

# Drainage Report

**SLC-40 Master Drainage Plan**  
Cape Canaveral, Florida

October 2021

Prepared For:

Space Exploration Technologies  
1 Rocket Road  
Hawthorne, California 90250

Prepared By:

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**Kimley»Horn**



**Drainage Report  
For  
SLC-40 Master Drainage Plan**

KHA Project Number: 145253005

October 2021

Prepared For:  
Space Exploration Technologies  
1 Rocket Road  
Hawthorne, California, Florida 90250

This item has been digitally signed and sealed by  
Britt Stephens, P.E. on the date adjacent to the seal.

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signed and sealed and the signature must be verified  
on any electronic copies.

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# Section 1 General Site

## Introduction

The drainage calculations herein include pre-permit, existing, and future calculations for the SpaceX Launch Complex 40 (SLC-40) located in Cape Canaveral, Brevard County, Florida. The site currently operates as a launch facility for Space Exploration Technologies (SpaceX) and was historically a launch facility for NASA since the 1960's. The total project area for this facility is approximately 38.2 acres.

## Soils

Hydrologic soil conditions for the study area are based on information obtained from the National Resource Conservation Service (NRCS) Web Soil Survey and primarily consist of Urban Land, Canaveral-Urban land complex, and Palm Beach sand all with a hydrologic soil group of A.

## Existing Permits

The existing site currently has a master permit through St. John's River Water Management District (SJRWMD) permit number 149413-1. The master permit was issued on April 27, 2017. Since, various permit modifications have been approved as well:

Permit No.	Date	Name	Impervious Area Added	Basin	Notes
149413-2	7/11/2018	Crane Build Up	2,178 SF	7	Pipe between Basin 5 and 7 removed
149413-3	7/18/2018	Pavement Mod	0.05 ac	7	Pipe between Pond 6 and 9/19 installed
149413-5	2/4/2021	Pond 11	0.09 ac	11	Pond reconfiguration
149413-6	6/7/2021	RP-1 Offload	0.03 ac	12	

## Flood Routing Software

A flood routing model was prepared for all conditions using Interconnected Channel & Pond Routing (ICPR4) by Streamline Technologies, Inc. All model inputs and results can be found in subsequent sections of this report.

Modeling for all scenarios have been done using ICPR4 in lieu of the previously used ICPR3. Due to some known differences in calculations between ICPR3 and ICPR4, results of modeling prepared for these calculations yields differing results than the previously permitted calculations prepared by Poulos & Bennett (March 2017) for the pre-permit conditions.

## Drainage System

### Pre-Permit Drainage

Prior to Permit No. 149413-1, the site operated as an approximate 38-acre launch facility much as it still does currently consisting of roads, concrete pads, towers, and various support facilities. Historically, stormwater drainage has been provided within a network of interconnected dry detention ponds ultimately discharging to the undeveloped surrounding areas. Due to the absence of a control, minimal to no water quality was previously provided.

For the purposes of comparison, a model of the pre-permit conditions was prepared using most of the model inputs permitted with Permit No. 149413-1 prepared by Poulos & Bennet (March 2017). Pond storage was not able to be verified, therefore pond storage was calculated using existing survey information for ponds know to have not changed. For ponds that have been known to change, the pre-improvement storage was used from the pre-improvement Permit No. 149413-1 calculations. Additionally, the pre-permit conditions included rectangular weirs for overland flow in Weir 10, Weir 16, Weir 17, and

Weir 18. Those overland flow section have been changed to sharp crested weirs for these calculations. Section 2 of this report includes the model results, nodal diagram and model inputs. Additionally, Section 5 shows a comparison between the pre-permitted model results and the future model results.

### Existing Drainage

As proposed in the previous permit calculations post-improvement modeling, improvements to the site to provide water quality treatment have been constructed to retain stormwater on the site. Three (3) weirs have been constructed on the west side of the site at elevation 6.0 ft-NAVD as well as two (2) control structures on the south east and south west sides of the site. However as per as-builts prepared by Base Line Land Surveying on July 25, 2021, the control structures at the south east and south west of the site (DS-9 and DS-10) weir's were constructed at 5.5 ft-NAVD. Various other improvements have been made since Permit No. 149413-1:

Improvements made at the site since Permit No. 149413-1 are as follows:

Basin	Impervious Change	Improvement
2		Added pipe connections to Pond 16/17 and Pond 8
3	+0.02 ac	Added 0.02 acres of impervious area
4	+0.08 ac	-Pond 4 and Pond 5 have been combined -Added 0.08 acres of impervious area
5	+0.15 ac	-Pond 4 and Pond 5 have been combined -Added 0.15 acres of impervious area
6	-0.15 ac	Removed 0.15 acres of impervious area. Added pipe connection to Pond 9/19
7	+0.04 ac	-Pond 7 have been removed -Added 0.04 acres (0.05 acres permitted) of impervious area
8		Added pipe connection to Pond 2
9		-Pond 9 and Pond 19 have been combined. -Remove existing headwall and replaced with raised Type H structure with weir installed as a control structure for offsite discharge. Catch basin rim constructed at 7.0 ft-NAVD, weir constructed at 5.5 ft-NAVD
10	+0.01 ac	Existing headwall removed and raised Type H structure with weir installed as a control structure for offsite discharge. Catch basin rim constructed at 6.8 ft-NAVD, weir constructed at 5.5 ft-NAVD
11	+0.10 ac	Pond storage reconfigured, 0.10 acres (0.09 acres permitted) impervious area added for tanks
12	+0.04 ac	Added 0.04 acres (0.03 acres permitted) of impervious area. Impervious area added for maneuverability
13	+0.04 ac	Added 0.04 ac of impervious
14	+0.05 ac	Added 0.05 ac of impervious. Footers constructed
15	+0.07 ac	-Pond 15 has been removed -Added 0.07 ac of impervious. Footers constructed
16	+0.02 ac	-Pond 16 and Pond 17 have been combined -Added pipe connection to Pond 2. Added weir for offsite discharge at 6.0 ft-NAVD
17	-0.04 ac	-Pond 16 and Pond 17 have been combined -Added pipe connection to Pond 18. Added weir for offsite discharge at 6.0 ft-NAVD
18		Added pipe connections to Pond 10 and Pond 16/17. Added weir for offsite discharge at 6.0 ft-NAVD
19		-Pond 9 and Pond 19 have been combined

For the purposes of these calculations, the basin areas and divides have been kept the same as shown in the Permit No. 149413-1 calculations. Tailwater conditions for discharge to the east and west were taken from the previous calculations done for Permit No. 149413-1 as well.

Stage-storage for each pond was calculated using existing surveying collected on July 25, 2021.

Section 3 of this report includes a basin map, basin summary, pond stage-storage summary, and modeling for the existing conditions.

## Future Drainage

A model representing the full build out conditions was prepared with the intent that the existing ponds will not change. The existing discharge weirs (Weir 16, Weir 17, and Weir 18) along with the existing discharge structures (DS-9 and DS-10) will need to be modified to raise the discharge elevation to 6.2 ft-NAVD for the purposes of retaining the required water treatment volume. Additionally, all structures, weirs, and pipe connection are to remain the same. Tailwater conditions for discharge to the east and west were taken from the previous calculations done for Permit No. 149413-1.

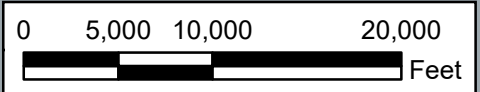
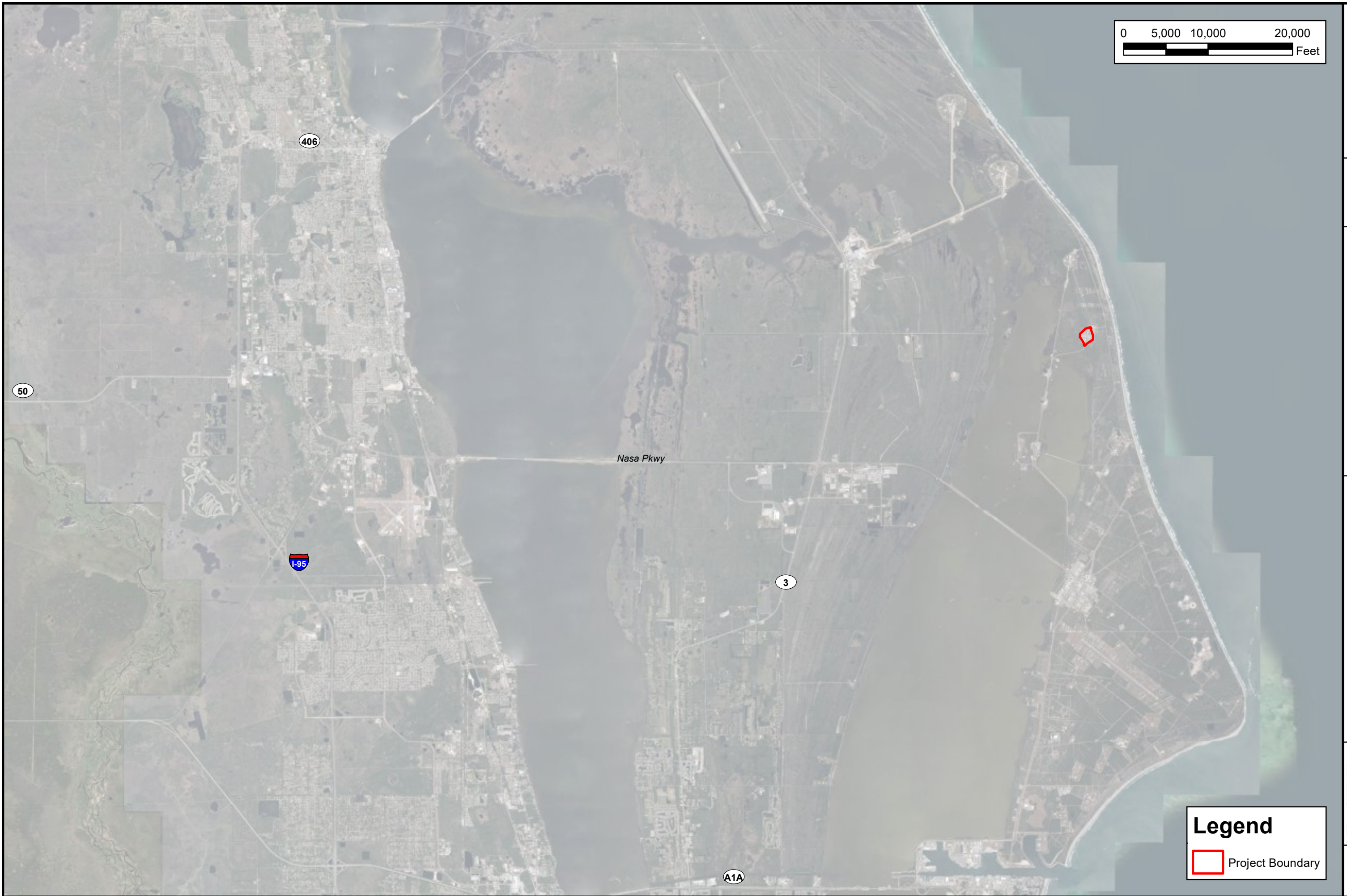
Section 4 of this report includes a basin map, basin summary, pond stage-storage summary, and modeling for the future conditions.

Discharge for the mean annual storm and 25-year, 24-hour storms for the pre-permit conditions were used as a baseline to compare the discharge anticipated in the future conditions. Section 5 of this report shows the stage and node inflow results.

## Conclusion

As shown in Section 5, the increase in impervious area and discharge structure modifications in the future conditions reduces the discharge comparatively with the pre-permit conditions calculated herein.

Tailwater ID	2.33YR- 24HR			025YR- 024HR		
	Pre-Permit Conditions	Existing Conditions	Future Conditions	Pre-Permit Conditions	Existing Conditions	Future Conditions
	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)
TW-E	11.17	4.34	4.48	23.68	24.41	28.89
TW-W	54.93	17.92	18.42	106.96	71.09	71.84
TOTAL	66.10	22.26	22.90	130.64	95.50	100.73



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**SLC 40  
 MASTER PERMIT**

**Project Location Map**

**Legend**

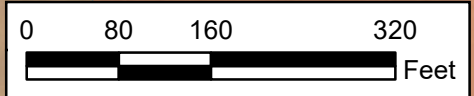
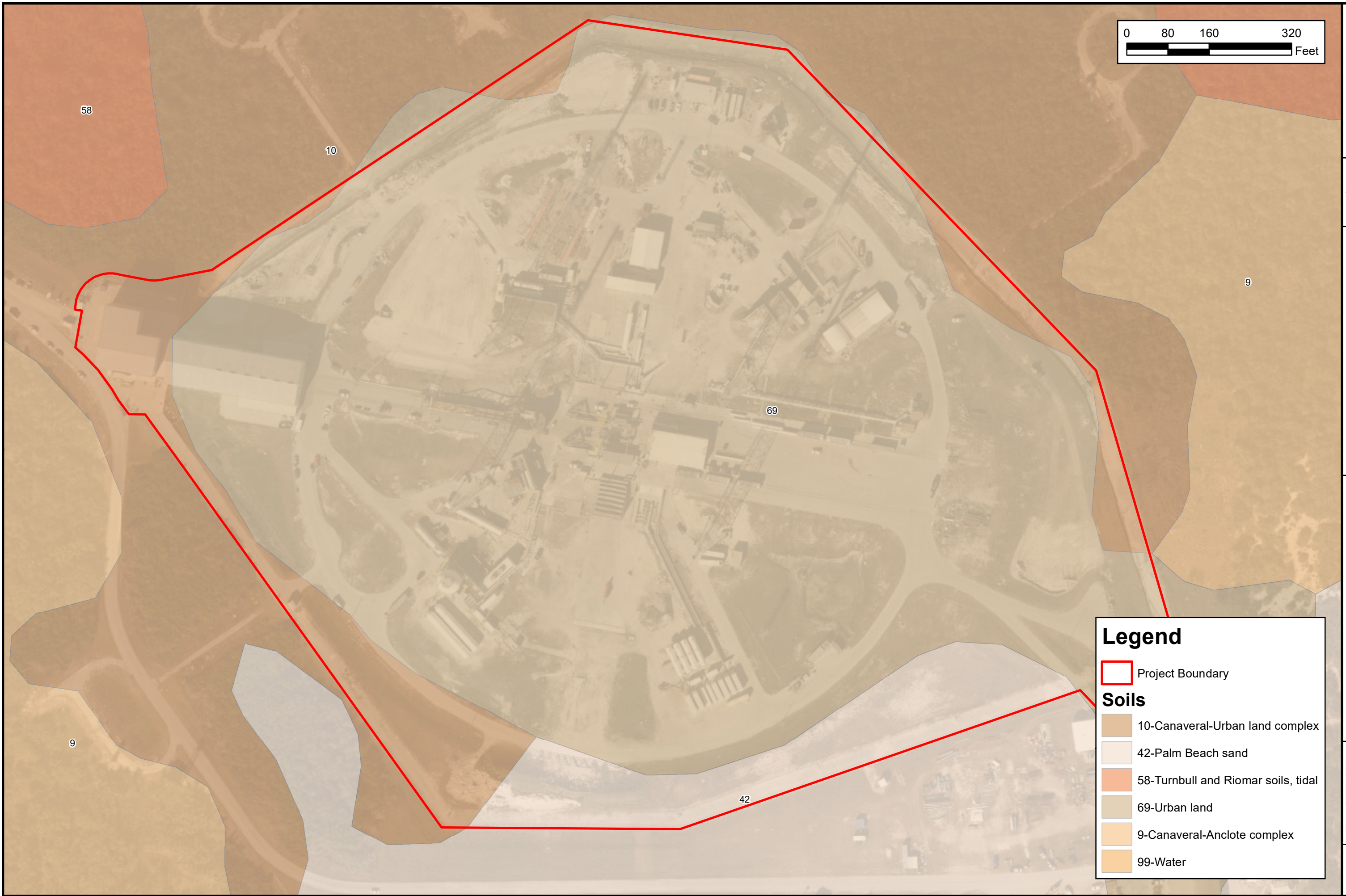
Project Boundary

DATE:	SEPTEMBER 2021
DESIGN:	TS
DRAWN:	TS
CHECKED:	BS
KH NO.:	145253005

SHEET  
**1**

C:\Users\jfrany\station\Desktop\Work From Home\SLC 40\GIS\Maps\1 Location Map.mxd





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**SLC 40  
 MASTER PERMIT**

**Soils Map**

**Legend**

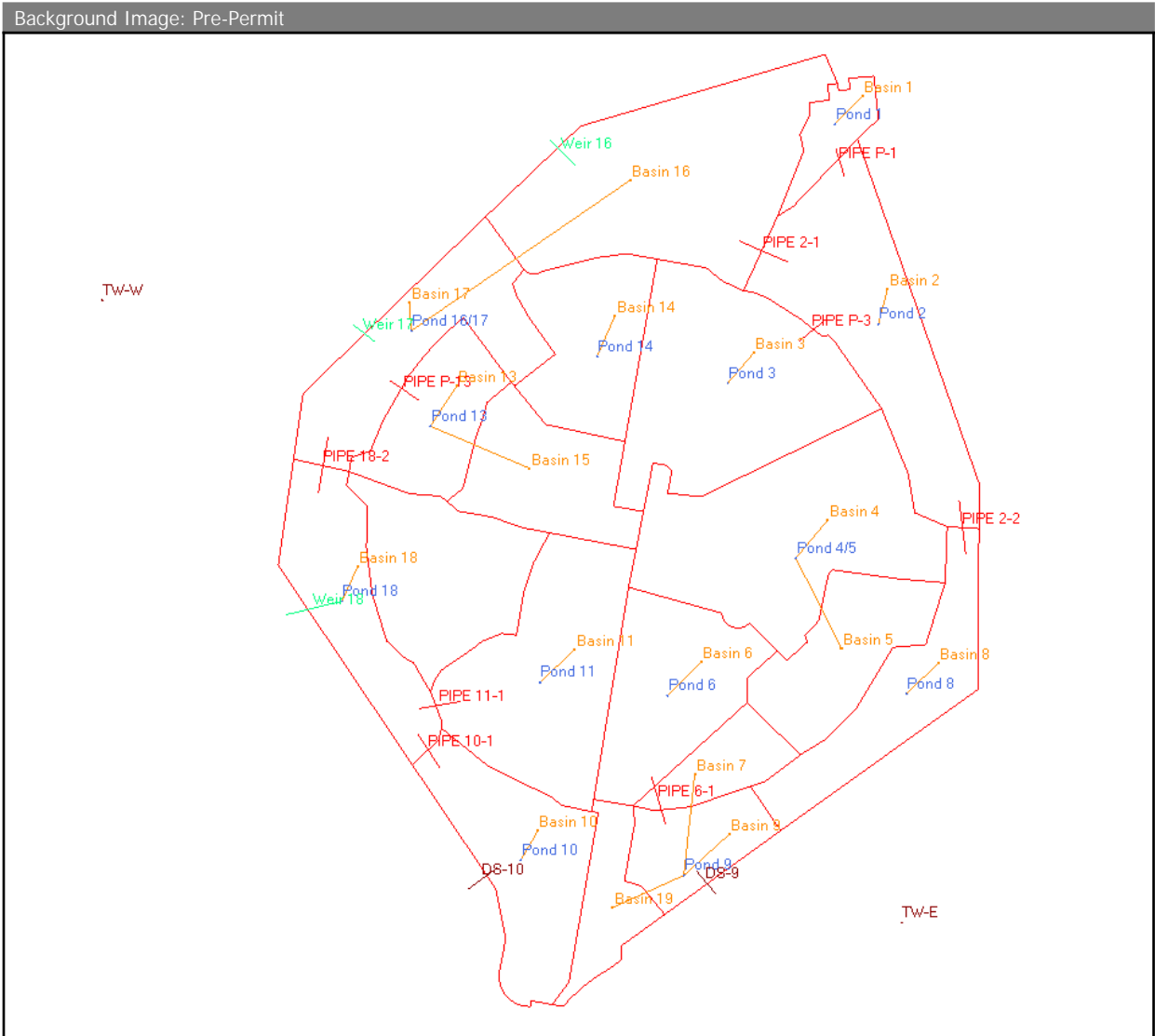
Project Boundary

**Soils**

- 10-Canaveral-Urban land complex
- 42-Palm Beach sand
- 58-Turnbull and Riomar soils, tidal
- 69-Urban land
- 9-Canaveral-Anclote complex
- 99-Water

DATE:	SEPTEMBER 2021	DESIGN:	TS
DRAWN:	TS	CHECKED:	BS
KH NO.:	145253005		

## Section 2 Pre-Permit ICPR Routing



Pre-Permit Node Maximum Summary

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Pre-Permit Conditions	010YR-24HR	Pond 1	11.00	12.0932	2.08	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 10	5.00	16.0001	8.51	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 11	6.06	12.6521	10.54	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 12	5.14	12.3920	11.58	12.1001
Pre-Permit Conditions	010YR-24HR	Pond 13	5.22	12.4336	9.57	12.1183
Pre-Permit Conditions	010YR-24HR	Pond 14	6.03	12.3792	6.36	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 15	5.51	12.2456	6.16	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 16	5.00	16.0035	18.36	12.0999
Pre-Permit Conditions	010YR-24HR	Pond 17	5.00	16.0102	19.98	4.4264
Pre-Permit Conditions	010YR-24HR	Pond 18	5.00	15.9979	15.39	12.1187
Pre-Permit Conditions	010YR-24HR	Pond 19	7.39	12.1263	3.42	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 2	7.01	36.0005	13.51	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 3	7.01	28.9560	14.27	12.0667
Pre-Permit Conditions	010YR-24HR	Pond 4	6.07	12.8406	14.93	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 5	5.22	13.0289	8.68	12.6246
Pre-Permit Conditions	010YR-24HR	Pond 6	7.57	12.4316	8.02	12.0833
Pre-Permit Conditions	010YR-24HR	Pond 7	7.27	12.9342	6.28	12.4221
Pre-Permit Conditions	010YR-24HR	Pond 8	5.01	16.0091	11.63	12.1332
Pre-Permit Conditions	010YR-24HR	Pond 9	5.00	16.0055	18.55	12.1167
Pre-Permit Conditions	010YR-24HR	TW-E	5.00	16.0000	18.06	12.1516
Pre-Permit Conditions	010YR-24HR	TW-W	5.00	16.0000	85.14	12.1137
Pre-Permit Conditions	025YR-024HR	Pond 1	11.14	12.0970	2.67	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 10	5.00	16.0000	11.04	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 11	6.30	12.6759	14.11	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 12	5.41	12.4390	14.72	12.1000
Pre-Permit Conditions	025YR-024HR	Pond 13	5.48	12.4707	12.40	12.1168
Pre-Permit Conditions	025YR-024HR	Pond 14	6.21	12.4048	8.40	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 15	5.82	12.3823	8.09	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 16	5.00	16.0025	23.92	12.0998

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Pre-Permit Conditions	025YR-024HR	Pond 17	5.00	16.0093	19.67	4.4210
Pre-Permit Conditions	025YR-024HR	Pond 18	5.00	16.0003	18.97	12.1167
Pre-Permit Conditions	025YR-024HR	Pond 19	7.50	12.1246	4.37	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 2	7.51	23.7026	17.75	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 3	7.51	23.7174	18.25	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 4	6.26	12.8579	19.46	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 5	5.50	12.9653	13.00	12.3688
Pre-Permit Conditions	025YR-024HR	Pond 6	7.88	12.4296	10.42	12.0833
Pre-Permit Conditions	025YR-024HR	Pond 7	7.59	12.7884	8.82	12.2958
Pre-Permit Conditions	025YR-024HR	Pond 8	5.02	16.0151	15.40	12.1376
Pre-Permit Conditions	025YR-024HR	Pond 9	5.01	16.0096	24.40	12.1169
Pre-Permit Conditions	025YR-024HR	TW-E	5.00	16.0000	23.68	12.1669
Pre-Permit Conditions	025YR-024HR	TW-W	5.00	16.0000	106.96	12.1073
Pre-Permit Conditions	100YR-24HR	Pond 1	11.38	12.1044	3.69	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 10	5.00	16.0000	15.44	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 11	6.77	12.7512	20.31	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 12	5.87	12.4581	20.20	12.1000
Pre-Permit Conditions	100YR-24HR	Pond 13	5.90	12.5470	15.79	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 14	6.51	12.4282	11.93	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 15	6.36	12.4696	11.44	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 16	5.00	16.0018	33.63	12.0999
Pre-Permit Conditions	100YR-24HR	Pond 17	5.00	16.0067	23.89	12.1000
Pre-Permit Conditions	100YR-24HR	Pond 18	5.00	15.9987	24.68	12.1176
Pre-Permit Conditions	100YR-24HR	Pond 19	7.67	12.1231	6.03	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 2	7.53	13.1327	25.08	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 3	7.53	13.1378	26.32	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 4	6.62	13.9480	27.31	12.0833
Pre-Permit Conditions	100YR-24HR	Pond 5	5.91	12.9802	19.93	12.3319
Pre-Permit Conditions	100YR-24HR	Pond 6	8.56	12.5376	14.57	12.0833

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Pre-Permit Conditions	100YR-24HR	Pond 7	8.05	12.7304	11.71	12.1261
Pre-Permit Conditions	100YR-24HR	Pond 8	5.22	12.2757	22.60	12.1338
Pre-Permit Conditions	100YR-24HR	Pond 9	5.04	16.0171	34.22	12.1295
Pre-Permit Conditions	100YR-24HR	TW-E	5.00	16.0000	33.07	12.2124
Pre-Permit Conditions	100YR-24HR	TW-W	5.00	16.0000	131.34	11.9880
Pre-Permit Conditions	2.33YR-24HR	Pond 1	10.80	12.0883	1.33	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 10	5.00	16.0001	5.30	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 11	5.76	12.5954	6.10	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 12	5.00	16.0069	7.66	12.1000
Pre-Permit Conditions	2.33YR-24HR	Pond 13	5.00	16.0300	5.87	12.1325
Pre-Permit Conditions	2.33YR-24HR	Pond 14	5.80	12.3000	3.81	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 15	5.18	12.2294	3.72	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 16	5.00	16.0103	11.27	12.1000
Pre-Permit Conditions	2.33YR-24HR	Pond 17	5.00	16.0108	20.08	4.4286
Pre-Permit Conditions	2.33YR-24HR	Pond 18	5.00	16.0006	10.49	12.1301
Pre-Permit Conditions	2.33YR-24HR	Pond 19	7.24	12.1307	2.22	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 2	6.37	36.0007	8.17	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 3	6.37	29.3127	9.95	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 4	5.80	12.7955	9.21	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 5	5.01	16.0339	5.16	12.1166
Pre-Permit Conditions	2.33YR-24HR	Pond 6	7.08	12.5819	5.00	12.0833
Pre-Permit Conditions	2.33YR-24HR	Pond 7	6.80	13.5435	3.12	12.3377
Pre-Permit Conditions	2.33YR-24HR	Pond 8	5.01	16.0032	7.22	12.1332
Pre-Permit Conditions	2.33YR-24HR	Pond 9	5.00	16.0029	11.50	12.1172
Pre-Permit Conditions	2.33YR-24HR	TW-E	5.00	16.0000	11.17	12.1375
Pre-Permit Conditions	2.33YR-24HR	TW-W	5.00	16.0000	54.93	12.1168

Manual Basin: Basin 1

Scenario: Pre-Permit Conditions  
 Node: Pond 1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.5000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5000	Basin 1	A			

Comment:

Manual Basin: Basin 10

Scenario: Pre-Permit Conditions  
 Node: Pond 10  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1200	Basin 10	A			

Comment:

Manual Basin: Basin 11

Scenario: Pre-Permit Conditions  
 Node: Pond 11  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.9300 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.9300	Basin 11	A			

Comment:

Manual Basin: Basin 12

Scenario: Pre-Permit Conditions  
 Node: Pond 12  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1100	Basin 12	A			

Comment:

Manual Basin: Basin 13

Scenario: Pre-Permit Conditions  
 Node: Pond 13  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.3200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.3200	Basin 13	A			

Comment:

Manual Basin: Basin 14

Scenario: Pre-Permit Conditions



Node: Pond 14  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6800 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6800	Basin 14	A			

Comment:

Manual Basin: Basin 15

Scenario: Pre-Permit Conditions  
 Node: Pond 15  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6000	Basin 15	A			

Comment:

Manual Basin: Basin 16

Scenario: Pre-Permit Conditions  
 Node: Pond 16  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 4.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
4.0200	Basin 16	A			

Comment:

Manual Basin: Basin 17

Scenario: Pre-Permit Conditions  
 Node: Pond 17  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0900	Basin 17	A			

Comment:

Manual Basin: Basin 18

Scenario: Pre-Permit Conditions  
 Node: Pond 18  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7600 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7600	Basin 18	A			

Comment:

Manual Basin: Basin 19

Scenario: Pre-Permit Conditions

Node: Pond 19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.8100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8100	Basin 19	A			

Comment:

Manual Basin: Basin 2

Scenario: Pre-Permit Conditions  
 Node: Pond 2  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0200	Basin 2	A			

Comment:

Manual Basin: Basin 3

Scenario: Pre-Permit Conditions  
 Node: Pond 3  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.4400 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.4400	Basin 3	A			

Comment:

Manual Basin: Basin 4

Scenario: Pre-Permit Conditions  
 Node: Pond 4  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.7700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.7700	Basin 4	A			

Comment:

Manual Basin: Basin 5

Scenario: Pre-Permit Conditions  
 Node: Pond 5  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.5900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5900	Basin 5	A			

Comment:

Manual Basin: Basin 6

Scenario: Pre-Permit Conditions

Node: Pond 6  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0000	Basin 6	A			

Comment:

Manual Basin: Basin 7

Scenario: Pre-Permit Conditions  
 Node: Pond 7  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.7100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.7100	Basin 7	A			

Comment:

Manual Basin: Basin 8

Scenario: Pre-Permit Conditions  
 Node: Pond 8  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7400 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7400	Basin 8	A			

Comment:

Manual Basin: Basin 9

Scenario: Pre-Permit Conditions  
 Node: Pond 9  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.9900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9900	Basin 9	A			

Comment:

Node: Pond 1

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.81	0.0000	0
14.37	0.0500	2178

Comment:

Node: Pond 10

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.2500	10890
6.00	0.3200	13939
6.50	0.3800	16553

Comment:

**Node: Pond 11**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.5500	23958
6.00	0.6400	27878
6.50	0.7100	30928

Comment:

**Node: Pond 12**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.00	0.0500	2178
5.50	0.3000	13068

Comment:

**Node: Pond 13**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.50	0.0100	436
6.00	0.3200	13939
6.60	0.5300	23087

Comment:

**Node: Pond 14**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.0100	436
6.00	0.3100	13504
6.90	0.3700	16117

Comment:

**Node: Pond 15**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.22	0.0000	0
6.00	0.1600	6970
7.00	0.4400	19166

Comment: Pond 15 has been filled since pre-permit conditions. Pond 15 areas from permit no. 148413-1

**Node: Pond 16**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft



Stage [ft]	Area [ac]	Area [ft2]
4.00	0.0900	3920
5.00	0.6100	26572
6.00	1.1400	49658

Comment: Pond 16 has been combined with Pond 17 since pre-permit conditions. Pond 16 areas from permit no. 148413-1

**Node: Pond 17**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.00	0.5000	21780
4.00	0.7500	32670
5.00	0.9400	40946

Comment: Pond 16 and 17 have been combined since pre-permit conditions. Pond 17 areas from permit no. 148413-1

**Node: Pond 18**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.57 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.3500	15246
6.00	0.3900	16988
6.20	0.4100	17860

Comment:

**Node: Pond 19**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.00	0.0200	871
7.00	0.0300	1307
8.00	0.0500	2178
9.00	0.0800	3485

Comment: Pond 9 has been combined with Pond 19 since pre-permit conditions. Pond 19 areas from permit no. 148413-1

**Node: Pond 2**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.1300	5663
6.00	0.8800	38333
6.40	1.0200	44431

Comment:

**Node: Pond 3**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.90	0.6100	26572
6.00	0.9300	40511
6.60	1.1600	50530

Comment:

**Node: Pond 4**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.90	0.0000	0
6.00	1.2900	56192
7.00	2.3000	100188

Comment: Pond 4 and 5 were reconfigured since pre-permit conditions. Pre-permit Pond 4 areas from permit no. 148413-1

**Node: Pond 5**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.91	0.0000	0
4.00	0.0500	2178
5.00	0.3200	13939
6.00	0.7500	32670
7.00	0.9300	40511

Comment: Pond 4 and 5 were reconfigured since pre-permit conditions. Pre-permit Pond 5 areas from permit no. 148413-1

**Node: Pond 6**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.30	0.0000	0
6.00	0.1800	7841
7.00	0.2200	9583

Comment:

**Node: Pond 7**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs

Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.0400	1742
6.00	0.2000	8712
7.00	0.2900	12632

Comment: Pond 7 has been removed since pre-permit conditions. Pre-permit Pond 7 areas from permit no. 148413-1

**Node: Pond 8**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.0300	1307
6.00	0.3700	16117
7.00	0.4800	20909

Comment:

**Node: Pond 9**

Scenario: Pre-Permit Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 2.10 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
2.10	0.0000	0
4.00	0.0900	3920
5.00	0.2700	11761
6.00	0.3700	16117
7.00	0.5400	23522

Comment: Pond 9 has been combined with Pond 19 since pre-permit conditions. Pond 9 areas from permit no. 148413-1

**Node: TW-E**

Scenario: Pre-Permit Conditions

Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

Node: TW-W

Scenario: Pre-Permit Conditions  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

Curve Number: Composite CN-Pre-Permit Conditions [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Basin 1	A	92.0
Basin 10	A	89.0
Basin 11	A	82.0
Basin 12	A	91.0
Basin 13	A	85.0
Basin 14	A	85.0
Basin 15	A	86.0
Basin 16	A	83.0
Basin 17	A	88.0
Basin 18	A	87.0

Land Cover Zone	Soil Zone	Curve Number [dec]
Basin 19	A	94.0
Basin 2	A	85.0
Basin 3	A	88.0
Basin 4	A	88.0
Basin 5	A	84.0
Basin 6	A	89.0
Basin 7	A	85.0
Basin 8	A	86.0
Basin 9	A	84.0

Drop Structure Link: CS 4		Upstream Pipe	Downstream Pipe
Scenario:	Pre-Permit	Invert: 4.80 ft	Invert: 4.65 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 4	Geometry: Circular	Geometry: Circular
To Node:	Pond 5	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Link Count:	1	Bottom Clip	
Flow Direction:	None	Default: 0.00 ft	Default: 0.00 ft
Solution:	Combine	Op Table:	Op Table:
Increments:	0	Ref Node:	Ref Node:
Pipe Count:	1	Manning's N: 0.0000	Manning's N: 0.0000
Damping:	0.0000 ft	Top Clip	
Length:	30.00 ft	Default: 0.00 ft	Default: 0.00 ft
FHWA Code:	1	Op Table:	Op Table:
Entr Loss Coef:	0.50	Ref Node:	Ref Node:
Exit Loss Coef:	1.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Loss Coef:	0.00		
Bend Location:	0.00 dec		
Energy Switch:	Energy		

Pipe Comment:

Weir Component	
Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Rectangular
Invert:	6.12 ft
Control Elevation:	6.12 ft
Max Depth:	999.00 ft
Max Width:	3.00 ft
Fillet:	0.00 ft
Bottom Clip	
Default: 0.00 ft	
Op Table:	
Ref Node:	
Top Clip	
Default: 0.00 ft	
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default: 3.200	
Weir Table:	
Orifice Default: 0.600	
Orifice Table:	

Weir Comment:

Weir Component	
Weir: 2	Bottom Clip
Weir Count: 1	Default: 0.00 ft
Weir Flow Direction: Both	Op Table:
Damping: 0.0000 ft	Ref Node:
Weir Type: Horizontal	Top Clip
Geometry Type: Rectangular	Default: 0.00 ft
Invert: 7.50 ft	Op Table:
Control Elevation: 7.50 ft	Ref Node:
Max Depth: 3.00 ft	Discharge Coefficients
Max Width: 2.00 ft	Weir Default: 3.200
Fillet: 0.00 ft	Weir Table:
	Orifice Default: 0.600
	Orifice Table:
Weir Comment:	

Drop Structure Comment:

Pipe Link: Pipe 1	Upstream	Downstream
Scenario: Pre-Permit	Invert: 10.10 ft	Invert: 9.98 ft
Conditions	Manning's N: 0.0130	Manning's N: 0.0130
From Node: Pond 1	Geometry: Circular	Geometry: Circular
To Node: Pond 2	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count: 1	Bottom Clip	
Flow Direction: Both	Default: 0.00 ft	Default: 0.00 ft
Damping: 0.0000 ft	Op Table:	Op Table:
Length: 72.00 ft	Ref Node:	Ref Node:
FHWA Code: 5	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef: 0.50	Top Clip	
Exit Loss Coef: 1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef: 0.00	Op Table:	Op Table:
Bend Location: 0.00 dec	Ref Node:	Ref Node:
Energy Switch: Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:		

Pipe Link: Pipe 10A	Upstream	Downstream
Scenario: Pre-Permit	Invert: 2.81 ft	Invert: 2.00 ft
Conditions	Manning's N: 0.0130	Manning's N: 0.0130
From Node: Pond 10	Geometry: Circular	Geometry: Circular
To Node: TW-W	Max Depth: 3.00 ft	Max Depth: 3.00 ft
Link Count: 1	Bottom Clip	
Flow Direction: Both	Default: 0.00 ft	Default: 0.00 ft
Damping: 0.0000 ft	Op Table:	Op Table:
Length: 93.00 ft	Ref Node:	Ref Node:
FHWA Code: 1	Manning's N: 0.0000	Manning's N: 0.0000

Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:			

Pipe Link: Pipe 10B		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 2.57 ft	Invert: 2.00 ft
Conditions		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 10	Geometry: Circular	Geometry: Circular
To Node:	TW-W	Max Depth: 3.00 ft	Max Depth: 3.00 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	93.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:			

Pipe Link: Pipe 11		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 4.79 ft	Invert: 4.33 ft
Conditions		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 11	Geometry: Circular	Geometry: Circular
To Node:	Pond 12	Max Depth: 1.25 ft	Max Depth: 1.25 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	50.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:			

Pipe Link: Pipe 12		Upstream	Downstream
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Scenario:	Pre-Permit	Invert: 2.91 ft	Invert: 1.92 ft
Conditions		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 12	Geometry: Circular	Geometry: Circular
To Node:	Pond 18	Max Depth: 1.75 ft	Max Depth: 1.75 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	69.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:			

Pipe Link: Pipe 13		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 2.90 ft	Invert: 2.06 ft
Conditions		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 13	Geometry: Circular	Geometry: Circular
To Node:	Pond 17	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	56.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:			

Pipe Link: Pipe 14		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 4.88 ft	Invert: 4.00 ft
Conditions		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 14	Geometry: Circular	Geometry: Circular
To Node:	Pond 16	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	90.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft

Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N:	0.0000
		Manning's N:	0.0000

Comment:

Pipe Link: Pipe 15		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 4.22 ft	Invert: 3.81 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 15	Geometry: Circular	Geometry: Circular
To Node:	Pond 13	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	56.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 3		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 4.48 ft	Invert: 4.75 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 3	Geometry: Circular	Geometry: Circular
To Node:	Pond 2	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	53.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000

Comment: as per permit 149413-1:flow is assumed to flow the opposite direction that the pipe invert suggests and exit the project site from bas

Pipe Link: Pipe 4		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 4.94 ft	Invert: 4.75 ft

Conditions	Manning's N: 0.0130	Manning's N: 0.0130
From Node: Pond 4	Geometry: Circular	Geometry: Circular
To Node: Pond 5	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count: 1	Bottom Clip	
Flow Direction: Both	Default: 0.00 ft	Default: 0.00 ft
Damping: 0.0000 ft	Op Table:	Op Table:
Length: 23.00 ft	Ref Node:	Ref Node:
FHWA Code: 1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef: 0.50	Top Clip	
Exit Loss Coef: 1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef: 0.00	Op Table:	Op Table:
Bend Location: 0.00 dec	Ref Node:	Ref Node:
Energy Switch: Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment: as per permit 149413-1:entrance loss coefficient assume as a square edge 0.5		

Pipe Link: Pipe 5	Upstream	Downstream
Scenario: Pre-Permit	Invert: 3.91 ft	Invert: 3.53 ft
Conditions	Manning's N: 0.0130	Manning's N: 0.0130
From Node: Pond 5	Geometry: Circular	Geometry: Circular
To Node: Pond 8	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Link Count: 1	Bottom Clip	
Flow Direction: Both	Default: 0.00 ft	Default: 0.00 ft
Damping: 0.0000 ft	Op Table:	Op Table:
Length: 44.00 ft	Ref Node:	Ref Node:
FHWA Code: 1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef: 0.50	Top Clip	
Exit Loss Coef: 1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef: 0.00	Op Table:	Op Table:
Bend Location: 0.00 dec	Ref Node:	Ref Node:
Energy Switch: Energy	Manning's N: 0.0000	Manning's N: 0.0000
Comment:		

Pipe Link: Pipe 6	Upstream	Downstream
Scenario: Pre-Permit	Invert: 6.23 ft	Invert: 6.04 ft
Conditions	Manning's N: 0.0130	Manning's N: 0.0130
From Node: Pond 6	Geometry: Circular	Geometry: Circular
To Node: Pond 7	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count: 1	Bottom Clip	
Flow Direction: Both	Default: 0.00 ft	Default: 0.00 ft
Damping: 0.0000 ft	Op Table:	Op Table:
Length: 53.00 ft	Ref Node:	Ref Node:
FHWA Code: 1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef: 0.50	Top Clip	
Exit Loss Coef: 1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef: 0.00	Op Table:	Op Table:

Bend Location: 0.00 dec                      Ref Node:                      Ref Node:  
 Energy Switch: Energy                      Manning's N: 0.0000                      Manning's N: 0.0000

Comment:

Pipe Link: Pipe 7		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 6.31 ft	Invert: 5.08 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 7	Geometry: Circular	Geometry: Circular
To Node:	Pond 5	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	41.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 8		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 0.88 ft	Invert: 0.89 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 8	Geometry: Circular	Geometry: Circular
To Node:	Pond 9	Max Depth: 3.00 ft	Max Depth: 3.00 ft
Link Count:	1	Bottom Clip	
Flow Direction:	Both	Default: 0.00 ft	Default: 0.00 ft
Damping:	0.0000 ft	Op Table:	Op Table:
Length:	50.00 ft	Ref Node:	Ref Node:
FHWA Code:	1	Manning's N: 0.0000	Manning's N: 0.0000
Entr Loss Coef:	0.50	Top Clip	
Exit Loss Coef:	1.00	Default: 0.00 ft	Default: 0.00 ft
Bend Loss Coef:	0.00	Op Table:	Op Table:
Bend Location:	0.00 dec	Ref Node:	Ref Node:
Energy Switch:	Energy	Manning's N: 0.0000	Manning's N: 0.0000

Comment: as per permit 149413-1:existing pipe

Pipe Link: Pipe 9A		Upstream	Downstream
Scenario:	Pre-Permit	Invert: 2.10 ft	Invert: 2.00 ft
Conditions:		Manning's N: 0.0130	Manning's N: 0.0130
From Node:	Pond 9	Geometry: Circular	Geometry: Circular

To Node:	TW-E	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:		Op Table:	
Length:	89.00 ft	Ref Node:		Ref Node:	
FHWA Code:	1	Manning's N:	0.0000	Manning's N:	0.0000
Entr Loss Coef:	0.50	Top Clip			
Exit Loss Coef:	1.00	Default:	0.00 ft	Default:	0.00 ft
Bend Loss Coef:	0.00	Op Table:		Op Table:	
Bend Location:	0.00 dec	Ref Node:		Ref Node:	
Energy Switch:	Energy	Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link: Pipe 9B		Upstream		Downstream	
Scenario:	Pre-Permit Conditions	Invert:	2.12 ft	Invert:	2.00 ft
From Node:	Pond 9	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	TW-E	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	89.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Weir Link: Weir 10		Bottom Clip			
Scenario:	Pre-Permit Conditions	Default:	0.00 ft		
From Node:	Pond 10	Op Table:			
To Node:	TW-W	Ref Node:			
Link Count:	1	Top Clip			
Flow Direction:	Both	Default:	0.00 ft		
Damping:	0.0000 ft	Op Table:			
Weir Type:	Sharp Crested Vertical	Ref Node:			
Geometry Type:	Rectangular	Discharge Coefficients			
Invert:	3.00 ft	Weir Default:	3.200		
Control Elevation:	3.00 ft	Weir Table:			
Max Depth:	999.00 ft	Orifice Default:	0.600		
Max Width:	278.30 ft	Orifice Table:			
Fillet:	0.00 ft				
Comment: as per permit 149413-1:weir 10 consist of concrete spillway 5.87' wide conveying water from basin 10 to pipes 10A to					

10B  
original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, the weir has been modeled as a sharp crested, vertical weir

Weir Link: Weir 15	
Scenario: Pre-Permit Conditions	Bottom Clip
From Node: Pond 15	Default: 0.00 ft
To Node: Pond 13	Op Table:
Link Count: 1	Ref Node:
Flow Direction: Both	Top Clip
Damping: 0.0000 ft	Default: 0.00 ft
Weir Type: Sharp Crested Vertical	Op Table:
Geometry Type: Rectangular	Ref Node:
Invert: 6.90 ft	Discharge Coefficients
Control Elevation: 6.90 ft	Weir Default: 3.200
Max Depth: 999.00 ft	Weir Table:
Max Width: 19.50 ft	Orifice Default: 0.600
Fillet: 0.00 ft	Orifice Table:

Comment: as per permit 149413-1:weir 15 consists of overtopping the ridge between basins 15 and 13 along the north side of basin 15

Weir Link: Weir 16	
Scenario: Pre-Permit Conditions	Bottom Clip
From Node: Pond 16	Default: 0.00 ft
To Node: TW-W	Op Table:
Link Count: 1	Ref Node:
Flow Direction: Both	Top Clip
Damping: 0.0000 ft	Default: 0.00 ft
Weir Type: Sharp Crested Vertical	Op Table:
Geometry Type: Rectangular	Ref Node:
Invert: 4.50 ft	Discharge Coefficients
Control Elevation: 4.50 ft	Weir Default: 3.200
Max Depth: 999.00 ft	Weir Table:
Max Width: 323.50 ft	Orifice Default: 0.600
Fillet: 0.00 ft	Orifice Table:

Comment: as per permit 149413-1:weir 16 will be assumed as sheet flow. flow across the boundary determined to be 4.5 feet  
original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, overland flow has been modeled as a sharp crested, vertical weir

Weir Link: Weir 17

Scenario:	Pre-Permit Conditions	
From Node:	Pond 17	Bottom Clip
To Node:	TW-W	Default: 0.00 ft
Link Count:	1	Op Table:
Flow Direction:	Both	Ref Node:
Damping:	0.0000 ft	Top Clip
Weir Type:	Sharp Crested Vertical	Default: 0.00 ft
Geometry Type:	Rectangular	Op Table:
Invert:	3.50 ft	Ref Node:
Control Elevation:	3.50 ft	Discharge Coefficients
Max Depth:	999.00 ft	Weir Default: 3.200
Max Width:	506.90 ft	Weir Table:
Fillet:	0.00 ft	Orifice Default: 0.600
		Orifice Table:

Comment: as per permit 149413-1:weir 17-overflow across boundary at elevation 3.5  
 original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, overland flow has been modeled as a sharp crested, vertical weir

**Weir Link: Weir 18**

Scenario:	Pre-Permit Conditions	Bottom Clip
From Node:	Pond 18	Default: 0.00 ft
To Node:	TW-W	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Rectangular	Ref Node:
Invert:	3.00 ft	Discharge Coefficients
Control Elevation:	3.00 ft	Weir Default: 3.200
Max Depth:	999.00 ft	Weir Table:
Max Width:	278.30 ft	Orifice Default: 0.600
Fillet:	0.00 ft	Orifice Table:

Comment: as per permit 149413-1:weir 18 will be assumed as sheet flow. flow across the boundary determined to be 2.5 feet  
 original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, overland flow has been modeled as a sharp crested, vertical weir

**Weir Link: Weir 19**

Scenario:	Pre-Permit Conditions	Bottom Clip
From Node:	Pond 19	Default: 0.00 ft
To Node:	Pond 9	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:

Geometry Type:	Rectangular	
Invert:	6.79 ft	Ref Node:
Control Elevation:	6.79 ft	Discharge Coefficients
Max Depth:	999.00 ft	Weir Default:
Max Width:	2.20 ft	Weir Table:
Fillet:	0.00 ft	Orifice Default:
		Orifice Table:

Comment: as per permit 149413-1:weir 19 consists of 2.2' wide concrete spillway from basin 19 to 9

Weir Link: Weir 2

Scenario:	Pre-Permit Conditions	Bottom Clip
From Node:	Pond 2	Default:
To Node:	Pond 4	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default:
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Rectangular	Ref Node:
Invert:	7.50 ft	Discharge Coefficients
Control Elevation:	7.50 ft	Weir Default:
Max Depth:	999.00 ft	Weir Table:
Max Width:	216.40 ft	Orifice Default:
Fillet:	0.00 ft	Orifice Table:

Comment: as per permit 149413-1:weir 2 consist of overtopping the road between basins 2 and 4 along the western side of basin 2  
original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, overland flow has been modeled as a sharp crested, veritcal weir

Weir Link: Weir 3

Scenario:	Pre-Permit Conditions	Bottom Clip
From Node:	Pond 3	Default:
To Node:	Pond 4	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default:
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Rectangular	Ref Node:
Invert:	7.50 ft	Discharge Coefficients
Control Elevation:	7.50 ft	Weir Default:
Max Depth:	999.00 ft	Weir Table:
Max Width:	244.80 ft	Orifice Default:
Fillet:	0.00 ft	Orifice Table:

Comment: as per permit 149413-1:weir 3 consists of overtopping the road between basins 3 nand 4 along the southwest side



original permit (149413-1) modeled as a horizontal/rectangular weir. for the purposes of these calcs, overland flow has been modeled as a sharp crested, vertical weir

Simulation: 010YR-24HR

Scenario: Pre-Permit Conditions  
 Run Date/Time: 10/8/2021 11:19:08 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite  
 CN-Pre-Permit

Conditions

Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	OF Region Rain Opt: Global
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FLMOD
	Rainfall Amount: 7.50 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area 100 ft2	Min Node Srf Area 100 ft2
(2D):	(1D):
Energy Switch (2D): Energy	Energy Switch (1D): Energy

Comment:

Simulation: 025YR-024HR

Scenario: Pre-Permit Conditions  
 Run Date/Time: 10/8/2021 11:20:09 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite  
 CN-Pre-Permit Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight: 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft  
 Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr  
 ET for Manual Basins: False  
 Smp/Man Basin Rain Opt: Global  
 OF Region Rain Opt: Global  
 Rainfall Name: ~FLMOD  
 Rainfall Amount: 9.50 in  
 Storm Duration: 24.0000 hr

Dflt Damping (2D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (2D):  
 Energy Switch (2D): Energy

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (1D):  
 Energy Switch (1D): Energy

Comment:

Simulation: 100YR-24HR

Scenario: Pre-Permit Conditions  
 Run Date/Time: 10/8/2021 11:21:37 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:	Boundary Stage Set:
Reference ET Folder:	Extern Hydrograph Set:
Unit Hydrograph Folder:	Curve Number Set: Composite CN-Pre-Permit Conditions
	Green-Ampt Set:
	Vertical Layers Set:
	Impervious Set: Composite CN
	Roughness Set:
	Crop Coef Set:
	Fillable Porosity Set:
	Conductivity Set:
	Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight Fact: 0.5 dec	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Opt: Global
Max dZ: 1.0000 ft	OF Region Rain Opt: Global
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FLMOD
Edge Length Option: Automatic	Rainfall Amount: 13.00 in
	Storm Duration: 24.0000 hr
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2	Min Node Srf Area (1D): 100 ft2
Energy Switch (2D): Energy	Energy Switch (1D): Energy

Comment:

Simulation: 2.33YR-24HR

Scenario: Pre-Permit Conditions  
 Run Date/Time: 10/8/2021 11:23:59 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics	Groundwater [sec]

	[sec]		
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
Reference ET Folder:  
Unit Hydrograph  
Folder:

Lookup Tables

Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: Composite  
CN-Pre-Permit  
Conditions  
  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Composite CN  
Roughness Set:  
Crop Coef Set:  
Fillable Porosity Set:  
Conductivity Set:  
Leakage Set:

Tolerances & Options

Time Marching: SAOR  
Max Iterations: 6  
Over-Relax Weight 0.5 dec  
Fact:  
dZ Tolerance: 0.0010 ft  
  
Max dZ: 1.0000 ft

IA Recovery Time: 24.0000 hr  
ET for Manual Basins: False  
  
Smp/Man Basin Rain Global  
Opt:  
OF Region Rain Opt: Global

Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
Edge Length Option:	Automatic	Rainfall Amount:	5.00 in
		Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area	100 ft2	Min Node Srf Area	100 ft2
(2D):		(1D):	
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

# Section 3

## Existing Conditions Calculations and ICPR Routing



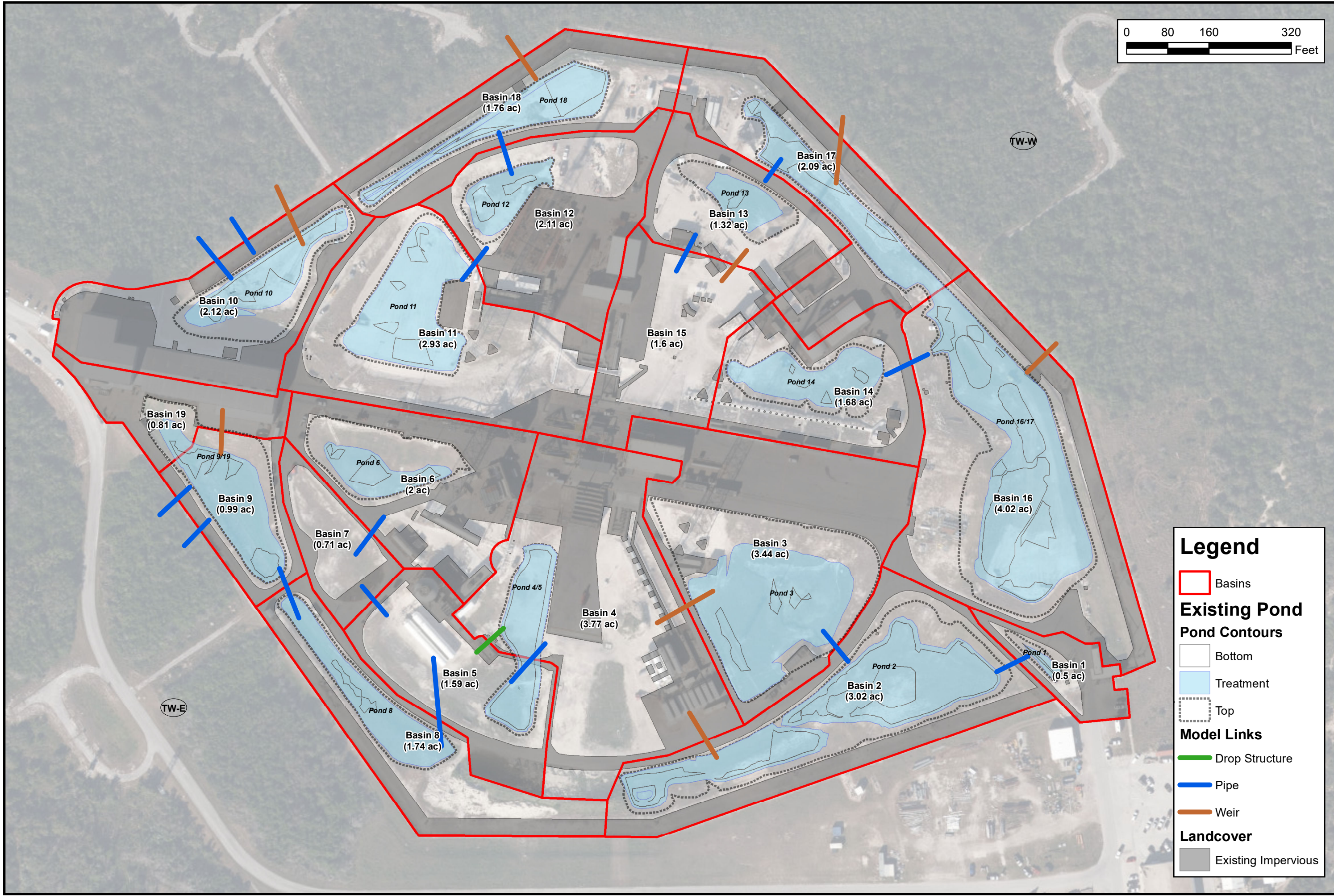


SLC 40  
 MASTER PERMIT

Existing Drainage Map

DATE:	OCTOBER 2021
DESIGN:	TS
DRAWN:	TS
CHECKED:	BS
KH NO.:	145253005

Y:\DEN\_Aerospace\SpaceX\1742623005 - SLC 40 Master Drainage Permit\CADD\GIS\Maps\3 Existing Drainage Map.mxd



EXISTING BASIN AREA SUMMARY

Table 1

Basin ID	Receiving Node ID	Total Basin Area (ac)	IMPERVIOUS AREAS		PERVIOUS AREAS	
			Existing Impervious Area (ac)	Existing Impervious (%)	Existing Pervious Area (ac)	Existing Pervious (%)
1	Pond 1	0.50	0.34	68.0%	0.16	32.0%
2	Pond 2	3.02	0.90	29.8%	2.12	70.2%
3	Pond 3	3.44	1.68	48.8%	1.76	51.2%
4	Pond 4/5	3.77	1.78	47.2%	1.99	52.8%
5	Pond 4/5	1.59	0.56	35.2%	1.03	64.8%
6	Pond 6	2.00	0.92	46.0%	1.08	54.0%
7	Pond 9	0.71	0.28	39.4%	0.43	60.6%
8	Pond 8	1.74	0.64	36.8%	1.10	63.2%
9	Pond 9	0.99	0.25	25.3%	0.74	74.7%
10	Pond 10	2.12	1.10	51.9%	1.02	48.1%
11	Pond 11	2.93	0.63	21.5%	2.30	78.5%
12	Pond 12	2.11	1.32	62.6%	0.79	37.4%
13	Pond 13	1.32	0.47	35.6%	0.85	64.4%
14	Pond 14	1.68	0.58	34.5%	1.10	65.5%
15	Pond 13	1.60	0.69	43.1%	0.91	56.9%
16	Pond 17	4.02	0.82	20.4%	3.20	79.6%
17	Pond 17	2.09	0.90	43.1%	1.19	56.9%
18	Pond 18	1.76	0.74	42.0%	1.02	58.0%
19	Pond 19	0.81	0.65	80.2%	0.16	19.8%
TOTAL:		38.20	15.25		22.95	

**EXISTING HYDROLOGIC DATA**

Table 2

Basin ID	Receiving Node ID	Total Basin Area (ac)	Existing		Weighted Runoff CN	Time of Conc. (min)
			Impervious Area (ac)	Pervious Area (ac)		
1	Pond 1	0.50	0.34	0.16	92	15.00
2	Pond 2	3.02	0.90	2.12	85	15.00
3	Pond 3	3.44	1.68	1.76	88	15.00
4	Pond 4/5	3.77	1.78	1.99	88	15.00
5	Pond 4/5	1.59	0.56	1.03	86	15.00
6	Pond 6	2.00	0.92	1.08	88	15.00
7	Pond 9/19	0.71	0.28	0.43	86	15.00
8	Pond 8	1.74	0.64	1.10	86	15.00
9	Pond 9/19	0.99	0.25	0.74	84	15.00
10	Pond 10	2.12	1.10	1.02	89	15.00
11	Pond 11	2.93	0.63	2.30	83	15.00
12	Pond 12	2.11	1.32	0.79	91	15.00
13	Pond 13	1.32	0.47	0.85	86	15.00
14	Pond 14	1.68	0.58	1.10	86	15.00
15	Pond 13	1.60	0.69	0.91	87	15.00
16	Pond 16/17	4.02	0.82	3.20	83	15.00
17	Pond 16/17	2.09	0.90	1.19	87	15.00
18	Pond 18	1.76	0.74	1.02	87	15.00
19	Pond 9/19	0.81	0.65	0.16	94	15.00

Notes:

Impervious CN= 98

Pervious CN= 79

**EXISTING POND STAGE-STORAGE**

Table 3

POND 1	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	10.81	0.00	0.00
Top of Bank Elevation	14.37	0.05	0.09

POND 2	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	5.00	0.13	0.00
Water Quality Elevation (Existing)	5.50	0.51	0.16
Water Quality Elevation (Future)	6.20	0.95	0.69
Top of Bank Elevation	6.40	1.02	0.89

POND 3	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	4.90	0.61	0.00
Water Quality Elevation (Existing)	5.50	0.78	0.42
Water Quality Elevation at 6	6.00	0.93	0.84
Water Quality Elevation (Future)	6.20	1.01	1.04
Top of Bank Elevation	6.60	1.16	1.47

POND 4/5	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	5.80	0.04	0.00
Water Quality Elevation (Future)	6.20	0.36	0.11
Top of Bank Elevation	7.00	0.48	0.44

POND 6	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	5.30	0.00	0.00
Water Quality Elevation (Existing)	5.50	0.05	0.01
Water Quality Elevation (Future)	6.20	0.19	0.10
Top of Bank Elevation	7.00	0.22	0.26

POND 8	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	5.00	0.03	0.00
Water Quality Elevation (Existing)	5.50	0.20	0.06
Water Quality Elevation (Future)	6.20	0.39	0.27
Top of Bank Elevation	7.00	0.48	0.62

POND 9/19	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	0.24	0.00
Water Quality Elevation (Future)	6.20	0.47	0.27
Top of Bank Elevation	6.70	0.51	0.51

**EXISTING POND STAGE-STORAGE**

Table 3

POND 10	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	0.25	0.00
Water Quality Elevation (Future)	6.20	0.34	0.21
Top of Bank Elevation	6.50	0.38	0.31

POND 11	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	0.55	0.00
Water Quality Elevation (Future)	6.20	0.67	0.43
Top of Bank Elevation	6.50	0.71	0.63

POND 12	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	4.00	0.05	0.00
Water Quality Elevation (Existing)	5.50	0.30	0.26
Water Quality Elevation (Future)	5.50	0.30	0.26

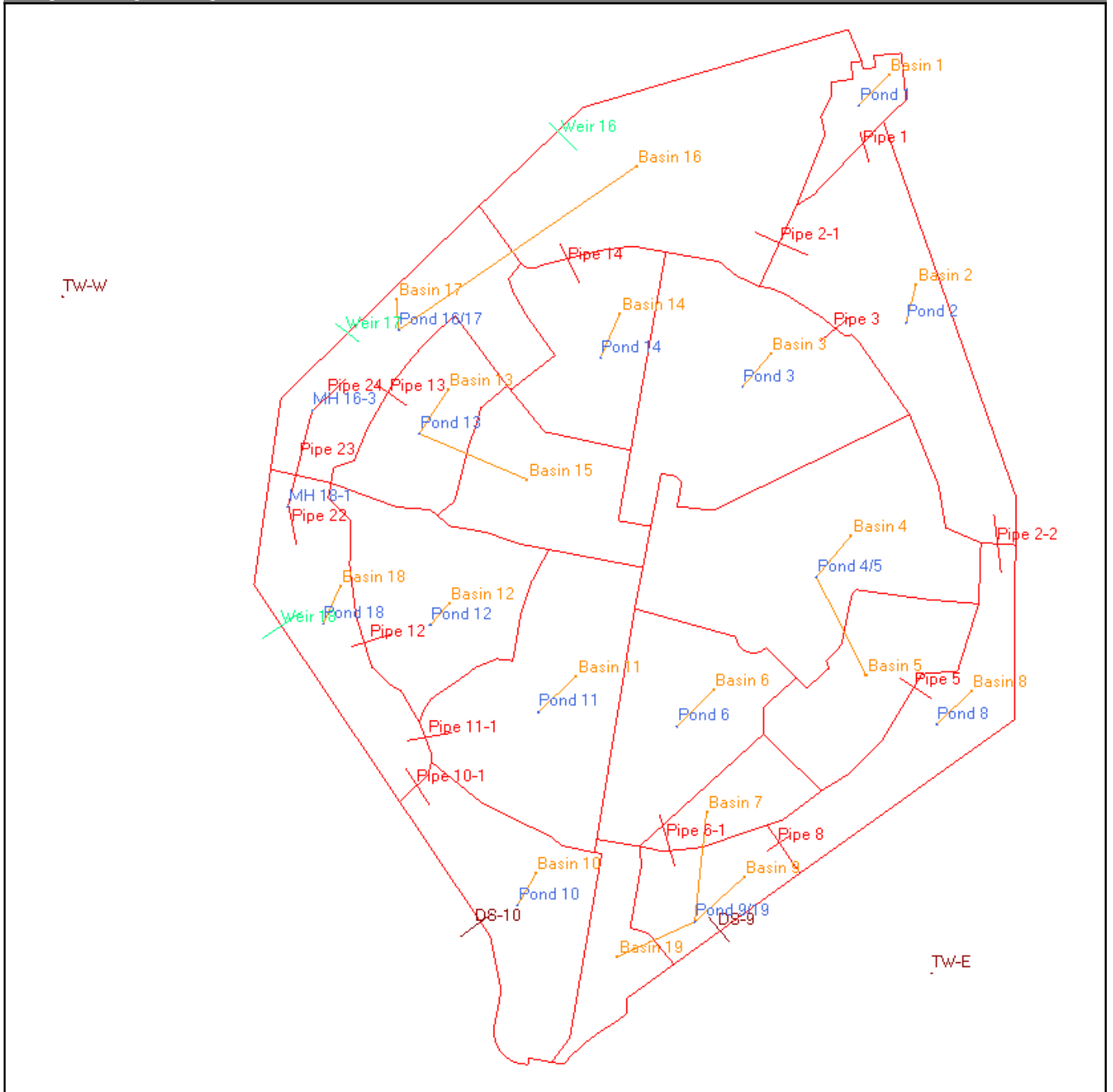
POND 13	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Bottom Elevation	3.50	0.01	0.00
Water Quality Elevation (Existing)	5.50	0.26	0.27
Water Quality Elevation (Future)	6.20	0.39	0.49
Top of Bank Elevation	6.60	0.53	0.67

POND 14	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	0.01	0.00
Water Quality Elevation at 6	6.00	0.31	0.08
Water Quality Elevation (Future)	6.20	0.32	0.14
Top of Bank Elevation	6.90	0.37	0.39

POND 16/17	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	1.40	0.00
Water Quality Elevation (Future)	6.20	1.58	1.04
Top of Bank Elevation	6.30	1.60	1.20

POND 18	Stage (ft-NAVD)	Area (acres)	Volume (ac-ft)
Water Quality Elevation (Existing)	5.50	0.35	0.00
Water Quality Elevation (Future)	6.20	0.41	0.27
Top of Bank Elevation	6.20	0.41	0.27

Background Image: Existing



## Existing Conditions Node Maximum Summary

1

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Existing Conditions	010YR-24HR	MH 16-3	6.34	12.4262	12.34	0.0000
Existing Conditions	010YR-24HR	MH 18-1	6.33	12.4455	53.67	0.0000
Existing Conditions	010YR-24HR	Pond 1	11.00	12.0928	2.08	12.0832
Existing Conditions	010YR-24HR	Pond 10	6.10	12.2872	11.33	12.1000
Existing Conditions	010YR-24HR	Pond 11	6.43	12.5225	10.73	12.0835
Existing Conditions	010YR-24HR	Pond 12	6.50	12.4156	11.00	0.0000
Existing Conditions	010YR-24HR	Pond 13	6.50	12.4384	13.55	0.0000
Existing Conditions	010YR-24HR	Pond 14	6.48	12.5009	6.46	12.0832
Existing Conditions	010YR-24HR	Pond 16/17	6.35	12.4447	32.45	12.1169
Existing Conditions	010YR-24HR	Pond 18	6.32	12.4390	16.15	12.3227
Existing Conditions	010YR-24HR	Pond 2	6.76	13.1034	19.00	12.1000
Existing Conditions	010YR-24HR	Pond 3	6.77	13.1828	15.46	12.0832
Existing Conditions	010YR-24HR	Pond 4/5	7.08	12.5858	21.05	12.0832
Existing Conditions	010YR-24HR	Pond 6	7.06	12.5430	7.92	12.0832
Existing Conditions	010YR-24HR	Pond 8	6.98	12.6605	43.96	0.0000
Existing Conditions	010YR-24HR	Pond 9/19	6.97	12.6572	16.01	12.1459
Existing Conditions	010YR-24HR	TW-E	5.00	15.9998	12.20	12.6588
Existing Conditions	010YR-24HR	TW-W	5.00	15.9998	49.16	12.4162
Existing Conditions	025YR-024HR	MH 16-3	6.44	12.3896	12.34	0.0000
Existing Conditions	025YR-024HR	MH 18-1	6.42	12.3708	53.67	0.0000
Existing Conditions	025YR-024HR	Pond 1	11.14	12.0967	2.67	12.0833
Existing Conditions	025YR-024HR	Pond 10	6.21	12.2365	14.59	12.0836
Existing Conditions	025YR-024HR	Pond 11	6.64	12.4807	14.30	12.0833
Existing Conditions	025YR-024HR	Pond 12	6.76	12.3808	11.17	12.0833
Existing Conditions	025YR-024HR	Pond 13	6.73	12.4108	14.85	12.0833
Existing Conditions	025YR-024HR	Pond 14	6.71	12.4575	8.50	12.0833
Existing Conditions	025YR-024HR	Pond 16/17	6.44	12.3651	45.70	12.1176
Existing Conditions	025YR-024HR	Pond 18	6.41	12.3643	22.40	12.3297
Existing Conditions	025YR-024HR	Pond 2	7.05	12.9518	23.70	12.0997

## Existing Conditions Node Maximum Summary

2

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Existing Conditions	025YR-024HR	Pond 3	7.07	13.0556	19.13	12.0833
Existing Conditions	025YR-024HR	Pond 4/5	7.51	12.4819	27.50	12.0833
Existing Conditions	025YR-024HR	Pond 6	7.37	12.4383	10.32	12.0833
Existing Conditions	025YR-024HR	Pond 8	7.26	12.5354	43.96	0.0000
Existing Conditions	025YR-024HR	Pond 9/19	7.17	12.4961	24.93	12.3977
Existing Conditions	025YR-024HR	TW-E	5.00	16.0000	24.41	12.4969
Existing Conditions	025YR-024HR	TW-W	5.00	16.0000	71.09	12.3452
Existing Conditions	100YR-24HR	MH 16-3	6.56	12.3055	12.34	0.0000
Existing Conditions	100YR-24HR	MH 18-1	6.54	12.3107	53.67	0.0000
Existing Conditions	100YR-24HR	Pond 1	11.38	12.1043	3.69	12.0832
Existing Conditions	100YR-24HR	Pond 10	6.37	12.2169	19.43	12.0834
Existing Conditions	100YR-24HR	Pond 11	6.98	12.4836	20.49	12.0834
Existing Conditions	100YR-24HR	Pond 12	7.18	12.3846	15.52	12.0832
Existing Conditions	100YR-24HR	Pond 13	7.10	12.4170	20.96	12.0832
Existing Conditions	100YR-24HR	Pond 14	7.08	12.4635	12.02	12.0832
Existing Conditions	100YR-24HR	Pond 16/17	6.57	12.2965	66.02	12.1167
Existing Conditions	100YR-24HR	Pond 18	6.53	12.3146	30.90	12.3107
Existing Conditions	100YR-24HR	Pond 2	7.50	12.8109	31.57	12.0834
Existing Conditions	100YR-24HR	Pond 3	7.57	12.9430	25.71	12.0687
Existing Conditions	100YR-24HR	Pond 4/5	8.23	12.4398	38.68	12.0832
Existing Conditions	100YR-24HR	Pond 6	7.81	12.3603	14.49	12.0832
Existing Conditions	100YR-24HR	Pond 8	7.64	12.4925	43.96	0.0000
Existing Conditions	100YR-24HR	Pond 9/19	7.35	12.3925	43.33	12.3392
Existing Conditions	100YR-24HR	TW-E	5.00	15.9999	42.98	12.3941
Existing Conditions	100YR-24HR	TW-W	5.00	15.9999	102.91	12.2852
Existing Conditions	2.33YR-24HR	MH 16-3	6.17	12.8361	12.34	0.0000
Existing Conditions	2.33YR-24HR	MH 18-1	6.16	12.8196	53.67	0.0000
Existing Conditions	2.33YR-24HR	Pond 1	10.81	0.0000	1.33	12.0833
Existing Conditions	2.33YR-24HR	Pond 10	5.91	12.4170	6.25	12.1167



Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Existing Conditions	2.33YR-24HR	Pond 11	6.16	12.7784	7.31	12.0833
Existing Conditions	2.33YR-24HR	Pond 12	6.17	12.6947	11.00	0.0000
Existing Conditions	2.33YR-24HR	Pond 13	6.19	12.7301	13.55	0.0000
Existing Conditions	2.33YR-24HR	Pond 14	6.19	12.7860	3.91	12.0833
Existing Conditions	2.33YR-24HR	Pond 16/17	6.17	12.7973	18.82	12.0833
Existing Conditions	2.33YR-24HR	Pond 18	6.15	12.7424	13.38	0.0015
Existing Conditions	2.33YR-24HR	Pond 2	6.36	13.4100	13.03	12.1001
Existing Conditions	2.33YR-24HR	Pond 3	6.36	13.4622	10.86	12.0833
Existing Conditions	2.33YR-24HR	Pond 4/5	6.51	12.7164	12.91	12.0833
Existing Conditions	2.33YR-24HR	Pond 6	6.62	12.4679	4.89	12.0833
Existing Conditions	2.33YR-24HR	Pond 8	6.49	12.7635	43.96	0.0000
Existing Conditions	2.33YR-24HR	Pond 9/19	6.49	12.7634	7.99	12.1167
Existing Conditions	2.33YR-24HR	TW-E	5.00	16.0003	4.34	12.7643
Existing Conditions	2.33YR-24HR	TW-W	5.00	16.0003	17.92	12.7284

Manual Basin: Basin 1

Scenario: Existing Conditions  
 Node: Pond 1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.5000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5000	Basin 1	A			

Comment:

Manual Basin: Basin 10

Scenario: Existing Conditions  
 Node: Pond 10  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1200	Basin 10	A			

Comment:

Manual Basin: Basin 11

Scenario: Existing Conditions  
 Node: Pond 11  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.9300 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.9300	Basin 11	A			

Comment:

#### Manual Basin: Basin 12

Scenario: Existing Conditions  
 Node: Pond 12  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1100	Basin 12	A			

Comment:

#### Manual Basin: Basin 13

Scenario: Existing Conditions  
 Node: Pond 13  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.3200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.3200	Basin 13	A			

Comment:

#### Manual Basin: Basin 14

Scenario: Existing Conditions

Node: Pond 14  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6800 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6800	Basin 14	A			

Comment:

Manual Basin: Basin 15

Scenario: Existing Conditions  
 Node: Pond 13  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6000	Basin 15	A			

Comment:

Manual Basin: Basin 16

Scenario: Existing Conditions  
 Node: Pond 16/17  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 4.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
4.0200	Basin 16	A			

Comment:

#### Manual Basin: Basin 17

Scenario: Existing Conditions  
 Node: Pond 16/17  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0900	Basin 17	A			

Comment:

#### Manual Basin: Basin 18

Scenario: Existing Conditions  
 Node: Pond 18  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7600 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7600	Basin 18	A			

Comment:

#### Manual Basin: Basin 19

Scenario: Existing Conditions

Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.8100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8100	Basin 19	A			

Comment:

Manual Basin: Basin 2

Scenario: Existing Conditions  
 Node: Pond 2  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0200	Basin 2	A			

Comment:

Manual Basin: Basin 3

Scenario: Existing Conditions  
 Node: Pond 3  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.4400 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.4400	Basin 3	A			

Comment:

Manual Basin: Basin 4

Scenario: Existing Conditions  
 Node: Pond 4/5  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.7700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.7700	Basin 4	A			

Comment:

Manual Basin: Basin 5

Scenario: Existing Conditions  
 Node: Pond 4/5  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.5900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5900	Basin 5	A			

Comment:

Manual Basin: Basin 6

Scenario: Existing Conditions

Node: Pond 6  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0000	Basin 6	A			

Comment:

Manual Basin: Basin 7

Scenario: Existing Conditions  
 Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.7100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.7100	Basin 7	A			

Comment:

Manual Basin: Basin 8

Scenario: Existing Conditions  
 Node: Pond 8  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7400 ac



Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7400	Basin 8	A			

Comment:

Manual Basin: Basin 9

Scenario: Existing Conditions  
 Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.9900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9900	Basin 9	A			

Comment:

Node: MH 16-3

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Comment:

Node: MH 18-1

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 0.00 ft

Comment:

## Node: Pond 1

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 10.81 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.81	0.0000	0
14.37	0.0500	2178

Comment:

## Node: Pond 10

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.2500	10890
6.00	0.3200	13939
6.50	0.3800	16553

Comment:

## Node: Pond 11

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.5500	23958
6.00	0.6400	27878
6.50	0.7100	30928

Comment: Pond reconfigured as per permit no. 149413-5. Reconfiguration provides same volume

## Node: Pond 12

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 4.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.00	0.0500	2178
5.50	0.3000	13068

Comment: Original master permit did not include Pond 12. In reviewing existing topography, Pond 12 exist with a bottom of 4 and top of 6 and a pipe connection to Pond 18

Permit 149413-6 includes proposed impervious with no reduction in pond storage.

#### Node: Pond 13

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.50	0.0100	436
6.00	0.3200	13939
6.60	0.5300	23087

Comment:

#### Node: Pond 14

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.0100	436
6.00	0.3100	13504
6.90	0.3700	16117

Comment:

## Node: Pond 16/17

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	1.4000	60984
6.00	1.5300	66647
6.30	1.6000	69696

Comment:

## Node: Pond 18

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.3500	15246
6.00	0.3900	16988
6.20	0.4100	17860

Comment:

## Node: Pond 2

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.1300	5663
6.00	0.8800	38333
6.40	1.0200	44431

Comment:

## Node: Pond 3

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 4.90 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.90	0.6100	26572
6.00	0.9300	40511
6.60	1.1600	50530

Comment:

## Node: Pond 4/5

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.80 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.80	0.0400	1742
6.00	0.3300	14375
7.00	0.4800	20909

Comment:

## Node: Pond 6

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.30 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.30	0.0000	0
6.00	0.1800	7841
7.00	0.2200	9583

Comment:

## Node: Pond 8

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.0300	1307
6.00	0.3700	16117
7.00	0.4800	20909

Comment:

## Node: Pond 9/19

Scenario: Existing Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.2400	10454
6.00	0.4600	20038
6.70	0.5100	22216

Comment:

## Node: TW-E

Scenario: Existing Conditions  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

Node: TW-W

Scenario: Existing Conditions  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

Curve Number: Composite CN-Existing Conditions [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Basin 1	A	92.0
Basin 10	A	89.0
Basin 11	A	83.0
Basin 12	A	91.0
Basin 13	A	86.0
Basin 14	A	86.0
Basin 15	A	87.0
Basin 16	A	83.0
Basin 17	A	87.0
Basin 18	A	87.0
Basin 19	A	94.0
Basin 2	A	85.0
Basin 3	A	88.0
Basin 4	A	88.0
Basin 5	A	86.0
Basin 6	A	88.0
Basin 7	A	86.0
Basin 8	A	86.0
Basin 9	A	84.0

Curve Number: Site [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Impervious	A	98.0
Pervious	A	79.0

Drop Structure Link: DS-10		Upstream Pipe	Downstream Pipe
Scenario:	Existing Conditions	Invert: 2.47 ft	Invert: 2.47 ft
From Node:	Pond 10	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	TW-W	Geometry: Circular	Geometry: Circular
Link Count:	2	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	0	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	91.00 ft	Top Clip	
FHWA Code:	1	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.50	Op Table:	Op Table:
Exit Loss Coef:	1.00	Ref Node:	Ref Node:
Bend Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Location:	0.00 dec		
Energy Switch:	Energy		
Pipe Comment:			

Weir Component		Bottom Clip
Weir:	1	Default: 0.00 ft
Weir Count:	1	Op Table:
Weir Flow Direction:	Both	Ref Node:
Damping:	0.0000 ft	Top Clip
Weir Type:	Horizontal	Default: 0.00 ft
Geometry Type:	Rectangular	Op Table:
Invert:	6.80 ft	Ref Node:
Control Elevation:	6.80 ft	Discharge Coefficients
Max Depth:	6.58 ft	Weir Default: 3.200
Max Width:	3.00 ft	Weir Table:
Fillet:	0.00 ft	Orifice Default: 0.600
		Orifice Table:
Weir Comment: As per as-builts, grate elevation at 6.8		

Weir Component		Bottom Clip
Weir:	2	Default: 0.00 ft
Weir Count:	1	Op Table:
Weir Flow Direction:	Both	Ref Node:
Damping:	0.0000 ft	Top Clip
Weir Type:	Sharp Crested Vertical	Default: 0.00 ft
Geometry Type:	Rectangular	Op Table:
Invert:	5.50 ft	Ref Node:
Control Elevation:	5.50 ft	Discharge Coefficients
Max Depth:	0.80 ft	Weir Default: 3.200
Max Width:	3.33 ft	Weir Table:
Fillet:	0.00 ft	Orifice Default: 0.600
		Orifice Table:
Weir Comment: As per permit plans, weir width is 3.33' with elev at 5.5		



Drop Structure Comment:

Drop Structure Link: DS-9		Upstream Pipe	Downstream Pipe
Scenario:	Existing Conditions	Invert: 2.10 ft	Invert: 2.05 ft
From Node:	Pond 9/19	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	TW-E	Geometry: Circular	Geometry: Circular
Link Count:	2	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	0	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	89.00 ft	Top Clip	
FHWA Code:	1	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.50	Op Table:	Op Table:
Exit Loss Coef:	1.00	Ref Node:	Ref Node:
Bend Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Location:	0.00 dec		
Energy Switch:	Energy		

Pipe Comment:

Weir Component		
Weir:	1	Bottom Clip
Weir Count:	1	Default: 0.00 ft
Weir Flow Direction:	Both	Op Table:
Damping:	0.0000 ft	Ref Node:
Weir Type:	Horizontal	Top Clip
Geometry Type:	Rectangular	Default: 0.00 ft
Invert:	7.00 ft	Op Table:
Control Elevation:	7.00 ft	Ref Node:
Max Depth:	6.58 ft	Discharge Coefficients
Max Width:	3.00 ft	Weir Default: 3.200
Fillet:	0.00 ft	Weir Table:
		Orifice Default: 0.600
		Orifice Table:

Weir Comment: As per as-builts, grate elevation at 7.0

Weir Component		
Weir:	2	Bottom Clip
Weir Count:	1	Default: 0.00 ft
Weir Flow Direction:	Both	Op Table:
Damping:	0.0000 ft	Ref Node:
Weir Type:	Sharp Crested Vertical	Top Clip
Geometry Type:	Rectangular	Default: 0.00 ft
Invert:	6.00 ft	Op Table:
Control Elevation:	6.00 ft	Ref Node:

Max Depth: 1.00 ft  
 Max Width: 2.00 ft  
 Fillet: 0.00 ft

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Drop Structure Comment:

Pipe Link: Pipe 1	Upstream	Downstream
Scenario: Existing Conditions	Invert: 10.10 ft	Invert: 9.98 ft
From Node: Pond 1	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 2	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 72.00 ft	Op Table:	Op Table:
FHWA Code: 5	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 10-1	Upstream	Downstream
Scenario: Existing Conditions	Invert: 5.22 ft	Invert: 5.20 ft
From Node: Pond 10	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 18	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 33.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 11-1		Upstream	Downstream
Scenario:	Existing Conditions	Invert: 0.00 ft	Invert: 0.00 ft
From Node:	Pond 11	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 18	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	89.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 12		Upstream	Downstream
Scenario:	Existing Conditions	Invert: 2.91 ft	Invert: 1.92 ft
From Node:	Pond 12	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 18	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.75 ft	Max Depth: 1.75 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	67.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 13		Upstream	Downstream
Scenario:	Existing Conditions	Invert: 2.90 ft	Invert: 2.06 ft
From Node:	Pond 13	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	56.00 ft	Op Table:	Op Table:
FHWA Code:	0	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	

Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: Pipe 14		Upstream	Downstream
Scenario:	Existing Conditions	Invert: 4.88 ft	Invert: 4.00 ft
From Node:	Pond 14	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	55.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 2-1		Upstream	Downstream
Scenario:	Existing Conditions	Invert: 5.02 ft	Invert: 4.98 ft
From Node:	Pond 2	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	94.00 ft	Op Table:	Op Table:
FHWA Code:	5	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 2-2		Upstream	Downstream
Scenario:	Existing Conditions	Invert: -0.20 ft	Invert: -0.27 ft

From Node:	Pond 2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 8	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	312.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link:	Pipe 22	Upstream		Downstream	
Scenario:	Existing Conditions	Invert:	0.10 ft	Invert:	0.10 ft
From Node:	MH 18-1	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 18	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	55.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link:	Pipe 23	Upstream		Downstream	
Scenario:	Existing Conditions	Invert:	0.20 ft	Invert:	0.20 ft
From Node:	MH 16-3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	MH 18-1	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	171.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	

Energy Switch: Energy	Ref Node: Manning's N: 0.0000	Ref Node: Manning's N: 0.0000
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Comment:
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Pipe Link: Pipe 24	Upstream	Downstream
Scenario: Existing Conditions	Invert: 0.00 ft	Invert: 0.00 ft
From Node: Pond 16/17	Manning's N: 0.0130	Manning's N: 0.0130
To Node: MH 16-3	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 48.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:
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Pipe Link: Pipe 3	Upstream	Downstream
Scenario: Existing Conditions	Invert: 4.45 ft	Invert: 4.75 ft
From Node: Pond 3	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 2	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 53.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:
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Pipe Link: Pipe 5	Upstream	Downstream
Scenario: Existing Conditions	Invert: 3.91 ft	Invert: 3.53 ft
From Node: Pond 4/5	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 8	Geometry: Circular	Geometry: Circular

Link Count:	1	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	44.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link: Pipe 6-1		Upstream	Downstream		
Scenario:	Existing Conditions	Invert:	5.40 ft	Invert:	5.60 ft
From Node:	Pond 6	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 9/19	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	107.00 ft	Op Table:		Op Table:	
FHWA Code:	5	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link: Pipe 8		Upstream	Downstream		
Scenario:	Existing Conditions	Invert:	0.88 ft	Invert:	0.89 ft
From Node:	Pond 8	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 9/19	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	3.00 ft	Max Depth:	3.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	52.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

**Weir Link: Weir 16**

Scenario:	Existing Conditions	<b>Bottom Clip</b>
From Node:	Pond 16/17	Default: 0.00 ft
To Node:	TW-W	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	<b>Top Clip</b>
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Trapezoidal	Ref Node:
Invert:	6.00 ft	<b>Discharge Coefficients</b>
Control Elevation:	3.50 ft	Weir Default: 3.200
Max Depth:	999.00 ft	Weir Table:
Extrapolation Method:	Normal Projection	Orifice Default: 0.600
Bottom Width:	20.00 ft	Orifice Table:
Left Slope:	4.000 (h:v)	
Right Slope:	4.000 (h:v)	

Comment:

**Weir Link: Weir 17**

Scenario:	Existing Conditions	<b>Bottom Clip</b>
From Node:	Pond 16/17	Default: 0.00 ft
To Node:	TW-W	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	<b>Top Clip</b>
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Trapezoidal	Ref Node:
Invert:	6.00 ft	<b>Discharge Coefficients</b>
Control Elevation:	3.50 ft	Weir Default: 3.200
Max Depth:	999.00 ft	Weir Table:
Extrapolation Method:	Normal Projection	Orifice Default: 0.600
Bottom Width:	20.00 ft	Orifice Table:
Left Slope:	4.000 (h:v)	
Right Slope:	4.000 (h:v)	

Comment:

**Weir Link: Weir 18**

Scenario:	Existing Conditions	<b>Bottom Clip</b>
From Node:	Pond 18	Default: 0.00 ft
To Node:	TW-W	Op Table:



Link Count: 1	
Flow Direction: Both	Ref Node:
Damping: 0.0000 ft	Top Clip
Weir Type: Sharp Crested Vertical	Default: 0.00 ft
Geometry Type: Trapezoidal	Op Table:
Invert: 6.00 ft	Ref Node:
Control Elevation: 3.50 ft	Discharge Coefficients
Max Depth: 999.00 ft	Weir Default: 3.200
Extrapolation Method: Normal Projection	Weir Table:
Bottom Width: 20.00 ft	Orifice Default: 0.600
Left Slope: 4.000 (h:v)	Orifice Table:
Right Slope: 4.000 (h:v)	

Comment:

Simulation: 010YR-24HR

Scenario: Existing Conditions  
 Run Date/Time: 10/8/2021 9:33:56 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
Reference ET Folder:  
Unit Hydrograph  
Folder:

Lookup Tables

Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: Composite CN-Existing  
Conditions  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Composite CN  
Roughness Set:  
Crop Coef Set:  
Fillable Porosity Set:  
Conductivity Set:  
Leakage Set:

Tolerances & Options

Time Marching: SAOR  
Max Iterations: 6  
Over-Relax Weight 0.5 dec  
Fact:  
dZ Tolerance: 0.0010 ft  
Max dZ: 1.0000 ft  
Link Optimizer Tol: 0.0001 ft  
Edge Length Option: Automatic  
Dflt Damping (2D): 0.0050 ft  
Min Node Srf Area 100 ft2  
(2D):  
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr  
ET for Manual Basins: False  
Smp/Man Basin Rain Global  
Opt:  
OF Region Rain Opt: Global  
Rainfall Name: ~FLMOD  
Rainfall Amount: 7.50 in  
Storm Duration: 24.0000 hr  
Dflt Damping (1D): 0.0050 ft  
Min Node Srf Area 100 ft2  
(1D):  
Energy Switch (1D): Energy

Comment:

Simulation: 025YR-024HR

Scenario: Existing Conditions  
Run Date/Time: 10/8/2021 9:34:22 AM  
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
Reference ET Folder:  
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: Composite CN-Existing Conditions  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Composite CN  
Roughness Set:  
Crop Coef Set:  
Fillable Porosity Set:  
Conductivity Set:  
Leakage Set:

Tolerances & Options

Time Marching: SAOR  
Max Iterations: 6

IA Recovery Time: 24.0000 hr  
ET for Manual Basins: False

Over-Relax Weight	0.5 dec	Smp/Man Basin Rain	Global
Fact:		Opt:	
dZ Tolerance:	0.0010 ft	OF Region Rain Opt:	Global
Max dZ:	1.0000 ft	Rainfall Name:	~FLMOD
Link Optimizer Tol:	0.0001 ft	Rainfall Amount:	9.50 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area	100 ft2	Min Node Srf Area	100 ft2
(2D):		(1D):	
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100YR-24HR

Scenario: Existing Conditions  
 Run Date/Time: 10/8/2021 9:34:49 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File  
 Save Restart: False

Resources & Lookup Tables

Resources  
 Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables  
 Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite CN-Existing Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight Fact: 0.5 dec  
 dZ Tolerance: 0.0010 ft  
 Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic  
 Dflt Damping (2D): 0.0050 ft  
 Min Node Srf Area (2D): 100 ft2  
 Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr  
 ET for Manual Basins: False  
 Smp/Man Basin Rain Opt: Global  
 OF Region Rain Opt: Global  
 Rainfall Name: ~FLMOD  
 Rainfall Amount: 13.00 in  
 Storm Duration: 24.0000 hr  
 Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area (1D): 100 ft2  
 Energy Switch (1D): Energy

Comment:

Simulation: 2.33YR-24HR

Scenario: Existing Conditions  
 Run Date/Time: 10/8/2021 9:35:25 AM  
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite CN-Existing Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight	0.5 dec		
Fact:			
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain	Global
		Opt:	
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	-FLMOD
		Rainfall Amount:	5.00 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area	100 ft2	Min Node Srf Area	100 ft2
(2D):		(1D):	
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

# Section 4

## Future Conditions Calculations and ICPR Routing



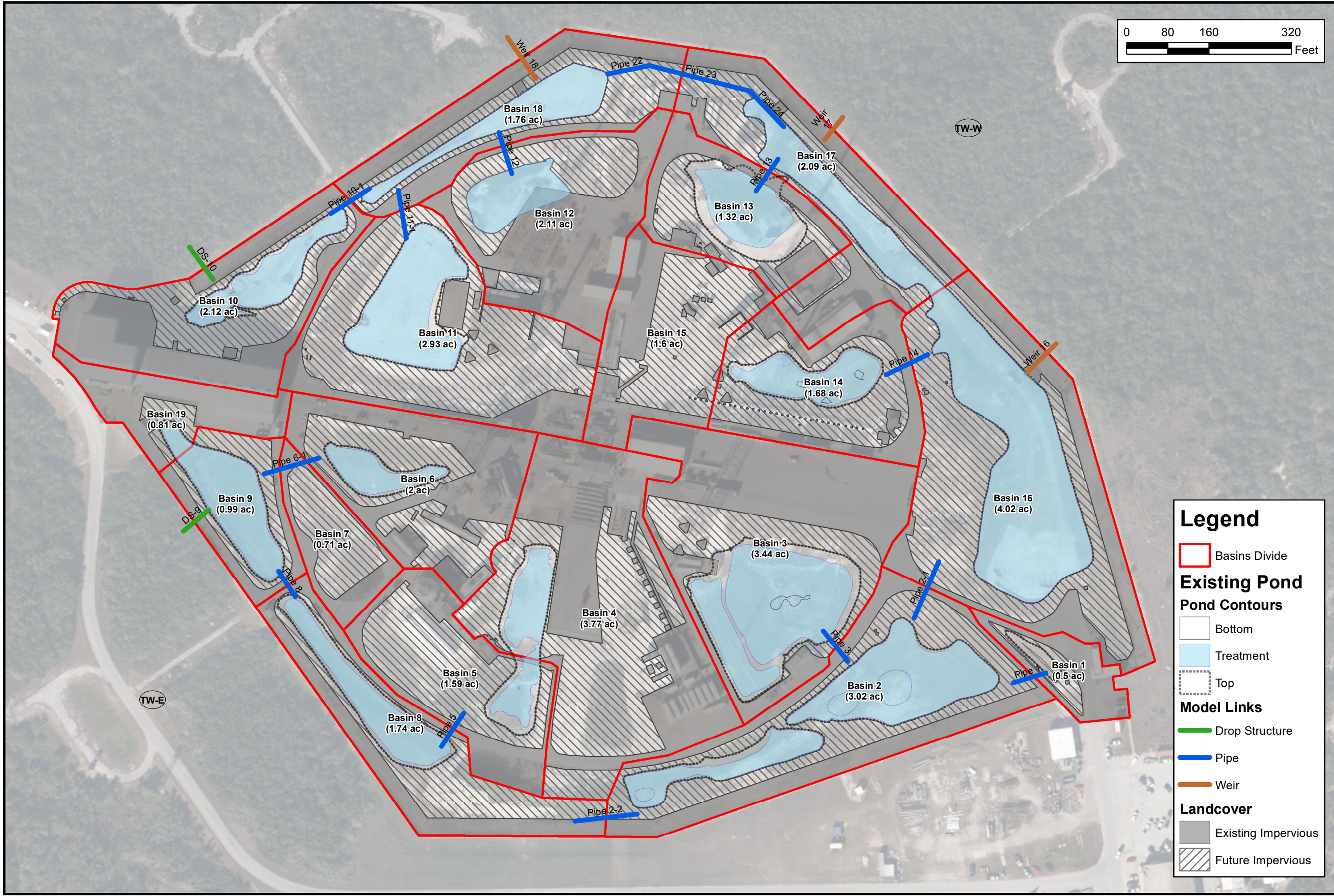


SLC 40  
 MASTER PERMIT

Future Drainage Map

DATE:	OCTOBER 2021
DESIGN:	TS
DRAWN:	TS
CHECKED:	BS
KH NO.:	145253005

C:\Users\jfrany\station\Desktop\Work From Home\SLC 40\GIS\Maps\4 Future Drainage Map.mxd



**Legend**

- Basins Divide
- Existing Pond
- Pond Contours
  - Bottom
  - Treatment
  - Top
- Model Links
  - Drop Structure
  - Pipe
  - Weir
- Landcover
  - Existing Impervious
  - Future Impervious

PREVIOUS PERMIT BASIN AREA SUMMARY

Table 4.1

(149413-1)

Basin ID	Receiving Node ID	Total Basin Area (ac)	IMPERVIOUS AREAS				PERVIOUS AREAS			
			Pre-Improvement Conditions Impervious Area (ac)	Post-Improvements Impervious Area Change (ac)	Future Impervious Area Total (ac)	Future Impervious (%)	Pre-Permit Pervious Area (ac)	Future Pervious Area Change (ac)	Future Pervious Area Total (ac)	Future Pervious (%)
1	Pond 1	0.50	0.34	0.11	0.45	90.0%	0.16	-0.11	0.05	10.0%
2	Pond 2	3.02	0.90	0.64	1.54	51.0%	2.12	-0.64	1.48	49.0%
3	Pond 3	3.44	1.66	1.00	2.66	77.3%	1.78	-1.00	0.78	22.7%
4	Pond 4/5	3.77	1.70	1.63	3.33	88.3%	2.07	-1.63	0.44	11.7%
5	Pond 4/5	1.59	0.41	0.65	1.06	66.7%	1.18	-0.65	0.53	33.3%
6	Pond 6	2.00	1.07	0.65	1.72	86.0%	0.93	-0.65	0.28	14.0%
7	Pond 9	0.71	0.24	0.47	0.71	100.0%	0.47	-0.47	0.00	0.0%
8	Pond 8	1.74	0.64	0.63	1.27	73.0%	1.10	-0.63	0.47	27.0%
9	Pond 9	0.99	0.25	0.15	0.40	40.4%	0.74	-0.15	0.59	59.6%
10	Pond 10	2.12	1.09	0.61	1.70	80.2%	1.03	-0.61	0.42	19.8%
11	Pond 11	2.93	0.53	1.53	2.06	70.3%	2.40	-1.53	0.87	29.7%
12	Pond 12	2.11	1.28	0.83	2.11	100.0%	0.83	-0.83	0.00	0.0%
13	Pond 13	1.32	0.43	0.28	0.71	53.8%	0.89	-0.28	0.61	46.2%
14	Pond 14	1.68	0.53	0.71	1.24	73.8%	1.15	-0.71	0.44	26.2%
15	Pond 13	1.60	0.62	0.66	1.28	80.0%	0.98	-0.66	0.32	20.0%
16	Pond 17	4.02	0.80	1.00	1.80	44.8%	3.22	-1.00	2.22	55.2%
17	Pond 17	2.09	0.94	1.15	2.09	100.0%	1.15	-1.15	0.00	0.0%
18	Pond 18	1.76	0.74	0.55	1.29	73.3%	1.02	-0.55	0.47	26.7%
19	Pond 19	0.81	0.65	0.16	0.81	100.0%	0.16	-0.16	0.00	0.0%
TOTAL		38.20	14.82	13.41	28.23	73.9%	23.38	-13.41	9.97	26.1%

**FUTURE BASIN AREA SUMMARY**

Table 4.2

Basin ID	Receiving Node ID	Total Basin Area (ac)	IMPERVIOUS AREAS					PERVIOUS AREAS				
			Pre-Permit Impervious Area (ac)	Existing Impervious Area Change (ac)	Proposed Impervious Area Change (ac)	Future Impervious Area Total (ac)	Future Impervious (%)	Pre-Permit Pervious Area (ac)	Existing Pervious Area Change (ac)	Future Pervious Area Change (ac)	Future Pervious Area Total (ac)	Future Pervious (%)
1	Pond 1	0.50	0.34	0.00	0.10	0.44	88.0%	0.16	0.00	-0.10	0.06	12.0%
2	Pond 2	3.02	0.90	0.00	1.01	1.91	63.2%	2.12	0.00	-1.01	1.11	36.8%
3	Pond 3	3.44	1.66	0.02	0.61	2.29	66.6%	1.78	-0.02	-0.61	1.15	33.4%
4	Pond 4/5	3.77	1.70	0.08	1.70	3.48	92.3%	2.07	-0.08	-1.70	0.29	7.7%
5	Pond 4/5	1.59	0.41	0.15	0.85	1.41	88.7%	1.18	-0.15	-0.85	0.18	11.3%
6	Pond 6	2.00	1.07	-0.15	0.70	1.62	81.0%	0.93	0.15	-0.70	0.38	19.0%
7	Pond 9	0.71	0.24	0.04	0.42	0.70	98.6%	0.47	-0.04	-0.42	0.01	1.4%
8	Pond 8	1.74	0.64	0.00	0.62	1.26	72.4%	1.10	0.00	-0.62	0.48	27.6%
9	Pond 9	0.99	0.25	0.00	0.28	0.53	53.5%	0.74	0.00	-0.28	0.46	46.5%
10	Pond 10	2.12	1.09	0.01	0.64	1.74	82.1%	1.03	-0.01	-0.64	0.38	17.9%
11	Pond 11	2.93	0.53	0.10	1.59	2.22	75.8%	2.40	-0.10	-1.59	0.71	24.2%
12	Pond 12	2.11	1.28	0.04	0.57	1.89	89.6%	0.83	-0.04	-0.57	0.22	10.4%
13	Pond 13	1.32	0.43	0.04	0.34	0.81	61.4%	0.89	-0.04	-0.34	0.51	38.6%
14	Pond 14	1.68	0.53	0.05	0.73	1.31	78.0%	1.15	-0.05	-0.73	0.37	22.0%
15	Pond 13	1.60	0.62	0.07	0.91	1.60	100.0%	0.98	-0.07	-0.91	0.00	0.0%
16	Pond 17	4.02	0.80	0.02	1.66	2.48	61.7%	3.22	-0.02	-1.66	1.54	38.3%
17	Pond 17	2.09	0.94	-0.04	0.67	1.57	75.1%	1.15	0.04	-0.67	0.52	24.9%
18	Pond 18	1.76	0.74	0.00	0.60	1.34	76.1%	1.02	0.00	-0.60	0.42	23.9%
19	Pond 19	0.81	0.65	0.00	0.12	0.77	95.1%	0.16	0.00	-0.12	0.04	4.9%
TOTAL		38.20	14.82	0.43	14.12	29.37	76.9%	23.38	-0.43	-14.12	8.83	23.1%

**FUTURE HYDROLOGIC DATA**

Table 5

Basin ID	Receiving Node ID	Total Basin Area (ac)	Future		Weighted Runoff CN	Time of Conc. (min)
			Impervious Area (ac)	Pervious Area (ac)		
1	Pond 1	0.50	0.44	0.06	96	15.00
2	Pond 2	3.02	1.91	1.11	91	15.00
3	Pond 3	3.44	2.29	1.15	92	15.00
4	Pond 4/5	3.77	3.48	0.29	97	15.00
5	Pond 4/5	1.59	1.41	0.18	96	15.00
6	Pond 6	2.00	1.62	0.38	94	15.00
7	Pond 9/19	0.71	0.70	0.01	98	15.00
8	Pond 8	1.74	1.26	0.48	93	15.00
9	Pond 9/19	0.99	0.53	0.46	89	15.00
10	Pond 10	2.12	1.74	0.38	95	15.00
11	Pond 11	2.93	2.22	0.71	93	15.00
12	Pond 12	2.11	1.89	0.22	96	15.00
13	Pond 13	1.32	0.81	0.51	91	15.00
14	Pond 14	1.68	1.31	0.37	94	15.00
15	Pond 13	1.60	1.60	0.00	98	15.00
16	Pond 16/17	4.02	2.48	1.54	91	15.00
17	Pond 16/17	2.09	1.57	0.52	93	15.00
18	Pond 18	1.76	1.34	0.42	93	15.00
19	Pond 9/19	0.81	0.77	0.04	97	15.00

Notes:

Impervious CN= 98

Pervious CN= 79

**FUTURE TREATMENT VOLUME**

Table 6

Required Water Quality  
(Retention/On-Line)

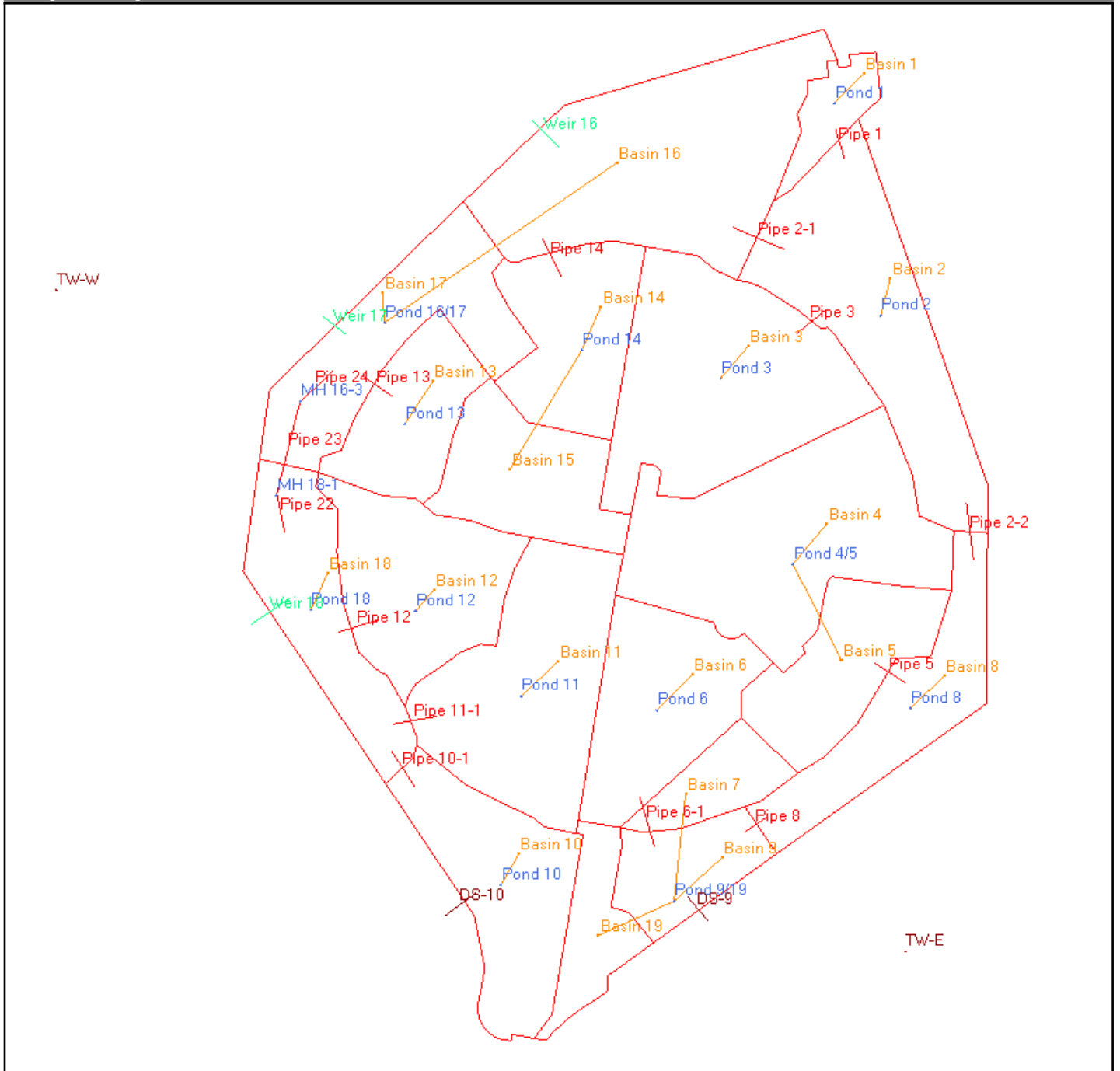
1) Compute Great of 0.5"xSite or 1.25"xImpervious

<i>Total Project Area=</i>	<i>38.20 acres</i>
<i>Additional Future Impervious Area=</i>	<i>10.92 acres</i>
<i>0.5" Across the site=</i>	<i>1.59 ac-ft</i>
<i>1.25" Across Impervious=</i>	<i>1.14 ac-ft</i>
<i>Greater=</i>	<i>1.59 ac-ft</i>
<i>Additional 0.5"xSite=</i>	<i>1.59 ac-ft</i>
<i>Required Water Quality=</i>	<i>3.18 ac-ft</i>
<i>Additional 50% for discharge to OFW=</i>	<i>4.78 ac-ft</i>
<i>*As per Section 5.2.2</i>	

Total Required Water Quality	
Total Required Water Quality=	4.78 ac-ft

Provided Water Quality	
Volume Provide in Ponds and WQ Elev.=	5.31 ac-ft

Background Image: Future



Future Conditions Node Maximum Summary

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Future Conditions	010YR-24HR	MH 16-3	6.58	12.4223	12.34	0.0000
Future Conditions	010YR-24HR	MH 18-1	6.58	12.3904	53.67	0.0000
Future Conditions	010YR-24HR	Pond 1	11.02	12.0916	2.14	12.0832
Future Conditions	010YR-24HR	Pond 10	6.59	12.3535	9.02	12.0832
Future Conditions	010YR-24HR	Pond 11	6.73	12.4980	12.28	12.0832
Future Conditions	010YR-24HR	Pond 12	6.80	12.3966	11.00	0.0000
Future Conditions	010YR-24HR	Pond 13	6.65	12.5526	9.16	0.0000
Future Conditions	010YR-24HR	Pond 14	7.19	12.4968	14.01	12.0832
Future Conditions	010YR-24HR	Pond 16/17	6.58	12.4150	35.26	12.1199
Future Conditions	010YR-24HR	Pond 18	6.59	12.3838	17.44	12.2633
Future Conditions	010YR-24HR	Pond 2	6.96	12.9731	20.13	12.0997
Future Conditions	010YR-24HR	Pond 3	6.98	13.0624	16.51	12.0832
Future Conditions	010YR-24HR	Pond 4/5	7.34	12.5005	23.04	12.0832
Future Conditions	010YR-24HR	Pond 6	7.25	12.4852	8.45	12.0832
Future Conditions	010YR-24HR	Pond 8	7.18	12.5574	43.96	0.0000
Future Conditions	010YR-24HR	Pond 9/19	7.14	12.5375	18.10	12.4251
Future Conditions	010YR-24HR	TW-E	5.00	16.0001	17.58	12.5383
Future Conditions	010YR-24HR	TW-W	5.00	16.0001	52.90	12.3993
Future Conditions	025YR-024HR	MH 16-3	6.67	12.3322	12.34	0.0000
Future Conditions	025YR-024HR	MH 18-1	6.68	12.3205	53.67	0.0000
Future Conditions	025YR-024HR	Pond 1	11.16	12.0956	2.72	12.0831
Future Conditions	025YR-024HR	Pond 10	6.69	12.2477	11.50	12.0831
Future Conditions	025YR-024HR	Pond 11	6.95	12.4665	15.73	12.0831
Future Conditions	025YR-024HR	Pond 12	7.06	12.3712	11.50	12.0831
Future Conditions	025YR-024HR	Pond 13	6.80	12.5059	9.16	0.0000
Future Conditions	025YR-024HR	Pond 14	7.65	12.4961	17.84	12.0831
Future Conditions	025YR-024HR	Pond 16/17	6.67	12.3387	48.09	12.1142
Future Conditions	025YR-024HR	Pond 18	6.68	12.3210	23.92	12.1919
Future Conditions	025YR-024HR	Pond 2	7.24	12.8256	24.76	12.0970

Future Conditions Node Maximum Summary

Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate
Future Conditions	025YR-024HR	Pond 3	7.28	12.9405	19.95	12.0831
Future Conditions	025YR-024HR	Pond 4/5	7.75	12.4356	29.27	12.0831
Future Conditions	025YR-024HR	Pond 6	7.52	12.3855	10.80	12.0831
Future Conditions	025YR-024HR	Pond 8	7.42	12.4833	43.96	0.0000
Future Conditions	025YR-024HR	Pond 9/19	7.27	12.4246	30.49	12.3561
Future Conditions	025YR-024HR	TW-E	5.00	16.0001	30.08	12.4260
Future Conditions	025YR-024HR	TW-W	5.00	16.0001	73.94	12.3273
Future Conditions	100YR-24HR	MH 16-3	6.78	12.2908	12.34	0.0000
Future Conditions	100YR-24HR	MH 18-1	6.79	12.2631	53.67	0.0000
Future Conditions	100YR-24HR	Pond 1	11.39	12.1030	3.74	12.0833
Future Conditions	100YR-24HR	Pond 10	6.82	12.1969	15.82	12.0833
Future Conditions	100YR-24HR	Pond 11	7.29	12.4789	21.73	12.0833
Future Conditions	100YR-24HR	Pond 12	7.47	12.3826	15.78	12.0833
Future Conditions	100YR-24HR	Pond 13	7.03	12.5089	9.71	12.0833
Future Conditions	100YR-24HR	Pond 14	8.39	12.5281	24.51	12.0833
Future Conditions	100YR-24HR	Pond 16/17	6.78	12.2731	66.75	12.1015
Future Conditions	100YR-24HR	Pond 18	6.79	12.2684	32.82	12.1676
Future Conditions	100YR-24HR	Pond 2	7.68	12.7367	32.05	12.0833
Future Conditions	100YR-24HR	Pond 3	7.77	12.8803	25.78	12.0666
Future Conditions	100YR-24HR	Pond 4/5	8.47	12.4218	40.15	12.0833
Future Conditions	100YR-24HR	Pond 6	7.93	12.3295	14.88	12.0833
Future Conditions	100YR-24HR	Pond 8	7.79	12.4746	43.96	0.0000
Future Conditions	100YR-24HR	Pond 9/19	7.42	12.3636	47.49	12.3183
Future Conditions	100YR-24HR	TW-E	5.00	15.9999	47.25	12.3645
Future Conditions	100YR-24HR	TW-W	5.00	15.9999	103.96	12.2541
Future Conditions	2.33YR-24HR	MH 16-3	6.41	12.7487	12.34	0.0000
Future Conditions	2.33YR-24HR	MH 18-1	6.41	12.7075	53.67	0.0000
Future Conditions	2.33YR-24HR	Pond 1	10.83	12.0885	1.41	12.0833
Future Conditions	2.33YR-24HR	Pond 10	6.41	12.6589	5.91	12.0833



Scenario	Sim	Node Name	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate [hrs]
Future Conditions	2.33YR-24HR	Pond 11	6.44	12.7191	8.98	12.0833
Future Conditions	2.33YR-24HR	Pond 12	6.44	12.6361	11.00	0.0000
Future Conditions	2.33YR-24HR	Pond 13	6.42	12.8068	9.16	0.0000
Future Conditions	2.33YR-24HR	Pond 14	6.59	12.5957	9.21	12.0833
Future Conditions	2.33YR-24HR	Pond 16/17	6.41	12.7665	21.58	12.0732
Future Conditions	2.33YR-24HR	Pond 18	6.41	12.6726	13.38	0.0015
Future Conditions	2.33YR-24HR	Pond 2	6.58	13.3264	14.27	12.0999
Future Conditions	2.33YR-24HR	Pond 3	6.58	13.3744	11.32	12.0999
Future Conditions	2.33YR-24HR	Pond 4/5	6.77	12.6799	15.22	12.0833
Future Conditions	2.33YR-24HR	Pond 6	6.78	12.6541	5.49	12.0833
Future Conditions	2.33YR-24HR	Pond 8	6.74	12.7398	43.96	0.0000
Future Conditions	2.33YR-24HR	Pond 9/19	6.74	12.7420	9.31	12.1166
Future Conditions	2.33YR-24HR	TW-E	5.00	15.9999	5.07	12.7427
Future Conditions	2.33YR-24HR	TW-W	5.00	15.9999	21.48	12.7236

Manual Basin: Basin 1

Scenario: Future Conditions  
 Node: Pond 1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.5000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5000	Basin 1	A			

Comment:

Manual Basin: Basin 10

Scenario: Future Conditions  
 Node: Pond 10  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1200	Basin 10	A			

Comment:

Manual Basin: Basin 11

Scenario: Future Conditions  
 Node: Pond 11  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.9300 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.9300	Basin 11	A			

Comment:

Manual Basin: Basin 12

Scenario: Future Conditions  
 Node: Pond 12  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.1100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1100	Basin 12	A			

Comment:

Manual Basin: Basin 13

Scenario: Future Conditions  
 Node: Pond 13  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.3200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.3200	Basin 13	A			

Comment:

Manual Basin: Basin 14

Scenario: Future Conditions

Node: Pond 14  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6800 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6800	Basin 14	A			

Comment:

Manual Basin: Basin 15

Scenario: Future Conditions  
 Node: Pond 14  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.6000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.6000	Basin 15	A			

Comment:

Manual Basin: Basin 16

Scenario: Future Conditions  
 Node: Pond 16/17  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 4.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
4.0200	Basin 16	A			

Comment:

Manual Basin: Basin 17

Scenario: Future Conditions  
 Node: Pond 16/17  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0900	Basin 17	A			

Comment:

Manual Basin: Basin 18

Scenario: Future Conditions  
 Node: Pond 18  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7600 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7600	Basin 18	A			

Comment:

Manual Basin: Basin 19

Scenario: Future Conditions

Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.8100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8100	Basin 19	A			

Comment:

Manual Basin: Basin 2

Scenario: Future Conditions  
 Node: Pond 2  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.0200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0200	Basin 2	A			

Comment:

Manual Basin: Basin 3

Scenario: Future Conditions  
 Node: Pond 3  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.4400 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.4400	Basin 3	A			

Comment:

Manual Basin: Basin 4

Scenario: Future Conditions  
 Node: Pond 4/5  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 3.7700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.7700	Basin 4	A			

Comment:

Manual Basin: Basin 5

Scenario: Future Conditions  
 Node: Pond 4/5  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.5900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5900	Basin 5	A			

Comment:

Manual Basin: Basin 6

Scenario: Future Conditions

Node: Pond 6  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 2.0000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0000	Basin 6	A			

Comment:

Manual Basin: Basin 7

Scenario: Future Conditions  
 Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.7100 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.7100	Basin 7	A			

Comment:

Manual Basin: Basin 8

Scenario: Future Conditions  
 Node: Pond 8  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 1.7400 ac



Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.7400	Basin 8	A			

Comment:

Manual Basin: Basin 9

Scenario: Future Conditions  
 Node: Pond 9/19  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 15.0000 min  
 Max Allowable Q: 0.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 0.9900 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9900	Basin 9	A			

Comment:

Curve Number: Composite CN-Future Conditions [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Basin 1	A	96.0
Basin 10	A	95.0
Basin 11	A	93.0
Basin 12	A	96.0
Basin 13	A	91.0
Basin 14	A	94.0
Basin 15	A	98.0
Basin 16	A	91.0
Basin 17	A	93.0
Basin 18	A	93.0
Basin 19	A	97.0
Basin 2	A	91.0
Basin 3	A	92.0
Basin 4	A	97.0
Basin 5	A	96.0
Basin 6	A	94.0
Basin 7	A	98.0
Basin 8	A	93.0
Basin 9	A	89.0

Node: MH 16-3

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Comment:

Node: MH 18-1

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 0.00 ft

Comment:

Node: Pond 1

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 10.81 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.81	0.0000	0
14.37	0.0500	2178

Comment:

Node: Pond 10

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.2500	10890

Stage [ft]	Area [ac]	Area [ft2]
6.00	0.3200	13939
6.50	0.3800	16553

Comment:

**Node: Pond 11**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.5500	23958
6.00	0.6400	27878
6.50	0.7100	30928

Comment: Pond reconfigured as per permit no. 149413-5. Reconfiguration provides same volume

**Node: Pond 12**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 4.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.00	0.0500	2178
5.50	0.3000	13068

Comment: Original master permit did not include Pond 12. In reviewing existing topography, Pond 12 exist with a bottom of 4 and top of 6 and a pipe connection to Pond 18  
 Permit 149413-6 includes proposed impervious with no reduction in pond storage.

**Node: Pond 13**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.50	0.0100	436
6.00	0.3200	13939
6.60	0.5300	23087

Comment:

**Node: Pond 14**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.0100	436
6.00	0.3100	13504
6.90	0.3700	16117

Comment:

**Node: Pond 16/17**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	1.4000	60984
6.00	1.5300	66647
6.30	1.6000	69696

Comment:

**Node: Pond 18**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.3500	15246
6.00	0.3900	16988
6.20	0.4100	17860

Comment:

**Node: Pond 2**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.1300	5663
6.00	0.8800	38333
6.40	1.0200	44431

Comment:

**Node: Pond 3**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 4.90 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.90	0.6100	26572
6.00	0.9300	40511
6.60	1.1600	50530

Comment:

**Node: Pond 4/5**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.80 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.80	0.0400	1742
6.00	0.3300	14375
7.00	0.4800	20909

Comment:

**Node: Pond 6**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.30 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.30	0.0000	0
6.00	0.1800	7841
7.00	0.2200	9583

Comment:

**Node: Pond 8**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.00 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.00	0.0300	1307
6.00	0.3700	16117
7.00	0.4800	20909

Comment:

**Node: Pond 9/19**

Scenario: Future Conditions  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 5.50 ft  
 Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.50	0.2400	10454
6.00	0.4600	20038
6.70	0.5100	22216

Comment:

**Node: TW-E**

Scenario: Future Conditions  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

**Node: TW-W**

Scenario: Future Conditions  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 3.00 ft  
 Warning Stage: 0.00 ft  
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	3.00
0	0	0	16.0000	5.00
0	0	0	24.0000	4.00

Comment: Tailwater elevation obtained from stormwater calculations dated 12/8/2011 prepared by Gear Engineering and approved by the SJRWMD, Permit No. 33833-5 and used for calculations dated March 2017 prepared by Poulos & Bennett and approved by SJRWMD, Permit No. 148413-1

Drop Structure Link: DS-10		Upstream Pipe	Downstream Pipe
Scenario:	Future Conditions	Invert: 2.47 ft	Invert: 2.47 ft
From Node:	Pond 10	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	TW-W	Geometry: Circular	Geometry: Circular
Link Count:	2	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	0	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	91.00 ft	Top Clip	
FHWA Code:	1	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.50	Op Table:	Op Table:
Exit Loss Coef:	1.00	Ref Node:	Ref Node:
Bend Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Location:	0.00 dec		
Energy Switch:	Energy		

Pipe Comment:

Weir Component		Bottom Clip	
Weir:	1	Default: 0.00 ft	
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	Top Clip	
Weir Type:	Horizontal	Default: 0.00 ft	
Geometry Type:	Rectangular	Op Table:	
Invert:	6.80 ft	Ref Node:	
Control Elevation:	6.80 ft	Discharge Coefficients	
Max Depth:	6.58 ft	Weir Default:	3.200
Max Width:	3.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Weir Comment: As per as-builts, grate elevation at 6.8

Weir Component		Bottom Clip	
Weir:	2	Default: 0.00 ft	
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	Top Clip	
Weir Type:	Sharp Crested Vertical	Default: 0.00 ft	
Geometry Type:	Rectangular	Op Table:	
Invert:	6.20 ft	Ref Node:	
Control Elevation:	6.20 ft	Discharge Coefficients	
Max Depth:	0.60 ft	Weir Default:	3.200
Max Width:	3.33 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Weir Comment: As per permit plans, weir width is 3.33'. To meet water quality the weir is to be raised to 6.2



Drop Structure Comment:

Drop Structure Link: DS-9		Upstream Pipe	Downstream Pipe
Scenario:	Future Conditions	Invert: 2.10 ft	Invert: 2.05 ft
From Node:	Pond 9/19	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	TW-E	Geometry: Circular	Geometry: Circular
Link Count:	2	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	0	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	89.00 ft	Top Clip	
FHWA Code:	1	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.50	Op Table:	Op Table:
Exit Loss Coef:	1.00	Ref Node:	Ref Node:
Bend Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Location:	0.00 dec		
Energy Switch:	Energy		

Pipe Comment:

Weir Component		
Weir:	1	Bottom Clip
Weir Count:	1	Default: 0.00 ft
Weir Flow Direction:	Both	Op Table:
Damping:	0.0000 ft	Ref Node:
Weir Type:	Horizontal	Top Clip
Geometry Type:	Rectangular	Default: 0.00 ft
Invert:	7.00 ft	Op Table:
Control Elevation:	7.00 ft	Ref Node:
Max Depth:	6.58 ft	Discharge Coefficients
Max Width:	3.00 ft	Weir Default: 3.200
Fillet:	0.00 ft	Weir Table:
		Orifice Default: 0.600
		Orifice Table:

Weir Comment: As per as-builts, grate elevation at 7.0

Weir Component		
Weir:	2	Bottom Clip
Weir Count:	1	Default: 0.00 ft
Weir Flow Direction:	Both	Op Table:
Damping:	0.0000 ft	Ref Node:
Weir Type:	Sharp Crested Vertical	Top Clip
Geometry Type:	Rectangular	Default: 0.00 ft
Invert:	6.20 ft	Op Table:
Control Elevation:	6.20 ft	Ref Node:

Max Depth: 0.80 ft  
 Max Width: 2.00 ft  
 Fillet: 0.00 ft

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: As per permit plans, weir width is 2.0'. To meet water quality the weir is to be raised to 6.2

Drop Structure Comment:

Pipe Link: Pipe 1	Upstream	Downstream
Scenario: Future Conditions	Invert: 10.10 ft	Invert: 9.98 ft
From Node: Pond 1	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 2	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 72.00 ft	Op Table:	Op Table:
FHWA Code: 5	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 10-1	Upstream	Downstream
Scenario: Future Conditions	Invert: 5.22 ft	Invert: 5.20 ft
From Node: Pond 10	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 18	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 33.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 11-1		Upstream	Downstream
Scenario:	Future Conditions	Invert: 0.00 ft	Invert: 0.00 ft
From Node:	Pond 11	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 18	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	89.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 12		Upstream	Downstream
Scenario:	Future Conditions	Invert: 2.91 ft	Invert: 1.92 ft
From Node:	Pond 12	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 18	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.75 ft	Max Depth: 1.75 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	67.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 13		Upstream	Downstream
Scenario:	Future Conditions	Invert: 2.90 ft	Invert: 2.06 ft
From Node:	Pond 13	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	56.00 ft	Op Table:	Op Table:
FHWA Code:	0	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	

Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: Pipe 14		Upstream	Downstream
Scenario:	Future Conditions	Invert: 4.88 ft	Invert: 4.00 ft
From Node:	Pond 14	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	55.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 2-1		Upstream	Downstream
Scenario:	Future Conditions	Invert: 5.02 ft	Invert: 4.98 ft
From Node:	Pond 2	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	Pond 16/17	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	94.00 ft	Op Table:	Op Table:
FHWA Code:	5	Ref Node:	Ref Node:
Entr Loss Coef:	0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	1.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 dec	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 2-2		Upstream	Downstream
Scenario:	Future Conditions	Invert: -0.20 ft	Invert: -0.27 ft

From Node:	Pond 2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 8	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	312.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link:	Pipe 22	Upstream		Downstream	
Scenario:	Future Conditions	Invert:	0.10 ft	Invert:	0.10 ft
From Node:	MH 18-1	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 18	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	55.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link:	Pipe 23	Upstream		Downstream	
Scenario:	Future Conditions	Invert:	0.20 ft	Invert:	0.20 ft
From Node:	MH 16-3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	MH 18-1	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	171.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	

Energy Switch: Energy

Ref Node:  
Manning's N: 0.0000

Ref Node:  
Manning's N: 0.0000

Comment:

Pipe Link: Pipe 24	Upstream	Downstream
Scenario: Future Conditions	Invert: 0.00 ft	Invert: 0.00 ft
From Node: Pond 16/17	Manning's N: 0.0130	Manning's N: 0.0130
To Node: MH 16-3	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 48.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 3	Upstream	Downstream
Scenario: Future Conditions	Invert: 4.45 ft	Invert: 4.75 ft
From Node: Pond 3	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 2	Geometry: Circular	Geometry: Circular
Link Count: 1	Max Depth: 2.00 ft	Max Depth: 2.00 ft
Flow Direction: Both	Bottom Clip	
Damping: 0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length: 53.00 ft	Op Table:	Op Table:
FHWA Code: 1	Ref Node:	Ref Node:
Entr Loss Coef: 0.50	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef: 1.00	Top Clip	
Bend Loss Coef: 0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location: 0.00 dec	Op Table:	Op Table:
Energy Switch: Energy	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: Pipe 5	Upstream	Downstream
Scenario: Future Conditions	Invert: 3.91 ft	Invert: 3.53 ft
From Node: Pond 4/5	Manning's N: 0.0130	Manning's N: 0.0130
To Node: Pond 8	Geometry: Circular	Geometry: Circular

Link Count:	1	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	44.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: Pipe 6-1		Upstream		Downstream	
Scenario:	Future Conditions	Invert:	5.40 ft	Invert:	5.60 ft
From Node:	Pond 6	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 9/19	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	107.00 ft	Op Table:		Op Table:	
FHWA Code:	5	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: Pipe 8		Upstream		Downstream	
Scenario:	Future Conditions	Invert:	0.88 ft	Invert:	0.89 ft
From Node:	Pond 8	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Pond 9/19	Geometry:	Circular	Geometry:	Circular
Link Count:	1	Max Depth:	3.00 ft	Max Depth:	3.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	52.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

**Weir Link: Weir 16**

Scenario:	Future Conditions	<b>Bottom Clip</b>
From Node:	Pond 16/17	Default: 0.00 ft
To Node:	TW-W	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	<b>Top Clip</b>
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Trapezoidal	Ref Node:
Invert:	6.20 ft	<b>Discharge Coefficients</b>
Control Elevation:	3.50 ft	Weir Default: 3.200
Max Depth:	999.00 ft	Weir Table:
Extrapolation Method:	Normal Projection	Orifice Default: 0.600
Bottom Width:	20.00 ft	Orifice Table:
Left Slope:	4.000 (h:v)	
Right Slope:	4.000 (h:v)	

Comment:

**Weir Link: Weir 17**

Scenario:	Future Conditions	<b>Bottom Clip</b>
From Node:	Pond 16/17	Default: 0.00 ft
To Node:	TW-W	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	<b>Top Clip</b>
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Sharp Crested Vertical	Op Table:
Geometry Type:	Trapezoidal	Ref Node:
Invert:	6.20 ft	<b>Discharge Coefficients</b>
Control Elevation:	3.50 ft	Weir Default: 3.200
Max Depth:	999.00 ft	Weir Table:
Extrapolation Method:	Normal Projection	Orifice Default: 0.600
Bottom Width:	20.00 ft	Orifice Table:
Left Slope:	4.000 (h:v)	
Right Slope:	4.000 (h:v)	

Comment:

**Weir Link: Weir 18**

Scenario:	Future Conditions	<b>Bottom Clip</b>
From Node:	Pond 18	Default: 0.00 ft
To Node:	TW-W	Op Table:



Link Count: 1	
Flow Direction: Both	Ref Node:
Damping: 0.0000 ft	Top Clip
Weir Type: Sharp Crested Vertical	Default: 0.00 ft
Geometry Type: Trapezoidal	Op Table:
Invert: 6.20 ft	Ref Node:
Control Elevation: 3.50 ft	Discharge Coefficients
Max Depth: 999.00 ft	Weir Default: 3.200
Extrapolation Method: Normal Projection	Weir Table:
Bottom Width: 20.00 ft	Orifice Default: 0.600
Left Slope: 4.000 (h:v)	Orifice Table:
Right Slope: 4.000 (h:v)	

Comment:

Simulation: 010YR-24HR

Scenario: Future Conditions  
 Run Date/Time: 10/21/2021 5:37:37 PM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph  
 Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite CN-Future  
 Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft  
 Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic  
 Dflt Damping (2D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (2D):  
 Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr  
 ET for Manual Basins: False  
 Smp/Man Basin Rain Global  
 Opt:  
 OF Region Rain Opt: Global  
 Rainfall Name: ~FLMOD  
 Rainfall Amount: 7.50 in  
 Storm Duration: 24.0000 hr  
 Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (1D):  
 Energy Switch (1D): Energy

Comment:

Simulation: 025YR-024HR

Scenario: Future Conditions  
 Run Date/Time: 10/21/2021 5:38:18 PM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite CN-Future Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6

IA Recovery Time: 24.0000 hr  
 ET for Manual Basins: False

Over-Relax Weight	0.5 dec	Smp/Man Basin Rain	Global
Fact:		Opt:	
dZ Tolerance:	0.0010 ft	OF Region Rain Opt:	Global
Max dZ:	1.0000 ft	Rainfall Name:	~FLMOD
Link Optimizer Tol:	0.0001 ft	Rainfall Amount:	9.50 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area	100 ft2	Min Node Srf Area	100 ft2
(2D):		(1D):	
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100YR-24HR

Scenario: Future Conditions  
 Run Date/Time: 10/21/2021 5:38:56 PM  
 Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File  
Save Restart: False

Resources & Lookup Tables

Resources  
Rainfall Folder:  
Reference ET Folder:  
Unit Hydrograph Folder:

Lookup Tables  
Boundary Stage Set:  
Extern Hydrograph Set:  
Curve Number Set: Composite CN-Future Conditions  
Green-Ampt Set:  
Vertical Layers Set:  
Impervious Set: Composite CN  
Roughness Set:  
Crop Coef Set:  
Fillable Porosity Set:  
Conductivity Set:  
Leakage Set:

Tolerances & Options

Time Marching: SAOR  
Max Iterations: 6  
Over-Relax Weight: 0.5 dec  
Fact:  
dZ Tolerance: 0.0010 ft  
Max dZ: 1.0000 ft  
Link Optimizer Tol: 0.0001 ft  
Edge Length Option: Automatic  
Dflt Damping (2D): 0.0050 ft  
Min Node Srf Area (2D): 100 ft2  
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr  
ET for Manual Basins: False  
Smp/Man Basin Rain Opt: Global  
OF Region Rain Opt: Global  
Rainfall Name: ~FLMOD  
Rainfall Amount: 13.00 in  
Storm Duration: 24.0000 hr  
Dflt Damping (1D): 0.0050 ft  
Min Node Srf Area (1D): 100 ft2  
Energy Switch (1D): Energy

Comment:

Simulation: 2.33YR-24HR

Scenario: Future Conditions  
Run Date/Time: 10/21/2021 5:39:28 PM  
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:  
 Reference ET Folder:  
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: Composite CN-Future Conditions  
 Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: Composite CN  
 Roughness Set:  
 Crop Coef Set:  
 Fillable Porosity Set:  
 Conductivity Set:  
 Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	OF Region Rain Opt: Global
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FLMOD
	Rainfall Amount: 5.00 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area 100 ft2	Min Node Srf Area 100 ft2
(2D):	(1D):
Energy Switch (2D): Energy	Energy Switch (1D): Energy

Comment:

# Section 5 Results Summary



**POND PEAK STAGE SUMMARY**

Table 7

PEAK STAGE (ft-NAVD)

Future Pond ID	Top of Bank (ft-NAVD)	2.33YR-24HR			025YR-024HR		
		Pre-Permit Conditions	Existing Conditions	Future Conditions	Pre-Permit Conditions	Existing Conditions	Future Conditions
Pond 1	14.37	10.80	10.81	10.81	11.14	11.14	11.14
Pond 2	6.40	6.37	6.36	6.53	7.51	7.05	7.20
Pond 3	6.60	6.37	6.36	6.54	7.51	7.07	7.23
Pond 4/5	7.00	5.80	6.51	6.73	6.26	7.51	7.72
		5.01	0.00		5.50		
Pond 6	7.00	7.08	6.62	6.74	7.88	7.37	7.49
		6.80			7.59		
Pond 8	7.00	5.01	6.49	6.70	5.02	7.26	7.39
Pond 9/19	6.70	5.00	6.49	6.70	5.01	7.17	7.26
		7.24			7.50		
Pond 10	6.50	5.00	5.91	6.39	5.00	6.21	6.68
Pond 11	6.50	5.76	6.16	6.41	6.30	6.64	6.94
Pond 12	5.50	5.00	6.17	6.42	5.41	6.76	7.04
Pond 13	6.60	5.00	6.19	6.40	5.48	6.73	6.79
Pond 14	6.90	5.80	6.19	6.53	6.21	6.71	7.61
		5.18			5.82		
Pond 16/17	6.30	5.00	6.17	6.39	5.00	6.44	6.66
		5.00			5.00		
Pond 18	6.20	5.00	6.15	6.39	5.00	6.41	6.67

**PEAK DISCHARGE SUMMARY**

Table 8

Tailwater ID	2.33YR-24HR			025YR-024HR		
	Pre-Permit Conditions	Existing Conditions	Future Conditions	Pre-Permit Conditions	Existing Conditions	Future Conditions
	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)	Peak Inflow (cfs)
TW-E	11.17	4.34	4.48	23.68	24.41	28.89
TW-W	54.93	17.92	18.42	106.96	71.09	71.84
TOTAL	66.10	22.26	22.90	130.64	95.50	100.73

AS WRITTEN IN PERMIT				
BASIN ID	TOTAL BASIN AREA (acres)	EXISTING IMPERVIOUS AREA (acres)	PROPOSED IMPERVIOUS AREA (acres)	FUTURE IMPERVIOUS AREA (acres)
1	0.50	0.34	0.00	0.10
2	3.02	0.90	0.00	1.01
3	3.44	1.68	0.00	0.61
4	3.77	1.78	0.00	1.70
5	1.59	0.56	0.00	0.85
6	2.00	0.92	0.00	0.70
7	0.71	0.28	0.00	0.42
8	1.74	0.64	0.00	0.62
9	0.99	0.25	0.00	0.28
10	2.12	1.10	0.00	0.64
11	2.93	0.63	0.00	1.59
12	2.11	1.29	0.00	0.57
13	1.32	0.47	0.00	0.34
14	1.68	0.58	0.00	0.73
15	1.60	0.69	0.00	0.91
16	4.02	0.82	0.00	1.66
17	2.09	0.90	0.00	0.67
18	1.76	0.74	0.00	0.60
19	0.81	0.65	0.00	0.12

PERMIT DETERMINATIONS								
REMAINING AREA FOR IMPROVEMENT								
0.10								
1.01								
0.61								
1.70								
0.85								
0.70								
0.42								
0.62								
0.28								
0.64								
1.59								
0.57								
0.34								
0.73								
0.91								
1.66								
0.67								
0.60								
0.12								
APPROVED ?								
BUILT?								