TORY R. WALKER ENGINEERING
RELIABLE SOLUTIONS IN WATER RESOURCES

MEMORANDUM

DATE: December 20, 2019

TO: Riverside County Flood Control and Water Conservation District
1995 Market Street
Riverside, CA 92501

FROM: Tory R. Walker Engineering, Inc.
Tory R. Walker, PE, CFM, LEED GA, QISP
122 Civic Center Drive, Suite 206
Vista, CA 92084

SUBJECT: Placentia Logistics Center – Preliminary Drainage Analysis

Tory R. Walker Engineering (TRWE) analyzed the existing and proposed condition 2-year, 5-year, and 10-year hydrographs and the 100-year Rational Method peak flow for the proposed Placentia Logistics Center project. This memorandum summarizes our analysis.

The Placentia Logistics Center project is a proposed 11-acre industrial tilt up warehouse building in the County of Riverside. The site is bound by APNs 317-240-044 through 045 to the north, Harvill Avenue to the east, Placentia Avenue to the south, and APN 317-240-001 to the west. The existing undeveloped site features four rural residential properties on the western half and vacant land on the eastern half, indirectly discharging to the Perris Valley Master Plan of Drainage (MPD) Lateral H-11 via overland and gutter flow. Existing land cover consists of rooftop, residential driveways, miscellaneous paved area, and compacted pervious cover with scarce vegetation. The existing site does not appear to receive offsite run-on. The proposed development will feature a warehouse building, paved parking, self-treating LID landscaped areas along the southern and southeastern boundaries, and one lined bioretention basin for volumetric pollutant control. The site will discharge directly to MPD Lateral H-11 in the proposed condition. Therefore, we analyzed the following:

1. The existing and proposed condition 2-year, 5-year, and 10-year storm frequency hydrographs for the 1-hour, 3-hour, 6-hour, and 24-hour durations to determine if pre-development peak flow rates are maintained
2. The proposed condition 100-year Rational Method peak flow and hydraulic grade line (HGL) to determine if the proposed lateral provides sufficient conveyance capacity.

Analyses omitted from this memorandum that will accompany the drainage report for the project engineering phase include the following:

1. Perris MPD Lateral H-10 HGL profile
2. Drainage for the proposed street improvement(s)

3. Onsite inlet and pipe sizing

ONSITE HYDROGRAPH ATTENUATION

The existing condition is characterized by a single drainage area, whereas the proposed condition is characterized by one main drainage area, DMA D/1, and two self-treating landscaped LID areas, A/1 and A/2, respectively. Existing and proposed condition hydrology maps are provided in Appendix 1. The existing and proposed drainage area summaries are presented in Table 1:

Table 1: Drainage Area Summaries

Condition	ID	A (ac)	% Imp	Runoff Index
Existing	DMA EX	11.81	4%	78
Proposed	DMA D/1	10.95	89%	52
	DMA A/1	0.15	0%	75
	DMA A/2	0.32	0%	75

The Riverside County Hydrology Manual (RCHM) was referenced to construct the unattenuated existing and proposed condition Short Cut Method hydrographs. Antecedent Moisture Condition (AMC) I was selected for the 2-year and 5-year storms and AMC II was selected for the 10-year storm. The National Resources Conservation Service (NRCS) Web Soil Survey was used to establish the site-wide Hydrologic Soil Groups as Types A, C, and D. The National Oceanic and Atmospheric Administration (NOAA) Atlas 14 was used to determine point precipitation depths at the project site for the 1-hour, 3-hour, 6-hour, and 24-hour durations. Soil Type and Atlas 14 information is provided in Appendix 2. The point precipitation depths are summarized in Table 2:

Table 2: Point Precipitation Depths

Storm Duration	2-Year Depth (in)	5-Year Depth (in)	10-Year Depth (in)
1-hour	0.46	0.64	0.79
3-hour	0.80	1.06	1.27
6-hour	1.12	1.46	1.75
24-hour	2.00	2.66	3.20

The Environmental Protection Agency's Storm Water Management Model (EPA SWMM) was used to route the post-developed DMA D/1 hydrograph through the proposed lined bioretention basin due to the software's unique ability to account for the complexities of low impact development (LID) amended soil layer and basin underdrain flow constriction. The attenuated DMA D/1 SWMM hydrograph was summed with the DMAs A/1 and A/2 hydrographs for each respective time step to determine the confluence peak flow at the site discharge point.

The bioretention basin is proposed to provide 13,203 square feet of treatment area at a finished grade elevation of 1507.60 feet. The media layers will include a 24-inche engineered soil media layer underlain by a 12-inch gravel layer. A flat, perforated 6-inch diameter PVC underdrain will be aligned along the bottom of the 12-inch gravel layer, and will tie into a proposed 3-foot diameter riser standpipe. A 3.25-inch diameter orifice plate will be placed over the underdrain at the underdrain and riser interface at the riser invert for low flow control. At six inches above the basin finished grade elevation, a 3.75-inch diameter orifice will be provided to bypass flows in excess of the maximum allowable basin surface ponding per WQMP standards. The riser rim elevation will be 20 inches above the invert of the 3.75-inch diameter orifice for conveyance of high flows. The riser structure will directly tie into MPD Lateral H-11 via an 18-inch diameter RCP. The basin storage and discharge curves are provided in Appendix 3.

Complete hydrograph and detention routing data are provided in Appendices 4 and 5. The hydrograph routing analyses are summarized in the tables below:

Table 3: 2-Year Peak Flow Summary

Storm Event	2-Year Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
2-yr, 24-hour	0.65	1.70	0.54	-0.11
2-yr, 6-hour	2.95	6.41	0.83	-2.12
2-yr, 3-hour	4.06	7.30	0.72	-3.34
2-yr, 1-hour	13.64	16.52	0.52	-13.12

Table 4: 5-Year Peak Flow Summary

Storm Event	5-Year Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
5-yr, 24-hour	0.86	2.69	0.84	-0.02
5-yr, 6-hour	5.46	8.62	0.95	-4.51
5-yr, 3-hour	7.13	10.24	0.86	-6.27
5-yr, 1-hour	21.12	23.76	0.71	-20.41

Table 4: 10-Year Peak Flow Summary

Storm Event	Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
10-yr, 24-hour	2.31	3.93	1.79	-0.52
10-yr, 6-hour	9.55	11.20	2.53	-7.02
10-yr, 3-hour	11.55	13.14	0.95	-10.60
10-yr, 1-hour	29.48	30.47	0.81	-28.67

RATIONAL METHOD HYDROLOGY AND LATERAL H-11 TIE-IN

The site proposes to tie directly into the existing Perris Valley MPD Lateral H-11 via an 18-inch diameter storm drain at approximately Station 20+00 per RCID Drawing #966-0. It is expected that the 100-year storm will be attenuated due to the presence of the bioretention basin; however, the lateral has been conservatively sized assuming an unattenuated 100-year Rational Method peak flow from the project site. The completely pervious basin areas and DMAs A/1 and A/2 were neglected in the Rational Method analysis.

The Rational Method criteria set forth in the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Hydrology Manual was used to determine the unattenuated 100-year peak flow. Advanced Engineering Software (AES) was used for computing hydrologic calculations and integrates the RCFC&WCD methodology and standards.

Rational Method calculations are provided in Appendix 6. The 100-year peak flow calculations are summarized in Table 4:

Table 4: 100-Year Peak Flow Summary

Drainage Area ID	Area (ac)	Node ID	t_c (min)	100-Year Peak Flow (cfs)
DMA D/1	10.4	108.0	11.58	28.17

The 100-year HGL was computed using XPWSPG software to determine if the proposed lateral provides sufficient capacity and if adequate freeboard is provided for the proposed structure. The downstream water surface elevation was taken as the HGL shown at Station 20+00 per RCID Drawing #966-0. The XPWSPG data and RCID Drawing #966-0 are provided in Appendix 7. The HGL analysis is summarized in Table 5:

Table 5: 100-Year HGL Summary

Pipe Diameter (in)	Pipe Slope (%)	100-Year Peak Flow (cfs)	Velocity (fps)	Upstream WS Elevation (ft)	Lowest FF Elevation (ft)	Freeboard (ft)
18	9.6	28.17	17.88	1506.09	1519.40	13.31

CONCLUSIONS

Our preliminary analysis demonstrates that the Placentia Logistics Center project will:

1. Provide attenuation for the 2-year, 5-year, and 10-year storm frequencies for the 1-hour, 3-hour, 6-hour, and 24-hour durations
2. Safely convey the 100-year peak flow to Perris Valley MPD Line H-11

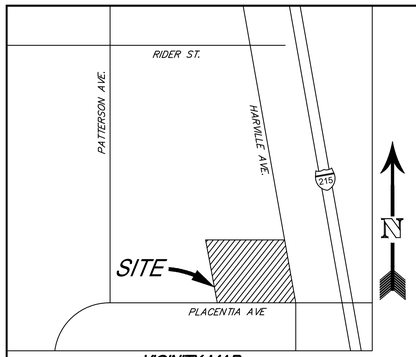
APPENDICES

1. Hydrology Exhibits
2. Hydrologic Parameters
3. Basin Storage and Discharge Curves
4. Short Cut Method Hydrographs
5. SWMM Input and Output
6. AES Rational Method Output
7. Lateral H-11 Tie-In

Appendix 1

Hydrology Exhibits

EXISTING CONDITION HYDROLOGY MAP
SHORT CUT HYDROGRAPH METHOD
PLACENTIA LOGISTICS CENTER

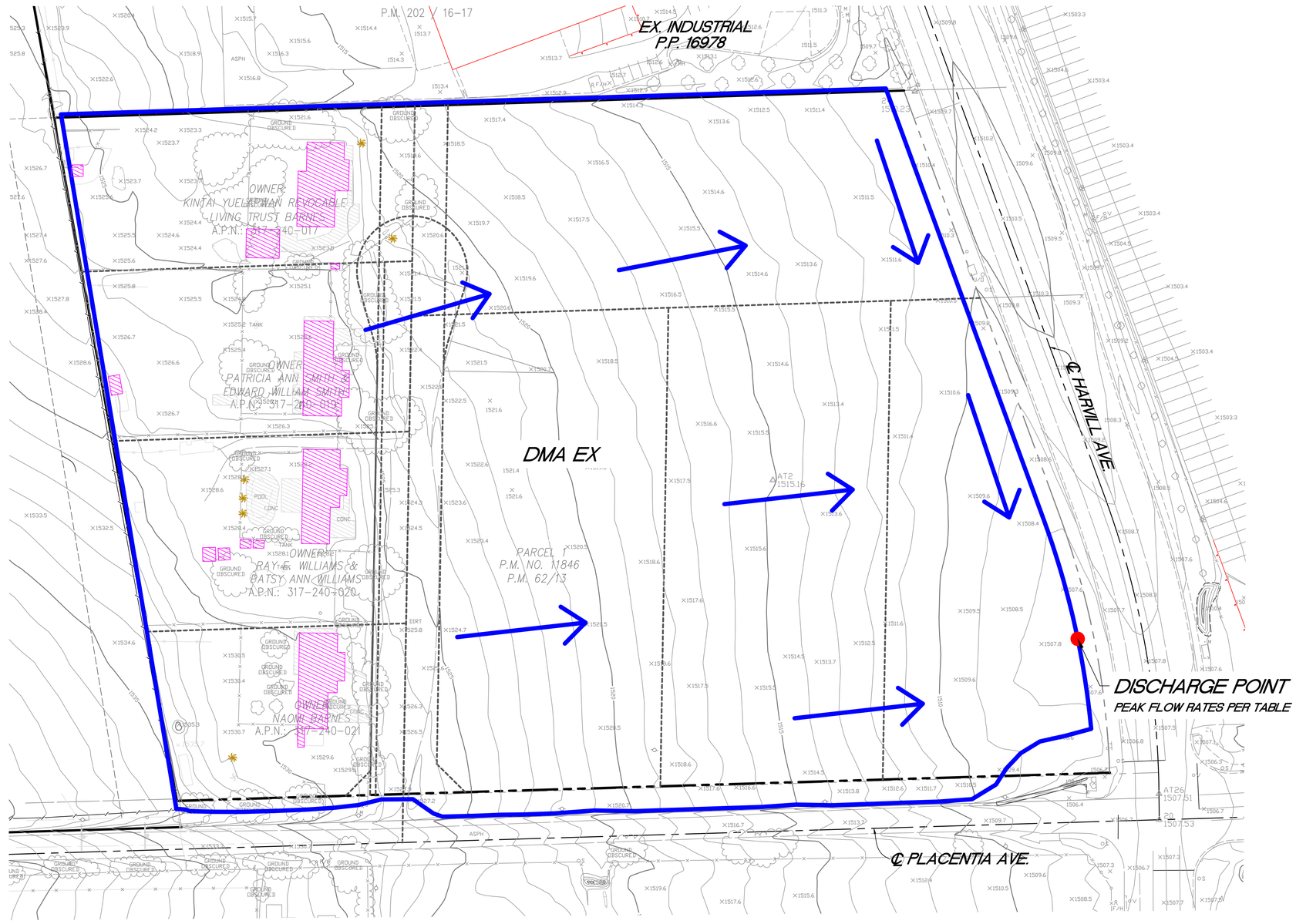


VICINITY MAP
NOT TO SCALE

LEGEND

- DRAINAGE AREA
- 1280 — EXISTING CONTOUR LINE
- OFFSITE CONCRETE/ASPHALT AREA
- OFFSITE ROOFS/IMPERVIOUS AREA

Storm Frequency	Peak Flow (cfs)			
	1-Hour Duration	3-Hour Duration	6-Hour Duration	24-Hour Duration
2-Year	13.64	4.06	2.95	0.65
5-Year	21.12	7.13	5.46	0.86
10-Year	29.48	11.55	9.55	2.31



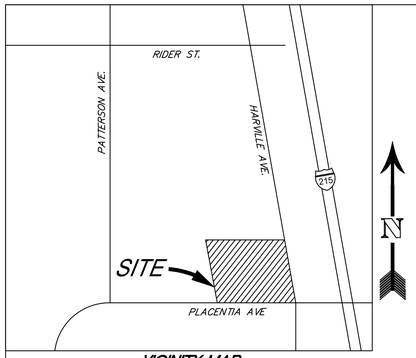
N

0 50 100 200 300 400

SCALE: 1"=50'

COUNTY OF RIVERSIDE	
EXISTING CONDITION HYDROLOGY MAP SHORT CUT HYDROGRAPH METHOD PLACENTIA LOGISTICS CENTER	1 OF 3 SHEETS

POST-DEVELOPED HYDROLOGY EXHIBIT
SHORT CUT HYDROGRAPH METHOD
PLACENTIA LOGISTICS CENTER



VICINITY MAP
NOT TO SCALE

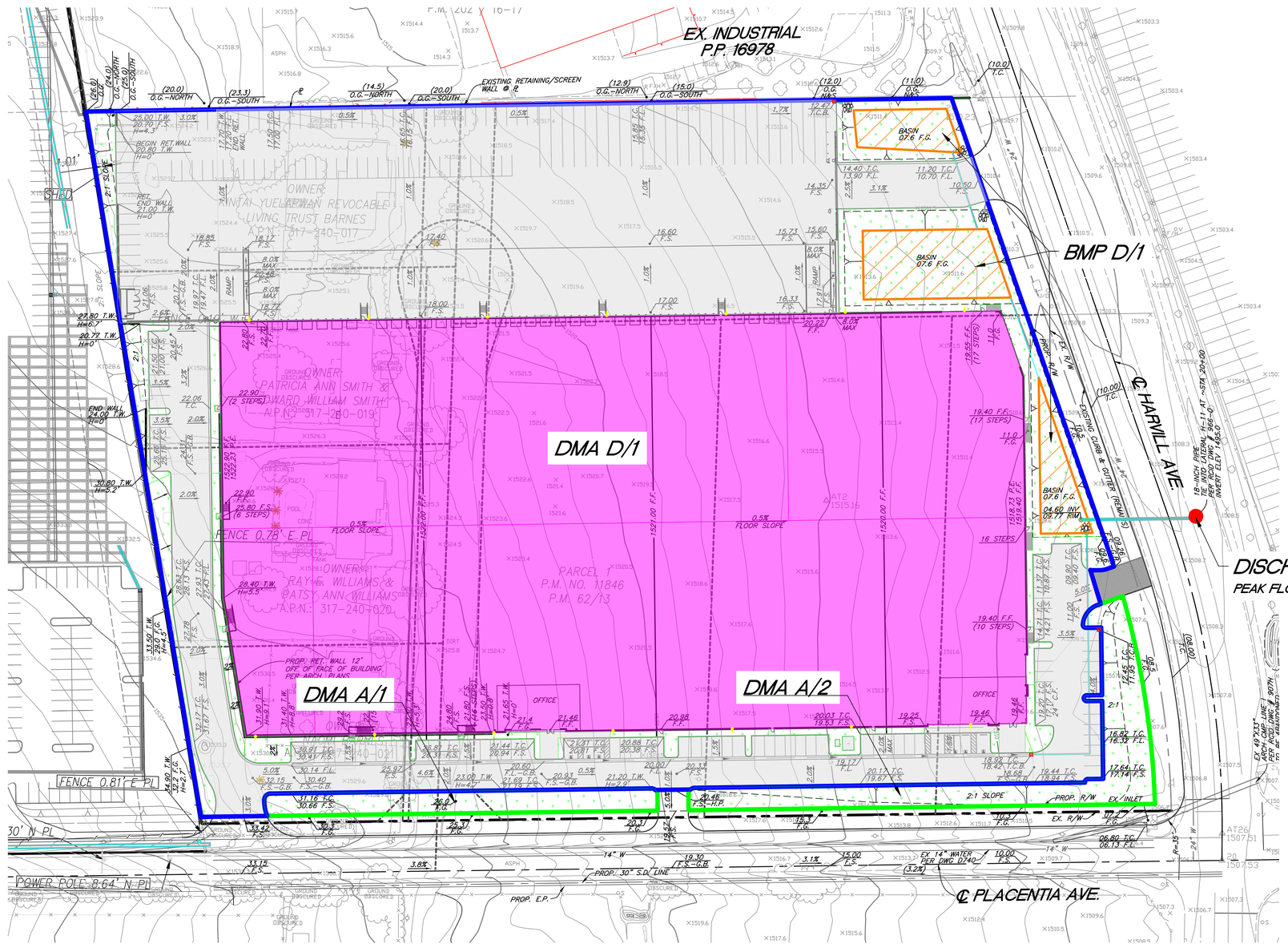
LEGEND

- DRAINAGE MANAGEMENT AREA (DMA)
- BMP FOOTPRINT
- PROPOSED STORM DRAIN
- CURB AND GUTTER
- RIBBON DRAIN
- 1280 EXISTING CONTOUR LINE
- SLOPE
- STORM DRAIN CATCH BASIN
- ROOF DOWNSPOUT
- DISCHARGE POINT (POINT OF COMPLIANCE, POC)
- LANDSCAPE/PERVIOUS AREA
- CONCRETE/IMPERVIOUS AREA
- ROOFS/IMPERVIOUS AREA

Storm Frequency	Undetained Peak Flow (cfs)			
	1-Hour Duration	3-Hour Duration	6-Hour Duration	24-Hour Duration
2-Year	16.52	7.30	6.41	1.70
5-Year	23.76	10.24	8.62	2.69
10-Year	30.47	13.14	11.20	3.93

Storm Frequency	Detained Peak Flow (cfs)			
	1-Hour Duration	3-Hour Duration	6-Hour Duration	24-Hour Duration
2-Year	0.52	0.72	0.83	0.54
5-Year	0.71	0.86	0.95	0.84
10-Year	0.81	0.95	2.53	1.79

Storm Frequency	Pre-to-Post Difference (cfs)			
	1-Hour Duration	3-Hour Duration	6-Hour Duration	24-Hour Duration
2-Year	-13.12	-3.34	-2.12	-0.11
5-Year	-20.41	-6.27	-4.51	-0.02
10-Year	-28.67	-10.60	-7.02	-0.52

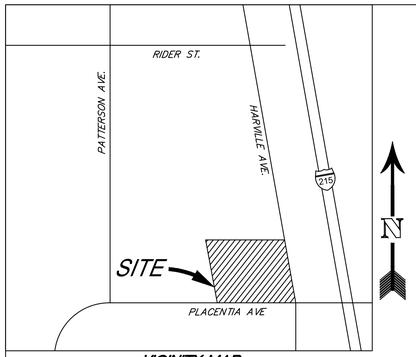


COUNTY OF RIVERSIDE

POST-DEVELOPED HYDROLOGY EXHIBIT
SHOT CUT HYDROGRAPH METHOD
PLACENTIA LOGISTICS CENTER

2 OF 3 SHEETS

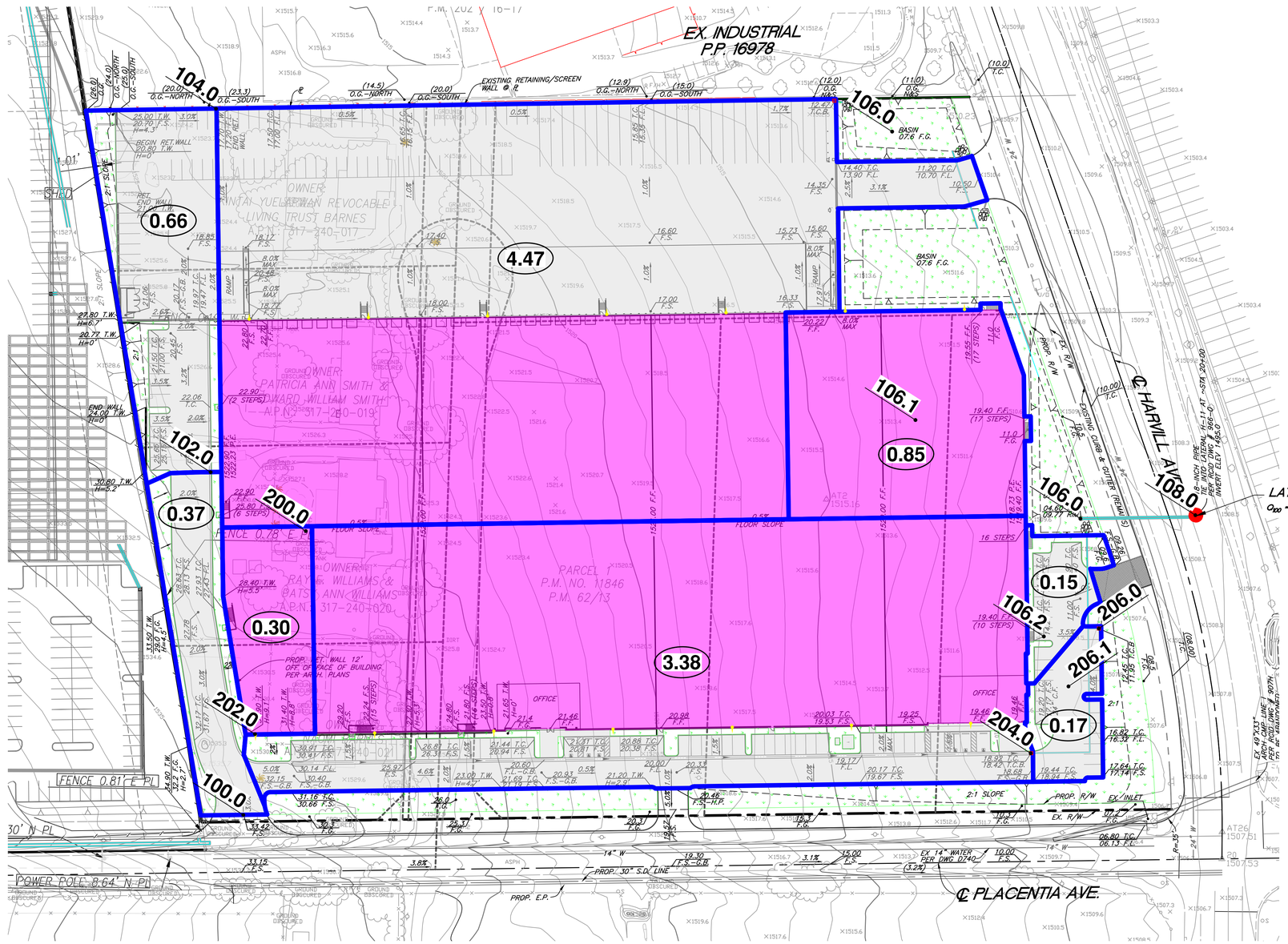
POST-DEVELPED HYDROLOGY EXHIBIT
RATIONAL METHOD
PLACENTIA LOGISTICS CENTER

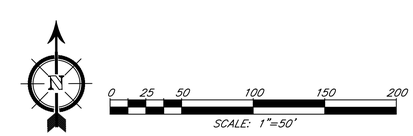


VICINITY MAP
NOT TO SCALE

LEGEND

- DRAINAGE MANAGEMENT AREA (DMA)
- BMP FOOTPRINT
- PROPOSED STORM DRAIN
- CURB AND GUTTER
- RIBBON DRAIN
- 1280 EXISTING CONTOUR LINE
- SLOPE
- STORM DRAIN CATCH BASIN
- ROOF DOWNSPOUT
- DISCHARGE POINT (POINT OF COMPLIANCE, POC)
- LANDSCAPE/PERVIOUS AREA
- CONCRETE/IMPERVIOUS AREA
- ROOFS/IMPERVIOUS AREA
- 147.0 NODE
- (0.36) AREA (AC)





COUNTY OF RIVERSIDE	
POST-DEVELOPED HYDROLOGY EXHIBIT RATIONAL METHOD PLACENTIA LOGISTICS CENTER	3 OF 3 SHEETS

Appendix 2

Hydrologic Parameters

NOAA Atlas 14, Volume 6, Version 2
Location name: Perris, California, USA*
Latitude: 33.824°, Longitude: -117.2476°
Elevation: 1519.21 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	**0.087** (0.073-0.105)	**0.122** (0.102-0.148)	**0.170** (0.142-0.207)	**0.212** (0.175-0.259)	**0.272** (0.217-0.345)	**0.321** (0.250-0.416)	**0.373** (0.284-0.496)	**0.430** (0.318-0.589)	**0.513** (0.363-0.733)	**0.581** (0.396-0.861)
10-min	**0.125** (0.105-0.151)	**0.175** (0.146-0.212)	**0.244** (0.203-0.296)	**0.304** (0.251-0.372)	**0.390** (0.311-0.494)	**0.460** (0.359-0.596)	**0.535** (0.407-0.711)	**0.617** (0.455-0.844)	**0.735** (0.520-1.05)	**0.833** (0.568-1.23)
15-min	**0.151** (0.127-0.183)	**0.212** (0.177-0.256)	**0.295** (0.246-0.358)	**0.367** (0.303-0.450)	**0.471** (0.376-0.597)	**0.556** (0.434-0.721)	**0.647** (0.492-0.860)	**0.746** (0.551-1.02)	**0.889** (0.629-1.27)	**1.01** (0.687-1.49)
30-min	**0.242** (0.202-0.292)	**0.339** (0.283-0.410)	**0.473** (0.394-0.573)	**0.588** (0.485-0.719)	**0.754** (0.601-0.955)	**0.890** (0.694-1.15)	**1.03** (0.787-1.38)	**1.19** (0.881-1.63)	**1.42** (1.00-2.03)	**1.61** (1.10-2.39)
60-min	**0.325** (0.272-0.393)	**0.455** (0.380-0.550)	**0.635** (0.529-0.770)	**0.789** (0.652-0.966)	**1.01** (0.807-1.28)	**1.20** (0.932-1.55)	**1.39** (1.06-1.85)	**1.60** (1.18-2.19)	**1.91** (1.35-2.73)	**2.17** (1.48-3.21)
2-hr	**0.490** (0.410-0.592)	**0.656** (0.548-0.794)	**0.882** (0.734-1.07)	**1.07** (0.884-1.31)	**1.34** (1.07-1.70)	**1.55** (1.21-2.01)	**1.77** (1.35-2.35)	**2.01** (1.48-2.75)	**2.34** (1.65-3.34)	**2.60** (1.78-3.86)
3-hr	**0.605** (0.506-0.731)	**0.798** (0.666-0.965)	**1.06** (0.880-1.28)	**1.27** (1.05-1.56)	**1.57** (1.25-1.99)	**1.81** (1.41-2.34)	**2.05** (1.56-2.73)	**2.31** (1.71-3.16)	**2.67** (1.89-3.81)	**2.95** (2.01-4.37)
6-hr	**0.858** (0.718-1.04)	**1.12** (0.934-1.35)	**1.46** (1.22-1.78)	**1.75** (1.44-2.14)	**2.14** (1.70-2.71)	**2.44** (1.90-3.16)	**2.75** (2.09-3.65)	**3.07** (2.27-4.20)	**3.51** (2.48-5.01)	**3.86** (2.63-5.71)
12-hr	**1.14** (0.956-1.38)	**1.50** (1.25-1.81)	**1.97** (1.64-2.39)	**2.35** (1.94-2.87)	**2.87** (2.29-3.63)	**3.27** (2.55-4.23)	**3.67** (2.79-4.88)	**4.09** (3.02-5.60)	**4.66** (3.30-6.66)	**5.11** (3.48-7.56)
24-hr	**1.50** (1.33-1.73)	**2.00** (1.77-2.32)	**2.66** (2.35-3.08)	**3.20** (2.80-3.73)	**3.93** (3.32-4.73)	**4.49** (3.72-5.52)	**5.05** (4.10-6.37)	**5.64** (4.45-7.30)	**6.44** (4.87-8.67)	**7.05** (5.17-9.83)
2-day	**1.73** (1.53-1.99)	**2.35** (2.08-2.72)	**3.18** (2.80-3.68)	**3.86** (3.37-4.50)	**4.79** (4.06-5.78)	**5.52** (4.58-6.79)	**6.27** (5.08-7.90)	**7.05** (5.56-9.12)	**8.12** (6.15-10.9)	**8.96** (6.56-12.5)
3-day	**1.83** (1.62-2.12)	**2.53** (2.23-2.92)	**3.45** (3.04-4.00)	**4.22** (3.69-4.93)	**5.29** (4.48-6.38)	**6.14** (5.09-7.55)	**7.01** (5.68-8.83)	**7.93** (6.25-10.3)	**9.20** (6.97-12.4)	**10.2** (7.48-14.2)
4-day	**1.96** (1.73-2.26)	**2.72** (2.40-3.14)	**3.75** (3.30-4.34)	**4.61** (4.03-5.38)	**5.80** (4.91-7.00)	**6.75** (5.60-8.30)	**7.74** (6.27-9.74)	**8.78** (6.92-11.4)	**10.2** (7.75-13.8)	**11.4** (8.35-15.9)
7-day	**2.14** (1.89-2.47)	**3.00** (2.65-3.47)	**4.18** (3.68-4.84)	**5.16** (4.51-6.03)	**6.55** (5.54-7.89)	**7.65** (6.34-9.40)	**8.79** (7.12-11.1)	**10.0** (7.89-13.0)	**11.7** (8.87-15.8)	**13.1** (9.58-18.2)
10-day	**2.22** (1.96-2.56)	**3.14** (2.78-3.63)	**4.40** (3.88-5.09)	**5.46** (4.77-6.37)	**6.95** (5.88-8.38)	**8.14** (6.75-10.0)	**9.39** (7.61-11.8)	**10.7** (8.45-13.9)	**12.6** (9.53-16.9)	**14.1** (10.3-19.6)
20-day	**2.58** (2.28-2.97)	**3.70** (3.27-4.27)	**5.25** (4.63-6.08)	**6.58** (5.76-7.68)	**8.50** (7.19-10.2)	**10.1** (8.34-12.4)	**11.7** (9.48-14.7)	**13.5** (10.6-17.5)	**16.0** (12.1-21.6)	**18.1** (13.3-25.2)
30-day	**2.94** (2.60-3.39)	**4.22** (3.73-4.87)	**6.03** (5.31-6.98)	**7.60** (6.65-8.87)	**9.90** (8.38-11.9)	**11.8** (9.78-14.5)	**13.8** (11.2-17.4)	**16.1** (12.7-20.8)	**19.3** (14.6-26.0)	**22.0** (16.1-30.6)
45-day	**3.41** (3.01-3.93)	**4.85** (4.29-5.61)	**6.94** (6.12-8.04)	**8.79** (7.68-10.3)	**11.5** (9.77-13.9)	**13.9** (11.5-17.1)	**16.4** (13.3-20.7)	**19.2** (15.2-24.9)	**23.4** (17.7-31.6)	**27.0** (19.7-37.6)
60-day	**3.85** (3.41-4.44)	**5.42** (4.79-6.26)	**7.72** (6.80-8.94)	**9.79** (8.56-11.4)	**12.9** (10.9-15.6)	**15.6** (13.0-19.2)	**18.6** (15.1-23.4)	**22.0** (17.3-28.4)	**27.0** (20.5-36.4)	**31.4** (23.0-43.8)

[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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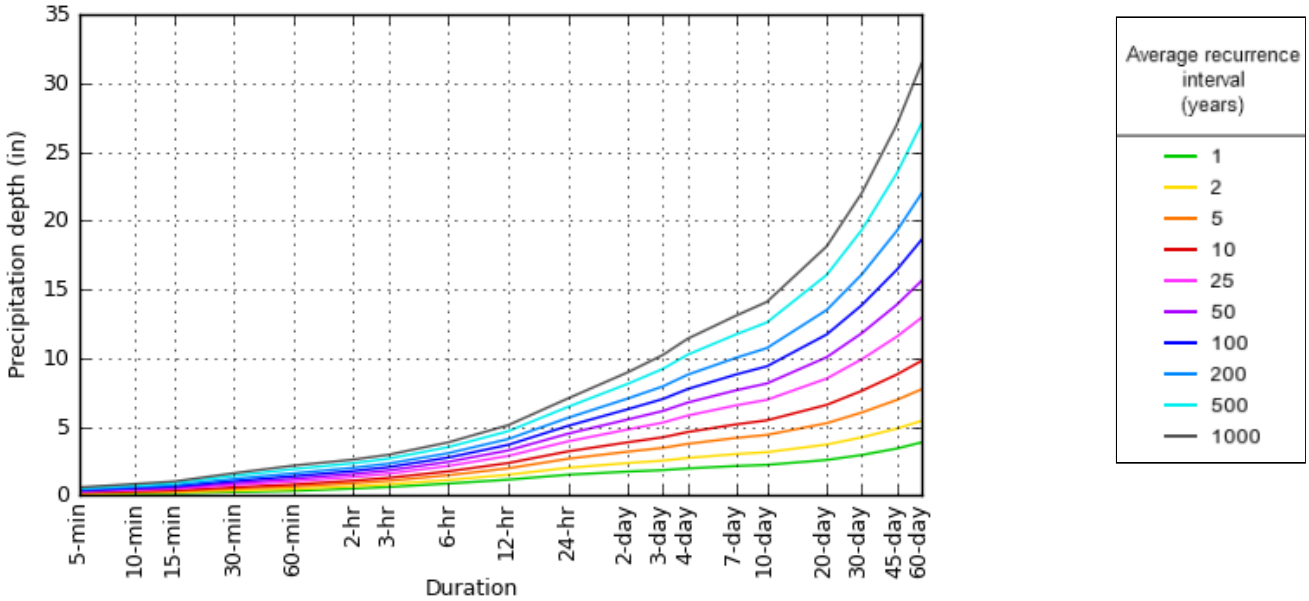
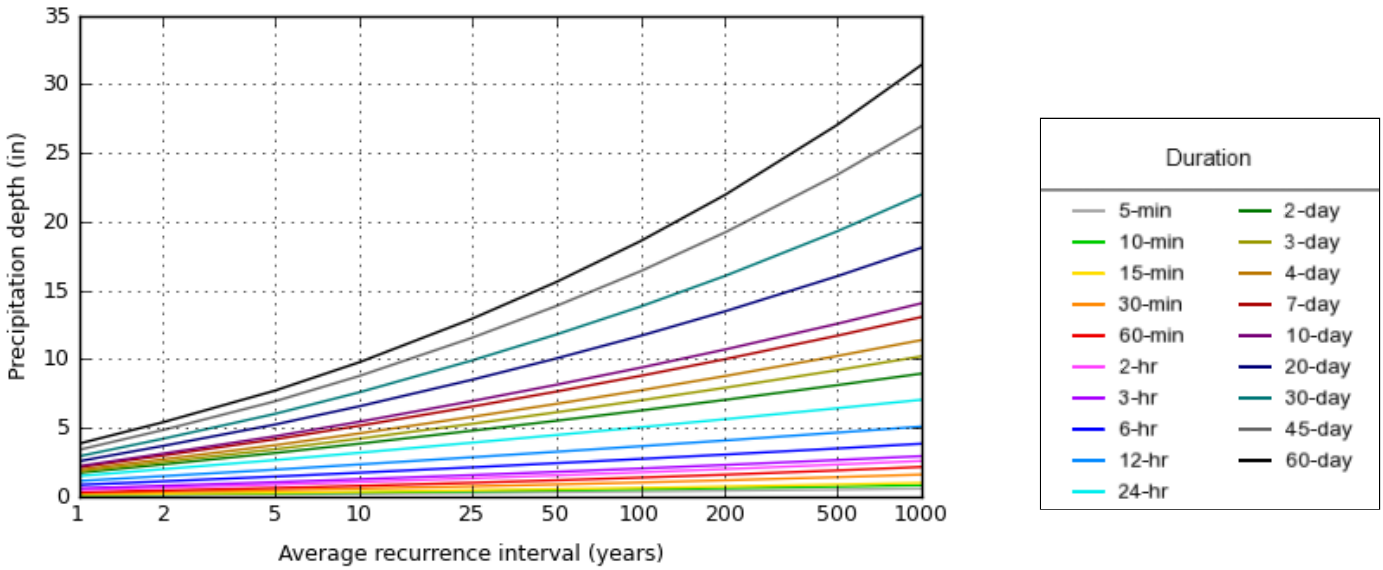
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.8240°, Longitude: -117.2476°





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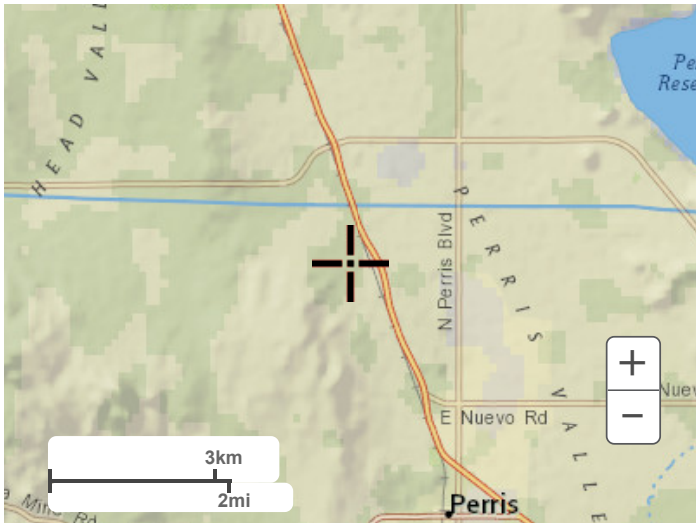
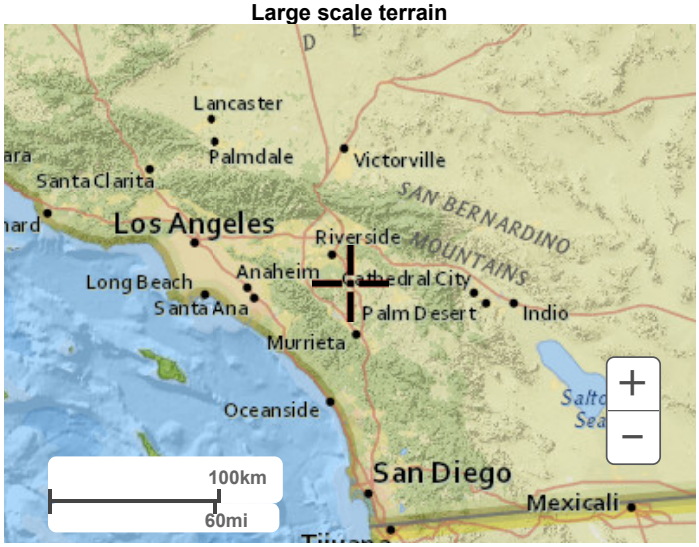
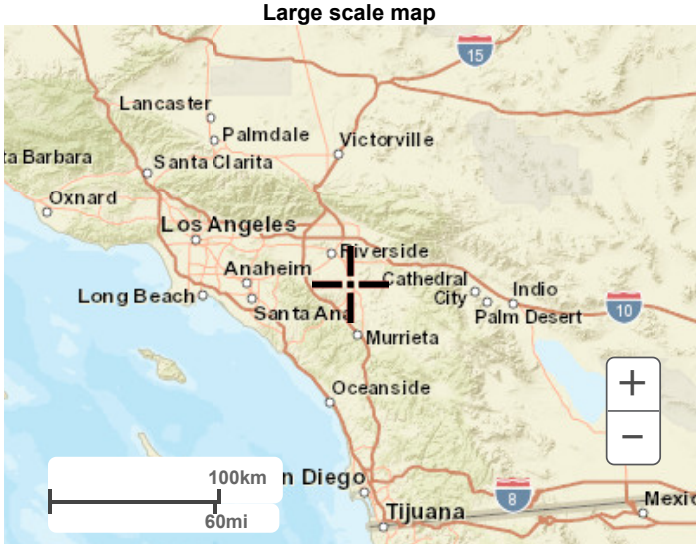
Small scale terrain



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

NOAA Atlas 14, Volume 6, Version 2
Location name: Perris, California, USA*
Latitude: 33.824°, Longitude: -117.2476°
Elevation: 1519.21 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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.04 (0.876-1.26)	1.46 (1.22-1.78)	2.04 (1.70-2.48)	2.54 (2.10-3.11)	3.26 (2.60-4.14)	3.85 (3.00-4.99)	4.48 (3.41-5.95)	5.16 (3.82-7.07)	6.16 (4.36-8.80)	6.97 (4.75-10.3)
10-min	0.750 (0.630-0.906)	1.05 (0.876-1.27)	1.46 (1.22-1.78)	1.82 (1.51-2.23)	2.34 (1.87-2.96)	2.76 (2.15-3.58)	3.21 (2.44-4.27)	3.70 (2.73-5.06)	4.41 (3.12-6.31)	5.00 (3.41-7.40)
15-min	0.604 (0.508-0.732)	0.848 (0.708-1.02)	1.18 (0.984-1.43)	1.47 (1.21-1.80)	1.88 (1.50-2.39)	2.22 (1.74-2.88)	2.59 (1.97-3.44)	2.98 (2.20-4.08)	3.56 (2.52-5.08)	4.03 (2.75-5.97)
30-min	0.484 (0.404-0.584)	0.678 (0.566-0.820)	0.946 (0.788-1.15)	1.18 (0.970-1.44)	1.51 (1.20-1.91)	1.78 (1.39-2.31)	2.07 (1.57-2.75)	2.39 (1.76-3.27)	2.84 (2.01-4.07)	3.22 (2.20-4.78)
60-min	0.325 (0.272-0.393)	0.455 (0.380-0.550)	0.635 (0.529-0.770)	0.789 (0.652-0.966)	1.01 (0.807-1.28)	1.20 (0.932-1.55)	1.39 (1.06-1.85)	1.60 (1.18-2.19)	1.91 (1.35-2.73)	2.17 (1.48-3.21)
2-hr	0.245 (0.205-0.296)	0.328 (0.274-0.397)	0.441 (0.367-0.535)	0.536 (0.442-0.656)	0.668 (0.533-0.848)	0.775 (0.604-1.00)	0.886 (0.674-1.18)	1.00 (0.741-1.37)	1.17 (0.826-1.67)	1.30 (0.888-1.93)
3-hr	0.201 (0.168-0.243)	0.266 (0.222-0.321)	0.352 (0.293-0.427)	0.424 (0.350-0.519)	0.524 (0.418-0.664)	0.602 (0.470-0.781)	0.684 (0.520-0.909)	0.770 (0.568-1.05)	0.889 (0.628-1.27)	0.983 (0.671-1.46)
6-hr	0.143 (0.120-0.173)	0.187 (0.156-0.226)	0.244 (0.204-0.297)	0.292 (0.241-0.357)	0.357 (0.284-0.452)	0.407 (0.317-0.527)	0.459 (0.349-0.610)	0.513 (0.378-0.701)	0.586 (0.414-0.838)	0.644 (0.439-0.954)
12-hr	0.095 (0.079-0.115)	0.124 (0.104-0.151)	0.163 (0.136-0.198)	0.195 (0.161-0.239)	0.238 (0.190-0.302)	0.271 (0.211-0.351)	0.305 (0.232-0.405)	0.340 (0.251-0.465)	0.387 (0.273-0.553)	0.424 (0.289-0.628)
24-hr	0.063 (0.055-0.072)	0.084 (0.074-0.096)	0.111 (0.098-0.128)	0.133 (0.117-0.156)	0.164 (0.139-0.197)	0.187 (0.155-0.230)	0.211 (0.171-0.265)	0.235 (0.185-0.304)	0.268 (0.203-0.361)	0.294 (0.215-0.409)
2-day	0.036 (0.032-0.042)	0.049 (0.043-0.057)	0.066 (0.058-0.077)	0.080 (0.070-0.094)	0.100 (0.085-0.120)	0.115 (0.095-0.141)	0.131 (0.106-0.164)	0.147 (0.116-0.190)	0.169 (0.128-0.228)	0.187 (0.137-0.260)
3-day	0.025 (0.023-0.029)	0.035 (0.031-0.041)	0.048 (0.042-0.056)	0.059 (0.051-0.068)	0.074 (0.062-0.089)	0.085 (0.071-0.105)	0.097 (0.079-0.123)	0.110 (0.087-0.142)	0.128 (0.097-0.172)	0.142 (0.104-0.198)
4-day	0.020 (0.018-0.024)	0.028 (0.025-0.033)	0.039 (0.034-0.045)	0.048 (0.042-0.056)	0.060 (0.051-0.073)	0.070 (0.058-0.087)	0.081 (0.065-0.102)	0.091 (0.072-0.118)	0.107 (0.081-0.144)	0.119 (0.087-0.165)
7-day	0.013 (0.011-0.015)	0.018 (0.016-0.021)	0.025 (0.022-0.029)	0.031 (0.027-0.036)	0.039 (0.033-0.047)	0.046 (0.038-0.056)	0.052 (0.042-0.066)	0.060 (0.047-0.077)	0.070 (0.053-0.094)	0.078 (0.057-0.108)
10-day	0.009 (0.008-0.011)	0.013 (0.012-0.015)	0.018 (0.016-0.021)	0.023 (0.020-0.027)	0.029 (0.025-0.035)	0.034 (0.028-0.042)	0.039 (0.032-0.049)	0.045 (0.035-0.058)	0.052 (0.040-0.071)	0.059 (0.043-0.082)
20-day	0.005 (0.005-0.006)	0.008 (0.007-0.009)	0.011 (0.010-0.013)	0.014 (0.012-0.016)	0.018 (0.015-0.021)	0.021 (0.017-0.026)	0.024 (0.020-0.031)	0.028 (0.022-0.036)	0.033 (0.025-0.045)	0.038 (0.028-0.053)
30-day	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.010)	0.011 (0.009-0.012)	0.014 (0.012-0.017)	0.016 (0.014-0.020)	0.019 (0.016-0.024)	0.022 (0.018-0.029)	0.027 (0.020-0.036)	0.031 (0.022-0.043)
45-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.006-0.007)	0.008 (0.007-0.010)	0.011 (0.009-0.013)	0.013 (0.011-0.016)	0.015 (0.012-0.019)	0.018 (0.014-0.023)	0.022 (0.016-0.029)	0.025 (0.018-0.035)
60-day	0.003 (0.002-0.003)	0.004 (0.003-0.004)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.013 (0.010-0.016)	0.015 (0.012-0.020)	0.019 (0.014-0.025)	0.022 (0.016-0.030)

[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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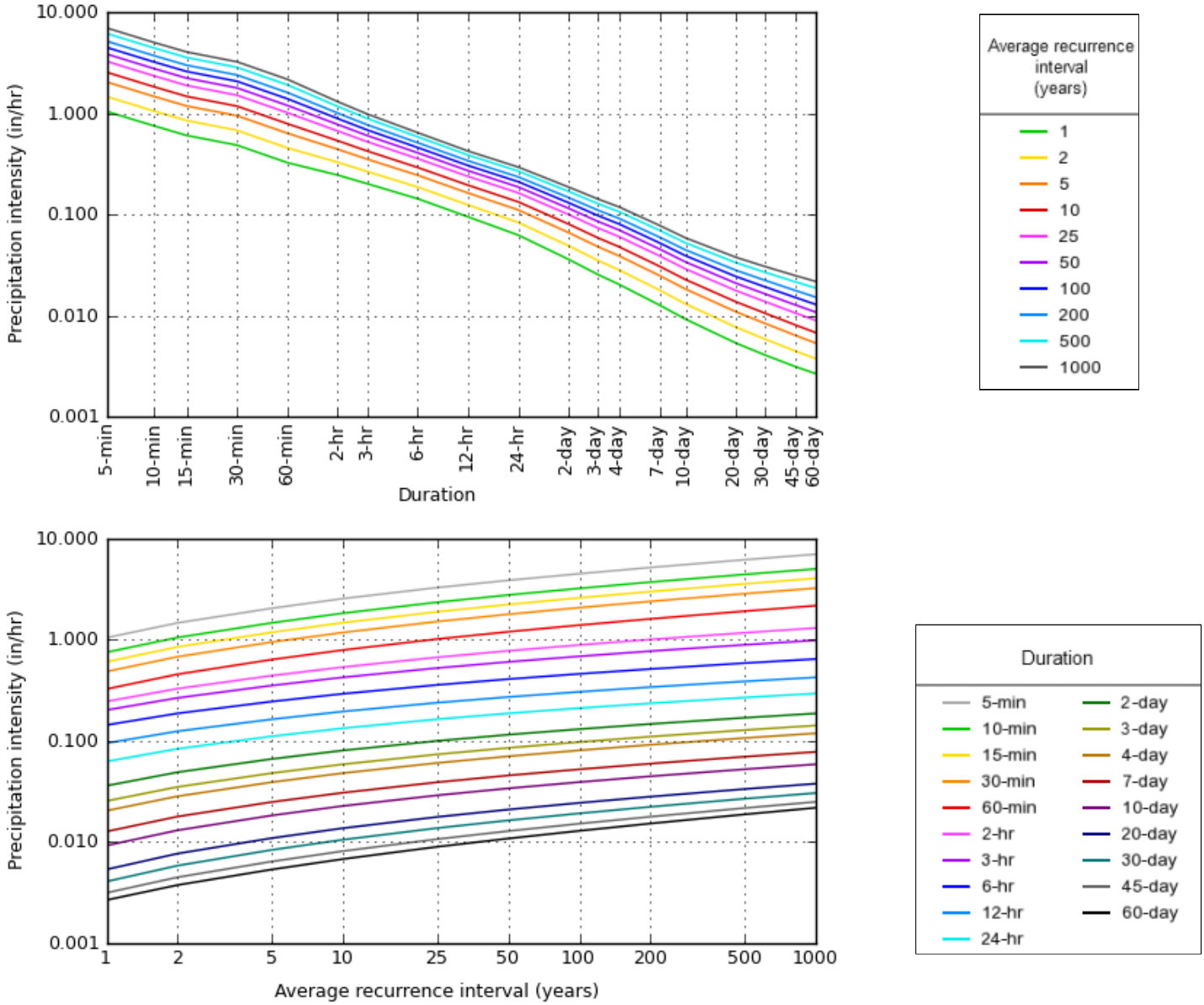
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 33.8240°, Longitude: -117.2476°



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Created (GMT): Thu Dec 19 21:42:03 2019

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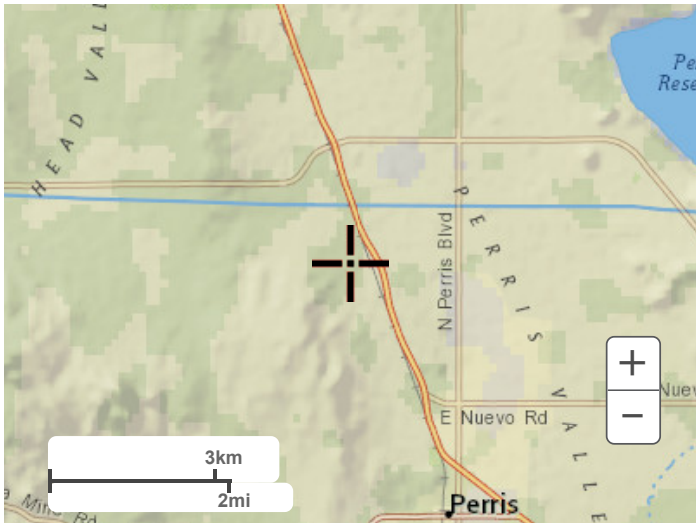
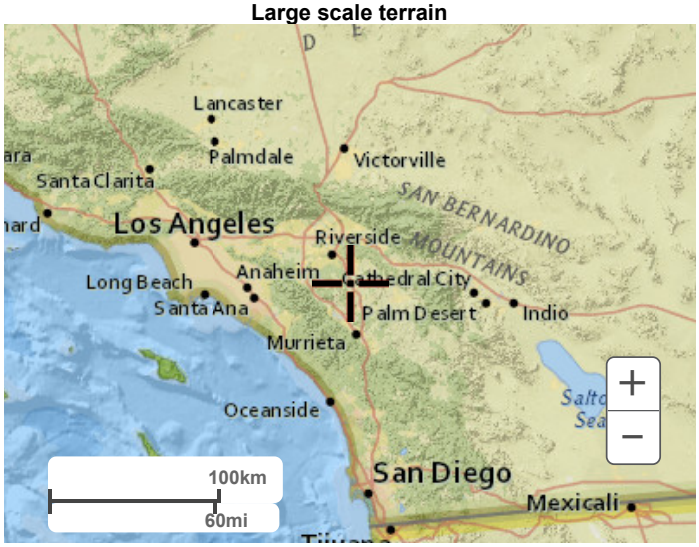
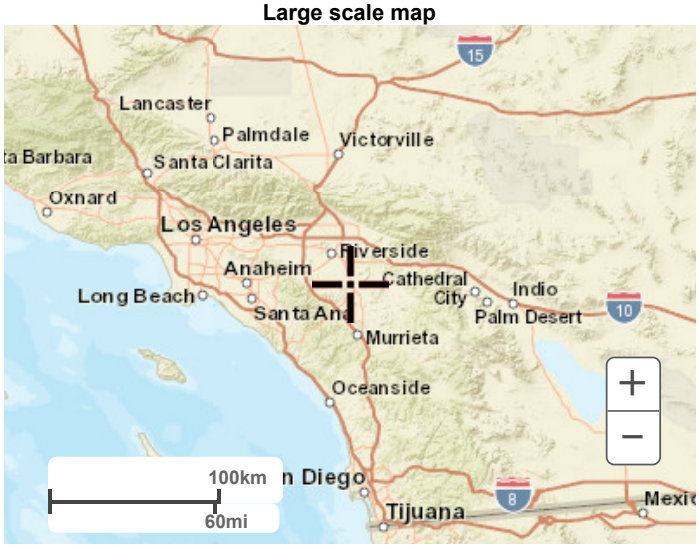


Large scale terrain



Large scale map



Large scale aerial

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US Department of Commerce
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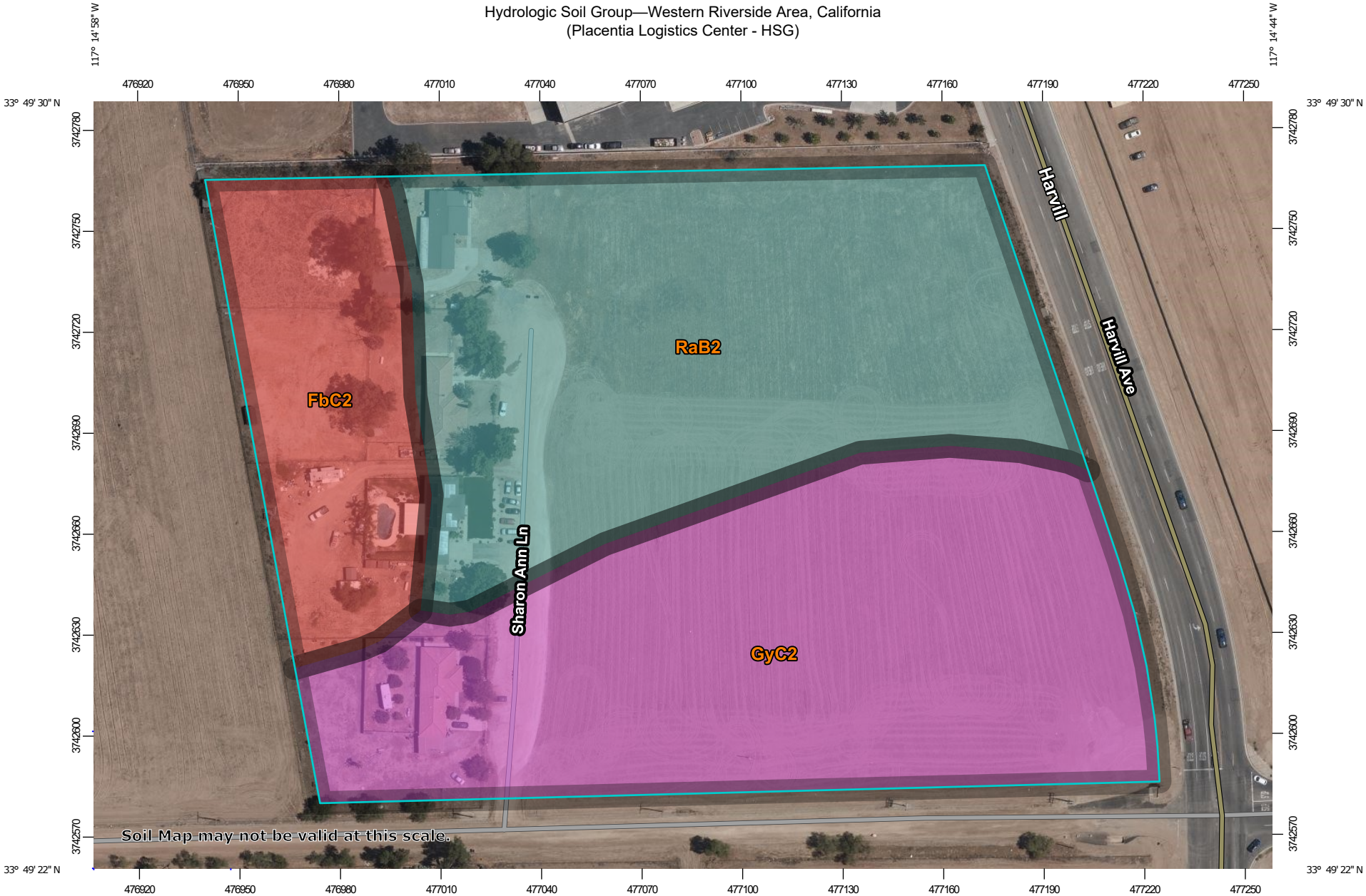
Hydrologic Soil Group—Western Riverside Area, California
(Placentia Logistics Center - HSG)



Map Scale: 1:1,610 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 12, Sep 16, 2019

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

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
FbC2	Fallbrook sandy loam, shallow, 5 to 8 percent slopes, eroded	D	1.7	15.4%
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	A	4.9	43.3%
RaB2	Ramona sandy loam, 2 to 5 percent slopes, eroded	C	4.7	41.3%
Totals for Area of Interest			**11.3**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix 3

Basin Storage and Discharge Curves

BMP D/1 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)	Elevation (ft)
0.00	13203	0	1504.60
0.08	13203	440	1504.68
0.17	13203	880	1504.77
0.25	13203	1320	1504.85
0.33	13203	1760	1504.93
0.42	13203	2201	1505.02
0.50	13203	2641	1505.10
0.58	13203	3081	1505.18
0.67	13203	3521	1505.27
0.75	13203	3961	1505.35
0.83	13203	4401	1505.43
0.92	13203	4841	1505.52
1.00	13203	5281	1505.60
1.08	13203	5611	1505.68
1.17	13203	5941	1505.77
1.25	13203	6271	1505.85
1.33	13203	6602	1505.93
1.42	13203	6932	1506.02
1.50	13203	7262	1506.10
1.58	13203	7592	1506.18
1.67	13203	7922	1506.27
1.75	13203	8252	1506.35
1.83	13203	8582	1506.43
1.92	13203	8912	1506.52
2.00	13203	9242	1506.60
2.08	13203	9572	1506.68
2.17	13203	9902	1506.77
2.25	13203	10232	1506.85
2.33	13203	10562	1506.93
2.42	13203	10892	1507.02
2.50	13203	11223	1507.10
2.58	13203	11553	1507.18
2.67	13203	11883	1507.27
2.75	13203	12213	1507.35
2.83	13203	12543	1507.43
2.92	13203	12873	1507.52
3.00	13203	13203	1507.60
3.08	13387	14319	1507.68
3.17	13572	15450	1507.77
3.25	13756	16596	1507.85
3.33	13940	17758	1507.93
3.42	14124	18935	1508.02
3.50	14309	20127	1508.10

BMP D/1 Storage Curve

Depth (ft)	Area (ft^2)	Volume (ft^3)	Elevation (ft)
3.58	14493	21335	1508.18
3.67	14677	22558	1508.27
3.75	14861	23796	1508.35
3.83	15046	25050	1508.43
3.92	15230	26319	1508.52
4.00	15414	27604	1508.60
4.08	15599	28904	1508.68
4.17	15783	30219	1508.77
4.25	15967	31550	1508.85
4.33	16151	32895	1508.93
4.42	16336	34257	1509.02
4.50	16520	35633	1509.10
4.58	16704	37025	1509.18
4.67	16889	38433	1509.27
4.75	17073	39856	1509.35
4.83	17257	41294	1509.43
4.92	17441	42747	1509.52
5.00	17626	44216	1509.60
5.08	17810	45700	1509.68
5.17	17994	47200	1509.77
5.25	18178	48714	1509.85
5.30	18363	49633	1509.90

Effective Depth:	6.29 in

BMP D/1 Flow Control Rating Curve

Discharge vs Elevation Table

Low orifice	3.750	"	Lower slot			Lower Weir	
Number of orif:	1		Number of slots:	0		Number of weirs:	0
Cg-low:	0.62		Invert:	0.000	ft	Invert:	0.00
			B	0.00	ft	B:	0.00
			h_{slot}	0.000	in		
Middle orifice	0	"		0.000	ft		
Number of orif:	0						
Cg-middle:	0.62		Upper slot			Emergency weir	
invert elev:	0.000	ft	Number of slots:	0		Invert:	1.67 ft
			Invert:	0.00	ft	B:	9.42 ft
			B:	0.00	ft		
			h_{slot}	0.0	in		
				0.000	ft		

*Note: h = head above the invert of the lowest surface discharge opening.

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.083	0.267	0.000	0.000	0.013	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
0.167	0.533	0.000	0.039	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
0.250	0.800	0.000	0.117	0.098	0.098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.098
0.333	1.067	0.000	0.161	0.157	0.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.157
0.417	1.333	0.000	0.195	0.219	0.195	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.195
0.500	1.600	0.000	0.224	0.276	0.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.224
0.583	1.867	0.000	0.249	0.323	0.249	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.249
0.667	2.133	0.000	0.273	0.356	0.273	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.273
0.750	2.400	0.000	0.294	0.376	0.294	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.294
0.833	2.667	0.000	0.314	0.383	0.314	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.314
0.917	2.933	0.000	0.333	0.385	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333
1.000	3.200	0.000	0.351	0.392	0.351	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.351
1.083	3.467	0.000	0.367	0.421	0.367	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.367
1.167	3.733	0.000	0.384	0.496	0.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.384
1.250	4.000	0.000	0.399	0.645	0.399	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.399
1.333	4.267	0.000	0.414	0.905	0.414	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.414
1.417	4.533	0.000	0.428	1.322	0.428	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.428
1.500	4.800	0.000	0.442	1.951	0.442	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.442
1.583	5.067	0.000	0.456	2.854	0.456	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.456
1.667	5.333	0.000	0.469	4.108	0.469	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.469

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
1.750	5.600	0.000	0.482	4.818	0.482	0.000	0.000	0.000	0.000	0.000	0.000	0.741	1.223
1.800	5.760	0.000	0.489	4.893	0.489	0.000	0.000	0.000	0.000	0.000	0.000	1.509	1.999

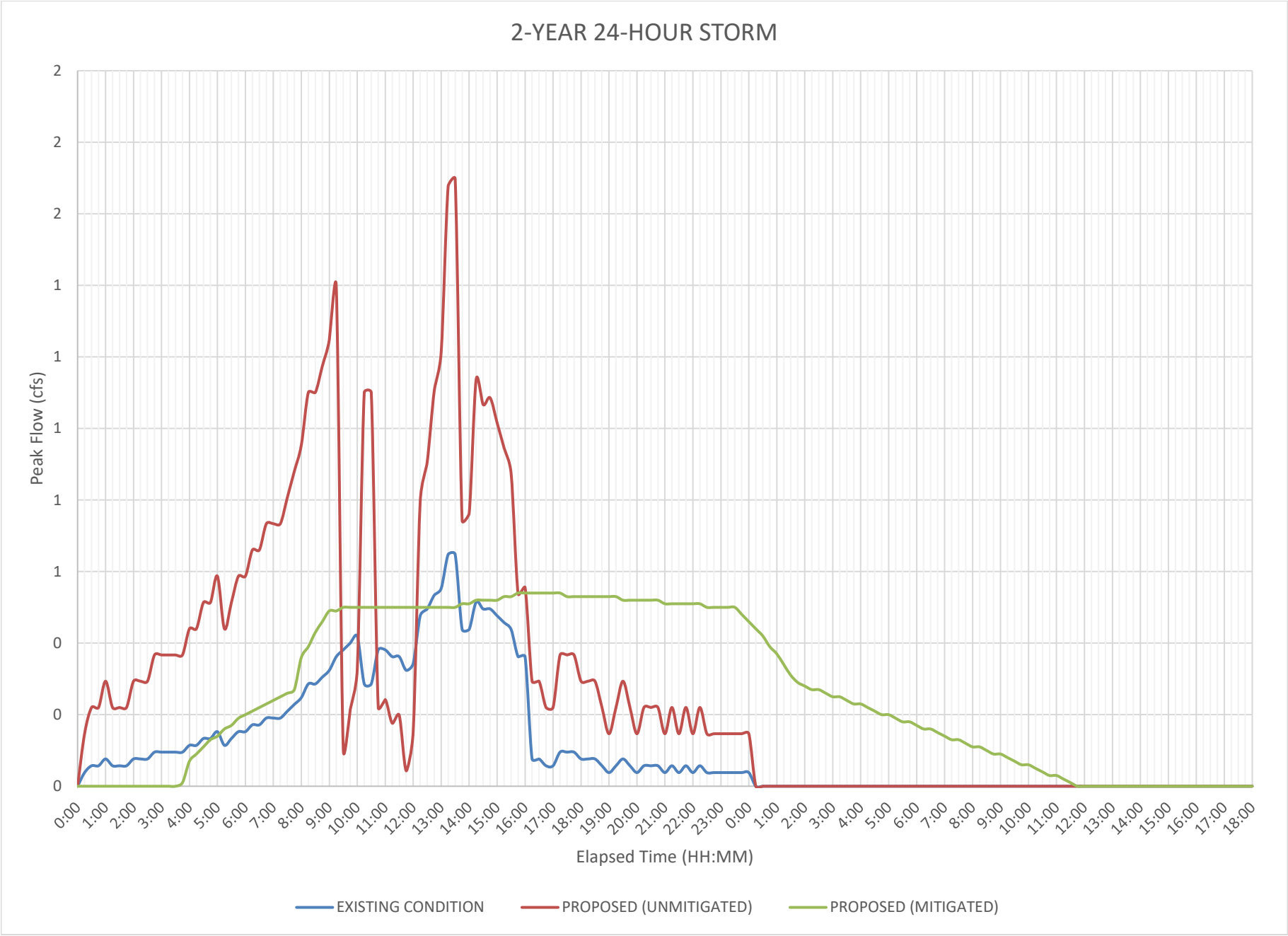
BMP_D1

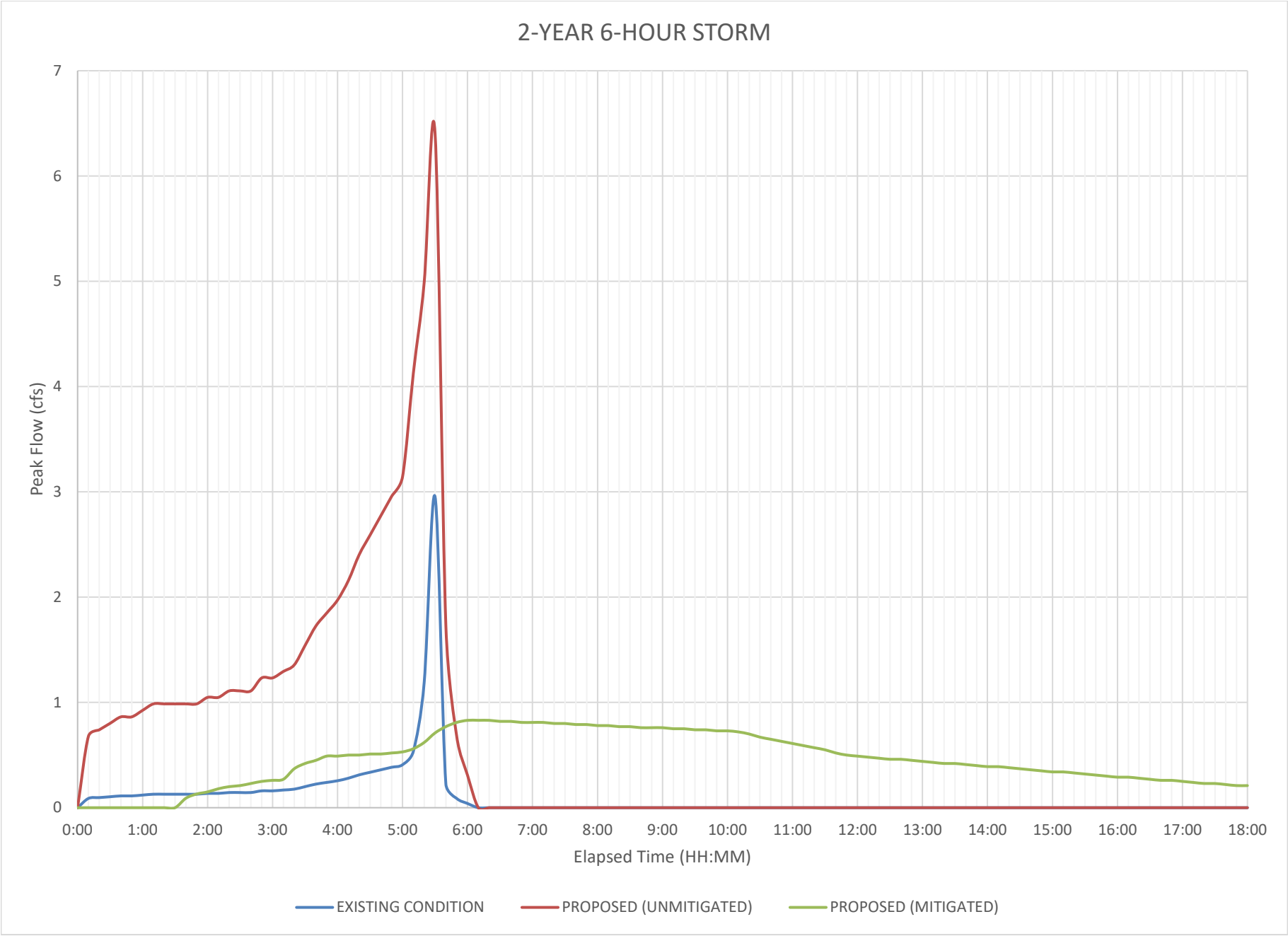
	A_{BMP}	**13,203**	sq-ft
	C_g	**0.61**	
	D_{orif}	**3.25**	in
	A_{orif}	0.05761	sq-ft
	C_{SWMM}	0.2664	s-(in)^0.5/hr2
		0.445899	cfs
	H_{gravel}	**2.5**	ft
	H_{gravel}	**30**	in
	H_{soil}	**1.5**	ft
	H_{soil}	**18**	in
	$H_{surface}$	**0.5**	ft
	$H_{surface}$	**6**	in
	$H_{design\text{-}SWMM}$	4.500	ft
		54	in
	H_{design}	4.365	ft
		52.375	in
	$Q_{orif\text{-}classic}$	0.59824	cfs
Using $H_{design\text{-}SWMM}$	$Q_{orif\text{-}SWMM}$	0.59824	cfs
	$Q_{diversion}$	0.59824	cfs
Using H_{design}	$Q_{orif\text{-}classic}$	0.58917	cfs
	$Q_{orif\text{-}SWMM}$	0.58917	cfs
Old method:	$Q_{diversion}$	0.59506	cfs
	Q_{inf}	1.5281	cfs

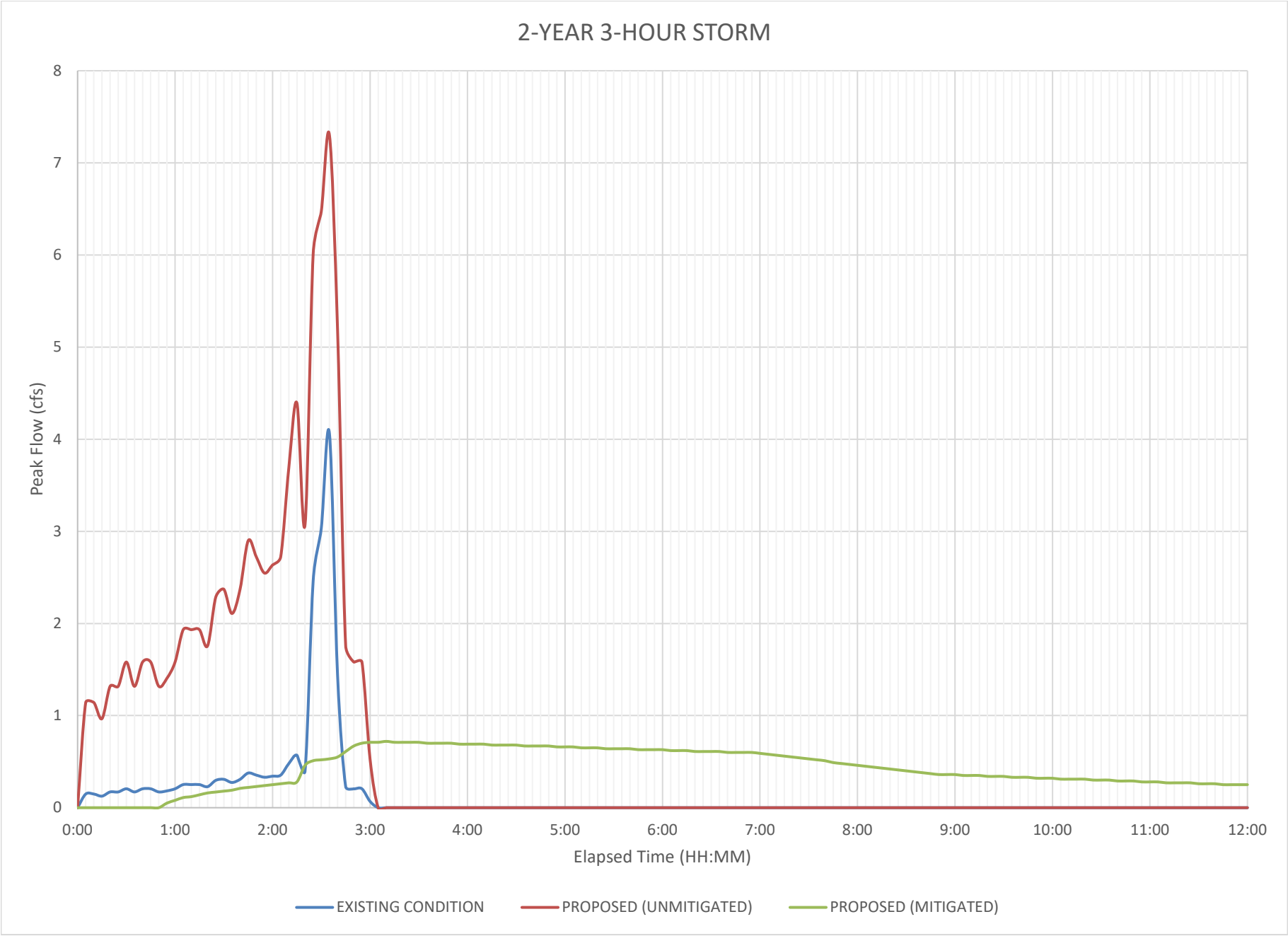
Appendix 4

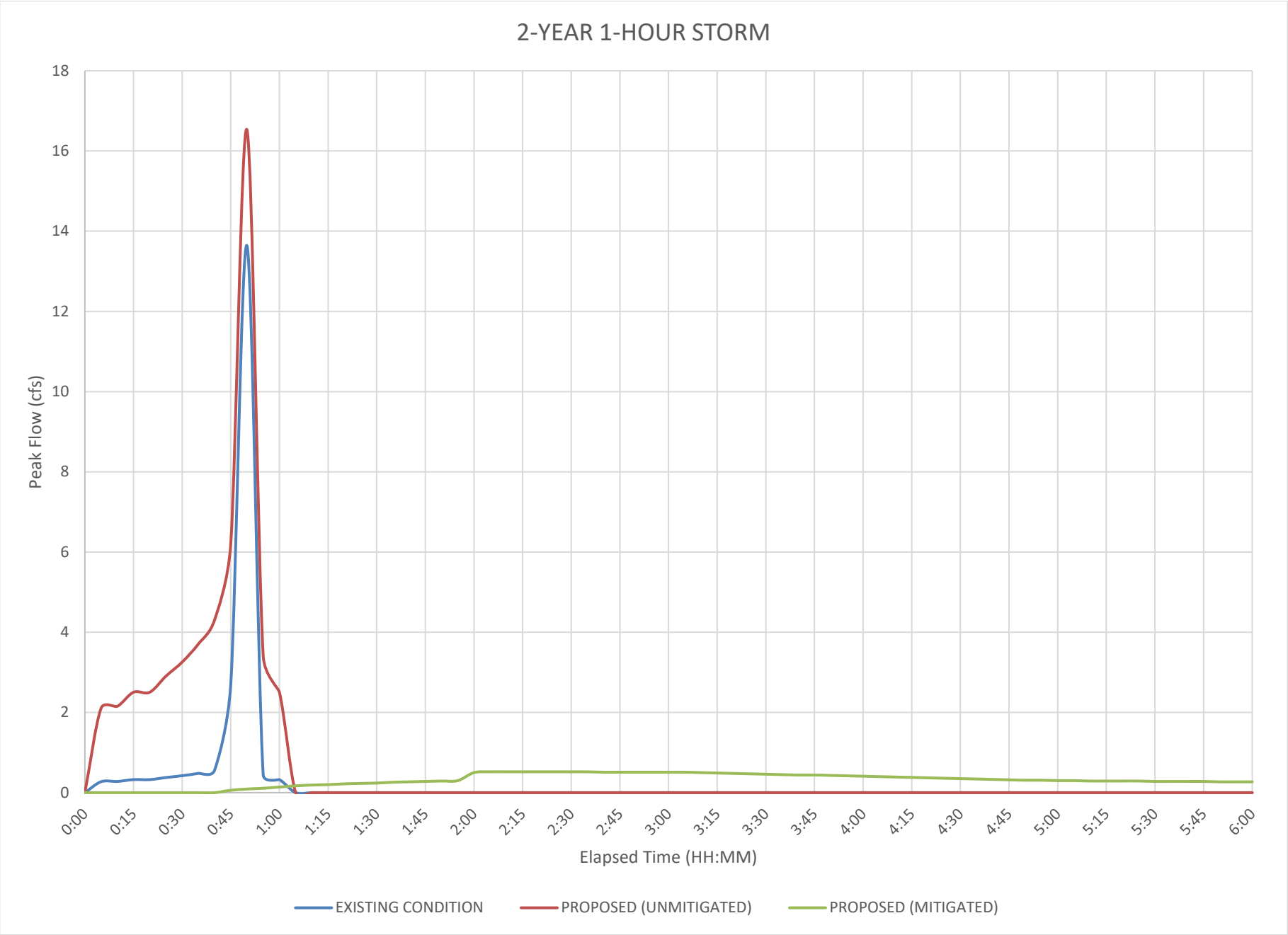
Short Cut Method Hydrographs

Storm Event	Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
2-yr, 24-hour	0.65	1.70	0.54	-0.11
2-yr, 6-hour	2.95	6.41	0.83	-2.12
2-yr, 3-hour	4.06	7.30	0.72	-3.34
2-yr, 1-hour	13.64	16.52	0.52	-13.12


2-YEAR 24-HOUR STORM
Peak Flow (cfs)
2
2
2
1
1
1
1
1
0
0
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


2-YEAR 6-HOUR STORM
Peak Flow (cfs)
0
1
2
3
4
5
6
7
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


2-YEAR 3-HOUR STORM
Peak Flow (cfs)
0
1
2
3
4
5
6
7
8
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


2-YEAR 1-HOUR STORM
Peak Flow (cfs)
18
16
14
12
10
8
6
4
2
0
0:00
0:15
0:30
0:45
1:00
1:15
1:30
1:45
2:00
2:15
2:30
2:45
3:00
3:15
3:30
3:45
4:00
4:15
4:30
4:45
5:00
5:15
5:30
5:45
6:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)

Storm Event	Precip (inches)	Reference
2-yr, 24-hour	2.00	NOAA Atlas 14
2-yr, 6-hour	1.12	
2-yr, 3-hour	0.80	
2-yr, 1-hour	0.46	

PROJECT SITE EXISTING

Drainage Area	514607	sf		
	11.81	ac		
A_i	19,641	sf		
	4%	imp		
Runoff Index	78		Note:	Plate E-6.1: Grass (Poor); Soil Types A (40%), C (43%) & D (16%); Area-Weighted
F_p	0.46	in/hr	Note:	Plate E-6.2: AMC I

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.444 in/hr**

For 24-hr storms, F_T is variable loss rate

$F_T = C[24 - (T/60)]^{1.55} + F_M$ ***F_T =*** **0.784**

$C = (F - F_M)/54$ ***C =*** **0.0041**

$T = \text{Unit Time}/2$ ***T =*** **7.5**

$F_M = 0.5F$ ***F_M =*** **0.222**

DMA D/1: PROPOSED

Drainage Area	476806	sf		
	10.95	ac		
A_i	433,145	sf		
	91%	imp		
Runoff Index	52		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Types A (49%), C (37%) & D (14%); Area-Weighted
F_p	0.76	in/hr	Note:	Plate E-6.2: AMC I

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.139 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* = 0.245**

$$C = (F - F_M)/54$$ ***C* = 0.0013**

$$T = \text{Unit Time}/2$$ ***T* = 7.5**

$$F_M = 0.5F$$ ***F M* = 0.069**

DMA A/1: PROPOSED

Drainage Area	6668	sf		
	0.15	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.50	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F* = 0.500 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* = 0.883**

$$C = (F - F_M)/54$$ ***C* = 0.0046**

$$T = \text{Unit Time}/2$$ ***T* = 7.5**

$$F_M = 0.5F$$ ***F M* = 0.250**

DMA A/2: PROPOSED

Drainage Area	13866	sf		
	0.32	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.50	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F* = 0.500 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$

$$C = (F - F_M)/54$$

$$T = \text{Unit Time}/2$$

$$F_M = 0.5F$$

F_T =	**0.883**
C =	**0.0046**
T =	**7.5**
F_M =	**0.250**

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.444	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.222
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.016	0.784	0.013	0.003	0.04
2					0.3	0.024	0.775	0.019	0.005	0.06
3					0.3	0.024	0.766	0.019	0.005	0.06
4					0.4	0.032	0.757	0.026	0.006	0.08
5					0.3	0.024	0.748	0.019	0.005	0.06
6					0.3	0.024	0.739	0.019	0.005	0.06
7					0.3	0.024	0.731	0.019	0.005	0.06
8					0.4	0.032	0.722	0.026	0.006	0.08
9					0.4	0.032	0.713	0.026	0.006	0.08
10					0.4	0.032	0.704	0.026	0.006	0.08
11					0.5	0.040	0.696	0.032	0.008	0.10
12					0.5	0.040	0.687	0.032	0.008	0.10
13					0.5	0.040	0.679	0.032	0.008	0.10
14					0.5	0.040	0.670	0.032	0.008	0.10
15					0.5	0.040	0.662	0.032	0.008	0.10
16					0.6	0.048	0.654	0.038	0.010	0.11
17					0.6	0.048	0.645	0.038	0.010	0.11
18					0.7	0.056	0.637	0.045	0.011	0.13
19					0.7	0.056	0.629	0.045	0.011	0.13
20					0.8	0.064	0.621	0.051	0.013	0.15
21					0.6	0.048	0.613	0.038	0.010	0.11
22					0.7	0.056	0.605	0.045	0.011	0.13
23					0.8	0.064	0.597	0.051	0.013	0.15
24					0.8	0.064	0.589	0.051	0.013	0.15
25					0.9	0.072	0.581	0.058	0.014	0.17
26					0.9	0.072	0.573	0.058	0.014	0.17
27					1.0	0.080	0.566	0.064	0.016	0.19
28					1.0	0.080	0.558	0.064	0.016	0.19
29					1.0	0.080	0.550	0.064	0.016	0.19
30					1.1	0.088	0.543	0.070	0.018	0.21
31					1.2	0.096	0.536	0.077	0.019	0.23
32					1.3	0.104	0.528	0.083	0.021	0.25
33					1.5	0.120	0.521	0.096	0.024	0.29
34					1.5	0.120	0.514	0.096	0.024	0.29
35					1.6	0.128	0.506	0.102	0.026	0.30
36					1.7	0.136	0.499	0.109	0.027	0.32
37					1.9	0.152	0.492	0.122	0.030	0.36
38					2.0	0.160	0.485	0.128	0.032	0.38
39					2.1	0.168	0.478	0.134	0.034	0.40
40					2.2	0.176	0.471	0.141	0.035	0.42
41					1.5	0.120	0.465	0.096	0.024	0.29
42					1.5	0.120	0.458	0.096	0.024	0.29
43					2.0	0.160	0.451	0.128	0.032	0.38
44					2.0	0.160	0.445	0.128	0.032	0.38
45					1.9	0.152	0.438	0.122	0.030	0.36
46					1.9	0.152	0.432	0.122	0.030	0.36
47					1.7	0.136	0.425	0.109	0.027	0.32
48					1.8	0.144	0.419	0.115	0.029	0.34
49					2.5	0.200	0.413	0.160	0.040	0.48
50					2.6	0.208	0.406	0.166	0.042	0.50
51					2.8	0.224	0.400	0.179	0.045	0.53
52					2.9	0.232	0.394	0.186	0.046	0.55
53					3.4	0.272	0.388	0.218	0.054	0.65
54					3.4	0.272	0.382	0.218	0.054	**0.65**
55					2.3	0.184	0.377	0.147	0.037	0.44
56					2.3	0.184	0.371	0.147	0.037	0.44
57					2.7	0.216	0.365	0.173	0.043	0.51
58					2.6	0.208	0.360	0.166	0.042	0.50
59					2.6	0.208	0.354	0.166	0.042	0.50
60					2.5	0.200	0.349	0.160	0.040	0.48
61					2.4	0.192	0.343	0.154	0.038	0.46
62					2.3	0.184	0.338	0.147	0.037	0.44
63					1.9	0.152	0.333	0.122	0.030	0.36
64					1.9	0.152	0.328	0.122	0.030	0.36

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.444	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.222
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.032	0.323	0.026	0.006	0.08
66					0.4	0.032	0.318	0.026	0.006	0.08
67					0.3	0.024	0.313	0.019	0.005	0.06
68					0.3	0.024	0.308	0.019	0.005	0.06
69					0.5	0.040	0.304	0.032	0.008	0.10
70					0.5	0.040	0.299	0.032	0.008	0.10
71					0.5	0.040	0.295	0.032	0.008	0.10
72					0.4	0.032	0.290	0.026	0.006	0.08
73					0.4	0.032	0.286	0.026	0.006	0.08
74					0.4	0.032	0.282	0.026	0.006	0.08
75					0.3	0.024	0.278	0.019	0.005	0.06
76					0.2	0.016	0.274	0.013	0.003	0.04
77					0.3	0.024	0.270	0.019	0.005	0.06
78					0.4	0.032	0.266	0.026	0.006	0.08
79					0.3	0.024	0.263	0.019	0.005	0.06
80					0.2	0.016	0.259	0.013	0.003	0.04
81					0.3	0.024	0.256	0.019	0.005	0.06
82					0.3	0.024	0.252	0.019	0.005	0.06
83					0.3	0.024	0.249	0.019	0.005	0.06
84					0.2	0.016	0.246	0.013	0.003	0.04
85					0.3	0.024	0.243	0.019	0.005	0.06
86					0.2	0.016	0.240	0.013	0.003	0.04
87					0.3	0.024	0.238	0.019	0.005	0.06
88					0.2	0.016	0.235	0.013	0.003	0.04
89					0.3	0.024	0.233	0.019	0.005	0.06
90					0.2	0.016	0.231	0.013	0.003	0.04
91					0.2	0.016	0.229	0.013	0.003	0.04
92					0.2	0.016	0.227	0.013	0.003	0.04
93					0.2	0.016	0.225	0.013	0.003	0.04
94					0.2	0.016	0.224	0.013	0.003	0.04
95					0.2	0.016	0.223	0.013	0.003	0.04
96					0.2	0.016	0.222	0.013	0.003	0.04
TOTALS					100.0				1.60	19.06

EFFECTIVE RAIN = 0.40 INCHES
TOTAL RUNOFF VOLUME = 0.39 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.139	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.069
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.016	0.245	0.003	0.013	0.15
2					0.3	0.024	0.242	0.004	0.020	0.22
3					0.3	0.024	0.239	0.004	0.020	0.22
4					0.4	0.032	0.236	0.006	0.026	0.29
5					0.3	0.024	0.234	0.004	0.020	0.22
6					0.3	0.024	0.231	0.004	0.020	0.22
7					0.3	0.024	0.228	0.004	0.020	0.22
8					0.4	0.032	0.225	0.006	0.026	0.29
9					0.4	0.032	0.223	0.006	0.026	0.29
10					0.4	0.032	0.220	0.006	0.026	0.29
11					0.5	0.040	0.217	0.007	0.033	0.36
12					0.5	0.040	0.214	0.007	0.033	0.36
13					0.5	0.040	0.212	0.007	0.033	0.36
14					0.5	0.040	0.209	0.007	0.033	0.36
15					0.5	0.040	0.207	0.007	0.033	0.36
16					0.6	0.048	0.204	0.008	0.040	0.44
17					0.6	0.048	0.201	0.008	0.040	0.44
18					0.7	0.056	0.199	0.010	0.046	0.51
19					0.7	0.056	0.196	0.010	0.046	0.51
20					0.8	0.064	0.194	0.011	0.053	0.58
21					0.6	0.048	0.191	0.008	0.040	0.44
22					0.7	0.056	0.189	0.010	0.046	0.51
23					0.8	0.064	0.186	0.011	0.053	0.58
24					0.8	0.064	0.184	0.011	0.053	0.58
25					0.9	0.072	0.181	0.012	0.060	0.66
26					0.9	0.072	0.179	0.012	0.060	0.66
27					1.0	0.080	0.177	0.014	0.066	0.73
28					1.0	0.080	0.174	0.014	0.066	0.73
29					1.0	0.080	0.172	0.014	0.066	0.73
30					1.1	0.088	0.169	0.015	0.073	0.80
31					1.2	0.096	0.167	0.017	0.079	0.88
32					1.3	0.104	0.165	0.018	0.086	0.95
33					1.5	0.120	0.163	0.021	0.099	1.09
34					1.5	0.120	0.160	0.021	0.099	1.09
35					1.6	0.128	0.158	0.022	0.106	1.17
36					1.7	0.136	0.156	0.024	0.112	1.24
37					1.9	0.152	0.154	0.026	0.126	1.39
38					2.0	0.160	0.151	0.028	0.009	0.09
39					2.1	0.168	0.149	0.029	0.019	0.21
40					2.2	0.176	0.147	0.030	0.029	0.32
41					1.5	0.120	0.145	0.021	0.099	1.09
42					1.5	0.120	0.143	0.021	0.099	1.09
43					2.0	0.160	0.141	0.028	0.019	0.21
44					2.0	0.160	0.139	0.028	0.021	0.23
45					1.9	0.152	0.137	0.026	0.015	0.17
46					1.9	0.152	0.135	0.026	0.017	0.19
47					1.7	0.136	0.133	0.024	0.003	0.04
48					1.8	0.144	0.131	0.025	0.013	0.15
49					2.5	0.200	0.129	0.035	0.071	0.79
50					2.6	0.208	0.127	0.036	0.081	0.90
51					2.8	0.224	0.125	0.039	0.099	1.09
52					2.9	0.232	0.123	0.040	0.109	1.20
53					3.4	0.272	0.121	0.047	0.151	1.66
54					3.4	0.272	0.119	0.047	0.153	**1.68**
55					2.3	0.184	0.118	0.032	0.066	0.73
56					2.3	0.184	0.116	0.032	0.068	0.75
57					2.7	0.216	0.114	0.037	0.102	1.13
58					2.6	0.208	0.112	0.036	0.096	1.06
59					2.6	0.208	0.111	0.036	0.097	1.08
60					2.5	0.200	0.109	0.035	0.091	1.01
61					2.4	0.192	0.107	0.033	0.085	0.94
62					2.3	0.184	0.106	0.032	0.078	0.87
63					1.9	0.152	0.104	0.026	0.048	0.53
64					1.9	0.152	0.102	0.026	0.050	0.55

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.139	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.069
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.032	0.101	0.006	0.026	0.29
66					0.4	0.032	0.099	0.006	0.026	0.29
67					0.3	0.024	0.098	0.004	0.020	0.22
68					0.3	0.024	0.096	0.004	0.020	0.22
69					0.5	0.040	0.095	0.007	0.033	0.36
70					0.5	0.040	0.093	0.007	0.033	0.36
71					0.5	0.040	0.092	0.007	0.033	0.36
72					0.4	0.032	0.091	0.006	0.026	0.29
73					0.4	0.032	0.089	0.006	0.026	0.29
74					0.4	0.032	0.088	0.006	0.026	0.29
75					0.3	0.024	0.087	0.004	0.020	0.22
76					0.2	0.016	0.085	0.003	0.013	0.15
77					0.3	0.024	0.084	0.004	0.020	0.22
78					0.4	0.032	0.083	0.006	0.026	0.29
79					0.3	0.024	0.082	0.004	0.020	0.22
80					0.2	0.016	0.081	0.003	0.013	0.15
81					0.3	0.024	0.080	0.004	0.020	0.22
82					0.3	0.024	0.079	0.004	0.020	0.22
83					0.3	0.024	0.078	0.004	0.020	0.22
84					0.2	0.016	0.077	0.003	0.013	0.15
85					0.3	0.024	0.076	0.004	0.020	0.22
86					0.2	0.016	0.075	0.003	0.013	0.15
87					0.3	0.024	0.074	0.004	0.020	0.22
88					0.2	0.016	0.073	0.003	0.013	0.15
89					0.3	0.024	0.073	0.004	0.020	0.22
90					0.2	0.016	0.072	0.003	0.013	0.15
91					0.2	0.016	0.071	0.003	0.013	0.15
92					0.2	0.016	0.071	0.003	0.013	0.15
93					0.2	0.016	0.070	0.003	0.013	0.15
94					0.2	0.016	0.070	0.003	0.013	0.15
95					0.2	0.016	0.070	0.003	0.013	0.15
96					0.2	0.016	0.069	0.003	0.013	0.15
TOTALS					100.0				4.32	47.72

EFFECTIVE RAIN = 1.08 INCHES
TOTAL RUNOFF VOLUME = 0.99 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.016	0.883	0.014	0.002	0.00
2					0.3	0.024	0.873	0.022	0.002	0.00
3					0.3	0.024	0.863	0.022	0.002	0.00
4					0.4	0.032	0.852	0.029	0.003	0.00
5					0.3	0.024	0.842	0.022	0.002	0.00
6					0.3	0.024	0.832	0.022	0.002	0.00
7					0.3	0.024	0.822	0.022	0.002	0.00
8					0.4	0.032	0.812	0.029	0.003	0.00
9					0.4	0.032	0.803	0.029	0.003	0.00
10					0.4	0.032	0.793	0.029	0.003	0.00
11					0.5	0.040	0.783	0.036	0.004	0.00
12					0.5	0.040	0.774	0.036	0.004	0.00
13					0.5	0.040	0.764	0.036	0.004	0.00
14					0.5	0.040	0.754	0.036	0.004	0.00
15					0.5	0.040	0.745	0.036	0.004	0.00
16					0.6	0.048	0.736	0.043	0.005	0.00
17					0.6	0.048	0.726	0.043	0.005	0.00
18					0.7	0.056	0.717	0.050	0.006	0.00
19					0.7	0.056	0.708	0.050	0.006	0.00
20					0.8	0.064	0.699	0.058	0.006	0.00
21					0.6	0.048	0.690	0.043	0.005	0.00
22					0.7	0.056	0.681	0.050	0.006	0.00
23					0.8	0.064	0.672	0.058	0.006	0.00
24					0.8	0.064	0.663	0.058	0.006	0.00
25					0.9	0.072	0.654	0.065	0.007	0.00
26					0.9	0.072	0.645	0.065	0.007	0.00
27					1.0	0.080	0.637	0.072	0.008	0.00
28					1.0	0.080	0.628	0.072	0.008	0.00
29					1.0	0.080	0.620	0.072	0.008	0.00
30					1.1	0.088	0.611	0.079	0.009	0.00
31					1.2	0.096	0.603	0.086	0.010	0.00
32					1.3	0.104	0.594	0.094	0.010	0.00
33					1.5	0.120	0.586	0.108	0.012	0.00
34					1.5	0.120	0.578	0.108	0.012	0.00
35					1.6	0.128	0.570	0.115	0.013	0.00
36					1.7	0.136	0.562	0.122	0.014	0.00
37					1.9	0.152	0.554	0.137	0.015	0.00
38					2.0	0.160	0.546	0.144	0.016	0.00
39					2.1	0.168	0.538	0.151	0.017	0.00
40					2.2	0.176	0.531	0.158	0.018	0.00
41					1.5	0.120	0.523	0.108	0.012	0.00
42					1.5	0.120	0.515	0.108	0.012	0.00
43					2.0	0.160	0.508	0.144	0.016	0.00
44					2.0	0.160	0.500	0.144	0.016	0.00
45					1.9	0.152	0.493	0.137	0.015	0.00
46					1.9	0.152	0.486	0.137	0.015	0.00
47					1.7	0.136	0.479	0.122	0.014	0.00
48					1.8	0.144	0.471	0.130	0.014	0.00
49					2.5	0.200	0.464	0.180	0.020	0.00
50					2.6	0.208	0.457	0.187	0.021	0.00
51					2.8	0.224	0.451	0.202	0.022	0.00
52					2.9	0.232	0.444	0.209	0.023	0.00
53					3.4	0.272	0.437	0.245	0.027	0.00
54					3.4	0.272	0.430	0.245	0.027	**0.00**
55					2.3	0.184	0.424	0.166	0.018	0.00
56					2.3	0.184	0.417	0.166	0.018	0.00
57					2.7	0.216	0.411	0.194	0.022	0.00
58					2.6	0.208	0.405	0.187	0.021	0.00
59					2.6	0.208	0.399	0.187	0.021	0.00
60					2.5	0.200	0.393	0.180	0.020	0.00
61					2.4	0.192	0.387	0.173	0.019	0.00
62					2.3	0.184	0.381	0.166	0.018	0.00
63					1.9	0.152	0.375	0.137	0.015	0.00
64					1.9	0.152	0.369	0.137	0.015	0.00

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.032	0.363	0.029	0.003	0.00
66					0.4	0.032	0.358	0.029	0.003	0.00
67					0.3	0.024	0.352	0.022	0.002	0.00
68					0.3	0.024	0.347	0.022	0.002	0.00
69					0.5	0.040	0.342	0.036	0.004	0.00
70					0.5	0.040	0.337	0.036	0.004	0.00
71					0.5	0.040	0.332	0.036	0.004	0.00
72					0.4	0.032	0.327	0.029	0.003	0.00
73					0.4	0.032	0.322	0.029	0.003	0.00
74					0.4	0.032	0.317	0.029	0.003	0.00
75					0.3	0.024	0.313	0.022	0.002	0.00
76					0.2	0.016	0.308	0.014	0.002	0.00
77					0.3	0.024	0.304	0.022	0.002	0.00
78					0.4	0.032	0.300	0.029	0.003	0.00
79					0.3	0.024	0.296	0.022	0.002	0.00
80					0.2	0.016	0.292	0.014	0.002	0.00
81					0.3	0.024	0.288	0.022	0.002	0.00
82					0.3	0.024	0.284	0.022	0.002	0.00
83					0.3	0.024	0.281	0.022	0.002	0.00
84					0.2	0.016	0.277	0.014	0.002	0.00
85					0.3	0.024	0.274	0.022	0.002	0.00
86					0.2	0.016	0.271	0.014	0.002	0.00
87					0.3	0.024	0.268	0.022	0.002	0.00
88					0.2	0.016	0.265	0.014	0.002	0.00
89					0.3	0.024	0.262	0.022	0.002	0.00
90					0.2	0.016	0.260	0.014	0.002	0.00
91					0.2	0.016	0.258	0.014	0.002	0.00
92					0.2	0.016	0.256	0.014	0.002	0.00
93					0.2	0.016	0.254	0.014	0.002	0.00
94					0.2	0.016	0.252	0.014	0.002	0.00
95					0.2	0.016	0.251	0.014	0.002	0.00
96					0.2	0.016	0.250	0.014	0.002	0.00
TOTALS					100.0				0.80	0.12

EFFECTIVE RAIN = 0.20 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.016	0.883	0.014	0.002	0.00
2					0.3	0.024	0.873	0.022	0.002	0.00
3					0.3	0.024	0.863	0.022	0.002	0.00
4					0.4	0.032	0.852	0.029	0.003	0.00
5					0.3	0.024	0.842	0.022	0.002	0.00
6					0.3	0.024	0.832	0.022	0.002	0.00
7					0.3	0.024	0.822	0.022	0.002	0.00
8					0.4	0.032	0.812	0.029	0.003	0.00
9					0.4	0.032	0.803	0.029	0.003	0.00
10					0.4	0.032	0.793	0.029	0.003	0.00
11					0.5	0.040	0.783	0.036	0.004	0.00
12					0.5	0.040	0.774	0.036	0.004	0.00
13					0.5	0.040	0.764	0.036	0.004	0.00
14					0.5	0.040	0.754	0.036	0.004	0.00
15					0.5	0.040	0.745	0.036	0.004	0.00
16					0.6	0.048	0.736	0.043	0.005	0.00
17					0.6	0.048	0.726	0.043	0.005	0.00
18					0.7	0.056	0.717	0.050	0.006	0.00
19					0.7	0.056	0.708	0.050	0.006	0.00
20					0.8	0.064	0.699	0.058	0.006	0.00
21					0.6	0.048	0.690	0.043	0.005	0.00
22					0.7	0.056	0.681	0.050	0.006	0.00
23					0.8	0.064	0.672	0.058	0.006	0.00
24					0.8	0.064	0.663	0.058	0.006	0.00
25					0.9	0.072	0.654	0.065	0.007	0.00
26					0.9	0.072	0.645	0.065	0.007	0.00
27					1.0	0.080	0.637	0.072	0.008	0.00
28					1.0	0.080	0.628	0.072	0.008	0.00
29					1.0	0.080	0.620	0.072	0.008	0.00
30					1.1	0.088	0.611	0.079	0.009	0.00
31					1.2	0.096	0.603	0.086	0.010	0.00
32					1.3	0.104	0.594	0.094	0.010	0.00
33					1.5	0.120	0.586	0.108	0.012	0.00
34					1.5	0.120	0.578	0.108	0.012	0.00
35					1.6	0.128	0.570	0.115	0.013	0.00
36					1.7	0.136	0.562	0.122	0.014	0.00
37					1.9	0.152	0.554	0.137	0.015	0.00
38					2.0	0.160	0.546	0.144	0.016	0.01
39					2.1	0.168	0.538	0.151	0.017	0.01
40					2.2	0.176	0.531	0.158	0.018	0.01
41					1.5	0.120	0.523	0.108	0.012	0.00
42					1.5	0.120	0.515	0.108	0.012	0.00
43					2.0	0.160	0.508	0.144	0.016	0.01
44					2.0	0.160	0.500	0.144	0.016	0.01
45					1.9	0.152	0.493	0.137	0.015	0.00
46					1.9	0.152	0.486	0.137	0.015	0.00
47					1.7	0.136	0.479	0.122	0.014	0.00
48					1.8	0.144	0.471	0.130	0.014	0.00
49					2.5	0.200	0.464	0.180	0.020	0.01
50					2.6	0.208	0.457	0.187	0.021	0.01
51					2.8	0.224	0.451	0.202	0.022	0.01
52					2.9	0.232	0.444	0.209	0.023	0.01
53					3.4	0.272	0.437	0.245	0.027	0.01
54					3.4	0.272	0.430	0.245	0.027	**0.01**
55					2.3	0.184	0.424	0.166	0.018	0.01
56					2.3	0.184	0.417	0.166	0.018	0.01
57					2.7	0.216	0.411	0.194	0.022	0.01
58					2.6	0.208	0.405	0.187	0.021	0.01
59					2.6	0.208	0.399	0.187	0.021	0.01
60					2.5	0.200	0.393	0.180	0.020	0.01
61					2.4	0.192	0.387	0.173	0.019	0.01
62					2.3	0.184	0.381	0.166	0.018	0.01
63					1.9	0.152	0.375	0.137	0.015	0.00
64					1.9	0.152	0.369	0.137	0.015	0.00

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	2-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.00
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.032	0.363	0.029	0.003	0.00
66					0.4	0.032	0.358	0.029	0.003	0.00
67					0.3	0.024	0.352	0.022	0.002	0.00
68					0.3	0.024	0.347	0.022	0.002	0.00
69					0.5	0.040	0.342	0.036	0.004	0.00
70					0.5	0.040	0.337	0.036	0.004	0.00
71					0.5	0.040	0.332	0.036	0.004	0.00
72					0.4	0.032	0.327	0.029	0.003	0.00
73					0.4	0.032	0.322	0.029	0.003	0.00
74					0.4	0.032	0.317	0.029	0.003	0.00
75					0.3	0.024	0.313	0.022	0.002	0.00
76					0.2	0.016	0.308	0.014	0.002	0.00
77					0.3	0.024	0.304	0.022	0.002	0.00
78					0.4	0.032	0.300	0.029	0.003	0.00
79					0.3	0.024	0.296	0.022	0.002	0.00
80					0.2	0.016	0.292	0.014	0.002	0.00
81					0.3	0.024	0.288	0.022	0.002	0.00
82					0.3	0.024	0.284	0.022	0.002	0.00
83					0.3	0.024	0.281	0.022	0.002	0.00
84					0.2	0.016	0.277	0.014	0.002	0.00
85					0.3	0.024	0.274	0.022	0.002	0.00
86					0.2	0.016	0.271	0.014	0.002	0.00
87					0.3	0.024	0.268	0.022	0.002	0.00
88					0.2	0.016	0.265	0.014	0.002	0.00
89					0.3	0.024	0.262	0.022	0.002	0.00
90					0.2	0.016	0.260	0.014	0.002	0.00
91					0.2	0.016	0.258	0.014	0.002	0.00
92					0.2	0.016	0.256	0.014	0.002	0.00
93					0.2	0.016	0.254	0.014	0.002	0.00
94					0.2	0.016	0.252	0.014	0.002	0.00
95					0.2	0.016	0.251	0.014	0.002	0.00
96					0.2	0.016	0.250	0.014	0.002	0.00
TOTALS					100.0				0.80	0.26

EFFECTIVE RAIN = 0.20 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.12
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.074	0.444	0.067	0.007	0.09
2					1.2	0.081	0.444	0.073	0.008	0.10
3					1.3	0.087	0.444	0.079	0.009	0.10
4					1.4	0.094	0.444	0.085	0.009	0.11
5					1.4	0.094	0.444	0.085	0.009	0.11
6					1.5	0.101	0.444	0.091	0.010	0.12
7					1.6	0.108	0.444	0.097	0.011	0.13
8					1.6	0.108	0.444	0.097	0.011	0.13
9					1.6	0.108	0.444	0.097	0.011	0.13
10					1.6	0.108	0.444	0.097	0.011	0.13
11					1.6	0.108	0.444	0.097	0.011	0.13
12					1.7	0.114	0.444	0.103	0.011	0.14
13					1.7	0.114	0.444	0.103	0.011	0.14
14					1.8	0.121	0.444	0.109	0.012	0.14
15					1.8	0.121	0.444	0.109	0.012	0.14
16					1.8	0.121	0.444	0.109	0.012	0.14
17					2.0	0.134	0.444	0.121	0.013	0.16
18					2.0	0.134	0.444	0.121	0.013	0.16
19					2.1	0.141	0.444	0.127	0.014	0.17
20					2.2	0.148	0.444	0.133	0.015	0.18
21					2.5	0.168	0.444	0.151	0.017	0.20
22					2.8	0.188	0.444	0.169	0.019	0.22
23					3.0	0.202	0.444	0.181	0.020	0.24
24					3.2	0.215	0.444	0.194	0.022	0.26
25					3.5	0.235	0.444	0.212	0.024	0.28
26					3.9	0.262	0.444	0.236	0.026	0.31
27					4.2	0.282	0.444	0.254	0.028	0.34
28					4.5	0.302	0.444	0.272	0.030	0.36
29					4.8	0.323	0.444	0.290	0.032	0.38
30					5.1	0.343	0.444	0.308	0.034	0.41
31					6.7	0.450	0.444	0.405	0.045	0.54
32					8.1	0.544	0.444	0.490	0.100	1.19
33					10.3	0.692	0.444	0.623	0.248	**2.95**
34					2.8	0.188	0.444	0.169	0.019	0.22
35					1.1	0.074	0.444	0.067	0.007	0.09
36					0.5	0.034	0.444	0.030	0.003	0.04
TOTALS					100.0				0.90	10.68

EFFECTIVE RAIN = 0.15 INCHES
TOTAL RUNOFF VOLUME = 0.15 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.12
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.074	0.139	0.013	0.061	0.67
2					1.2	0.081	0.139	0.014	0.067	0.74
3					1.3	0.087	0.139	0.015	0.072	0.80
4					1.4	0.094	0.139	0.016	0.078	0.86
5					1.4	0.094	0.139	0.016	0.078	0.86
6					1.5	0.101	0.139	0.017	0.083	0.92
7					1.6	0.108	0.139	0.019	0.089	0.98
8					1.6	0.108	0.139	0.019	0.089	0.98
9					1.6	0.108	0.139	0.019	0.089	0.98
10					1.6	0.108	0.139	0.019	0.089	0.98
11					1.6	0.108	0.139	0.019	0.089	0.98
12					1.7	0.114	0.139	0.020	0.094	1.04
13					1.7	0.114	0.139	0.020	0.094	1.04
14					1.8	0.121	0.139	0.021	0.100	1.10
15					1.8	0.121	0.139	0.021	0.100	1.10
16					1.8	0.121	0.139	0.021	0.100	1.10
17					2.0	0.134	0.139	0.023	0.111	1.23
18					2.0	0.134	0.139	0.023	0.111	1.23
19					2.1	0.141	0.139	0.024	0.117	1.29
20					2.2	0.148	0.139	0.026	0.122	1.35
21					2.5	0.168	0.139	0.029	0.139	1.53
22					2.8	0.188	0.139	0.033	0.156	1.72
23					3.0	0.202	0.139	0.035	0.167	1.84
24					3.2	0.215	0.139	0.037	0.178	1.96
25					3.5	0.235	0.139	0.041	0.194	2.15
26					3.9	0.262	0.139	0.045	0.217	2.39
27					4.2	0.282	0.139	0.049	0.233	2.58
28					4.5	0.302	0.139	0.052	0.250	2.76
29					4.8	0.323	0.139	0.056	0.267	2.94
30					5.1	0.343	0.139	0.059	0.283	3.13
31					6.7	0.450	0.139	0.078	0.372	4.11
32					8.1	0.544	0.139	0.094	0.450	4.97
33					10.3	0.692	0.139	0.120	0.572	**6.32**
34					2.8	0.188	0.139	0.033	0.156	1.72
35					1.1	0.074	0.139	0.013	0.061	0.67
36					0.5	0.034	0.139	0.006	0.028	0.31
TOTALS					100.0				5.56	61.32

EFFECTIVE RAIN = 0.93 INCHES
TOTAL RUNOFF VOLUME = 0.84 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.12
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.074	0.500	0.067	0.007	0.00
2					1.2	0.081	0.500	0.073	0.008	0.00
3					1.3	0.087	0.500	0.079	0.009	0.00
4					1.4	0.094	0.500	0.085	0.009	0.00
5					1.4	0.094	0.500	0.085	0.009	0.00
6					1.5	0.101	0.500	0.091	0.010	0.00
7					1.6	0.108	0.500	0.097	0.011	0.00
8					1.6	0.108	0.500	0.097	0.011	0.00
9					1.6	0.108	0.500	0.097	0.011	0.00
10					1.6	0.108	0.500	0.097	0.011	0.00
11					1.6	0.108	0.500	0.097	0.011	0.00
12					1.7	0.114	0.500	0.103	0.011	0.00
13					1.7	0.114	0.500	0.103	0.011	0.00
14					1.8	0.121	0.500	0.109	0.012	0.00
15					1.8	0.121	0.500	0.109	0.012	0.00
16					1.8	0.121	0.500	0.109	0.012	0.00
17					2.0	0.134	0.500	0.121	0.013	0.00
18					2.0	0.134	0.500	0.121	0.013	0.00
19					2.1	0.141	0.500	0.127	0.014	0.00
20					2.2	0.148	0.500	0.133	0.015	0.00
21					2.5	0.168	0.500	0.151	0.017	0.00
22					2.8	0.188	0.500	0.169	0.019	0.00
23					3.0	0.202	0.500	0.181	0.020	0.00
24					3.2	0.215	0.500	0.194	0.022	0.00
25					3.5	0.235	0.500	0.212	0.024	0.00
26					3.9	0.262	0.500	0.236	0.026	0.00
27					4.2	0.282	0.500	0.254	0.028	0.00
28					4.5	0.302	0.500	0.272	0.030	0.00
29					4.8	0.323	0.500	0.290	0.032	0.00
30					5.1	0.343	0.500	0.308	0.034	0.01
31					6.7	0.450	0.500	0.405	0.045	0.01
32					8.1	0.544	0.500	0.490	0.054	0.01
33					10.3	0.692	0.500	0.623	0.192	**0.03**
34					2.8	0.188	0.500	0.169	0.019	0.00
35					1.1	0.074	0.500	0.067	0.007	0.00
36					0.5	0.034	0.500	0.030	0.003	0.00
TOTALS					100.0				0.79	0.12

EFFECTIVE RAIN = 0.13 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.12
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.074	0.500	0.067	0.007	0.00
2					1.2	0.081	0.500	0.073	0.008	0.00
3					1.3	0.087	0.500	0.079	0.009	0.00
4					1.4	0.094	0.500	0.085	0.009	0.00
5					1.4	0.094	0.500	0.085	0.009	0.00
6					1.5	0.101	0.500	0.091	0.010	0.00
7					1.6	0.108	0.500	0.097	0.011	0.00
8					1.6	0.108	0.500	0.097	0.011	0.00
9					1.6	0.108	0.500	0.097	0.011	0.00
10					1.6	0.108	0.500	0.097	0.011	0.00
11					1.6	0.108	0.500	0.097	0.011	0.00
12					1.7	0.114	0.500	0.103	0.011	0.00
13					1.7	0.114	0.500	0.103	0.011	0.00
14					1.8	0.121	0.500	0.109	0.012	0.00
15					1.8	0.121	0.500	0.109	0.012	0.00
16					1.8	0.121	0.500	0.109	0.012	0.00
17					2.0	0.134	0.500	0.121	0.013	0.00
18					2.0	0.134	0.500	0.121	0.013	0.00
19					2.1	0.141	0.500	0.127	0.014	0.00
20					2.2	0.148	0.500	0.133	0.015	0.00
21					2.5	0.168	0.500	0.151	0.017	0.01
22					2.8	0.188	0.500	0.169	0.019	0.01
23					3.0	0.202	0.500	0.181	0.020	0.01
24					3.2	0.215	0.500	0.194	0.022	0.01
25					3.5	0.235	0.500	0.212	0.024	0.01
26					3.9	0.262	0.500	0.236	0.026	0.01
27					4.2	0.282	0.500	0.254	0.028	0.01
28					4.5	0.302	0.500	0.272	0.030	0.01
29					4.8	0.323	0.500	0.290	0.032	0.01
30					5.1	0.343	0.500	0.308	0.034	0.01
31					6.7	0.450	0.500	0.405	0.045	0.01
32					8.1	0.544	0.500	0.490	0.054	0.02
33					10.3	0.692	0.500	0.623	0.192	**0.06**
34					2.8	0.188	0.500	0.169	0.019	0.01
35					1.1	0.074	0.500	0.067	0.007	0.00
36					0.5	0.034	0.500	0.030	0.003	0.00
TOTALS					100.0				0.79	0.26

EFFECTIVE RAIN = 0.13 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.798
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.124	0.444	0.112	0.012	0.15
2					1.3	0.124	0.444	0.112	0.012	0.15
3					1.1	0.105	0.444	0.095	0.011	0.13
4					1.5	0.144	0.444	0.129	0.014	0.17
5					1.5	0.144	0.444	0.129	0.014	0.17
6					1.8	0.172	0.444	0.155	0.017	0.21
7					1.5	0.144	0.444	0.129	0.014	0.17
8					1.8	0.172	0.444	0.155	0.017	0.21
9					1.8	0.172	0.444	0.155	0.017	0.21
10					1.5	0.144	0.444	0.129	0.014	0.17
11					1.6	0.153	0.444	0.138	0.015	0.18
12					1.8	0.172	0.444	0.155	0.017	0.21
13					2.2	0.211	0.444	0.190	0.021	0.25
14					2.2	0.211	0.444	0.190	0.021	0.25
15					2.2	0.211	0.444	0.190	0.021	0.25
16					2.0	0.192	0.444	0.172	0.019	0.23
17					2.6	0.249	0.444	0.224	0.025	0.30
18					2.7	0.259	0.444	0.233	0.026	0.31
19					2.4	0.230	0.444	0.207	0.023	0.27
20					2.7	0.259	0.444	0.233	0.026	0.31
21					3.3	0.316	0.444	0.284	0.032	0.38
22					3.1	0.297	0.444	0.267	0.030	0.35
23					2.9	0.278	0.444	0.250	0.028	0.33
24					3.0	0.287	0.444	0.259	0.029	0.34
25					3.1	0.297	0.444	0.267	0.030	0.35
26					4.2	0.402	0.444	0.362	0.040	0.48
27					5.0	0.479	0.444	0.431	0.048	0.57
28					3.5	0.335	0.444	0.302	0.034	0.40
29					6.8	0.651	0.444	0.586	0.207	2.47
30					7.3	0.699	0.444	0.629	0.255	3.04
31					8.2	0.785	0.444	0.707	0.341	**4.06**
32					5.9	0.565	0.444	0.508	0.121	1.44
33					2.0	0.192	0.444	0.172	0.019	0.23
34					1.8	0.172	0.444	0.155	0.017	0.21
35					1.8	0.172	0.444	0.155	0.017	0.21
36					0.6	0.057	0.444	0.052	0.006	0.07
TOTALS					100.0				1.61	19.19

EFFECTIVE RAIN = 0.13 INCHES
TOTAL RUNOFF VOLUME = 0.13 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.798
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.124	0.139	0.022	0.103	1.14
2					1.3	0.124	0.139	0.022	0.103	1.14
3					1.1	0.105	0.139	0.018	0.087	0.96
4					1.5	0.144	0.139	0.025	0.119	1.31
5					1.5	0.144	0.139	0.025	0.119	1.31
6					1.8	0.172	0.139	0.030	0.143	1.57
7					1.5	0.144	0.139	0.025	0.119	1.31
8					1.8	0.172	0.139	0.030	0.143	1.57
9					1.8	0.172	0.139	0.030	0.143	1.57
10					1.5	0.144	0.139	0.025	0.119	1.31
11					1.6	0.153	0.139	0.027	0.127	1.40
12					1.8	0.172	0.139	0.030	0.143	1.57
13					2.2	0.211	0.139	0.037	0.174	1.92
14					2.2	0.211	0.139	0.037	0.174	1.92
15					2.2	0.211	0.139	0.037	0.174	1.92
16					2.0	0.192	0.139	0.033	0.158	1.75
17					2.6	0.249	0.139	0.043	0.206	2.27
18					2.7	0.259	0.139	0.045	0.214	2.36
19					2.4	0.230	0.139	0.040	0.190	2.10
20					2.7	0.259	0.139	0.045	0.214	2.36
21					3.3	0.316	0.139	0.055	0.261	2.88
22					3.1	0.297	0.139	0.051	0.245	2.71
23					2.9	0.278	0.139	0.048	0.230	2.53
24					3.0	0.287	0.139	0.050	0.238	2.62
25					3.1	0.297	0.139	0.051	0.245	2.71
26					4.2	0.402	0.139	0.070	0.333	3.67
27					5.0	0.479	0.139	0.083	0.396	4.37
28					3.5	0.335	0.139	0.058	0.277	3.06
29					6.8	0.651	0.139	0.113	0.538	5.94
30					7.3	0.699	0.139	0.121	0.578	6.38
31					8.2	0.785	0.139	0.136	0.649	**7.17**
32					5.9	0.565	0.139	0.098	0.467	5.16
33					2.0	0.192	0.139	0.033	0.158	1.75
34					1.8	0.172	0.139	0.030	0.143	1.57
35					1.8	0.172	0.139	0.030	0.143	1.57
36					0.6	0.057	0.139	0.010	0.048	0.52
TOTALS					100.0				7.92	87.38

EFFECTIVE RAIN = 0.66 INCHES
TOTAL RUNOFF VOLUME = 0.60 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.798
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.124	0.500	0.112	0.012	0.00
2					1.3	0.124	0.500	0.112	0.012	0.00
3					1.1	0.105	0.500	0.095	0.011	0.00
4					1.5	0.144	0.500	0.129	0.014	0.00
5					1.5	0.144	0.500	0.129	0.014	0.00
6					1.8	0.172	0.500	0.155	0.017	0.00
7					1.5	0.144	0.500	0.129	0.014	0.00
8					1.8	0.172	0.500	0.155	0.017	0.00
9					1.8	0.172	0.500	0.155	0.017	0.00
10					1.5	0.144	0.500	0.129	0.014	0.00
11					1.6	0.153	0.500	0.138	0.015	0.00
12					1.8	0.172	0.500	0.155	0.017	0.00
13					2.2	0.211	0.500	0.190	0.021	0.00
14					2.2	0.211	0.500	0.190	0.021	0.00
15					2.2	0.211	0.500	0.190	0.021	0.00
16					2.0	0.192	0.500	0.172	0.019	0.00
17					2.6	0.249	0.500	0.224	0.025	0.00
18					2.7	0.259	0.500	0.233	0.026	0.00
19					2.4	0.230	0.500	0.207	0.023	0.00
20					2.7	0.259	0.500	0.233	0.026	0.00
21					3.3	0.316	0.500	0.284	0.032	0.00
22					3.1	0.297	0.500	0.267	0.030	0.00
23					2.9	0.278	0.500	0.250	0.028	0.00
24					3.0	0.287	0.500	0.259	0.029	0.00
25					3.1	0.297	0.500	0.267	0.030	0.00
26					4.2	0.402	0.500	0.362	0.040	0.01
27					5.0	0.479	0.500	0.431	0.048	0.01
28					3.5	0.335	0.500	0.302	0.034	0.01
29					6.8	0.651	0.500	0.586	0.151	0.02
30					7.3	0.699	0.500	0.629	0.199	0.03
31					8.2	0.785	0.500	0.707	0.285	**0.04**
32					5.9	0.565	0.500	0.508	0.065	0.01
33					2.0	0.192	0.500	0.172	0.019	0.00
34					1.8	0.172	0.500	0.155	0.017	0.00
35					1.8	0.172	0.500	0.155	0.017	0.00
36					0.6	0.057	0.500	0.052	0.006	0.00
TOTALS					100.0				1.39	0.21

EFFECTIVE RAIN = 0.12 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.798
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.124	0.500	0.112	0.012	0.00
2					1.3	0.124	0.500	0.112	0.012	0.00
3					1.1	0.105	0.500	0.095	0.011	0.00
4					1.5	0.144	0.500	0.129	0.014	0.00
5					1.5	0.144	0.500	0.129	0.014	0.00
6					1.8	0.172	0.500	0.155	0.017	0.01
7					1.5	0.144	0.500	0.129	0.014	0.00
8					1.8	0.172	0.500	0.155	0.017	0.01
9					1.8	0.172	0.500	0.155	0.017	0.01
10					1.5	0.144	0.500	0.129	0.014	0.00
11					1.6	0.153	0.500	0.138	0.015	0.00
12					1.8	0.172	0.500	0.155	0.017	0.01
13					2.2	0.211	0.500	0.190	0.021	0.01
14					2.2	0.211	0.500	0.190	0.021	0.01
15					2.2	0.211	0.500	0.190	0.021	0.01
16					2.0	0.192	0.500	0.172	0.019	0.01
17					2.6	0.249	0.500	0.224	0.025	0.01
18					2.7	0.259	0.500	0.233	0.026	0.01
19					2.4	0.230	0.500	0.207	0.023	0.01
20					2.7	0.259	0.500	0.233	0.026	0.01
21					3.3	0.316	0.500	0.284	0.032	0.01
22					3.1	0.297	0.500	0.267	0.030	0.01
23					2.9	0.278	0.500	0.250	0.028	0.01
24					3.0	0.287	0.500	0.259	0.029	0.01
25					3.1	0.297	0.500	0.267	0.030	0.01
26					4.2	0.402	0.500	0.362	0.040	0.01
27					5.0	0.479	0.500	0.431	0.048	0.02
28					3.5	0.335	0.500	0.302	0.034	0.01
29					6.8	0.651	0.500	0.586	0.151	0.05
30					7.3	0.699	0.500	0.629	0.199	0.06
31					8.2	0.785	0.500	0.707	0.285	**0.09**
32					5.9	0.565	0.500	0.508	0.065	0.02
33					2.0	0.192	0.500	0.172	0.019	0.01
34					1.8	0.172	0.500	0.155	0.017	0.01
35					1.8	0.172	0.500	0.155	0.017	0.01
36					0.6	0.057	0.500	0.052	0.006	0.00
TOTALS					100.0				1.39	0.45

EFFECTIVE RAIN = 0.12 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.455
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.229	0.444	0.206	0.023	0.27
2					4.3	0.235	0.444	0.211	0.023	0.28
3					5.0	0.273	0.444	0.246	0.027	0.33
4					5.0	0.273	0.444	0.246	0.027	0.33
5					5.8	0.317	0.444	0.285	0.032	0.38
6					6.5	0.355	0.444	0.319	0.035	0.42
7					7.4	0.404	0.444	0.364	0.040	0.48
8					8.6	0.470	0.444	0.423	0.047	0.56
9					12.3	0.672	0.444	0.604	0.227	2.71
10					29.1	1.589	0.444	1.430	1.145	**13.64**
11					6.8	0.371	0.444	0.334	0.037	0.44
12					5.0	0.273	0.444	0.246	0.027	0.33
TOTALS					100.0				1.69	20.16

EFFECTIVE RAIN = 0.14 INCHES
TOTAL RUNOFF VOLUME = 0.14 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.455
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.229	0.139	0.040	0.190	2.09
2					4.3	0.235	0.139	0.041	0.194	2.14
3					5.0	0.273	0.139	0.047	0.226	2.49
4					5.0	0.273	0.139	0.047	0.226	2.49
5					5.8	0.317	0.139	0.055	0.262	2.89
6					6.5	0.355	0.139	0.061	0.293	3.24
7					7.4	0.404	0.139	0.070	0.334	3.69
8					8.6	0.470	0.139	0.081	0.388	4.28
9					12.3	0.672	0.139	0.116	0.555	6.13
10					29.1	1.589	0.139	0.275	1.450	**16.01**
11					6.8	0.371	0.139	0.064	0.307	3.39
12					5.0	0.273	0.139	0.047	0.226	2.49
TOTALS					100.0				4.65	51.33

EFFECTIVE RAIN = 0.39 INCHES
TOTAL RUNOFF VOLUME = 0.35 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.455
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.229	0.500	0.206	0.023	0.00
2					4.3	0.235	0.500	0.211	0.023	0.00
3					5.0	0.273	0.500	0.246	0.027	0.00
4					5.0	0.273	0.500	0.246	0.027	0.00
5					5.8	0.317	0.500	0.285	0.032	0.00
6					6.5	0.355	0.500	0.319	0.035	0.01
7					7.4	0.404	0.500	0.364	0.040	0.01
8					8.6	0.470	0.500	0.423	0.047	0.01
9					12.3	0.672	0.500	0.604	0.172	0.03
10					29.1	1.589	0.500	1.430	1.089	**0.17**
11					6.8	0.371	0.500	0.334	0.037	0.01
12					5.0	0.273	0.500	0.246	0.027	0.00
TOTALS					100.0				1.58	0.24

EFFECTIVE RAIN = 0.13 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

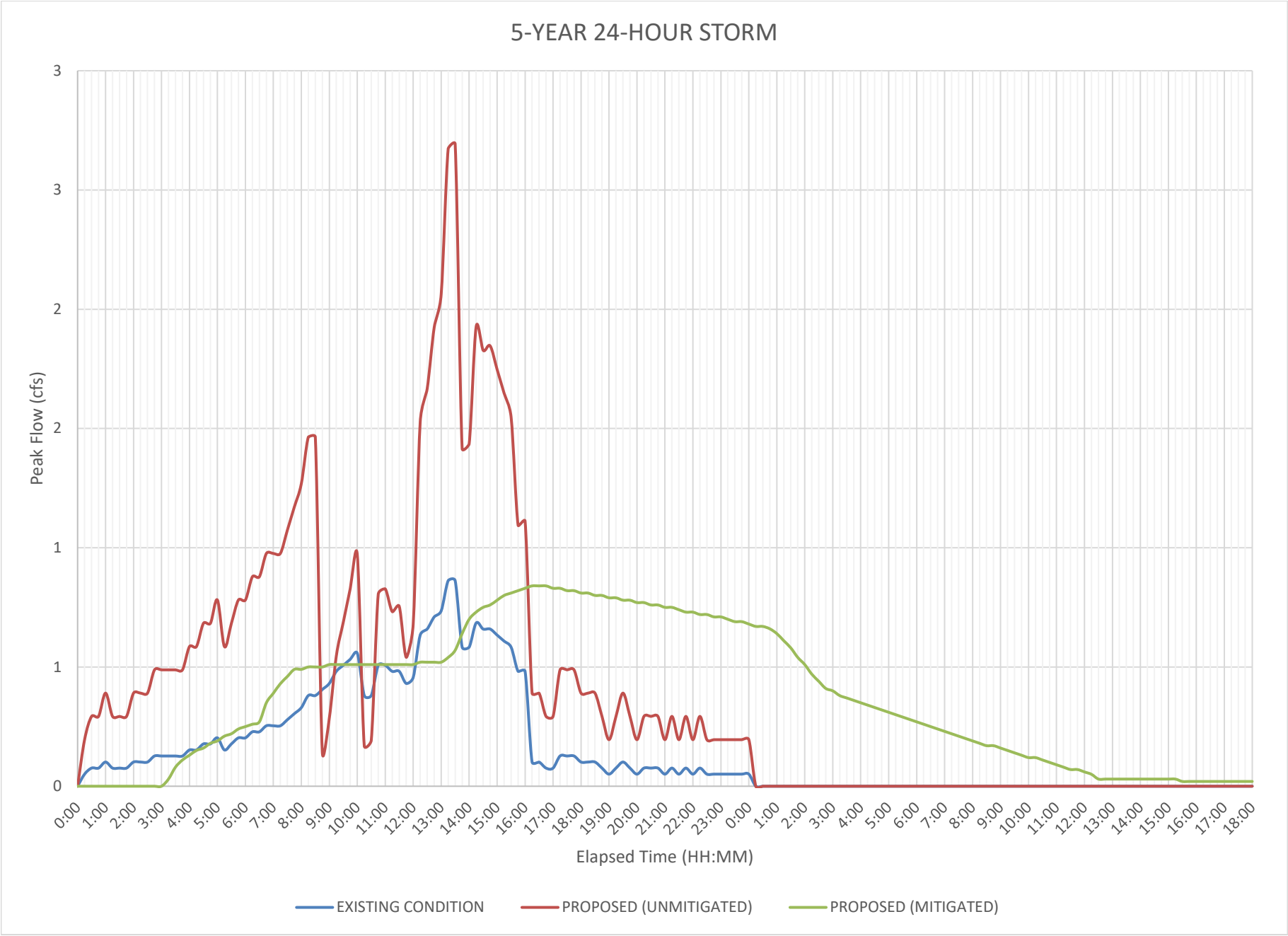
R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

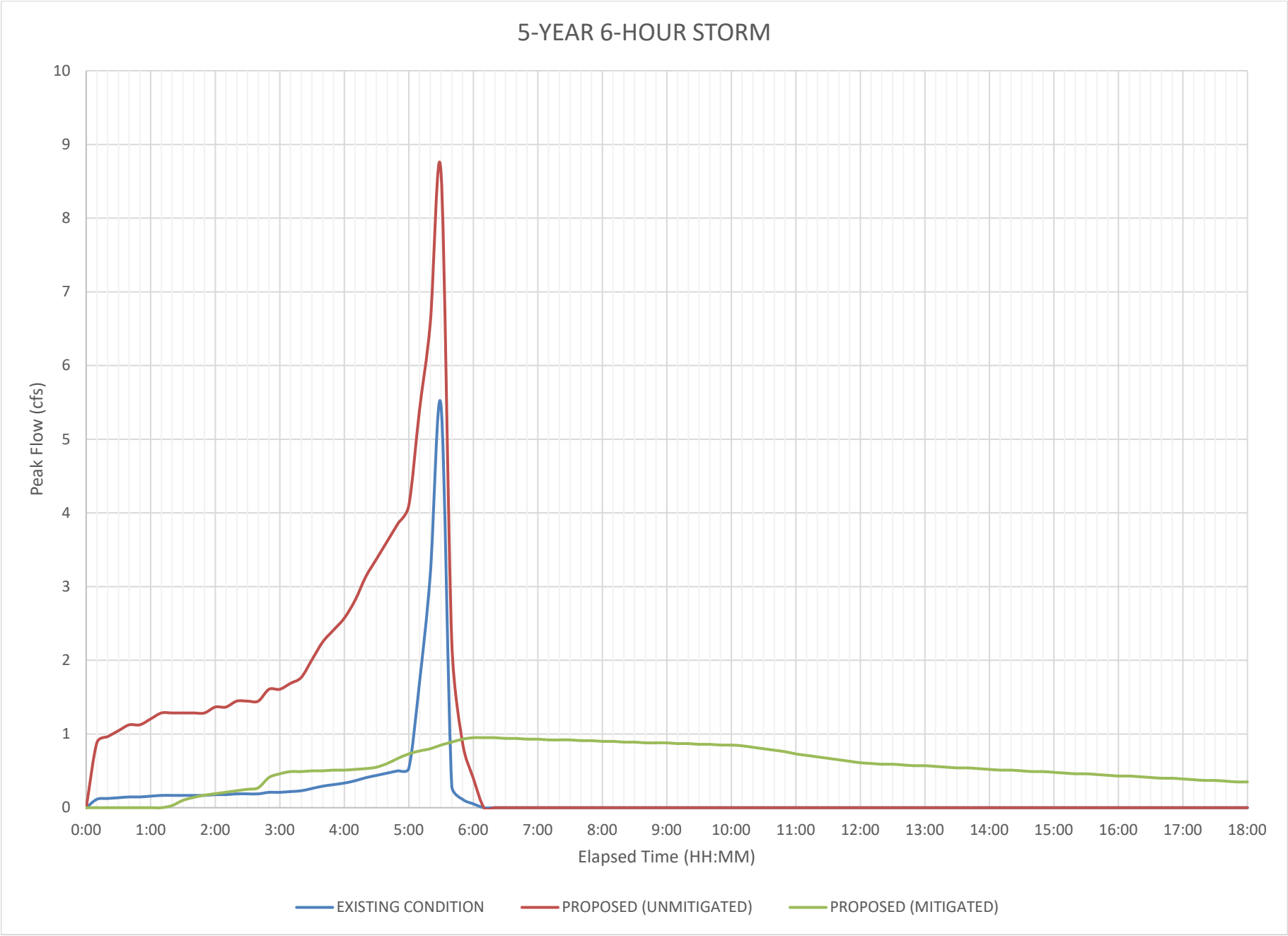
[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	2-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.455
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

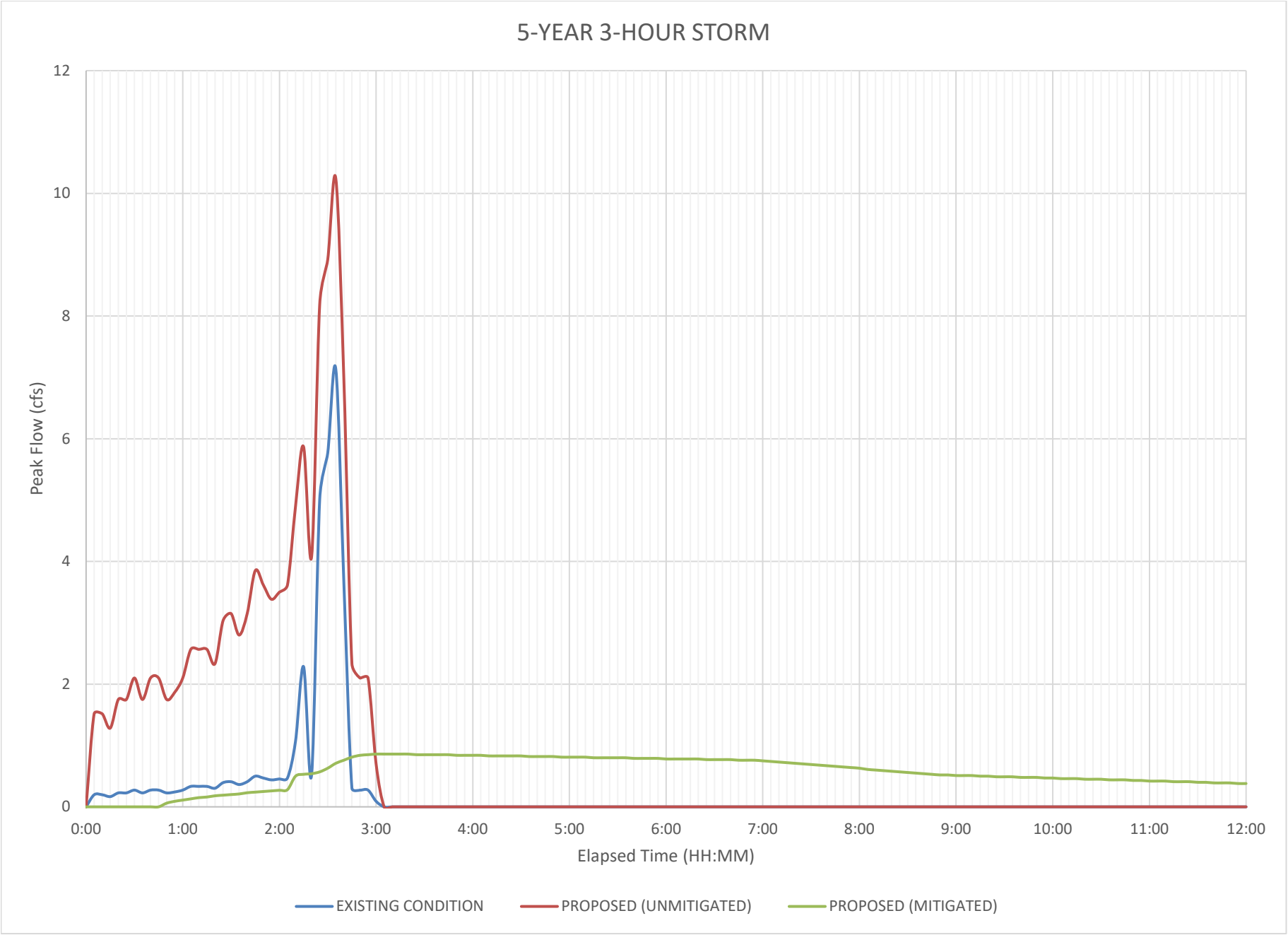
	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.229	0.500	0.206	0.023	0.01
2					4.3	0.235	0.500	0.211	0.023	0.01
3					5.0	0.273	0.500	0.246	0.027	0.01
4					5.0	0.273	0.500	0.246	0.027	0.01
5					5.8	0.317	0.500	0.285	0.032	0.01
6					6.5	0.355	0.500	0.319	0.035	0.01
7					7.4	0.404	0.500	0.364	0.040	0.01
8					8.6	0.470	0.500	0.423	0.047	0.02
9					12.3	0.672	0.500	0.604	0.172	0.06
10					29.1	1.589	0.500	1.430	1.089	**0.35**
11					6.8	0.371	0.500	0.334	0.037	0.01
12					5.0	0.273	0.500	0.246	0.027	0.01
TOTALS					100.0				1.58	0.51

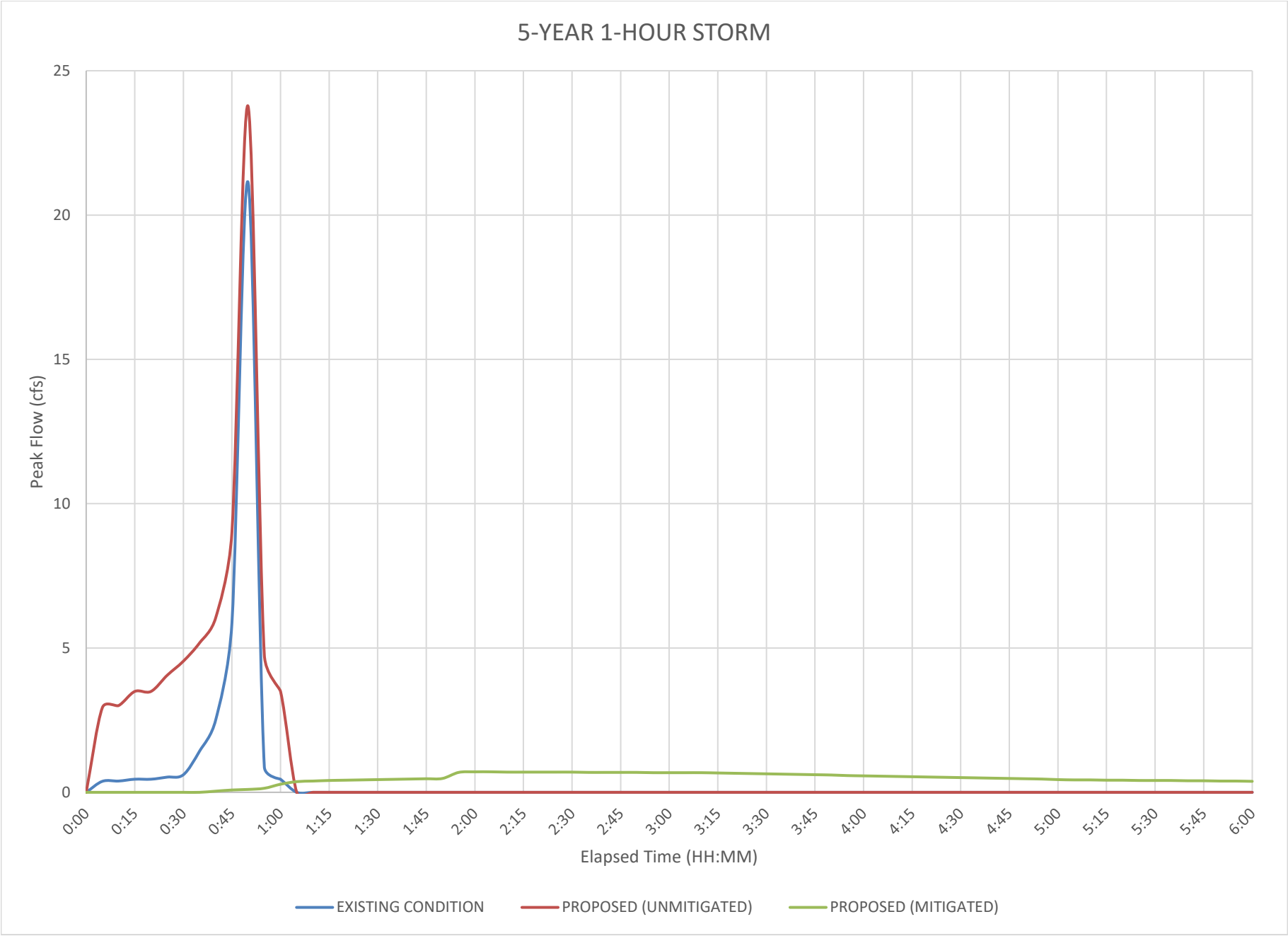
EFFECTIVE RAIN = 0.13 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

Storm Event	Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
5-yr, 24-hour	0.86	2.69	0.84	-0.02
5-yr, 6-hour	5.46	8.62	0.95	-4.51
5-yr, 3-hour	7.13	10.24	0.86	-6.27
5-yr, 1-hour	21.12	23.76	0.71	-20.41


5-YEAR 24-HOUR STORM
Peak Flow (cfs)
3
3
2
2
1
1
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


5-YEAR 6-HOUR STORM
Peak Flow (cfs)
10
9
8
7
6
5
4
3
2
1
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


5-YEAR 3-HOUR STORM
Peak Flow (cfs)
12
10
8
6
4
2
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


5-YEAR 1-HOUR STORM
Peak Flow (cfs)
25
20
15
10
5
0
0:00
0:15
0:30
0:45
1:00
1:15
1:30
1:45
2:00
2:15
2:30
2:45
3:00
3:15
3:30
3:45
4:00
4:15
4:30
4:45
5:00
5:15
5:30
5:45
6:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)

Storm Event	Precip (inches)	Reference
5-yr, 24-hour	2.66	NOAA Atlas 14
5-yr, 6-hour	1.46	
5-yr, 3-hour	1.06	
5-yr, 1-hour	0.64	

PROJECT SITE EXISTING

Drainage Area	514607	sf		
	11.81	ac		
A_i	19,641	sf		
	4%	imp		
Runoff Index	78		Note:	Plate E-6.1: Grass (Poor); Soil Types A (40%), C (43%) & D (16%); Area-Weighted
F_p	0.46	in/hr	Note:	Plate E-6.2: AMC I

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.444 in/hr**

For 24-hr storms, F_T is variable loss rate

$F_T = C[24 - (T/60)]^{1.55} + F_M$ ***F_T =*** **0.784**

$C = (F - F_M)/54$ ***C =*** **0.0041**

$T = \text{Unit Time}/2$ ***T =*** **7.5**

$F_M = 0.5F$ ***F_M =*** **0.222**

DMA D/1: PROPOSED

Drainage Area	476806	sf		
	10.95	ac		
A_i	433,145	sf		
	91%	imp		
Runoff Index	52		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Types A (49%), C (37%) & D (14%); Area-Weighted
F_p	0.76	in/hr	Note:	Plate E-6.2: AMC I

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.139 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* = 0.245**

$$C = (F - F_M)/54$$ ***C* = 0.0013**

$$T = \text{Unit Time}/2$$ ***T* = 7.5**

$$F_M = 0.5F$$ ***F M* = 0.069**

DMA A/1: PROPOSED

Drainage Area	6668	sf		
	0.15	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.50	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F* = 0.500 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* = 0.883**

$$C = (F - F_M)/54$$ ***C* = 0.0046**

$$T = \text{Unit Time}/2$$ ***T* = 7.5**

$$F_M = 0.5F$$ ***F M* = 0.250**

DMA A/2: PROPOSED

Drainage Area	13866	sf		
	0.32	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.50	in/hr	Note:	Plate E-6.2: AMC I

$$F = F_p(1 - 0.9A_i)$$ ***F* = 0.500 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$

$$C = (F - F_M)/54$$

$$T = \text{Unit Time}/2$$

$$F_M = 0.5F$$

F_T =	**0.883**
C =	**0.0046**
T =	**7.5**
F_M =	**0.250**

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.444	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.222
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.021	0.784	0.017	0.004	0.05
2					0.3	0.032	0.775	0.026	0.006	0.08
3					0.3	0.032	0.766	0.026	0.006	0.08
4					0.4	0.043	0.757	0.034	0.009	0.10
5					0.3	0.032	0.748	0.026	0.006	0.08
6					0.3	0.032	0.739	0.026	0.006	0.08
7					0.3	0.032	0.731	0.026	0.006	0.08
8					0.4	0.043	0.722	0.034	0.009	0.10
9					0.4	0.043	0.713	0.034	0.009	0.10
10					0.4	0.043	0.704	0.034	0.009	0.10
11					0.5	0.053	0.696	0.043	0.011	0.13
12					0.5	0.053	0.687	0.043	0.011	0.13
13					0.5	0.053	0.679	0.043	0.011	0.13
14					0.5	0.053	0.670	0.043	0.011	0.13
15					0.5	0.053	0.662	0.043	0.011	0.13
16					0.6	0.064	0.654	0.051	0.013	0.15
17					0.6	0.064	0.645	0.051	0.013	0.15
18					0.7	0.074	0.637	0.060	0.015	0.18
19					0.7	0.074	0.629	0.060	0.015	0.18
20					0.8	0.085	0.621	0.068	0.017	0.20
21					0.6	0.064	0.613	0.051	0.013	0.15
22					0.7	0.074	0.605	0.060	0.015	0.18
23					0.8	0.085	0.597	0.068	0.017	0.20
24					0.8	0.085	0.589	0.068	0.017	0.20
25					0.9	0.096	0.581	0.077	0.019	0.23
26					0.9	0.096	0.573	0.077	0.019	0.23
27					1.0	0.106	0.566	0.085	0.021	0.25
28					1.0	0.106	0.558	0.085	0.021	0.25
29					1.0	0.106	0.550	0.085	0.021	0.25
30					1.1	0.117	0.543	0.094	0.023	0.28
31					1.2	0.128	0.536	0.102	0.026	0.30
32					1.3	0.138	0.528	0.111	0.028	0.33
33					1.5	0.160	0.521	0.128	0.032	0.38
34					1.5	0.160	0.514	0.128	0.032	0.38
35					1.6	0.170	0.506	0.136	0.034	0.41
36					1.7	0.181	0.499	0.145	0.036	0.43
37					1.9	0.202	0.492	0.162	0.040	0.48
38					2.0	0.213	0.485	0.170	0.043	0.51
39					2.1	0.223	0.478	0.179	0.045	0.53
40					2.2	0.234	0.471	0.187	0.047	0.56
41					1.5	0.160	0.465	0.128	0.032	0.38
42					1.5	0.160	0.458	0.128	0.032	0.38
43					2.0	0.213	0.451	0.170	0.043	0.51
44					2.0	0.213	0.445	0.170	0.043	0.51
45					1.9	0.202	0.438	0.162	0.040	0.48
46					1.9	0.202	0.432	0.162	0.040	0.48
47					1.7	0.181	0.425	0.145	0.036	0.43
48					1.8	0.192	0.419	0.153	0.038	0.46
49					2.5	0.266	0.413	0.213	0.053	0.63
50					2.6	0.277	0.406	0.221	0.055	0.66
51					2.8	0.298	0.400	0.238	0.060	0.71
52					2.9	0.309	0.394	0.247	0.062	0.74
53					3.4	0.362	0.388	0.289	0.072	0.86
54					3.4	0.362	0.382	0.289	0.072	**0.86**
55					2.3	0.245	0.377	0.196	0.049	0.58
56					2.3	0.245	0.371	0.196	0.049	0.58
57					2.7	0.287	0.365	0.230	0.057	0.68
58					2.6	0.277	0.360	0.221	0.055	0.66
59					2.6	0.277	0.354	0.221	0.055	0.66
60					2.5	0.266	0.349	0.213	0.053	0.63
61					2.4	0.255	0.343	0.204	0.051	0.61
62					2.3	0.245	0.338	0.196	0.049	0.58
63					1.9	0.202	0.333	0.162	0.040	0.48
64					1.9	0.202	0.328	0.162	0.040	0.48

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.444	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.222
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.043	0.323	0.034	0.009	0.10
66					0.4	0.043	0.318	0.034	0.009	0.10
67					0.3	0.032	0.313	0.026	0.006	0.08
68					0.3	0.032	0.308	0.026	0.006	0.08
69					0.5	0.053	0.304	0.043	0.011	0.13
70					0.5	0.053	0.299	0.043	0.011	0.13
71					0.5	0.053	0.295	0.043	0.011	0.13
72					0.4	0.043	0.290	0.034	0.009	0.10
73					0.4	0.043	0.286	0.034	0.009	0.10
74					0.4	0.043	0.282	0.034	0.009	0.10
75					0.3	0.032	0.278	0.026	0.006	0.08
76					0.2	0.021	0.274	0.017	0.004	0.05
77					0.3	0.032	0.270	0.026	0.006	0.08
78					0.4	0.043	0.266	0.034	0.009	0.10
79					0.3	0.032	0.263	0.026	0.006	0.08
80					0.2	0.021	0.259	0.017	0.004	0.05
81					0.3	0.032	0.256	0.026	0.006	0.08
82					0.3	0.032	0.252	0.026	0.006	0.08
83					0.3	0.032	0.249	0.026	0.006	0.08
84					0.2	0.021	0.246	0.017	0.004	0.05
85					0.3	0.032	0.243	0.026	0.006	0.08
86					0.2	0.021	0.240	0.017	0.004	0.05
87					0.3	0.032	0.238	0.026	0.006	0.08
88					0.2	0.021	0.235	0.017	0.004	0.05
89					0.3	0.032	0.233	0.026	0.006	0.08
90					0.2	0.021	0.231	0.017	0.004	0.05
91					0.2	0.021	0.229	0.017	0.004	0.05
92					0.2	0.021	0.227	0.017	0.004	0.05
93					0.2	0.021	0.225	0.017	0.004	0.05
94					0.2	0.021	0.224	0.017	0.004	0.05
95					0.2	0.021	0.223	0.017	0.004	0.05
96					0.2	0.021	0.222	0.017	0.004	0.05
TOTALS					100.0				2.13	25.35

EFFECTIVE RAIN = 0.53 INCHES
TOTAL RUNOFF VOLUME = 0.52 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.139	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.069
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.021	0.245	0.004	0.018	0.19
2					0.3	0.032	0.242	0.006	0.026	0.29
3					0.3	0.032	0.239	0.006	0.026	0.29
4					0.4	0.043	0.236	0.007	0.035	0.39
5					0.3	0.032	0.234	0.006	0.026	0.29
6					0.3	0.032	0.231	0.006	0.026	0.29
7					0.3	0.032	0.228	0.006	0.026	0.29
8					0.4	0.043	0.225	0.007	0.035	0.39
9					0.4	0.043	0.223	0.007	0.035	0.39
10					0.4	0.043	0.220	0.007	0.035	0.39
11					0.5	0.053	0.217	0.009	0.044	0.49
12					0.5	0.053	0.214	0.009	0.044	0.49
13					0.5	0.053	0.212	0.009	0.044	0.49
14					0.5	0.053	0.209	0.009	0.044	0.49
15					0.5	0.053	0.207	0.009	0.044	0.49
16					0.6	0.064	0.204	0.011	0.053	0.58
17					0.6	0.064	0.201	0.011	0.053	0.58
18					0.7	0.074	0.199	0.013	0.062	0.68
19					0.7	0.074	0.196	0.013	0.062	0.68
20					0.8	0.085	0.194	0.015	0.070	0.78
21					0.6	0.064	0.191	0.011	0.053	0.58
22					0.7	0.074	0.189	0.013	0.062	0.68
23					0.8	0.085	0.186	0.015	0.070	0.78
24					0.8	0.085	0.184	0.015	0.070	0.78
25					0.9	0.096	0.181	0.017	0.079	0.87
26					0.9	0.096	0.179	0.017	0.079	0.87
27					1.0	0.106	0.177	0.018	0.088	0.97
28					1.0	0.106	0.174	0.018	0.088	0.97
29					1.0	0.106	0.172	0.018	0.088	0.97
30					1.1	0.117	0.169	0.020	0.097	1.07
31					1.2	0.128	0.167	0.022	0.106	1.17
32					1.3	0.138	0.165	0.024	0.114	1.26
33					1.5	0.160	0.163	0.028	0.132	1.46
34					1.5	0.160	0.160	0.028	0.132	1.46
35					1.6	0.170	0.158	0.029	0.012	0.13
36					1.7	0.181	0.156	0.031	0.025	0.28
37					1.9	0.202	0.154	0.035	0.049	0.54
38					2.0	0.213	0.151	0.037	0.061	0.68
39					2.1	0.223	0.149	0.039	0.074	0.82
40					2.2	0.234	0.147	0.041	0.087	0.96
41					1.5	0.160	0.145	0.028	0.015	0.16
42					1.5	0.160	0.143	0.028	0.017	0.18
43					2.0	0.213	0.141	0.037	0.072	0.79
44					2.0	0.213	0.139	0.037	0.074	0.82
45					1.9	0.202	0.137	0.035	0.065	0.72
46					1.9	0.202	0.135	0.035	0.067	0.74
47					1.7	0.181	0.133	0.031	0.048	0.53
48					1.8	0.192	0.131	0.033	0.061	0.67
49					2.5	0.266	0.129	0.046	0.137	1.51
50					2.6	0.277	0.127	0.048	0.150	1.65
51					2.8	0.298	0.125	0.052	0.173	1.91
52					2.9	0.309	0.123	0.053	0.186	2.05
53					3.4	0.362	0.121	0.063	0.241	2.66
54					3.4	0.362	0.119	0.063	0.242	**2.68**
55					2.3	0.245	0.118	0.042	0.127	1.40
56					2.3	0.245	0.116	0.042	0.129	1.42
57					2.7	0.287	0.114	0.050	0.173	1.91
58					2.6	0.277	0.112	0.048	0.164	1.81
59					2.6	0.277	0.111	0.048	0.166	1.83
60					2.5	0.266	0.109	0.046	0.157	1.73
61					2.4	0.255	0.107	0.044	0.148	1.64
62					2.3	0.245	0.106	0.042	0.139	1.54
63					1.9	0.202	0.104	0.035	0.098	1.08
64					1.9	0.202	0.102	0.035	0.100	1.10

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.139	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.069
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.043	0.101	0.007	0.035	0.39
66					0.4	0.043	0.099	0.007	0.035	0.39
67					0.3	0.032	0.098	0.006	0.026	0.29
68					0.3	0.032	0.096	0.006	0.026	0.29
69					0.5	0.053	0.095	0.009	0.044	0.49
70					0.5	0.053	0.093	0.009	0.044	0.49
71					0.5	0.053	0.092	0.009	0.044	0.49
72					0.4	0.043	0.091	0.007	0.035	0.39
73					0.4	0.043	0.089	0.007	0.035	0.39
74					0.4	0.043	0.088	0.007	0.035	0.39
75					0.3	0.032	0.087	0.006	0.026	0.29
76					0.2	0.021	0.085	0.004	0.018	0.19
77					0.3	0.032	0.084	0.006	0.026	0.29
78					0.4	0.043	0.083	0.007	0.035	0.39
79					0.3	0.032	0.082	0.006	0.026	0.29
80					0.2	0.021	0.081	0.004	0.018	0.19
81					0.3	0.032	0.080	0.006	0.026	0.29
82					0.3	0.032	0.079	0.006	0.026	0.29
83					0.3	0.032	0.078	0.006	0.026	0.29
84					0.2	0.021	0.077	0.004	0.018	0.19
85					0.3	0.032	0.076	0.006	0.026	0.29
86					0.2	0.021	0.075	0.004	0.018	0.19
87					0.3	0.032	0.074	0.006	0.026	0.29
88					0.2	0.021	0.073	0.004	0.018	0.19
89					0.3	0.032	0.073	0.006	0.026	0.29
90					0.2	0.021	0.072	0.004	0.018	0.19
91					0.2	0.021	0.071	0.004	0.018	0.19
92					0.2	0.021	0.071	0.004	0.018	0.19
93					0.2	0.021	0.070	0.004	0.018	0.19
94					0.2	0.021	0.070	0.004	0.018	0.19
95					0.2	0.021	0.070	0.004	0.018	0.19
96					0.2	0.021	0.069	0.004	0.018	0.19
TOTALS					100.0				6.17	68.10

EFFECTIVE RAIN = 1.54 INCHES
TOTAL RUNOFF VOLUME = 1.41 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.021	0.883	0.019	0.002	0.00
2					0.3	0.032	0.873	0.029	0.003	0.00
3					0.3	0.032	0.863	0.029	0.003	0.00
4					0.4	0.043	0.852	0.038	0.004	0.00
5					0.3	0.032	0.842	0.029	0.003	0.00
6					0.3	0.032	0.832	0.029	0.003	0.00
7					0.3	0.032	0.822	0.029	0.003	0.00
8					0.4	0.043	0.812	0.038	0.004	0.00
9					0.4	0.043	0.803	0.038	0.004	0.00
10					0.4	0.043	0.793	0.038	0.004	0.00
11					0.5	0.053	0.783	0.048	0.005	0.00
12					0.5	0.053	0.774	0.048	0.005	0.00
13					0.5	0.053	0.764	0.048	0.005	0.00
14					0.5	0.053	0.754	0.048	0.005	0.00
15					0.5	0.053	0.745	0.048	0.005	0.00
16					0.6	0.064	0.736	0.057	0.006	0.00
17					0.6	0.064	0.726	0.057	0.006	0.00
18					0.7	0.074	0.717	0.067	0.007	0.00
19					0.7	0.074	0.708	0.067	0.007	0.00
20					0.8	0.085	0.699	0.077	0.009	0.00
21					0.6	0.064	0.690	0.057	0.006	0.00
22					0.7	0.074	0.681	0.067	0.007	0.00
23					0.8	0.085	0.672	0.077	0.009	0.00
24					0.8	0.085	0.663	0.077	0.009	0.00
25					0.9	0.096	0.654	0.086	0.010	0.00
26					0.9	0.096	0.645	0.086	0.010	0.00
27					1.0	0.106	0.637	0.096	0.011	0.00
28					1.0	0.106	0.628	0.096	0.011	0.00
29					1.0	0.106	0.620	0.096	0.011	0.00
30					1.1	0.117	0.611	0.105	0.012	0.00
31					1.2	0.128	0.603	0.115	0.013	0.00
32					1.3	0.138	0.594	0.124	0.014	0.00
33					1.5	0.160	0.586	0.144	0.016	0.00
34					1.5	0.160	0.578	0.144	0.016	0.00
35					1.6	0.170	0.570	0.153	0.017	0.00
36					1.7	0.181	0.562	0.163	0.018	0.00
37					1.9	0.202	0.554	0.182	0.020	0.00
38					2.0	0.213	0.546	0.192	0.021	0.00
39					2.1	0.223	0.538	0.201	0.022	0.00
40					2.2	0.234	0.531	0.211	0.023	0.00
41					1.5	0.160	0.523	0.144	0.016	0.00
42					1.5	0.160	0.515	0.144	0.016	0.00
43					2.0	0.213	0.508	0.192	0.021	0.00
44					2.0	0.213	0.500	0.192	0.021	0.00
45					1.9	0.202	0.493	0.182	0.020	0.00
46					1.9	0.202	0.486	0.182	0.020	0.00
47					1.7	0.181	0.479	0.163	0.018	0.00
48					1.8	0.192	0.471	0.172	0.019	0.00
49					2.5	0.266	0.464	0.239	0.027	0.00
50					2.6	0.277	0.457	0.249	0.028	0.00
51					2.8	0.298	0.451	0.268	0.030	0.00
52					2.9	0.309	0.444	0.278	0.031	0.00
53					3.4	0.362	0.437	0.326	0.036	0.01
54					3.4	0.362	0.430	0.326	0.036	**0.01**
55					2.3	0.245	0.424	0.220	0.024	0.00
56					2.3	0.245	0.417	0.220	0.024	0.00
57					2.7	0.287	0.411	0.259	0.029	0.00
58					2.6	0.277	0.405	0.249	0.028	0.00
59					2.6	0.277	0.399	0.249	0.028	0.00
60					2.5	0.266	0.393	0.239	0.027	0.00
61					2.4	0.255	0.387	0.230	0.026	0.00
62					2.3	0.245	0.381	0.220	0.024	0.00
63					1.9	0.202	0.375	0.182	0.020	0.00
64					1.9	0.202	0.369	0.182	0.020	0.00

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.043	0.363	0.038	0.004	0.00
66					0.4	0.043	0.358	0.038	0.004	0.00
67					0.3	0.032	0.352	0.029	0.003	0.00
68					0.3	0.032	0.347	0.029	0.003	0.00
69					0.5	0.053	0.342	0.048	0.005	0.00
70					0.5	0.053	0.337	0.048	0.005	0.00
71					0.5	0.053	0.332	0.048	0.005	0.00
72					0.4	0.043	0.327	0.038	0.004	0.00
73					0.4	0.043	0.322	0.038	0.004	0.00
74					0.4	0.043	0.317	0.038	0.004	0.00
75					0.3	0.032	0.313	0.029	0.003	0.00
76					0.2	0.021	0.308	0.019	0.002	0.00
77					0.3	0.032	0.304	0.029	0.003	0.00
78					0.4	0.043	0.300	0.038	0.004	0.00
79					0.3	0.032	0.296	0.029	0.003	0.00
80					0.2	0.021	0.292	0.019	0.002	0.00
81					0.3	0.032	0.288	0.029	0.003	0.00
82					0.3	0.032	0.284	0.029	0.003	0.00
83					0.3	0.032	0.281	0.029	0.003	0.00
84					0.2	0.021	0.277	0.019	0.002	0.00
85					0.3	0.032	0.274	0.029	0.003	0.00
86					0.2	0.021	0.271	0.019	0.002	0.00
87					0.3	0.032	0.268	0.029	0.003	0.00
88					0.2	0.021	0.265	0.019	0.002	0.00
89					0.3	0.032	0.262	0.029	0.003	0.00
90					0.2	0.021	0.260	0.019	0.002	0.00
91					0.2	0.021	0.258	0.019	0.002	0.00
92					0.2	0.021	0.256	0.019	0.002	0.00
93					0.2	0.021	0.254	0.019	0.002	0.00
94					0.2	0.021	0.252	0.019	0.002	0.00
95					0.2	0.021	0.251	0.019	0.002	0.00
96					0.2	0.021	0.250	0.019	0.002	0.00
TOTALS					100.0				1.06	0.16

EFFECTIVE RAIN = 0.27 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.021	0.883	0.019	0.002	0.00
2					0.3	0.032	0.873	0.029	0.003	0.00
3					0.3	0.032	0.863	0.029	0.003	0.00
4					0.4	0.043	0.852	0.038	0.004	0.00
5					0.3	0.032	0.842	0.029	0.003	0.00
6					0.3	0.032	0.832	0.029	0.003	0.00
7					0.3	0.032	0.822	0.029	0.003	0.00
8					0.4	0.043	0.812	0.038	0.004	0.00
9					0.4	0.043	0.803	0.038	0.004	0.00
10					0.4	0.043	0.793	0.038	0.004	0.00
11					0.5	0.053	0.783	0.048	0.005	0.00
12					0.5	0.053	0.774	0.048	0.005	0.00
13					0.5	0.053	0.764	0.048	0.005	0.00
14					0.5	0.053	0.754	0.048	0.005	0.00
15					0.5	0.053	0.745	0.048	0.005	0.00
16					0.6	0.064	0.736	0.057	0.006	0.00
17					0.6	0.064	0.726	0.057	0.006	0.00
18					0.7	0.074	0.717	0.067	0.007	0.00
19					0.7	0.074	0.708	0.067	0.007	0.00
20					0.8	0.085	0.699	0.077	0.009	0.00
21					0.6	0.064	0.690	0.057	0.006	0.00
22					0.7	0.074	0.681	0.067	0.007	0.00
23					0.8	0.085	0.672	0.077	0.009	0.00
24					0.8	0.085	0.663	0.077	0.009	0.00
25					0.9	0.096	0.654	0.086	0.010	0.00
26					0.9	0.096	0.645	0.086	0.010	0.00
27					1.0	0.106	0.637	0.096	0.011	0.00
28					1.0	0.106	0.628	0.096	0.011	0.00
29					1.0	0.106	0.620	0.096	0.011	0.00
30					1.1	0.117	0.611	0.105	0.012	0.00
31					1.2	0.128	0.603	0.115	0.013	0.00
32					1.3	0.138	0.594	0.124	0.014	0.00
33					1.5	0.160	0.586	0.144	0.016	0.01
34					1.5	0.160	0.578	0.144	0.016	0.01
35					1.6	0.170	0.570	0.153	0.017	0.01
36					1.7	0.181	0.562	0.163	0.018	0.01
37					1.9	0.202	0.554	0.182	0.020	0.01
38					2.0	0.213	0.546	0.192	0.021	0.01
39					2.1	0.223	0.538	0.201	0.022	0.01
40					2.2	0.234	0.531	0.211	0.023	0.01
41					1.5	0.160	0.523	0.144	0.016	0.01
42					1.5	0.160	0.515	0.144	0.016	0.01
43					2.0	0.213	0.508	0.192	0.021	0.01
44					2.0	0.213	0.500	0.192	0.021	0.01
45					1.9	0.202	0.493	0.182	0.020	0.01
46					1.9	0.202	0.486	0.182	0.020	0.01
47					1.7	0.181	0.479	0.163	0.018	0.01
48					1.8	0.192	0.471	0.172	0.019	0.01
49					2.5	0.266	0.464	0.239	0.027	0.01
50					2.6	0.277	0.457	0.249	0.028	0.01
51					2.8	0.298	0.451	0.268	0.030	0.01
52					2.9	0.309	0.444	0.278	0.031	0.01
53					3.4	0.362	0.437	0.326	0.036	0.01
54					3.4	0.362	0.430	0.326	0.036	**0.01**
55					2.3	0.245	0.424	0.220	0.024	0.01
56					2.3	0.245	0.417	0.220	0.024	0.01
57					2.7	0.287	0.411	0.259	0.029	0.01
58					2.6	0.277	0.405	0.249	0.028	0.01
59					2.6	0.277	0.399	0.249	0.028	0.01
60					2.5	0.266	0.393	0.239	0.027	0.01
61					2.4	0.255	0.387	0.230	0.026	0.01
62					2.3	0.245	0.381	0.220	0.024	0.01
63					1.9	0.202	0.375	0.182	0.020	0.01
64					1.9	0.202	0.369	0.182	0.020	0.01

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	5-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	2.66
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.500	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.250
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.043	0.363	0.038	0.004	0.00
66					0.4	0.043	0.358	0.038	0.004	0.00
67					0.3	0.032	0.352	0.029	0.003	0.00
68					0.3	0.032	0.347	0.029	0.003	0.00
69					0.5	0.053	0.342	0.048	0.005	0.00
70					0.5	0.053	0.337	0.048	0.005	0.00
71					0.5	0.053	0.332	0.048	0.005	0.00
72					0.4	0.043	0.327	0.038	0.004	0.00
73					0.4	0.043	0.322	0.038	0.004	0.00
74					0.4	0.043	0.317	0.038	0.004	0.00
75					0.3	0.032	0.313	0.029	0.003	0.00
76					0.2	0.021	0.308	0.019	0.002	0.00
77					0.3	0.032	0.304	0.029	0.003	0.00
78					0.4	0.043	0.300	0.038	0.004	0.00
79					0.3	0.032	0.296	0.029	0.003	0.00
80					0.2	0.021	0.292	0.019	0.002	0.00
81					0.3	0.032	0.288	0.029	0.003	0.00
82					0.3	0.032	0.284	0.029	0.003	0.00
83					0.3	0.032	0.281	0.029	0.003	0.00
84					0.2	0.021	0.277	0.019	0.002	0.00
85					0.3	0.032	0.274	0.029	0.003	0.00
86					0.2	0.021	0.271	0.019	0.002	0.00
87					0.3	0.032	0.268	0.029	0.003	0.00
88					0.2	0.021	0.265	0.019	0.002	0.00
89					0.3	0.032	0.262	0.029	0.003	0.00
90					0.2	0.021	0.260	0.019	0.002	0.00
91					0.2	0.021	0.258	0.019	0.002	0.00
92					0.2	0.021	0.256	0.019	0.002	0.00
93					0.2	0.021	0.254	0.019	0.002	0.00
94					0.2	0.021	0.252	0.019	0.002	0.00
95					0.2	0.021	0.251	0.019	0.002	0.00
96					0.2	0.021	0.250	0.019	0.002	0.00
TOTALS					100.0				1.06	0.34

EFFECTIVE RAIN = 0.27 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition; By; Date 12/16/19; Checked; Date	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.46
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.096	0.444	0.087	0.010	0.11
2					1.2	0.105	0.444	0.095	0.011	0.13
3					1.3	0.114	0.444	0.102	0.011	0.14
4					1.4	0.123	0.444	0.110	0.012	0.15
5					1.4	0.123	0.444	0.110	0.012	0.15
6					1.5	0.131	0.444	0.118	0.013	0.16
7					1.6	0.140	0.444	0.126	0.014	0.17
8					1.6	0.140	0.444	0.126	0.014	0.17
9					1.6	0.140	0.444	0.126	0.014	0.17
10					1.6	0.140	0.444	0.126	0.014	0.17
11					1.6	0.140	0.444	0.126	0.014	0.17
12					1.7	0.149	0.444	0.134	0.015	0.18
13					1.7	0.149	0.444	0.134	0.015	0.18
14					1.8	0.158	0.444	0.142	0.016	0.19
15					1.8	0.158	0.444	0.142	0.016	0.19
16					1.8	0.158	0.444	0.142	0.016	0.19
17					2.0	0.175	0.444	0.158	0.018	0.21
18					2.0	0.175	0.444	0.158	0.018	0.21
19					2.1	0.184	0.444	0.166	0.018	0.22
20					2.2	0.193	0.444	0.173	0.019	0.23
21					2.5	0.219	0.444	0.197	0.022	0.26
22					2.8	0.245	0.444	0.221	0.025	0.29
23					3.0	0.263	0.444	0.237	0.026	0.31
24					3.2	0.280	0.444	0.252	0.028	0.33
25					3.5	0.307	0.444	0.276	0.031	0.37
26					3.9	0.342	0.444	0.307	0.034	0.41
27					4.2	0.368	0.444	0.331	0.037	0.44
28					4.5	0.394	0.444	0.355	0.039	0.47
29					4.8	0.420	0.444	0.378	0.042	0.50
30					5.1	0.447	0.444	0.402	0.045	0.53
31					6.7	0.587	0.444	0.528	0.143	1.70
32					8.1	0.710	0.444	0.639	0.265	3.16
33					10.3	0.902	0.444	0.812	0.458	**5.46**
34					2.8	0.245	0.444	0.221	0.025	0.29
35					1.1	0.096	0.444	0.087	0.010	0.11
36					0.5	0.044	0.444	0.039	0.004	0.05
TOTALS					100.0				1.52	18.13

EFFECTIVE RAIN = 0.25 INCHES
TOTAL RUNOFF VOLUME = 0.25 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.46
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.096	0.139	0.017	0.080	0.88
2					1.2	0.105	0.139	0.018	0.087	0.96
3					1.3	0.114	0.139	0.020	0.094	1.04
4					1.4	0.123	0.139	0.021	0.101	1.12
5					1.4	0.123	0.139	0.021	0.101	1.12
6					1.5	0.131	0.139	0.023	0.109	1.20
7					1.6	0.140	0.139	0.024	0.116	1.28
8					1.6	0.140	0.139	0.024	0.116	1.28
9					1.6	0.140	0.139	0.024	0.116	1.28
10					1.6	0.140	0.139	0.024	0.116	1.28
11					1.6	0.140	0.139	0.024	0.116	1.28
12					1.7	0.149	0.139	0.026	0.123	1.36
13					1.7	0.149	0.139	0.026	0.123	1.36
14					1.8	0.158	0.139	0.027	0.130	1.44
15					1.8	0.158	0.139	0.027	0.130	1.44
16					1.8	0.158	0.139	0.027	0.130	1.44
17					2.0	0.175	0.139	0.030	0.145	1.60
18					2.0	0.175	0.139	0.030	0.145	1.60
19					2.1	0.184	0.139	0.032	0.152	1.68
20					2.2	0.193	0.139	0.033	0.159	1.76
21					2.5	0.219	0.139	0.038	0.181	2.00
22					2.8	0.245	0.139	0.042	0.203	2.24
23					3.0	0.263	0.139	0.046	0.217	2.40
24					3.2	0.280	0.139	0.049	0.232	2.56
25					3.5	0.307	0.139	0.053	0.253	2.80
26					3.9	0.342	0.139	0.059	0.282	3.12
27					4.2	0.368	0.139	0.064	0.304	3.36
28					4.5	0.394	0.139	0.068	0.326	3.60
29					4.8	0.420	0.139	0.073	0.348	3.84
30					5.1	0.447	0.139	0.077	0.369	4.08
31					6.7	0.587	0.139	0.102	0.485	5.36
32					8.1	0.710	0.139	0.123	0.587	6.47
33					10.3	0.902	0.139	0.156	0.764	**8.43**
34					2.8	0.245	0.139	0.042	0.203	2.24
35					1.1	0.096	0.139	0.017	0.080	0.88
36					0.5	0.044	0.139	0.008	0.036	0.40
TOTALS					100.0				7.26	80.13

EFFECTIVE RAIN = 1.21 INCHES
TOTAL RUNOFF VOLUME = 1.10 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.46
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.096	0.500	0.087	0.010	0.00
2					1.2	0.105	0.500	0.095	0.011	0.00
3					1.3	0.114	0.500	0.102	0.011	0.00
4					1.4	0.123	0.500	0.110	0.012	0.00
5					1.4	0.123	0.500	0.110	0.012	0.00
6					1.5	0.131	0.500	0.118	0.013	0.00
7					1.6	0.140	0.500	0.126	0.014	0.00
8					1.6	0.140	0.500	0.126	0.014	0.00
9					1.6	0.140	0.500	0.126	0.014	0.00
10					1.6	0.140	0.500	0.126	0.014	0.00
11					1.6	0.140	0.500	0.126	0.014	0.00
12					1.7	0.149	0.500	0.134	0.015	0.00
13					1.7	0.149	0.500	0.134	0.015	0.00
14					1.8	0.158	0.500	0.142	0.016	0.00
15					1.8	0.158	0.500	0.142	0.016	0.00
16					1.8	0.158	0.500	0.142	0.016	0.00
17					2.0	0.175	0.500	0.158	0.018	0.00
18					2.0	0.175	0.500	0.158	0.018	0.00
19					2.1	0.184	0.500	0.166	0.018	0.00
20					2.2	0.193	0.500	0.173	0.019	0.00
21					2.5	0.219	0.500	0.197	0.022	0.00
22					2.8	0.245	0.500	0.221	0.025	0.00
23					3.0	0.263	0.500	0.237	0.026	0.00
24					3.2	0.280	0.500	0.252	0.028	0.00
25					3.5	0.307	0.500	0.276	0.031	0.00
26					3.9	0.342	0.500	0.307	0.034	0.01
27					4.2	0.368	0.500	0.331	0.037	0.01
28					4.5	0.394	0.500	0.355	0.039	0.01
29					4.8	0.420	0.500	0.378	0.042	0.01
30					5.1	0.447	0.500	0.402	0.045	0.01
31					6.7	0.587	0.500	0.528	0.087	0.01
32					8.1	0.710	0.500	0.639	0.210	0.03
33					10.3	0.902	0.500	0.812	0.402	**0.06**
34					2.8	0.245	0.500	0.221	0.025	0.00
35					1.1	0.096	0.500	0.087	0.010	0.00
36					0.5	0.044	0.500	0.039	0.004	0.00
TOTALS					100.0				1.35	0.21

EFFECTIVE RAIN = 0.23 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.46
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.096	0.500	0.087	0.010	0.00
2					1.2	0.105	0.500	0.095	0.011	0.00
3					1.3	0.114	0.500	0.102	0.011	0.00
4					1.4	0.123	0.500	0.110	0.012	0.00
5					1.4	0.123	0.500	0.110	0.012	0.00
6					1.5	0.131	0.500	0.118	0.013	0.00
7					1.6	0.140	0.500	0.126	0.014	0.00
8					1.6	0.140	0.500	0.126	0.014	0.00
9					1.6	0.140	0.500	0.126	0.014	0.00
10					1.6	0.140	0.500	0.126	0.014	0.00
11					1.6	0.140	0.500	0.126	0.014	0.00
12					1.7	0.149	0.500	0.134	0.015	0.00
13					1.7	0.149	0.500	0.134	0.015	0.00
14					1.8	0.158	0.500	0.142	0.016	0.01
15					1.8	0.158	0.500	0.142	0.016	0.01
16					1.8	0.158	0.500	0.142	0.016	0.01
17					2.0	0.175	0.500	0.158	0.018	0.01
18					2.0	0.175	0.500	0.158	0.018	0.01
19					2.1	0.184	0.500	0.166	0.018	0.01
20					2.2	0.193	0.500	0.173	0.019	0.01
21					2.5	0.219	0.500	0.197	0.022	0.01
22					2.8	0.245	0.500	0.221	0.025	0.01
23					3.0	0.263	0.500	0.237	0.026	0.01
24					3.2	0.280	0.500	0.252	0.028	0.01
25					3.5	0.307	0.500	0.276	0.031	0.01
26					3.9	0.342	0.500	0.307	0.034	0.01
27					4.2	0.368	0.500	0.331	0.037	0.01
28					4.5	0.394	0.500	0.355	0.039	0.01
29					4.8	0.420	0.500	0.378	0.042	0.01
30					5.1	0.447	0.500	0.402	0.045	0.01
31					6.7	0.587	0.500	0.528	0.087	0.03
32					8.1	0.710	0.500	0.639	0.210	0.07
33					10.3	0.902	0.500	0.812	0.402	**0.13**
34					2.8	0.245	0.500	0.221	0.025	0.01
35					1.1	0.096	0.500	0.087	0.010	0.00
36					0.5	0.044	0.500	0.039	0.004	0.00
TOTALS					100.0				1.35	0.43

EFFECTIVE RAIN = 0.23 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition; By; Date 12/16/19; Checked; Date	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.06
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.165	0.444	0.149	0.017	0.20
2					1.3	0.165	0.444	0.149	0.017	0.20
3					1.1	0.140	0.444	0.126	0.014	0.17
4					1.5	0.191	0.444	0.172	0.019	0.23
5					1.5	0.191	0.444	0.172	0.019	0.23
6					1.8	0.229	0.444	0.206	0.023	0.27
7					1.5	0.191	0.444	0.172	0.019	0.23
8					1.8	0.229	0.444	0.206	0.023	0.27
9					1.8	0.229	0.444	0.206	0.023	0.27
10					1.5	0.191	0.444	0.172	0.019	0.23
11					1.6	0.204	0.444	0.183	0.020	0.24
12					1.8	0.229	0.444	0.206	0.023	0.27
13					2.2	0.280	0.444	0.252	0.028	0.33
14					2.2	0.280	0.444	0.252	0.028	0.33
15					2.2	0.280	0.444	0.252	0.028	0.33
16					2.0	0.254	0.444	0.229	0.025	0.30
17					2.6	0.331	0.444	0.298	0.033	0.39
18					2.7	0.343	0.444	0.309	0.034	0.41
19					2.4	0.305	0.444	0.275	0.031	0.36
20					2.7	0.343	0.444	0.309	0.034	0.41
21					3.3	0.420	0.444	0.378	0.042	0.50
22					3.1	0.394	0.444	0.355	0.039	0.47
23					2.9	0.369	0.444	0.332	0.037	0.44
24					3.0	0.382	0.444	0.343	0.038	0.45
25					3.1	0.394	0.444	0.355	0.039	0.47
26					4.2	0.534	0.444	0.481	0.090	1.07
27					5.0	0.636	0.444	0.572	0.192	2.28
28					3.5	0.445	0.444	0.401	0.045	0.53
29					6.8	0.865	0.444	0.778	0.421	5.01
30					7.3	0.929	0.444	0.836	0.484	5.77
31					8.2	1.043	0.444	0.939	0.599	**7.13**
32					5.9	0.750	0.444	0.675	0.306	3.65
33					2.0	0.254	0.444	0.229	0.025	0.30
34					1.8	0.229	0.444	0.206	0.023	0.27
35					1.8	0.229	0.444	0.206	0.023	0.27
36					0.6	0.076	0.444	0.069	0.008	0.09
TOTALS					100.0				2.89	34.41

EFFECTIVE RAIN = 0.24 INCHES
TOTAL RUNOFF VOLUME = 0.24 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.06
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.165	0.139	0.029	0.137	1.51
2					1.3	0.165	0.139	0.029	0.137	1.51
3					1.1	0.140	0.139	0.024	0.116	1.28
4					1.5	0.191	0.139	0.033	0.158	1.74
5					1.5	0.191	0.139	0.033	0.158	1.74
6					1.8	0.229	0.139	0.040	0.189	2.09
7					1.5	0.191	0.139	0.033	0.158	1.74
8					1.8	0.229	0.139	0.040	0.189	2.09
9					1.8	0.229	0.139	0.040	0.189	2.09
10					1.5	0.191	0.139	0.033	0.158	1.74
11					1.6	0.204	0.139	0.035	0.168	1.86
12					1.8	0.229	0.139	0.040	0.189	2.09
13					2.2	0.280	0.139	0.048	0.231	2.55
14					2.2	0.280	0.139	0.048	0.231	2.55
15					2.2	0.280	0.139	0.048	0.231	2.55
16					2.0	0.254	0.139	0.044	0.210	2.32
17					2.6	0.331	0.139	0.057	0.273	3.02
18					2.7	0.343	0.139	0.060	0.284	3.13
19					2.4	0.305	0.139	0.053	0.252	2.79
20					2.7	0.343	0.139	0.060	0.284	3.13
21					3.3	0.420	0.139	0.073	0.347	3.83
22					3.1	0.394	0.139	0.068	0.326	3.60
23					2.9	0.369	0.139	0.064	0.305	3.37
24					3.0	0.382	0.139	0.066	0.315	3.48
25					3.1	0.394	0.139	0.068	0.326	3.60
26					4.2	0.534	0.139	0.093	0.442	4.87
27					5.0	0.636	0.139	0.110	0.526	5.80
28					3.5	0.445	0.139	0.077	0.368	4.06
29					6.8	0.865	0.139	0.150	0.726	8.02
30					7.3	0.929	0.139	0.161	0.790	8.72
31					8.2	1.043	0.139	0.181	0.904	**9.98**
32					5.9	0.750	0.139	0.130	0.620	6.85
33					2.0	0.254	0.139	0.044	0.210	2.32
34					1.8	0.229	0.139	0.040	0.189	2.09
35					1.8	0.229	0.139	0.040	0.189	2.09
36					0.6	0.076	0.139	0.013	0.063	0.70
TOTALS					100.0				10.59	116.90

EFFECTIVE RAIN = 0.88 INCHES
TOTAL RUNOFF VOLUME = 0.81 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.06
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.165	0.500	0.149	0.017	0.00
2					1.3	0.165	0.500	0.149	0.017	0.00
3					1.1	0.140	0.500	0.126	0.014	0.00
4					1.5	0.191	0.500	0.172	0.019	0.00
5					1.5	0.191	0.500	0.172	0.019	0.00
6					1.8	0.229	0.500	0.206	0.023	0.00
7					1.5	0.191	0.500	0.172	0.019	0.00
8					1.8	0.229	0.500	0.206	0.023	0.00
9					1.8	0.229	0.500	0.206	0.023	0.00
10					1.5	0.191	0.500	0.172	0.019	0.00
11					1.6	0.204	0.500	0.183	0.020	0.00
12					1.8	0.229	0.500	0.206	0.023	0.00
13					2.2	0.280	0.500	0.252	0.028	0.00
14					2.2	0.280	0.500	0.252	0.028	0.00
15					2.2	0.280	0.500	0.252	0.028	0.00
16					2.0	0.254	0.500	0.229	0.025	0.00
17					2.6	0.331	0.500	0.298	0.033	0.01
18					2.7	0.343	0.500	0.309	0.034	0.01
19					2.4	0.305	0.500	0.275	0.031	0.00
20					2.7	0.343	0.500	0.309	0.034	0.01
21					3.3	0.420	0.500	0.378	0.042	0.01
22					3.1	0.394	0.500	0.355	0.039	0.01
23					2.9	0.369	0.500	0.332	0.037	0.01
24					3.0	0.382	0.500	0.343	0.038	0.01
25					3.1	0.394	0.500	0.355	0.039	0.01
26					4.2	0.534	0.500	0.481	0.053	0.01
27					5.0	0.636	0.500	0.572	0.136	0.02
28					3.5	0.445	0.500	0.401	0.045	0.01
29					6.8	0.865	0.500	0.778	0.365	0.06
30					7.3	0.929	0.500	0.836	0.429	0.07
31					8.2	1.043	0.500	0.939	0.543	**0.08**
32					5.9	0.750	0.500	0.675	0.250	0.04
33					2.0	0.254	0.500	0.229	0.025	0.00
34					1.8	0.229	0.500	0.206	0.023	0.00
35					1.8	0.229	0.500	0.206	0.023	0.00
36					0.6	0.076	0.500	0.069	0.008	0.00
TOTALS					100.0				2.57	0.40

EFFECTIVE RAIN = 0.21 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.06
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.165	0.500	0.149	0.017	0.01
2					1.3	0.165	0.500	0.149	0.017	0.01
3					1.1	0.140	0.500	0.126	0.014	0.00
4					1.5	0.191	0.500	0.172	0.019	0.01
5					1.5	0.191	0.500	0.172	0.019	0.01
6					1.8	0.229	0.500	0.206	0.023	0.01
7					1.5	0.191	0.500	0.172	0.019	0.01
8					1.8	0.229	0.500	0.206	0.023	0.01
9					1.8	0.229	0.500	0.206	0.023	0.01
10					1.5	0.191	0.500	0.172	0.019	0.01
11					1.6	0.204	0.500	0.183	0.020	0.01
12					1.8	0.229	0.500	0.206	0.023	0.01
13					2.2	0.280	0.500	0.252	0.028	0.01
14					2.2	0.280	0.500	0.252	0.028	0.01
15					2.2	0.280	0.500	0.252	0.028	0.01
16					2.0	0.254	0.500	0.229	0.025	0.01
17					2.6	0.331	0.500	0.298	0.033	0.01
18					2.7	0.343	0.500	0.309	0.034	0.01
19					2.4	0.305	0.500	0.275	0.031	0.01
20					2.7	0.343	0.500	0.309	0.034	0.01
21					3.3	0.420	0.500	0.378	0.042	0.01
22					3.1	0.394	0.500	0.355	0.039	0.01
23					2.9	0.369	0.500	0.332	0.037	0.01
24					3.0	0.382	0.500	0.343	0.038	0.01
25					3.1	0.394	0.500	0.355	0.039	0.01
26					4.2	0.534	0.500	0.481	0.053	0.02
27					5.0	0.636	0.500	0.572	0.136	0.04
28					3.5	0.445	0.500	0.401	0.045	0.01
29					6.8	0.865	0.500	0.778	0.365	0.12
30					7.3	0.929	0.500	0.836	0.429	0.14
31					8.2	1.043	0.500	0.939	0.543	**0.17**
32					5.9	0.750	0.500	0.675	0.250	0.08
33					2.0	0.254	0.500	0.229	0.025	0.01
34					1.8	0.229	0.500	0.206	0.023	0.01
35					1.8	0.229	0.500	0.206	0.023	0.01
36					0.6	0.076	0.500	0.069	0.008	0.00
TOTALS					100.0				2.57	0.83

EFFECTIVE RAIN = 0.21 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.635
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.444	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.320	0.444	0.288	0.032	0.38
2					4.3	0.328	0.444	0.295	0.033	0.39
3					5.0	0.381	0.444	0.343	0.038	0.45
4					5.0	0.381	0.444	0.343	0.038	0.45
5					5.8	0.442	0.444	0.398	0.044	0.53
6					6.5	0.495	0.444	0.446	0.051	0.61
7					7.4	0.564	0.444	0.507	0.120	1.43
8					8.6	0.655	0.444	0.590	0.211	2.51
9					12.3	0.937	0.444	0.844	0.493	5.87
10					29.1	2.217	0.444	1.996	1.773	**21.12**
11					6.8	0.518	0.444	0.466	0.074	0.88
12					5.0	0.381	0.444	0.343	0.038	0.45
TOTALS					100.0				2.95	35.09

EFFECTIVE RAIN = 0.25 INCHES
TOTAL RUNOFF VOLUME = 0.24 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.635
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.139	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.320	0.139	0.055	0.265	2.92
2					4.3	0.328	0.139	0.057	0.271	2.99
3					5.0	0.381	0.139	0.066	0.315	3.48
4					5.0	0.381	0.139	0.066	0.315	3.48
5					5.8	0.442	0.139	0.077	0.365	4.03
6					6.5	0.495	0.139	0.086	0.409	4.52
7					7.4	0.564	0.139	0.098	0.466	5.15
8					8.6	0.655	0.139	0.114	0.542	5.98
9					12.3	0.937	0.139	0.162	0.799	8.81
10					29.1	2.217	0.139	0.384	2.079	**22.94**
11					6.8	0.518	0.139	0.090	0.428	4.73
12					5.0	0.381	0.139	0.066	0.315	3.48
TOTALS					100.0				6.57	72.50

EFFECTIVE RAIN = 0.55 INCHES
TOTAL RUNOFF VOLUME = 0.50 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.635
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.320	0.500	0.288	0.032	0.00
2					4.3	0.328	0.500	0.295	0.033	0.01
3					5.0	0.381	0.500	0.343	0.038	0.01
4					5.0	0.381	0.500	0.343	0.038	0.01
5					5.8	0.442	0.500	0.398	0.044	0.01
6					6.5	0.495	0.500	0.446	0.050	0.01
7					7.4	0.564	0.500	0.507	0.064	0.01
8					8.6	0.655	0.500	0.590	0.155	0.02
9					12.3	0.937	0.500	0.844	0.437	0.07
10					29.1	2.217	0.500	1.996	1.717	**0.27**
11					6.8	0.518	0.500	0.466	0.052	0.01
12					5.0	0.381	0.500	0.343	0.038	0.01
TOTALS					100.0				2.70	0.42

EFFECTIVE RAIN = 0.22 INCHES
TOTAL RUNOFF VOLUME = 0.00 AC-FT

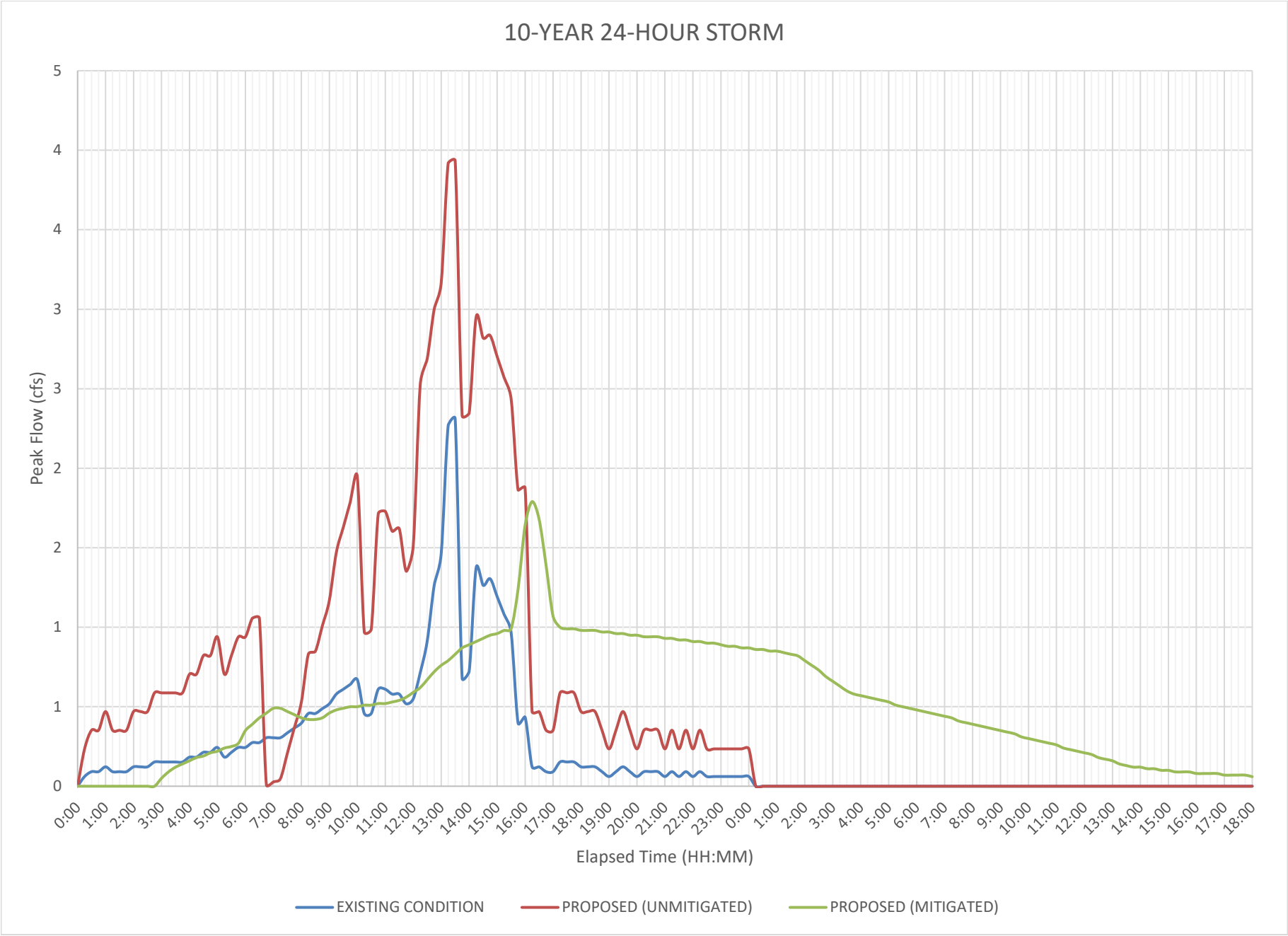
R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

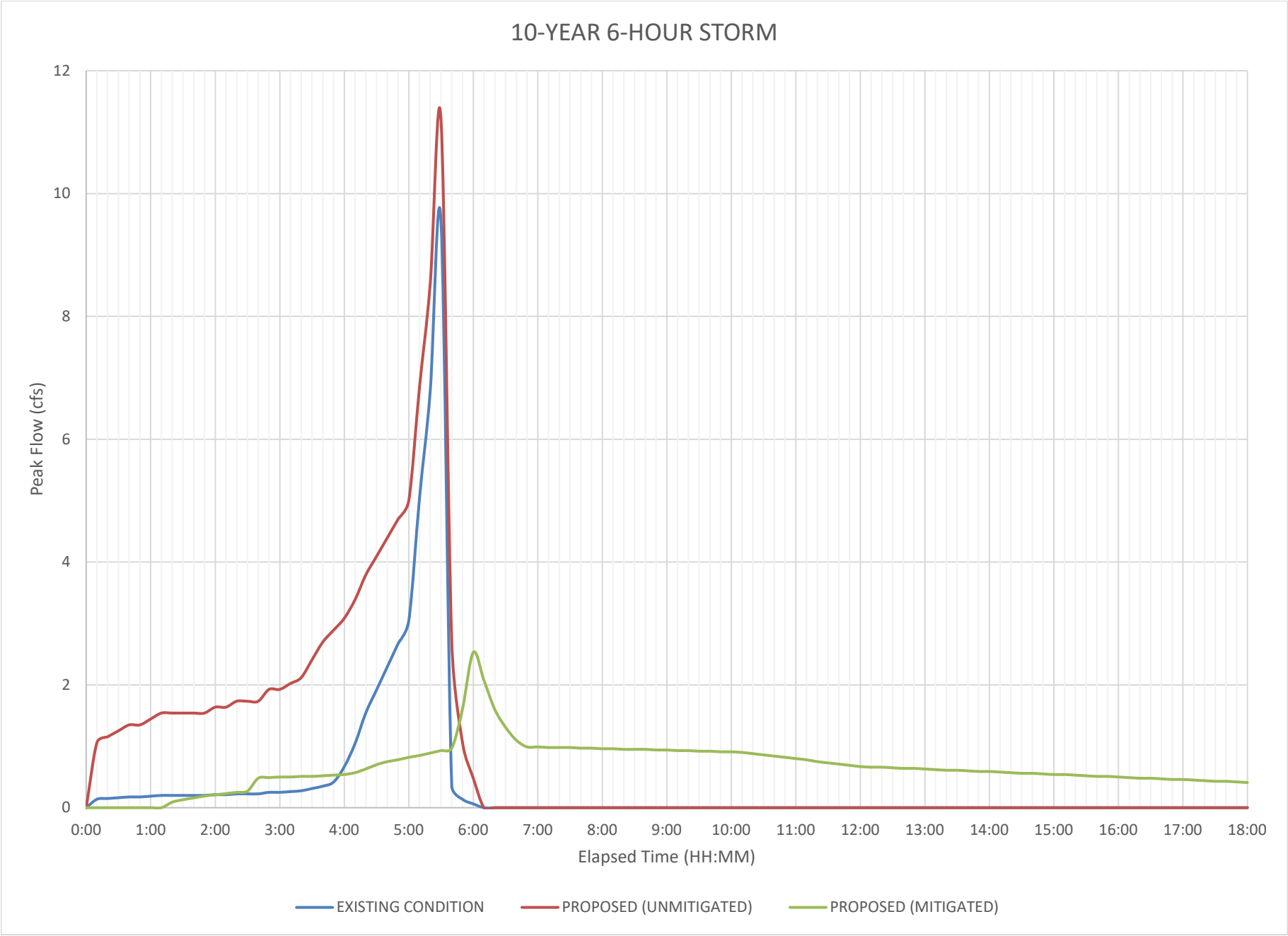
[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	5-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.635
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.500	[14] LOW LOSS RATE-PERCENT	90%

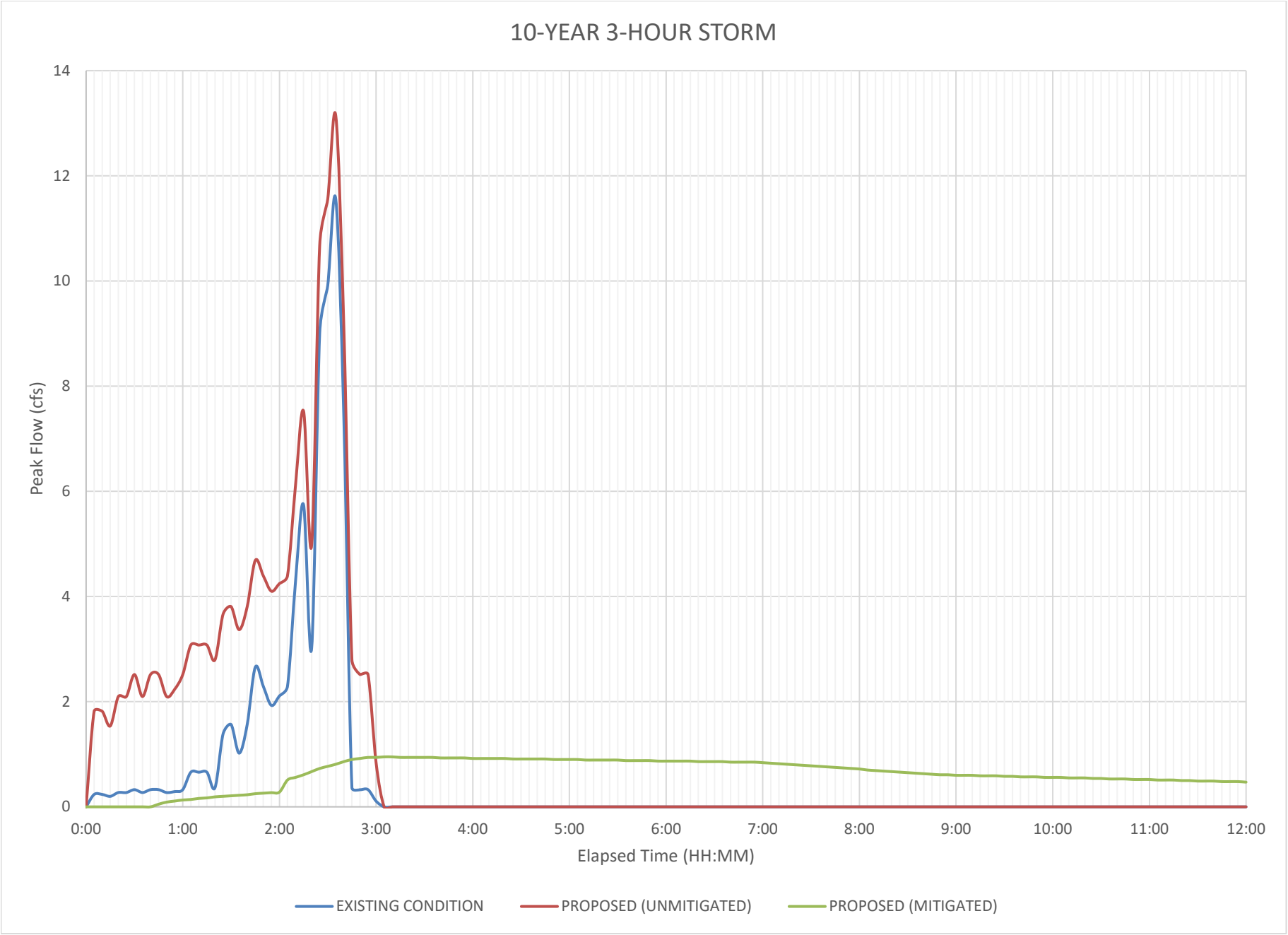
	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.320	0.500	0.288	0.032	0.01
2					4.3	0.328	0.500	0.295	0.033	0.01
3					5.0	0.381	0.500	0.343	0.038	0.01
4					5.0	0.381	0.500	0.343	0.038	0.01
5					5.8	0.442	0.500	0.398	0.044	0.01
6					6.5	0.495	0.500	0.446	0.050	0.02
7					7.4	0.564	0.500	0.507	0.064	0.02
8					8.6	0.655	0.500	0.590	0.155	0.05
9					12.3	0.937	0.500	0.844	0.437	0.14
10					29.1	2.217	0.500	1.996	1.717	**0.55**
11					6.8	0.518	0.500	0.466	0.052	0.02
12					5.0	0.381	0.500	0.343	0.038	0.01
TOTALS					100.0				2.70	0.87

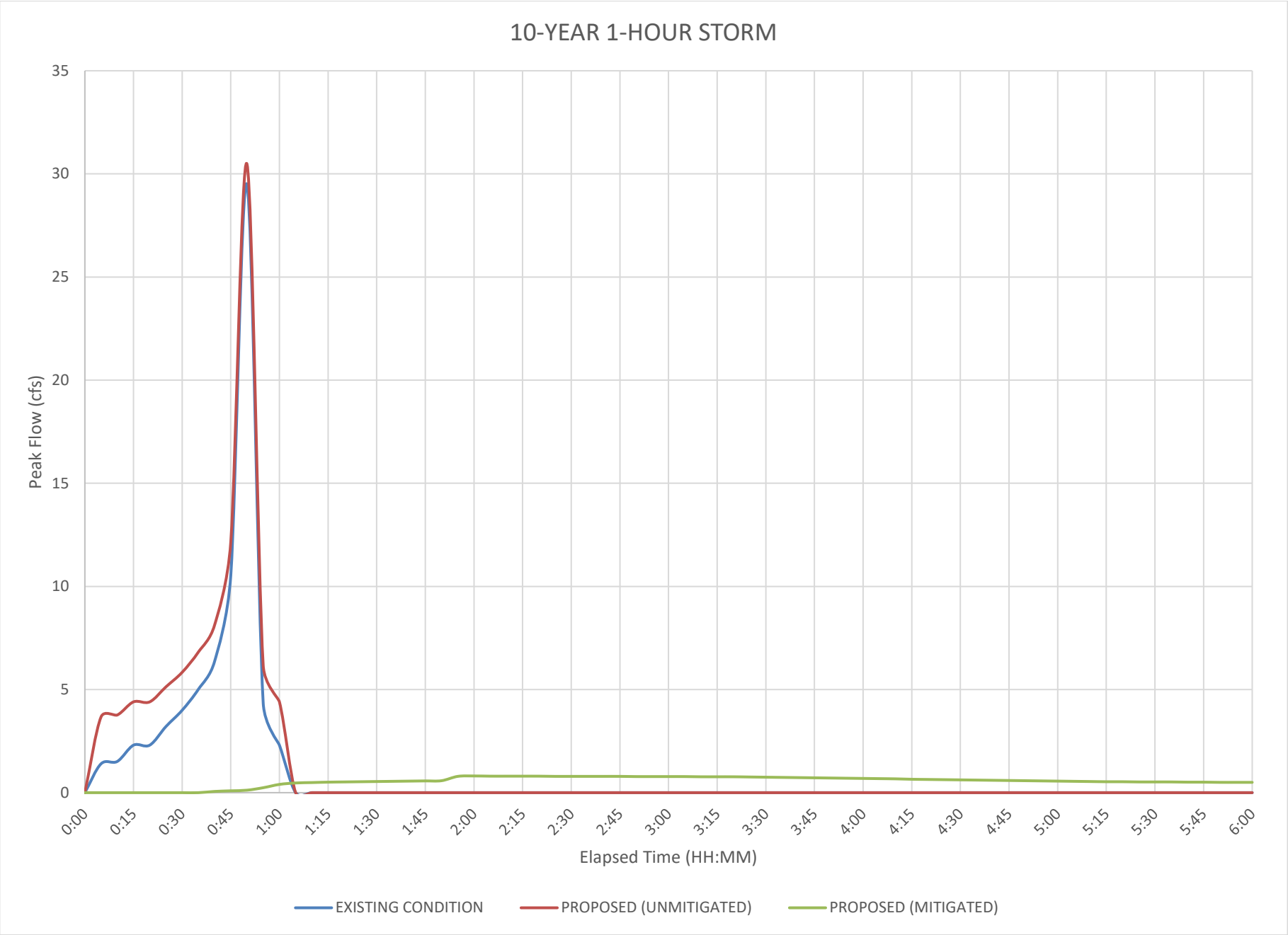
EFFECTIVE RAIN = 0.22 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

Storm Event	Peak Flow Summary (cfs)			
	Existing	Unmitigated	Mitigated	Difference
10-yr, 24-hour	2.31	3.93	1.79	-0.52
10-yr, 6-hour	9.55	11.20	2.53	-7.02
10-yr, 3-hour	11.55	13.14	0.95	-10.60
10-yr, 1-hour	29.48	30.47	0.81	-28.67


10-YEAR 24-HOUR STORM
Peak Flow (cfs)
5
4
4
3
3
2
2
1
1
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


10-YEAR 6-HOUR STORM
Peak Flow (cfs)
12
10
8
6
4
2
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


10-YEAR 3-HOUR STORM
Peak Flow (cfs)
14
12
10
8
6
4
2
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)


10-YEAR 1-HOUR STORM
Peak Flow (cfs)
35
30
25
20
15
10
5
0
0:00
0:15
0:30
0:45
1:00
1:15
1:30
1:45
2:00
2:15
2:30
2:45
3:00
3:15
3:30
3:45
4:00
4:15
4:30
4:45
5:00
5:15
5:30
5:45
6:00
Elapsed Time (HH:MM)
EXISTING CONDITION
PROPOSED (UNMITIGATED)
PROPOSED (MITIGATED)

Storm Event	Precip (inches)	Reference
10-yr, 24-hour	3.20	NOAA Atlas 14
10-yr, 6-hour	1.75	
10-yr, 3-hour	1.27	
10-yr, 1-hour	0.79	

PROJECT SITE EXISTING

Drainage Area	514607	sf		
	11.81	ac		
A_i	19,641	sf		
	4%	imp		
Runoff Index	78		Note:	Plate E-6.1: Grass (Poor); Soil Types A (40%), C (43%) & D (16%); Area-Weighted
F_p	0.29	in/hr	Note:	Plate E-6.2: AMC II

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.280 in/hr**

For 24-hr storms, F_T is variable loss rate

$F_T = C[24 - (T/60)]^{1.55} + F_M$ ***F_T =*** **0.495**

$C = (F - F_M)/54$ ***C =*** **0.0026**

$T = \text{Unit Time}/2$ ***T =*** **7.5**

$F_M = 0.5F$ ***F_M =*** **0.140**

DMA D/1: PROPOSED

Drainage Area	476806	sf		
	10.95	ac		
A_i	433,145	sf		
	91%	imp		
Runoff Index	52		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Types A (49%), C (37%) & D (14%); Area-Weighted
F_p	0.55	in/hr	Note:	Plate E-6.2: AMC II

$F = F_p(1 - 0.9A_i)$ ***F =*** **0.100 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* =** **0.177**

$$C = (F - F_M)/54$$ ***C* =** **0.0009**

$$T = \text{Unit Time}/2$$ ***T* =** **7.5**

$$F_M = 0.5F$$ ***F M* =** **0.050**

DMA A/1: PROPOSED

Drainage Area	6668	sf		
	0.15	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.30	in/hr	Note:	Plate E-6.2: AMC II

$$F = F_p(1 - 0.9A_i)$$ ***F* =** **0.300 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$ ***F T* =** **0.530**

$$C = (F - F_M)/54$$ ***C* =** **0.0028**

$$T = \text{Unit Time}/2$$ ***T* =** **7.5**

$$F_M = 0.5F$$ ***F M* =** **0.150**

DMA A/2: PROPOSED

Drainage Area	13866	sf		
	0.32	ac		
A_i	0	sf		
	0%	imp		
Runoff Index	75		Note:	Plate E-6.1: Residential or Commercial Landscaping (Good); Soil Type D
F_p	0.30	in/hr	Note:	Plate E-6.2: AMC II

$$F = F_p(1 - 0.9A_i)$$ ***F* =** **0.300 in/hr**

For 24-hr storms, F_T is variable loss rate

$$F_T = C[24 - (T/60)]^{1.55} + F_M$$

$$C = (F - F_M)/54$$

$$T = \text{Unit Time}/2$$

$$F_M = 0.5F$$

F_T =	**0.530**
C =	**0.0028**
T =	**7.5**
F_M =	**0.150**

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.280	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.140
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.026	0.495	0.020	0.005	0.06
2					0.3	0.038	0.489	0.031	0.008	0.09
3					0.3	0.038	0.483	0.031	0.008	0.09
4					0.4	0.051	0.477	0.041	0.010	0.12
5					0.3	0.038	0.472	0.031	0.008	0.09
6					0.3	0.038	0.466	0.031	0.008	0.09
7					0.3	0.038	0.461	0.031	0.008	0.09
8					0.4	0.051	0.455	0.041	0.010	0.12
9					0.4	0.051	0.450	0.041	0.010	0.12
10					0.4	0.051	0.444	0.041	0.010	0.12
11					0.5	0.064	0.439	0.051	0.013	0.15
12					0.5	0.064	0.433	0.051	0.013	0.15
13					0.5	0.064	0.428	0.051	0.013	0.15
14					0.5	0.064	0.423	0.051	0.013	0.15
15					0.5	0.064	0.417	0.051	0.013	0.15
16					0.6	0.077	0.412	0.061	0.015	0.18
17					0.6	0.077	0.407	0.061	0.015	0.18
18					0.7	0.090	0.402	0.072	0.018	0.21
19					0.7	0.090	0.396	0.072	0.018	0.21
20					0.8	0.102	0.391	0.082	0.020	0.24
21					0.6	0.077	0.386	0.061	0.015	0.18
22					0.7	0.090	0.381	0.072	0.018	0.21
23					0.8	0.102	0.376	0.082	0.020	0.24
24					0.8	0.102	0.371	0.082	0.020	0.24
25					0.9	0.115	0.366	0.092	0.023	0.27
26					0.9	0.115	0.361	0.092	0.023	0.27
27					1.0	0.128	0.357	0.102	0.026	0.30
28					1.0	0.128	0.352	0.102	0.026	0.30
29					1.0	0.128	0.347	0.102	0.026	0.30
30					1.1	0.141	0.342	0.113	0.028	0.34
31					1.2	0.154	0.338	0.123	0.031	0.37
32					1.3	0.166	0.333	0.133	0.033	0.40
33					1.5	0.192	0.328	0.154	0.038	0.46
34					1.5	0.192	0.324	0.154	0.038	0.46
35					1.6	0.205	0.319	0.164	0.041	0.49
36					1.7	0.218	0.315	0.174	0.044	0.52
37					1.9	0.243	0.310	0.195	0.049	0.58
38					2.0	0.256	0.306	0.205	0.051	0.61
39					2.1	0.269	0.301	0.215	0.054	0.64
40					2.2	0.282	0.297	0.225	0.056	0.67
41					1.5	0.192	0.293	0.154	0.038	0.46
42					1.5	0.192	0.289	0.154	0.038	0.46
43					2.0	0.256	0.284	0.205	0.051	0.61
44					2.0	0.256	0.280	0.205	0.051	0.61
45					1.9	0.243	0.276	0.195	0.049	0.58
46					1.9	0.243	0.272	0.195	0.049	0.58
47					1.7	0.218	0.268	0.174	0.044	0.52
48					1.8	0.230	0.264	0.184	0.046	0.55
49					2.5	0.320	0.260	0.256	0.060	0.71
50					2.6	0.333	0.256	0.266	0.077	0.91
51					2.8	0.358	0.252	0.287	0.106	1.26
52					2.9	0.371	0.249	0.297	0.123	1.46
53					3.4	0.435	0.245	0.348	0.190	2.27
54					3.4	0.435	0.241	0.348	0.194	**2.31**
55					2.3	0.294	0.237	0.236	0.057	0.68
56					2.3	0.294	0.234	0.236	0.061	0.72
57					2.7	0.346	0.230	0.276	0.115	1.37
58					2.6	0.333	0.227	0.266	0.106	1.26
59					2.6	0.333	0.223	0.266	0.110	1.30
60					2.5	0.320	0.220	0.256	0.100	1.19
61					2.4	0.307	0.216	0.246	0.091	1.08
62					2.3	0.294	0.213	0.236	0.081	0.97
63					1.9	0.243	0.210	0.195	0.033	0.40
64					1.9	0.243	0.207	0.195	0.036	0.43

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.280	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.140
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	80%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.051	0.204	0.041	0.010	0.12
66					0.4	0.051	0.200	0.041	0.010	0.12
67					0.3	0.038	0.197	0.031	0.008	0.09
68					0.3	0.038	0.194	0.031	0.008	0.09
69					0.5	0.064	0.191	0.051	0.013	0.15
70					0.5	0.064	0.189	0.051	0.013	0.15
71					0.5	0.064	0.186	0.051	0.013	0.15
72					0.4	0.051	0.183	0.041	0.010	0.12
73					0.4	0.051	0.180	0.041	0.010	0.12
74					0.4	0.051	0.178	0.041	0.010	0.12
75					0.3	0.038	0.175	0.031	0.008	0.09
76					0.2	0.026	0.173	0.020	0.005	0.06
77					0.3	0.038	0.170	0.031	0.008	0.09
78					0.4	0.051	0.168	0.041	0.010	0.12
79					0.3	0.038	0.166	0.031	0.008	0.09
80					0.2	0.026	0.163	0.020	0.005	0.06
81					0.3	0.038	0.161	0.031	0.008	0.09
82					0.3	0.038	0.159	0.031	0.008	0.09
83					0.3	0.038	0.157	0.031	0.008	0.09
84					0.2	0.026	0.155	0.020	0.005	0.06
85					0.3	0.038	0.153	0.031	0.008	0.09
86					0.2	0.026	0.152	0.020	0.005	0.06
87					0.3	0.038	0.150	0.031	0.008	0.09
88					0.2	0.026	0.148	0.020	0.005	0.06
89					0.3	0.038	0.147	0.031	0.008	0.09
90					0.2	0.026	0.146	0.020	0.005	0.06
91					0.2	0.026	0.144	0.020	0.005	0.06
92					0.2	0.026	0.143	0.020	0.005	0.06
93					0.2	0.026	0.142	0.020	0.005	0.06
94					0.2	0.026	0.141	0.020	0.005	0.06
95					0.2	0.026	0.141	0.020	0.005	0.06
96					0.2	0.026	0.140	0.020	0.005	0.06
TOTALS					100.0				3.05	36.31

EFFECTIVE RAIN = 0.76 INCHES
TOTAL RUNOFF VOLUME = 0.75 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.100	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.050
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.026	0.177	0.004	0.021	0.23
2					0.3	0.038	0.175	0.007	0.032	0.35
3					0.3	0.038	0.173	0.007	0.032	0.35
4					0.4	0.051	0.171	0.009	0.042	0.47
5					0.3	0.038	0.169	0.007	0.032	0.35
6					0.3	0.038	0.167	0.007	0.032	0.35
7					0.3	0.038	0.165	0.007	0.032	0.35
8					0.4	0.051	0.163	0.009	0.042	0.47
9					0.4	0.051	0.161	0.009	0.042	0.47
10					0.4	0.051	0.159	0.009	0.042	0.47
11					0.5	0.064	0.157	0.011	0.053	0.58
12					0.5	0.064	0.155	0.011	0.053	0.58
13					0.5	0.064	0.153	0.011	0.053	0.58
14					0.5	0.064	0.151	0.011	0.053	0.58
15					0.5	0.064	0.149	0.011	0.053	0.58
16					0.6	0.077	0.148	0.013	0.063	0.70
17					0.6	0.077	0.146	0.013	0.063	0.70
18					0.7	0.090	0.144	0.016	0.074	0.82
19					0.7	0.090	0.142	0.016	0.074	0.82
20					0.8	0.102	0.140	0.018	0.085	0.93
21					0.6	0.077	0.138	0.013	0.063	0.70
22					0.7	0.090	0.137	0.016	0.074	0.82
23					0.8	0.102	0.135	0.018	0.085	0.93
24					0.8	0.102	0.133	0.018	0.085	0.93
25					0.9	0.115	0.131	0.020	0.095	1.05
26					0.9	0.115	0.130	0.020	0.095	1.05
27					1.0	0.128	0.128	0.022	0.000	0.00
28					1.0	0.128	0.126	0.022	0.002	0.02
29					1.0	0.128	0.124	0.022	0.004	0.04
30					1.1	0.141	0.123	0.024	0.018	0.20
31					1.2	0.154	0.121	0.027	0.033	0.36
32					1.3	0.166	0.119	0.029	0.047	0.52
33					1.5	0.192	0.118	0.033	0.074	0.82
34					1.5	0.192	0.116	0.033	0.076	0.84
35					1.6	0.205	0.114	0.035	0.090	1.00
36					1.7	0.218	0.113	0.038	0.105	1.16
37					1.9	0.243	0.111	0.042	0.132	1.46
38					2.0	0.256	0.110	0.044	0.146	1.62
39					2.1	0.269	0.108	0.047	0.161	1.77
40					2.2	0.282	0.106	0.049	0.175	1.93
41					1.5	0.192	0.105	0.033	0.087	0.96
42					1.5	0.192	0.103	0.033	0.089	0.98
43					2.0	0.256	0.102	0.044	0.154	1.70
44					2.0	0.256	0.100	0.044	0.156	1.72
45					1.9	0.243	0.099	0.042	0.144	1.59
46					1.9	0.243	0.097	0.042	0.146	1.61
47					1.7	0.218	0.096	0.038	0.122	1.34
48					1.8	0.230	0.095	0.040	0.136	1.50
49					2.5	0.320	0.093	0.055	0.227	2.50
50					2.6	0.333	0.092	0.058	0.241	2.66
51					2.8	0.358	0.090	0.062	0.268	2.96
52					2.9	0.371	0.089	0.064	0.282	3.11
53					3.4	0.435	0.088	0.075	0.347	3.84
54					3.4	0.435	0.086	0.075	0.349	**3.85**
55					2.3	0.294	0.085	0.051	0.209	2.31
56					2.3	0.294	0.084	0.051	0.211	2.32
57					2.7	0.346	0.082	0.060	0.263	2.90
58					2.6	0.333	0.081	0.058	0.252	2.78
59					2.6	0.333	0.080	0.058	0.253	2.79
60					2.5	0.320	0.079	0.055	0.241	2.66
61					2.4	0.307	0.078	0.053	0.230	2.53
62					2.3	0.294	0.076	0.051	0.218	2.41
63					1.9	0.243	0.075	0.042	0.168	1.85
64					1.9	0.243	0.074	0.042	0.169	1.87

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.100	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.050
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.051	0.073	0.009	0.042	0.47
66					0.4	0.051	0.072	0.009	0.042	0.47
67					0.3	0.038	0.071	0.007	0.032	0.35
68					0.3	0.038	0.070	0.007	0.032	0.35
69					0.5	0.064	0.069	0.011	0.053	0.58
70					0.5	0.064	0.068	0.011	0.053	0.58
71					0.5	0.064	0.067	0.011	0.053	0.58
72					0.4	0.051	0.066	0.009	0.042	0.47
73					0.4	0.051	0.065	0.009	0.042	0.47
74					0.4	0.051	0.064	0.009	0.042	0.47
75					0.3	0.038	0.063	0.007	0.032	0.35
76					0.2	0.026	0.062	0.004	0.021	0.23
77					0.3	0.038	0.061	0.007	0.032	0.35
78					0.4	0.051	0.060	0.009	0.042	0.47
79					0.3	0.038	0.059	0.007	0.032	0.35
80					0.2	0.026	0.059	0.004	0.021	0.23
81					0.3	0.038	0.058	0.007	0.032	0.35
82					0.3	0.038	0.057	0.007	0.032	0.35
83					0.3	0.038	0.056	0.007	0.032	0.35
84					0.2	0.026	0.056	0.004	0.021	0.23
85					0.3	0.038	0.055	0.007	0.032	0.35
86					0.2	0.026	0.054	0.004	0.021	0.23
87					0.3	0.038	0.054	0.007	0.032	0.35
88					0.2	0.026	0.053	0.004	0.021	0.23
89					0.3	0.038	0.053	0.007	0.032	0.35
90					0.2	0.026	0.052	0.004	0.021	0.23
91					0.2	0.026	0.052	0.004	0.021	0.23
92					0.2	0.026	0.051	0.004	0.021	0.23
93					0.2	0.026	0.051	0.004	0.021	0.23
94					0.2	0.026	0.051	0.004	0.021	0.23
95					0.2	0.026	0.050	0.004	0.021	0.23
96					0.2	0.026	0.050	0.004	0.021	0.23
TOTALS					100.0				8.51	93.94

EFFECTIVE RAIN = 2.13 INCHES
TOTAL RUNOFF VOLUME = 1.94 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.300	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.150
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.026	0.530	0.023	0.003	0.00
2					0.3	0.038	0.524	0.035	0.004	0.00
3					0.3	0.038	0.518	0.035	0.004	0.00
4					0.4	0.051	0.511	0.046	0.005	0.00
5					0.3	0.038	0.505	0.035	0.004	0.00
6					0.3	0.038	0.499	0.035	0.004	0.00
7					0.3	0.038	0.493	0.035	0.004	0.00
8					0.4	0.051	0.487	0.046	0.005	0.00
9					0.4	0.051	0.482	0.046	0.005	0.00
10					0.4	0.051	0.476	0.046	0.005	0.00
11					0.5	0.064	0.470	0.058	0.006	0.00
12					0.5	0.064	0.464	0.058	0.006	0.00
13					0.5	0.064	0.458	0.058	0.006	0.00
14					0.5	0.064	0.453	0.058	0.006	0.00
15					0.5	0.064	0.447	0.058	0.006	0.00
16					0.6	0.077	0.441	0.069	0.008	0.00
17					0.6	0.077	0.436	0.069	0.008	0.00
18					0.7	0.090	0.430	0.081	0.009	0.00
19					0.7	0.090	0.425	0.081	0.009	0.00
20					0.8	0.102	0.419	0.092	0.010	0.00
21					0.6	0.077	0.414	0.069	0.008	0.00
22					0.7	0.090	0.408	0.081	0.009	0.00
23					0.8	0.102	0.403	0.092	0.010	0.00
24					0.8	0.102	0.398	0.092	0.010	0.00
25					0.9	0.115	0.392	0.104	0.012	0.00
26					0.9	0.115	0.387	0.104	0.012	0.00
27					1.0	0.128	0.382	0.115	0.013	0.00
28					1.0	0.128	0.377	0.115	0.013	0.00
29					1.0	0.128	0.372	0.115	0.013	0.00
30					1.1	0.141	0.367	0.127	0.014	0.00
31					1.2	0.154	0.362	0.138	0.015	0.00
32					1.3	0.166	0.357	0.150	0.017	0.00
33					1.5	0.192	0.352	0.173	0.019	0.00
34					1.5	0.192	0.347	0.173	0.019	0.00
35					1.6	0.205	0.342	0.184	0.020	0.00
36					1.7	0.218	0.337	0.196	0.022	0.00
37					1.9	0.243	0.332	0.219	0.024	0.00
38					2.0	0.256	0.328	0.230	0.026	0.00
39					2.1	0.269	0.323	0.242	0.027	0.00
40					2.2	0.282	0.318	0.253	0.028	0.00
41					1.5	0.192	0.314	0.173	0.019	0.00
42					1.5	0.192	0.309	0.173	0.019	0.00
43					2.0	0.256	0.305	0.230	0.026	0.00
44					2.0	0.256	0.300	0.230	0.026	0.00
45					1.9	0.243	0.296	0.219	0.024	0.00
46					1.9	0.243	0.291	0.219	0.024	0.00
47					1.7	0.218	0.287	0.196	0.022	0.00
48					1.8	0.230	0.283	0.207	0.023	0.00
49					2.5	0.320	0.279	0.288	0.041	0.01
50					2.6	0.333	0.274	0.300	0.058	0.01
51					2.8	0.358	0.270	0.323	0.088	0.01
52					2.9	0.371	0.266	0.334	0.105	0.02
53					3.4	0.435	0.262	0.392	0.173	0.03
54					3.4	0.435	0.258	0.392	0.177	**0.03**
55					2.3	0.294	0.254	0.265	0.040	0.01
56					2.3	0.294	0.250	0.265	0.044	0.01
57					2.7	0.346	0.247	0.311	0.099	0.02
58					2.6	0.333	0.243	0.300	0.090	0.01
59					2.6	0.333	0.239	0.300	0.094	0.01
60					2.5	0.320	0.236	0.288	0.084	0.01
61					2.4	0.307	0.232	0.276	0.075	0.01
62					2.3	0.294	0.228	0.265	0.066	0.01
63					1.9	0.243	0.225	0.219	0.018	0.00
64					1.9	0.243	0.221	0.219	0.022	0.00

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.300	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.150
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.051	0.218	0.046	0.005	0.00
66					0.4	0.051	0.215	0.046	0.005	0.00
67					0.3	0.038	0.211	0.035	0.004	0.00
68					0.3	0.038	0.208	0.035	0.004	0.00
69					0.5	0.064	0.205	0.058	0.006	0.00
70					0.5	0.064	0.202	0.058	0.006	0.00
71					0.5	0.064	0.199	0.058	0.006	0.00
72					0.4	0.051	0.196	0.046	0.005	0.00
73					0.4	0.051	0.193	0.046	0.005	0.00
74					0.4	0.051	0.190	0.046	0.005	0.00
75					0.3	0.038	0.188	0.035	0.004	0.00
76					0.2	0.026	0.185	0.023	0.003	0.00
77					0.3	0.038	0.182	0.035	0.004	0.00
78					0.4	0.051	0.180	0.046	0.005	0.00
79					0.3	0.038	0.177	0.035	0.004	0.00
80					0.2	0.026	0.175	0.023	0.003	0.00
81					0.3	0.038	0.173	0.035	0.004	0.00
82					0.3	0.038	0.170	0.035	0.004	0.00
83					0.3	0.038	0.168	0.035	0.004	0.00
84					0.2	0.026	0.166	0.023	0.003	0.00
85					0.3	0.038	0.164	0.035	0.004	0.00
86					0.2	0.026	0.162	0.023	0.003	0.00
87					0.3	0.038	0.161	0.035	0.004	0.00
88					0.2	0.026	0.159	0.023	0.003	0.00
89					0.3	0.038	0.157	0.035	0.004	0.00
90					0.2	0.026	0.156	0.023	0.003	0.00
91					0.2	0.026	0.155	0.023	0.003	0.00
92					0.2	0.026	0.153	0.023	0.003	0.00
93					0.2	0.026	0.152	0.023	0.003	0.00
94					0.2	0.026	0.151	0.023	0.003	0.00
95					0.2	0.026	0.151	0.023	0.003	0.00
96					0.2	0.026	0.150	0.023	0.003	0.00
TOTALS					100.0				2.03	0.31

EFFECTIVE RAIN = 0.51 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.300	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.150
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					0.2	0.026	0.530	0.023	0.003	0.00
2					0.3	0.038	0.524	0.035	0.004	0.00
3					0.3	0.038	0.518	0.035	0.004	0.00
4					0.4	0.051	0.511	0.046	0.005	0.00
5					0.3	0.038	0.505	0.035	0.004	0.00
6					0.3	0.038	0.499	0.035	0.004	0.00
7					0.3	0.038	0.493	0.035	0.004	0.00
8					0.4	0.051	0.487	0.046	0.005	0.00
9					0.4	0.051	0.482	0.046	0.005	0.00
10					0.4	0.051	0.476	0.046	0.005	0.00
11					0.5	0.064	0.470	0.058	0.006	0.00
12					0.5	0.064	0.464	0.058	0.006	0.00
13					0.5	0.064	0.458	0.058	0.006	0.00
14					0.5	0.064	0.453	0.058	0.006	0.00
15					0.5	0.064	0.447	0.058	0.006	0.00
16					0.6	0.077	0.441	0.069	0.008	0.00
17					0.6	0.077	0.436	0.069	0.008	0.00
18					0.7	0.090	0.430	0.081	0.009	0.00
19					0.7	0.090	0.425	0.081	0.009	0.00
20					0.8	0.102	0.419	0.092	0.010	0.00
21					0.6	0.077	0.414	0.069	0.008	0.00
22					0.7	0.090	0.408	0.081	0.009	0.00
23					0.8	0.102	0.403	0.092	0.010	0.00
24					0.8	0.102	0.398	0.092	0.010	0.00
25					0.9	0.115	0.392	0.104	0.012	0.00
26					0.9	0.115	0.387	0.104	0.012	0.00
27					1.0	0.128	0.382	0.115	0.013	0.00
28					1.0	0.128	0.377	0.115	0.013	0.00
29					1.0	0.128	0.372	0.115	0.013	0.00
30					1.1	0.141	0.367	0.127	0.014	0.00
31					1.2	0.154	0.362	0.138	0.015	0.00
32					1.3	0.166	0.357	0.150	0.017	0.01
33					1.5	0.192	0.352	0.173	0.019	0.01
34					1.5	0.192	0.347	0.173	0.019	0.01
35					1.6	0.205	0.342	0.184	0.020	0.01
36					1.7	0.218	0.337	0.196	0.022	0.01
37					1.9	0.243	0.332	0.219	0.024	0.01
38					2.0	0.256	0.328	0.230	0.026	0.01
39					2.1	0.269	0.323	0.242	0.027	0.01
40					2.2	0.282	0.318	0.253	0.028	0.01
41					1.5	0.192	0.314	0.173	0.019	0.01
42					1.5	0.192	0.309	0.173	0.019	0.01
43					2.0	0.256	0.305	0.230	0.026	0.01
44					2.0	0.256	0.300	0.230	0.026	0.01
45					1.9	0.243	0.296	0.219	0.024	0.01
46					1.9	0.243	0.291	0.219	0.024	0.01
47					1.7	0.218	0.287	0.196	0.022	0.01
48					1.8	0.230	0.283	0.207	0.023	0.01
49					2.5	0.320	0.279	0.288	0.041	0.01
50					2.6	0.333	0.274	0.300	0.058	0.02
51					2.8	0.358	0.270	0.323	0.088	0.03
52					2.9	0.371	0.266	0.334	0.105	0.03
53					3.4	0.435	0.262	0.392	0.173	0.06
54					3.4	0.435	0.258	0.392	0.177	**0.06**
55					2.3	0.294	0.254	0.265	0.040	0.01
56					2.3	0.294	0.250	0.265	0.044	0.01
57					2.7	0.346	0.247	0.311	0.099	0.03
58					2.6	0.333	0.243	0.300	0.090	0.03
59					2.6	0.333	0.239	0.300	0.094	0.03
60					2.5	0.320	0.236	0.288	0.084	0.03
61					2.4	0.307	0.232	0.276	0.075	0.02
62					2.3	0.294	0.228	0.265	0.066	0.02
63					1.9	0.243	0.225	0.219	0.018	0.01
64					1.9	0.243	0.221	0.219	0.022	0.01

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	N/A
[5] UNIT TIME-MINUTES	15	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	N/A
[9] STORM FREQUENCY & DURATION	10-YR, 24-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	3.20
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0.300	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0.150
[13] CONSTANT LOSS RATE-INCHES/HOUR	---	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] / 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] / 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
65					0.4	0.051	0.218	0.046	0.005	0.00
66					0.4	0.051	0.215	0.046	0.005	0.00
67					0.3	0.038	0.211	0.035	0.004	0.00
68					0.3	0.038	0.208	0.035	0.004	0.00
69					0.5	0.064	0.205	0.058	0.006	0.00
70					0.5	0.064	0.202	0.058	0.006	0.00
71					0.5	0.064	0.199	0.058	0.006	0.00
72					0.4	0.051	0.196	0.046	0.005	0.00
73					0.4	0.051	0.193	0.046	0.005	0.00
74					0.4	0.051	0.190	0.046	0.005	0.00
75					0.3	0.038	0.188	0.035	0.004	0.00
76					0.2	0.026	0.185	0.023	0.003	0.00
77					0.3	0.038	0.182	0.035	0.004	0.00
78					0.4	0.051	0.180	0.046	0.005	0.00
79					0.3	0.038	0.177	0.035	0.004	0.00
80					0.2	0.026	0.175	0.023	0.003	0.00
81					0.3	0.038	0.173	0.035	0.004	0.00
82					0.3	0.038	0.170	0.035	0.004	0.00
83					0.3	0.038	0.168	0.035	0.004	0.00
84					0.2	0.026	0.166	0.023	0.003	0.00
85					0.3	0.038	0.164	0.035	0.004	0.00
86					0.2	0.026	0.162	0.023	0.003	0.00
87					0.3	0.038	0.161	0.035	0.004	0.00
88					0.2	0.026	0.159	0.023	0.003	0.00
89					0.3	0.038	0.157	0.035	0.004	0.00
90					0.2	0.026	0.156	0.023	0.003	0.00
91					0.2	0.026	0.155	0.023	0.003	0.00
92					0.2	0.026	0.153	0.023	0.003	0.00
93					0.2	0.026	0.152	0.023	0.003	0.00
94					0.2	0.026	0.151	0.023	0.003	0.00
95					0.2	0.026	0.151	0.023	0.003	0.00
96					0.2	0.026	0.150	0.023	0.003	0.00
TOTALS					100.0				2.03	0.65

EFFECTIVE RAIN = 0.51 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition; By; Date 12/16/19; Checked; Date	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.75
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.280	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.116	0.280	0.104	0.012	0.14
2					1.2	0.126	0.280	0.113	0.013	0.15
3					1.3	0.137	0.280	0.123	0.014	0.16
4					1.4	0.147	0.280	0.132	0.015	0.18
5					1.4	0.147	0.280	0.132	0.015	0.18
6					1.5	0.158	0.280	0.142	0.016	0.19
7					1.6	0.168	0.280	0.151	0.017	0.20
8					1.6	0.168	0.280	0.151	0.017	0.20
9					1.6	0.168	0.280	0.151	0.017	0.20
10					1.6	0.168	0.280	0.151	0.017	0.20
11					1.6	0.168	0.280	0.151	0.017	0.20
12					1.7	0.179	0.280	0.161	0.018	0.21
13					1.7	0.179	0.280	0.161	0.018	0.21
14					1.8	0.189	0.280	0.170	0.019	0.23
15					1.8	0.189	0.280	0.170	0.019	0.23
16					1.8	0.189	0.280	0.170	0.019	0.23
17					2.0	0.210	0.280	0.189	0.021	0.25
18					2.0	0.210	0.280	0.189	0.021	0.25
19					2.1	0.221	0.280	0.198	0.022	0.26
20					2.2	0.231	0.280	0.208	0.023	0.28
21					2.5	0.263	0.280	0.236	0.026	0.31
22					2.8	0.294	0.280	0.265	0.029	0.35
23					3.0	0.315	0.280	0.284	0.035	0.42
24					3.2	0.336	0.280	0.302	0.056	0.67
25					3.5	0.368	0.280	0.331	0.087	1.04
26					3.9	0.410	0.280	0.369	0.129	1.54
27					4.2	0.441	0.280	0.397	0.161	1.92
28					4.5	0.473	0.280	0.425	0.192	2.29
29					4.8	0.504	0.280	0.454	0.224	2.67
30					5.1	0.536	0.280	0.482	0.255	3.04
31					6.7	0.704	0.280	0.633	0.423	5.04
32					8.1	0.851	0.280	0.765	0.570	6.80
33					10.3	1.082	0.280	0.973	0.801	**9.55**
34					2.8	0.294	0.280	0.265	0.029	0.35
35					1.1	0.116	0.280	0.104	0.012	0.14
36					0.5	0.053	0.280	0.047	0.005	0.06
TOTALS					100.0				3.38	40.32

EFFECTIVE RAIN = 0.56 INCHES
TOTAL RUNOFF VOLUME = 0.56 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.75
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.100	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.116	0.100	0.020	0.095	1.05
2					1.2	0.126	0.100	0.022	0.104	1.15
3					1.3	0.137	0.100	0.024	0.113	1.25
4					1.4	0.147	0.100	0.025	0.122	1.34
5					1.4	0.147	0.100	0.025	0.122	1.34
6					1.5	0.158	0.100	0.027	0.130	1.44
7					1.6	0.168	0.100	0.029	0.139	1.53
8					1.6	0.168	0.100	0.029	0.139	1.53
9					1.6	0.168	0.100	0.029	0.139	1.53
10					1.6	0.168	0.100	0.029	0.139	1.53
11					1.6	0.168	0.100	0.029	0.139	1.53
12					1.7	0.179	0.100	0.031	0.148	1.63
13					1.7	0.179	0.100	0.031	0.148	1.63
14					1.8	0.189	0.100	0.033	0.156	1.72
15					1.8	0.189	0.100	0.033	0.156	1.72
16					1.8	0.189	0.100	0.033	0.156	1.72
17					2.0	0.210	0.100	0.036	0.174	1.92
18					2.0	0.210	0.100	0.036	0.174	1.92
19					2.1	0.221	0.100	0.038	0.182	2.01
20					2.2	0.231	0.100	0.040	0.191	2.11
21					2.5	0.263	0.100	0.045	0.217	2.40
22					2.8	0.294	0.100	0.051	0.243	2.68
23					3.0	0.315	0.100	0.055	0.260	2.87
24					3.2	0.336	0.100	0.058	0.278	3.07
25					3.5	0.368	0.100	0.064	0.304	3.35
26					3.9	0.410	0.100	0.071	0.339	3.74
27					4.2	0.441	0.100	0.076	0.365	4.02
28					4.5	0.473	0.100	0.082	0.391	4.31
29					4.8	0.504	0.100	0.087	0.417	4.60
30					5.1	0.536	0.100	0.093	0.443	4.89
31					6.7	0.704	0.100	0.122	0.603	6.66
32					8.1	0.851	0.100	0.147	0.750	8.28
33					10.3	1.082	0.100	0.187	0.981	**10.83**
34					2.8	0.294	0.100	0.051	0.243	2.68
35					1.1	0.116	0.100	0.020	0.095	1.05
36					0.5	0.053	0.100	0.009	0.043	0.48
TOTALS					100.0				8.84	97.53

EFFECTIVE RAIN = 1.47 INCHES
TOTAL RUNOFF VOLUME = 1.34 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.75
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.116	0.300	0.104	0.012	0.00
2					1.2	0.126	0.300	0.113	0.013	0.00
3					1.3	0.137	0.300	0.123	0.014	0.00
4					1.4	0.147	0.300	0.132	0.015	0.00
5					1.4	0.147	0.300	0.132	0.015	0.00
6					1.5	0.158	0.300	0.142	0.016	0.00
7					1.6	0.168	0.300	0.151	0.017	0.00
8					1.6	0.168	0.300	0.151	0.017	0.00
9					1.6	0.168	0.300	0.151	0.017	0.00
10					1.6	0.168	0.300	0.151	0.017	0.00
11					1.6	0.168	0.300	0.151	0.017	0.00
12					1.7	0.179	0.300	0.161	0.018	0.00
13					1.7	0.179	0.300	0.161	0.018	0.00
14					1.8	0.189	0.300	0.170	0.019	0.00
15					1.8	0.189	0.300	0.170	0.019	0.00
16					1.8	0.189	0.300	0.170	0.019	0.00
17					2.0	0.210	0.300	0.189	0.021	0.00
18					2.0	0.210	0.300	0.189	0.021	0.00
19					2.1	0.221	0.300	0.198	0.022	0.00
20					2.2	0.231	0.300	0.208	0.023	0.00
21					2.5	0.263	0.300	0.236	0.026	0.00
22					2.8	0.294	0.300	0.265	0.029	0.00
23					3.0	0.315	0.300	0.284	0.032	0.00
24					3.2	0.336	0.300	0.302	0.036	0.01
25					3.5	0.368	0.300	0.331	0.068	0.01
26					3.9	0.410	0.300	0.369	0.110	0.02
27					4.2	0.441	0.300	0.397	0.141	0.02
28					4.5	0.473	0.300	0.425	0.173	0.03
29					4.8	0.504	0.300	0.454	0.204	0.03
30					5.1	0.536	0.300	0.482	0.236	0.04
31					6.7	0.704	0.300	0.633	0.404	0.06
32					8.1	0.851	0.300	0.765	0.551	0.08
33					10.3	1.082	0.300	0.973	0.782	**0.12**
34					2.8	0.294	0.300	0.265	0.029	0.00
35					1.1	0.116	0.300	0.104	0.012	0.00
36					0.5	0.053	0.300	0.047	0.005	0.00
TOTALS					100.0				3.18	0.49

EFFECTIVE RAIN = 0.53 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	10	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 6-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.75
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.1	0.116	0.300	0.104	0.012	0.00
2					1.2	0.126	0.300	0.113	0.013	0.00
3					1.3	0.137	0.300	0.123	0.014	0.00
4					1.4	0.147	0.300	0.132	0.015	0.00
5					1.4	0.147	0.300	0.132	0.015	0.00
6					1.5	0.158	0.300	0.142	0.016	0.01
7					1.6	0.168	0.300	0.151	0.017	0.01
8					1.6	0.168	0.300	0.151	0.017	0.01
9					1.6	0.168	0.300	0.151	0.017	0.01
10					1.6	0.168	0.300	0.151	0.017	0.01
11					1.6	0.168	0.300	0.151	0.017	0.01
12					1.7	0.179	0.300	0.161	0.018	0.01
13					1.7	0.179	0.300	0.161	0.018	0.01
14					1.8	0.189	0.300	0.170	0.019	0.01
15					1.8	0.189	0.300	0.170	0.019	0.01
16					1.8	0.189	0.300	0.170	0.019	0.01
17					2.0	0.210	0.300	0.189	0.021	0.01
18					2.0	0.210	0.300	0.189	0.021	0.01
19					2.1	0.221	0.300	0.198	0.022	0.01
20					2.2	0.231	0.300	0.208	0.023	0.01
21					2.5	0.263	0.300	0.236	0.026	0.01
22					2.8	0.294	0.300	0.265	0.029	0.01
23					3.0	0.315	0.300	0.284	0.032	0.01
24					3.2	0.336	0.300	0.302	0.036	0.01
25					3.5	0.368	0.300	0.331	0.068	0.02
26					3.9	0.410	0.300	0.369	0.110	0.04
27					4.2	0.441	0.300	0.397	0.141	0.05
28					4.5	0.473	0.300	0.425	0.173	0.06
29					4.8	0.504	0.300	0.454	0.204	0.07
30					5.1	0.536	0.300	0.482	0.236	0.08
31					6.7	0.704	0.300	0.633	0.404	0.13
32					8.1	0.851	0.300	0.765	0.551	0.18
33					10.3	1.082	0.300	0.973	0.782	**0.25**
34					2.8	0.294	0.300	0.265	0.029	0.01
35					1.1	0.116	0.300	0.104	0.012	0.00
36					0.5	0.053	0.300	0.047	0.005	0.00
TOTALS					100.0				3.18	1.02

EFFECTIVE RAIN = 0.53 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.27
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.280	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.198	0.280	0.178	0.020	0.24
2					1.3	0.198	0.280	0.178	0.020	0.24
3					1.1	0.168	0.280	0.151	0.017	0.20
4					1.5	0.229	0.280	0.206	0.023	0.27
5					1.5	0.229	0.280	0.206	0.023	0.27
6					1.8	0.274	0.280	0.247	0.027	0.33
7					1.5	0.229	0.280	0.206	0.023	0.27
8					1.8	0.274	0.280	0.247	0.027	0.33
9					1.8	0.274	0.280	0.247	0.027	0.33
10					1.5	0.229	0.280	0.206	0.023	0.27
11					1.6	0.244	0.280	0.219	0.024	0.29
12					1.8	0.274	0.280	0.247	0.027	0.33
13					2.2	0.335	0.280	0.302	0.055	0.66
14					2.2	0.335	0.280	0.302	0.055	0.66
15					2.2	0.335	0.280	0.302	0.055	0.66
16					2.0	0.305	0.280	0.274	0.030	0.36
17					2.6	0.396	0.280	0.357	0.116	1.38
18					2.7	0.411	0.280	0.370	0.131	1.57
19					2.4	0.366	0.280	0.329	0.086	1.02
20					2.7	0.411	0.280	0.370	0.131	1.57
21					3.3	0.503	0.280	0.453	0.223	2.66
22					3.1	0.472	0.280	0.425	0.192	2.29
23					2.9	0.442	0.280	0.398	0.162	1.93
24					3.0	0.457	0.280	0.411	0.177	2.11
25					3.1	0.472	0.280	0.425	0.192	2.29
26					4.2	0.640	0.280	0.576	0.360	4.29
27					5.0	0.762	0.280	0.686	0.482	5.74
28					3.5	0.533	0.280	0.480	0.253	3.02
29					6.8	1.036	0.280	0.933	0.756	9.01
30					7.3	1.113	0.280	1.001	0.832	9.92
31					8.2	1.250	0.280	1.125	0.970	**11.55**
32					5.9	0.899	0.280	0.809	0.619	7.38
33					2.0	0.305	0.280	0.274	0.030	0.36
34					1.8	0.274	0.280	0.247	0.027	0.33
35					1.8	0.274	0.280	0.247	0.027	0.33
36					0.6	0.091	0.280	0.082	0.009	0.11
TOTALS					100.0				6.26	74.54

EFFECTIVE RAIN = 0.52 INCHES
TOTAL RUNOFF VOLUME = 0.51 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.27
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.100	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.198	0.100	0.034	0.164	1.81
2					1.3	0.198	0.100	0.034	0.164	1.81
3					1.1	0.168	0.100	0.029	0.139	1.53
4					1.5	0.229	0.100	0.040	0.189	2.09
5					1.5	0.229	0.100	0.040	0.189	2.09
6					1.8	0.274	0.100	0.048	0.227	2.50
7					1.5	0.229	0.100	0.040	0.189	2.09
8					1.8	0.274	0.100	0.048	0.227	2.50
9					1.8	0.274	0.100	0.048	0.227	2.50
10					1.5	0.229	0.100	0.040	0.189	2.09
11					1.6	0.244	0.100	0.042	0.202	2.23
12					1.8	0.274	0.100	0.048	0.227	2.50
13					2.2	0.335	0.100	0.058	0.277	3.06
14					2.2	0.335	0.100	0.058	0.277	3.06
15					2.2	0.335	0.100	0.058	0.277	3.06
16					2.0	0.305	0.100	0.053	0.252	2.78
17					2.6	0.396	0.100	0.069	0.328	3.62
18					2.7	0.411	0.100	0.071	0.340	3.75
19					2.4	0.366	0.100	0.063	0.302	3.34
20					2.7	0.411	0.100	0.071	0.340	3.75
21					3.3	0.503	0.100	0.087	0.416	4.59
22					3.1	0.472	0.100	0.082	0.391	4.31
23					2.9	0.442	0.100	0.077	0.365	4.03
24					3.0	0.457	0.100	0.079	0.378	4.17
25					3.1	0.472	0.100	0.082	0.391	4.31
26					4.2	0.640	0.100	0.111	0.540	5.96
27					5.0	0.762	0.100	0.132	0.662	7.30
28					3.5	0.533	0.100	0.092	0.441	4.87
29					6.8	1.036	0.100	0.180	0.936	10.33
30					7.3	1.113	0.100	0.193	1.012	11.17
31					8.2	1.250	0.100	0.217	1.149	**12.69**
32					5.9	0.899	0.100	0.156	0.799	8.82
33					2.0	0.305	0.100	0.053	0.252	2.78
34					1.8	0.274	0.100	0.048	0.227	2.50
35					1.8	0.274	0.100	0.048	0.227	2.50
36					0.6	0.091	0.100	0.016	0.076	0.83
TOTALS					100.0				12.99	143.32

EFFECTIVE RAIN = 1.08 INCHES
TOTAL RUNOFF VOLUME = 0.99 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.27
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.198	0.300	0.178	0.020	0.00
2					1.3	0.198	0.300	0.178	0.020	0.00
3					1.1	0.168	0.300	0.151	0.017	0.00
4					1.5	0.229	0.300	0.206	0.023	0.00
5					1.5	0.229	0.300	0.206	0.023	0.00
6					1.8	0.274	0.300	0.247	0.027	0.00
7					1.5	0.229	0.300	0.206	0.023	0.00
8					1.8	0.274	0.300	0.247	0.027	0.00
9					1.8	0.274	0.300	0.247	0.027	0.00
10					1.5	0.229	0.300	0.206	0.023	0.00
11					1.6	0.244	0.300	0.219	0.024	0.00
12					1.8	0.274	0.300	0.247	0.027	0.00
13					2.2	0.335	0.300	0.302	0.035	0.01
14					2.2	0.335	0.300	0.302	0.035	0.01
15					2.2	0.335	0.300	0.302	0.035	0.01
16					2.0	0.305	0.300	0.274	0.030	0.00
17					2.6	0.396	0.300	0.357	0.096	0.01
18					2.7	0.411	0.300	0.370	0.111	0.02
19					2.4	0.366	0.300	0.329	0.066	0.01
20					2.7	0.411	0.300	0.370	0.111	0.02
21					3.3	0.503	0.300	0.453	0.203	0.03
22					3.1	0.472	0.300	0.425	0.172	0.03
23					2.9	0.442	0.300	0.398	0.142	0.02
24					3.0	0.457	0.300	0.411	0.157	0.02
25					3.1	0.472	0.300	0.425	0.172	0.03
26					4.2	0.640	0.300	0.576	0.340	0.05
27					5.0	0.762	0.300	0.686	0.462	0.07
28					3.5	0.533	0.300	0.480	0.233	0.04
29					6.8	1.036	0.300	0.933	0.736	0.11
30					7.3	1.113	0.300	1.001	0.813	0.13
31					8.2	1.250	0.300	1.125	0.950	**0.15**
32					5.9	0.899	0.300	0.809	0.599	0.09
33					2.0	0.305	0.300	0.274	0.030	0.00
34					1.8	0.274	0.300	0.247	0.027	0.00
35					1.8	0.274	0.300	0.247	0.027	0.00
36					0.6	0.091	0.300	0.082	0.009	0.00
TOTALS					100.0				5.88	0.91

EFFECTIVE RAIN = 0.49 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 3-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.27
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					1.3	0.198	0.300	0.178	0.020	0.01
2					1.3	0.198	0.300	0.178	0.020	0.01
3					1.1	0.168	0.300	0.151	0.017	0.01
4					1.5	0.229	0.300	0.206	0.023	0.01
5					1.5	0.229	0.300	0.206	0.023	0.01
6					1.8	0.274	0.300	0.247	0.027	0.01
7					1.5	0.229	0.300	0.206	0.023	0.01
8					1.8	0.274	0.300	0.247	0.027	0.01
9					1.8	0.274	0.300	0.247	0.027	0.01
10					1.5	0.229	0.300	0.206	0.023	0.01
11					1.6	0.244	0.300	0.219	0.024	0.01
12					1.8	0.274	0.300	0.247	0.027	0.01
13					2.2	0.335	0.300	0.302	0.035	0.01
14					2.2	0.335	0.300	0.302	0.035	0.01
15					2.2	0.335	0.300	0.302	0.035	0.01
16					2.0	0.305	0.300	0.274	0.030	0.01
17					2.6	0.396	0.300	0.357	0.096	0.03
18					2.7	0.411	0.300	0.370	0.111	0.04
19					2.4	0.366	0.300	0.329	0.066	0.02
20					2.7	0.411	0.300	0.370	0.111	0.04
21					3.3	0.503	0.300	0.453	0.203	0.07
22					3.1	0.472	0.300	0.425	0.172	0.06
23					2.9	0.442	0.300	0.398	0.142	0.05
24					3.0	0.457	0.300	0.411	0.157	0.05
25					3.1	0.472	0.300	0.425	0.172	0.06
26					4.2	0.640	0.300	0.576	0.340	0.11
27					5.0	0.762	0.300	0.686	0.462	0.15
28					3.5	0.533	0.300	0.480	0.233	0.07
29					6.8	1.036	0.300	0.933	0.736	0.24
30					7.3	1.113	0.300	1.001	0.813	0.26
31					8.2	1.250	0.300	1.125	0.950	**0.30**
32					5.9	0.899	0.300	0.809	0.599	0.19
33					2.0	0.305	0.300	0.274	0.030	0.01
34					1.8	0.274	0.300	0.247	0.027	0.01
35					1.8	0.274	0.300	0.247	0.027	0.01
36					0.6	0.091	0.300	0.082	0.009	0.00
TOTALS					100.0				5.88	1.89

EFFECTIVE RAIN = 0.49 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics Center: Existing Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	11.81	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.789
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.280	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.398	0.280	0.358	0.118	1.40
2					4.3	0.407	0.280	0.366	0.127	1.51
3					5.0	0.473	0.280	0.426	0.193	2.30
4					5.0	0.473	0.280	0.426	0.193	2.30
5					5.8	0.549	0.280	0.494	0.269	3.21
6					6.5	0.615	0.280	0.554	0.335	4.00
7					7.4	0.701	0.280	0.631	0.421	5.01
8					8.6	0.814	0.280	0.733	0.534	6.36
9					12.3	1.165	0.280	1.048	0.885	10.54
10					29.1	2.755	0.280	2.480	2.475	**29.48**
11					6.8	0.644	0.280	0.579	0.364	4.33
12					5.0	0.473	0.280	0.426	0.193	2.30
TOTALS					100.0				6.11	72.75

EFFECTIVE RAIN = 0.51 INCHES
TOTAL RUNOFF VOLUME = 0.50 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA D/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	10.95	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.789
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.100	[14] LOW LOSS RATE-PERCENT	17%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.398	0.100	0.069	0.329	3.63
2					4.3	0.407	0.100	0.071	0.337	3.71
3					5.0	0.473	0.100	0.082	0.391	4.32
4					5.0	0.473	0.100	0.082	0.391	4.32
5					5.8	0.549	0.100	0.095	0.454	5.01
6					6.5	0.615	0.100	0.107	0.515	5.69
7					7.4	0.701	0.100	0.121	0.600	6.63
8					8.6	0.814	0.100	0.141	0.714	7.88
9					12.3	1.165	0.100	0.202	1.064	11.75
10					29.1	2.755	0.100	0.477	2.655	**29.30**
11					6.8	0.644	0.100	0.112	0.543	6.00
12					5.0	0.473	0.100	0.082	0.391	4.32
TOTALS					100.0				8.39	92.55

EFFECTIVE RAIN = 0.70 INCHES
TOTAL RUNOFF VOLUME = 0.64 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/1 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.15	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.789
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.398	0.300	0.358	0.098	0.02
2					4.3	0.407	0.300	0.366	0.107	0.02
3					5.0	0.473	0.300	0.426	0.173	0.03
4					5.0	0.473	0.300	0.426	0.173	0.03
5					5.8	0.549	0.300	0.494	0.249	0.04
6					6.5	0.615	0.300	0.554	0.315	0.05
7					7.4	0.701	0.300	0.631	0.401	0.06
8					8.6	0.814	0.300	0.733	0.514	0.08
9					12.3	1.165	0.300	1.048	0.865	0.13
10					29.1	2.755	0.300	2.480	2.455	**0.38**
11					6.8	0.644	0.300	0.579	0.344	0.05
12					5.0	0.473	0.300	0.426	0.173	0.03
TOTALS					100.0				5.87	0.91

EFFECTIVE RAIN = 0.49 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph and Effective Rain Calculation Form	Project: Placentia Logistics: DMA A/2 Proposed Condition By ____ Date 12/16/19 Checked ____ Date ____	Sheet 1 / 1

[1] CONCENTRATION POINT	---	[2] AREA DESIGNATION	---
[3] DRAINAGE AREA-ACRES	0.32	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	---
[5] UNIT TIME-MINUTES	5	[6] LAG TIME-MINUTES	---
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	---	[8] S-CURVE	---
[9] STORM FREQUENCY & DURATION	10-YR, 1-HR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	0.789
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	---	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	---
[13] CONSTANT LOSS RATE-INCHES/HOUR	0.300	[14] LOW LOSS RATE-PERCENT	90%

	UNIT HYDROGRAPH				EFFECTIVE RAIN					FLOOD HYDROGRAPH
[15] UNIT TIME PERIOD m	[16] TIME PERCENT OF LAG [7]*[15]	[17] CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	[16] DISTRIB GRAPH PERCENT [17]m-[17]m-1	[17] UNIT HYDROGRAPH CFS-HRS/IN [4]*[18] 100.000	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN IN/HR 60[10][20] 100[5]	[22] LOSS RATE IN/HR MAX	[22] LOSS RATE IN/HR LOW	[23] EFFECTIVE RAIN IN/HR [21]-[22]	[24] FLOW CFS
1					4.2	0.398	0.300	0.358	0.098	0.03
2					4.3	0.407	0.300	0.366	0.107	0.03
3					5.0	0.473	0.300	0.426	0.173	0.06
4					5.0	0.473	0.300	0.426	0.173	0.06
5					5.8	0.549	0.300	0.494	0.249	0.08
6					6.5	0.615	0.300	0.554	0.315	0.10
7					7.4	0.701	0.300	0.631	0.401	0.13
8					8.6	0.814	0.300	0.733	0.514	0.17
9					12.3	1.165	0.300	1.048	0.865	0.28
10					29.1	2.755	0.300	2.480	2.455	**0.79**
11					6.8	0.644	0.300	0.579	0.344	0.11
12					5.0	0.473	0.300	0.426	0.173	0.06
TOTALS					100.0				5.87	1.88

EFFECTIVE RAIN = 0.49 INCHES
TOTAL RUNOFF VOLUME = 0.01 AC-FT

Appendix 5

SWMM Input and Output

```
[TITLE]
;;Project Title/Notes
PLC - 2-YR DETENTION

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         HORTON
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           01/01/2000
START_TIME           00:00:00
REPORT_START_DATE    01/01/2000
REPORT_START_TIME    00:00:00
END_DATE             01/05/2000
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:15:00
WET_STEP             00:15:00
DRY_STEP             00:15:00
ROUTING_STEP         0:00:30
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.566
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
NORAIN           INTENSITY 1:00     1.0      TIMESERIES FAKE
```

```
[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
BMP_D1           NORAIN           BMP_D1_SURF      0.3030992 25       500      0.5      0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
BMP_D1           0.01       0.1        0.05       0.05       25         OUTLET

[INFILTRATION]
;;Subcatchment   MaxRate    MinRate    Decay      DryTime    MaxInfil
;;-------------- ---------- ---------- ---------- ---------- ----------
BMP_D1           3.0        0.5        4          7          0

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BMP_D1           BC
BMP_D1           SURFACE    6.29       0          0          0          5
BMP_D1           SOIL       24         0.3        0.2        0.1        5          5          1.5
BMP_D1           STORAGE    12         0.67       0          0
BMP_D1           DRAIN      0.2664     0.5        0          6          0          0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp    ToPerv     RptFile                  DrainTo          FromPerv
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ---------- ------------------------ ---------------- ----------
BMP_D1           BMP_D1           1       13203.00   0          0          100        0          "X:\Projects2\156 (Steve Sommers)\29 (Placentia Logistics
Center)\03 Analysis\Drainage\Prelim\SWMM\2YR24HR_LID.txt" POC              100

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
DMA_D1           0          FREE                        NO       BMP_D1
POC              0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ----------- ---------- ---------------------------- -------- --------          -------- --------
BMP_D1_SURF      0        1.8        0          TABULAR    BMP_D1_STORAGE               0        0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type            QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- --------
BMP_D1_OUTFLOW   BMP_D1_SURF      POC              0          TABULAR/DEPTH   BMP_D1_RATING               NO

[INFLOWS]
;;Node           Constituent      Time Series      Type     Mfactor  Sfactor  Baseline Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- --------
DMA_D1           FLOW             2YR_24HR         FLOW     1.0      1.0
```

```
[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
BMP_D1_RATING    Rating     0.000      0.000
BMP_D1_RATING               0.083      0.013
BMP_D1_RATING               0.167      0.047
BMP_D1_RATING               0.250      0.098
BMP_D1_RATING               0.333      0.157
BMP_D1_RATING               0.417      0.195
BMP_D1_RATING               0.500      0.224
BMP_D1_RATING               0.583      0.249
BMP_D1_RATING               0.667      0.273
BMP_D1_RATING               0.750      0.294
BMP_D1_RATING               0.833      0.314
BMP_D1_RATING               0.917      0.333
BMP_D1_RATING               1.000      0.351
BMP_D1_RATING               1.083      0.367
BMP_D1_RATING               1.167      0.384
BMP_D1_RATING               1.250      0.399
BMP_D1_RATING               1.333      0.414
BMP_D1_RATING               1.417      0.428
BMP_D1_RATING               1.500      0.442
BMP_D1_RATING               1.583      0.456
BMP_D1_RATING               1.667      0.469
BMP_D1_RATING               1.750      1.223
BMP_D1_RATING               1.800      1.999
;
BMP_D1_STORAGE   Storage    0.00       14309
BMP_D1_STORAGE              0.08       14493
BMP_D1_STORAGE              0.17       14677
BMP_D1_STORAGE              0.25       14861
BMP_D1_STORAGE              0.33       15046
BMP_D1_STORAGE              0.42       15230
BMP_D1_STORAGE              0.50       15414
BMP_D1_STORAGE              0.58       15599
BMP_D1_STORAGE              0.67       15783
BMP_D1_STORAGE              0.75       15967
BMP_D1_STORAGE              0.83       16151
BMP_D1_STORAGE              0.92       16336
BMP_D1_STORAGE              1.00       16520
BMP_D1_STORAGE              1.08       16704
BMP_D1_STORAGE              1.17       16889
BMP_D1_STORAGE              1.25       17073
BMP_D1_STORAGE              1.33       17257
BMP_D1_STORAGE              1.42       17441
BMP_D1_STORAGE              1.50       17626
BMP_D1_STORAGE              1.58       17810
BMP_D1_STORAGE              1.67       17994
BMP_D1_STORAGE              1.75       18178
BMP_D1_STORAGE              1.80       18363

[TIMESERIES]
```

```
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
2YR_24HR         1/1/2000   0:00       0.00
2YR_24HR                    0:15       0.15
2YR_24HR                    0:30       0.22
2YR_24HR                    0:45       0.22
2YR_24HR                    1:00       0.29
2YR_24HR                    1:15       0.22
2YR_24HR                    1:30       0.22
2YR_24HR                    1:45       0.22
2YR_24HR                    2:00       0.29
2YR_24HR                    2:15       0.29
2YR_24HR                    2:30       0.29
2YR_24HR                    2:45       0.36
2YR_24HR                    3:00       0.36
2YR_24HR                    3:15       0.36
2YR_24HR                    3:30       0.36
2YR_24HR                    3:45       0.36
2YR_24HR                    4:00       0.44
2YR_24HR                    4:15       0.44
2YR_24HR                    4:30       0.51
2YR_24HR                    4:45       0.51
2YR_24HR                    5:00       0.58
2YR_24HR                    5:15       0.44
2YR_24HR                    5:30       0.51
2YR_24HR                    5:45       0.58
2YR_24HR                    6:00       0.58
2YR_24HR                    6:15       0.66
2YR_24HR                    6:30       0.66
2YR_24HR                    6:45       0.73
2YR_24HR                    7:00       0.73
2YR_24HR                    7:15       0.73
2YR_24HR                    7:30       0.80
2YR_24HR                    7:45       0.88
2YR_24HR                    8:00       0.95
2YR_24HR                    8:15       1.09
2YR_24HR                    8:30       1.09
2YR_24HR                    8:45       1.17
2YR_24HR                    9:00       1.24
2YR_24HR                    9:15       1.39
2YR_24HR                    9:30       0.09
2YR_24HR                    9:45       0.21
2YR_24HR                    10:00      0.32
2YR_24HR                    10:15      1.09
2YR_24HR                    10:30      1.09
2YR_24HR                    10:45      0.21
2YR_24HR                    11:00      0.23
2YR_24HR                    11:15      0.17
2YR_24HR                    11:30      0.19
2YR_24HR                    11:45      0.04
2YR_24HR                    12:00      0.15
2YR_24HR                    12:15      0.79
```

2YR_24HR		12:30	0.90
2YR_24HR		12:45	1.09
2YR_24HR		13:00	1.20
2YR_24HR		13:15	1.66
2YR_24HR		13:30	1.68
2YR_24HR		13:45	0.73
2YR_24HR		14:00	0.75
2YR_24HR		14:15	1.13
2YR_24HR		14:30	1.06
2YR_24HR		14:45	1.08
2YR_24HR		15:00	1.01
2YR_24HR		15:15	0.94
2YR_24HR		15:30	0.87
2YR_24HR		15:45	0.53
2YR_24HR		16:00	0.55
2YR_24HR		16:15	0.29
2YR_24HR		16:30	0.29
2YR_24HR		16:45	0.22
2YR_24HR		17:00	0.22
2YR_24HR		17:15	0.36
2YR_24HR		17:30	0.36
2YR_24HR		17:45	0.36
2YR_24HR		18:00	0.29
2YR_24HR		18:15	0.29
2YR_24HR		18:30	0.29
2YR_24HR		18:45	0.22
2YR_24HR		19:00	0.15
2YR_24HR		19:15	0.22
2YR_24HR		19:30	0.29
2YR_24HR		19:45	0.22
2YR_24HR		20:00	0.15
2YR_24HR		20:15	0.22
2YR_24HR		20:30	0.22
2YR_24HR		20:45	0.22
2YR_24HR		21:00	0.15
2YR_24HR		21:15	0.22
2YR_24HR		21:30	0.15
2YR_24HR		21:45	0.22
2YR_24HR		22:00	0.15
2YR_24HR		22:15	0.22
2YR_24HR		22:30	0.15
2YR_24HR		22:45	0.15
2YR_24HR		23:00	0.15
2YR_24HR		23:15	0.15
2YR_24HR		23:30	0.15
2YR_24HR		23:45	0.15
2YR_24HR	1/2/2000	0:00	0.15
;			
2YR_6HR	1/1/2000	0:00	0.00
2YR_6HR		0:10	0.67
2YR_6HR		0:20	0.74
2YR_6HR		0:30	0.80

```
2YR_6HR                    0:40       0.86
2YR_6HR                    0:50       0.86
2YR_6HR                    1:00       0.92
2YR_6HR                    1:10       0.98
2YR_6HR                    1:20       0.98
2YR_6HR                    1:30       0.98
2YR_6HR                    1:40       0.98
2YR_6HR                    1:50       0.98
2YR_6HR                    2:00       1.04
2YR_6HR                    2:10       1.04
2YR_6HR                    2:20       1.10
2YR_6HR                    2:30       1.10
2YR_6HR                    2:40       1.10
2YR_6HR                    2:50       1.23
2YR_6HR                    3:00       1.23
2YR_6HR                    3:10       1.29
2YR_6HR                    3:20       1.35
2YR_6HR                    3:30       1.53
2YR_6HR                    3:40       1.72
2YR_6HR                    3:50       1.84
2YR_6HR                    4:00       1.96
2YR_6HR                    4:10       2.15
2YR_6HR                    4:20       2.39
2YR_6HR                    4:30       2.58
2YR_6HR                    4:40       2.76
2YR_6HR                    4:50       2.94
2YR_6HR                    5:00       3.13
2YR_6HR                    5:10       4.11
2YR_6HR                    5:20       4.97
2YR_6HR                    5:30       6.32
2YR_6HR                    5:40       1.72
2YR_6HR                    5:50       0.67
2YR_6HR                    6:00       0.31
;
2YR_3HR                    0:00       0.00
2YR_3HR                    0:05       1.14
2YR_3HR                    0:10       1.14
2YR_3HR                    0:15       0.96
2YR_3HR                    0:20       1.31
2YR_3HR                    0:25       1.31
2YR_3HR                    0:30       1.57
2YR_3HR                    0:35       1.31
2YR_3HR                    0:40       1.57
2YR_3HR                    0:45       1.57
2YR_3HR                    0:50       1.31
2YR_3HR                    0:55       1.40
2YR_3HR                    1:00       1.57
2YR_3HR                    1:05       1.92
2YR_3HR                    1:10       1.92
2YR_3HR                    1:15       1.92
2YR_3HR                    1:20       1.75
2YR_3HR                    1:25       2.27
```

```
2YR_3HR                     1:30       2.36
2YR_3HR                     1:35       2.10
2YR_3HR                     1:40       2.36
2YR_3HR                     1:45       2.88
2YR_3HR                     1:50       2.71
2YR_3HR                     1:55       2.53
2YR_3HR                     2:00       2.62
2YR_3HR                     2:05       2.71
2YR_3HR                     2:10       3.67
2YR_3HR                     2:15       4.37
2YR_3HR                     2:20       3.06
2YR_3HR                     2:25       5.94
2YR_3HR                     2:30       6.38
2YR_3HR                     2:35       7.17
2YR_3HR                     2:40       5.16
2YR_3HR                     2:45       1.75
2YR_3HR                     2:50       1.57
2YR_3HR                     2:55       1.57
2YR_3HR                     3:00       0.52
;
2YR_1HR                     0:00       0.00
2YR_1HR                     0:05       2.09
2YR_1HR                     0:10       2.14
2YR_1HR                     0:15       2.49
2YR_1HR                     0:20       2.49
2YR_1HR                     0:25       2.89
2YR_1HR                     0:30       3.24
2YR_1HR                     0:35       3.69
2YR_1HR                     0:40       4.28
2YR_1HR                     0:45       6.13
2YR_1HR                     0:50       16.01
2YR_1HR                     0:55       3.39
2YR_1HR                     1:00       2.49
;
FAKE             1/1/2000   00:00      0
FAKE             1/2/2000   00:00      0

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

```
DMA_D1           4829.060           8710.826
POC              4800.570           1631.054
BMP_D1_SURF      4796.512           4469.477

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
BMP_D1           4800.570           6873.219
BMP_D1           4800.570           6873.219

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
NORAIN           4844.633           10275.424
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 2-YR 1-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.068         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.344        12.154
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.004         0.157
LID Drainage .............         0.272         9.596
Final Storage ............         0.136         4.800
Continuity Error (%) .....         0.000


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.276         0.090
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.344         0.112
External Outflow .........         0.620         0.202
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	12.15	0.00	0.00	0.00	0.00	9.75	0.09	0.82	0.803

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	12.15	0.00	0.00	0.16	9.60	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.00	0.01	0.01	0 01:12	0.01

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	16.01	16.01	0 00:50	0.112	0.112	0.000
POC	OUTFALL	0.56	0.56	0 02:00	0.0885	0.0899	0.000
BMP_D1_SURF	STORAGE	0.65	0.65	0 01:05	0.00145	0.00145	-0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	0.050	0	0	0	0.194	1	0 01:10	0.00

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	1.03	4.20	16.01	0.112
POC	20.37	0.17	0.56	0.090
System	10.70	4.37	0.56	0.202

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.00	0 01:12			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Tue Dec 17 15:27:19 2019
Analysis ended on: Tue Dec 17 15:27:19 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 2-YR 3-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.600        23.744
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.140         5.554
LID Drainage .............         0.399        15.789
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.000


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.539         0.176
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.600         0.195
External Outflow .........         1.137         0.371
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.001
Continuity Error (%) .....         0.003


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	23.74	0.00	0.00	0.00	0.00	21.34	0.18	6.74	0.899

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	23.74	0.00	0.00	5.55	15.79	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.06	0.40	0.40	0 03:09	0.40

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	7.17	7.17	0 02:35	0.195	0.195	0.000
POC	OUTFALL	0.53	0.72	0 03:09	0.13	0.175	0.000
BMP_D1_SURF	STORAGE	6.21	6.21	0 02:40	0.0457	0.0457	0.024

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	0.906	3	0	0	5.854	20	0 03:09	0.19

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	3.12	2.43	7.17	0.195
POC	93.48	0.07	0.72	0.175
System	48.30	2.50	0.72	0.371

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.19	0 03:09			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:21:28 2019
Analysis ended on: Thu Dec 19 15:21:28 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 2-YR 6-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:10:00
Wet Time Step ............ 00:10:00
Dry Time Step ............ 00:10:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.842        33.355
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.290        11.477
LID Drainage .............         0.492        19.477
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.003


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.782         0.255
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.842         0.275
External Outflow .........         1.622         0.528
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.001
Continuity Error (%) .....         0.003


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	33.36	0.00	0.00	0.00	0.00	30.95	0.25	5.61	0.928

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	33.36	0.00	0.00	11.48	19.48	2.40	4.80	-0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.11	0.78	0.78	0 06:06	0.78

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	6.32	6.32	0 05:30	0.275	0.275	0.000
POC	OUTFALL	0.53	0.83	0 06:06	0.16	0.254	0.000
BMP_D1_SURF	STORAGE	5.08	5.08	0 05:40	0.0945	0.0945	0.016

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	1.568	5	0	0	11.895	41	0 06:06	0.30

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	6.24	1.70	6.32	0.275
POC	98.43	0.10	0.83	0.254
System	52.34	1.80	0.83	0.528

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.30	0 06:06			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:20:33 2019
Analysis ended on: Thu Dec 19 15:20:33 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 2-YR 24-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:15:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 00:15:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.984        38.970
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.023         0.908
LID Drainage .............         0.901        35.660
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.003


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.924         0.301
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.984         0.321
External Outflow .........         1.907         0.621
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.001         0.000
Continuity Error (%) .....         0.000


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	38.97	0.00	0.00	0.00	0.00	36.57	0.30	0.98	0.938

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	38.97	0.00	0.00	0.91	35.66	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.02	0.07	0.07	0 16:16	0.07

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	1.68	1.68	0 13:30	0.321	0.321	0.000
POC	OUTFALL	0.53	0.54	0 16:16	0.293	0.301	0.000
BMP_D1_SURF	STORAGE	0.45	0.45	0 15:30	0.00748	0.00748	-0.001

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	0.254	1	0	0	0.972	3	0 16:15	0.01

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	24.99	0.50	1.68	0.321
POC	75.98	0.15	0.54	0.301
System	50.49	0.65	0.54	0.621

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.01	0 16:16			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:19:00 2019
Analysis ended on: Thu Dec 19 15:19:00 2019
Total elapsed time: < 1 sec

```
[TITLE]
;;Project Title/Notes
PLC - 5-YR DETENTION

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         HORTON
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           01/01/2000
START_TIME           00:00:00
REPORT_START_DATE    01/01/2000
REPORT_START_TIME    00:00:00
END_DATE             01/05/2000
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:05:00
WET_STEP             00:05:00
DRY_STEP             00:05:00
ROUTING_STEP         0:00:30
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.566
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
NORAIN           INTENSITY 1:00     1.0      TIMESERIES FAKE
```

```
[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
BMP_D1           NORAIN           BMP_D1_SURF      0.3030992 25       500      0.5      0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
BMP_D1           0.01       0.1        0.05       0.05       25         OUTLET

[INFILTRATION]
;;Subcatchment   MaxRate    MinRate    Decay      DryTime    MaxInfil
;;-------------- ---------- ---------- ---------- ---------- ----------
BMP_D1           3.0        0.5        4          7          0

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BMP_D1           BC
BMP_D1           SURFACE    6.29       0.0        0          0          5
BMP_D1           SOIL       24         0.3        0.2        0.1        5          5          1.5
BMP_D1           STORAGE    12         0.67       0          0
BMP_D1           DRAIN      0.2664     0.5        0          6          0          0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp    ToPerv     RptFile                  DrainTo          FromPerv
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ---------- ------------------------ ---------------- ----------
BMP_D1           BMP_D1           1       13203.00   0          0          100        0          *                        POC              100

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
DMA_D1           0          FREE                        NO       BMP_D1
POC              0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ----------- ---------- ---------------------------- -------- --------          -------- --------
BMP_D1_SURF      0        1.80       0          TABULAR    BMP_D1_STORAGE               0        0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type            QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- --------
BMP_D1_OUTFLOW   BMP_D1_SURF      POC              0          TABULAR/DEPTH   BMP_D1_RATING               NO

[INFLOWS]
;;Node           Constituent      Time Series      Type     Mfactor  Sfactor  Baseline Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
DMA_D1           FLOW             5YR_1HR          FLOW     1.0      1.0

[CURVES]
```

```
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
BMP_D1_RATING    Rating     0.000      0.000
BMP_D1_RATING               0.083      0.013
BMP_D1_RATING               0.167      0.047
BMP_D1_RATING               0.250      0.098
BMP_D1_RATING               0.333      0.157
BMP_D1_RATING               0.417      0.195
BMP_D1_RATING               0.500      0.224
BMP_D1_RATING               0.583      0.249
BMP_D1_RATING               0.667      0.273
BMP_D1_RATING               0.750      0.294
BMP_D1_RATING               0.833      0.314
BMP_D1_RATING               0.917      0.333
BMP_D1_RATING               1.000      0.351
BMP_D1_RATING               1.083      0.367
BMP_D1_RATING               1.167      0.384
BMP_D1_RATING               1.250      0.399
BMP_D1_RATING               1.333      0.414
BMP_D1_RATING               1.417      0.428
BMP_D1_RATING               1.500      0.442
BMP_D1_RATING               1.583      0.456
BMP_D1_RATING               1.667      0.469
BMP_D1_RATING               1.750      1.223
BMP_D1_RATING               1.800      1.999
;
BMP_D1_STORAGE   Storage    0.00       14309
BMP_D1_STORAGE              0.08       14493
BMP_D1_STORAGE              0.17       14677
BMP_D1_STORAGE              0.25       14861
BMP_D1_STORAGE              0.33       15046
BMP_D1_STORAGE              0.42       15230
BMP_D1_STORAGE              0.50       15414
BMP_D1_STORAGE              0.58       15599
BMP_D1_STORAGE              0.67       15783
BMP_D1_STORAGE              0.75       15967
BMP_D1_STORAGE              0.83       16151
BMP_D1_STORAGE              0.92       16336
BMP_D1_STORAGE              1.00       16520
BMP_D1_STORAGE              1.08       16704
BMP_D1_STORAGE              1.17       16889
BMP_D1_STORAGE              1.25       17073
BMP_D1_STORAGE              1.33       17257
BMP_D1_STORAGE              1.42       17441
BMP_D1_STORAGE              1.50       17626
BMP_D1_STORAGE              1.58       17810
BMP_D1_STORAGE              1.67       17994
BMP_D1_STORAGE              1.75       18178
BMP_D1_STORAGE              1.80       18363

[TIMESERIES]
;;Name           Date       Time       Value
```

```
;;-------------- ---------- ---------- ----------
5YR_24HR         1/1/2000   0:00       0.00
5YR_24HR                    0:15       0.19
5YR_24HR                    0:30       0.29
5YR_24HR                    0:45       0.29
5YR_24HR                    1:00       0.39
5YR_24HR                    1:15       0.29
5YR_24HR                    1:30       0.29
5YR_24HR                    1:45       0.29
5YR_24HR                    2:00       0.39
5YR_24HR                    2:15       0.39
5YR_24HR                    2:30       0.39
5YR_24HR                    2:45       0.49
5YR_24HR                    3:00       0.49
5YR_24HR                    3:15       0.49
5YR_24HR                    3:30       0.49
5YR_24HR                    3:45       0.49
5YR_24HR                    4:00       0.58
5YR_24HR                    4:15       0.58
5YR_24HR                    4:30       0.68
5YR_24HR                    4:45       0.68
5YR_24HR                    5:00       0.78
5YR_24HR                    5:15       0.58
5YR_24HR                    5:30       0.68
5YR_24HR                    5:45       0.78
5YR_24HR                    6:00       0.78
5YR_24HR                    6:15       0.87
5YR_24HR                    6:30       0.87
5YR_24HR                    6:45       0.97
5YR_24HR                    7:00       0.97
5YR_24HR                    7:15       0.97
5YR_24HR                    7:30       1.07
5YR_24HR                    7:45       1.17
5YR_24HR                    8:00       1.26
5YR_24HR                    8:15       1.46
5YR_24HR                    8:30       1.46
5YR_24HR                    8:45       0.13
5YR_24HR                    9:00       0.28
5YR_24HR                    9:15       0.54
5YR_24HR                    9:30       0.68
5YR_24HR                    9:45       0.82
5YR_24HR                    10:00      0.96
5YR_24HR                    10:15      0.16
5YR_24HR                    10:30      0.18
5YR_24HR                    10:45      0.79
5YR_24HR                    11:00      0.82
5YR_24HR                    11:15      0.72
5YR_24HR                    11:30      0.74
5YR_24HR                    11:45      0.53
5YR_24HR                    12:00      0.67
5YR_24HR                    12:15      1.51
5YR_24HR                    12:30      1.65
```

5YR_24HR		12:45	1.91
5YR_24HR		13:00	2.05
5YR_24HR		13:15	2.66
5YR_24HR		13:30	2.68
5YR_24HR		13:45	1.40
5YR_24HR		14:00	1.42
5YR_24HR		14:15	1.91
5YR_24HR		14:30	1.81
5YR_24HR		14:45	1.83
5YR_24HR		15:00	1.73
5YR_24HR		15:15	1.64
5YR_24HR		15:30	1.54
5YR_24HR		15:45	1.08
5YR_24HR		16:00	1.10
5YR_24HR		16:15	0.39
5YR_24HR		16:30	0.39
5YR_24HR		16:45	0.29
5YR_24HR		17:00	0.29
5YR_24HR		17:15	0.49
5YR_24HR		17:30	0.49
5YR_24HR		17:45	0.49
5YR_24HR		18:00	0.39
5YR_24HR		18:15	0.39
5YR_24HR		18:30	0.39
5YR_24HR		18:45	0.29
5YR_24HR		19:00	0.19
5YR_24HR		19:15	0.29
5YR_24HR		19:30	0.39
5YR_24HR		19:45	0.29
5YR_24HR		20:00	0.19
5YR_24HR		20:15	0.29
5YR_24HR		20:30	0.29
5YR_24HR		20:45	0.29
5YR_24HR		21:00	0.19
5YR_24HR		21:15	0.29
5YR_24HR		21:30	0.19
5YR_24HR		21:45	0.29
5YR_24HR		22:00	0.19
5YR_24HR		22:15	0.29
5YR_24HR		22:30	0.19
5YR_24HR		22:45	0.19
5YR_24HR		23:00	0.19
5YR_24HR		23:15	0.19
5YR_24HR		23:30	0.19
5YR_24HR		23:45	0.19
5YR_24HR	1/2/2000	0:00	0.19
;			
5YR_6HR	1/1/2000	0:00	0.00
5YR_6HR		0:10	0.88
5YR_6HR		0:20	0.96
5YR_6HR		0:30	1.04
5YR_6HR		0:40	1.12

5YR_6HR	0:50	1.12
5YR_6HR	1:00	1.20
5YR_6HR	1:10	1.28
5YR_6HR	1:20	1.28
5YR_6HR	1:30	1.28
5YR_6HR	1:40	1.28
5YR_6HR	1:50	1.28
5YR_6HR	2:00	1.36
5YR_6HR	2:10	1.36
5YR_6HR	2:20	1.44
5YR_6HR	2:30	1.44
5YR_6HR	2:40	1.44
5YR_6HR	2:50	1.60
5YR_6HR	3:00	1.60
5YR_6HR	3:10	1.68
5YR_6HR	3:20	1.76
5YR_6HR	3:30	2.00
5YR_6HR	3:40	2.24
5YR_6HR	3:50	2.40
5YR_6HR	4:00	2.56
5YR_6HR	4:10	2.80
5YR_6HR	4:20	3.12
5YR_6HR	4:30	3.36
5YR_6HR	4:40	3.60
5YR_6HR	4:50	3.84
5YR_6HR	5:00	4.08
5YR_6HR	5:10	5.36
5YR_6HR	5:20	6.47
5YR_6HR	5:30	8.43
5YR_6HR	5:40	2.24
5YR_6HR	5:50	0.88
5YR_6HR	6:00	0.40
;		
5YR_3HR	0:00	0.00
5YR_3HR	0:05	1.51
5YR_3HR	0:10	1.51
5YR_3HR	0:15	1.28
5YR_3HR	0:20	1.74
5YR_3HR	0:25	1.74
5YR_3HR	0:30	2.09
5YR_3HR	0:35	1.74
5YR_3HR	0:40	2.09
5YR_3HR	0:45	2.09
5YR_3HR	0:50	1.74
5YR_3HR	0:55	1.86
5YR_3HR	1:00	2.09
5YR_3HR	1:05	2.55
5YR_3HR	1:10	2.55
5YR_3HR	1:15	2.55
5YR_3HR	1:20	2.32
5YR_3HR	1:25	3.02
5YR_3HR	1:30	3.13

```
5YR_3HR                     1:35       2.79
5YR_3HR                     1:40       3.13
5YR_3HR                     1:45       3.83
5YR_3HR                     1:50       3.60
5YR_3HR                     1:55       3.37
5YR_3HR                     2:00       3.48
5YR_3HR                     2:05       3.60
5YR_3HR                     2:10       4.87
5YR_3HR                     2:15       5.80
5YR_3HR                     2:20       4.06
5YR_3HR                     2:25       8.02
5YR_3HR                     2:30       8.72
5YR_3HR                     2:35       9.98
5YR_3HR                     2:40       6.85
5YR_3HR                     2:45       2.32
5YR_3HR                     2:50       2.09
5YR_3HR                     2:55       2.09
5YR_3HR                     3:00       0.70
;
5YR_1HR                     0:00       0.00
5YR_1HR                     0:05       2.92
5YR_1HR                     0:10       2.99
5YR_1HR                     0:15       3.48
5YR_1HR                     0:20       3.48
5YR_1HR                     0:25       4.03
5YR_1HR                     0:30       4.52
5YR_1HR                     0:35       5.15
5YR_1HR                     0:40       5.98
5YR_1HR                     0:45       8.81
5YR_1HR                     0:50       22.94
5YR_1HR                     0:55       4.73
5YR_1HR                     1:00       3.48
;
FAKE             1/1/2000   00:00      0
FAKE             1/2/2000   00:00      0

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA_D1           4829.060           8710.826
```

```
POC              4800.570           1631.054
BMP_D1_SURF      4796.512           4469.477

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
BMP_D1           4800.570           6873.219
BMP_D1           4800.570           6873.219

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
NORAIN           4844.633           10275.424
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 5-YR 1-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.486        19.248
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.171         6.783
LID Drainage .............         0.254        10.065
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.000


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.426         0.139
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.486         0.158
External Outflow .........         0.910         0.297
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.001
Continuity Error (%) .....         0.007


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	19.25	0.00	0.00	0.00	0.00	16.85	0.14	12.92	0.875

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	19.25	0.00	0.00	6.78	10.07	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.07	0.49	0.49	0 01:10	0.49

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	22.94	22.94	0 00:50	0.158	0.158	0.000
POC	OUTFALL	0.50	0.71	0 01:55	0.0828	0.138	0.000
BMP_D1_SURF	STORAGE	12.77	12.77	0 01:00	0.0558	0.0558	0.036

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	1.032	4	0	0	7.319	25	0 01:10	0.22

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	1.03	5.93	22.94	0.158
POC	93.74	0.06	0.71	0.138
System	47.39	5.99	0.71	0.297

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.22	0 01:10			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:35:26 2019
Analysis ended on: Thu Dec 19 15:35:26 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 5-YR 3-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.802        31.768
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.336        13.306
LID Drainage .............         0.406        16.061
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.003


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.742         0.242
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.802         0.261
External Outflow .........         1.542         0.502
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.001
Continuity Error (%) .....         0.005


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	31.77	0.00	0.00	0.00	0.00	29.37	0.24	9.29	0.924

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	31.77	0.00	0.00	13.31	16.06	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.12	0.91	0.91	0 03:09	0.91

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	9.98	9.98	0 02:35	0.261	0.261	0.000
POC	OUTFALL	0.53	0.86	0 03:09	0.132	0.241	0.000
BMP_D1_SURF	STORAGE	8.76	8.76	0 02:40	0.11	0.11	0.022

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	1.810	6	0	0	13.961	48	0 03:08	0.33

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	3.12	3.25	9.98	0.261
POC	99.21	0.09	0.86	0.241
System	51.16	3.34	0.86	0.502

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.33	0 03:09			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:34:59 2019
Analysis ended on: Thu Dec 19 15:34:59 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 5-YR 6-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:10:00
Wet Time Step ............ 00:10:00
Dry Time Step ............ 00:10:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         1.101        43.608
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.530        20.965
LID Drainage .............         0.511        20.242
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.003


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.041         0.339
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         1.101         0.359
External Outflow .........         2.139         0.697
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.003         0.001
Continuity Error (%) .....         0.003


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	43.61	0.00	0.00	0.00	0.00	41.21	0.34	7.40	0.945

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	43.61	0.00	0.00	20.97	20.24	2.40	4.80	-0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.20	1.36	1.36	0 06:08	1.36

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	8.43	8.43	0 05:30	0.359	0.359	0.000
POC	OUTFALL	0.53	0.95	0 06:08	0.167	0.338	0.000
BMP_D1_SURF	STORAGE	6.87	6.87	0 05:40	0.173	0.173	0.012

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	2.940	10	0	0	21.472	73	0 06:07	0.42

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	6.24	2.22	8.43	0.359
POC	98.78	0.13	0.95	0.338
System	52.51	2.36	0.95	0.697

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.42	0 06:08			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:34:15 2019
Analysis ended on: Thu Dec 19 15:34:15 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 5-YR 24-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:15:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 00:15:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         1.404        55.590
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.347        13.741
LID Drainage .............         0.996        39.448
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.004


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.343         0.438
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         1.404         0.458
External Outflow .........         2.744         0.894
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.004         0.001
Continuity Error (%) .....         0.000


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	55.59	0.00	0.00	0.00	0.00	53.19	0.44	2.67	0.957

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	55.59	0.00	0.00	13.74	39.45	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.12	0.82	0.82	0 16:27	0.82

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	2.68	2.68	0 13:30	0.458	0.458	0.000
POC	OUTFALL	0.53	0.84	0 16:27	0.325	0.436	0.000
BMP_D1_SURF	STORAGE	2.14	2.14	0 13:45	0.113	0.113	-0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	1.823	6	0	0	12.454	42	0 16:27	0.31

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	24.99	0.71	2.68	0.458
POC	96.86	0.17	0.84	0.436
System	60.92	0.88	0.84	0.894

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.31	0 16:27			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:33:20 2019
Analysis ended on: Thu Dec 19 15:33:20 2019
Total elapsed time: < 1 sec

```
[TITLE]
;;Project Title/Notes
PLC - 10-YR DETENTION

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         HORTON
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           01/01/2000
START_TIME           00:00:00
REPORT_START_DATE    01/01/2000
REPORT_START_TIME    00:00:00
END_DATE             01/05/2000
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:05:00
WET_STEP             00:05:00
DRY_STEP             00:05:00
ROUTING_STEP         0:00:30
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.566
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
NORAIN           INTENSITY 1:00     1.0      TIMESERIES FAKE

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
```

```
BMP_D1           NORAIN           BMP_D1_SURF      0.3030992 25       500      0.5      0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
BMP_D1           0.01       0.1        0.05       0.05       25         OUTLET

[INFILTRATION]
;;Subcatchment   MaxRate    MinRate    Decay      DryTime    MaxInfil
;;-------------- ---------- ---------- ---------- ---------- ----------
BMP_D1           3.0        0.5        4          7          0

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BMP_D1           BC
BMP_D1           SURFACE    6.29       0.0        0          0          5
BMP_D1           SOIL       24         0.3        0.2        0.1        5          5          1.5
BMP_D1           STORAGE    12         0.67       0          0
BMP_D1           DRAIN      0.2664     0.5        0          6          0          0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp    ToPerv     RptFile                  DrainTo          FromPerv
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ---------- ------------------------ ---------------- ----------
BMP_D1           BMP_D1           1       13203.00   0          0          100        0          *                        POC              100


[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
DMA_D1           0          FREE                        NO       BMP_D1
POC              0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ----------- ---------- ---------------------------- -------- --------          -------- --------
BMP_D1_SURF      0        1.80       0          TABULAR    BMP_D1_STORAGE               0        0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type            QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- --------
BMP_D1_OUTFLOW   BMP_D1_SURF      POC              0          TABULAR/DEPTH   BMP_D1_RATING               NO

[INFLOWS]
;;Node           Constituent      Time Series      Type     Mfactor  Sfactor  Baseline Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- --------
DMA_D1           FLOW             10YR_1HR         FLOW     1.0      1.0

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
BMP_D1_RATING    Rating     0.000      0.000
BMP_D1_RATING               0.083      0.013
BMP_D1_RATING               0.167      0.047
BMP_D1_RATING               0.250      0.098
BMP_D1_RATING               0.333      0.157
```

```
BMP_D1_RATING               0.417      0.195
BMP_D1_RATING               0.500      0.224
BMP_D1_RATING               0.583      0.249
BMP_D1_RATING               0.667      0.273
BMP_D1_RATING               0.750      0.294
BMP_D1_RATING               0.833      0.314
BMP_D1_RATING               0.917      0.333
BMP_D1_RATING               1.000      0.351
BMP_D1_RATING               1.083      0.367
BMP_D1_RATING               1.167      0.384
BMP_D1_RATING               1.250      0.399
BMP_D1_RATING               1.333      0.414
BMP_D1_RATING               1.417      0.428
BMP_D1_RATING               1.500      0.442
BMP_D1_RATING               1.583      0.456
BMP_D1_RATING               1.667      0.469
BMP_D1_RATING               1.750      1.223
BMP_D1_RATING               1.800      1.999
;
BMP_D1_STORAGE   Storage    0.00       14309
BMP_D1_STORAGE              0.08       14493
BMP_D1_STORAGE              0.17       14677
BMP_D1_STORAGE              0.25       14861
BMP_D1_STORAGE              0.33       15046
BMP_D1_STORAGE              0.42       15230
BMP_D1_STORAGE              0.50       15414
BMP_D1_STORAGE              0.58       15599
BMP_D1_STORAGE              0.67       15783
BMP_D1_STORAGE              0.75       15967
BMP_D1_STORAGE              0.83       16151
BMP_D1_STORAGE              0.92       16336
BMP_D1_STORAGE              1.00       16520
BMP_D1_STORAGE              1.08       16704
BMP_D1_STORAGE              1.17       16889
BMP_D1_STORAGE              1.25       17073
BMP_D1_STORAGE              1.33       17257
BMP_D1_STORAGE              1.42       17441
BMP_D1_STORAGE              1.50       17626
BMP_D1_STORAGE              1.58       17810
BMP_D1_STORAGE              1.67       17994
BMP_D1_STORAGE              1.75       18178
BMP_D1_STORAGE              1.80       18363

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
10YR_24HR        1/1/2000   0:00       0.00
10YR_24HR                   0:15       0.23
10YR_24HR                   0:30       0.35
10YR_24HR                   0:45       0.35
10YR_24HR                   1:00       0.47
10YR_24HR                   1:15       0.35
10YR_24HR                   1:30       0.35
10YR_24HR                   1:45       0.35
10YR_24HR                   2:00       0.47
10YR_24HR                   2:15       0.47
```

10YR_24HR	2:30	0.47
10YR_24HR	2:45	0.58
10YR_24HR	3:00	0.58
10YR_24HR	3:15	0.58
10YR_24HR	3:30	0.58
10YR_24HR	3:45	0.58
10YR_24HR	4:00	0.70
10YR_24HR	4:15	0.70
10YR_24HR	4:30	0.82
10YR_24HR	4:45	0.82
10YR_24HR	5:00	0.93
10YR_24HR	5:15	0.70
10YR_24HR	5:30	0.82
10YR_24HR	5:45	0.93
10YR_24HR	6:00	0.93
10YR_24HR	6:15	1.05
10YR_24HR	6:30	1.05
10YR_24HR	6:45	0.00
10YR_24HR	7:00	0.02
10YR_24HR	7:15	0.04
10YR_24HR	7:30	0.20
10YR_24HR	7:45	0.36
10YR_24HR	8:00	0.52
10YR_24HR	8:15	0.82
10YR_24HR	8:30	0.84
10YR_24HR	8:45	1.00
10YR_24HR	9:00	1.16
10YR_24HR	9:15	1.46
10YR_24HR	9:30	1.62
10YR_24HR	9:45	1.77
10YR_24HR	10:00	1.93
10YR_24HR	10:15	0.96
10YR_24HR	10:30	0.98
10YR_24HR	10:45	1.70
10YR_24HR	11:00	1.72
10YR_24HR	11:15	1.59
10YR_24HR	11:30	1.61
10YR_24HR	11:45	1.34
10YR_24HR	12:00	1.50
10YR_24HR	12:15	2.50
10YR_24HR	12:30	2.66
10YR_24HR	12:45	2.96
10YR_24HR	13:00	3.11
10YR_24HR	13:15	3.84
10YR_24HR	13:30	3.85
10YR_24HR	13:45	2.31
10YR_24HR	14:00	2.32
10YR_24HR	14:15	2.90
10YR_24HR	14:30	2.78
10YR_24HR	14:45	2.79
10YR_24HR	15:00	2.66
10YR_24HR	15:15	2.53
10YR_24HR	15:30	2.41
10YR_24HR	15:45	1.85
10YR_24HR	16:00	1.87
10YR_24HR	16:15	0.47

```
10YR_24HR                   16:30      0.47
10YR_24HR                   16:45      0.35
10YR_24HR                   17:00      0.35
10YR_24HR                   17:15      0.58
10YR_24HR                   17:30      0.58
10YR_24HR                   17:45      0.58
10YR_24HR                   18:00      0.47
10YR_24HR                   18:15      0.47
10YR_24HR                   18:30      0.47
10YR_24HR                   18:45      0.35
10YR_24HR                   19:00      0.23
10YR_24HR                   19:15      0.35
10YR_24HR                   19:30      0.47
10YR_24HR                   19:45      0.35
10YR_24HR                   20:00      0.23
10YR_24HR                   20:15      0.35
10YR_24HR                   20:30      0.35
10YR_24HR                   20:45      0.35
10YR_24HR                   21:00      0.23
10YR_24HR                   21:15      0.35
10YR_24HR                   21:30      0.23
10YR_24HR                   21:45      0.35
10YR_24HR                   22:00      0.23
10YR_24HR                   22:15      0.35
10YR_24HR                   22:30      0.23
10YR_24HR                   22:45      0.23
10YR_24HR                   23:00      0.23
10YR_24HR                   23:15      0.23
10YR_24HR                   23:30      0.23
10YR_24HR                   23:45      0.23
10YR_24HR        1/2/2000   0:00       0.23
;
10YR_6HR         1/1/2000   0:00       0.00
10YR_6HR                    0:10       1.05
10YR_6HR                    0:20       1.15
10YR_6HR                    0:30       1.25
10YR_6HR                    0:40       1.34
10YR_6HR                    0:50       1.34
10YR_6HR                    1:00       1.44
10YR_6HR                    1:10       1.53
10YR_6HR                    1:20       1.53
10YR_6HR                    1:30       1.53
10YR_6HR                    1:40       1.53
10YR_6HR                    1:50       1.53
10YR_6HR                    2:00       1.63
10YR_6HR                    2:10       1.63
10YR_6HR                    2:20       1.72
10YR_6HR                    2:30       1.72
10YR_6HR                    2:40       1.72
10YR_6HR                    2:50       1.92
10YR_6HR                    3:00       1.92
10YR_6HR                    3:10       2.01
10YR_6HR                    3:20       2.11
10YR_6HR                    3:30       2.40
10YR_6HR                    3:40       2.68
10YR_6HR                    3:50       2.87
```

```
10YR_6HR                    4:00       3.07
10YR_6HR                    4:10       3.35
10YR_6HR                    4:20       3.74
10YR_6HR                    4:30       4.02
10YR_6HR                    4:40       4.31
10YR_6HR                    4:50       4.60
10YR_6HR                    5:00       4.89
10YR_6HR                    5:10       6.66
10YR_6HR                    5:20       8.28
10YR_6HR                    5:30       10.83
10YR_6HR                    5:40       2.68
10YR_6HR                    5:50       1.05
10YR_6HR                    6:00       0.48
;
10YR_3HR                    0:00       0.00
10YR_3HR                    0:05       1.81
10YR_3HR                    0:10       1.81
10YR_3HR                    0:15       1.53
10YR_3HR                    0:20       2.09
10YR_3HR                    0:25       2.09
10YR_3HR                    0:30       2.50
10YR_3HR                    0:35       2.09
10YR_3HR                    0:40       2.50
10YR_3HR                    0:45       2.50
10YR_3HR                    0:50       2.09
10YR_3HR                    0:55       2.23
10YR_3HR                    1:00       2.50
10YR_3HR                    1:05       3.06
10YR_3HR                    1:10       3.06
10YR_3HR                    1:15       3.06
10YR_3HR                    1:20       2.78
10YR_3HR                    1:25       3.62
10YR_3HR                    1:30       3.75
10YR_3HR                    1:35       3.34
10YR_3HR                    1:40       3.75
10YR_3HR                    1:45       4.59
10YR_3HR                    1:50       4.31
10YR_3HR                    1:55       4.03
10YR_3HR                    2:00       4.17
10YR_3HR                    2:05       4.31
10YR_3HR                    2:10       5.96
10YR_3HR                    2:15       7.30
10YR_3HR                    2:20       4.87
10YR_3HR                    2:25       10.33
10YR_3HR                    2:30       11.17
10YR_3HR                    2:35       12.69
10YR_3HR                    2:40       8.82
10YR_3HR                    2:45       2.78
10YR_3HR                    2:50       2.50
10YR_3HR                    2:55       2.50
10YR_3HR                    3:00       0.83
;
10YR_1HR                    0:00       0.00
10YR_1HR                    0:05       3.63
10YR_1HR                    0:10       3.71
10YR_1HR                    0:15       4.32
```

```
10YR_1HR                    0:20       4.32
10YR_1HR                    0:25       5.01
10YR_1HR                    0:30       5.69
10YR_1HR                    0:35       6.63
10YR_1HR                    0:40       7.88
10YR_1HR                    0:45       11.75
10YR_1HR                    0:50       29.30
10YR_1HR                    0:55       6.00
10YR_1HR                    1:00       4.32
;
FAKE             1/1/2000   00:00      0
FAKE             1/5/2000   00:00      0

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA_D1           4829.060           8710.826
POC              4800.570           1631.054
BMP_D1_SURF      4796.512           4469.477

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
BMP_D1           4800.570           6873.219
BMP_D1           4800.570           6873.219

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
NORAIN           4844.633           10275.424
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 10-YR 1-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.621        24.589
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.301        11.913
LID Drainage .............         0.260        10.275
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.000


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.560         0.183
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.621         0.202
External Outflow .........         1.179         0.384
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.002         0.001
Continuity Error (%) .....         0.008


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	24.59	0.00	0.00	0.00	0.00	22.19	0.18	17.78	0.902

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	24.59	0.00	0.00	11.91	10.28	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.11	0.84	0.84	0 01:10	0.84

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	29.30	29.30	0 00:50	0.202	0.202	0.000
POC	OUTFALL	0.50	0.81	0 01:55	0.0846	0.182	0.000
BMP_D1_SURF	STORAGE	17.65	17.65	0 00:55	0.098	0.098	0.030

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	1.631	6	0	0	12.853	44	0 01:10	0.32

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	1.03	7.58	29.30	0.202
POC	99.38	0.07	0.81	0.182
System	50.21	7.65	0.81	0.384

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.32	0 01:10			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:41:54 2019
Analysis ended on: Thu Dec 19 15:41:54 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 10-YR 3-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         0.984        38.952
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.514        20.358
LID Drainage .............         0.409        16.193
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.003


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.923         0.301
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.984         0.321
External Outflow .........         1.904         0.620
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.003         0.001
Continuity Error (%) .....         0.005


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


************************
Routing Time Step Summary
************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	38.95	0.00	0.00	0.00	0.00	36.55	0.30	11.85	0.938

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	38.95	0.00	0.00	20.36	16.19	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.19	1.35	1.35	0 03:09	1.35

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	12.69	12.69	0 02:35	0.321	0.321	0.000
POC	OUTFALL	0.53	0.95	0 03:09	0.133	0.3	0.000
BMP_D1_SURF	STORAGE	11.32	11.32	0 02:40	0.168	0.168	0.019

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	2.862	10	0	0	21.357	73	0 03:09	0.42

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	3.12	3.98	12.69	0.321
POC	99.30	0.12	0.95	0.300
System	51.21	4.10	0.95	0.620

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	0.42	0 03:09			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:41:24 2019
Analysis ended on: Thu Dec 19 15:41:24 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 10-YR 6-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:10:00
Wet Time Step ............ 00:10:00
Dry Time Step ............ 00:10:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         1.340        53.036
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.758        30.030
LID Drainage .............         0.520        20.604
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.004


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.279         0.417
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         1.340         0.437
External Outflow .........         2.608         0.850
Flooding Loss ............         0.007         0.002
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.004         0.001
Continuity Error (%) .....         0.013


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	53.04	0.00	0.00	0.00	0.00	50.63	0.42	9.49	0.955

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	53.04	0.00	0.00	30.03	20.61	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.27	1.80	1.80	0 05:59	1.80

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	10.83	10.83	0 05:30	0.436	0.436	0.000
POC	OUTFALL	0.53	2.53	0 05:59	0.17	0.413	0.000
BMP_D1_SURF	STORAGE	8.96	8.96	0 05:40	0.247	0.247	0.044

****
Node Flooding Summary
****

Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate CFS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 gal	Maximum Ponded Volume 1000 ft3
BMP_D1_SURF	0.08	2.08	0 05:55	0.002	0.000

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	4.084	14	0	0	29.340	100	0 05:55	2.00

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	6.24	2.71	10.83	0.436
POC	98.78	0.16	2.53	0.413
System	52.51	2.87	2.53	0.850

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	2.00	0 05:59			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:40:29 2019
Analysis ended on: Thu Dec 19 15:40:29 2019
Total elapsed time: < 1 sec

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

PLC - 10-YR 24-HR DETENTION

WARNING 09: time series interval greater than recording interval for Rain Gage NORAIN

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... KINWAVE
Starting Date ............ 01/01/2000 00:00:00
Ending Date .............. 01/05/2000 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:15:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 00:15:00
Routing Time Step ........ 30.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.061         2.400
Total Precipitation ......         0.000         0.000
Outfall Runon ............         1.937        76.677
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.000         0.000
Surface Runoff ...........         0.826        32.687
LID Drainage .............         1.050        41.587
Final Storage ............         0.121         4.800
Continuity Error (%) .....         0.004


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         1.876         0.611
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         1.937         0.631
External Outflow .........         3.807         1.241
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.006         0.002
Continuity Error (%) .....         0.000


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
BMP_D1	0.00	76.68	0.00	0.00	0.00	0.00	74.27	0.61	3.84	0.969

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Initial Storage in	Final Storage in	Continuity Error %
BMP_D1	BMP_D1	76.68	0.00	0.00	32.69	41.59	2.40	4.80	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
DMA_D1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
POC	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
BMP_D1_SURF	STORAGE	0.30	1.75	1.75	0 16:17	1.75

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DMA_D1	OUTFALL	3.85	3.85	0 13:30	0.631	0.631	0.000
POC	OUTFALL	0.53	1.79	0 16:17	0.342	0.609	0.000
BMP_D1_SURF	STORAGE	3.32	3.32	0 13:45	0.269	0.269	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
BMP_D1_SURF	4.542	15	0	0	28.473	97	0 16:17	1.26

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
DMA_D1	24.97	0.98	3.85	0.631
POC	97.13	0.24	1.79	0.609
System	61.05	1.22	1.79	1.240

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
BMP_D1_OUTFLOW	DUMMY	1.26	0 16:17			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Dec 19 15:40:00 2019
Analysis ended on: Thu Dec 19 15:40:00 2019
Total elapsed time: < 1 sec

Appendix 6

AES Rational Method Output

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                     (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                     (Rational Tabling Version 23.0)
                  Release Date: 07/01/2016  License ID 1532

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* PLACENTIA LOGISTICS CENTER                                             *
* 100-YEAR PEAK FLOW                                                     *
* DEVELOPED CONDITION                                                    *
 ************************************************************************

  FILE NAME: PLC_100.DAT
  TIME/DATE OF STUDY: 14:45 12/19/2019
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.820
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.789
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.210
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.390
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.4664830
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.4671202
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.390
  SLOPE OF INTENSITY DURATION CURVE = 0.4671
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
```

```
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS MOBILE HOME PARK
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  UPSTREAM ELEVATION(FEET) =   1533.42
  DOWNSTREAM ELEVATION(FEET) =   1524.03
  ELEVATION DIFFERENCE(FEET) =      9.39
  TC = 0.336*[(  300.00**3)/(     9.39)]**.2 =    6.576
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.904
  USER-SPECIFIED RUNOFF COEFFICIENT = .8701
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      1.26
  TOTAL AREA(ACRES) =      0.37   TOTAL RUNOFF(CFS) =      1.26

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    104.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1524.03  DOWNSTREAM ELEVATION(FEET) = 1517.20
  STREET LENGTH(FEET) =   317.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.27
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    8.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =    8.37
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.489
  USER-SPECIFIED RUNOFF COEFFICIENT = .8797
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.66      SUBAREA RUNOFF(CFS) =    2.03
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       3.28
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.66
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.07
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =     617.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    106.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1517.20  DOWNSTREAM ELEVATION(FEET) = 1512.47
  STREET LENGTH(FEET) =   537.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   11.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.007
  USER-SPECIFIED RUNOFF COEFFICIENT = .8850
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    4.47      SUBAREA RUNOFF(CFS) =   11.90
  TOTAL AREA(ACRES) =        5.5        PEAK FLOW RATE(CFS) =      15.18

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  22.46
  FLOW VELOCITY(FEET/SEC.) =  3.23   DEPTH*VELOCITY(FT*FT/SEC.) =   1.82
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    106.00 =    1154.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.10 TO NODE    106.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.007
  USER-SPECIFIED RUNOFF COEFFICIENT = .8850
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.85   SUBAREA RUNOFF(CFS) =    2.26
  TOTAL AREA(ACRES) =        6.3   TOTAL RUNOFF(CFS) =      17.44
```

```
  TC(MIN.) =   11.50

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.50
  RAINFALL INTENSITY(INCH/HR) =   3.01
  TOTAL STREAM AREA(ACRES) =     6.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.44

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   180.00
  UPSTREAM ELEVATION(FEET) =    103.60
  DOWNSTREAM ELEVATION(FEET) =    100.00
  ELEVATION DIFFERENCE(FEET) =      3.60
  TC = 0.303*[(  180.00**3)/(     3.60)]**.2 =    5.290
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.322
  USER-SPECIFIED RUNOFF COEFFICIENT = .8890
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      1.15
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.15

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    204.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1530.14
  DOWNSTREAM NODE ELEVATION(FEET) =   1518.42
  CHANNEL LENGTH THRU SUBAREA(FEET) =   645.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.060
  PAVEMENT LIP(FEET) =  0.020   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.433
  USER-SPECIFIED RUNOFF COEFFICIENT = .8593
  SOIL CLASSIFICATION IS "A"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.19
  AVERAGE FLOW DEPTH(FEET) =   0.24   FLOOD WIDTH(FEET) =   19.16
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.37   Tc(MIN.) =    8.66
  SUBAREA AREA(ACRES) =    3.38       SUBAREA RUNOFF(CFS) =    9.97
```

```
  TOTAL AREA(ACRES) =        3.7         PEAK FLOW RATE(CFS) =      11.12

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOOD WIDTH(FEET) =   24.41
  FLOW VELOCITY(FEET/SEC.) =   3.61   DEPTH*VELOCITY(FT*FT/SEC) =   1.06
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    204.00 =     825.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    206.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1516.42  DOWNSTREAM(FEET) =  1509.95
  FLOW LENGTH(FEET) =   158.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.70
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.12
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    8.89
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    206.00 =     983.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    206.10 TO NODE    206.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.392
  USER-SPECIFIED RUNOFF COEFFICIENT = .8590
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.17   SUBAREA RUNOFF(CFS) =    0.50
  TOTAL AREA(ACRES) =        3.9   TOTAL RUNOFF(CFS) =      11.62
  TC(MIN.) =    8.89

****************************************************************************
  FLOW PROCESS FROM NODE    206.00 TO NODE    106.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1509.95  DOWNSTREAM(FEET) =  1507.60
  FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.62
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    106.00 =    1068.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.20 TO NODE    106.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.368
  USER-SPECIFIED RUNOFF COEFFICIENT = .7972
  SOIL CLASSIFICATION IS "A"
  SUBAREA AREA(ACRES) =    0.15   SUBAREA RUNOFF(CFS) =    0.40
  TOTAL AREA(ACRES) =        4.0   TOTAL RUNOFF(CFS) =      12.02
  TC(MIN.) =    9.02

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.02
  RAINFALL INTENSITY(INCH/HR) =   3.37
  TOTAL STREAM AREA(ACRES) =     4.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.02

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.44    11.50        3.007          6.35
      2       12.02     9.02        3.368          4.00

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       25.70     9.02       3.368
      2       28.17    11.50       3.007

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.17   Tc(MIN.) =   11.50
  TOTAL AREA(ACRES) =       10.4
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    106.00 =    1154.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  1504.60  DOWNSTREAM(FEET) =  1495.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.17
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   11.58
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    108.00 =    1254.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       10.4  TC(MIN.) =     11.58
  PEAK FLOW RATE(CFS)   =      28.17
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

↑

Appendix 7

Lateral H-11 Tie-In

```
[TITLE]



[REPORT]
COMPOSITE_ONLY

[NETWORK]
**TYPE           NAME
**-----          -------
Outlet           "Node2"
Reach            "Link1"
Headwork         "Node1"

**BRANCH DEFINITIONS

[OUTLET]
**NAME              STATION    INVERT     GROUND     CHANNEL     WATER SURFACE
**                             ELEV       ELEV       ID          ELEV (opt.)
**------------      ---------  ---------- ---------- ----------  ----------
"Node2"             0          1495       1509.5     "18RCP"     1497

[HEADWORK]
**NAME              INVERT     GROUND     CHANNEL     FLOW       WATER SURFACE
**                  ELEV       ELEV       ID                     ELEV (opt.)
**------------      ---------  ---------- ----------  ---------- ----------
"Node1"             1504.6     1507.6     "18RCP"     28.17      0

[WALLENTRANCE]
**NAME              INVERT     GROUND     CHANNEL     LOSS
**                  ELEV       ELEV       ID          COEFFICIENT(opt.)
**------------      ---------  ---------- ----------  --------------

[WALLEXIT]
**NAME              INVERT     GROUND     CHANNEL     LOSS
**                  ELEV       ELEV       ID          COEFFICIENT(opt.)
**------------      ---------  ---------- ----------  --------------

[BRIDGEENTRANCE]
**NAME              INVERT     GROUND     CHANNEL     REDUCTION
**                  ELEV       ELEV       ID          FACTOR(opt.)
**------------      ---------  ---------- ----------  --------------

[BRIDGEEXIT]
**NAME              INVERT     GROUND     CHANNEL     REDUCTION
**                  ELEV       ELEV       ID          FACTOR(opt.)
**------------      ---------  ---------- ----------  --------------

[JOIN]
**NAME              INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n NUMBER OF  CONFLUENCE
**                  ELEV       ELEV       ID                                BRANCHES   ANGLE
**------------      ---------  ---------- ----------  ---------- ---------- ---------- ----------

[JUNCTION]
**Name              INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n NUMBER OF  CONFLUENCE FLOW
**                  ELEV       ELEV       ID                                LATERALS   ANGLE
**------------      ---------  ---------- ----------  ---------- ---------- ---------- ---------- ----------

[TRANSITION]
```

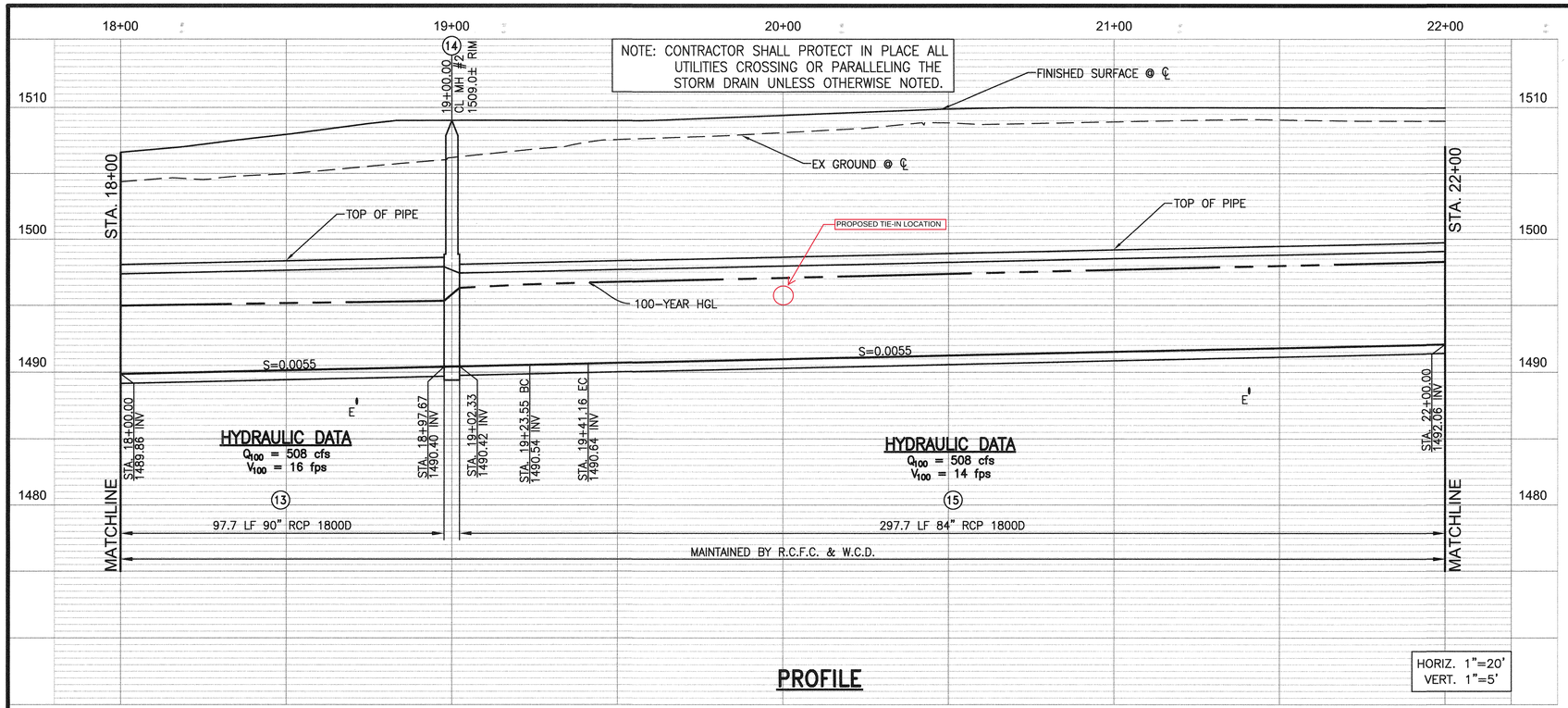
```
**NAME              INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n
**                  ELEV       ELEV       ID
**------------      ---------  ---------- ----------  ---------- ----------

[REACH]
**NAME              INVERT     GROUND     CHANNEL     LENGTH     MANNINGS n CURVE      ANGLE      NUMBER
**                  ELEV       ELEV       ID                                (opt)      POINT(opt) MANHOLES(opt)
**------------      ---------  ---------- ----------  ---------- ---------- ---------- ---------- ----------
"Link1"             1504.6     1507.6     "18RCP"     100        0.015      0          0          0

[DROP]
**Name              INVERT     GROUND     CHANNEL     LOSS
**                  ELEV       ELEV       ID          COEFFICIENT
**------------      ---------  ---------- ----------  ----------

[CHANNEL]
**REGULAR TYPES 1-4 7-8
**ID          TYPE HEIGHT     WIDTH      LEFT       RIGHT      NUMBER     AVG PIER   INVERT     NUM OF
**                                       SLOPE      SLOPE      PIERS      WIDTH      CROSS FALL BARRELS
**----------  ---- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------
"18RCP"       4    1.5                                                                           1

**IRREGULAR TYPES 5-6
**ID       TYPE NUMBER     AVG PIER   PIER1      PIER2      PIER3      PIER4      PIER5      PIER6      PIER7      PIER8      PIER9      PIER10
**              PIERS      WIDTH      ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV       ELEV
**------   ---- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------



[POINT]
**ID          XCOORD     YCOORD
**----------- ---------- ----------
```

```
************************************
Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0         30/09/2011
XP Solutions        www.xpsolutions.com
************************************

INPUT FILE
************************************
X:\Projects2\156 (Steve Sommers)\29 (Placentia Logistics Center)\03 Analysis\Drainage\Prelim\XP\156-29 - Prelim Lateral HGL.wsx
Computed  12/19/19  14:48:37

TITLE INFORMATION
************************************

WARNING SUMMARY
************************************

RESULTS
************************************


==============================================================
   Main Line
==============================================================
```

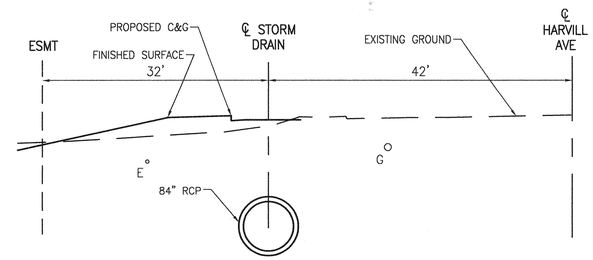
Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Node2"	Outlet	0.00	1495.00	1509.50	1496.252	1.252	28.17	1	17.88	4.96	1501.22	0.000	1.491	0.000	0.00000	0.000	Circular Pipe
	"i.p."	32.98	1498.17	1508.87	1499.445	1.279	28.17	1	17.55	4.78	1504.23	0.000	1.491	2.517	0.09600	1.228	Circular Pipe
	"i.p."	71.55	1501.87	1508.14	1503.229	1.359	28.17	1	16.73	4.35	1507.58	0.000	1.491	2.125	0.09600	1.228	Circular Pipe
"Link1"	Reach	100.00	1504.60	1507.60	1506.090	1.490	28.17	1	15.95	3.95	1510.04	0.000	1.491	1.033	0.09600	1.228	Circular Pipe
"Node1"	Headwrk	100.00	1504.60	1507.60	1506.091	1.491	28.17	1	15.95	3.95	1510.04	0.000	1.491	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches



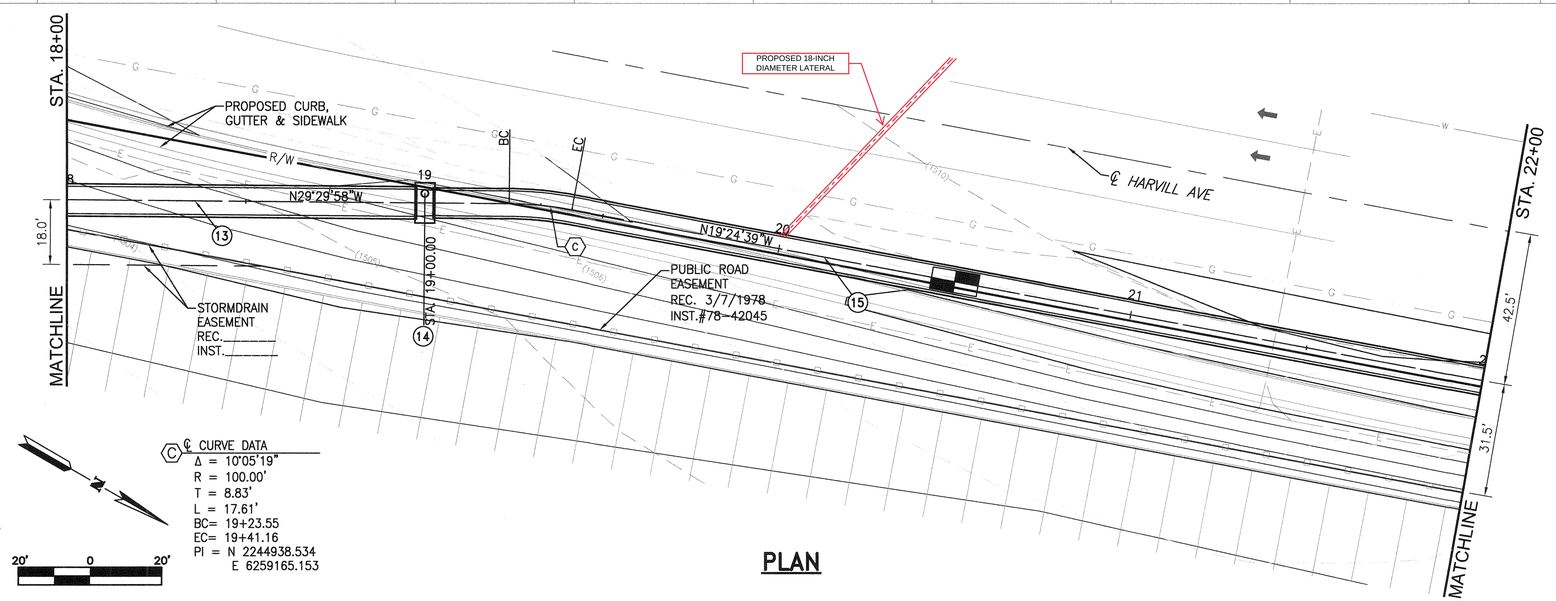
PROFILE



SECTION AT STA. 20+50

TYPICAL FROM STA 19+02 TO STA 28+40

10' 0 10'



℄ CURVE DATA
Δ = 10°05'19"
R = 100.00'
T = 8.83'
L = 17.61'
BC= 19+23.55
EC= 19+41.16
PI = N 2244938.534
E 6259165.153

PLAN

CONSTRUCTION NOTES

(13) INSTALL 90" RCP D-LOAD PER PLAN

(14) INSTALL MANHOLE NO. 2 PER RCFCWCD STD DWG. NO. MH252

(15) INSTALL 84" RCP D-LOAD PER PLAN

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
		35165	3-15-19

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

ENGINEER: RCE C67239 DATE: 15 Mar 2019

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CASWELL NO. C67239 CIVIL STATE OF CALIFORNIA

DESIGNED BY: JCC
DRAWN BY: CS
DATE DRAWN: JAN 2019
CHECKED BY: JCC

Don't Dig...Until You Call:
U.S.A. Toll Free: 1-800-422-4133 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCHMARK: SEE SHEET 1

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 03/19/19
APPROVED BY: Edwin Quinonez DATE: 3/20/19

PERRIS VALLEY MDP
LATERAL H-11

PLAN & PROFILE
STA. 18+00 TO STA. 22+00

IP180002 PP 26220

PROJECT NO. 4-0-00502
DRAWING NO. 4-1124
SHEET NO. 4 OF 10

966-0

G:\2018\18-0169\DRAWINGS\PLAN SHEETS\18-0169 SD SHEETS.DWG 3/13/2019 1:37:51 PM