Bellecci & Associates

PRELIMINARY HYDROLOGY AND HYDRAULIC CALCULATIONS

for

DIABLO WATER DISTRICT CORPORATION YARD OFFICE AND SHOP BUILDING

CITY OF OAKLEY, CONTRA COSTA COUNTY
CALIFORNIA
(APN 037-191-034)

April 2021

Client
Diablo Water District
87 Carol Lane
Oakley, CA 94561

CONCORD
2290 Diamond Blvd. Suite 100
Concord, CA 94520-5744

PLEASANTON
7041 Koll Center Parkway, Suite 132
Pleasanton, CA 94566-3127

Civil Engineering Land Surveying

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ATTACHMENTS

Project Location and Description

The Diablo Water District Corporation Yard Office and Shop Building project is to build new corporation offices and yard in an approximately 1.42-acre area. In general, the development consists of constructing a 14,600-sf building to house the corporation yard offices, shop space, and covered work bays, and creating a 5,785-sf unenclosed covered area for equipment storage and fleet parking. The site development also includes stormwater management, fencing, parking and landscaping. The project site is located at 3990 Main Street, within the City of Oakley, Contra Costa County, California.

The purpose of this report is to evaluate the proposed stormwater management facilities for the development. This report includes brief description of the existing and proposed drainage facilities, preliminary analysis of stormwater treatment design, and the 100-year 24-hour flood event results.

Projects legal description is as follows,

> "All of that certain real property as described in the Final Order of Condemnation filed August 7, 1956 in Book 2822 of Official Records of Contra Costa County at page 572". In addition to: All that area within the Ironhouse Sanitary District Transfer Area parcel described herein. Containing an area of 158479 square feet, more or less."

According to FEMA map No.06013C0355G effective date March 21, 2017, project is in Zone X. See FEMA Map in Attachment C.

Existing Conditions

Under existing condition, project area serves as open space with vegetation. Runoff from the site travels via sheet flow and shallow overland flow northwesterly to Access Road and northeasterly to existing ditches located along Oakley Road. As outlined in the Contra Costa County flood control and water conservation district maps project area falls under Flood Control Zone 10, Drainage area 29.

Proposed Conditions

Under proposed conditions, the existing ditch along project eastern boundary is to be removed and replaced with 3 infiltration basins located at designed low points in the project are. Runoff generated by the addition of parking area and buildings proposed as part of this project will flow into the proposed 2,505 square feet Infiltration basins. Location of the infiltration basins are shown in Attachment D – Hydrology Exhibit. The infiltration basins serve as storm water treatment and temporary storage facility. The outflow from the basin is through the surrounding soil.

Analysis

PondPack detention pond analysis and design software was used to model 100-year 24-hour flood event at the project site.

Based on Contra Costa County standard runoff coefficients (See Attachment A and Attachment B), the following assumptions were made to the model:

Recurrence Interval: 100 year

Land use: Commercial

Runoff Coefficient C - Commercial: 0.95

Runoff Coefficient C – Open: 0.3

Runoff Coefficient C – Landscape: 0.15

Runoff Coefficient Adjustment Factor (C_f) for 100-year storm: 1.25

Time of Concentration Tc – Roof to Gutter: 8 minutes

100-year design storm data for 11.5" mean annual precipitation was extrapolated based on rainfall intensity data provided by Contra Costa County Flood Control & Water Conservation District. See below Table 1 and Table 2.

Table 1 100 Year Return Period Rainfall Intensity

100 Year Return Period (Design Storm)								
Intensity (in/hr)	Mean Seasonal Precipitation Depth (in)							
Duration (min)	5	10	15	20	25	30	35	40 in/yr
5	2.832	3.240	3.708	4.080	4.548	4.968	5.364	5.760
20	1.260	1.545	1.830	2.115	2.400	2.670	2.970	3.270
60	0.660	0.850	1.050	1.260	1.450	1.650	1.840	2.050
180	0.340	0.467	0.597	0.727	0.850	0.977	1.107	1.133
360	0.220	0.317	0.412	0.502	0.600	0.700	0.788	0.887
720	0.143	0.212	0.283	0.350	0.418	0.492	0.558	0.625
1440	0.090	0.137	0.188	0.238	0.288	0.333	0.385	0.433

Note. The data above are from Contra Costa County - IDF Curves and Spreadsheet. https://www.contracosta.ca.gov/5747/Hydrology-Standards

Table 2 100 Year Return Period Rainfall Intensity - 11.5" Mean Annual Precipitation

100 Year Return Period (Design Storm)			
Intensity (in/hr)	**Mean Seasonal Precipitation Depth (in)**		
Duration (min)	10	**11.5**	15
5	3.240	3.380	3.708
20	1.545	1.631	1.830
60	0.850	0.910	1.050
180	0.467	0.506	0.597
360	0.317	0.345	0.412
720	0.212	0.233	0.283
1440	0.137	0.152	0.188

Overland flow velocity was calculated using the nomograph entitled "Time of Concentration of Small Drainage Basins", developed by P.Z. Kirpich. See Attachment E.

The project site was divided into 23 drainage management areas (DMAs). See Attachment D for location of DMAs.

DMA 3, 6, 10, 13, 14, 17, 18, 19, 20, 21, 22 and 23 are considered self-treating areas.

DMA 1 and 2 flow into the proposed infiltration basin, IMP1.

DMA 4, 5, 7, 8, 9 and 11 flow into the proposed infiltration basin, IMP2.

DMA 12, 15 and 16 flow into the proposed infiltration basin, IMP3.

The PondPack model assumes that self-treating areas drain overland to the storm drain system. The 23 DMAs are divided into 3 categories based on the designated infiltration basins.

The proposed infiltration basin contains 12" gravel layer beneath 18" soil mix. Distance between the maximum storage water level and top of soil mix is approximately 6". Based on the boring data, typical soil type is medium dense alluvium from original ground to 8' below. The infiltration rate is about 1.25 in/hr. See Attachment F for boring data.

The analysis includes two scenarios, Pre-Development with existing conditions and Pose-Development with proposed conditions. See below Table 3 and Table 4 summarizing the input to the model and results of analysis. Refer to Attachment G for the full report generated by PondPack.

Conclusions

In general, the existing conditions drainage patterns have been maintained to the point that the existing condition flow rate leaving the site is not exceeded in the proposed condition.

Based on the peak flow calculation for the 100-year 24-hour storm event in the proposed development, the on-site storm water infiltration basins have been designed to mitigate the increased flow associated with the proposed improvements.

Table 3 PondPack Model Input and Output Data – Pre-Development Scenario

EXISTING CONDITIONS PEAK FLOW RATES								
100-Year 24-hour Design Storm								
Drainage Management Area (DMA)	Runoff Coefficient Adjustment Factor "C_f"	Runoff Coefficient "C"	Adjusted Coefficient "C"	t_c (min)	Intensity (in/hr)	Tributary Area "A" (sf)	Tributary Area "A" (ac)	**Peak Flow Q_{pre} (cfs)**
IMP 1	1.25	0.30	0.375	4	3.38	17,922	0.41	0.53
IMP 2	1.25	0.30	0.375	3	3.38	31,586	0.73	0.93
IMP 3	1.25	0.30	0.375	4	3.38	21,591	0.50	0.63

Table 4 PondPack Model Input and Output Data - Post-Development Scenario

PROPOSED CONDITIONS PEAK FLOW RATES												
100-Year 24-hour Design Storm												
Drainage Management Area (DMA)	Runoff Coefficient Adjustment Factor "C_f"	Composite Runoff Coefficient "C"	Adjusted "C" Coefficient	t_c (min)	Intensity (in/hr)	Tributary Area "A" (sf)	Tributary Area "A" (ac)	**Peak Flow Q_{post} (cfs)**	**Top of Soil**	**Freeboard Elevation**	**Peak Water Surface Elevation**	**Peak Pond Storage Volume (cf)**
IMP 1	1.25	0.67	0.834	9	2.68	17,922	0.41	0.93	14.32	14.82	14.52	587
IMP 2	1.25	0.80	0.997	10	2.21	31,586	0.73	1.61	13.00	13.51	13.14	1,395
IMP 3	1.25	0.80	0.995	8	1.23	21,591	0.50	0.61	12.60	13.22	13.06	1,440

ATTACHMENT A

CCCFCD STANDARD - RUNOFF COEFFICIENTS

Rational Formula

Land Use	Runoff Coefficient	Average Impervious Area (%)	Time of Concentration-Roof to Gutter (min)
Residential:			
R - 6	.50 - .70	76	3 - 5
R - 10	.45 - .60	53	5 - 7
R - 20	.40 - .50	35	6 - 8
R - 40	.35 - .45	25	8 - 10
Apartment	.60 - .80		3 - 10
Commercial	.70 - .95		3 - 8
Industrial	.60 - .90		3 - 10
Open	.20 - .40		
Street:			
Asphalt	.75 - .95		
Concrete	.80 - .95		
Drives and Walks	.80 - .95		
Roofs	.75 - .95		

Legend

R - 6 = 6,000 ft^2 Lot
R - 10 = 10,000 ft^2 Lot
R - 20 = 20,000 ft^2 Lot
R - 40 = 40,000 ft^2 Lot

Note: For Contra Costa County Land Uses use the highest runoff coefficient in the range. This more closely approximates the peak flows calculated by the Unit Hydrograph method developed for Contra Costa County and calibrated with local rainfall and runoff data.

ATTACHMENT B

RECURRENCE INTERVAL
100 YEARS

Mean Annual Precipitation = 11.5"

PRECIPITATION DEPTH (IN INCHES)

100.0 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0 9.0 8.0 7.0 6.0 5.0 4.0 3.0 2.0 1.0 .9 .8 .7 .6 .5 .4 .3 .2 .1

40" 35" 30" 25" 20" 15" 10" 5"

MEAN SEASONAL PRECIPITATION

1 2 3 4 5 6 7 8 9 10 20 30 40 50 1 2 3 4 5 6 7 8 9 10 20 1 2 3 4 5 6 7 8 9 10

MINUTES — 60 MINUTES / 1 HOUR — HOURS — 24 HOURS / 1 DAY — DAYS

300.0 200.0 20 30 40 50 60 70 80 90 100 200 300 2

DAYS — 365 DAYS / 1 YEAR — YEARS

DURATION

CONTRA COSTA COUNTY PUBLIC WORKS DEPARTMENT		
CONTRA COSTA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
PRECIPITATION DURATION-FREQUENCY-DEPTH CURVES		
DESIGNED: P. W.	CHECKED: L. H.	DRAWING NUMBER: B-162
DRAWN: L. L. H.	DATE: 7-77	

ATTACHMENT C

National Flood Hazard Layer FIRMette

FEMA

121°42'26"W 38°0'8"N

121°41'48"W 37°59'40"N

Feet

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

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/9/2021 at 6:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

ATTACHMENT D

VESTING TENTATIVE MAP
SUBDIVISION MS 976-21

STORM WATER CONTROL PLAN

A PORTION OF THE NORTHEAST 1/4 OF SECTION 25, T.2N., R.2E., M.D.B.& M.

CITY OF OAKLEY

CONTRA COSTA COUNTY, CALIFORNIA

BELLECCI & ASSOCIATES, INC.
CONCORD, CALIFORNIA

APRIL 9, 2021 SCALE: 1" = 40'

Project Name: 20034_DWD Corp Yard LLA
Project Type: Treatment Only
APN: 037-191-006-8
Drainage Area: 158,471
Mean Annual Precipitation: 11.5

Self-Treating DMAs

DMA Name	Area (sq ft)
DMA3	1,210.0
DMA6	2,562.0
DMA10	154.0
DMA13	359.0
DMA14	293.0
DMA17	103.0
DMA18	103.0
DMA19	103.0
DMA20	359.0
DMA21	5,117.0
DMA22	3,310.0
DMA23	2,842.0

IV. Areas Draining to IMPs

IMP Name: IMP1
IMP Type: Bioretention Facility
Soil Group: IMP1

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing
DMA1	8,745	Concrete or Asphalt	1.00	8,745	
DMA2	2,850	Conventional Roof	1.00	2,850	
			Total	11,595	
			Area		0.040

IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	464	618

IMP Name: IMP2
IMP Type: Bioretention Facility
Soil Group: IMP2

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing
DMA4	12,811	Concrete or Asphalt	1.00	12,811	
DMA5	2,850	Conventional	1.00	2,850	
DMA7	8,480	Conventional Roof	1.00	8,480	
DMA8	200	Conventional Roof	1.00	200	
DMA9	1,052	Concrete or Asphalt	1.00	1,052	
DMA11	167	Concrete or Asphalt	1.00	167	
			Total	25,560	
			Area		0.040

IMP Sizing Factor	Rain Adjustment	Minimum Area or	Proposed Area or
0.040	1.000	1,022	1,071

IMP Name: IMP3
IMP Type: Bioretention Facility
Soil Group: IMP3

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Sizing
DMA12	7,956	Conventional Roof	1.00	7,956	
DMA15	963	Concrete or Asphalt	1.00	963	
DMA16	8,510	Concrete or Asphalt	1.00	8,510	
			Total	17,429	
			Area		0.040

IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
0.040	1.000	697	816

Report generated on 1/14/2021 12:00:00 AM by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.3.1.0).

LEGEND

- PROJECT BOUNDARY
- SELF-TREATING LANDSCAPE DMA
- IMPERVIOUS DMA TO BE TREATED*
- BIORETENTION/IMP FACILITY*
- TEMPORARY SILT FENCE PER CALIFORNIA STORMWATER BMP HANDBOOK SE-1
- CONSTRUCTION STAGING, MATERIALS STORAGE, AND VEHICLE/EQUIPMENT STORAGE, CLEANING, MAINTENANCE & FUELING AREA.
- TEMPORARY CONSTRUCTION ENTRANCE PER CALIFORNIA STORMWATER BMP HANDBOOK TC-1

*NOTE: DMA TREATMENT AREAS ARE COLOR-COORDINATED FOR EASIER VIEWING PURPOSES.

PRELIMINARY

NOTE:

1. BMP(S) APPLICABLE THROUGHOUT THE PROJECT LIMITS DURING CONSTRUCTION. EXACT LOCATION AND ORIENTATION OF BMPS CAN BE ADJUSTED BY THE CONTRACTORS TO FIT FIELD CONDITION.
2. ALL TEMPORARY BMPS WILL BE IMPLEMENTED AS PER THE CONTRACTOR'S DESIGNATED QSP.
3. THE INFORMATION ON THIS PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTORS TO INSTALL WATER POLLUTION CONTROL DEVICES AT GENERAL LOCATIONS THROUGHOUT THE SITE.
4. FIELD AND WEATHER CONDITIONS MAY NECESSITATE MODIFICATIONS TO THESE DRAWINGS.

N

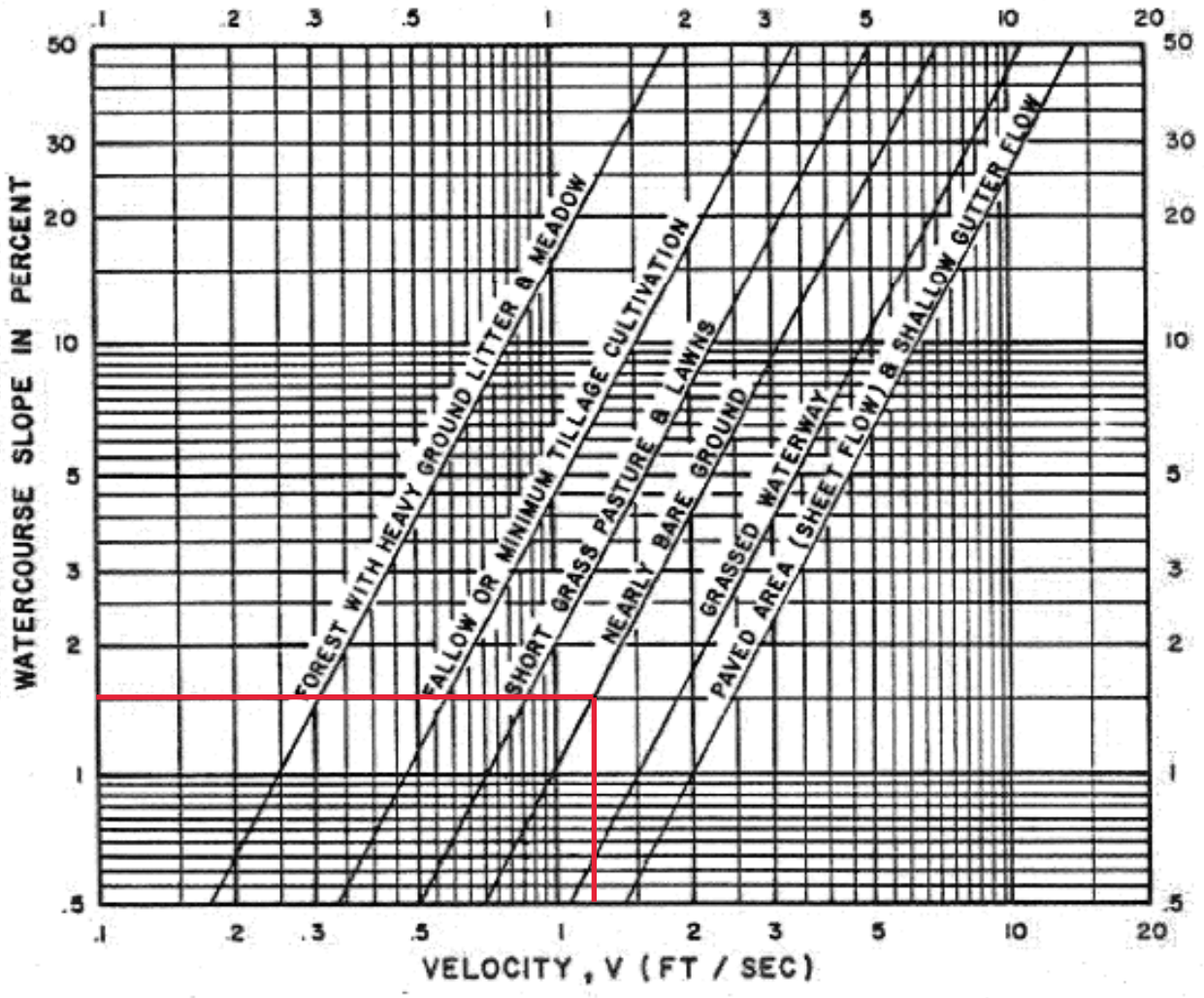
40 20 0 40 80 120
SCALE IN FEET

SHEET 5 OF 5

JOB NO. 20034

ATTACHMENT E

OVERLAND FLOW VELOCITY



Based on Topographic Survey, slope of existing ground ranges between 0.5% to 2.5%.
Assume average slope of existing ground is 1.5%,
V_{OG}=1.2 ft/sec

Velocity of water flow on proposed paved area was calculated based on proposed grading using the same method.

ATTACHMENT F

Bear Engineering Group, Inc.
Earth Science Consultants

March 30, 2021

Mr. Dan Muelrath
General Manager
Diablo Water District
3990 Main Street
Oakley, CA 94561

cc Wayne weaver

Subject: **Estimated Infiltration Rates for Corporation Yard, Administration and Shop Bldg.**
Rose Avenue
Oakley, CA

Dear Mr. Muelrath;

At your request we are providing infiltration rates for the subsoil located at the subject site. We assume a retention pond will be located in the general area of Borings 4 and 5 as shown on Figure 6 of our report dated October 28, 2020. Soil infiltration refers to the soil's ability to allow water movement into and through the soil profile and is provided for the various medium found in our borings. Rates decrease with time and percent of cover. Information derived from USDA information.

BORING 4

SOIL DESCRIPTION	DEPTH FT.	INFILTRATION RATES IN/HR.
Oakley dune sand moist yellow brown, medium dense alluvium	0-8.5	1.25
Silt sand, yellow brown, moist to wet medium dense alluvium	8.5-12.5	1.06-.94
Sand clay dark brown saturated, medium dense, alluvium	12.5-20	.31

BORING 5

SOIL DESCRIPTION	DEPTH FT.	INFILTRATION RATES IN/HR.
Oakley dune sand moist yellow brown, medium dense alluvium	0-8	1.25
Silt sand, yellow brown, moist to wet medium dense alluvium	8-13	1.06-.94
Sand clay dark brown saturated, medium dense, alluvium	13-20	.31

The analysis, and conclusions, submitted in this letter are based in part on the referenced materials as stated. For more accurate measurements on-site infiltration rates should be obtained.

It has been a pleasure to be of service to you on this project. Should you have any questions concerning the discoveries, recommendations or conclusions of the attached report, please contact this office at your earliest convenience.

Very truly yours,
Bear Engineering Group, Inc.
Mark L. Schroeder

Mark L. Schroeder, P.E.M.S.G.E.
Principal Engineer

Reference: Title 14 Agricultural Activities and Water Use and Conservation Chapter 14.10 WATER USE and Conservation, Sacramento County Code

ATTACHMENT G

Basin - IMP 1

Project Summary	
Title	
Engineer	
Company	
Date	4/15/2021

Notes

Table of Contents

Subsection: Modified Rational Grand Summary

Modified Rational Method

Q = CiA * Units Conversion; Where conversion = 43560 / (12 * 3600)

Frequency (years)	Area (ft^2)	Adjusted C Coefficient	Duration (hours)	Intensity (in/h)	Flow (Peak) (ft^3/s)	Flow (Allowable) (ft^3/s)
100	17,922.00	0.834	0.183	2.679	0.93	0.53
100	17,922.00	0.375	0.083	3.378	0.53	0.53

Volume (inflow) (ft^3)	Volume (Storage) (ft^3)
611.754	266.887
(N/A)	(N/A)

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Catchment	Post-Development 100 year	100	612.000	0.150	0.93
Catchment	Pre-Development 100 year	100	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Outfall	Pre-Development 100 year	100	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
IMP1 (IN)	Post-Development 100 year	100	612.000	0.150	0.93	(N/A)	(N/A)
IMP1 (OUT)	Post-Development 100 year	100	0.000	0.000	0.00	14.52	587.000

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Pre-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: Time vs. Elevation

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	12.82	12.93	13.27	13.82
0.250	14.41	14.50	14.52	14.52
0.500	14.51	14.50	14.50	14.49
0.750	14.48	14.48	14.47	14.47
1.000	14.46	14.45	14.45	14.44
1.250	14.43	14.43	14.42	14.42
1.500	14.41	14.40	14.40	14.39
1.750	14.38	14.38	14.37	14.37
2.000	14.36	14.35	14.35	14.35
2.250	14.34	14.33	14.33	14.32
2.500	14.31	14.30	14.29	14.29
2.750	14.27	14.26	14.26	14.25
3.000	14.24	14.23	14.22	14.22
3.250	14.20	14.20	14.19	14.18
3.500	14.17	14.16	14.16	14.15
3.750	14.14	14.13	14.13	14.12
4.000	14.11	14.10	14.10	14.09
4.250	14.08	14.08	14.07	14.07
4.500	14.05	14.05	14.04	14.04
4.750	14.03	14.02	14.02	14.01
5.000	14.00	14.00	14.00	13.99
5.250	13.98	13.98	13.97	13.97
5.500	13.96	13.95	13.95	13.95
5.750	13.94	13.93	13.93	13.93
6.000	13.92	13.91	13.91	13.91
6.250	13.90	13.89	13.89	13.89
6.500	13.88	13.88	13.87	13.87
6.750	13.86	13.86	13.85	13.85
7.000	13.84	13.84	13.84	13.84
7.250	13.83	13.83	13.82	13.82
7.500	13.81	13.80	13.80	13.79
7.750	13.78	13.78	13.77	13.77
8.000	13.76	13.75	13.75	13.74
8.250	13.73	13.73	13.72	13.71
8.500	13.70	13.70	13.69	13.69
8.750	13.68	13.67	13.67	13.66
9.000	13.65	13.65	13.64	13.64
9.250	13.63	13.62	13.62	13.61
9.500	13.60	13.60	13.59	13.58
9.750	13.57	13.57	13.56	13.56
10.000	13.55	13.54	13.54	13.53

Subsection: Time vs. Elevation

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	13.52	13.52	13.51	13.51
10.500	13.50	13.49	13.49	13.48
10.750	13.47	13.46	13.46	13.45
11.000	13.44	13.44	13.43	13.43
11.250	13.42	13.41	13.41	13.40
11.500	13.39	13.39	13.38	13.38
11.750	13.37	13.36	13.36	13.35
12.000	13.34	13.33	13.33	13.32
12.250	13.31	13.31	13.30	13.30
12.500	13.29	13.28	13.28	13.27
12.750	13.27	13.26	13.26	13.25
13.000	13.24	13.24	13.23	13.23
13.250	13.22	13.22	13.21	13.21
13.500	13.20	13.20	13.19	13.19
13.750	13.18	13.18	13.17	13.17
14.000	13.16	13.16	13.16	13.15
14.250	13.15	13.14	13.14	13.14
14.500	13.13	13.13	13.12	13.12
14.750	13.11	13.11	13.11	13.10
15.000	13.10	13.10	13.09	13.09
15.250	13.08	13.08	13.08	13.08
15.500	13.07	13.07	13.07	13.06
15.750	13.06	13.06	13.05	13.05
16.000	13.05	13.04	13.04	13.04
16.250	13.03	13.03	13.03	13.03
16.500	13.02	13.02	13.02	13.02
16.750	13.01	13.01	13.01	13.01
17.000	13.00	13.00	13.00	13.00
17.250	12.99	12.99	12.99	12.99
17.500	12.99	12.98	12.98	12.98
17.750	12.98	12.98	12.97	12.97
18.000	12.97	12.97	12.97	12.96
18.250	12.96	12.96	12.96	12.96
18.500	12.95	12.95	12.95	12.95
18.750	12.95	12.95	12.94	12.94
19.000	12.94	12.94	12.94	12.94
19.250	12.93	12.93	12.93	12.93
19.500	12.93	12.93	12.93	12.93
19.750	12.92	12.92	12.92	12.92
20.000	12.92	12.92	12.92	12.92
20.250	12.91	12.91	12.91	12.91

Subsection: Time vs. Elevation

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	12.91	12.91	12.91	12.91	14.19
20.750	12.90	12.90	12.90	12.90	14.51
21.000	12.90	12.90	12.90	12.90	14.49
21.250	12.90	12.89	12.89	12.89	14.46
21.500	12.89	12.89	12.89	12.89	14.44
21.750	12.89	12.89	12.89	12.89	14.41
22.000	12.88	12.88	12.88	12.88	14.39
22.250	12.88	12.88	12.88	12.88	14.36
22.500	12.88	12.88	12.88	12.88	14.34
22.750	12.88	12.87	12.87	12.87	14.32
23.000	12.87	12.87	12.87	12.87	14.28
23.250	12.87	12.87	12.87	12.87	14.24
23.500	12.87	12.87	12.87	12.87	14.21
23.750	12.86	12.86	12.86	12.86	14.18
24.000	12.86	(N/A)	(N/A)	(N/A)	14.15
					14.12
					14.09
					14.06
					14.03
					14.01
					13.99
					13.96
					13.94
					13.92

Subsection: Time vs. Elevation

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
13.90
13.88
13.87
13.85
13.83
13.81
13.79
13.76
13.74
13.71
13.68
13.66
13.63
13.61
13.58
13.55
13.53
13.50
13.48
13.45
13.42
13.40
13.37
13.35
13.32
13.29
13.27
13.25
13.23
13.20
13.19
13.17
13.15
13.13
13.12
13.10
13.09
13.07
13.06
13.05
13.04

Subsection: Time vs. Elevation

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
13.03
13.02
13.01
13.00
12.99
12.98
12.97
12.96
12.96
12.95
12.94
12.94
12.93
12.92
12.92
12.91
12.91
12.90
12.90
12.90
12.89
12.89
12.89
12.88
12.88
12.88
12.87
12.87
12.87
12.87
12.86
(N/A)

Subsection: Time vs. Volume

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	28.000	110.000	248.000
0.250	515.000	573.000	587.000	584.000
0.500	577.000	574.000	570.000	567.000
0.750	560.000	557.000	553.000	550.000
1.000	543.000	540.000	537.000	533.000
1.250	527.000	524.000	521.000	518.000
1.500	511.000	508.000	505.000	502.000
1.750	496.000	493.000	490.000	487.000
2.000	481.000	478.000	475.000	472.000
2.250	466.000	463.000	461.000	458.000
2.500	449.000	445.000	440.000	436.000
2.750	427.000	423.000	419.000	415.000
3.000	408.000	404.000	400.000	397.000
3.250	390.000	386.000	383.000	380.000
3.500	373.000	370.000	367.000	364.000
3.750	359.000	356.000	353.000	351.000
4.000	345.000	343.000	340.000	338.000
4.250	333.000	331.000	329.000	327.000
4.500	322.000	320.000	318.000	316.000
4.750	312.000	310.000	309.000	307.000
5.000	303.000	301.000	300.000	298.000
5.250	295.000	293.000	292.000	290.000
5.500	287.000	286.000	284.000	283.000
5.750	280.000	279.000	278.000	276.000
6.000	274.000	273.000	272.000	270.000
6.250	268.000	267.000	266.000	265.000
6.500	263.000	262.000	261.000	260.000
6.750	258.000	257.000	256.000	255.000
7.000	253.000	252.000	252.000	251.000
7.250	249.000	248.000	248.000	247.000
7.500	244.000	243.000	242.000	240.000
7.750	238.000	236.000	235.000	234.000
8.000	231.000	230.000	229.000	227.000
8.250	225.000	224.000	222.000	221.000
8.500	218.000	217.000	216.000	215.000
8.750	212.000	211.000	209.000	208.000
9.000	206.000	204.000	203.000	202.000
9.250	199.000	198.000	197.000	195.000
9.500	193.000	191.000	190.000	189.000
9.750	186.000	185.000	184.000	182.000
10.000	180.000	179.000	177.000	176.000

Subsection: Time vs. Volume

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
10.250	173.000	172.000	171.000	170.000
10.500	167.000	166.000	164.000	163.000
10.750	161.000	159.000	158.000	157.000
11.000	154.000	153.000	152.000	150.000
11.250	148.000	146.000	145.000	144.000
11.500	141.000	140.000	139.000	137.000
11.750	135.000	134.000	132.000	131.000
12.000	128.000	127.000	126.000	125.000
12.250	122.000	121.000	119.000	118.000
12.500	116.000	115.000	113.000	112.000
12.750	110.000	109.000	108.000	107.000
13.000	104.000	103.000	102.000	101.000
13.250	99.000	98.000	97.000	96.000
13.500	94.000	93.000	92.000	91.000
13.750	89.000	88.000	87.000	87.000
14.000	85.000	84.000	83.000	82.000
14.250	80.000	80.000	79.000	78.000
14.500	76.000	76.000	75.000	74.000
14.750	72.000	72.000	71.000	70.000
15.000	69.000	68.000	67.000	67.000
15.250	65.000	65.000	64.000	63.000
15.500	62.000	61.000	61.000	60.000
15.750	59.000	58.000	58.000	57.000
16.000	56.000	55.000	55.000	54.000
16.250	53.000	52.000	52.000	51.000
16.500	50.000	50.000	49.000	49.000
16.750	48.000	47.000	47.000	46.000
17.000	45.000	45.000	44.000	44.000
17.250	43.000	43.000	42.000	42.000
17.500	41.000	40.000	40.000	40.000
17.750	39.000	38.000	38.000	38.000
18.000	37.000	36.000	36.000	36.000
18.250	35.000	35.000	34.000	34.000
18.500	33.000	33.000	32.000	32.000
18.750	31.000	31.000	31.000	31.000
19.000	30.000	30.000	29.000	29.000
19.250	28.000	28.000	28.000	28.000
19.500	27.000	27.000	26.000	26.000
19.750	26.000	25.000	25.000	25.000
20.000	24.000	24.000	24.000	24.000
20.250	23.000	23.000	23.000	22.000

Subsection: Time vs. Volume

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
20.500	22.000	22.000	21.000	21.000	386.000
20.750	21.000	21.000	20.000	20.000	580.000
21.000	20.000	20.000	19.000	19.000	563.000
21.250	19.000	19.000	18.000	18.000	547.000
21.500	18.000	18.000	17.000	17.000	530.000
21.750	17.000	17.000	17.000	16.000	514.000
22.000	16.000	16.000	16.000	16.000	499.000
22.250	15.000	15.000	15.000	15.000	484.000
22.500	14.000	14.000	14.000	14.000	469.000
22.750	14.000	14.000	13.000	13.000	454.000
23.000	13.000	13.000	13.000	13.000	432.000
23.250	12.000	12.000	12.000	12.000	411.000
23.500	12.000	12.000	11.000	11.000	393.000
23.750	11.000	11.000	11.000	11.000	377.000
24.000	11.000	(N/A)	(N/A)	(N/A)	362.000
					348.000
					336.000
					324.000
					314.000
					305.000
					296.000
					289.000
					282.000
					275.000

Subsection: Time vs. Volume

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
269.000
264.000
259.000
254.000
250.000
245.000
239.000
233.000
226.000
220.000
213.000
207.000
200.000
194.000
188.000
181.000
175.000
168.000
162.000
155.000
149.000
143.000
136.000
130.000
123.000
117.000
111.000
105.000
100.000
95.000
90.000
86.000
81.000
77.000
73.000
70.000
66.000
63.000
59.000
56.000
54.000

Subsection: Time vs. Volume

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
51.000
48.000
46.000
44.000
41.000
39.000
37.000
35.000
34.000
32.000
30.000
29.000
27.000
26.000
25.000
23.000
22.000
21.000
20.000
19.000
18.000
17.000
16.000
15.000
15.000
14.000
13.000
12.000
12.000
11.000
11.000
(N/A)

Subsection: Elevation-Volume-Flow Table (Pond)

Label: IMP1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	12.82 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)
12.82	0.00	0.000	247.00	0.00
13.32	0.00	123.500	247.00	0.01
13.82	0.00	247.000	247.00	0.01
14.32	0.00	456.283	618.00	0.02
14.80	0.00	793.590	791.00	0.02

Flow (Total) (ft³/s)	2S/t + O (ft³/s)
0.00	0.00
0.01	1.38
0.01	2.75
0.02	5.09
0.02	8.84

Subsection: Pond Infiltration Calculations

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Average Infiltration Rating Table

Elevation (Water Surface) (ft)	Area (Total) (ft^2)	Flow (Infiltration) (ft^3/s)
12.82	247.0	0.00
13.32	247.0	0.01
13.82	247.0	0.01
14.32	618.0	0.02
14.80	791.0	0.02

Subsection: Level Pool Pond Routing Summary

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	12.82 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	0.93 ft³/s	Time to Peak (Flow, In)	0.150 hours
Infiltration (Peak)	0.02 ft³/s	Time to Peak (Infiltration)	0.350 hours
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 hours

Elevation (Water Surface, Peak)	14.52 ft
Volume (Peak)	587.467 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	612.000 ft³
Volume (Total Infiltration)	601.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	11.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Subsection: Pond Inflow Summary

Label: IMP1 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Summary for Hydrograph Addition at 'IMP1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Catchment

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Catchment	611.754	0.150	0.93
Flow (In)	IMP1	611.754	0.150	0.93

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Basin - IMP 2

Project Summary	
Title	
Engineer	
Company	
Date	4/15/2021

Notes

Table of Contents

Subsection: User Notifications

User Notifications?	No user notifications generated.

Subsection: Modified Rational Grand Summary

Modified Rational Method

Q = CiA * Units Conversion; Where conversion = 43560 / (12 * 3600)

Frequency (years)	Area (ft^2)	Adjusted C Coefficient	Duration (hours)	Intensity (in/h)	Flow (Peak) (ft^3/s)	Flow (Allowable) (ft^3/s)
100	31,586.00	0.997	0.250	2.213	1.61	0.94
100	31,586.00	0.375	0.083	3.378	0.93	0.93

Volume (inflow) (ft^3)	Volume (Storage) (ft^3)
1,451.791	641.227
1,451.791	0.000

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Catchment	Post-Development 100 year	100	1,452.000	0.200	1.61
Catchment	Pre-Development 100 year	100	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Outfall	Pre-Development 100 year	100	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
IMP2 (IN)	Post-Development 100 year	100	1,452.000	0.200	1.61	(N/A)	(N/A)
IMP2 (OUT)	Post-Development 100 year	100	0.000	0.000	0.00	13.14	1,395.000

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Pre-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: Time vs. Elevation

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	10.50	10.60	10.90	11.40
0.250	12.62	12.95	13.09	13.14
0.500	13.14	13.13	13.13	13.12
0.750	13.12	13.11	13.11	13.10
1.000	13.09	13.09	13.08	13.08
1.250	13.07	13.06	13.06	13.06
1.500	13.05	13.04	13.04	13.03
1.750	13.03	13.02	13.02	13.01
2.000	13.00	13.00	12.99	12.98
2.250	12.97	12.96	12.95	12.95
2.500	12.93	12.93	12.92	12.91
2.750	12.90	12.89	12.88	12.88
3.000	12.87	12.86	12.85	12.85
3.250	12.83	12.83	12.82	12.82
3.500	12.80	12.80	12.79	12.79
3.750	12.77	12.77	12.76	12.76
4.000	12.75	12.74	12.74	12.73
4.250	12.72	12.72	12.71	12.71
4.500	12.70	12.69	12.69	12.68
4.750	12.67	12.67	12.66	12.66
5.000	12.65	12.65	12.64	12.64
5.250	12.63	12.62	12.62	12.62
5.500	12.61	12.60	12.60	12.60
5.750	12.59	12.58	12.58	12.58
6.000	12.57	12.56	12.56	12.56
6.250	12.55	12.55	12.54	12.54
6.500	12.53	12.53	12.53	12.52
6.750	12.52	12.51	12.51	12.51
7.000	12.50	12.50	12.49	12.49
7.250	12.47	12.47	12.46	12.46
7.500	12.45	12.44	12.44	12.43
7.750	12.42	12.42	12.41	12.41
8.000	12.40	12.39	12.39	12.38
8.250	12.37	12.37	12.36	12.36
8.500	12.34	12.34	12.33	12.33
8.750	12.32	12.31	12.31	12.30
9.000	12.29	12.29	12.28	12.28
9.250	12.27	12.26	12.26	12.25
9.500	12.24	12.24	12.23	12.22
9.750	12.21	12.21	12.20	12.20
10.000	12.19	12.18	12.18	12.17

Subsection: Time vs. Elevation

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	12.16	12.16	12.15	12.15
10.500	12.14	12.13	12.13	12.12
10.750	12.11	12.11	12.10	12.09
11.000	12.08	12.08	12.07	12.07
11.250	12.06	12.05	12.05	12.04
11.500	12.03	12.03	12.02	12.02
11.750	12.01	12.00	12.00	11.99
12.000	11.98	11.97	11.97	11.96
12.250	11.95	11.95	11.94	11.94
12.500	11.93	11.92	11.92	11.91
12.750	11.90	11.90	11.89	11.89
13.000	11.88	11.87	11.87	11.86
13.250	11.85	11.84	11.84	11.83
13.500	11.82	11.82	11.81	11.81
13.750	11.80	11.79	11.79	11.78
14.000	11.77	11.77	11.76	11.76
14.250	11.75	11.74	11.74	11.73
14.500	11.72	11.71	11.71	11.70
14.750	11.69	11.69	11.68	11.68
15.000	11.67	11.66	11.66	11.65
15.250	11.64	11.64	11.63	11.63
15.500	11.62	11.61	11.61	11.60
15.750	11.59	11.58	11.58	11.57
16.000	11.56	11.56	11.55	11.55
16.250	11.54	11.53	11.53	11.52
16.500	11.51	11.51	11.50	11.50
16.750	11.49	11.48	11.47	11.47
17.000	11.46	11.45	11.45	11.44
17.250	11.43	11.43	11.42	11.42
17.500	11.41	11.40	11.40	11.39
17.750	11.38	11.38	11.37	11.37
18.000	11.36	11.35	11.34	11.34
18.250	11.33	11.32	11.32	11.31
18.500	11.30	11.30	11.29	11.29
18.750	11.28	11.27	11.27	11.26
19.000	11.25	11.25	11.24	11.24
19.250	11.22	11.22	11.21	11.21
19.500	11.20	11.19	11.19	11.18
19.750	11.17	11.17	11.16	11.16
20.000	11.15	11.14	11.14	11.13
20.250	11.12	11.12	11.11	11.11

Subsection: Time vs. Elevation

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	11.09	11.09	11.08	11.08	12.03
20.750	11.07	11.06	11.06	11.05	13.14
21.000	11.04	11.04	11.03	11.03	13.12
21.250	11.02	11.01	11.01	11.00	13.10
21.500	10.99	10.99	10.98	10.98	13.07
21.750	10.97	10.96	10.96	10.95	13.05
22.000	10.94	10.94	10.93	10.93	13.03
22.250	10.92	10.92	10.91	10.91	13.01
22.500	10.90	10.89	10.89	10.89	12.98
22.750	10.88	10.87	10.87	10.87	12.94
23.000	10.86	10.86	10.85	10.85	12.90
23.250	10.84	10.84	10.83	10.83	12.87
23.500	10.82	10.82	10.82	10.81	12.84
23.750	10.81	10.80	10.80	10.80	12.81
24.000	10.79	(N/A)	(N/A)	(N/A)	12.78
					12.75
					12.73
					12.70
					12.68
					12.65
					12.63
					12.61
					12.59
					12.57

Subsection: Time vs. Elevation

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
12.55
12.54
12.52
12.50
12.48
12.45
12.43
12.40
12.38
12.35
12.32
12.30
12.27
12.25
12.22
12.19
12.17
12.14
12.12
12.09
12.06
12.04
12.01
11.99
11.96
11.93
11.91
11.88
11.86
11.83
11.80
11.78
11.75
11.72
11.70
11.67
11.65
11.62
11.59
11.57
11.54

Subsection: Time vs. Elevation

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
11.52
11.49
11.46
11.44
11.41
11.39
11.36
11.33
11.31
11.28
11.26
11.23
11.20
11.18
11.15
11.13
11.10
11.07
11.05
11.02
11.00
10.97
10.95
10.92
10.90
10.88
10.86
10.84
10.83
10.81
10.79
(N/A)

Subsection: Time vs. Volume

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	43.000	173.000	389.000
0.250	922.000	1,177.000	1,328.000	1,388.000
0.500	1,389.000	1,383.000	1,378.000	1,372.000
0.750	1,361.000	1,355.000	1,350.000	1,344.000
1.000	1,333.000	1,328.000	1,323.000	1,317.000
1.250	1,307.000	1,302.000	1,297.000	1,292.000
1.500	1,282.000	1,277.000	1,272.000	1,267.000
1.750	1,257.000	1,252.000	1,248.000	1,243.000
2.000	1,234.000	1,229.000	1,220.000	1,212.000
2.250	1,197.000	1,189.000	1,182.000	1,175.000
2.500	1,161.000	1,154.000	1,147.000	1,141.000
2.750	1,128.000	1,122.000	1,116.000	1,110.000
3.000	1,098.000	1,093.000	1,087.000	1,082.000
3.250	1,071.000	1,066.000	1,061.000	1,056.000
3.500	1,047.000	1,042.000	1,038.000	1,033.000
3.750	1,025.000	1,021.000	1,016.000	1,012.000
4.000	1,005.000	1,001.000	997.000	993.000
4.250	986.000	983.000	979.000	976.000
4.500	970.000	966.000	963.000	960.000
4.750	954.000	952.000	949.000	946.000
5.000	941.000	938.000	935.000	933.000
5.250	928.000	925.000	923.000	921.000
5.500	916.000	914.000	912.000	910.000
5.750	906.000	904.000	902.000	900.000
6.000	896.000	894.000	892.000	890.000
6.250	887.000	885.000	884.000	882.000
6.500	879.000	877.000	876.000	874.000
6.750	871.000	870.000	868.000	867.000
7.000	864.000	862.000	860.000	858.000
7.250	853.000	851.000	849.000	846.000
7.500	842.000	840.000	837.000	835.000
7.750	831.000	828.000	826.000	824.000
8.000	819.000	817.000	815.000	813.000
8.250	808.000	806.000	804.000	801.000
8.500	797.000	795.000	792.000	790.000
8.750	786.000	783.000	781.000	779.000
9.000	774.000	772.000	770.000	768.000
9.250	763.000	761.000	759.000	756.000
9.500	752.000	750.000	747.000	745.000
9.750	741.000	738.000	736.000	734.000
10.000	729.000	727.000	725.000	723.000

Subsection: Time vs. Volume

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
10.250	718.000	716.000	714.000	711.000
10.500	707.000	705.000	702.000	700.000
10.750	696.000	693.000	691.000	689.000
11.000	684.000	682.000	680.000	678.000
11.250	673.000	671.000	669.000	666.000
11.500	662.000	660.000	657.000	655.000
11.750	651.000	648.000	646.000	644.000
12.000	639.000	637.000	635.000	633.000
12.250	628.000	626.000	624.000	621.000
12.500	617.000	615.000	612.000	610.000
12.750	606.000	603.000	601.000	599.000
13.000	594.000	592.000	590.000	588.000
13.250	583.000	581.000	579.000	576.000
13.500	572.000	570.000	567.000	565.000
13.750	561.000	558.000	556.000	554.000
14.000	549.000	547.000	545.000	543.000
14.250	538.000	536.000	534.000	531.000
14.500	527.000	525.000	522.000	520.000
14.750	516.000	513.000	511.000	509.000
15.000	504.000	502.000	500.000	498.000
15.250	493.000	491.000	489.000	486.000
15.500	482.000	480.000	477.000	475.000
15.750	471.000	468.000	466.000	464.000
16.000	459.000	457.000	455.000	453.000
16.250	448.000	446.000	444.000	441.000
16.500	437.000	435.000	432.000	430.000
16.750	426.000	423.000	421.000	419.000
17.000	414.000	412.000	410.000	408.000
17.250	403.000	401.000	399.000	396.000
17.500	392.000	390.000	387.000	385.000
17.750	381.000	378.000	376.000	374.000
18.000	369.000	367.000	365.000	363.000
18.250	358.000	356.000	354.000	351.000
18.500	347.000	345.000	342.000	340.000
18.750	336.000	333.000	331.000	329.000
19.000	324.000	322.000	320.000	318.000
19.250	313.000	311.000	309.000	306.000
19.500	302.000	300.000	297.000	295.000
19.750	291.000	288.000	286.000	284.000
20.000	279.000	277.000	275.000	273.000
20.250	268.000	266.000	264.000	261.000

Subsection: Time vs. Volume

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
20.500	257.000	255.000	252.000	250.000	662.000
20.750	246.000	243.000	241.000	239.000	1,395.000
21.000	234.000	232.000	230.000	228.000	1,366.000
21.250	223.000	221.000	219.000	216.000	1,339.000
21.500	212.000	210.000	208.000	205.000	1,312.000
21.750	201.000	199.000	197.000	195.000	1,287.000
22.000	191.000	189.000	187.000	185.000	1,262.000
22.250	181.000	179.000	178.000	176.000	1,238.000
22.500	172.000	170.000	169.000	167.000	1,205.000
22.750	163.000	162.000	160.000	158.000	1,168.000
23.000	155.000	153.000	152.000	150.000	1,134.000
23.250	147.000	146.000	144.000	143.000	1,104.000
23.500	140.000	138.000	137.000	135.000	1,076.000
23.750	133.000	131.000	130.000	129.000	1,052.000
24.000	126.000	(N/A)	(N/A)	(N/A)	1,029.000
					1,008.000
					990.000
					973.000
					957.000
					943.000
					930.000
					918.000
					908.000
					898.000

Subsection: Time vs. Volume

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
889.000
880.000
873.000
866.000
855.000
844.000
833.000
822.000
810.000
799.000
788.000
777.000
765.000
754.000
743.000
732.000
720.000
709.000
698.000
687.000
675.000
664.000
653.000
642.000
630.000
619.000
608.000
597.000
585.000
574.000
563.000
552.000
540.000
529.000
518.000
507.000
495.000
484.000
473.000
462.000
450.000

Subsection: Time vs. Volume

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
439.000
428.000
417.000
405.000
394.000
383.000
372.000
360.000
349.000
338.000
327.000
315.000
304.000
293.000
282.000
270.000
259.000
248.000
237.000
225.000
214.000
203.000
193.000
183.000
174.000
165.000
157.000
149.000
141.000
134.000
127.000
(N/A)

Subsection: Elevation-Volume-Flow Table (Pond)

Label: IMP2

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	10.50 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)
10.50	0.00	0.000	432.00	0.00
11.00	0.00	216.000	432.00	0.01
11.50	0.00	432.000	432.00	0.01
12.00	0.00	648.000	432.00	0.01
12.50	0.00	864.000	432.00	0.01
13.00	0.00	1,229.842	1,080.00	0.03
13.50	0.00	1,894.187	1,594.00	0.05

Flow (Total) (ft³/s)	2S/t + O (ft³/s)
0.00	0.00
0.01	2.41
0.01	4.81
0.01	7.21
0.01	9.61
0.03	13.70
0.05	21.09

Subsection: Pond Infiltration Calculations

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Average Infiltration Rating Table

Elevation (Water Surface) (ft)	Area (Total) (ft^2)	Flow (Infiltration) (ft^3/s)
10.50	432.0	0.00
11.00	432.0	0.01
11.50	432.0	0.01
12.00	432.0	0.01
12.50	432.0	0.01
13.00	1,080.0	0.03
13.50	1,594.0	0.05

Subsection: Level Pool Pond Routing Summary

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	10.50 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.61 ft³/s	Time to Peak (Flow, In)	0.200 hours
Infiltration (Peak)	0.04 ft³/s	Time to Peak (Infiltration)	0.450 hours
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 hours

Elevation (Water Surface, Peak)	13.14 ft
Volume (Peak)	1,395.081 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	1,452.000 ft³
Volume (Total Infiltration)	1,327.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	125.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Subsection: Pond Inflow Summary

Label: IMP2 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Summary for Hydrograph Addition at 'IMP2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Catchment

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Catchment	1,451.791	0.200	1.61
Flow (In)	IMP2	1,451.791	0.200	1.61

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Basin - IMP 3

Project Summary	
Title	
Engineer	
Company	
Date	4/15/2021

Notes

Table of Contents

Subsection: User Notifications

User Notifications?	No user notifications generated.

Subsection: Modified Rational Grand Summary

Modified Rational Method

Q = CiA * Units Conversion; Where conversion = 43560 / (12 * 3600)

Frequency (years)	Area (ft^2)	Adjusted C Coefficient	Duration (hours)	Intensity (in/h)	Flow (Peak) (ft^3/s)	Flow (Allowable) (ft^3/s)
100	21,591.00	0.995	0.700	1.234	0.61	0.24
100	21,591.00	0.375	0.083	3.378	0.63	0.63

Volume (inflow) (ft^3)	Volume (Storage) (ft^3)
1,546.683	959.893
1,546.683	0.000

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Catchment	Post-Development 100 year	100	1,547.000	0.150	0.61
Catchment	Pre-Development 100 year	100	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
Outfall	Pre-Development 100 year	100	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
IMP3 (IN)	Post-Development 100 year	100	1,547.000	0.150	0.61	(N/A)	(N/A)
IMP3 (OUT)	Post-Development 100 year	100	0.000	0.000	0.00	13.06	1,440.000

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: I-D-F Table

Label: User Defined IDF Table - 1

Scenario: Pre-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

I-D-F Curve

Time (hours)	Intensity (in/h)
0.083	3.380
0.333	1.631
1.000	0.910
3.000	0.506
6.000	0.345
12.000	0.233
24.000	0.152

Subsection: Time vs. Elevation

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	10.10	10.16	10.35	10.64
0.250	11.31	11.65	11.98	12.23
0.500	12.61	12.69	12.78	12.87
0.750	13.02	13.06	13.06	13.06
1.000	13.04	13.04	13.03	13.03
1.250	13.01	13.01	13.00	13.00
1.500	12.98	12.98	12.97	12.97
1.750	12.96	12.95	12.94	12.94
2.000	12.93	12.92	12.92	12.91
2.250	12.90	12.90	12.89	12.88
2.500	12.87	12.87	12.86	12.86
2.750	12.85	12.84	12.84	12.83
3.000	12.82	12.82	12.81	12.81
3.250	12.80	12.80	12.79	12.79
3.500	12.78	12.77	12.77	12.76
3.750	12.75	12.75	12.75	12.74
4.000	12.73	12.73	12.72	12.72
4.250	12.71	12.71	12.70	12.70
4.500	12.69	12.69	12.68	12.68
4.750	12.67	12.67	12.66	12.66
5.000	12.65	12.65	12.64	12.64
5.250	12.63	12.63	12.62	12.62
5.500	12.61	12.61	12.61	12.60
5.750	12.59	12.58	12.58	12.57
6.000	12.55	12.55	12.54	12.53
6.250	12.52	12.51	12.51	12.50
6.500	12.49	12.48	12.47	12.47
6.750	12.45	12.45	12.44	12.43
7.000	12.42	12.42	12.41	12.40
7.250	12.39	12.39	12.38	12.38
7.500	12.36	12.36	12.35	12.35
7.750	12.34	12.33	12.33	12.32
8.000	12.31	12.31	12.30	12.30
8.250	12.29	12.28	12.28	12.27
8.500	12.26	12.26	12.25	12.25
8.750	12.24	12.24	12.23	12.23
9.000	12.22	12.22	12.21	12.21
9.250	12.20	12.20	12.19	12.19
9.500	12.18	12.18	12.17	12.17
9.750	12.16	12.16	12.15	12.15
10.000	12.14	12.14	12.14	12.13

Subsection: Time vs. Elevation

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.250	12.13	12.12	12.12	12.12
10.500	12.11	12.11	12.10	12.10
10.750	12.09	12.09	12.08	12.08
11.000	12.06	12.06	12.05	12.05
11.250	12.04	12.03	12.03	12.02
11.500	12.01	12.01	12.00	12.00
11.750	11.99	11.98	11.98	11.97
12.000	11.96	11.96	11.95	11.95
12.250	11.93	11.93	11.92	11.92
12.500	11.91	11.90	11.90	11.89
12.750	11.88	11.88	11.87	11.87
13.000	11.86	11.85	11.85	11.84
13.250	11.83	11.83	11.82	11.81
13.500	11.80	11.80	11.79	11.79
13.750	11.78	11.77	11.77	11.76
14.000	11.75	11.75	11.74	11.74
14.250	11.73	11.72	11.72	11.71
14.500	11.70	11.70	11.69	11.68
14.750	11.67	11.67	11.66	11.66
15.000	11.65	11.64	11.64	11.63
15.250	11.62	11.62	11.61	11.61
15.500	11.60	11.59	11.59	11.58
15.750	11.57	11.56	11.56	11.55
16.000	11.54	11.54	11.53	11.53
16.250	11.52	11.51	11.51	11.50
16.500	11.49	11.49	11.48	11.48
16.750	11.47	11.46	11.46	11.45
17.000	11.44	11.43	11.43	11.42
17.250	11.41	11.41	11.40	11.40
17.500	11.39	11.38	11.38	11.37
17.750	11.36	11.36	11.35	11.35
18.000	11.34	11.33	11.33	11.32
18.250	11.31	11.30	11.30	11.29
18.500	11.28	11.28	11.27	11.27
18.750	11.26	11.25	11.25	11.24
19.000	11.23	11.23	11.22	11.22
19.250	11.21	11.20	11.20	11.19
19.500	11.18	11.17	11.17	11.16
19.750	11.15	11.15	11.14	11.14
20.000	11.13	11.12	11.12	11.11
20.250	11.10	11.10	11.09	11.09

Subsection: Time vs. Elevation

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.500	11.08	11.07	11.06	11.06	10.98
20.750	11.05	11.04	11.04	11.03	12.42
21.000	11.02	11.02	11.01	11.01	12.95
21.250	11.00	10.99	10.99	10.98	13.05
21.500	10.97	10.97	10.96	10.96	13.02
21.750	10.95	10.94	10.93	10.93	12.99
22.000	10.92	10.91	10.91	10.90	12.96
22.250	10.89	10.89	10.88	10.88	12.93
22.500	10.87	10.86	10.86	10.85	12.91
22.750	10.84	10.84	10.83	10.83	12.88
23.000	10.81	10.81	10.80	10.80	12.85
23.250	10.79	10.78	10.78	10.77	12.83
23.500	10.76	10.76	10.75	10.75	12.81
23.750	10.74	10.73	10.73	10.72	12.78
24.000	10.71	(N/A)	(N/A)	(N/A)	12.76
					12.74
					12.72
					12.69
					12.67
					12.66
					12.64
					12.62
					12.60
					12.56

Subsection: Time vs. Elevation

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
12.53
12.49
12.46
12.43
12.40
12.37
12.34
12.32
12.29
12.27
12.25
12.22
12.20
12.18
12.16
12.15
12.13
12.11
12.10
12.07
12.04
12.02
11.99
11.97
11.94
11.91
11.89
11.86
11.84
11.81
11.78
11.76
11.73
11.71
11.68
11.65
11.63
11.60
11.58
11.55
11.52

Subsection: Time vs. Elevation

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Elevation (ft)

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

Elevation (ft)
11.50
11.47
11.45
11.42
11.39
11.37
11.34
11.31
11.29
11.26
11.24
11.21
11.18
11.16
11.13
11.11
11.08
11.05
11.03
11.00
10.98
10.95
10.92
10.90
10.87
10.85
10.82
10.79
10.77
10.74
10.72
(N/A)

Subsection: Time vs. Volume

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	21.000	82.000	178.000
0.250	395.000	504.000	613.000	699.000
0.500	933.000	1,010.000	1,096.000	1,191.000
0.750	1,385.000	1,433.000	1,440.000	1,431.000
1.000	1,414.000	1,405.000	1,397.000	1,388.000
1.250	1,372.000	1,364.000	1,356.000	1,348.000
1.500	1,333.000	1,325.000	1,318.000	1,310.000
1.750	1,296.000	1,289.000	1,282.000	1,275.000
2.000	1,261.000	1,254.000	1,248.000	1,241.000
2.250	1,228.000	1,222.000	1,216.000	1,210.000
2.500	1,198.000	1,192.000	1,186.000	1,180.000
2.750	1,169.000	1,163.000	1,158.000	1,152.000
3.000	1,141.000	1,136.000	1,131.000	1,126.000
3.250	1,116.000	1,111.000	1,106.000	1,101.000
3.500	1,091.000	1,087.000	1,082.000	1,077.000
3.750	1,068.000	1,064.000	1,060.000	1,055.000
4.000	1,047.000	1,043.000	1,038.000	1,034.000
4.250	1,026.000	1,022.000	1,019.000	1,015.000
4.500	1,007.000	1,003.000	1,000.000	996.000
4.750	989.000	985.000	982.000	978.000
5.000	972.000	968.000	965.000	962.000
5.250	955.000	952.000	949.000	946.000
5.500	940.000	937.000	934.000	931.000
5.750	922.000	915.000	910.000	904.000
6.000	892.000	887.000	882.000	876.000
6.250	866.000	861.000	856.000	851.000
6.500	842.000	838.000	833.000	829.000
6.750	821.000	817.000	813.000	809.000
7.000	801.000	797.000	794.000	790.000
7.250	783.000	780.000	777.000	773.000
7.500	767.000	764.000	761.000	758.000
7.750	753.000	750.000	747.000	744.000
8.000	739.000	737.000	734.000	732.000
8.250	727.000	725.000	723.000	720.000
8.500	716.000	714.000	712.000	710.000
8.750	706.000	704.000	702.000	700.000
9.000	697.000	695.000	693.000	691.000
9.250	688.000	687.000	685.000	683.000
9.500	680.000	679.000	678.000	676.000
9.750	673.000	672.000	671.000	669.000
10.000	667.000	666.000	664.000	663.000

Subsection: Time vs. Volume

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
10.250	661.000	660.000	659.000	657.000
10.500	655.000	654.000	653.000	652.000
10.750	649.000	647.000	646.000	644.000
11.000	641.000	639.000	637.000	635.000
11.250	632.000	630.000	629.000	627.000
11.500	624.000	622.000	620.000	618.000
11.750	615.000	613.000	612.000	610.000
12.000	607.000	605.000	603.000	601.000
12.250	598.000	596.000	595.000	593.000
12.500	590.000	588.000	586.000	584.000
12.750	581.000	579.000	578.000	576.000
13.000	573.000	571.000	569.000	568.000
13.250	564.000	562.000	561.000	559.000
13.500	556.000	554.000	552.000	551.000
13.750	547.000	545.000	544.000	542.000
14.000	539.000	537.000	535.000	534.000
14.250	530.000	528.000	527.000	525.000
14.500	522.000	520.000	518.000	517.000
14.750	513.000	511.000	510.000	508.000
15.000	505.000	503.000	501.000	500.000
15.250	496.000	495.000	493.000	491.000
15.500	488.000	486.000	484.000	483.000
15.750	479.000	478.000	476.000	474.000
16.000	471.000	469.000	467.000	466.000
16.250	462.000	461.000	459.000	457.000
16.500	454.000	452.000	450.000	449.000
16.750	445.000	444.000	442.000	440.000
17.000	437.000	435.000	433.000	432.000
17.250	428.000	427.000	425.000	423.000
17.500	420.000	418.000	416.000	415.000
17.750	411.000	410.000	408.000	406.000
18.000	403.000	401.000	399.000	398.000
18.250	394.000	393.000	391.000	389.000
18.500	386.000	384.000	382.000	381.000
18.750	377.000	376.000	374.000	372.000
19.000	369.000	367.000	365.000	364.000
19.250	360.000	359.000	357.000	355.000
19.500	352.000	350.000	348.000	347.000
19.750	343.000	342.000	340.000	338.000
20.000	335.000	333.000	332.000	330.000
20.250	326.000	325.000	323.000	321.000

Subsection: Time vs. Volume

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Time (hours)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
20.500	318.000	316.000	315.000	313.000	286.000
20.750	309.000	308.000	306.000	304.000	800.000
21.000	301.000	299.000	298.000	296.000	1,295.000
21.250	292.000	291.000	289.000	287.000	1,422.000
21.500	284.000	282.000	281.000	279.000	1,380.000
21.750	275.000	274.000	272.000	270.000	1,340.000
22.000	267.000	265.000	264.000	262.000	1,303.000
22.250	258.000	257.000	255.000	253.000	1,268.000
22.500	250.000	248.000	247.000	245.000	1,235.000
22.750	242.000	240.000	238.000	236.000	1,204.000
23.000	233.000	231.000	230.000	228.000	1,174.000
23.250	225.000	223.000	221.000	219.000	1,147.000
23.500	216.000	214.000	213.000	211.000	1,121.000
23.750	208.000	206.000	204.000	202.000	1,096.000
24.000	199.000	(N/A)	(N/A)	(N/A)	1,073.000
					1,051.000
					1,030.000
					1,011.000
					992.000
					975.000
					958.000
					943.000
					928.000
					898.000

Subsection: Time vs. Volume

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
871.000
847.000
825.000
805.000
787.000
770.000
755.000
742.000
729.000
718.000
708.000
698.000
690.000
682.000
675.000
668.000
662.000
656.000
651.000
642.000
634.000
625.000
617.000
608.000
600.000
591.000
583.000
574.000
566.000
557.000
549.000
540.000
532.000
523.000
515.000
506.000
498.000
489.000
481.000
472.000
464.000

Subsection: Time vs. Volume

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Time vs. Volume (ft³)

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

Volume (ft³)
455.000
447.000
438.000
430.000
421.000
413.000
405.000
396.000
388.000
379.000
371.000
362.000
354.000
345.000
337.000
328.000
320.000
311.000
303.000
294.000
286.000
277.000
269.000
260.000
252.000
243.000
235.000
226.000
218.000
209.000
201.000
(N/A)

Subsection: Elevation-Volume-Flow Table (Pond)

Label: IMP3

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	10.10 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)
10.10	0.00	0.000	326.00	0.00
10.60	0.00	163.000	326.00	0.01
11.10	0.00	326.000	326.00	0.01
11.60	0.00	489.000	326.00	0.01
12.10	0.00	652.000	326.00	0.01
12.60	0.00	928.295	816.00	0.02
13.20	0.00	1,650.859	1,640.00	0.05

Flow (Total) (ft³/s)	2S/t + O (ft³/s)
0.00	0.00
0.01	1.82
0.01	3.63
0.01	5.44
0.01	7.25
0.02	10.34
0.05	18.39

Subsection: Pond Infiltration Calculations

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Average Infiltration Rating Table

Elevation (Water Surface) (ft)	Area (Total) (ft^2)	Flow (Infiltration) (ft^3/s)
10.10	326.0	0.00
10.60	326.0	0.01
11.10	326.0	0.01
11.60	326.0	0.01
12.10	326.0	0.01
12.60	816.0	0.02
13.20	1,640.0	0.05

Subsection: Level Pool Pond Routing Summary

Label: IMP3 (IN)

Scenario: Post-Development 100 year

Return Event: 100 years

Storm Event: User Defined IDF Table - 1 - 100 Year

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	1.2500 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	10.10 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	0.61 ft³/s	Time to Peak (Flow, In)	0.150 hours
Infiltration (Peak)	0.04 ft³/s	Time to Peak (Infiltration)	0.850 hours
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 hours

Elevation (Water Surface, Peak)	13.06 ft
Volume (Peak)	1,440.111 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	1,547.000 ft³
Volume (Total Infiltration)	1,349.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	197.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'IMP3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Catchment

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Catchment	1,546.683	0.150	0.61
Flow (In)	IMP3	1,546.683	0.150	0.61

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