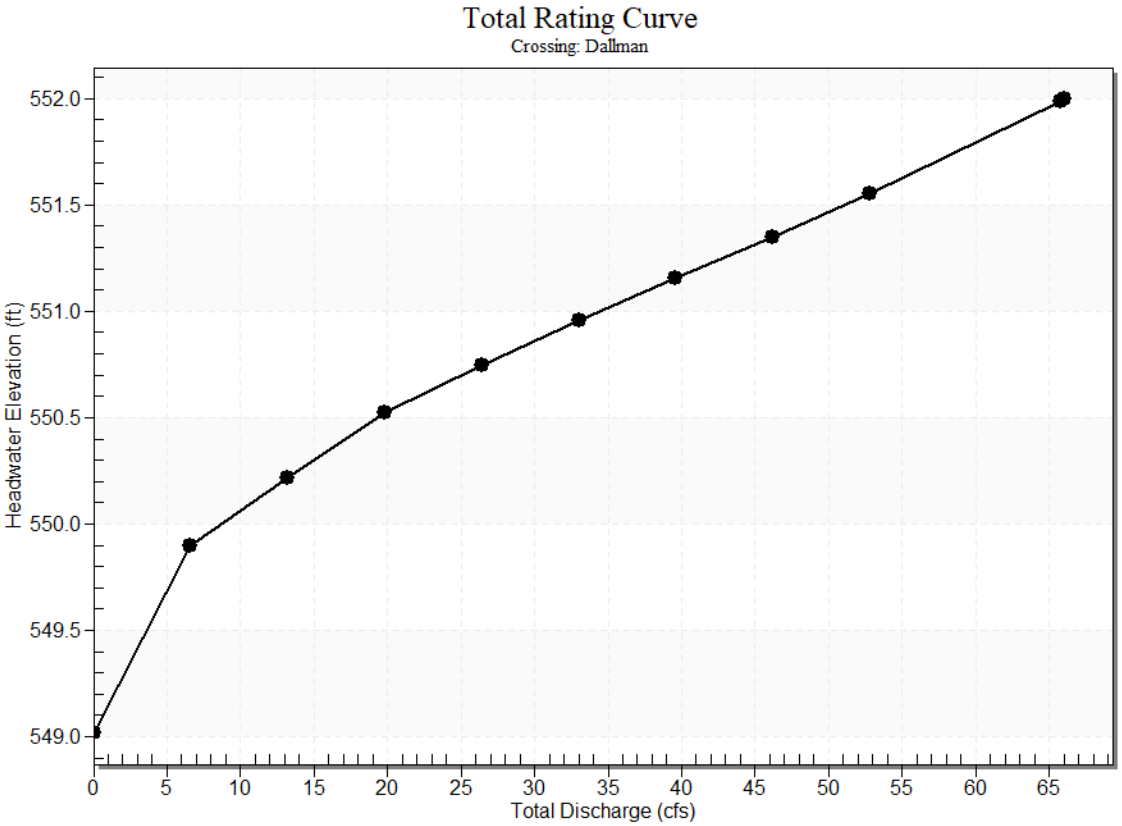
Design Flow: 65.80 cfs

Maximum Flow: 66.00 cfs

Table 1 - Summary of Culvert Flows at Crossing: Dallman

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Culvert 2 Discharge (cfs)	Culvert 3 Discharge (cfs)	Culvert 4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
549.02	0.00	0.00	0.00	0.00	0.00	0.00	0
549.90	6.60	2.93	1.73	1.66	0.28	0.00	5
550.22	13.20	5.14	3.40	3.30	1.35	0.00	5
550.52	19.80	6.08	5.38	5.30	3.04	0.00	6
550.75	26.40	7.84	6.99	6.99	4.58	0.00	4
550.95	33.00	9.61	8.55	8.70	6.13	0.00	3
551.15	39.60	11.43	10.06	10.42	7.69	0.00	4
551.35	46.20	13.28	11.52	12.15	9.25	0.00	7
551.56	52.80	15.11	12.90	13.89	10.85	0.00	13
551.99	65.80	17.64	17.27	16.78	13.96	0.00	26
552.00	66.00	17.68	17.32	16.83	14.02	0.00	8
552.00	65.91	17.70	17.33	16.84	14.04	0.00	Overtopping

Rating Curve Plot for Crossing: Dallman



Culvert Data: Culvert 1

Table 1 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.30	0.00	0.00	0.00
6.60 cfs	2.93 cfs	549.90	0.88	0.138	1-S2n	0.59	0.60	0.59	0.31	3.78	9.27
13.20 cfs	5.14 cfs	550.22	1.19	0.416	1-S2n	0.80	0.80	0.80	0.46	4.41	11.56
19.80 cfs	6.08 cfs	550.52	1.32	1.502	3-M1t	0.87	0.87	0.89	0.59	4.49	13.06
26.40	7.84	550.75	1.54	1.72	2-	1.01	1.00	1.0	0.69	5.02	14.21

cfs	cfs			6	M2c			0			
33.00 cfs	9.61 cfs	550.95	1.77	1.934	2-M2c	1.14	1.11	1.11	0.78	5.38	15.14
39.60 cfs	11.43 cfs	551.15	2.00	2.134	7-M2c	1.28	1.21	1.21	0.87	5.73	15.93
46.20 cfs	13.28 cfs	551.35	2.26	2.331	7-M2c	1.43	1.31	1.31	0.94	6.08	16.62
52.80 cfs	15.11 cfs	551.56	2.54	2.529	7-M2c	1.61	1.40	1.40	1.02	6.43	17.24
65.80 cfs	17.64 cfs	551.99	2.97	2.843	7-M2c	2.00	1.51	1.51	1.14	6.92	18.29
66.00 cfs	17.68 cfs	552.00	2.98	2.850	7-M2c	2.00	1.52	1.52	1.15	6.93	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

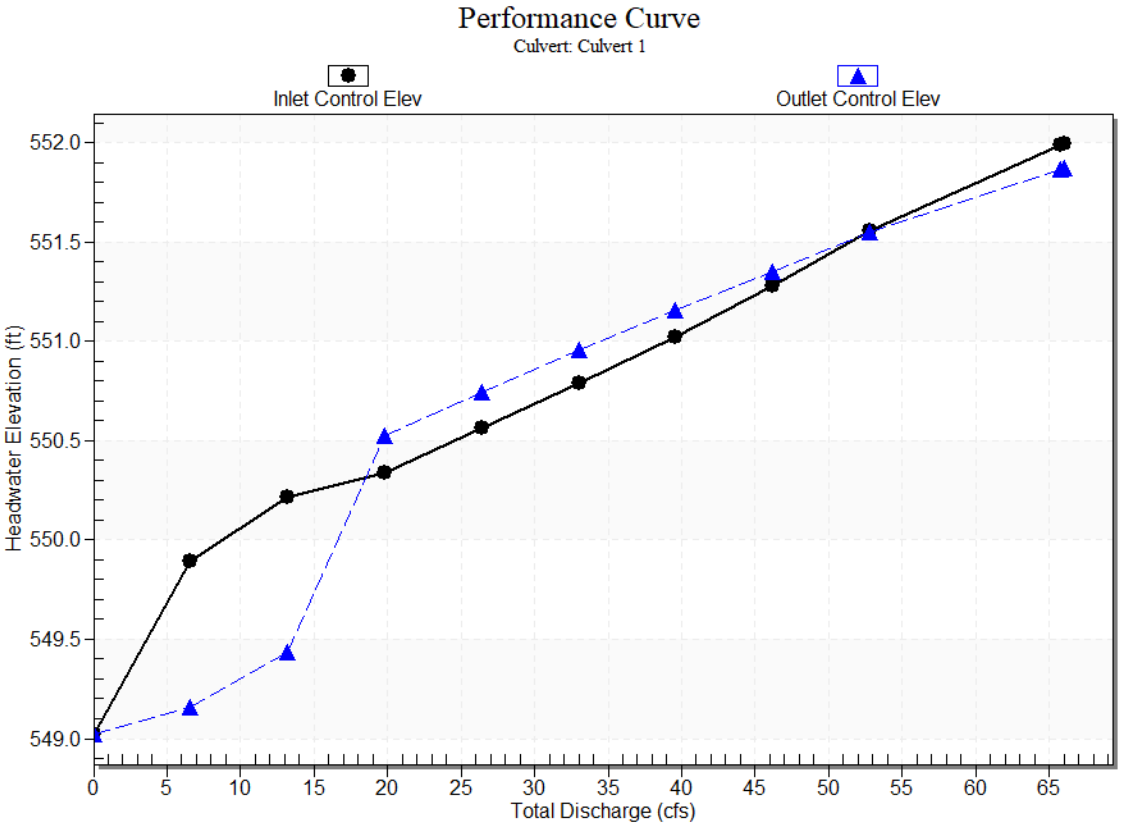
Inlet Elevation (invert): 549.02 ft,

Outlet Elevation (invert): 548.50 ft

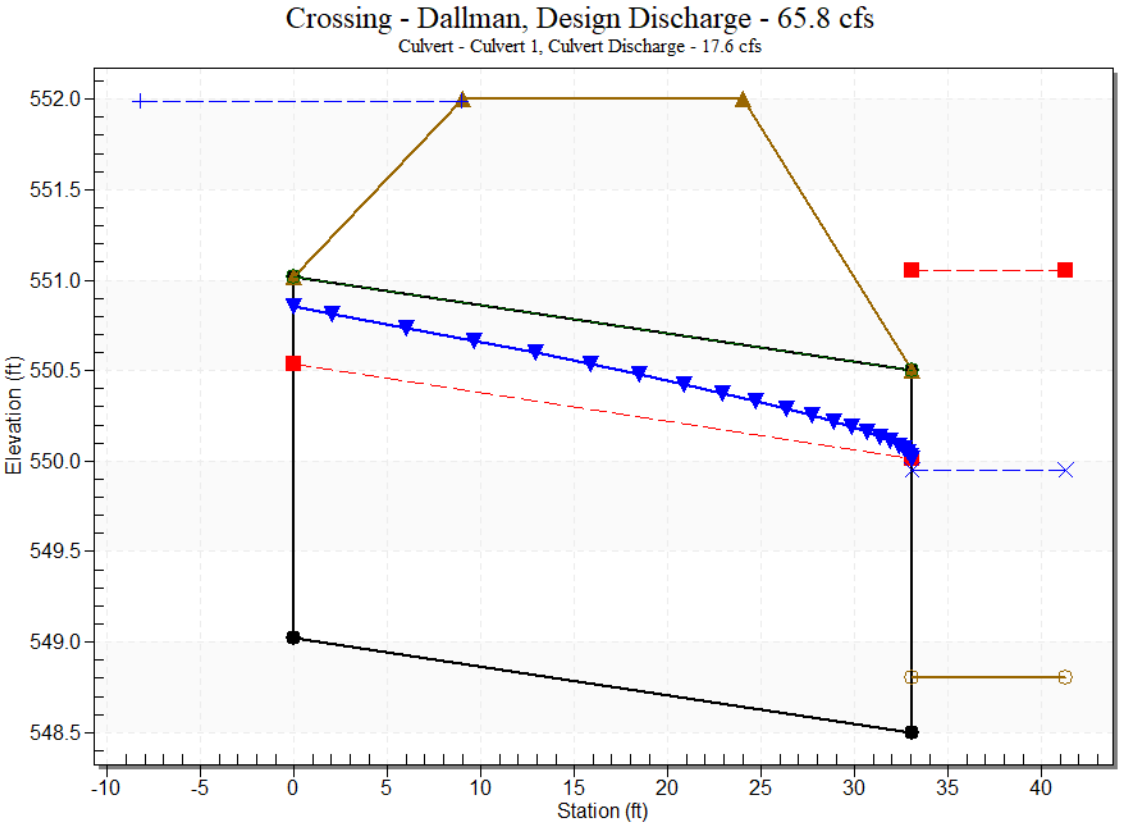
Culvert Length: 33.05 ft,

Culvert Slope: 0.0157

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.02 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.50 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Culvert Data: Culvert 2

Table 2 - Culvert Summary Table: Culvert 2

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
6.60 cfs	1.73 cfs	549.90	0.67	0.826	7-A2c	-1.00	0.45	0.45	0.31	3.21	9.27
13.20 cfs	3.40 cfs	550.22	0.96	1.146	7-A2c	-1.00	0.65	0.65	0.46	3.88	11.56
19.80 cfs	5.38 cfs	550.52	1.24	1.452	7-A2c	-1.00	0.82	0.82	0.59	4.45	13.06
26.40 cfs	6.99 cfs	550.75	1.45	1.676	7-A2c	-1.00	0.94	0.94	0.69	4.83	14.21
33.00 cfs	8.55 cfs	550.95	1.65	1.884	7-A2c	-1.00	1.04	1.04	0.78	5.17	15.14
39.60 cfs	10.06 cfs	551.15	1.84	2.083	7-A2c	-1.00	1.14	1.14	0.87	5.47	15.93
46.20 cfs	11.52 cfs	551.35	2.03	2.281	7-A2c	-1.00	1.22	1.22	0.94	5.75	16.62
52.80 cfs	12.90 cfs	551.56	2.22	2.487	7-A2c	-1.00	1.29	1.29	1.02	6.01	17.24
65.80 cfs	17.27 cfs	551.99	2.92	2.892	7-JA2c	-1.00	1.50	1.50	1.14	6.84	18.29
66.00 cfs	17.32 cfs	552.00	2.93	2.897	7-JA2t	-1.00	1.50	1.50	1.15	6.85	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

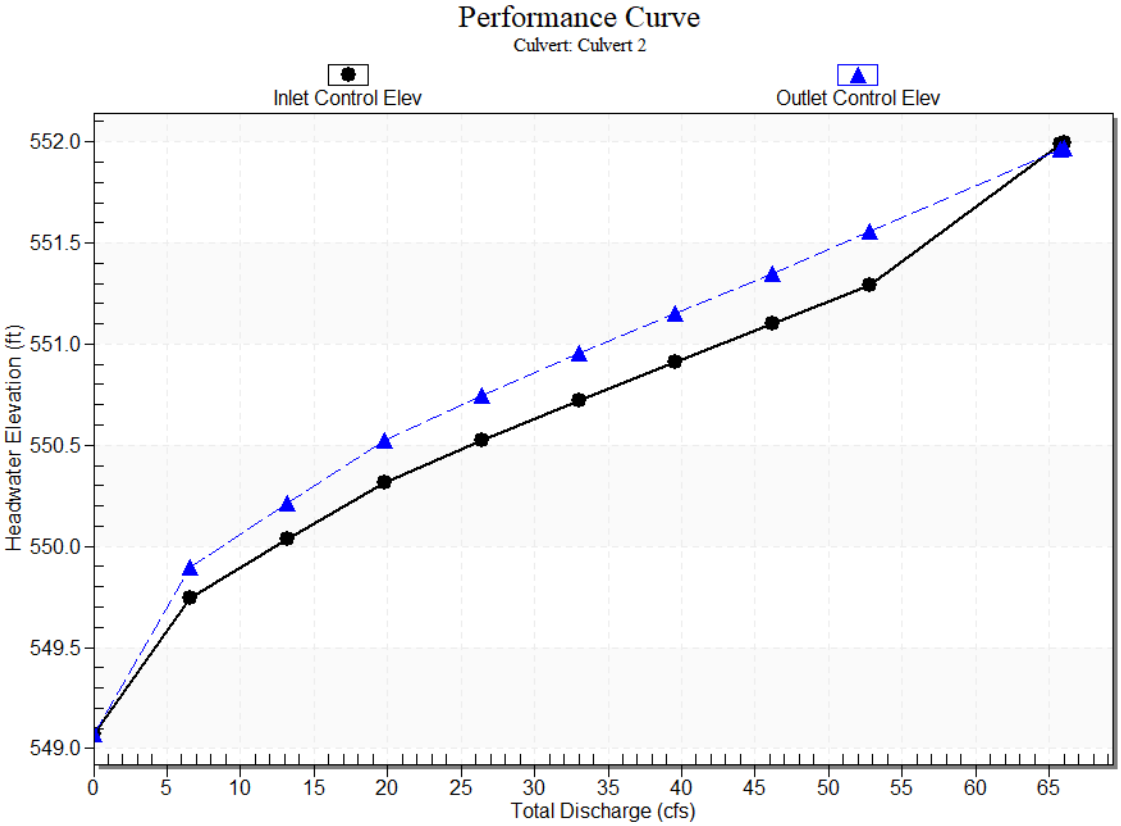
Inlet Elevation (invert): 549.07 ft,

Outlet Elevation (invert): 549.11 ft

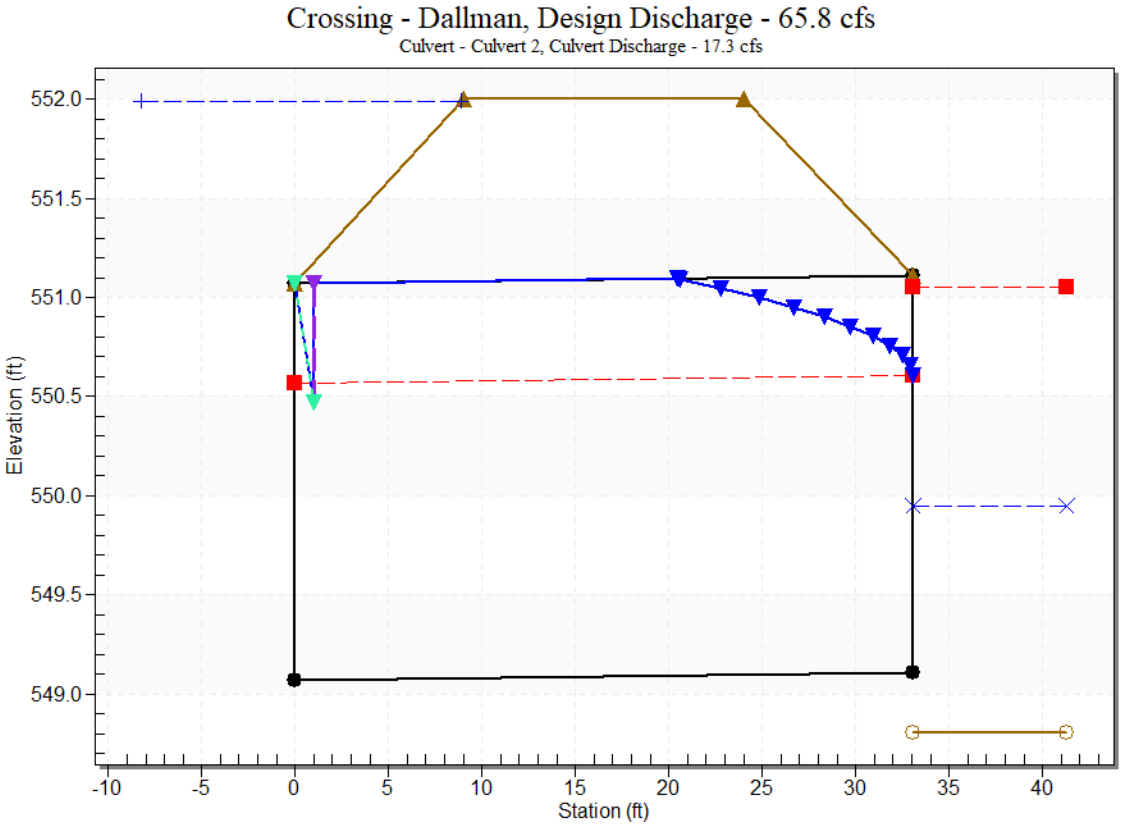
Culvert Length: 33.05 ft,

Culvert Slope: -0.0012

Culvert Performance Curve Plot: Culvert 2



Water Surface Profile Plot for Culvert: Culvert 2



Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.07 ft

Outlet Station: 33.05 ft

Outlet Elevation: 549.11 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Culvert Data: Culvert 3

Table 3 - Culvert Summary Table: Culvert 3

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.03	0.00	0.00	0.00
6.60 cfs	1.66 cfs	549.90	0.65	0.726	2-M2c	0.47	0.45	0.45	0.31	3.18	9.27
13.20 cfs	3.30 cfs	550.22	0.94	1.046	2-M2c	0.67	0.64	0.64	0.46	3.85	11.56
19.80 cfs	5.30 cfs	550.52	1.22	1.352	2-M2c	0.87	0.81	0.81	0.59	4.43	13.06
26.40 cfs	6.99 cfs	550.75	1.44	1.575	2-M2c	1.02	0.94	0.94	0.69	4.83	14.21
33.00 cfs	8.70 cfs	550.95	1.66	1.785	2-M2c	1.17	1.05	1.05	0.78	5.20	15.14
39.60 cfs	10.42 cfs	551.15	1.88	1.984	2-M2c	1.32	1.16	1.16	0.87	5.54	15.93
46.20 cfs	12.15 cfs	551.35	2.10	2.181	7-M2c	1.48	1.25	1.25	0.94	5.87	16.62
52.80 cfs	13.89 cfs	551.56	2.35	2.386	7-M2c	1.70	1.34	1.34	1.02	6.20	17.24
65.80 cfs	16.78 cfs	551.99	2.82	2.770	7-M2c	2.00	1.48	1.48	1.14	6.75	18.29
66.00 cfs	16.83 cfs	552.00	2.83	2.778	7-M2c	2.00	1.48	1.48	1.15	6.76	18.31

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

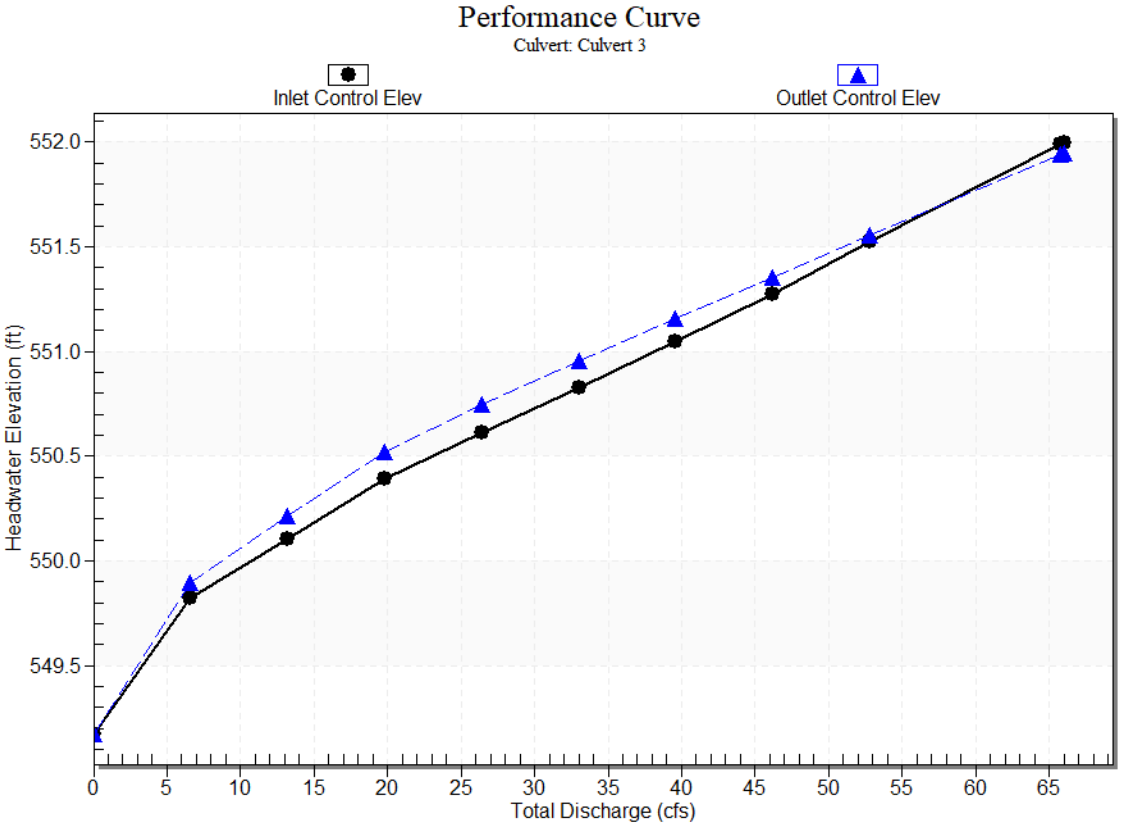
Inlet Elevation (invert): 549.17 ft,

Outlet Elevation (invert): 548.77 ft

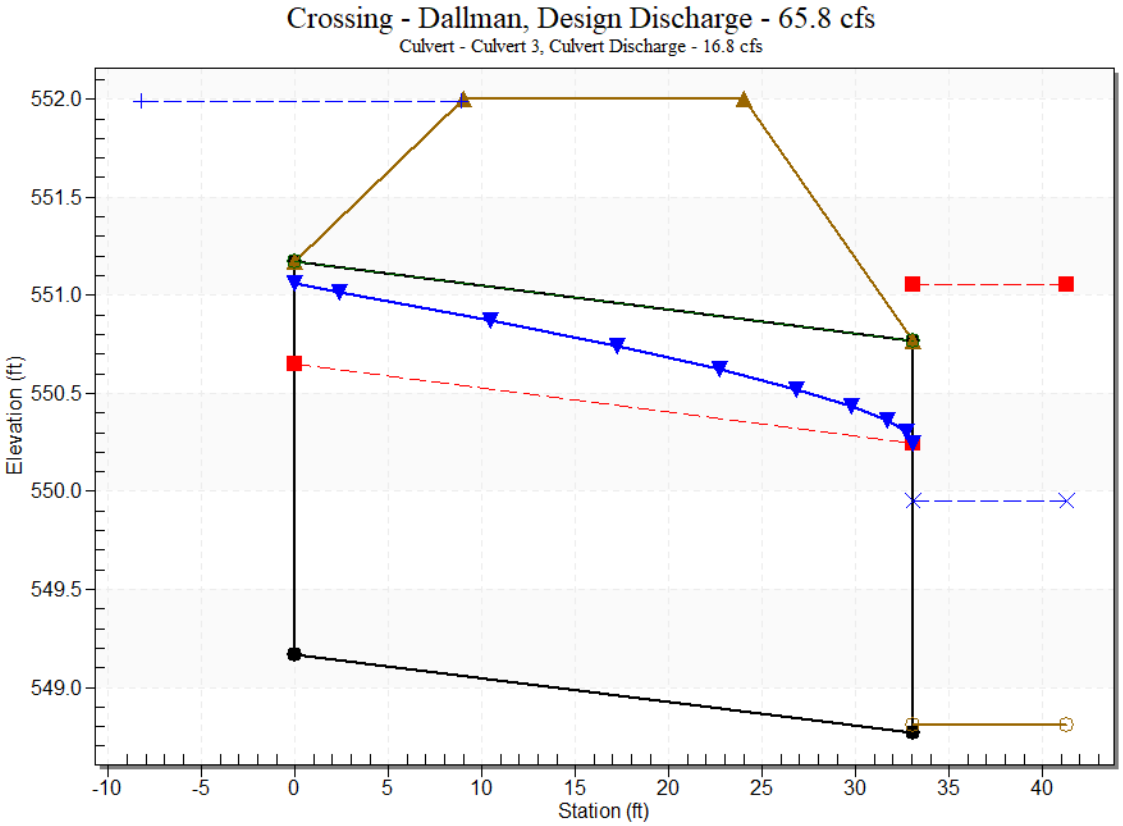
Culvert Length: 33.05 ft,

Culvert Slope: 0.0121

Culvert Performance Curve Plot: Culvert 3



Water Surface Profile Plot for Culvert: Culvert 3



Site Data - Culvert 3

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.17 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.77 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 3

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Culvert Data: Culvert 4

Table 4 - Culvert Summary Table: Culvert 4

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00 cfs	0.00 cfs	549.02	0.00	0.000	0-NF	0.00	0.00	0.06	0.00	0.00	0.00
6.60 cfs	0.28 cfs	549.90	0.26	0.0*	1-JS1t	0.16	0.18	0.37	0.31	0.69	9.27
13.20 cfs	1.35 cfs	550.22	0.58	0.0*	1-S2n	0.35	0.40	0.35	0.46	3.67	11.56
19.80 cfs	3.04 cfs	550.52	0.88	0.0*	1-S2n	0.52	0.61	0.52	0.59	4.64	13.06
26.40 cfs	4.58 cfs	550.75	1.11	0.0*	1-S2n	0.65	0.75	0.65	0.69	5.22	14.21
33.00 cfs	6.13 cfs	550.95	1.31	0.170	1-S2n	0.75	0.88	0.75	0.78	5.65	15.14
39.60 cfs	7.69 cfs	551.15	1.51	0.392	1-S2n	0.85	0.99	0.85	0.87	6.01	15.93
46.20 cfs	9.25 cfs	551.35	1.71	0.629	1-S2n	0.95	1.09	0.95	0.94	6.30	16.62
52.80 cfs	10.85 cfs	551.56	1.92	0.890	1-S2n	1.04	1.18	1.04	1.02	6.56	17.24
65.80 cfs	13.96 cfs	551.99	2.35	1.456	5-S2n	1.22	1.35	1.22	1.14	6.96	18.29
66.00 cfs	14.02 cfs	552.00	2.36	1.467	5-S2n	1.22	1.35	1.22	1.15	6.96	18.31

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

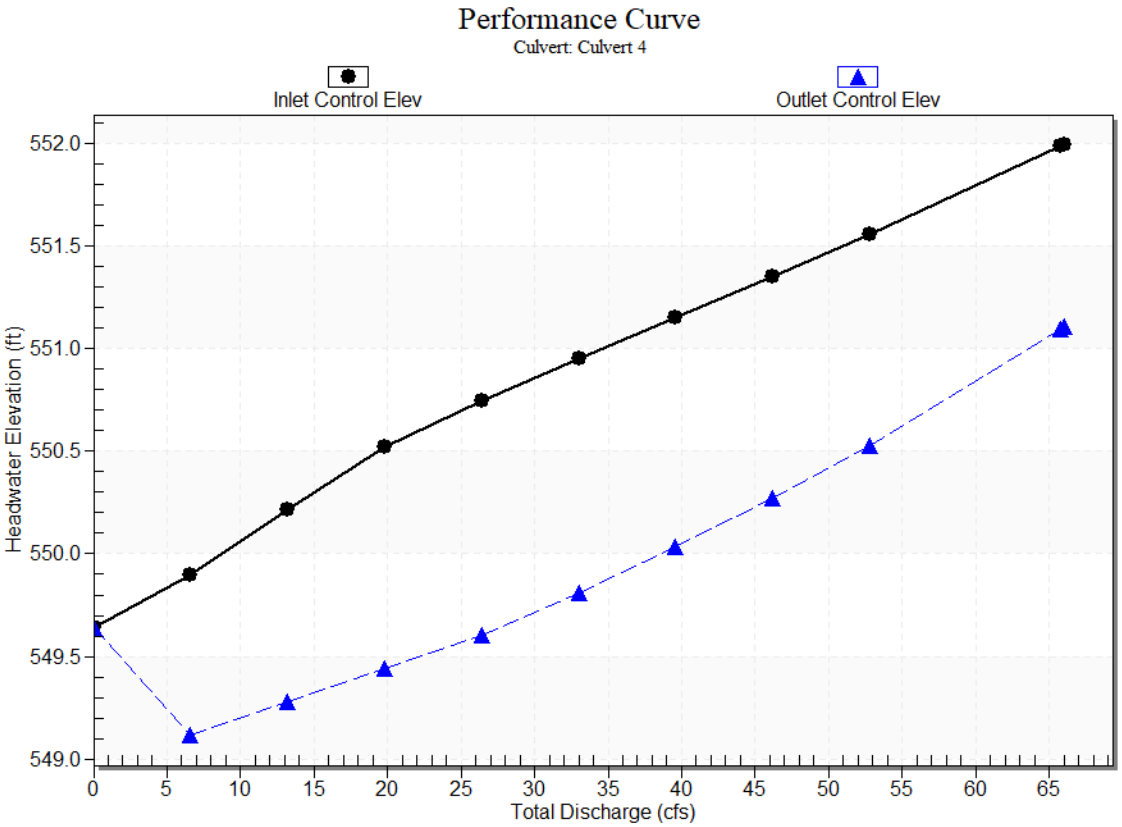
Inlet Elevation (invert): 549.64 ft,

Outlet Elevation (invert): 548.74 ft

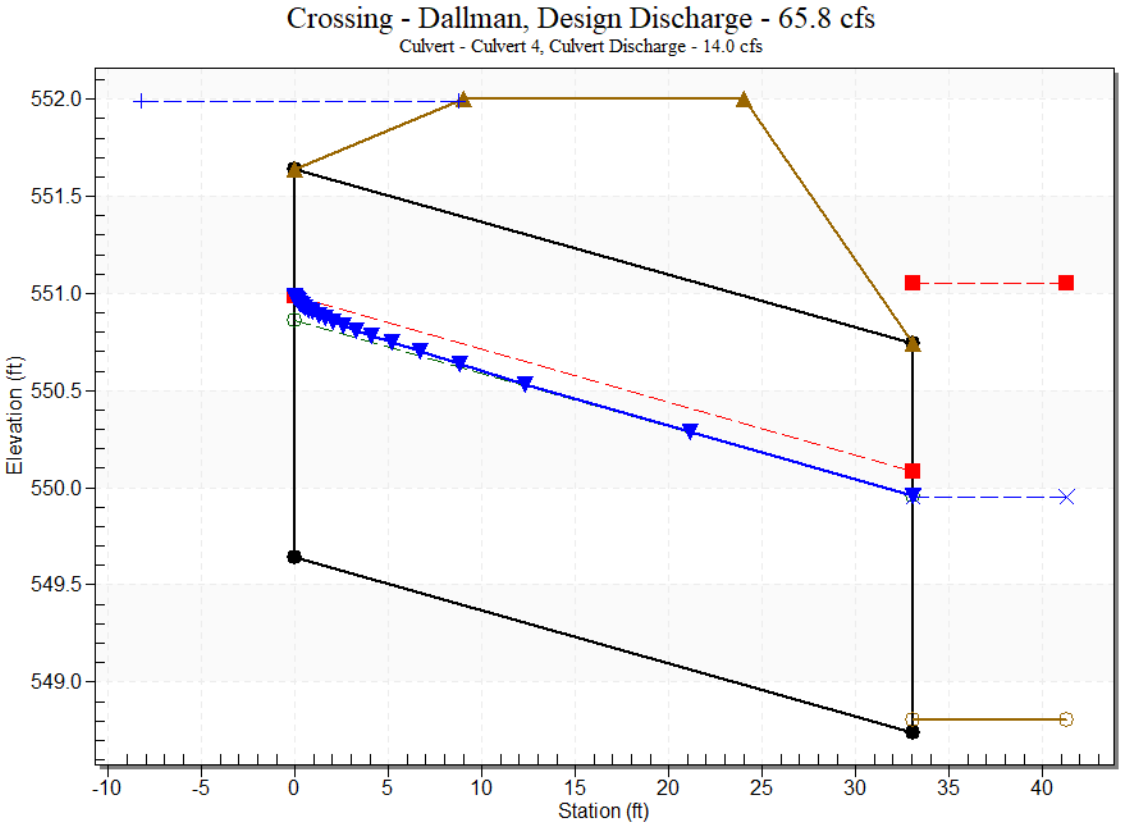
Culvert Length: 33.06 ft,

Culvert Slope: 0.0272

Culvert Performance Curve Plot: Culvert 4



Water Surface Profile Plot for Culvert: Culvert 4



Site Data - Culvert 4

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 549.64 ft

Outlet Station: 33.05 ft

Outlet Elevation: 548.74 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 4

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Tailwater Data for Crossing: Dallman

Table 2 - Downstream Channel Rating Curve (Crossing: Dallman)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
0.00	548.80	0.00	0.00	0.00	0.00
6.60	549.11	0.31	9.27	1.92	3.13
13.20	549.27	0.46	11.56	2.89	3.26
19.80	549.39	0.59	13.06	3.66	3.33
26.40	549.50	0.69	14.21	4.31	3.38
33.00	549.59	0.78	15.14	4.89	3.41
39.60	549.67	0.87	15.93	5.41	3.44
46.20	549.75	0.94	16.62	5.89	3.47
52.80	549.82	1.02	17.24	6.34	3.49
65.80	549.95	1.14	18.29	7.14	3.52
66.00	549.95	1.15	18.31	7.15	3.52

Tailwater Channel Data - Dallman

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 2.00 ft

Side Slope (H:V): 1.00 (_:1)

Channel Slope: 0.1000

Channel Manning's n: 0.0200

Channel Invert Elevation: 548.80 ft

Roadway Data for Crossing: Dallman

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 552.00 ft

Roadway Surface: Gravel

Roadway Top Width: 15.00 ft

APPENDIX D:
Lakeside & Lime Pond 3 Pump Curve

APPENDIX E:
Hydraulic Modeling – WinTR-20

WinTR-20 Printed Page File Beginning of Input Data List
C:\Win TR-20\CWLP-WinTR-20 Updated 2025 with Pumping & Decant (rev).inp

WinTR-20: Version 3.30 0 0 0.1 0 Illinois,Sangamon
City Water Light and Power
Springfield, Illinois

SUB-AREA:

Dallman	Reach 1	0.05905	86.1	0.8965	YY
Clarif	Reach 2	0.01622	93.67	0.083	YY
Lime 1	Reach 4	0.00794	98.52	0.083	YY Y
Lime 2	Reach 3	0.00614	98.77	0.083	
Lake + L3	Reach 8	0.03927	73.24	1.26	
Cntr Cnl	Reach 5	0.0011875	98.	0.1	
W Stl Chnl	Reach 7	0.003328	98.	0.1	
Decant	Reach 6	0.002892	100.	8.19	

STREAM REACH:

Reach 1	Reach 2	D Pond	YY Y
Reach 2	Outlet	C Pond	YY
Reach 7	Reach 2	W Stl Chnl	
Reach 5	Reach 7	Cntr Cnl	YY Y
Reach 4	Reach 7	Lime 1	
Reach 3	Reach 5	Lime 2	
Reach 8	Reach 2	Lake + L3	
Reach 6	Reach 2	Decant	

STORM ANALYSIS:

1000-yr	8.38	NOAA_A	2	2.95

STRUCTURE RATING:

C Pond 546.09

546.09	0.	0.
547.	3.6528	7.0184
548.	10.944	14.9050
549.	20.408	22.9745
550.	31.599	31.2278
551.	44.264	39.6751
552.	58.237	48.1030

D Pond 549.02

549.02	0.	0.
550.	8.25	0.104
551.	34.1	1.660
552.	66.	7.253

Lime 1 564.93

564.93	0.	0.
565.	0.02	0.28524
566.	4.08	4.40936
567.	8.75	8.60849
568.	11.86	12.89651

Lime 2 564.52

564.52	0.	0.
565.	0.9	1.496
566.	7.5	4.668
567.	12.9	7.914
568.	16.49	11.234

W Stl Chnl559.45

559.45	0.	0.
560.	1.0	0.13395
561.	3.8	0.52801
562.	5.47	1.18565
562.5	6.12	1.60184

Cntr Cnl 561.26

561.26	0.	0.
562.	2.46	0.05599
563.	7.1	0.18650

564. 9.78 0.37486

Lake + L3 559.

559. 0. 0.0005
559.01 34.95 0.000501
560. 34.96 0.008035
561. 34.97 0.0143
562. 34.98 0.4605
563. 34.99 2.8624

Decant 557.5

557.5 0. 0.
558.5 4.3 0.0008
559.5 12.75 0.001623
560.5 20.35 0.002466

RAINFALL DISTRIBUTION:

NOAA_A 0.1

0.0 0.000776 0.00141 0.00205 0.00270
0.00336 0.00403 0.00471 0.00539 0.00609
0.00679 0.00751 0.00823 0.00897 0.00971
0.01046 0.01122 0.01199 0.01277 0.01356
0.01435 0.01516 0.01598 0.01680 0.01764
0.01848 0.01933 0.02019 0.02106 0.02194
0.02283 0.02373 0.02464 0.02556 0.02648
0.02742 0.02836 0.02932 0.03028 0.03125
0.03223 0.03322 0.03422 0.03523 0.03625
0.03727 0.03831 0.03936 0.04041 0.04147
0.04255 0.04363 0.04472 0.04582 0.04693
0.04805 0.04918 0.05032 0.05146 0.05262
0.05378 0.05498 0.05622 0.05750 0.05881
0.06016 0.06154 0.06297 0.06442 0.06592
0.06745 0.06902 0.07063 0.07227 0.07395
0.07567 0.07742 0.07921 0.08104 0.08290
0.08480 0.08674 0.08871 0.09072 0.09277
0.09485 0.09697 0.09913 0.10132 0.10355
0.10582 0.10824 0.11081 0.11354 0.11643
0.11946 0.12265 0.12599 0.12949 0.13314
0.13695 0.14090 0.14502 0.14928 0.15370
0.15827 0.16348 0.16932 0.17580 0.18291
0.19065 0.19971 0.21009 0.22179 0.23481
0.24900 0.27176 0.29572 0.32954 0.37820
0.46660 0.62180 0.67046 0.70428 0.72824
0.75100 0.76519 0.77821 0.78991 0.80029
0.80935 0.81709 0.82420 0.83068 0.83652
0.84173 0.84630 0.85072 0.85498 0.85910
0.86305 0.86686 0.87051 0.87401 0.87735
0.88054 0.88357 0.88646 0.88919 0.89176
0.89418 0.89645 0.89868 0.90087 0.90303
0.90515 0.90723 0.90928 0.91129 0.91326
0.91520 0.91710 0.91896 0.92079 0.92258
0.92433 0.92605 0.92773 0.92937 0.93098
0.93255 0.93408 0.93558 0.93703 0.93846
0.93984 0.94119 0.94250 0.94378 0.94502
0.94622 0.94738 0.94854 0.94968 0.95082
0.95195 0.95307 0.95418 0.95528 0.95637
0.95745 0.95853 0.95959 0.96064 0.96169
0.96273 0.96375 0.96477 0.96578 0.96678
0.96777 0.96875 0.96972 0.97068 0.97164
0.97258 0.97352 0.97444 0.97536 0.97627
0.97717 0.97806 0.97894 0.97981 0.98067
0.98152 0.98236 0.98320 0.98402 0.98484
0.98565 0.98644 0.98723 0.98801 0.98878
0.98954 0.99029 0.99103 0.99177 0.99249
0.99321 0.99391 0.99461 0.99529 0.99597
0.99664 0.99730 0.99795 0.99859 0.999224
1.0

GLOBAL OUTPUT:
0.1 YY N YY N

VERIFICATION:
DATA PREP Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
PROCESSINGY Y Y Y Y Y Y Y Y Y

WinTR-20 Printed Page File End of Input Data List

City Water Light and Power
Springfield, Illinois

Name of printed page file:
C:\Win TR-20\CWLP-WinTR-20 Updated 2025 with Pumping & Decant (rev).out

STORM 1000-yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Lime 2	0.006		8.222		12.11	48.9	7962.98

Line Start Time (hr) — Flow Values @ time increment of 0.100 hr (cfs)

7.000	0.5	0.5	0.5	0.5	0.5	0.6	0.6
7.700	0.6	0.6	0.6	0.6	0.6	0.6	0.7
8.400	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.100	0.8	0.8	0.9	0.9	1.0	1.0	1.1
9.800	1.1	1.2	1.2	1.3	1.3	1.4	1.4
10.500	1.5	1.7	1.9	2.1	2.3	2.5	2.9
11.200	3.4	3.8	4.2	4.6	7.1	7.9	10.8
11.900	15.4	27.5	48.4	20.9	12.1	8.4	7.6
12.600	5.1	4.4	3.9	3.5	3.1	2.6	2.4
13.300	2.2	2.0	1.8	1.5	1.5	1.4	1.4
14.000	1.3	1.3	1.2	1.2	1.1	1.1	1.0
14.700	1.0	0.9	0.9	0.8	0.8	0.7	0.7
15.400	0.7	0.7	0.7	0.7	0.7	0.7	0.6
16.100	0.6	0.6	0.6	0.6	0.6	0.6	0.6
16.800	0.5	0.5	0.5	0.5	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Reach 3	0.006	Upstream	8.222		12.11	48.9	7962.98

Line Start Time (hr) — Flow Values @ time increment of 0.100 hr (cfs)

7.000	0.5	0.5	0.5	0.5	0.5	0.6	0.6
7.700	0.6	0.6	0.6	0.6	0.6	0.6	0.7
8.400	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.100	0.8	0.8	0.9	0.9	1.0	1.0	1.1
9.800	1.1	1.2	1.2	1.3	1.3	1.4	1.4
10.500	1.5	1.7	1.9	2.1	2.3	2.5	2.9
11.200	3.4	3.8	4.2	4.6	7.1	7.9	10.8
11.900	15.4	27.5	48.4	20.9	12.1	8.4	7.6

12.600	5.1	4.4	3.9	3.5	3.1	2.6	2.4
13.300	2.2	2.0	1.8	1.5	1.5	1.4	1.4
14.000	1.3	1.3	1.2	1.2	1.1	1.1	1.0
14.700	1.0	0.9	0.9	0.8	0.8	0.7	0.7

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
15.400	0.7	0.7	0.7	0.7	0.7	0.7	0.6
16.100	0.6	0.6	0.6	0.6	0.6	0.6	0.6
16.800	0.5	0.5	0.5	0.5	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 3	0.006	Downstream	7.645	565.15	13.45	1.9	305.21

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.900	0.5	0.6	0.8	1.1	1.3	1.5	1.6
12.600	1.7	1.7	1.8	1.8	1.8	1.9	1.9
13.300	1.9	1.9	1.9	1.9	1.9	1.9	1.8
14.000	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.700	1.8	1.7	1.7	1.7	1.7	1.7	1.7
15.400	1.7	1.6	1.6	1.6	1.6	1.6	1.6
16.100	1.5	1.5	1.5	1.5	1.5	1.5	1.4
16.800	1.4	1.4	1.4	1.4	1.4	1.4	1.3
17.500	1.3	1.3	1.3	1.3	1.3	1.3	1.2
18.200	1.2	1.2	1.2	1.2	1.2	1.2	1.1
18.900	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.600	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20.300	1.0	0.9	0.9	0.9	0.9	0.9	0.9
21.000	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.700	0.9	0.9	0.9	0.9	0.9	0.9	0.9
22.400	0.9	0.9	0.8	0.8	0.8	0.8	0.8
23.100	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.800	0.8	0.8	0.8	0.8	0.8	0.8	0.8
24.500	0.8	0.8	0.8	0.8	0.8	0.8	0.8
25.200	0.8	0.8	0.8	0.7	0.7	0.7	0.7
25.900	0.7	0.7	0.7	0.7	0.7	0.7	0.7
26.600	0.7	0.7	0.7	0.7	0.7	0.7	0.7
27.300	0.7	0.7	0.7	0.7	0.7	0.7	0.7
28.000	0.7	0.7	0.7	0.7	0.6	0.6	0.6
28.700	0.6	0.6	0.6	0.6	0.6	0.6	0.6
29.400	0.6	0.6	0.6	0.6	0.6	0.6	0.6
30.100	0.6	0.6	0.6	0.6	0.6	0.6	0.6
30.800	0.6	0.6	0.6	0.6	0.6	0.6	0.6
31.500	0.6	0.6	0.6	0.5	0.5	0.5	0.5
32.200	0.5	0.5	0.5	0.5	0.5	0.5	0.5
32.900	0.5	0.5	0.5	0.5	0.5	0.5	0.5
33.600	0.5	0.0					

City Water Light and Power
Springfield, Illinois

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cntr Cnl	0.001		7.154		12.12	9.1	7695.71

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.5	0.6	0.6	0.7	0.8	0.9	1.3
11.700	1.5	2.0	2.9	5.0	8.9	4.7	2.5
12.400	1.7	1.5	1.0	0.9	0.8	0.7	0.6
13.100	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Reach 5	0.007	Upstream	7.565		12.12	9.9	1357.07

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.500	0.5	0.5	0.6	0.6	0.7	0.7	0.8
11.200	0.9	1.0	1.1	1.2	1.7	1.9	2.4
11.900	3.4	5.6	9.7	5.7	3.8	3.2	3.1
12.600	2.7	2.6	2.5	2.5	2.4	2.4	2.3
13.300	2.3	2.3	2.2	2.2	2.2	2.1	2.1
14.000	2.1	2.1	2.1	2.0	2.0	2.0	2.0
14.700	1.9	1.9	1.9	1.9	1.8	1.8	1.8
15.400	1.8	1.8	1.8	1.7	1.7	1.7	1.7
16.100	1.7	1.6	1.6	1.6	1.6	1.6	1.6
16.800	1.5	1.5	1.5	1.4	1.4	1.4	1.3
17.500	1.3	1.3	1.3	1.3	1.3	1.3	1.2
18.200	1.2	1.2	1.2	1.2	1.2	1.2	1.1
18.900	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.600	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20.300	1.0	0.9	0.9	0.9	0.9	0.9	0.9
21.000	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.700	0.9	0.9	0.9	0.9	0.9	0.9	0.9
22.400	0.9	0.9	0.8	0.8	0.8	0.8	0.8
23.100	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.800	0.8	0.8	0.8	0.8	0.8	0.8	0.8
24.500	0.8	0.8	0.8	0.8	0.8	0.8	0.8
25.200	0.8	0.8	0.8	0.7	0.7	0.7	0.7
25.900	0.7	0.7	0.7	0.7	0.7	0.7	0.7
26.600	0.7	0.7	0.7	0.7	0.7	0.7	0.7
27.300	0.7	0.7	0.7	0.7	0.7	0.7	0.7
28.000	0.7	0.7	0.7	0.7	0.6	0.6	0.6
28.700	0.6	0.6	0.6	0.6	0.6	0.6	0.6
29.400	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
30.100	0.6	0.6	0.6	0.6	0.6	0.6	0.6
30.800	0.6	0.6	0.6	0.6	0.6	0.6	0.6
31.500	0.6	0.6	0.6	0.5	0.5	0.5	0.5
32.200	0.5	0.5	0.5	0.5	0.5	0.5	0.5
32.900	0.5	0.5	0.5	0.5	0.5	0.5	0.5
33.600	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 5	0.007	Downstream	7.551	562.56	12.23	5.0	688.53

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
10.700	0.5	0.5	0.6	0.6	0.6	0.7	0.8
11.400	0.9	1.0	1.1	1.3	1.6	2.0	2.7
12.100	3.9	5.0	4.9	4.5	4.2	3.9	3.6
12.800	3.3	3.1	2.9	2.8	2.7	2.6	2.5
13.500	2.4	2.4	2.3	2.3	2.2	2.2	2.2
14.200	2.1	2.1	2.1	2.1	2.0	2.0	2.0
14.900	2.0	1.9	1.9	1.9	1.9	1.8	1.8
15.600	1.8	1.8	1.8	1.8	1.7	1.7	1.7
16.300	1.7	1.7	1.6	1.6	1.6	1.6	1.6
17.000	1.6	1.5	1.5	1.4	1.4	1.4	1.4
17.700	1.3	1.3	1.3	1.3	1.3	1.3	1.3
18.400	1.2	1.2	1.2	1.2	1.2	1.2	1.2
19.100	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.800	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20.500	1.0	1.0	0.9	0.9	0.9	0.9	0.9
21.200	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.900	0.9	0.9	0.9	0.9	0.9	0.9	0.9
22.600	0.9	0.9	0.9	0.8	0.8	0.8	0.8
23.300	0.8	0.8	0.8	0.8	0.8	0.8	0.8
24.000	0.8	0.8	0.8	0.8	0.8	0.8	0.8
24.700	0.8	0.8	0.8	0.8	0.8	0.8	0.8
25.400	0.8	0.8	0.8	0.8	0.7	0.7	0.7
26.100	0.7	0.7	0.7	0.7	0.7	0.7	0.7
26.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
27.500	0.7	0.7	0.7	0.7	0.7	0.7	0.7
28.200	0.7	0.7	0.7	0.7	0.7	0.6	0.6
28.900	0.6	0.6	0.6	0.6	0.6	0.6	0.6
29.600	0.6	0.6	0.6	0.6	0.6	0.6	0.6
30.300	0.6	0.6	0.6	0.6	0.6	0.6	0.6
31.000	0.6	0.6	0.6	0.6	0.6	0.6	0.6
31.700	0.6	0.6	0.6	0.5	0.5	0.5	0.5
32.400	0.5	0.5	0.5	0.5	0.5	0.5	0.5
33.100	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
33.800	0.5	0.5	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
W Stl Chnl	0.003		8.085		12.12	25.6	7695.71

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.400	0.5	0.5	0.5	0.6	0.6	0.6	0.7
10.100	0.7	0.7	0.7	0.8	0.8	0.9	1.0
10.800	1.1	1.2	1.3	1.6	1.8	2.0	2.3
11.500	2.5	3.7	4.2	5.6	8.1	14.1	24.9
12.200	13.0	7.0	4.8	4.2	2.9	2.4	2.2
12.900	1.9	1.7	1.5	1.3	1.2	1.1	1.0
13.600	0.9	0.8	0.8	0.7	0.7	0.7	0.7
14.300	0.6	0.6	0.6	0.6	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Lime 1	0.008		8.196		12.11	63.1	7951.58

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
6.200	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.900	0.6	0.6	0.6	0.7	0.7	0.7	0.7
7.600	0.7	0.7	0.8	0.8	0.8	0.8	0.8
8.300	0.8	0.9	0.9	0.9	0.9	0.9	0.9
9.000	1.0	1.0	1.1	1.1	1.2	1.3	1.3
9.700	1.4	1.5	1.5	1.6	1.7	1.7	1.8
10.400	1.9	1.9	2.2	2.4	2.7	3.0	3.3
11.100	3.8	4.3	4.9	5.5	6.0	9.2	10.2
11.800	13.9	19.9	35.5	62.5	27.1	15.6	10.9
12.500	9.9	6.6	5.7	5.1	4.5	4.0	3.4
13.200	3.1	2.8	2.5	2.3	2.0	1.9	1.8
13.900	1.8	1.7	1.6	1.6	1.5	1.4	1.4
14.600	1.3	1.2	1.2	1.1	1.0	1.0	1.0
15.300	0.9	0.9	0.9	0.9	0.9	0.9	0.8
16.000	0.8	0.8	0.8	0.8	0.8	0.8	0.7
16.700	0.7	0.7	0.7	0.7	0.7	0.6	0.6
17.400	0.6	0.6	0.6	0.6	0.6	0.5	0.5
18.100	0.5	0.0					

City Water Light and Power
Springfield, Illinois

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Reach 4	0.008	Upstream	8.196		12.11	63.1	7951.58

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
6.200	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.900	0.6	0.6	0.6	0.7	0.7	0.7	0.7
7.600	0.7	0.7	0.8	0.8	0.8	0.8	0.8
8.300	0.8	0.9	0.9	0.9	0.9	0.9	0.9
9.000	1.0	1.0	1.1	1.1	1.2	1.3	1.3
9.700	1.4	1.5	1.5	1.6	1.7	1.7	1.8
10.400	1.9	1.9	2.2	2.4	2.7	3.0	3.3
11.100	3.8	4.3	4.9	5.5	6.0	9.2	10.2
11.800	13.9	19.9	35.5	62.5	27.1	15.6	10.9
12.500	9.9	6.6	5.7	5.1	4.5	4.0	3.4
13.200	3.1	2.8	2.5	2.3	2.0	1.9	1.8
13.900	1.8	1.7	1.6	1.6	1.5	1.4	1.4
14.600	1.3	1.2	1.2	1.1	1.0	1.0	1.0
15.300	0.9	0.9	0.9	0.9	0.9	0.9	0.8
16.000	0.8	0.8	0.8	0.8	0.8	0.8	0.7
16.700	0.7	0.7	0.7	0.7	0.7	0.6	0.6
17.400	0.6	0.6	0.6	0.6	0.6	0.5	0.5
18.100	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Reach 4	0.008	Downstream	7.309	565.55	13.50	2.3	285.94

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.500	0.5	0.5	0.6	0.7	0.8	1.0	1.4
12.200	1.8	1.9	2.0	2.1	2.1	2.2	2.2
12.900	2.2	2.2	2.3	2.3	2.3	2.3	2.3
13.600	2.3	2.3	2.3	2.3	2.3	2.3	2.2
14.300	2.2	2.2	2.2	2.2	2.2	2.2	2.2
15.000	2.2	2.2	2.2	2.2	2.1	2.1	2.1
15.700	2.1	2.1	2.1	2.1	2.1	2.1	2.1
16.400	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17.100	2.0	2.0	2.0	1.9	1.9	1.9	1.9
17.800	1.9	1.9	1.9	1.9	1.9	1.8	1.8
18.500	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.200	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.900	1.7	1.7	1.7	1.6	1.6	1.6	1.6
20.600	1.6	1.6	1.6	1.6	1.6	1.6	1.5

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
21.300	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.000	1.5	1.5	1.5	1.4	1.4	1.4	1.4
22.700	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.400	1.3	1.3	1.3	1.3	1.3	1.3	1.3
24.100	1.3	1.3	1.3	1.3	1.2	1.2	1.2
24.800	1.2	1.2	1.2	1.2	1.2	1.2	1.2
25.500	1.1	1.1	1.1	1.1	1.1	1.1	1.1
26.200	1.1	1.1	1.1	1.1	1.1	1.0	1.0
26.900	1.0	1.0	1.0	1.0	1.0	1.0	1.0
27.600	1.0	1.0	1.0	0.9	0.9	0.9	0.9
28.300	0.9	0.9	0.9	0.9	0.9	0.9	0.9
29.000	0.9	0.9	0.9	0.8	0.8	0.8	0.8
29.700	0.8	0.8	0.8	0.8	0.8	0.8	0.8
30.400	0.8	0.8	0.8	0.8	0.7	0.7	0.7
31.100	0.7	0.7	0.7	0.7	0.7	0.7	0.7
31.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
32.500	0.6	0.6	0.6	0.6	0.6	0.6	0.6
33.200	0.6	0.6	0.6	0.6	0.6	0.6	0.6
33.900	0.6	0.6	0.6	0.6	0.6	0.6	0.6
34.600	0.5	0.5	0.5	0.5	0.5	0.5	0.5
35.300	0.5	0.5	0.5	0.5	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 7	0.019	Upstream	7.543		12.12	31.3	1684.52

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
8.200	0.5	0.5	0.5	0.6	0.6	0.6	0.6
8.900	0.6	0.6	0.7	0.7	0.7	0.8	0.8
9.600	0.9	0.9	1.0	1.1	1.2	1.2	1.3
10.300	1.3	1.4	1.4	1.6	1.7	1.9	2.1
11.000	2.2	2.5	2.8	3.2	3.5	3.9	5.3
11.700	6.1	7.9	10.8	17.8	30.2	19.8	13.9
12.400	11.3	10.4	8.9	8.1	7.7	7.3	6.9
13.100	6.5	6.3	6.1	5.9	5.7	5.5	5.4
13.800	5.3	5.2	5.2	5.1	5.0	5.0	4.9
14.500	4.9	4.8	4.7	4.7	4.6	4.6	4.5
15.200	4.5	4.4	4.4	4.3	4.3	4.3	4.2
15.900	4.2	4.2	4.1	4.1	4.1	4.0	4.0
16.600	4.0	3.9	3.9	3.9	3.8	3.8	3.7
17.300	3.7	3.6	3.6	3.5	3.5	3.5	3.4
18.000	3.4	3.4	3.3	3.3	3.3	3.2	3.2
18.700	3.2	3.2	3.1	3.1	3.1	3.1	3.0
19.400	3.0	3.0	3.0	2.9	2.9	2.9	2.9
20.100	2.8	2.8	2.8	2.8	2.8	2.7	2.7

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
20.800	2.7	2.7	2.6	2.6	2.6	2.6	2.6
21.500	2.6	2.5	2.5	2.5	2.5	2.5	2.5
22.200	2.5	2.5	2.4	2.4	2.4	2.4	2.4
22.900	2.4	2.4	2.3	2.3	2.3	2.3	2.3
23.600	2.3	2.3	2.2	2.2	2.2	2.1	2.1
24.300	2.1	2.1	2.0	2.0	2.0	2.0	2.0
25.000	2.0	2.0	1.9	1.9	1.9	1.9	1.9
25.700	1.9	1.9	1.9	1.8	1.8	1.8	1.8
26.400	1.8	1.8	1.8	1.8	1.7	1.7	1.7
27.100	1.7	1.7	1.7	1.7	1.7	1.7	1.6
27.800	1.6	1.6	1.6	1.6	1.6	1.6	1.6
28.500	1.6	1.5	1.5	1.5	1.5	1.5	1.5
29.200	1.5	1.5	1.5	1.5	1.4	1.4	1.4
29.900	1.4	1.4	1.4	1.4	1.4	1.4	1.4
30.600	1.3	1.3	1.3	1.3	1.3	1.3	1.3
31.300	1.3	1.3	1.3	1.3	1.3	1.2	1.2
32.000	1.2	1.2	1.2	1.2	1.2	1.2	1.2
32.700	1.2	1.2	1.2	1.1	1.1	1.1	1.1
33.400	1.1	1.1	1.1	1.1	1.1	1.1	1.1
34.100	1.1	1.1	1.1	1.0	1.0	1.0	1.0
34.800	1.0	1.0	1.0	1.0	1.0	1.0	1.0
35.500	1.0	1.0	1.0	1.0	0.9	0.9	0.9
36.200	0.9	0.9	0.9	0.9	0.9	0.9	0.9
36.900	0.9	0.9	0.9	0.9	0.9	0.9	0.9
37.600	0.8	0.8	0.8	0.8	0.8	0.8	0.8
38.300	0.8	0.8	0.8	0.8	0.8	0.8	0.8
39.000	0.8	0.8	0.8	0.8	0.8	0.7	0.7
39.700	0.7	0.7	0.7	0.7	0.7	0.7	0.7
40.400	0.7	0.7	0.7	0.7	0.7	0.7	0.7
41.100	0.7	0.7	0.7	0.7	0.7	0.7	0.6
41.800	0.6	0.6	0.6	0.6	0.6	0.6	0.6
42.500	0.6	0.6	0.6	0.6	0.6	0.6	0.6
43.200	0.6	0.6	0.6	0.6	0.6	0.6	0.6
43.900	0.6	0.6	0.6	0.6	0.5	0.5	0.5
44.600	0.5	0.5	0.5	0.5	0.5	0.5	0.5
45.300	0.5	0.5	0.5	0.5	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 7	0.019	Downstream	7.521	561.98	13.64	5.4	292.19

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.600	0.5	0.5	0.5	0.6	0.6	0.6	0.7
10.300	0.7	0.7	0.8	0.8	0.9	0.9	1.0
11.000	1.1	1.1	1.2	1.3	1.4	1.6	1.7

City Water Light and Power
Springfield, Illinois

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.700	2.0	2.2	2.6	3.3	4.0	4.5	4.8
12.400	4.9	5.0	5.1	5.2	5.3	5.3	5.3
13.100	5.4	5.4	5.4	5.4	5.4	5.4	5.4
13.800	5.4	5.4	5.4	5.4	5.4	5.4	5.4
14.500	5.4	5.4	5.4	5.3	5.3	5.3	5.3
15.200	5.3	5.3	5.2	5.2	5.2	5.2	5.2
15.900	5.2	5.1	5.1	5.1	5.1	5.0	5.0
16.600	5.0	5.0	5.0	4.9	4.9	4.9	4.9
17.300	4.8	4.8	4.8	4.8	4.7	4.7	4.7
18.000	4.7	4.6	4.6	4.6	4.6	4.5	4.5
18.700	4.5	4.4	4.4	4.4	4.4	4.3	4.3
19.400	4.3	4.3	4.2	4.2	4.2	4.2	4.1
20.100	4.1	4.1	4.0	4.0	4.0	4.0	3.9
20.800	3.9	3.9	3.9	3.8	3.8	3.8	3.7
21.500	3.6	3.6	3.5	3.5	3.4	3.4	3.3
22.200	3.3	3.2	3.2	3.1	3.1	3.0	3.0
22.900	3.0	2.9	2.9	2.9	2.8	2.8	2.8
23.600	2.8	2.7	2.7	2.7	2.6	2.6	2.6
24.300	2.6	2.5	2.5	2.5	2.5	2.4	2.4
25.000	2.4	2.4	2.3	2.3	2.3	2.3	2.2
25.700	2.2	2.2	2.2	2.2	2.1	2.1	2.1
26.400	2.1	2.1	2.1	2.0	2.0	2.0	2.0
27.100	2.0	2.0	1.9	1.9	1.9	1.9	1.9
27.800	1.9	1.9	1.8	1.8	1.8	1.8	1.8
28.500	1.8	1.8	1.8	1.7	1.7	1.7	1.7
29.200	1.7	1.7	1.7	1.7	1.6	1.6	1.6
29.900	1.6	1.6	1.6	1.6	1.6	1.6	1.5
30.600	1.5	1.5	1.5	1.5	1.5	1.5	1.5
31.300	1.5	1.4	1.4	1.4	1.4	1.4	1.4
32.000	1.4	1.4	1.4	1.4	1.4	1.3	1.3
32.700	1.3	1.3	1.3	1.3	1.3	1.3	1.3
33.400	1.3	1.3	1.2	1.2	1.2	1.2	1.2
34.100	1.2	1.2	1.2	1.2	1.2	1.2	1.2
34.800	1.1	1.1	1.1	1.1	1.1	1.1	1.1
35.500	1.1	1.1	1.1	1.1	1.1	1.1	1.1
36.200	1.0	1.0	1.0	1.0	1.0	1.0	1.0
36.900	1.0	1.0	1.0	1.0	1.0	1.0	1.0
37.600	1.0	0.9	0.9	0.9	0.9	0.9	0.9
38.300	0.9	0.9	0.9	0.9	0.9	0.9	0.9
39.000	0.9	0.9	0.9	0.8	0.8	0.8	0.8
39.700	0.8	0.8	0.8	0.8	0.8	0.8	0.8
40.400	0.8	0.8	0.8	0.8	0.8	0.8	0.8
41.100	0.8	0.7	0.7	0.7	0.7	0.7	0.7
41.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
42.500	0.7	0.7	0.7	0.7	0.7	0.7	0.7
43.200	0.7	0.7	0.6	0.6	0.6	0.6	0.6
43.900	0.6	0.6	0.6	0.6	0.6	0.6	0.6
44.600	0.6	0.6	0.6	0.6	0.6	0.6	0.6
45.300	0.6	0.6	0.6	0.6	0.6	0.6	0.6
46.000	0.5	0.5	0.5	0.5	0.5	0.5	0.5
46.700	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
47.400	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Clarif	0.016		7.617		12.11	126.9	7824.95

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
5.700	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.400	0.6	0.7	0.7	0.7	0.8	0.8	0.8
7.100	0.9	0.9	0.9	1.0	1.0	1.0	1.1
7.800	1.1	1.1	1.2	1.2	1.2	1.3	1.3
8.500	1.3	1.4	1.4	1.5	1.5	1.5	1.6
9.200	1.8	1.9	2.0	2.1	2.3	2.4	2.5
9.900	2.6	2.8	2.9	3.0	3.2	3.3	3.5
10.600	3.9	4.4	5.0	5.5	6.0	7.0	8.1
11.300	9.3	10.4	11.4	17.7	19.7	27.1	39.3
12.000	70.6	125.4	54.6	31.6	22.0	19.9	13.4
12.700	11.5	10.3	9.2	8.0	6.9	6.3	5.7
13.400	5.2	4.6	4.1	3.9	3.7	3.6	3.5
14.100	3.3	3.2	3.1	2.9	2.8	2.7	2.5
14.800	2.4	2.3	2.1	2.0	1.9	1.9	1.9
15.500	1.9	1.8	1.8	1.8	1.7	1.7	1.7
16.200	1.6	1.6	1.6	1.5	1.5	1.5	1.4
16.900	1.4	1.4	1.3	1.3	1.3	1.2	1.2
17.600	1.2	1.1	1.1	1.1	1.1	1.0	1.0
18.300	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.000	0.9	0.9	0.9	0.9	0.9	0.9	0.9
19.700	0.9	0.9	0.9	0.9	0.9	0.8	0.8
20.400	0.8	0.8	0.8	0.8	0.8	0.8	0.8
21.100	0.8	0.8	0.8	0.8	0.7	0.7	0.7
21.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
22.500	0.7	0.7	0.6	0.6	0.6	0.6	0.6
23.200	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.900	0.6	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Dallman	0.059		6.711		12.60	157.5	2667.13

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
6.500	0.5	0.5	0.6	0.6	0.7	0.7	0.8
7.200	0.9	0.9	1.0	1.1	1.1	1.2	1.3
7.900	1.4	1.5	1.6	1.7	1.8	1.9	2.0
8.600	2.1	2.2	2.3	2.4	2.5	2.6	2.7
9.300	2.8	3.0	3.2	3.4	3.6	3.9	4.2
10.000	4.5	4.8	5.1	5.5	5.9	6.2	6.6
10.700	7.1	7.6	8.2	9.0	10.0	11.1	12.5
11.400	14.2	16.2	18.7	21.8	26.1	32.2	41.5
12.100	56.9	80.1	108.6	135.8	153.0	157.4	151.0
12.800	137.4	119.3	100.9	85.8	73.2	62.6	53.5
13.500	46.2	40.0	34.8	30.4	26.7	23.7	21.2
14.200	19.1	17.4	16.1	14.9	13.9	13.0	12.2
14.900	11.5	10.8	10.3	9.7	9.2	8.8	8.4
15.600	8.0	7.7	7.4	7.2	7.0	6.8	6.6
16.300	6.5	6.3	6.2	6.1	6.0	5.8	5.7
17.000	5.6	5.5	5.4	5.3	5.1	5.0	4.9
17.700	4.8	4.7	4.6	4.5	4.3	4.2	4.1
18.400	4.0	3.9	3.8	3.8	3.7	3.6	3.6
19.100	3.6	3.5	3.5	3.4	3.4	3.4	3.3
19.800	3.3	3.3	3.3	3.2	3.2	3.2	3.1
20.500	3.1	3.1	3.1	3.0	3.0	3.0	2.9
21.200	2.9	2.9	2.9	2.8	2.8	2.8	2.7
21.900	2.7	2.7	2.7	2.6	2.6	2.6	2.5
22.600	2.5	2.5	2.5	2.4	2.4	2.4	2.3
23.300	2.3	2.3	2.3	2.2	2.2	2.2	2.1
24.000	2.1	2.1	2.0	1.9	1.7	1.4	1.2
24.700	0.9	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 1	0.059	Upstream	6.711		12.60	157.5	2667.13

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
6.500	0.5	0.5	0.6	0.6	0.7	0.7	0.8
7.200	0.9	0.9	1.0	1.1	1.1	1.2	1.3
7.900	1.4	1.5	1.6	1.7	1.8	1.9	2.0
8.600	2.1	2.2	2.3	2.4	2.5	2.6	2.7
9.300	2.8	3.0	3.2	3.4	3.6	3.9	4.2
10.000	4.5	4.8	5.1	5.5	5.9	6.2	6.6
10.700	7.1	7.6	8.2	9.0	10.0	11.1	12.5
11.400	14.2	16.2	18.7	21.8	26.1	32.2	41.5
12.100	56.9	80.1	108.6	135.8	153.0	157.4	151.0
12.800	137.4	119.3	100.9	85.8	73.2	62.6	53.5
13.500	46.2	40.0	34.8	30.4	26.7	23.7	21.2
14.200	19.1	17.4	16.1	14.9	13.9	13.0	12.2

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
14.900	11.5	10.8	10.3	9.7	9.2	8.8	8.4
15.600	8.0	7.7	7.4	7.2	7.0	6.8	6.6
16.300	6.5	6.3	6.2	6.1	6.0	5.8	5.7
17.000	5.6	5.5	5.4	5.3	5.1	5.0	4.9
17.700	4.8	4.7	4.6	4.5	4.3	4.2	4.1
18.400	4.0	3.9	3.8	3.8	3.7	3.6	3.6
19.100	3.6	3.5	3.5	3.4	3.4	3.4	3.3
19.800	3.3	3.3	3.3	3.2	3.2	3.2	3.1
20.500	3.1	3.1	3.1	3.0	3.0	3.0	2.9
21.200	2.9	2.9	2.9	2.8	2.8	2.8	2.7
21.900	2.7	2.7	2.7	2.6	2.6	2.6	2.5
22.600	2.5	2.5	2.5	2.4	2.4	2.4	2.3
23.300	2.3	2.3	2.3	2.2	2.2	2.2	2.1
24.000	2.1	2.1	2.0	1.9	1.7	1.4	1.2
24.700	0.9	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 1	0.059	Downstream	6.710	551.99	13.28	65.8	1113.78

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
6.700	0.5	0.5	0.6	0.6	0.7	0.8	0.8
7.400	0.9	1.0	1.0	1.1	1.2	1.3	1.4
8.100	1.4	1.5	1.6	1.7	1.8	1.9	2.0
8.800	2.1	2.2	2.3	2.4	2.5	2.7	2.8
9.500	2.9	3.1	3.3	3.5	3.8	4.0	4.3
10.200	4.6	5.0	5.3	5.7	6.1	6.5	6.9
10.900	7.4	8.0	8.4	8.6	9.1	9.6	10.3
11.600	11.2	12.4	13.9	15.8	18.5	22.4	28.3
12.300	34.9	39.1	44.0	49.1	54.0	58.1	61.4
13.000	63.6	65.0	65.6	65.7	65.4	64.7	63.7
13.700	62.4	61.1	59.6	58.0	56.3	54.7	53.0
14.400	51.3	49.7	48.1	46.5	44.9	43.4	41.9
15.100	40.4	39.0	37.7	36.4	35.1	33.3	30.1
15.800	27.2	24.6	22.4	20.4	18.6	17.1	15.7
16.500	14.5	13.4	12.5	11.6	10.9	10.2	9.6
17.200	9.1	8.6	7.8	6.5	5.8	5.3	5.0
17.900	4.8	4.7	4.5	4.4	4.3	4.2	4.1
18.600	4.0	3.9	3.8	3.7	3.7	3.6	3.6
19.300	3.5	3.5	3.5	3.4	3.4	3.4	3.3
20.000	3.3	3.3	3.2	3.2	3.2	3.2	3.1
20.700	3.1	3.1	3.0	3.0	3.0	3.0	2.9
21.400	2.9	2.9	2.8	2.8	2.8	2.8	2.7
22.100	2.7	2.7	2.6	2.6	2.6	2.6	2.5
22.800	2.5	2.5	2.4	2.4	2.4	2.4	2.3

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
23.500	2.3	2.3	2.2	2.2	2.2	2.2	2.1
24.200	2.1	2.0	1.9	1.7	1.5	1.3	1.0
24.900	0.8	0.6	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Lake + L3	0.039		5.174		12.82	66.5	1694.49

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.900	0.4	0.5	0.6	0.7	0.8	0.9	1.0
10.600	1.2	1.3	1.5	1.6	1.9	2.1	2.4
11.300	2.8	3.3	3.8	4.6	5.5	6.7	8.4
12.000	11.1	15.3	21.8	30.0	39.7	49.9	58.1
12.700	63.6	66.2	66.3	63.8	59.8	54.5	48.5
13.400	43.0	38.2	34.0	30.2	26.9	24.0	21.4
14.100	19.2	17.2	15.5	14.1	12.8	11.8	10.8
14.800	10.0	9.3	8.7	8.1	7.6	7.1	6.7
15.500	6.3	6.0	5.6	5.3	5.1	4.8	4.6
16.200	4.5	4.3	4.2	4.1	4.0	3.9	3.8
16.900	3.7	3.6	3.6	3.5	3.4	3.3	3.3
17.600	3.2	3.1	3.0	3.0	2.9	2.8	2.8
18.300	2.7	2.6	2.6	2.5	2.5	2.4	2.4
19.000	2.3	2.3	2.2	2.2	2.2	2.2	2.1
19.700	2.1	2.1	2.1	2.0	2.0	2.0	2.0
20.400	2.0	2.0	1.9	1.9	1.9	1.9	1.9
21.100	1.8	1.8	1.8	1.8	1.8	1.8	1.7
21.800	1.7	1.7	1.7	1.7	1.7	1.6	1.6
22.500	1.6	1.6	1.6	1.6	1.5	1.5	1.5
23.200	1.5	1.5	1.5	1.4	1.4	1.4	1.4
23.900	1.4	1.3	1.3	1.3	1.3	1.2	1.1
24.600	1.0	0.9	0.8	0.6	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 8	0.039	Upstream	5.174		12.82	66.5	1694.49

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.900	0.4	0.5	0.6	0.7	0.8	0.9	1.0
10.600	1.2	1.3	1.5	1.6	1.9	2.1	2.4

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
11.300	2.8	3.3	3.8	4.6	5.5	6.7	8.4
12.000	11.1	15.3	21.8	30.0	39.7	49.9	58.1
12.700	63.6	66.2	66.3	63.8	59.8	54.5	48.5
13.400	43.0	38.2	34.0	30.2	26.9	24.0	21.4
14.100	19.2	17.2	15.5	14.1	12.8	11.8	10.8
14.800	10.0	9.3	8.7	8.1	7.6	7.1	6.7
15.500	6.3	6.0	5.6	5.3	5.1	4.8	4.6
16.200	4.5	4.3	4.2	4.1	4.0	3.9	3.8
16.900	3.7	3.6	3.6	3.5	3.4	3.3	3.3
17.600	3.2	3.1	3.0	3.0	2.9	2.8	2.8
18.300	2.7	2.6	2.6	2.5	2.5	2.4	2.4
19.000	2.3	2.3	2.2	2.2	2.2	2.2	2.1
19.700	2.1	2.1	2.1	2.0	2.0	2.0	2.0
20.400	2.0	2.0	1.9	1.9	1.9	1.9	1.9
21.100	1.8	1.8	1.8	1.8	1.8	1.8	1.7
21.800	1.7	1.7	1.7	1.7	1.7	1.6	1.6
22.500	1.6	1.6	1.6	1.6	1.5	1.5	1.5
23.200	1.5	1.5	1.5	1.4	1.4	1.4	1.4
23.900	1.4	1.3	1.3	1.3	1.3	1.2	1.1
24.600	1.0	0.9	0.8	0.6	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 8	0.039	Downstream	5.153	562.61	13.53	35.0	890.91

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.900	0.4	0.5	0.6	0.7	0.8	0.9	1.0
10.600	1.2	1.3	1.5	1.6	1.9	2.1	2.4
11.300	2.8	3.3	3.8	4.6	5.5	6.7	8.4
12.000	11.1	15.3	21.8	30.0	34.6	35.0	35.0
12.700	35.0	35.0	35.0	35.0	35.0	35.0	35.0
13.400	35.0	35.0	35.0	35.0	35.0	35.0	35.0
14.100	35.0	35.0	35.0	35.0	35.0	35.0	35.0
14.800	35.0	30.9	8.7	8.1	7.6	7.1	6.7
15.500	6.3	6.0	5.6	5.3	5.1	4.8	4.6
16.200	4.5	4.3	4.2	4.1	4.0	3.9	3.8
16.900	3.7	3.6	3.6	3.5	3.4	3.3	3.3
17.600	3.2	3.1	3.0	3.0	2.9	2.8	2.8
18.300	2.7	2.6	2.6	2.5	2.5	2.4	2.4
19.000	2.3	2.3	2.2	2.2	2.2	2.2	2.1
19.700	2.1	2.1	2.1	2.0	2.0	2.0	2.0
20.400	2.0	2.0	1.9	1.9	1.9	1.9	1.9
21.100	1.8	1.8	1.8	1.8	1.8	1.8	1.7
21.800	1.7	1.7	1.7	1.7	1.7	1.6	1.6
22.500	1.6	1.6	1.6	1.6	1.5	1.5	1.5

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
23.200	1.5	1.5	1.5	1.4	1.4	1.4	1.4
23.900	1.4	1.3	1.3	1.3	1.3	1.2	1.1
24.600	1.0	0.9	0.8	0.6	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Decant	0.003		8.113		17.07	1.8	607.63

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
13.000	0.5	0.5	0.5	0.6	0.6	0.6	0.7
13.700	0.7	0.7	0.8	0.8	0.9	0.9	1.0
14.400	1.0	1.1	1.1	1.2	1.2	1.2	1.3
15.100	1.3	1.4	1.4	1.5	1.5	1.5	1.6
15.800	1.6	1.6	1.6	1.7	1.7	1.7	1.7
16.500	1.7	1.7	1.7	1.7	1.8	1.8	1.8
17.200	1.8	1.7	1.7	1.7	1.7	1.7	1.7
17.900	1.7	1.7	1.7	1.6	1.6	1.6	1.6
18.600	1.6	1.5	1.5	1.5	1.5	1.4	1.4
19.300	1.4	1.3	1.3	1.3	1.3	1.2	1.2
20.000	1.2	1.1	1.1	1.1	1.1	1.0	1.0
20.700	1.0	0.9	0.9	0.9	0.9	0.9	0.8
21.400	0.8	0.8	0.8	0.8	0.7	0.7	0.7
22.100	0.7	0.7	0.7	0.6	0.6	0.6	0.6
22.800	0.6	0.6	0.6	0.6	0.5	0.5	0.5
23.500	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 6	0.003	Upstream	8.113		17.07	1.8	607.63

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
13.000	0.5	0.5	0.5	0.6	0.6	0.6	0.7
13.700	0.7	0.7	0.8	0.8	0.9	0.9	1.0
14.400	1.0	1.1	1.1	1.2	1.2	1.2	1.3
15.100	1.3	1.4	1.4	1.5	1.5	1.5	1.6
15.800	1.6	1.6	1.6	1.7	1.7	1.7	1.7
16.500	1.7	1.7	1.7	1.7	1.8	1.8	1.8
17.200	1.8	1.7	1.7	1.7	1.7	1.7	1.7
17.900	1.7	1.7	1.7	1.6	1.6	1.6	1.6

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
18.600	1.6	1.5	1.5	1.5	1.5	1.4	1.4
19.300	1.4	1.3	1.3	1.3	1.3	1.2	1.2
20.000	1.2	1.1	1.1	1.1	1.1	1.0	1.0
20.700	1.0	0.9	0.9	0.9	0.9	0.9	0.8
21.400	0.8	0.8	0.8	0.8	0.7	0.7	0.7
22.100	0.7	0.7	0.7	0.6	0.6	0.6	0.6
22.800	0.6	0.6	0.6	0.6	0.5	0.5	0.5
23.500	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 6	0.003	Downstream	8.113	557.91	17.07	1.8	607.60

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
13.000	0.5	0.5	0.5	0.6	0.6	0.6	0.7
13.700	0.7	0.7	0.8	0.8	0.9	0.9	1.0
14.400	1.0	1.1	1.1	1.2	1.2	1.2	1.3
15.100	1.3	1.4	1.4	1.5	1.5	1.5	1.6
15.800	1.6	1.6	1.6	1.7	1.7	1.7	1.7
16.500	1.7	1.7	1.7	1.7	1.8	1.8	1.8
17.200	1.8	1.7	1.7	1.7	1.7	1.7	1.7
17.900	1.7	1.7	1.7	1.6	1.6	1.6	1.6
18.600	1.6	1.5	1.5	1.5	1.5	1.4	1.4
19.300	1.4	1.4	1.3	1.3	1.3	1.2	1.2
20.000	1.2	1.1	1.1	1.1	1.1	1.0	1.0
20.700	1.0	0.9	0.9	0.9	0.9	0.9	0.8
21.400	0.8	0.8	0.8	0.8	0.7	0.7	0.7
22.100	0.7	0.7	0.7	0.6	0.6	0.6	0.6
22.800	0.6	0.6	0.6	0.6	0.5	0.5	0.5
23.500	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 2	0.136	Upstream	6.509		12.12	170.4	1252.71

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
4.900	0.4	0.5	0.5	0.5	0.6	0.6	0.6
5.600	0.6	0.6	0.8	0.8	0.9	0.9	1.0
6.300	1.1	1.2	1.2	1.3	1.4	1.5	1.6

City Water Light and Power
Springfield, Illinois

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
7.000	1.6	1.7	1.8	2.0	2.1	2.2	2.3
7.700	2.5	2.6	2.7	2.9	3.0	3.1	3.3
8.400	3.4	3.6	3.7	3.9	4.0	4.2	4.4
9.100	4.6	4.9	5.2	5.6	5.9	6.3	6.7
9.800	7.1	7.6	8.1	8.6	9.2	9.8	10.5
10.500	11.1	12.1	13.2	14.4	15.7	17.1	18.8
11.200	20.6	22.6	24.9	27.4	35.5	39.7	50.2
11.900	66.4	103.7	167.4	109.4	101.5	101.0	104.3
12.600	103.0	106.1	109.1	111.3	112.5	112.7	112.8
13.300	112.4	111.5	110.3	108.8	107.4	106.0	104.4
14.000	102.7	101.0	99.2	97.4	95.6	93.9	92.2
14.700	90.5	88.8	83.1	59.3	57.2	55.3	53.4
15.400	51.7	50.0	47.8	44.3	41.0	38.2	35.7
16.100	33.5	31.5	29.8	28.2	26.9	25.7	24.6
16.800	23.6	22.7	21.9	21.2	20.5	19.9	18.9
17.500	17.5	16.6	16.0	15.6	15.3	15.0	14.7
18.200	14.4	14.2	14.0	13.7	13.5	13.3	13.1
18.900	12.9	12.8	12.6	12.5	12.4	12.2	12.1
19.600	12.0	11.9	11.7	11.6	11.5	11.4	11.3
20.300	11.2	11.1	10.9	10.8	10.7	10.6	10.5
21.000	10.4	10.3	10.2	10.1	10.0	9.8	9.7
21.700	9.6	9.4	9.3	9.2	9.1	9.0	8.8
22.400	8.7	8.6	8.5	8.4	8.3	8.2	8.1
23.100	8.0	7.9	7.8	7.7	7.6	7.5	7.4
23.800	7.3	7.2	7.3	6.6	6.4	6.3	6.1
24.500	5.8	5.4	5.0	4.6	4.2	3.9	3.6
25.200	3.4	3.2	3.1	2.9	2.7	2.7	2.6
25.900	2.5	2.5	2.4	2.4	2.4	2.4	2.3
26.600	2.3	2.3	2.3	2.3	2.2	2.2	2.2
27.300	2.2	2.1	2.1	2.1	2.1	2.1	2.1
28.000	2.0	2.0	2.0	2.0	2.0	1.9	1.9
28.700	1.9	1.9	1.9	1.9	1.8	1.8	1.8
29.400	1.8	1.8	1.8	1.7	1.7	1.7	1.7
30.100	1.7	1.7	1.7	1.6	1.6	1.5	1.5
30.800	1.5	1.5	1.5	1.5	1.5	1.5	1.4
31.500	1.4	1.4	1.4	1.4	1.4	1.4	1.4
32.200	1.4	1.4	1.4	1.3	1.3	1.3	1.3
32.900	1.3	1.3	1.3	1.3	1.3	1.3	1.3
33.600	1.2	1.2	1.2	1.2	1.2	1.2	1.2
34.300	1.2	1.2	1.2	1.2	1.2	1.1	1.1
35.000	1.1	1.1	1.1	1.1	1.1	1.1	1.1
35.700	1.1	1.1	1.1	1.1	1.1	1.0	1.0
36.400	1.0	1.0	1.0	1.0	1.0	1.0	1.0
37.100	1.0	1.0	1.0	1.0	1.0	1.0	0.9
37.800	0.9	0.9	0.9	0.9	0.9	0.9	0.9
38.500	0.9	0.9	0.9	0.9	0.9	0.9	0.9
39.200	0.9	0.8	0.8	0.8	0.8	0.8	0.8
39.900	0.8	0.8	0.8	0.8	0.8	0.8	0.8
40.600	0.8	0.8	0.8	0.8	0.8	0.8	0.7
41.300	0.7	0.7	0.7	0.7	0.7	0.7	0.7
42.000	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
42.700	0.7	0.7	0.7	0.7	0.7	0.7	0.7
43.400	0.6	0.6	0.6	0.6	0.6	0.6	0.6
44.100	0.6	0.6	0.6	0.6	0.6	0.6	0.6
44.800	0.6	0.6	0.6	0.6	0.6	0.6	0.6
45.500	0.6	0.6	0.6	0.6	0.6	0.5	0.5
46.200	0.5	0.5	0.5	0.5	0.5	0.5	0.5
46.900	0.5	0.5	0.5	0.5	0.5	0.5	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Reach 2	0.136	Downstream	6.481	549.74	16.37	28.7	211.10

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.700	0.5	0.5	0.5	0.6	0.6	0.6	0.7
10.400	0.7	0.8	0.8	0.9	0.9	1.0	1.0
11.100	1.1	1.2	1.3	1.4	1.5	1.6	1.8
11.800	1.9	2.2	2.5	3.1	3.7	4.5	5.3
12.500	6.0	6.7	7.5	8.2	9.0	9.8	10.6
13.200	11.5	12.5	13.4	14.4	15.3	16.2	17.0
13.900	17.9	18.7	19.5	20.3	21.1	22.0	22.8
14.600	23.6	24.3	25.1	25.8	26.2	26.6	26.9
15.300	27.2	27.5	27.8	28.0	28.2	28.4	28.5
16.000	28.6	28.6	28.7	28.7	28.7	28.7	28.7
16.700	28.6	28.6	28.5	28.5	28.4	28.3	28.2
17.400	28.1	28.0	27.9	27.7	27.6	27.5	27.3
18.100	27.2	27.1	26.9	26.8	26.6	26.5	26.3
18.800	26.2	26.0	25.9	25.8	25.6	25.5	25.3
19.500	25.2	25.0	24.9	24.7	24.6	24.4	24.3
20.200	24.1	24.0	23.9	23.7	23.6	23.4	23.3
20.900	23.1	23.0	22.9	22.7	22.6	22.4	22.3
21.600	22.2	22.0	21.9	21.7	21.6	21.5	21.3
22.300	21.2	21.1	20.9	20.8	20.6	20.5	20.4
23.000	20.3	20.1	20.0	19.9	19.8	19.7	19.6
23.700	19.4	19.3	19.2	19.1	19.0	18.8	18.7
24.400	18.6	18.5	18.4	18.2	18.1	18.0	17.8
25.100	17.7	17.6	17.4	17.3	17.2	17.0	16.9
25.800	16.7	16.6	16.5	16.3	16.2	16.1	15.9
26.500	15.8	15.7	15.5	15.4	15.3	15.2	15.0
27.200	14.9	14.8	14.7	14.5	14.4	14.3	14.2
27.900	14.1	14.0	13.8	13.7	13.6	13.5	13.4
28.600	13.3	13.2	13.1	13.0	12.8	12.7	12.6
29.300	12.5	12.4	12.3	12.2	12.1	12.0	11.9
30.000	11.8	11.7	11.6	11.5	11.4	11.3	11.3
30.700	11.2	11.1	11.0	10.9	10.8	10.8	10.7
31.400	10.6	10.5	10.5	10.4	10.3	10.3	10.2

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
32.100	10.1	10.1	10.0	9.9	9.9	9.8	9.7
32.800	9.7	9.6	9.5	9.5	9.4	9.4	9.3
33.500	9.2	9.2	9.1	9.1	9.0	8.9	8.9
34.200	8.8	8.8	8.7	8.6	8.6	8.5	8.5
34.900	8.4	8.4	8.3	8.3	8.2	8.1	8.1
35.600	8.0	8.0	7.9	7.9	7.8	7.8	7.7
36.300	7.7	7.6	7.6	7.5	7.5	7.4	7.4
37.000	7.3	7.3	7.2	7.2	7.1	7.1	7.0
37.700	7.0	7.0	6.9	6.9	6.8	6.8	6.7
38.400	6.7	6.6	6.6	6.6	6.5	6.5	6.4
39.100	6.4	6.3	6.3	6.3	6.2	6.2	6.1
39.800	6.1	6.1	6.0	6.0	5.9	5.9	5.9
40.500	5.8	5.8	5.7	5.7	5.7	5.6	5.6
41.200	5.6	5.5	5.5	5.4	5.4	5.4	5.3
41.900	5.3	5.3	5.2	5.2	5.2	5.1	5.1
42.600	5.1	5.0	5.0	5.0	4.9	4.9	4.9
43.300	4.8	4.8	4.8	4.7	4.7	4.7	4.6
44.000	4.6	4.6	4.6	4.5	4.5	4.5	4.4
44.700	4.4	4.4	4.3	4.3	4.3	4.3	4.2
45.400	4.2	4.2	4.2	4.1	4.1	4.1	4.0
46.100	4.0	4.0	4.0	3.9	3.9	3.9	3.9
46.800	3.8	3.8	3.8	3.8	3.7	3.7	3.7
47.500	3.7	3.6	3.6	3.6	3.6	3.6	3.6
48.200	3.6	3.6	3.5	3.5	3.5	3.5	3.5
48.900	3.5	3.5	3.4	3.4	3.4	3.4	3.4
49.600	3.4	3.4	3.4	3.3	3.3	3.3	3.3
50.300	3.3	3.3	3.3	3.3	3.2	3.2	3.2
51.000	3.2	3.2	3.2	3.2	3.2	3.1	3.1
51.700	3.1	3.1	3.1	3.1	3.1	3.1	3.1
52.400	3.0	3.0	3.0	3.0	3.0	3.0	3.0
53.100	3.0	3.0	2.9	2.9	2.9	2.9	2.9
53.800	2.9	2.9	2.9	2.9	2.8	2.8	2.8
54.500	2.8	2.8	2.8	2.8	2.8	2.8	2.7
55.200	2.7	2.7	2.7	2.7	2.7	2.7	2.7
55.900	2.7	2.7	2.6	2.6	2.6	2.6	2.6
56.600	2.6	2.6	2.6	2.6	2.6	2.5	2.5
57.300	2.5	2.5	2.5	2.5	2.5	2.5	2.5
58.000	2.5	2.4	2.4	2.4	2.4	2.4	2.4
58.700	2.4	2.4	2.4	2.4	2.3	2.3	2.3
59.400	2.3	2.3	2.3	2.3	2.3	2.3	2.3
60.100	2.3	2.2	2.2	2.2	2.2	2.2	2.2
60.800	2.2	2.2	2.2	2.2	2.2	2.2	2.1
61.500	2.1	2.1	2.1	2.1	2.1	2.1	2.1
62.200	2.1	2.1	2.1	2.0	2.0	2.0	2.0
62.900	2.0	2.0	2.0	2.0	2.0	2.0	2.0
63.600	2.0	2.0	1.9	1.9	1.9	1.9	1.9
64.300	1.9	1.9	1.9	1.9	1.9	1.9	1.9
65.000	1.9	1.8	1.8	1.8	1.8	1.8	1.8
65.700	1.8	1.8	1.8	1.8	1.8	1.8	1.8
66.400	1.7	1.7	1.7	1.7	1.7	1.7	1.7
67.100	1.7	1.7	1.7	1.7	1.7	1.7	1.7

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
67.800	1.6	1.6	1.6	1.6	1.6	1.6	1.6
68.500	1.6	1.6	1.6	1.6	1.6	1.6	1.6
69.200	1.6	1.5	1.5	1.5	1.5	1.5	1.5
69.900	1.5	1.5	1.5	1.5	1.5	1.5	1.5
70.600	1.5	1.5	1.4	1.4	1.4	1.4	1.4
71.300	1.4	1.4	1.4	1.4	1.4	1.4	1.4
72.000	1.4	1.4	1.4	1.4	1.4	1.3	1.3
72.700	1.3	1.3	1.3	1.3	1.3	1.3	1.3
73.400	1.3	1.3	1.3	1.3	1.3	1.3	1.3
74.100	1.3	1.3	1.2	1.2	1.2	1.2	1.2
74.800	1.2	1.2	1.2	1.2	1.2	1.2	1.2
75.500	1.2	1.2	1.2	1.2	1.2	1.2	1.2
76.200	1.1	1.1	1.1	1.1	1.1	1.1	1.1
76.900	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.600	1.1	1.1	1.1	1.1	1.1	1.1	1.1
78.300	1.0	1.0	1.0	1.0	1.0	1.0	1.0
79.000	1.0	1.0	1.0	1.0	1.0	1.0	1.0
79.700	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80.400	1.0	1.0	1.0	0.9	0.9	0.9	0.9
81.100	0.9	0.9	0.9	0.9	0.9	0.9	0.9
81.800	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.500	0.9	0.9	0.9	0.9	0.9	0.9	0.9
83.200	0.8	0.8	0.8	0.8	0.8	0.8	0.8
83.900	0.8	0.8	0.8	0.8	0.8	0.8	0.8
84.600	0.8	0.8	0.8	0.8	0.8	0.8	0.8
85.300	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86.000	0.8	0.7	0.7	0.7	0.7	0.7	0.7
86.700	0.7	0.7	0.7	0.7	0.7	0.7	0.7
87.400	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88.100	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89.500	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90.200	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90.900	0.6	0.6	0.6	0.6	0.6	0.6	0.6
91.600	0.6	0.6	0.6	0.6	0.6	0.6	0.6
92.300	0.6	0.6	0.6	0.6	0.6	0.6	0.6
93.000	0.6	0.6	0.6	0.6	0.5	0.5	0.5
93.700	0.5	0.5	0.5	0.5	0.5	0.5	0.5
94.400	0.5	0.5	0.5	0.5	0.5	0.5	0.5
95.100	0.5	0.5	0.5	0.5	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.136		6.481		16.37	28.7	211.10

City Water Light and Power
Springfield, Illinois

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)						
9.700	0.5	0.5	0.5	0.6	0.6	0.6	0.7
10.400	0.7	0.8	0.8	0.9	0.9	1.0	1.0
11.100	1.1	1.2	1.3	1.4	1.5	1.6	1.8
11.800	1.9	2.2	2.5	3.1	3.7	4.5	5.3
12.500	6.0	6.7	7.5	8.2	9.0	9.8	10.6
13.200	11.5	12.5	13.4	14.4	15.3	16.2	17.0
13.900	17.9	18.7	19.5	20.3	21.1	22.0	22.8
14.600	23.6	24.3	25.1	25.8	26.2	26.6	26.9
15.300	27.2	27.5	27.8	28.0	28.2	28.4	28.5
16.000	28.6	28.6	28.7	28.7	28.7	28.7	28.7
16.700	28.6	28.6	28.5	28.5	28.4	28.3	28.2
17.400	28.1	28.0	27.9	27.7	27.6	27.5	27.3
18.100	27.2	27.1	26.9	26.8	26.6	26.5	26.3
18.800	26.2	26.0	25.9	25.8	25.6	25.5	25.3
19.500	25.2	25.0	24.9	24.7	24.6	24.4	24.3
20.200	24.1	24.0	23.9	23.7	23.6	23.4	23.3
20.900	23.1	23.0	22.9	22.7	22.6	22.4	22.3
21.600	22.2	22.0	21.9	21.7	21.6	21.5	21.3
22.300	21.2	21.1	20.9	20.8	20.6	20.5	20.4
23.000	20.3	20.1	20.0	19.9	19.8	19.7	19.6
23.700	19.4	19.3	19.2	19.1	19.0	18.8	18.7
24.400	18.6	18.5	18.4	18.2	18.1	18.0	17.8
25.100	17.7	17.6	17.4	17.3	17.2	17.0	16.9
25.800	16.7	16.6	16.5	16.3	16.2	16.1	15.9
26.500	15.8	15.7	15.5	15.4	15.3	15.2	15.0
27.200	14.9	14.8	14.7	14.5	14.4	14.3	14.2
27.900	14.1	14.0	13.8	13.7	13.6	13.5	13.4
28.600	13.3	13.2	13.1	13.0	12.8	12.7	12.6
29.300	12.5	12.4	12.3	12.2	12.1	12.0	11.9
30.000	11.8	11.7	11.6	11.5	11.4	11.3	11.3
30.700	11.2	11.1	11.0	10.9	10.8	10.8	10.7
31.400	10.6	10.5	10.5	10.4	10.3	10.3	10.2
32.100	10.1	10.1	10.0	9.9	9.9	9.8	9.7
32.800	9.7	9.6	9.5	9.5	9.4	9.4	9.3
33.500	9.2	9.2	9.1	9.1	9.0	8.9	8.9
34.200	8.8	8.8	8.7	8.6	8.6	8.5	8.5
34.900	8.4	8.4	8.3	8.3	8.2	8.1	8.1
35.600	8.0	8.0	7.9	7.9	7.8	7.8	7.7
36.300	7.7	7.6	7.6	7.5	7.5	7.4	7.4
37.000	7.3	7.3	7.2	7.2	7.1	7.1	7.0
37.700	7.0	7.0	6.9	6.9	6.8	6.8	6.7
38.400	6.7	6.6	6.6	6.6	6.5	6.5	6.4
39.100	6.4	6.3	6.3	6.3	6.2	6.2	6.1
39.800	6.1	6.1	6.0	6.0	5.9	5.9	5.9
40.500	5.8	5.8	5.7	5.7	5.7	5.6	5.6
41.200	5.6	5.5	5.5	5.4	5.4	5.4	5.3
41.900	5.3	5.3	5.2	5.2	5.2	5.1	5.1
42.600	5.1	5.0	5.0	5.0	4.9	4.9	4.9
43.300	4.8	4.8	4.8	4.7	4.7	4.7	4.6
44.000	4.6	4.6	4.6	4.5	4.5	4.5	4.4
44.700	4.4	4.4	4.3	4.3	4.3	4.3	4.2

City Water Light and Power
Springfield, Illinois

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
45.400	4.2	4.2	4.2	4.1	4.1	4.1	4.0
46.100	4.0	4.0	4.0	3.9	3.9	3.9	3.9
46.800	3.8	3.8	3.8	3.8	3.7	3.7	3.7
47.500	3.7	3.6	3.6	3.6	3.6	3.6	3.6
48.200	3.6	3.6	3.5	3.5	3.5	3.5	3.5
48.900	3.5	3.5	3.4	3.4	3.4	3.4	3.4
49.600	3.4	3.4	3.4	3.3	3.3	3.3	3.3
50.300	3.3	3.3	3.3	3.3	3.2	3.2	3.2
51.000	3.2	3.2	3.2	3.2	3.2	3.1	3.1
51.700	3.1	3.1	3.1	3.1	3.1	3.1	3.1
52.400	3.0	3.0	3.0	3.0	3.0	3.0	3.0
53.100	3.0	3.0	2.9	2.9	2.9	2.9	2.9
53.800	2.9	2.9	2.9	2.9	2.8	2.8	2.8
54.500	2.8	2.8	2.8	2.8	2.8	2.8	2.7
55.200	2.7	2.7	2.7	2.7	2.7	2.7	2.7
55.900	2.7	2.7	2.6	2.6	2.6	2.6	2.6
56.600	2.6	2.6	2.6	2.6	2.6	2.5	2.5
57.300	2.5	2.5	2.5	2.5	2.5	2.5	2.5
58.000	2.5	2.4	2.4	2.4	2.4	2.4	2.4
58.700	2.4	2.4	2.4	2.4	2.3	2.3	2.3
59.400	2.3	2.3	2.3	2.3	2.3	2.3	2.3
60.100	2.3	2.2	2.2	2.2	2.2	2.2	2.2
60.800	2.2	2.2	2.2	2.2	2.2	2.2	2.1
61.500	2.1	2.1	2.1	2.1	2.1	2.1	2.1
62.200	2.1	2.1	2.1	2.0	2.0	2.0	2.0
62.900	2.0	2.0	2.0	2.0	2.0	2.0	2.0
63.600	2.0	2.0	1.9	1.9	1.9	1.9	1.9
64.300	1.9	1.9	1.9	1.9	1.9	1.9	1.9
65.000	1.9	1.8	1.8	1.8	1.8	1.8	1.8
65.700	1.8	1.8	1.8	1.8	1.8	1.8	1.8
66.400	1.7	1.7	1.7	1.7	1.7	1.7	1.7
67.100	1.7	1.7	1.7	1.7	1.7	1.7	1.7
67.800	1.6	1.6	1.6	1.6	1.6	1.6	1.6
68.500	1.6	1.6	1.6	1.6	1.6	1.6	1.6
69.200	1.6	1.5	1.5	1.5	1.5	1.5	1.5
69.900	1.5	1.5	1.5	1.5	1.5	1.5	1.5
70.600	1.5	1.5	1.4	1.4	1.4	1.4	1.4
71.300	1.4	1.4	1.4	1.4	1.4	1.4	1.4
72.000	1.4	1.4	1.4	1.4	1.4	1.3	1.3
72.700	1.3	1.3	1.3	1.3	1.3	1.3	1.3
73.400	1.3	1.3	1.3	1.3	1.3	1.3	1.3
74.100	1.3	1.3	1.2	1.2	1.2	1.2	1.2
74.800	1.2	1.2	1.2	1.2	1.2	1.2	1.2
75.500	1.2	1.2	1.2	1.2	1.2	1.2	1.2
76.200	1.1	1.1	1.1	1.1	1.1	1.1	1.1
76.900	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.600	1.1	1.1	1.1	1.1	1.1	1.1	1.1
78.300	1.0	1.0	1.0	1.0	1.0	1.0	1.0
79.000	1.0	1.0	1.0	1.0	1.0	1.0	1.0
79.700	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80.400	1.0	1.0	1.0	0.9	0.9	0.9	0.9

City Water Light and Power
Springfield, Illinois

Line Start Time (hr)	Flow Values @ time increment of 0.100 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
81.100	0.9	0.9	0.9	0.9	0.9	0.9	0.9
81.800	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.500	0.9	0.9	0.9	0.9	0.9	0.9	0.9
83.200	0.8	0.8	0.8	0.8	0.8	0.8	0.8
83.900	0.8	0.8	0.8	0.8	0.8	0.8	0.8
84.600	0.8	0.8	0.8	0.8	0.8	0.8	0.8
85.300	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86.000	0.8	0.7	0.7	0.7	0.7	0.7	0.7
86.700	0.7	0.7	0.7	0.7	0.7	0.7	0.7
87.400	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88.100	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88.800	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89.500	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90.200	0.6	0.6	0.6	0.6	0.6	0.6	0.6
90.900	0.6	0.6	0.6	0.6	0.6	0.6	0.6
91.600	0.6	0.6	0.6	0.6	0.6	0.6	0.6
92.300	0.6	0.6	0.6	0.6	0.6	0.6	0.6
93.000	0.6	0.6	0.6	0.6	0.5	0.5	0.5
93.700	0.5	0.5	0.5	0.5	0.5	0.5	0.5
94.400	0.5	0.5	0.5	0.5	0.5	0.5	0.5
95.100	0.5	0.5	0.5	0.5	0.5	0.0	

City Water Light and Power
Springfield, Illinois

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 1000-yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
Dallman	0.059	157.5				
Clarif	0.016	126.9				
Lime 1	0.008	63.1				
Lime 2	0.006	48.9				
Lake + L3	0.039	66.5				
Cntr Cnl	0.001	9.1				
W Stl Chnl	0.003	25.6				
Decant	0.003	1.8				
Reach 1	0.059	157.5				
DOWNSTREAM		65.8				
Reach 2	0.136	170.4				
DOWNSTREAM		28.7				
Reach 7	0.019	31.3				
DOWNSTREAM		5.4				
Reach 5	0.007	9.9				
DOWNSTREAM		5.0				
Reach 4	0.008	63.1				
DOWNSTREAM		2.3				
Reach 3	0.006	48.9				
DOWNSTREAM		1.9				
Reach 8	0.039	66.5				
DOWNSTREAM		35.0				
Reach 6	0.003	1.8				
DOWNSTREAM		1.8				
OUTLET	0.136	28.7				