

**Appendix N -
DSD Alternative Stormwater
Calculations**

BASF Site – Pondpack Results

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
CM-BASF	2-YEAR	2	11.071	12.200	110.17
CM-BASF	5-YEAR	5	14.931	12.200	146.22
CM-BASF	10-YEAR	10	18.531	12.200	179.21
CM-BASF	25-YEAR	25	23.708	12.200	225.95

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1	2-YEAR	2	8.050	13.500	11.04
O-1	5-YEAR	5	11.128	13.500	14.17
O-1	10-YEAR	10	13.724	13.600	16.71
O-1	25-YEAR	25	17.183	13.700	19.94

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-BASF (IN)	2-YEAR	2	11.083	12.200	110.17	(N/A)	(N/A)
PO-BASF (OUT)	2-YEAR	2	8.050	13.500	11.04	-6.96	6.536
PO-BASF (IN)	5-YEAR	5	14.947	12.200	146.22	(N/A)	(N/A)
PO-BASF (OUT)	5-YEAR	5	11.128	13.500	14.17	-6.05	8.901
PO-BASF (IN)	10-YEAR	10	18.550	12.200	179.21	(N/A)	(N/A)
PO-BASF (OUT)	10-YEAR	10	13.724	13.600	16.71	-5.19	11.120
PO-BASF (IN)	25-YEAR	25	23.732	12.200	225.95	(N/A)	(N/A)
PO-BASF (OUT)	25-YEAR	25	17.183	13.700	19.94	-3.94	14.324

CN Area Collection - CM-BASF (Catchment)

Description	CN	Area (acres)	Percent Connected Impervious Area (%)	Percent Unconnected Impervious Area (%)
Urban Districts - Commercial & Business - Soil B	92.000	54.287	90.0	10.0

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-BASF
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Infiltration	
Infiltration Method (Computed)	No Infiltration
Initial Conditions	
Elevation (Water Surface, Initial)	-9.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.100 hours

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-9.50	0.00	0.000	0.000	0.00	0.00	0.00
-9.40	0.04	0.255	0.000	0.00	0.04	61.75
-9.30	0.16	0.510	0.000	0.00	0.16	123.58
-9.20	0.35	0.772	0.000	0.00	0.35	187.18
-9.10	0.58	1.034	0.000	0.00	0.58	250.81
-9.00	0.85	1.289	0.000	0.00	0.85	312.79
-8.90	1.17	1.544	0.000	0.00	1.17	374.81
-8.80	1.52	1.806	0.000	0.00	1.52	438.57
-8.70	1.92	2.068	0.000	0.00	1.92	502.38
-8.60	2.37	2.324	0.000	0.00	2.37	564.66
-8.50	2.87	2.579	0.000	0.00	2.87	626.98
-8.40	3.43	2.834	0.000	0.00	3.43	689.26
-8.30	4.04	3.089	0.000	0.00	4.04	751.58
-8.20	4.66	3.351	0.000	0.00	4.66	815.60
-8.10	5.32	3.613	0.000	0.00	5.32	879.67
-8.00	6.04	3.868	0.000	0.00	6.04	942.10
-7.90	6.85	4.123	0.000	0.00	6.85	1,004.61
-7.80	7.59	4.385	0.000	0.00	7.59	1,068.76
-7.70	8.04	4.647	0.000	0.00	8.04	1,132.61
-7.60	8.48	4.902	0.000	0.00	8.48	1,194.76
-7.50	8.91	5.157	0.000	0.00	8.91	1,256.90
-7.40	9.33	5.412	0.000	0.00	9.33	1,319.03
-7.30	9.74	5.667	0.000	0.00	9.74	1,381.15
-7.20	10.14	5.929	0.000	0.00	10.14	1,444.96
-7.10	10.52	6.191	0.000	0.00	10.52	1,508.74
-7.00	10.91	6.446	0.000	0.00	10.91	1,570.84
-6.90	11.28	6.701	0.000	0.00	11.28	1,632.92
-6.80	11.64	6.963	0.000	0.00	11.64	1,696.68
-6.70	12.00	7.225	0.000	0.00	12.00	1,760.45
-6.60	12.36	7.480	0.000	0.00	12.36	1,822.64

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-BASF
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-6.50	12.69	7.736	0.000	0.00	12.69	1,884.80
-6.40	13.04	7.991	0.000	0.00	13.04	1,946.86
-6.30	13.37	8.246	0.000	0.00	13.37	2,008.91
-6.20	13.69	8.508	0.000	0.00	13.69	2,072.63
-6.10	14.00	8.770	0.000	0.00	14.00	2,136.34
-6.00	14.32	9.025	0.000	0.00	14.32	2,198.37
-5.90	14.64	9.280	0.000	0.00	14.64	2,260.40
-5.80	14.94	9.542	0.000	0.00	14.94	2,324.10
-5.70	15.24	9.804	0.000	0.00	15.24	2,387.81
-5.60	15.54	10.059	0.000	0.00	15.54	2,449.82
-5.50	15.82	10.314	0.000	0.00	15.82	2,511.81
-5.40	16.11	10.569	0.000	0.00	16.11	2,573.81
-5.30	16.40	10.824	0.000	0.00	16.40	2,635.81
-5.20	16.67	11.086	0.000	0.00	16.67	2,699.49
-5.10	16.95	11.348	0.000	0.00	16.95	2,763.16
-5.00	17.23	11.603	0.000	0.00	17.23	2,825.16
-4.90	17.50	11.858	0.000	0.00	17.50	2,887.13
-4.80	17.76	12.120	0.000	0.00	17.76	2,950.80
-4.70	18.02	12.382	0.000	0.00	18.02	3,014.47
-4.60	18.29	12.638	0.000	0.00	18.29	3,076.57
-4.50	18.56	12.893	0.000	0.00	18.56	3,138.66
-4.40	18.80	13.148	0.000	0.00	18.80	3,200.62
-4.30	19.05	13.403	0.000	0.00	19.05	3,262.57
-4.20	19.30	13.665	0.000	0.00	19.30	3,326.23
-4.10	19.55	13.927	0.000	0.00	19.55	3,389.88
-4.00	19.79	14.175	0.000	0.00	19.79	3,450.26
-3.90	20.04	14.424	0.000	0.00	20.04	3,510.65
-3.80	20.70	14.659	0.000	0.00	20.70	3,568.17
-3.70	21.70	14.894	0.000	0.00	21.70	3,626.04
-3.60	22.93	15.129	0.000	0.00	22.93	3,684.15
-3.50	24.32	15.364	0.000	0.00	24.32	3,742.41
-3.40	25.91	15.578	0.000	0.00	25.91	3,795.90
-3.30	27.62	15.793	0.000	0.00	27.62	3,849.52
-3.20	29.49	16.001	0.000	0.00	29.49	3,901.85
-3.10	31.46	16.210	0.000	0.00	31.46	3,954.28
-3.00	33.56	16.398	0.000	0.00	33.56	4,001.87
-2.90	35.79	16.586	0.000	0.00	35.79	4,049.61
-2.80	38.13	16.767	0.000	0.00	38.13	4,095.74
-2.70	40.52	16.948	0.000	0.00	40.52	4,141.94
-2.60	43.06	17.116	0.000	0.00	43.06	4,185.13
-2.50	45.67	17.284	0.000	0.00	45.67	4,228.40
-2.40	48.38	17.432	0.000	0.00	48.38	4,266.93
-2.30	51.17	17.580	0.000	0.00	51.17	4,305.53
-2.20	54.04	17.714	0.000	0.00	54.04	4,340.82
-2.10	57.00	17.848	0.000	0.00	57.00	4,376.22

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-BASF
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-2.00	60.07	17.956	0.000	0.00	60.07	4,405.30
-1.90	63.18	18.063	0.000	0.00	63.18	4,434.43
-1.80	66.37	18.151	0.000	0.00	66.37	4,458.79
-1.70	69.62	18.238	0.000	0.00	69.62	4,483.22
-1.60	72.99	18.285	0.000	0.00	72.99	4,497.96
-1.50	76.40	18.332	0.000	0.00	76.40	4,512.75

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	-9.50 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	-1.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	-9.50	-1.50
Rectangular Weir	Weir - 1	Forward	Culvert - 1	-3.90	-1.50
Culvert-Circular	Culvert - 1	Forward	TW	-9.50	-1.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
Label: Composite Outlet Structure - 1
Scenario: 25-YEAR

Return Event: 25 years
Storm Event: 25-YEAR

Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
<hr/>	
Number of Openings	1
Elevation	-9.50 ft
Orifice Diameter	20.0 in
Orifice Coefficient	0.600

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Culvert - 1	
Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	54.0 in
Length	20.00 ft
Length (Computed Barrel)	20.00 ft
Slope (Computed)	0.010 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.004
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)	1.155
T2 ratio (HW/D)	1.302
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...

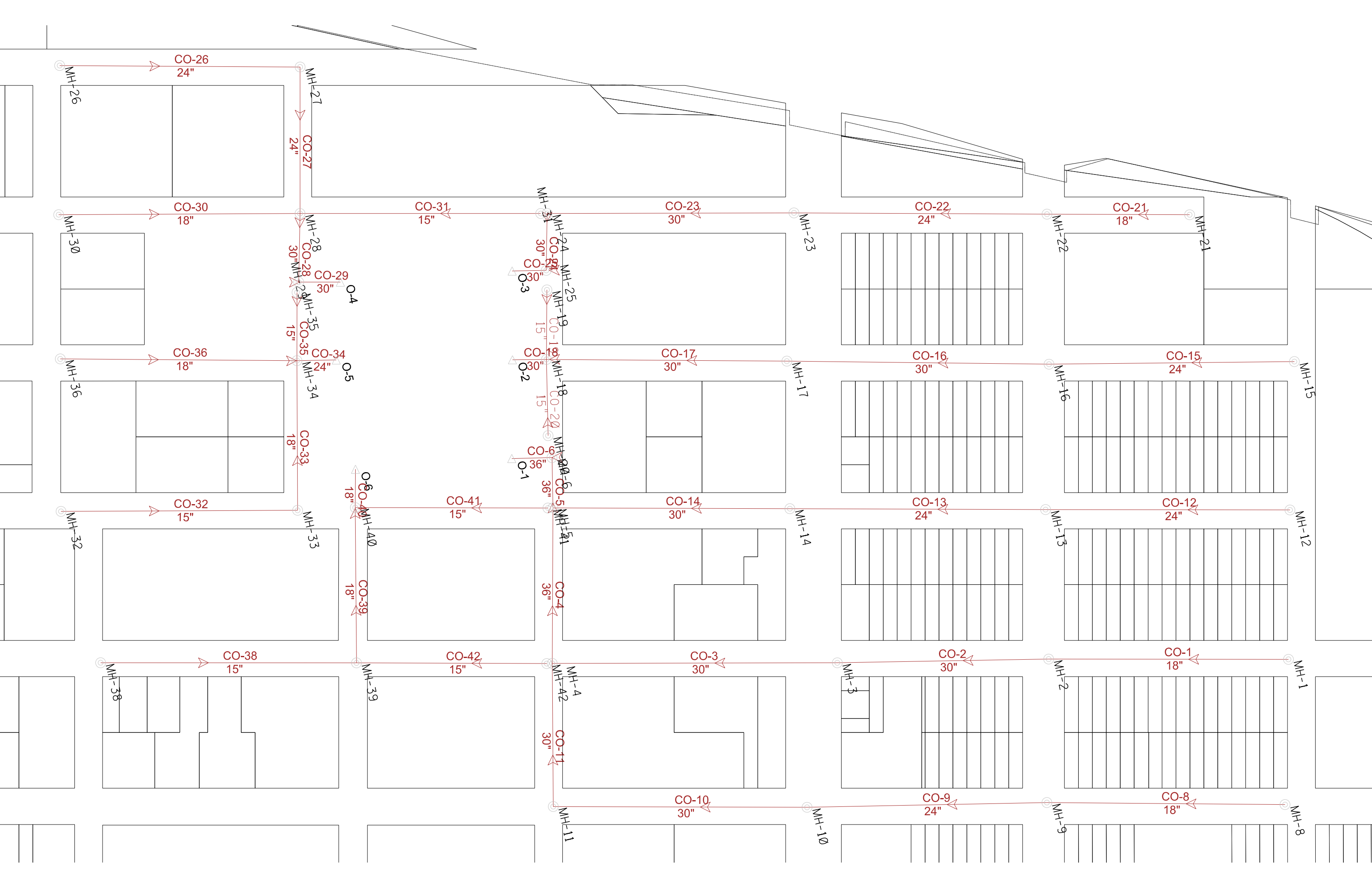
T1 Elevation	-4.30 ft	T1 Flow	118.08 ft ³ /s
T2 Elevation	-3.64 ft	T2 Flow	134.95 ft ³ /s

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Weir - 1	
Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	-3.90 ft
Weir Length	5.00 ft
Weir Coefficient	3.00 (ft ^{0.5})/s
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

BASF Site – StormCAD Results



FlexTable: Conduit Calculations
Active Scenario: 25-YEAR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Conduit Description	Manning's n	Number of Barrels	Capacity (Full Flow) (cfs)	Flow (cfs)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-1	MH-1	MH-2	0.00	-2.15	430	0.005	Circle - 24 in	0.013	1	15.99	10.19	5.40	4.00	5.00	1.16	-0.54
CO-2	MH-2	MH-3	-2.15	-4.21	379	0.005	Circle - 30 in	0.013	1	30.23	22.46	6.75	5.00	5.00	-0.54	-2.38
CO-3	MH-3	MH-4	-4.21	-7.20	511	0.006	Circle - 30.0 in	0.013	1	31.37	27.72	7.21	5.00	5.00	-2.38	-4.79
CO-4	MH-4	MH-5	-7.20	-8.34	262	0.004	Circle - 36 in	0.013	1	43.95	43.23	7.09	5.00	4.80	-4.79	-5.98
CO-5	MH-5	MH-6	-8.34	-9.05	158	0.005	Circle - 36 in	0.013	1	44.76	43.29	7.21	4.80	5.00	-5.98	-6.82
CO-6	MH-6	O-7	-9.05	-9.50	89	0.005	Circle - 36 in	0.013	1	47.55	43.01	7.62	5.00	4.00	-6.82	-7.36
CO-7	MH-7	MH-8	0.52	-1.62	427	0.005	Circle - 18.0 in	0.013	1	7.44	6.42	4.73	4.50	5.00	1.60	-0.15
CO-8	MH-8	MH-9	-1.62	-3.71	430	0.005	Circle - 24 in	0.013	1	15.77	13.99	5.67	5.00	4.50	-0.15	-2.34
CO-9	MH-9	MH-10	-3.71	-6.07	455	0.005	Circle - 30.0 in	0.013	1	29.53	16.35	6.17	4.50	5.50	-2.34	-4.50
CO-10	MH-10	MH-4	-6.07	-7.20	257	0.004	Circle - 30 in	0.013	1	27.21	17.08	5.85	5.50	5.00	-4.50	-4.79
CO-11	MH-11	MH-12	-0.50	-2.88	438	0.005	Circle - 24 in	0.013	1	16.67	10.25	5.58	3.50	5.30	0.65	-1.16
CO-12	MH-12	MH-13	-2.88	-4.95	459	0.005	Circle - 30 in	0.013	1	27.56	22.53	6.26	5.30	4.80	-1.16	-3.02
CO-13	MH-13	MH-14	-4.95	-8.72	425	0.009	Circle - 30 in	0.013	1	38.63	32.11	8.80	4.80	4.80	-3.02	-6.45
CO-14	MH-14	MH-15	-8.72	-9.16	90	0.005	Circle - 30 in	0.013	1	28.64	31.79	6.48	4.80	5.00	-6.45	-6.97
CO-15	MH-15	O-1	-9.16	-9.50	72	0.005	Circle - 30 in	0.013	1	28.15	31.53	6.42	5.00	4.00	-6.97	-7.59
CO-16	MH-16	MH-17	-1.00	-3.21	440	0.005	Circle - 24 in	0.013	1	16.03	12.61	5.65	3.25	4.00	0.34	-1.50
CO-17	MH-17	MH-18	-3.21	-5.56	470	0.005	Circle - 30 in	0.013	1	29.00	23.47	6.58	4.00	4.00	-1.50	-3.53
CO-18	MH-18	MH-19	-5.56	-8.15	431	0.006	Circle - 36 in	0.013	1	51.70	39.06	8.04	4.00	4.00	-3.53	-6.11
CO-19	MH-19	O-2	-8.15	-8.50	61	0.006	Circle - 36 in	0.013	1	50.51	39.32	7.90	4.00	4.00	-6.11	-6.51
CO-20	MH-20	MH-19	0.00	-1.25	125	0.010	Circle - 15 in	0.013	1	6.47	0.82	3.62	4.00	4.00	0.36	-0.95
CO-20	MH-20	MH-19	1.00	-0.37	137	0.010	Circle - 15 in	0.013	1	6.47	0.82	3.62	5.00	4.00	1.36	-0.07
CO-21	MH-21	MH-22	0.00	-1.30	256	0.005	Circle - 18.0 in	0.013	1	7.49	6.23	3.53	4.00	4.50	2.52	1.62
CO-22	MH-22	MH-23	-1.30	-3.58	454	0.005	Circle - 24 in	0.013	1	16.04	17.44	5.55	4.50	3.50	1.62	-1.08
CO-23	MH-23	MH-24	-3.58	-6.24	443	0.006	Circle - 30 in	0.013	1	31.80	34.93	7.12	3.50	4.00	-1.08	-4.01
CO-24	MH-24	MH-25	-6.24	-6.90	102	0.006	Circle - 30 in	0.013	1	32.99	35.38	7.50	4.00	4.00	-4.01	-4.74
CO-25	MH-25	O-3	-6.90	-7.30	61	0.007	Circle - 30 in	0.013	1	33.15	35.09	7.62	4.00	4.00	-4.74	-5.29
CO-26	MH-26	MH-27	0.00	-2.15	431	0.005	Circle - 24 in	0.013	1	15.97	9.76	5.34	4.00	4.00	1.13	0.35
CO-27	MH-27	MH-28	-2.15	-3.46	263	0.005	Circle - 24.0 in	0.013	1	15.97	17.20	5.48	4.00	4.20	0.35	-1.17
CO-28	MH-28	MH-29	-3.46	-4.10	123	0.005	Circle - 30.0 in	0.013	1	29.58	32.79	6.68	4.20	4.00	-1.17	-1.93
CO-29	MH-29	O-4	-4.10	-4.50	75	0.005	Circle - 30.0 in	0.013	1	30.00	32.44	6.61	4.00	4.00	-1.93	-2.56
CO-30	MH-30	MH-28	0.20	-3.46	433	0.008	Circle - 18.0 in	0.013	1	9.66	10.39	5.88	4.20	4.20	3.07	-1.17
CO-31	MH-31	MH-28	0.00	-3.46	432	0.008	Circle - 15 in	0.013	1	5.78	6.10	4.97	4.00	4.20	2.68	-1.17
CO-32	MH-32	MH-33	1.20	-0.88	424	0.005	Circle - 15 in	0.013	1	4.52	3.77	4.12	5.20	4.80	2.07	0.02
CO-33	MH-33	MH-34	-0.88	-2.22	268	0.005	Circle - 18 in	0.013	1	7.42	4.98	4.50	4.80	4.30	0.02	-0.96
CO-34	MH-34	O-5	-2.22	-2.61	71	0.006	Circle - 24 in	0.013	1	16.82	12.19	5.84	4.30	4.00	-0.96	-1.35
CO-35	MH-35	MH-34	0.50	-0.60	122	0.009	Circle - 15 in	0.013	1	6.13	0.74	3.37	4.50	4.30	0.84	-0.31
CO-36	MH-36	MH-34	1.30	-2.22	424	0.008	Circle - 18.0 in	0.013	1	9.57	7.34	5.97	5.30	4.30	2.35	-0.96
CO-38	MH-38	MH-39	4.00	-0.70	459	0.010	Circle - 15 in	0.013	1	6.54	4.12	5.63	8.00	5.20	4.82	1.06
CO-39	MH-39	MH-40	-0.70	-2.70	278	0.007	Circle - 18 in	0.013	1	8.90	9.97	5.64	5.20	4.80	1.06	-1.48
CO-40	MH-40	O-6	-2.70	-3.12	69	0.006	Circle - 24 in	0.013	1	17.68	10.55	5.87	4.80	4.00	-1.54	-2.01
CO-41	MH-41	MH-40	0.80	-2.70	181	0.019	Circle - 15 in	0.013	1	8.99	0.92	4.72	5.00	4.80	1.18	-1.54
CO-42	MH-42	MH-39	1.25	-0.70	341	0.006	Circle - 15 in	0.013	1	4.88	1.84	3.70	5.00	5.20	1.79	1.06

Block 10 Site – Pondpack Results

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft ³)	Time to Peak (hours)	Peak Flow (ft ³ /s)
BLOCK 10	2-YEAR	2	74,163.0	12.100	17.81
BLOCK 10	5-YEAR	5	98,563.0	12.100	23.31
BLOCK 10	10-YEAR	10	119,622.0	12.100	28.00
BLOCK 10	25-YEAR	25	150,913.0	12.100	34.90

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft ³)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-8	2-YEAR	2	63,432.0	13.000	2.02
O-8	5-YEAR	5	83,991.0	13.100	2.39
O-8	10-YEAR	10	99,857.0	13.200	2.69
O-8	25-YEAR	25	126,649.0	12.600	8.54

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft ³)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft ³)
PO-8 (IN)	2-YEAR	2	74,239.0	12.100	17.81	(N/A)	(N/A)
PO-8 (OUT)	2-YEAR	2	63,432.0	13.000	2.02	-0.93	41,072.0
PO-8 (IN)	5-YEAR	5	98,661.0	12.100	23.31	(N/A)	(N/A)
PO-8 (OUT)	5-YEAR	5	83,991.0	13.100	2.39	-0.33	54,869.0
PO-8 (IN)	10-YEAR	10	119,739.0	12.100	28.00	(N/A)	(N/A)
PO-8 (OUT)	10-YEAR	10	99,857.0	13.200	2.69	0.19	66,877.0
PO-8 (IN)	25-YEAR	25	151,058.0	12.100	34.90	(N/A)	(N/A)
PO-8 (OUT)	25-YEAR	25	126,649.0	12.600	8.54	0.76	77,545.0

CN Area Collection - BLOCK 10 (Catchment)

Description	CN	Area (acres)	Percent Connected Impervious Area (%)	Percent Unconnected Impervious Area (%)
Impervious	98.000	6.640	90.0	10.0
Open space (Lawns,parks etc.) - Fair condition; grass cover 50% to 75% - Soil B	69.000	0.800	0.0	0.0

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-8
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Infiltration	
Infiltration Method (Computed)	No Infiltration
Initial Conditions	
Elevation (Water Surface, Initial)	-2.70 ft
Volume (Initial)	0.0 ft ³
Flow (Initial Outlet)	0.00 ft ³ /s
Flow (Initial Infiltration)	0.00 ft ³ /s
Flow (Initial, Total)	0.00 ft ³ /s
Time Increment	0.100 hours

Elevation (ft)	Outflow (ft ³ /s)	Storage (ft ³)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-2.70	0.00	0.0	0.000	0.00	0.00	0.00
-2.60	0.03	2,254.0	0.000	0.00	0.03	12.55
-2.50	0.11	4,669.0	0.000	0.00	0.11	26.04
-2.40	0.23	6,923.0	0.000	0.00	0.23	38.69
-2.30	0.39	9,338.0	0.000	0.00	0.39	52.26
-2.20	0.58	11,592.0	0.000	0.00	0.58	64.98
-2.10	0.79	13,846.0	0.000	0.00	0.79	77.71
-2.00	1.02	16,261.0	0.000	0.00	1.02	91.36
-1.90	1.15	18,515.0	0.000	0.00	1.15	104.01
-1.80	1.26	20,930.0	0.000	0.00	1.26	117.54
-1.70	1.37	23,184.0	0.000	0.00	1.37	130.17
-1.60	1.47	25,438.0	0.000	0.00	1.47	142.79
-1.50	1.56	27,853.0	0.000	0.00	1.56	156.30
-1.40	1.65	30,107.0	0.000	0.00	1.65	168.91
-1.30	1.74	32,522.0	0.000	0.00	1.74	182.41
-1.20	1.81	34,776.0	0.000	0.00	1.81	195.01
-1.10	1.89	37,030.0	0.000	0.00	1.89	207.61
-1.00	1.96	39,445.0	0.000	0.00	1.96	221.10
-0.90	2.03	41,699.0	0.000	0.00	2.03	233.70
-0.80	2.10	44,114.0	0.000	0.00	2.10	247.18
-0.70	2.17	46,368.0	0.000	0.00	2.17	259.77
-0.60	2.23	48,622.0	0.000	0.00	2.23	272.36
-0.50	2.30	51,037.0	0.000	0.00	2.30	285.83
-0.40	2.36	53,291.0	0.000	0.00	2.36	298.42
-0.30	2.42	55,706.0	0.000	0.00	2.42	311.89
-0.20	2.47	57,960.0	0.000	0.00	2.47	324.47
-0.10	2.53	60,214.0	0.000	0.00	2.53	337.05
0.00	2.58	62,629.0	0.000	0.00	2.58	350.52
0.10	2.64	64,883.0	0.000	0.00	2.64	363.10
0.20	2.69	67,137.0	0.000	0.00	2.69	375.67

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-8
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Elevation (ft)	Outflow (ft ³ /s)	Storage (ft ³)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
0.30	2.74	69,230.0	0.000	0.00	2.74	387.35
0.40	3.36	71,323.0	0.000	0.00	3.36	399.60
0.50	4.45	73,255.0	0.000	0.00	4.45	411.43
0.60	5.85	75,026.0	0.000	0.00	5.85	422.66
0.70	7.49	76,636.0	0.000	0.00	7.49	433.25
0.80	9.35	78,246.0	0.000	0.00	9.35	444.05
0.90	11.41	79,534.0	0.000	0.00	11.41	453.26
1.00	13.63	80,822.0	0.000	0.00	13.63	462.64
1.10	16.00	81,788.0	0.000	0.00	16.00	470.38
1.20	18.53	82,593.0	0.000	0.00	18.53	477.38
1.30	21.22	83,076.0	0.000	0.00	21.22	482.76
1.40	24.02	83,559.0	0.000	0.00	24.02	488.23
1.50	26.35	84,042.0	0.000	0.00	26.35	493.25
1.60	28.10	84,525.0	0.000	0.00	28.10	497.69
1.70	29.42	85,008.0	0.000	0.00	29.42	501.69
1.80	30.53	85,491.0	0.000	0.00	30.53	505.48
1.90	31.54	85,974.0	0.000	0.00	31.54	509.17
2.00	32.46	86,457.0	0.000	0.00	32.46	512.78

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	-2.70 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	2.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	-2.70	2.00
Rectangular Weir	Weir - 1	Forward	Culvert - 1	0.30	2.00
Culvert-Circular	Culvert - 1	Forward	TW	-2.70	2.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Culvert - 1	
Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	24.0 in
Length	35.00 ft
Length (Computed Barrel)	35.00 ft
Slope (Computed)	0.009 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.012
Kr	0.500
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.091
T2 ratio (HW/D)	1.193
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...

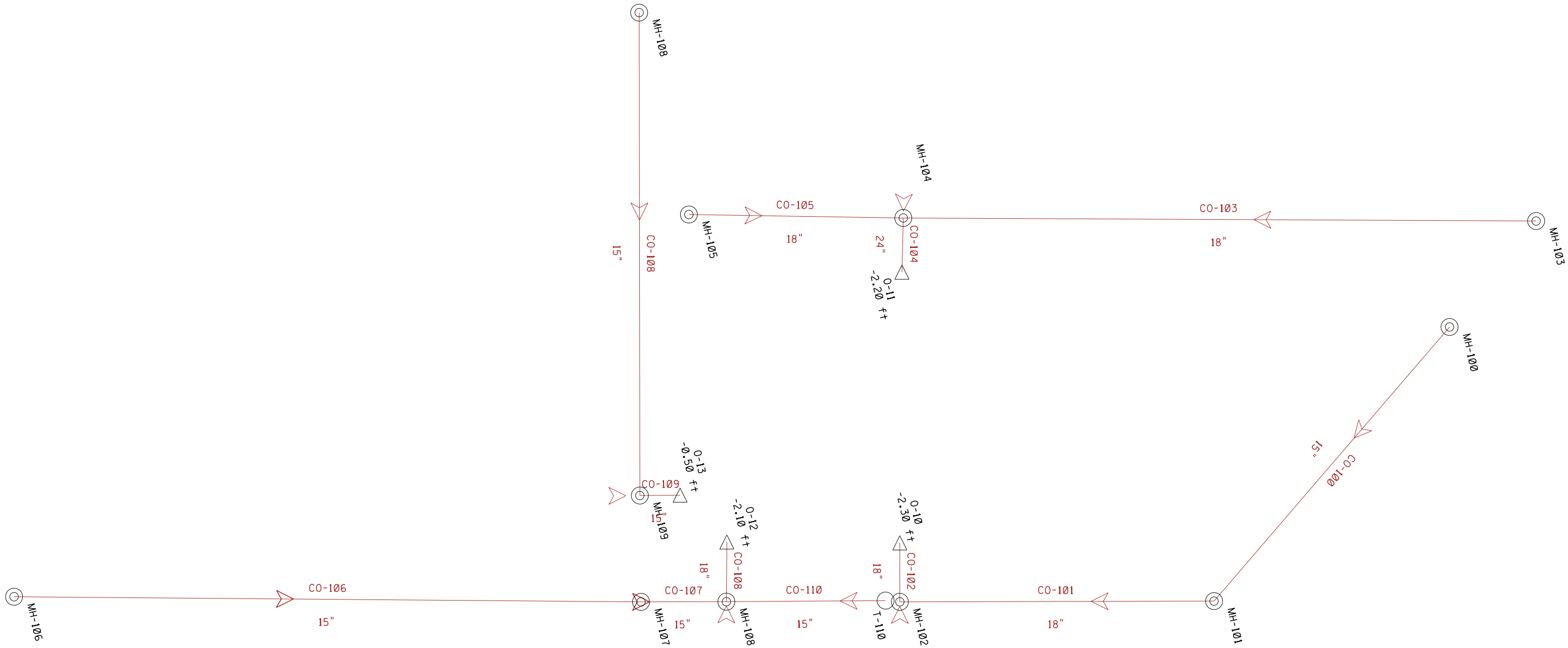
T1 Elevation	-0.52 ft	T1 Flow	15.55 ft ³ /s
T2 Elevation	-0.31 ft	T2 Flow	17.77 ft ³ /s

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Weir - 1	
Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	0.30 ft
Weir Length	6.00 ft
Weir Coefficient	3.00 (ft ^{0.5})/s
Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	-2.70 ft
Orifice Diameter	8.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

Block 10 Site – StormCAD Results



FlexTable: Conduit Calculations
Active Scenario: 25-YEAR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Conduit Description	Manning's n	Number of Barrels	Capacity (Full Flow) (cfs)	Flow (cfs)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-100	MH-100	MH-101	0.25	-1.02	254	0.005	Circle - 15 in	0.013	1	4.56	4.50	4.24	3.00	3.00	1.27	0.18
CO-101	MH-101	MH-102	-1.02	-2.12	231	0.005	Circle - 18 in	0.013	1	7.25	7.09	4.67	3.00	4.00	0.18	-0.96
CO-102	MH-102	O-14	-2.12	-2.30	41	0.004	Circle - 18 in	0.013	1	6.98	6.89	4.50	4.00	4.50	-0.96	-1.28
CO-103	MH-103	MH-104	0.20	-2.00	458	0.005	Circle - 18 in	0.013	1	7.28	8.52	4.82	3.00	4.00	2.27	-0.73
CO-104	MH-104	O-17	-2.00	-2.20	22	0.009	Circle - 24 in	0.013	1	21.52	12.55	7.11	4.00	4.50	-0.73	-1.07
CO-105	MH-105	MH-104	-0.25	-2.00	138	0.013	Circle - 18 in	0.013	1	11.85	4.70	6.32	3.00	4.00	0.58	-0.73
CO-106	MH-106	MH-107	0.75	-1.58	441	0.005	Circle - 15 in	0.013	1	4.69	4.18	4.32	4.00	4.00	1.67	-0.59
CO-107	MH-107	MH-108	-1.58	-1.90	62	0.005	Circle - 15 in	0.013	1	4.64	3.95	4.25	4.00	4.00	-0.59	-0.76
CO-108	MH-108	O-15	-1.90	-2.10	43	0.005	Circle - 18 in	0.013	1	7.20	6.81	4.63	4.00	4.50	-0.76	-1.09
CO-108	MH-108	MH-109	2.75	-0.90	338	0.011	Circle - 18 in	0.013	1	10.91	13.16	7.45	6.00	3.50	5.98	0.67
CO-109	MH-109	O-16	-0.90	-1.25	34	0.010	Circle - 18 in	0.013	1	10.70	12.85	7.27	3.50	3.50	0.67	0.10
CO-110	T-110	MH-108	0.75	-1.90	102	0.026	Circle - 15 in	0.013	1	10.41	3.08	7.39	4.00	4.00	1.46	-0.76

NJ Transit Site – Pondpack Results

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
CM-1	2-YEAR	2	2.384	12.100	26.12
CM-1	5-YEAR	5	3.401	12.100	37.18
CM-1	10-YEAR	10	4.302	12.100	46.77
CM-1	25-YEAR	25	5.665	12.100	61.01

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
O-1 Housing	2-YEAR	2	1.932	13.500	2.66
O-1 Housing	5-YEAR	5	2.743	13.600	3.46
O-1 Housing	10-YEAR	10	3.381	13.700	4.07
O-1 Housing	25-YEAR	25	4.273	13.800	4.88

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-HA (IN)	2-YEAR	2	2.387	12.100	26.12	(N/A)	(N/A)
PO-HA (OUT)	2-YEAR	2	1.932	13.500	2.66	-3.79	1.283
PO-HA (IN)	5-YEAR	5	3.406	12.100	37.18	(N/A)	(N/A)
PO-HA (OUT)	5-YEAR	5	2.743	13.600	3.46	-2.97	1.892
PO-HA (IN)	10-YEAR	10	4.307	12.100	46.77	(N/A)	(N/A)
PO-HA (OUT)	10-YEAR	10	3.381	13.700	4.07	-2.24	2.441
PO-HA (IN)	25-YEAR	25	5.671	12.100	61.01	(N/A)	(N/A)
PO-HA (OUT)	25-YEAR	25	4.273	13.800	4.88	-1.10	3.283

CN Area Collection - CM-1 (Catchment)

Description	CN	Area (acres)	Percent Connected Impervious Area (%)	Percent Unconnected Impervious Area (%)
Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil B	98.000	9.859	80.0	20.0
Open space (Lawns,parks etc.) - Good condition; grass cover > 75% - Soil B	61.000	4.125	0.0	0.0
Open space (Lawns,parks etc.) - Fair condition; grass cover 50% to 75% - Soil B	69.000	0.845	0.0	0.0

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-HA
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Infiltration

Infiltration Method (Computed) No Infiltration

Initial Conditions

Elevation (Water Surface, Initial) -5.50 ft
 Volume (Initial) 0.000 ac-ft
 Flow (Initial Outlet) 0.00 ft³/s
 Flow (Initial Infiltration) 0.00 ft³/s
 Flow (Initial, Total) 0.00 ft³/s
 Time Increment 0.100 hours

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-5.50	0.00	0.000	0.000	0.00	0.00	0.00
-5.40	0.03	0.074	0.000	0.00	0.03	17.98
-5.30	0.12	0.148	0.000	0.00	0.12	36.01
-5.20	0.25	0.224	0.000	0.00	0.25	54.55
-5.10	0.40	0.301	0.000	0.00	0.40	73.12
-5.00	0.59	0.375	0.000	0.00	0.59	91.26
-4.90	0.82	0.449	0.000	0.00	0.82	109.43
-4.80	1.09	0.525	0.000	0.00	1.09	128.12
-4.70	1.38	0.601	0.000	0.00	1.38	146.82
-4.60	1.59	0.675	0.000	0.00	1.59	164.98
-4.50	1.75	0.749	0.000	0.00	1.75	183.08
-4.40	1.89	0.823	0.000	0.00	1.89	201.17
-4.30	2.03	0.898	0.000	0.00	2.03	219.25
-4.20	2.17	0.974	0.000	0.00	2.17	237.80
-4.10	2.29	1.050	0.000	0.00	2.29	256.35
-4.00	2.42	1.124	0.000	0.00	2.42	274.42
-3.90	2.53	1.198	0.000	0.00	2.53	292.47
-3.80	2.65	1.274	0.000	0.00	2.65	311.01
-3.70	2.75	1.350	0.000	0.00	2.75	329.53
-3.60	2.86	1.424	0.000	0.00	2.86	347.58
-3.50	2.96	1.499	0.000	0.00	2.96	365.63
-3.40	3.06	1.573	0.000	0.00	3.06	383.67
-3.30	3.16	1.647	0.000	0.00	3.16	401.72
-3.20	3.25	1.723	0.000	0.00	3.25	420.23
-3.10	3.35	1.799	0.000	0.00	3.35	438.73
-3.00	3.44	1.873	0.000	0.00	3.44	456.77
-2.90	3.53	1.947	0.000	0.00	3.53	474.80
-2.80	3.61	2.024	0.000	0.00	3.61	493.31
-2.70	3.70	2.100	0.000	0.00	3.70	511.81
-2.60	3.78	2.174	0.000	0.00	3.78	529.84

Subsection: Elevation-Volume-Flow Table (Pond)
 Label: PO-HA
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Elevation (ft)	Outflow (ft ³ /s)	Storage (ac-ft)	Area (acres)	Infiltration (ft ³ /s)	Flow (Total) (ft ³ /s)	2S/t + O (ft ³ /s)
-2.50	3.86	2.248	0.000	0.00	3.86	547.86
-2.40	3.94	2.322	0.000	0.00	3.94	565.89
-2.30	4.02	2.396	0.000	0.00	4.02	583.91
-2.20	4.10	2.472	0.000	0.00	4.10	602.41
-2.10	4.18	2.548	0.000	0.00	4.18	620.90
-2.00	4.25	2.623	0.000	0.00	4.25	638.92
-1.90	4.33	2.697	0.000	0.00	4.33	656.94
-1.80	4.40	2.773	0.000	0.00	4.40	675.43
-1.70	4.47	2.849	0.000	0.00	4.47	693.92
-1.60	4.54	2.923	0.000	0.00	4.54	711.93
-1.50	4.61	2.997	0.000	0.00	4.61	729.95
-1.40	4.68	3.069	0.000	0.00	4.68	747.49
-1.30	4.75	3.142	0.000	0.00	4.75	765.03
-1.20	4.82	3.212	0.000	0.00	4.82	782.10
-1.10	4.88	3.282	0.000	0.00	4.88	799.16
-1.00	4.95	3.347	0.000	0.00	4.95	814.81
-0.90	5.46	3.411	0.000	0.00	5.46	830.90
-0.80	6.34	3.471	0.000	0.00	6.34	846.42
-0.70	7.47	3.532	0.000	0.00	7.47	862.19
-0.60	8.80	3.587	0.000	0.00	8.80	876.74
-0.50	10.29	3.641	0.000	0.00	10.29	891.46
-0.40	11.97	3.692	0.000	0.00	11.97	905.41
-0.30	13.75	3.743	0.000	0.00	13.75	919.48
-0.20	15.69	3.788	0.000	0.00	15.69	932.27
-0.10	17.76	3.832	0.000	0.00	17.76	945.20
0.00	19.93	3.869	0.000	0.00	19.93	956.34
0.10	22.23	3.907	0.000	0.00	22.23	967.62
0.20	24.62	3.936	0.000	0.00	24.62	977.09
0.30	27.12	3.965	0.000	0.00	27.12	986.68
0.40	29.72	3.981	0.000	0.00	29.72	993.06
0.50	32.43	3.996	0.000	0.00	32.43	999.54

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	-5.50 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	0.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	-5.50	0.50
Rectangular Weir	Riser - 1	Forward	Culvert - 1	-1.00	0.50
Culvert-Circular	Culvert - 1	Forward	TW	-5.50	0.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Culvert - 1	
Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	54.0 in
Length	10.00 ft
Length (Computed Barrel)	10.00 ft
Slope (Computed)	0.010 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.500
Kb	0.004
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)	1.155
T2 ratio (HW/D)	1.302
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...

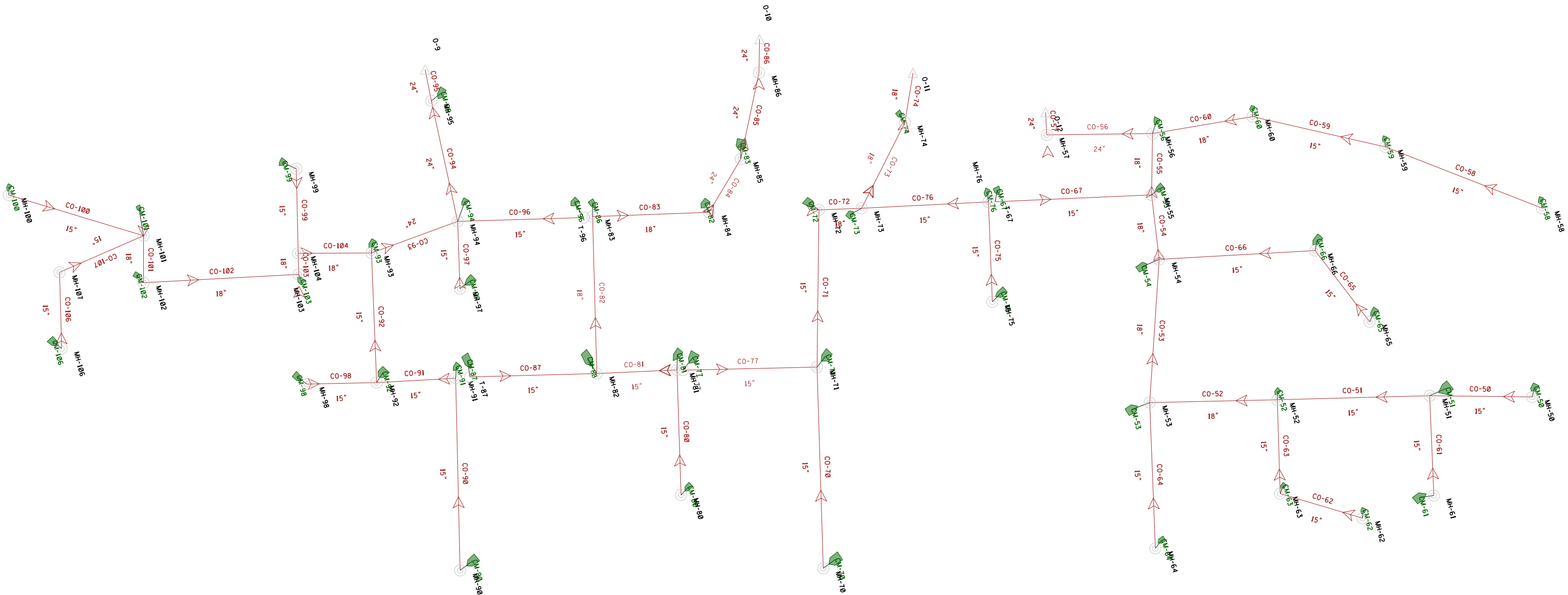
T1 Elevation	-0.30 ft	T1 Flow	118.08 ft ³ /s
T2 Elevation	0.36 ft	T2 Flow	134.95 ft ³ /s

Subsection: Outlet Input Data
 Label: Composite Outlet Structure - 1
 Scenario: 25-YEAR

Return Event: 25 years
 Storm Event: 25-YEAR

Structure ID: Riser - 1	
Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	-1.00 ft
Weir Length	5.00 ft
Weir Coefficient	3.00 (ft ^{0.5})/s
Structure ID: Orifice - 1	
Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	-5.50 ft
Orifice Diameter	10.0 in
Orifice Coefficient	0.600
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

NJ Transit Site – StormCAD Results



FlexTable: Conduit Calculations
Active Scenario: 25-YEAR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Conduit Description	Manning's n	Number of Barrels	Capacity (Full Flow) (cfs)	Flow (cfs)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-50	MH-50	MH-51	1.50	0.77	110	0.007	Circle - 15 in	0.013	1	5.26	0.72	3.00	5.50	6.70	1.83	1.31
CO-51	MH-51	MH-52	0.77	-0.22	164	0.006	Circle - 15 in	0.013	1	5.02	1.82	3.77	6.70	7.00	1.31	0.52
CO-52	MH-52	MH-53	-0.22	-1.05	137	0.006	Circle - 18 in	0.013	1	8.18	3.75	4.53	7.00	5.50	0.52	-0.16
CO-53	MH-53	MH-54	-1.05	-1.98	154	0.006	Circle - 18 in	0.013	1	8.17	5.38	4.93	5.50	7.50	-0.16	-0.86
CO-54	MH-54	MH-55	-1.98	-2.54	70	0.008	Circle - 18 in	0.013	1	9.42	8.30	6.02	7.50	7.50	-0.86	-1.34
CO-55	MH-55	MH-56	-2.54	-4.00	66	0.022	Circle - 18 in	0.013	1	15.64	9.73	9.33	7.50	7.00	-1.34	-2.62
CO-56	MH-56	MH-57	-4.00	-4.86	114	0.008	Circle - 24 in	0.013	1	19.69	14.56	6.86	7.00	7.50	-2.62	-3.46
CO-57	MH-57	O-12	-4.86	-5.00	24	0.006	Circle - 24 in	0.013	1	17.19	14.42	6.13	7.50	7.50	-3.46	-3.63
CO-58	MH-58	MH-59	2.20	1.30	181	0.005	Circle - 15 in	0.013	1	4.56	2.25	3.70	6.20	7.00	2.82	2.20
CO-59	MH-59	MH-60	1.30	0.57	146	0.005	Circle - 15 in	0.013	1	4.57	3.98	4.19	7.00	7.50	2.20	1.38
CO-60	MH-60	MH-56	0.57	-0.52	109	0.010	Circle - 18 in	0.013	1	10.51	4.16	5.60	7.50	7.00	1.35	0.14
CO-61	MH-61	MH-51	2.50	0.77	107	0.016	Circle - 15 in	0.013	1	8.21	0.47	3.64	6.50	6.70	2.77	1.31
CO-62	MH-62	MH-63	2.00	1.53	92	0.005	Circle - 15 in	0.013	1	4.61	0.93	2.94	6.00	7.00	2.38	2.02
CO-63	MH-63	MH-52	1.53	1.03	101	0.005	Circle - 15 in	0.013	1	4.55	1.47	3.31	7.00	7.00	2.02	1.51
CO-64	MH-64	MH-53	0.00	-1.05	156	0.007	Circle - 15 in	0.013	1	5.29	0.63	2.90	4.50	5.50	0.31	-0.16
CO-65	MH-65	MH-66	3.80	2.85	96	0.010	Circle - 15 in	0.013	1	6.42	1.41	4.20	7.80	7.20	4.27	3.52
CO-66	MH-66	MH-54	2.85	1.17	168	0.010	Circle - 15 in	0.013	1	6.46	2.78	5.07	7.20	7.50	3.52	1.74
CO-67	T-67	MH-55	0.00	-2.54	168	0.015	Circle - 15 in	0.013	1	7.94	1.37	4.85	8.00	7.50	0.46	-1.34
CO-70	MH-70	MH-71	-1.50	-2.56	216	0.005	Circle - 15 in	0.013	1	4.53	1.17	3.09	2.50	4.25	-1.07	-1.67
CO-71	MH-71	MH-72	-2.56	-3.42	169	0.005	Circle - 15 in	0.013	1	4.61	3.95	4.22	4.25	5.70	-1.67	-2.41
CO-72	MH-72	MH-73	-3.42	-3.65	46	0.005	Circle - 18 in	0.013	1	7.45	4.20	4.34	5.70	5.70	-2.41	-2.46
CO-73	MH-73	MH-74	-3.65	-4.17	103	0.005	Circle - 18 in	0.013	1	7.47	7.29	4.82	5.70	5.70	-2.46	-3.05
CO-74	MH-74	O-11	-4.17	-4.82	54	0.012	Circle - 18 in	0.013	1	11.51	8.36	7.10	5.70	7.50	-3.05	-3.87
CO-75	MH-75	MH-76	1.80	0.73	107	0.010	Circle - 15 in	0.013	1	6.45	1.45	4.24	5.80	8.00	2.28	1.33
CO-76	MH-76	MH-73	0.73	-0.63	136	0.010	Circle - 15 in	0.013	1	6.45	2.26	4.79	8.00	5.70	1.33	-0.12
CO-77	T-77	MH-71	-0.55	-2.56	144	0.014	Circle - 15 in	0.013	1	7.64	1.31	4.66	3.20	4.25	-0.10	-1.67
CO-80	MH-80	MH-81	-1.00	-1.66	134	0.005	Circle - 15 in	0.013	1	4.53	4.47	3.64	2.75	3.20	0.50	-0.14
CO-81	MH-81	MH-82	-1.66	-2.13	86	0.005	Circle - 15 in	0.013	1	4.77	5.33	4.34	3.20	3.00	-0.14	-0.73
CO-82	MH-82	MH-83	-2.13	-2.97	168	0.005	Circle - 18 in	0.013	1	7.42	8.07	4.57	3.00	5.60	-0.73	-1.61
CO-83	MH-83	MH-84	-2.97	-3.21	125	0.002	Circle - 24 in	0.013	1	9.91	8.81	3.56	5.60	6.00	-1.61	-2.07
CO-84	MH-84	MH-85	-3.21	-3.61	66	0.006	Circle - 24 in	0.013	1	17.56	10.09	5.78	6.00	6.00	-2.07	-2.41
CO-85	MH-85	MH-86	-3.61	-4.18	95	0.006	Circle - 24 in	0.013	1	17.56	11.27	5.93	6.00	6.00	-2.41	-3.01
CO-86	MH-86	O-10	-4.18	-4.40	36	0.006	Circle - 24 in	0.013	1	17.66	11.17	5.95	6.00	6.50	-2.98	-3.25
CO-87	T-87	MH-82	0.00	-2.13	136	0.016	Circle - 15 in	0.013	1	8.08	1.59	5.12	3.00	3.00	0.50	-0.73
CO-90	MH-90	MH-91	0.25	-1.00	206	0.006	Circle - 15 in	0.013	1	5.03	2.91	4.25	4.00	3.00	0.94	0.59
CO-91	MH-91	MH-92	-1.00	-1.51	85	0.006	Circle - 15 in	0.013	1	5.01	3.42	2.78	3.00	3.00	0.59	0.35
CO-92	MH-92	MH-93	-1.51	-2.21	139	0.005	Circle - 15 in	0.013	1	4.58	6.23	5.08	3.00	5.50	0.35	-0.95
CO-93	MH-93	MH-94	-2.21	-2.66	98	0.005	Circle - 24 in	0.013	1	15.30	11.12	5.31	5.50	5.50	-0.95	-1.32
CO-94	MH-94	MH-95	-2.66	-3.32	132	0.005	Circle - 24 in	0.013	1	15.98	12.64	5.64	5.50	8.00	-1.32	-1.95
CO-95	MH-95	O-9	-3.32	-3.50	34	0.005	Circle - 24 in	0.013	1	16.41	13.35	5.82	8.00	7.50	-1.95	-2.18
CO-96	T-96	MH-94	0.70	-2.66	135	0.025	Circle - 15 in	0.013	1	10.18	0.56	4.46	5.60	5.50	0.99	-1.32
CO-97	MH-97	MH-94	1.00	-2.66	72	0.051	Circle - 15 in	0.013	1	14.53	0.82	6.40	5.00	5.50	1.36	-1.32
CO-98	MH-98	MH-92	-0.50	-1.24	75	0.010	Circle - 15 in	0.013	1	6.42	1.57	4.32	3.50	3.00	0.37	0.35
CO-99	MH-99	MH-104	0.00	-1.77	91	0.020	Circle - 15 in	0.013	1	9.03	0.76	4.47	7.00	6.00	0.34	-0.86
CO-100	MH-100	MH-101	0.50	-0.64	151	0.008	Circle - 15 in	0.013	1	5.61	2.22	4.30	4.50	5.50	1.09	0.04
CO-101	MH-101	MH-102	-0.64	-0.90	50	0.005	Circle - 18 in	0.013	1	7.54	3.14	4.07	5.50	6.00	0.04	-0.18

FlexTable: Conduit Calculations
Active Scenario: 25-YEAR

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Conduit Description	Manning's n	Number of Barrels	Capacity (Full Flow) (cfs)	Flow (cfs)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-102	MH-102	MH-103	-0.90	-1.65	167	0.004	Circle - 18 in	0.013	1	7.04	3.25	3.91	6.00	6.00	-0.18	-0.84
CO-103	MH-103	MH-104	-1.65	-1.77	23	0.005	Circle - 18 in	0.013	1	7.64	4.07	4.39	6.00	6.00	-0.84	-0.86
CO-104	MH-104	MH-93	-1.77	-2.21	79	0.006	Circle - 18 in	0.013	1	7.85	4.76	4.66	6.00	5.50	-0.86	-0.95
CO-106	MH-106	MH-107	0.25	-0.15	82	0.005	Circle - 15 in	0.013	1	4.52	0.57	2.51	4.00	5.00	0.55	0.14
CO-107	MH-107	MH-101	-0.15	-0.64	98	0.005	Circle - 15 in	0.013	1	4.56	0.56	2.52	5.00	5.50	0.14	0.04