Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SAA	0.000		10.600	1200	513200.912	103651.470	0.900
RE	0.003	4.00	10.650	150	513206.338	103636.332	0.500
S2	0.000	4.00	10.650	600	513198.118	103650.686	0.805
S1	0.003	4.00	10.650	450	513200.307	103635.545	0.652

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	RE	S1	6.082	0.600	10.150	9.998	0.152	40.0	100	4.08	50.0
1.002	S2	SAA	2.902	0.600	9.845	9.700	0.145	20.0	100	4.44	50.0
1.001	S1	S2	15.298	0.600	9.998	9.845	0.153	100.0	100	4.41	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.223	9.6	0.5	0.400	0.552	0.003	0.0	16	0.651
1.002	1.734	13.6	1.1	0.705	0.800	0.006	0.0	19	1.034
1.001	0.769	6.0	1.1	0.552	0.705	0.006	0.0	29	0.579

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	6.082	40.0	100	Circular	10.650	10.150	0.400	10.650	9.998	0.552
1.002	2.902	20.0	100	Circular	10.650	9.845	0.705	10.600	9.700	0.800
1.001	15.298	100.0	100	Circular	10.650	9.998	0.552	10.650	9.845	0.705

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	RE	150	Manhole	Adoptable	S1	450	Manhole	Adoptable
1.002	S2	600	Manhole	Adoptable	SAA	1200	Manhole	Adoptable
1.001	S1	450	Manhole	Adoptable	S2	600	Manhole	Adoptable

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SAA	513200.912	103651.470	10.600	0.900	1200	1	1.002	9.700	100
									
RE	513206.338	103636.332	10.650	0.500	150				
						0	1.000	10.150	100
S2	513198.118	103650.686	10.650	0.805	600	1	1.001	9.845	100
									
						0	1.002	9.845	100
S1	513200.307	103635.545	10.650	0.652	450		1.000	9.998	100
						0	1.001	9.998	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

Node SAA Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	9.700	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.08280	Time to half empty (mins)	563	Inf Depth (m)	
Safety Factor	1.5	Pit Width (m)	4.000	Number Required	1
Porosity	0.95	Pit Length (m)	1.500		

Approval Settings

Node Size	✓	Cover Depth	✓
Node Losses	✓	Minimum Cover Depth (m)	
Link Size	✓	Maximum Cover Depth (m)	3.000
Minimum Diameter (mm)	150	Backdrops	✓
Link Length	✓	Minimum Backdrop Height (m)	
Maximum Length (m)	100.000	Maximum Backdrop Height (m)	1.500
Coordinates	✓	Full Bore Velocity	✓
Accuracy (m)	1.000	Minimum Full Bore Velocity (m/s)	
Crossings	✓	Maximum Full Bore Velocity (m/s)	3.000

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Approval Settings

Proportional Velocity	✓	Flooding	✓
Return Period (years)		Return Period (years)	30
Minimum Proportional Velocity (m/s)	0.750	Time to Half Empty	x
Maximum Proportional Velocity (m/s)	3.000	Discharge Rates	✓
Surcharged Depth	✓	Discharge Volume	✓
Return Period (years)		100 year 360 minute (m^3)	
Maximum Surcharged Depth (m)	0.100		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute summer	232.669	65.837	30 year 720 minute summer	20.419	5.472
10 year 15 minute winter	163.277	65.837	30 year 720 minute winter	13.723	5.472
10 year 30 minute summer	153.068	43.313	30 year 960 minute summer	16.340	4.303
10 year 30 minute winter	107.416	43.313	30 year 960 minute winter	10.824	4.303
10 year 60 minute summer	103.814	27.435	30 year 1440 minute summer	11.433	3.064
10 year 60 minute winter	68.971	27.435	30 year 1440 minute winter	7.684	3.064
10 year 120 minute summer	65.944	17.427	30 year +40% CC 15 minute summer	426.459	120.673
10 year 120 minute winter	43.811	17.427	30 year +40% CC 15 minute winter	299.269	120.673
10 year 180 minute summer	50.811	13.075	30 year +40% CC 30 minute summer	284.069	80.382
10 year 180 minute winter	33.028	13.075	30 year +40% CC 30 minute winter	199.347	80.382
10 year 240 minute summer	39.970	10.563	30 year +40% CC 60 minute summer	193.258	51.073
10 year 240 minute winter	26.555	10.563	30 year +40% CC 60 minute winter	128.396	51.073
10 year 360 minute summer	29.968	7.712	30 year +40% CC 120 minute summer	118.850	31.408
10 year 360 minute winter	19.480	7.712	30 year +40% CC 120 minute winter	78.961	31.408
10 year 480 minute summer	23.161	6.121	30 year +40% CC 180 minute summer	90.398	23.263
10 year 480 minute winter	15.388	6.121	30 year +40% CC 180 minute winter	58.761	23.263
10 year 600 minute summer	18.656	5.103	30 year +40% CC 240 minute summer	70.636	18.667
10 year 600 minute winter	12.747	5.103	30 year +40% CC 240 minute winter	46.929	18.667
10 year 720 minute summer	16.391	4.393	30 year +40% CC 360 minute summer	52.640	13.546
10 year 720 minute winter	11.016	4.393	30 year +40% CC 360 minute winter	34.217	13.546
10 year 960 minute summer	13.157	3.465	30 year +40% CC 480 minute summer	40.556	10.718
10 year 960 minute winter	8.715	3.465	30 year +40% CC 480 minute winter	26.944	10.718
10 year 1440 minute summer	9.260	2.482	30 year +40% CC 600 minute summer	32.596	8.916
10 year 1440 minute winter	6.223	2.482	30 year +40% CC 600 minute winter	22.272	8.916
30 year 15 minute summer	304.613	86.195	30 year +40% CC 720 minute summer	28.586	7.661
30 year 15 minute winter	213.764	86.195	30 year +40% CC 720 minute winter	19.212	7.661
30 year 30 minute summer	202.907	57.416	30 year +40% CC 960 minute summer	22.876	6.024
30 year 30 minute winter	142.391	57.416	30 year +40% CC 960 minute winter	15.154	6.024
30 year 60 minute summer	138.042	36.480	30 year +40% CC 1440 minute summer	16.006	4.290
30 year 60 minute winter	91.712	36.480	30 year +40% CC 1440 minute winter	10.757	4.290
30 year 120 minute summer	84.893	22.435	100 year 15 minute summer	383.310	108.463
30 year 120 minute winter	56.401	22.435	100 year 15 minute winter	268.989	108.463
30 year 180 minute summer	64.570	16.616	100 year 30 minute summer	257.235	72.789
30 year 180 minute winter	41.972	16.616	100 year 30 minute winter	180.516	72.789
30 year 240 minute summer	50.454	13.333	100 year 60 minute summer	176.825	46.730
30 year 240 minute winter	33.520	13.333	100 year 60 minute winter	117.478	46.730
30 year 360 minute summer	37.600	9.676	100 year 120 minute summer	106.535	28.154
30 year 360 minute winter	24.441	9.676	100 year 120 minute winter	70.780	28.154
30 year 480 minute summer	28.969	7.656	100 year 180 minute summer	80.486	20.712
30 year 480 minute winter	19.246	7.656	100 year 180 minute winter	52.318	20.712
30 year 600 minute summer	23.283	6.368	100 year 240 minute summer	62.731	16.578
30 year 600 minute winter	15.908	6.368	100 year 240 minute winter	41.677	16.578

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year 360 minute summer	46.729	12.025
100 year 360 minute winter	30.375	12.025
100 year 480 minute summer	36.098	9.540
100 year 480 minute winter	23.983	9.540
100 year 600 minute summer	29.076	7.953
100 year 600 minute winter	19.867	7.953
100 year 720 minute summer	25.538	6.844
100 year 720 minute winter	17.163	6.844
100 year 960 minute summer	20.442	5.383
100 year 960 minute winter	13.541	5.383
100 year 1440 minute summer	14.307	3.834
100 year 1440 minute winter	9.615	3.834
100 year +45% CC 15 minute summer	555.799	157.272
100 year +45% CC 15 minute winter	390.034	157.272
100 year +45% CC 30 minute summer	372.990	105.543
100 year +45% CC 30 minute winter	261.748	105.543
100 year +45% CC 60 minute summer	256.396	67.758
100 year +45% CC 60 minute winter	170.343	67.758
100 year +45% CC 120 minute summer	154.476	40.824
100 year +45% CC 120 minute winter	102.630	40.824
100 year +45% CC 180 minute summer	116.705	30.032
100 year +45% CC 180 minute winter	75.861	30.032
100 year +45% CC 240 minute summer	90.959	24.038
100 year +45% CC 240 minute winter	60.431	24.038
100 year +45% CC 360 minute summer	67.757	17.436
100 year +45% CC 360 minute winter	44.044	17.436
100 year +45% CC 480 minute summer	52.343	13.833
100 year +45% CC 480 minute winter	34.775	13.833
100 year +45% CC 600 minute summer	42.161	11.532
100 year +45% CC 600 minute winter	28.807	11.532
100 year +45% CC 720 minute summer	37.030	9.924
100 year +45% CC 720 minute winter	24.887	9.924
100 year +45% CC 960 minute summer	29.641	7.805
100 year +45% CC 960 minute winter	19.635	7.805
100 year +45% CC 1440 minute summer	20.745	5.560
100 year +45% CC 1440 minute winter	13.942	5.560

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Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	SAA	420	9.982	0.282	0.2	1.9285	0.0000	OK
15 minute summer	RE	10	10.175	0.025	1.3	0.0004	0.0000	OK
600 minute winter	S2	420	9.982	0.137	0.2	0.0389	0.0000	SURCHARGED
15 minute summer	S1	10	10.047	0.049	2.6	0.0078	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
600 minute winter	SAA	Infiltration		0.0			
15 minute summer	RE	1.000	S1	1.3	0.499	0.135	0.0163
600 minute winter	S2	1.002	SAA	0.2	0.620	0.015	0.0227
15 minute summer	S1	1.001	S2	2.6	0.897	0.427	0.0444

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Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	SAA	168	10.060	0.360	0.9	2.4589	0.0000	OK
15 minute summer	RE	10	10.179	0.029	1.7	0.0005	0.0000	OK
180 minute summer	S2	168	10.060	0.215	1.0	0.0608	0.0000	SURCHARGED
180 minute summer	S1	168	10.060	0.062	1.0	0.0098	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
180 minute summer	SAA	Infiltration		0.1			
15 minute summer	RE	1.000	S1	1.7	0.532	0.177	0.0199
180 minute summer	S2	1.002	SAA	0.9	0.843	0.069	0.0227
180 minute summer	S1	1.001	S2	1.0	0.643	0.166	0.0987

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Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	SAA	244	10.359	0.659	1.0	3.0281	0.0000	OK
240 minute summer	RE	244	10.359	0.209	0.6	0.0038	0.0000	FLOOD RISK
240 minute summer	S2	244	10.359	0.514	1.2	0.1454	0.0000	FLOOD RISK
240 minute summer	S1	244	10.359	0.361	1.2	0.0574	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
240 minute summer	SAA	Infiltration		0.1			
240 minute summer	RE	1.000	S1	0.6	0.427	0.062	0.0476
240 minute summer	S2	1.002	SAA	1.0	0.883	0.074	0.0227
240 minute summer	S1	1.001	S2	1.2	0.531	0.199	0.1197

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Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	SAA	232	10.202	0.502	0.7	2.8506	0.0000	OK
240 minute winter	RE	232	10.202	0.052	0.3	0.0009	0.0000	OK
240 minute winter	S2	232	10.202	0.357	0.6	0.1010	0.0000	SURCHARGED
240 minute winter	S1	232	10.202	0.204	0.6	0.0324	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
240 minute winter	SAA	Infiltration		0.1			
240 minute winter	RE	1.000	S1	0.3	0.350	0.031	0.0363
240 minute winter	S2	1.002	SAA	0.7	0.843	0.055	0.0227
240 minute winter	S1	1.001	S2	0.6	0.531	0.099	0.1197

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	SAA	352	10.600	0.900	0.5	3.3008	0.7657	FLOOD
240 minute summer	RE	224	10.601	0.451	0.8	0.0081	0.0000	FLOOD RISK
360 minute winter	S2	296	10.600	0.755	0.7	0.2137	0.0000	FLOOD RISK
240 minute summer	S1	224	10.601	0.603	1.6	0.0958	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
480 minute winter	SAA	Infiltration		0.1			
240 minute summer	RE	1.000	S1	0.8	0.446	0.083	0.0476
360 minute winter	S2	1.002	SAA	0.6	0.866	0.043	0.0227
240 minute summer	S1	1.001	S2	1.4	0.531	0.227	0.1197

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