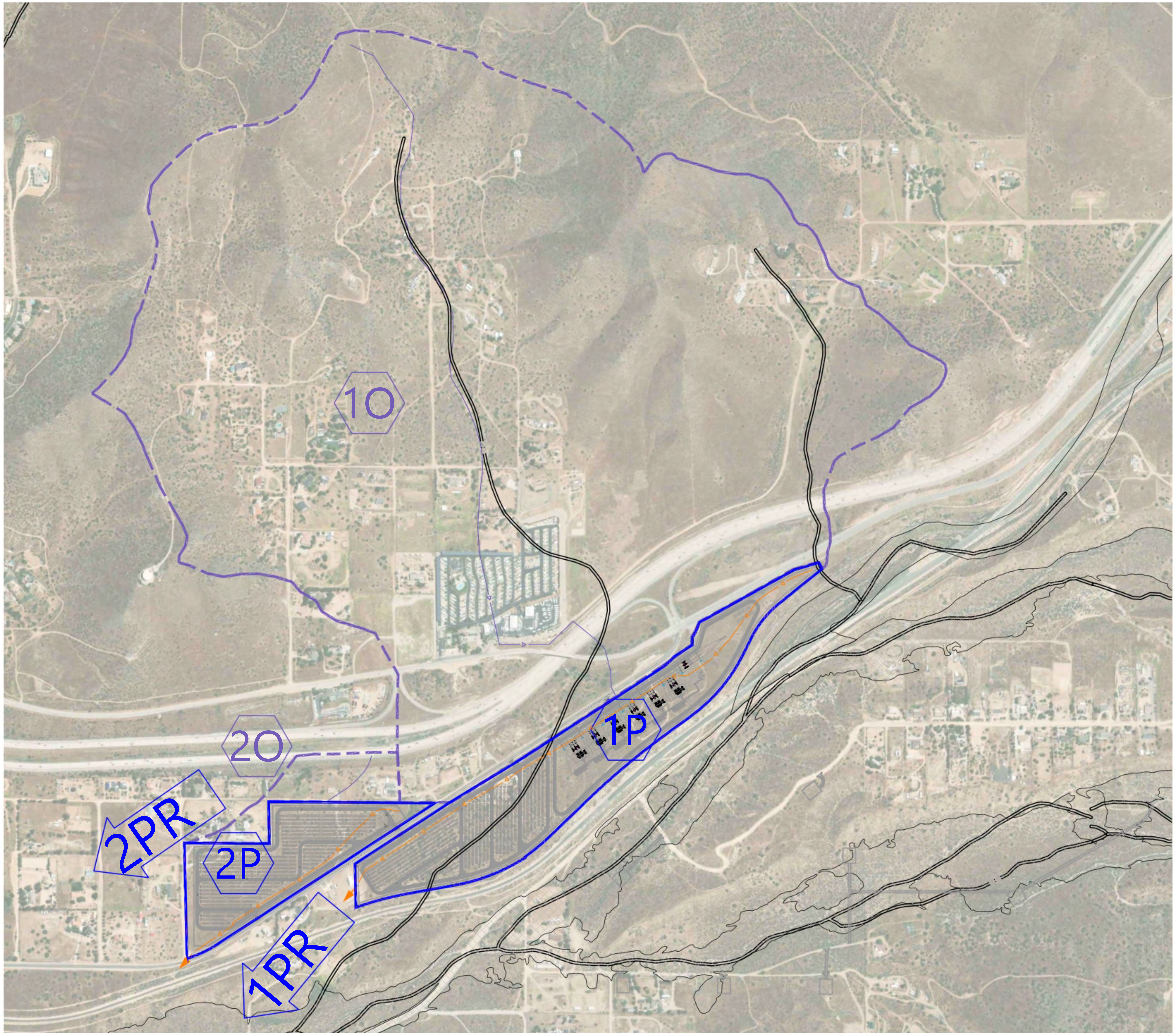
DOCKETED	
Docket Number:	25-OPT-02
Project Title:	Prairie Song Reliability Project
TN #:	264387
Document Title:	App 3-15A Water Quality Management Plan Part 6
Description:	N/A
Filer:	Erin Phillips
Organization:	Dudek
Submitter Role:	Applicant Consultant
Submission Date:	6/20/2025 1:49:08 PM
Docketed Date:	6/20/2025

Appendix 3.15A

Water Quality Management Plan

6 of 6



LEGEND:

- PROJECT BOUNDARY
- EX. WETLAND
- FEMA FLOOD ZONE
- PROPOSED ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED ELECTRICAL EQUIPMENT
- PROPOSED ONSITE DRAINAGE AREA BOUNDARY
- PROPOSED OFFSITE DRAINAGE AREA BOUNDARY
- PROPOSED TIME OF CONCENTRATION LINE
- EX. OFFSITE TIME OF CONCENTRATION LINE
- DISCHARGE LOCATION
- 1 — ONSITE DRAINAGE AREA LABEL
- 1O — OFFSITE DRAINAGE AREA LABEL
- 1PR — DISCHARGE AREA LABEL

Westwood

Phone (952) 937-5150
Toll Free (888) 937-5150
12701 Whitewater Drive, Suite #300
Minnetonka MN, 55343
westwoodps.com

Westwood Professional Services, Inc.

PREPARED FOR:

PRAIRIE SONG
RELIABILITY PROJECT LLC
[redacted]

REVISIONS:

#	DATE	COMMENT	BY	CHK	APR

0' 400' 800' 1200'

Prairie Song Reliability Project

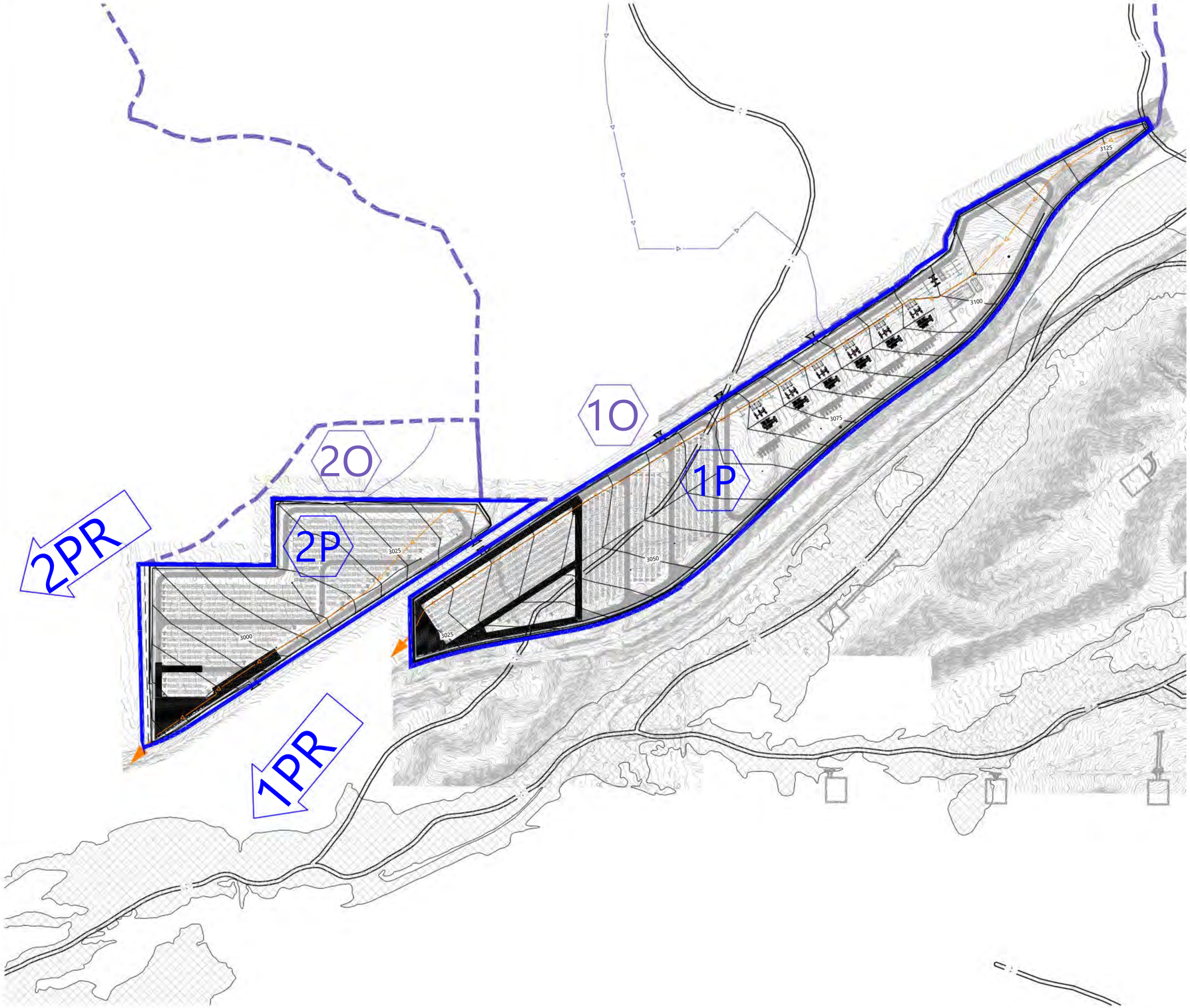
Los Angeles County, California

Overall Proposed Drainage Map

DATE: 03/14/2025

REV:

SHEET: 6



LEGEND:

- PROJECT BOUNDARY
- 900 EX. INDEX CONTOUR
- EX. INTERVAL CONTOUR
- EX. WETLAND
- FEMA FLOOD ZONE
- PROPOSED ACCESS ROAD
- PROPOSED ELECTRICAL EQUIPMENT
- 900 PROPOSED INDEX CONTOUR
- PROPOSED INTERVAL CONTOUR
- PROPOSED ONSITE DRAINAGE AREA BOUNDARY
- PROPOSED OFFSITE DRAINAGE AREA BOUNDARY
- PROPOSED TIME OF CONCENTRATION LINE
- EX. OFFSITE TIME OF CONCENTRATION LINE
- DISCHARGE LOCATION
- 1P ONSITE DRAINAGE AREA LABEL
- 1O OFFSITE DRAINAGE AREA LABEL
- 1PR DISCHARGE AREA LABEL

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westwoodps.com

Westwood Professional Services, Inc.

PREPARED FOR:

PRAIRIE SONG RELIABILITY PROJECT LLC

[redacted]

REVISIONS:

#	DATE	COMMENT	BY	CHK	APR

N

0' 250' 500' 750'

Prairie Song Reliability Project

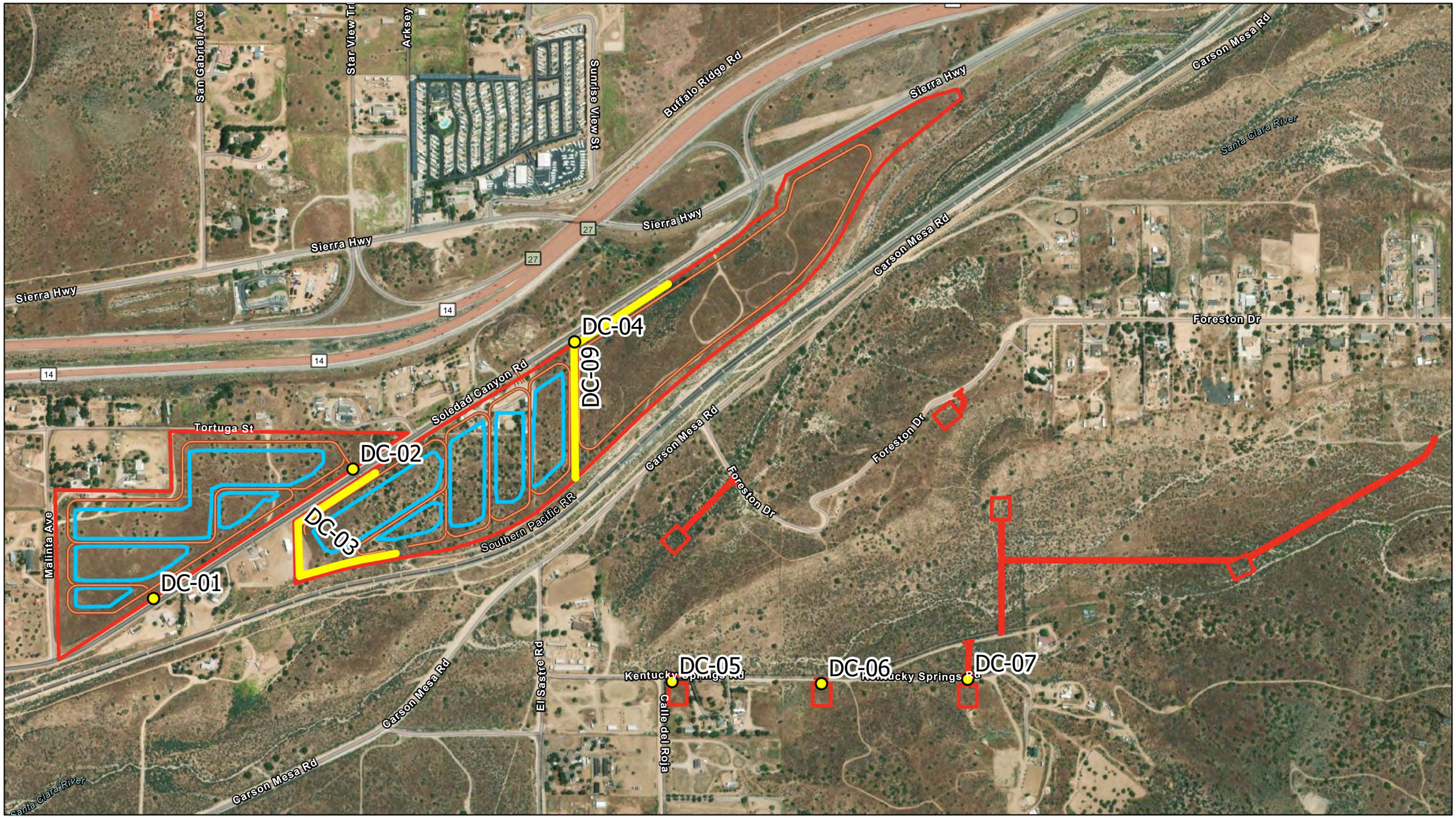
Los Angeles County, California

Proposed Drainage Map

DATE: 03/14/2025

REV:

SHEET: 6A



Data Source(s): Westwood (2025); Esri WMS Basemap Imagery (Accessed 2025); USGS (2025); FEMA (2025); USDA (2025)

Legend

- Project Area
- Entrance Culvert Locations
- Hydraulic Structure Locations
- Proposed Access Roads
- Proposed Battery Layout Outline

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Toll Free (888) 937-5150 westwoodps.com

Prairie Song Reliability Project

Los Angeles County, California

N

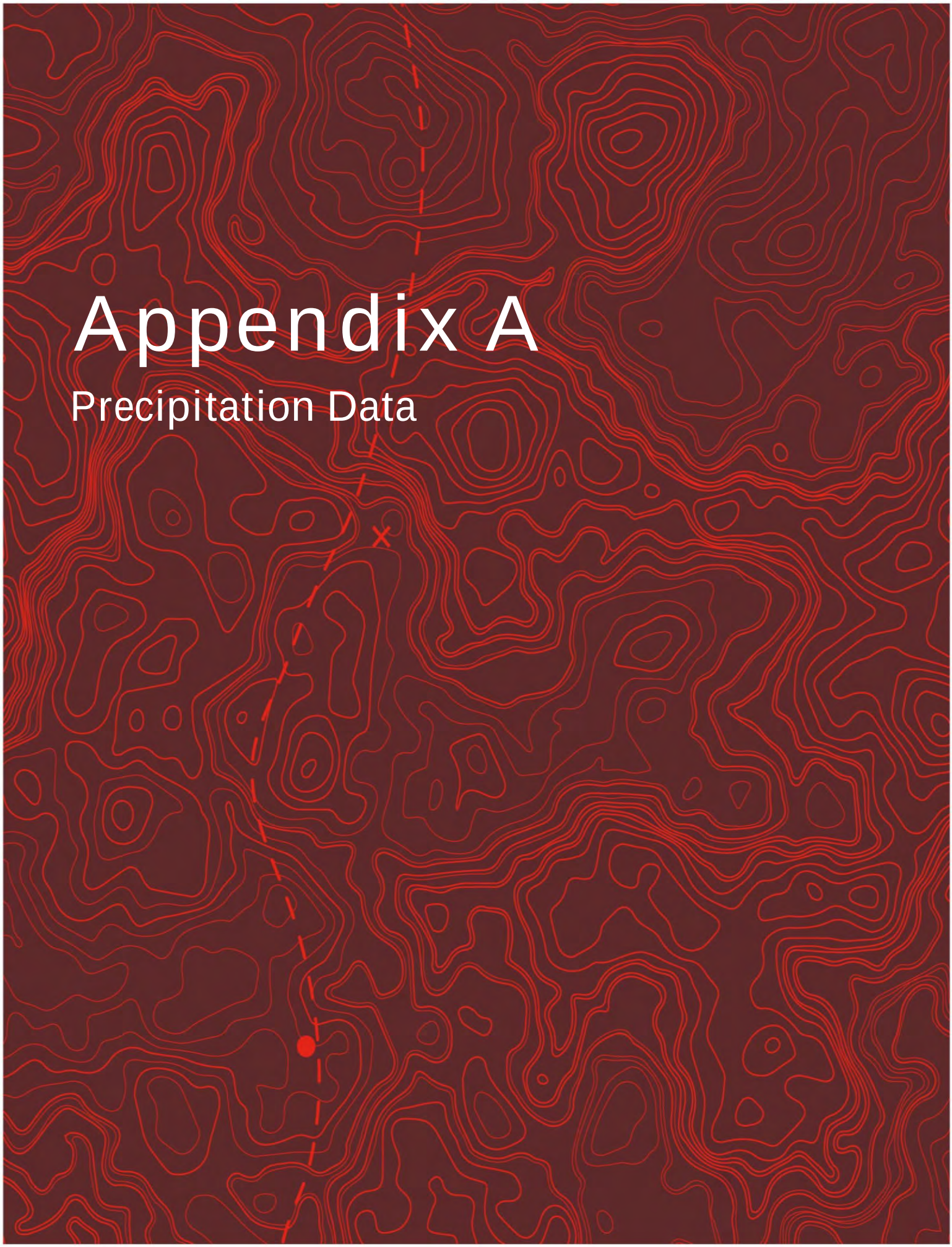
0 Feet 500

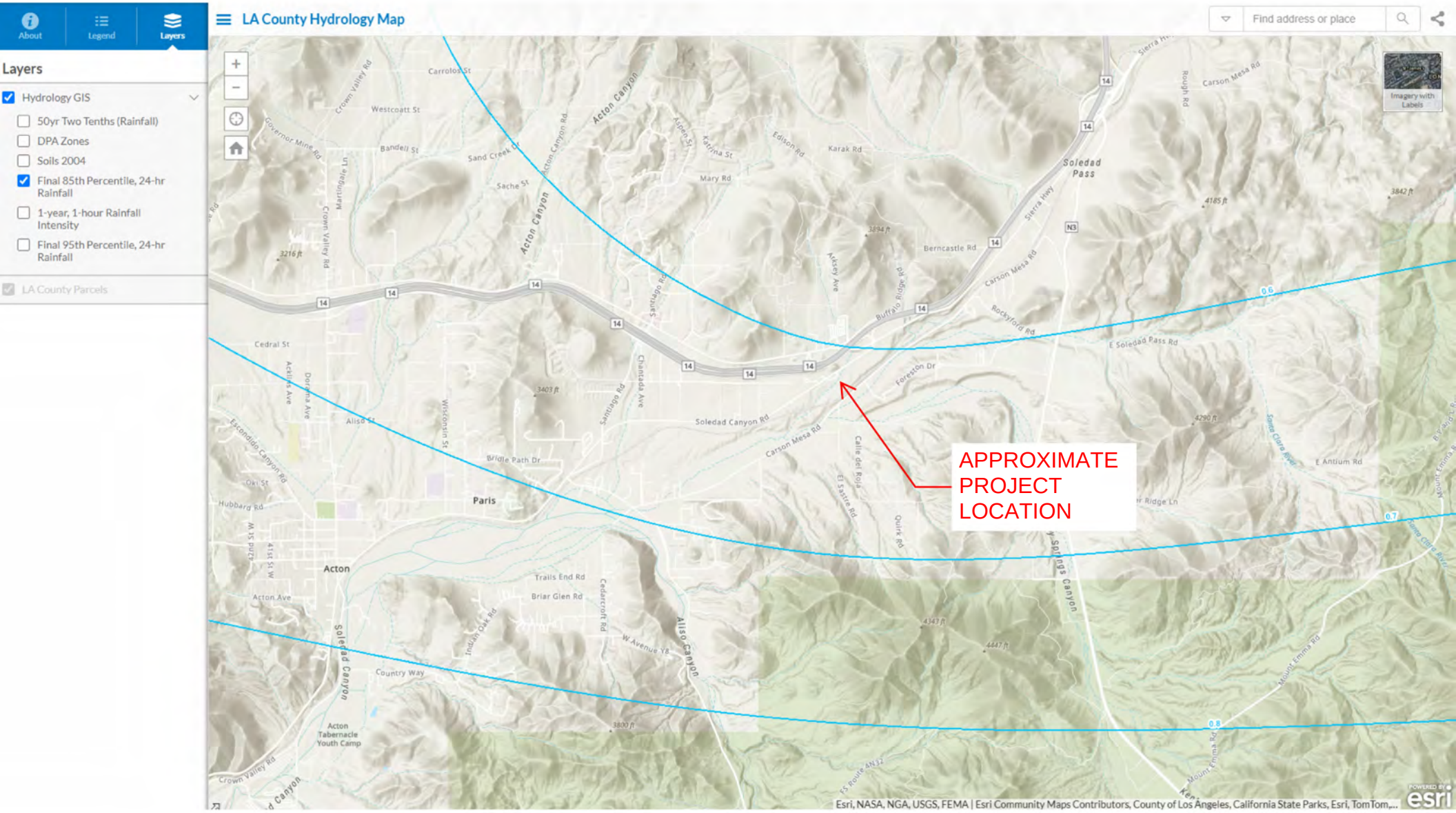
Exhibit 7: Hydraulic Structure Map

March 14, 2025

Appendix A

Precipitation Data




About
Legend
Layers
LA County Hydrology Map
Find address or place
Layers
Hydrology GIS
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
Final 95th Percentile, 24-hr Rainfall
LA County Parcels
Imagery with Labels
APPROXIMATE PROJECT LOCATION
Paris
Acton
Soledad Pass
Soledad Canyon Rd
Carson Mesa Rd
Acton Canyon
Esri, NASA, NGA, USGS, FEMA | Esri Community Maps Contributors, County of Los Angeles, California State Parks, Esri, TomTom,...

NOAA Atlas 14, Volume 6, Version 2
Location name: Acton, California, USA*
Latitude: 34.4848°, Longitude: -118.1403°
Elevation: 3058 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

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	0.076 (0.063-0.092)	0.101 (0.083-0.122)	0.135 (0.112-0.165)	0.164 (0.135-0.203)	0.207 (0.164-0.264)	0.242 (0.187-0.315)	0.278 (0.210-0.372)	0.318 (0.234-0.437)	0.374 (0.264-0.537)	0.420 (0.286-0.625)
10-min	0.109 (0.090-0.132)	0.144 (0.120-0.175)	0.193 (0.160-0.236)	0.236 (0.193-0.290)	0.297 (0.235-0.378)	0.346 (0.269-0.451)	0.399 (0.302-0.533)	0.456 (0.335-0.626)	0.537 (0.378-0.770)	0.602 (0.409-0.895)
15-min	0.131 (0.109-0.160)	0.174 (0.145-0.212)	0.234 (0.194-0.286)	0.285 (0.234-0.351)	0.359 (0.284-0.457)	0.419 (0.325-0.545)	0.482 (0.365-0.644)	0.551 (0.405-0.758)	0.649 (0.457-0.931)	0.728 (0.495-1.08)
30-min	0.183 (0.152-0.223)	0.243 (0.202-0.296)	0.327 (0.270-0.399)	0.398 (0.327-0.490)	0.501 (0.397-0.639)	0.585 (0.453-0.761)	0.674 (0.509-0.900)	0.769 (0.565-1.06)	0.906 (0.638-1.30)	1.02 (0.691-1.51)
60-min	0.259 (0.215-0.314)	0.343 (0.285-0.418)	0.461 (0.381-0.562)	0.561 (0.460-0.691)	0.706 (0.560-0.900)	0.824 (0.639-1.07)	0.950 (0.718-1.27)	1.08 (0.797-1.49)	1.28 (0.899-1.83)	1.43 (0.974-2.13)
2-hr	0.378 (0.314-0.460)	0.501 (0.416-0.611)	0.670 (0.555-0.819)	0.813 (0.667-1.00)	1.02 (0.805-1.30)	1.18 (0.913-1.53)	1.35 (1.02-1.80)	1.53 (1.12-2.10)	1.78 (1.25-2.56)	1.98 (1.35-2.95)
3-hr	0.514 (0.427-0.625)	0.683 (0.566-0.831)	0.911 (0.754-1.11)	1.10 (0.905-1.36)	1.37 (1.09-1.75)	1.59 (1.23-2.07)	1.81 (1.37-2.42)	2.05 (1.50-2.81)	2.38 (1.67-3.41)	2.64 (1.79-3.82)
6-hr	0.737 (0.613-0.897)	0.980 (0.813-1.19)	1.30 (1.08-1.59)	1.58 (1.29-1.94)	1.95 (1.55-2.49)	2.25 (1.75-2.93)	2.56 (1.94-3.42)	2.88 (2.12-3.97)	3.34 (2.35-4.78)	3.69 (2.51-5.49)
12-hr	0.993 (0.825-1.21)	1.32 (1.10-1.61)	1.77 (1.46-2.16)	2.14 (1.75-2.63)	2.65 (2.10-3.37)	3.05 (2.36-3.97)	3.46 (2.62-4.63)	3.90 (2.86-5.36)	4.50 (3.17-6.46)	4.98 (3.38-7.40)
24-hr	1.35 (1.19-1.55)	1.81 (1.60-2.08)	2.42 (2.14-2.80)	2.93 (2.57-3.42)	3.65 (3.09-4.40)	4.21 (3.49-5.18)	4.79 (3.88-6.04)	5.41 (4.26-7.01)	6.26 (4.72-8.45)	6.93 (5.06-9.69)
2-day	1.61 (1.43-1.86)	2.18 (1.93-2.51)	2.95 (2.60-3.41)	3.59 (3.15-4.19)	4.50 (3.81-5.42)	5.21 (4.32-6.41)	5.96 (4.82-7.51)	6.74 (5.31-8.74)	7.84 (5.92-10.6)	8.72 (6.36-12.2)
3-day	1.68 (1.49-1.93)	2.29 (2.03-2.64)	3.13 (2.76-3.62)	3.83 (3.35-4.46)	4.81 (4.08-5.80)	5.60 (4.64-6.88)	6.41 (5.19-8.08)	7.28 (5.73-9.44)	8.49 (6.41-11.5)	9.46 (6.90-13.2)
4-day	1.78 (1.58-2.05)	2.44 (2.16-2.82)	3.35 (2.96-3.87)	4.11 (3.60-4.79)	5.19 (4.40-6.25)	6.05 (5.02-7.44)	6.95 (5.62-8.76)	7.90 (6.22-10.2)	9.24 (6.98-12.5)	10.3 (7.53-14.4)
7-day	2.02 (1.79-2.32)	2.78 (2.46-3.20)	3.83 (3.38-4.43)	4.72 (4.14-5.50)	6.00 (5.08-7.23)	7.03 (5.83-8.64)	8.11 (6.57-10.2)	9.27 (7.30-12.0)	10.9 (8.25-14.8)	12.3 (8.95-17.2)
10-day	2.16 (1.91-2.48)	2.98 (2.64-3.44)	4.12 (3.64-4.77)	5.10 (4.47-5.95)	6.51 (5.51-7.84)	7.64 (6.34-9.40)	8.85 (7.16-11.2)	10.1 (7.99-13.2)	12.0 (9.06-16.2)	13.5 (9.86-18.9)
20-day	2.66 (2.36-3.06)	3.69 (3.27-4.25)	5.13 (4.53-5.93)	6.37 (5.58-7.42)	8.16 (6.92-9.83)	9.63 (7.98-11.8)	11.2 (9.06-14.1)	12.9 (10.1-16.7)	15.3 (11.6-20.7)	17.3 (12.6-24.2)
30-day	3.06 (2.71-3.52)	4.25 (3.76-4.90)	5.92 (5.22-6.84)	7.35 (6.44-8.57)	9.43 (7.98-11.4)	11.1 (9.22-13.7)	12.9 (10.5-16.3)	14.9 (11.7-19.3)	17.6 (13.3-23.8)	19.9 (14.5-27.8)
45-day	3.44 (3.05-3.96)	4.79 (4.24-5.52)	6.67 (5.88-7.70)	8.28 (7.25-9.64)	10.6 (8.97-12.8)	12.5 (10.3-15.3)	14.5 (11.7-18.2)	16.6 (13.1-21.5)	19.6 (14.8-26.5)	22.1 (16.1-30.9)
60-day	3.89 (3.44-4.47)	5.39 (4.77-6.21)	7.47 (6.60-8.64)	9.25 (8.10-10.8)	11.8 (9.99-14.2)	13.8 (11.5-17.0)	16.0 (13.0-20.2)	18.3 (14.4-23.7)	21.6 (16.3-29.1)	24.2 (17.6-33.8)

[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.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
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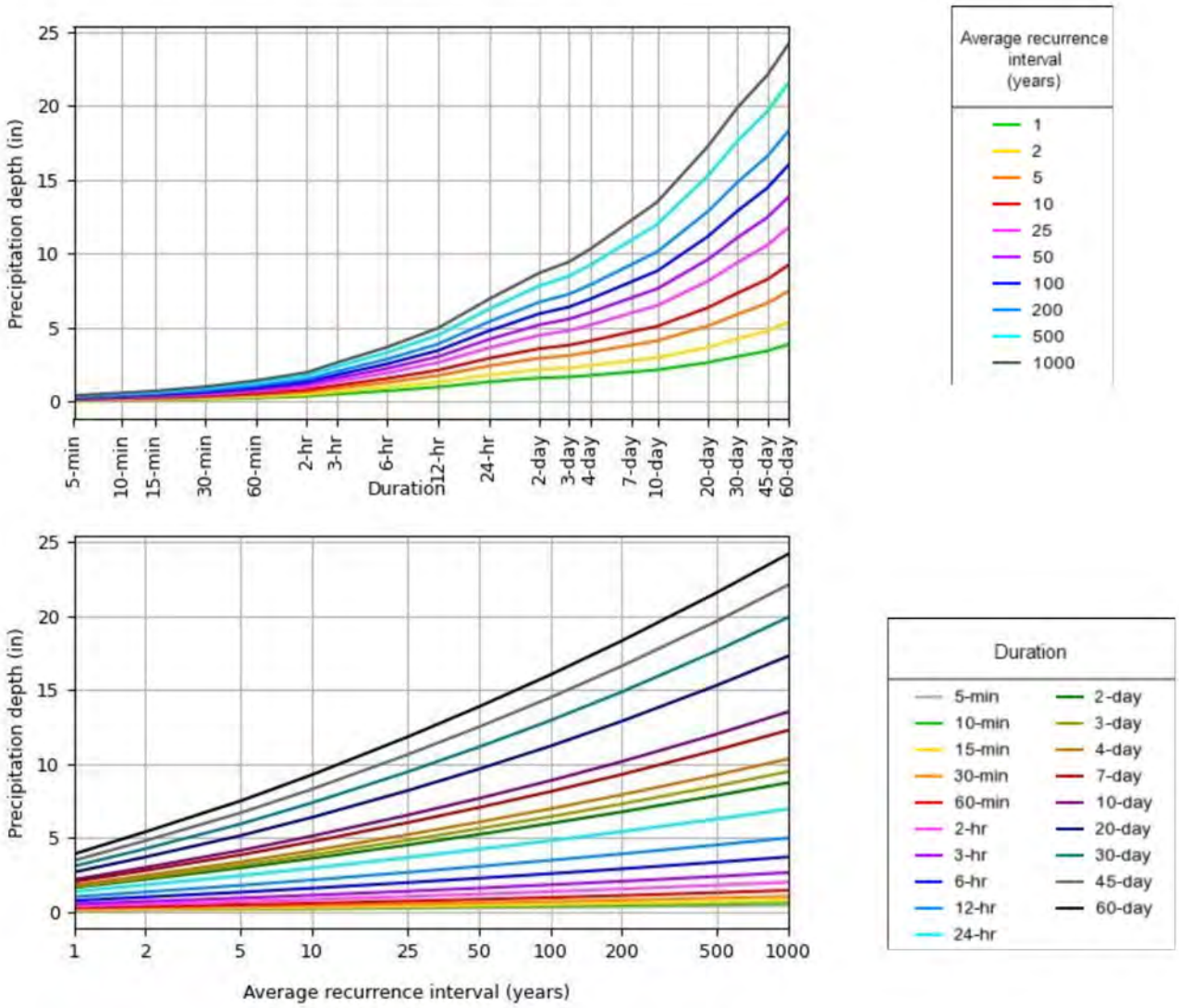

NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Fri Jan 17 18:37:28 2025

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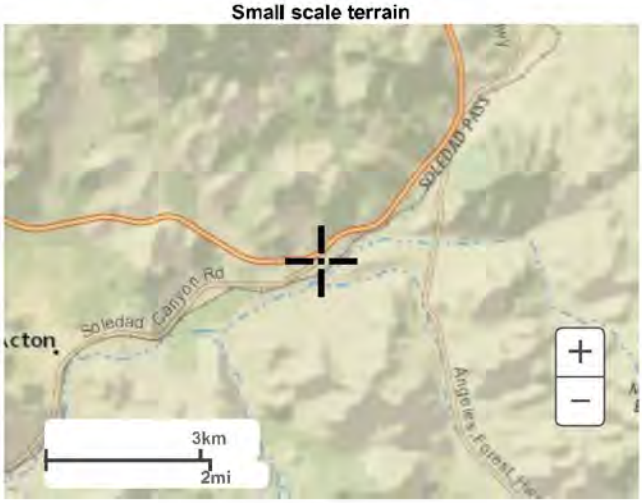
Maps & aerials

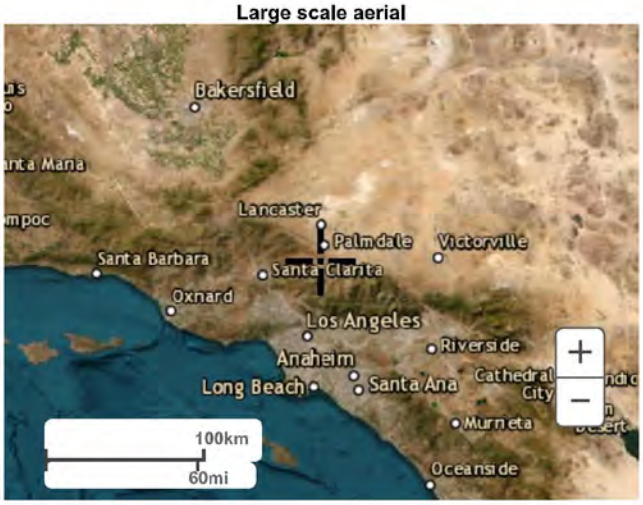
Small scale terrain



Large scale terrain

Large scale map

Large scale aerial



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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

Hydromodification HydroCalc Results

Peak Flow Hydrologic Analysis

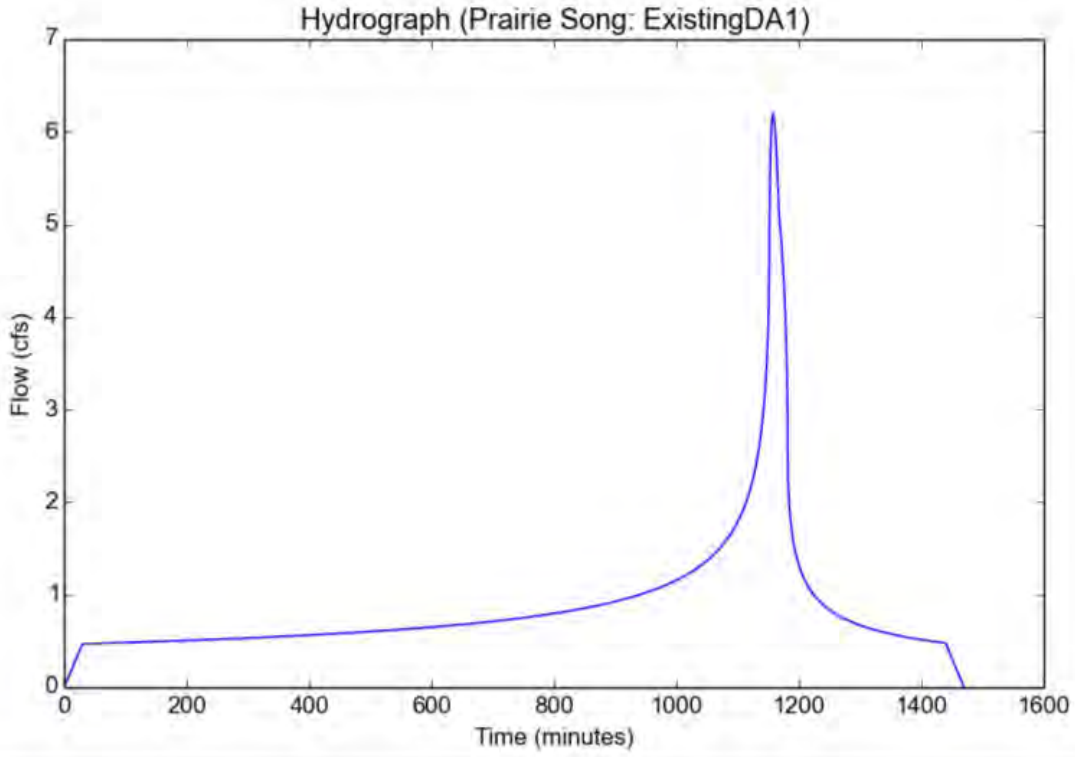
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App B - Hydromod/Prairie Song Reliability Project Hydromodification Report.
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ExistingDA1
Area (ac)	46.41
Flow Path Length (ft)	3950.0
Flow Path Slope (vft/hft)	0.033
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.01
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	1.0821
Undeveloped Runoff Coefficient (Cu)	0.1155
Developed Runoff Coefficient (Cd)	0.1233
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	6.1944
Burned Peak Flow Rate (cfs)	11.1103
24-Hr Clear Runoff Volume (ac-ft)	1.7549
24-Hr Clear Runoff Volume (cu-ft)	76442.4681



Peak Flow Hydrologic Analysis

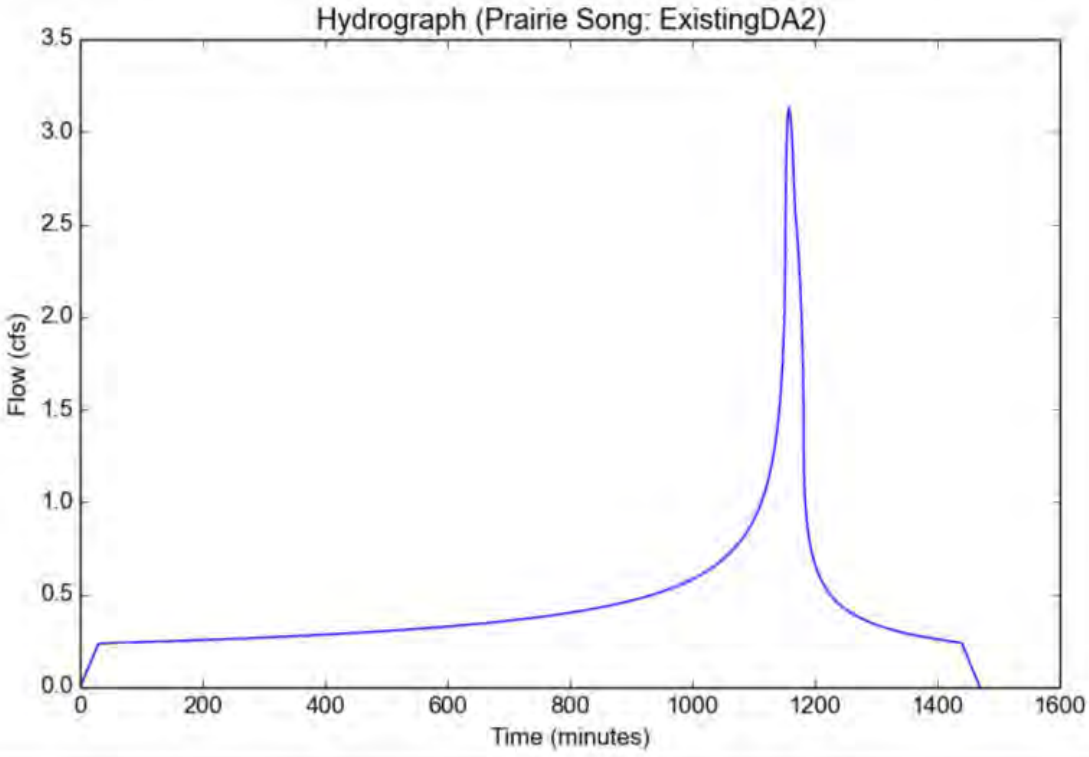
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App B - Hydromod/Prairie Song Reliability Project Hydromodification Report.
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ExistingDA2
Area (ac)	23.44
Flow Path Length (ft)	1710.0
Flow Path Slope (vft/hft)	0.037
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.01
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	1.0821
Undeveloped Runoff Coefficient (Cu)	0.1155
Developed Runoff Coefficient (Cd)	0.1233
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	3.1285
Burned Peak Flow Rate (cfs)	5.6114
24-Hr Clear Runoff Volume (ac-ft)	0.8863
24-Hr Clear Runoff Volume (cu-ft)	38608.3053



Peak Flow Hydrologic Analysis

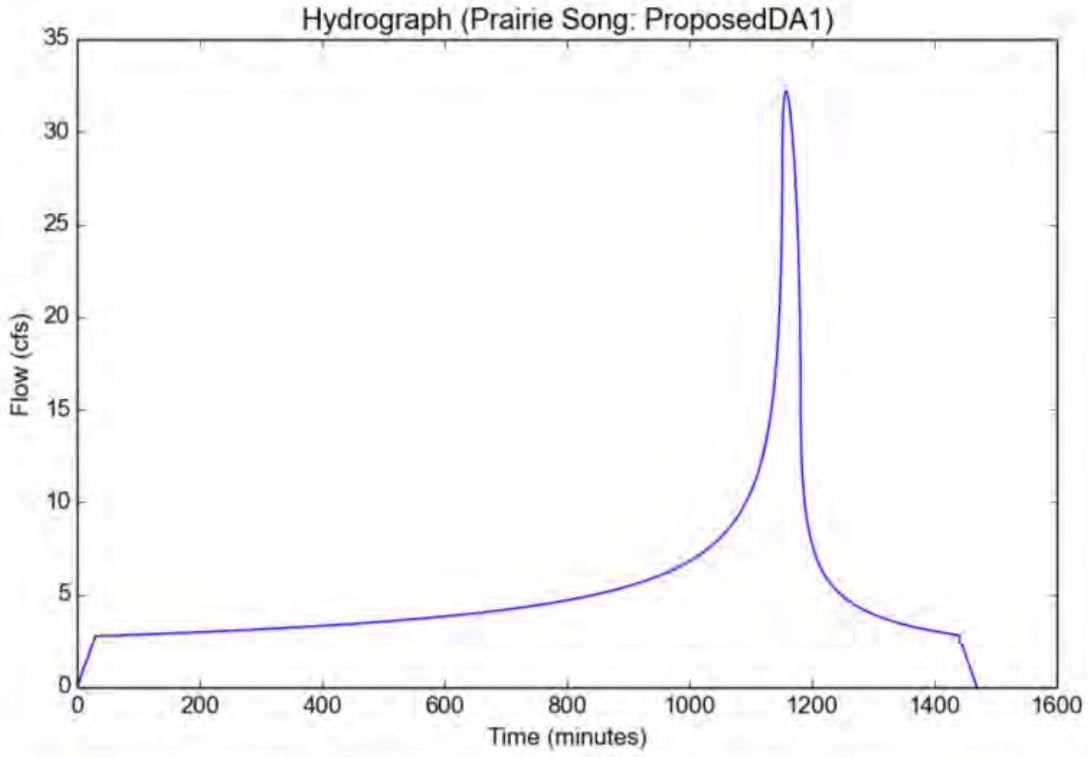
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App B - Hydromod/Prairie Song Reliability Project Hydromodification Report.
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ProposedDA1
Area (ac)	46.41
Flow Path Length (ft)	3950.0
Flow Path Slope (vft/hft)	0.033
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.67
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	1.0821
Undeveloped Runoff Coefficient (Cu)	0.1155
Developed Runoff Coefficient (Cd)	0.6411
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	32.196
Burned Peak Flow Rate (cfs)	34.2085
24-Hr Clear Runoff Volume (ac-ft)	10.2736
24-Hr Clear Runoff Volume (cu-ft)	447519.6442



Peak Flow Hydrologic Analysis

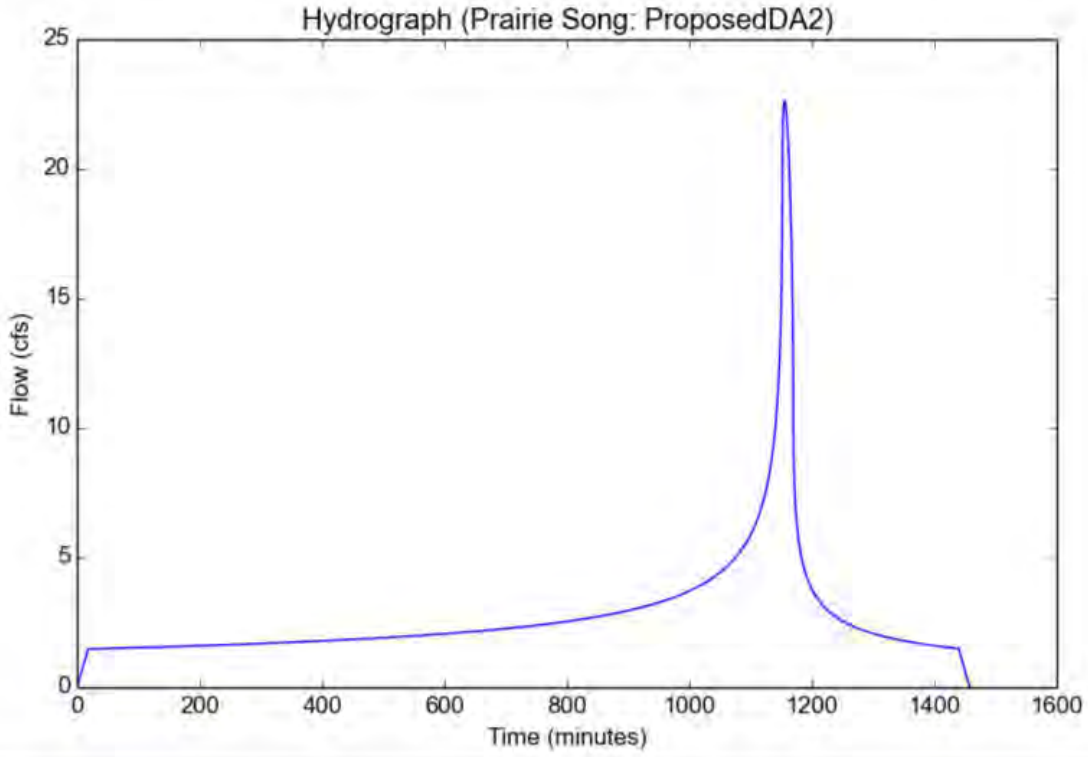
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App B - Hydromod/Prairie Song Reliability Project Hydromodification Report.
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ProposedDA2
Area (ac)	23.44
Flow Path Length (ft)	1710.0
Flow Path Slope (vft/hft)	0.037
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.72
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	1.3757
Undeveloped Runoff Coefficient (Cu)	0.1888
Developed Runoff Coefficient (Cd)	0.7009
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	22.6007
Burned Peak Flow Rate (cfs)	23.7311
24-Hr Clear Runoff Volume (ac-ft)	5.5255
24-Hr Clear Runoff Volume (cu-ft)	240692.8037



Appendix C

Stormwater Quality Design Volume HydroCalc Results

Peak Flow Hydrologic Analysis

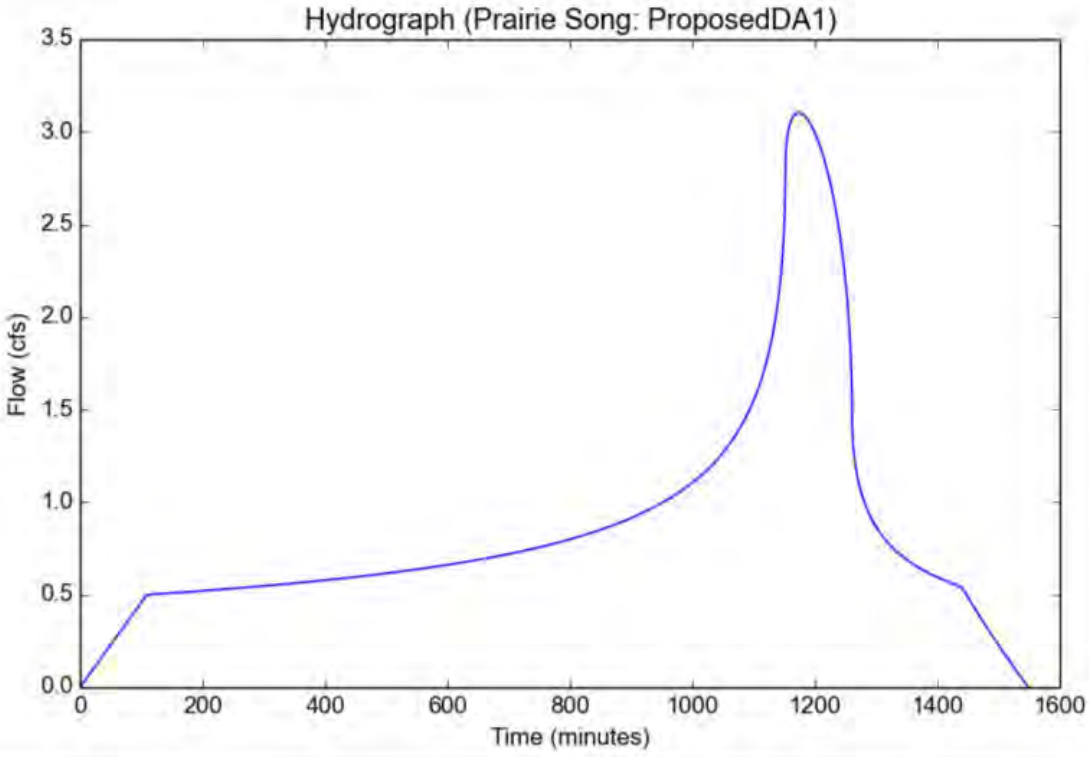
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App C - SWQD/2025-05-08 Prairie Song Reliability Project SWQDv HydroCa
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ProposedDA1
Area (ac)	46.41
Flow Path Length (ft)	3950.0
Flow Path Slope (vft/hft)	0.033
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.67
Soil Type	15
Design Storm Frequency	0.75 inch storm
Fire Factor	0.34
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1051
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.636
Time of Concentration (min)	109.0
Clear Peak Flow Rate (cfs)	3.1028
Burned Peak Flow Rate (cfs)	3.1923
24-Hr Clear Runoff Volume (ac-ft)	1.8298
24-Hr Clear Runoff Volume (cu-ft)	79707.9868



Peak Flow Hydrologic Analysis

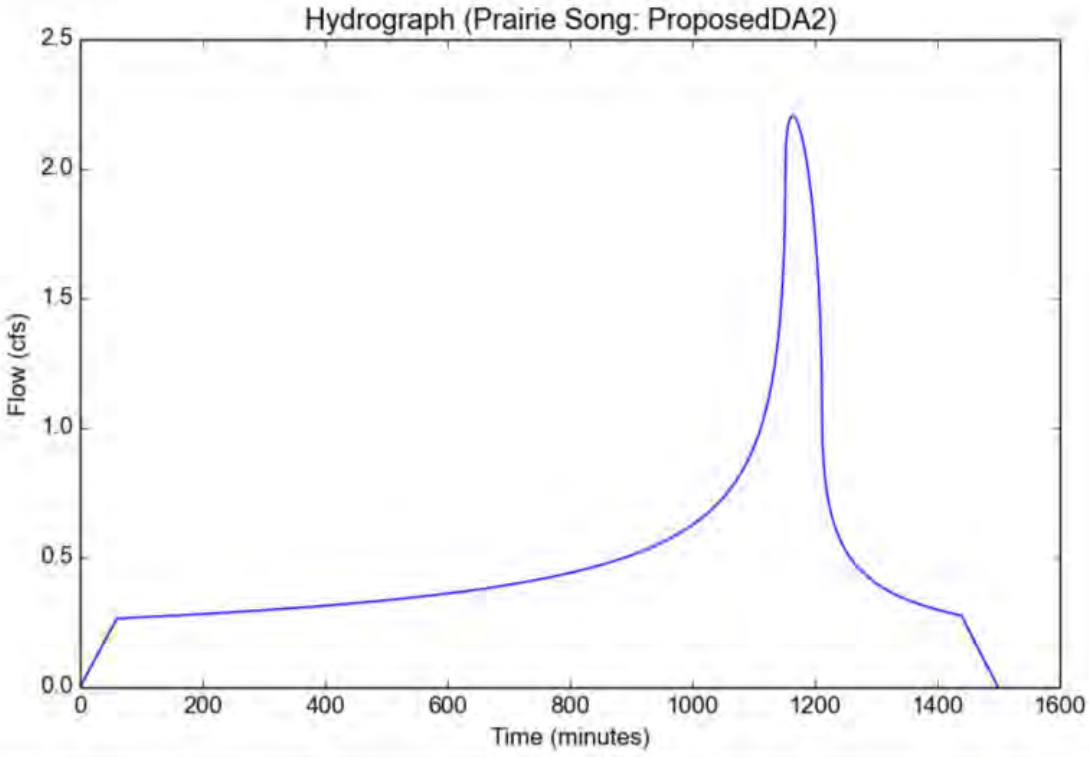
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App C - SWQD/2025-05-08 Prairie Song Reliability Project SWQDv HydroCa
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	ProposedDA2
Area (ac)	23.44
Flow Path Length (ft)	1710.0
Flow Path Slope (vft/hft)	0.037
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.72
Soil Type	15
Design Storm Frequency	0.75 inch storm
Fire Factor	0.34
LID	True

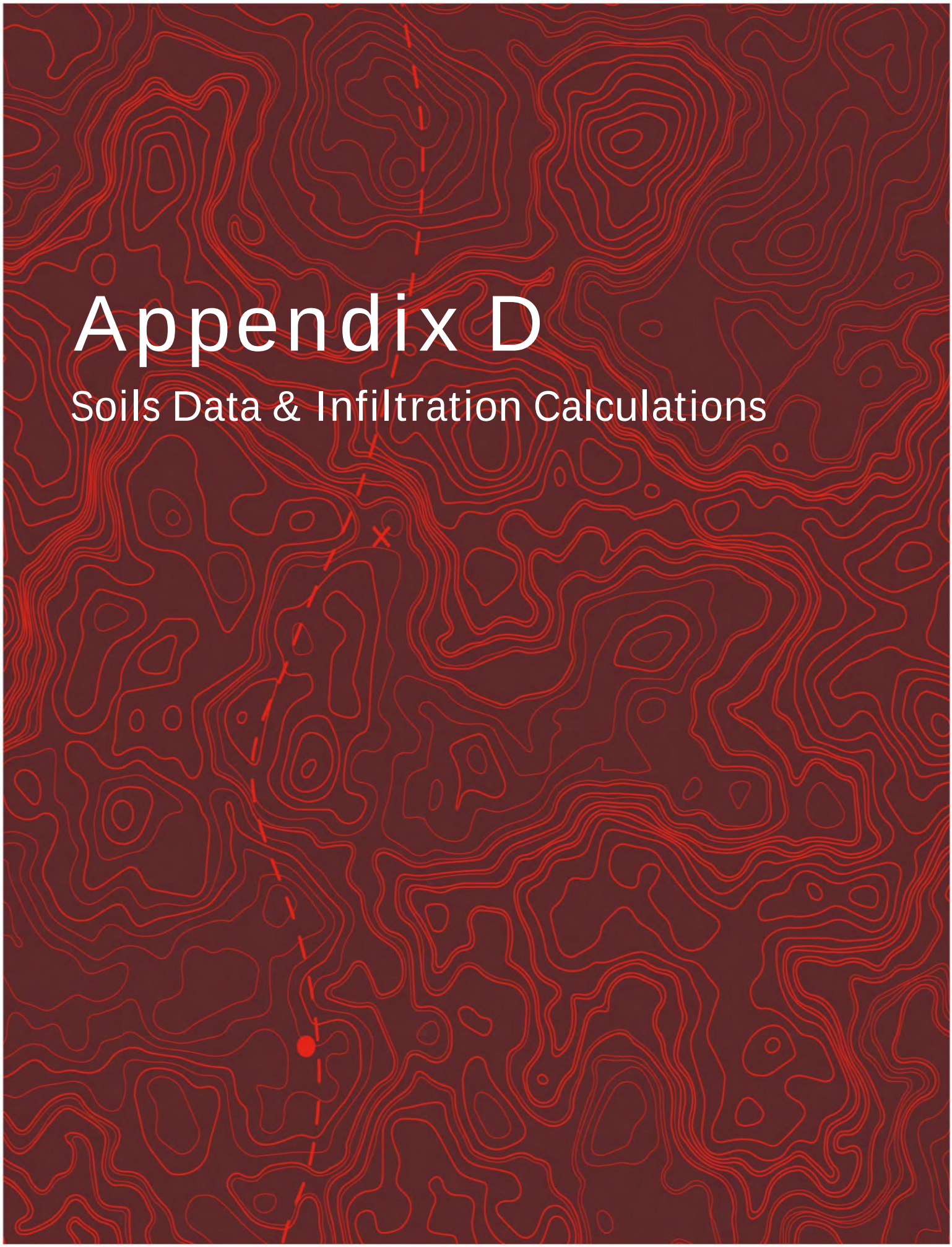
Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1392
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.676
Time of Concentration (min)	60.0
Clear Peak Flow Rate (cfs)	2.2052
Burned Peak Flow Rate (cfs)	2.2671
24-Hr Clear Runoff Volume (ac-ft)	0.9822
24-Hr Clear Runoff Volume (cu-ft)	42784.692



Appendix D

Soils Data & Infiltration Calculations



Soil Identification Table

Number	Name	Original Name
2	ALTAMONT CLAY LOAM	A
3	CHINO SILT LOAM	CS-1
4	DIABLO CLAY LOAM	DY
5	HANFORD FINE SANDY LOAM	HF
6	HANFORD FINE SANDY LOAM	HF-1
7	HANFORD GRAVELLY SANDY LOAM	HG
8	HANFORD SILT LOAM	HN
9	MONTEZUMA CLAY ADOBE	M
10	OAKLEY FINE SAND	OS
11	PLACENTIA LOAM	PL
12	RAMONA CLAY LOAM	RC- 1
13	RAMONA LOAM	RO
14	RAMONA SANDY LOAM	RS
15	TUJUNGA FINE SANDY LOAM	TF
16	YOLO LOAM	Y
17	YOLO CLAY LOAM	YC
18	YOLO FINE SANDY LOAM	YF
19	YOLO GRAVELLY SANDY LOAM	YG
20	YOLO SANDY LOAM	YS
21	SANTA MONICA MOUNTAINS	SMM-1
22	SANTA MONICA MOUNTAINS	SMM-2
23	SANTA MONICA MOUNTAINS	SMM-3
24	SANTA MONICA MOUNTAINS	SMM-4
25	SANTA MONICA MOUNTAINS	SMM-5
26	SANTA MONICA MOUNTAINS	SMM-6
27	SANTA MONICA MOUNTAINS	SMM-7
28	SANTA MONICA MOUNTAINS	SMM-8
29	SANTA MONICA MOUNTAINS	SMM-9
30	SANTA MONICA MOUNTAINS	SMM-10
31	SANTA MONICA MOUNTAINS	SMM- 11
32	SANTA MONICA MOUNTAINS	SMM-12
33	SANTA MONICA MOUNTAINS	SMM-13
34	SANTA MONICA MOUNTAINS	SMM-14
35	SANTA MONICA MOUNTAINS	SMM-15
36	SANTA MONICA MOUNTAINS	SMM-16
37	SANTA MONICA MOUNTAINS	SMM- 17
38	SANTA MONICA MOUNTAINS	SMM- 18

1355 E. Cooley Dr. Suite C
Colton, CA 92324
P (909) 824-7311
Terracon.com

January 22, 2025, revised May 5, 2025

Prairie Song Reliability Project, LLC
[redacted]

Attn: [redacted]
E: [redacted]

Re: Geotechnical Percolation Test Letter
Prairie Song Reliability Project
Acton, Los Angeles County, CA
Terracon Project No. LA245085

Dear Mr. Lehman

Per your request, we are providing this letter to outline the percolation testing services conducted for the referenced project in general accordance with Terracon Proposal Number PLA245085. This percolation test letter provides geotechnical considerations for the design and construction of the proposed stormwater basin.

The project site is located near 800 Soledad Canyon Road in Acton, Los Angeles County, California. The coordinates of the approximate center of the site are 34.4858°N, 118.1383°W. A total of four (4) percolation tests (falling head borehole permeability) were conducted at the site on December 18, and 19, 2024. The approximate location of site and the tests are shown in the **Site Location** and **Exploration Plan** attached to this letter.

Two (2) percolation test borings (P-1 and P-2) were advanced to three (3) feet below ground surface (bgs) and two (2) percolation test borings (P-3 and P-4) were advanced to five (5) feet bgs for percolation testing. Based on visual classification and laboratory tests, subsurface conditions at the test locations generally consisted of loose to dense silty sands. The individual **Boring Logs** are attached to this letter.

Percolation Test Results

The percolations tests were completed in accordance with the *Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration* published by the Los Angeles County Public Works Geotechnical and Materials Engineering Division Administrative Manual on June 30, 2021. After the test borings were advanced, the augers were removed from the boring and an approximately 2-inch thick, 3/4-inch gravel layer was placed in the bottom of each boring. A three-inch diameter perforated pipe was installed on

top of the gravel layer and gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at standardized time intervals.

The soil at the percolation test locations was classified in the field using a visual/manual procedure. The infiltration velocity is presented as the infiltration rate and is summarized in the following table. The infiltration rates provided do not include safety factors.

Test Location	Boring Depth (ft.)[1]	Test Depth Range (ft.)[1]	Soil Type	Percolation Rate (in./hr.)	Infiltration Rate (in.hr.)[2]
P-1	3	0 to 3	SM	55.3	4.6
P-2	3	0 to 3	SM	21.0	1.3
P-3	5	0 to 5	SM	45.3	1.8
P-4	5	0 to 5	SM	76.7	3.6

1. Below existing ground surface.
2. If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used.

The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. Based on the County of Los Angeles Department of Public Works GS200.1 document, the following reduction factors are recommended:

LA County Reduction Factor	Value
RF_t	2
RF_v	1
RF_s	2[1]
RF, Total Reduction Factor $RF=RF_t + RF_v + RF_s$	5

1. This factor may be used if stormwater will be clear and filtered of silts and sediments prior to infiltration. We recommend the designer confirm this Reduction Factor.

The design civil engineer may elect to modify these reduction factors based on their design.

With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation tests were performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration systems. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

The above infiltration rates determined by the percolation test method are based on field test results utilizing clear water. Infiltration rates can be affected by silt buildup, debris, degree of soil saturation, site variability and other factors. The rate obtained at specific location and depth is representative of the location and depth tested and may not be representative of the entire site.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth along with other factors may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located a minimum of 10 feet from any existing or proposed foundation system.

Closure

Our review, analysis, and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer to provide observations during pertinent construction phases. If variations, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention

of pollutants, hazardous materials, or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support are the responsibility of others.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this addendum, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Janna Valdez, E.I.T.
Senior Staff Engineer

Jay J. Martin, C.E.G.
Principal Geologist

Attachments:
Site Location
Exploration Plan
Boring Logs

Site Location

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Prairie Song Reliability Project
800 Soledad Canyon Rd | Acton, CA
Terracon Project No. LA245085

Terracon
145 W Walnut St
Carson, CA

Boring Log No. P-1

Graphic Log	Location: See Exploration Plan Latitude: 34.4833° Longitude: -118.1438° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
	SILTY SAND (SM), light brown											
	loose				9-8-8				1.4	116	21-18-3	27
	3.0											
	Boring Terminated at 3 Feet											

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
D-50

Hammer Type
Automatic

Driller
Terracon

Logged by
OW

Boring Started
12-17-2024

Boring Completed
12-17-2024

Prairie Song Reliability Project
800 Soledad Canyon Rd | Acton, CA
Terracon Project No. LA245085

Terracon
145 W Walnut St
Carson, CA

Boring Log No. P-2

Graphic Log	Location: See Exploration Plan Latitude: 34.4829° Longitude: -118.1438° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
	SILTY SAND (SM), trace gravel, brown											
	dense				8-22-40				4.1	98		29
	3.0											
	Boring Terminated at 3 Feet											

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
D-50

Hammer Type
Automatic

Driller
Terracon

Logged by
OW

Boring Started
12-17-2024

Boring Completed
12-17-2024

Prairie Song Reliability Project
800 Soledad Canyon Rd | Acton, CA
Terracon Project No. LA245085

Terracon
145 W Walnut St
Carson, CA

Boring Log No. P-3

Graphic Log	Location: See Exploration Plan Latitude: 34.4827° Longitude: -118.1435° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
	SILTY SAND (SM), brown											26
	trace gravel, medium dense				9-12-17				2.2	112		
	5.0	5										
	Boring Terminated at 5 Feet											

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
D-50

Hammer Type
Automatic

Driller
Terracon

Logged by
OW

Boring Started
12-17-2024

Boring Completed
12-17-2024

Prairie Song Reliability Project
800 Soledad Canyon Rd | Acton, CA
Terracon Project No. LA245085

Terracon
145 W Walnut St
Carson, CA

Boring Log No. P-4

Graphic Log	Location: See Exploration Plan Latitude: 34.4828° Longitude: -118.1432° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
	POORLY GRADED SAND WITH SILT (SP-SM), brown										NP	9
	trace gravel, loose				7-6-5				6.0	99		
	5.0 ***Boring Terminated at 5 Feet***	5										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes

Water Level Observations
Groundwater not encountered

Advancement Method
Hollow Stem Auger

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
D-50

Hammer Type
Automatic

Driller
Terracon

Logged by
OW

Boring Started
12-17-2024

Boring Completed
12-17-2024

Calculations for determining the number and volume of required ADS MC-3500 underground stormwater chambers are described in the following:

The hydrology study and stormwater sizing for the project area was conducted by Westwood. S&L proposed the underground stormwater chambers manufactured by ADS to help meet stormwater needs on site. Westwood agreed those would be acceptable to use on site and provided preliminary calculations of what would be required as seen below.

Preliminary Stormwater Sizing	DA 1	DA 2
Req. Infiltration Volume (ac-ft)	8.52	4.64
Req. Infiltration Volume (cu. ft)	371131	202118
Installed Storage/MC-3500 Chamber (cu. ft)*	175	
Approx Req. Number of MC-3500 Chambers*	2121	1155

*This calculation excludes storage provided by end caps, which is dependent upon the number of rows of chambers

To help reduce some costs per Prairie Song Reliability Project's request, S&L incorporated infiltration trenches along the south sides of the BESS and switchyard locations. The first step in S&L's calculation was determining the average volume the infiltration trenches would occupy. This was done by taking the length of trench multiplied by the assumed 2' wide trench width, and 5' trench depth. The trench would be backfilled with coarser stone aggregate to help the trenches withstand heavier vehicular traffic. In doing so, there would be more air gaps compared to using finer backfill. Therefore, a void ratio factor of 0.4 was multiplied to the average trench volumes. The average trench volumes were subtracted for each drainage areas required infiltration volumes to determine the new required volumes.

The number of ADS chambers required was calculated using a ratio between the new required volumes and the initial volumes provided by Westwood multiplied by Westwood's approximate estimation of the number of chambers required.

The approximate area required for each drainage area for the chambers was determined by first calculating the area of one chamber. Using ADS' product drawings and dividing the system area by number of chambers, S&L calculated an area per chamber of ~51 sq ft. The total required area per drainage area was determined by multiplying the unit area by the number of adjusted required ADS chambers calculated earlier.

Westwood's Calcs

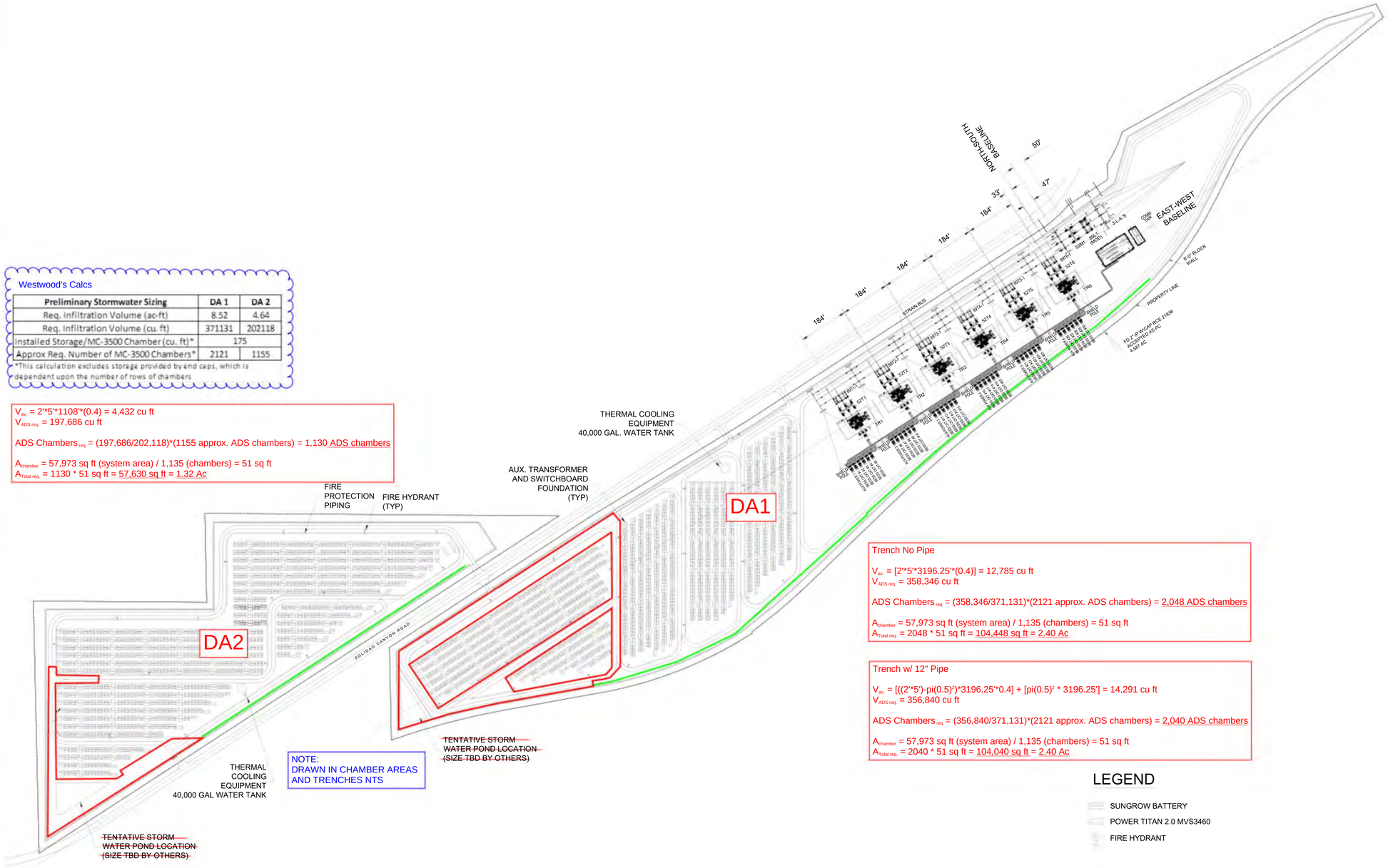
Preliminary Stormwater Sizing	DA 1	DA 2
Req. Infiltration Volume (ac-ft)	8.52	4.64
Req. Infiltration Volume (cu. ft)	371131	202118
Installed Storage/MC-3500 Chamber (cu. ft)*	175	
Approx Req. Number of MC-3500 Chambers*	2121	1155

*This calculation excludes storage provided by end caps, which is dependent upon the number of rows of chambers

$V_{av.}$ = 2'*5'*1108'*(0.4) = 4,432 cu ft
$V_{ADS\ req.}$ = 197,686 cu ft

ADS $Chambers_{req}$ = (197,686/202,118)*(1155 approx. ADS chambers) = 1,130 ADS chambers

$A_{chamber}$ = 57,973 sq ft (system area) / 1,135 (chambers) = 51 sq ft
$A_{Total\ req.}$ = 1130 * 51 sq ft = 57,630 sq ft = 1.32 Ac



Trench No Pipe

$V_{av.}$ = [2'*5'*3196.25'*(0.4)] = 12,785 cu ft
$V_{ADS\ req.}$ = 358,346 cu ft

ADS $Chambers_{req}$ = (358,346/371,131)*(2121 approx. ADS chambers) = 2,048 ADS chambers

$A_{chamber}$ = 57,973 sq ft (system area) / 1,135 (chambers) = 51 sq ft
$A_{Total\ req.}$ = 2048 * 51 sq ft = 104,448 sq ft = 2.40 Ac

Trench w/ 12" Pipe

$V_{av.}$ = [((2'*5')-pi(0.5)^2)*3196.25'*0.4] + [pi(0.5)^2 * 3196.25'] = 14,291 cu ft
$V_{ADS\ req.}$ = 356,840 cu ft

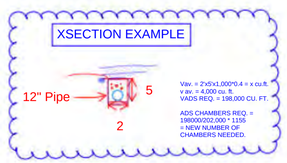
ADS $Chambers_{req}$ = (356,840/371,131)*(2121 approx. ADS chambers) = 2,040 ADS chambers

$A_{chamber}$ = 57,973 sq ft (system area) / 1,135 (chambers) = 51 sq ft
$A_{Total\ req.}$ = 2040 * 51 sq ft = 104,040 sq ft = 2.40 Ac

LEGEND

- SUNGROW BATTERY
- POWER TITAN 2.0 MVS3460
- FIRE HYDRANT

XSECTION EXAMPLE



NORTH

0 200 400 800

GRAPHIC SCALE

DRAWING SCALE
1:200

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/ INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

RELEASE INFORMATION

REV.	DATE	DESCRIPTION
0	1/15/2025	30% DESIGN

ISSUE PURPOSE:	PRELIMINARY ISSUE
SPECIFICATION:	-
PROJECT NO.:	15474.001

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF ENTER NAME.

ENTER NAME
ENTER DATE

MY LICENSE RENEWAL DATE IS: ENTER DATE
PAGES OR SHEETS COVERED BY THIS SEAL:
THIS DOCUMENT ONLY.

CERT OF AUTHORIZATION (WHEN REQ'D)

CAD FILE NAME:	ANG-SE-101_S001.DWG
PREPARED BY:	LG
REVIEWED BY:	CHKD
APPROVED BY:	APPD

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY, IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

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SARGENT & LUNDY
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603-5780

PROJECT

PRAIRIE SON[redacted]TY PROJECT
BATTERY ENERGY STORAGE

DRAWING TITLE

GENERAL ARRANGEMENT

DRAWING NUMBER	REVISION
ANG-SE-101	0
SHEET 1 OF 1	

Advanced Drainage Systems, Inc.

ADS SiteAssist™
FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP

MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

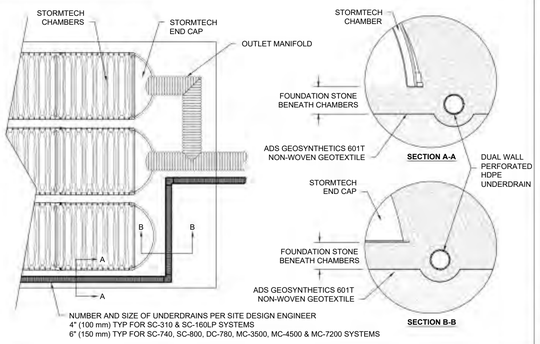
1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

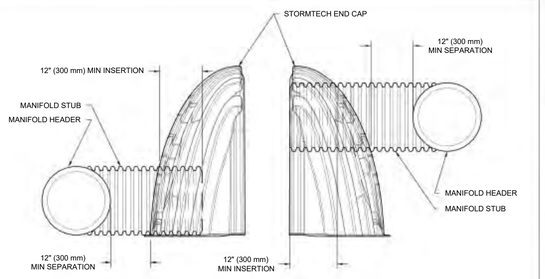
1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER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

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

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

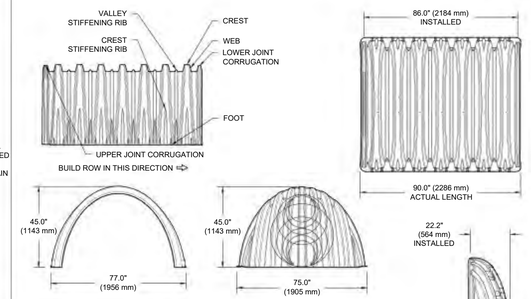


5 UNDERDRAIN DETAIL



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

6 MC-SERIES END CAP INSERTION DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

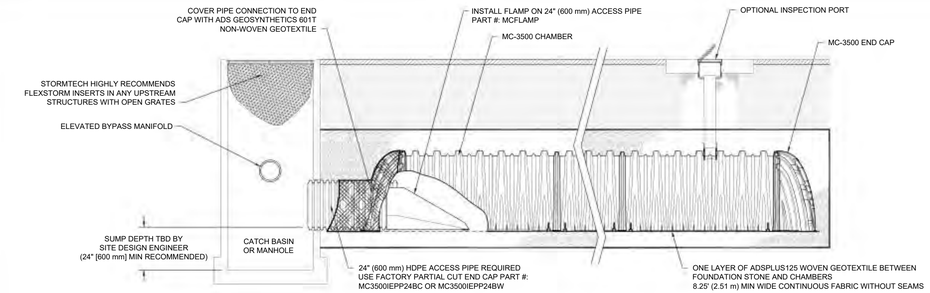
PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

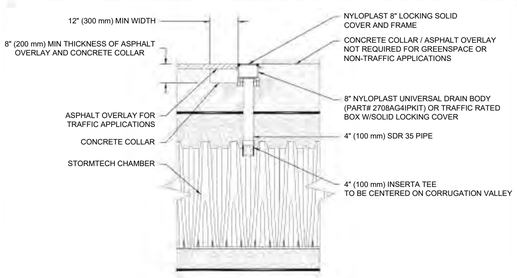
NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

2 MC-3500 TECHNICAL SPECIFICATIONS



3 MC-3500 ISOLATOR ROW PLUS DETAIL



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

INSPECTION & MAINTENANCE

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

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

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

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

NOTES

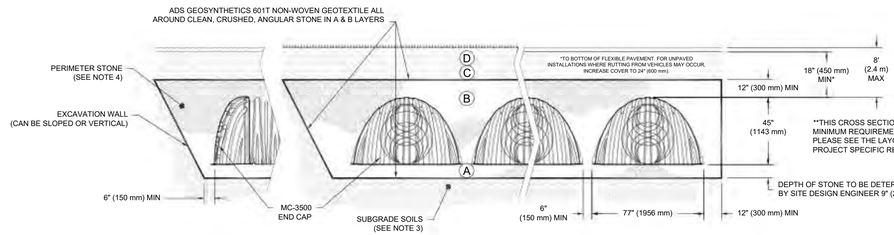
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 18" (450 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE[5]	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 MC-3500 CROSS SECTION DETAIL

DRAWN: JLM | DATE: 01/10/24
REVIEWED: JLM | PROJECT NO:
REV: | NOT TO SCALE

MC-3500 STANDARD DETAILS

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

4640 TRUEMAN BLVD
HILLIARD, OH 43026

Advanced Drainage Systems, Inc.

SHEET 1

Stormwater Sizing	DA 1	DA 2
Req. Infiltration Volume (ac-ft)	8.52	4.64
Req. Infiltration Volume (cu. ft)	371131	202118
Installed Storage/MC-3500 Chamber (cu. ft)	175	
Number of MC-3500 Chambers	2040	1130
MC-3500 Chamber Infiltration Volume (cu.ft)	357000	197750
MC-3500 Chamber Infiltration Volume (ac-ft)	8.196	4.540
Trench Infiltration Volume (cu. ft)[1]	14291	4432
Trench Infiltration Volume (ac-ft)	0.328	0.102
Total Provided Infiltration Volume (cu. ft)	371291	202182
Total Provided Infiltration Volume (ac-ft)	8.52	4.64

[1]Values provided by S&L calculations

Appendix E

Transmission Line Tower Pad Infiltration Calculations

Peak Flow Hydrologic Analysis

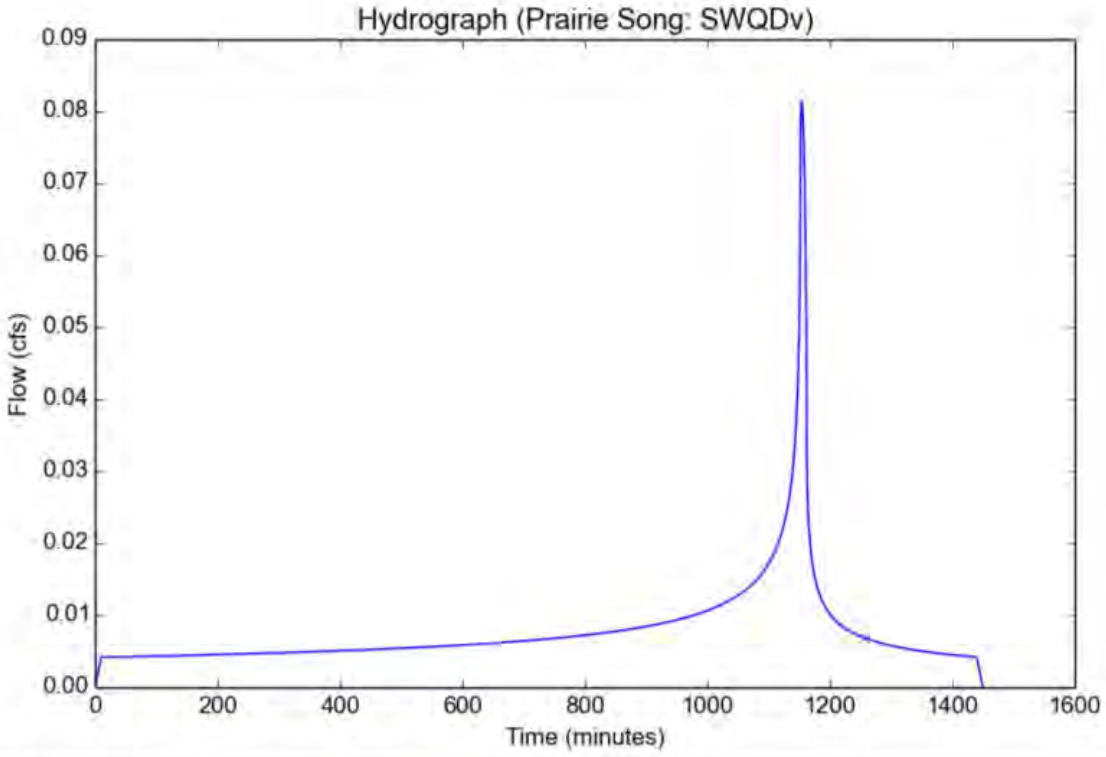
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App E - Transmission Tower/Prairie Song Reliability Project Transmission To
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	SWQDv
Area (ac)	0.28
Flow Path Length (ft)	120.0
Flow Path Slope (vft/hft)	0.02
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	1.0
Soil Type	15
Design Storm Frequency	0.75 inch storm
Fire Factor	0.34
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.3231
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	0.0814
Burned Peak Flow Rate (cfs)	0.0821
24-Hr Clear Runoff Volume (ac-ft)	0.0156
24-Hr Clear Runoff Volume (cu-ft)	680.4009



Peak Flow Hydrologic Analysis

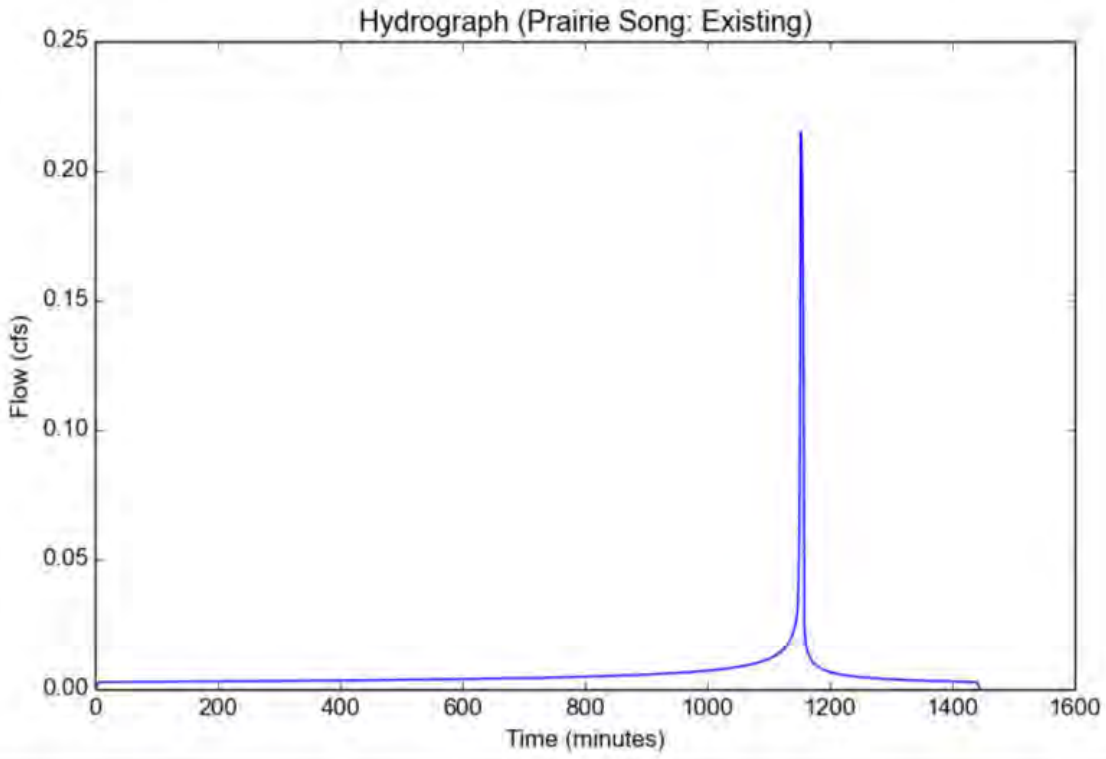
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App E - Transmission Tower/Prairie Song Reliability Project Transmission To
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	Existing
Area (ac)	0.28
Flow Path Length (ft)	120.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.01
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	2.3055
Undeveloped Runoff Coefficient (Cu)	0.3271
Developed Runoff Coefficient (Cd)	0.3328
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	0.2149
Burned Peak Flow Rate (cfs)	0.2703
24-Hr Clear Runoff Volume (ac-ft)	0.0116
24-Hr Clear Runoff Volume (cu-ft)	506.4877



Peak Flow Hydrologic Analysis

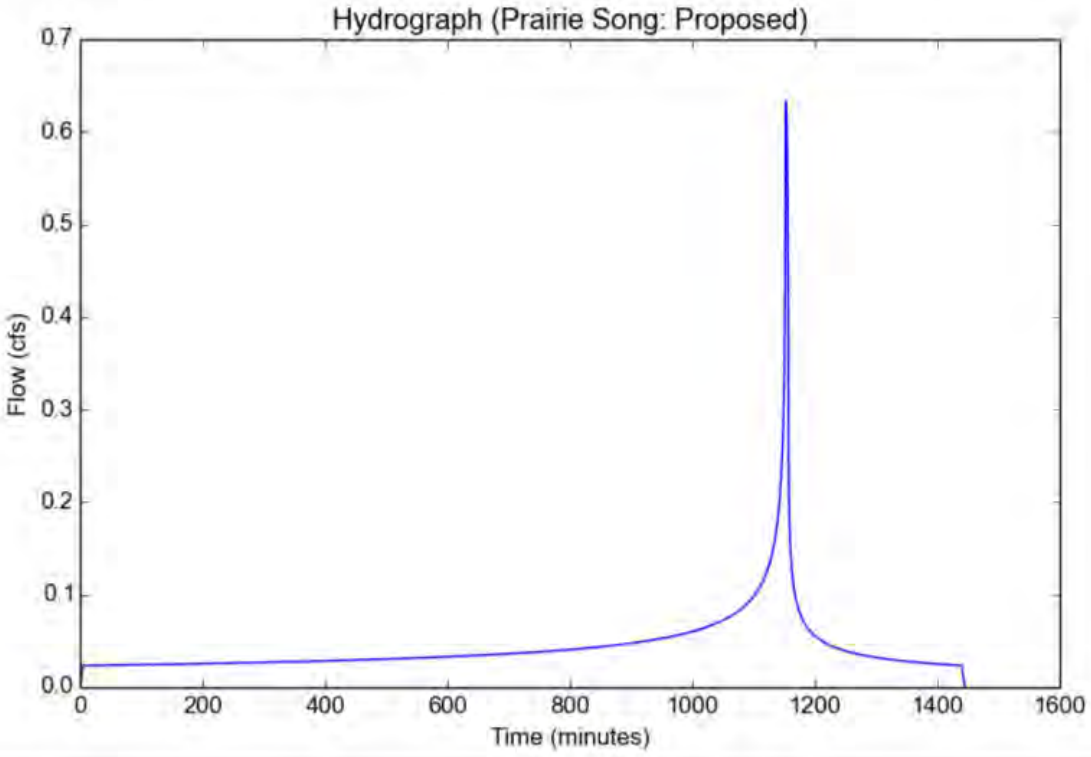
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App E - Transmission Tower/Prairie Song Reliability Project Transmission To
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	Proposed
Area (ac)	0.28
Flow Path Length (ft)	120.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	4.21
Percent Impervious	1.0
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	4.21
Peak Intensity (in/hr)	2.5118
Undeveloped Runoff Coefficient (Cu)	0.3519
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.633
Burned Peak Flow Rate (cfs)	0.6421
24-Hr Clear Runoff Volume (ac-ft)	0.0877
24-Hr Clear Runoff Volume (cu-ft)	3819.3132



Appendix F

Hydraulic Structure Sizing Calculations

Peak Flow Hydrologic Analysis

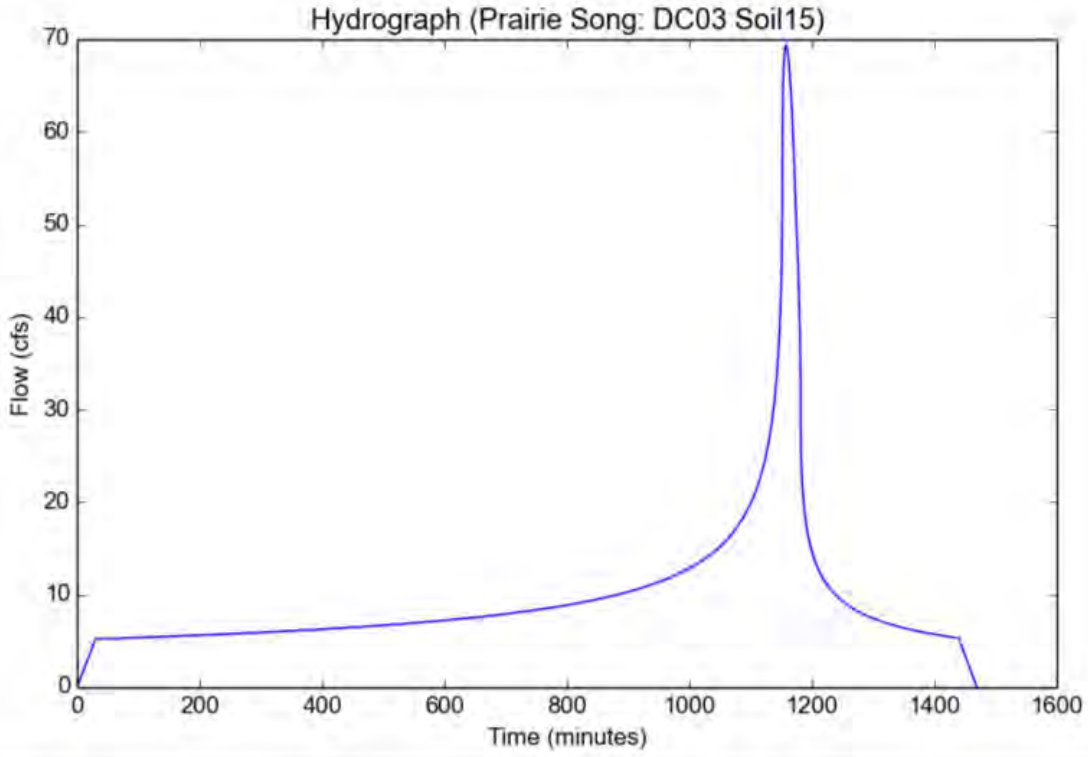
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC03 Soil15
Area (ac)	191.16
Flow Path Length (ft)	6540.0
Flow Path Slope (vft/hft)	0.131
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.2
Soil Type	15
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.1485
Developed Runoff Coefficient (Cd)	0.2988
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	69.342
Burned Peak Flow Rate (cfs)	87.9482
24-Hr Clear Runoff Volume (ac-ft)	19.5964
24-Hr Clear Runoff Volume (cu-ft)	853618.9



Peak Flow Hydrologic Analysis

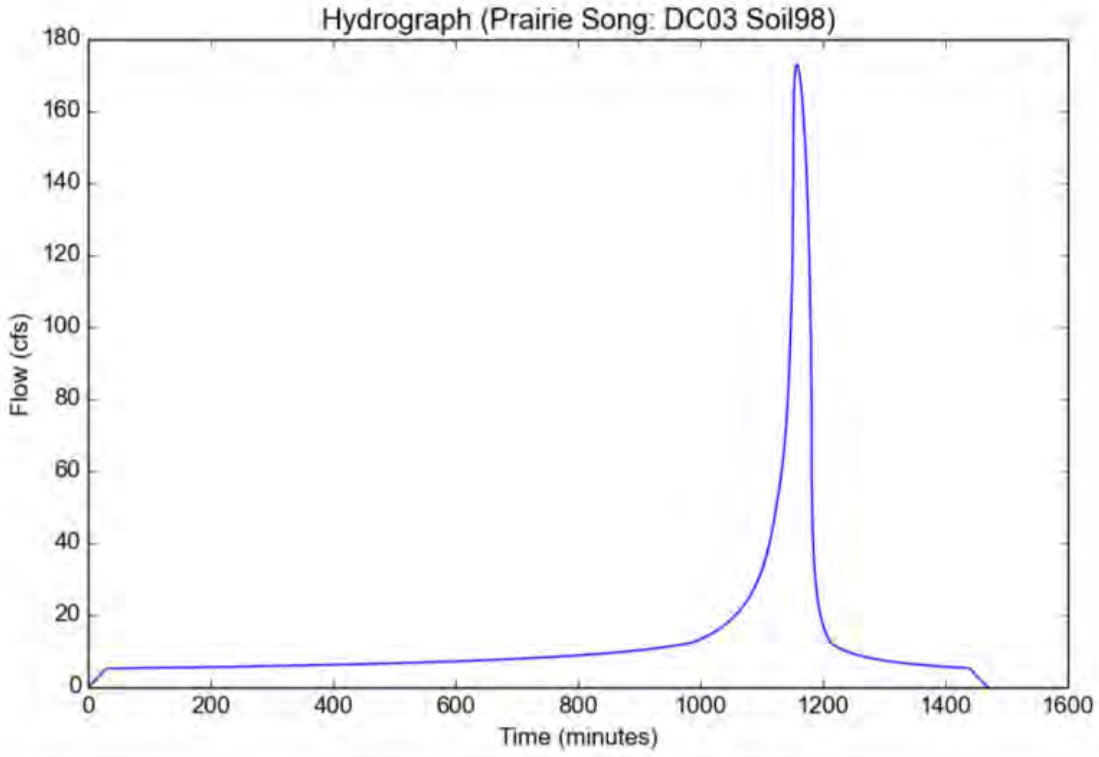
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC03 Soil98
Area (ac)	191.16
Flow Path Length (ft)	6540.0
Flow Path Slope (vft/hft)	0.131
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.2
Soil Type	98
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.7072
Developed Runoff Coefficient (Cd)	0.7457
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	173.0757
Burned Peak Flow Rate (cfs)	179.822
24-Hr Clear Runoff Volume (ac-ft)	26.5475
24-Hr Clear Runoff Volume (cu-ft)	1156409.7221



Peak Flow Hydrologic Analysis

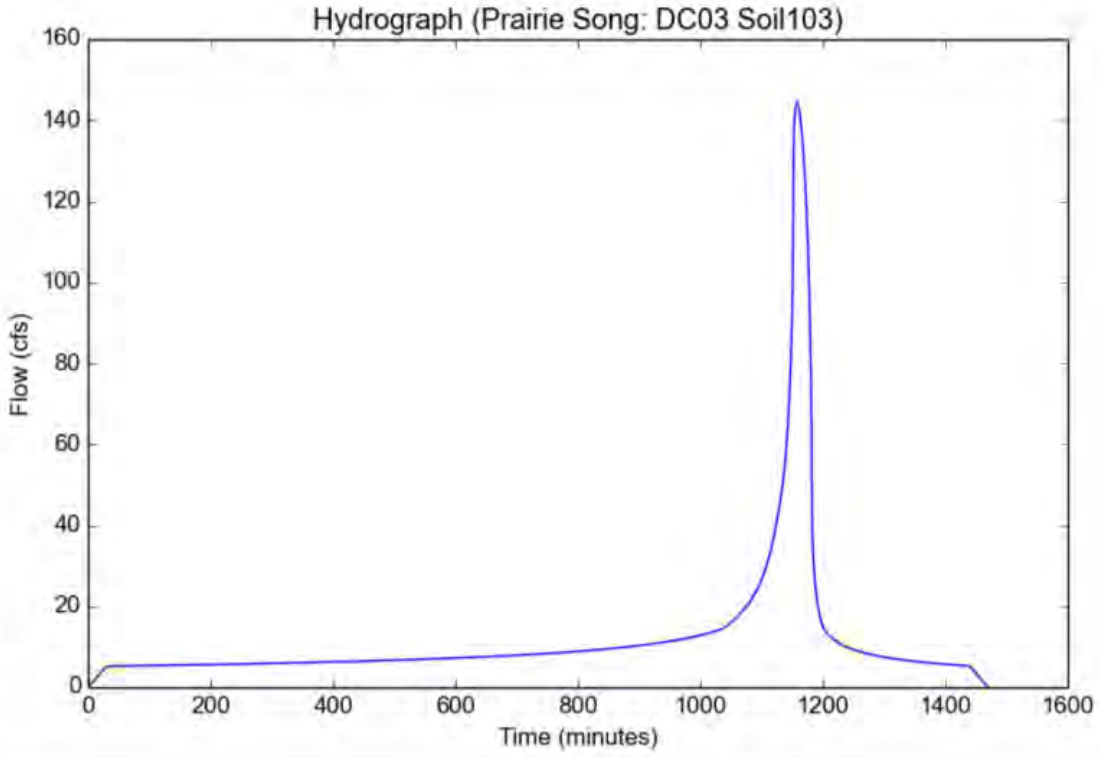
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC03 Soil103
Area (ac)	191.16
Flow Path Length (ft)	6540.0
Flow Path Slope (vft/hft)	0.131
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.2
Soil Type	103
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.5527
Developed Runoff Coefficient (Cd)	0.6222
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	144.3919
Burned Peak Flow Rate (cfs)	154.4176
24-Hr Clear Runoff Volume (ac-ft)	24.1325
24-Hr Clear Runoff Volume (cu-ft)	1051209.8312



Peak Flow Hydrologic Analysis

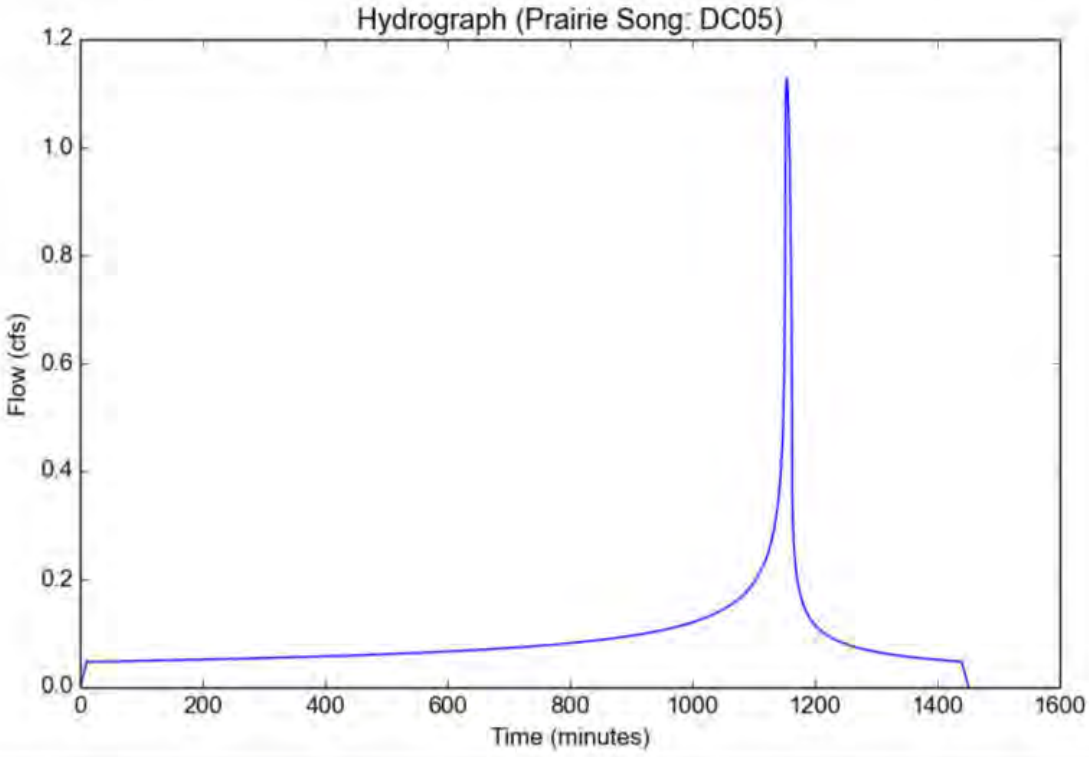
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC05
Area (ac)	1.12
Flow Path Length (ft)	660.0
Flow Path Slope (vft/hft)	0.044
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.38
Soil Type	15
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.9455
Undeveloped Runoff Coefficient (Cu)	0.2827
Developed Runoff Coefficient (Cd)	0.5173
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	1.1271
Burned Peak Flow Rate (cfs)	1.2585
24-Hr Clear Runoff Volume (ac-ft)	0.1798
24-Hr Clear Runoff Volume (cu-ft)	7831.3209



Peak Flow Hydrologic Analysis

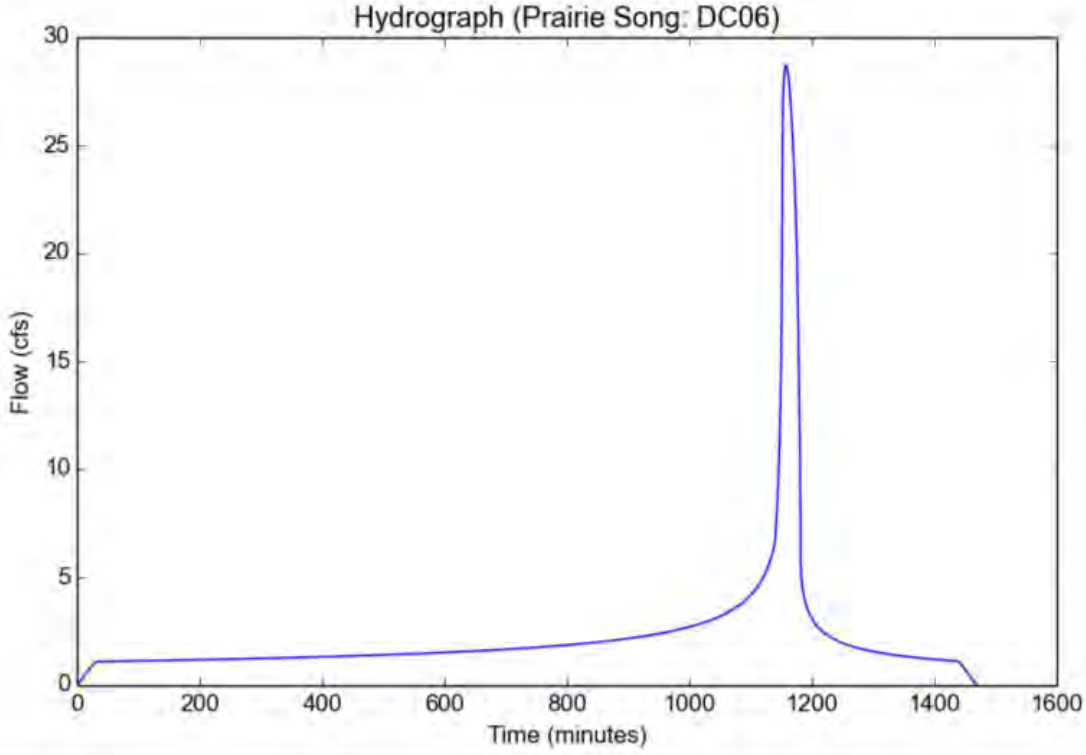
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC06
Area (ac)	63.66
Flow Path Length (ft)	4230.0
Flow Path Slope (vft/hft)	0.149
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.08
Soil Type	101
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.3252
Developed Runoff Coefficient (Cd)	0.3712
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	28.6892
Burned Peak Flow Rate (cfs)	34.2455
24-Hr Clear Runoff Volume (ac-ft)	4.6426
24-Hr Clear Runoff Volume (cu-ft)	202232.6033



Peak Flow Hydrologic Analysis

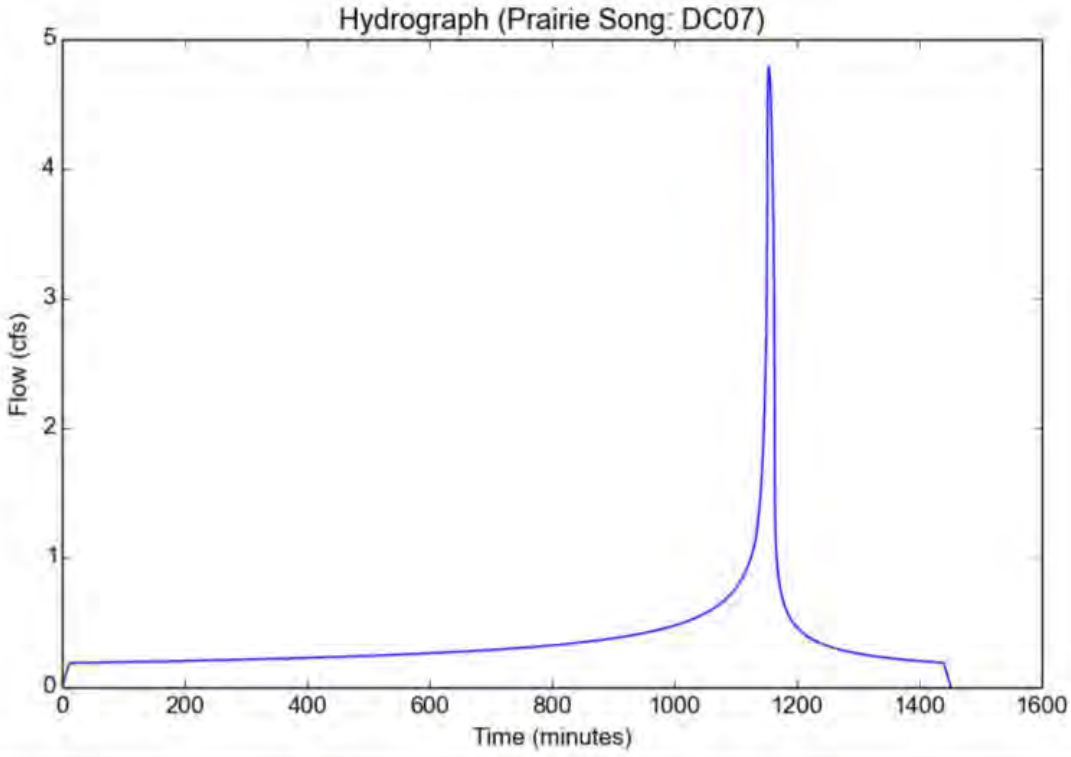
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC07
Area (ac)	4.04
Flow Path Length (ft)	1440.0
Flow Path Slope (vft/hft)	0.178
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.43
Soil Type	101
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.8676
Undeveloped Runoff Coefficient (Cu)	0.4345
Developed Runoff Coefficient (Cd)	0.6346
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	4.7884
Burned Peak Flow Rate (cfs)	5.1303
24-Hr Clear Runoff Volume (ac-ft)	0.7266
24-Hr Clear Runoff Volume (cu-ft)	31648.7375



Peak Flow Hydrologic Analysis

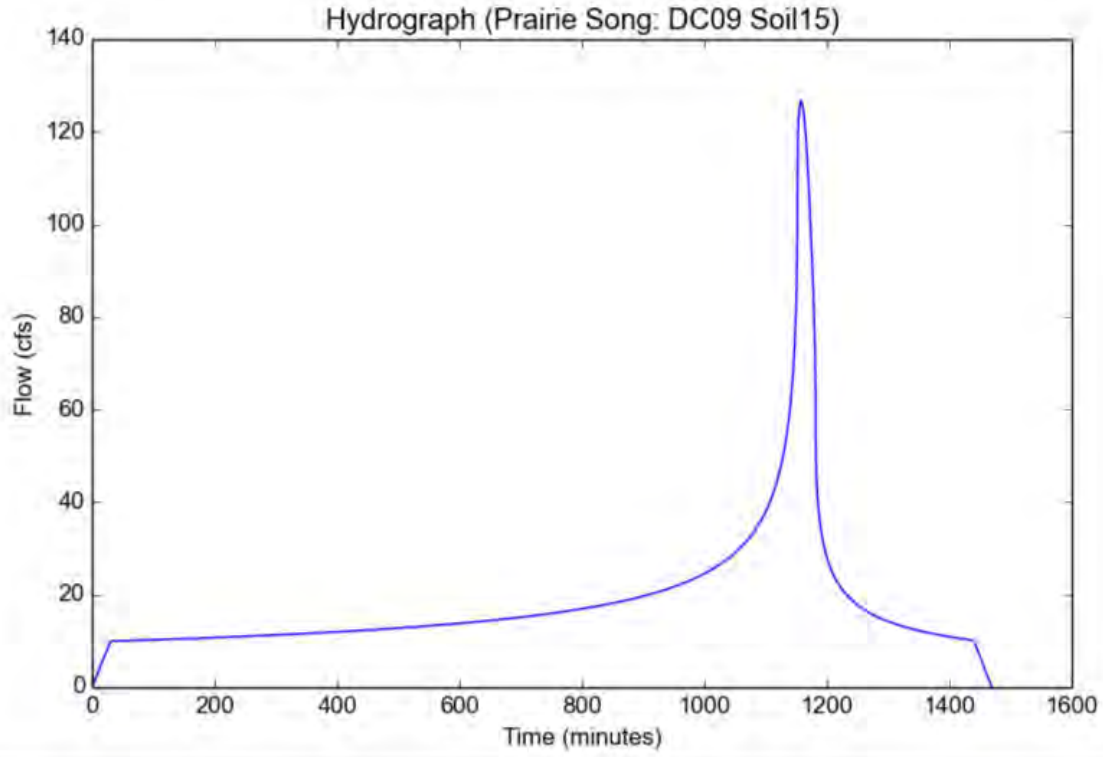
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC09 Soil15
Area (ac)	279.17
Flow Path Length (ft)	6940.0
Flow Path Slope (vft/hft)	0.099
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.3
Soil Type	15
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.1485
Developed Runoff Coefficient (Cd)	0.3739
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	126.7388
Burned Peak Flow Rate (cfs)	150.999
24-Hr Clear Runoff Volume (ac-ft)	37.302
24-Hr Clear Runoff Volume (cu-ft)	1624873.4563



Peak Flow Hydrologic Analysis

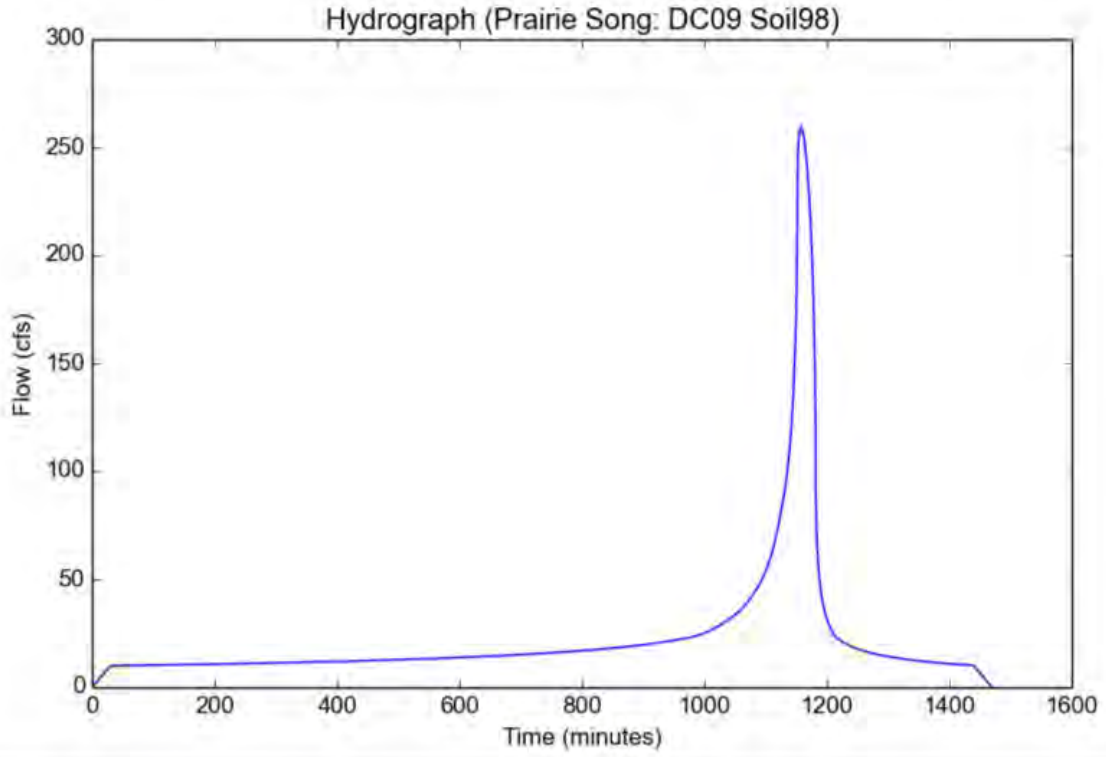
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC09 Soil98
Area (ac)	279.17
Flow Path Length (ft)	6940.0
Flow Path Slope (vft/hft)	0.099
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.3
Soil Type	98
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.7072
Developed Runoff Coefficient (Cd)	0.765
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	259.2949
Burned Peak Flow Rate (cfs)	268.4001
24-Hr Clear Runoff Volume (ac-ft)	46.1844
24-Hr Clear Runoff Volume (cu-ft)	2011794.6197



Peak Flow Hydrologic Analysis

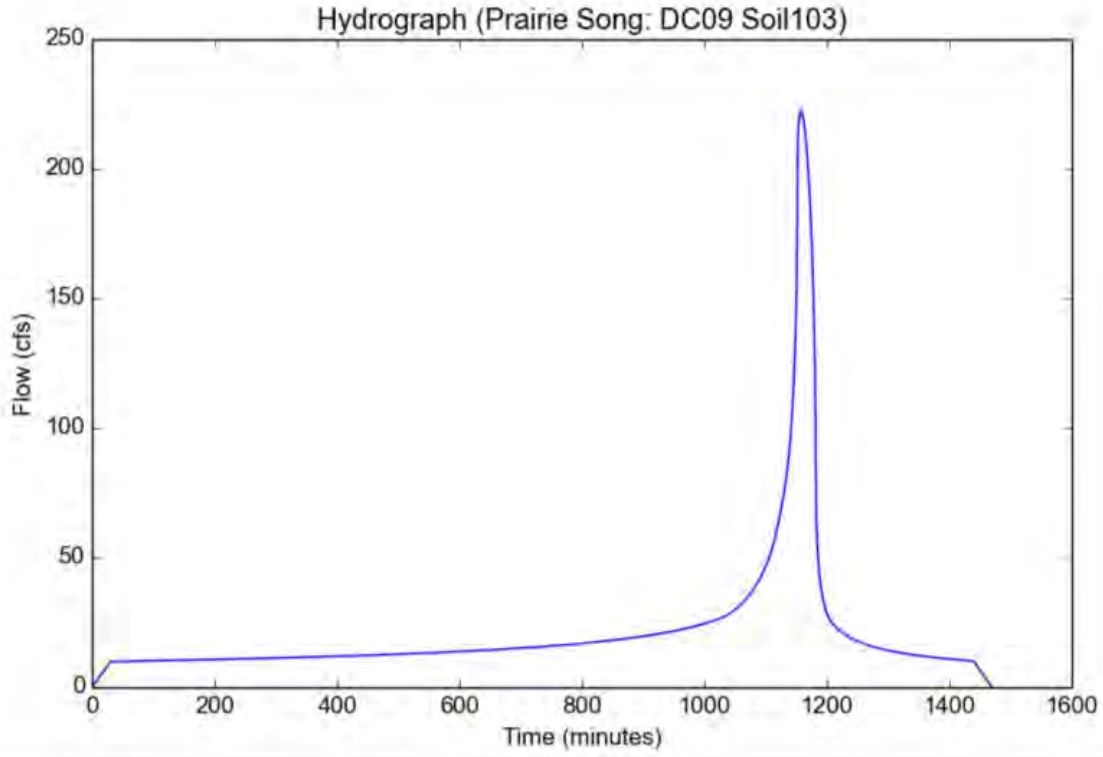
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC09 Soil103
Area (ac)	279.17
Flow Path Length (ft)	6940.0
Flow Path Slope (vft/hft)	0.099
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.3
Soil Type	103
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.5527
Developed Runoff Coefficient (Cd)	0.6569
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	222.6413
Burned Peak Flow Rate (cfs)	235.937
24-Hr Clear Runoff Volume (ac-ft)	43.0984
24-Hr Clear Runoff Volume (cu-ft)	1877364.9699



Peak Flow Hydrologic Analysis

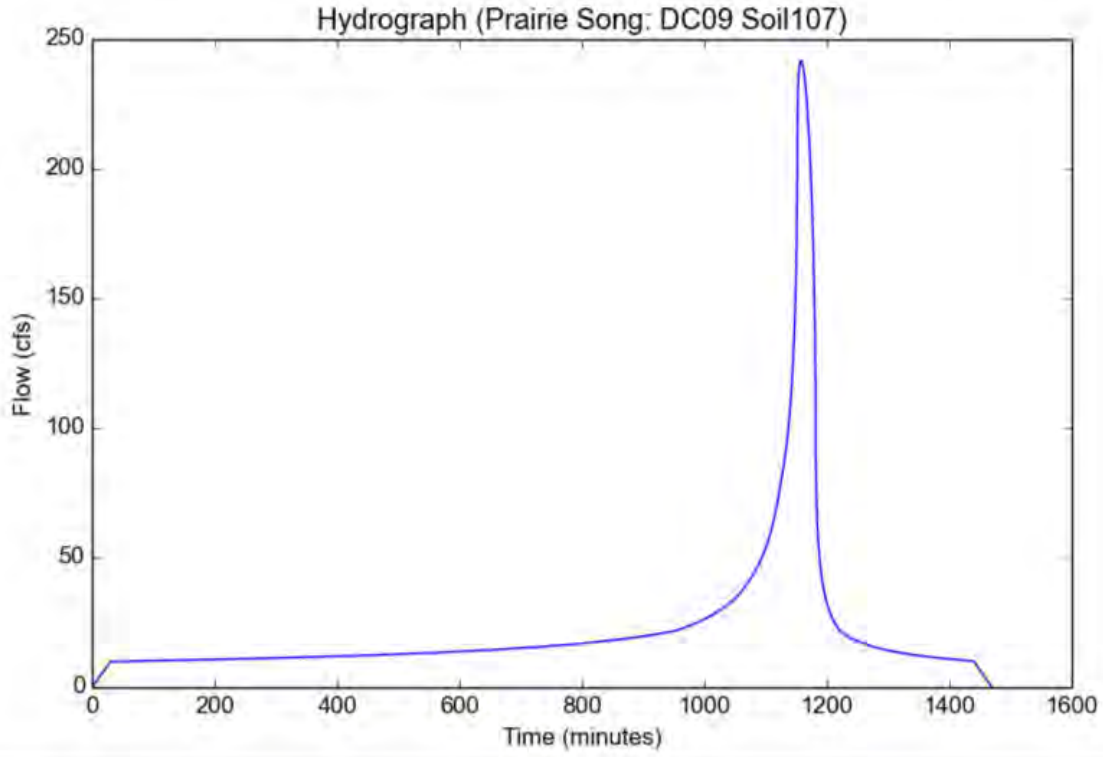
File location: N:/0036369.01/070_Water Resources/SWMP/Report/Sections/App F - Hydraulic Structure Sizing/2025-05-08 Prairie Song Crossing Report
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Prairie Song
Subarea ID	DC09 Soil107
Area (ac)	279.17
Flow Path Length (ft)	6940.0
Flow Path Slope (vft/hft)	0.099
50-yr Rainfall Depth (in)	4.21
Percent Impervious	0.3
Soil Type	107
Design Storm Frequency	100-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	4.7236
Peak Intensity (in/hr)	1.2141
Undeveloped Runoff Coefficient (Cu)	0.6336
Developed Runoff Coefficient (Cd)	0.7135
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	241.8456
Burned Peak Flow Rate (cfs)	252.9458
24-Hr Clear Runoff Volume (ac-ft)	45.4691
24-Hr Clear Runoff Volume (cu-ft)	1980632.9936



Culvert Design Report
DC03

Peak Discharge Method: User-Specified			
Design Discharge	150.42 cfs	Check Discharge	0.00 cfs

Grades Model: Inverts			
Invert Upstream	3,026.00 ft	Invert Downstream	3,001.00 ft
Length	1,390.00 ft	Slope	0.017986 ft/ft
Drop	25.00 ft		

Headwater Model: Unspecified

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

Name	Description	Discharge	HW Elev.	Velocity
x Trial-1	1-60 inch Circular	150.42 cfs	3,031.94 ft	17.12 ft/s

Culvert Design Report
DC03

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	3,031.94 ft	Discharge	150.42 cfs
Headwater Depth/Height	1.19	Tailwater Elevation	N/A ft
Inlet Control HW Elev.	3,031.66 ft	Control Type	Entrance Control
Outlet Control HW Elev.	3,031.94 ft		

Grades			
Upstream Invert	3,026.00 ft	Downstream Invert	3,001.00 ft
Length	1,390.00 ft	Constructed Slope	0.017986 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	2.29 ft
Slope Type	Steep	Normal Depth	2.29 ft
Flow Regime	Supercritical	Critical Depth	3.52 ft
Velocity Downstream	17.12 ft/s	Critical Slope	0.004702 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	5.00 ft
Section Size	60 inch	Rise	5.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	3,031.94 ft	Upstream Velocity Head	1.62 ft
Ke	0.50	Entrance Loss	0.81 ft

Inlet Control Properties			
Inlet Control HW Elev.	3,031.66 ft	Flow Control	N/A
Inlet Type	Square edge w/headwall	Area Full	19.6 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Design Report
DC05

Peak Discharge Method: User-Specified			
Design Discharge	1.13 cfs	Check Discharge	0.00 cfs

Grades Model: Inverts			
Invert Upstream	3,008.60 ft	Invert Downstream	3,007.60 ft
Length	22.00 ft	Slope	0.045455 ft/ft
Drop	1.00 ft		

Headwater Model: Unspecified

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

	Name	Description	Discharge	HW Elev.	Velocity
x	Trial-1	1-12 inch Circular	1.13 cfs	3,009.37 ft	4.47 ft/s

Culvert Design Report
DC05

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	3,009.37 ft	Discharge	1.13 cfs
Headwater Depth/Height	0.77	Tailwater Elevation	N/A ft
Inlet Control HW Elev.	3,009.25 ft	Control Type	Entrance Control
Outlet Control HW Elev.	3,009.37 ft		

Grades			
Upstream Invert	3,008.60 ft	Downstream Invert	3,007.60 ft
Length	22.00 ft	Constructed Slope	0.045455 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	0.36 ft
Slope Type	Steep	Normal Depth	0.36 ft
Flow Regime	Supercritical	Critical Depth	0.45 ft
Velocity Downstream	4.47 ft/s	Critical Slope	0.020110 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	1.00 ft
Section Size	12 inch	Rise	1.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	3,009.37 ft	Upstream Velocity Head	0.17 ft
Ke	0.90	Entrance Loss	0.15 ft

Inlet Control Properties			
Inlet Control HW Elev.	3,009.25 ft	Flow Control	N/A
Inlet Type	Projecting	Area Full	0.8 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

Culvert Design Report
DC06

Peak Discharge Method: User-Specified			
Design Discharge	28.69 cfs	Check Discharge	0.00 cfs

Grades Model: Inverts			
Invert Upstream	3,025.90 ft	Invert Downstream	3,025.20 ft
Length	20.00 ft	Slope	0.035000 ft/ft
Drop	0.70 ft		

Headwater Model: Unspecified

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

Name	Description	Discharge	HW Elev.	Velocity
x Trial-1	2-24 inch Circular	28.69 cfs	3,028.43 ft	7.64 ft/s

Culvert Design Report
DC06

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	3,028.43 ft	Discharge	28.69 cfs
Headwater Depth/Height	1.26	Tailwater Elevation	N/A ft
Inlet Control HW Elev.	3,028.24 ft	Control Type	Entrance Control
Outlet Control HW Elev.	3,028.43 ft		

Grades			
Upstream Invert	3,025.90 ft	Downstream Invert	3,025.20 ft
Length	20.00 ft	Constructed Slope	0.035000 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	1.15 ft
Slope Type	Steep	Normal Depth	1.15 ft
Flow Regime	Supercritical	Critical Depth	1.36 ft
Velocity Downstream	7.64 ft/s	Critical Slope	0.020931 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev.	3,028.43 ft	Upstream Velocity Head	0.61 ft
Ke	0.90	Entrance Loss	0.55 ft

Inlet Control Properties			
Inlet Control HW Elev.	3,028.24 ft	Flow Control	N/A
Inlet Type	Projecting	Area Full	6.3 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

Culvert Design Report
DC07

Peak Discharge Method: User-Specified			
Design Discharge	4.79 cfs	Check Discharge	0.00 cfs

Grades Model: Inverts			
Invert Upstream	3,070.00 ft	Invert Downstream	3,068.75 ft
Length	30.00 ft	Slope	0.041667 ft/ft
Drop	1.25 ft		

Headwater Model: Unspecified

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

	Name	Description	Discharge	HW Elev.	Velocity
x	Trial-1	1-18 inch Circular	4.79 cfs	3,071.49 ft	6.26 ft/s

Culvert Design Report
DC07

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	3,071.49 ft	Discharge	4.79 cfs
Headwater Depth/Height	0.99	Tailwater Elevation	N/A ft
Inlet Control HW Elev.	3,071.32 ft	Control Type	Entrance Control
Outlet Control HW Elev.	3,071.49 ft		

Grades			
Upstream Invert	3,070.00 ft	Downstream Invert	3,068.75 ft
Length	30.00 ft	Constructed Slope	0.041667 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	0.67 ft
Slope Type	Steep	Normal Depth	0.67 ft
Flow Regime	Supercritical	Critical Depth	0.84 ft
Velocity Downstream	6.26 ft/s	Critical Slope	0.019407 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.024
Section Material	CMP	Span	1.50 ft
Section Size	18 inch	Rise	1.50 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	3,071.49 ft	Upstream Velocity Head	0.34 ft
Ke	0.90	Entrance Loss	0.31 ft

Inlet Control Properties			
Inlet Control HW Elev.	3,071.32 ft	Flow Control	N/A
Inlet Type	Projecting	Area Full	1.8 ft²
K	0.03400	HDS 5 Chart	2
M	1.50000	HDS 5 Scale	3
C	0.05530	Equation Form	1
Y	0.54000		

Culvert Design Report
DC09

Peak Discharge Method: User-Specified			
Design Discharge	240.25 cfs	Check Discharge	0.00 cfs

Grades Model: Inverts			
Invert Upstream	3,083.00 ft	Invert Downstream	3,051.00 ft
Length	550.00 ft	Slope	0.058182 ft/ft
Drop	32.00 ft		

Headwater Model: Unspecified

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

	Name	Description	Discharge	HW Elev.	Velocity
x	Trial-1	1-72 inch Circular	240.25 cfs	3,089.60 ft	29.52 ft/s

Culvert Design Report
DC09

Design:Trial-1

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	N/A ft	Storm Event	Design
Computed Headwater Elevation	3,089.60 ft	Discharge	240.25 cfs
Headwater Depth/Height	1.10	Tailwater Elevation	N/A ft
Inlet Control HW Elev.	3,089.36 ft	Control Type	Entrance Control
Outlet Control HW Elev.	3,089.60 ft		

Grades			
Upstream Invert	3,083.00 ft	Downstream Invert	3,051.00 ft
Length	550.00 ft	Constructed Slope	0.058182 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	1.98 ft
Slope Type	Steep	Normal Depth	1.98 ft
Flow Regime	Supercritical	Critical Depth	4.25 ft
Velocity Downstream	29.52 ft/s	Critical Slope	0.004463 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	6.00 ft
Section Size	72 inch	Rise	6.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	3,089.60 ft	Upstream Velocity Head	1.96 ft
Ke	0.20	Entrance Loss	0.39 ft

Inlet Control Properties			
Inlet Control HW Elev.	3,089.36 ft	Flow Control	N/A
Inlet Type	Groove end projecting	Area Full	28.3 ft²
K	0.00450	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	3
C	0.03170	Equation Form	1
Y	0.69000		

Crossing ID	Soil Type	Drainage Area (ac)	Flow Rate (cfs)	Area By Soil Type (ac)	Soil Type Ratio	Flow Rate (cfs)	100-Yr Hydraulic Structure
DC01							1-12"*
DC02							1-12"*
DC03	15	191.16	69.34	13	0.07	150.42	1-60"
	98	191.16	173.08	75	0.39		
	103	191.16	144.39	103	0.54		
DC04							1-12"*
DC05	15	1.12	1.13	1.12	1	1.13	1-12"
DC06	101	63.66	28.69	63.66	1	28.69	2-24"
DC07	101	4.04	4.79	4.04	1	4.79	1-18"
DC09	15	279.17	126.74	9	0.03	240.25	1-72"
	98	279.17	259.29	123	0.44		
	103	279.17	222.64	80	0.29		
	107	279.17	241.85	67	0.24		

* minimal drainage to culverts