City of Helena

Helena Wastewater Collection System Master Plan

APPENDIX D

Existing System Capacities under Near-Term Future Conditions

Capacity Deficiencies in Existing Collection System Under Near-Term Conditions

Pipe ID	From Manhole ID	To Manhole ID	Pipe Diameter (in)	Length (ft)	Slope	Flow (gpm)	Flow Type	Velocity (ft/s)	Water Depth (ft)	Froude Number	Overflow (MG)	q/Q
P1803	445-5	445-6	12	400.4	0.002	1,730.35	Pressurized	4.91	1	0.865	0	2.303
P3052	78-14-9	78-14-8	10	254.7	0.001	814.493	Pressurized	3.33	0.833	0.642	0	2.238
P2915	254-2	254-3	8	178.4	0.002	508.747	Pressurized	3.25	0.667	0.701	0	1.971
P2126	SI370-43	78-14-11	10	308.9	0.002	808.058	Pressurized	3.30	0.833	0.637	0	1.706
P469	78-14-10	78-14-9	10	370.2	0.003	814.508	Pressurized	3.33	0.833	0.642	0	1.639
P482	78-9-19	78-9-18	10	152.3	0.001	498.328	Pressurized	2.04	0.833	0.393	0	1.613
P474	78-14-14	78-14-13	10	370.4	0.003	807.477	Pressurized	3.30	0.833	0.637	0	1.604
P1360	94-10-1	94-10-2	10	476.4	0.001	510.702	Pressurized	2.09	0.833	0.403	0	1.601
P343	78-14-5	78-14-5A	10	59.1	0.003	815.149	Pressurized	3.33	0.833	0.643	0	1.551
P470	78-14-11	78-14-10	10	370.0	0.003	809.305	Pressurized	3.31	0.833	0.638	0	1.516
P342	78-14-6	78-14-5	10	202.3	0.003	815.234	Pressurized	3.33	0.833	0.643	0	1.466
P2153	254-3	253-1	8	468.7	0.004	506.64	Pressurized	3.23	0.667	0.698	0	1.449
P475	78-14-15	78-14-14	10	370.8	0.003	807.464	Pressurized	3.30	0.833	0.637	0	1.441
P472	78-14-12	SI370-43	10	60.7	0.003	807.776	Pressurized	3.30	0.833	0.637	0	1.399
P358	78-14-5A	78-14-4	10	264.3	0.003	815.149	Pressurized	3.33	0.833	0.643	0	1.399
FP992	FMH956	78-9-21	8	317.7	0.004	479.71	Pressurized	3.06	0.667	0.661	0	1.395
P3053	78-14-8	78-14-7	10	261.5	0.004	814.793	Pressurized	3.33	0.833	0.643	0	1.359
P716	78-9-21	78-9-20	8	331.6	0.005	479.729	Pressurized	3.06	0.667	0.661	0	1.274
P760	538-5	538-4	10	464.2	0.002	506.343	Pressurized	2.07	0.833	0.399	0	1.253
P1542	99-16-30	99-16-31	12	322.7	0.002	916.39	Pressurized	2.60	1	0.458	0	1.234
P881	003-1	91-1-11	7	164.8	0.005	315.903	Pressurized	2.63	0.583	0.608	0	1.206
P359	78-14-4	78-14-3	10	324.3	0.005	815.011	Pressurized	3.33	0.833	0.643	0	1.196
P931	SI293-12	SI293-13	8	360.4	0.017	819.624	Pressurized	5.23	0.667	1.129	0	1.170
P2867	SI293-11	SI293-12	8	409.3	0.017	819.791	Pressurized	5.23	0.667	1.129	0	1.170
P1879	533-2	533-6	12	332.8	0.009	1,760.45	Pressurized	4.99	1	0.88	0	1.170
P473	78-14-13	78-14-12	10	370.3	0.005	807.768	Pressurized	3.30	0.833	0.637	0	1.170
P1602	445-6	445-7	12	394.2	0.008	1,712.08	Pressurized	4.86	1	0.856	0	1.159
P1603	445-7	445-8	12	287.0	0.009	1,706.56	Pressurized	4.84	1	0.853	0	1.150
P1441	445-4	445-4A	12	714.7	0.009	1,749.36	Pressurized	4.96	1	0.875	0	1.128
P1604	445-8	64-21	12	309.8	0.009	1,700.27	Pressurized	4.82	1	0.85	0	1.111
P933	SI293-13	SI293-7A	10	424.4	0.006	819.308	Pressurized	3.35	0.833	0.646	0	1.109
P2152	SI293-10	SI293-11	8	264.7	0.019	815.82	Pressurized	5.21	0.667	1.124	0	1.101
P1447	533-8	533-10	12	317.1	0.011	1,759.20	Pressurized	4.99	1	0.879	0	1.054
P980	551-6	551-7	24	39.0	0.001	2,421.64	Pressurized	1.72	2	0.214	0	1.002
P899	99-16-37	99-16-38	12	119.7	-0.003	914.221	Pressurized	2.59	1	0.457	0	1.000
P2239	94-28-1	551-8	24	54.2	0	2,470.11	Pressurized	1.75	2	0.218	0	1.000
P1202	99-16-40	99-16-41	12	399.8	0	913.689	Pressurized	2.59	1	0.457	0	1.000
P1600	78-14-2	78-14-1	10	321.2	0.007	815.664	Free Surface	3.91	0.662	0.829	0	0.972
P1540	99-16-28	99-16-29	12	399.5	0.004	917.02	Free Surface	3.08	0.787	0.603	0	0.961
P1483	99-16-34	99-16-35	12	398.9	0.004	914.924	Free Surface	3.08	0.785	0.605	0	0.960
P1482	99-16-33	99-16-34	12	399.3	0.004	915.316	Free Surface	3.13	0.773	0.625	0	0.945
P1446	533-10	533-12	12	320.2	0.013	1,756.34	Free Surface	6.00	0.773	1.199	0	0.943
P1878	533-6	533-8	12	319.8	0.014	1,760.97	Free Surface	6.13	0.76	1.248	0	0.925
ATP165	ATMH-06-15	ATMH-06-15-8	8	102.8	0.004	311.341	Free Surface	2.48	0.497	0.631	0	0.907
P1497	538-6	538-5	10	475.6	0.003	499.531	Pressurized	2.58	0.615	0.592	0	0.895
P1599	78-14-3	78-14-2	10	324.7	0.009	815.829	Free Surface	4.28	0.605	0.998	0	0.877
P1201	99-16-39	99-16-40	12	262.2	0.004	913.689	Pressurized	3.34	0.725	0.713	0	0.876
P1480	99-16-31	99-16-32	12	400.7	0.004	916.008	Free Surface	3.38	0.719	0.726	0	0.866
P1481	99-16-32	99-16-33	12	400.1	0.004	915.668	Free Surface	3.41	0.713	0.738	0	0.858
P1183	99-16-17	99-16-18	12	273.1	0.001	443.995	Free Surface	1.65	0.713	0.358	0	0.857
P1541	99-16-29	99-16-30	12	401.1	0.005	916.69	Free Surface	3.50	0.696	0.774	0	0.831
P2550	99-16-44	99-16-45	12	399.0	0.005	912.626	Free Surface	3.49	0.694	0.775	0	0.828
ATP160	ATMH-06-15	ATMH-06-15-7	8	229.8	0.005	310.07	Free Surface	2.71	0.456	0.746	0	0.813
SMP155	SMMH-09	SMMH-08	12	65.0	0.006	972.635	Free Surface	3.81	0.68	0.861	0	0.804
P2551	99-16-45	99-16-46	12	400.2	0.005	912.208	Free Surface	3.60	0.675	0.819	0	0.797
P3063	76-41-5	76-41-4	10	399.6	0	149.637	Free Surface	0.86	0.559	0.214	0	0.791
P1359	94-10-2	254-2	10	455.0	0.004	508.58	Pressurized	2.94	0.554	0.741	0	0.781
P900	99-16-38	99-16-39	12	260.9	0.005	913.934	Free Surface	3.68	0.664	0.846	0	0.780
SMP165	SMMH-11	SMMH-09	12	83.3	0.006	967.967	Free Surface	3.89	0.664	0.896	0	0.779
P1436	533-12	445-4	12	471.8	0.02	1,753.59	Free Surface	7.09	0.661	1.638	0	0.775
SMP185	SMMH-19	SMMH-11	12	80.6	0.006	958.641	Free Surface	3.91	0.656	0.908	0	0.767
P759	538-4	94-10-1	10	371.6	0.005	508.272	Pressurized	3.00	0.544	0.766	0	0.763
SMP100	SMMH-21	9020	12	21.9	0.007	1,028.71	Free Surface	4.27	0.646	1.005	0	0.750
P1203	99-16-41	99-16-42	12	400.1	0.006	913.402	Free Surface	3.80	0.646	0.894	0	0.748