

March 30, 2022

To: City of Scottsdale

From: Jorge Garré, P.E.
Argus Consulting, P.C.
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Scottsdale, Arizona 85260
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Re: Sereno Canyon Phase 4 – Master Sewer Plan (Amendment #3)

This document is an amendment to the Sewer Basis of Design Report approved by the City of Scottsdale. The sewer capacity analysis and exhibit attached herein are in support of the proposed development for Parcel E of Sereno Canyon Phase 4.

The revision to Parcel E includes re-lotting of 6 Enclave units and 4 Estate lots from the previous configuration of 8 Enclave units and 5 Estates lots. This re-lotting results in 83 lots contributing flows through East Ranch Gate Road sewer line to Lift Station No.52.

Basis of Sewer Design

- Preliminary Plat Phase 4 Units = 268 dwelling units + 29 Cottages=297
- Final Plat/Proposed Phase 4 Units = 261 dwelling units + 25 Cottages = 286
- Per City of Scottsdale design standard section 7-1.403 residential design flow will be 100 gallons per capita day with 2.5 persons per dwelling unit
- A peaking factor of 4 will be used for residential units

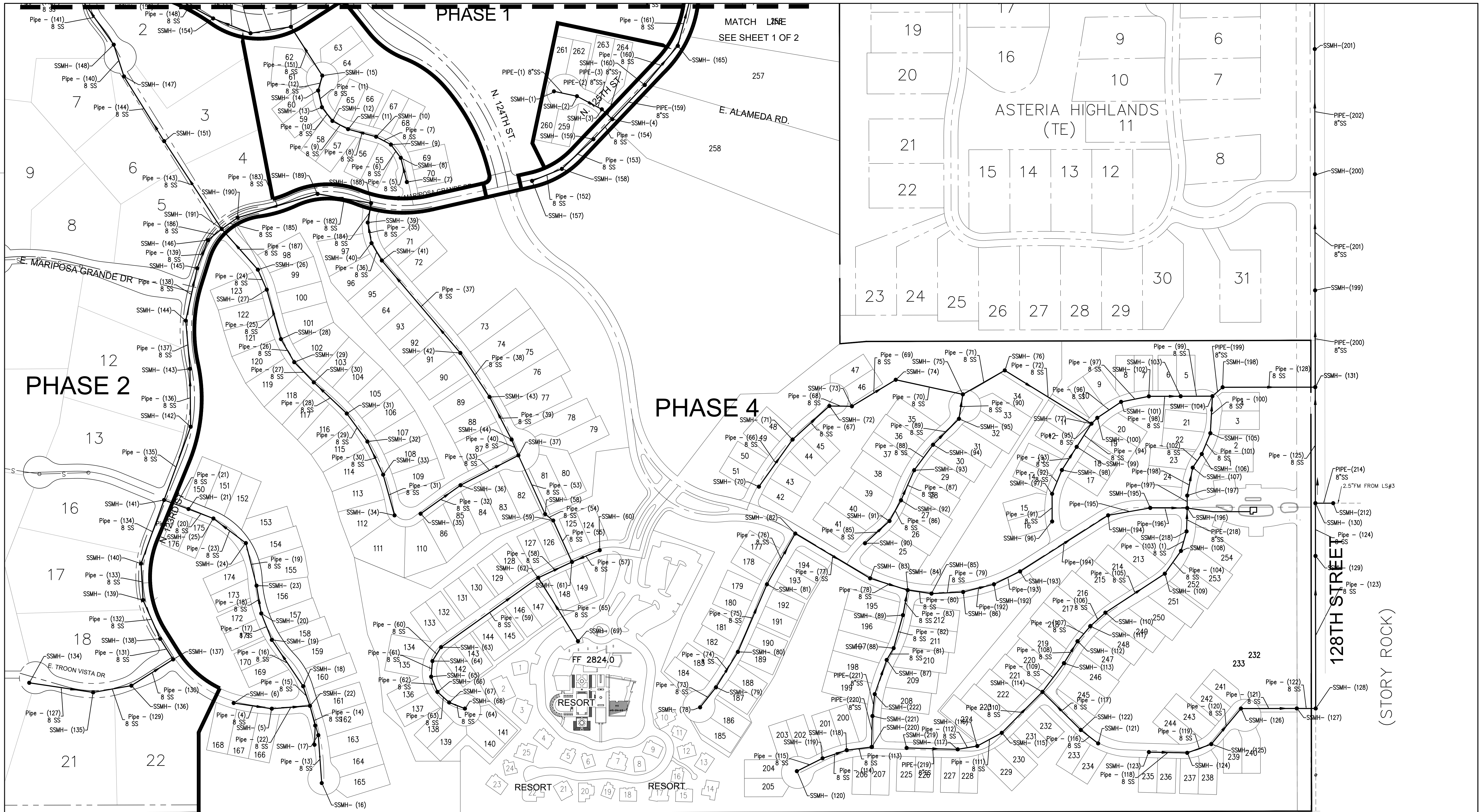
See attached calculations and sewer distribution map of the proposed system design and capacity.

The proposed sewer collection system is design to provided adequate capacity to meet City of Scottsdale regulations and code.



EXPIRES 12/31/24

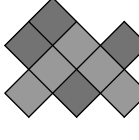
Figure 2: Sewer Distribution Map



SCALE: 1=120'

EXP. 12/31/24

28638
JORGE R. GARRE
Professional Engineer
No. 28638, 3/19/2022
ARIZONA, U.S.A.



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28150 N. Alma School Pkwy., Suite 103 - #193
Scottsdale, Arizona 85262 480-596-1131

SERENO CANYON PHASE 4

FIGURE 2
SEWER DISTRIBUTION PLAN

Designed by	Drawn by
Date 3/30/2022	Job No.
Sheet 2 of 2	

Appendix A: Proposed System Design and Capacity

Sewer Model Node Demand Assignment												
Project:		Sereno Canyon Phase 4										
Location:		Scottsdale, AZ										
SSMH	Phase	Rim Elevation	# of Units	Persons Per Unit (PPU)	Total Pop.	Daily Flow Factor (gal/cap-day)	Residential gallons/unit /day	Average Daily Flow (gpd)	Average Daily Flow (gpm)	Peaking Factor	Demand Flow with peaking factor (gpm)	Demand Flow with peaking factor (cfs)
1	4	2769.45	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
2	4	2761.99	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
3	4	2758.01	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
4	4	2762.73	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
5	4	2831.55	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
6	4	2832.98	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
7	4	2788.9	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
8	4	2785.33	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
9	4	2782.57	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
10	4	2779.75	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
11	4	2774.74	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
12	4	2770.74	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
13	4	2767.29	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
14	4	2765.21	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
15	4	2763.84	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
16	4	2838.32	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
17	4	2834.2	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
18	4	2826.45	5	2.5	12.5	100	250	1250	0.87	4.00	3.472	0.0077
19	4	2820.37	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
20	4	2818.1	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
21	4	2797.06	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
22	4	2830	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
23	4	2815.87	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
24	4	2799.18	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
25	4	2801.92	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
26	4	2776.29	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
27	4	2779.72	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
28	4	2788.07	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
29	4	2792.76	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
30	4	2797.11	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
31	4	2801.29	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
32	4	2804.34	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
33	4	2807.55	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
34	4	2812.29	5	2.5	12.5	100	250	1250	0.87	4.00	3.472	0.0077
35	4	2813.43	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
36	4	2804.59	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
37	4	2797.26	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
38	4	2797.86	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
39	4	2780.57	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
40	4	2779.22	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
41	4	2779.76	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
42	4	2792.05	8	2.5	20.0	100	250	2000	1.39	4.00	5.556	0.0124
43	4	2793.06	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
44	4	2795.26	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
57	4	2797	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
58	4	2798.5	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
59	4	2811	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
60	4	2809.64	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
61	4	2810.09	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
62	4	2814.06	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
63	4	2827.13	12	2.5	30.0	100	250	3000	2.08	4.00	8.333	0.0186
64	4	2830.21	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
65	4	2833.17	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
66	4	2836.28	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
67	4	2838.03	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
68	4	2838.62	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
69	Resort	2827.79	25	2.5	62.5	100	380	9500	6.60	4.50	29.688	0.0661
69	Spa	2827.79	14500	sf			1.2	17400	12.08	6.00	72.500	0.1615
70	4	2791.77	5	2.5	12.5	100	250	1250	0.87	4.00	3.472	0.0077
71	4	2784.42	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
72	4	2778.21	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
73	4	2775.32	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
74	4	2768.13	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
75	4	2761.66	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
76	4	2758.02	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
77	4	2756.62	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
78	4	2815.62	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
79	4	2810.92	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
80	4	2806.99	7	2.5	17.5	100	250	1750	1.22	4.00	4.861	0.0108
81	4	2793.72	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
82	4	2792.27	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
83	4	2790.23	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
84	4	2788.87	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
85	4	2786.63	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
86	4	2784.14	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
87	4	2798.95	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
88	4	2796.88	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
89	4	2791.38	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
90	4	2786.74	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
91	4	2781.38	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
92	4	2777.77	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
93	4	2772.93	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
94	4	2768.26	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
95	4	2763.13	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
96	4	2768.52	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
97	4	2766.99	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
98	4	2762.87	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
99	4	2758.75	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
100	4	2754.57	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
101	4	2752.31	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
102	4	2749.75	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
103	4	2744.71	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
104	4	2743.48	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
105	4	2745.14	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
106	4	2746.64	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
107	4	2754.54	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
108	4	2758.55	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
109	4	2766.09	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
110	4	2778.4	6	2.5	15.0	100	250	1500	1.04	4.00	4.167	0.0093
111	4	2779.5	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
112	4	2782.76	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
113	4	2788.54	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
114	4	2793.43	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031

Sewer Model Node Demand Assignment												
Project:		Sereno Canyon Phase 4										
Location:		Scottsdale, AZ										
SSMH	Phase	Rim Elevation	# of Units	Persons Per Unit (PPU)	Total Pop.	Daily Flow Factor (gal/cap-day)	Residential gallons/unit /day	Average Daily Flow (gpd)	Average Daily Flow (gpm)	Peaking Factor	Demand Flow with peaking factor (gpm)	Demand Flow with peaking factor (cfs)
115	4	2803.55	5	2.5	12.5	100	250	1250	0.87	4.00	3.472	0.0077
116	4	2805.05	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
117	4	2805.94	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
118	4	2815.26	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
119	4	2817.3	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
120	4	2819.77	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
121	4	2798.43	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
122	4	2791.26	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
123	4	2789.51	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
124	4	2786.15	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
125	4	2782.18	5	2.5	12.5	100	250	1250	0.87	4.00	3.472	0.0077
126	4	2777.38	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
127	4	2773.5	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
128	4	2771.82	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
129	4	2769.8	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
130	4	2748.07	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
131	4	2738.13	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
132	4	2750.84	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
133	4	2745.18	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
134	2	2815.98	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
135	2	2821.08	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
136	2	2820.48	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
137	2	2825	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
138	4	2821	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
139	4	2813.8	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
140	4	2809.75	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
141	2	2806	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
142	4	2798.19	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
143	4	2792.3	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
144	4	2785.01	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
145	4	2776	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
146	2	2773.5	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
147	2	2752	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
148	2	2748	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
149	2	2744	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
150	2	2743	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
151	2	2757	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
152	4	2765.8	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
153	4	2766.2	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
154	4	2765	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
155	4	2756.94	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
156	4	2749.7	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
157	3	2780.5	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
158	3	2778.6	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
159	3	2771.4	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
160	3	2764.01	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
165	4	2760.63	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
166	4	2756.73	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
167	3	2753.14	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
168	3	2747.84	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
169	3	2747.63	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
170	3	2743.3	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
171	3	2738.44	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
172	3	2736.68	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
173	3	2732.54	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
174	3	2729.38	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
175	3	2727.4	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
176	3	2726.07	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
177	3	2720.9	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
178	3	2717.97	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
179	3	2711.18	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
180	3	2707.55	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
181	3	2704.24	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
182	3	2700.7	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
183	3	2701.3	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
185	3	2733.2	2	2.5	5.0	100	250	500	0.35	4.00	1.389	0.0031
186	3	2729.55	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
187	3	2728.63	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
188	4	2783.3	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
189	4	2778.7	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
190	4	2772.3	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
191	4	2773.4	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
192	4	2782.92	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
193	4	2779.07	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
194	4	2764.69	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
195	4	2758.3	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
196	4	2756.17	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
197	4	2756.3	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
198	4	2744.14	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
199	4	2726.9	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
218	4	2756.44	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
219	4	2805.94	3	2.5	7.5	100	250	750	0.52	4.00	2.083	0.0046
220	4	2811.91	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
221	4	2806.41	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
222	4	2801.96	4	2.5	10.0	100	250	1000	0.69	4.00	2.778	0.0062
EXMH-1	2	2721.98	7	2.5	17.5	100	250	1750	1.22	4.00	4.861	0.0108
EXMH-2	1	2725.04	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
EXMH-3	1	2730.33	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
EXMH-4	1	2731.01	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
EXMH-5	1	2739.72	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
EXMH-6	1	2699.2	1	2.5	2.5	100	250	250	0.17	4.00	0.694	0.0015
EXMH-7	1	2701.79	0	2.5	0.0	100	250	0	0.00	4.00	0.000	0.0000
EXMH-8	1	2703.28	56	2.5	140.0	100	250	14000	9.72	4.00	38.889	0.0866
Total			383		958			116400	80.8333		350.799	0.7816

[illegible]

	A	B	C	D	E	F	G	H	I	J	K
1	Name	US Node	DS Node	US Invert (ft)	DS Invert (ft)	2D Length (ft)	% Slope	Size (in)	Tributary Pipes	Peak Cumulative Flow (cfs)	Depth to Diameter Ratio (d/D)
2						center-to-center					
3						edge-to-edge					
4	E. Alameda Road Sewer outfall										
5						70.03	4.97%	8		0.0031	0.0298
6	Pipe - (5)	SSMH- (7)	SSMH- (8)	2780.51	2777.03	66.03					
7	Pipe - (6)	SSMH- (8)	SSMH- (9)	2776.94	2774.28	46.29	5.75%	8		0.0062	0.0440
8						42.29					
9	Pipe - (7)	SSMH- (9)	SSMH- (10)	2774.18	2771.46	47.17	5.77%	8		0.0062	0.0440
10						43.17					
11	Pipe - (8)	SSMH- (10)	SSMH- (11)	2771.36	2766.45	81.44	6.03%	8		0.0108	0.0440
12						77.44					
13	Pipe - (9)	SSMH- (11)	SSMH- (12)	2766.35	2762.45	49.61	7.86%	8		0.0139	0.0440
14						45.61					
15	Pipe - (10)	SSMH- (12)	SSMH- (13)	2762.35	2759	48.38	6.92%	8		0.0155	0.0597
16						44.38					
17	Pipe - (11)	SSMH- (13)	SSMH- (14)	2758.9	2757.85	48.19	2.18%	8		0.0186	0.0746
18						44.19					
19	Pipe - (12)	SSMH- (14)	SSMH- (15)	2757.75	2756.69	48.1	2.20%	8		0.0201	0.0746
20						44.1					
21	Pipe - (151)	SSMH- (15)	SSMH- (152)	2756.59	2755.66	168.48	0.55%	8		0.0248	0.1190
22						164.48					
23	Pipe - (146)	SSMH- (152)	SSMH- (153)	2755.56	2755.28	47.65	0.59%	8		0.0248	0.1040
24						43.65					
25	Pipe - (147)	SSMH- (153)	SSMH- (154)	2755.18	2754.69	81.96	0.60%	8		0.0248	0.1040
26						77.96					
27	Pipe - (148)	SSMH- (154)	SSMH- (155)	2754.59	2748.94	194.84	2.90%	8		0.0248	0.0746
28						190.84					
29	Pipe - (149)	SSMH- (155)	SSMH- (156)	2748.84	2741.7	134.42	5.31%	8		0.0248	0.0746
30						130.42					
31	Pipe - (150)	SSMH- (156)	SSMH- (150)	2741.6	2735	135.93	4.86%	8		0.0248	0.0746
32						131.93					
33	Pipe - (13)	SSMH- (16)	SSMH- (17)	2829.93	2825.81	53.97	7.63%	8		0.0046	0.0298
34						49.97					
35	Pipe - (14)	SSMH- (17)	SSMH- (22)	2825.72	2821.91	57.3	6.65%	8		0.0077	0.0447
36						53.3					
37	Pipe - (4)	SSMH- (6)	SSMH- (5)	2826.79	2825.36	108.09	1.32%	8		0.0046	0.0299
38						104.09					
39	Pipe - (22)	SSMH- (5)	SSMH- (22)	2825.26	2821.93	107.38	3.10%	8		0.0046	0.0448
40						103.38					
41	Pipe - (15)	SSMH- (22)	SSMH- (18)	2821.81	2818.16	58.18	6.27%	8	PIPE 22	0.0124	0.0597
42						54.18					
43	Pipe - (16)	SSMH- (18)	SSMH- (19)	2817.96	2811.75	157	3.96%	8		0.0201	0.0746
44						153					
45	Pipe - (17)	SSMH- (19)	SSMH- (20)	2811.65	2808.68	79.97	3.71%	8		0.0232	0.0746
46						75.97					
47	Pipe - (18)	SSMH- (20)	SSMH- (23)	2808.58	2806.63	79.01	2.47%	8		0.0279	0.0895
48						75.01					
49	Pipe - (19)	SSMH- (23)	SSMH- (25)	2806.53	2793.53	368.97	3.52%	8		0.0325	0.1045
50						364.97					
51	Pipe - (23)	SSMH- (25)	SSMH- (24)	2793.43	2790.79	36.56	7.22%	8		0.0356	0.0896
52						32.56					
53	Pipe - (20)	SSMH- (24)	SSMH- (21)	2790.69	2788.67	28.85	7.00%	8		0.0387	0.0896
54						24.85					
55	Pipe - (21)	SSMH- (21)	SSMH- (142)	2788.57	2787.66	152.04	0.60%	8		0.0418	0.1490
56						148.04					
57	Pipe - (127)	SSMH- (134)	SSMH- (135)	2809.9	2808.8	181.23	0.61%	8		0.0031	0.0448
58						177.23					
59	Pipe - (129)	SSMH- (135)	SSMH- (136)	2808.7	2808.1	108.96	0.55%	8		0.0046	0.0597
60						104.96					
61	Pipe - (130)	SSMH- (136)	SSMH- (137)	2808	2807	138.35	0.72%	8		0.0062	0.0597
62						134.35					
63	Pipe - (131)	SSMH- (137)	SSMH- (138)	2806.9	2806.49	68.46	0.60%	8		0.0062	0.0746
64						64.46					
65	Pipe - (132)	SSMH- (138)	SSMH- (139)	2806.4	2805.69	118.6	0.60%	8		0.0077	0.0746
66						114.6					
67	Pipe - (133)	SSMH- (139)	SSMH- (140)	2805.6	2801.75	102.61	3.75%	8		0.0093	0.0597
68						98.61					
69	Pipe - (134)	SSMH- (140)	SSMH- (141)	2801.65	2798	189.71	1.92%	8		0.0093	0.0746
70						185.71					
71	Pipe - (135)	SSMH- (141)	SSMH- (142)	2797.9	2787.66	218.69	4.68%	8		0.0108	0.0597
72						214.69					
73	Pipe - (136)	SSMH- (142)	SSMH- (143)	2787.56	2784.3	162.71	2.00%	8	PIPE-21	0.0526	0.1340
74						158.71					
75	Pipe - (137)	SSMH- (143)	SSMH- (144)	2784.2	2777	135.57	5.31%	8		0.0542	0.1045
76						131.57					
77	Pipe - (138)	SSMH- (144)	SSMH- (145)	2776.9	2768	158.87	5.60%	8		0.0542	0.1045
78						154.87					
79	Pipe - (139)	SSMH- (145)	SSMH- (146)	2767.9	2765.5	116.08	2.07%	8		0.0557	0.1343
80						112.08					
81	Pipe - (31)	SSMH- (34)	SSMH- (33)	2803.9	2799.26	118.69	3.91%	8		0.0077	0.0299
82						114.69					
83	Pipe - (30)	SSMH- (33)	SSMH- (32)	2799.16	2796.05	102.82	3.02%	8		0.0124	0.0448
84						98.82					
85	Pipe - (29)	SSMH- (32)	SSMH- (31)	2795.95	2793	97.61	3.02%	8		0.0170	0.0597
86						93.61					
87	Pipe - (28)	SSMH- (31)	SSMH- (30)	2792.9	2788.82	127.35	3.20%	8		0.0232	0.0746
88						123.35					
89	Pipe - (27)	SSMH- (30)	SSMH- (29)	2788.72	2784.47	78.84	5.39%	8		0.0279	0.0746
90						74.84					
91	Pipe - (26)	SSMH- (29)	SSMH- (28)	2784.37	2779.78	74.72	6.14%	8		0.0294	0.0746
92						70.72					
93											

	A	B	C	D	E	F	G	H	I	J	K
1	Name	US Node	DS Node	US Invert (ft)	DS Invert (ft)	2D Length (ft)	% Slope	Size (in)	Tributary Pipes	Peak Cumulative Flow (cfs)	Depth to Diameter Ratio (d/D)
2						center-to-center					
3						edge-to-edge					
94	Pipe - (25)	SSMH- (28)	SSMH- (27)	2779.68	2771.43	144.3	5.72%	8		0.0356	0.0746
95						140.3					
96	Pipe - (24)	SSMH- (27)	SSMH- (26)	2771.33	2768	61.43	5.42%	8		0.0387	0.0896
97						57.43					
98	Pipe - (187)	SSMH- (26)	SSMH- (191)	2767.9	2766.07	149.44	1.22%	8		0.0402	0.1194
99						145.44					
100	Pipe - (32)	SSMH- (35)	SSMH- (36)	2805.05	2796.3	160.74	5.44%	8		0.0031	0.0299
101						156.74					
102	Pipe - (33)	SSMH- (36)	SSMH- (37)	2796.2	2788.77	182.64	4.07%	8		0.0077	0.0448
103						178.64					
104	Pipe - (34)	SSMH- (38)	SSMH- (57)	2789.26	2788.77	95.04	0.52%	8		0.0417	0.1537
105						91.04					
106	Pipe - (40)	SSMH- (37)	SSMH- (44)	2788.67	2786.87	48.53	3.71%	8	Pipes 33, 34	0.0557	0.1077
107						44.53					
108	Pipe - (39)	SSMH- (44)	SSMH- (43)	2786.77	2784.67	134.41	1.56%	8		0.0618	0.0896
109						130.41					
110	Pipe - (38)	SSMH- (43)	SSMH- (42)	2784.57	2783.66	148.31	0.61%	8		0.0680	0.1194
111						144.31					
112	Pipe - (37)	SSMH- (42)	SSMH- (41)	2783.56	2771.37	340.28	3.58%	8		0.0804	0.1045
113						336.28					
114	Pipe - (36)	SSMH- (41)	SSMH- (40)	2771.37	2771.07	56.69	0.53%	8		0.0820	0.1490
115						52.69					
116	Pipe - (35)	SSMH- (40)	SSMH- (39)	2770.97	2770.67	58.8	0.51%	8		0.0835	0.1490
117						54.8					
118	Pipe - (184)	SSMH- (39)	SSMH- (188)	2770.57	2770.28	55.45	0.52%	8		0.0835	0.1490
119						51.45					
120	Pipe - (182)	SSMH- (188)	SSMH- (189)	2770.18	2769.53	125.12	0.52%	8		0.0835	0.1490
121						121.12					
122	Pipe - (183)	SSMH- (189)	SSMH- (190)	2769.43	2767.05	237.68	1.00%	8		0.0835	0.1343
123						233.68					
124	Pipe - (185)	SSMH- (190)	SSMH- (191)	2766.95	2766.07	54.83	1.60%	8		0.0835	0.1194
125						50.83					
126	Pipe - (186)	SSMH- (191)	SSMH- (146)	2765.97	2765.5	32.32	1.45%	8	Pipes 185,187	0.1237	0.1642
127						28.32					
128	Pipe - (143)	SSMH- (146)	SSMH- (151)	2765.4	2749	275.89	5.94%	8	Pipes 139,186	0.1794	0.1642
129						271.89					
130	Pipe - (144)	SSMH- (151)	SSMH- (147)	2748.9	2744	275.89	1.78%	8		0.1825	0.2089
131						271.89					
132	Pipe - (140)	SSMH- (147)	SSMH- (148)	2743.9	2740	92.54	4.21%	8		0.1856	0.1791
133						88.54					
134	Pipe - (141)	SSMH- (148)	SSMH- (149)	2739.9	2736	87.07	4.48%	8		0.1872	0.1642
135						83.07					
136	Pipe - (142)	SSMH- (149)	SSMH- (150)	2735.9	2735	73.51	1.22%	8		0.1872	0.2388
137						69.51					
138	Pipe - (145)	SSMH- (150)	EXIST SSMH- (5)	2735.8	2730	54.08	10.72%	8	Pipes 142, 150	0.2135	0.1493
139						50.08					
140	Pipe - (56)	SSMH- (38)	SSMH- (57)	2789.26	2788.78	61.83	0.78%	8		0.0046	0.0478
141						57.83					
142	Pipe - (53)	SSMH- (58)	SSMH- (57)	2793.03	2788.78	140.25	3.03%	8		0.0371	0.0955
143						136.25					
144	Pipe - (54)	SSMH- (59)	SSMH- (58)	2795.6	2793.13	66.7	3.70%	8		0.0371	0.0910
145						62.7					
146	Pipe - (55)	SSMH- (61)	SSMH- (59)	2800.81	2795.7	127.7	4.00%	8		0.0371	0.0896
147						123.7					
148	Pipe - (57)	SSMH- (61)	SSMH- (60)	2801.5	2800.91	99	0.60%	8		0.0000	0.0418
149						95					
150	Pipe - (58)	SSMH- (62)	SSMH- (61)	2805.67	2800.81	148.27	3.28%	8		0.0371	0.0896
151						144.27					
152	Pipe - (59)	SSMH- (63)	SSMH- (62)	2818.64	2805.77	334.99	3.84%	8		0.0309	0.0791
153						330.99					
154	Pipe - (60)	SSMH- (64)	SSMH- (63)	2821.72	2818.74	45.92	6.49%	8		0.0124	0.0478
155						41.92					
156	Pipe - (61)	SSMH- (65)	SSMH- (64)	2824.68	2821.82	43.93	6.51%	8		0.0108	0.0433
157						39.93					
158	Pipe - (62)	SSMH- (66)	SSMH- (65)	2827.79	2824.78	46.16	6.52%	8		0.0093	0.0403
159						42.16					
160	Pipe - (63)	SSMH- (67)	SSMH- (66)	2829.54	2827.89	44.25	3.73%	8		0.0077	0.0418
161						40.25					
162	Pipe - (64)	SSMH- (68)	SSMH- (67)	2830.23	2829.64	47.52	1.24%	8		0.0062	0.0493
163						43.52					
164	Pipe - (65)	SSMH- (69)	SSMH- (62)	2806.86	2805.77	209.87	0.52%	8		0.2277	0.1134
165						205.87					
166	EXIST Pipe - (4)	EXIST SSMH- (5)	EXIST SSMH- (4)	2730	2722.5	257.01	2.92%	8		0.2135	0.2089
167						253.01					
168	EXIST Pipe - (3)	EXIST SSMH- (4)	EXIST SSMH- (3)	2722.4	2721.8	91.26	0.66%	8		0.2150	0.2985
169						87.26					
170	EXIST Pipe - (2)	EXIST SSMH- (3)	EXIST SSMH- (2)	2721.7	2715.9	92.83	6.25%	8		0.2166	0.1642
171						88.83					
172	EXIST Pipe - (1)	EXIST SSMH- (2)	EXIST SSMH- (1)	2715.8	2713.5	38.00	6.05%	8		0.2166	0.1791
173						34.00					
174	128th Street Sewer Outfall										
175											
176	Pipe - (118)	SSMH- (123)	SSMH- (124)	2784.13	2777.25	107.56	6.40%	8		0.0031	0.0240
177						103.56					
178	Pipe - (119)	SSMH- (124)	SSMH- (125)	2777.15	2773.38	71.88	5.24%	8		0.0077	0.0348
179						67.88					
180	Pipe - (120)	SSMH- (125)	SSMH- (126)	2773.28	2768.53	129.99	3.65%	8		0.0155	0.0448
181						125.99					
182	Pipe - (121)	SSMH- (126)	SSMH- (127)	2768.43	2762.30	156.66	3.91%	8		0.0155	0.0543
183						152.66					

	A	B	C	D	E	F	G	H	I	J	K
1	Name	US Node	DS Node	US Invert (ft)	DS Invert (ft)	2D Length (ft)	% Slope	Size (in)	Tributary Pipes	Peak Cumulative Flow (cfs)	Depth to Diameter Ratio (d/D)
2						center-to-center					
3						edge-to-edge					
184	Pipe - (122)	SSMH- (127)	SSMH- (128)	2761.30	2760.50	53.00	1.51%	8		0.0155	0.0679
185						49.00					
186	Pipe - (123)	SSMH- (128)	SSMH- (129)	2762.01	2761.14	167.03	0.52%	8		0.0155	0.1045
187						163.03					
188	Pipe - (124)	SSMH- (129)	SSMH- (130)	2761.04	2739.68	500.00	4.27%	8		0.0155	0.0597
189						496.00					
190	Pipe - (125)	SSMH- (130)	SSMH- (131)	2739.58	2729.74	240.78	4.09%	8		0.0155	0.0597
191						236.78					
192	Pipe - (73)	SSMH- (78)	SSMH- (79)	2808.90	2803.06	116.72	5.00%	8		0.0046	0.0313
193						112.72					
194	Pipe - (74)	SSMH- (79)	SSMH- (80)	2802.96	2797.12	116.94	4.99%	8		0.0108	0.0418
195						112.94					
196	Pipe - (75)	SSMH- (80)	SSMH- (81)	2797.02	2785.82	221.99	5.05%	8		0.0217	0.0627
197						217.99					
198	Pipe - (76)	SSMH- (81)	SSMH- (82)	2785.72	2783.71	98.54	2.04%	8		0.0279	0.0716
199						94.54					
200	Pipe - (77)	SSMH- (82)	SSMH- (83)	2783.61	2782.29	245.00	0.54%	8		0.0279	0.1224
201						241.00					
202	Pipe - (78)	SSMH- (83)	SSMH- (84)	2782.19	2780.47	110.00	1.56%	8		0.0031	0.0552
203						106.00					
204	Pipe - (81)	SSMH- (87)	SSMH- (88)	2790.95	2788.48	40.00	6.17%	8	222	0.0279	0.0710
205						36.00					
206	Pipe - (82)	SSMH- (88)	SSMH- (89)	2788.38	2782.05	94.59	6.69%	8		0.0279	0.0697
207						90.59					
208	Pipe - (83)	SSMH- (89)	SSMH- (84)	2781.38	2780.37	71.55	1.41%	8		0.0309	0.1055
209						67.55					
210	Pipe - (80)	SSMH- (84)	SSMH- (85)	2780.37	2778.72	67.66	2.44%	8	Pipes 78, 83	0.0340	0.0966
211						63.66					
212	Pipe - (79)	SSMH- (85)	SSMH- (86)	2778.62	2775.65	89.07	3.33%	8		0.0340	0.0897
213						85.07					
214	Pipe - (192)	SSMH- (86)	SSMH- (192)	2775.55	2774.78	89.04	0.86%	8		0.0340	0.1239
215						85.04					
216	Pipe - (193)	SSMH- (192)	SSMH- (193)	2774.68	2771.17	81.76	4.29%	8		0.0340	0.0845
217						77.76					
218	Pipe - (194)	SSMH- (193)	SSMH- (194)	2771.06	2756.79	292.86	4.87%	8		0.0340	0.0819
219						288.86					
220	Pipe - (195)	SSMH- (194)	SSMH- (195)	2756.69	2748.90	119.99	6.49%	8		0.0340	0.0766
221						115.99					
222	Pipe - (196)	SSMH- (195)	SSMH- (196)	2748.80	2748.01	103.67	0.76%	8		0.0340	0.1276
223						99.67					
224	Pipe - (85)	SSMH- (90)	SSMH- (91)	2778.35	2773.09	92.98	5.66%	8		0.0046	0.0896
225						88.98					
226	Pipe - (86)	SSMH- (91)	SSMH- (92)	2772.99	2769.48	66.42	5.28%	8		0.0093	0.1045
227						62.42					
228	Pipe - (87)	SSMH- (92)	SSMH- (93)	2769.38	2764.64	92.14	5.14%	8		0.0139	0.1044
229						88.14					
230	Pipe - (88)	SSMH- (93)	SSMH- (94)	2764.54	2759.97	89.06	5.13%	8		0.0170	0.1045
231						85.06					
232	Pipe - (89)	SSMH- (94)	SSMH- (95)	2759.87	2754.84	102.83	4.89%	8		0.0217	0.1194
233						98.83					
234	Pipe - (90)	SSMH- (95)	SSMH- (75)	2754.74	2753.27	69.49	2.12%	8		0.0248	0.1343
235						65.49					
236	Pipe - (66)	SSMH- (70)	SSMH- (71)	2783.38	2776.03	108.07	6.80%	8		0.0031	0.0045
237						104.07					
238	Pipe - (67)	SSMH- (71)	SSMH- (72)	2776.03	2769.82	109.55	5.67%	8		0.0077	0.0343
239						105.55					
240	Pipe - (68)	SSMH- (72)	SSMH- (73)	2769.82	2766.93	84.71	3.41%	8		0.0108	0.3880
241						80.71					
242	Pipe - (69)	SSMH- (73)	SSMH- (74)	2766.83	2759.74	243.97	2.91%	8		0.0108	0.0552
243						239.97					
244	Pipe - (70)	SSMH- (74)	SSMH- (75)	2759.64	2753.27	133.03	4.79%	8		0.0108	0.4980
245						129.03					
246	Pipe - (71)	SSMH- (75)	SSMH- (76)	2753.17	2749.63	135.51	2.61%	8	PIpes70, 90	0.0371	0.0970
247						131.51					
248	Pipe - (72)	SSMH- (76)	SSMH- (77)	2749.53	2747.98	297.52	0.52%	8		0.0371	0.1433
249						293.52					
250	Pipe - (91)	SSMH- (96)	SSMH- (97)	2760.13	2758.60	47.67	3.21%	8		0.0031	0.0299
251						43.67					
252	Pipe - (92)	SSMH- (97)	SSMH- (98)	2758.50	2754.48	119.36	3.37%	8		0.0062	0.0448
253						115.36					
254	Pipe - (93)	SSMH- (98)	SSMH- (99)	2754.38	2750.36	89.23	4.51%	8		0.0108	0.0597
255						85.23					
256	Pipe - (94)	SSMH- (99)	SSMH- (77)	2750.26	2747.98	43.89	5.19%	8		0.0139	0.0597
257						39.89					
258	Pipe - (95)	SSMH- (77)	SSMH- (100)	2747.88	2746.00	43.33	4.34%	8	Pipes 72,94	0.0511	0.1000
259						39.33					
260	Pipe - (96)	SSMH- (100)	SSMH- (101)	2745.90	2743.84	47.39	4.35%	8		0.0557	0.1030
261						43.39					
262	Pipe - (97)	SSMH- (101)	SSMH- (102)	2743.74	2741.36	53.40	4.46%	8		0.0588	0.1045
263						49.40					
264	Pipe - (98)	SSMH- (102)	SSMH- (103)	2741.26	2736.32	129.04	3.83%	8		0.0603	0.1104
265						125.04					
266	Pipe - (99)	SSMH- (103)	SSMH- (104)	2736.23	2735.58	46.22	1.41%	8		0.0619	0.1418
267						42.22					
268	Pipe - (197)	SSMH- (196)	SSMH- (197)	2747.91	2747.63	34.89	0.80%	8	Pipes 218,196	0.0836	0.1984
269						30.89					
270	Pipe - (198)	SSMH- (197)	SSMH- (107)	2747.53	2746.53	79.93	1.25%	8		0.0851	0.1793
271						75.93					
272	Pipe - (102)	SSMH- (107)	SSMH- (106)	2746.43	2743.45	45.90	6.49%	8		0.0866	0.1212
273						41.90					

	A	B	C	D	E	F	G	H	I	J	K
1	Name	US Node	DS Node	US Invert (ft)	DS Invert (ft)	2D Length (ft)	% Slope	Size (in)	Tributary Pipes	Peak Cumulative Flow (cfs)	Depth to Diameter Ratio (d/D)
2						center-to-center					
3						edge-to-edge					
274	Pipe - (101)	SSMH- (106)	SSMH- (105)	2742.85	2738.74	63.18	6.51%	8		0.0866	0.1221
275						59.18					
276	Pipe - (100)	SSMH- (105)	SSMH- (104)	2738.64	2735.58	104.13	2.94%	8		0.0897	0.1512
277						100.13					
278	Pipe - (199)	SSMH- (104)	SSMH- (198)	2735.48	2733.01	37.94	6.51%	8		0.0897	0.1248
279						33.94					
280	Pipe - (128)	SSMH- (198)	SSMH- (131)	2732.35	2727.05	260.54	2.03%	8		0.0897	0.1654
281						256.54					
282	Pipe - (200)	SSMH- (131)	SSMH- (199)	2726.95	2722.06	271.63	1.80%	8	Pipe 125,128	0.0897	0.1703
283						267.63					
284	Pipe - (115)	SSMH- (120)	SSMH- (119)	2811.77	2809.40	80.55	2.94%	8		0.0015	0.0288
285						76.55					
286	Pipe - (114)	SSMH- (119)	SSMH- (118)	2809.30	2806.36	71.51	4.11%	8		0.0031	0.0369
287						67.51					
288	Pipe - (113)	SSMH- (118)	SSMH- (220)	2806.26	2803.55	71.34	3.80%	8		0.0077	0.0487
289						67.34					
290	Pipe - (220)	SSMH- (220)	SSMH- (221)	2803.45	2797.53	87.01	6.80%	8		0.0124	0.0503
291						83.01					
292	Pipe - (221)	SSMH- (221)	SSMH- (222)	2797.43	2793.89	61.65	5.74%	8		0.0170	0.0591
293						57.65					
294	Pipe - (222)	SSMH- (222)	SSMH- (87)	2793.79	2791.05	101.77	2.69%	8		0.0217	0.0779
295						97.77					
296	Pipe - (219)	SSMH- (219)	SSMH- (117)	2802.04	2796.41	143.32	3.93%	8		0.0046	0.0449
297						139.32					
298	Pipe - (112)	SSMH- (117)	SSMH- (116)	2796.31	2795.49	55.78	1.47%	8		0.0093	0.0684
299						51.78					
300	Pipe - (111)	SSMH- (116)	SSMH- (115)	2795.39	2794.82	77.89	0.73%	8		0.0139	0.0888
301						73.89					
302	Pipe - (110)	SSMH- (115)	SSMH- (114)	2794.72	2785.48	161.80	5.71%	8		0.0217	0.0652
303						157.80					
304	Pipe - (116)	SSMH- (121)	SSMH- (122)	2792.30	2791.26	61.38	1.69%	8		0.0015	0.0234
305						57.38					
306	Pipe - (117)	SSMH- (122)	SSMH- (114)	2791.16	2785.48	151.81	3.74%	8		0.0015	0.0273
307						147.81					
308	Pipe - (109)	SSMH- (114)	SSMH- (113)	2785.38	2779.76	100.72	5.58%	8	Pipes 110,117	0.0263	0.0896
309						96.72					
310	Pipe - (108)	SSMH- (113)	SSMH- (112)	2779.66	2774.74	72.33	6.80%	8		0.0309	0.0896
311						68.33					
312	Pipe - (107)	SSMH- (112)	SSMH- (111)	2774.64	2771.47	56.18	5.64%	8		0.0325	0.0896
313						52.18					
314	Pipe - (106)	SSMH- (111)	SSMH- (110)	2771.37	2769.40	56.18	3.51%	8		0.0356	0.1045
315						52.18					
316	Pipe - (105)	SSMH- (110)	SSMH- (109)	2769.30	2757.60	199.29	5.87%	8		0.0449	0.1045
317						195.29					
318	Pipe - (104)	SSMH- (109)	SSMH- (108)	2757.50	2751.23	78.43	7.99%	8		0.0480	0.1194
319						74.43					
320	Pipe - (103)	SSMH- (108)	SSMH- (218)	2750.40	2749.04	56.98	2.39%	8		0.0464	0.1194
321						52.98					
322	Pipe - (218)	SSMH- (218)	SSMH- (196)	2748.94	2748.76	33.44	0.54%	8		0.0495	0.1194
323						29.44					
324	E. Ranch Gate Road (Happy Valley Rd) Sewer outfall										
325											
326	Pipe - (1)	SSMH- (1)	SSMH- (2)	2764.00	2760.50	66.00	5.30%	8		0.0062	0.0419
327						62.00					
328	Pipe - (2)	SSMH- (2)	SSMH- (3)	2760.40	2757.55	78.85	3.61%	8		0.0093	0.0458
329						74.85					
330	Pipe - (3)	SSMH- (3)	SSMH- (4)	2757.45	2757.17	40.54	0.69%	8		0.0093	0.0676
331						36.54					
332	Pipe - (152)	SSMH- (157)	SSMH- (158)	2771.40	2770.00	89.98	1.56%	8		0.0000	0.0000
333						85.98					
334	Pipe - (153)	SSMH- (158)	SSMH- (159)	2769.90	2761.70	121.47	6.75%	8		0.0000	0.0000
335						117.47					
336	Pipe - (154)	SSMH- (159)	SSMH- (4)	2761.60	2757.07	77.32	5.86%	8		0.0000	0.0000
337						73.32					
338	Pipe - (159)	SSMH- (4)	SSMH- (160)	2757.07	2749.30	132.49	5.86%	8		0.0108	0.0439
339						128.49					
340	Pipe - (160)	SSMH- (160)	SSMH- (165)	2749.20	2745.10	143.68	2.85%	8		0.0124	0.0555
341						139.68					
342	Pipe - (161)	SSMH- (165)	SSMH- (166)	2745.00	2744.20	128.80	0.62%	8		0.0139	0.0839
343						124.80					
344	Pipe - (162)	SSMH- (166)	SSMH- (167)	2744.10	2743.50	90.22	0.67%	8		0.0139	0.0824
345						86.22					
346	Pipe - (163)	SSMH- (167)	SSMH- (168)	2743.40	2739.00	145.50	3.02%	8		0.0155	0.0607
347						141.50					
348	Pipe - (164)	SSMH- (168)	SSMH- (169)	2738.90	2738.20	98.27	0.71%	8		0.0170	0.0894
349						94.27					
350	Pipe - (165)	SSMH- (169)	SSMH- (170)	2738.10	2735.00	219.28	1.41%	8		0.0201	0.0822
351						215.28					
352	Pipe - (166)	SSMH- (170)	SSMH- (171)	2734.90	2729.50	113.56	4.76%	8		0.0217	0.0618
353						109.56					
354	Pipe - (167)	SSMH- (171)	SSMH- (172)	2729.40	2728.00	113.56	1.23%	8		0.0232	0.0909
355						109.56					
356	Pipe - (168)	SSMH- (172)	SSMH- (173)	2727.90	2723.50	113.71	3.87%	8		0.0248	0.0715
357						109.71					
358	Pipe - (169)	SSMH- (173)	SSMH- (174)	2723.40	2719.60	81.32	4.67%	8		0.0263	0.0703
359						77.32					
360	Pipe - (179)	SSMH- (185)	SSMH- (186)	2725.90	2720.70	82.07	6.34%	8		0.0031	0.0242
361						78.07					
362	Pipe - (180)	SSMH- (186)	SSMH- (187)	2720.60	2720.10	81.55	0.61%	8		0.0031	0.0416
363						77.55					

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2						center-to-center					
3						edge-to-edge					
364	Pipe - (181)	SSMH- (187)	SSMH- (174)	2720.00	2719.60	56.96	0.70%	8		0.0031	0.0403
365						52.96					
366	Pipe - (170)	SSMH- (174)	SSMH- (175)	2719.50	2718.00	90.80	1.65%	8	Pipes 169,181	0.0294	0.0949
367						86.80					
368	Pipe - (171)	SSMH- (175)	SSMH- (176)	2717.90	2717.00	90.69	0.99%	8		0.0294	0.1072
369						86.69					
370	Pipe - (172)	SSMH- (176)	SSMH- (177)	2716.90	2711.10	173.48	3.34%	8		0.0309	0.0822
371						169.48					
372	Pipe - (173)	SSMH- (177)	SSMH- (178)	2711.00	2709.00	86.17	2.32%	8		0.0325	0.0918
373						82.17					
374	Pipe - (174)	SSMH- (178)	SSMH- (179)	2708.90	2701.00	123.31	6.41%	8		0.0325	0.0722
375						119.31					
376	Pipe - (175)	SSMH- (179)	SSMH- (180)	2700.90	2698.00	108.83	2.66%	8		0.0356	0.0927
377						104.83					
378	Pipe - (176)	SSMH- (180)	SSMH- (181)	2697.90	2695.00	108.83	2.66%	8		0.0356	0.0927
379						104.83					
380	Pipe - (177)	SSMH- (181)	SSMH- (183)	2694.90	2688.80	99.37	6.14%	8		0.0371	0.0776
381						95.37					
382	Pipe - (178)	SSMH- (183)	SSMH- (182)	2688.70	2687.58	215.53	0.52%	8		0.0418	0.1481
383						213.53					
384	EXIST Pipe - (5)	SSMH- (182)	EXIST SSMH- (6)	2688.70	2687.48	202.54	0.60%	8		0.0433	0.1455
385						200.54					
386	EXIST Pipe - (6)	EXIST SSMH- (6)	EXIST SSMH- (7)	2687.38	2686.40	157.20	0.62%	8		0.0449	0.1469
387						153.20					
388	EXIST Pipe - (7)	EXIST SSMH- (7)	EXIST SSMH- (8)	2686.30	2685.10	149.17	0.80%	8		0.0449	0.1382
389						145.17					
390											
391											
392											