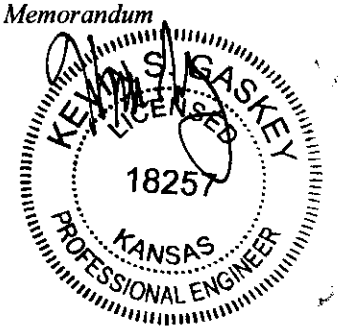

2-1-13

To: Scott C. Lindebak, P.E., CFM – City of Wichita

From: Kevin S. Gaskey, P.E. *(KS)*, – Kimley-Horn and Associates, Inc.

Cc: Brad Pickering, P.E. *(TX)*, CFM – Kimley-Horn and Associates, Inc.
Andrew Simonsen, E.I.T. *(TX)* – Kimley-Horn and Associates, Inc.

Date: February 1, 2013

Subj: Detention Pond Design

Kimley-Horn and Associates Inc. (KHA) has prepared a detention pond design for a 38 +/- acre proposed Sam's Club located at the northeast corner of N Maize Rd. and West 29th St. N in the City of Wichita, Kansas. This analysis considers four outfall locations, which are designated by letters A-D for the purpose of this report. The locations of each outfall are shown on the attached Existing and Proposed Condition Drainage Area Maps.

The proposed detention ponds are designed to reduce the proposed condition peak discharge to less than or equal to the existing condition peak discharge for the 2-, 5-, 10-, 25-, and 100-year storm events. Additionally, compensatory storage is provided below elevation 1351.7 so there is no reduction in valley storage as a result of this project. Approximately 5.3 acre-feet of compensatory storage is required based on the existing topographic information within the site. Finally, the total provided detention storage exceeds the required detention storage by at least 10% as required by the City of Wichita.

Methodology

KHA prepared three hydrologic models for the site. The models represent existing and proposed conditions for the site at each outfall location and a determination of the minimum amount of detention storage.

Bentley PondPack V8i was used to calculate the peak flow rates nd to size each detention pond. Each drainage area, as applicable, was divided into impervious and pervious sub-basins in accordance with City criteria.

The NRCS Unit Hydrograph Method was used to generate hydrographs and the NRCS Type II rainfall distribution was used to model precipitation for the 2-, 5-, 10-, 25-, and 100-year storm events. Local rainfall depths were obtained from the Sedgwick County Stormwater Manual. Existing and proposed time of concentrations were calculated in accordance with methodology described in the Sedgwick County Stormwater Manual. Curve Numbers for existing watershed conditions are based on land use and soil type. Existing land uses are based on on-ground survey information and aerial photography. Soil types are based on information obtained from the NRCS Websoil Survey (NRCS, 2012) and consist of Type B and Type D soils.

The amount of impervious area for each basin in proposed conditions was calculated based on the proposed site plan. An 85% impervious area was assumed for areas where no site plan was available. Pervious areas were assumed to be disturbed pervious, and an appropriate

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Curve Number was selected based on soil type. A Curve Number value of 98 was assumed for all impervious areas.

A tailwater condition was established for the proposed detention ponds. The tailwater stage table is based on existing condition Fox Ridge Lake, which was obtained from the City's HEC-HMS model for the Cadillac Lake drainage system.

Existing Drainage Conditions

Each drainage area was divided into pervious and impervious sub-basins. Pervious areas were assumed as pre-developed conditions, as classified by the Sedgwick County Stormwater Manual. Existing buildings and drives were considered to be impervious.

Approximately 14.9 acres drains to Outfall A which is located at the southwest corner of the site. Outfall A drains into the roadside ditch along the east side of N Maize Rd. Outfall C is located along the eastern property boundary. An existing 36" reinforced concrete pipe collects runoff from approximately 16.4 acres of the site and discharges into the adjacent Fox Ridge pond system which is located east of the site. The remaining 6.8 acres of the site drains to the southeast to Outfall D and into an existing storm sewer on the north side of West 29th St. N before ultimately discharging into the Fox Ridge pond.

Existing condition outfall locations and drainage area boundaries are shown on the attached Existing Condition Drainage Area Map. Table 1 summarizes the existing peak flow at each outfall for the modeled storm events.

Table 1: Existing Condition Flow Summary

OUTFALL	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
A	16	26	34	45	65
C	17	27	36	47	69
D	10	16	21	26	37

Existing condition hydrologic calculations, PondPack output, and digital models are attached to this memo.

Proposed Drainage Conditions

The City of Wichita requires proposed peak flows be less than or equal to existing condition peak flows for 2-, 5-, 10-, 25-, and 100-year storm events.

The site will drain to the proposed detention ponds, with the exception of small bypass areas that will drain directly to Outfalls A, C, and D.

Four detention ponds, shown on the attached Proposed Condition Drainage Area Map as Pond 1, Pond 2, Pond 3, and Pond 4, will reduce the proposed condition peak flow at Outfalls A, C, and D to less than or equal to existing conditions for each of the modeled storm events. Ponds 1 through 3 are proposed to be interconnected with 3-36" reinforced

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concrete pipes so water can flow between the ponds to efficiently utilize the available volume. Pond 4, which serves Outfall C, is independent of Ponds 1 through 3.

Compensatory storage will be provided in Ponds 2 and 3 below the gravity drain elevation of Pond 3. An 800 GPM pump will be located at the Pond 3 outfall to drain compensatory storage volume. Storage above the Pond 3 gravity drain elevation is considered detention storage. The pump will turn on as soon as it senses water in the pond. The pump will shut off once the water level reaches the Pond 3 gravity drain elevation and will turn on again after the entire detention volume has drained. This will prevent the pump from activating during the peak flow event. The detention storage will be controlled by a multistage hydraulic structure. Pond 2 has been graded to drain into Pond 3 during low flow conditions.

Tables 2, 3, 4, and 5 summarize the proposed detention ponds.

Table 2: Pond 1 Summary; 100-Year Event

Drainage Area (ac)	**Q_{in} (cfs)**	**Q_{out} (cfs)**	**Peak Storage (ac-ft)**	**Peak WSEL (ft)**
3.03	73.69	36.01	1.22	1351.92
Multistage Outfall: 12" Orifice and 20' Spillway; 36" Culvert				

Table 3: Pond 2 Summary; 100-Year Event

Drainage Area (ac)	**Q_{in} (cfs)**	**Q_{out} (cfs)**	**Peak Storage (ac-ft)**	**Peak WSEL (ft)**
16.62	153.36	95.90	4.21	1352.06
Outfall: No outfall, connected to Pond 1 and Pond 3 with 3-36" reinforced concrete pipes				

Table 4: Pond 3 Summary; 100-Year Event

Drainage Area (ac)	**Q_{in} (cfs)**	**Q_{out} (cfs)**	**Peak Storage (ac-ft)**	**Peak WSEL (ft)**
7.41	116.94	23.83	7.62	1352.00
Multistage Outfall: 18" Orifice and 12' Spillway; 27" Culvert				

Table 5: Pond 4 Summary; 100-Year Event

Drainage Area (ac)	**Q_{in} (cfs)**	**Q_{out} (cfs)**	**Peak Storage (ac-ft)**	**Peak WSEL (ft)**
3.55	30.23	21.15	0.45	1352.04
Multistage Outfall: 6" Orifice and 12' Spillway; 36" Culvert				

The proposed design detains proposed condition peak discharge back to less than existing condition. A separate model, included as *Sams_Storage*, was created to calculate the minimum required detention storage to match existing flows at each outfall. The resulting required detention storage is 7.4 ac-feet. Approximately 5.3 ac-feet of compensatory storage is required on site. The total required storage, including an additional 10% of detention storage, is 13.4 ac-feet. The total storage provided to each pond's respective 100-year water surface elevation is 13.5 acre-feet, which exceeds the total required storage.

Table 6 summarizes the proposed peak flow at the outfall locations for each modeled storm event. The table shows the proposed condition peak flow is less than the existing condition peak flow rate for each event.

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Table 6: Proposed Condition Flow Summary

OUTFALL	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
A	11	13	19	26	40
C	15	21	35	42	61
D	10	13	17	25	32

Proposed condition hydrologic calculations, PondPack output, and digital models are attached to this memo.

In addition to peak flow control, the City of Wichita requires stormwater quality measures be implemented to reduce total suspended solids. Stormceptors will be used at each outfall to reduce total suspended solids from the stormwater discharge prior to the site's outfall. The proprietary system is sized to meet the requirements in the Sedgwick County Stormwater Manual. Stormceptors specifications are included in the Operations and Maintenance plan.

Attachments
Existing Condition Drainage Area Map
Existing Condition Hydrologic Calculations
Existing Condition PondPack Output
Proposed Condition Drainage Area Map
Proposed Condition Hydrologic Calculations
Proposed Condition PondPack Output
Digital Files

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EXISTING CONDITIONS, TIME OF CONCENTRATION CALCULATIONS

Sheet Flow

Basin	L_o (ft.)	S (ft/ft)	Conditions	n	P_2 (in.)	t_t (min)
DA-A	100	0.02	Cultivated, no crop	0.17	3.5	11.6
DA-C	100	0.02	Cultivated, no crop	0.17	3.5	10.0
DA-D	100	0.03	Cultivated, no crop	0.17	3.5	8.7

Shallow Flow

Basin	L_o (ft.)	S (ft/ft)	Conditions	K	V (ft/s)	t_t (min)
DA-A	614	0.01	Cultivated, no crop	9.00	0.79	13.0
DA-C	640	0.01	Cultivated, no crop	9.00	0.86	12.5
DA-D	561	0.01	Cultivated, no crop	9.00	0.93	10.1

Channel Flow

Basin	L_o (ft.)	S (ft/ft)	Roughness (n)	b (ft.)	y (ft.)	z (H:V)	R_h (ft.)	V (ft/s)	t_{ch} (min)
DA-C	558	0.0043	.027	3	2	3	1.15	3.96	2.3

Total Time of Concentration

Basin	t_c (min)
DA-A	24.6
DA-C	24.8
DA-D	18.8

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Master Network Summary 1

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
DA-C-Impervious	Pre-Development 2-year	2	0.192	726.00	1.97
DA-C-Impervious	Pre-Development 5-year	5	0.245	726.00	2.49
DA-C-Impervious	Pre-Development 10-year	10	0.292	726.00	2.95
DA-C-Impervious	Pre-Development 25-year	25	0.345	726.00	3.46
DA-C-Impervious	Pre-Development 100-year	100	0.445	726.00	4.44
DA-A-Pervious	Pre-Development 2-year	2	1.331	729.00	14.39
DA-A-Pervious	Pre-Development 5-year	5	2.070	729.00	23.16
DA-A-Pervious	Pre-Development 10-year	10	2.784	729.00	31.53
DA-A-Pervious	Pre-Development 25-year	25	3.635	729.00	41.40
DA-A-Pervious	Pre-Development 100-year	100	5.334	729.00	60.77
DA-D-Impervious	Pre-Development 2-year	2	0.001	723.00	0.01
DA-D-Impervious	Pre-Development 5-year	5	0.001	723.00	0.01
DA-D-Impervious	Pre-Development 10-year	10	0.001	723.00	0.01
DA-D-Impervious	Pre-Development 25-year	25	0.001	723.00	0.02
DA-D-Impervious	Pre-Development 100-year	100	0.002	723.00	0.02
DA-A-Impervious	Pre-Development 2-year	2	0.194	726.00	2.00
DA-A-Impervious	Pre-Development 5-year	5	0.247	726.00	2.52
DA-A-Impervious	Pre-Development 10-year	10	0.295	726.00	2.99
DA-A-Impervious	Pre-Development 25-year	25	0.348	726.00	3.51
DA-A-Impervious	Pre-Development 100-year	100	0.449	726.00	4.49
DA-D-Pervious	Pre-Development 2-year	2	0.811	726.00	10.47
DA-D-Pervious	Pre-Development 5-year	5	1.206	726.00	15.72
DA-D-Pervious	Pre-Development 10-year	10	1.581	726.00	20.60
DA-D-Pervious	Pre-Development 25-year	25	2.019	726.00	26.22

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
DA-D-Pervious	Pre-Development 100-year	100	2.881	723.00	37.28
DA-C-Pervious	Pre-Development 2-year	2	1.382	729.00	14.63
DA-C-Pervious	Pre-Development 5-year	5	2.178	729.00	24.06
DA-C-Pervious	Pre-Development 10-year	10	2.952	729.00	33.14
DA-C-Pervious	Pre-Development 25-year	25	3.878	729.00	43.88
DA-C-Pervious	Pre-Development 100-year	100	5.738	729.00	65.11

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Outfall C	Pre-Development 2-year	2	1.575	729.00	16.58
Outfall C	Pre-Development 5-year	5	2.423	729.00	26.52
Outfall C	Pre-Development 10-year	10	3.244	729.00	36.05
Outfall C	Pre-Development 25-year	25	4.223	729.00	47.30
Outfall C	Pre-Development 100-year	100	6.183	729.00	69.49
Outfall D	Pre-Development 2-year	2	0.811	726.00	10.48
Outfall D	Pre-Development 5-year	5	1.207	726.00	15.73
Outfall D	Pre-Development 10-year	10	1.582	726.00	20.61
Outfall D	Pre-Development 25-year	25	2.021	726.00	26.24
Outfall D	Pre-Development 100-year	100	2.883	723.00	37.30
Outfall A	Pre-Development 2-year	2	1.525	729.00	16.36
Outfall A	Pre-Development 5-year	5	2.317	729.00	25.64
Outfall A	Pre-Development 10-year	10	3.079	729.00	34.48
Outfall A	Pre-Development 25-year	25	3.983	729.00	44.86
Outfall A	Pre-Development 100-year	100	5.783	729.00	65.21

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Proposed Curve Number							
Basin	Area (acres)	Impervious Area (acres)	Pervious Area (acres)	Soil Type	Impervious CN	Pervious CN	Composite CN
DA-A1	16.62	13.49	3.13	97% Type B Soil 3% Type D Soil	98.0	80.2	94.6
DA-A2	2.13	1.14	0.99	71% Type B Soil 29% Type D Soil	98.0	82.3	90.7
DA-C1	3.55	0.92	2.63	100% Type B Soil	98.0	80.0	84.7
DA-C2	5.52	1.58	3.94	100% Type B Soil	98.0	80.0	85.1
DA-D1	7.41	6.67	0.74	75% Type B Soil 25% Type D Soil	98.0	82.0	96.4
DA-D2	1.23	0.26	0.97	43% Type B Soil 57% Type D Soil	98.0	84.6	87.2
Pond 1	1.63	1.47	0.16	64% Type B Soil 36% Type D Soil	98.0	82.9	96.5

Note: Pervious CN assumes developed conditions

PROPOSED CONDITIONS, TIME OF CONENTRATION

Sheet Flow

Basin	L_o (ft.)	S (ft/ft)	Conditions	n	P_2 (in.)	t_i (min)
DA-A1	100	0.02	Concrete	0.011	3.5	1.2
DA-A2	100	0.02	Concrete	0.011	3.5	1.3
DA-C1 Pervious	54	0.35	Berm, Short Grass	0.150	3.5	1.8
DA-C1 Impervious	100	0.02	Concrete	0.011	3.5	1.2
DA-C2 Pervious	56	0.22	Berm, Short Grass	0.150	3.5	2.3
DA-C2 Impervious	100	0.01	Concrete	0.011	3.5	1.5
DA-D1	100	0.02	Concrete	0.011	3.5	1.2
DA-D2	25	0.12	Berm, Short Grass	0.150	3.5	1.5
POND 1	100	0.01	Concrete	0.011	3.5	2.0

Shallow Concentrated Flow

Basin	L (ft)	S (ft/ft)	K	V (ft/s)	t_s (min)
DA-A2	224	0.01	20.30	1.66	2.2
DA-C2 Impervious	219	0.01	20.30	2.03	1.8

Channel Flow

Basin	L_o (ft.)	S (ft/ft)	Roughness (n)	b (ft.)	y (ft.)	z (H:V)	R_h (ft.)	V (ft/s)	t_{ch} (min)
DA-A1	1226	Pipe velocity from storm line calculations						4.26	4.8
DA-C1 Pervious	976	Pipe velocity assumed						4.00	4.1
DA-C1 Impervious	117	Pipe velocity assumed						4.00	0.5
DA-C2 Pervious	1128	0.003	.027	0	1	3	0.47	1.83	10.3
DA-C2 Impervious	395	Pipe velocity from storm line calculations						4.61	1.4
DA-D1	168	Pipe velocity assumed						4.00	0.7
DA-D2	378	0.01	.013	0	0.5	50	0.25	5.22	1.2
POND 1	240	Pipe velocity assumed						4.00	1.0

Total Time of Concentration

Basin	t_c (min)
DA-A1	6.0
DA-A2	3.5
DA-C1 Pervious	5.9
DA-C1 Impervious	1.6
DA-C2 Pervious	12.5
DA-C2 Impervious	4.8
DA-D1	1.9
DA-D2	2.7
POND 1	3.0

Pond 1 Stage-Storage Table					
Elevation	Area (ft^2)	Incremental Storage (ft^3)	Cumulative Storage (ft^3)	Cumulative Storage (ac-ft)	
1,349.00	6,260	0	0	0.00	
1,350.00	18,735	12,497	12,497	0.29	
1351.00	20,299	19,517	32,014	0.73	
1351.92	21,779	19,356	51,370	1.18	100-Year WSEL
1,352.00	21,911	1,748	53,118	1.22	
1,353.00	23,562	22,736	75,854	1.74	
1354.00	25,260	24,411	100,265	2.30	

Pond 2 Stage-Storage Table					
Elevation	Area (ft^2)	Incremental Storage (ft^3)	Cumulative Storage (ft^3)	Cumulative Storage (ac-ft)	
1,344.00	9,296	0	0	0.00	
1,345.00	17,250	13,273	13,273	0.30	
1346.00	19,075	18,162	31,435	0.72	
1347.00	20,965	20,020	51,455	1.18	
1,348.00	22,926	21,946	73,401	1.69	
1,348.10	23,129	2,303	75,703	1.74	Compensatory Storage
1349.00	24,956	21,638	97,341	2.23	
1350.00	27,046	26,001	123,342	2.83	
1,351.00	29,211	28,129	151,471	3.48	
1,352.00	31,442	30,326	181,798	4.17	
1352.06	31,579	1,891	183,688	4.22	100-Year WSEL
1353.00	33,737	30,699	214,387	4.92	
1,354.00	36,103	34,920	249,307	5.72	

Pond 3 Stage-Storage Table					
Elevation	Area (ft^2)	Incremental Storage (ft^3)	Cumulative Storage (ft^3)	Cumulative Storage (ac-ft)	
1,342.00	8,002	0	0	0.00	
1,343.00	22,573	15,287	15,287	0.35	
1344.00	25,470	24,021	39,309	0.90	
1345.00	28,083	26,776	66,085	1.52	
1,346.00	30,784	29,433	95,518	2.19	
1,347.00	33,563	32,173	127,692	2.93	
1348.00	36,425	34,994	162,686	3.73	
1348.10	36,719	3,657	166,343	3.82	Compensatory Storage
1,349.00	39,370	37,897	200,583	4.60	
1,350.00	42,397	40,883	241,466	5.54	
1351.00	45,507	43,952	285,418	6.55	
1352.00	48,696	47,101	332,520	7.63	100-Year WSEL
1353.00	51,893	50,294	382,814	8.79	
1354.00	55,234	53,564	436,378	10.02	

Pond 4 Stage-Storage Table					
Elevation	Area (ft^2)	Incremental Storage (ft^3)	Cumulative Storage (ft^3)	Cumulative Storage (ac-ft)	
1,350.00	5,815	0	0	0.00	
1,351.00	9,383	7,599	7,599	0.17	
1352.00	10,934	10,158	17,757	0.41	
1352.04	10,999	439	18,196	0.42	100-Year WSEL
1353.00	12,558	11,307	29,503	0.68	
1354.00	14,244	13,401	42,904	0.98	

Pond	Compensatory Storage (ac-ft)	Detention Storage (ac-ft)
1	0.00	1.18
2	1.74	2.48
3	3.82	3.81
4	0.00	0.42
Total	5.56	7.89

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
DA-C1-Pervious	Post-Development 2-year	2	0.358	717.00	6.48
DA-C1-Pervious	Post-Development 5-year	5	0.520	717.00	9.38
DA-C1-Pervious	Post-Development 10-year	10	0.671	717.00	12.04
DA-C1-Pervious	Post-Development 25-year	25	0.847	717.00	15.07
DA-C1-Pervious	Post-Development 100-year	100	1.190	717.00	20.84
DA-C1-Impervious	Post-Development 2-year	2	0.252	714.00	4.42
DA-C1-Impervious	Post-Development 5-year	5	0.321	714.00	5.58
DA-C1-Impervious	Post-Development 10-year	10	0.382	714.00	6.61
DA-C1-Impervious	Post-Development 25-year	25	0.451	714.00	7.76
DA-C1-Impervious	Post-Development 100-year	100	0.582	714.00	9.93
DA-A1-Pervious	Post-Development 2-year	2	0.431	717.00	7.78
DA-A1-Pervious	Post-Development 5-year	5	0.625	717.00	11.26
DA-A1-Pervious	Post-Development 10-year	10	0.806	717.00	14.43
DA-A1-Pervious	Post-Development 25-year	25	1.016	717.00	18.05
DA-A1-Pervious	Post-Development 100-year	100	1.425	717.00	24.94
DA-A1-Impervious	Post-Development 2-year	2	3.668	717.00	57.15
DA-A1-Impervious	Post-Development 5-year	5	4.676	717.00	72.11
DA-A1-Impervious	Post-Development 10-year	10	5.573	717.00	85.38
DA-A1-Impervious	Post-Development 25-year	25	6.583	717.00	100.29
DA-A1-Impervious	Post-Development 100-year	100	8.490	717.00	128.42
DA-D2-Pervious	Post-Development 2-year	2	0.160	714.00	3.21
DA-D2-Pervious	Post-Development 5-year	5	0.224	714.00	4.46
DA-D2-Pervious	Post-Development 10-year	10	0.283	714.00	5.58
DA-D2-Pervious	Post-Development 25-year	25	0.351	714.00	6.84

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
DA-D2-Pervious	Post-Development 100-year	100	0.481	714.00	9.22
DA-D1-Impervious	Post-Development 2-year	2	1.816	714.00	31.92
DA-D1-Impervious	Post-Development 5-year	5	2.315	714.00	40.26
DA-D1-Impervious	Post-Development 10-year	10	2.759	714.00	47.67
DA-D1-Impervious	Post-Development 25-year	25	3.259	714.00	55.99
DA-D1-Impervious	Post-Development 100-year	100	4.203	714.00	71.69
DA-D1-Pervious	Post-Development 2-year	2	0.110	714.00	2.26
DA-D1-Pervious	Post-Development 5-year	5	0.157	714.00	3.20
DA-D1-Pervious	Post-Development 10-year	10	0.201	714.00	4.05
DA-D1-Pervious	Post-Development 25-year	25	0.251	714.00	5.02
DA-D1-Pervious	Post-Development 100-year	100	0.349	714.00	6.85
Pond 1 Impervious	Post-Development 2-year	2	0.400	714.00	6.97
Pond 1 Impervious	Post-Development 5-year	5	0.510	714.00	8.80
Pond 1 Impervious	Post-Development 10-year	10	0.608	714.00	10.42
Pond 1 Impervious	Post-Development 25-year	25	0.718	714.00	12.23
Pond 1 Impervious	Post-Development 100-year	100	0.926	714.00	15.67
Pond 1 Pervious	Post-Development 2-year	2	0.024	714.00	0.48
Pond 1 Pervious	Post-Development 5-year	5	0.034	714.00	0.68
Pond 1 Pervious	Post-Development 10-year	10	0.043	714.00	0.86
Pond 1 Pervious	Post-Development 25-year	25	0.054	714.00	1.06
Pond 1 Pervious	Post-Development 100-year	100	0.075	714.00	1.44
DA-D2 Impervious	Post-Development 2-year	2	0.072	714.00	1.27
DA-D2 Impervious	Post-Development 5-year	5	0.092	714.00	1.60
DA-D2 Impervious	Post-Development 10-year	10	0.110	714.00	1.89

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
DA-D2 Impervious	Post-Development 25-year	25	0.130	714.00	2.22
DA-D2 Impervious	Post-Development 100-year	100	0.168	714.00	2.84
DA-C2 Pervious	Post-Development 2-year	2	0.536	720.00	8.21
DA-C2 Pervious	Post-Development 5-year	5	0.778	720.00	12.00
DA-C2 Pervious	Post-Development 10-year	10	1.005	720.00	15.48
DA-C2 Pervious	Post-Development 25-year	25	1.268	720.00	19.46
DA-C2 Pervious	Post-Development 100-year	100	1.781	720.00	27.06
DA-C2 Impervious	Post-Development 2-year	2	0.430	714.00	7.08
DA-C2 Impervious	Post-Development 5-year	5	0.548	714.00	8.93
DA-C2 Impervious	Post-Development 10-year	10	0.653	714.00	10.58
DA-C2 Impervious	Post-Development 25-year	25	0.771	714.00	12.43
DA-C2 Impervious	Post-Development 100-year	100	0.995	714.00	15.92
DA-A2-Pervious	Post-Development 2-year	2	0.148	714.00	2.89
DA-A2-Pervious	Post-Development 5-year	5	0.211	714.00	4.12
DA-A2-Pervious	Post-Development 10-year	10	0.269	714.00	5.23
DA-A2-Pervious	Post-Development 25-year	25	0.336	714.00	6.50
DA-A2-Pervious	Post-Development 100-year	100	0.467	714.00	8.89
DA-A2-Impervious	Post-Development 2-year	2	0.311	714.00	5.36
DA-A2-Impervious	Post-Development 5-year	5	0.396	714.00	6.76
DA-A2-Impervious	Post-Development 10-year	10	0.472	714.00	8.01
DA-A2-Impervious	Post-Development 25-year	25	0.558	714.00	9.41
DA-A2-Impervious	Post-Development 100-year	100	0.719	714.00	12.05

Node Summary

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
Outfall C	Post-Development 2-year	2	1.564	720.00	14.83
Outfall C	Post-Development 5-year	5	2.154	720.00	21.26
Outfall C	Post-Development 10-year	10	2.697	720.00	31.58
Outfall C	Post-Development 25-year	25	3.322	720.00	42.00
Outfall C	Post-Development 100-year	100	4.529	720.00	60.68
Outfall D	Post-Development 2-year	2	4.110	720.00	9.99
Outfall D	Post-Development 2-year	2	-0.385	813.00	-5.76
Outfall D	Post-Development 5-year	5	4.717	714.00	12.69
Outfall D	Post-Development 5-year	5	-0.238	813.00	-5.05
Outfall D	Post-Development 10-year	10	5.421	720.00	16.83
Outfall D	Post-Development 10-year	10	-0.136	813.00	-3.81
Outfall D	Post-Development 25-year	25	6.325	720.00	24.51
Outfall D	Post-Development 25-year	25	-0.050	813.00	-2.62
Outfall D	Post-Development 100-year	100	7.944	720.00	31.86
Outfall A	Post-Development 2-year	2	2.690	996.00	11.49
Outfall A	Post-Development 2-year	2	-0.759	813.00	-12.53
Outfall A	Post-Development 5-year	5	3.630	741.00	12.90
Outfall A	Post-Development 5-year	5	-0.425	813.00	-9.75
Outfall A	Post-Development 10-year	10	4.451	735.00	18.54
Outfall A	Post-Development 10-year	10	-0.230	813.00	-7.87
Outfall A	Post-Development 25-year	25	5.377	732.00	25.93
Outfall A	Post-Development 25-year	25	-0.085	813.00	-5.80
Outfall A	Post-Development 100-year	100	7.534	720.00	39.52
A-2	Post-Development 2-year	2	0.458	714.00	8.25

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
A-2	Post-Development 5-year	5	0.607	714.00	10.88
A-2	Post-Development 10-year	10	0.741	714.00	13.24
A-2	Post-Development 25-year	25	0.894	714.00	15.91
A-2	Post-Development 100-year	100	1.186	714.00	20.94

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Pond 2 (IN)	Post-Development 2-year	2	4.099	717.00	64.93	(N/A)	(N/A)
Pond 2 (OUT)	Post-Development 2-year	2	3.771	717.00	30.20	1,351.10	3.543
Pond 2 (Reverse)	Post-Development 2-year	2	-0.236	816.00	-4.25	(N/A)	(N/A)
Pond 2 (IN)	Post-Development 5-year	5	5.301	717.00	83.37	(N/A)	(N/A)
Pond 2 (OUT)	Post-Development 5-year	5	4.807	720.00	41.35	1,351.12	3.557
Pond 2 (Reverse)	Post-Development 5-year	5	-0.098	816.00	-2.78	(N/A)	(N/A)
Pond 2 (IN)	Post-Development 10-year	10	6.379	717.00	99.81	(N/A)	(N/A)
Pond 2 (OUT)	Post-Development 10-year	10	5.793	720.00	54.11	1,351.14	3.570
Pond 2 (Reverse)	Post-Development 10-year	10	-0.029	819.00	-1.57	(N/A)	(N/A)
Pond 2 (IN)	Post-Development 25-year	25	7.598	717.00	118.34	(N/A)	(N/A)
Pond 2 (OUT)	Post-Development 25-year	25	6.955	720.00	67.07	1,351.42	3.767

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Pond 2 (Reverse)	Post-Development 25-year	25	-0.001	819.00	-0.30	(N/A)	(N/A)
Pond 2 (IN)	Post-Development 100-year	100	9.915	717.00	153.36	(N/A)	(N/A)
Pond 2 (OUT)	Post-Development 100-year	100	9.223	720.00	95.90	1,352.06	4.210
Pond 1 (IN)	Post-Development 2-year	2	1.955	720.00	9.28	(N/A)	(N/A)
Pond 1 (Reverse)	Post-Development 2-year	2	-0.442	819.00	-7.54	(N/A)	(N/A)
Pond 1 (OUT)	Post-Development 2-year	2	2.267	996.00	11.35	1,351.09	0.814
Pond 1 (Reverse)	Post-Development 2-year	2	-0.793	813.00	-12.84	(N/A)	(N/A)
Pond 1 (IN)	Post-Development 5-year	5	2.858	723.00	20.25	(N/A)	(N/A)
Pond 1 (Reverse)	Post-Development 5-year	5	-0.223	819.00	-5.43	(N/A)	(N/A)
Pond 1 (OUT)	Post-Development 5-year	5	3.054	744.00	11.83	1,351.11	0.822
Pond 1 (Reverse)	Post-Development 5-year	5	-0.461	813.00	-10.16	(N/A)	(N/A)
Pond 1 (IN)	Post-Development 10-year	10	3.620	726.00	33.13	(N/A)	(N/A)
Pond 1 (Reverse)	Post-Development 10-year	10	-0.100	819.00	-4.09	(N/A)	(N/A)
Pond 1 (OUT)	Post-Development 10-year	10	3.742	735.00	16.97	1,351.12	0.828
Pond 1 (Reverse)	Post-Development 10-year	10	-0.260	813.00	-8.36	(N/A)	(N/A)

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Pond 1 (IN)	Post-Development 25-year	25	4.465	723.00	46.28	(N/A)	(N/A)
Pond 1 (Reverse)	Post-Development 25-year	25	-0.026	819.00	-2.60	(N/A)	(N/A)
Pond 1 (OUT)	Post-Development 25-year	25	4.506	732.00	23.88	1,351.22	0.876
Pond 1 (Reverse)	Post-Development 25-year	25	-0.110	813.00	-6.39	(N/A)	(N/A)
Pond 1 (IN)	Post-Development 100-year	100	6.401	720.00	73.69	(N/A)	(N/A)
Pond 1 (OUT)	Post-Development 100-year	100	6.348	729.00	36.01	1,351.92	1.217
Pond 3 (IN)	Post-Development 2-year	2	4.433	714.00	58.76	(N/A)	(N/A)
Pond 3 (Reverse)	Post-Development 2-year	2	-0.059	999.00	-1.93	(N/A)	(N/A)
Pond 3 (OUT)	Post-Development 2-year	2	3.896	729.00	7.27	1,351.10	6.646
Pond 3 (Reverse)	Post-Development 2-year	2	-0.402	813.00	-5.93	(N/A)	(N/A)
Pond 3 (IN)	Post-Development 5-year	5	5.138	714.00	74.70	(N/A)	(N/A)
Pond 3 (Reverse)	Post-Development 5-year	5	-0.049	999.00	-1.86	(N/A)	(N/A)
Pond 3 (OUT)	Post-Development 5-year	5	4.420	729.00	8.73	1,351.12	6.669
Pond 3 (Reverse)	Post-Development 5-year	5	-0.256	813.00	-5.27	(N/A)	(N/A)
Pond 3 (IN)	Post-Development 10-year	10	5.893	714.00	85.10	(N/A)	(N/A)

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Pond 3 (Reverse)	Post-Development 10-year	10	-0.040	999.00	-1.67	(N/A)	(N/A)
Pond 3 (OUT)	Post-Development 10-year	10	5.046	726.00	14.66	1,351.14	6.688
Pond 3 (Reverse)	Post-Development 10-year	10	-0.153	813.00	-4.09	(N/A)	(N/A)
Pond 3 (IN)	Post-Development 25-year	25	6.828	714.00	96.54	(N/A)	(N/A)
Pond 3 (Reverse)	Post-Development 25-year	25	-0.032	999.00	-1.46	(N/A)	(N/A)
Pond 3 (OUT)	Post-Development 25-year	25	5.856	726.00	19.82	1,351.39	6.957
Pond 3 (Reverse)	Post-Development 25-year	25	-0.063	813.00	-2.95	(N/A)	(N/A)
Pond 3 (IN)	Post-Development 100-year	100	8.394	714.00	116.94	(N/A)	(N/A)
Pond 3 (Reverse)	Post-Development 100-year	100	-0.019	1,002.00	-1.11	(N/A)	(N/A)
Pond 3 (OUT)	Post-Development 100-year	100	7.295	723.00	23.83	1,352.00	7.615
Pond 4 (IN)	Post-Development 2-year	2	0.610	714.00	10.43	(N/A)	(N/A)
Pond 4 (OUT)	Post-Development 2-year	2	0.598	738.00	1.19	1,351.21	0.255
Pond 4 (IN)	Post-Development 5-year	5	0.841	714.00	14.44	(N/A)	(N/A)
Pond 4 (OUT)	Post-Development 5-year	5	0.828	726.00	4.96	1,351.45	0.310
Pond 4 (IN)	Post-Development 10-year	10	1.054	714.00	18.10	(N/A)	(N/A)

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Pond 4 (OUT)	Post-Development 10-year	10	1.039	723.00	9.21	1,351.61	0.348
Pond 4 (IN)	Post-Development 25-year	25	1.299	714.00	22.28	(N/A)	(N/A)
Pond 4 (OUT)	Post-Development 25-year	25	1.283	723.00	13.54	1,351.77	0.387
Pond 4 (IN)	Post-Development 100-year	100	1.772	714.00	30.23	(N/A)	(N/A)
Pond 4 (OUT)	Post-Development 100-year	100	1.753	720.00	21.15	1,352.04	0.450

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Subsection: Elevation-Area Volume Curve
Label: Pond 2

Return Event: 100 years
Storm Event: 2-year

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
1,344.00	0.0	0.213	0.000	0.000	0.000
1,345.00	0.0	0.396	0.899	0.300	0.300
1,346.00	0.0	0.438	1.250	0.417	0.717
1,347.00	0.0	0.481	1.378	0.459	1.176
1,348.00	0.0	0.526	1.510	0.503	1.679
1,349.00	0.0	0.573	1.648	0.549	2.229
1,350.00	0.0	0.621	1.791	0.597	2.825
1,351.00	0.0	0.671	1.938	0.646	3.471
1,352.00	0.0	0.722	2.089	0.696	4.168
1,353.00	0.0	0.775	2.245	0.748	4.916
1,354.00	0.0	0.829	2.406	0.802	5.718

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Subsection: Elevation-Area Volume Curve
Label: Pond 4

Return Event: 100 years
Storm Event: 2-year

Elevation (ft)	Planimeter (ft^2)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
1,349.25	0.0	0.000	0.000	0.000	0.000
1,350.00	0.0	0.134	0.134	0.033	0.033
1,351.00	0.0	0.215	0.519	0.173	0.206
1,352.00	0.0	0.251	0.698	0.233	0.439
1,353.00	0.0	0.288	0.808	0.269	0.708
1,354.00	0.0	0.327	0.922	0.307	1.016

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,344.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,354.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Circular	Culvert - 1	Forward + Reverse	TW	1,343.70	1,354.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: P-A to P-D

Return Event: 100 years
Storm Event: 2-year

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	3
Diameter	36.0 in
Length	104.00 ft
Length (Computed Barrel)	104.00 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.007
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0260
M	1.0000
C	0.0347
Y	0.8100
T1 ratio (HW/D)	1.129
T2 ratio (HW/D)	1.363
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	1,347.09 ft	T1 Flow	42.85 ft^3/s
T2 Elevation	1,347.79 ft	T2 Flow	48.97 ft^3/s

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,344.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,354.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Circular	Culvert - 1	Forward + Reverse	TW	1,349.53	1,354.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: P-Comp to P-A

Return Event: 100 years
Storm Event: 2-year

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	3
Diameter	36.0 in
Length	52.00 ft
Length (Computed Barrel)	52.00 ft
Slope (Computed)	0.003 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.007
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0260
M	1.0000
C	0.0347
Y	0.8100
T1 ratio (HW/D)	1.130
T2 ratio (HW/D)	1.364
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	1,352.92 ft	T1 Flow	42.85 ft³/s
T2 Elevation	1,353.62 ft	T2 Flow	48.97 ft³/s

Subsection: Outlet Input Data
Label: Pond Outfall A

Return Event: 100 years
Storm Event: 2-year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,344.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,354.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward + Reverse	36" Pipe	1,348.67	1,354.00
Rectangular Weir	Orifice - 2	Forward + Reverse	36" Pipe	1,350.17	1,354.00
Culvert-Circular	36" Pipe	Forward + Reverse	TW	1,348.67	1,354.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Pond Outfall A

Return Event: 100 years
Storm Event: 2-year

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1,348.67 ft
Orifice Diameter	12.0 in
Orifice Coefficient	0.600

Subsection: Outlet Input Data
Label: Pond Outfall A

Return Event: 100 years
Storm Event: 2-year

Structure ID: 36" Pipe Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	36.0 in
Length	46.00 ft
Length (Computed Barrel)	46.01 ft
Slope (Computed)	0.021 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.007
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0098
M	2.0000
C	0.0398
Y	0.6700
T1 ratio (HW/D)	1.150
T2 ratio (HW/D)	1.296
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	1,352.12 ft	T1 Flow	42.85 ft^3/s
T2 Elevation	1,352.56 ft	T2 Flow	48.97 ft^3/s

Structure ID: Orifice - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,350.17 ft
Weir Length	20.00 ft
Weir Coefficient	3.33 (ft^0.5)/s

Subsection: Outlet Input Data
Label: Pond Outfall C

Return Event: 100 years
Storm Event: 2-year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,349.25 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,354.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward + Reverse	36" Pipe	1,349.25	1,354.00
Rectangular Weir	Orifice - 2	Forward + Reverse	36" Pipe	1,351.30	1,354.00
Culvert-Circular	36" Pipe	Forward + Reverse	TW	1,349.25	1,354.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1,349.25 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Subsection: Outlet Input Data
Label: Pond Outfall C

Return Event: 100 years
Storm Event: 2-year

Structure ID: 36" Pipe Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	36.0 in
Length	637.00 ft
Length (Computed Barrel)	637.01 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.007
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0098
M	2.0000
C	0.0398
Y	0.6700
T1 ratio (HW/D)	1.158
T2 ratio (HW/D)	1.304
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	1,352.72 ft	T1 Flow	42.85 ft³/s
T2 Elevation	1,353.16 ft	T2 Flow	48.97 ft³/s

Structure ID: Orifice - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,351.30 ft
Weir Length	12.00 ft
Weir Coefficient	3.33 (ft^0.5)/s

Subsection: Outlet Input Data
Label: Pond Outfall D

Return Event: 100 years
Storm Event: 2-year

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,342.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,354.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward + Reverse	27" Pipe	1,348.10	1,354.00
Rectangular Weir	Orifice - 2	Forward + Reverse	27" Pipe	1,350.75	1,354.00
Culvert-Circular	27" Pipe	Forward + Reverse	TW	1,348.10	1,354.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Pond Outfall D

Return Event: 100 years
Storm Event: 2-year

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	1,348.10 ft
Orifice Diameter	18.0 in
Orifice Coefficient	0.600

Subsection: Outlet Input Data
Label: Pond Outfall D

Return Event: 100 years
Storm Event: 2-year

Structure ID: 27" Pipe Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	27.0 in
Length	356.82 ft
Length (Computed Barrel)	356.82 ft
Slope (Computed)	0.003 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.011
Kr	0.500
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0098
M	2.0000
C	0.0398
Y	0.6700
T1 ratio (HW/D)	1.159
T2 ratio (HW/D)	1.305
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	1,350.71 ft	T1 Flow	20.87 ft³/s
T2 Elevation	1,351.04 ft	T2 Flow	23.86 ft³/s

Subsection: Outlet Input Data
Label: Pond Outfall D

Return Event: 100 years
Storm Event: 2-year

Structure ID: Orifice - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,350.75 ft
Weir Length	12.00 ft
Weir Coefficient	3.33 (ft^0.5)/s

Subsection: Interconnected Pond Routing Summary
Label: Pond 1

Return Event: 2 years
Storm Event: 2-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,344.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	867.00	1,351.09	0.814

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	10.43	0.23	0.00
Pond Outflow...	738.00	1.19	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.610	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.598	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	2.747 ac-ft
Volume (Total Out ICPM)	2.709 ac-ft
Volume (Ending)	0.038 ac-ft
Elevation (Ending)	1,348.79 ft
Difference	0.000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 1

Return Event: 5 years
Storm Event: 5-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,344.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
861.00	1,351.11	0.822

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	14.44	0.23	0.00
Pond Outflow...	726.00	4.96	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.841	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.828	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	3.319 ac-ft
Volume (Total Out ICPM)	3.278 ac-ft
Volume (Ending)	0.040 ac-ft
Elevation (Ending)	1,348.82 ft
Difference	0.002 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 1

Return Event: 10 years
Storm Event: 10-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,344.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
861.00	1,351.12	0.828

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	18.10	0.23	0.00
Pond Outflow...	723.00	9.21	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.054	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.039	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	3.880 ac-ft
Volume (Total Out ICPM)	3.843 ac-ft
Volume (Ending)	0.042 ac-ft
Elevation (Ending)	1,348.86 ft
Difference	-0.004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 1

Return Event: 25 years
Storm Event: 25-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,344.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
732.00	1,351.22	0.876

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	22.28	0.23	0.00
Pond Outflow...	723.00	13.54	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.299	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.283	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	4.575 ac-ft
Volume (Total Out ICPM)	4.532 ac-ft
Volume (Ending)	0.044 ac-ft
Elevation (Ending)	1,348.92 ft
Difference	-0.001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 1

Return Event: 100 years
Storm Event: 100-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,344.00	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
729.00	1,351.92	1.217

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	30.23	0.00	0.00
Pond Outflow...	720.00	21.15	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.772	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.753	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	6.401 ac-ft
Volume (Total Out ICPM)	6.348 ac-ft
Volume (Ending)	0.052 ac-ft
Elevation (Ending)	1,349.01 ft
Difference	0.001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 2

Return Event: 2 years
Storm Event: 2-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	1.734	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.02	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	879.00	1,351.10	3.543

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	10.43	0.23	0.00
Pond Outflow...	738.00	1.19	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.610	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.598	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	1.734 ac-ft
Volume (Total In ICPM)	4.335 ac-ft
Volume (Total Out ICPM)	3.771 ac-ft
Volume (Ending)	2.295 ac-ft
Elevation (Ending)	1,349.11 ft
Difference	0.004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 2

Return Event: 5 years
Storm Event: 5-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	1.734	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.02	ft³/s	ICPM Time Step	3.00	min

Time to Peak (min)	Maximum Storage Elevation (ft)	Maximum Storage Volume (ac-ft)
873.00	1,351.12	3.557

	Forward Flow Peaks Time to Peak (min)	Forward Flow Peaks Flow (Peak) (ft³/s)	Reverse Flow Peaks Time to Peak (min)	Reverse Flow Peaks Flow (Peak) (ft³/s)
Pond Inflow....	714.00	14.44	0.23	0.00
Pond Outflow...	726.00	4.96	0.00	0.00

	Total Volume In Volume (ac-ft)	Total Volume In Direction	Total Volume Out Volume (ac-ft)	Total Volume Out Direction
Pond Inflow....	0.841	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.828	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	1.734 ac-ft
Volume (Total In ICPM)	5.399 ac-ft
Volume (Total Out ICPM)	4.807 ac-ft
Volume (Ending)	2.323 ac-ft
Elevation (Ending)	1,349.16 ft
Difference	0.004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 2

Return Event: 10 years
Storm Event: 10-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	1.734	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.02	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	873.00	1,351.14	3.570

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	18.10	0.23	0.00
Pond Outflow...	723.00	9.21	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.054	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.039	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	1.734 ac-ft
Volume (Total In ICPM)	6.408 ac-ft
Volume (Total Out ICPM)	5.793 ac-ft
Volume (Ending)	2.347 ac-ft
Elevation (Ending)	1,349.20 ft
Difference	0.002 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 2

Return Event: 25 years
Storm Event: 25-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	1.734	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.02	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
726.00	1,351.42	3.767

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	22.28	0.23	0.00
Pond Outflow...	723.00	13.54	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.299	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.283	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	1.734 ac-ft
Volume (Total In ICPM)	7.600 ac-ft
Volume (Total Out ICPM)	6.955 ac-ft
Volume (Ending)	2.373 ac-ft
Elevation (Ending)	1,349.24 ft
Difference	0.006 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 2

Return Event: 100 years
Storm Event: 100-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	1.734	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.02	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
729.00	1,352.06	4.210

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	30.23	0.00	0.00
Pond Outflow...	720.00	21.15	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.772	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.753	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	1.734 ac-ft
Volume (Total In ICPM)	9.915 ac-ft
Volume (Total Out ICPM)	9.223 ac-ft
Volume (Ending)	2.423 ac-ft
Elevation (Ending)	1,349.32 ft
Difference	0.004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 3

Return Event: 2 years
Storm Event: 2-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	3.806	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	876.00	1,351.10	6.646

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	10.43	0.23	0.00
Pond Outflow...	738.00	1.19	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.610	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.598	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	3.806 ac-ft
Volume (Total In ICPM)	4.836 ac-ft
Volume (Total Out ICPM)	3.956 ac-ft
Volume (Ending)	4.683 ac-ft
Elevation (Ending)	1,349.10 ft
Difference	0.003 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 3

Return Event: 5 years
Storm Event: 5-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	3.806	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	873.00	1,351.12	6.669

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	14.44	0.23	0.00
Pond Outflow...	726.00	4.96	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.841	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.828	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	3.806 ac-ft
Volume (Total In ICPM)	5.394 ac-ft
Volume (Total Out ICPM)	4.469 ac-ft
Volume (Ending)	4.725 ac-ft
Elevation (Ending)	1,349.15 ft
Difference	0.006 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 3

Return Event: 10 years
Storm Event: 10-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	3.806	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	870.00	1,351.14	6.688

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	18.10	0.23	0.00
Pond Outflow...	723.00	9.21	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.054	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.039	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	3.806 ac-ft
Volume (Total In ICPM)	6.046 ac-ft
Volume (Total Out ICPM)	5.086 ac-ft
Volume (Ending)	4.763 ac-ft
Elevation (Ending)	1,349.18 ft
Difference	0.004 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 3

Return Event: 25 years
Storm Event: 25-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	3.806	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	726.00	1,351.39	6.957

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	22.28	0.23	0.00
Pond Outflow...	723.00	13.54	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.299	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.283	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	3.806 ac-ft
Volume (Total In ICPM)	6.892 ac-ft
Volume (Total Out ICPM)	5.887 ac-ft
Volume (Ending)	4.804 ac-ft
Elevation (Ending)	1,349.23 ft
Difference	0.007 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 3

Return Event: 100 years
Storm Event: 100-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,348.10	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	3.806	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
726.00	1,352.00	7.615

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	30.23	0.00	0.00
Pond Outflow...	720.00	21.15	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.772	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.753	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	3.806 ac-ft
Volume (Total In ICPM)	8.394 ac-ft
Volume (Total Out ICPM)	7.314 ac-ft
Volume (Ending)	4.879 ac-ft
Elevation (Ending)	1,349.31 ft
Difference	0.007 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.1 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 4

Return Event: 2 years
Storm Event: 2-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,349.25	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	885.00	1,351.21	0.255

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	10.43	0.23	0.00
Pond Outflow...	738.00	1.19	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.610	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.598	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	0.610 ac-ft
Volume (Total Out ICPM)	0.598 ac-ft
Volume (Ending)	0.011 ac-ft
Elevation (Ending)	1,349.50 ft
Difference	0.000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 4

Return Event: 5 years
Storm Event: 5-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,349.25	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

Maximum Storage		
Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
726.00	1,351.45	0.310

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	14.44	0.23	0.00
Pond Outflow...	726.00	4.96	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	0.841	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	0.828	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	0.841 ac-ft
Volume (Total Out ICPM)	0.828 ac-ft
Volume (Ending)	0.012 ac-ft
Elevation (Ending)	1,349.53 ft
Difference	0.000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 4

Return Event: 10 years
Storm Event: 10-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,349.25	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	723.00	1,351.61	0.348

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	18.10	0.23	0.00
Pond Outflow...	723.00	9.21	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.054	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.039	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	1.054 ac-ft
Volume (Total Out ICPM)	1.039 ac-ft
Volume (Ending)	0.014 ac-ft
Elevation (Ending)	1,349.56 ft
Difference	0.000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 4

Return Event: 25 years
Storm Event: 25-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,349.25	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	723.00	1,351.77	0.387

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	22.28	0.23	0.00
Pond Outflow...	723.00	13.54	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.299	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.283	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	1.299 ac-ft
Volume (Total Out ICPM)	1.283 ac-ft
Volume (Ending)	0.015 ac-ft
Elevation (Ending)	1,349.59 ft
Difference	0.000 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

Subsection: Interconnected Pond Routing Summary
Label: Pond 4

Return Event: 100 years
Storm Event: 100-year

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions			Calculation Tolerances		
Elevation (Starting Water Surface Computed)	1,349.25	ft	Flow Tolerance (Minimum)	0.000	ft³/s
Volume (Starting)	0.000	ac-ft	Maximum Iterations	35	
Outflow (Starting)	0.00	ft³/s	ICPM Time Step	3.00	min

	Maximum Storage		
	Time to Peak (min)	Elevation (ft)	Volume (ac-ft)
	720.00	1,352.04	0.450

	Forward Flow Peaks		Reverse Flow Peaks	
	Time to Peak (min)	Flow (Peak) (ft³/s)	Time to Peak (min)	Flow (Peak) (ft³/s)
Pond Inflow....	714.00	30.23	0.00	0.00
Pond Outflow...	720.00	21.15	0.00	0.00

	Total Volume In		Total Volume Out	
	Volume (ac-ft)	Direction	Volume (ac-ft)	Direction
Pond Inflow....	1.772	Forward	0.000	Reverse
Pond Outflow...	0.000	Reverse	1.753	Forward

Mass Balance (ac-ft)	
Volume (Initial ICPM)	0.000 ac-ft
Volume (Total In ICPM)	1.772 ac-ft
Volume (Total Out ICPM)	1.753 ac-ft
Volume (Ending)	0.019 ac-ft
Elevation (Ending)	1,349.67 ft
Difference	0.001 ac-ft
Percent of Inflow Volume (Interconnected Pond Mass Balance)	0.0 %

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