

July 09, 2026

Project: P959(e02)
DSEL #1480

David Schaeffer Engineering Ltd.
120 Iber Rd.
Stittsville, ON
K2S 1E9

Attention: Braden Kaminski, P. Eng.

**Subject: Cardinal Creek Village / Impact of Cardinal Creek Village Phase 8
Stormwater Management Design**

As requested by your office, we have evaluated, based on the available information as described below, the impact of the latest proposed design for Cardinal Creek Village (CCV) Phase 8. CCV Phase 8 was formerly School Block 109 of CCV Phase 4 (2.09 ha at 71% imperviousness), but is now proposed as a residential development (2.09 ha at 65% imperviousness).

Quality control for CCV Phase 8 is provided by Stormwater Management (SWM) Pond 1, which discharges to the Ottawa River. Outflow from the pond is limited by the capacity of a culvert under Highway 174 to the Ottawa River, reduced by other contributing flows to the culvert. Refer to the December 2018 **Design Brief for Interim Stormwater Management Pond 1 for Phases 1 to 5 in Cardinal Creek Village** by DSEL and JFSA. Note that the “interim” SWM pond is now the ultimate design, as a future south forebay treating additional drainage areas is no longer proposed.

A DDSWMM / XPSWMM model of drainage areas to SWM Pond 1, including CCV Phases 1-6, was prepared by JFSA as detailed in the January 2020 **Stormwater Management Report for Phases 5 and 6 of Cardinal Creek Village**. The DDSWMM / XPSWMM model was last updated in the June 2026 **Stormwater Management Report for Phase 7 of Cardinal Creek Village**. Note that CCV Phase 7 and external areas to the east are treated by a separate SWM Pond and are modelled in PCSWMM; major system outflows from CCV Phase 7 into the Pond 1 drainage area have been incorporated into the Pond 1 DDSWMM / XPSWMM model.

Proposed Minor and Major System Drainage

The proposed drainage plan for CCV Phase 8 and surrounding areas is presented in **Figure A-1 of Attachment A**. Other drainage areas to Pond 1 are as modelled in the June 2026 **SWM Report for Phase 7 of Cardinal Creek Village**. Refer to **Figure A-2 of Attachment A** for an ultimate conditions drainage plan. CCV Phase 8 is located southeast of Famille-Laporte Avenue, southwest of Géographe Terrace, northwest of Mishawashkode Street and northeast of Cartographe Street. 0.31 ha on the boundaries of CCV Phase 8 drain directly overland to Famille-Laporte Avenue and Géographe Terrace, with no minor system capture within Phase 8. 100-year flows from 0.63 ha of rearyard drainage are captured by RLCBs discharging to existing MH 213 on Famille-Laporte Avenue. The remaining 1.15 ha of residential development within Phase 8 is serviced by an internal storm sewer, connecting to the existing storm sewer on Famille-Laporte Avenue via a new MH 404 to be installed between existing MH 210 and existing MH 211.

The internal CCV Phase 8 storm sewer has a 2-year level of service, consistent with current City of Ottawa standards and CCV Phases 5 and 6 (excluding collector roads, which have a 5-year level of service). A 10-year level of service is proposed for Old Montreal Road (an arterial road). All other drainage areas to Pond 1, including CCV Phases 1-4, were developed based on older City of Ottawa standards and have a 5-year level of service. Famille-Laporte Avenue and Géographe Terrace, which collect flows from CCV Phase 8, have a 5-year level of service.

For comparison, CCV Phase 8 was modelled in previous submissions with on-site minor system capture to MH 213 on Famille-Laporte Avenue limited to the 5-year Rational Method flow (424 L/s), with excess major system flows draining overland to Famille-Laporte Avenue.

As the drainage area to Pond 1 and percent imperviousness of CCV Phase 8 has not increased from previous submissions, it may be concluded that the proposed design of Phase 8 will not have a negative impact on the operation of SWM Pond 1. However, the major and minor system drainage flow split for Phase 8 has changed. As such, the DDSWMM / XPSWMM models submitted with the June 2026 **SWM Report for Phase 7 of Cardinal Creek Village** were updated to reflect the latest design of CCV Phase 8 and surrounding areas, to assess the impact on the performance of the downstream major and minor systems.

Major System Performance

Within proposed CCV Phase 8, circular orifice plate type ICDs of City standard diameters 83 mm, 94 mm, 102 mm, 108 mm, 127 mm, 152 mm and 178 mm will be used to limit minor system capture to a minimum of the 2-year flow, as follows (refer to **Figure A-1** of **Attachment A** for catchbasin / low point IDs):

CB 401 / LP403NE = 178 mm ICD
CB 402 / LP403NW = 83 mm ICD
CB 403 / LP402SE = 178 mm ICD
CB 404 / LP402SW = 83 mm ICD
CB 412 / LP403SW = 152 mm ICD

Additionally, CB 18 on Famille-Laporte Avenue has been removed, CB 16 on Famille-Laporte Avenue (area A211SE) has been relocated by approximately 1.4 m, and CB 29 on Géographe Terrace (area A222NW) has been relocated by approximately 5.0 m.

To ensure a 5-year level of service on surrounding roads, the 127 mm ICD in CB 27 on Géographe Terrace (low point LP218SW) is to be removed and capture will be limited by the capacity of the catchbasin grate and lead pipe, and the 152 mm ICD in CB 405 on Famille-Laporte Avenue is to be removed and replaced with a 178 mm ICD.

The rearyard catchbasin on area A213R4 is to provide 100-year capture for a large 0.62 ha area and has a ponding depth of 0.3 m before spilling to the adjacent area A213R5. The 100-year flow generated on area A213R4 is 228 L/s based on DDSWMM modelling. Some capture is provided by City standard S30 grates connected by perforated pipes to a double catchbasin. The double catchbasin has a 450 mm diameter lead pipe at a slope of 1.0%. A standard double catchbasin at a ponding depth of 0.3 m has a capacity of 403 L/s per **Appendix D Table D-3** of the January 2020 **SWM Report for Phases 5 and 6 of Cardinal Creek Village**. Similarly, the 450 mm diameter lead pipe has a capacity of 633 L/s at a head of approximately 1.2 m (0.935 m depth from ground to centreline of pipe + 0.3 m ponding) per **Appendix D Table D-4** of the January 2020 **SWM Report for Phases 5 and 6 of Cardinal Creek Village**. Therefore, the proposed rearyard catchbasin has sufficient capacity to capture the full 100-year flows, even with some blockage.

Details of 100-year and 100-year + 20% road ponding depths for Cardinal Creek Village Phases 1-6 and 8, tributary to Pond 1, are presented in **Attachment D** based on grading plans provided by DSEL and dynamic flow depths simulated in DDSWMM. The total 100-year depth of water (static and dynamic) does not exceed 35 cm at any location, or reach the minimum opening elevation of an adjacent home. As shown in Attachment D, the maximum 100-year + 20% depth of water at any ponding area is calculated as 37.1 cm.

Minor System Performance

An ultimate conditions XPSWMM model schematic and hydraulic simulation results are presented in **Attachment B** for the 100-year 3-hour Chicago storm, 100-year 24-hour SCS Type II storm, the 1979, 1988 and 1996 historical events, and the 100-year 3-hour Chicago + 20% climate change stress test. A freeboard of 0.3 m has been provided between the hydraulic gradeline and the underside of footing elevations throughout Cardinal Creek Village, including Phase 8, for the 100-year storms. A freeboard of 0 m has been provided for the historical events, and a freeboard of -0.23 m has been provided for the 100-year + 20% stress test (as the system was partially approved prior to the adoption of a 0 m freeboard for the stress test per current City standards). Note that a 0 m freeboard is provided for all CCV Phase 8 lots during the 100-year + 20% stress test.

An interim conditions model was also prepared for the purposes of checking the HGL results throughout the Cardinal Creek Village system, as in the January 2020 **SWM Report for Phases 5 and 6 of Cardinal Creek Village**. Under interim conditions, as shown in **Figure A-3 of Attachment A**, Old Montreal Road, areas south of Old Montreal Road, and future development blocks north of Cardinal Creek Village Phases 1-8 remain as under existing conditions. Cardinal Creek Village storm sewers discharge to Temporary Ditches 1 and 2 for conveyance to SWM Pond 1 through the future development lands.

An interim conditions XPSWMM model schematic and hydraulic simulation results are presented in **Attachment C** for the 100-year 3-hour Chicago storm, 100-year 24-hour SCS Type II storm, the 1979, 1988 and 1996 historical events, and the 100-year 3-hour Chicago + 20% climate change stress test. A freeboard of 0.3 m has been provided between the hydraulic gradeline and the underside of footing elevations throughout Cardinal Creek Village, including Phase 8, for the 100-year storms. A freeboard of 0 m has been provided for the historical events, and a freeboard of -0.23 m has been provided for the 100-year + 20% stress test (as the system was partially approved prior to the adoption of a 0 m freeboard for the stress test per current City standards). Note that a 0 m freeboard is provided for all CCV Phase 8 lots during the 100-year + 20% stress test.

The 100-year water levels in SWM Pond 1 are 50.396 m under ultimate conditions and 49.636 m under interim conditions. The 100-year interim pond level is lower than the 49.716 m documented in the December 2018 **Design Brief for Interim Stormwater Management Pond 1 for Phases 1 to 5 in Cardinal Creek Village**. The 100-year ultimate pond level is higher as a result of changes made to the Pond 1 drainage areas outside of CCV Phase 8 prior to the current study, particularly future development south of Old Montreal Road. It is consistent with the 100-year water level in Pond 1 in the June 2026 **SWM Report for Phase 7 of Cardinal Creek Village** of 50.395 m, which has a 0.3 m freeboard to the top of berm, and does not exceed the allowable outflow to the culvert under Highway 174 to the Ottawa River.

Yours truly,
JFSA Canada Inc.



Laura Pipkins, P.Eng
Senior Water Resources Engineer



Appendices

Appendix A: Drainage Plans

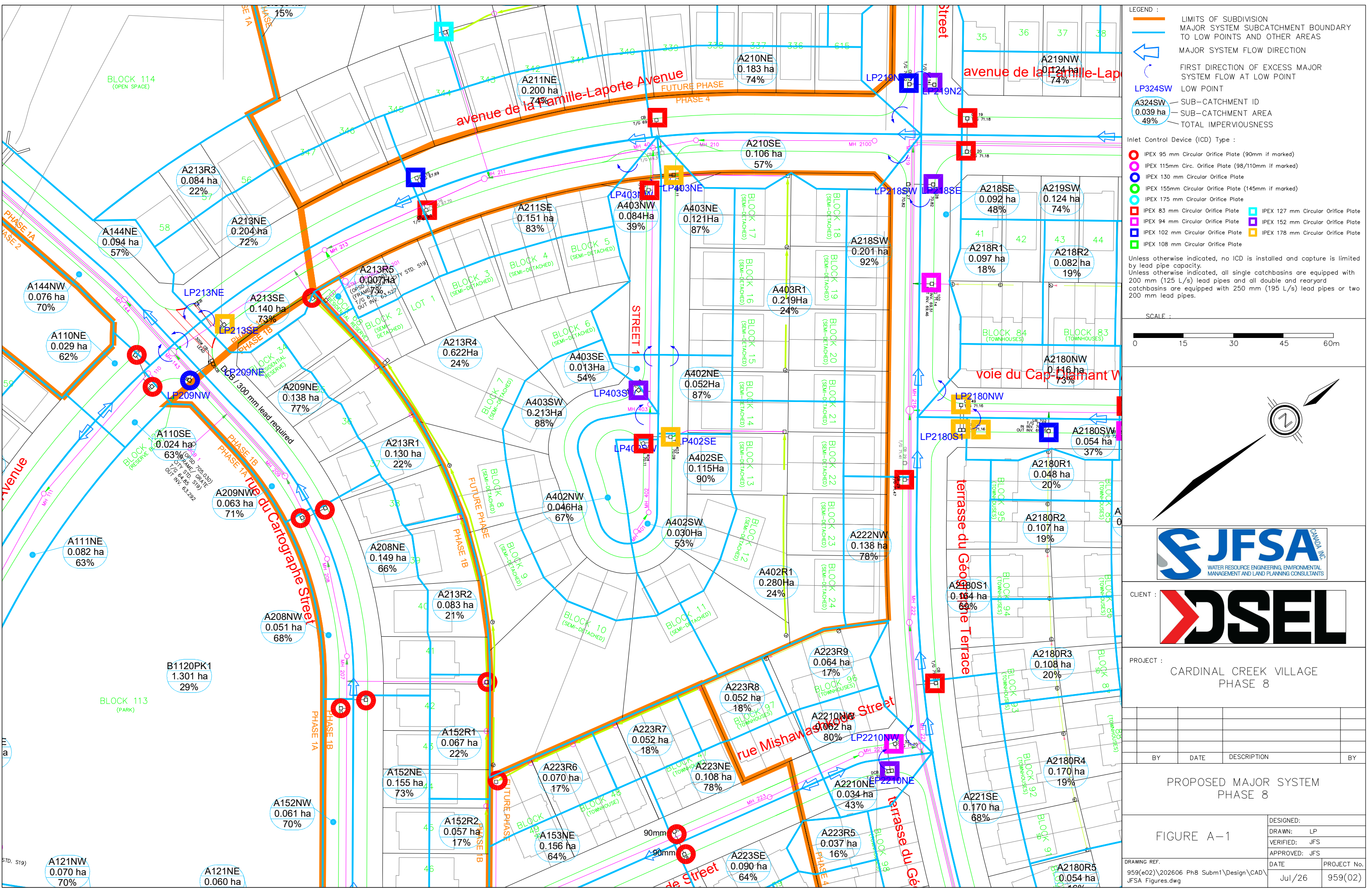
Appendix B: Ultimate Conditions XPSWMM Model Schematic; Ultimate Conditions Pipe Data and Hydraulic Simulation Results

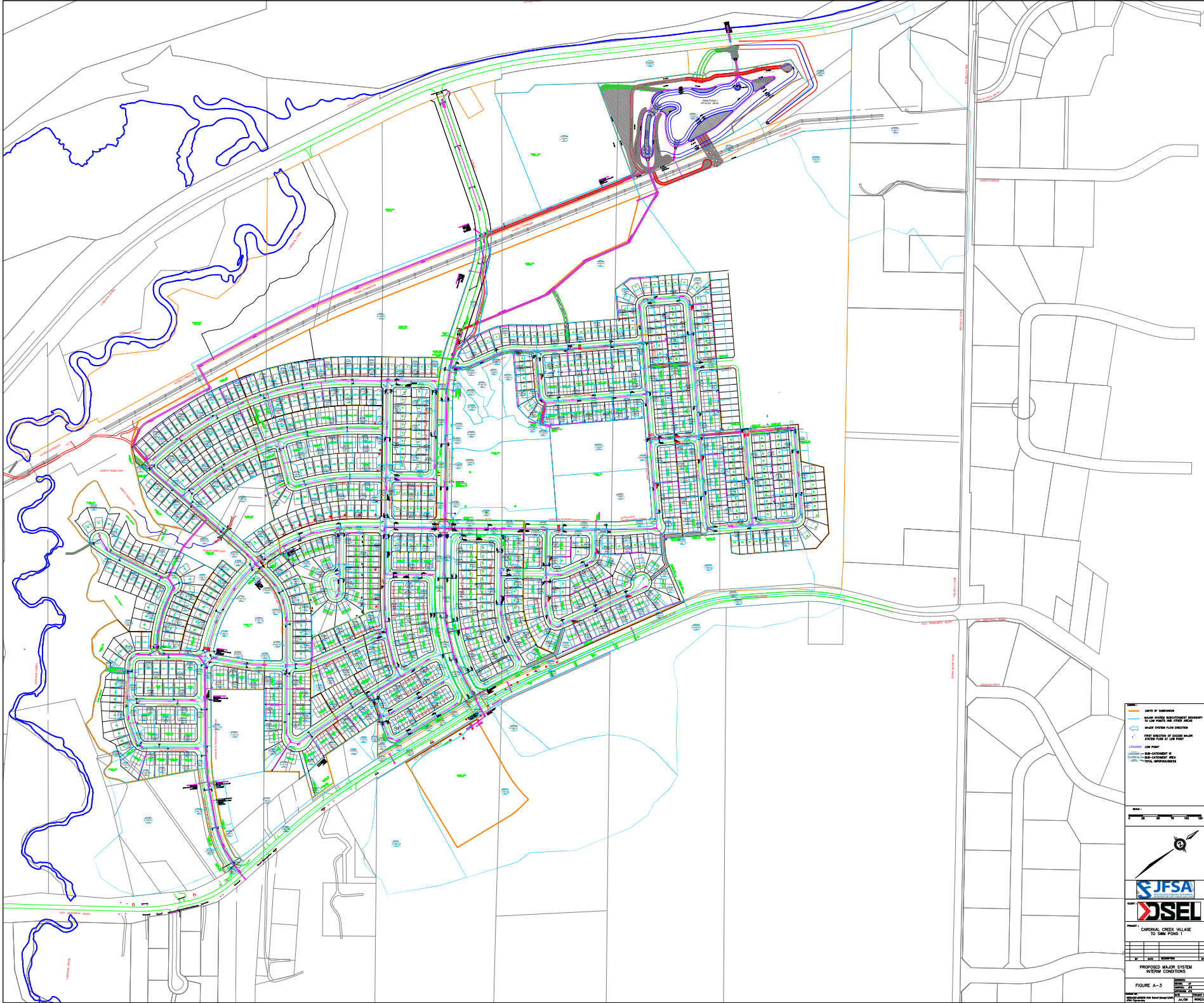
Appendix C: Ultimate Conditions XPSWMM Model Schematic; Ultimate Conditions Pipe Data and Hydraulic Simulation Results

Appendix D: Ultimate Conditions Road Ponding Depths

Attachment A

Drainage Plans





LEGEND

- ORANGE LINE: WATER MAINS
- BLUE LINE: WATER SERVICE LINES
- GREEN LINE: WATER DISTRIBUTION LINES
- PURPLE LINE: WATER COLLECTION LINES
- ARROW: FLOW DIRECTION
- SYMBOL: FLOW DIRECTION AT JUNCTION
- SYMBOL: FLOW DIRECTION AT END OF LINE
- SYMBOL: LOW POINT
- SYMBOL: VALVE
- SYMBOL: HYDRO-PNEUMATIC TANK
- SYMBOL: PUMP STATION
- SYMBOL: TREATMENT PLANT

Scale

0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100'

North Arrow

JFSA

DSEL

PROJECT

CARDINAL CREEK VILLAGE
TO SANI POND 1

FIGURE A-3

PROPOSED MAJOR WATER SYSTEM
SYSTEM CONDITIONS

DATE: 11/11/2011

BY: JFSA

CHK: JFSA

APP: JFSA

DESIGNED BY: JFSA

CHECKED BY: JFSA

APPROVED BY: JFSA

DATE: 11/11/2011

BY: JFSA

CHK: JFSA

APP: JFSA

DESIGNED BY: JFSA

CHECKED BY: JFSA

APPROVED BY: JFSA

Attachment B

Ultimate Conditions XPSWMM Model Schematic

Ultimate Conditions Pipe Data and Hydraulic Simulation Results

Figure B-1: XPSWMM MODEL SCHEMATIC, ULTIMATE CONDITIONS

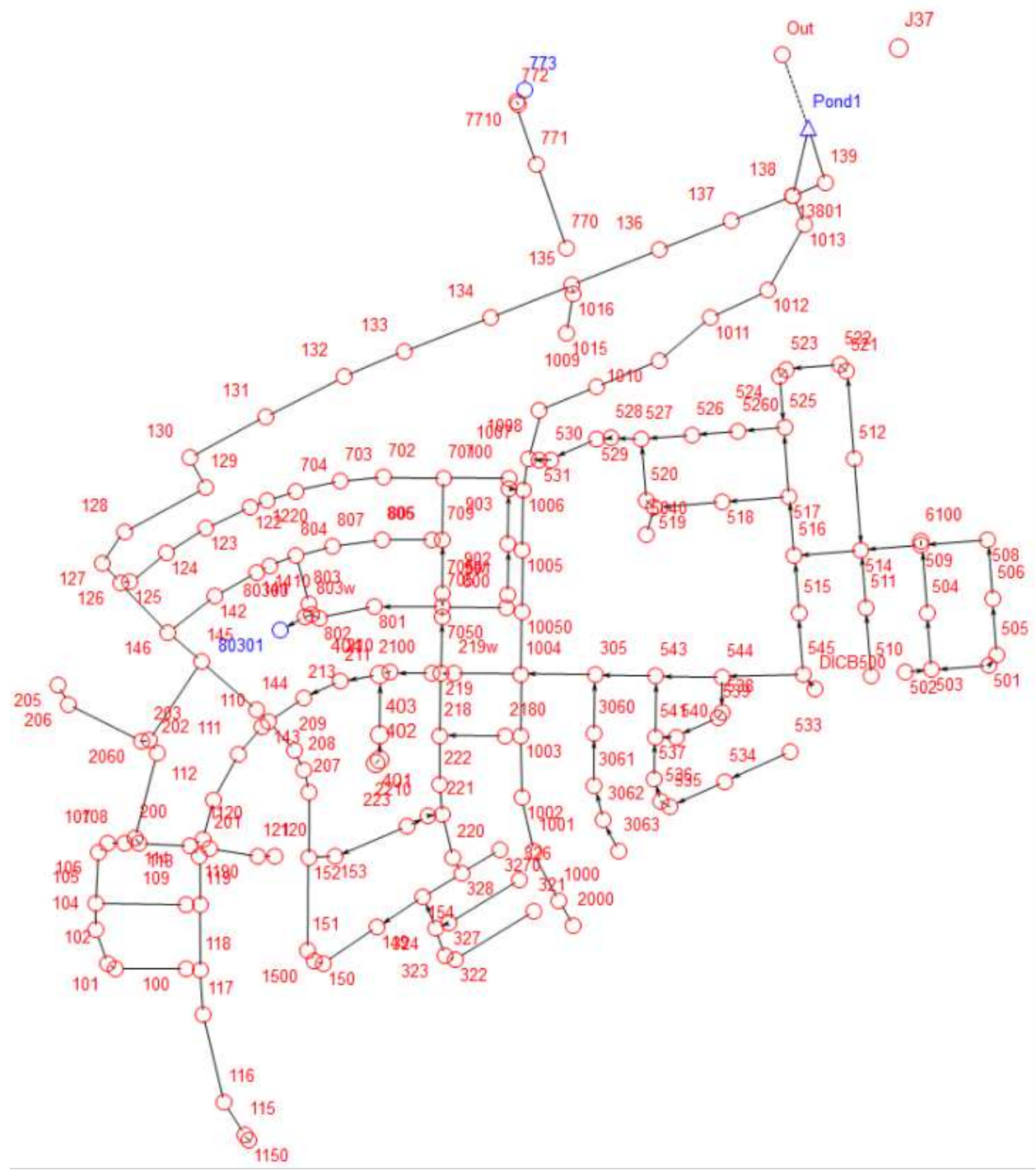


Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.89	0.06	0.3	-0.182	0.95	62.786	60.151	B92L1	61.17	-1.616																							
																				B92L1	61.17	0.955	90.9	2.2	60.215																			
																				B93	61.89	1.423	90.9	10.9	60.467																			
																				B94	62.24	1.115	90.9	33.6	61.125																			
																				B95	62.74	0.980	90.9	55.5	61.760																			
																				B96	63.53	1.193	90.9	75.4	62.337																			
																				B97	63.52	1.221	90.9	74.1	62.299																			
																				B98	62.59	1.050	90.9	47.9	61.540																			
																				B99	61.56	1.273	90.9	4.7	60.287																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.33	0.26	1.3	0.186	0.93	60.151	59.790	B92L3	61.17	1.019			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.03	0.29	0.9	-0.066	0.93	59.719	58.503	L88	60.83	1.111			
																																								L88	60.83	2.184	45.2	5.3
L89	61.05	1.961	45.2	21.8	59.089																																							
L90	60.93	1.615	45.2	30.2	59.315																																							
L91	60.90	1.211	45.2	44.1	59.689																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.15	0.30	0.9	0.068	0.95	58.503	58.165	L85	58.99	0.487																							
																				L85	58.99	0.782	34.0	4.3	58.208																			
																				L86	59.79	1.489	34.0	13.7	58.301																			
																				L87	60.00	1.541	34.0	29.6	58.459																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.31	0.66	1.1	0.206	0.95	58.165	57.333	L81	58.16	-0.005			
																				L81	58.16	0.679	66.9	11.9	57.481																			
																				L80	58.39	1.021	66.9	2.9	57.369																			
																				L82	58.22	0.559	66.9	26.4	57.661																			
																				L83	58.40	0.542	66.9	42.2	57.858																			
																				L84	58.95	0.955	66.9	53.2	57.995																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.91	0.66	1.1	0.044	0.95	57.333	57.167	L79	58.44	1.107																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.44	0.66	1.0	-0.042	1.00	57.167	57.107	L74	58.91	1.743																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.48	0.67	1.0	-0.026	1.00	57.107	57.023	L73	59.22	2.113																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.18	0.7	-0.145	0.95	60.726	58.165	L75	59.26	-1.466																							
																				L75	59.26	0.710	116.3	17.5	58.550																			
																				L76	59.55	0.568	116.3	37.1	58.982																			
																				B103SD	60.07	0.656	116.3	56.7	59.414																			
																				B104SD	60.75	0.918	116.3	75.7	59.832																			
																				B105SD	61.36	1.110	116.3	94.7	60.250																			
																				B106SD	62.05	1.379	116.3	113.8	60.671																			
																				B102L1	61.93	1.266	116.3	113.5	60.664																			
																				B102L4	61.55	1.383	116.3	90.9	60.167																			
																				B101L1	60.92	1.033	116.3	78.2	59.887																			
																				B101L4	60.52	1.131	116.3	55.6	59.389																			
																				B100L1	59.97	0.810	116.3	45.2	59.160																			
B100L4	59.58	0.917	116.3	22.6	58.663																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.81	0.01	0.1	-0.243	0.93	63.213	62.746	L60	63.78	0.567																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.87	0.04	0.2	-0.200	0.95	62.746	60.912	L66	62.23	-0.516																							
																				L66	62.23	1.290	65.6	1.0	60.940																			
																				L65	62.47	1.141	65.6	14.9	61.329																			
																				L64	62.67	1.028	65.6	26.1	61.642																			
																				L63	63.00	0.925	65.6	41.6	62.075																			
																				L62	63.31	1.059	65.6	47.9	62.251																			
																				L61	63.58	1.021	65.6	58.9	62.559																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.96	0.09	0.3	-0.221	0.93	60.891	59.870	B108L4	61.64	0.749																							

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.87	5.57	0.9	-0.204	0.98	58.831	58.258	L71	59.63	0.799			
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.89	5.57	0.9	0.063	0.98	57.239	57.023	N/A	N/A	N/A			
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	3.07	2.47	0.8	-0.375	0.95	66.003	65.620	N/A	N/A	N/A			
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	3.17	2.56	0.8	-0.379	0.95	64.653	63.814	N/A	N/A	N/A			
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.19	4.50	0.9	-0.366	0.97	63.344	63.029	N/A	N/A	N/A			
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.22	4.64	0.9	-0.352	0.97	61.768	61.322	N/A	N/A	N/A			
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	3.06	4.98	1.0	-0.181	0.97	60.519	60.054	N/A	N/A	N/A			
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.442	B112L4	64.20	0.843			
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.69	0.30	1.0	0.497	0.95	62.442	60.497	B109L4	61.76	-0.682			
																			B109L4	61.76	0.481	62.4	25.1	61.279
																			B109L1	61.76	0.484	62.4	25.0	61.276
																			B110SD	62.44	0.606	62.4	42.9	61.834
																			B111SD	63.15	0.823	62.4	58.7	62.327
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.12	0.76	0.7	-0.241	1.03	59.132	58.161	L18	59.42	0.288			
																			L18	59.42	1.181	64.4	5.2	58.239
																			L19	60.08	1.672	64.4	16.4	58.408
																			L20	60.56	1.914	64.4	32.2	58.647
																			L21	60.98	2.187	64.4	41.9	58.793
																			L22	61.39	2.362	64.4	57.5	59.028
																			L24	61.34	2.449	64.4	48.4	58.891
																			L35	61.06	2.407	64.4	32.6	58.653
																			L26	60.61	2.131	64.4	21.1	58.479
																			L27	59.90	1.656	64.4	5.5	58.244
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.20	0.76	0.7	-0.250	1.03	56.955	55.992	L14	57.61	0.655			
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.01	0.82	0.8	-0.201	1.03	54.844	53.952	L9	55.68	0.836			
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.56	0.82	0.8	-0.095	1.03	53.952	53.625	N/A	N/A	N/A			
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	2.19	10.12	1.0	0.258	1.02	53.474	53.224	N/A	N/A	N/A			
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	2.23	10.08	1.0	0.122	1.03	53.224	53.086	N/A	N/A	N/A			
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	2.23	10.02	1.0	0.098	1.03	53.086	52.725	N/A	N/A	N/A			
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.125	2.119	9.588	2.32	9.94	1.0	-0.041	1.05	52.725	52.467	N/A	N/A	N/A			
130	131	50.272	50.105	2400	111.5	0.2	0.013	54.125	54.000	2.119	9.588	2.51	9.78	1.0	-0.205	1.07	52.467	52.330	N/A	N/A	N/A			
131	132	50.085	49.916	2400	112.5	0.2	0.013	54.000	54.000	2.119	9.588	2.42	9.61	1.0	-0.155	1.08	52.330	52.185	N/A	N/A	N/A			
132	133	49.896	49.769	2400	84.5	0.2	0.013	54.000	54.135	2.119	9.588	2.31	9.53	1.0	-0.111	1.08	52.185	52.076	N/A	N/A	N/A			
133	134	49.749	49.569	2400	120.0	0.2	0.013	54.135	54.036	2.119	9.588	2.21	9.67	1.0	-0.073	1.13	52.076	51.908	N/A	N/A	N/A			
134	135	49.549	49.377	2400	115.0	0.2	0.013	54.036	54.079	2.119	9.588	2.22	9.82	1.0	-0.041	1.15	51.908	51.735	N/A	N/A	N/A			
135	136	49.227	49.071	2550	121.5	0.1	0.013	54.079	54.320	2.054	10.492	2.40	12.18	1.2	-0.042	1.12	51.735	51.526	N/A	N/A	N/A			
136	137	49.051	48.919	2550	100.0	0.1	0.013	54.320	54.449	2.054	10.492	2.42	12.21	1.2	-0.075	1.12	51.526	51.359	N/A	N/A	N/A			
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.74	13.54	1.2	-0.090	1.12	51.359	50.667	N/A	N/A	N/A			
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	4.14	21.91	1.1	-0.889	1.08	50.667	50.571	N/A	N/A	N/A			
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	4.10	N/A	N/A	1.08	50.666	50.337	N/A	N/A	N/A			
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	3.19	4.10	1.3	0.321	1.10	50.281	50.280	N/A	N/A	N/A			
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	3.08	0.55	0.7	-0.238	1.02	60.435	59.324	L52	60.19	-0.245			
																			L52	60.19	0.799	61.7	3.7	59.391
																			L51	60.63	1.117	61.7	10.5	59.513
																			L50	61.53	1.687	61.7	28.8	59.843
																			L49	62.36	2.382	61.7	36.3	59.978
																			L48	62.74	2.417	61.7	55.5	60.323
																			L47	63.79	3.382	61.7	60.2	60.408
																			L44	62.69	2.552	61.7	45.2	60.138
																			L43	61.84	1.835	61.7	37.8	60.005

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L42	61.29	1.629	61.7	18.7	59.661
																				L41	60.68	1.153			
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.82	0.8	-0.108	1.02	57.433	56.095	L36	57.89	0.457				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.34	1.75	0.9	-0.204	1.02	63.000	62.749	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.39	1.79	0.9	-0.200	1.03	61.167	60.133	N/A	N/A	N/A				
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.16	8.18	0.9	-0.201	1.00	53.877	53.731	L3	58.26	4.383				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	3.01	9.36	0.9	-0.119	1.02	53.731	53.474	L8	55.21	1.479				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.20	0.10	0.4	-0.216	1.02	69.824	67.828	B54L4	69.35	-0.474				
																				B54L4	69.35	1.409	83.1	4.7	67.941
																				B54L1	69.35	0.960	83.1	23.4	68.390
																				B56L4	70.19	1.634	83.1	30.3	68.556
																				B56L1	70.19	1.125	83.1	51.5	69.065
																				B57SD	70.63	1.210	83.1	66.3	69.420
																				B43L4	71.22	1.629	83.1	73.4	69.591
																				B58L4	70.88	1.224	83.1	76.1	69.656
																				B58L1	70.88	1.736	83.1	54.8	69.144
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	1.97	0.10	0.4	-0.200	1.02	67.788	67.480	B53L3	68.90	1.112				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.33	0.53	0.9	-0.146	1.03	66.515	65.437	B47L4	66.63	0.115				
																				B47L4	66.63	1.039	119.4	17.1	65.591
																				B47L1	66.63	0.847	119.4	38.3	65.783
																				B48L4	67.21	1.366	119.4	45.1	65.844
																				B48L1	67.21	1.174	119.4	66.3	66.036
																				B49L4	67.77	1.675	119.4	72.9	66.095
																				B49L1	67.77	1.483	119.4	94.1	66.287
																				B50SD	68.07	1.646	119.4	109.3	66.424
																				B51L3	68.41	1.932	119.4	115.3	66.478
																				B59L4	68.18	1.769	119.4	107.9	66.411
																				B59L1	68.18	1.960	119.4	86.7	66.220
																				B60SD	67.97	1.813	119.4	79.8	66.157
																				B61L4	67.31	1.289	119.4	64.7	66.021
																				B61L1	67.31	1.480	119.4	43.5	65.830
																				B62L4	66.89	1.120	119.4	36.9	65.770
																				B62L1	66.89	1.311	119.4	15.7	65.579
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921														

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL			
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(h)	(m)	(m)	Length HGL (m)				Dist. From D/S MH (m)	HGL (m)		
																				B45L4	71.98	1.528	71.4	34.5	70.452
																				B44SD	71.47	1.144	71.4	27.5	70.326
																				B43L1	71.47	1.426	71.4	11.9	70.045
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	3.02	6.34	1.0	-0.079	0.98	57.023	56.507	L32	58.76	1.737				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.89	0.30	1.5	0.302	0.95	60.497	60.038	N/A	N/A	N/A				
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	3.03	6.34	1.0	-0.022	0.98	56.507	56.074	L11	58.85	2.343				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.46	6.53	0.8	-0.268	1.00	54.299	53.877	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.01	0.19	0.3	-0.064	1.00	54.360	54.350	L22	54.73	0.370				
																				L22	54.73	0.371	28.2	25.9	54.359
																				L21	54.73	0.370	28.2	27.4	54.360
																				L20	55.10	0.742	28.2	22.9	54.358
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	2.54	0.26	0.5	0.026	1.00	54.350	54.307	L19	55.79	1.440				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.75	0.70	0.8	-0.223	1.03	64.336	63.963	L39	65.04	0.704				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.77	0.72	0.8	-0.210	1.03	63.959	63.609	L37	64.89	0.931				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.56	0.96	1.0	-0.156	1.02	63.452	63.044	L34	64.28	0.828				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	0.98	67.451	67.098	L339	68.56	1.109				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	1.02	65.521	64.337	L347	65.57	0.049				
																				L347	65.57	1.199	52.4	1.5	64.371
																				L346	66.07	1.213	52.4	23.0	64.857
																				L345	66.61	1.550	52.4	32.0	65.060
																				L344	67.15	1.760	52.4	46.6	65.390
																				3-1	66.15	1.054	52.4	33.6	65.096
																				1	65.55	0.723	52.4	21.7	64.827
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.57	0.80	0.7	-0.115	1.02	63.969	63.000	L58	64.18	0.211				
																				L58	64.18	0.849	55.0	18.8	63.331
																				L57	64.44	0.806	55.0	36.0	63.634
																				L56	64.75	0.890	55.0	48.8	63.860
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.51	1.36	0.9	-0.312	0.98	69.236	69.112	18-1	69.48	0.244				
																				18-1	69.48	0.339	80.5	18.7	69.141
																				18-2	69.48	0.326	80.5	27.1	69.154
																				19-1	69.51	0.341	80.5	37.2	69.169
																				19-2	69.51	0.328	80.5	45.6	69.182
																				20-1	69.54	0.342	80.5	55.9	69.198
																				20-2	69.54	0.329	80.5	64.4	69.211
																				21-1	69.57	0.343	80.5	74.5	69.227
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.75	0.28	1.7	0.455	1.00	69.112	68.423	N/A	N/A	N/A				
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.19	N/A	N/A	1.00	69.112	68.460	N/A	N/A	N/A				
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.62	0.77	0.5	-0.384	0.97	70.039	69.506	B92L1	70.77	0.731				
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	2.03	0.85	0.7	-0.342	0.97	69.506	69.348	B94L4	70.08	0.574				
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.56	0.86	0.6	-0.312	0.97	69.348	69.236	21-2	69.57	0.222				
																				21-2	69.57	0.329	64.0	2.7	69.241
																				22-1	69.60	0.342	64.0	12.7	69.258
																				22-2	69.60	0.327	64.0	21.2	69.273
																				23-1	69.63	0.340	64.0	31.1	69.290
																				23-2	69.63	0.325	64.0	39.4	69.305
																				24-1	69.67	0.347	64.0	49.5	69.323
																				24-2	69.67	0.332	64.0	58.0	69.338
																				B95-1	69.95	0.686	64.0	15.9	69.264
																				B95-4	69.95	0.648	64.0	37.7	69.302
																				B94-1	70.08	0.765	64.0	45.4	69.315

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.08	0.08	0.3	-0.235	0.95	68.667	66.168	B36SD	68.23	-0.437				
																				B36SD	68.23	1.679	101.9	15.6	66.551
																				B37L4	68.70	2.000	101.9	21.7	66.700
																				B37L1	68.70	1.480	101.9	42.9	67.220
																				B38L4	69.31	1.931	101.9	49.4	67.379
																				B38L1	69.31	1.411	101.9	70.6	67.899
																				B39L4	69.62	1.546	101.9	77.7	68.074
																				B39L1	69.62	1.024	101.9	99.0	68.596
																				B47L1	69.23	0.786	101.9	92.8	68.444
																				B47L4	69.23	1.345	101.9	70.0	67.885
																				B48L1	68.82	1.060	101.9	64.9	67.760
																				B48L4	68.82	1.580	101.9	43.7	67.240
																				B49SD	68.53	1.455	101.9	37.0	67.075
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.45	-0.01	-0.1	-0.232	0.97	69.540	69.666	B96L1	70.07	0.530				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.28	1.86	0.6	-0.370	1.05	68.878	68.147	Fut. Est.	72.09	3.212				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.06	0.05	0.3	-0.223	0.95	72.456	71.814	B107L1	72.89	0.434				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.74	0.05	0.3	-0.127	0.95	71.814	71.800	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.43	0.21	1.1	-0.057	0.95	71.800	71.576	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.55	0.70	0.7	-0.158	0.95	71.547	71.165	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	1.00	0.03	0.4	-0.167	0.95	72.397	71.791	B102L1	72.70	0.303				
																				B102L1	72.70	0.875	106.5	6.0	71.825
																				B102L5	72.70	0.709	106.5	35.1	71.991
																				B103L1	72.87	0.824	106.5	44.8	72.046
																				B103L4	72.87	0.705	106.5	65.8	72.165
																				B104L1	73.05	0.828	106.5	75.8	72.222
																				B104L5	73.05	0.664	106.5	104.5	72.386
																				B105L10	73.24	0.878	106.5	100.3	72.362
																				B105L6	73.24	1.035	106.5	72.7	72.205
																				B106L10	73.08	0.934	106.5	62.3	72.146
																				B106L6	73.08	1.089	106.5	35.1	71.991
																				B107L10	72.89	0.949	106.5	26.3	71.941
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.09	0.05	0.5	-0.104	0.97	71.791	71.561	B107L6	72.89	1.099				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.51	0.76	0.6	-0.362	0.97	70.303	70.071	B100SD	72.25	1.947				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.106	0.97	63.160	62.634	L1	64.26	1.100				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.16	0.46	0.8	-0.181	1.02	62.594	61.972	L14	63.44	0.846				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.49	0.50	0.8	-0.201	1.02	61.924	61.311	L10	63.20	1.276				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.28	0.56	0.7	-0.238	1.02	61.277	60.805	L5	63.33	2.053				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.56	0.64	0.8	-0.227	1.02	60.790	60.390	L2	62.35	1.560				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.29	1.1	-0.026	1.00	68.010	67.181	L334	68.05	0.040				
																				L334	68.05	0.727	87.0	14.9	67.323
																				L335	68.12	0.729	87.0	22.0	67.391
																				B610L1	68.12	0.568	87.0	38.9	67.552
																				B610L5	68.18	0.344	87.0	68.7	67.836
																				B611L1	68.53	0.678	87.0	70.4	67.852
																				B111L4	68.45	0.814	87.0	47.8	67.636
																				B612SD	68.45	0.911	87.0	37.6	67.539
																				B613SD	68.40	1.054	87.0	17.3	67.346
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.10	N/A	N/A	1.00	68.010	67.843	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.92	8.60	0.8	-0.597	0.98	67.695	67.239	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.38	0.22	0.8	-0.083	1.02	64.965	62.984	L19	64.58	-0.385				

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				L19	64.58	1.135	82.0	19.1	63.445			
																				L20	64.99	1.221	82.0	32.5	63.769			
																				L21	65.74	1.606	82.0	47.6	64.134			
																				L22	66.37	1.900	82.0	61.5	64.470			
																				L23	67.00	2.187	82.0	75.7	64.813			
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.23	0.01	0.1	-0.252	0.95	51.513	48.293	N/A	N/A	N/A							
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.66	0.04	0.1	-0.284	0.93	47.136	44.994	N/A	N/A	N/A							
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.67	0.23	1.0	-0.079	0.93	44.847	44.705	N/A	N/A	N/A							
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.74	0.08	0.7	-0.113	1.02	69.168	68.010	L34	69.22	0.052							
																				L34	69.22	0.955	82.8	18.2	68.265			
																				L33	69.36	0.877	82.8	33.8	68.483			
																				L32	69.53	0.927	82.8	42.4	68.603			
																				L31	69.62	0.814	82.8	56.9	68.806			
																				L30	69.82	0.890	82.8	65.8	68.930			
																				L29	70.07	0.931	82.8	80.7	69.139			
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.042	1.00	67.181	66.137	L325	67.35	0.169							
																				L325	67.35				1.168	72.5	3.1	66.182
																				L326	67.53				1.122	72.5	18.8	66.408
																				L327	67.79				1.266	72.5	26.9	66.524
																				L328	67.99				1.156	72.5	48.4	66.834
																				B614SD	68.21				1.051	72.5	71.0	67.159
																				L333	67.98				0.821	72.5	71.0	67.159
																				L332	67.91				0.879	72.5	62.1	67.031
																				L331	67.79				1.031	72.5	43.2	66.759
L330	67.63	0.989	72.5	35.0	66.641																							
L329	67.47	1.103	72.5	16.0	66.367																							
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.10	0.34	1.0	0.032	1.00	66.137	65.847	L324	67.08	0.943							
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.128	1.02	65.812	64.584	L319	65.72	-0.092							
																				L319	65.72	0.801	77.0	21.0	64.919			
																				L320	66.05	0.823	77.0	40.3	65.227			
																				L321	66.39	1.036	77.0	48.3	65.354			
																				L322	66.71	1.061	77.0	66.8	65.649			
																				L323	66.89	1.193	77.0	69.8	65.697			
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.02	0.50	0.6	-0.261	1.02	63.750	63.072	L123	64.76	1.010							
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.164	0.95	66.097	65.715	B601SD	66.46	0.363							
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.24	0.07	0.3	-0.271	0.97	65.609	65.215	B604SD	66.07	0.461							
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.24	0.07	0.3	-0.271	0.98	65.186	64.897	L296	65.77	0.584							
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	3.22	4.82	1.0	-0.285	0.95	72.798	72.370	B80L1	73.88	1.082							
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	3.25	4.95	1.0	-0.273	0.95	71.226	70.807	B87SD	72.44	1.214							
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	3.24	5.04	1.0	-0.244	0.95	70.098	69.679	B85L1	71.32	1.222							
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	3.35	5.22	1.0	-0.238	0.97	69.679	69.203	L51	71.02	1.341							
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	3.32	8.26	1.1	-0.403	0.98	68.147	67.782	N/A	N/A	N/A							
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	5.46	8.74	0.5	-0.907	0.98	63.783	62.726	N/A	N/A	N/A							
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	5.43	8.90	0.5	-0.886	0.98	62.273	61.723	N/A	N/A	N/A							
1007	1008	59.854	59.009	1950	65.0	1.3	0.013	64.500	62.180	5.433	16.224	4.47	11.18	0.7	-0.362	1.00	61.442	60.206	N/A	N/A	N/A							
1008	1009	52.061	51.805	2250	80.0	0.3	0.013	62.180	57.440	2.965	11.790	3.13	11.22	1.0	-0.335	1.00	53.976	53.772	N/A	N/A	N/A							
1009	1010	51.805	51.527	2250	87.0	0.3	0.013	57.440	57.070	2.965	11.790	3.03	11.15	0.9	-0.283	1.00	53.772	53.507	N/A	N/A	N/A							
1010	1011	51.527	51.252	2250	86.0	0.3	0.013	57.070	56.500	2.965	11.790	2.99	11.00	0.9	-0.270	1.00	53.507	53.246	N/A	N/A	N/A							
1011	1012	51.252	50.991	2250	81.5	0.3	0.013	56.500	56.600	2.965	11.790	2.97	11.03	0.9	-0.256	1.02	53.246	52.902	N/A	N/A	N/A							
1012	1013	50.991	50.681	2250	97.0	0.3	0.013	56.600	54.680	2.965	11.790	3.13	11.01	0.9	-0.339	1.02	52.902	52.246	N/A	N/A	N/A							

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.52	12.94	0.8	-0.798	1.03	51.832	51.594	N/A	N/A	N/A				
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.65	0.74	0.7	-0.178	0.95	52.525	52.028	N/A	N/A	N/A				
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.13	0.74	0.7	0.083	0.98	52.028	51.735	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.34	0.24	0.6	-0.172	0.95	59.870	59.535	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.59	1.84	1.0	-0.246	0.93	67.220	67.152	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.78	5.28	0.8	-0.248	0.97	59.859	59.512	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	3.87	0.50	0.6	-0.259	1.02	62.647	62.309	L45	63.24	0.593				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.75	0.12	0.3	-0.263	1.03	66.712	66.515	B51L1	68.41	1.698				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.96	3.63	1.1	-0.238	0.93	75.647	75.412	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.03	0.26	0.5	0.278	1.00	54.307	54.299	L30	58.92	4.613				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.72	0.02	0.2	-0.198	0.97	72.062	71.765	B103L8	72.87	0.808				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.75	0.28	0.7	0.036	1.00	68.423	68.010	N/A	N/A	N/A				
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.50	0.23	1.0	-0.019	0.93	44.994	44.875	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.088	1.02	65.822	65.714	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.03	65.822	65.812	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	2.79	4.10	1.4	0.195	1.10	50.337	50.281	N/A	N/A	N/A				
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	6.24	11.48	N/A	N/A	1.42	50.280	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.45	0.64	0.8	-0.209	1.03	60.312	60.099	L23	61.85	1.538				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.02	0.30	1.1	0.076	0.95	69.492	69.236	B84L1	69.71	0.218				
																				B84L1	69.71	0.423	83.9	16.8	69.287
																				B84L4	69.71	0.357	83.9	38.3	69.353
																				B83L1	70.27	0.897	83.9	45.0	69.373
																				B83L3	70.27	0.851	83.9	60.0	69.419
																				B82L1	70.96	1.521	83.9	66.6	69.439
																				B82L4	70.96	1.474	83.9	81.9	69.486
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.98	0.07	1.1	0.046	0.95	69.666	69.506	B96L4	70.07	0.404				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.76	0.33	0.8	-0.088	0.97	71.873	71.089	L52	72.19	0.317				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.29	0.9	-0.116	0.95	72.690	71.873	L56	72.93	0.240				
																				L56	72.93	0.946	64.8	8.8	71.984
																				B73SD	73.17	1.025	64.8	21.6	72.145
																				L57	73.23	0.846	64.8	40.5	72.384
																				L58	73.36	0.804	64.8	54.2	72.556
																				L60	73.51	0.870	64.8	60.8	72.640
																				L61	73.43	0.997	64.8	44.4	72.433
																				L62	73.37	1.131	64.8	29.0	72.239
																				L63	73.28	1.218	64.8	15.0	72.062
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.37	0.03	0.2	-0.204	0.95	73.492	72.690	L59	73.54	0.048				
																				L59	73.54	0.810	44.4	2.2	72.730
																				B72L1	73.92	0.990	44.4	13.3	72.930
																				B72L2	73.92	0.822	44.4	22.6	73.098
																				B71L1	74.10	0.850	44.4	31.0	73.250
																				B66L4	74.39	1.050	44.4	36.0	73.340
																				B66L1	73.99	0.892	44.4	22.6	73.098
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.54	0.03	0.2	-0.203	0.95	74.433	73.522	B71L4	74.50	0.067				
																				B71L4	74.50	0.819	45.4	7.9	73.681
																				B70L1	74.89	1.051	45.4	15.8	73.839
																				B70L2	74.89	0.862	45.4	25.2	74.028
																				B69L1	75.49	1.298	45.4	33.4	74.192
																				B69L2	75.49	1.097	45.4	43.4	74.393

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			B68L1	76.39	1.997	45.4	43.4	74.393
																			B67L4	75.19	0.998	45.4	33.4	74.192
																			B67L1	74.79	1.109	45.4	7.9	73.681
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.32	0.29 0.02	1.0 0.2	-0.091 -0.217	1.02 0.93	65.695 69.156	65.298 68.002	N/A L13	N/A 69.13	N/A -0.026			
																			L13	69.13	0.986	65.0	8.0	68.144
																			L12	69.49	1.135	65.0	19.9	68.355
																			L11	69.68	1.032	65.0	36.4	68.648
																			L10	69.81	0.974	65.0	47.0	68.836
																			L9	69.81	0.690	65.0	63.0	69.120
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	2.04	0.05	0.3	-0.181	0.95	68.002	65.681	L18	66.92	-1.082			
																			L18	66.92	1.005	72.3	7.3	65.915
																			L17	67.35	0.918	72.3	23.4	66.432
																			L16	67.80	1.011	72.3	34.5	66.789
																			L15	68.21	0.892	72.3	51.0	67.318
																			L14	68.67	0.957	72.3	63.3	67.713
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.22 2.10	0.05 0.11	0.5 0.5	-0.122 -0.193	0.95 1.00	65.681 67.843	65.436 66.295	N/A L24	N/A 67.63	N/A -0.213			
																			L24	67.63	1.205	86.0	7.2	66.425
																			L25	68.23	1.553	86.0	21.2	66.677
																			L26	68.95	1.994	86.0	36.7	66.956
																			L27	69.33	2.128	86.0	50.4	67.202
																			L28	69.33	1.824	86.0	67.3	67.506
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.40	1.33	0.9	-0.242	1.00	68.463	68.147	L35	69.61	1.147			
																			L35	69.61	1.206	103.5	84.3	68.404
																			L36	70.01	1.644	103.5	71.8	68.366
																			L37	70.32	1.990	103.5	59.9	68.330
																			L38	70.49	2.205	103.5	45.3	68.285
																			L39	70.49	2.232	103.5	36.4	68.258
																			L40	70.36	2.144	103.5	22.5	68.216
																			L46	70.51	2.291	103.5	23.6	68.219
																			L45	70.56	2.298	103.5	37.7	68.262
																			L44	70.58	2.291	103.5	46.4	68.289
																			L43	70.32	1.987	103.5	61.0	68.333
																			L42	70.06	1.692	103.5	72.5	68.368
																			L41	69.67	1.262	103.5	85.4	68.408
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.264	84	80.14	-0.092			
																			79	81.31	1.129	74.0	72.1	80.181
																			80	81.20	1.401	74.0	57.7	79.799
																			81	80.				

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S ⁽¹⁾	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																							
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(h)	(m)	(m)	Length HGL (m)				Dist. From D/S MH (m)	HGL (m)																						
																				37	79.14	1.240	88.0	47.5	77.900																				
																				38	79.19	1.262	88.0	54.4	77.928																				
																				39	79.25	1.265	88.0	68.8	77.985																				
																				40	79.31	1.289	88.0	77.6	78.021																				
																				52	79.54	1.488	88.0	85.4	78.052																				
																				53	79.46	1.433	88.0	79.3	78.027																				
																				54	79.43	1.460	88.0	64.9	77.970																				
																				55	79.43	1.512	88.0	51.9	77.918																				
																				56	79.32	1.459	88.0	37.5	77.861																				
																				57	79.23	1.413	88.0	26.6	77.817																				
																				58	79.12	1.363	88.0	11.6	77.757																				
																				505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	1.05	0.03	0.3	-0.184	0.93	80.164	79.591	64	80.26	0.096				
																																								64	80.26	0.630	72.5	4.9	79.630
																																								65	80.40	0.665	72.5	18.2	79.735
																																								66	80.54	0.691	72.5	32.6	79.849
																																								67	80.65	0.715	72.5	43.5	79.935
																																								68	80.77	0.721	72.5	57.9	80.049
																																								69	80.92	0.781	72.5	69.4	80.139
																																								71	80.32	0.652	72.5	9.7	79.668
																																								72	80.46	0.690	72.5	22.7	79.770
73	80.57	0.686	72.5	37.1	79.884																																								
74	80.69	0.736	72.5	45.9	79.954																																								
																				75	80.82	0.752	72.5	60.3	80.068																				
																				76	81.20	1.054	72.5	70.2	80.146																				
																				506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.8	-0.068	0.97	79.591	78.725	59	79.58	-0.011				
																																								59	79.58	0.716	76.5	12.3	78.864
																																								60	79.72	0.693	76.5	26.7	79.027
																																								61	79.86	0.686	76.5	39.7	79.174
																																								62	80.00	0.663	76.5	54.1	79.337
																																								63	80.12	0.634	76.5	67.2	79.486
																																								70	80.18	0.641	76.5	71.9	79.539
																				508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.13	0.27	0.6	-0.234	0.97	78.622	77.711	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.53	0.8	-0.159	0.98	77.711	75.998	N/A	N/A	N/A																								
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.42	0.06	0.6	-0.134	0.95	77.618	76.733	90-2	77.72	0.102																								
																				88-1	78.32	1.071	88.5	51.6	77.249																				
																				88-4	78.32	0.859	88.5	72.8	77.461																				
																				89-1	78.00	1.034	88.5	23.3	76.966																				
																				89-4	78.00	0.822	88.5	44.5	77.178																				
																				90-2	77.72	0.961	88.5	2.6	76.759																				
																				90-4	77.72	0.820	88.5	16.7	76.900																				
																				96-1	78.46	1.122	88.5	60.5	77.338																				
																				96-5	78.46	0.873	88.5	85.4	77.587																				
																				97-1	78.08	1.021	88.5	32.6	77.059																				
																				97-4	78.08	0.809	88.5	53.8	77.271																				
																				98-2	77.80	1.009	88.5	5.8	76.791																				
																				98-5	77.80	0.807	88.5	26.0	76.993																				
																				511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.20	0.5	-0.247	0.95	76.620	75.998	100-1	77.19	0.570				
																				100-1	77.19	1.043	75.0	18.0	76.147																				
																				100-4	77.19	0.867	75.0	39.2	76.323																				
																				90-1	77.72	1.138	75.0	70.4	76.582																				

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			91-1	77.47	1.169	75.0	36.5	76.301
																			91-5	77.47	0.943	75.0	63.8	76.527
																			92-1	77.33	1.263	75.0	8.3	76.067
																			92-4	77.33	1.087	75.0	29.5	76.243
																			98-1	77.80	1.191	75.0	73.7	76.609
																			99-1	77.47	1.092	75.0	45.8	76.376
																			99-4	77.47	0.916	75.0	67.0	76.554
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.81	0.09	0.4	-0.214	0.95	77.904	75.998	101-1	77.24	-0.664			
																			102	77.52	0.905	119.0	38.5	76.615
																			102	77.52	0.761	119.0	47.5	76.759
																			101-1	77.24	0.723	119.0	32.4	76.517
																			101-4	77.24	1.063	119.0	11.2	76.177
																			103-1	78.08	0.876	119.0	75.3	77.204
																			103-4	78.08	1.215	119.0	54.1	76.865
																			104-1	78.52	0.972	119.0	96.8	77.548
																			104-3	78.52	1.213	119.0	81.7	77.307
																			105-1	78.53	0.648	119.0	117.6	77.882
																			105-3	78.53	0.876	119.0	103.4	77.654
																			93-1	77.74	1.140	119.0	37.6	76.600
																			93-5	77.74	1.575	119.0	10.4	76.165
																			94-1	77.88	0.722	119.0	72.4	77.158
																			94-5	77.88	1.160	119.0	45.1	76.720
																			95-1	78.67	0.961	119.0	106.8	77.709
95-5	78.67	1.399	119.0	79.5	77.271																			
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.08	0.03	0.2	-0.263	0.95	77.904	76.986	25	78.18	0.276			
																			17	78.54	1.349	114.5	25.6	77.191
																			18	78.54	1.293	114.5	32.6	77.247
																			19	78.59	1.074	114.5	66.1	77.516
																			20	78.59	1.514	114.5	11.2	77.076
																			21	78.58	0.949	114.5	80.5	77.631
																			22	78.67	0.969	114.5	89.2	77.701
																			23	78.75	1.455	114.5	38.6	77.295
																			24	78.75	1.339	114.5	53.0	77.411
																			25	78.18	1.166	114.5	3.5	77.014
																			26	78.23	1.157	114.5	10.8	77.073
																			27	78.29	1.102	114.5	25.2	77.188
																			28	78.34	0.523	114.5	103.6	77.817
																			29	78.40	0.939	114.5	59.3	77.461
																			30	78.45	1.191	114.5	34.0	77.259
																			31	78.51	1.136	114.5	48.4	77.374
32	78.56	0.983	114.5	73.7	77.577																			
33	78.56	0.913	114.5	82.4	77.647																			
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.10	77.936	77.720	Est. Fut.	78.68	0.744			
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.90	1.04	0.7	-0.156	0.98	75.998	75.313	N/A	N/A	N/A			
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.07	0.06	0.3	-0.270	1.05	75.638	75.303						

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				97-4	76.30	1.061	78.0	66.2	75.239
																				99-1	76.23	1.305	78.0	8.1	74.925
																				99-3	76.23	1.223	78.0	23.2	75.007
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.83	0.06	0.5	-0.157	1.03	74.881	73.216	113-2	74.43	-0.451				
																				114	74.86	1.299	86.5	17.9	73.561
																				114	74.86	1.126	86.5	26.9	73.734
																				102-1	75.69	1.425	86.5	54.5	74.265
																				102-4	75.69	1.017	86.5	75.7	74.673
																				103-1	75.32	1.590	86.5	26.7	73.730
																				103-4	75.32	1.182	86.5	47.9	74.138
																				104-1	74.57	1.260	86.5	4.9	73.310
																				104-3	74.57	0.969	86.5	20.0	73.601
																				113-2	74.43	1.129	86.5	4.4	73.301
																				113-3	74.43	0.993	86.5	11.5	73.437
																				115-1	75.54	1.683	86.5	33.3	73.857
																				115-3	75.54	1.392	86.5	48.4	74.148
																				116-1	75.93	1.653	86.5	55.1	74.277
																				116-4	75.93	1.245	86.5	76.3	74.685
																				48	75.25	0.369			
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.24	1.16	0.7	-0.201	1.03	74.881	73.926	48	75.25	0.369				
																				48	75.25	1.271	88.5	4.9	73.979
																				49	75.59	1.456	88.5	19.3	74.134
																				50	76.24	1.957	88.5	33.1	74.283
																				100-1	76.17	1.503	88.5	68.7	74.667
																				100-3	76.17	1.351	88.5	82.8	74.819
																				101-2	76.39	1.880	88.5	54.1	74.510
																				101-3	76.39	1.794	88.5	62.1	74.596
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.42	0.11	0.7	-0.115	1.05	73.216	70.673	108-1	71.98	-1.236				
																				106	73.27	0.734	87.5	64.1	72.536
																				106	73.27	0.996	87.5	55.1	72.274
																				112	73.88	1.222	87.5	68.3	72.658
																				112	73.88	0.960	87.5	77.3	72.920
																				105-1	73.98	1.258	87.5	70.5	72.722
																				105-3	73.98	0.819	87.5	85.6	73.161
																				107-1	72.82	1.345	87.5	27.6	71.475
																				107-4	72.82	0.729	87.5	48.8	72.091
																				108-1	71.98	1.136	87.5	5.9	70.844
																				108-3	71.98	0.697	87.5	21.0	71.283
																				109-1	72.10	1.319	87.5	3.7	70.781
																				109-3	72.10	0.881	87.5	18.8	71.219
																				110-1	72.62	1.220	87.5	25.0	71.400
																				110-3	72.62	0.782	87.5	40.1	71.838
																				111-1	73.30	1.281	87.5	46.3	72.019
																				111-3	73.30	0.828	87.5	61.9	72.472
																				113-1	74.43	1.324	87.5	83.7	73.106
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.87	0.44	0.4	-0.278	1.03	70.454	70.036	22	71.62	1.166				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.86																	

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			19	70.14	1.419	79.5	58.1	68.721
																			20	70.77	1.534	79.5	72.5	69.236
																			21	71.17	1.770	79.5	77.1	69.400
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.60	0.03	0.1	-0.290	0.95	76.931	76.586	15	78.33	1.399			
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.55	0.08	0.1	-0.342	0.95	76.540	73.244	9	75.24	-1.300			
																			9	75.24	1.555	69.5	9.3	73.685
																			10	75.66	1.449	69.5	20.4	74.211
																			11	76.22	1.326	69.5	34.8	74.894
																			12	76.80	1.488	69.5	43.6	75.312
																			13	77.37	1.375	69.5	58.0	75.995
																			14	77.72	1.370	69.5	65.5	76.350
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.56	0.08	0.3	-0.302	0.95	73.244	73.231	7	75.09	1.846			
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.95	0.19	0.5	-0.298	0.98	73.231	72.989	5	74.99	1.759			
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.01	1.37	0.4	-0.499	1.03	72.361	70.259	32	71.51	-0.851			
																			32	71.51	1.174	60.0	2.2	70.336
																			33	72.20	1.605	60.0	9.6	70.595
																			34	72.90	1.898	60.0	21.2	71.002
																			35	73.59	2.182	60.0	32.8	71.408
																			36	74.30	2.387	60.0	47.2	71.913
																			42	71.67	1.190	60.0	6.3	70.480
																			43	72.31	1.683	60.0	10.5	70.627
																			44	73.07	1.939	60.0	24.9	71.131
																			45	73.65	2.273	60.0	31.9	71.377
																			46	74.31	2.429	60.0	46.3	71.881
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.58	1.0	-0.150	1.05	67.284	66.785	13	67.89	0.606			
																			11	67.97	1.121	65.0	8.4	66.849
																			12	67.91	0.945	65.0	23.4	66.965
																			13	67.89	0.858	65.0	32.2	67.032
																			14	67.89	0.747	65.0	46.6	67.143
																			23	68.16	1.226	65.0	19.4	66.934
																			24	68.23	1.187	65.0	33.6	67.043
																			25	68.23	1.082	65.0	47.3	67.148
																			26	68.28	1.043	65.0	58.9	67.237
																			37	68.30	1.028	65.0	63.5	67.272
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.66	2.20	0.8	-0.273	1.05	66.643	65.728	7	66.89	0.247			
																			7	66.89	1.129	39.0	1.4	65.761
																			8	67.37	1.356	39.0	12.2	66.014
																			9	67.82				

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				62	78.72	1.084	92.0	20.1	77.636
																				63	78.74	0.844	92.0	33.8	77.896
																				64	79.82	1.116	92.0	76.3	78.704
																				64	79.82	1.272	92.0	68.1	78.548
																				65	79.96	1.131	92.0	82.9	78.829
																				65	79.96	1.222	92.0	78.1	78.736
																				66	80.11	1.216	92.0	86.3	78.894
																				66	80.11	1.249	92.0	84.6	78.861
																				67	80.11	1.140	92.0	90.3	78.970
																				67	80.11	1.178	92.0	88.3	78.932
																				68	79.92	0.939	92.0	90.9	78.981
																				68	79.92	0.918	92.0	92.0	79.002
																				69	79.99	1.009	92.0	90.9	78.981
																				69	79.99	1.058	92.0	88.3	78.932
																				72	78.57	1.021	92.0	15.5	77.549
																				72	78.57	1.183	92.0	7.0	77.387
																				70-1	79.75	1.392	92.0	58.1	78.358
70-4	79.75	0.963	92.0	80.7	78.787																				
71-1	79.32	1.581	92.0	25.5	77.739																				
71-4	79.32	1.152	92.0	48.1	78.168																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.40	0.11	0.3	-0.218	0.97	77.229	74.939	79	76.31	-0.919				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.863	77.5	41.9	76.177
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.905	77.5	23.9	75.645
																				76	77.90	0.845	77.5	71.6	77.055
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.829	77.5	53.2	76.511
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
73-1	77.95	1.477	77.5	51.9	76.473																				
73-4	77.95	0.810	77.5	74.5	77.140																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.188	0.97	74.913	74.579	80-4	75.75	0.837				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	0.97	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
81-4	74.96	1.057	30.5	11.6	73.903																				
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	0.97	73.486	72.282	82-1	74.07	0.584				
																				59	74.11	1.479	54.5	15.8	72.631
																				60	74.12	1.171	54.5	30.2	72.949
																				78-1	75.03	1.783	54.5	43.7	73.247
																				81-1	74.96	1.673	54.5	45.5	73.287
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.477	54.5	14.1	72.593
82-4	74.07	0.977	54.5	36.7	73.093																				
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430																	

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.54	0.03	0.2	-0.203	0.95	74.621	73.420	87	74.99	0.369				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.77	0.03	0.2	-0.212	0.95	73.382	72.294	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.48	0.7	-0.232	0.98	72.282	71.945	83-1	73.46	1.178				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.46	1.02	0.3	-0.726	1.05	71.194	70.692	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.38	0.00	0.0	-0.268	1.03	74.878	74.645	57	75.47	0.592				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.47	0.51	0.5	-0.289	1.03	74.878	72.728	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.07	0.05	0.3	-0.290	1.05	76.033	75.638	94-1	76.73	0.697				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	1.99	0.20	0.3	-0.372	1.05	76.033	74.878	56	76.20	0.167				
																				51	77.19	1.451	105.0	78.3	75.739
																				52	77.15	1.568	105.0	64.0	75.582
																				53	76.91	1.448	105.0	53.1	75.462
																				54	76.63	1.326	105.0	38.7	75.304
																				55	76.37	1.182	105.0	28.2	75.188
																				56	76.20	1.170	105.0	13.8	75.030
																				91-1	77.44	1.612	105.0	86.4	75.828
91-4	77.44	1.419	105.0	103.9	76.021																				
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.64	1.37	0.5	-0.407	1.03	69.052	67.284	27	68.65	-0.402				
																				27	68.65	1.228	60.0	4.7	67.422
																				28	69.07	1.223	60.0	19.1	67.847
																				29	69.63	1.580	60.0	26.0	68.050
																				30	70.23	1.756	60.0	40.4	68.474
																				31	70.87	2.189	60.0	47.4	68.681
																				38	68.95	1.239	60.0	14.5	67.711
																				39	69.64	1.504	60.0	28.9	68.136
40	70.34	1.948	60.0	37.6	68.392																				
41	71.03	2.296	60.0	49.2	68.734																				
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	1.96	0.21	0.4	-0.260	1.10	76.525	76.160	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.42	0.31	0.4	-0.319	0.98	71.175	70.454	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	-0.05	0.00	0.0	0.049	1.12	68.015	68.015	9-2	68.47	0.455				
																				10-1	68.47	0.455	7.0	3.5	68.015
																				10-2	68.47	0.455	7.0	2.8	68.015
																				11-1	68.62	0.605	7.0	5.3	68.015
																				11-2	68.62	0.605	7.0	5.3	68.015
																				12-2	68.54	0.525	7.0	1.7	68.015
9-2	68.50	0.485	7.0	2.4	68.015																				
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.10	1.1	0.104	1.02	68.015	67.690	6-1	68.23	0.215				
																				12-1	68.54	0.551	32.5	29.9	67.989
																				13-1	68.43	0.612	32.5	12.8	67.818
																				13-2	68.43	0.528	32.5	21.2	67.902
																				14-2	68.42	0.703	32.5	2.7	67.717
																				6-1	68.23	0.454	32.5	8.6	67.776
																				6-2	68.23	0.498	32.5	4.2	67.732
																				7-1	68.28	0.484	32.5	10.6	67.796
																				7-2	68.28	0.493	32.5	9.7	67.787
																				8-1	68.36	0.533	32.5	13.7	67.827
																				8-2	68.36	0.453	32.5	21.7	67.907
9-1	68.50	0.543	32.5	26.7	67.957																				
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.16	0.25	1.2	0.055	1.02	67.690	67.256	17-1	68.23	0.540				
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.866	77.0	52.9	67.554

Table B-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.818	77.0	61.3	67.602
																				16-1	68.29	0.840	77.0	34.4	67.450
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.888	77.0	15.2	67.342
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.02	66.691	65.529	4-1	66.76	0.069				
																				4-1	66.76	1.195	51.5	1.6	65.565
																				4-2	66.76	1.005	51.5	10.0	65.755
																				5-1	67.15	1.122	51.5	22.1	66.028
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.897	51.5	8.6	65.723
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full
⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.141 Interpolated HGL elevation

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.89	0.06	0.3	-0.182	11.93	62.786	60.136	B92L1	61.17	-1.616				
																				B92L1	61.17	0.970	90.9	2.2	60.200
																				B93	61.89	1.436	90.9	10.9	60.454
																				B94	62.24	1.124	90.9	33.6	61.116
																				B95	62.74	0.986	90.9	55.5	61.754
																				B96	63.53	1.196	90.9	75.4	62.334
																				B97	63.52	1.224	90.9	74.1	62.296
																				B98	62.59	1.058	90.9	47.9	61.532
																				B99	61.56	1.287	90.9	4.7	60.273
101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.30	0.25	1.3	0.171	11.93	60.136	59.789	B92L3	61.17	1.034				
102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.04	0.28	0.9	-0.080	11.93	59.705	58.389	L88	60.83	1.125				
																				L88	60.83	2.287	45.2	5.3	58.543
																				L89	61.05	2.026	45.2	21.8	59.024
																				L90	60.93	1.662	45.2	30.2	59.268
																				L91	60.90	1.227	45.2	44.1	59.673
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.12	0.29	0.9	-0.046	11.93	58.389	58.053	L85	58.99	0.601				
																				L85	58.99	0.895	34.0	4.3	58.095
																				L86	59.79	1.602	34.0	13.7	58.188
																				L87	60.00	1.654	34.0	29.6	58.346
105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.29	0.66	1.1	0.094	11.95	58.053	57.246	L81	58.16	0.107				
																				L81	58.16	0.770	66.9	11.9	57.390
																				L80	58.39	1.109	66.9	2.9	57.281
																				L82	58.22	0.656	66.9	26.4	57.564
																				L83	58.40	0.645	66.9	42.2	57.755
																				L84	58.95	1.062	66.9	53.2	57.888
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.92	0.66	1.1	-0.043	11.95	57.246	57.054	L79	58.44	1.194				
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.45	0.66	1.0	-0.155	11.95	57.054	56.982	L74	58.91	1.856				
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.49	0.65	1.0	-0.151	11.95	56.982	56.867	L73	59.22	2.238				
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.18	0.6	-0.152	11.93	60.719	58.053	L75	59.26	-1.459				
																				L75	59.26	0.806	116.3	17.5	58.454
																				L76	59.55	0.647	116.3	37.1	58.903
																				B103SD	60.07	0.717	116.3	56.7	59.353
																				B104SD	60.75	0.962	116.3	75.7	59.788
																				B105SD	61.36	1.136	116.3	94.7	60.224
																				B106SD	62.05	1.388	116.3	113.8	60.662
																				B102L1	61.93	1.275	116.3	113.5	60.655
																				B102L4	61.55	1.413	116.3	90.9	60.137
																				B101L1	60.92	1.074	116.3	78.2	59.846
																				B101L4	60.52	1.192	116.3	55.6	59.328
B100L1	59.97	0.881	116.3	45.2	59.089																				
B100L4	59.58	1.009	116.3	22.6	58.571																				
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.75	0.01	0.1	-0.251	11.93	63.205	62.739	L60	63.78	0.575				
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.79	0.03	0.2	-0.207	11.93	62.739	60.904	L66	62.23	-0.509				
																				L66	62.23	1.298	65.6	1.0	60.932
																				L65	62.47	1.149	65.6	14.9	61.321
																				L64	62.67	1.036	65.6	26.1	61.634
																				L63	63.00	0.932	65.6	41.6	62.068
																				L62	63.31	1.066	65.6	47.9	62.244
																				L61	63.58	1.028	65.6	58.9	62.552
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.90	0.08	0.3	-0.230	11.93	60.882	59.862	B108L4	61.64	0.758				

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.79	5.05	0.8	-0.316	11.98	58.719	58.170	L71	59.63	0.911				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.45	5.05	0.8	-0.103	11.98	57.073	56.867	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	2.94	2.03	0.6	-0.478	11.95	65.900	65.525	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	3.05	2.11	0.6	-0.485	11.95	64.547	63.713	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.12	4.03	0.8	-0.462	11.95	63.248	62.944	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.15	4.13	0.8	-0.452	11.97	61.668	61.240	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.94	4.47	0.9	-0.284	11.97	60.416	59.994	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.419	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.72	0.30	1.0	0.474	11.95	62.419	60.492	B109L4	61.76	-0.659				
																			B109L4	61.76	0.493	62.4	25.1	61.267	
																			B109L1	61.76	0.496	62.4	25.0	61.264	
																			B110SD	62.44	0.623	62.4	42.9	61.817	
																			B111SD	63.15	0.845	62.4	58.7	62.305	
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.10	0.74	0.7	-0.248	11.97	59.125	58.154	L18	59.42	0.295				
																			L18	59.42	1.188	64.4	5.2	58.232	
																			L19	60.08	1.679	64.4	16.4	58.401	
																			L20	60.56	1.921	64.4	32.2	58.640	
																			L21	60.98	2.194	64.4	41.9	58.786	
																			L22	61.39	2.369	64.4	57.5	59.021	
																			L24	61.34	2.456	64.4	48.4	58.884	
																			L35	61.06	2.414	64.4	32.6	58.646	
																			L26	60.61	2.138	64.4	21.1	58.472	
																			L27	59.90	1.663	64.4	5.5	58.237	
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.18	0.74	0.7	-0.257	11.98	56.948	55.985	L14	57.61	0.662				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.00	0.80	0.8	-0.211	11.98	54.834	53.941	L9	55.68	0.846				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.55</													

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				L42 L41	61.29 60.68	1.631 1.154	61.7 61.7	18.7 11.3	59.659 59.526			
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.82	0.8	-0.111	11.95	57.430	56.093	L36	57.89	0.460							
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.31	1.67	0.9	-0.232	11.97	62.972	62.722	N/A	N/A	N/A							
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.36	1.71	0.9	-0.229	11.97	61.138	60.106	N/A	N/A	N/A							
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.11	7.67	0.9	-0.362	12.00	53.716	53.573	L3	58.26	4.544							
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.99	8.89	0.9	-0.277	12.00	53.573	53.335	L8	55.21	1.637							
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.18	0.10	0.3	-0.219	11.97	69.821	67.826	B54L4	69.35	-0.471							
																				B54L4	69.35	1.411	83.1	4.7	67.939			
																				B54L1	69.35	0.962	83.1	23.4	68.388			
																				B56L4	70.19	1.637	83.1	30.3	68.553			
																				B56L1	70.19	1.128	83.1	51.5	69.062			
																				B57SD	70.63	1.212	83.1	66.3	69.418			
																				B43L4	71.22	1.632	83.1	73.4	69.588			
																				B58L4	70.88	1.227	83.1	76.1	69.653			
																				B58L1	70.88	1.738	83.1	54.8	69.142			
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	1.96	0.10	0.3	-0.204	11.97	67.784	67.478	B53L3	68.90	1.116							
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.33	0.53	0.9	-0.147	11.97	66.514	65.437	B47L4	66.63	0.116							
																				B47L4	66.63	1.039	119.4	17.1	65.591			
																				B47L1	66.63	0.848	119.4	38.3	65.782			
																				B48L4	67.21	1.366	119.4	45.1	65.844			
																				B48L1	67.21	1.175	119.4	66.3	66.035			
																				B49L4	67.77	1.675	119.4	72.9	66.095			
																				B49L1	67.77	1.484	119.4	94.1	66.286			
																				B50SD	68.07	1.647	119.4	109.3	66.423			
																				B51L3	68.41	1.933	119.4	115.3	66.477			
																				B59L4	68.18	1.770	119.4	107.9	66.410			
																				B59L1	68.18	1.961	119.4	86.7	66.219			
																				B60SD	67.97	1.813	119.4	79.8	66.157			
																				B61L4	67.31	1.289	119.4	64.7	66.021			
																				B61L1	67.31	1.481	119.4	43.5	65.829			
																				B62L4	66.89	1.120	119.4	36.9	65.770			
																				B62L1	66.89	1.311	119.4	15.7	65.579			
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.80	0.70	0.8	-0.230	11.97	65.355	64.355	L41	65.57	0.215							
																				L41	65.57				1.201	83.2	1.2	64.369
																				L42	65.98				1.456	83.2	14.1	64.524
																				L43	66.07				1.401	83.2	26.1	64.669
																				L44	66.12				1.278	83.2	40.5	64.842
																				L45	66.23				1.263	83.2	50.9	64.967
																				L46	66.87	1.724	83.2	65.8	65.146			
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.87	0.12	0.5	-0.155	11.95	66.167	65.392	N/A	N/A	N/A							
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.14	0.68	0.4	-0.338	11.95	71.089	70.280	B102L5	72.70	1.611							
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.10	0.01	0.1	-0.238	11.95	71.089	69.821	B42SD	71.19	0.101							
																				B42SD	71.19	1.213	71.4	8.8	69.977			
																				B41L1	71.59	1.497	71.4	15.3	70.093			
																				B41L4	71.59	1.119	71.4	36.6	70.471			
																				B40L1	71.88	1.295	71.4	43.0	70.585			
																				B40L3	71.88	1.027	71.4	58.1	70.853			
																				B563L1	72.21	1.284	71.4	62.2	70.926			
																				B45L1	71.98	1.168	71.4	55.8	70.812			

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B45L4	71.98	1.546	71.4	34.5	70.434
																				B44SD	71.47	1.161	71.4	27.5	70.309
																				B43L1	71.47	1.438	71.4	11.9	70.032
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.98	5.82	1.0	-0.235	11.98	56.867	56.420	L32	58.76	1.893				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.89	0.30	1.5	0.297	11.95	60.492	60.037	N/A	N/A	N/A				
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.86	5.83	1.0	-0.109	11.98	56.420	56.021	L11	58.85	2.430				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.38	6.00	0.7	-0.399	11.98	54.168	53.716	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.01	0.19	0.3	-0.212	11.85	54.212	54.207	L22	54.73	0.518				
																				L22	54.73	0.518	28.2	25.9	54.212
																				L21	54.73	0.518	28.2	27.4	54.212
																				L20	55.10	0.889	28.2	22.9	54.211
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.09	0.25	0.4	-0.117	11.93	54.207	54.177	L19	55.79	1.583				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.75	0.70	0.8	-0.221	11.97	64.338	63.965	L39	65.04	0.702				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.77	0.73	0.8	-0.207	11.97	63.962	63.612	L37	64.89	0.928				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.55	0.92	0.9	-0.175	11.95	63.433	63.025	L34	64.28	0.847				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	11.97	67.451	67.098	L339	68.56	1.109				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	11.95	65.521	64.337	L347	65.57	0.049				
																				L347	65.57	1.199	52.4	1.5	64.371
																				L346	66.07	1.213	52.4	23.0	64.857
																				L345	66.61	1.550	52.4	32.0	65.060
																				L344	67.15	1.760	52.4	46.6	65.390
																				3-1	66.15	1.054	52.4	33.6	65.096
																				1	65.55	0.723	52.4	21.7	64.827
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.53	0.77	0.7	-0.126	12.02	63.958	62.972	L58	64.18	0.222				
																				L58	64.18	0.871	55.0	18.8	63.309
																				L57	64.44	0.823	55.0	36.0	63.617
																				L56	64.75	0.903	55.0	48.8	63.847
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.48	1.29	0.9	-0.333	11.97	69.215	69.096	18-1	69.48	0.265				
																				18-1	69.48	0.356	80.5	18.7	69.124
																				18-2	69.48	0.344	80.5	27.1	69.136
																				19-1	69.51	0.359	80.5	37.2	69.151
																				19-2	69.51	0.347	80.5	45.6	69.163
																				20-1	69.54	0.361	80.5	55.9	69.179
																				20-2	69.54	0.349	80.5	64.4	69.191
																				21-1	69.57	0.364	80.5	74.5	69.206
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.74	0.28	1.7	0.439	11.98	69.096	68.419	N/A	N/A	N/A				
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.13	N/A	N/A	11.98	69.096	68.400	N/A	N/A	N/A				
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.58	0.71	0.5	-0.407	11.95	70.016	69.479	B92L1	70.77	0.754				
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	1.99	0.78	0.6	-0.369	11.95	69.479	69.321	B94L4	70.08	0.601				
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.52	0.80	0.6	-0.339	11.97	69.321	69.215	21-2	69.57	0.249				
																				21-2	69.57	0.351	64.0	2.7	69.219
																				22-1	69.60	0.364	64.0	12.7	69.236
																				22-2	69.60	0.350	64.0	21.2	69.250
																				23-1	69.63	0.363	64.0	31.1	69.267
																				23-2	69.63	0.350	64.0	39.4	69.280
																				24-1	69.67	0.373	64.0	49.5	69.297
																				24-2	69.67	0.359	64.0	58.0	69.311
																				B95-1	69.95	0.709	64.0	15.9	69.241
																				B95-4	69.95	0.673	64.0	37.7	69.277
																				B94-1	70.08	0.790	64.0	45.4	69.290

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.08	0.08	0.3	-0.235	11.93	68.667	66.167	B36SD	68.23	-0.437				
																				B36SD	68.23	1.680	101.9	15.6	66.550
																				B37L4	68.70	2.001	101.9	21.7	66.699
																				B37L1	68.70	1.480	101.9	42.9	67.220
																				B38L4	69.31	1.931	101.9	49.4	67.379
																				B38L1	69.31	1.411	101.9	70.6	67.899
																				B39L4	69.62	1.547	101.9	77.7	68.073
																				B39L1	69.62	1.024	101.9	99.0	68.596
																				B47L1	69.23	0.786	101.9	92.8	68.444
																				B47L4	69.23	1.346	101.9	70.0	67.884
																				B48L1	68.82	1.061	101.9	64.9	67.759
																				B48L4	68.82	1.581	101.9	43.7	67.239
																				B49SD	68.53	1.455	101.9	37.0	67.075
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.42	-0.01	-0.1	-0.237	11.95	69.535	69.651	B96L1	70.07	0.535				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.26	1.88	0.6	-0.347	12.02	68.901	68.048	Fut. Est.	72.09	3.189				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.03	0.04	0.3	-0.239	11.93	72.440	71.786	B107L1	72.89	0.450				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.67	0.04	0.3	-0.155	11.95	71.786	71.773	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.40	0.19	1.1	-0.084	11.95	71.773	71.562	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.50	0.62	0.6	-0.210	11.95	71.495	71.130	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.99	0.03	0.4	-0.169	11.93	72.395	71.787	B102L1	72.70	0.305				
																				B102L1	72.70	0.879	106.5	6.0	71.821
																				B102L5	72.70	0.713	106.5	35.1	71.987
																				B103L1	72.87	0.827	106.5	44.8	72.043
																				B103L4	72.87	0.707	106.5	65.8	72.163
																				B104L1	73.05	0.830	106.5	75.8	72.220
																				B104L5	73.05	0.666	106.5	104.5	72.384
																				B105L10	73.24	0.880	106.5	100.3	72.360
																				B105L6	73.24	1.038	106.5	72.7	72.202
																				B106L10	73.08	0.937	106.5	62.3	72.143
																				B106L6	73.08	1.093	106.5	35.1	71.987
																				B107L10	72.89	0.953	106.5	26.3	71.937
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.08	0.05	0.5	-0.108	11.95	71.787	71.559	B107L6	72.89	1.103				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.46	0.71	0.5	-0.385	11.95	70.280	70.050	B100SD	72.25	1.970				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.105	11.95	63.161	62.635	L1	64.26	1.099				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.15	0.45	0.8	-0.188	11.97	62.587	61.965	L14	63.44	0.853				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.48	0.49	0.8	-0.207	11.98	61.918	61.305	L10	63.20	1.282				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.27	0.54	0.7	-0.246	11.97	61.269	60.798	L5	63.33	2.061				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.55	0.63	0.7	-0.236	11.97	60.781	60.382	L2	62.35	1.569				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.94	0.29	1.1	-0.029	11.95	68.007	67.181	L334	68.05	0.043				
																				L334	68.05	0.728	87.0	14.9	67.322
																				L335	68.12	0.730	87.0	22.0	67.390
																				B610L1	68.12	0.570	87.0	38.9	67.550
																				B610L5	68.18	0.347	87.0	68.7	67.833
																				B611L1	68.53	0.681	87.0	70.4	67.849
																				B111L4	68.45	0.815	87.0	47.8	67.635
																				B612SD	68.45	0.912	87.0	37.6	67.538
																				B613SD	68.40	1.055	87.0	17.3	67.345
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.09	N/A	N/A	11.95	68.007	67.840	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.84	7.76	0.7	-0.695	11.98	67.597	67.146	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.38	0.21	0.8	-0.088	11.98	64.960	62.981	L19	64.58	-0.380				

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L19	64.58	1.138	82.0	19.1	63.442
																				L20	64.99	1.225	82.0	32.5	63.765
																				L21	65.74	1.610	82.0	47.6	64.130
																				L22	66.37	1.905	82.0	61.5	64.465
																				L23	67.00	2.192	82.0	75.7	64.808
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.16	0.01	0.0	-0.256	11.95	51.509	48.289	N/A	N/A	N/A				
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.48	0.03	0.1	-0.293	11.93	47.127	44.938	N/A	N/A	N/A				
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.56	0.19	0.8	-0.134	11.93	44.792	44.669	N/A	N/A	N/A				
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.73	0.08	0.7	-0.114	11.93	69.167	68.007	L34	69.22	0.053				
																				L34	69.22	0.958	82.8	18.2	68.262
																				L33	69.36	0.879	82.8	33.8	68.481
																				L32	69.53	0.929	82.8	42.4	68.601
																				L31	69.62	0.816	82.8	56.9	68.804
																				L30	69.82	0.891	82.8	65.8	68.929
																				L29	70.07	0.932	82.8	80.7	69.138
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.046	11.93	67.177	66.134	L325	67.35	0.173				
																				L325	67.35	1.171	72.5	3.1	66.179
																				L326	67.53	1.126	72.5	18.8	66.404
																				L327	67.79	1.269	72.5	26.9	66.521
																				L328	67.99	1.160	72.5	48.4	66.830
																				B614SD	68.21	1.055	72.5	71.0	67.155
																				L333	67.98	0.825	72.5	71.0	67.155
																				L332	67.91	0.883	72.5	62.1	67.027
																				L331	67.79	1.035	72.5	43.2	66.755
																				L330	67.63	0.992	72.5	35.0	66.638
																				L329	67.47	1.106	72.5	16.0	66.364
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.09	0.34	1.0	0.029	11.95	66.134	65.845	L324	67.08	0.946				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.129	11.97	65.811	64.583	L319	65.72	-0.091				
																				L319	65.72	0.802	77.0	21.0	64.918
																				L320	66.05	0.824	77.0	40.3	65.226
																				L321	66.39	1.037	77.0	48.3	65.353
																				L322	66.71	1.062	77.0	66.8	65.648
																				L323	66.89	1.194	77.0	69.8	65.696
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.01	0.49	0.6	-0.262	11.95	63.749	63.071	L123	64.76	1.011				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.164	11.95	66.097	65.715	B601SD	66.46	0.363				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.24	0.07	0.3	-0.271	11.95	65.609	65.215	B604SD	66.07	0.461				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.24	0.07	0.3	-0.272	11.95	65.185	64.897	L296	65.77	0.585				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	3.08	4.03	0.8	-0.443	11.95	72.640	72.248	B80L1	73.88	1.240				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	3.12	4.13	0.8	-0.434	11.95	71.065	70.689	B87SD	72.44	1.375				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	3.16	4.19	0.8	-0.426	11.95	69.916	69.512	B85L1	71.32	1.404				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	3.17	4.35	0.9	-0.405	11.97	69.512	69.099	L51	71.02	1.508				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	3.19	7.46	1.0	-0.502	11.98	68.048	67.711	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	5.32	7.87	0.5	-0.975	11.98	63.715	62.664	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	5.29	8.02	0.5	-0.955	11.98	62.204	61.659	N/A	N/A	N/A				
1007	1008	59.854	59.009	1950	65.0	1.3	0.013	64.500	62.180	5.433	16.224	4.38	10.32	0.6	-0.466	12.00	61.338	60.142	N/A	N/A	N/A				
1008	1009	52.061	51.805	2250	80.0	0.3	0.013	62.180	57.440	2.965	11.790	3.07	10.37	0.9	-0.466	12.00	53.845	53.644	N/A	N/A	N/A				
1009	1010	51.805	51.527	2250	87.0	0.3	0.013	57.440	57.070	2.965	11.790	2.98	10.35	0.9	-0.411	12.00	53.644	53.386	N/A	N/A	N/A				
1010	1011	51.527	51.252	2250	86.0	0.3	0.013	57.070	56.500	2.965	11.790	2.94	10.29	0.9	-0.391	12.00	53.386	53.137	N/A	N/A	N/A				
1011	1012	51.252	50.991	2250	81.5	0.3	0.013	56.500	56.600	2.965	11.790	2.91	10.31	0.9	-0.365	12.02	53.137	52.811	N/A	N/A	N/A				
1012	1013	50.991	50.681	2250	97.0	0.3	0.013	56.600	54.680	2.965	11.790	3.05	10.29	0.9	-0.430	12.02	52.811	52.192	N/A	N/A	N/A				

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.44	12.20	0.7	-0.860	12.02	51.770	51.542	N/A	N/A	N/A			
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.66	0.74	0.7	-0.195	11.93	52.508	51.964	N/A	N/A	N/A			
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.13	0.74	0.7	0.019	11.95	51.964	51.627	N/A	N/A	N/A			
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.33	0.23	0.6	-0.180	11.93	59.862	59.529	N/A	N/A	N/A			
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.39	1.48	0.8	-0.342	11.93	67.124	67.065	N/A	N/A	N/A			
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.68	4.77	0.7	-0.344	11.97	59.763	59.430	N/A	N/A	N/A			
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.99	0.49	0.6	-0.260	11.95	62.646	62.308	L45	63.24	0.594			
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.75	0.12	0.3	-0.265	11.97	66.710	66.514	B51L1	68.41	1.700			
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.74	2.98	0.9	-0.376	11.93	75.509	75.311	N/A	N/A	N/A			
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	0.98	0.23	0.4	0.148	11.93	54.177	54.168	L30	58.92	4.743			
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.72	0.02	0.2	-0.197	11.95	72.063	71.765	B103L8	72.87	0.807			
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.74	0.28	0.7	0.032	11.98	68.419	68.007	N/A	N/A	N/A			
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.34	0.19	0.8	-0.075	11.93	44.938	44.840	N/A	N/A	N/A			
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.089	11.97	65.821	65.714	N/A	N/A	N/A			
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	11.95	65.821	65.811	N/A	N/A	N/A			
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	2.47	3.65	1.2	0.347	12.03	50.489	50.396	N/A	N/A	N/A			
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	6.88	12.77	N/A	N/A	12.27	50.396	48.500	N/A	N/A	N/A			
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.44	0.63	0.8	-0.218	11.97	60.30							

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			B68L1	76.39	2.002	45.4	43.4	74.388
																			B67L4	75.19	1.003	45.4	33.4	74.187
																			B67L1	74.79	1.114	45.4	7.9	73.676
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.27	0.29 0.02	1.0 0.1	-0.091 -0.226	11.97 11.93	65.695 69.147	65.297 67.992	N/A L13	N/A 69.13	N/A -0.017			
																			L13	69.13	0.996	65.0	8.0	68.134
																			L12	69.49	1.144	65.0	19.9	68.346
																			L11	69.68	1.041	65.0	36.4	68.639
																			L10	69.81	0.983	65.0	47.0	68.827
																			L9	69.81	0.699	65.0	63.0	69.111
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.92	0.04	0.3	-0.191	11.93	67.992	65.666	L18	66.92	-1.072			
																			L18	66.92	1.019	72.3	7.3	65.901
																			L17	67.35	0.931	72.3	23.4	66.419
																			L16	67.80	1.024	72.3	34.5	66.776
																			L15	68.21	0.903	72.3	51.0	67.307
																			L14	68.67	0.968	72.3	63.3	67.702
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.18 2.08	0.04 0.11	0.4 0.5	-0.141 -0.196	11.95 11.97	65.662 67.840	65.422 66.291	N/A L24	N/A 67.63	N/A -0.210			
																			L24	67.63	1.209	86.0	7.2	66.421
																			L25	68.23	1.557	86.0	21.2	66.673
																			L26	68.95	1.998	86.0	36.7	66.952
																			L27	69.33	2.131	86.0	50.4	67.199
																			L28	69.33	1.827	86.0	67.3	67.503
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.40	1.22	0.8	-0.305	11.98	68.400	68.048	L35	69.61	1.210			
																			L35	69.61	1.275	103.5	84.3	68.335
																			L36	70.01	1.718	103.5	71.8	68.292
																			L37	70.32	2.068	103.5	59.9	68.252
																			L38	70.49	2.288	103.5	45.3	68.202
																			L39	70.49	2.318	103.5	36.4	68.172
																			L40	70.36	2.235	103.5	22.5	68.125
																			L46	70.51	2.382	103.5	23.6	68.128
																			L45	70.56	2.384	103.5	37.7	68.176
																			L44	70.58	2.374	103.5	46.4	68.206
																			L43	70.32	2.065	103.5	61.0	68.255
																			L42	70.06	1.765	103.5	72.5	68.295
																			L41	69.67	1.332	103.5	85.4	68.338
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.258	84	80.14	-0.092			
																			79	81.31	1.129	74.0	72.1	80.181
																			80	81.20	1.403	74.0	57.7	79.797
																			81	80.82	1.370	74.0	44.7	79.450
																			82	80.66	1.594	74		

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				37	79.14	1.243	88.0	47.5	77.897																				
																				38	79.19	1.265	88.0	54.4	77.925																				
																				39	79.25	1.268	88.0	68.8	77.982																				
																				40	79.31	1.292	88.0	77.6	78.018																				
																				52	79.54	1.491	88.0	85.4	78.049																				
																				53	79.46	1.436	88.0	79.3	78.024																				
																				54	79.43	1.463	88.0	64.9	77.967																				
																				55	79.43	1.515	88.0	51.9	77.915																				
																				56	79.32	1.462	88.0	37.5	77.858																				
																				57	79.23	1.416	88.0	26.6	77.814																				
																				58	79.12	1.366	88.0	11.6	77.754																				
																				505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	1.00	0.03	0.3	-0.191	11.93	80.157	79.586	64	80.26	0.103				
																																								64	80.26	0.635	72.5	4.9	79.625
																																								65	80.40	0.671	72.5	18.2	79.729
																																								66	80.54	0.697	72.5	32.6	79.843
																																								67	80.65	0.721	72.5	43.5	79.929
																																								68	80.77	0.728	72.5	57.9	80.042
																																								69	80.92	0.787	72.5	69.4	80.133
																																								71	80.32	0.658	72.5	9.7	79.662
																																								72	80.46	0.695	72.5	22.7	79.765
73	80.57	0.692	72.5	37.1	79.878																																								
74	80.69	0.742	72.5	45.9	79.948																																								
																				75	80.82	0.759	72.5	60.3	80.061																				
																				76	81.20	1.061	72.5	70.2	80.139																				
																				506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.8	-0.073	11.95	79.586	78.722	59	79.58	-0.006				
																																								59	79.58	0.719	76.5	12.3	78.861
																																								60	79.72	0.696	76.5	26.7	79.024
																																								61	79.86	0.690	76.5	39.7	79.170
																																								62	80.00	0.667	76.5	54.1	79.333
																																								63	80.12	0.639	76.5	67.2	79.481
																																								70	80.18	0.646	76.5	71.9	79.534
																				508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.13	0.26	0.6	-0.236	11.95	78.620	77.708	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.52	0.8	-0.162	11.95	77.708	75.993	N/A	N/A	N/A																								
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.41	0.06	0.6	-0.136	11.93	77.616	76.730	90-2	77.72	0.104																								
																				88-1	78.32	1.073	88.5	51.6	77.247																				
																				88-4	78.32	0.861	88.5	72.8	77.459																				
																				89-1	78.00	1.037	88.5	23.3	76.963																				
																				89-4	78.00	0.824	88.5	44.5	77.176																				
																				90-2	77.72	0.964	88.5	2.6	76.756																				
																				90-4	77.72	0.823	88.5	16.7	76.897																				
																				96-1	78.46	1.124	88.5	60.5	77.336																				
																				96-5	78.46	0.875	88.5	85.4	77.585																				
																				97-1	78.08	1.024	88.5	32.6	77.056																				
																				97-4	78.08	0.811	88.5	53.8	77.269																				
																				98-2	77.80	1.012	88.5	5.8	76.788																				
																				98-5	77.80	0.810	88.5	26.0	76.990																				
																				511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.251	11.95	76.616	75.993	100-1	77.19	0.574				
																				100-1	77.19	1.047	75.0	18.0	76.143																				
																				100-4	77.19	0.871	75.0	39.2	76.319																				
																				90-1	77.72	1.142	75.0	70.4	76.578																				

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				91-1	77.47	1.174	75.0	36.5	76.296
																				91-5	77.47	0.947	75.0	63.8	76.523
																				92-1	77.33	1.268	75.0	8.3	76.062
																				92-4	77.33	1.092	75.0	29.5	76.238
																				98-1	77.80	1.195	75.0	73.7	76.605
																				99-1	77.47	1.097	75.0	45.8	76.373
																				99-4	77.47	0.920	75.0	67.0	76.550
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.79	0.08	0.4	-0.219	11.95	77.899	75.993	101-1	77.24	-0.659				
																				102	77.52	0.910	119.0	38.5	76.610
																				102	77.52	0.766	119.0	47.5	76.754
																				101-1	77.24	0.728	119.0	32.4	76.512
																				101-4	77.24	1.068	119.0	11.2	76.172
																				103-1	78.08	0.881	119.0	75.3	77.199
																				103-4	78.08	1.220	119.0	54.1	76.860
																				104-1	78.52	0.977	119.0	96.8	77.543
																				104-3	78.52	1.218	119.0	81.7	77.302
																				105-1	78.53	0.653	119.0	117.6	77.877
																				105-3	78.53	0.881	119.0	103.4	77.649
																				93-1	77.74	1.145	119.0	37.6	76.595
																				93-5	77.74	1.580	119.0	10.4	76.160
																				94-1	77.88	0.727	119.0	72.4	77.153
																				94-5	77.88	1.165	119.0	45.1	76.715
																				95-1	78.67	0.966	119.0	106.8	77.704
95-5	78.67	1.404	119.0	79.5	77.266																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.05	0.03	0.2	-0.268	11.95	77.899	76.982	25	78.18	0.281				
																				17	78.54	1.353	114.5	25.6	77.187
																				18	78.54	1.297	114.5	32.6	77.243
																				19	78.59	1.079	114.5	66.1	77.511
																				20	78.59	1.518	114.5	11.2	77.072
																				21	78.58	0.953	114.5	80.5	77.627
																				22	78.67	0.974	114.5	89.2	77.696
																				23	78.75	1.459	114.5	38.6	77.291
																				24	78.75	1.344	114.5	53.0	77.406
																				25	78.18	1.170	114.5	3.5	77.010
																				26	78.23	1.162	114.5	10.8	77.068
																				27	78.29	1.106	114.5	25.2	77.184
																				28	78.34	0.528	114.5	103.6	77.812
																				29	78.40	0.943	114.5	59.3	77.457
																				30	78.45	1.196	114.5	34.0	77.254
																				31	78.51	1.140	114.5	48.4	77.370
																				32	78.56	0.988	114.5	73.7	77.572
																				33	78.56	0.918	114.5	82.4	77.642
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	11.87	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.03	0.7	-0.161	11.97	75.993	75.309	N/A	N/A					
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.10	0.07	0.4	-0.257	12.05	75.651	75.309	96-1	76.43	0.779				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.35	1.12	0.8	-0.277	11.98	75.298	74.876	100-4	76.17	0.872				
																				98	76.29	1.205	78.0	38.6	75.085
																				98	76.29	1.254	78.0	29.6	75.036
																				100-4	76.17	1.286	78.0	1.4	74.884
																				97-1	76.30	1.181	78.0	45.0	75.119

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				97-4	76.30	1.066	78.0	66.2	75.234
																				99-1	76.23	1.310	78.0	8.1	74.920
																				99-3	76.23	1.228	78.0	23.2	75.002
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.80	0.06	0.4	-0.162	12.00	74.876	73.213	113-2	74.43	-0.446				
																				114	74.86	1.303	86.5	17.9	73.557
																				114	74.86	1.130	86.5	26.9	73.730
																				102-1	75.69	1.429	86.5	54.5	74.261
																				102-4	75.69	1.022	86.5	75.7	74.668
																				103-1	75.32	1.594	86.5	26.7	73.726
																				103-4	75.32	1.186	86.5	47.9	74.134
																				104-1	74.57	1.263	86.5	4.9	73.307
																				104-3	74.57	0.972	86.5	20.0	73.598
																				113-2	74.43	1.132	86.5	4.4	73.298
																				113-3	74.43	0.996	86.5	11.5	73.434
																				115-1	75.54	1.687	86.5	33.3	73.853
																				115-3	75.54	1.396	86.5	48.4	74.144
																				116-1	75.93	1.658	86.5	55.1	74.272
																				116-4	75.93	1.250	86.5	76.3	74.680
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.24	1.15	0.7	-0.206	12.00	74.876	73.923	48	75.25	0.374				
																				48	75.25	1.274	88.5	4.9	73.976
																				49	75.59	1.459	88.5	19.3	74.131
																				50	76.24	1.961	88.5	33.1	74.279
																				100-1	76.17	1.507	88.5	68.7	74.663
																				100-3	76.17	1.355	88.5	82.8	74.815
																				101-2	76.39	1.884	88.5	54.1	74.506
																				101-3	76.39	1.798	88.5	62.1	74.592
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.41	0.11	0.7	-0.118	12.00	73.213	70.670	108-1	71.98	-1.233				
																				106	73.27	0.737	87.5	64.1	72.533
																				106	73.27	0.999	87.5	55.1	72.271
																				112	73.88	1.225	87.5	68.3	72.655
																				112	73.88	0.963	87.5	77.3	72.917
																				105-1	73.98	1.261	87.5	70.5	72.719
																				105-3	73.98	0.822	87.5	85.6	73.158
																				107-1	72.82	1.348	87.5	27.6	71.472
																				107-4	72.82	0.732	87.5	48.8	72.088
																				108-1	71.98	1.139	87.5	5.9	70.841
																				108-3	71.98	0.700	87.5	21.0	71.280
																				109-1	72.10	1.322	87.5	3.7	70.778
																				109-3	72.10	0.884	87.5	18.8	71.216
																				110-1	72.62	1.223	87.5	25.0	71.397
																				110-3	72.62	0.785	87.5	40.1	71.835
																				111-1	73.30	1.284	87.5	46.3	72.016
																				111-3	73.30	0.831	87.5	61.9	72.469
																				113-1	74.43	1.327	87.5	83.7	73.103
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.87	0.44	0.4	-0.279	12.00	70.453	70.035	22	71.62	1.167				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.56	0.60	0.5	-0.252	12.00	69.486	66.640	15	67.95	-1.536				
																				15	67.95	1.113	79.5	5.5	66.837
																				16	68.22	0.764	79.5	22.8	67.456
																				17	68.77	1.031	79.5	30.7	67.739
																				18	69.45	1.195	79.5	45.1	68.255

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				19	70.14	1.420	79.5	58.1	68.720
																				20	70.77	1.535	79.5	72.5	69.235
																				21	71.17	1.770	79.5	77.1	69.400
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.57	0.03	0.1	-0.294	11.95	76.927	76.583	15	78.33	1.403				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.51	0.08	0.1	-0.345	11.93	76.537	73.239	9	75.24	-1.297				
																				9	75.24	1.560	69.5	9.3	73.680
																				10	75.66	1.453	69.5	20.4	74.207
																				11	76.22	1.330	69.5	34.8	74.890
																				12	76.80	1.492	69.5	43.6	75.308
																				13	77.37	1.379	69.5	58.0	75.991
																				14	77.72	1.373	69.5	65.5	76.347
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.54	0.08	0.3	-0.307	11.93	73.239	73.227	7	75.09	1.851				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.94	0.18	0.5	-0.302	11.95	73.227	72.987	5	74.99	1.763				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.00	1.36	0.4	-0.501	11.98	72.359	70.257	32	71.51	-0.849				
																				32	71.51	1.176	60.0	2.2	70.334
																				33	72.20	1.607	60.0	9.6	70.593
																				34	72.90	1.900	60.0	21.2	71.000
																				35	73.59	2.184	60.0	32.8	71.406
																				36	74.30	2.389	60.0	47.2	71.911
																				42	71.67	1.192	60.0	6.3	70.478
																				43	72.31	1.685	60.0	10.5	70.625
																				44	73.07	1.941	60.0	24.9	71.129
																				45	73.65	2.275	60.0	31.9	71.375
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.57	1.0	-0.155	12.00	67.279	66.783	13	67.89	0.611				
																				11	67.97				1.123
																				12	67.91	0.948	65.0	23.4	66.962
																				13	67.89	0.861	65.0	32.2	67.029
																				14	67.89	0.751	65.0	46.6	67.139
																				23	68.16	1.229	65.0	19.4	66.931
																				24	68.23	1.191	65.0	33.6	67.039
																				25	68.23	1.086	65.0	47.3	67.144
																				26	68.28	1.048	65.0	58.9	67.232
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.66	2.19	0.8	-0.276	12.00	66.640	65.726	7	66.89	0.250				
																				7	66.89				1.131
																				8	67.37	1.358	39.0	12.2	66.012
																				9	67.82	1.534	39.0	23.9	66.286
																				10	67.97	1.370	39.0	37.3	66.600
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.26	2.19	0.6	-0.336	12.00	65.377	64.691	6	66.10	0.723				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.04	2.21	0.7	-0.340	12.00	63.954	62.127	1	63.88	-0.074				
																				1	63.88	1.484	64.5	9.5	62.396
																				2	63.92	1.136	64.5	23.2	62.784
																				3	64.39	1.277	64.5	34.8	63.113
																				4	64.86	1.371	64.5	48.1	63.489
																				5	65.44	1.588	64.5	60.9	63.852
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.85	2.21	1.0	0.091	12.00	62.127	61.959	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.03	2.28	1.0	0.054	12.00	61.959	61.480	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.60	0.04	0.3	-0.192	11.93	79.003	77.254	61	78.31	-0.693				
																				61	78.31	0.948	92.0	5.7	77.362

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				62	78.72	1.084	92.0	20.1	77.636
																				63	78.74	0.843	92.0	33.8	77.897
																				64	79.82	1.115	92.0	76.3	78.705
																				64	79.82	1.271	92.0	68.1	78.549
																				65	79.96	1.130	92.0	82.9	78.830
																				65	79.96	1.221	92.0	78.1	78.739
																				66	80.11	1.215	92.0	86.3	78.895
																				66	80.11	1.248	92.0	84.6	78.862
																				67	80.11	1.139	92.0	90.3	78.971
																				67	80.11	1.177	92.0	88.3	78.933
																				68	79.92	0.938	92.0	90.9	78.982
																				68	79.92	0.917	92.0	92.0	79.003
																				69	79.99	1.008	92.0	90.9	78.982
																				69	79.99	1.057	92.0	88.3	78.933
																				72	78.57	1.021	92.0	15.5	77.549
																				72	78.57	1.183	92.0	7.0	77.387
70-1	79.75	1.391	92.0	58.1	78.359																				
70-4	79.75	0.962	92.0	80.7	78.788																				
71-1	79.32	1.581	92.0	25.5	77.739																				
71-4	79.32	1.152	92.0	48.1	78.168																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.40	0.11	0.3	-0.218	11.93	77.229	74.939	79	76.31	-0.919				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.863	77.5	41.9	76.177
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.905	77.5	23.9	75.645
																				76	77.90	0.845	77.5	71.6	77.055
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.829	77.5	53.2	76.511
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
																				73-1	77.95	1.477	77.5	51.9	76.473
73-4	77.95	0.810	77.5	74.5	77.140																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.188	11.93	74.913	74.579	80-4	75.75	0.837				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	11.95	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
																				81-4	74.96	1.057	30.5	11.6	73.903
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	11.95	73.486	72.281	82-1	74.07	0.584				
																				59	74.11	1.480	54.5	15.8	72.630
																				60	74.12	1.171	54.5	30.2	72.949
																				78-1	75.03	1.783	54.5	43.7	73.247
																				81-1	74.96	1.673	54.5	45.5	73.287
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.477	54.5	14.1	72.593
																				82-4	74.07	0.978	54.5	36.7	73.092
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.44	0.00	0.0	-0.249	12.03	74.637	74.617	89	75.57	0.933				

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.51	0.03	0.2	-0.207	11.95	74.617	73.416	87	74.99	0.373				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.74	0.03	0.1	-0.215	11.95	73.379	72.291	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.48	0.7	-0.233	11.95	72.281	71.944	83-1	73.46	1.179				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.48	1.05	0.3	-0.718	12.03	71.202	70.700	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.48	0.00	0.0	-0.252	12.02	74.894	74.660	57	75.47	0.576				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.54	0.55	0.6	-0.273	12.02	74.894	72.743	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.16	0.07	0.4	-0.262	12.03	76.061	75.664	94-1	76.73	0.669				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.12	0.25	0.4	-0.344	12.03	76.061	74.894	56	76.20	0.139				
																				51	77.19	1.426	105.0	78.3	75.764
																				52	77.15	1.545	105.0	64.0	75.605
																				53	76.91	1.426	105.0	53.1	75.484
																				54	76.63	1.306	105.0	38.7	75.324
																				55	76.37	1.163	105.0	28.2	75.207
																				56	76.20	1.153	105.0	13.8	75.047
																				91-1	77.44	1.586	105.0	86.4	75.854
																				91-4	77.44	1.391	105.0	103.9	76.049
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.63	1.36	0.5	-0.409	11.98	69.050	67.279	27	68.65	-0.400				
																				27	68.65	1.232	60.0	4.7	67.418
																				28	69.07	1.227	60.0	19.1	67.843
																				29	69.63	1.584	60.0	26.0	68.046
																				30	70.23	1.759	60.0	40.4	68.471
																				31	70.87	2.192	60.0	47.4	68.678
																				38	68.95	1.243	60.0	14.5	67.707
																				39	69.64	1.508	60.0	28.9	68.132
																				40	70.34	1.951	60.0	37.6	68.389
																				41	71.03	2.299	60.0	49.2	68.731
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.08	0.27	0.5	-0.210	12.02	76.575	76.201	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.41	0.31	0.4	-0.320	11.95	71.174	70.453	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.07	0.00	0.1	0.048	12.05	68.014	68.014	9-2	68.47	0.456				
																				10-1	68.47	0.456	7.0	3.5	68.014
																				10-2	68.47	0.456	7.0	2.8	68.014
																				11-1	68.62	0.606	7.0	5.3	68.014
																				11-2	68.62	0.606	7.0	5.3	68.014
																				12-2	68.54	0.526	7.0	1.7	68.014
																				9-2	68.50	0.486	7.0	2.4	68.014
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.10	1.1	0.103	11.93	68.014	67.690	6-1	68.23	0.216				
																				12-1	68.54	0.552	32.5	29.9	67.988
																				13-1	68.43	0.612	32.5	12.8	67.818
																				13-2	68.43	0.529	32.5	21.2	67.901
																				14-2	68.42	0.703	32.5	2.7	67.717
																				6-1	68.23	0.454	32.5	8.6	67.776
																				6-2	68.23	0.498	32.5	4.2	67.732
																				7-1	68.28	0.484	32.5	10.6	67.796
																				7-2	68.28	0.493	32.5	9.7	67.787
																				8-1	68.36	0.533	32.5	13.7	67.827
																				8-2	68.36	0.454	32.5	21.7	67.906
																				9-1	68.50	0.544	32.5	26.7	67.956
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.055	11.93	67.690	67.256	17-1	68.23	0.540				
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.866	77.0	52.9	67.554

Table B-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.818	77.0	61.3	67.602
																				16-1	68.29	0.840	77.0	34.4	67.450
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.888	77.0	15.2	67.342
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	11.95	66.691	65.528	4-1	66.76	0.069				
																				4-1	66.76	1.196	51.5	1.6	65.564
																				4-2	66.76	1.006	51.5	10.0	65.754
																				5-1	67.15	1.123	51.5	22.1	66.027
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.898	51.5	8.6	65.722
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.124

Interpolated HGL elevation

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾ m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.81	0.05	0.3	-0.186	1.52	62.782	60.025	B92L1	61.17	-1.612																							
																				B92L1	61.17	1.078	90.9	2.2	60.092																			
																				B93	61.89	1.534	90.9	10.9	60.356																			
																				B94	62.24	1.196	90.9	33.6	61.044																			
																				B95	62.74	1.032	90.9	55.5	61.708																			
																				B96	63.53	1.218	90.9	75.4	62.312																			
																				B97	63.52	1.248	90.9	74.1	62.272																			
																				B98	62.59	1.112	90.9	47.9	61.478																			
																				B99	61.56	1.392	90.9	4.7	60.168																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	1.93	0.22	1.2	0.060	1.52	60.025	59.776	B92L3	61.17	1.145			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.02	0.25	0.8	-0.108	1.52	59.677	58.321	L88	60.83	1.153			
																																								L88	60.83	2.350	45.2	5.3
L89	61.05	2.075	45.2	21.8	58.975																																							
L90	60.93	1.703	45.2	30.2	59.227																																							
L91	60.90	1.256	45.2	44.1	59.644																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.13	0.26	0.8	-0.132	1.53	58.303	57.919	L85	58.99	0.687																							
																				L85	58.99	1.022	34.0	4.3	57.968																			
																				L86	59.79	1.716	34.0	13.7	58.074																			
																				L87	60.00	1.747	34.0	29.6	58.253																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.28	0.62	1.0	-0.040	1.53	57.919	57.220	L81	58.16	0.241			
																				L81	58.16	0.816	66.9	11.9	57.344																			
																				L80	58.39	1.140	66.9	2.9	57.250																			
																				L82	58.22	0.724	66.9	26.4	57.496																			
																				L83	58.40	0.739	66.9	42.2	57.661																			
																				L84	58.95	1.174	66.9	53.2	57.776																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.86	0.62	1.0	-0.069	1.53	57.220	57.034	L79	58.44	1.220																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.44	0.62	1.0	-0.200	1.53	57.009	56.928	L74	58.91	1.901																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.49	0.62	1.0	-0.205	1.53	56.928	56.776	L73	59.22	2.292																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.17	0.6	-0.160	1.53	60.711	57.919	L75	59.26	-1.451																							
																				L75	59.26	0.921	116.3	17.5	58.339																			
																				L76	59.55	0.740	116.3	37.1	58.810																			
																				B103SD	60.07	0.790	116.3	56.7	59.280																			
																				B104SD	60.75	1.014	116.3	75.7	59.736																			
																				B105SD	61.36	1.168	116.3	94.7	60.192																			
																				B106SD	62.05	1.399	116.3	113.8	60.651																			
																				B102L1	61.93	1.286	116.3	113.5	60.644																			
																				B102L4	61.55	1.449	116.3	90.9	60.101																			
																				B101L1	60.92	1.124	116.3	78.2	59.796																			
																				B101L4	60.52	1.266	116.3	55.6	59.254																			
B100L1	59.97	0.966	116.3	45.2	59.004																																							
B100L4	59.58	1.118	116.3	22.6	58.462																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.67	0.00	0.0	-0.259	1.50	63.197	62.727	L60	63.78	0.583																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.67	0.03	0.2	-0.219	1.52	62.727	60.893	L66	62.23	-0.497																							
																				L66	62.23	1.309	65.6	1.0	60.921																			
																				L65	62.47	1.160	65.6	14.9	61.310																			
																				L64	62.67	1.047	65.6	26.1	61.623																			
																				L63	63.00	0.944	65.6	41.6	62.056																			
																				L62	63.31	1.078	65.6	47.9	62.232																			
																				L61	63.58	1.040	65.6	58.9	62.540																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.76	0.06	0.3	-0.247	1.52	60.865	59.850	B108L4	61.64	0.775																							

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.73	4.69	0.7	-0.391	1.57	58.644	58.111	L71	59.63	0.986				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.38	4.69	0.7	-0.198	1.57	56.978	56.776	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	2.81	1.70	0.5	-0.560	1.53	65.818	65.449	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	2.90	1.74	0.5	-0.566	1.55	64.466	63.636	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.06	3.67	0.7	-0.531	1.55	63.179	62.877	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.09	3.76	0.8	-0.521	1.55	61.599	61.172	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.89	4.10	0.8	-0.364	1.55	60.336	59.926	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.383	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.70	0.30	1.0	0.438	1.68	62.383	60.484	B109L4	61.76	-0.623				
																			B109L4	61.76	0.512	62.4	25.1	61.248	
																			B109L1	61.76	0.515	62.4	25.0	61.245	
																			B110SD	62.44	0.650	62.4	42.9	61.790	
																			B111SD	63.15	0.880	62.4	58.7	62.270	
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.06	0.69	0.7	-0.267	1.57	59.106	58.135	L18	59.42	0.314				
																			L18	59.42	1.207	64.4	5.2	58.213	
																			L19	60.08	1.698	64.4	16.4	58.382	
																			L20	60.56	1.940	64.4	32.2	58.621	
																			L21	60.98	2.213	64.4	41.9	58.767	
																			L22	61.39	2.388	64.4	57.5	59.002	
																			L24	61.34	2.475	64.4	48.4	58.865	
																			L35	61.06	2.433	64.4	32.6	58.627	
																			L26	60.61	2.157	64.4	21.1	58.453	
																			L27	59.90	1.682	64.4	5.5	58.218	
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.14	0.69	0.7	-0.275	1.58	56.930	55.967	L14	57.61	0.680				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.98	0.75	0.7	-0.232	1.58	54.813	53.915	L9	55.68	0.867				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.50	0.75												

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L42	61.29	1.635	61.7	18.7	59.655
																				L41	60.68	1.159	61.7	11.3	59.521
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.81	0.8	-0.117	1.58	57.424	56.090	L36	57.89	0.466				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.28	1.58	0.8	-0.262	1.60	62.942	62.693	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.33	1.60	0.8	-0.264	1.60	61.103	60.071	N/A	N/A	N/A				
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.09	7.21	0.8	-0.481	1.60	53.597	53.442	L3	58.26	4.663				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.97	8.43	0.8	-0.408	1.60	53.442	53.197	L8	55.21	1.768				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.09	0.08	0.3	-0.233	1.62	69.807	67.812	B54L4	69.35	-0.457				
																				B54L4	69.35	1.425	83.1	4.7	67.925
																				B54L1	69.35	0.976	83.1	23.4	68.374
																				B56L4	70.19	1.651	83.1	30.3	68.539
																				B56L1	70.19	1.142	83.1	51.5	69.048
																				B57SD	70.63	1.226	83.1	66.3	69.404
																				B43L4	71.22	1.646	83.1	73.4	69.574
																				B58L4	70.88	1.241	83.1	76.1	69.639
																				B58L1	70.88	1.752	83.1	54.8	69.128
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	1.88	0.08	0.3	-0.221	1.62	67.767	67.464	B53L3	68.90	1.133				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.32	0.51	0.9	-0.162	1.62	66.499	65.422	B47L4	66.63	0.131				
																				B47L4	66.63	1.054	119.4	17.1	65.576
																				B47L1	66.63	0.863	119.4	38.3	65.767
																				B48L4	67.21	1.381	119.4	45.1	65.829
																				B48L1	67.21	1.190	119.4	66.3	66.020
																				B49L4	67.77	1.690	119.4	72.9	66.080
																				B49L1	67.77	1.499	119.4	94.1	66.271
																				B50SD	68.07	1.662	119.4	109.3	66.408
																				B51L3	68.41	1.948	119.4	115.3	66.462
																				B59L4	68.18	1.785	119.4	107.9	66.395
																				B59L1	68.18	1.976	119.4	86.7	66.204
																				B60SD	67.97	1.828	119.4	79.8	66.142
																				B61L4	67.31	1.304	119.4	64.7	66.006
																				B61L1	67.31	1.496	119.4	43.5	65.814
																				B62L4	66.89	1.135	119.4	36.9	65.755
																				B62L1	66.89	1.326	119.4	15.7	65.564
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.78	0.67</												

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				B45L4	71.98	1.576	71.4	34.5	70.404			
																				B44SD	71.47	1.187	71.4	27.5	70.283			
																				B43L1	71.47	1.457	71.4	11.9	70.013			
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.93	5.42	0.9	-0.326	1.57	56.776	56.354	L32	58.76	1.984							
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.87	0.30	1.5	0.289	1.68	60.484	60.036	N/A	N/A	N/A							
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.74	5.42	0.9	-0.175	1.57	56.354	55.980	L11	58.85	2.496							
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.38	5.63	0.7	-0.500	1.58	54.067	53.597	N/A	N/A	N/A							
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.00	0.19	0.3	-0.284	1.52	54.140	54.129	L22	54.73	0.590							
																				L22	54.73	0.591	28.2	25.9	54.139			
																				L21	54.73	0.590	28.2	27.4	54.140			
																				L20	55.10	0.962	28.2	22.9	54.138			
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.07	0.23	0.4	-0.195	1.60	54.129	54.078	L19	55.79	1.661							
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.72	0.67	0.7	-0.236	1.57	64.323	63.951	L39	65.04	0.717							
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.74	0.70	0.8	-0.222	1.57	63.947	63.597	L37	64.89	0.943							
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.52	0.86	0.9	-0.210	1.57	63.398	62.991	L34	64.28	0.882							
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.57	67.451	67.098	L339	68.56	1.109							
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.249	1.55	65.520	64.336	L347	65.57	0.050							
																				L347	65.57	1.200	52.4	1.5	64.370			
																				L346	66.07	1.214	52.4	23.0	64.856			
																				L345	66.61	1.551	52.4	32.0	65.059			
																				L344	67.15	1.761	52.4	46.6	65.389			
																				3-1	66.15	1.055	52.4	33.6	65.095			
																				1	65.55	0.724	52.4	21.7	64.826			
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.50	0.73	0.7	-0.152	1.60	63.932	62.942	L58	64.18	0.248							
																				L58	64.18				0.900	55.0	18.8	63.280
																				L57	64.44				0.850	55.0	36.0	63.590
																				L56	64.75	0.930	55.0	48.8				

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF	Freeboard (2)	Interpolated HGL			
																						Length HGL	Dist. From D/S MH	HGL	
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)		(m)	(h)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.04	0.08	0.3	-0.242	1.53	68.660	66.156	B36SD	68.23	-0.430				
																				B36SD	68.23	1.691	101.9	15.6	66.539
																				B37L4	68.70	2.011	101.9	21.7	66.689
																				B37L1	68.70	1.490	101.9	42.9	67.210
																				B38L4	69.31	1.940	101.9	49.4	67.370
																				B38L1	69.31	1.419	101.9	70.6	67.891
																				B39L4	69.62	1.555	101.9	77.7	68.065
																				B39L1	69.62	1.031	101.9	99.0	68.589
																				B47L1	69.23	0.794	101.9	92.8	68.436
																				B47L4	69.23	1.354	101.9	70.0	67.876
																				B48L1	68.82	1.069	101.9	64.9	67.751
B48L4	68.82	1.590	101.9	43.7	67.230																				
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.34	-0.01	-0.1	-0.249	1.53	69.523	69.609	B96L1	70.07	0.547				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.25	1.87	0.6	-0.352	1.63	68.896	67.995	Fut. Est.	72.09	3.194				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.00	0.03	0.3	-0.249	1.53	72.430	71.759	B107L1	72.89	0.460				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.71	0.03	0.3	-0.182	1.53	71.759	71.748	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.36	0.17	1.0	-0.109	1.55	71.748	71.547	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.45	0.54	0.5	-0.270	1.53	71.435	71.089	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.95	0.03	0.3	-0.181	1.53	72.383	71.770	B102L1	72.70	0.317				
																				B102L1	72.70	0.895	106.5	6.0	71.805
																				B102L5	72.70	0.728	106.5	35.1	71.972
																				B103L1	72.87	0.842	106.5	44.8	72.028
																				B103L4	72.87	0.721	106.5	65.8	72.149
																				B104L1	73.05	0.844	106.5	75.8	72.206
																				B104L5	73.05	0.678	106.5	104.5	72.372
																				B105L10	73.24	0.893	106.5	100.3	72.347
																				B105L6	73.24	1.051	106.5	72.7	72.189
																				B106L10	73.08	0.951	106.5	62.3	72.129
																				B106L6	73.08	1.108	106.5	35.1	71.972
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.05	0.04	0.5	-0.125	1.53	71.770	71.547	B107L6	72.89	1.120				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.37	0.61	0.4	-0.424	1.55	70.241	70.014	B100SD	72.25	2.009				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.53	0.19	0.9	-0.116	1.53	63.150	62.629	L1	64.26	1.110				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.12	0.41	0.7	-0.211	1.57	62.564	61.942	L14	63.44	0.876				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.45	0.45	0.7	-0.227	1.58	61.898	61.286	L10	63.20	1.302				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.23	0.50	0.7	-0.271	1.58	61.244	60.774	L5	63.33	2.086				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.51	0.58	0.7	-0.259	1.57	60.758	60.359	L2	62.35	1.592				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.29	1.1	-0.042	1.55	67.994	67.179	L334	68.05	0.056				
																				L334	68.05	0.731	87.0	14.9	67.319
																				L335	68.12	0.735	87.0	22.0	67.385
																				B610L1	68.12	0.577	87.0	38.9	67.543
																				B610L5	68.18	0.357	87.0	68.7	67.823
																				B611L1	68.53	0.692	87.0	70.4	67.838
																				B111L4	68.45	0.823	87.0	47.8	67.627
																				B612SD	68.45	0.919	87.0	37.6	67.531
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.08	N/A	N/A	1.55	67.994	67.822	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.74	6.86	0.7	-0.795	1.63	67.497	67.048	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.35	0.19	0.7	-0.109	1.58	64.939	62.966	L19	64.58	-0.359				

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				L19	64.58	1.154	82.0	19.1	63.426			
																				L20	64.99	1.242	82.0	32.5	63.748			
																				L21	65.74	1.629	82.0	47.6	64.111			
																				L22	66.37	1.924	82.0	61.5	64.446			
																				L23	67.00	2.213	82.0	75.7	64.787			
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.07	0.01	0.0	-0.261	1.53	51.504	48.283	N/A	N/A	N/A							
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.44	0.02	0.1	-0.303	1.52	47.117	44.885	N/A	N/A	N/A							
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.47	0.14	0.7	-0.182	1.52	44.744	44.631	N/A	N/A	N/A							
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.69	0.08	0.6	-0.126	1.52	69.155	67.994	L34	69.22	0.065							
																				L34	69.22	0.971	82.8	18.2	68.249			
																				L33	69.36	0.892	82.8	33.8	68.468			
																				L32	69.53	0.941	82.8	42.4	68.589			
																				L31	69.62	0.828	82.8	56.9	68.792			
																				L30	69.82	0.903	82.8	65.8	68.917			
																				L29	70.07	0.944	82.8	80.7	69.126			
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.33	1.0	-0.064	1.53	67.159	66.128	L325	67.35	0.191							
																				L325	67.35	1.178	72.5	3.1	66.172			
																				L326	67.53	1.135	72.5	18.8	66.395			
																				L327	67.79	1.279	72.5	26.9	66.511			
																				L328	67.99	1.174	72.5	48.4	66.816			
																				B614SD	68.21	1.072	72.5	71.0	67.138			
																				L333	67.98	0.842	72.5	71.0	67.138			
																				L332	67.91	0.899	72.5	62.1	67.011			
																				L331	67.79	1.048	72.5	43.2	66.742			
																				L330	67.63	1.004	72.5	35.0	66.626			
																				L329	67.47	1.114	72.5	16.0	66.356			
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.08	0.33	1.0	0.023	1.55	66.128	65.841	L324	67.08	0.952							
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.20	0.38	0.7	-0.131	1.58	65.809	64.582	L319	65.72	-0.089							
																				L319	65.72				0.803	77.0	21.0	64.917
																				L320	66.05				0.826	77.0	40.3	65.224
																				L321	66.39				1.038	77.0	48.3	65.352
																				L322	66.71	1.064	77.0	66.8	65.646			
																				L323	66.89	1.196	77.0	69.8	65.694			
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.00	0.49	0.6	-0.265	1.57	63.746	63.068	L123	64.76	1.014							
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.97	0.03	0.4	-0.174	1.53	66.087	65.706	B601SD	66.46	0.373							
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.22	0.07	0.3	-0.276	1.55	65.604	65.210	B604SD	66.07	0.466							
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.22	0.07	0.3	-0.277	1.55	65.180	64.892	L296	65.77	0.590							
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.97	3.36	0.7	-0.577	1.60	72.506	72.126	B80L1	73.88	1.374							
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	3.00	3.43	0.7	-0.571	1.62	70.928	70.560	B87SD	72.44	1.512							
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	3.04	3.51	0.7	-0.567	1.62	69.775	69.373	B85L1	71.32	1.545							
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	3.07	3.62	0.7	-0.544	1.62	69.373	68.964	L51	71.02	1.647							
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	3.05	6.60	0.9	-0.611	1.62	67.939	67.628	N/A	N/A	N/A							
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	5.14	6.95	0.4	-1.044	1.63	63.646	62.598	N/A	N/A	N/A							
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	5.11	7.11	0.4	-1.025	1.63	62.134	61.592	N/A	N/A	N/A							
1007	1008	59.854	59.009	1950	65.0	1.3	0.013	64.500	62.180	5.433	16.224	4.28	9.41	0.6	-0.569	1.63	61.235	60.075	N/A	N/A	N/A							
1008	1009	52.061	51.805	2250	80.0	0.3	0.013	62.180	57.440	2.965	11.790	3.04	9.44	0.8	-0.607	1.63	53.704	53.501	N/A	N/A	N/A							
1009	1010	51.805	51.527	2250	87.0	0.3	0.013	57.440	57.070	2.965	11.790	2.94	9.44	0.8	-0.554	1.65	53.501	53.250	N/A	N/A	N/A							
1010	1011	51.527	51.252	2250	86.0	0.3	0.013	57.070	56.500	2.965	11.790	2.88	9.44	0.8	-0.527	1.65	53.250	53.013	N/A	N/A	N/A							
1011	1012	51.252	50.991	2250	81.5	0.3	0.013	56.500	56.600	2.965	11.790	2.83	9.43	0.8	-0.489	1.67	53.013	52.707	N/A	N/A	N/A							
1012	1013	50.991	50.681	2250	97.0	0.3	0.013	56.600	54.680	2.965	11.790	2.95	9.43	0.8	-0.534	1.67	52.707	52.124	N/A	N/A	N/A							

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.31	10.97	0.7	-0.964	1.68	51.666	51.454	N/A	N/A	N/A				
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.66	0.74	0.7	-0.195	1.53	52.508	51.955	N/A	N/A	N/A				
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.13	0.74	0.7	0.010	1.53	51.955	51.586	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.29	0.21	0.6	-0.192	1.53	59.850	59.517	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.29	1.20	0.6	-0.432	1.52	67.034	66.978	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.61	4.40	0.7	-0.412	1.55	59.695	59.373	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	3.02	0.49	0.6	-0.263	1.57	62.643	62.305	L45	63.24	0.597				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.71	0.10	0.3	-0.281	1.62	66.694	66.499	B51L1	68.41	1.716				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.56	2.41	0.7	-0.498	1.53	75.387	75.212	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	0.93	0.23	0.4	0.049	1.60	54.078	54.067	L30	58.92	4.842				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.69	0.01	0.2	-0.208	1.53	72.052	71.756	B103L8	72.87	0.818				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.73	0.27	0.7	0.020	1.58	68.407	67.994	N/A	N/A	N/A				
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.21	0.15	0.7	-0.128	1.52	44.885	44.802	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.092	1.57	65.818	65.711	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.50	65.818	65.809	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	2.15	3.20	1.1	0.389	1.65	50.531	50.507	N/A	N/A	N/A				
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	9.29	17.58	N/A	N/A	1.92	50.502	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.40	0.58	0.7	-0.242	1.58	60.279	60.066	L23	61.85	1.571				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.05	0.29	1.1	0.013	1.58	69.429	69.162	B84L1	69.71	0.281				
																				B84L1	69.71	0.495	83.9	16.8	69.215
																				B84L4	69.71	0.426	83.9	38.3	69.284
																				B83L1	70.27	0.965	83.9	45.0	69.305
																				B83L3	70.27	0.917	83.9	60.0	69.353
																				B82L1	70.96	1.586	83.9	66.6	69.374
																				B82L4	70.96	1.537	83.9	81.9	69.423
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.90	0.06	1.0	-0.011	1.53	69.609	69.440	B96L4	70.07	0.461				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.75	0.32	0.8	-0.098	1.55	71.863	71.083	L52	72.19	0.327				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.28	0.9	-0.125	1.53	72.681	71.863	L56	72.93	0.249				
																				L56	72.93	0.956	64.8	8.8	71.974
																				B73SD	73.17	1.034	64.8	21.6	72.136
																				L57	73.23	0.856	64.8	40.5	72.374
																				L58	73.36	0.813	64.8	54.2	72.547
																				L60	73.51	0.879	64.8	60.8	72.631
																				L61	73.43	1.007	64.8	44.4	72.423
																				L62	73.37	1.141	64.8	29.0	72.229
																				L63	73.28	1.228	64.8	15.0	72.052
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.22	0.02	0.2	-0.217	1.53	73.479	72.681	L59	73.54	0.061				
																				L59	73.54	0.819	44.4	2.2	72.721
																				B72L1	73.92	1.000	44.4	13.3	72.920
																				B72L2	73.92	0.833	44.4	22.6	73.087
																				B71L1	74.10	0.862	44.4	31.0	73.238
																				B66L4	74.39	1.062	44.4	36.0	73.328
																				B66L1	73.99	0.903	44.4	22.6	73.087
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.42	0.02	0.2	-0.217	1.53	74.419	73.509	B71L4	74.50	0.081				
																				B71L4	74.50	0.833	45.4	7.9	73.667
																				B70L1	74.89	1.064	45.4	15.8	73.826
																				B70L2	74.89	0.876	45.4	25.2	74.014
																				B69L1	75.49	1.312	45.4	33.4	74.178
																				B69L2	75.49	1.111	45.4	43.4	74.379

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B68L1 B67L4 B67L1	76.39 75.19 74.79	2.011 1.012 1.123	45.4 45.4 45.4	43.4 33.4 7.9	74.379 74.178 73.667
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.19	0.29 0.01	1.0 0.1	-0.094 -0.235	1.57 1.52	65.692 69.138	65.294 67.982	N/A L13	N/A 69.13	N/A -0.008				
																				L13 L12 L11 L10 L9	69.13 69.49 69.68 69.81 69.81	1.006 1.154 1.051 0.992 0.708	65.0 65.0 65.0 65.0 65.0	8.0 19.9 36.4 47.0 63.0	68.124 68.336 68.629 68.818 69.102
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.85	0.04	0.2	-0.201	1.53	67.982	65.658	L18	66.92	-1.062				
																				L18 L17 L16 L15 L14	66.92 67.35 67.80 68.21 68.67	1.027 0.940 1.033 0.913 0.977	72.3 72.3 72.3 72.3 72.3	7.3 23.4 34.5 51.0 63.3	65.893 66.410 66.767 67.297 67.693
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.15 1.98	0.04 0.09	0.3 0.4	-0.157 -0.214	1.53 1.57	65.646 67.822	65.410 66.273	N/A L24	N/A 67.63	N/A -0.192				
																				L24 L25 L26 L27 L28	67.63 68.23 68.95 69.33 69.33	1.227 1.575 2.016 2.149 1.845	86.0 86.0 86.0 86.0 86.0	7.2 21.2 36.7 50.4 67.3	66.403 66.655 66.934 67.181 67.485
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.35	1.07	0.7	-0.386	1.60	68.319	67.939	L35	69.61	1.291				
																				L35 L36 L37 L38 L39 L40 L46 L45 L44 L43 L42 L41	69.61 70.01 70.32 70.49 70.49 70.36 70.51 70.56 70.58 70.32 70.06 69.67	1.361 1.807 2.161 2.385 2.417 2.338 2.484 2.483 2.471 2.157 1.855 1.417	103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5	84.3 71.8 59.9 45.3 36.4 22.5 23.6 37.7 46.4 61.0 72.5 85.4	68.249 68.203 68.159 68.105 68.073 68.022 68.026 68.077 68.109 68.163 68.205 68.253
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.247	84	80.14	-0.092				
																				79 80 81 82 83 84	81.31 81.20 80.82 80.66 80.27 80.14	1.129 1.405 1.374 1.600 1.503 1.759	74.0 74.0 74.0 74.0 74.0 74.0	72.1 57.7 44.7 30.3 19.4 5.0	80.181 79.795 79.446 79.060 78.767 78.381
501 502 503 504	505 503 504 509	80.232 78.418 78.132 77.904	80.053 78.282 77.949 77.420	300 300 450 450	17.0 34.0 73.0 88.0	1.1 0.4 0.3 0.6	0.013 0.013 0.013 0.013	83.090 81.120 81.790 81.360	82.920 81.790 81.360 80.780	1.402 0.865 0.896 1.329	0.099 0.061 0.143 0.211	0.00 0.61 0.62 0.96	0.00 0.01 0.02 0.05	0.0 0.2 0.1 0.2	-0.300 -0.197 -0.335 -0.301	0.00 1.53 1.53 1.53	80.232 78.521 78.247 78.053	80.148 78.367 78.053 77.704	77 87 41 34	81.27 79.42 79.36 78.97	1.038 0.899 1.113 0.917				
																				34 35 36	78.97 79.03 79.08	1.227 1.230 1.245	88.0 88.0 88.0	9.9 24.3 33.1	77.743 77.800 77.835

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				37	79.14	1.248	88.0	47.5	77.892
																				38	79.19	1.270	88.0	54.4	77.920
																				39	79.25	1.273	88.0	68.8	77.977
																				40	79.31	1.298	88.0	77.6	78.012
																				52	79.54	1.497	88.0	85.4	78.043
																				53	79.46	1.442	88.0	79.3	78.018
																				54	79.43	1.469	88.0	64.9	77.961
																				55	79.43	1.520	88.0	51.9	77.910
																				56	79.32	1.467	88.0	37.5	77.853
																				57	79.23	1.421	88.0	26.6	77.809
																				58	79.12	1.370	88.0	11.6	77.750
505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	0.93	0.02	0.2	-0.200	1.52	80.148	79.580	64	80.26	0.112				
																				64	80.26	0.642	72.5	4.9	79.618
																				65	80.40	0.677	72.5	18.2	79.723
																				66	80.54	0.705	72.5	32.6	79.835
																				67	80.65	0.729	72.5	43.5	79.921
																				68	80.77	0.736	72.5	57.9	80.034
																				69	80.92	0.796	72.5	69.4	80.124
																				71	80.32	0.664	72.5	9.7	79.656
																				72	80.46	0.702	72.5	22.7	79.758
																				73	80.57	0.699	72.5	37.1	79.871
																				74	80.69	0.750	72.5	45.9	79.940
																				75	80.82	0.768	72.5	60.3	80.052
																				76	81.20	1.070	72.5	70.2	80.130
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.079	1.53	79.580	78.719	59	79.58	0.000				
																				59	79.58	0.723	76.5	12.3	78.857
																				60	79.72	0.700	76.5	26.7	79.020
																				61	79.86	0.694	76.5	39.7	79.166
																				62	80.00	0.672	76.5	54.1	79.328
																				63	80.12	0.645	76.5	67.2	79.475
																				70	80.18	0.652	76.5	71.9	79.528
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.12	0.26	0.6	-0.238	1.55	78.618	77.704	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.27	0.52	0.8	-0.166	1.55	77.704	75.987	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.40	0.05	0.5	-0.140	1.53	77.612	76.726	90-2	77.72	0.108				
																				88-1	78.32	1.077	88.5	51.6	77.243
																				88-4	78.32	0.865	88.5	72.8	77.455
																				89-1	78.00	1.041	88.5	23.3	76.959
																				89-4	78.00	0.828	88.5	44.5	77.172
																				90-2	77.72	0.968	88.5	2.6	76.752
																				90-4	77.72	0.827	88.5	16.7	76.893
																				96-1	78.46	1.128	88.5	60.5	77.332
																				96-5	78.46	0.879	88.5	85.4	77.581
																				97-1	78.08	1.028	88.5	32.6	77.052
																				97-4	78.08	0.815	88.5	53.8	77.265
																				98-2	77.80	1.016	88.5	5.8	76.784
																				98-5	77.80	0.814	88.5	26.0	76.986
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.254	1.53	76.613	75.982	100-1	77.19	0.577				
																				100-1	77.19	1.057	75.0	18.0	76.133
																				100-4	77.19	0.878	75.0	39.2	76.312
																				90-1	77.72	1.146	75.0	70.4	76.574

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				91-1	77.47	1.181	75.0	36.5	76.289
																				91-5	77.47	0.951	75.0	63.8	76.519
																				92-1	77.33	1.278	75.0	8.3	76.052
																				92-4	77.33	1.100	75.0	29.5	76.230
																				98-1	77.80	1.198	75.0	73.7	76.602
																				99-1	77.47	1.103	75.0	45.8	76.367
																				99-4	77.47	0.924	75.0	67.0	76.546
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.74	0.07	0.3	-0.227	1.53	77.891	75.982	101-1	77.24	-0.651				
																				102	77.52	0.920	119.0	38.5	76.600
																				102	77.52	0.776	119.0	47.5	76.744
																				101-1	77.24	0.738	119.0	32.4	76.502
																				101-4	77.24	1.078	119.0	11.2	76.162
																				103-1	78.08	0.890	119.0	75.3	77.190
																				103-4	78.08	1.230	119.0	54.1	76.850
																				104-1	78.52	0.985	119.0	96.8	77.535
																				104-3	78.52	1.227	119.0	81.7	77.293
																				105-1	78.53	0.661	119.0	117.6	77.869
																				105-3	78.53	0.889	119.0	103.4	77.641
																				93-1	77.74	1.155	119.0	37.6	76.585
																				93-5	77.74	1.591	119.0	10.4	76.149
																				94-1	77.88	0.737	119.0	72.4	77.143
																				94-5	77.88	1.175	119.0	45.1	76.705
																				95-1	78.67	0.975	119.0	106.8	77.695
95-5	78.67	1.413	119.0	79.5	77.257																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.01	0.02	0.1	-0.276	1.55	77.891	76.973	25	78.18	0.289				
																				17	78.54	1.362	114.5	25.6	77.178
																				18	78.54	1.306	114.5	32.6	77.234
																				19	78.59	1.087	114.5	66.1	77.503
																				20	78.59	1.527	114.5	11.2	77.063
																				21	78.58	0.962	114.5	80.5	77.618
																				22	78.67	0.982	114.5	89.2	77.688
																				23	78.75	1.468	114.5	38.6	77.282
																				24	78.75	1.352	114.5	53.0	77.398
																				25	78.18	1.179	114.5	3.5	77.001
																				26	78.23	1.170	114.5	10.8	77.060
																				27	78.29	1.115	114.5	25.2	77.175
																				28	78.34	0.536	114.5	103.6	77.804
																				29	78.40	0.952	114.5	59.3	77.448
																				30	78.45	1.204	114.5	34.0	77.246
																				31	78.51	1.149	114.5	48.4	77.361
32	78.56	0.996	114.5	73.7	77.564																				
33	78.56	0.926	114.5	82.4	77.634																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.72	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.02	0.7	-0.172	1.57	75.982	75.303	N/A	N/A	N/A				
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.11	0.07	0.4	-0.256	1.78	75.652	75.310	96-1	76.43	0.778				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.34	1.09	0.8	-0.286	1.60	75.289	74.868	100-4	76.17	0.881				
																				98	76.29	1.214	78.0	38.6	75.076
																				98	76.29	1.262	78.0	29.6	75.028
																				100-4	76.17	1.294	78.0	1.4	74.876
																				97-1	76.30	1.189	78.0	45.0	75.111

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S ⁽¹⁾	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(h)	(m)	(m)	Length HGL (m)				Dist. From D/S MH (m)	HGL (m)		
																				97-4	76.30	1.075	78.0	66.2	75.225
																				99-1	76.23	1.318	78.0	8.1	74.912
																				99-3	76.23	1.237	78.0	23.2	74.993
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.75	0.05	0.4	-0.170	1.62	74.868	73.206	113-2	74.43	-0.438				
																				114	74.86	1.310	86.5	17.9	73.550
																				114	74.86	1.137	86.5	26.9	73.723
																				102-1	75.69	1.437	86.5	54.5	74.253
																				102-4	75.69	1.030	86.5	75.7	74.660
																				103-1	75.32	1.601	86.5	26.7	73.719
																				103-4	75.32	1.194	86.5	47.9	74.126
																				104-1	74.57	1.270	86.5	4.9	73.300
																				104-3	74.57	0.980	86.5	20.0	73.590
																				113-2	74.43	1.139	86.5	4.4	73.291
																				113-3	74.43	1.003	86.5	11.5	73.427
																				115-1	75.54	1.694	86.5	33.3	73.846
																				115-3	75.54	1.404	86.5	48.4	74.136
116-1	75.93	1.665	86.5	55.1	74.265																				
116-4	75.93	1.258	86.5	76.3	74.672																				
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.23	1.13	0.7	-0.214	1.62	74.868	73.919	48	75.25	0.382				
																				48	75.25	1.278	88.5	4.9	73.972
																				49	75.59	1.464	88.5	19.3	74.126
																				50	76.24	1.966	88.5	33.1	74.274
																				100-1	76.17	1.514	88.5	68.7	74.656
																				100-3	76.17	1.363	88.5	82.8	74.807
																				101-2	76.39	1.891	88.5	54.1	74.499
																				101-3	76.39	1.805	88.5	62.1	74.585
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.38	0.10	0.6	-0.125	1.63	73.206	70.664	108-1	71.98	-1.226				
																				106	73.27	0.744	87.5	64.1	72.526
																				106	73.27	1.005	87.5	55.1	72.265
																				112	73.88	1.232	87.5	68.3	72.648
																				112	73.88	0.970	87.5	77.3	72.910
																				105-1	73.98	1.268	87.5	70.5	72.712
																				105-3	73.98	0.829	87.5	85.6	73.151
																				107-1	72.82	1.354	87.5	27.6	71.466
																				107-4	72.82	0.738	87.5	48.8	72.082
																				108-1	71.98	1.145	87.5	5.9	70.835
																				108-3	71.98	0.706	87.5	21.0	71.274
																				109-1	72.10	1.329	87.5	3.7	70.771
																				109-3	72.10	0.890	87.5	18.8	71.210
																				110-1	72.62	1.230	87.5	25.0	71.390
																				110-3	72.62	0.791	87.5	40.1	71.829
111-1	73.30	1.291	87.5	46.3	72.009																				
111-3	73.30	0.838	87.5	61.9	72.462																				
113-1	74.43	1.334	87.5	83.7	73.096																				
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.86	0.43	0.4	-0.281	1.63	70.451	70.033	22	71.62	1.169				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.53	0.59	0.5	-0.252	1.63	69.486	66.635	15	67.95	-1.536				
																				15	67.95	1.118	79.5	5.5	66.832
																				16	68.22	0.767	79.5	22.8	67.453
																				17	68.77	1.034	79.5	30.7	67.736
																				18	69.45	1.198	79.5	45.1	68.252

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				19	70.14	1.421	79.5	58.1	68.719
																				20	70.77	1.535	79.5	72.5	69.235
																				21	71.17	1.770	79.5	77.1	69.400
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.51	0.02	0.1	-0.300	1.55	76.921	76.577	15	78.33	1.409				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.47	0.07	0.1	-0.348	1.53	76.534	73.233	9	75.24	-1.294				
																				9	75.24	1.565	69.5	9.3	73.675
																				10	75.66	1.458	69.5	20.4	74.202
																				11	76.22	1.334	69.5	34.8	74.886
																				12	76.80	1.496	69.5	43.6	75.304
																				13	77.37	1.382	69.5	58.0	75.988
																				14	77.72	1.376	69.5	65.5	76.344
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.52	0.07	0.3	-0.313	1.53	73.233	73.222	7	75.09	1.857				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.93	0.18	0.5	-0.307	1.55	73.222	72.983	5	74.99	1.768				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	4.98	1.34	0.4	-0.504	1.62	72.356	70.254	32	71.51	-0.846				
																				32	71.51	1.179	60.0	2.2	70.331
																				33	72.20	1.610	60.0	9.6	70.590
																				34	72.90	1.903	60.0	21.2	70.997
																				35	73.59	2.187	60.0	32.8	71.403
																				36	74.30	2.392	60.0	47.2	71.908
																				42	71.67	1.195	60.0	6.3	70.475
																				43	72.31	1.688	60.0	10.5	70.622
																				44	73.07	1.944	60.0	24.9	71.126
																				45	73.65	2.278	60.0	31.9	71.372
																				46	74.31	2.434	60.0	46.3	71.876
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.55	1.0	-0.165	1.62	67.269	66.773	13	67.89	0.621				
																				11	67.97				1.133
																				12	67.91	0.958	65.0	23.4	66.952
																				13	67.89	0.871	65.0	32.2	67.019
																				14	67.89	0.761	65.0	46.6	67.129
																				23	68.16	1.239	65.0	19.4	66.921
																				24	68.23	1.201	65.0	33.6	67.029
																				25	68.23	1.096	65.0	47.3	67.134
																				26	68.28	1.058	65.0	58.9	67.222
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.65	2.16	0.8	-0.281	1.63	66.635	65.721	7	66.89	0.255				
																				7	66.89				1.136
																				8	67.37	1.363	39.0	12.2	66.007
																				9	67.82	1.539	39.0	23.9	66.281
																				10	67.97	1.375	39.0	37.3	66.595
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.24	2.16	0.6	-0.341	1.63	65.372	64.687	6	66.10	0.728				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.18	0.6	-0.346	1.63	63.948	62.116	1	63.88	-0.068				
																				1	63.88	1.494	64.5	9.5	62.386
																				2	63.92	1.145	64.5	23.2	62.775
																				3	64.39	1.286	64.5	34.8	63.104
																				4	64.86	1.378	64.5	48.1	63.482
																				5	65.44	1.594	64.5	60.9	63.846
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.83	2.18	1.0	0.080	1.63	62.116	61.950	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.02	2.26	1.0	0.045	1.63	61.950	61.475	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.58	0.03	0.3	-0.196	1.53	78.999	77.251	61	78.31	-0.689				
																				61	78.31	0.951	92.0	5.7	77.359

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S ⁽¹⁾	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(h)	(m)	(m)	Length HGL (m)				Dist. From D/S MH (m)	HGL (m)		
																				62	78.72	1.087	92.0	20.1	77.633
																				63	78.74	0.847	92.0	33.8	77.893
																				64	79.82	1.119	92.0	76.3	78.701
																				64	79.82	1.275	92.0	68.1	78.545
																				65	79.96	1.134	92.0	82.9	78.826
																				65	79.96	1.225	92.0	78.1	78.735
																				66	80.11	1.219	92.0	86.3	78.891
																				66	80.11	1.252	92.0	84.6	78.858
																				67	80.11	1.143	92.0	90.3	78.967
																				67	80.11	1.181	92.0	88.3	78.929
																				68	79.92	0.942	92.0	90.9	78.978
																				68	79.92	0.921	92.0	92.0	78.999
																				69	79.99	1.012	92.0	90.9	78.978
																				69	79.99	1.061	92.0	88.3	78.929
																				72	78.57	1.024	92.0	15.5	77.546
																				72	78.57	1.186	92.0	7.0	77.384
70-1	79.75	1.395	92.0	58.1	78.355																				
70-4	79.75	0.966	92.0	80.7	78.784																				
71-1	79.32	1.584	92.0	25.5	77.736																				
71-4	79.32	1.155	92.0	48.1	78.165																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.39	0.10	0.3	-0.219	1.53	77.228	74.937	79	76.31	-0.918				
																				74	77.04	1.116	77.5	33.4	75.924
																				74	77.04	0.864	77.5	41.9	76.176
																				75	76.55	1.161	77.5	15.3	75.389
																				75	76.55	0.906	77.5	23.9	75.644
																				76	77.90	0.846	77.5	71.6	77.054
																				76	77.90	1.098	77.5	63.1	76.802
																				77	77.34	0.830	77.5	53.2	76.510
																				77	77.34	1.082	77.5	44.7	76.258
																				79	76.31	1.240	77.5	4.5	75.070
73-1	77.95	1.479	77.5	51.9	76.471																				
73-4	77.95	0.811	77.5	74.5	77.139																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.10	0.4	-0.190	1.53	74.911	74.577	80-4	75.75	0.839				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.64	0.12	0.4	-0.209	1.53	74.507	73.529	81-3	74.96	0.453				
																				78-2	75.03	1.463	30.5	1.2	73.567
																				78-3	75.03	1.280	30.5	6.9	73.750
																				78-4	75.03	1.020	30.5	15.0	74.010
																				80-1	75.75	1.625	30.5	18.6	74.125
																				80-3	75.75	1.281	30.5	29.3	74.469
																				81-3	74.96	1.312	30.5	3.7	73.648
81-4	74.96	1.059	30.5	11.6	73.901																				
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.255	1.53	73.485	72.277	82-1	74.07	0.585				
																				59	74.11	1.483	54.5	15.8	72.627
																				60	74.12	1.174	54.5	30.2	72.946
																				78-1	75.03	1.784	54.5	43.7	73.246
																				81-1	74.96	1.674	54.5	45.5	73.286
																				81-2	74.96	1.522	54.5	52.4	73.438
																				82-1	74.07	1.480	54.5	14.1	72.590
82-4	74.07	0.980	54.5	36.7	73.090																				
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.39	0.00	0.0	-0.254	1.68	74.632	74.612	89	75.57	0.938				

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.46	0.03	0.2	-0.212	1.53	74.612	73.411	87	74.99	0.378				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.70	0.03	0.1	-0.221	1.53	73.373	72.287	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.47	0.7	-0.237	1.55	72.277	71.942	83-1	73.46	1.183				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.47	1.03	0.3	-0.723	1.63	71.197	70.695	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.46	0.00	0.0	-0.257	1.68	74.889	74.655	57	75.47	0.581				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.52	0.54	0.6	-0.278	1.68	74.889	72.738	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.16	0.07	0.4	-0.264	1.77	76.059	75.662	94-1	76.73	0.671				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.13	0.25	0.4	-0.346	1.77	76.059	74.889	56	76.20	0.141				
																				51	77.19	1.429	105.0	78.3	75.761
																				52	77.15	1.548	105.0	64.0	75.602
																				53	76.91	1.429	105.0	53.1	75.481
																				54	76.63	1.310	105.0	38.7	75.320
																				55	76.37	1.167	105.0	28.2	75.203
																				56	76.20	1.157	105.0	13.8	75.043
																				91-1	77.44	1.588	105.0	86.4	75.852
																				91-4	77.44	1.393	105.0	103.9	76.047
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.61	1.34	0.5	-0.413	1.62	69.046	67.269	27	68.65	-0.396				
																				27	68.65	1.242	60.0	4.7	67.408
																				28	69.07	1.235	60.0	19.1	67.835
																				29	69.63	1.591	60.0	26.0	68.039
																				30	70.23	1.764	60.0	40.4	68.466
																				31	70.87	2.197	60.0	47.4	68.673
																				38	68.95	1.252	60.0	14.5	67.698
																				39	69.64	1.515	60.0	28.9	68.125
																				40	70.34	1.957	60.0	37.6	68.383
																				41	71.03	2.304	60.0	49.2	68.726
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.08	0.28	0.5	-0.211	1.77	76.574	76.200	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.40	0.31	0.4	-0.319	1.55	71.175	70.451	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.07	0.00	0.0	0.048	1.45	68.014	68.014	9-2	68.47	0.456				
																				10-1	68.47	0.456	7.0	3.5	68.014
																				10-2	68.47	0.456	7.0	2.8	68.014
																				11-1	68.62	0.606	7.0	5.3	68.014
																				11-2	68.62	0.606	7.0	5.3	68.014
																				12-2	68.54	0.526	7.0	1.7	68.014
																				9-2	68.50	0.486	7.0	2.4	68.014
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.41	0.10	1.1	0.103	1.60	68.014	67.689	6-1	68.23	0.216				
																				12-1	68.54	0.552	32.5	29.9	67.988
																				13-1	68.43	0.613	32.5	12.8	67.817
																				13-2	68.43	0.529	32.5	21.2	67.901
																				14-2	68.42	0.704	32.5	2.7	67.716
																				6-1	68.23	0.455	32.5	8.6	67.775
																				6-2	68.23	0.499	32.5	4.2	67.731
																				7-1	68.28	0.485	32.5	10.6	67.795
																				7-2	68.28	0.494	32.5	9.7	67.786
																				8-1	68.36	0.534	32.5	13.7	67.826
																				8-2	68.36	0.454	32.5	21.7	67.906
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.054	1.57	67.689	67.256	9-1	68.50	0.544	32.5	26.7	67.956	
																				17-1	68.23	0.541			
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.867	77.0	52.9	67.553

Table B-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.819	77.0	61.3	67.601
																				16-1	68.29	0.841	77.0	34.4	67.449
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.889	77.0	15.2	67.341
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.57	66.691	65.528	4-1	66.76	0.069				
																				4-1	66.76	1.196	51.5	1.6	65.564
																				4-2	66.76	1.006	51.5	10.0	65.754
																				5-1	67.15	1.123	51.5	22.1	66.027
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.898	51.5	8.6	65.722
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full
⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.080 Interpolated HGL elevation

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾ m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.81	0.05	0.3	-0.186	1.52	62.782	60.025	B92L1	61.17	-1.612																							
																				B92L1	61.17	1.078	90.9	2.2	60.092																			
																				B93	61.89	1.534	90.9	10.9	60.356																			
																				B94	62.24	1.196	90.9	33.6	61.044																			
																				B95	62.74	1.032	90.9	55.5	61.708																			
																				B96	63.53	1.218	90.9	75.4	62.312																			
																				B97	63.52	1.248	90.9	74.1	62.272																			
																				B98	62.59	1.112	90.9	47.9	61.478																			
																				B99	61.56	1.392	90.9	4.7	60.168																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	1.93	0.22	1.2	0.060	1.52	60.025	59.776	B92L3	61.17	1.145			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.02	0.25	0.8	-0.108	1.52	59.677	58.321	L88	60.83	1.153			
																																								L88	60.83	2.350	45.2	5.3
L89	61.05	2.075	45.2	21.8	58.975																																							
L90	60.93	1.703	45.2	30.2	59.227																																							
L91	60.90	1.256	45.2	44.1	59.644																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.13	0.26	0.8	-0.132	1.53	58.303	57.919	L85	58.99	0.687																							
																				L85	58.99	1.022	34.0	4.3	57.968																			
																				L86	59.79	1.716	34.0	13.7	58.074																			
																				L87	60.00	1.747	34.0	29.6	58.253																			
105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.28	0.62	1.0	-0.040	1.53	57.919	57.220	L81	58.16	0.241																							
																				L81	58.16	0.816	66.9	11.9	57.344																			
																				L80	58.39	1.140	66.9	2.9	57.250																			
																				L82	58.22	0.724	66.9	26.4	57.496																			
																				L83	58.40	0.739	66.9	42.2	57.661																			
																				L84	58.95	1.174	66.9	53.2	57.776																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.86	0.62	1.0	-0.069	1.53	57.220	57.034	L79	58.44	1.220																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.44	0.62	1.0	-0.200	1.53	57.009	56.928	L74	58.91	1.901																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.49	0.62	1.0	-0.205	1.53	56.928	56.776	L73	59.22	2.292																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.17	0.6	-0.160	1.53	60.711	57.919	L75	59.26	-1.451																							
																				L75	59.26	0.921	116.3	17.5	58.339																			
																				L76	59.55	0.740	116.3	37.1	58.810																			
																				B103SD	60.07	0.790	116.3	56.7	59.280																			
																				B104SD	60.75	1.014	116.3	75.7	59.736																			
																				B105SD	61.36	1.168	116.3	94.7	60.192																			
																				B106SD	62.05	1.399	116.3	113.8	60.651																			
																				B102L1	61.93	1.286	116.3	113.5	60.644																			
																				B102L4	61.55	1.449	116.3	90.9	60.101																			
																				B101L1	60.92	1.124	116.3	78.2	59.796																			
																				B101L4	60.52	1.266	116.3	55.6	59.254																			
B100L1	59.97	0.966	116.3	45.2	59.004																																							
B100L4	59.58	1.118	116.3	22.6	58.462																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.67	0.00	0.0	-0.259	1.50	63.197	62.727	L60	63.78	0.583																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.67	0.03	0.2	-0.219	1.52	62.727	60.893	L66	62.23	-0.497																							
																				L66	62.23	1.309	65.6	1.0	60.921																			
																				L65	62.47	1.160	65.6	14.9	61.310																			
																				L64	62.67	1.047	65.6	26.1	61.623																			
																				L63	63.00	0.944	65.6	41.6	62.056																			
																				L62	63.31	1.078	65.6	47.9	62.232																			
																				L61	63.58	1.040	65.6	58.9	62.540																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.76	0.06	0.3	-0.247	1.52	60.865	59.850	B108L4	61.64	0.775																							

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.73	4.69	0.7	-0.391	1.57	58.644	58.111	L71	59.63	0.986				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.38	4.69	0.7	-0.198	1.57	56.978	56.776	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	2.81	1.70	0.5	-0.560	1.53	65.818	65.449	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	2.90	1.74	0.5	-0.566	1.55	64.466	63.636	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.06	3.67	0.7	-0.531	1.55	63.179	62.877	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.09	3.76	0.8	-0.521	1.55	61.599	61.172	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.89	4.10	0.8	-0.364	1.55	60.336	59.926	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.383	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.70	0.30	1.0	0.438	1.68	62.383	60.484	B109L4	61.76	-0.623				
																			B109L4	61.76	0.512	62.4	25.1	61.248	
																			B109L1	61.76	0.515	62.4	25.0	61.245	
																			B110SD	62.44	0.650	62.4	42.9	61.790	
																			B111SD	63.15	0.880	62.4	58.7	62.270	
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.06	0.69	0.7	-0.267	1.57	59.106	58.135	L18	59.42	0.314				
																			L18	59.42	1.207	64.4	5.2	58.213	
																			L19	60.08	1.698	64.4	16.4	58.382	
																			L20	60.56	1.940	64.4	32.2	58.621	
																			L21	60.98	2.213	64.4	41.9	58.767	
																			L22	61.39	2.388	64.4	57.5	59.002	
																			L24	61.34	2.475	64.4	48.4	58.865	
																			L35	61.06	2.433	64.4	32.6	58.627	
																			L26	60.61	2.157	64.4	21.1	58.453	
																			L27	59.90	1.682	64.4	5.5	58.218	
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.14	0.69	0.7	-0.275	1.58	56.930	55.967	L14	57.61	0.680				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.98	0.75	0.7	-0.232	1.58	54.813	53.915	L9	55.68	0.867				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.50	0.75												

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L42	61.29	1.635	61.7	18.7	59.655
																				L41	60.68	1.159	61.7	11.3	59.521
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.81	0.8	-0.117	1.58	57.424	56.090	L36	57.89	0.466				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.28	1.58	0.8	-0.262	1.60	62.942	62.693	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.33	1.60	0.8	-0.264	1.60	61.103	60.071	N/A	N/A	N/A				
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.09	7.21	0.8	-0.481	1.60	53.597	53.442	L3	58.26	4.663				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.97	8.43	0.8	-0.408	1.60	53.442	53.197	L8	55.21	1.768				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.09	0.08	0.3	-0.233	1.62	69.807	67.812	B54L4	69.35	-0.457				
																				B54L4	69.35	1.425	83.1	4.7	67.925
																				B54L1	69.35	0.976	83.1	23.4	68.374
																				B56L4	70.19	1.651	83.1	30.3	68.539
																				B56L1	70.19	1.142	83.1	51.5	69.048
																				B57SD	70.63	1.226	83.1	66.3	69.404
																				B43L4	71.22	1.646	83.1	73.4	69.574
																				B58L4	70.88	1.241	83.1	76.1	69.639
																				B58L1	70.88	1.752	83.1	54.8	69.128
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	1.88	0.08	0.3	-0.221	1.62	67.767	67.464	B53L3	68.90	1.133				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.32	0.51	0.9	-0.162	1.62	66.499	65.422	B47L4	66.63	0.131				
																				B47L4	66.63	1.054	119.4	17.1	65.576
																				B47L1	66.63	0.863	119.4	38.3	65.767
																				B48L4	67.21	1.381	119.4	45.1	65.829
																				B48L1	67.21	1.190	119.4	66.3	66.020
																				B49L4	67.77	1.690	119.4	72.9	66.080
																				B49L1	67.77	1.499	119.4	94.1	66.271
																				B50SD	68.07	1.662	119.4	109.3	66.408
																				B51L3	68.41	1.948	119.4	115.3	66.462
																				B59L4	68.18	1.785	119.4	107.9	66.395
																				B59L1	68.18	1.976	119.4	86.7	66.204
																				B60SD	67.97	1.828	119.4	79.8	66.142
																				B61L4	67.31	1.304	119.4	64.7	66.006
																				B61L1	67.31	1.496	119.4	43.5	65.814
																				B62L4	66.89	1.135	119.4	36.9	65.755
																				B62L1	66.89	1.326	119.4	15.7	65.564
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.78	0.67	0.7	-0.244	1.57	65.341	64.341	L41	65.57	0.229				
																				L41	65.57		1.215	83.2	1.2
																				L42	65.98	1.470	83.2	14.1	64.510
																				L43	66.07	1.415	83.2	26.1	64.655
																				L44	66.12	1.292	83.2	40.5	64.828
																				L45	66.23	1.277	83.2	50.9	64.953
																				L46	66.87	1.738	83.2	65.8	65.132
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.85	0.12	0.4	-0.166	1.53	66.156	65.384	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.09	0.59	0.4	-0.385	1.55	71.042	70.250	B102L5	72.70	1.658				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	0.27	0.00	0.0	-0.285	1.55	71.042	69.807	B42SD	71.19	0.148				
																				B42SD	71.19	1.231	71.4	8.8	69.959
																				B41L1	71.59	1.518	71.4	15.3	70.072
																				B41L4	71.59	1.150	71.4	36.6	70.440
																				B40L1	71.88	1.329	71.4	43.0	70.551
																				B40L3	71.88	1.068	71.4	58.1	70.812
																				B563L1	72.21	1.327	71.4	62.2	70.883
																				B45L1	71.98	1.208	71.4	55.8	70.772

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				B45L4 B44SD B43L1	71.98 71.47 71.47	1.576 1.187 1.457	71.4 71.4 71.4	34.5 27.5 11.9	70.404 70.283 70.013			
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.93	5.42	0.9	-0.326	1.57	56.776	56.354	L32	58.76	1.984							
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.87	0.30	1.5	0.289	1.68	60.484	60.036	N/A	N/A	N/A							
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.74	5.42	0.9	-0.175	1.57	56.354	55.980	L11	58.85	2.496							
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.38	5.63	0.7	-0.500	1.58	54.067	53.597	N/A	N/A	N/A							
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.00	0.19	0.3	-0.284	1.52	54.140	54.129	L22	54.73	0.590							
																				L22 L21 L20	54.73 54.73 55.10	0.591 0.590 0.962	28.2 28.2 28.2	25.9 27.4 22.9	54.139 54.140 54.138			
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.07	0.23	0.4	-0.195	1.60	54.129	54.078	L19	55.79	1.661							
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.72	0.67	0.7	-0.236	1.57	64.323	63.951	L39	65.04	0.717							
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.74	0.70	0.8	-0.222	1.57	63.947	63.597	L37	64.89	0.943							
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.52	0.86	0.9	-0.210	1.57	63.398	62.991	L34	64.28	0.882							
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.57	67.451	67.098	L339	68.56	1.109							
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.249	1.55	65.520	64.336	L347	65.57	0.050							
																				L347 L346 L345 L344 3-1 1	65.57 66.07 66.61 67.15 66.15 65.55	1.200 1.214 1.551 1.761 1.055 0.724	52.4 52.4 52.4 52.4 52.4 52.4	1.5 23.0 32.0 46.6 33.6 21.7	64.370 64.856 65.059 65.389 65.095 64.826			
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.50	0.73	0.7	-0.152	1.60	63.932	62.942	L58	64.18	0.248							
																				L58 L57 L56	64.18 64.44 64.75				0.900 0.850 0.930	55.0 55.0 55.0	18.8 36.0 48.8	63.280 63.590 63.820
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.41	1.15	0.8	-0.386	1.57	69.162	69.055	18-1	69.48	0.318							
																				18-1 18-2 19-1 19-2 20-1 20-2 21-1	69.48 69.48 69.51 69.51 69.54 69.54 69.57	0.400 0.389 0.406 0.394 0.411 0.399 0.416	80.5 80.5 80.5 80.5 80.5 80.5 80.5	18.7 27.1 37.2 45.6 55.9 64.4 74.5	69.080 69.091 69.104 69.116 69.129 69.141 69.154			
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.70	0.27	1.6	0.398	1.58	69.055	68.407	N/A	N/A	N/A							
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	0.99	N/A	N/A	1.58	69.055	68.319	N/A	N/A	N/A							
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.51	0.61	0.4	-0.444	1.55	69.979	69.427	B92L1	70.77	0.791							
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	1.95	0.68	0.5	-0.421	1.55	69.427	69.260	B94L4	70.08	0.653							
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.46	0.69	0.5	-0.400	1.55	69.260	69.162	21-2	69.57	0.310							
																				21-2 22-1 22-2 23-1 23-2 24-1 24-2 B95-1 B95-4 B94-1	69.57 69.60 69.60 69.63 69.63 69.67 69.67 69.95 69.95 70.08	0.404 0.419 0.406 0.420 0.408 0.432 0.419 0.764 0.730 0.848	64.0 64.0 64.0 64.0 64.0 64.0 64.0 64.0 64.0 64.0	2.7 12.7 21.2 31.1 39.4 49.5 58.0 15.9 37.7 45.4	69.166 69.181 69.194 69.210 69.222 69.238 69.251 69.186 69.220 69.232			

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.04	0.08	0.3	-0.242	1.53	68.660	66.156	B36SD	68.23	-0.430				
																				B36SD	68.23	1.691	101.9	15.6	66.539
																				B37L4	68.70	2.011	101.9	21.7	66.689
																				B37L1	68.70	1.490	101.9	42.9	67.210
																				B38L4	69.31	1.940	101.9	49.4	67.370
																				B38L1	69.31	1.419	101.9	70.6	67.891
																				B39L4	69.62	1.555	101.9	77.7	68.065
																				B39L1	69.62	1.031	101.9	99.0	68.589
																				B47L1	69.23	0.794	101.9	92.8	68.436
																				B47L4	69.23	1.354	101.9	70.0	67.876
																				B48L1	68.82	1.069	101.9	64.9	67.751
																				B48L4	68.82	1.590	101.9	43.7	67.230
																				B49SD	68.53	1.465	101.9	37.0	67.065
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.34	-0.01	-0.1	-0.249	1.53	69.523	69.609	B96L1	70.07	0.547				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.25	1.87	0.6	-0.352	1.63	68.896	67.995	Fut. Est.	72.09	3.194				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.00	0.03	0.3	-0.249	1.53	72.430	71.759	B107L1	72.89	0.460				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.71	0.03	0.3	-0.182	1.53	71.759	71.748	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.36	0.17	1.0	-0.109	1.55	71.748	71.547	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.45	0.54	0.5	-0.270	1.53	71.435	71.089	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.95	0.03	0.3	-0.181	1.53	72.383	71.770	B102L1	72.70	0.317				
																				B102L1	72.70	0.895	106.5	6.0	71.805
																				B102L5	72.70	0.728	106.5	35.1	71.972
																				B103L1	72.87	0.842	106.5	44.8	72.028
																				B103L4	72.87	0.721	106.5	65.8	72.149
																				B104L1	73.05	0.844	106.5	75.8	72.206
																				B104L5	73.05	0.678	106.5	104.5	72.372
																				B105L10	73.24	0.893	106.5	100.3	72.347
																				B105L6	73.24	1.051	106.5	72.7	72.189
																				B106L10	73.08	0.951	106.5	62.3	72.129
																				B106L6	73.08	1.108	106.5	35.1	71.972
																				B107L10	72.89	0.969	106.5	26.3	71.921
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.05	0.04	0.5	-0.125	1.53	71.770	71.547	B107L6	72.89	1.120				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.37	0.61	0.4	-0.424	1.55	70.241	70.014	B100SD	72.25	2.009				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.53	0.19	0.9	-0.116	1.53	63.150	62.629	L1	64.26	1.110				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.12	0.41	0.7	-0.211	1.57	62.564	61.942	L14	63.44	0.876				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.45	0.45	0.7	-0.227	1.58	61.898	61.286	L10	63.20	1.302				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.23	0.50	0.7	-0.271	1.58	61.244	60.774	L5	63.33	2.086				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.51	0.58	0.7	-0.259	1.57	60.758	60.359	L2	62.35	1.592				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.29	1.1	-0.042	1.55	67.994	67.179	L334	68.05	0.056				
																				L334	68.05	0.731	87.0	14.9	67.319
																				L335	68.12	0.735	87.0	22.0	67.385
																				B610L1	68.12	0.577	87.0	38.9	67.543
																				B610L5	68.18	0.357	87.0	68.7	67.823
																				B611L1	68.53	0.692	87.0	70.4	67.838
																				B111L4	68.45	0.823	87.0	47.8	67.627
																				B612SD	68.45	0.919	87.0	37.6	67.531
																				B613SD	68.40	1.059	87.0	17.3	67.341
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.08	N/A	N/A	1.55	67.994	67.822	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.74	6.86	0.7	-0.795	1.63	67.497	67.048	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.35	0.19	0.7	-0.109	1.58	64.939	62.966	L19	64.58	-0.359				

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L19	64.58	1.154	82.0	19.1	63.426
																				L20	64.99	1.242	82.0	32.5	63.748
																				L21	65.74	1.629	82.0	47.6	64.111
																				L22	66.37	1.924	82.0	61.5	64.446
																				L23	67.00	2.213	82.0	75.7	64.787
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.07	0.01	0.0	-0.261	1.53	51.504	48.283	N/A	N/A	N/A				
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.44	0.02	0.1	-0.303	1.52	47.117	44.885	N/A	N/A	N/A				
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.47	0.14	0.7	-0.182	1.52	44.744	44.631	N/A	N/A	N/A				
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.69	0.08	0.6	-0.126	1.52	69.155	67.994	L34	69.22	0.065				
																				L34	69.22	0.971	82.8	18.2	68.249
																				L33	69.36	0.892	82.8	33.8	68.468
																				L32	69.53	0.941	82.8	42.4	68.589
																				L31	69.62	0.828	82.8	56.9	68.792
																				L30	69.82	0.903	82.8	65.8	68.917
																				L29	70.07	0.944	82.8	80.7	69.126
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.33	1.0	-0.064	1.53	67.159	66.128	L325	67.35	0.191				
																				L325	67.35	1.178	72.5	3.1	66.172
																				L326	67.53	1.135	72.5	18.8	66.395
																				L327	67.79	1.279	72.5	26.9	66.511
																				L328	67.99	1.174	72.5	48.4	66.816
																				B614SD	68.21	1.072	72.5	71.0	67.138
																				L333	67.98	0.842	72.5	71.0	67.138
																				L332	67.91	0.899	72.5	62.1	67.011
																				L331	67.79	1.048	72.5	43.2	66.742
																				L330	67.63	1.004	72.5	35.0	66.626
																				L329	67.47	1.114	72.5	16.0	66.356
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.08	0.33	1.0	0.023	1.55	66.128	65.841	L324	67.08	0.952				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.20	0.38	0.7	-0.131	1.58	65.809	64.582	L319	65.72	-0.089				
																				L319	65.72	0.803	77.0	21.0	64.917
																				L320	66.05	0.826	77.0	40.3	65.224
																				L321	66.39	1.038	77.0	48.3	65.352
																				L322	66.71	1.064	77.0	66.8	65.646
																				L323	66.89	1.196	77.0	69.8	65.694
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.00	0.49	0.6	-0.265	1.57	63.746	63.068	L123	64.76	1.014				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.97	0.03	0.4	-0.174	1.53	66.087	65.706	B601SD	66.46	0.373				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.22	0.07	0.3	-0.276	1.55	65.604	65.210	B604SD	66.07	0.466				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.22	0.07	0.3	-0.277	1.55	65.180	64.892	L296	65.77	0.590				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.97	3.36	0.7	-0.577	1.60	72.506	72.126	B80L1	73.88	1.374				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	3.00	3.43	0.7	-0.571	1.62	70.928	70.560	B87SD	72.44	1.512				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	3.04	3.51	0.7	-0.567	1.62	69.775	69.373	B85L1	71.32	1.545				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	3.07	3.62	0.7	-0.544	1.62	69.373	68.964	L51	71.02	1.647				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	3.05	6.60	0.9	-0.611	1.62	67.939	67.628	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	5.14	6.95	0.4	-1.044	1.63	63.646	62.598	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	5.11	7.11	0.4	-1.025	1.63	62.134	61.592	N/A	N/A	N/A				
1007	1008	59.854	59.009	1950	65.0	1.3	0.013	64.500	62.180	5.433	16.224	4.28	9.41	0.6	-0.569	1.63	61.235	60.075	N/A	N/A	N/A				
1008	1009	52.061	51.805	2250	80.0	0.3	0.013	62.180	57.440	2.965	11.790	3.04	9.44	0.8	-0.607	1.63	53.704	53.501	N/A	N/A	N/A				
1009	1010	51.805	51.527	2250	87.0	0.3	0.013	57.440	57.070	2.965	11.790	2.94	9.44	0.8	-0.554	1.65	53.501	53.250	N/A	N/A	N/A				
1010	1011	51.527	51.252	2250	86.0	0.3	0.013	57.070	56.500	2.965	11.790	2.88	9.44	0.8	-0.527	1.65	53.250	53.013	N/A	N/A	N/A				
1011	1012	51.252	50.991	2250	81.5	0.3	0.013	56.500	56.600	2.965	11.790	2.83	9.43	0.8	-0.489	1.67	53.013	52.707	N/A	N/A	N/A				
1012	1013	50.991	50.681	2250	97.0	0.3	0.013	56.600	54.680	2.965	11.790	2.95	9.43	0.8	-0.534	1.67	52.707	52.124	N/A	N/A	N/A				

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.31	10.97	0.7	-0.964	1.68	51.666	51.454	N/A	N/A	N/A				
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.66	0.74	0.7	-0.195	1.53	52.508	51.955	N/A	N/A	N/A				
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.13	0.74	0.7	0.010	1.53	51.955	51.586	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.29	0.21	0.6	-0.192	1.53	59.850	59.517	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.29	1.20	0.6	-0.432	1.52	67.034	66.978	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.61	4.40	0.7	-0.412	1.55	59.695	59.373	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	3.02	0.49	0.6	-0.263	1.57	62.643	62.305	L45	63.24	0.597				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.71	0.10	0.3	-0.281	1.62	66.694	66.499	B51L1	68.41	1.716				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.56	2.41	0.7	-0.498	1.53	75.387	75.212	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	0.93	0.23	0.4	0.049	1.60	54.078	54.067	L30	58.92	4.842				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.69	0.01	0.2	-0.208	1.53	72.052	71.756	B103L8	72.87	0.818				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.73	0.27	0.7	0.020	1.58	68.407	67.994	N/A	N/A	N/A				
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.21	0.15	0.7	-0.128	1.52	44.885	44.802	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.092	1.57	65.818	65.711	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.50	65.818	65.809	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	2.15	3.20	1.1	0.389	1.65	50.531	50.507	N/A	N/A	N/A				
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	9.29	17.58	N/A	N/A	1.92	50.502	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.40	0.58	0.7	-0.242	1.58	60.279	60.066	L23	61.85	1.571				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.05	0.29	1.1	0.013	1.58	69.429	69.162	B84L1	69.71	0.281				
																				B84L1	69.71	0.495	83.9	16.8	69.215
																				B84L4	69.71	0.426	83.9	38.3	69.284
																				B83L1	70.27	0.965	83.9	45.0	69.305
																				B83L3	70.27	0.917	83.9	60.0	69.353
																				B82L1	70.96	1.586	83.9	66.6	69.374
																				B82L4	70.96	1.537	83.9	81.9	69.423
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.90	0.06	1.0	-0.011	1.53	69.609	69.440	B96L4	70.07	0.461				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.75	0.32	0.8	-0.098	1.55	71.863	71.083	L52	72.19	0.327				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.28	0.9	-0.125	1.53	72.681	71.863	L56	72.93	0.249				
																				L56	72.93	0.956	64.8	8.8	71.974
																				B73SD	73.17	1.034	64.8	21.6	72.136
																				L57	73.23	0.856	64.8	40.5	72.374
																				L58	73.36	0.813	64.8	54.2	72.547
																				L60	73.51	0.879	64.8	60.8	72.631
																				L61	73.43	1.007	64.8	44.4	72.423
																				L62	73.37	1.141	64.8	29.0	72.229
																				L63	73.28	1.228	64.8	15.0	72.052
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.22	0.02	0.2	-0.217	1.53	73.479	72.681	L59	73.54	0.061				
																				L59	73.54	0.819	44.4	2.2	72.721
																				B72L1	73.92	1.000	44.4	13.3	72.920
																				B72L2	73.92	0.833	44.4	22.6	73.087
																				B71L1	74.10	0.862	44.4	31.0	73.238
																				B66L4	74.39	1.062	44.4	36.0	73.328
																				B66L1	73.99	0.903	44.4	22.6	73.087
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.42	0.02	0.2	-0.217	1.53	74.419	73.509	B71L4	74.50	0.081				
																				B71L4	74.50	0.833	45.4	7.9	73.667
																				B70L1	74.89	1.064	45.4	15.8	73.826
																				B70L2	74.89	0.876	45.4	25.2	74.014
																				B69L1	75.49	1.312	45.4	33.4	74.178
																				B69L2	75.49	1.111	45.4	43.4	74.379

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B68L1 B67L4 B67L1	76.39 75.19 74.79	2.011 1.012 1.123	45.4 45.4 45.4	43.4 33.4 7.9	74.379 74.178 73.667
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.19	0.29 0.01	1.0 0.1	-0.094 -0.235	1.57 1.52	65.692 69.138	65.294 67.982	N/A L13	N/A 69.13	N/A -0.008				
																				L13 L12 L11 L10 L9	69.13 69.49 69.68 69.81 69.81	1.006 1.154 1.051 0.992 0.708	65.0 65.0 65.0 65.0 65.0	8.0 19.9 36.4 47.0 63.0	68.124 68.336 68.629 68.818 69.102
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.85	0.04	0.2	-0.201	1.53	67.982	65.658	L18	66.92	-1.062				
																				L18 L17 L16 L15 L14	66.92 67.35 67.80 68.21 68.67	1.027 0.940 1.033 0.913 0.977	72.3 72.3 72.3 72.3 72.3	7.3 23.4 34.5 51.0 63.3	65.893 66.410 66.767 67.297 67.693
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.15 1.98	0.04 0.09	0.3 0.4	-0.157 -0.214	1.53 1.57	65.646 67.822	65.410 66.273	N/A L24	N/A 67.63	N/A -0.192				
																				L24 L25 L26 L27 L28	67.63 68.23 68.95 69.33 69.33	1.227 1.575 2.016 2.149 1.845	86.0 86.0 86.0 86.0 86.0	7.2 21.2 36.7 50.4 67.3	66.403 66.655 66.934 67.181 67.485
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.35	1.07	0.7	-0.386	1.60	68.319	67.939	L35	69.61	1.291				
																				L35 L36 L37 L38 L39 L40 L46 L45 L44 L43 L42 L41	69.61 70.01 70.32 70.49 70.49 70.36 70.51 70.56 70.58 70.32 70.06 69.67	1.361 1.807 2.161 2.385 2.417 2.338 2.484 2.483 2.471 2.157 1.855 1.417	103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5	84.3 71.8 59.9 45.3 36.4 22.5 23.6 37.7 46.4 61.0 72.5 85.4	68.249 68.203 68.159 68.105 68.073 68.022 68.026 68.077 68.109 68.163 68.205 68.253
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.247	84	80.14	-0.092				
																				79 80 81 82 83 84	81.31 81.20 80.82 80.66 80.27 80.14	1.129 1.405 1.374 1.600 1.503 1.759	74.0 74.0 74.0 74.0 74.0 74.0	72.1 57.7 44.7 30.3 19.4 5.0	80.181 79.795 79.446 79.060 78.767 78.381
501 502 503 504	505 503 504 509	80.232 78.418 78.132 77.904	80.053 78.282 77.949 77.420	300 300 450 450	17.0 34.0 73.0 88.0	1.1 0.4 0.3 0.6	0.013 0.013 0.013 0.013	83.090 81.120 81.790 81.360	82.920 81.790 81.360 80.780	1.402 0.865 0.896 1.329	0.099 0.061 0.143 0.211	0.00 0.61 0.62 0.96	0.00 0.01 0.02 0.05	0.0 0.2 0.1 0.2	-0.300 -0.197 -0.335 -0.301	0.00 1.53 1.53 1.53	80.232 78.521 78.247 78.053	80.148 78.367 78.053 77.704	77 87 41 34	81.27 79.42 79.36 78.97	1.038 0.899 1.113 0.917				
																				34 35 36	78.97 79.03 79.08	1.227 1.230 1.245	88.0 88.0 88.0	9.9 24.3 33.1	77.743 77.800 77.835

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				37	79.14	1.248	88.0	47.5	77.892
																				38	79.19	1.270	88.0	54.4	77.920
																				39	79.25	1.273	88.0	68.8	77.977
																				40	79.31	1.298	88.0	77.6	78.012
																				52	79.54	1.497	88.0	85.4	78.043
																				53	79.46	1.442	88.0	79.3	78.018
																				54	79.43	1.469	88.0	64.9	77.961
																				55	79.43	1.520	88.0	51.9	77.910
																				56	79.32	1.467	88.0	37.5	77.853
																				57	79.23	1.421	88.0	26.6	77.809
																				58	79.12	1.370	88.0	11.6	77.750
505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	0.93	0.02	0.2	-0.200	1.52	80.148	79.580	64	80.26	0.112				
																				64	80.26	0.642	72.5	4.9	79.618
																				65	80.40	0.677	72.5	18.2	79.723
																				66	80.54	0.705	72.5	32.6	79.835
																				67	80.65	0.729	72.5	43.5	79.921
																				68	80.77	0.736	72.5	57.9	80.034
																				69	80.92	0.796	72.5	69.4	80.124
																				71	80.32	0.664	72.5	9.7	79.656
																				72	80.46	0.702	72.5	22.7	79.758
																				73	80.57	0.699	72.5	37.1	79.871
																				74	80.69	0.750	72.5	45.9	79.940
																				75	80.82	0.768	72.5	60.3	80.052
																				76	81.20	1.070	72.5	70.2	80.130
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.079	1.53	79.580	78.719	59	79.58	0.000				
																				59	79.58	0.723	76.5	12.3	78.857
																				60	79.72	0.700	76.5	26.7	79.020
																				61	79.86	0.694	76.5	39.7	79.166
																				62	80.00	0.672	76.5	54.1	79.328
																				63	80.12	0.645	76.5	67.2	79.475
																				70	80.18	0.652	76.5	71.9	79.528
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.12	0.26	0.6	-0.238	1.55	78.618	77.704	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.27	0.52	0.8	-0.166	1.55	77.704	75.987	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.40	0.05	0.5	-0.140	1.53	77.612	76.726	90-2	77.72	0.108				
																				88-1	78.32	1.077	88.5	51.6	77.243
																				88-4	78.32	0.865	88.5	72.8	77.455
																				89-1	78.00	1.041	88.5	23.3	76.959
																				89-4	78.00	0.828	88.5	44.5	77.172
																				90-2	77.72	0.968	88.5	2.6	76.752
																				90-4	77.72	0.827	88.5	16.7	76.893
																				96-1	78.46	1.128	88.5	60.5	77.332
																				96-5	78.46	0.879	88.5	85.4	77.581
																				97-1	78.08	1.028	88.5	32.6	77.052
																				97-4	78.08	0.815	88.5	53.8	77.265
																				98-2	77.80	1.016	88.5	5.8	76.784
																				98-5	77.80	0.814	88.5	26.0	76.986
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.254	1.53	76.613	75.982	100-1	77.19	0.577				
																				100-1	77.19	1.057	75.0	18.0	76.133
																				100-4	77.19	0.878	75.0	39.2	76.312
																				90-1	77.72	1.146	75.0	70.4	76.574

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				91-1	77.47	1.181	75.0	36.5	76.289
																				91-5	77.47	0.951	75.0	63.8	76.519
																				92-1	77.33	1.278	75.0	8.3	76.052
																				92-4	77.33	1.100	75.0	29.5	76.230
																				98-1	77.80	1.198	75.0	73.7	76.602
																				99-1	77.47	1.103	75.0	45.8	76.367
																				99-4	77.47	0.924	75.0	67.0	76.546
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.74	0.07	0.3	-0.227	1.53	77.891	75.982	101-1	77.24	-0.651				
																				102	77.52	0.920	119.0	38.5	76.600
																				102	77.52	0.776	119.0	47.5	76.744
																				101-1	77.24	0.738	119.0	32.4	76.502
																				101-4	77.24	1.078	119.0	11.2	76.162
																				103-1	78.08	0.890	119.0	75.3	77.190
																				103-4	78.08	1.230	119.0	54.1	76.850
																				104-1	78.52	0.985	119.0	96.8	77.535
																				104-3	78.52	1.227	119.0	81.7	77.293
																				105-1	78.53	0.661	119.0	117.6	77.869
																				105-3	78.53	0.889	119.0	103.4	77.641
																				93-1	77.74	1.155	119.0	37.6	76.585
																				93-5	77.74	1.591	119.0	10.4	76.149
																				94-1	77.88	0.737	119.0	72.4	77.143
																				94-5	77.88	1.175	119.0	45.1	76.705
																				95-1	78.67	0.975	119.0	106.8	77.695
95-5	78.67	1.413	119.0	79.5	77.257																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.01	0.02	0.1	-0.276	1.55	77.891	76.973	25	78.18	0.289				
																				17	78.54	1.362	114.5	25.6	77.178
																				18	78.54	1.306	114.5	32.6	77.234
																				19	78.59	1.087	114.5	66.1	77.503
																				20	78.59	1.527	114.5	11.2	77.063
																				21	78.58	0.962	114.5	80.5	77.618
																				22	78.67	0.982	114.5	89.2	77.688
																				23	78.75	1.468	114.5	38.6	77.282
																				24	78.75	1.352	114.5	53.0	77.398
																				25	78.18	1.179	114.5	3.5	77.001
																				26	78.23	1.170	114.5	10.8	77.060
																				27	78.29	1.115	114.5	25.2	77.175
																				28	78.34	0.536	114.5	103.6	77.804
																				29	78.40	0.952	114.5	59.3	77.448
																				30	78.45	1.204	114.5	34.0	77.246
																				31	78.51	1.149	114.5	48.4	77.361
																				32	78.56	0.996	114.5	73.7	77.564
33	78.56	0.926	114.5	82.4	77.634																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.72	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.02	0.7	-0.172	1.57	75.982	75.303	N/A	N/A					
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.11	0.07	0.4	-0.256	1.78	75.652	75.310	96-1	76.43	0.778				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.34	1.09	0.8	-0.286	1.60	75.289	74.868	100-4	76.17	0.881				
																				98	76.29	1.214	78.0	38.6	75.076
																				98	76.29	1.262	78.0	29.6	75.028
																				100-4	76.17	1.294	78.0	1.4	74.876
																				97-1	76.30	1.189	78.0	45.0	75.111

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				97-4	76.30	1.075	78.0	66.2	75.225
																				99-1	76.23	1.318	78.0	8.1	74.912
																				99-3	76.23	1.237	78.0	23.2	74.993
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.75	0.05	0.4	-0.170	1.62	74.868	73.206	113-2	74.43	-0.438				
																				114	74.86	1.310	86.5	17.9	73.550
																				114	74.86	1.137	86.5	26.9	73.723
																				102-1	75.69	1.437	86.5	54.5	74.253
																				102-4	75.69	1.030	86.5	75.7	74.660
																				103-1	75.32	1.601	86.5	26.7	73.719
																				103-4	75.32	1.194	86.5	47.9	74.126
																				104-1	74.57	1.270	86.5	4.9	73.300
																				104-3	74.57	0.980	86.5	20.0	73.590
																				113-2	74.43	1.139	86.5	4.4	73.291
																				113-3	74.43	1.003	86.5	11.5	73.427
																				115-1	75.54	1.694	86.5	33.3	73.846
																				115-3	75.54	1.404	86.5	48.4	74.136
																				116-1	75.93	1.665	86.5	55.1	74.265
																				116-4	75.93	1.258	86.5	76.3	74.672
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.23	1.13	0.7	-0.214	1.62	74.868	73.919	48	75.25	0.382				
																				48	75.25	1.278	88.5	4.9	73.972
																				49	75.59	1.464	88.5	19.3	74.126
																				50	76.24	1.966	88.5	33.1	74.274
																				100-1	76.17	1.514	88.5	68.7	74.656
																				100-3	76.17	1.363	88.5	82.8	74.807
																				101-2	76.39	1.891	88.5	54.1	74.499
																				101-3	76.39	1.805	88.5	62.1	74.585
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.38	0.10	0.6	-0.125	1.63	73.206	70.664	108-1	71.98	-1.226				
																				106	73.27	0.744	87.5	64.1	72.526
																				106	73.27	1.005	87.5	55.1	72.265
																				112	73.88	1.232	87.5	68.3	72.648
																				112	73.88	0.970	87.5	77.3	72.910
																				105-1	73.98	1.268	87.5	70.5	72.712
																				105-3	73.98	0.829	87.5	85.6	73.151
																				107-1	72.82	1.354	87.5	27.6	71.466
																				107-4	72.82	0.738	87.5	48.8	72.082
																				108-1	71.98	1.145	87.5	5.9	70.835
																				108-3	71.98	0.706	87.5	21.0	71.274
																				109-1	72.10	1.329	87.5	3.7	70.771
																				109-3	72.10	0.890	87.5	18.8	71.210
																				110-1	72.62	1.230	87.5	25.0	71.390
																				110-3	72.62	0.791	87.5	40.1	71.829
																				111-1	73.30	1.291	87.5	46.3	72.009
																				111-3	73.30	0.838	87.5	61.9	72.462
																				113-1	74.43	1.334	87.5	83.7	73.096
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.86	0.43	0.4	-0.281	1.63	70.451	70.033	22	71.62	1.169				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.53	0.59	0.5	-0.252	1.63	69.486	66.635	15	67.95	-1.536				
																				15	67.95	1.118	79.5	5.5	66.832
																				16	68.22	0.767	79.5	22.8	67.453
																				17	68.77	1.034	79.5	30.7	67.736
																				18	69.45	1.198	79.5	45.1	68.252

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				19	70.14	1.421	79.5	58.1	68.719
																				20	70.77	1.535	79.5	72.5	69.235
																				21	71.17	1.770	79.5	77.1	69.400
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.51	0.02	0.1	-0.300	1.55	76.921	76.577	15	78.33	1.409				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.47	0.07	0.1	-0.348	1.53	76.534	73.233	9	75.24	-1.294				
																				9	75.24	1.565	69.5	9.3	73.675
																				10	75.66	1.458	69.5	20.4	74.202
																				11	76.22	1.334	69.5	34.8	74.886
																				12	76.80	1.496	69.5	43.6	75.304
																				13	77.37	1.382	69.5	58.0	75.988
																				14	77.72	1.376	69.5	65.5	76.344
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.52	0.07	0.3	-0.313	1.53	73.233	73.222	7	75.09	1.857				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.93	0.18	0.5	-0.307	1.55	73.222	72.983	5	74.99	1.768				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	4.98	1.34	0.4	-0.504	1.62	72.356	70.254	32	71.51	-0.846				
																				32	71.51	1.179	60.0	2.2	70.331
																				33	72.20	1.610	60.0	9.6	70.590
																				34	72.90	1.903	60.0	21.2	70.997
																				35	73.59	2.187	60.0	32.8	71.403
																				36	74.30	2.392	60.0	47.2	71.908
																				42	71.67	1.195	60.0	6.3	70.475
																				43	72.31	1.688	60.0	10.5	70.622
																				44	73.07	1.944	60.0	24.9	71.126
																				45	73.65	2.278	60.0	31.9	71.372
																				46	74.31	2.434	60.0	46.3	71.876
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.55	1.0	-0.165	1.62	67.269	66.773	13	67.89	0.621				
																				11	67.97	1.133	65.0	8.4	66.837
																				12	67.91	0.958	65.0	23.4	66.952
																				13	67.89	0.871	65.0	32.2	67.019
																				14	67.89	0.761	65.0	46.6	67.129
																				23	68.16	1.239	65.0	19.4	66.921
																				24	68.23	1.201	65.0	33.6	67.029
																				25	68.23	1.096	65.0	47.3	67.134
																				26	68.28	1.058	65.0	58.9	67.222
																				37	68.30	1.042	65.0	63.5	67.258
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.65	2.16	0.8	-0.281	1.63	66.635	65.721	7	66.89	0.255				
																				7	66.89	1.136	39.0	1.4	65.754
																				8	67.37	1.363	39.0	12.2	66.007
																				9	67.82	1.539	39.0	23.9	66.281
																				10	67.97	1.375	39.0	37.3	66.595
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.24	2.16	0.6	-0.341	1.63	65.372	64.687	6	66.10	0.728				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.18	0.6	-0.346	1.63	63.948	62.116	1	63.88	-0.068				
																				1	63.88	1.494	64.5	9.5	62.386
																				2	63.92	1.145	64.5	23.2	62.775
																				3	64.39	1.286	64.5	34.8	63.104
																				4	64.86	1.378	64.5	48.1	63.482
																				5	65.44	1.594	64.5	60.9	63.846
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.83	2.18	1.0	0.080	1.63	62.116	61.950	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.02	2.26	1.0	0.045	1.63	61.950	61.475	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.58	0.03	0.3	-0.196	1.53	78.999	77.251	61	78.31	-0.689				
																				61	78.31	0.951	92.0	5.7	77.359

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				62	78.72	1.087	92.0	20.1	77.633
																				63	78.74	0.847	92.0	33.8	77.893
																				64	79.82	1.119	92.0	76.3	78.701
																				64	79.82	1.275	92.0	68.1	78.545
																				65	79.96	1.134	92.0	82.9	78.826
																				65	79.96	1.225	92.0	78.1	78.735
																				66	80.11	1.219	92.0	86.3	78.891
																				66	80.11	1.252	92.0	84.6	78.858
																				67	80.11	1.143	92.0	90.3	78.967
																				67	80.11	1.181	92.0	88.3	78.929
																				68	79.92	0.942	92.0	90.9	78.978
																				68	79.92	0.921	92.0	92.0	78.999
																				69	79.99	1.012	92.0	90.9	78.978
																				69	79.99	1.061	92.0	88.3	78.929
																				72	78.57	1.024	92.0	15.5	77.546
																				72	78.57	1.186	92.0	7.0	77.384
																				70-1	79.75	1.395	92.0	58.1	78.355
70-4	79.75	0.966	92.0	80.7	78.784																				
71-1	79.32	1.584	92.0	25.5	77.736																				
71-4	79.32	1.155	92.0	48.1	78.165																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.39	0.10	0.3	-0.219	1.53	77.228	74.937	79	76.31	-0.918				
																				74	77.04	1.116	77.5	33.4	75.924
																				74	77.04	0.864	77.5	41.9	76.176
																				75	76.55	1.161	77.5	15.3	75.389
																				75	76.55	0.906	77.5	23.9	75.644
																				76	77.90	0.846	77.5	71.6	77.054
																				76	77.90	1.098	77.5	63.1	76.802
																				77	77.34	0.830	77.5	53.2	76.510
																				77	77.34	1.082	77.5	44.7	76.258
																				79	76.31	1.240	77.5	4.5	75.070
																				73-1	77.95	1.479	77.5	51.9	76.471
73-4	77.95	0.811	77.5	74.5	77.139																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.10	0.4	-0.190	1.53	74.911	74.577	80-4	75.75	0.839				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.64	0.12	0.4	-0.209	1.53	74.507	73.529	81-3	74.96	0.453				
																				78-2	75.03	1.463	30.5	1.2	73.567
																				78-3	75.03	1.280	30.5	6.9	73.750
																				78-4	75.03	1.020	30.5	15.0	74.010
																				80-1	75.75	1.625	30.5	18.6	74.125
																				80-3	75.75	1.281	30.5	29.3	74.469
																				81-3	74.96	1.312	30.5	3.7	73.648
																				81-4	74.96	1.059	30.5	11.6	73.901
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.255	1.53	73.485	72.277	82-1	74.07	0.585				
																				59	74.11	1.483	54.5	15.8	72.627
																				60	74.12	1.174	54.5	30.2	72.946
																				78-1	75.03	1.784	54.5	43.7	73.246
																				81-1	74.96	1.674	54.5	45.5	73.286
																				81-2	74.96	1.522	54.5	52.4	73.438
																				82-1	74.07	1.480	54.5	14.1	72.590
																				82-4	74.07	0.980	54.5	36.7	73.090
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.39	0.00	0.0	-0.254	1.68	74.632	74.612	89	75.57	0.938				

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.46	0.03	0.2	-0.212	1.53	74.612	73.411	87	74.99	0.378				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.70	0.03	0.1	-0.221	1.53	73.373	72.287	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.47	0.7	-0.237	1.55	72.277	71.942	83-1	73.46	1.183				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.47	1.03	0.3	-0.723	1.63	71.197	70.695	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.46	0.00	0.0	-0.257	1.68	74.889	74.655	57	75.47	0.581				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.52	0.54	0.6	-0.278	1.68	74.889	72.738	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.16	0.07	0.4	-0.264	1.77	76.059	75.662	94-1	76.73	0.671				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.13	0.25	0.4	-0.346	1.77	76.059	74.889	56	76.20	0.141				
																				51	77.19	1.429	105.0	78.3	75.761
																				52	77.15	1.548	105.0	64.0	75.602
																				53	76.91	1.429	105.0	53.1	75.481
																				54	76.63	1.310	105.0	38.7	75.320
																				55	76.37	1.167	105.0	28.2	75.203
																				56	76.20	1.157	105.0	13.8	75.043
																				91-1	77.44	1.588	105.0	86.4	75.852
																				91-4	77.44	1.393	105.0	103.9	76.047
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.61	1.34	0.5	-0.413	1.62	69.046	67.269	27	68.65	-0.396				
																				27	68.65	1.242	60.0	4.7	67.408
																				28	69.07	1.235	60.0	19.1	67.835
																				29	69.63	1.591	60.0	26.0	68.039
																				30	70.23	1.764	60.0	40.4	68.466
																				31	70.87	2.197	60.0	47.4	68.673
																				38	68.95	1.252	60.0	14.5	67.698
																				39	69.64	1.515	60.0	28.9	68.125
																				40	70.34	1.957	60.0	37.6	68.383
																				41	71.03	2.304	60.0	49.2	68.726
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.08	0.28	0.5	-0.211	1.77	76.574	76.200	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.40	0.31	0.4	-0.319	1.55	71.175	70.451	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.07	0.00	0.0	0.048	1.45	68.014	68.014	9-2	68.47	0.456				
																				10-1	68.47	0.456	7.0	3.5	68.014
																				10-2	68.47	0.456	7.0	2.8	68.014
																				11-1	68.62	0.606	7.0	5.3	68.014
																				11-2	68.62	0.606	7.0	5.3	68.014
																				12-2	68.54	0.526	7.0	1.7	68.014
																				9-2	68.50	0.486	7.0	2.4	68.014
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.41	0.10	1.1	0.103	1.60	68.014	67.689	6-1	68.23	0.216				
																				12-1	68.54	0.552	32.5	29.9	67.988
																				13-1	68.43	0.613	32.5	12.8	67.817
																				13-2	68.43	0.529	32.5	21.2	67.901
																				14-2	68.42	0.704	32.5	2.7	67.716
																				6-1	68.23	0.455	32.5	8.6	67.775
																				6-2	68.23	0.499	32.5	4.2	67.731
																				7-1	68.28	0.485	32.5	10.6	67.795
																				7-2	68.28	0.494	32.5	9.7	67.786
																				8-1	68.36	0.534	32.5	13.7	67.826
																				8-2	68.36	0.454	32.5	21.7	67.906
																				9-1	68.50	0.544	32.5	26.7	67.956
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.054	1.57	67.689	67.256	17-1	68.23	0.541				
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.867	77.0	52.9	67.553

Table B-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.819	77.0	61.3	67.601
																				16-1	68.29	0.841	77.0	34.4	67.449
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.889	77.0	15.2	67.341
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.57	66.691	65.528	4-1	66.76	0.069				
																				4-1	66.76	1.196	51.5	1.6	65.564
																				4-2	66.76	1.006	51.5	10.0	65.754
																				5-1	67.15	1.123	51.5	22.1	66.027
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.898	51.5	8.6	65.722
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full
⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.080 Interpolated HGL elevation

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾ m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.80	0.04	0.2	-0.206	1.45	62.762	59.940	B92L1	61.17	-1.592																							
																				B92L1	61.17	1.162	90.9	2.2	60.008																			
																				B93	61.89	1.612	90.9	10.9	60.278																			
																				B94	62.24	1.257	90.9	33.6	60.983																			
																				B95	62.74	1.077	90.9	55.5	61.663																			
																				B96	63.53	1.249	90.9	75.4	62.281																			
																				B97	63.52	1.280	90.9	74.1	62.240																			
																				B98	62.59	1.163	90.9	47.9	61.427																			
																				B99	61.56	1.474	90.9	4.7	60.086																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	1.80	0.19	1.0	-0.025	1.43	59.940	59.747	B92L3	61.17	1.230			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	2.93	0.21	0.7	-0.137	1.43	59.648	58.294	L88	60.83	1.182			
																																								L88	60.83	2.377	45.2	5.3
L89	61.05	2.103	45.2	21.8	58.947																																							
L90	60.93	1.731	45.2	30.2	59.199																																							
L91	60.90	1.285	45.2	44.1	59.615																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.14	0.22	0.7	-0.172	1.45	58.263	57.853	L85	58.99	0.727																							
																				L85	58.99	1.085	34.0	4.3	57.905																			
																				L86	59.79	1.772	34.0	13.7	58.018																			
																				L87	60.00	1.790	34.0	29.6	58.210																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.28	0.56	0.9	-0.106	1.45	57.853	57.184	L81	58.16	0.307			
																				L81	58.16	0.857	66.9	11.9	57.303																			
																				L80	58.39	1.177	66.9	2.9	57.213																			
																				L82	58.22	0.772	66.9	26.4	57.448																			
																				L83	58.40	0.794	66.9	42.2	57.606																			
																				L84	58.95	1.234	66.9	53.2	57.716																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.78	0.57	1.0	-0.105	1.45	57.184	57.012	L79	58.44	1.256																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.40	0.56	0.9	-0.238	1.45	56.971	56.889	L74	58.91	1.939																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.44	0.56	0.9	-0.244	1.45	56.889	56.727	L73	59.22	2.331																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.45	0.16	0.6	-0.167	1.43	60.704	57.853	L75	59.26	-1.444																							
																				L75	59.26	0.978	116.3	17.5	58.282																			
																				L76	59.55	0.788	116.3	37.1	58.762																			
																				B103SD	60.07	0.827	116.3	56.7	59.243																			
																				B104SD	60.75	1.041	116.3	75.7	59.709																			
																				B105SD	61.36	1.186	116.3	94.7	60.174																			
																				B106SD	62.05	1.407	116.3	113.8	60.643																			
																				B102L1	61.93	1.295	116.3	113.5	60.635																			
																				B102L4	61.55	1.469	116.3	90.9	60.081																			
																				B101L1	60.92	1.150	116.3	78.2	59.770																			
																				B101L4	60.52	1.304	116.3	55.6	59.216																			
																				B100L1	59.97	1.009	116.3	45.2	58.961																			
B100L4	59.58	1.173	116.3	22.6	58.407																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.66	0.00	0.0	-0.260	1.43	63.196	62.725	L60	63.78	0.584																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.63	0.02	0.1	-0.221	1.43	62.725	60.890	L66	62.23	-0.495																							
																				L66	62.23	1.312	65.6	1.0	60.918																			
																				L65	62.47	1.163	65.6	14.9	61.307																			
																				L64	62.67	1.050	65.6	26.1	61.620																			
																				L63	63.00	0.946	65.6	41.6	62.054																			
																				L62	63.31	1.080	65.6	47.9	62.230																			
																				L61	63.58	1.042	65.6	58.9	62.538																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.73	0.06	0.2	-0.251	1.43	60.861	59.847	B108L4	61.64	0.779																							

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.67	4.35	0.7	-0.456	1.47	58.579	58.058	L71	59.63	1.051				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.33	4.35	0.7	-0.286	1.47	56.890	56.688	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	2.76	1.54	0.5	-0.591	1.45	65.787	65.418	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	2.85	1.60	0.5	-0.598	1.45	64.434	63.603	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.03	3.47	0.7	-0.566	1.45	63.144	62.841	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.06	3.55	0.7	-0.556	1.45	61.564	61.135	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.86	3.84	0.8	-0.412	1.47	60.288	59.882	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	61.824	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.67	0.22	0.8	-0.119	1.43	61.826	60.269	B109L4	61.76	-0.066				
																			B109L4	61.76	0.865	62.4	25.1	60.895	
																			B109L1	61.76	0.867	62.4	25.0	60.893	
																			B110SD	62.44	1.101	62.4	42.9	61.339	
																			B111SD	63.15	1.416	62.4	58.7	61.734	
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	2.94	0.58	0.6	-0.311	1.48	59.062	58.091	L18	59.42	0.358				
																			L18	59.42	1.251	64.4	5.2	58.169	
																			L19	60.08	1.742	64.4	16.4	58.338	
																			L20	60.56	1.984	64.4	32.2	58.577	
																			L21	60.98	2.257	64.4	41.9	58.723	
																			L22	61.39	2.432	64.4	57.5	58.958	
																			L24	61.34	2.519	64.4	48.4	58.821	
																			L35	61.06	2.477	64.4	32.6	58.583	
																			L26	60.61	2.201	64.4	21.1	58.409	
																			L27	59.90	1.726	64.4	5.5	58.174	
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.01	0.58	0.5	-0.318	1.48	56.887	55.924	L14	57.61	0.723				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.89	0.62	0.6	-0.288	1.48	54.757	53.846	L9	55.68	0.923				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.39	0.62	0.6	-0.201	1.48	53.846	53.552	N/A	N/A	N/A				
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.96	7.95	0.8	-0.349	1.50	52.867	52.639	N/A	N/A	N/A				
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	2.05	7.93	0.8	-0.463	1.50	52.639	52.528	N/A	N/A	N/A				
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	2.03	7.87	0.8	-0.460	1.50	52.528	52.212	N/A	N/A	N/A				
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.125	2.119	9.588	2.13	7.81	0.8	-0.554	1.52	52.212	51.917	N/A	N/A	N/A				
130	131	50.272	50.105	2400	111.5	0.2	0.013	54.125	54.000	2.119	9.588	2.37	7.77	0.8	-0.755	1.52	51.917	51.761	N/A	N/A	N/A				
131	132	50.085	49.916	2400	112.5	0.2	0.013	54.000	54.000	2.119	9.588	2.29	7.64	0.8	-0.724	1.53	51.761	51.614	N/A	N/A	N/A				
132	133	49.896	49.769	2400	84.5	0.2	0.013	54.000	54.135	2.119	9.588	2.21	7.56	0.8	-0.682	1.53	51.614	51.515	N/A	N/A	N/A				
133	134	49.749	49.569	2400	120.0	0.2	0.013	54.135	54.036	2.119	9.588	2.15	7.61	0.8	-0.634	1.55	51.515	51.374	N/A	N/A	N/A				
134	135	49.549	49.377	2400	115.0	0.2	0.013	54.036	54.079	2.119	9.588	2.14	7.70	0.8	-0.575	1.57	51.374	51.241	N/A	N/A	N/A				
135	136	49.227	49.071	2550	121.5	0.1	0.013	54.079	54.320	2.054	10.492	2.21	9.55	0.9	-0.536	1.55	51.241	51.095	N/A	N/A	N/A				
136	137	49.051	48.919	2550	100.0	0.1	0.013	54.320	54.449	2.054	10.492	2.20	9.61	0.9	-0.506	1.57	51.095	50.975	N/A	N/A	N/A				
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.42	10.49	1.0	-0.474	1.57	50.975	50.398	N/A	N/A	N/A				
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	3.73	16.89	0.8	-1.158	1.53	50.398	50.314	N/A	N/A	N/A				
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	2.49	N/A	N/A	1.53	50.397	49.874	N/A	N/A	N/A				
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	2.39	2.43	0.8	-0.088	1.55	49.872	49.871	N/A	N/A	N/A				
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	2.96	0.46	0.6	-0.276	1.47	60.397	59.287	L52	60.19	-0.207				
																			L52	60.19	0.836	61.7	3.7	59.354	
																			L51	60.63	1.154	61.7	10.5	59.476	
																			L50	61.53	1.725	61.7	28.8	59.805	
																			L49	62.36	2.420	61.7	36.3	59.940	
																			L48	62.74	2.455	61.7	55.5	60.285	
																			L47	63.79	3.420	61.7	60.2	60.370	
																			L44	62.69	2.590	61.7	45.2	60.100	
																			L43	61.84	1.873	61.7	37.8	59.966	

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			L42	61.29	1.667	61.7	18.7	59.623
																			L41	60.68	1.190	61.7	11.3	59.490
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.55	0.67	0.6	-0.198	1.45	57.343	56.040	L36	57.89	0.547			
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.16	1.29	0.7	-0.346	1.45	62.858	62.611	N/A	N/A	N/A			
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.21	1.31	0.7	-0.349	1.47	61.018	59.986	N/A	N/A	N/A			
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.17	6.45	0.7	-0.693	1.48	53.385	53.170	L3	58.26	4.875			
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.99	7.39	0.7	-0.680	1.48	53.170	52.867	L8	55.21	2.040			
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	1.78	0.04	0.2	-0.271	1.45	69.769	67.775	B54L4	69.35	-0.419			
																			B54L4	69.35	1.462	83.1	4.7	67.888
																			B54L1	69.35	1.014	83.1	23.4	68.336
																			B56L4	70.19	1.688	83.1	30.3	68.502
																			B56L1	70.19	1.179	83.1	51.5	69.011
																			B57SD	70.63	1.264	83.1	66.3	69.366
																			B43L4	71.22	1.684	83.1	73.4	69.536
																			B58L4	70.88	1.279	83.1	76.1	69.601
																			B58L1	70.88	1.790	83.1	54.8	69.090
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	1.64	0.04	0.2	-0.264	1.45	67.724	67.427	B53L3	68.90	1.176			
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.21	0.39	0.7	-0.238	1.45	66.423	65.345	B47L4	66.63	0.207			
																			B47L4	66.63	1.131	119.4	17.1	65.499
																			B47L1	66.63	0.939	119.4	38.3	65.691
																			B48L4	67.21	1.458	119.4	45.1	65.752
																			B48L1	67.21	1.266	119.4	66.3	65.944
																			B49L4	67.77	1.767	119.4	72.9	66.003
																			B49L1	67.77	1.575	119.4	94.1	66.195
																			B50SD	68.07	1.738	119.4	109.3	66.332
																			B51L3	68.41	2.024	119.4	115.3	66.386
																			B59L4	68.18	1.861	119.4	107.9	66.319
																			B59L1	68.18	2.052	119.4	86.7	66.128
																			B60SD	67.97	1.905	119.4	79.8	66.065
																			B61L4	67.31	1.381	119.4	64.7	65.929
																			B61L1	67.31	1.572	119.4	43.5	65.738
																			B62L4	66.89	1.212	119.4	36.9	65.678
																			B62L1	66.89	1.403	119.4	15.7	65.487
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.62	0.51	0.6	-0.311	1.45	65.274	64.275	L41	65.57	0.296			
																			L41	65.57	1.281	83.2	1.2	64.289
																			L42	65.98	1.536	83.2	14.1	64.444
																			L43	66.07	1.482	83.2	26.1	64.588
																			L44	66.12	1.359	83.2	40.5	64.761
																			L45	66.23	1.344	83.2	50.9	64.886
																			L46	66.87	1.805	83.2	65.8	65.065
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.78	0.09	0.3	-0.196	1.45	66.126	65.363	N/A	N/A	N/A			
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.05	0.52	0.3	-0.419	1.45	71.008	70.227	B102L5	72.70	1.692			
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	0.00	0.00	0.0	-0.319	0.00	71.008	69.769	B42SD	71.19	0.182			
																			B42SD	71.19	1.268	71.4	8.8	69.922
																			B41L1	71.59	1.555	71.4	15.3	70.035
																			B41L4	71.59	1.186	71.4	36.6	70.404
																			B40L1	71.88	1.365	71.4	43.0	70.515
																			B40L3	71.88	1.103	71.4	58.1	70.777
																			B563L1	72.21	1.362	71.4	62.2	70.848
																			B45L1	71.98	1.243	71.4	55.8	70.737

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL					
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)			
																			B45L4	71.98	1.612	71.4	34.5	70.368			
																			B44SD	71.47	1.224	71.4	27.5	70.246			
																			B43L1	71.47	1.494	71.4	11.9	69.976			
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.90	5.01	0.8	-0.414	1.47	56.688	56.280	L32	58.76	2.072						
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.36	0.22	1.1	0.074	1.45	60.269	59.990	N/A	N/A	N/A						
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.63	4.98	0.8	-0.249	1.47	56.280	55.927	L11	58.85	2.570						
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.40	5.17	0.6	-0.613	1.48	53.954	53.385	N/A	N/A	N/A						
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	0.98	0.18	0.3	-0.422	1.43	54.002	53.988	L22	54.73	0.728						
																			L22	54.73	0.729	28.2	25.9	54.001			
																			L21	54.73	0.728	28.2	27.4	54.002			
																			L20	55.10	1.101	28.2	22.9	53.999			
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.09	0.21	0.4	-0.336	1.43	53.988	53.960	L19	55.79	1.802						
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.58	0.51	0.6	-0.304	1.45	64.255	63.885	L39	65.04	0.785						
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.61	0.54	0.6	-0.292	1.47	63.877	63.530	L37	64.89	1.013						
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.42	0.67	0.7	-0.296	1.45	63.312	62.905	L34	64.28	0.968						
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.38	0.02	0.1	-0.237	1.43	67.449	67.095	L339	68.56	1.111						
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	2.97	0.33	0.5	-0.256	1.45	65.513	64.330	L347	65.57	0.057						
																			L347	65.57	1.206	52.4	1.5	64.364			
																			L346	66.07	1.221	52.4	23.0	64.849			
																			L345	66.61	1.558	52.4	32.0	65.052			
																			L344	67.15	1.768	52.4	46.6	65.382			
																			3-1	66.15	1.061	52.4	33.6	65.089			
																			1	65.55	0.731	52.4	21.7	64.819			
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.44	0.62	0.6	-0.214	1.45	63.870	62.899	L58	64.18	0.310						
																			L58	64.18	0.949				55.0	18.8	63.231
																			L57	64.44	0.905				55.0	36.0	63.535
																			L56	64.75	0.989	55.0	48.8				

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	1.92	0.06	0.2	-0.259	1.45	68.643	66.126	B36SD	68.23	-0.413				
																				B36SD	68.23	1.719	101.9	15.6	66.511
																				B37L4	68.70	2.038	101.9	21.7	66.662
																				B37L1	68.70	1.514	101.9	42.9	67.186
																				B38L4	69.31	1.964	101.9	49.4	67.346
																				B38L1	69.31	1.440	101.9	70.6	67.870
																				B39L4	69.62	1.575	101.9	77.7	68.045
																				B39L1	69.62	1.049	101.9	99.0	68.571
																				B47L1	69.23	0.812	101.9	92.8	68.418
																				B47L4	69.23	1.375	101.9	70.0	67.855
																				B48L1	68.82	1.091	101.9	64.9	67.729
B48L4	68.82	1.615	101.9	43.7	67.205																				
																				B49SD	68.53	1.490	101.9	37.0	67.040
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.31	0.00	-0.1	-0.254	1.43	69.518	69.595	B96L1	70.07	0.552				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.20	1.64	0.5	-0.429	1.47	68.819	67.947	Fut. Est.	72.09	3.271				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	0.99	0.03	0.2	-0.252	1.45	72.427	71.749	B107L1	72.89	0.463				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	2.14	0.03	0.2	-0.192	1.45	71.749	71.735	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.34	0.16	0.9	-0.122	1.45	71.735	71.539	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.42	0.49	0.5	-0.304	1.45	71.401	71.066	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.92	0.02	0.3	-0.187	1.45	72.377	71.759	B102L1	72.70	0.323				
																				B102L1	72.70	0.906	106.5	6.0	71.794
																				B102L5	72.70	0.737	106.5	35.1	71.963
																				B103L1	72.87	0.851	106.5	44.8	72.019
																				B103L4	72.87	0.729	106.5	65.8	72.141
																				B104L1	73.05	0.851	106.5	75.8	72.199
																				B104L5	73.05	0.684	106.5	104.5	72.366
																				B105L10	73.24	0.899	106.5	100.3	72.341
																				B105L6	73.24	1.059	106.5	72.7	72.181
																				B106L10	73.08	0.959	106.5	62.3	72.121
																				B106L6	73.08	1.117	106.5	35.1	71.963
B107L10	72.89	0.978	106.5	26.3	71.912																				
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.04	0.04	0.4	-0.136	1.45	71.759	71.540	B107L6	72.89	1.131				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.30	0.54	0.4	-0.451	1.45	70.214	69.988	B100SD	72.25	2.036				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.51	0.17	0.8	-0.144	1.45	63.122	62.611	L1	64.26	1.138				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.05	0.35	0.6	-0.251	1.45	62.524	61.901	L14	63.44	0.916				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.36	0.38	0.6	-0.265	1.47	61.860	61.248	L10	63.20	1.340				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.15	0.42	0.6	-0.310	1.47	61.205	60.734	L5	63.33	2.125				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.42	0.49	0.6	-0.300	1.47	60.717	60.319	L2	62.35	1.633				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.28	1.1	-0.053	1.45	67.983	67.176	L334	68.05	0.067				
																				L334	68.05	0.736	87.0	14.9	67.314
																				L335	68.12	0.740	87.0	22.0	67.380
																				B610L1	68.12	0.583	87.0	38.9	67.537
																				B610L5	68.18	0.367	87.0	68.7	67.813
																				B611L1	68.53	0.701	87.0	70.4	67.829
																				B111L4	68.45	0.831	87.0	47.8	67.619
																				B612SD	68.45	0.925	87.0	37.6	67.525
																				B613SD	68.40	1.064	87.0	17.3	67.336
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.06	N/A	N/A	1.45	67.983	67.803	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.63	6.03	0.6	-0.882	1.48	67.410	66.959	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.27	0.16	0.6	-0.150	1.45	64.898	62.934	L19	64.58	-0.318				

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				L19	64.58	1.189	82.0	19.1	63.391			
																				L20	64.99	1.278	82.0	32.5	63.712			
																				L21	65.74	1.666	82.0	47.6	64.074			
																				L22	66.37	1.963	82.0	61.5	64.407			
																				L23	67.00	2.253	82.0	75.7	64.747			
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.01	0.01	0.0	-0.265	1.45	51.500	48.280	N/A	N/A	N/A							
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.47	0.02	0.1	-0.307	1.43	47.113	44.863	N/A	N/A	N/A							
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.42	0.13	0.6	-0.200	1.43	44.726	44.613	N/A	N/A	N/A							
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.65	0.07	0.6	-0.134	1.43	69.147	67.983	L34	69.22	0.073							
																				L34	69.22	0.981	82.8	18.2	68.239			
																				L33	69.36	0.902	82.8	33.8	68.458			
																				L32	69.53	0.951	82.8	42.4	68.579			
																				L31	69.62	0.837	82.8	56.9	68.783			
																				L30	69.82	0.912	82.8	65.8	68.908			
																				L29	70.07	0.953	82.8	80.7	69.117			
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.32	0.9	-0.086	1.45	67.137	66.114	L325	67.35	0.213							
																				L325	67.35	1.192	72.5	3.1	66.158			
																				L326	67.53	1.151	72.5	18.8	66.379			
																				L327	67.79	1.296	72.5	26.9	66.494			
																				L328	67.99	1.193	72.5	48.4	66.797			
																				B614SD	68.21	1.094	72.5	71.0	67.116			
																				L333	67.98	0.864	72.5	71.0	67.116			
																				L332	67.91	0.920	72.5	62.1	66.990			
																				L331	67.79	1.066	72.5	43.2	66.724			
																				L330	67.63	1.022	72.5	35.0	66.608			
																				L329	67.47	1.130	72.5	16.0	66.340			
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.05	0.32	0.9	0.009	1.45	66.114	65.833	L324	67.08	0.966							
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.17	0.33	0.6	-0.169	1.45	65.771	64.556	L319	65.72	-0.051							
																				L319	65.72				0.833	77.0	21.0	64.887
																				L320	66.05				0.858	77.0	40.3	65.192
																				L321	66.39	1.072	77.0	48.3	65.318			
																				L322	66.71	1.100	77.0	66.8	65.610			
																				L323	66.89	1.233	77.0	69.8	65.657			
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	2.91	0.42	0.5	-0.292	1.45	63.719	63.041	L123	64.76	1.041							
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.96	0.03	0.3	-0.178	1.45	66.083	65.701	B601SD	66.46	0.377							
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.20	0.07	0.3	-0.282	1.45	65.598	65.204	B604SD	66.07	0.472							
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.20	0.06	0.3	-0.282	1.47	65.175	64.886	L296	65.77	0.595							
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.91	3.03	0.6	-0.632	1.45	72.451	72.069	B80L1	73.88	1.429							
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.96	3.11	0.6	-0.623	1.45	70.876	70.506	B87SD	72.44	1.564							
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.98	3.15	0.6	-0.616	1.45	69.726	69.322	B85L1	71.32	1.594							
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	3.01	3.33	0.7	-0.595	1.47	69.322	68.911	L51	71.02	1.698							
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.93	5.75	0.8	-0.704	1.48	67.846	67.547	N/A	N/A	N/A							
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.99	6.08	0.4	-1.109	1.48	63.581	62.533	N/A	N/A	N/A							
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.98	6.21	0.4	-1.092	1.48	62.067	61.527	N/A	N/A	N/A							
1007	1008	59.854	59.009	1950	65.0	1.3	0.013	64.500	62.180	5.433	16.224	4.19	8.31	0.5	-0.677	1.48	61.127	60.003	N/A	N/A	N/A							
1008	1009	52.061	51.805	2250	80.0	0.3	0.013	62.180	57.440	2.965	11.790	3.01	8.38	0.7	-0.765	1.50	53.546	53.338	N/A	N/A	N/A							
1009	1010	51.805	51.527	2250	87.0	0.3	0.013	57.440	57.070	2.965	11.790	2.90	8.37	0.7	-0.717	1.50	53.338	53.088	N/A	N/A	N/A							
1010	1011	51.527	51.252	2250	86.0	0.3	0.013	57.070	56.500	2.965	11.790	2.82	8.29	0.7	-0.689	1.50	53.088	52.859	N/A	N/A	N/A							
1011	1012	51.252	50.991	2250	81.5	0.3	0.013	56.500	56.600	2.965	11.790	2.74	8.31	0.7	-0.642	1.52	52.860	52.574	N/A	N/A	N/A							
1012	1013	50.991	50.681	2250	97.0	0.3	0.013	56.600	54.680	2.965	11.790	2.83	8.26	0.7	-0.667	1.52	52.574	52.031	N/A	N/A	N/A							

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.15	9.19	0.6	-1.113	1.52	51.517	51.316	N/A	N/A	N/A				
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.67	0.72	0.7	-0.211	1.45	52.492	51.933	N/A	N/A	N/A				
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.09	0.72	0.7	-0.012	1.45	51.933	51.528	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.27	0.21	0.5	-0.195	1.43	59.847	59.515	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.22	1.09	0.6	-0.471	1.43	66.995	66.940	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.55	4.07	0.6	-0.469	1.47	59.638	59.326	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.89	0.42	0.5	-0.290	1.45	62.616	62.278	L45	63.24	0.624				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.65	0.05	0.1	-0.335	1.53	66.640	66.423	B51L1	68.41	1.770				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.49	2.17	0.6	-0.544	1.43	75.341	75.170	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	0.99	0.19	0.3	-0.069	1.50	53.960	53.954	L30	58.92	4.960				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.67	0.01	0.2	-0.213	1.45	72.047	71.751	B103L8	72.87	0.823				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.71	0.26	0.7	0.005	1.48	68.392	67.983	N/A	N/A	N/A				
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.17	0.13	0.6	-0.150	1.43	44.863	44.784	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.11	0.28	0.9	-0.102	1.45	65.808	65.701	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.04	N/A	N/A	1.45	65.808	65.771	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	2.10	2.47	0.8	-0.267	1.55	49.875	49.872	N/A	N/A	N/A				
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	4.06	7.12	N/A	N/A	3.50	49.871	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.32	0.49	0.6	-0.286	1.47	60.235	60.023	L23	61.85	1.615				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.449	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.02	0.26	0.9	-0.088	1.45	69.328	69.094	B84L1	69.71	0.382				
																				B84L1	69.71		0.569	83.9	16.8
																				B84L4	69.71	0.509	83.9	38.3	69.201
																				B83L1	70.27	1.050	83.9	45.0	69.220
																				B83L3	70.27	1.009	83.9	60.0	69.261
																				B82L1	70.96	1.680	83.9	66.6	69.280
																				B82L4	70.96	1.638	83.9	81.9	69.322
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.88	0.06	0.9	-0.025	1.43	69.595	69.435	B96L4	70.07	0.475				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.74	0.31	0.8	-0.115	1.47	71.846	71.073	L52	72.19	0.344				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.27	0.8	-0.129	1.45	72.677	71.846	L56	72.93	0.253				
																				L56	72.93	0.971	64.8	8.8	71.959
																				B73SD	73.17	1.047	64.8	21.6	72.123
																				L57	73.23	0.865	64.8	40.5	72.365
																				L58	73.36	0.819	64.8	54.2	72.541
																				L60	73.51	0.884	64.8	60.8	72.626
																				L61	73.43	1.015	64.8	44.4	72.415
																				L62	73.37	1.152	64.8	29.0	72.218
																				L63	73.28	1.242	64.8	15.0	72.038
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.18	0.02	0.1	-0.224	1.45	73.472	72.677	L59	73.54	0.068				
																				L59	73.54	0.824	44.4	2.2	72.716
																				B72L1	73.92	1.005	44.4	13.3	72.915
																				B72L2	73.92	0.838	44.4	22.6	73.082
																				B71L1	74.10	0.868	44.4	31.0	73.232
																				B66L4	74.39	1.068	44.4	36.0	73.322
																				B66L1	73.99	0.908	44.4	22.6	73.082
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.36	0.02	0.1	-0.223	1.43	74.413	73.502	B71L4	74.50	0.087				
																				B71L4	74.50	0.839	45.4	7.9	73.661
																				B70L1	74.89	1.071	45.4	15.8	73.819
																				B70L2	74.89	0.882	45.4	25.2	74.008
																				B69L1	75.49	1.318	45.4	33.4	74.172
																				B69L2	75.49	1.117	45.4	43.4	74.373

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B68L1 B67L4 B67L1	76.39 75.19 74.79	2.017 1.018 1.129	45.4 45.4 45.4	43.4 33.4 7.9	74.373 74.172 73.661
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.16	0.28 0.01	0.9 0.1	-0.104 -0.237	1.45 1.43	65.682 69.136	65.284 67.979	N/A L13	N/A 69.13	N/A -0.006				
																				L13 L12 L11 L10 L9	69.13 69.49 69.68 69.81 69.81	1.009 1.157 1.053 0.994 0.710	65.0 65.0 65.0 65.0 65.0	8.0 19.9 36.4 47.0 63.0	68.121 68.333 68.627 68.816 69.100
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.81	0.04	0.2	-0.204	1.43	67.979	65.654	L18	66.92	-1.059				
																				L18 L17 L16 L15 L14	66.92 67.35 67.80 68.21 68.67	1.031 0.944 1.037 0.916 0.980	72.3 72.3 72.3 72.3 72.3	7.3 23.4 34.5 51.0 63.3	65.889 66.406 66.763 67.294 67.690
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.13 1.86	0.04 0.07	0.3 0.3	-0.163 -0.233	1.45 1.47	65.640 67.803	65.406 66.254	N/A L24	N/A 67.63	N/A -0.173				
																				L24 L25 L26 L27 L28	67.63 68.23 68.95 69.33 69.33	1.246 1.594 2.035 2.168 1.864	86.0 86.0 86.0 86.0 86.0	7.2 21.2 36.7 50.4 67.3	66.384 66.636 66.915 67.162 67.466
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.27	0.84	0.6	-0.493	1.48	68.212	67.846	L35	69.61	1.398				
																				L35 L36 L37 L38 L39 L40 L46 L45 L44 L43 L42 L41	69.61 70.01 70.32 70.49 70.49 70.36 70.51 70.56 70.58 70.32 70.06 69.67	1.466 1.910 2.262 2.484 2.515 2.434 2.581 2.581 2.570 2.258 1.958 1.522	103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5	84.3 71.8 59.9 45.3 36.4 22.5 23.6 37.7 46.4 61.0 72.5 85.4	68.144 68.100 68.058 68.006 67.975 67.926 67.929 67.979 68.010 68.062 68.102 68.148
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.240	84	80.14	-0.092				
																				79 80 81 82 83 84	81.31 81.20 80.82 80.66 80.27 80.14	1.129 1.407 1.377 1.604 1.508 1.765	74.0 74.0 74.0 74.0 74.0 74.0	72.1 57.7 44.7 30.3 19.4 5.0	80.181 79.793 79.443 79.056 78.762 78.375
501 502 503 504	505 503 504 509	80.232 78.418 78.132 77.904	80.053 78.282 77.949 77.420	300 300 450 450	17.0 34.0 73.0 88.0	1.1 0.4 0.3 0.6	0.013 0.013 0.013 0.013	83.090 81.120 81.790 81.360	82.920 81.790 81.360 80.780	1.402 0.865 0.896 1.329	0.099 0.061 0.143 0.211	0.00 0.59 0.59 0.93	0.00 0.01 0.02 0.05	0.0 0.2 0.1 0.2	-0.300 -0.202 -0.342 -0.309	0.00 1.45 1.45 1.45	80.232 78.516 78.240 78.045	80.143 78.363 78.045 77.691	77 87 41 34	81.27 79.42 79.36 78.97	1.038 0.904 1.120 0.925				
																				34 35 36	78.97 79.03 79.08	1.239 1.241 1.256	88.0 88.0 88.0	9.9 24.3 33.1	77.731 77.789 77.824

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				37	79.14	1.258	88.0	47.5	77.882																				
																				38	79.19	1.280	88.0	54.4	77.910																				
																				39	79.25	1.282	88.0	68.8	77.968																				
																				40	79.31	1.307	88.0	77.6	78.003																				
																				52	79.54	1.505	88.0	85.4	78.035																				
																				53	79.46	1.450	88.0	79.3	78.010																				
																				54	79.43	1.478	88.0	64.9	77.952																				
																				55	79.43	1.530	88.0	51.9	77.900																				
																				56	79.32	1.478	88.0	37.5	77.842																				
																				57	79.23	1.432	88.0	26.6	77.798																				
																				58	79.12	1.382	88.0	11.6	77.738																				
																				505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	0.91	0.02	0.2	-0.205	1.43	80.143	79.571	64	80.26	0.117				
																																								64	80.26	0.650	72.5	4.9	79.610
																																								65	80.40	0.685	72.5	18.2	79.715
																																								66	80.54	0.712	72.5	32.6	79.828
																																								67	80.65	0.736	72.5	43.5	79.914
																																								68	80.77	0.742	72.5	57.9	80.028
																																								69	80.92	0.801	72.5	69.4	80.119
																																								71	80.32	0.672	72.5	9.7	79.648
																																								72	80.46	0.710	72.5	22.7	79.750
73	80.57	0.706	72.5	37.1	79.864																																								
74	80.69	0.757	72.5	45.9	79.933																																								
																				75	80.82	0.773	72.5	60.3	80.047																				
																				76	81.20	1.075	72.5	70.2	80.125																				
																				506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.088	1.45	79.571	78.713	59	79.58	0.009				
																																								59	79.58	0.729	76.5	12.3	78.851
																																								60	79.72	0.708	76.5	26.7	79.012
																																								61	79.86	0.702	76.5	39.7	79.158
																																								62	80.00	0.680	76.5	54.1	79.320
																																								63	80.12	0.653	76.5	67.2	79.467
																																								70	80.18	0.661	76.5	71.9	79.519
																				508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.12	0.25	0.6	-0.242	1.45	78.614	77.691	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.24	0.49	0.8	-0.179	1.47	77.691	75.974	N/A	N/A	N/A																								
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.38	0.05	0.5	-0.146	1.43	77.606	76.721	90-2	77.72	0.114																								
																				88-1	78.32	1.083	88.5	51.6	77.237																				
																				88-4	78.32	0.871	88.5	72.8	77.449																				
																				89-1	78.00	1.046	88.5	23.3	76.954																				
																				89-4	78.00	0.834	88.5	44.5	77.166																				
																				90-2	77.72	0.973	88.5	2.6	76.747																				
																				90-4	77.72	0.832	88.5	16.7	76.888																				
																				96-1	78.46	1.134	88.5	60.5	77.326																				
																				96-5	78.46	0.885	88.5	85.4	77.575																				
																				97-1	78.08	1.033	88.5	32.6	77.047																				
																				97-4	78.08	0.821	88.5	53.8	77.259																				
																				98-2	77.80	1.021	88.5	5.8	76.779																				
																				98-5	77.80	0.819	88.5	26.0	76.981																				
																				511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.19	0.5	-0.250	1.45	76.617	75.956	100-1	77.19	0.573				
																				100-1	77.19	1.075	75.0	18.0	76.115																				
																				100-4	77.19	0.889	75.0	39.2	76.301																				
																				90-1	77.72	1.144	75.0	70.4	76.576																				

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				91-1	77.47	1.192	75.0	36.5	76.278
																				91-5	77.47	0.952	75.0	63.8	76.518
																				92-1	77.33	1.301	75.0	8.3	76.029
																				92-4	77.33	1.114	75.0	29.5	76.216
																				98-1	77.80	1.194	75.0	73.7	76.606
																				99-1	77.47	1.110	75.0	45.8	76.360
																				99-4	77.47	0.924	75.0	67.0	76.546
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.70	0.07	0.3	-0.236	1.45	77.882	75.956	101-1	77.24	-0.642				
																				102	77.52	0.941	119.0	38.5	76.579
																				102	77.52	0.795	119.0	47.5	76.725
																				101-1	77.24	0.760	119.0	32.4	76.480
																				101-4	77.24	1.103	119.0	11.2	76.137
																				103-1	78.08	0.905	119.0	75.3	77.175
																				103-4	78.08	1.248	119.0	54.1	76.832
																				104-1	78.52	0.997	119.0	96.8	77.523
																				104-3	78.52	1.242	119.0	81.7	77.278
																				105-1	78.53	0.671	119.0	117.6	77.859
																				105-3	78.53	0.900	119.0	103.4	77.630
																				93-1	77.74	1.175	119.0	37.6	76.565
																				93-5	77.74	1.616	119.0	10.4	76.124
																				94-1	77.88	0.752	119.0	72.4	77.128
																				94-5	77.88	1.194	119.0	45.1	76.686
																				95-1	78.67	0.985	119.0	106.8	77.685
95-5	78.67	1.427	119.0	79.5	77.243																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	0.96	0.02	0.1	-0.285	1.45	77.882	76.965	25	78.18	0.298				
																				17	78.54	1.370	114.5	25.6	77.170
																				18	78.54	1.314	114.5	32.6	77.226
																				19	78.59	1.096	114.5	66.1	77.494
																				20	78.59	1.535	114.5	11.2	77.055
																				21	78.58	0.970	114.5	80.5	77.610
																				22	78.67	0.991	114.5	89.2	77.679
																				23	78.75	1.476	114.5	38.6	77.274
																				24	78.75	1.361	114.5	53.0	77.389
																				25	78.18	1.187	114.5	3.5	76.993
																				26	78.23	1.179	114.5	10.8	77.051
																				27	78.29	1.123	114.5	25.2	77.167
																				28	78.34	0.545	114.5	103.6	77.795
																				29	78.40	0.960	114.5	59.3	77.440
																				30	78.45	1.213	114.5	34.0	77.237
																				31	78.51	1.157	114.5	48.4	77.353
32	78.56	1.005	114.5	73.7	77.555																				
33	78.56	0.935	114.5	82.4	77.625																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.25	0.19	0.7	-0.008	1.43	77.913	77.706	Est. Fut.	78.68	0.767				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.87	0.97	0.7	-0.198	1.47	75.956	75.286	N/A	N/A					
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	0.83	0.03	0.1	-0.337	1.55	75.571	75.255	96-1	76.43	0.859				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.31	1.01	0.7	-0.320	1.48	75.255	74.833	100-4	76.17	0.915				
																				98	76.29	1.248	78.0	38.6	75.042
																				98	76.29	1.297	78.0	29.6	74.993
																				100-4	76.17	1.329	78.0	1.4	74.841
																				97-1	76.30	1.224	78.0	45.0	75.076

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				97-4	76.30	1.109	78.0	66.2	75.191
																				99-1	76.23	1.353	78.0	8.1	74.877
																				99-3	76.23	1.271	78.0	23.2	74.959
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.46	0.03	0.2	-0.205	1.48	74.833	73.175	113-2	74.43	-0.403				
																				114	74.86	1.342	86.5	17.9	73.518
																				114	74.86	1.169	86.5	26.9	73.691
																				102-1	75.69	1.470	86.5	54.5	74.220
																				102-4	75.69	1.064	86.5	75.7	74.626
																				103-1	75.32	1.633	86.5	26.7	73.687
																				103-4	75.32	1.227	86.5	47.9	74.093
																				104-1	74.57	1.301	86.5	4.9	73.269
																				104-3	74.57	1.012	86.5	20.0	73.558
																				113-2	74.43	1.171	86.5	4.4	73.259
																				113-3	74.43	1.035	86.5	11.5	73.395
																				115-1	75.54	1.727	86.5	33.3	73.813
																				115-3	75.54	1.437	86.5	48.4	74.103
																				116-1	75.93	1.699	86.5	55.1	74.231
																				116-4	75.93	1.293	86.5	76.3	74.637
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.22	1.06	0.6	-0.249	1.48	74.833	73.897	48	75.25	0.417				
																				48	75.25	1.301	88.5	4.9	73.949
																				49	75.59	1.489	88.5	19.3	74.101
																				50	76.24	1.993	88.5	33.1	74.247
																				100-1	76.17	1.546	88.5	68.7	74.624
																				100-3	76.17	1.397	88.5	82.8	74.773
																				101-2	76.39	1.921	88.5	54.1	74.469
																				101-3	76.39	1.836	88.5	62.1	74.554
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.21	0.07	0.4	-0.156	1.50	73.175	70.634	108-1	71.98	-1.195				
																				106	73.27	0.775	87.5	64.1	72.495
																				106	73.27	1.036	87.5	55.1	72.234
																				112	73.88	1.263	87.5	68.3	72.617
																				112	73.88	1.001	87.5	77.3	72.879
																				105-1	73.98	1.299	87.5	70.5	72.681
																				105-3	73.98	0.860	87.5	85.6	73.120
																				107-1	72.82	1.384	87.5	27.6	71.436
																				107-4	72.82	0.769	87.5	48.8	72.051
																				108-1	71.98	1.175	87.5	5.9	70.805
																				108-3	71.98	0.736	87.5	21.0	71.244
																				109-1	72.10	1.359	87.5	3.7	70.741
																				109-3	72.10	0.920	87.5	18.8	71.180
																				110-1	72.62	1.260	87.5	25.0	71.360
																				110-3	72.62	0.821	87.5	40.1	71.799
																				111-1	73.30	1.321	87.5	46.3	71.979
																				111-3	73.30	0.868	87.5	61.9	72.432
																				113-1	74.43	1.365	87.5	83.7	73.065
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.79	0.38	0.4	-0.307	1.47	70.425	70.013	22	71.62	1.195				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.42	0.54	0.5	-0.268	1.45	69.470	66.605	15	67.95	-1.520				
																				15	67.95	1.147	79.5	5.5	66.803
																				16	68.22	0.793	79.5	22.8	67.427
																				17	68.77	1.059	79.5	30.7	67.711
																				18	69.45	1.220	79.5	45.1	68.230

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				19	70.14	1.441	79.5	58.1	68.699
																				20	70.77	1.552	79.5	72.5	69.218
																				21	71.17	1.786	79.5	77.1	69.384
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.43	0.02	0.1	-0.307	1.45	76.914	76.571	15	78.33	1.416				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.43	0.06	0.1	-0.353	1.43	76.529	73.222	9	75.24	-1.289				
																				9	75.24	1.575	69.5	9.3	73.665
																				10	75.66	1.467	69.5	20.4	74.193
																				11	76.22	1.342	69.5	34.8	74.878
																				12	76.80	1.503	69.5	43.6	75.297
																				13	77.37	1.388	69.5	58.0	75.982
																				14	77.72	1.381	69.5	65.5	76.339
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.50	0.06	0.3	-0.324	1.43	73.222	73.213	7	75.09	1.868				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.92	0.17	0.5	-0.316	1.47	73.213	72.977	5	74.99	1.777				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	4.90	1.26	0.4	-0.518	1.48	72.342	70.240	32	71.51	-0.832				
																				32	71.51	1.193	60.0	2.2	70.317
																				33	72.20	1.624	60.0	9.6	70.576
																				34	72.90	1.917	60.0	21.2	70.983
																				35	73.59	2.201	60.0	32.8	71.389
																				36	74.30	2.406	60.0	47.2	71.894
																				42	71.67	1.209	60.0	6.3	70.461
																				43	72.31	1.702	60.0	10.5	70.608
																				44	73.07	1.958	60.0	24.9	71.112
																				45	73.65	2.292	60.0	31.9	71.358
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.78	1.47	0.9	-0.202	1.50	67.232	66.737	46	74.31	2.448	60.0	46.3	71.862	
																				13	67.89	0.658			
																				11	67.97	1.169			
																				12	67.91	0.995	65.0	23.4	66.915
																				13	67.89	0.908	65.0	32.2	66.982
																				14	67.89	0.798	65.0	46.6	67.092
																				23	68.16	1.275	65.0	19.4	66.885
																				24	68.23	1.237	65.0	33.6	66.993
																				25	68.23	1.133	65.0	47.3	67.097
																				26	68.28	1.094	65.0	58.9	67.186
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.59	2.01	0.7	-0.311	1.48	66.605	65.692	37	68.30	1.079	65.0	63.5	67.221	
																				7	66.89	0.285			
																				7	66.89	1.165			
																				8	67.37	1.392	39.0	12.2	65.978
																				9	67.82	1.568	39.0	23.9	66.252
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.17	2.01	0.6	-0.366	1.48	65.347	64.665	10	67.97	1.405	39.0	37.3	66.565	
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.04	2.04	0.6	-0.377	1.50	63.917	62.044	6	66.10	0.753				
1	63.88	-0.037																							
																				1	63.88	1.560	64.5	9.5	62.320
																				2	63.92	1.202	64.5	23.2	62.718
																				3	64.39	1.335	64.5	34.8	63.055
																				4	64.86	1.419	64.5	48.1	63.441
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.72	2.04	1.0	0.008	1.50	62.044	61.892	5	65.44	1.628	64.5	60.9	63.812	
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	1.93	2.11	0.9	-0.013	1.50	61.892	61.446	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.54	0.03	0.2	-0.200	1.45	78.995	77.247	61	78.31	-0.685				
																				61	78.31	0.955	92.0	5.7	77.355

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				62	78.72	1.091	92.0	20.1	77.629
																				63	78.74	0.851	92.0	33.8	77.889
																				64	79.82	1.123	92.0	76.3	78.697
																				64	79.82	1.279	92.0	68.1	78.541
																				65	79.96	1.138	92.0	82.9	78.822
																				65	79.96	1.229	92.0	78.1	78.731
																				66	80.11	1.223	92.0	86.3	78.887
																				66	80.11	1.256	92.0	84.6	78.854
																				67	80.11	1.147	92.0	90.3	78.963
																				67	80.11	1.185	92.0	88.3	78.925
																				68	79.92	0.946	92.0	90.9	78.974
																				68	79.92	0.925	92.0	92.0	78.995
																				69	79.99	1.016	92.0	90.9	78.974
																				69	79.99	1.065	92.0	88.3	78.925
																				72	78.57	1.028	92.0	15.5	77.542
																				72	78.57	1.190	92.0	7.0	77.380
																				70-1	79.75	1.399	92.0	58.1	78.351
70-4	79.75	0.970	92.0	80.7	78.780																				
71-1	79.32	1.589	92.0	25.5	77.732																				
71-4	79.32	1.159	92.0	48.1	78.161																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.37	0.10	0.3	-0.223	1.43	77.224	74.934	79	76.31	-0.914				
																				74	77.04	1.119	77.5	33.4	75.921
																				74	77.04	0.868	77.5	41.9	76.172
																				75	76.55	1.164	77.5	15.3	75.386
																				75	76.55	0.910	77.5	23.9	75.640
																				76	77.90	0.850	77.5	71.6	77.050
																				76	77.90	1.101	77.5	63.1	76.799
																				77	77.34	0.834	77.5	53.2	76.506
																				77	77.34	1.085	77.5	44.7	76.255
																				79	76.31	1.243	77.5	4.5	75.067
																				73-1	77.95	1.482	77.5	51.9	76.468
73-4	77.95	0.815	77.5	74.5	77.135																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.92	0.10	0.4	-0.195	1.45	74.906	74.573	80-4	75.75	0.844				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.61	0.12	0.4	-0.212	1.45	74.504	73.526	81-3	74.96	0.456				
																				78-2	75.03	1.466	30.5	1.2	73.564
																				78-3	75.03	1.283	30.5	6.9	73.747
																				78-4	75.03	1.023	30.5	15.0	74.007
																				80-1	75.75	1.628	30.5	18.6	74.122
																				80-3	75.75	1.284	30.5	29.3	74.466
																				81-3	74.96	1.315	30.5	3.7	73.645
																				81-4	74.96	1.062	30.5	11.6	73.898
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.98	0.33	0.5	-0.257	1.45	73.483	72.271	82-1	74.07	0.587				
																				59	74.11	1.488	54.5	15.8	72.622
																				60	74.12	1.177	54.5	30.2	72.943
																				78-1	75.03	1.787	54.5	43.7	73.243
																				81-1	74.96	1.677	54.5	45.5	73.283
																				81-2	74.96	1.524	54.5	52.4	73.436
																				82-1	74.07	1.485	54.5	14.1	72.585
																				82-4	74.07	0.983	54.5	36.7	73.087
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.08	0.00	0.0	-0.275	1.30	74.611	74.611	89	75.57	0.959				

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.45	0.02	0.2	-0.213	1.45	74.611	73.410	87	74.99	0.379				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.69	0.02	0.1	-0.222	1.45	73.372	72.286	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.19	0.46	0.7	-0.243	1.45	72.271	71.938	83-1	73.46	1.189				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.37	0.89	0.3	-0.761	1.47	71.159	70.657	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.00	0.00	0.0	-0.313	0.00	74.833	74.611	57	75.47	0.637				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.24	0.39	0.4	-0.334	1.45	74.833	72.683	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	0.87	0.03	0.1	-0.341	1.53	75.982	75.586	94-1	76.73	0.748				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	1.71	0.12	0.2	-0.423	1.53	75.982	74.833	56	76.20	0.218				
																				51	77.19	1.500	105.0	78.3	75.690
																				52	77.15	1.617	105.0	64.0	75.533
																				53	76.91	1.496	105.0	53.1	75.414
																				54	76.63	1.374	105.0	38.7	75.256
																				55	76.37	1.228	105.0	28.2	75.142
																				56	76.20	1.216	105.0	13.8	74.984
																				91-1	77.44	1.662	105.0	86.4	75.778
																				91-4	77.44	1.470	105.0	103.9	75.970
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.54	1.26	0.5	-0.427	1.48	69.032	67.232	27	68.65	-0.382				
																				27	68.65	1.277	60.0	4.7	67.373
																				28	69.07	1.265	60.0	19.1	67.805
																				29	69.63	1.618	60.0	26.0	68.012
																				30	70.23	1.786	60.0	40.4	68.444
																				31	70.87	2.216	60.0	47.4	68.654
																				38	68.95	1.283	60.0	14.5	67.667
																				39	69.64	1.541	60.0	28.9	68.099
																				40	70.34	1.980	60.0	37.6	68.360
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	1.70	0.11	0.2	-0.341	1.52	76.444	76.093	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.37	0.29	0.4	-0.325	1.43	71.169	70.440	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	-0.08	0.00	0.0	-0.010	1.50	67.956	67.956	9-2	68.47	0.514				
																				10-1	68.47	0.514	7.0	3.5	67.956
																				10-2	68.47	0.514	7.0	2.8	67.956
																				11-1	68.62	0.664	7.0	5.3	67.956
																				11-2	68.62	0.664	7.0	5.3	67.956
																				12-2	68.54	0.584	7.0	1.7	67.956
																				9-2	68.50	0.544	7.0	2.4	67.956
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.09	1.1	0.045	1.45	67.956	67.672	6-1	68.23	0.274				
																				12-1	68.54	0.607	32.5	29.9	67.933
																				13-1	68.43	0.646	32.5	12.8	67.784
																				13-2	68.43	0.573	32.5	21.2	67.857
																				14-2	68.42	0.724	32.5	2.7	67.696
																				6-1	68.23	0.483	32.5	8.6	67.747
																				6-2	68.23	0.521	32.5	4.2	67.709
																				7-1	68.28	0.515	32.5	10.6	67.765
																				7-2	68.28	0.523	32.5	9.7	67.757
																				8-1	68.36	0.568	32.5	13.7	67.792
																				8-2	68.36	0.498	32.5	21.7	67.862
																				9-1	68.50	0.595	32.5	26.7	67.905
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.13	0.24	1.1	0.037	1.45	67.672	67.251	17-1	68.23	0.558				
																				14-1	68.42	0.779	77.0	71.4	67.641
																				15-1	68.42	0.880	77.0	52.9	67.540

Table B-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.834	77.0	61.3	67.586
																				16-1	68.29	0.851	77.0	34.4	67.439
																				16-2	68.29	0.805	77.0	42.8	67.485
																				17-1	68.23	0.896	77.0	15.2	67.334
																				17-2	68.23	0.850	77.0	23.6	67.380
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.88	0.30	0.5	-0.272	1.45	66.686	65.524	4-1	66.76	0.074				
																				4-1	66.76	1.200	51.5	1.6	65.560
																				4-2	66.76	1.010	51.5	10.0	65.750
																				5-1	67.15	1.127	51.5	22.1	66.023
																				5-2	67.15	0.929	51.5	30.9	66.221
																				L343	67.62	1.902	51.5	8.6	65.718
																				L342	67.97	1.986	51.5	20.4	65.984
																				L341	68.19	1.935	51.5	32.4	66.255
																				L340	68.40	1.856	51.5	45.2	66.544

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full
⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.019 Interpolated HGL elevation

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾ m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.97	0.06	0.4	-0.175	0.93	62.793	60.449	B92L1	61.17	-1.623																							
																				B92L1	61.17	0.664	90.9	2.2	60.506																			
																				B93	61.89	1.160	90.9	10.9	60.730																			
																				B94	62.24	0.925	90.9	33.6	61.315																			
																				B95	62.74	0.860	90.9	55.5	61.880																			
																				B96	63.53	1.137	90.9	75.4	62.393																			
																				B97	63.52	1.160	90.9	74.1	62.360																			
																				B98	62.59	0.906	90.9	47.9	61.684																			
																				B99	61.56	0.990	90.9	4.7	60.570																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.39	0.26	1.4	0.484	0.93	60.449	60.101	B92L3	61.17	0.721			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.02	0.29	1.0	0.316	0.93	60.101	58.882	L88	60.83	0.729			
																																								L88	60.83	1.805	45.2	5.3
L89	61.05	1.580	45.2	21.8	59.470																																							
L90	60.93	1.234	45.2	30.2	59.696																																							
L91	60.90	0.829	45.2	44.1	60.071																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.14	0.30	0.9	0.447	0.95	58.882	58.506	L85	58.99	0.108																							
																				L85	58.99	0.436	34.0	4.3	58.554																			
																				L86	59.79	1.132	34.0	13.7	58.658																			
																				L87	60.00	1.167	34.0	29.6	58.833																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.37	0.68	1.1	0.547	0.95	58.506	57.613	L81	58.16	-0.346			
																				L81	58.16	0.388	66.9	11.9	57.772																			
																				L80	58.39	0.738	66.9	2.9	57.652																			
																				L82	58.22	0.255	66.9	26.4	57.965																			
																				L83	58.40	0.224	66.9	42.2	58.176																			
																				L84	58.95	0.627	66.9	53.2	58.323																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.89	0.67	1.1	0.324	0.98	57.613	57.445	L79	58.44	0.827																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.44	0.68	1.1	0.236	0.98	57.445	57.378	L74	58.91	1.465																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.49	0.68	1.1	0.245	0.98	57.378	57.295	L73	59.22	1.842																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.51	0.19	0.7	-0.129	0.93	60.742	58.506	L75	59.26	-1.482																							
																				L75	59.26	0.418	116.3	17.5	58.842																			
																				L76	59.55	0.331	116.3	37.1	59.219																			
																				B103SD	60.07	0.474	116.3	56.7	59.596																			
																				B104SD	60.75	0.789	116.3	75.7	59.961																			
																				B105SD	61.36	1.033	116.3	94.7	60.327																			
																				B106SD	62.05	1.356	116.3	113.8	60.694																			
																				B102L1	61.93	1.242	116.3	113.5	60.688																			
																				B102L4	61.55	1.296	116.3	90.9	60.254																			
																				B101L1	60.92	0.911	116.3	78.2	60.009																			
																				B101L4	60.52	0.945	116.3	55.6	59.575																			
																				B100L1	59.97	0.595	116.3	45.2	59.375																			
																				B100L4	59.58	0.639	116.3	22.6	58.941																			
																				110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.86	0.01	0.1	-0.237	0.93	63.219	62.753	L60	63.78	0.561			
																				111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.94	0.04	0.3	-0.193	0.95	62.753	60.919	L66	62.23	-0.523			
																				L66	62.23	1.283	65.6	1.0	60.947																			
																				L65	62.47	1.134	65.6	14.9	61.336																			
																				L64	62.67	1.021	65.6	26.1	61.649																			
																				L63	63.00	0.918	65.6	41.6	62.082																			
																				L62	63.31	1.052	65.6	47.9	62.258																			
																				L61	63.58	1.014	65.6	58.9	62.566																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	2.00	0.09	0.4	-0.213	0.95	60.899	59.875	B108L4	61.64	0.741																							

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.99	6.15	1.0	-0.085	0.97	58.950	58.323	L71	59.63	0.680				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	2.76	6.14	1.0	0.332	0.97	57.508	57.295	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	3.17	3.01	0.9	-0.236	0.95	66.142	65.752	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	3.26	3.10	1.0	-0.241	0.95	64.791	63.949	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	3.31	5.03	1.0	-0.276	0.97	63.434	63.092	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	3.34	5.18	1.0	-0.253	0.97	61.867	61.384	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	3.22	5.54	1.1	-0.065	0.97	60.635	60.112	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.476	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.71	0.30	1.0	0.531	0.95	62.476	60.504	B109L4	61.76	-0.716				
																				B109L4	61.76	0.463	62.4	25.1	61.297
																				B109L1	61.76	0.466	62.4	25.0	61.294
																				B110SD	62.44	0.580	62.4	42.9	61.860
																				B111SD	63.15	0.791	62.4	58.7	62.359
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.13	0.78	0.8	-0.234	1.03	59.139	58.167	L18	59.42	0.281				
																				L18	59.42	1.175	64.4	5.2	58.245
																				L19	60.08	1.665	64.4	16.4	58.415
																				L20	60.56	1.907	64.4	32.2	58.653
																				L21	60.98	2.181	64.4	41.9	58.799
																				L22	61.39	2.355	64.4	57.5	59.035
																				L24	61.34	2.442	64.4	48.4	58.898
																				L35	61.06	2.401	64.4	32.6	58.659
																				L26	60.61	2.125	64.4	21.1	58.485
																				L27	59.90	1.650	64.4	5.5	58.250
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.21	0.78	0.7	-0.243	1.03	56.962	55.998	L14	57.61	0.648				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.01	0.84	0.8	-0.169	1.03	54.876	54.128	L9	55.68	0.804				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.																

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				L42	61.29	1.628	61.7	18.7	59.662
																				L41	60.68	1.152	61.7	11.3	59.528
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.82	0.8	-0.107	1.02	57.434	56.095	L36	57.89	0.456				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.36	1.89	1.0	-0.148	1.02	63.056	62.804	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.40	1.93	1.0	-0.141	1.03	61.226	60.192	N/A	N/A	N/A				
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	3.15	8.86	1.0	0.302	1.02	54.380	54.198	L3	58.26	3.880				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	3.04	10.07	1.0	0.348	1.03	54.198	53.908	L8	55.21	1.012				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.39	0.14	0.5	-0.180	1.02	69.860	67.863	B54L4	69.35	-0.510				
																				B54L4	69.35	1.374	83.1	4.7	67.976
																				B54L1	69.35	0.925	83.1	23.4	68.425
																				B56L4	70.19	1.599	83.1	30.3	68.591
																				B56L1	70.19	1.089	83.1	51.5	69.101
																				B57SD	70.63	1.174	83.1	66.3	69.456
																				B43L4	71.22	1.593	83.1	73.4	69.627
																				B58L4	70.88	1.188	83.1	76.1	69.692
																				B58L1	70.88	1.700	83.1	54.8	69.180
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.11	0.14	0.5	-0.157	1.02	67.831	67.515	B53L3	68.90	1.069				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.35	0.58	1.0	-0.106	1.02	66.555	65.477	B47L4	66.63	0.075				
																				B47L4	66.63	0.999	119.4	17.1	65.631
																				B47L1	66.63	0.807	119.4	38.3	65.823
																				B48L4	67.21	1.326	119.4	45.1	65.884
																				B48L1	67.21	1.134	119.4	66.3	66.076
																				B49L4	67.77	1.635	119.4	72.9	66.135
																				B49L1	67.77	1.443	119.4	94.1	66.327
																				B50SD	68.07	1.606	119.4	109.3	66.464
																				B51L3	68.41	1.892	119.4	115.3	66.518
																				B59L4	68.18	1.729	119.4	107.9	66.451
																				B59L1	68.18	1.920	119.4	86.7	66.260
																				B60SD	67.97	1.773	119.4	79.8	66.197
																				B61L4	67.31	1.249	119.4	64.7	66.061
																				B61L1	67.31	1.440	119.4	43.5	65.870
																				B62L4	66.89	1.080	119.4	36.9	65.810
																				B62L1	66.89	1.271	119.4	15.7	65.619
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.85													

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B45L4	71.98	1.489	71.4	34.5	70.491
																				B44SD	71.47	1.105	71.4	27.5	70.365
																				B43L1	71.47	1.387	71.4	11.9	70.084
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	3.13	6.94	1.1	0.193	0.98	57.295	56.613	L32	58.76	1.465				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.91	0.30	1.5	0.309	0.95	60.504	60.039	N/A	N/A	N/A				
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	3.24	6.98	1.1	0.084	0.98	56.613	56.132	L11	58.85	2.237				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.47	7.15	0.8	0.209	0.98	54.776	54.380	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.02	0.20	0.4	0.404	1.02	54.828	54.822	L22	54.73	-0.098				
																				L22	54.73	-0.098	28.2	25.9	54.828
																				L21	54.73	-0.098	28.2	27.4	54.828
																				L20	55.10	0.273	28.2	22.9	54.827
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.14	0.27	0.5	0.498	0.98	54.822	54.785	L19	55.79	0.968				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.79	0.76	0.8	-0.192	1.00	64.367	63.994	L39	65.04	0.673				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.81	0.80	0.9	-0.175	1.00	63.994	63.642	L37	64.89	0.896				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.58	1.03	1.0	-0.111	1.00	63.497	63.078	L34	64.28	0.783				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.17	67.451	67.098	L339	68.56	1.109				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	1.02	65.521	64.337	L347	65.57	0.049				
																				L347	65.57	1.199	52.4	1.5	64.371
																				L346	66.07	1.213	52.4	23.0	64.857
																				L345	66.61	1.550	52.4	32.0	65.060
																				L344	67.15	1.760	52.4	46.6	65.390
																				3-1	66.15	1.054	52.4	33.6	65.096
																				1	65.55	0.723	52.4	21.7	64.827
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.60	0.87	0.8	-0.066	1.02	64.018	63.056	L58	64.18	0.162				
																				L58	64.18	0.795	55.0	18.8	63.385
																				L57	64.44	0.754	55.0	36.0	63.686
																				L56	64.75	0.840	55.0	48.8	63.910
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.56	1.45	1.0	-0.277	0.98	69.271	69.139	18-1	69.48	0.209				
																				18-1	69.48	0.310	80.5	18.7	69.170
																				18-2	69.48	0.297	80.5	27.1	69.183
																				19-1	69.51	0.310	80.5	37.2	69.200
																				19-2	69.51	0.296	80.5	45.6	69.214
																				20-1	69.54	0.309	80.5	55.9	69.231
																				20-2	69.54	0.295	80.5	64.4	69.245
																				21-1	69.57	0.309	80.5	74.5	69.261
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.78	0.29	1.7	0.482	1.00	69.139	68.431	N/A	N/A	N/A				
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.28	N/A	N/A	0.98	69.139	68.565	N/A	N/A	N/A				
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.67	0.85	0.6	-0.352	0.97	70.071	69.548	B92L1	70.77	0.699				
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	2.06	0.93	0.7	-0.300	0.97	69.548	69.392	B94L4	70.08	0.532				
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.61	0.94	0.7	-0.268	0.97	69.392	69.271	21-2	69.57	0.178				
																				21-2	69.57	0.294	64.0	2.7	69.276
																				22-1	69.60	0.305	64.0	12.7	69.295
																				22-2	69.60	0.289	64.0	21.2	69.311
																				23-1	69.63	0.300	64.0	31.1	69.330
																				23-2	69.63	0.285	64.0	39.4	69.345
																				24-1	69.67	0.305	64.0	49.5	69.365
																				24-2	69.67	0.289	64.0	58.0	69.381
																				B95-1	69.95	0.649	64.0	15.9	69.301
																				B95-4	69.95	0.608	64.0	37.7	69.342
																				B94-1	70.08	0.723	64.0	45.4	69.357

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF	Freeboard (2)	Interpolated HGL			
																						Length HGL	Dist. From D/S MH	HGL	
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)		(m)	(h)	(m)	(m)		(m)	(m)	(m)			
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.17	0.10	0.3	-0.222	0.95	68.680	66.186	B36SD	68.23	-0.450				
																				B36SD	68.23	1.662	101.9	15.6	66.568
																				B37L4	68.70	1.983	101.9	21.7	66.717
																				B37L1	68.70	1.464	101.9	42.9	67.236
																				B38L4	69.31	1.915	101.9	49.4	67.395
																				B38L1	69.31	1.396	101.9	70.6	67.914
																				B39L4	69.62	1.532	101.9	77.7	68.088
																				B39L1	69.62	1.011	101.9	99.0	68.609
																				B47L1	69.23	0.773	101.9	92.8	68.457
																				B47L4	69.23	1.331	101.9	70.0	67.899
																				B48L1	68.82	1.046	101.9	64.9	67.774
																				B48L4	68.82	1.564	101.9	43.7	67.256
																				B49SD	68.53	1.438	101.9	37.0	67.092
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.52	-0.01	-0.2	-0.223	0.98	69.549	69.696	B96L1	70.07	0.521				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.30	1.96	0.6	-0.341	1.05	68.907	68.283	Fut. Est.	72.09	3.183				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.08	0.05	0.4	-0.217	0.93	72.462	71.847	B107L1	72.89	0.428				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.68	0.05	0.4	-0.094	0.97	71.847	71.832	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.45	0.22	1.2	-0.025	0.97	71.832	71.616	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.62	0.79	0.8	-0.089	0.95	71.616	71.200	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	1.00	0.03	0.4	-0.165	0.95	72.399	71.790	B102L1	72.70	0.301				
																				B102L1	72.70	0.876	106.5	6.0	71.824
																				B102L5	72.70	0.709	106.5	35.1	71.991
																				B103L1	72.87	0.824	106.5	44.8	72.046
																				B103L4	72.87	0.704	106.5	65.8	72.166
																				B104L1	73.05	0.826	106.5	75.8	72.224
																				B104L5	73.05	0.662	106.5	104.5	72.388
																				B105L10	73.24	0.876	106.5	100.3	72.364
																				B105L6	73.24	1.034	106.5	72.7	72.206
																				B106L10	73.08	0.934	106.5	62.3	72.146
																				B106L6	73.08	1.089	106.5	35.1	71.991
																				B107L10	72.89	0.950	106.5	26.3	71.940
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.11	0.05	0.5	-0.105	0.97	71.790	71.616	B107L6	72.89	1.100				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.57	0.85	0.6	-0.330	0.95	70.335	70.102	B100SD	72.25	1.915				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.103	1.02	63.163	62.636	L1	64.26	1.097				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.17	0.47	0.9	-0.169	1.02	62.606	61.983	L14	63.44	0.834				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.51	0.51	0.8	-0.192	1.02	61.933	61.320	L10	63.20	1.267				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.30	0.57	0.8	-0.229	1.02	61.286	60.814	L5	63.33	2.044				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.58	0.66	0.8	-0.219	1.02	60.798	60.398	L2	62.35	1.552				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.30	1.1	-0.021	1.00	68.015	67.185	L334	68.05	0.035				
																				L334	68.05	0.723	87.0	14.9	67.327
																				L335	68.12	0.725	87.0	22.0	67.395
																				B610L1	68.12	0.564	87.0	38.9	67.556
																				B610L5	68.18	0.340	87.0	68.7	67.840
																				B611L1	68.53	0.673	87.0	70.4	67.857
																				B111L4	68.45	0.809	87.0	47.8	67.641
																				B612SD	68.45	0.906	87.0	37.6	67.544
																				B613SD	68.40	1.050	87.0	17.3	67.350
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.11	N/A	N/A	1.00	68.015	67.854	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.99	9.77	0.9	-0.451	0.98	67.841	67.386	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.39	0.23	0.8	-0.068	1.02	64.980	62.995	L19	64.58	-0.400				

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
																				L19	64.58	1.123	82.0	19.1	63.457			
																				L20	64.99	1.208	82.0	32.5	63.782			
																				L21	65.74	1.593	82.0	47.6	64.147			
																				L22	66.37	1.886	82.0	61.5	64.484			
																				L23	67.00	2.173	82.0	75.7	64.827			
770	771	51.465	48.245	300	115.0	2.8	0.013	54.316	51.047	2.289	0.162	1.33	0.01	0.1	-0.245	0.95	51.520	48.300	N/A	N/A	N/A							
771	7710	47.045	44.763	375	81.5	2.8	0.013	51.047	47.085	2.656	0.293	1.45	0.04	0.1	-0.279	0.95	47.141	45.088	N/A	N/A	N/A							
772	773	44.476	44.365	450	18.5	0.6	0.013	46.973	46.739	1.389	0.221	1.81	0.28	1.3	0.019	0.93	44.945	44.743	N/A	N/A	N/A							
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.74	0.08	0.7	-0.113	1.02	69.168	68.015	L34	69.22	0.052							
																				L34	69.22	0.952	82.8	18.2	68.268			
																				L33	69.36	0.874	82.8	33.8	68.486			
																				L32	69.53	0.925	82.8	42.4	68.605			
																				L31	69.62	0.813	82.8	56.9	68.807			
																				L30	69.82	0.889	82.8	65.8	68.931			
																				L29	70.07	0.931	82.8	80.7	69.139			
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.038	1.02	67.185	66.140	L325	67.35	0.165							
																				L325	67.35				1.165	72.5	3.1	66.185
																				L326	67.53				1.119	72.5	18.8	66.411
																				L327	67.79				1.262	72.5	26.9	66.528
																				L328	67.99				1.152	72.5	48.4	66.838
																				B614SD	68.21				1.047	72.5	71.0	67.163
																				L333	67.98				0.817	72.5	71.0	67.163
																				L332	67.91				0.875	72.5	62.1	67.035
																				L331	67.79				1.027	72.5	43.2	66.763
L330	67.63	0.986	72.5	35.0	66.644																							
L329	67.47	1.099	72.5	16.0	66.371																							
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.10	0.34	1.0	0.035	1.02	66.140	65.848	L324	67.08	0.940							
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.127	1.03	65.813	64.584	L319	65.72	-0.093							
																				L319	65.72	0.801	77.0	21.0	64.919			
																				L320	66.05	0.823	77.0	40.3	65.227			
																				L321	66.39	1.035	77.0	48.3	65.355			
																				L322	66.71	1.060	77.0	66.8	65.650			
																				L323	66.89	1.192	77.0	69.8	65.696			
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.02	0.50	0.6	-0.260	1.02	63.751	63.073	L123	64.76	1.009							
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.163	0.97	66.098	65.716	B601SD	66.46	0.362							
806	807	65.430</																										

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
1013	138	50.080	49.950	2550	40.5	0.3	0.013	54.680	54.371	3.223	16.461	3.74	15.17	0.9	-0.637	1.03	51.993	51.732	N/A	N/A	N/A				
1015	1016	52.028	51.300	675	52.0	1.4	0.013	56.049	54.402	2.779	0.995	2.66	0.74	0.7	-0.085	0.97	52.618	52.244	N/A	N/A	N/A				
1016	135	51.270	51.102	675	12.0	1.4	0.013	54.402	54.079	2.779	0.995	2.13	0.74	0.7	0.299	1.00	52.244	51.947	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.36	0.25	0.6	-0.167	0.95	59.875	59.540	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	2.92	2.30	1.2	-0.149	0.93	67.317	67.238	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.91	5.85	0.9	-0.146	0.97	59.961	59.597	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	3.00	0.50	0.6	-0.258	1.02	62.648	62.310	L45	63.24	0.592				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	1.86	0.16	0.4	-0.223	1.02	66.752	66.555	B51L1	68.41	1.658				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	3.29	4.58	1.4	-0.061	0.93	75.824	75.526	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.02	0.27	0.5	0.756	0.98	54.785	54.776	L30	58.92	4.135				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.73	0.02	0.2	-0.195	1.02	72.065	71.768	B103L8	72.87	0.805				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.77	0.29	0.7	0.044	1.00	68.431	68.015	N/A	N/A	N/A				
7710	772	44.563	44.536	450	4.5	0.6	0.013	47.085	46.973	1.389	0.221	1.76	0.29	1.3	0.075	0.93	45.088	44.945	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.087	1.03	65.823	65.715	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.02	65.823	65.813	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	3.25	4.64	1.6	0.455	1.07	50.597	50.505	N/A	N/A	N/A				
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	9.28	17.56	N/A	N/A	1.37	50.500	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.46	0.66	0.8	-0.200	1.03	60.321	60.108	L23	61.85	1.529				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.05	0.30	1.1	0.115	1.00	69.531	69.271	B84L1	69.71	0.179				
																				B84L1	69.71	0.387	83.9	16.8	69.323
																				B84L4	69.71	0.320	83.9	38.3	69.390
																				B83L1	70.27	0.860	83.9	45.0	69.410
																				B83L3	70.27	0.813	83.9	60.0	69.457
																				B82L1	70.96	1.483	83.9	66.6	69.477
																				B82L4	70.96	1.435	83.9	81.9	69.525
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.98	0.07	1.1	0.076	0.92	69.696	69.548	B96L4	70.07	0.374				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.76	0.34	0.8	-0.084	0.97	71.877	71.092	L52	72.19	0.313				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.29	0.9	-0.114	0.95	72.692	71.877	L56	72.93	0.238				
																				L56	72.93	0.942	64.8	8.8	71.988
																				B73SD	73.17	1.021	64.8	21.6	72.149
																				L57	73.23	0.844	64.8	40.5	72.386
																				L58	73.36	0.801	64.8	54.2	72.559
																				L60	73.51	0.868	64.8	60.8	72.642
																				L61	73.43	0.995	64.8	44.4	72.435
																				L62	73.37	1.128	64.8	29.0	72.242
																				L63	73.28	1.214	64.8	15.0	72.066
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.39	0.03	0.2	-0.202	0.95	73.494	72.692	L59	73.54	0.046				
																				L59	73.54	0.808	44.4	2.2	72.732
																				B72L1	73.92	0.988	44.4	13.3	72.932
																				B72L2	73.92	0.820	44.4	22.6	73.100
																				B71L1	74.10	0.848	44.4	31.0	73.252
																				B66L4	74.39	1.048	44.4	36.0	73.342
																				B66L1	73.99	0.890	44.4	22.6	73.100
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.56	0.03	0.2	-0.201	0.95	74.435	73.524	B71L4	74.50	0.065				
																				B71L4	74.50	0.817	45.4	7.9	73.683
																				B70L1	74.89	1.049	45.4	15.8	73.841
																				B70L2	74.89	0.860	45.4	25.2	74.030
																				B69L1	75.49	1.296	45.4	33.4	74.194
																				B69L2	75.49	1.095	45.4	43.4	74.395

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B68L1 B67L4 B67L1	76.39 75.19 74.79	1.995 0.996 1.107	45.4 45.4 45.4	43.4 33.4 7.9	74.395 74.194 73.683
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.34	0.29 0.02	1.0 0.2	-0.089 -0.215	1.03 0.93	65.697 69.158	65.299 68.004	N/A L13	N/A 69.13	N/A -0.028				
																				L13 L12 L11 L10 L9	69.13 69.49 69.68 69.81 69.81	0.984 1.133 1.030 0.972 0.688	65.0 65.0 65.0 65.0 65.0	8.0 19.9 36.4 47.0 63.0	68.146 68.357 68.650 68.838 69.122
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	2.07	0.06	0.3	-0.179	0.93	68.004	65.688	L18	66.92	-1.084				
																				L18 L17 L16 L15 L14	66.92 67.35 67.80 68.21 68.67	0.998 0.912 1.007 0.888 0.954	72.3 72.3 72.3 72.3 72.3	7.3 23.4 34.5 51.0 63.3	65.922 66.438 66.793 67.322 67.716
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.24 2.15	0.06 0.12	0.5 0.5	-0.115 -0.182	0.95 1.00	65.688 67.854	65.441 66.306	N/A L24	N/A 67.63	N/A -0.224				
																				L24 L25 L26 L27 L28	67.63 68.23 68.95 69.33 69.33	1.194 1.542 1.983 2.117 1.813	86.0 86.0 86.0 86.0 86.0	7.2 21.2 36.7 50.4 67.3	66.436 66.688 66.967 67.213 67.517
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.41	1.43	0.9	-0.140	1.00	68.565	68.283	L35	69.61	1.045				
																				L35 L36 L37 L38 L39 L40 L46 L45 L44 L43 L42 L41	69.61 70.01 70.32 70.49 70.49 70.36 70.51 70.56 70.58 70.32 70.06 69.67	1.097 1.531 1.874 2.084 2.108 2.016 2.163 2.174 2.171 1.871 1.579 1.154	103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5 103.5	84.3 71.8 59.9 45.3 36.4 22.5 23.6 37.7 46.4 61.0 72.5 85.4	68.513 68.479 68.446 68.406 68.382 68.344 68.347 68.386 68.409 68.449 68.481 68.516
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.275	84	80.14	-0.092				
																				79 80 81 82 83 84	81.31 81.20 80.82 80.66 80.27 80.14	1.128 1.399 1.363 1.584 1.482 1.733	74.0 74.0 74.0 74.0 74.0 74.0	72.1 57.7 44.7 30.3 19.4 5.0	80.182 79.801 79.457 79.076 78.788 78.407
501 502 503 504	505 503 504 509	80.232 78.418 78.132 77.904	80.053 78.282 77.949 77.420	300 300 450 450	17.0 34.0 73.0 88.0	1.1 0.4 0.3 0.6	0.013 0.013 0.013 0.013	83.090 81.120 81.790 81.360	82.920 81.790 81.360 80.780	1.402 0.865 0.896 1.329	0.099 0.061 0.143 0.211	0.00 0.64 0.69 1.03	0.00 0.02 0.03 0.06	0.0 0.3 0.2 0.3	-0.300 -0.184 -0.307 -0.284	0.00 0.95 0.95 0.97	80.232 78.534 78.275 78.070	80.167 78.377 78.070 77.714	77 87 41 34	81.27 79.42 79.36 78.97	1.038 0.886 1.085 0.900				
																				34 35 36	78.97 79.03 79.08	1.216 1.218 1.232	88.0 88.0 88.0	9.9 24.3 33.1	77.754 77.812 77.848

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL																							
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(h)	(m)	(m)	Length HGL (m)				Dist. From D/S MH (m)	HGL (m)																						
																				37	79.14	1.234	88.0	47.5	77.906																				
																				38	79.19	1.256	88.0	54.4	77.934																				
																				39	79.25	1.258	88.0	68.8	77.992																				
																				40	79.31	1.282	88.0	77.6	78.028																				
																				52	79.54	1.481	88.0	85.4	78.059																				
																				53	79.46	1.425	88.0	79.3	78.035																				
																				54	79.43	1.453	88.0	64.9	77.977																				
																				55	79.43	1.506	88.0	51.9	77.924																				
																				56	79.32	1.454	88.0	37.5	77.866																				
																				57	79.23	1.408	88.0	26.6	77.822																				
																				58	79.12	1.359	88.0	11.6	77.761																				
																				505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	1.06	0.03	0.3	-0.181	0.93	80.167	79.595	64	80.26	0.093				
																																								64	80.26	0.626	72.5	4.9	79.634
																																								65	80.40	0.661	72.5	18.2	79.739
																																								66	80.54	0.688	72.5	32.6	79.852
																																								67	80.65	0.712	72.5	43.5	79.938
																																								68	80.77	0.718	72.5	57.9	80.052
																																								69	80.92	0.777	72.5	69.4	80.143
																																								71	80.32	0.648	72.5	9.7	79.672
																																								72	80.46	0.686	72.5	22.7	79.774
73	80.57	0.682	72.5	37.1	79.888																																								
74	80.69	0.733	72.5	45.9	79.957																																								
																				75	80.82	0.749	72.5	60.3	80.071																				
																				76	81.20	1.051	72.5	70.2	80.149																				
																				506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.9	-0.064	0.97	79.595	78.727	59	79.58	-0.015				
																																								59	79.58	0.713	76.5	12.3	78.867
																																								60	79.72	0.690	76.5	26.7	79.030
																																								61	79.86	0.683	76.5	39.7	79.177
																																								62	80.00	0.659	76.5	54.1	79.341
																																								63	80.12	0.631	76.5	67.2	79.489
																																								70	80.18	0.637	76.5	71.9	79.543
																				508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.14	0.27	0.6	-0.233	0.97	78.623	77.714	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.54	0.8	-0.156	0.97	77.714	76.006	N/A	N/A	N/A																								
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.44	0.06	0.6	-0.130	0.95	77.622	76.737	90-2	77.72	0.098																								
																				88-1	78.32	1.067	88.5	51.6	77.253																				
																				88-4	78.32	0.855	88.5	72.8	77.465																				
																				89-1	78.00	1.030	88.5	23.3	76.970																				
																				89-4	78.00	0.818	88.5	44.5	77.182																				
																				90-2	77.72	0.957	88.5	2.6	76.763																				
																				90-4	77.72	0.816	88.5	16.7	76.904																				
																				96-1	78.46	1.118	88.5	60.5	77.342																				
																				96-5	78.46	0.869	88.5	85.4	77.591																				
																				97-1	78.08	1.017	88.5	32.6	77.063																				
																				97-4	78.08	0.805	88.5	53.8	77.275																				
																				98-2	77.80	1.005	88.5	5.8	76.795																				
																				98-5	77.80	0.803	88.5	26.0	76.997																				
																				511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.20	0.5	-0.246	0.95	76.621	76.006	100-1	77.19	0.569				
																				100-1	77.19	1.036	75.0	18.0	76.154																				
																				100-4	77.19	0.863	75.0	39.2	76.327																				
																				90-1	77.72	1.137	75.0	70.4	76.583																				

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
		(m)	(m)	(mm)	(m)	(%)		Length HGL (m)	Dist. From D/S MH (m)	HGL (m)															
																				91-1	77.47	1.165	75.0	36.5	76.305
																				91-5	77.47	0.941	75.0	63.8	76.529
																				92-1	77.33	1.256	75.0	8.3	76.074
																				92-4	77.33	1.082	75.0	29.5	76.248
																				98-1	77.80	1.190	75.0	73.7	76.610
																				99-1	77.47	1.088	75.0	45.8	76.382
																				99-4	77.47	0.915	75.0	67.0	76.555
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.82	0.09	0.4	-0.212	0.95	77.906	76.006	101-1	77.24	-0.666				
																				102	77.52	0.899	119.0	38.5	76.621
																				102	77.52	0.756	119.0	47.5	76.764
																				101-1	77.24	0.717	119.0	32.4	76.523
																				101-4	77.24	1.055	119.0	11.2	76.185
																				103-1	78.08	0.872	119.0	75.3	77.208
																				103-4	78.08	1.210	119.0	54.1	76.870
																				104-1	78.52	0.968	119.0	96.8	77.552
																				104-3	78.52	1.210	119.0	81.7	77.310
																				105-1	78.53	0.646	119.0	117.6	77.884
																				105-3	78.53	0.873	119.0	103.4	77.657
																				93-1	77.74	1.134	119.0	37.6	76.606
																				93-5	77.74	1.568	119.0	10.4	76.172
																				94-1	77.88	0.718	119.0	72.4	77.162
																				94-5	77.88	1.154	119.0	45.1	76.726
																				95-1	78.67	0.959	119.0	106.8	77.711
																				95-5	78.67	1.395	119.0	79.5	77.275
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.09	0.03	0.2	-0.261	0.95	77.906	76.988	25	78.18	0.274				
																				17	78.54	1.347	114.5	25.6	77.193
																				18	78.54	1.291	114.5	32.6	77.249
																				19	78.59	1.072	114.5	66.1	77.518
																				20	78.59	1.512	114.5	11.2	77.078
																				21	78.58	0.947	114.5	80.5	77.633
																				22	78.67	0.967	114.5	89.2	77.703
																				23	78.75	1.453	114.5	38.6	77.297
																				24	78.75	1.337	114.5	53.0	77.413
																				25	78.18	1.164	114.5	3.5	77.016
																				26	78.23	1.155	114.5	10.8	77.075
																				27	78.29	1.100	114.5	25.2	77.190
																				28	78.34	0.521	114.5	103.6	77.819
																				29	78.40	0.937	114.5	59.3	77.463
																				30	78.45	1.189	114.5	34.0	77.261
																				31	78.51	1.134	114.5	48.4	77.376
																				33	78.56	0.911	114.5	82.4	77.649
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.27	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.90	1.05	0.8	-0.148	0.98	76.006	75.319	N/A	N/A					
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.18	0.09	0.5	-0.224	1.07	75.684	75.337	96-1	76.43	0.746				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.37	1.16	0.8	-0.256	1.03	75.319	74.895	100-4	76.17	0.851				
																				98	76.29	1.185	78.0	38.6	75.105
																				98	76.29	1.234	78.0	29.6	75.056
																				100-4	76.17	1.267	78.0	1.4	74.903
																				97-1	76.30	1.160	78.0	45.0	75.140

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			97-4	76.30	1.045	78.0	66.2	75.255
																			99-1	76.23	1.291	78.0	8.1	74.939
																			99-3	76.23	1.209	78.0	23.2	75.021
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.92	0.07	0.5	-0.143	1.05	74.895	73.229	113-2	74.43	-0.465			
																			114	74.86	1.286	86.5	17.9	73.574
																			114	74.86	1.113	86.5	26.9	73.747
																			102-1	75.69	1.411	86.5	54.5	74.279
																			102-4	75.69	1.003	86.5	75.7	74.687
																			103-1	75.32	1.577	86.5	26.7	73.743
																			103-4	75.32	1.168	86.5	47.9	74.152
																			104-1	74.57	1.247	86.5	4.9	73.323
																			104-3	74.57	0.956	86.5	20.0	73.614
																			113-2	74.43	1.116	86.5	4.4	73.314
																			113-3	74.43	0.980	86.5	11.5	73.450
																			115-1	75.54	1.670	86.5	33.3	73.870
115-3	75.54	1.379	86.5	48.4	74.161																			
																			116-1	75.93	1.640	86.5	55.1	74.290
																			116-4	75.93	1.231	86.5	76.3	74.699
																			48	75.25	0.355			
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.25	1.18	0.7	-0.187	1.05	74.895	73.934	48	75.25	0.355			
																			48	75.25	1.263	88.5	4.9	73.987
																			49	75.59	1.446	88.5	19.3	74.144
																			50	76.24	1.947	88.5	33.1	74.293
																			100-1	76.17	1.490	88.5	68.7	74.680
																			100-3	76.17	1.337	88.5	82.8	74.833
																			101-2	76.39	1.869	88.5	54.1	74.521
																			101-3	76.39	1.782	88.5	62.1	74.608
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.47	0.12	0.7	-0.102	1.05	73.229	70.685	108-1	71.98	-1.249			
																			106	73.27	0.721	87.5	64.1	72.549
																			106	73.27	0.983	87.5	55.1	72.287
																			112	73.88	1.209	87.5	68.3	72.671
																			112	73.88	0.948	87.5	77.3	72.932
																			105-1	73.98	1.245	87.5	70.5	72.735
																			105-3	73.98	0.806	87.5	85.6	73.174
																			107-1	72.82	1.333	87.5	27.6	71.487
																			107-4	72.82	0.716	87.5	48.8	72.104
																			108-1	71.98	1.123	87.5	5.9	70.857
																			108-3	71.98	0.684	87.5	21.0	71.296
																			109-1	72.10	1.307	87.5	3.7	70.793
																			109-3	72.10	0.868	87.5	18.8	71.232
																			110-1	72.62	1.208	87.5	25.0	71.412
																			110-3	72.62	0.769	87.5	40.1	71.851
111-1	73.30	1.269	87.5	46.3	72.031																			
111-3	73.30	0.815	87.5	61.9	72.485																			
113-1	74.43	1.311	87.5	83.7	73.119																			
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.89	0.45	0.4	-0.272	1.05	70.460	70.040	22	71.62	1.160			
520	527	69.138	6																					

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				19	70.14	1.415	79.5	58.1	68.725
																				20	70.77	1.532	79.5	72.5	69.238
																				21	71.17	1.768	79.5	77.1	69.402
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.61	0.03	0.1	-0.289	0.95	76.932	76.588	15	78.33	1.398				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.55	0.08	0.1	-0.341	0.97	76.541	73.246	9	75.24	-1.301				
																				9	75.24	1.553	69.5	9.3	73.687
																				10	75.66	1.447	69.5	20.4	74.213
																				11	76.22	1.324	69.5	34.8	74.896
																				12	76.80	1.487	69.5	43.6	75.313
																				13	77.37	1.374	69.5	58.0	75.996
																				14	77.72	1.369	69.5	65.5	76.351
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.56	0.08	0.3	-0.300	0.97	73.246	73.233	7	75.09	1.844				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.95	0.19	0.5	-0.296	0.98	73.233	72.991	5	74.99	1.757				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.04	1.40	0.4	-0.494	1.03	72.366	70.264	32	71.51	-0.856				
																				32	71.51	1.169	60.0	2.2	70.341
																				33	72.20	1.600	60.0	9.6	70.600
																				34	72.90	1.893	60.0	21.2	71.007
																				35	73.59	2.177	60.0	32.8	71.413
																				36	74.30	2.382	60.0	47.2	71.918
																				42	71.67	1.185	60.0	6.3	70.485
																				43	72.31	1.678	60.0	10.5	70.632
																				44	73.07	1.934	60.0	24.9	71.136
																				45	73.65	2.268	60.0	31.9	71.382
																				46	74.31	2.424	60.0	46.3	71.886
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.80	1.61	1.0	-0.137	1.05	67.297	66.791	13	67.89	0.593				
																				11	67.97	1.114	65.0	8.4	66.856
																				12	67.91	0.937	65.0	23.4	66.973
																				13	67.89	0.848	65.0	32.2	67.042
																				14	67.89	0.736	65.0	46.6	67.154
																				23	68.16	1.218	65.0	19.4	66.942
																				24	68.23	1.177	65.0	33.6	67.053
																				25	68.23	1.071	65.0	47.3	67.159
																				26	68.28	1.030	65.0	58.9	67.250
																				37	68.30	1.015	65.0	63.5	67.285
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.68	2.24	0.8	-0.264	1.05	66.652	65.737	7	66.89	0.238				
																				7	66.89	1.120	39.0	1.4	65.770
																				8	67.37	1.347	39.0	12.2	66.023
																				9	67.82	1.522	39.0	23.9	66.298
																				10	67.97	1.358	39.0	37.3	66.612
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.28	2.24	0.7	-0.327	1.05	65.386	64.700	6	66.10	0.714				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.27	0.7	-0.326	1.05	63.968	62.172	1	63.88	-0.088				
																				1	63.88	1.443	64.5	9.5	62.437
																				2	63.92	1.102	64.5	23.2	62.818
																				3	64.39	1.249	64.5	34.8	63.141
																				4	64.86	1.349	64.5	48.1	63.511
																				5	65.44	1.572	64.5	60.9	63.868
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.90	2.27	1.1	0.136	1.05	62.172	62.004	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.07	2.34	1.0	0.099	1.05	62.004	61.584	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.61	0.04	0.3	-0.192	0.95	79.003	77.255	61	78.31	-0.693				
																				61	78.31	0.947	92.0	5.7	77.363

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				62	78.72	1.083	92.0	20.1	77.637
																				63	78.74	0.843	92.0	33.8	77.897
																				64	79.82	1.115	92.0	76.3	78.705
																				64	79.82	1.271	92.0	68.1	78.549
																				65	79.96	1.130	92.0	82.9	78.830
																				65	79.96	1.221	92.0	78.1	78.739
																				66	80.11	1.215	92.0	86.3	78.895
																				66	80.11	1.248	92.0	84.6	78.862
																				67	80.11	1.139	92.0	90.3	78.971
																				67	80.11	1.177	92.0	88.3	78.933
																				68	79.92	0.938	92.0	90.9	78.982
																				68	79.92	0.917	92.0	92.0	79.003
																				69	79.99	1.008	92.0	90.9	78.982
																				69	79.99	1.057	92.0	88.3	78.933
																				72	78.57	1.021	92.0	15.5	77.550
																				72	78.57	1.182	92.0	7.0	77.388
																				70-1	79.75	1.391	92.0	58.1	78.359
70-4	79.75	0.962	92.0	80.7	78.788																				
71-1	79.32	1.581	92.0	25.5	77.740																				
71-4	79.32	1.151	92.0	48.1	78.169																				
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.41	0.11	0.4	-0.217	0.97	77.230	74.939	79	76.31	-0.920				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.862	77.5	41.9	76.178
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.904	77.5	23.9	75.646
																				76	77.90	0.844	77.5	71.6	77.056
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.828	77.5	53.2	76.512
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
																				73-1	77.95	1.477	77.5	51.9	76.473
73-4	77.95	0.809	77.5	74.5	77.141																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.187	0.97	74.914	74.579	80-4	75.75	0.836				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	0.97	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
																				81-4	74.96	1.057	30.5	11.6	73.903
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	0.97	73.486	72.284	82-1	74.07	0.584				
																				59	74.11	1.478	54.5	15.8	72.632
																				60	74.12	1.170	54.5	30.2	72.950
																				78-1	75.03	1.782	54.5	43.7	73.248
																				81-1	74.96	1.672	54.5	45.5	73.288
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.475	54.5	14.1	72.595
																				82-4	74.07	0.977	54.5	36.7	73.093
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.52	0.01	0.1	-0.236	1.05	74.650	74.623	89	75.57	0.920				

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.56	0.03	0.2	-0.201	0.95	74.623	73.422	87	74.99	0.367				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.79	0.03	0.2	-0.210	0.95	73.384	72.296	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.48	0.7	-0.230	0.98	72.284	71.946	83-1	73.46	1.176				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.51	1.11	0.4	-0.704	1.05	71.216	70.713	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.57	0.01	0.1	-0.240	1.05	74.906	74.672	57	75.47	0.564				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.59	0.59	0.6	-0.261	1.05	74.906	72.755	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.21	0.09	0.4	-0.243	1.10	76.080	75.684	94-1	76.73	0.650				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.20	0.28	0.4	-0.325	1.10	76.080	74.906	56	76.20	0.120				
																				51	77.19	1.409	105.0	78.3	75.781
																				52	77.15	1.528	105.0	64.0	75.622
																				53	76.91	1.410	105.0	53.1	75.500
																				54	76.63	1.291	105.0	38.7	75.339
																				55	76.37	1.149	105.0	28.2	75.221
																				56	76.20	1.140	105.0	13.8	75.060
																				91-1	77.44	1.568	105.0	86.4	75.872
																				91-4	77.44	1.372	105.0	103.9	76.068
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.67	1.40	0.5	-0.402	1.05	69.057	67.297	27	68.65	-0.407				
																				27	68.65	1.215	60.0	4.7	67.435
																				28	69.07	1.213	60.0	19.1	67.857
																				29	69.63	1.570	60.0	26.0	68.060
																				30	70.23	1.748	60.0	40.4	68.482
																				31	70.87	2.183	60.0	47.4	68.687
																				38	68.95	1.228	60.0	14.5	67.722
																				39	69.64	1.495	60.0	28.9	68.145
																				40	70.34	1.940	60.0	37.6	68.400
																				41	71.03	2.290	60.0	49.2	68.740
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.14	0.32	0.6	-0.177	1.10	76.608	76.227	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.43	0.31	0.4	-0.319	0.97	71.175	70.460	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.05	0.00	0.0	0.049	0.87	68.015	68.015	9-2	68.47	0.455				
																				10-1	68.47	0.455	7.0	3.5	68.015
																				10-2	68.47	0.455	7.0	2.8	68.015
																				11-1	68.62	0.605	7.0	5.3	68.015
																				11-2	68.62	0.605	7.0	5.3	68.015
																				12-2	68.54	0.525	7.0	1.7	68.015
																				9-2	68.50	0.485	7.0	2.4	68.015
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.41	0.10	1.1	0.104	1.02	68.015	67.690	6-1	68.23	0.215				
																				12-1	68.54	0.551	32.5	29.9	67.989
																				13-1	68.43	0.612	32.5	12.8	67.818
																				13-2	68.43	0.528	32.5	21.2	67.902
																				14-2	68.42	0.703	32.5	2.7	67.717
																				6-1	68.23	0.454	32.5	8.6	67.776
																				6-2	68.23	0.498	32.5	4.2	67.732
																				7-1	68.28	0.484	32.5	10.6	67.796
																				7-2	68.28	0.493	32.5	9.7	67.787
																				8-1	68.36	0.533	32.5	13.7	67.827
																				8-2	68.36	0.453	32.5	21.7	67.907
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.16	0.25	1.2	0.055	1.02	67.690	67.257	9-1	68.50	0.543	32.5	26.7	67.957	
																				17-1	68.23	0.540			
																				14-1	68.42	0.761	77.0	71.4	67.659
																				15-1	68.42	0.866	77.0	52.9	67.554

Table B-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Ultimate Conditions)

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				15-2	68.42	0.818	77.0	61.3	67.602
																				16-1	68.29	0.840	77.0	34.4	67.450
																				16-2	68.29	0.792	77.0	42.8	67.498
																				17-1	68.23	0.888	77.0	15.2	67.342
																				17-2	68.23	0.840	77.0	23.6	67.390
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.02	66.691	65.529	4-1	66.76	0.069				
																				4-1	66.76	1.195	51.5	1.6	65.565
																				4-2	66.76	1.005	51.5	10.0	65.755
																				5-1	67.15	1.122	51.5	22.1	66.028
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.897	51.5	8.6	65.723
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

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Interpolated HGL elevation

Attachment C

Interim Conditions XPSWMM Model Schematic

Interim Conditions Pipe Data and Hydraulic Simulation Results

Figure C-1: XPSWMM MODEL SCHEMATIC, INTERIM CONDITIONS

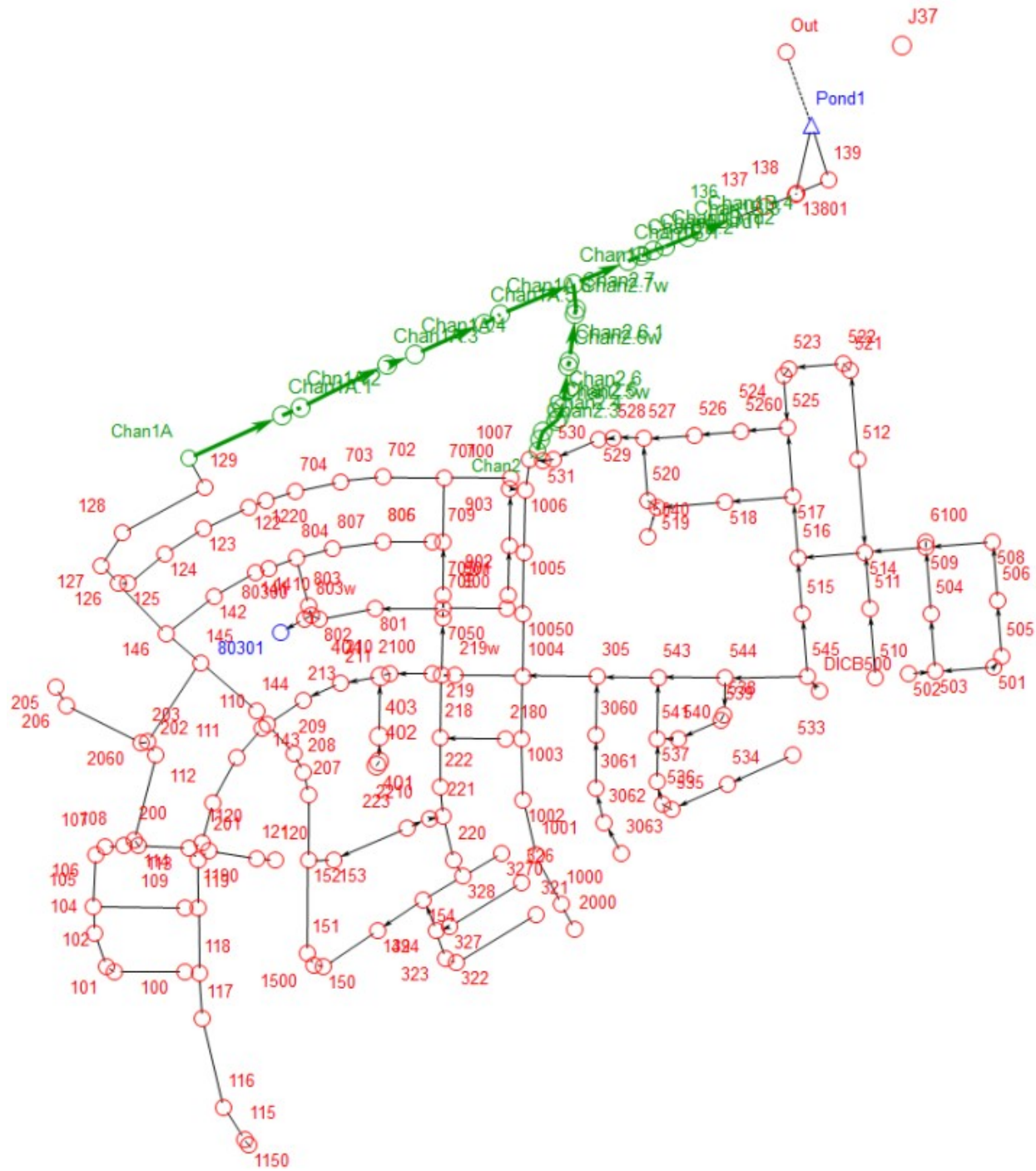


Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.89	0.06	0.3	-0.182	0.95	62.786	60.151	B92L1	61.17	-1.616																							
																				B92L1	61.17	0.955	90.9	2.2	60.215																			
																				B93	61.89	1.423	90.9	10.9	60.467																			
																				B94	62.24	1.115	90.9	33.6	61.125																			
																				B95	62.74	0.980	90.9	55.5	61.760																			
																				B96	63.53	1.193	90.9	75.4	62.337																			
																				B97	63.52	1.221	90.9	74.1	62.299																			
																				B98	62.59	1.050	90.9	47.9	61.540																			
																				B99	61.56	1.273	90.9	4.7	60.287																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.33	0.26	1.3	0.186	0.93	60.151	59.790	B92L3	61.17	1.019			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.05	0.29	0.9	-0.066	0.93	59.719	58.453	L88	60.83	1.111			
																																								L88	60.83	2.229	45.2	5.3
L89	61.05	1.986	45.2	21.8	59.064																																							
L90	60.93	1.631	45.2	30.2	59.299																																							
L91	60.90	1.212	45.2	44.1	59.688																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.15	0.30	0.9	0.018	0.97	58.453	58.103	L85	58.99	0.537																							
																				L85	58.99	0.843	34.0	4.3	58.147																			
																				L86	59.79	1.546	34.0	13.7	58.244																			
																				L87	60.00	1.592	34.0	29.6	58.408																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.32	0.66	1.1	0.144	0.98	58.103	57.250	L81	58.16	0.057			
																				L81	58.16	0.758	66.9	11.9	57.402																			
																				L80	58.39	1.103	66.9	2.9	57.287																			
																				L82	58.22	0.633	66.9	26.4	57.587																			
																				L83	58.40	0.612	66.9	42.2	57.788																			
																				L84	58.95	1.022	66.9	53.2	57.928																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.93	0.66	1.1	-0.039	0.95	57.250	57.052	L79	58.44	1.190																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.47	0.66	1.0	-0.174	0.97	57.035	56.945	L74	58.91	1.875																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.53	0.66	1.0	-0.188	0.97	56.945	56.767	L73	59.22	2.275																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.18	0.7	-0.145	0.95	60.726	58.103	L75	59.26	-1.466																							
																				L75	59.26	0.762	116.3	17.5	58.498																			
																				L76	59.55	0.610	116.3	37.1	58.940																			
																				B103SD	60.07	0.688	116.3	56.7	59.382																			
																				B104SD	60.75	0.940	116.3	75.7	59.810																			
																				B105SD	61.36	1.121	116.3	94.7	60.239																			
																				B106SD	62.05	1.380	116.3	113.8	60.670																			
																				B102L1	61.93	1.267	116.3	113.5	60.663																			
																				B102L4	61.55	1.397	116.3	90.9	60.153																			
																				B101L1	60.92	1.053	116.3	78.2	59.867																			
																				B101L4	60.52	1.163	116.3	55.6	59.357																			
																				B100L1	59.97	0.848	116.3	45.2	59.122																			
B100L4	59.58	0.967	116.3	22.6	58.613																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.81	0.01	0.1	-0.243	0.93	63.213	62.746	L60	63.78	0.567																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.87	0.04	0.2	-0.200	0.95	62.746	60.912	L66	62.23	-0.516																							
																				L66	62.23	1.290	65.6	1.0	60.940																			
																				L65	62.47	1.141	65.6	14.9	61.329																			
																				L64	62.67	1.028	65.6	26.1	61.642																			
																				L63	63.00	0.925	65.6	41.6	62.075																			
																				L62	63.31	1.059	65.6	47.9	62.251																			
																				L61	63.58	1.021	65.6	58.9	62.559																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.96	0.09	0.3	-0.221	0.93	60.891	59.870	B108L4	61.64	0.749																							

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.28	2.19	0.3	-0.877	0.98	58.158	57.726	L71	59.63	1.472				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.83	2.19	0.3	-0.740	0.98	56.436	56.303	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.29	0.10	0.0	-1.054	0.95	65.324	64.977	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.47	0.15	0.0	-1.022	0.97	64.010	63.186	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.27	1.14	0.2	-1.007	0.95	62.703	62.408	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.34	1.23	0.2	-0.989	0.97	61.131	60.707	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.32	1.58	0.3	-0.881	0.97	59.819	59.470	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.442	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.69	0.30	1.0	0.497	0.95	62.442	60.497	B109L4	61.76	-0.682				
																				B109L4	61.76	0.481	62.4	25.1	61.279
																				B109L1	61.76	0.484	62.4	25.0	61.276
																				B110SD	62.44	0.606	62.4	42.9	61.834
																				B111SD	63.15	0.823	62.4	58.7	62.327
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.12	0.76	0.7	-0.242	1.03	59.131	58.160	L18	59.42	0.289				
																				L18	59.42	1.182	64.4	5.2	58.238
																				L19	60.08	1.673	64.4	16.4	58.407
																				L20	60.56	1.915	64.4	32.2	58.646
																				L21	60.98	2.188	64.4	41.9	58.792
																				L22	61.39	2.363	64.4	57.5	59.027
																				L24	61.34	2.450	64.4	48.4	58.890
																				L35	61.06	2.408	64.4	32.6	58.652
																				L26	60.61	2.132	64.4	21.1	58.478
																				L27	59.90	1.657	64.4	5.5	58.243
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.20	0.76	0.7	-0.251	1.03	56.954	55.991	L14	57.61	0.656				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.01	0.82	0.8	-0.203	1.03	54.842	53.951	L9	55.68	0.838				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.56	0.82	0.8	-0.096	1.03	53.951	53.624	N/A	N/A	N/A				
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.68	6.95	0.7	0.061	1.03	53.277	53.270	N/A	N/A	N/A				
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	1.67	6.90	0.7	0.168	1.05	53.270	53.266	N/A	N/A	N/A				
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	1.53	6.84	0.7	0.278	1.05	53.266	53.255	N/A	N/A	N/A				
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.130	2.119	9.588	1.50	6.78	0.7	0.489	1.05	53.255	53.248	N/A	N/A	N/A				
Chan1A	Chan1A.1	50.130	49.970	N/A	105.0	N/A	N/A	N/A	N/A	N/A	N/A	0.80	6.88	N/A	N/A	1.07	53.248	53.244	N/A	N/A	N/A				
136	137	48.960	48.919	2550	43.5	0.1	0.013	54.450	54.449	2.054	10.492	2.00	6.08	0.6	-1.079	1.55	50.431	50.376	N/A	N/A	N/A				
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.05	6.08	0.6	-1.073	1.57	50.376	49.885	N/A	N/A	N/A				
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	2.67	6.08	0.3	-1.923	1.57	49.633	49.607	N/A	N/A	N/A				
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	0.00	N/A	N/A	0.00	49.633	49.607	N/A	N/A	N/A				
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	-0.09	-0.03	0.0	-0.353	1.40	49.607	49.607	N/A	N/A	N/A				
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	3.08	0.55	0.7	-0.239	1.02	60.434	59.324	L52	60.19	-0.244				
																				L52	60.19	0.799	61.7	3.7	59.391
																				L51	60.63	1.117	61.7	10.5	59.513
																				L50	61.53	1.688	61.7	28.8	59.842
																				L49	62.36	2.383	61.7	36.3	59.977
																				L48	62.74	2.418	61.7	55.5	60.322
																				L47	63.79	3.383	61.7	60.2	60.407
																				L44	62.69	2.553	61.7	45.2	60.137
																				L43	61.84	1.836	61.7	37.8	60.004
																				L42	61.29	1.630	61.7	18.7	59.660
																				L41	60.68	1.153	61.7	11.3	59.527
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.82	0.8	-0.109	1.02	57.432	56.094	L36	57.89	0.458				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.36	1.85	1.0	-0.163	1.02	63.041	62.789	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.40	1.90	1.0	-0.157	1.03	61.210	60.176	N/A	N/A	N/A				

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.84	5.04	0.6	-0.707	1.02	53.371	53.302	L3	58.26	4.889				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.77	6.21	0.6	-0.548	1.03	53.302	53.277	L8	55.21	1.908				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.68	0.24	0.9	-0.088	1.03	69.952	67.950	B54L4	69.35	-0.602				
																				B54L4	69.35	1.287	83.1	4.7	68.063
																				B54L1	69.35	0.836	83.1	23.4	68.514
																				B56L4	70.19	1.510	83.1	30.3	68.680
																				B56L1	70.19	0.999	83.1	51.5	69.191
																				B57SD	70.63	1.083	83.1	66.3	69.547
																				B43L4	71.22	1.502	83.1	73.4	69.718
																				B58L4	70.88	1.097	83.1	76.1	69.783
																				B58L1	70.88	1.610	83.1	54.8	69.270
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.34	0.24	0.9	-0.038	1.03	67.950	67.599	B53L3	68.90	0.950				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.39	0.66	1.1	0.115	1.05	66.776	65.507	B47L4	66.63	-0.146				
																				B47L4	66.63	0.941	119.4	17.1	65.689
																				B47L1	66.63	0.716	119.4	38.3	65.914
																				B48L4	67.21	1.224	119.4	45.1	65.986
																				B48L1	67.21	0.998	119.4	66.3	66.212
																				B49L4	67.77	1.488	119.4	72.9	66.282
																				B49L1	67.77	1.263	119.4	94.1	66.507
																				B50SD	68.07	1.401	119.4	109.3	66.669
																				B51L3	68.41	1.678	119.4	115.3	66.732
																				B59L4	68.18	1.526	119.4	107.9	66.654
																				B59L1	68.18	1.752	119.4	86.7	66.428
																				B60SD	67.97	1.615	119.4	79.8	66.355
																				B61L4	67.31	1.115	119.4	64.7	66.195
																				B61L1	67.31	1.341	119.4	43.5	65.969
																				B62L4	66.89	0.991	119.4	36.9	65.899
																				B62L1	66.89	1.216	119.4	15.7	65.674
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.88	0.82	0.9	-0.174	1.05	65.411	64.409	L41	65.57	0.159				
																				L41	65.57				1.147
																				L42	65.98	1.401	83.2	14.1	64.579
																				L43	66.07	1.347	83.2	26.1	64.723
																				L44	66.12	1.223	83.2	40.5	64.897
																				L45	66.23	1.208	83.2	50.9	65.022
																				L46	66.87	1.669	83.2	65.8	65.201
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.94	0.12	0.5	-0.154	0.95	66.168	65.411	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.19	0.77	0.5	-0.297	1.03	71.130	70.310	B102L5	72.70	1.570				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.33	0.03	0.2	-0.197	1.03	71.130	69.952	B42SD	71.19	0.060				
																				B42SD	71.19	1.093	71.4	8.8	70.097
																				B41L1	71.59	1.386	71.4	15.3	70.204
																				B41L4	71.59	1.034	71.4	36.6	70.556
																				B40L1	71.88	1.219	71.4	43.0	70.661
																				B40L3	71.88	0.969	71.4	58.1	70.911
																				B563L1	72.21	1.232	71.4	62.2	70.978
																				B45L1	71.98	1.107	71.4	55.8	70.873
																				B45L4	71.98	1.459	71.4	34.5	70.521
																				B44SD	71.47	1.064	71.4	27.5	70.406
																				B43L1	71.47	1.322	71.4	11.9	70.148
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.64	2.98	0.5	-0.799	0.98	56.303	55.889	L32	58.76	2.457				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.90	0.30	1.5	0.302	0.95	60.497	60.038	N/A	N/A	N/A				

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot	USF	Freeboard (2)	Interpolated HGL			
		Invert	Invert	/ Height	Length	Slope		Cover Elev.	Cover Elev.	Vel.	Flow	Pipe Vel.	Pipe Flow	Design Flow	U/S (1)	to Peak	U/S HGL	D/S HGL				Length HGL	Dist. From D/S MH	HGL	
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)		(m)	(h)	(m)	(m)	Number	(m)	(m)	(m)	(m)	(m)	
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.23	2.98	0.5	-0.640	0.98	55.889	55.605	L11	58.85	2.961				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.08	3.23	0.4	-0.937	1.00	53.630	53.371	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.03	0.20	0.4	-0.412	0.97	54.012	53.957	L22	54.73	0.718				
																				L22	54.73	0.722	28.2	25.9	54.008
																				L21	54.73	0.720	28.2	27.4	54.010
																				L20	55.10	1.098	28.2	22.9	54.002
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.22	0.28	0.5	-0.367	0.95	53.957	53.686	L19	55.79	1.833				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.82	0.82	0.9	-0.164	1.05	64.395	64.021	L39	65.04	0.645				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.83	0.84	0.9	-0.148	1.05	64.021	63.667	L37	64.89	0.869				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.60	1.06	1.1	-0.090	1.02	63.518	63.087	L34	64.28	0.762				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.07	67.451	67.098	L339	68.56	1.109				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	1.02	65.521	64.337	L347	65.57	0.049				
																				L347	65.57	1.199	52.4	1.5	64.371
																				L346	66.07	1.213	52.4	23.0	64.857
																				L345	66.61	1.550	52.4	32.0	65.060
																				L344	67.15	1.760	52.4	46.6	65.390
																				3-1	66.15	1.054	52.4	33.6	65.096
																				1	65.55	0.723	52.4	21.7	64.827
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.59	0.80	0.7	-0.126	1.02	63.958	63.041	L58	64.18	0.222				
																				L58	64.18	0.826	55.0	18.8	63.354
																				L57	64.44	0.799	55.0	36.0	63.641
																				L56	64.75	0.895	55.0	48.8	63.855
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.51	1.37	0.9	-0.308	1.05	69.240	69.116	18-1	69.48	0.240				
																				18-1	69.48	0.335	80.5	18.7	69.145
																				18-2	69.48	0.322	80.5	27.1	69.158
																				19-1	69.51	0.337	80.5	37.2	69.173
																				19-2	69.51	0.324	80.5	45.6	69.186
																				20-1	69.54	0.3			

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B38L1	69.31	1.411	101.9	70.6	67.899
																				B39L4	69.62	1.546	101.9	77.7	68.074
																				B39L1	69.62	1.024	101.9	99.0	68.596
																				B47L1	69.23	0.786	101.9	92.8	68.444
																				B47L4	69.23	1.345	101.9	70.0	67.885
																				B48L1	68.82	1.060	101.9	64.9	67.760
																				B48L4	68.82	1.580	101.9	43.7	67.240
																				B49SD	68.53	1.455	101.9	37.0	67.075
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.44	-0.01	-0.1	-0.235	1.00	69.537	69.658	B96L1	70.07	0.533				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.26	1.92	0.6	-0.334	1.05	68.914	68.006	Fut. Est.	72.09	3.176				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.08	0.05	0.4	-0.212	0.95	72.467	71.855	B107L1	72.89	0.423				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.71	0.05	0.4	-0.086	0.97	71.855	71.842	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.48	0.23	1.3	-0.015	0.97	71.842	71.592	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.56	0.71	0.7	-0.151	1.03	71.554	71.170	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	1.00	0.03	0.4	-0.167	0.95	72.397	71.791	B102L1	72.70	0.303				
																				B102L1	72.70	0.875	106.5	6.0	71.825
																				B102L5	72.70	0.709	106.5	35.1	71.991
																				B103L1	72.87	0.824	106.5	44.8	72.046
																				B103L4	72.87	0.705	106.5	65.8	72.165
																				B104L1	73.05	0.828	106.5	75.8	72.222
																				B104L5	73.05	0.664	106.5	104.5	72.386
																				B105L10	73.24	0.878	106.5	100.3	72.362
																				B105L6	73.24	1.035	106.5	72.7	72.205
																				B106L10	73.08	0.934	106.5	62.3	72.146
																				B106L6	73.08	1.089	106.5	35.1	71.991
																				B107L10	72.89	0.949	106.5	26.3	71.941
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.09	0.05	0.5	-0.104	0.97	71.791	71.561	B107L6	72.89	1.099				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.52	0.79	0.6	-0.355	1.03	70.310	70.078	B100SD	72.25	1.940				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.106	0.97	63.160	62.634	L1	64.26	1.100				
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.16	0.45	0.8	-0.183	1.02	62.592	61.970	L14	63.44	0.848				
702	703	61.525	60.915	600	55.5	1.1	0.013	65.902	65.626	2.278	0.644	2.49	0.49	0.8	-0.203	1.02	61.922	61.309	L10	63.20	1.278				
703	704	60.840	60.372	675	58.5	0.8	0.013	65.626	65.335	2.101	0.752	2.28	0.56	0.7	-0.240	1.02	61.275	60.804	L5	63.33	2.055				
704	1220	60.342	59.947	675	39.5	1.0	0.013	65.335	64.579	2.349	0.841	2.56	0.64	0.8	-0.229	1.02	60.788	60.389	L2	62.35	1.562				
705	801	67.586	66.803	450	87.0	0.9	0.013	71.209	69.959	1.701	0.270	1.93	0.29	1.1	-0.028	1.02	68.008	67.181	L334	68.05	0.042				
																				L334	68.05	0.727	87.0	14.9	67.323
																				L335	68.12	0.730	87.0	22.0	67.390
																				B610L1	68.12	0.569	87.0	38.9	67.551
																				B610L5	68.18	0.346	87.0	68.7	67.834
																				B611L1	68.53	0.680	87.0	70.4	67.850
																				B111L4	68.45	0.815	87.0	47.8	67.635
																				B612SD	68.45	0.912	87.0	37.6	67.538
																				B613SD	68.40	1.055	87.0	17.3	67.345
705	705w	N/A	N/A	N/A	N/A	N/A	N/A	71.209	71.209	N/A	N/A	0.00	0.10	N/A	N/A	1.02	68.008	67.841	N/A	N/A	N/A				
10050	1005	66.342	65.902	1950	80.0	0.6	0.013	71.960	69.850	3.534	10.553	3.48	5.07	0.5	-0.990	1.07	67.302	66.854	N/A	N/A	N/A				
709	701	64.673	62.730	375	82.0	2.4	0.013	68.928	66.290	2.444	0.270	2.38	0.21	0.8	-0.086	1.02	64.962	62.982	L19	64.58	-0.382				
																				L19	64.58	1.137	82.0	19.1	63.443
																				L20	64.99	1.223	82.0	32.5	63.767
																				L21	65.74	1.609	82.0	47.6	64.131
																				L22	66.37	1.903	82.0	61.5	64.467
																				L23	67.00	2.190	82.0	75.7	64.810

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.74	0.08	0.7	-0.113	1.02	69.168	68.008	L34	69.22	0.052				
																				L34	69.22	0.957	82.8	18.2	68.263
																				L33	69.36	0.878	82.8	33.8	68.482
																				L32	69.53	0.928	82.8	42.4	68.602
																				L31	69.62	0.815	82.8	56.9	68.805
																				L30	69.82	0.890	82.8	65.8	68.930
																				L29	70.07	0.931	82.8	80.7	69.139
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.043	1.00	67.180	66.136	L325	67.35	0.170				
																				L325	67.35	1.169	72.5	3.1	66.181
																				L326	67.53	1.123	72.5	18.8	66.407
																				L327	67.79	1.267	72.5	26.9	66.523
																				L328	67.99	1.157	72.5	48.4	66.833
																				B614SD	68.21	1.052	72.5	71.0	67.158
																				L333	67.98	0.822	72.5	71.0	67.158
																				L332	67.91	0.880	72.5	62.1	67.030
																				L331	67.79	1.032	72.5	43.2	66.758
																				L330	67.63	0.990	72.5	35.0	66.640
																				L329	67.47	1.104	72.5	16.0	66.366
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.09	0.34	1.0	0.031	1.02	66.136	65.846	L324	67.08	0.944				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.129	1.02	65.811	64.583	L319	65.72	-0.091				
																				L319	65.72	0.802	77.0	21.0	64.918
																				L320	66.05	0.824	77.0	40.3	65.226
																				L321	66.39	1.037	77.0	48.3	65.353
																				L322	66.71	1.062	77.0	66.8	65.648
																				L323	66.89	1.194	77.0	69.8	65.696
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.01	0.50	0.6	-0.261	1.02	63.750	63.072	L123	64.76	1.010				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.164	0.95	66.097	65.715	B601SD	66.46	0.363				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.24	0.07	0.3	-0.271	0.97	65.609	65.215	B604SD	66.07	0.461				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.24	0.07	0.3	-0.271	0.98	65.186	64.897	L296	65.77	0.584				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.31	1.25	0.2	-0.979	1.03	72.104	71.735	B80L1	73.88	1.776				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.37	1.32	0.3	-0.965	1.03	70.534	70.174	B87SD	72.44	1.906				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.43	1.41	0.3	-0.951	1.05	69.391	68.992	B85L1	71.32	1.929				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.46	1.53	0.3	-0.926	1.05	68.991	68.584	L51	71.02	2.029				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.75	4.79	0.6	-0.837	1.07	67.713	67.436	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.78	5.17	0.3	-1.182	1.07	63.508	62.463	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.60	5.32	0.3	-1.147	1.07	62.012	61.541	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.79	7.65	0.5	-0.263	1.07	61.541	61.267	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.30	8.95	N/A	N/A	1.07	61.267	60.240	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.34	0.24	0.6	-0.172	0.95	59.870	59.535	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.323	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.05	1.88	0.3	-0.902	0.97	59.205	58.979	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.99	0.50	0.6	-0.259	1.02	62.647	62.309	L45	63.24	0.593				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.02	0.26	0.7	-0.074	1.03	66.901	66.776	B51L1	68.41	1.509				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	1.73	0.55	0.2	-0.975	1.03	74.910	74.752	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.20	0.27	0.5	-0.343	0.95	53.686	53.630	L30	58.92	5.234				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.72	0.02	0.2	-0.198	0.97	72.062	71.765	B103L8	72.87	0.808				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.76	0.28	0.7	0.037	1.07	68.424	68.008	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.088	1.02	65.822	65.714	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.03	65.822	65.811	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.09	-0.01	0.0	-0.535	1.48	49.607	49.607	N/A	N/A	N/A				

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL					
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)			
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	2.80	4.59	N/A	N/A	2.50	49.607	48.500	N/A	N/A	N/A						
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.45	0.64	0.8	-0.210	1.03	60.311	60.097	L23	61.85	1.539						
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552						
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.04	0.30	1.1	0.069	0.97	69.485	69.240	B84L1	69.71	0.225						
																			B84L1	69.71	0.421				83.9	16.8	69.289
																			B84L4	69.71	0.358				83.9	38.3	69.352
																			B83L1	70.27	0.899	83.9	45.0	69.371			
																			B83L3	70.27	0.855	83.9	60.0	69.415			
																			B82L1	70.96	1.526	83.9	66.6	69.434			
																			B82L4	70.96	1.481	83.9	81.9	69.479			
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.99	0.07	1.2	0.038	0.95	69.658	69.513	B96L4	70.07	0.412						
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.76	0.33	0.8	-0.088	0.97	71.873	71.089	L52	72.19	0.317						
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.29	0.9	-0.116	0.95	72.690	71.873	L56	72.93	0.240						
																			L56	72.93	0.946	64.8	8.8	71.984			
																			B73SD	73.17	1.025	64.8	21.6	72.145			
																			L57	73.23	0.846	64.8	40.5	72.384			
																			L58	73.36	0.804	64.8	54.2	72.556			
																			L60	73.51	0.870	64.8	60.8	72.640			
																			L61	73.43	0.997	64.8	44.4	72.433			
																			L62	73.37	1.131	64.8	29.0	72.239			
																			L63	73.28	1.218	64.8	15.0	72.062			
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.37	0.03	0.2	-0.204	0.95	73.492	72.690	L59	73.54	0.048						
																			L59	73.54	0.810	44.4	2.2	72.730			
																			B72L1	73.92	0.990	44.4	13.3	72.930			
																			B72L2	73.92	0.822	44.4	22.6	73.098			
																			B71L1	74.10	0.850	44.4	31.0	73.250			
																			B66L4	74.39	1.050	44.4	36.0	73.340			
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.55	0.03	0.2	-0.203	0.95	74.433	73.522	B66L1	73.99	0.892	44.4	22.6	73.098			
																			B71L4	74.50	0.067						
																			B71L4	74.50	0.819	45.4	7.9	73.681			
																			B70L1	74.89	1.051	45.4	15.8	73.839			
																			B70L2	74.89	0.862	45.4	25.2	74.028			
																			B69L1	75.49	1.298	45.4	33.4	74.192			
																			B69L2	75.49	1.097	45.4	43.4	74.393			
																			B68L1	76.39	1.997	45.4	43.4	74.393			
																			B67L4	75.19	0.998	45.4	33.4	74.192			
80300	80301	65.336	64.940	450	36.0	1.1	0.013	66.728	65.751	1.880	0.299	2.13	0.29	1.0	-0.091	1.02	65.695	65.297	N/A	N/A	N/A						
901	902	69.073	67.903	300	65.0	1.8	0.013	71.873	70.716	1.835	0.130	1.32	0.02	0.2	-0.217	0.93	69.156	68.002	L13	69.13	-0.026						
																			L13	69.13	0.986	65.0	8.0	68.144			
																			L12	69.49	1.135	65.0	19.9	68.355			
																			L11	69.68	1.032	65.0	36.4	68.648			
																			L10	69.81	0.974	65.0	47.0	68.836			
																			L9	69.81	0.690	65.0	63.0	69.120			
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	2.04	0.05	0.3	-0.181	0.95	68.002	65.681	L18	66.92	-1.082						
																			L18	66.92	1.005	72.3	7.3	65.915			
																			L17	67.35	0.918	72.3	23.4	66.432			
																			L16	67.80	1.011	72.3	34.5	66.789			
																			L15	68.21	0.892	72.3	51.0	67.318			
																			L14	68.67	0.957	72.3	63.3	67.713			

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
903 705w	1006 709	65.503	65.287	300	18.0	1.2	0.013	68.393	65.660	1.499	0.106	1.23	0.05	0.5	-0.122	0.95	65.681	65.436	N/A	N/A	N/A				
		67.661	66.113	375	86.0	1.8	0.013	71.209	68.928	2.130	0.235	2.09	0.11	0.5	-0.195	1.02	67.841	66.293	L24	67.63	-0.211				
																				L24	67.63	1.207	86.0	7.2	66.423
																				L25	68.23	1.555	86.0	21.2	66.675
																				L26	68.95	1.996	86.0	36.7	66.954
																		L27	69.33	2.130	86.0	50.4	67.200		
																		L28	69.33	1.826	86.0	67.3	67.504		
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.45	1.30	0.9	-0.285	1.05	68.420	67.971	L35	69.61	1.190				
																		L35	69.61	1.273	103.5	84.3	68.337		
																		L36	70.01	1.728	103.5	71.8	68.282		
																		L37	70.32	2.089	103.5	59.9	68.231		
																		L38	70.49	2.322	103.5	45.3	68.168		
																		L39	70.49	2.361	103.5	36.4	68.129		
																		L40	70.36	2.291	103.5	22.5	68.069		
																		L46	70.51	2.437	103.5	23.6	68.073		
																		L45	70.56	2.425	103.5	37.7	68.135		
																		L44	70.58	2.408	103.5	46.4	68.172		
																		L43	70.32	2.084	103.5	61.0	68.236		
																		L42	70.06	1.774	103.5	72.5	68.286		
																		L41	69.67	1.329	103.5	85.4	68.341		
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.264	84	80.14	-0.092				
																		79	81.31	1.129	74.0	72.1	80.181		
																		80	81.20	1.401	74.0	57.7	79.799		
																		81	80.82	1.367	74.0	44.7	79.453		
																		82	80.66	1.590	74.0	30.3	79.070		
																		83	80.27	1.490	74.0	19.4	78.780		
																		84	80.14	1.743	74.0	5.0	78.397		
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.165	77	81.27	1.038				
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.64	0.02	0.2	-0.185	0.95	78.533	78.376	87	79.42	0.887				
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.66	0.03	0.2	-0.318	0.95	78.264	78.062	41	79.36	1.096				
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	1.01	0.06	0.3	-0.292	0.97	78.062	77.711	34	78.97	0.908				
																		34	78.97	1.220	88.0	9.9	77.750		
																		35	79.03	1.222	88.0	24.3	77.808		
																		36	79.08	1.237	88.0	33.1	77.843		
																		37	79.14	1.240					

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.721	72.5	57.9	80.049
																				69	80.92	0.780	72.5	69.4	80.140
																				71	80.32	0.652	72.5	9.7	79.668
																				72	80.46	0.689	72.5	22.7	79.771
																				73	80.57	0.685	72.5	37.1	79.885
																				74	80.69	0.736	72.5	45.9	79.954
																				75	80.82	0.752	72.5	60.3	80.068
																				76	81.20	1.053	72.5	70.2	80.147
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.8	-0.068	0.97	79.591	78.725	59	79.58	-0.011				
																				59	79.58	0.716	76.5	12.3	78.864
																				60	79.72	0.693	76.5	26.7	79.027
																				61	79.86	0.686	76.5	39.7	79.174
																				62	80.00	0.663	76.5	54.1	79.337
																				63	80.12	0.634	76.5	67.2	79.486
																				70	80.18	0.641	76.5	71.9	79.539
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.13	0.27	0.6	-0.234	0.97	78.622	77.711	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.53	0.8	-0.159	0.98	77.711	75.998	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.42	0.06	0.6	-0.134	0.95	77.618	76.733	90-2	77.72	0.102				
																				88-1	78.32	1.071	88.5	51.6	77.249
																				88-4	78.32	0.859	88.5	72.8	77.461
																				89-1	78.00	1.034	88.5	23.3	76.966
																				89-4	78.00	0.822	88.5	44.5	77.178
																				90-2	77.72	0.961	88.5	2.6	76.759
																				90-4	77.72	0.820	88.5	16.7	76.900
																				96-1	78.46	1.122	88.5	60.5	77.338
																				96-5	78.46	0.873	88.5	85.4	77.587
																				97-1	78.08	1.021	88.5	32.6	77.059
																				97-4	78.08	0.809	88.5	53.8	77.271
																				98-2	77.80	1.009	88.5	5.8	76.791
																				98-5	77.80	0.807	88.5	26.0	76.993
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.20	0.5	-0.246	0.95	76.621	75.998	100-1	77.19	0.569				
																				100-1	77.19	1.042	75.0	18.0	76.148
																				100-4	77.19	0.866	75.0	39.2	76.324
																				90-1	77.72	1.137	75.0	70.4	76.583
																				91-1	77.47	1.169	75.0	36.5	76.301
																				91-5	77.47	0.942	75.0	63.8	76.528
																				92-1	77.33	1.263	75.0	8.3	76.067
																				92-4	77.33	1.087	75.0	29.5	76.243
																				98-1	77.80	1.190	75.0	73.7	76.610
																				99-1	77.47	1.092	75.0	45.8	76.378
																				99-4	77.47	0.915	75.0	67.0	76.555
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.81	0.09	0.4	-0.214	0.95	77.904	75.998	101-1	77.24	-0.664				
																				102	77.52	0.905	119.0	38.5	76.615
																				102	77.52	0.761	119.0	47.5	76.759
																				101-1	77.24	0.723	119.0	32.4	76.517
																				101-4	77.24	1.063	119.0	11.2	76.177
																				103-1	78.08	0.876	119.0	75.3	77.204
																				103-4	78.08	1.215	119.0	54.1	76.865
																				104-1	78.52	0.972	119.0	96.8	77.548
																				104-3	78.52	1.213	119.0	81.7	77.307

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				105-1	78.53	0.648	119.0	117.6	77.882																				
																				105-3	78.53	0.876	119.0	103.4	77.654																				
																				93-1	77.74	1.140	119.0	37.6	76.600																				
																				93-5	77.74	1.575	119.0	10.4	76.165																				
																				94-1	77.88	0.722	119.0	72.4	77.158																				
																				94-5	77.88	1.160	119.0	45.1	76.720																				
																				95-1	78.67	0.961	119.0	106.8	77.709																				
																				95-5	78.67	1.399	119.0	79.5	77.271																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.08	0.03	0.2	-0.263	0.95	77.904	76.986	25	78.18	0.276																								
																				17	78.54	1.349	114.5	25.6	77.191																				
																				18	78.54	1.293	114.5	32.6	77.247																				
																				19	78.59	1.074	114.5	66.1	77.516																				
																				20	78.59	1.514	114.5	11.2	77.076																				
																				21	78.58	0.949	114.5	80.5	77.631																				
																				22	78.67	0.969	114.5	89.2	77.701																				
																				23	78.75	1.455	114.5	38.6	77.295																				
																				24	78.75	1.339	114.5	53.0	77.411																				
																				25	78.18	1.166	114.5	3.5	77.014																				
																				26	78.23	1.157	114.5	10.8	77.073																				
																				27	78.29	1.102	114.5	25.2	77.188																				
																				28	78.34	0.523	114.5	103.6	77.817																				
																				29	78.40	0.939	114.5	59.3	77.461																				
																				30	78.45	1.191	114.5	34.0	77.259																				
31	78.51	1.136	114.5	48.4	77.374																																								
32	78.56	0.983	114.5	73.7	77.577																																								
33	78.56	0.913	114.5	82.4	77.647																																								
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.12	77.936	77.720	Est. Fut.	78.68	0.744																								
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.90	1.04	0.7	-0.156	0.98	75.998	75.313	N/A	N/A	N/A																								
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.16	0.09	0.4	-0.236	1.05	75.672	75.327	96-1	76.43	0.758																								
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.37	1.14	0.8	-0.264	1.03	75.311	74.888	100-4	76.17	0.859																								
																				98	76.29	1.193	78.0	38.6	75.097																				
																				98	76.29	1.241	78.0	29.6	75.049																				
																				100-4	76.17	1.274	78.0	1.4	74.896																				
																				97-1	76.30	1.168	78.0	45.0	75.132																				
																				97-4	76.30	1.053	78.0	66.2	75.247																				
																				99-1	76.23	1.298	78.0	8.1	74.932																				
																				99-3	76.23	1.216	78.0	23.2	75.014																				
																				517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.87	0.07	0.5	-0.150	1.03	74.888	73.222	113-2	74.43	-0.458				
																																								114	74.86	1.293	86.5	17.9	73.567
																																								114	74.86	1.120	86.5	26.9	73.740
																																								102-1	75.69	1.418	86.5	54.5	74.272
																																								102-4	75.69	1.010	86.5	75.7	74.680
103-1	75.32	1.584	86.5	26.7	73.736																																								
103-4	75.32	1.175	86.5	47.9	74.145																																								
104-1	74.57	1.254	86.5	4.9	73.316																																								
104-3	74.57	0.963	86.5	20.0	73.607																																								
113-2	74.43	1.123	86.5	4.4	73.307																																								
113-3	74.43	0.987	86.5	11.5	73.443																																								
115-1	75.54	1.677	86.5	33.3	73.863																																								
115-3	75.54	1.386	86.5	48.4	74.154																																								

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				116-1	75.93	1.647	86.5	55.1	74.283
																				116-4	75.93	1.238	86.5	76.3	74.692
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.24	1.17	0.7	-0.194	1.03	74.888	73.930	48	75.25	0.362				
																				48	75.25	1.267	88.5	4.9	73.983
																				49	75.59	1.451	88.5	19.3	74.139
																				50	76.24	1.952	88.5	33.1	74.286
																				100-1	76.17	1.496	88.5	68.7	74.674
																				100-3	76.17	1.344	88.5	82.8	74.826
																				101-2	76.39	1.874	88.5	54.1	74.516
																				101-3	76.39	1.788	88.5	62.1	74.602
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.45	0.12	0.7	-0.109	1.05	73.222	70.679	108-1	71.98	-1.242				
																				106	73.27	0.728	87.5	64.1	72.542
																				106	73.27	0.990	87.5	55.1	72.280
																				112	73.88	1.216	87.5	68.3	72.664
																				112	73.88	0.954	87.5	77.3	72.926
																				105-1	73.98	1.252	87.5	70.5	72.728
																				105-3	73.98	0.813	87.5	85.6	73.167
																				107-1	72.82	1.339	87.5	27.6	71.481
																				107-4	72.82	0.723	87.5	48.8	72.097
																				108-1	71.98	1.130	87.5	5.9	70.850
																				108-3	71.98	0.691	87.5	21.0	71.289
																				109-1	72.10	1.313	87.5	3.7	70.787
																				109-3	72.10	0.875	87.5	18.8	71.225
																				110-1	72.62	1.214	87.5	25.0	71.406
																				110-3	72.62	0.776	87.5	40.1	71.844
																				111-1	73.30	1.275	87.5	46.3	72.025
111-3	73.30	0.822	87.5	61.9	72.478																				
113-1	74.43	1.318	87.5	83.7	73.112																				
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.88	0.44	0.4	-0.275	1.03	70.457	70.037	22	71.62	1.163				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.59	0.61	0.5	-0.251	1.03	69.487	66.647	15	67.95	-1.537				
																				15	67.95	1.107	79.5	5.5	66.843
																				16	68.22	0.759	79.5	22.8	67.461
																				17	68.77	1.026	79.5	30.7	67.744
																				18	69.45	1.192	79.5	45.1	68.258
																				19	70.14	1.417	79.5	58.1	68.723
																				20	70.77	1.533	79.5	72.5	69.237
																				21	71.17	1.769	79.5	77.1	69.401
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.60	0.03	0.1	-0.290	0.95	76.931	76.586	15	78.33	1.399				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.55	0.08	0.1	-0.342	0.95	76.540	73.244	9	75.24	-1.300				
																				9	75.24	1.555	69.5	9.3	73.685
																				10	75.66	1.449	69.5	20.4	74.211
																				11	76.22	1.326			

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				34	72.90	1.896	60.0	21.2	71.004
																				35	73.59	2.180	60.0	32.8	71.410
																				36	74.30	2.385	60.0	47.2	71.915
																				42	71.67	1.188	60.0	6.3	70.482
																				43	72.31	1.681	60.0	10.5	70.629
																				44	73.07	1.937	60.0	24.9	71.133
																				45	73.65	2.271	60.0	31.9	71.379
																				46	74.31	2.427	60.0	46.3	71.883
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.80	1.59	1.0	-0.145	1.05	67.289	66.788	13	67.89	0.601				
																				11	67.97	1.117	65.0	8.4	66.853
																				12	67.91	0.942	65.0	23.4	66.968
																				13	67.89	0.854	65.0	32.2	67.036
																				14	67.89	0.743	65.0	46.6	67.147
																				23	68.16	1.222	65.0	19.4	66.938
																				24	68.23	1.183	65.0	33.6	67.047
																				25	68.23	1.077	65.0	47.3	67.153
																				26	68.28	1.038	65.0	58.9	67.242
																				37	68.30	1.023	65.0	63.5	67.277
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.67	2.22	0.8	-0.269	1.05	66.647	65.732	7	66.89	0.243				
																				7	66.89	1.125	39.0	1.4	65.765
																				8	67.37	1.352	39.0	12.2	66.018
																				9	67.82	1.527	39.0	23.9	66.293
																				10	67.97	1.363	39.0	37.3	66.607
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.27	2.22	0.7	-0.331	1.05	65.382	64.696	6	66.10	0.718				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.24	0.7	-0.332	1.05	63.962	62.154	1	63.88	-0.082				
																				1	63.88	1.460	64.5	9.5	62.420
																				2	63.92	1.116	64.5	23.2	62.804
																				3	64.39	1.261	64.5	34.8	63.129
																				4	64.86	1.358	64.5	48.1	63.502
																				5	65.44	1.579	64.5	60.9	63.861
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.87	2.24	1.1	0.118	1.05	62.154	61.985	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.04	2.31	1.0	0.080	1.05	61.985	61.541	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.60	0.04	0.3	-0.193	0.95	79.002	77.254	61	78.31	-0.692				
																				61	78.31	0.948	92.0	5.7	77.362
																				62	78.72	1.084	92.0	20.1	77.636
																				63	78.74	0.844	92.0	33.8	77.896
																				64	79.82	1.116	92.0	76.3	78.704
																				64	79.82	1.272	92.0	68.1	78.548
																				65	79.96	1.131	92.0	82.9	78.829
																				65	79.96	1.222	92.0	78.1	78.738
																				66	80.11	1.216	92.0	86.3	78.894
																				66	80.11	1.249	92.0	84.6	78.861
																				67	80.11	1.140	92.0	90.3	78.970
																				67	80.11	1.178	92.0	88.3	78.932
																				68	79.92	0.939	92.0	90.9	78.981
																				68	79.92	0.918	92.0	92.0	79.002
																				69	79.99	1.009	92.0	90.9	78.981
																				69	79.99	1.058	92.0	88.3	78.932
																				72	78.57	1.021	92.0	15.5	77.549
																				72	78.57	1.183	92.0	7.0	77.387

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				70-1	79.75	1.392	92.0	58.1	78.358
																				70-4	79.75	0.963	92.0	80.7	78.787
																				71-1	79.32	1.581	92.0	25.5	77.739
																				71-4	79.32	1.152	92.0	48.1	78.168
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.41	0.11	0.3	-0.218	0.97	77.229	74.939	79	76.31	-0.919				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.863	77.5	41.9	76.177
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.905	77.5	23.9	75.645
																				76	77.90	0.845	77.5	71.6	77.055
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.829	77.5	53.2	76.511
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
																				73-1	77.95	1.477	77.5	51.9	76.473
																				73-4	77.95	0.810	77.5	74.5	77.140
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.188	0.97	74.913	74.579	80-4	75.75	0.837				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	0.97	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
																				81-4	74.96	1.057	30.5	11.6	73.903
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	0.97	73.486	72.282	82-1	74.07	0.584				
																				59	74.11	1.479	54.5	15.8	72.631
																				60	74.12	1.171	54.5	30.2	72.949
																				78-1	75.03	1.783	54.5	43.7	73.247
																				81-1	74.96	1.673	54.5	45.5	73.287
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.477	54.5	14.1	72.593
																				82-4	74.07	0.977	54.5	36.7	73.093
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.46	0.00	0.1	-0.243	1.03	74.643	74.621	89	75.57	0.927				
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.54	0.03	0.2	-0.203	0.95	74.621	73.420	87	74.99	0.369				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.77	0.03	0.2	-0.212	0.95	73.382	72.294	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.48	0.7	-0.232	0.98	72.282	71.945	83-1	73.46	1.178				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.50	1.08	0.3	-0.711	1.05	71.209	70.707	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.52	0.00	0.1	-0.247	1.03	74.899	74.665	57	75.47	0.571				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.56	0.57	0.6	-0.268	1.03	74.899	72.748	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.18	0.08	0.4	-0.256	1.03	76.067	75.672	94-1	76.73	0.663				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.15	0.26	0.4	-0.338	1.03	76.067	74.899	56	76.20	0.133				
																				51	77.19	1.420	105.0	78.3	75.770
																				52	77.15	1.539	105.0	64.0	75.611
																				53	76.91	1.420	105.0	53.1	75.490
																				54	76.63	1.301	105.0	38.7	75.329
																				55	76.37	1.157	105.0	28.2	75.213
																				56	76.20	1.147	105.0	13.8	75.053
																				91-1	77.44	1.580	105.0	86.4	75.860
																				91-4	77.44	1.385	105.0	103.9	76.055

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.65	1.39	0.5	-0.405	1.03	69.054	67.289	27	68.65	-0.404				
																				27	68.65	1.223	60.0	4.7	67.427
																				28	69.07	1.219	60.0	19.1	67.851
																				29	69.63	1.576	60.0	26.0	68.054
																				30	70.23	1.753	60.0	40.4	68.477
																				31	70.87	2.187	60.0	47.4	68.683
																				38	68.95	1.234	60.0	14.5	67.716
																				39	69.64	1.501	60.0	28.9	68.139
																				40	70.34	1.945	60.0	37.6	68.395
																				41	71.03	2.294	60.0	49.2	68.736
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.08	0.28	0.5	-0.208	1.03	76.577	76.202	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.42	0.31	0.4	-0.319	0.97	71.175	70.457	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.05	0.00	0.0	0.050	1.05	68.016	68.016	9-2	68.47	0.454				
																				10-1	68.47	0.454	7.0	3.5	68.016
																				10-2	68.47	0.454	7.0	2.8	68.016
																				11-1	68.62	0.604	7.0	5.3	68.016
																				11-2	68.62	0.604	7.0	5.3	68.016
																				12-2	68.54	0.524	7.0	1.7	68.016
																				9-2	68.50	0.484	7.0	2.4	68.016
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.10	1.1	0.105	1.00	68.016	67.690	6-1	68.23	0.214				
																				12-1	68.54	0.550	32.5	29.9	67.990
																				13-1	68.43	0.612	32.5	12.8	67.818
																				13-2	68.43	0.527	32.5	21.2	67.903
																				14-2	68.42	0.703	32.5	2.7	67.717
																				6-1	68.23	0.454	32.5	8.6	67.776
																				6-2	68.23	0.498	32.5	4.2	67.732
																				7-1	68.28	0.484	32.5	10.6	67.796
																				7-2	68.28	0.493	32.5	9.7	67.787
																				8-1	68.36	0.533	32.5	13.7	67.827
																				8-2	68.36	0.452	32.5	21.7	67.908
																				9-1	68.50	0.542	32.5	26.7	67.958
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.16	0.25	1.2	0.055	1.02	67.690	67.256	17-1	68.23	0.540				
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.866	77.0	52.9	67.554
																				15-2	68.42	0.818	77.0	61.3	67.602
																				16-1	68.29	0.840	77.0	34.4	67.450
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.888	77.0	15.2	67.342
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.02	66.691	65.529	4-1	66.76	0.069				
																				4-1	66.76	1.195	51.5	1.6	65.565
																				4-2	66.76	1.005	51.5	10.0	65.755
																				5-1	67.15	1.122	51.5	22.1	66.028
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.897	51.5	8.6	65.723
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549
Chan1B	Chan1B.1	49.260	49.220	N/A	30.0	N/A	N/A	N/A	N/A	N/A	N/A	0.58	7.35	N/A	N/A	1.10	53.193	53.192	N/A	N/A	N/A				
Chan1B.4	136	48.990	48.960	N/A	27.7	N/A	N/A	N/A	N/A	N/A	N/A	1.17	6.08	N/A	N/A	1.53	50.618	50.431	N/A	N/A	N/A				

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.37	4.23	N/A	N/A	1.48	51.351	50.618	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.86	N/A	N/A	1.53	51.351	50.618	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.61	6.18	N/A	N/A	1.43	53.136	53.134	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.87	3.32	N/A	N/A	1.02	53.192	53.136	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	5.24	N/A	N/A	1.20	53.192	53.136	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	0.33	3.24	N/A	N/A	1.95	53.195	53.193	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.88	1.57	N/A	N/A	2.98	53.206	53.195	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.09	N/A	N/A	1.93	53.205	53.195	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.40	3.58	N/A	N/A	1.12	53.210	53.206	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.45	2.57	N/A	N/A	1.03	53.223	53.210	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.21	N/A	N/A	1.13	53.223	53.209	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.67	5.90	N/A	N/A	1.12	53.227	53.223	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.17	3.86	N/A	N/A	0.98	53.244	53.227	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	4.19	N/A	N/A	1.15	53.244	53.227	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.78	8.94	N/A	N/A	1.08	57.869	57.242	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	8.50	7.43	N/A	N/A	1.20	56.303	53.750	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.75	8.95	N/A	N/A	1.07	59.503	58.338	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.85	8.94	N/A	N/A	1.08	57.242	56.602	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.65	6.09	N/A	N/A	1.52	51.396	51.351	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	3.42	6.10	N/A	N/A	1.52	53.134	51.396	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	53.134	51.396	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.15	8.94	N/A	N/A	1.07	58.338	57.869	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.80	7.59	N/A	N/A	1.13	56.312	56.303	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.73	8.59	N/A	N/A	1.08	56.397	56.312	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.12	8.91	N/A	N/A	1.08	56.602	56.396	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.21	8.95	N/A	N/A	1.07	60.240	59.503	N/A	N/A	N/A			

Note:

(1) A negative surcharge implies that the pipe is not flowing full

(2) Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.145

Interpolated HGL elevation

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.89	0.06	0.3	-0.182	11.93	62.786	60.136	B92L1	61.17	-1.616																							
																				B92L1	61.17	0.970	90.9	2.2	60.200																			
																				B93	61.89	1.436	90.9	10.9	60.454																			
																				B94	62.24	1.124	90.9	33.6	61.116																			
																				B95	62.74	0.986	90.9	55.5	61.754																			
																				B96	63.53	1.196	90.9	75.4	62.334																			
																				B97	63.52	1.224	90.9	74.1	62.296																			
																				B98	62.59	1.058	90.9	47.9	61.532																			
																				B99	61.56	1.287	90.9	4.7	60.273																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.30	0.25	1.3	0.171	11.93	60.136	59.789	B92L3	61.17	1.034			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.04	0.28	0.9	-0.080	11.93	59.705	58.389	L88	60.83	1.125			
																																								L88	60.83	2.287	45.2	5.3
L89	61.05	2.026	45.2	21.8	59.024																																							
L90	60.93	1.662	45.2	30.2	59.268																																							
L91	60.90	1.227	45.2	44.1	59.673																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.12	0.29	0.9	-0.046	11.93	58.389	58.053	L85	58.99	0.601																							
																				L85	58.99	0.895	34.0	4.3	58.095																			
																				L86	59.79	1.602	34.0	13.7	58.188																			
																				L87	60.00	1.654	34.0	29.6	58.346																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.29	0.66	1.1	0.094	11.95	58.053	57.246	L81	58.16	0.107			
																				L81	58.16	0.770	66.9	11.9	57.390																			
																				L80	58.39	1.109	66.9	2.9	57.281																			
																				L82	58.22	0.656	66.9	26.4	57.564																			
																				L83	58.40	0.645	66.9	42.2	57.755																			
																				L84	58.95	1.062	66.9	53.2	57.888																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.92	0.66	1.1	-0.043	11.95	57.246	57.050	L79	58.44	1.194																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.47	0.66	1.0	-0.178	11.95	57.031	56.942	L74	58.91	1.879																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.53	0.66	1.0	-0.191	11.95	56.942	56.765	L73	59.22	2.278																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.18	0.6	-0.151	11.93	60.720	58.053	L75	59.26	-1.460																							
																				L75	59.26	0.806	116.3	17.5	58.454																			
																				L76	59.55	0.646	116.3	37.1	58.904																			
																				B103SD	60.07	0.717	116.3	56.7	59.353																			
																				B104SD	60.75	0.961	116.3	75.7	59.789																			
																				B105SD	61.36	1.135	116.3	94.7	60.225																			
																				B106SD	62.05	1.387	116.3	113.8	60.663																			
																				B102L1	61.93	1.274	116.3	113.5	60.656																			
																				B102L4	61.55	1.412	116.3	90.9	60.138																			
																				B101L1	60.92	1.074	116.3	78.2	59.846																			
																				B101L4	60.52	1.192	116.3	55.6	59.328																			
																				B100L1	59.97	0.880	116.3	45.2	59.090																			
B100L4	59.58	1.009	116.3	22.6	58.571																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.75	0.01	0.1	-0.251	11.93	63.205	62.739	L60	63.78	0.575																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.79	0.03	0.2	-0.207	11.93	62.739	60.904	L66	62.23	-0.509																							
																				L66	62.23	1.298	65.6	1.0	60.932																			
																				L65	62.47	1.149	65.6	14.9	61.321																			
																				L64	62.67	1.036	65.6	26.1	61.634																			
																				L63	63.00	0.932	65.6	41.6	62.068																			
																				L62	63.31	1.066	65.6	47.9	62.244																			
																				L61	63.58	1.028	65.6	58.9	62.552																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.90	0.08	0.3	-0.230	11.93	60.882	59.862	B108L4	61.64	0.758																							

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.27	2.16	0.3	-0.886	11.97	58.149	57.720	L71	59.63	1.481				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.84	2.16	0.3	-0.749	11.97	56.427	56.295	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.29	0.10	0.0	-1.052	11.95	65.326	64.978	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.44	0.14	0.0	-1.027	11.95	64.005	63.181	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.27	1.13	0.2	-1.010	11.95	62.700	62.406	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.32	1.21	0.2	-0.994	11.97	61.126	60.703	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.31	1.55	0.3	-0.887	11.97	59.813	59.465	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.418	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.73	0.30	1.0	0.473	11.95	62.418	60.492	B109L4	61.76	-0.658				
																				B109L4	61.76	0.493	62.4	25.1	61.267
																				B109L1	61.76	0.496	62.4	25.0	61.264
																				B110SD	62.44	0.624	62.4	42.9	61.816
																				B111SD	63.15	0.846	62.4	58.7	62.304
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.11	0.74	0.7	-0.248	11.98	59.125	58.154	L18	59.42	0.295				
																				L18	59.42	1.188	64.4	5.2	58.232
																				L19	60.08	1.679	64.4	16.4	58.401
																				L20	60.56	1.921	64.4	32.2	58.640
																				L21	60.98	2.194	64.4	41.9	58.786
																				L22	61.39	2.369	64.4	57.5	59.021
																				L24	61.34	2.456	64.4	48.4	58.884
																				L35	61.06	2.414	64.4	32.6	58.646
																				L26	60.61	2.138	64.4	21.1	58.472
																				L27	59.90	1.663	64.4	5.5	58.237
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.18	0.74	0.7	-0.257	11.98	56.948	55.985	L14	57.61	0.662				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.00	0.80	0.8	-0.211	11.98	54.834	53.941	L9	55.68	0.846				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.55	0.80	0.8	-0.106										

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.79	4.92	0.6	-0.668	11.98	53.410	53.346	L3	58.26	4.850				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.72	6.10	0.6	-0.504	11.98	53.346	53.239	L8	55.21	1.864				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.71	0.27	1.0	-0.061	12.02	69.979	68.017	B54L4	69.35	-0.629				
																				B54L4	69.35	1.222	83.1	4.7	68.128
																				B54L1	69.35	0.781	83.1	23.4	68.569
																				B56L4	70.19	1.458	83.1	30.3	68.732
																				B56L1	70.19	0.957	83.1	51.5	69.233
																				B57SD	70.63	1.048	83.1	66.3	69.582
																				B43L4	71.22	1.470	83.1	73.4	69.750
																				B58L4	70.88	1.066	83.1	76.1	69.814
																				B58L1	70.88	1.569	83.1	54.8	69.311
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.36	0.26	1.0	0.029	12.02	68.017	67.626	B53L3	68.90	0.883				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.45	0.69	1.2	0.359	12.02	67.020	65.516	B47L4	66.63	-0.390				
																				B47L4	66.63	0.899	119.4	17.1	65.731
																				B47L1	66.63	0.632	119.4	38.3	65.998
																				B48L4	67.21	1.126	119.4	45.1	66.084
																				B48L1	67.21	0.859	119.4	66.3	66.351
																				B49L4	67.77	1.336	119.4	72.9	66.434
																				B49L1	67.77	1.069	119.4	94.1	66.701
																				B50SD	68.07	1.177	119.4	109.3	66.893
																				B51L3	68.41	1.442	119.4	115.3	66.968
																				B59L4	68.18	1.305	119.4	107.9	66.875
																				B59L1	68.18	1.572	119.4	86.7	66.608
																				B60SD	67.97	1.449	119.4	79.8	66.521
																				B61L4	67.31	0.979	119.4	64.7	66.331
																				B61L1	67.31	1.246	119.4	43.5	66.064
																				B62L4	66.89	0.909	119.4	36.9	65.981
																				B62L1	66.89	1.176	119.4	15.7	65.714
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.90	0.84	0.9	-0.161	12.03	65.424	64.421	L41	65.57	0.146				
																				L41	65.57	1.135	83.2	1.2	64.435
																				L42	65.98	1.389	83.2	14.1	64.591
																				L43	66.07	1.334	83.2	26.1	64.736
																				L44	66.12	1.211	83.2	40.5	64.909
																				L45	66.23	1.195	83.2	50.9	65.035
																				L46	66.87	1.656	83.2	65.8	65.214
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.96	0.12	0.5	-0.156	11.95	66.166	65.424	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.21	0.80	0.5	-0.279	12.02	71.148	70.321	B102L5	72.70	1.552				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.47	0.04	0.3	-0.179	12.02	71.148	69.979	B42SD	71.19	0.042				
																				B42SD	71.19	1.067	71.4	8.8	70.123
																				B41L1	71.59	1.361	71.4	15.3	70.230
																				B41L4	71.59	1.012	71.4	36.6	70.578
																				B40L1	71.88	1.197	71.4	43.0	70.683
																				B40L3	71.88	0.950	71.4	58.1	70.930
																				B563L1	72.21	1.213	71.4	62.2	70.997
																				B45L1	71.98	1.087	71.4	55.8	70.893
																				B45L4	71.98	1.436	71.4	34.5	70.544
																				B44SD	71.47	1.041	71.4	27.5	70.429
																				B43L1	71.47	1.296	71.4	11.9	70.174
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.63	2.93	0.5	-0.807	11.97	56.295	55.880	L32	58.76	2.465				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.89	0.30	1.5	0.297	11.95	60.492	60.037	N/A	N/A	N/A				

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.22	2.94	0.5	-0.649	11.97	55.880	55.598	L11	58.85	2.970			
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.07	3.16	0.4	-0.926	11.97	53.641	53.410	N/A	N/A	N/A			
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.03	0.20	0.4	-0.413	11.88	54.011	53.956	L22	54.73	0.719			
																			L22	54.73	0.723	28.2	25.9	54.007
																			L21	54.73	0.721	28.2	27.4	54.009
																			L20	55.10	1.099	28.2	22.9	54.001
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.22	0.27	0.5	-0.368	11.93	53.956	53.685	L19	55.79	1.834			
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.84	0.84	0.9	-0.150	12.03	64.409	64.033	L39	65.04	0.631			
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.85	0.87	0.9	-0.136	12.03	64.033	63.679	L37	64.89	0.857			
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.59	1.03	1.0	-0.108	11.95	63.500	63.079	L34	64.28	0.780			
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	11.97	67.451	67.098	L339	68.56	1.109			
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	11.95	65.521	64.337	L347	65.57	0.049			
																			L347	65.57	1.199	52.4	1.5	64.371
																			L346	66.07	1.213	52.4	23.0	64.857
																			L345	66.61	1.550	52.4	32.0	65.060
																			L344	67.15	1.760	52.4	46.6	65.390
																			3-1	66.15	1.054	52.4	33.6	65.096
																			1	65.55	0.723	52.4	21.7	64.827
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.58	0.77	0.7	-0.141	12.02	63.943	63.009	L58	64.18	0.237			
																			L58	64.18	0.852	55.0	18.8	63.328
																			L57	64.44	0.820	55.0	36.0	63.620
																			L56	64.75	0.912	55.0	48.8	63.838
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.52	1.38	0.9	-0.302	12.02	69.246	69.120	18-1	69.48	0.234			
																			18-1	69.48	0.331	80.5	18.7	69.149
																			18-2	69.48	0.318	80.5	27.1	69.162
																			19-1	69.51	0.332	80.5	37.2	69.178
																			19-2	69.51	0.319	80.5	45.6	69.191
																			20-1	69.54	0.333	80.5	55.9	69.207
																			20-2	69.54	0.319	80.5	64.4	69.221
																			21-1	69.57	0.333	80.5	74.5	69.237
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.76	0.28	1.7	0.463	12.02	69.120	68.425	N/A	N/A	N/A			
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.22	N/A	N/A	12.02	69.120	68.415	N/A	N/A	N/A			
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.67	0.82	0.6	-0.367	12.03	70.056	69.522	B92L1	70.77	0.714			
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	2.05	0.88	0.7	-0.326	12.02	69.522	69.363	B94L4	70.08	0.558			
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.60	0.89	0.7	-0.297	12.03	69.363	69.246	21-2	69.57	0.207			
																			21-2	69.57	0.319	64.0	2.7	69.251
																			22-1	69.60	0.331	64.0	12.7	69.269
																			22-2	69.60	0.315	64.0	21.2	69.285
																			23-1	69.63	0.327	64.0	31.1	69.303
																			23-2	69.63	0.312	64.0	39.4	69.318
																			24-1	69.67	0.334	64.0	49.5	69.336
																			24-2	69.67	0.318	64.0	58.0	69.352
																			B95-1	69.95	0.675	64.0	15.9	69.275
																			B95-4	69.95	0.635	64.0	37.7	69.315
																			B94-1	70.08	0.751	64.0	45.4	69.329
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.09	0.08	0.3	-0.235	11.95	68.667	66.166	B36SD	68.23	-0.437			
																			B36SD	68.23	1.681	101.9	15.6	66.549
																			B37L4	68.70	2.001	101.9	21.7	66.699
																			B37L1	68.70	1.481	101.9	42.9	67.219
																			B38L4	69.31	1.932	101.9	49.4	67.378

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time to Peak	Max. U/S HGL	Max. D/S HGL	Lot Number	USF	Freeboard (2)	Interpolated HGL		
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m ³ /s)	Pipe Vel. (m/s)	Pipe Flow (m ³ /s)	Design Flow								U/S (1)	(m)	(h)
																			B38L1	69.31	1.411	101.9	70.6	67.899
																			B39L4	69.62	1.547	101.9	77.7	68.073
																			B39L1	69.62	1.024	101.9	99.0	68.596
																			B47L1	69.23	0.786	101.9	92.8	68.444
																			B47L4	69.23	1.346	101.9	70.0	67.884
																			B48L1	68.82	1.061	101.9	64.9	67.755
																			B48L4	68.82	1.581	101.9	43.7	67.239
																			B49SD	68.53	1.456	101.9	37.0	67.074
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.44	-0.01	-0.1	-0.235	11.95	69.537	69.657	B96L1	70.07	0.533			
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.26	1.93	0.6	-0.331	12.02	68.917	68.008	Fut. Est.	72.09	3.173			
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.04	0.05	0.4	-0.220	11.93	72.459	71.842	B107L1	72.89	0.431			
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.71	0.05	0.4	-0.099	11.95	71.842	71.830	N/A	N/A	N/A			
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.47	0.22	1.2	-0.027	11.95	71.830	71.596	N/A	N/A	N/A			
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.60	0.77	0.8	-0.109	12.02	71.596	71.191	N/A	N/A	N/A			
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.99	0.03	0.4	-0.169	11.93	72.395	71.787	B102L1	72.70	0.305			
																			B102L1	72.70	0.879	106.5	6.0	71.821
																			B102L5	72.70	0.713	106.5	35.1	71.987
																			B103L1	72.87	0.827	106.5	44.8	72.043
																			B103L4	72.87	0.707	106.5	65.8	72.163
																			B104L1	73.05	0.830	106.5	75.8	72.220
																			B104L5	73.05	0.666	106.5	104.5	72.384
																			B105L10	73.24	0.880	106.5	100.3	72.360
																			B105L6	73.24	1.038	106.5	72.7	72.202
																			B106L10	73.08	0.937	106.5	62.3	72.143
																			B106L6	73.08	1.093	106.5	35.1	71.987
																			B107L10	72.89	0.953	106.5	26.3	71.937
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.10	0.05	0.5	-0.108	11.95	71.787	71.596	B107L6	72.89	1.103			
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.55	0.82	0.6	-0.344	12.02	70.321	70.089	B100SD	72.25	1.929			
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.105	11.95	63.161	62.635	L1	64.26	1.099			
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.15	0.45											

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.73	0.08	0.7	-0.114	11.93	69.167	68.008	L34	69.22	0.053				
																				L34	69.22	0.957	82.8	18.2	68.263
																				L33	69.36	0.879	82.8	33.8	68.481
																				L32	69.53	0.929	82.8	42.4	68.601
																				L31	69.62	0.816	82.8	56.9	68.804
																				L30	69.82	0.891	82.8	65.8	68.929
																				L29	70.07	0.932	82.8	80.7	69.138
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.045	11.95	67.178	66.135	L325	67.35	0.172				
																				L325	67.35	1.170	72.5	3.1	66.180
																				L326	67.53	1.125	72.5	18.8	66.405
																				L327	67.79	1.268	72.5	26.9	66.522
																				L328	67.99	1.159	72.5	48.4	66.831
																				B614SD	68.21	1.054	72.5	71.0	67.156
																				L333	67.98	0.824	72.5	71.0	67.156
																				L332	67.91	0.882	72.5	62.1	67.028
																				L331	67.79	1.034	72.5	43.2	66.756
																				L330	67.63	0.991	72.5	35.0	66.639
																				L329	67.47	1.105	72.5	16.0	66.365
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.09	0.34	1.0	0.030	11.95	66.135	65.845	L324	67.08	0.945				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.129	11.97	65.811	64.583	L319	65.72	-0.091				
																				L319	65.72	0.802	77.0	21.0	64.918
																				L320	66.05	0.824	77.0	40.3	65.226
																				L321	66.39	1.037	77.0	48.3	65.353
																				L322	66.71	1.062	77.0	66.8	65.648
																				L323	66.89	1.194	77.0	69.8	65.696
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.01	0.49	0.6	-0.262	11.95	63.749	63.071	L123	64.76	1.011				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.164	11.95	66.097	65.715	B601SD	66.46	0.363				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.24	0.07	0.3	-0.271	11.95	65.609	65.215	B604SD	66.07	0.461				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.24	0.07	0.3	-0.272	11.95	65.185	64.897	L296	65.77	0.585				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.43	1.49	0.3	-0.926	12.03	72.157	71.787	B80L1	73.88	1.723				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.47	1.55	0.3	-0.917	12.03	70.582	70.221	B87SD	72.44	1.858				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.51	1.59	0.3	-0.910	12.03	69.432	69.032	B85L1	71.32	1.888				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.55	1.71	0.3	-0.891	12.05	69.026	68.620	L51	71.02	1.994				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.78	4.94	0.7	-0.819	12.05	67.731	67.452	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.80	5.29	0.3	-1.174	12.05	63.516	62.472	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.68	5.42	0.3	-1.143	12.05	62.016	61.538	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.82	7.69	0.5	-0.266	12.05	61.538	61.261	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.29	8.86	N/A	N/A	12.02	61.261	60.235	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.33	0.23	0.6	-0.180	11.93	59.862	59.529	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.324	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.04	1.86	0.3	-0.908	11.97	59.199	58.975	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.99	0.49	0.6	-0.260	11.95	62.646	62.308	L45	63.24	0.594				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.07	0.28	0.7	0.248	12.02	67.223	67.020	B51L1	68.41	1.187				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	1.92	0.78	0.2	-0.897	12.02	74.988	74.828	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.19	0.27	0.5	-0.344	11.93	53.685	53.641	L30	58.92	5.235				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.72	0.02	0.2	-0.197	11.95	72.063	71.765	B103L8	72.87	0.807				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.77	0.28	0.7	0.038	12.02	68.425	68.008	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.089	11.97	65.821	65.714	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	11.95	65.821	65.811	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.02	-0.01	0.0	-0.506	12.20	49.636	49.636	N/A	N/A	N/A				

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	2.93	4.86	N/A	N/A	13.20	49.636	48.500	N/A	N/A	N/A				
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.44	0.63	0.8	-0.217	11.97	60.304	60.091	L23	61.85	1.546				
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552				
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.05	0.30	1.1	0.076	11.93	69.492	69.246	B84L1	69.71	0.218				
																			B84L1	69.71	0.415	83.9	16.8	69.295	
																			B84L4	69.71	0.352	83.9	38.3	69.358	
																			B83L1	70.27	0.892	83.9	45.0	69.378	
																			B83L3	70.27	0.848	83.9	60.0	69.422	
																			B82L1	70.96	1.519	83.9	66.6	69.441	
																			B82L4	70.96	1.474	83.9	81.9	69.486	
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.95	0.07	1.1	0.037	11.93	69.657	69.522	B96L4	70.07	0.413				
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.76	0.33	0.8	-0.090	11.95	71.871	71.088	L52	72.19	0.319				
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.27	0.29	0.9	-0.118	11.93	72.688	71.871	L56	72.93	0.242				
																			L56	72.93	0.948		64.8	8.8	71.982
																			B73SD	73.17	1.027	64.8	21.6	72.143	
																			L57	73.23	0.848	64.8	40.5	72.382	
																			L58	73.36	0.806	64.8	54.2	72.554	
																			L60	73.51	0.872	64.8	60.8	72.638	
																			L61	73.43	0.999	64.8	44.4	72.431	
																			L62	73.37	1.133	64.8	29.0	72.237	
																			L63	73.28	1.220	64.8	15.0	72.060	
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.31	0.03	0.2	-0.209	11.93	73.487	72.688	L59	73.54	0.053				
																			L59	73.54	0.812		44.4	2.2	72.728
																			B72L1	73.92	0.993		44.4	13.3	72.927
																			B72L2	73.92	0.825		44.4	22.6	73.095
																			B71L1	74.10	0.854	44.4	31.0	73.246	
																			B66L4	74.39	1.054	44.4	36.0	73.336	
																			B66L1	73.99	0.895	44.4	22.6	73.095	
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.50	0.03	0.2	-0.208	11.93	74.428	73.517	B71L4	74.50	0.072				
																			B71L4	74.50	0.824		45.4	7.9	73.676
																			B70L1	74.89	1.056		45.4	15.8	73.834
																			B70L2	74.89	0.867		45.4	25.2	74.023
																			B69L1	75.49	1.303	45.4	33.4		

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL				
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)		
903 705w	1006 709	65.503	65.287	300	18.0	1.2	0.013	68.393	65.660	1.499	0.106	1.18	0.04	0.4	-0.141	11.95	65.662	65.422	N/A	N/A	N/A					
		67.661	66.113	375	86.0	1.8	0.013	71.209	68.928	2.130	0.235	2.09	0.11	0.5	-0.195	11.97	67.841	66.293	L24	67.63	-0.211					
																					L24	67.63	1.207	86.0	7.2	66.423
																					L25	68.23	1.555	86.0	21.2	66.675
																					L26	68.95	1.996	86.0	36.7	66.954
																			L27	69.33	2.130	86.0	50.4	67.200		
																			L28	69.33	1.826	86.0	67.3	67.504		
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.45	1.29	0.9	-0.290	12.02	68.415	67.968	L35	69.61	1.195					
																			L35	69.61	1.278	103.5	84.3	68.332		
																			L36	70.01	1.732	103.5	71.8	68.278		
																			L37	70.32	2.093	103.5	59.9	68.227		
																			L38	70.49	2.326	103.5	45.3	68.164		
																			L39	70.49	2.365	103.5	36.4	68.125		
																			L40	70.36	2.295	103.5	22.5	68.065		
																			L46	70.51	2.440	103.5	23.6	68.070		
																			L45	70.56	2.429	103.5	37.7	68.131		
																			L44	70.58	2.412	103.5	46.4	68.168		
																			L43	70.32	2.089	103.5	61.0	68.231		
																			L42	70.06	1.779	103.5	72.5	68.281		
																			L41	69.67	1.333	103.5	85.4	68.337		
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.258	84	80.14	-0.092					
																			79	81.31	1.129	74.0	72.1	80.181		
																			80	81.20	1.403	74.0	57.7	79.797		
																			81	80.82	1.370	74.0	44.7	79.450		
																			82	80.66	1.594	74.0	30.3	79.066		
																			83	80.27	1.494	74.0	19.4	78.776		
																			84	80.14	1.749	74.0	5.0	78.391		
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.157	77	81.27	1.038					
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.64	0.02	0.2	-0.185	11.93	78.533	78.376	87	79.42	0.887					
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.64	0.02	0.2	-0.324	11.95	78.258	78.059	41	79.36	1.102					
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	1.00	0.05	0.3	-0.295	11.95	78.059	77.708	34	78.97	0.911					
																			34	78.97	1.223	88.0	9.9	77.747		
																			35	79.03	1.225	88.0	24.3	77.805		
																			36	79.08	1.240	88.0	33.1	77.840		
																			37	79.14	1.					

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.728	72.5	57.9	80.042
																				69	80.92	0.787	72.5	69.4	80.133
																				71	80.32	0.658	72.5	9.7	79.662
																				72	80.46	0.695	72.5	22.7	79.765
																				73	80.57	0.692	72.5	37.1	79.878
																				74	80.69	0.742	72.5	45.9	79.948
																				75	80.82	0.759	72.5	60.3	80.061
																				76	81.20	1.061	72.5	70.2	80.139
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.8	-0.073	11.95	79.586	78.722	59	79.58	-0.006				
																				59	79.58	0.719	76.5	12.3	78.861
																				60	79.72	0.696	76.5	26.7	79.024
																				61	79.86	0.690	76.5	39.7	79.170
																				62	80.00	0.667	76.5	54.1	79.333
																				63	80.12	0.639	76.5	67.2	79.481
																				70	80.18	0.646	76.5	71.9	79.534
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.13	0.26	0.6	-0.236	11.95	78.620	77.708	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.52	0.8	-0.162	11.95	77.708	75.993	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.41	0.06	0.6	-0.136	11.93	77.616	76.730	90-2	77.72	0.104				
																				88-1	78.32	1.073	88.5	51.6	77.247
																				88-4	78.32	0.861	88.5	72.8	77.459
																				89-1	78.00	1.037	88.5	23.3	76.963
																				89-4	78.00	0.824	88.5	44.5	77.176
																				90-2	77.72	0.964	88.5	2.6	76.756
																				90-4	77.72	0.823	88.5	16.7	76.897
																				96-1	78.46	1.124	88.5	60.5	77.336
																				96-5	78.46	0.875	88.5	85.4	77.585
																				97-1	78.08	1.024	88.5	32.6	77.056
																				97-4	78.08	0.811	88.5	53.8	77.269
																				98-2	77.80	1.012	88.5	5.8	76.788
98-5	77.80	0.810	88.5	26.0	76.990																				
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.251	11.95	76.616	75.993	100-1	77.19	0.574				
																				100-1	77.19	1.047	75.0	18.0	76.143
																				100-4	77.19	0.871	75.0	39.2	76.319
																				90-1	77.72	1.142	75.0	70.4	76.578
																				91-1	77.47	1.174	75.0	36.5	76.296
																				91-5	77.47	0.947	75.0	63.8	76.523
																				92-1	77.33	1.268	75.0	8.3	76.062
																				92-4	77.33	1.092	75.0	29.5	76.238
																				98-1	77.80	1.195	75.0	73.7	76.605
																				99-1	77.47	1.097	75.0	45.8	76.373
																				99-4	77.47	0.920	75.0	67.0	76.550
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.79	0.08	0.4	-0.219	11.95	77.899	75.993	101-1	77.24	-0.659				
																				102	77.52	0.910	119.0	38.5	76.610
																				102	77.52	0.766	119.0	47.5	76.754
																				101-1	77.24	0.728	119.0	32.4	76.512
																				101-4	77.24	1.068	119.0	11.2	76.172
																				103-1	78.08	0.881	119.0	75.3	77.199
																				103-4	78.08	1.220	119.0	54.1	76.860
																				104-1	78.52	0.977	119.0	96.8	77.543
																				104-3	78.52	1.218	119.0	81.7	77.302

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				105-1	78.53	0.653	119.0	117.6	77.877
																				105-3	78.53	0.881	119.0	103.4	77.649
																				93-1	77.74	1.145	119.0	37.6	76.595
																				93-5	77.74	1.580	119.0	10.4	76.160
																				94-1	77.88	0.727	119.0	72.4	77.153
																				94-5	77.88	1.165	119.0	45.1	76.715
																				95-1	78.67	0.966	119.0	106.8	77.704
																				95-5	78.67	1.404	119.0	79.5	77.266
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.05	0.03	0.2	-0.268	11.95	77.899	76.982	25	78.18	0.281				
																				17	78.54	1.353	114.5	25.6	77.187
																				18	78.54	1.297	114.5	32.6	77.243
																				19	78.59	1.079	114.5	66.1	77.511
																				20	78.59	1.518	114.5	11.2	77.072
																				21	78.58	0.953	114.5	80.5	77.627
																				22	78.67	0.974	114.5	89.2	77.696
																				23	78.75	1.459	114.5	38.6	77.291
																				24	78.75	1.344	114.5	53.0	77.406
																				25	78.18	1.170	114.5	3.5	77.010
																				26	78.23	1.162	114.5	10.8	77.068
																				27	78.29	1.106	114.5	25.2	77.184
																				28	78.34	0.528	114.5	103.6	77.812
																				29	78.40	0.943	114.5	59.3	77.457
																				30	78.45	1.196	114.5	34.0	77.254
																				31	78.51	1.140	114.5	48.4	77.370
																				32	78.56	0.988	114.5	73.7	77.572
33	78.56	0.918	114.5	82.4	77.642																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	11.87	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.03	0.7	-0.161	11.97	75.993	75.309	N/A	N/A	N/A				
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.17	0.09	0.5	-0.229	12.05	75.679	75.333	96-1	76.43	0.751				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.36	1.13	0.8	-0.270	11.98	75.305	74.882	100-4	76.17	0.865				
																				98	76.29	1.199	78.0	38.6	75.091
																				98	76.29	1.247	78.0	29.6	75.043
																				100-4	76.17	1.280	78.0	1.4	74.890
																				97-1	76.30	1.174	78.0	45.0	75.126
																				97-4	76.30	1.059	78.0	66.2	75.241
																				99-1	76.23	1.304	78.0	8.1	74.926
																				99-3	76.23	1.222	78.0	23.2	75.008
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.84	0.06	0.5	-0.156	11.98	74.882	73.218	113-2	74.43	-0.452				
																				114	74.86	1.298	86.5	17.9	73.562
																				114	74.86	1.125	86.5	26.9	73.735
																				102-1	75.69	1.424	86.5	54.5	74.266
																				102-4	75.69	1.016	86.5	75.7	74.674
																				103-1	75.32	1.588	86.5	26.7	73.732
																				103-4	75.32	1.181	86.5	47.9	74.139
																				104-1	74.57	1.258	86.5	4.9	73.312
																				104-3	74.57	0.967	86.5	20.0	73.603
																				113-2	74.43	1.127	86.5	4.4	73.303
																				113-3	74.43	0.991	86.5	11.5	73.439
																				115-1	75.54	1.681	86.5	33.3	73.859
																				115-3	75.54	1.391	86.5	48.4	74.149

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				116-1	75.93	1.652	86.5	55.1	74.278																				
																				116-4	75.93	1.244	86.5	76.3	74.686																				
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.24	1.16	0.7	-0.200	12.00	74.882	73.927	48	75.25	0.368																								
																				48	75.25	1.270	88.5	4.9	73.980																				
																				49	75.59	1.455	88.5	19.3	74.135																				
																				50	76.24	1.956	88.5	33.1	74.284																				
																				100-1	76.17	1.502	88.5	68.7	74.668																				
																				100-3	76.17	1.350	88.5	82.8	74.820																				
																				101-2	76.39	1.879	88.5	54.1	74.511																				
																				101-3	76.39	1.793	88.5	62.1	74.597																				
																				518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.43	0.11	0.7	-0.113	12.00	73.218	70.674	108-1	71.98	-1.238				
																																								106	73.27	0.732	87.5	64.1	72.538
																																								106	73.27	0.994	87.5	55.1	72.276
																																								112	73.88	1.220	87.5	68.3	72.660
																																								112	73.88	0.959	87.5	77.3	72.921
105-1	73.98	1.256	87.5	70.5	72.724																																								
105-3	73.98	0.817	87.5	85.6	73.163																																								
107-1	72.82	1.344	87.5	27.6	71.476																																								
107-4	72.82	0.727	87.5	48.8	72.093																																								
108-1	71.98	1.134	87.5	5.9	70.846																																								
108-3	71.98	0.695	87.5	21.0	71.285																																								
109-1	72.10	1.318	87.5	3.7	70.782																																								
109-3	72.10	0.879	87.5	18.8	71.221																																								
110-1	72.62	1.219	87.5	25.0	71.401																																								
110-3	72.62	0.780	87.5	40.1	71.840																																								
111-1	73.30	1.280	87.5	46.3	72.020																																								
111-3	73.30	0.826	87.5	61.9	72.474																																								
113-1	74.43	1.322	87.5	83.7	73.108																																								
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.88	0.44	0.4	-0.277	12.00	70.455	70.036	22	71.62	1.165																								
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.57	0.60	0.5	-0.251	12.00	69.487	66.644	15	67.95	-1.537																								
																				15	67.95	1.109	79.5	5.5	66.841																				
																				16	68.22	0.761	79.5	22.8	67.459																				
																				17	68.77	1.028	79.5	30.7	67.742																				
																				18	69.45	1.193	79.5	45.1	68.257																				
																				19	70.14	1.418	79.5	58.1	68.722																				
																				20	70.77	1.533	79.5	72.5	69.237																				
																				21	71.17	1.769	79.5	77.1	69.401																				
																				521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.57	0.03	0.1	-0.294	11.95	76.927	76.583	15	78.33	1.403				
																				522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.51	0.08	0.1	-0.345	11.93	76.537	73.239	9	75.24	-1.297				
																																								9	75.24	1.560	69.5	9.3	73.680
																																								10	75.66	1.453	69.5	20.4	74.207
																																								11	76.22	1.330	69.5	34.8	74.890
12	76.80	1.492	69.5	43.6	75.308																																								
																				13	77.37	1.379	69.5	58.0	75.991																				
																				14	77.72	1.373	69.5	65.5	76.347																				
																				523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.54	0.08	0.3	-0.307	11.93	73.239	73.227	7	75.09	1.851				
																				524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.94	0.18	0.5	-0.302	11.95	73.227	72.987	5	74.99	1.763				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.01	1.37	0.4	-0.499	11.98	72.361	70.259	32	71.51	-0.851																								
																				32	71.51	1.174	60.0	2.2	70.336																				
																				33	72.20	1.605	60.0	9.6	70.595																				

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				34	72.90	1.898	60.0	21.2	71.002
																				35	73.59	2.182	60.0	32.8	71.408
																				36	74.30	2.387	60.0	47.2	71.913
																				42	71.67	1.190	60.0	6.3	70.480
																				43	72.31	1.683	60.0	10.5	70.627
																				44	73.07	1.939	60.0	24.9	71.131
																				45	73.65	2.273	60.0	31.9	71.377
																				46	74.31	2.429	60.0	46.3	71.881
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.58	1.0	-0.150	12.00	67.284	66.785	13	67.89	0.606				
																				11	67.97	1.121	65.0	8.4	66.849
																				12	67.91	0.945	65.0	23.4	66.965
																				13	67.89	0.858	65.0	32.2	67.032
																				14	67.89	0.747	65.0	46.6	67.143
																				23	68.16	1.226	65.0	19.4	66.934
																				24	68.23	1.187	65.0	33.6	67.043
																				25	68.23	1.082	65.0	47.3	67.148
																				26	68.28	1.043	65.0	58.9	67.237
																				37	68.30	1.028	65.0	63.5	67.272
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.67	2.20	0.8	-0.272	12.00	66.644	65.729	7	66.89	0.246				
																				7	66.89	1.128	39.0	1.4	65.762
																				8	67.37	1.355	39.0	12.2	66.015
																				9	67.82	1.530	39.0	23.9	66.290
																				10	67.97	1.366	39.0	37.3	66.604
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.26	2.20	0.6	-0.334	12.00	65.379	64.693	6	66.10	0.721				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.04	2.23	0.7	-0.336	12.00	63.958	62.145	1	63.88	-0.078				
																				1	63.88	1.468	64.5	9.5	62.412
																				2	63.92	1.123	64.5	23.2	62.797
																				3	64.39	1.267	64.5	34.8	63.123
																				4	64.86	1.363	64.5	48.1	63.497
																				5	65.44	1.583	64.5	60.9	63.857
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.86	2.23	1.0	0.109	12.00	62.145	61.978	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.03	2.30	1.0	0.073	12.00	61.978	61.538	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.60	0.04	0.3	-0.192	11.93	79.003	77.254	61	78.31	-0.693				
																				61	78.31	0.948	92.0	5.7	77.362
																				62	78.72	1.084	92.0	20.1	77.636
																				63	78.74	0.843	92.0	33.8	77.897
																				64	79.82	1.115	92.0	76.3	78.705
																				64	79.82	1.271	92.0	68.1	78.549
																				65	79.96	1.130	92.0	82.9	78.830
																				65	79.96	1.221	92.0	78.1	78.739
																				66	80.11	1.215	92.0	86.3	78.895
																				66	80.11	1.248	92.0	84.6	78.862
																				67	80.11	1.139	92.0	90.3	78.971
																				67	80.11	1.177	92.0	88.3	78.933
																				68	79.92	0.938	92.0	90.9	78.982
																				68	79.92	0.917	92.0	92.0	79.003
																				69	79.99	1.008	92.0	90.9	78.982
																				69	79.99	1.057	92.0	88.3	78.933
																				72	78.57	1.021	92.0	15.5	77.549
																				72	78.57	1.183	92.0	7.0	77.387

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				70-1	79.75	1.391	92.0	58.1	78.359
																				70-4	79.75	0.962	92.0	80.7	78.788
																				71-1	79.32	1.581	92.0	25.5	77.739
																				71-4	79.32	1.152	92.0	48.1	78.168
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.40	0.11	0.3	-0.218	11.93	77.229	74.939	79	76.31	-0.919				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.863	77.5	41.9	76.177
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.905	77.5	23.9	75.645
																				76	77.90	0.845	77.5	71.6	77.055
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.829	77.5	53.2	76.511
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
																				73-1	77.95	1.477	77.5	51.9	76.473
73-4	77.95	0.810	77.5	74.5	77.140																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.188	11.93	74.913	74.579	80-4	75.75	0.837				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	11.95	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
																				81-4	74.96	1.057	30.5	11.6	73.903
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	11.95	73.486	72.282	82-1	74.07	0.584				
																				59	74.11	1.479	54.5	15.8	72.631
																				60	74.12	1.171	54.5	30.2	72.949
																				78-1	75.03	1.783	54.5	43.7	73.247
																				81-1	74.96	1.673	54.5	45.5	73.287
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.477	54.5	14.1	72.593
																				82-4	74.07	0.977	54.5	36.7	73.093
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.54	0.01	0.1	-0.232	12.03	74.654	74.619	89	75.57	0.916				
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.53	0.03	0.2	-0.205	11.95	74.619	73.418	87	74.99	0.371				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.76	0.03	0.1	-0.213	11.95	73.381	72.293	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.48	0.7	-0.232	11.97	72.282	71.944	83-1	73.46	1.178				
543																									

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.64	1.37	0.5	-0.407	11.98	69.052	67.284	27	68.65	-0.402																								
																				27	68.65	1.228	60.0	4.7	67.422																				
																				28	69.07	1.223	60.0	19.1	67.847																				
																				29	69.63	1.580	60.0	26.0	68.050																				
																				30	70.23	1.756	60.0	40.4	68.474																				
																				31	70.87	2.189	60.0	47.4	68.681																				
																				38	68.95	1.239	60.0	14.5	67.711																				
																				39	69.64	1.504	60.0	28.9	68.136																				
																				40	70.34	1.948	60.0	37.6	68.392																				
																				41	71.03	2.296	60.0	49.2	68.734																				
																				DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.17	0.34	0.7	-0.159	12.02	76.626	76.241	N/A	N/A	N/A				
																				5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.42	0.31	0.4	-0.320	11.95	71.174	70.455	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.07	0.00	0.0	0.049	12.05	68.015	68.015	9-2	68.47	0.455																								
																				10-1	68.47	0.455	7.0	3.5	68.015																				
																				10-2	68.47	0.455	7.0	2.8	68.015																				
																				11-1	68.62	0.605	7.0	5.3	68.015																				
																				11-2	68.62	0.605	7.0	5.3	68.015																				
																				12-2	68.54	0.525	7.0	1.7	68.015																				
																				9-2	68.50	0.485	7.0	2.4	68.015																				
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.10	1.1	0.104	11.93	68.015	67.690	6-1	68.23	0.215																								
																				12-1	68.54	0.551	32.5	29.9	67.989																				
																				13-1	68.43	0.612	32.5	12.8	67.818																				
																				13-2	68.43	0.528	32.5	21.2	67.902																				
																				14-2	68.42	0.703	32.5	2.7	67.717																				
																				6-1	68.23	0.454	32.5	8.6	67.776																				
																				6-2	68.23	0.498	32.5	4.2	67.732																				
																				7-1	68.28	0.484	32.5	10.6	67.796																				
																				7-2	68.28	0.493	32.5	9.7	67.787																				
																				8-1	68.36	0.533	32.5	13.7	67.827																				
																				8-2	68.36	0.453	32.5	21.7	67.907																				
																				9-1	68.50	0.543	32.5	26.7	67.957																				
																				403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.055	11.93	67.690	67.256	17-1	68.23	0.540				
																																								14-1	68.42	0.762	77.0	71.4	67.658
																																								15-1	68.42	0.866	77.0	52.9	67.554
																																								15-2	68.42	0.818	77.0	61.3	67.602
																																								16-1	68.29	0.840	77.0	34.4	67.450
																																								16-2	68.29	0.793	77.0	42.8	67.497
																																								17-1	68.23	0.888	77.0	15.2	67.342
17-2	68.23	0.841	77.0	23.6	67.389																																								
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	11.95	66.691	65.528	4-1	66.76	0.069																								
																				4-1	66.76	1.196	51.5	1.6	65.564																				
																				4-2	66.76	1.006	51.5	10.0	65.754																				
																				5-1	67.15	1.123	51.5	22.1	66.027																				
																				5-2	67.15	0.924	51.5	30.9	66.226																				
																				L343	67.62	1.898	51.5	8.6	65.722																				
																				L342	67.97	1.981	51.5	20.4	65.989																				
																				L341	68.19	1.930	51.5	32.4	66.260																				
																				L340	68.40	1.851	51.5	45.2	66.549																				
Chan1B Chan1B.4	Chan1B.1 136	49.260 48.990	49.220 48.960	N/A N/A	30.0 27.7	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	0.51 1.17	7.08 5.98	N/A N/A	N/A N/A	12.12 12.43	53.121 50.605	53.120 50.416	N/A N/A	N/A N/A	N/A N/A																								

Table C-1B: Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Type II Storm (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.37	4.22	N/A	N/A	12.40	51.337	50.605	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.76	N/A	N/A	12.43	51.337	50.605	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.56	6.07	N/A	N/A	12.35	53.064	53.062	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.81	3.22	N/A	N/A	11.92	53.120	53.064	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	5.27	N/A	N/A	12.12	53.119	53.063	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	0.32	3.20	N/A	N/A	12.87	53.123	53.121	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.88	1.56	N/A	N/A	13.80	53.133	53.123	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.07	N/A	N/A	12.87	53.133	53.122	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.37	3.63	N/A	N/A	12.03	53.136	53.133	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.40	2.47	N/A	N/A	11.95	53.148	53.136	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.35	N/A	N/A	12.05	53.147	53.135	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.60	5.98	N/A	N/A	12.05	53.151	53.148	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.03	3.62	N/A	N/A	11.90	53.165	53.151	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	4.39	N/A	N/A	12.07	53.165	53.151	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.77	8.85	N/A	N/A	12.03	57.864	57.237	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	8.47	7.40	N/A	N/A	12.15	56.287	53.750	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.74	8.84	N/A	N/A	12.03	59.499	58.334	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.84	8.84	N/A	N/A	12.03	57.237	56.598	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.63	5.99	N/A	N/A	12.42	51.382	51.337	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	3.36	5.99	N/A	N/A	12.40	53.062	51.382	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	53.061	51.382	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.14	8.85	N/A	N/A	12.03	58.333	57.864	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.78	7.55	N/A	N/A	12.10	56.296	56.286	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.70	8.51	N/A	N/A	12.05	56.385	56.297	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.10	8.81	N/A	N/A	12.05	56.598	56.385	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.20	8.85	N/A	N/A	12.02	60.235	59.498	N/A	N/A	N/A			

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.149 Interpolated HGL elevation

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.81	0.05	0.3	-0.186	1.52	62.782	60.025	B92L1	61.17	-1.612																							
																				B92L1	61.17	1.078	90.9	2.2	60.092																			
																				B93	61.89	1.534	90.9	10.9	60.356																			
																				B94	62.24	1.196	90.9	33.6	61.044																			
																				B95	62.74	1.032	90.9	55.5	61.708																			
																				B96	63.53	1.218	90.9	75.4	62.312																			
																				B97	63.52	1.248	90.9	74.1	62.272																			
																				B98	62.59	1.112	90.9	47.9	61.478																			
																				B99	61.56	1.392	90.9	4.7	60.168																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	1.93	0.22	1.2	0.060	1.52	60.025	59.776	B92L3	61.17	1.145			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.02	0.25	0.8	-0.108	1.52	59.677	58.321	L88	60.83	1.153			
																																								L88	60.83	2.350	45.2	5.3
L89	61.05	2.075	45.2	21.8	58.975																																							
L90	60.93	1.703	45.2	30.2	59.227																																							
L91	60.90	1.256	45.2	44.1	59.644																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.13	0.26	0.8	-0.132	1.53	58.303	57.919	L85	58.99	0.687																							
																				L85	58.99	1.022	34.0	4.3	57.968																			
																				L86	59.79	1.716	34.0	13.7	58.074																			
																				L87	60.00	1.747	34.0	29.6	58.253																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.28	0.62	1.0	-0.040	1.53	57.919	57.220	L81	58.16	0.241			
																				L81	58.16	0.816	66.9	11.9	57.344																			
																				L80	58.39	1.140	66.9	2.9	57.250																			
																				L82	58.22	0.724	66.9	26.4	57.496																			
																				L83	58.40	0.739	66.9	42.2	57.661																			
																				L84	58.95	1.174	66.9	53.2	57.776																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.86	0.62	1.0	-0.069	1.53	57.220	57.034	L79	58.44	1.220																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.44	0.62	1.0	-0.203	1.55	57.006	56.920	L74	58.91	1.904																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.49	0.62	1.0	-0.213	1.55	56.920	56.750	L73	59.22	2.300																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.17	0.6	-0.160	1.53	60.711	57.919	L75	59.26	-1.451																							
																				L75	59.26	0.921	116.3	17.5	58.339																			
																				L76	59.55	0.740	116.3	37.1	58.810																			
																				B103SD	60.07	0.790	116.3	56.7	59.280																			
																				B104SD	60.75	1.014	116.3	75.7	59.736																			
																				B105SD	61.36	1.168	116.3	94.7	60.192																			
																				B106SD	62.05	1.399	116.3	113.8	60.651																			
																				B102L1	61.93	1.286	116.3	113.5	60.644																			
																				B102L4	61.55	1.449	116.3	90.9	60.101																			
																				B101L1	60.92	1.124	116.3	78.2	59.796																			
																				B101L4	60.52	1.266	116.3	55.6	59.254																			
B100L1	59.97	0.966	116.3	45.2	59.004																																							
B100L4	59.58	1.118	116.3	22.6	58.462																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.67	0.00	0.0	-0.259	1.50	63.197	62.727	L60	63.78	0.583																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.67	0.03	0.2	-0.219	1.52	62.727	60.893	L66	62.23	-0.497																							
																				L66	62.23	1.309	65.6	1.0	60.921																			
																				L65	62.47	1.160	65.6	14.9	61.310																			
																				L64	62.67	1.047	65.6	26.1	61.623																			
																				L63	63.00	0.944	65.6	41.6	62.056																			
																				L62	63.31	1.078	65.6	47.9	62.232																			
																				L61	63.58	1.040	65.6	58.9	62.540																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.76	0.06	0.3	-0.247	1.52	60.865	59.850	B108L4	61.64	0.775																							

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.26	2.11	0.3	-0.896	1.57	58.139	57.711	L71	59.63	1.491							
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.83	2.11	0.3	-0.764	1.57	56.412	56.279	N/A	N/A	N/A							
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.20	0.08	0.0	-1.068	1.53	65.310	64.961	N/A	N/A	N/A							
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.35	0.12	0.0	-1.044	1.55	63.988	63.164	N/A	N/A	N/A							
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.25	1.10	0.2	-1.017	1.53	62.693	62.398	N/A	N/A	N/A							
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.31	1.18	0.2	-1.001	1.55	61.119	60.696	N/A	N/A	N/A							
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.30	1.52	0.3	-0.893	1.55	59.807	59.459	N/A	N/A	N/A							
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.383	B112L4	64.20	0.843							
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.70	0.30	1.0	0.438	1.68	62.383	60.484	B109L4	61.76	-0.623							
																				B109L4	61.76	0.512	62.4	25.1	61.248			
																				B109L1	61.76	0.515	62.4	25.0	61.245			
																				B110SD	62.44	0.650	62.4	42.9	61.790			
																				B111SD	63.15	0.880	62.4	58.7	62.270			
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.06	0.69	0.7	-0.266	1.58	59.107	58.136	L18	59.42	0.313							
																				L18	59.42				1.206	64.4	5.2	58.214
																				L19	60.08				1.697	64.4	16.4	58.383
																				L20	60.56				1.939	64.4	32.2	58.622
																				L21	60.98				2.212	64.4	41.9	58.768
																				L22	61.39				2.387	64.4	57.5	59.003
																				L24	61.34				2.474	64.4	48.4	58.866
																				L35	61.06				2.432	64.4	32.6	58.628
																				L26	60.61				2.156	64.4	21.1	58.454
																				L27	59.90	1.681	64.4	5.5	58.219			
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.14	0.69	0.7	-0.274	1.58	56.931	55.968	L14	57.61	0.679							
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.98	0.76	0.7	-0.231	1.58	54.814	53.916	L9	55.68	0.866							
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.51	0.76	0.7	-0.131	1.58	53.916	53.713	N/A	N/A	N/A							
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.47	6.65	0.7	0.497	1.63	53.713	53.705	N/A	N/A	N/A							
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	1.47	6.64	0.7	0.603	1.63	53.705	53.703	N/A	N/A	N/A							
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	1.44	6.60	0.7	0.715	1.63	53.703	53.696	N/A	N/A	N/A							
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.130	2.119	9.588	1.42	6.57	0.7	0.931	1.63	53.697	53.692	N/A	N/A	N/A							
Chan1A	Chan1A.1	50.130	49.970	N/A	105.0	N/A	N/A	N/A	N/A	N/A	N/A	0.66	6.79	N/A	N/A	1.63	53.692	53.691	N/A	N/A	N/A							
136	137	48.960	48.919	2550	43.5	0.1	0.013	54.450	54.449	2.054	10.492	2.06	6.72	0.6	-0.992	2.22	50.518	50.461	N/A	N/A	N/A							
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.12	6.72	0.6	-0.988	2.23	50.461	49.944	N/A	N/A	N/A							
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	2.75	6.72	0.3	-1.814	2.23	49.742	49.714	N/A	N/A	N/A							
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	0.00	N/A	N/A	0.00	49.742	49.714	N/A	N/A	N/A							
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	-0.07	-0.03	0.0	-0.246	1.95	49.714	49.714	N/A	N/A	N/A							
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	3.07	0.54	0.6	-0.244	1.57	60.429	59.318	L52	60.19	-0.239							
																				L52	60.19	0.805	61.7	3.7	59.385			
																				L51	60.63	1.123	61.7	10.5	59.507			
																				L50	61.53	1.693	61.7	28.8	59.837			
																				L49	62.36	2.388	61.7	36.3	59.972			
																				L48	62.74	2.423	61.7	55.5	60.317			
																				L47	63.79	3.388	61.7	60.2	60.402			
																				L44	62.69	2.558	61.7	45.2	60.132			
																				L43	61.84	1.841	61.7	37.8	59.999			
																				L42	61.29	1.635	61.7	18.7	59.655			
																				L41	60.68	1.159	61.7	11.3	59.521			
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.81	0.8	-0.117	1.58	57.424	56.090	L36	57.89	0.466							
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.31	1.68	0.9	-0.227	1.60	62.977	62.727	N/A	N/A	N/A							
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.36	1.71	0.9	-0.229	1.62	61.138	60.105	N/A	N/A	N/A							

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.66	4.71	0.5	-0.361	1.60	53.717	53.717	L3	58.26	4.543				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.53	5.92	0.6	-0.133	1.63	53.717	53.713	L8	55.21	1.493				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.59	0.20	0.7	-0.126	1.62	69.914	67.913	B54L4	69.35	-0.564				
																				B54L4	69.35	1.324	83.1	4.7	68.026
																				B54L1	69.35	0.874	83.1	23.4	68.476
																				B56L4	70.19	1.547	83.1	30.3	68.643
																				B56L1	70.19	1.037	83.1	51.5	69.153
																				B57SD	70.63	1.121	83.1	66.3	69.509
																				B43L4	71.22	1.540	83.1	73.4	69.680
																				B58L4	70.88	1.135	83.1	76.1	69.745
																				B58L1	70.88	1.647	83.1	54.8	69.233
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.27	0.20	0.7	-0.090	1.62	67.898	67.565	B53L3	68.90	1.002				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.36	0.63	1.1	-0.047	1.63	66.614	65.498	B47L4	66.63	0.016				
																				B47L4	66.63	0.972	119.4	17.1	65.658
																				B47L1	66.63	0.774	119.4	38.3	65.856
																				B48L4	67.21	1.290	119.4	45.1	65.920
																				B48L1	67.21	1.092	119.4	66.3	66.118
																				B49L4	67.77	1.591	119.4	72.9	66.179
																				B49L1	67.77	1.392	119.4	94.1	66.378
																				B50SD	68.07	1.550	119.4	109.3	66.520
																				B51L3	68.41	1.834	119.4	115.3	66.576
																				B59L4	68.18	1.673	119.4	107.9	66.507
																				B59L1	68.18	1.872	119.4	86.7	66.308
																				B60SD	67.97	1.726	119.4	79.8	66.244
																				B61L4	67.31	1.207	119.4	64.7	66.103
																				B61L1	67.31	1.405	119.4	43.5	65.905
																				B62L4	66.89	1.047	119.4	36.9	65.843
																				B62L1	66.89	1.245	119.4	15.7	65.645
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.86	0.78	0.9	-0.191	1.63	65.394	64.393	L41	65.57	0.176				
																				L41	65.57	1.163	83.2	1.2	64.407
																				L42	65.98	1.417	83.2	14.1	64.563
																				L43	66.07	1.363	83.2	26.1	64.707
																				L44	66.12	1.240	83.2	40.5	64.880
																				L45	66.23	1.225	83.2	50.9	65.005
																				L46	66.87	1.685	83.2	65.8	65.185
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.90	0.12	0.4	-0.166	1.53	66.156	65.394	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.16	0.73	0.5	-0.312	1.62	71.115	70.297	B102L5	72.70	1.585				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.22	0.02	0.2	-0.212	1.62	71.115	69.914	B42SD	71.19	0.075				
																				B42SD	71.19	1.128	71.4	8.8	70.062
																				B41L1	71.59	1.419	71.4	15.3	70.171
																				B41L4	71.59	1.060	71.4	36.6	70.530
																				B40L1	71.88	1.243	71.4	43.0	70.637
																				B40L3	71.88	0.989	71.4	58.1	70.891
																				B563L1	72.21	1.250	71.4	62.2	70.960
																				B45L1	71.98	1.127	71.4	55.8	70.853
																				B45L4	71.98	1.486	71.4	34.5	70.494
																				B44SD	71.47	1.093	71.4	27.5	70.377
																				B43L1	71.47	1.356	71.4	11.9	70.114
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.62	2.85	0.5	-0.823	1.57	56.279	55.862	L32	58.76	2.481				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.87	0.30	1.5	0.289	1.68	60.484	60.036	N/A	N/A	N/A				

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time to Peak	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL			
		Invert	Invert	/ Height	Length	Slope		Cover Elev.	Cover Elev.	Vel.	Flow	Pipe Vel.	Pipe Flow	Design Flow			U/S (1)	U/S HGL				D/S HGL	Length HGL	Dist. From D/S MH	HGL
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)		(m)	(h)	(m)	(m)		(m)	(m)	(m)			
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.20	2.85	0.5	-0.667	1.57	55.862	55.584	L11	58.85	2.988				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.02	3.07	0.4	-0.846	1.58	53.721	53.717	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.03	0.19	0.3	-0.419	1.52	54.005	53.944	L22	54.73	0.725				
																				L22	54.73	0.730	28.2	25.9	54.000
																				L21	54.73	0.727	28.2	27.4	54.003
																				L20	55.10	1.106	28.2	22.9	53.994
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.20	0.26	0.5	-0.380	1.53	53.944	53.721	L19	55.79	1.846				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.80	0.78	0.9	-0.181	1.63	64.378	64.003	L39	65.04	0.662				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.82	0.81	0.9	-0.166	1.63	64.003	63.650	L37	64.89	0.887				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.55	0.96	1.0	-0.156	1.60	63.452	63.045	L34	64.28	0.828				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.57	67.451	67.098	L339	68.56	1.109				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.249	1.55	65.520	64.336	L347	65.57	0.050				
																				L347	65.57	1.200	52.4	1.5	64.370
																				L346	66.07	1.214	52.4	23.0	64.856
																				L345	66.61	1.551	52.4	32.0	65.059
																				L344	67.15	1.761	52.4	46.6	65.389
																				3-1	66.15	1.055	52.4	33.6	65.095
																				1	65.55	0.724	52.4	21.7	64.826
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.54	0.73	0.7	-0.165	1.60	63.919	62.977	L58	64.18	0.261				
																				L58	64.18	0.881	55.0	18.8	63.299
																				L57	64.44	0.846	55.0	36.0	63.594
																				L56	64.75	0.937	55.0	48.8	63.813
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.47	1.28	0.8	-0.340	1.63	69.208	69.091	18-1	69.48	0.272				
																				18-1	69.48	0.362	80.5	18.7	69.118
																				18-2	69.48	0.350	80.5	27.1	69.130
																				19-1	69.51	0.365	80.5	37.2	69.145
																				19-2	69.51	0.353	80.5	45.6	

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL		
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m ³ /s)	Pipe Vel. (m/s)	Pipe Flow (m ³ /s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)				Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			B38L1	69.31	1.419	101.9	70.6	67.891
																			B39L4	69.62	1.555	101.9	77.7	68.065
																			B39L1	69.62	1.031	101.9	99.0	68.589
																			B47L1	69.23	0.794	101.9	92.8	68.436
																			B47L4	69.23	1.354	101.9	70.0	67.876
																			B48L1	68.82	1.069	101.9	64.9	67.751
																			B48L4	68.82	1.590	101.9	43.7	67.230
																			B49SD	68.53	1.465	101.9	37.0	67.065
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.34	-0.01	-0.1	-0.249	1.53	69.523	69.609	B96L1	70.07	0.547			
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.26	1.91	0.6	-0.338	1.63	68.910	68.004	Fut. Est.	72.09	3.180			
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.03	0.04	0.3	-0.227	1.53	72.452	71.826	B107L1	72.89	0.438			
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.75	0.04	0.3	-0.115	1.53	71.826	71.816	N/A	N/A	N/A			
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.46	0.22	1.2	-0.041	1.60	71.816	71.583	N/A	N/A	N/A			
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.54	0.68	0.7	-0.169	1.62	71.536	71.158	N/A	N/A	N/A			
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.95	0.03	0.3	-0.181	1.53	72.383	71.770	B102L1	72.70	0.317			
																			B102L1	72.70	0.895	106.5	6.0	71.805
																			B102L5	72.70	0.728	106.5	35.1	71.972
																			B103L1	72.87	0.842	106.5	44.8	72.028
																			B103L4	72.87	0.721	106.5	65.8	72.149
																			B104L1	73.05	0.844	106.5	75.8	72.206
																			B104L5	73.05	0.678	106.5	104.5	72.372
																			B105L10	73.24	0.893	106.5	100.3	72.347
																			B105L6	73.24	1.051	106.5	72.7	72.189
																			B106L10	73.08	0.951	106.5	62.3	72.129
																			B106L6	73.08	1.108	106.5	35.1	71.972
																			B107L10	72.89	0.969	106.5	26.3	71.921
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.05	0.04	0.5	-0.125	1.53	71.770	71.547	B107L6	72.89	1.120			
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.49	0.75	0.6	-0.369	1.62	70.296	70.065	B100SD	72.25	1.954			
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.53	0.19	0.9	-0.116	1.53	63.150	62.629	L1	64.26	1.110			
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.12	0.41	0.8	-0.210	1.57								

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.69	0.08	0.6	-0.126	1.52	69.155	67.996	L34	69.22	0.065				
																				L34	69.22	0.969	82.8	18.2	68.251
																				L33	69.36	0.891	82.8	33.8	68.469
																				L32	69.53	0.941	82.8	42.4	68.589
																				L31	69.62	0.828	82.8	56.9	68.792
																				L30	69.82	0.903	82.8	65.8	68.917
																				L29	70.07	0.944	82.8	80.7	69.126
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.33	1.0	-0.061	1.53	67.162	66.129	L325	67.35	0.188				
																				L325	67.35	1.177	72.5	3.1	66.173
																				L326	67.53	1.133	72.5	18.8	66.397
																				L327	67.79	1.278	72.5	26.9	66.512
																				L328	67.99	1.171	72.5	48.4	66.819
																				B614SD	68.21	1.069	72.5	71.0	67.141
																				L333	67.98	0.839	72.5	71.0	67.141
																				L332	67.91	0.896	72.5	62.1	67.014
																				L331	67.79	1.045	72.5	43.2	66.745
																				L330	67.63	1.002	72.5	35.0	66.628
																				L329	67.47	1.113	72.5	16.0	66.357
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.08	0.33	1.0	0.024	1.55	66.129	65.842	L324	67.08	0.951				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.20	0.38	0.7	-0.131	1.58	65.809	64.582	L319	65.72	-0.089				
																				L319	65.72	0.803	77.0	21.0	64.917
																				L320	66.05	0.826	77.0	40.3	65.224
																				L321	66.39	1.038	77.0	48.3	65.352
																				L322	66.71	1.064	77.0	66.8	65.646
																				L323	66.89	1.196	77.0	69.8	65.694
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.00	0.49	0.6	-0.265	1.57	63.746	63.068	L123	64.76	1.014				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.97	0.03	0.4	-0.174	1.53	66.087	65.706	B601SD	66.46	0.373				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.22	0.07	0.3	-0.276	1.55	65.604	65.210	B604SD	66.07	0.466				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.22	0.07	0.3	-0.277	1.55	65.180	64.892	L296	65.77	0.590				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.40	1.43	0.3	-0.941	1.77	72.142	71.774	B80L1	73.88	1.738				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.43	1.48	0.3	-0.934	1.78	70.565	70.206	B87SD	72.44	1.875				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.48	1.53	0.3	-0.927	1.72	69.415	69.016	B85L1	71.32	1.905				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.52	1.64	0.3	-0.906	1.72	69.011	68.606	L51	71.02	2.009				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.74	4.72	0.6	-0.850	1.70	67.700	67.426	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.73	5.06	0.3	-1.192	1.67	63.498	62.453	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.67	5.21	0.3	-1.166	1.67	61.993	61.497	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.79	7.49	0.5	-0.307	1.67	61.497	61.222	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.24	8.33	N/A	N/A	1.67	61.222	60.210	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.29	0.21	0.6	-0.192	1.53	59.850	59.517	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.310	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.03	1.82	0.3	-0.916	1.55	59.191	58.969	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.98	0.49	0.6	-0.263	1.57	62.643	62.305	L45	63.24	0.597				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.06	0.22	0.6	-0.162	1.62	66.813	66.614	B51L1	68.41	1.597				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	1.94	0.85	0.3	-0.882	1.77	75.003	74.845	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.17	0.25	0.5	-0.308	1.53	53.721	53.721	L30	58.92	5.199				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.69	0.01	0.2	-0.208	1.53	72.052	71.756	B103L8	72.87	0.818				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.75	0.28	0.7	0.029	1.63	68.416	67.996	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.091	1.57	65.819	65.711	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.53	65.819	65.809	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.07	-0.01	0.0	-0.427	1.77	49.715	49.714	N/A	N/A	N/A				

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	3.29	5.59	N/A	N/A	2.90	49.714	48.500	N/A	N/A	N/A			
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.40	0.58	0.7	-0.242	1.58	60.279	60.067	L23	61.85	1.571			
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552			
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.02	0.29	1.1	0.040	1.58	69.456	69.208	B84L1	69.71	0.254			
																			B84L1	69.71	0.452	83.9	16.8	69.258
																			B84L4	69.71	0.389	83.9	38.3	69.321
																			B83L1	70.27	0.929	83.9	45.0	69.341
																			B83L3	70.27	0.885	83.9	60.0	69.385
																			B82L1	70.96	1.555	83.9	66.6	69.405
																			B82L4	70.96	1.510	83.9	81.9	69.450
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.90	0.06	1.0	-0.011	1.52	69.609	69.486	B96L4	70.07	0.461			
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.75	0.32	0.8	-0.098	1.55	71.863	71.083	L52	72.19	0.327			
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.28	0.9	-0.125	1.53	72.681	71.863	L56	72.93	0.249			
																			L56	72.93	0.956	64.8	8.8	71.974
																			B73SD	73.17	1.034	64.8	21.6	72.136
																			L57	73.23	0.856	64.8	40.5	72.374
																			L58	73.36	0.813	64.8	54.2	72.547
																			L60	73.51	0.879	64.8	60.8	72.631
																			L61	73.43	1.007	64.8	44.4	72.423
																			L62	73.37	1.141	64.8	29.0	72.229
																			L63	73.28	1.228	64.8	15.0	72.052
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.22	0.02	0.2	-0.217	1.53	73.479	72.681	L59	73.54	0.061			
																			L59	73.54	0.819	44.4	2.2	72.721
																			B72L1	73.92	1.000	44.4	13.3	72.920
																			B72L2	73.92	0.833	44.4	22.6	73.087
																			B71L1	74.10	0.862	44.4	31.0	73.238
																			B66L4	74.39	1.062	44.4	36.0	73.328
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.42	0.02	0.2	-0.217	1.53	74.419	73.509	B66L1	73.99	0.903	44.4	22.6	73.087
																			B71L4	74.50	0.081			
																			B71L4	74.50	0.833	45.4	7.9	73.667
																			B70L1	74.89	1.064	45.4	15.8	73.826
																			B70L2	74.89	0.876	45.4	25.2	74.014
																			B69L1	75.49	1.312	45.4	33.4	74.178
																			B69L2	75.49	1.111	45.4	43.4	74.379
																			B68L1	76.39	2.011	45.4	43.4	74.379
																			B67L4	75.19	1.012	45.4	33.4	74.178
80300	80301	65.336	64.940	450	36.0	1.1	0.013	66.728	65.751	1.880	0.299	2.13	0.29	1.0	-0.094	1.57	65.692	65.295	N/A	N/A	N/A			
901	902	69.073	67.903	300	65.0	1.8	0.013	71.873	70.716	1.835	0.130	1.19	0.01	0.1	-0.235	1.52	69.138	67.982	L13	69.13	-0.008			
																			L13	69.13	1.006	65.0	8.0	68.124
																			L12	69.49	1.154	65.0	19.9	68.336
																			L11	69.68	1.051	65.0	36.4	68.629
																			L10	69.81	0.992	65.0	47.0	68.818
																			L9	69.81	0.708	65.0	63.0	69.102
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.85	0.04	0.2	-0.201	1.53	67.982	65.658	L18	66.92	-1.062			
																			L18	66.92	1.027	72.3	7.3	65.893
																			L17	67.35	0.940	72.3	23.4	66.410
																			L16	67.80	1.033	72.3	34.5	66.767
																			L15	68.21	0.913	72.3	51.0	67.297
																			L14	68.67	0.977	72.3	63.3	67.693

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
903 705w	1006 709	65.503	65.287	300	18.0	1.2	0.013	68.393	65.660	1.499	0.106	1.15	0.04	0.3	-0.157	1.53	65.646	65.410	N/A	N/A	N/A				
		67.661	66.113	375	86.0	1.8	0.013	71.209	68.928	2.130	0.235	1.99	0.09	0.4	-0.212	1.58	67.824	66.276	L24	67.63	-0.194				
																				L24	67.63	1.224	86.0	7.2	66.406
																				L25	68.23	1.572	86.0	21.2	66.658
																				L26	68.95	2.013	86.0	36.7	66.937
																		L27	69.33	2.147	86.0	50.4	67.183		
																		L28	69.33	1.843	86.0	67.3	67.487		
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.41	1.18	0.8	-0.340	1.63	68.365	67.939	L35	69.61	1.245				
																		L35	69.61	1.324	103.5	84.3	68.286		
																		L36	70.01	1.775	103.5	71.8	68.235		
																		L37	70.32	2.134	103.5	59.9	68.186		
																		L38	70.49	2.365	103.5	45.3	68.125		
																		L39	70.49	2.401	103.5	36.4	68.089		
																		L40	70.36	2.328	103.5	22.5	68.032		
																		L46	70.51	2.474	103.5	23.6	68.036		
																		L45	70.56	2.466	103.5	37.7	68.094		
																		L44	70.58	2.450	103.5	46.4	68.130		
																		L43	70.32	2.130	103.5	61.0	68.190		
																		L42	70.06	1.823	103.5	72.5	68.237		
																		L41	69.67	1.379	103.5	85.4	68.291		
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.247	84	80.14	-0.092				
																		79	81.31	1.129	74.0	72.1	80.181		
																		80	81.20	1.405	74.0	57.7	79.795		
																		81	80.82	1.374	74.0	44.7	79.446		
																		82	80.66	1.600	74.0	30.3	79.060		
																		83	80.27	1.503	74.0	19.4	78.767		
																		84	80.14	1.759	74.0	5.0	78.381		
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.148	77	81.27	1.038				
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.61	0.01	0.2	-0.197	1.53	78.521	78.367	87	79.42	0.899				
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.62	0.02	0.1	-0.335	1.53	78.247	78.053	41	79.36	1.113				
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	0.96	0.05	0.2	-0.301	1.53	78.053	77.704	34	78.97	0.917				
																		34	78.97	1.227	88.0	9.9	77.743		
																		35	79.03	1.230	88.0	24.3	77.800		
																		36	79.08	1.245	88.0	33.1	77.835		
																		37	79.14	1.248	88.0	4			

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.736	72.5	57.9	80.034
																				69	80.92	0.796	72.5	69.4	80.124
																				71	80.32	0.664	72.5	9.7	79.656
																				72	80.46	0.702	72.5	22.7	79.758
																				73	80.57	0.699	72.5	37.1	79.871
																				74	80.69	0.750	72.5	45.9	79.940
																				75	80.82	0.768	72.5	60.3	80.052
																				76	81.20	1.070	72.5	70.2	80.130
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.079	1.53	79.580	78.719	59	79.58	0.000				
																				59	79.58	0.723	76.5	12.3	78.857
																				60	79.72	0.700	76.5	26.7	79.020
																				61	79.86	0.694	76.5	39.7	79.166
																				62	80.00	0.672	76.5	54.1	79.328
																				63	80.12	0.645	76.5	67.2	79.475
																				70	80.18	0.652	76.5	71.9	79.528
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.12	0.26	0.6	-0.238	1.55	78.618	77.704	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.27	0.52	0.8	-0.166	1.55	77.704	75.987	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.40	0.05	0.5	-0.140	1.53	77.612	76.726	90-2	77.72	0.108				
																				88-1	78.32	1.077	88.5	51.6	77.243
																				88-4	78.32	0.865	88.5	72.8	77.455
																				89-1	78.00	1.041	88.5	23.3	76.959
																				89-4	78.00	0.828	88.5	44.5	77.172
																				90-2	77.72	0.968	88.5	2.6	76.752
																				90-4	77.72	0.827	88.5	16.7	76.893
																				96-1	78.46	1.128	88.5	60.5	77.332
																				96-5	78.46	0.879	88.5	85.4	77.581
																				97-1	78.08	1.028	88.5	32.6	77.052
																				97-4	78.08	0.815	88.5	53.8	77.265
																				98-2	77.80	1.016	88.5	5.8	76.784
																				98-5	77.80	0.814	88.5	26.0	76.986
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.254	1.53	76.613	75.982	100-1	77.19	0.577				
																				100-1	77.19	1.057	75.0	18.0	76.133
																				100-4	77.19	0.878	75.0	39.2	76.312
																				90-1	77.72	1.146	75.0	70.4	76.574
																				91-1	77.47	1.181	75.0	36.5	76.289
																				91-5	77.47	0.951	75.0	63.8	76.519
																				92-1	77.33	1.278	75.0	8.3	76.052
																				92-4	77.33	1.100	75.0	29.5	76.230
																				98-1	77.80	1.198	75.0	73.7	76.602
																				99-1	77.47	1.103	75.0	45.8	76.367
																				99-4	77.47	0.924	75.0	67.0	76.546
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.74	0.07	0.3	-0.227	1.53	77.891	75.982	101-1	77.24	-0.651				
																				102	77.52	0.920	119.0	38.5	76.600
																				102	77.52	0.776	119.0	47.5	76.744
																				101-1	77.24	0.738	119.0	32.4	76.502
																				101-4	77.24	1.078	119.0	11.2	76.162
																				103-1	78.08	0.890	119.0	75.3	77.190
																				103-4	78.08	1.230	119.0	54.1	76.850
																				104-1	78.52	0.985	119.0	96.8	77.535
																				104-3	78.52	1.227	119.0	81.7	77.293

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				105-1	78.53	0.661	119.0	117.6	77.869
																				105-3	78.53	0.889	119.0	103.4	77.641
																				93-1	77.74	1.155	119.0	37.6	76.585
																				93-5	77.74	1.591	119.0	10.4	76.149
																				94-1	77.88	0.737	119.0	72.4	77.143
																				94-5	77.88	1.175	119.0	45.1	76.705
																				95-1	78.67	0.975	119.0	106.8	77.695
																				95-5	78.67	1.413	119.0	79.5	77.257
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.01	0.02	0.1	-0.276	1.55	77.891	76.973	25	78.18	0.289				
																				17	78.54	1.362	114.5	25.6	77.178
																				18	78.54	1.306	114.5	32.6	77.234
																				19	78.59	1.087	114.5	66.1	77.503
																				20	78.59	1.527	114.5	11.2	77.063
																				21	78.58	0.962	114.5	80.5	77.618
																				22	78.67	0.982	114.5	89.2	77.688
																				23	78.75	1.468	114.5	38.6	77.282
																				24	78.75	1.352	114.5	53.0	77.398
																				25	78.18	1.179	114.5	3.5	77.001
																				26	78.23	1.170	114.5	10.8	77.060
																				27	78.29	1.115	114.5	25.2	77.175
																				28	78.34	0.536	114.5	103.6	77.804
																				29	78.40	0.952	114.5	59.3	77.448
																				30	78.45	1.204	114.5	34.0	77.246
31	78.51	1.149	114.5	48.4	77.361																				
32	78.56	0.996	114.5	73.7	77.564																				
33	78.56	0.926	114.5	82.4	77.634																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.53	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.02	0.7	-0.172	1.57	75.982	75.303	N/A	N/A	N/A				
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.17	0.09	0.5	-0.232	1.77	75.676	75.331	96-1	76.43	0.754				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.35	1.11	0.8	-0.280	1.62	75.295	74.874	100-4	76.17	0.875				
																				98	76.29	1.208	78.0	38.6	75.082
																				98	76.29	1.256	78.0	29.6	75.034
																				100-4	76.17	1.288	78.0	1.4	74.882
																				97-1	76.30	1.183	78.0	45.0	75.117
																				97-4	76.30	1.069	78.0	66.2	75.231
																				99-1	76.23	1.312	78.0	8.1	74.918
																				99-3	76.23	1.231	78.0	23.2	74.999
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.79	0.06	0.4	-0.164	1.63	74.874	73.211	113-2	74.43	-0.444				
																				114	74.86	1.305	86.5	17.9	73.555
																				114	74.86	1.132	86.5	26.9	73.728
																				102-1	75.69	1.431	86.5	54.5	74.259
																				102-4	75.69	1.024	86.5	75.7	74.666
																				103-1	75.32	1.596	86.5	26.7	73.724
																				103-4	75.32	1.188	86.5	47.9	74.132
																				104-1	74.57	1.265	86.5	4.9	73.305
																				104-3	74.57	0.974	86.5	20.0	73.596
																				113-2	74.43	1.134	86.5	4.4	73.296
																				113-3	74.43	0.998	86.5	11.5	73.432
																				115-1	75.54	1.689	86.5	33.3	73.851
115-3	75.54	1.398	86.5	48.4	74.142																				

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				116-1	75.93	1.660	86.5	55.1	74.270																				
																				116-4	75.93	1.252	86.5	76.3	74.678																				
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.23	1.14	0.7	-0.208	1.63	74.874	73.922	48	75.25	0.376																								
																				48	75.25	1.275	88.5	4.9	73.975																				
																				49	75.59	1.460	88.5	19.3	74.130																				
																				50	76.24	1.962	88.5	33.1	74.278																				
																				100-1	76.17	1.509	88.5	68.7	74.661																				
																				100-3	76.17	1.357	88.5	82.8	74.813																				
																				101-2	76.39	1.886	88.5	54.1	74.504																				
																				101-3	76.39	1.800	88.5	62.1	74.590																				
																				518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.40	0.11	0.6	-0.120	1.63	73.211	70.668	108-1	71.98	-1.231				
																																								106	73.27	0.739	87.5	64.1	72.531
																																								106	73.27	1.001	87.5	55.1	72.269
																																								112	73.88	1.227	87.5	68.3	72.653
																																								112	73.88	0.965	87.5	77.3	72.915
105-1	73.98	1.263	87.5	70.5	72.717																																								
105-3	73.98	0.824	87.5	85.6	73.156																																								
107-1	72.82	1.350	87.5	27.6	71.470																																								
107-4	72.82	0.734	87.5	48.8	72.086																																								
108-1	71.98	1.141	87.5	5.9	70.839																																								
108-3	71.98	0.702	87.5	21.0	71.278																																								
109-1	72.10	1.324	87.5	3.7	70.776																																								
109-3	72.10	0.886	87.5	18.8	71.214																																								
110-1	72.62	1.225	87.5	25.0	71.395																																								
110-3	72.62	0.787	87.5	40.1	71.833																																								
111-1	73.30	1.286	87.5	46.3	72.014																																								
111-3	73.30	0.833	87.5	61.9	72.467																																								
113-1	74.43	1.329	87.5	83.7	73.101																																								
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.87	0.43	0.4	-0.280	1.63	70.452	70.034	22	71.62	1.168																								
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.54	0.60	0.5	-0.252	1.63	69.486	66.638	15	67.95	-1.536																								
																				15	67.95	1.115	79.5	5.5	66.835																				
																				16	68.22	0.765	79.5	22.8	67.455																				
																				17	68.77	1.032	79.5	30.7	67.738																				
																				18	69.45	1.196	79.5	45.1	68.254																				
																				19	70.14	1.421	79.5	58.1	68.719																				
																				20	70.77	1.535	79.5	72.5	69.235																				
																				21	71.17	1.770	79.5	77.1	69.400																				
																				521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.51	0.02	0.1	-0.300	1.55	76.921	76.577	15	78.33	1.409				
																				522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.56	0.07	0.1	-0.351	1.53	76.531	73.233	9	75.24	-1.291				
																																								9	75.24	1.566	69.5	9.3	73.674
																																								10	75.66	1.459	69.5	20.4	74.201
																																								11	76.22	1.336	69.5	34.8	74.884
12	76.80	1.498	69.5	43.6	75.302																																								
13	77.37	1.385	69.5	58.0	75.985																																								
																				14	77.72	1.379	69.5	65.5	76.341																				
																				523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.52	0.07	0.3	-0.313	1.53	73.233	73.222	7	75.09	1.857				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.93	0.18	0.5	-0.307	1.55	73.222	72.983	5	74.99	1.768																								
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	4.99	1.35	0.4	-0.503	1.62	72.357	70.255	32	71.51	-0.847																								
																				32	71.51	1.178	60.0	2.2	70.332																				
																				33	72.20	1.609	60.0	9.6	70.591																				

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				34	72.90	1.902	60.0	21.2	70.998
																				35	73.59	2.186	60.0	32.8	71.404
																				36	74.30	2.391	60.0	47.2	71.909
																				42	71.67	1.194	60.0	6.3	70.476
																				43	72.31	1.687	60.0	10.5	70.623
																				44	73.07	1.943	60.0	24.9	71.127
																				45	73.65	2.277	60.0	31.9	71.373
																				46	74.31	2.433	60.0	46.3	71.877
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.56	1.0	-0.160	1.63	67.274	66.778	13	67.89	0.616				
																				11	67.97	1.128	65.0	8.4	66.842
																				12	67.91	0.953	65.0	23.4	66.957
																				13	67.89	0.866	65.0	32.2	67.024
																				14	67.89	0.756	65.0	46.6	67.134
																				23	68.16	1.234	65.0	19.4	66.926
																				24	68.23	1.196	65.0	33.6	67.034
																				25	68.23	1.091	65.0	47.3	67.139
																				26	68.28	1.053	65.0	58.9	67.227
																				37	68.30	1.037	65.0	63.5	67.263
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.65	2.17	0.8	-0.278	1.63	66.638	65.723	7	66.89	0.252				
																				7	66.89	1.134	39.0	1.4	65.756
																				8	67.37	1.361	39.0	12.2	66.009
																				9	67.82	1.536	39.0	23.9	66.284
																				10	67.97	1.372	39.0	37.3	66.598
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.25	2.17	0.6	-0.339	1.63	65.374	64.689	6	66.10	0.726				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.20	0.6	-0.343	1.63	63.951	62.124	1	63.88	-0.071				
																				1	63.88	1.487	64.5	9.5	62.393
																				2	63.92	1.139	64.5	23.2	62.781
																				3	64.39	1.280	64.5	34.8	63.110
																				4	64.86	1.374	64.5	48.1	63.486
																				5	65.44	1.591	64.5	60.9	63.849
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.84	2.20	1.0	0.088	1.63	62.124	61.958	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.02	2.27	1.0	0.053	1.62	61.958	61.497	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.58	0.03	0.3	-0.196	1.53	78.999	77.251	61	78.31	-0.689				
																				61	78.31	0.951	92.0	5.7	77.359
																				62	78.72	1.087	92.0	20.1	77.633
																				63	78.74	0.847	92.0	33.8	77.893
																				64	79.82	1.119	92.0	76.3	78.701
																				64	79.82	1.275	92.0	68.1	78.545
																				65	79.96	1.134	92.0	82.9	78.826
																				65	79.96	1.225	92.0	78.1	78.735
																				66	80.11	1.219	92.0	86.3	78.891
																				66	80.11	1.252	92.0	84.6	78.858
																				67	80.11	1.143	92.0	90.3	78.967
																				67	80.11	1.181	92.0	88.3	78.929
																				68	79.92	0.942	92.0	90.9	78.978
																				68	79.92	0.921	92.0	92.0	78.999
																				69	79.99	1.012	92.0	90.9	78.978
																				69	79.99	1.061	92.0	88.3	78.929
																				72	78.57	1.024	92.0	15.5	77.546
																				72	78.57	1.186	92.0	7.0	77.384

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL																						
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m ³ /s)	Pipe Vel. (m/s)	Pipe Flow (m ³ /s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)				Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
																				70-1	79.75	1.395	92.0	58.1	78.355																			
																				70-4	79.75	0.966	92.0	80.7	78.784																			
																				71-1	79.32	1.584	92.0	25.5	77.736																			
																				71-4	79.32	1.155	92.0	48.1	78.165																			
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.39	0.10	0.3	-0.219	1.53	77.228	74.937	79	76.31	-0.918																							
																				74	77.04	1.116	77.5	33.4	75.924																			
																				74	77.04	0.864	77.5	41.9	76.176																			
																				75	76.55	1.161	77.5	15.3	75.389																			
																				75	76.55	0.906	77.5	23.9	75.644																			
																				76	77.90	0.846	77.5	71.6	77.054																			
																				76	77.90	1.098	77.5	63.1	76.802																			
																				77	77.34	0.830	77.5	53.2	76.510																			
																				77	77.34	1.082	77.5	44.7	76.258																			
																				79	76.31	1.240	77.5	4.5	75.070																			
																				73-1	77.95	1.479	77.5	51.9	76.471																			
																				73-4	77.95	0.811	77.5	74.5	77.139																			
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.10	0.4	-0.190	1.53	74.911	74.577	80-4	75.75	0.839																							
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.64	0.12	0.4	-0.209	1.53	74.507	73.529	81-3	74.96	0.453																							
																				78-2	75.03	1.463	30.5	1.2	73.567																			
																				78-3	75.03	1.280	30.5	6.9	73.750																			
																				78-4	75.03	1.020	30.5	15.0	74.010																			
																				80-1	75.75	1.625	30.5	18.6	74.125																			
																				80-3	75.75	1.281	30.5	29.3	74.469																			
																				81-3	74.96	1.312	30.5	3.7	73.648																			
																				81-4	74.96	1.059	30.5	11.6	73.901																			
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.255	1.53	73.485	72.278	82-1	74.07	0.585																							
																				59	74.11	1.482	54.5	15.8	72.628																			
																				60	74.12	1.173	54.5	30.2	72.947																			
																				78-1	75.03	1.784	54.5	43.7	73.246																			
																				81-1	74.96	1.674	54.5	45.5	73.286																			
																				81-2	74.96	1.522	54.5	52.4	73.438																			
																				82-1	74.07	1.480	54.5	14.1	72.590																			
																				82-4	74.07	0.979	54.5	36.7	73.091																			
																				538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.50	0.01	0.1	-0.240	1.68	74.646	74.615	89	75.57	0.924			
																				539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.49	0.03	0.2	-0.209	1.68	74.615	73.414	87	74.99	0.375			
																				540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.72	0.03	0.1	-0.217	1.68	73.377	72.290	N/A	N/A	N/A			
																				541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.47	0.7	-0.236	1.57	72.278	71.942	83-1	73.46	1.182			
																				543	305	70.720	70.220	1200	78.0	0.6																		

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.62	1.35	0.5	-0.411	1.62	69.048	67.274	27	68.65	-0.398				
																				27	68.65	1.237	60.0	4.7	67.413
																				28	69.07	1.231	60.0	19.1	67.839
																				29	69.63	1.587	60.0	26.0	68.043
																				30	70.23	1.762	60.0	40.4	68.468
																				31	70.87	2.195	60.0	47.4	68.675
																				38	68.95	1.247	60.0	14.5	67.703
																				39	69.64	1.512	60.0	28.9	68.128
																				40	70.34	1.954	60.0	37.6	68.386
																				41	71.03	2.301	60.0	49.2	68.729
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.16	0.33	0.7	-0.168	1.77	76.617	76.234	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.41	0.31	0.4	-0.319	1.53	71.175	70.452	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.07	0.00	0.0	0.048	1.45	68.014	68.014	9-2	68.47	0.456				
																				10-1	68.47	0.456	7.0	3.5	68.014
																				10-2	68.47	0.456	7.0	2.8	68.014
																				11-1	68.62	0.606	7.0	5.3	68.014
																				11-2	68.62	0.606	7.0	5.3	68.014
																				12-2	68.54	0.526	7.0	1.7	68.014
																				9-2	68.50	0.486	7.0	2.4	68.014
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.41	0.10	1.1	0.103	1.60	68.014	67.689	6-1	68.23	0.216				
																				12-1	68.54	0.552	32.5	29.9	67.988
																				13-1	68.43	0.613	32.5	12.8	67.817
																				13-2	68.43	0.529	32.5	21.2	67.901
																				14-2	68.42	0.704	32.5	2.7	67.716
																				6-1	68.23	0.455	32.5	8.6	67.775
																				6-2	68.23	0.499	32.5	4.2	67.731
																				7-1	68.28	0.485	32.5	10.6	67.795
																				7-2	68.28	0.494	32.5	9.7	67.786
																				8-1	68.36	0.534	32.5	13.7	67.826
																				8-2	68.36	0.454	32.5	21.7	67.906
																				9-1	68.50	0.544	32.5	26.7	67.956
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.054	1.57	67.689	67.256	17-1	68.23	0.541				
																				14-1	68.42	0.762	77.0	71.4	67.658
																				15-1	68.42	0.867	77.0	52.9	67.553
																				15-2	68.42	0.819	77.0	61.3	67.601
																				16-1	68.29	0.841	77.0	34.4	67.449
																				16-2	68.29	0.793	77.0	42.8	67.497
																				17-1	68.23	0.889	77.0	15.2	67.341
																				17-2	68.23	0.841	77.0	23.6	67.389
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.57	66.691	65.528	4-1	66.76	0.069				
																				4-1	66.76	1.196	51.5	1.6	65.564
																				4-2	66.76	1.006	51.5	10.0	65.754
																				5-1	67.15	1.123	51.5	22.1	66.027
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.898	51.5	8.6	65.722
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549
Chan1B	Chan1B.1	49.260	49.220	N/A	30.0	N/A	N/A	N/A	N/A	N/A	N/A	0.56	7.31	N/A	N/A	1.80	53.648	53.648	N/A	N/A	N/A				
Chan1B.4	136	48.990	48.960	N/A	27.7	N/A	N/A	N/A	N/A	N/A	N/A	1.18	6.72	N/A	N/A	2.22	50.693	50.518	N/A	N/A	N/A				

Table C-1C: Pipe Data and Hydraulic Simulation Results for the July 1st, 1979 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.38	4.25	N/A	N/A	2.08	51.432	50.693	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.48	N/A	N/A	2.22	51.432	50.693	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.55	6.80	N/A	N/A	2.08	53.591	53.590	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.60	2.84	N/A	N/A	1.37	53.648	53.591	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	5.83	N/A	N/A	2.00	53.647	53.591	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	0.34	3.75	N/A	N/A	2.67	53.649	53.648	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.89	1.58	N/A	N/A	3.68	53.662	53.649	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.46	N/A	N/A	2.52	53.662	53.649	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.41	3.28	N/A	N/A	1.60	53.663	53.662	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.17	2.07	N/A	N/A	1.50	53.677	53.663	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.02	N/A	N/A	1.62	53.677	53.663	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.55	5.58	N/A	N/A	1.62	53.677	53.677	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.62	2.87	N/A	N/A	1.48	53.691	53.677	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	4.51	N/A	N/A	1.67	53.691	53.677	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.73	8.32	N/A	N/A	1.68	57.838	57.205	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	8.49	7.42	N/A	N/A	1.83	56.300	53.750	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.70	8.33	N/A	N/A	1.68	59.472	58.306	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.80	8.32	N/A	N/A	1.68	57.205	56.577	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.61	6.73	N/A	N/A	2.20	51.478	51.432	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	3.77	6.73	N/A	N/A	2.20	53.590	51.478	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	53.590	51.478	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.10	8.33	N/A	N/A	1.68	58.306	57.838	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.78	7.50	N/A	N/A	1.78	56.309	56.300	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.68	8.07	N/A	N/A	1.70	56.395	56.309	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.06	8.30	N/A	N/A	1.70	56.577	56.395	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.16	8.33	N/A	N/A	1.68	60.209	59.472	N/A	N/A	N/A			

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.118 Interpolated HGL elevation

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.86	0.06	0.3	-0.184	1.93	62.784	60.110	B92L1	61.17	-1.614																							
																				B92L1	61.17	0.995	90.9	2.2	60.175																			
																				B93	61.89	1.459	90.9	10.9	60.431																			
																				B94	62.24	1.142	90.9	33.6	61.098																			
																				B95	62.74	0.997	90.9	55.5	61.743																			
																				B96	63.53	1.202	90.9	75.4	62.328																			
																				B97	63.52	1.230	90.9	74.1	62.290																			
																				B98	62.59	1.071	90.9	47.9	61.519																			
																				B99	61.56	1.312	90.9	4.7	60.248																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.21	0.24	1.3	0.145	1.93	60.110	59.786	B92L3	61.17	1.060			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.05	0.27	0.9	-0.088	1.93	59.697	58.348	L88	60.83	1.133			
																																								L88	60.83	2.324	45.2	5.3
L89	61.05	2.051	45.2	21.8	58.999																																							
L90	60.93	1.681	45.2	30.2	59.249																																							
L91	60.90	1.236	45.2	44.1	59.664																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.16	0.28	0.8	-0.087	1.93	58.348	58.009	L85	58.99	0.642																							
																				L85	58.99	0.938	34.0	4.3	58.052																			
																				L86	59.79	1.644	34.0	13.7	58.146																			
																				L87	60.00	1.696	34.0	29.6	58.304																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.29	0.63	1.0	0.050	1.95	58.009	57.232	L81	58.16	0.151			
																				L81	58.16	0.790	66.9	11.9	57.370																			
																				L80	58.39	1.124	66.9	2.9	57.266																			
																				L82	58.22	0.681	66.9	26.4	57.539																			
																				L83	58.40	0.678	66.9	42.2	57.722																			
																				L84	58.95	1.100	66.9	53.2	57.850																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.88	0.63	1.1	-0.057	1.97	57.232	57.041	L79	58.44	1.208																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.45	0.63	1.0	-0.192	1.97	57.017	56.930	L74	58.91	1.893																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.51	0.64	1.0	-0.203	1.97	56.930	56.756	L73	59.22	2.290																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.48	0.17	0.6	-0.157	1.95	60.714	58.009	L75	59.26	-1.454																							
																				L75	59.26	0.844	116.3	17.5	58.416																			
																				L76	59.55	0.678	116.3	37.1	58.872																			
																				B103SD	60.07	0.742	116.3	56.7	59.328																			
																				B104SD	60.75	0.980	116.3	75.7	59.770																			
																				B105SD	61.36	1.148	116.3	94.7	60.212																			
																				B106SD	62.05	1.394	116.3	113.8	60.656																			
																				B102L1	61.93	1.281	116.3	113.5	60.649																			
																				B102L4	61.55	1.427	116.3	90.9	60.123																			
																				B101L1	60.92	1.092	116.3	78.2	59.828																			
																				B101L4	60.52	1.218	116.3	55.6	59.302																			
B100L1	59.97	0.910	116.3	45.2	59.060																																							
B100L4	59.58	1.045	116.3	22.6	58.535																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.70	0.01	0.1	-0.255	1.93	63.201	62.732	L60	63.78	0.579																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.73	0.03	0.2	-0.214	1.95	62.732	60.898	L66	62.23	-0.502																							
																				L66	62.23	1.304	65.6	1.0	60.926																			
																				L65	62.47	1.155	65.6	14.9	61.315																			
																				L64	62.67	1.042	65.6	26.1	61.628																			
																				L63	63.00	0.939	65.6	41.6	62.061																			
																				L62	63.31	1.073	65.6	47.9	62.237																			
																				L61	63.58	1.035	65.6	58.9	62.545																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.82	0.07	0.3	-0.239	1.93	60.873	59.856	B108L4	61.64	0.767																							

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)				
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.27	2.14	0.3	-0.888	1.97	58.147	57.718	L71	59.63	1.483							
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.83	2.14	0.3	-0.754	1.98	56.422	56.290	N/A	N/A	N/A							
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.25	0.09	0.0	-1.060	1.95	65.318	64.970	N/A	N/A	N/A							
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.40	0.13	0.0	-1.035	1.97	63.997	63.172	N/A	N/A	N/A							
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.26	1.12	0.2	-1.013	1.95	62.697	62.402	N/A	N/A	N/A							
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.32	1.20	0.2	-0.996	1.97	61.124	60.700	N/A	N/A	N/A							
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.31	1.55	0.3	-0.888	1.97	59.812	59.464	N/A	N/A	N/A							
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.401	B112L4	64.20	0.843							
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.68	0.30	1.0	0.456	1.97	62.401	60.489	B109L4	61.76	-0.641							
																				B109L4	61.76	0.502	62.4	25.1	61.258			
																				B109L1	61.76	0.505	62.4	25.0	61.255			
																				B110SD	62.44	0.636	62.4	42.9	61.804			
																				B111SD	63.15	0.862	62.4	58.7	62.288			
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.07	0.70	0.7	-0.262	1.98	59.111	58.139	L18	59.42	0.309							
																				L18	59.42				1.203	64.4	5.2	58.217
																				L19	60.08				1.693	64.4	16.4	58.387
																				L20	60.56				1.935	64.4	32.2	58.625
																				L21	60.98				2.209	64.4	41.9	58.771
																				L22	61.39				2.383	64.4	57.5	59.007
																				L24	61.34				2.470	64.4	48.4	58.870
																				L35	61.06				2.429	64.4	32.6	58.631
																				L26	60.61				2.153	64.4	21.1	58.457
																				L27	59.90	1.678	64.4	5.5	58.222			
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.15	0.70	0.7	-0.271	2.00	56.934	55.971	L14	57.61	0.676							
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.98	0.76	0.7	-0.228	2.00	54.817	53.920	L9	55.68	0.863							
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.51	0.76	0.7	-0.127	2.00	53.920	53.603	N/A	N/A	N/A							
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.47	6.67	0.7	0.066	2.02	53.282	53.208	N/A	N/A	N/A							
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	1.50	6.65	0.7	0.106	2.02	53.208	53.206	N/A	N/A	N/A							
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	1.44	6.60	0.7	0.218	2.02	53.206	53.205	N/A	N/A	N/A							
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.130	2.119	9.588	1.41	6.55	0.7	0.439	2.02	53.205	53.203	N/A	N/A	N/A							
Chan1A	Chan1A.1	50.130	49.970	N/A	105.0	N/A	N/A	N/A	N/A	N/A	N/A	0.67	6.71	N/A	N/A	2.03	53.203	53.203	N/A	N/A	N/A							
136	137	48.960	48.919	2550	43.5	0.1	0.013	54.450	54.449	2.054	10.492	1.99	6.05	0.6	-1.083	2.37	50.427	50.372	N/A	N/A	N/A							
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.04	6.05	0.6	-1.077	2.38	50.372	49.882	N/A	N/A	N/A							
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	2.67	6.05	0.3	-1.903	2.38	49.653	49.627	N/A	N/A	N/A							
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	0.00	N/A	N/A	0.00	49.653	49.627	N/A	N/A	N/A							
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	-0.05	-0.02	0.0	-0.333	2.17	49.627	49.627	N/A	N/A	N/A							
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	3.06	0.53	0.6	-0.245	1.98	60.428	59.317	L52	60.19	-0.238							
																				L52	60.19	0.806	61.7	3.7	59.384			
																				L51	60.63	1.124	61.7	10.5	59.506			
																				L50	61.53	1.694	61.7	28.8	59.836			
																				L49	62.36	2.389	61.7	36.3	59.971			
																				L48	62.74	2.424	61.7	55.5	60.316			
																				L47	63.79	3.389	61.7	60.2	60.401			
																				L44	62.69	2.559	61.7	45.2	60.131			
																				L43	61.84	1.842	61.7	37.8	59.998			
																				L42	61.29	1.636	61.7	18.7	59.654			
																				L41	60.68	1.160	61.7	11.3	59.520			
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.80	0.8	-0.119	1.98	57.422	56.089	L36	57.89	0.468							
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.33	1.71	0.9	-0.220	2.02	62.984	62.734	N/A	N/A	N/A							
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.38	1.73	0.9	-0.221	2.02	61.146	60.114	N/A	N/A	N/A							

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.53	4.74	0.5	-0.648	2.02	53.430	53.375	L3	58.26	4.830				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.45	5.94	0.6	-0.475	2.02	53.375	53.282	L8	55.21	1.835				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.65	0.23	0.8	-0.103	2.02	69.937	67.934	B54L4	69.35	-0.587				
																				B54L4	69.35	1.303	83.1	4.7	68.047
																				B54L1	69.35	0.852	83.1	23.4	68.498
																				B56L4	70.19	1.526	83.1	30.3	68.664
																				B56L1	70.19	1.015	83.1	51.5	69.175
																				B57SD	70.63	1.098	83.1	66.3	69.532
																				B43L4	71.22	1.517	83.1	73.4	69.703
																				B58L4	70.88	1.112	83.1	76.1	69.768
																				B58L1	70.88	1.625	83.1	54.8	69.255
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.32	0.22	0.8	-0.060	2.02	67.928	67.586	B53L3	68.90	0.972				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.35	0.64	1.1	0.028	2.00	66.689	65.500	B47L4	66.63	-0.059				
																				B47L4	66.63	0.960	119.4	17.1	65.670
																				B47L1	66.63	0.749	119.4	38.3	65.881
																				B48L4	67.21	1.261	119.4	45.1	65.949
																				B48L1	67.21	1.050	119.4	66.3	66.160
																				B49L4	67.77	1.544	119.4	72.9	66.226
																				B49L1	67.77	1.333	119.4	94.1	66.437
																				B50SD	68.07	1.482	119.4	109.3	66.588
																				B51L3	68.41	1.762	119.4	115.3	66.648
																				B59L4	68.18	1.606	119.4	107.9	66.574
																				B59L1	68.18	1.817	119.4	86.7	66.363
																				B60SD	67.97	1.675	119.4	79.8	66.295
																				B61L4	67.31	1.166	119.4	64.7	66.144
																				B61L1	67.31	1.377	119.4	43.5	65.933
																				B62L4	66.89	1.023	119.4	36.9	65.867
																				B62L1	66.89	1.234	119.4	15.7	65.656
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.88	0.79	0.9	-0.186	2.00	65.399	64.397	L41	65.57	0.171				
																				L41	65.57				1.159
																				L42	65.98	1.413	83.2	14.1	64.567
																				L43	66.07	1.359	83.2	26.1	64.711
																				L44	66.12	1.235	83.2	40.5	64.885
																				L45	66.23	1.220	83.2	50.9	65.010
																				L46	66.87	1.681	83.2	65.8	65.189
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.92	0.12	0.5	-0.159	1.95	66.163	65.399	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.19	0.77	0.5	-0.295	2.02	71.132	70.309	B102L5	72.70	1.568				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.38	0.03	0.3	-0.195	2.02	71.132	69.937	B42SD	71.19	0.058				
																				B42SD	71.19	1.106	71.4	8.8	70.084
																				B41L1	71.59	1.397	71.4	15.3	70.193
																				B41L4	71.59	1.040	71.4	36.6	70.550
																				B40L1	71.88	1.223	71.4	43.0	70.657
																				B40L3	71.88	0.971	71.4	58.1	70.909
																				B563L1	72.21	1.232	71.4	62.2	70.978
																				B45L1	71.98	1.109	71.4	55.8	70.871
																				B45L4	71.98	1.466	71.4	34.5	70.514
																				B44SD	71.47	1.073	71.4	27.5	70.397
																				B43L1	71.47	1.334	71.4	11.9	70.136
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.63	2.89	0.5	-0.812	1.98	56.290	55.872	L32	58.76	2.470				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.88	0.30	1.5	0.294	1.97	60.489	60.037	N/A	N/A	N/A				

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.21	2.90	0.5	-0.657	1.98	55.872	55.592	L11	58.85	2.978			
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	1.98	3.10	0.4	-0.918	1.98	53.649	53.430	N/A	N/A	N/A			
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.02	0.19	0.3	-0.418	1.93	54.006	53.949	L22	54.73	0.724			
																			L22	54.73	0.729	28.2	25.9	54.001
																			L21	54.73	0.726	28.2	27.4	54.004
																			L20	55.10	1.105	28.2	22.9	53.995
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.21	0.26	0.5	-0.375	1.95	53.949	53.678	L19	55.79	1.841			
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.82	0.79	0.9	-0.176	2.00	64.383	64.007	L39	65.04	0.657			
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.82	0.82	0.9	-0.162	2.00	64.007	63.655	L37	64.89	0.883			
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.56	0.98	1.0	-0.144	1.98	63.464	63.056	L34	64.28	0.816			
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.97	67.451	67.098	L339	68.56	1.109			
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	2.99	0.34	0.5	-0.250	1.98	65.519	64.335	L347	65.57	0.051			
																			L347	65.57	1.201	52.4	1.5	64.369
																			L346	66.07	1.215	52.4	23.0	64.855
																			L345	66.61	1.552	52.4	32.0	65.058
																			L344	67.15	1.762	52.4	46.6	65.388
																			3-1	66.15	1.056	52.4	33.6	65.094
																			1	65.55	0.725	52.4	21.7	64.825
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.55	0.74	0.7	-0.157	2.02	63.927	62.984	L58	64.18	0.253			
																			L58	64.18	0.874	55.0	18.8	63.306
																			L57	64.44	0.839	55.0	36.0	63.601
																			L56	64.75	0.929	55.0	48.8	63.821
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.49	1.32	0.9	-0.325	2.00	69.223	69.102	18-1	69.48	0.257			
																			18-1	69.48	0.350	80.5	18.7	69.130
																			18-2	69.48	0.337	80.5	27.1	69.143
																			19-1	69.51	0.352	80.5	37.2	69.158
																			19-2	69.51	0.339	80.5	45.6	69.171
																			20-1	69.54	0.354	80.5	55.9	69.186
																			20-2	69.54	0.341	80.5	64.4	69.199
																			21-1	69.57	0.356	80.5	74.5	69.214
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.75	0.28	1.7	0.445	2.02	69.102	68.419	N/A	N/A	N/A			
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.15	N/A	N/A	2.02	69.102	68.380	N/A	N/A	N/A			
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.65	0.79	0.5	-0.379	2.03	70.044	69.502	B92L1	70.77	0.726			
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	2.04	0.84	0.7	-0.346	2.03	69.502	69.339	B94L4	70.08	0.578			
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.59	0.85	0.6	-0.321	2.03	69.339	69.223	21-2	69.57	0.231			
																			21-2	69.57	0.342	64.0	2.7	69.228
																			22-1	69.60	0.354	64.0	12.7	69.246
																			22-2	69.60	0.339	64.0	21.2	69.261
																			23-1	69.63	0.351	64.0	31.1	69.279
																			23-2	69.63	0.336	64.0	39.4	69.294
																			24-1	69.67	0.357	64.0	49.5	69.313
																			24-2	69.67	0.342	64.0	58.0	69.328
																			B95-1	69.95	0.698	64.0	15.9	69.252
																			B95-4	69.95	0.659	64.0	37.7	69.291
																			B94-1	70.08	0.775	64.0	45.4	69.305
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.06	0.08	0.3	-0.238	1.95	68.664	66.163	B36SD	68.23	-0.434			
																			B36SD	68.23	1.684	101.9	15.6	66.546
																			B37L4	68.70	2.004	101.9	21.7	66.696
																			B37L1	68.70	1.484	101.9	42.9	67.216
																			B38L4	69.31	1.935	101.9	49.4	67.375

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				B38L1	69.31	1.414	101.9	70.6	67.896
																				B39L4	69.62	1.550	101.9	77.7	68.070
																				B39L1	69.62	1.027	101.9	99.0	68.593
																				B47L1	69.23	0.789	101.9	92.8	68.441
																				B47L4	69.23	1.349	101.9	70.0	67.881
																				B48L1	68.82	1.064	101.9	64.9	67.756
																				B48L4	68.82	1.584	101.9	43.7	67.236
																				B49SD	68.53	1.459	101.9	37.0	67.071
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.39	-0.01	-0.1	-0.243	1.95	69.529	69.630	B96L1	70.07	0.541				
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.26	1.93	0.6	-0.331	2.03	68.917	68.008	Fut. Est.	72.09	3.173				
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.06	0.05	0.3	-0.226	1.95	72.453	71.826	B107L1	72.89	0.437				
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.71	0.04	0.3	-0.115	1.97	71.826	71.817	N/A	N/A	N/A				
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.46	0.22	1.2	-0.040	2.02	71.817	71.583	N/A	N/A	N/A				
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.57	0.73	0.7	-0.133	2.02	71.572	71.179	N/A	N/A	N/A				
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.97	0.03	0.4	-0.175	1.95	72.389	71.780	B102L1	72.70	0.311				
																				B102L1	72.70	0.886	106.5	6.0	71.814
																				B102L5	72.70	0.719	106.5	35.1	71.981
																				B103L1	72.87	0.834	106.5	44.8	72.036
																				B103L4	72.87	0.714	106.5	65.8	72.156
																				B104L1	73.05	0.836	106.5	75.8	72.214
																				B104L5	73.05	0.672	106.5	104.5	72.378
																				B105L10	73.24	0.886	106.5	100.3	72.354
																				B105L6	73.24	1.044	106.5	72.7	72.196
																				B106L10	73.08	0.944	106.5	62.3	72.136
																				B106L6	73.08	1.099	106.5	35.1	71.981
																				B107L10	72.89	0.960	106.5	26.3	71.930
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.08	0.05	0.5	-0.115	1.95	71.780	71.572	B107L6	72.89	1.110				
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.53	0.78	0.6	-0.356	2.02	70.309	70.078	B100SD	72.25	1.941				
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.19	0.9	-0.113	1.97	63.153	62.630	L1	64.26	1.107				
701	702	62.175	61.555	600	77.5	0.8	0.013	66																	

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.69	0.08	0.7	-0.123	1.95	69.158	67.999	L34	69.22	0.062				
																				L34	69.22	0.966	82.8	18.2	68.254
																				L33	69.36	0.888	82.8	33.8	68.472
																				L32	69.53	0.938	82.8	42.4	68.592
																				L31	69.62	0.825	82.8	56.9	68.795
																				L30	69.82	0.900	82.8	65.8	68.920
																				L29	70.07	0.941	82.8	80.7	69.129
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.33	1.0	-0.062	1.95	67.161	66.128	L325	67.35	0.189				
																				L325	67.35	1.178	72.5	3.1	66.172
																				L326	67.53	1.134	72.5	18.8	66.396
																				L327	67.79	1.279	72.5	26.9	66.511
																				L328	67.99	1.172	72.5	48.4	66.818
																				B614SD	68.21	1.070	72.5	71.0	67.140
																				L333	67.98	0.840	72.5	71.0	67.140
																				L332	67.91	0.897	72.5	62.1	67.013
																				L331	67.79	1.046	72.5	43.2	66.744
																				L330	67.63	1.003	72.5	35.0	66.627
																				L329	67.47	1.114	72.5	16.0	66.356
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.08	0.33	1.0	0.023	1.97	66.128	65.841	L324	67.08	0.952				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.131	2.00	65.809	64.581	L319	65.72	-0.089				
																				L319	65.72	0.804	77.0	21.0	64.916
																				L320	66.05	0.826	77.0	40.3	65.224
																				L321	66.39	1.039	77.0	48.3	65.351
																				L322	66.71	1.064	77.0	66.8	65.646
																				L323	66.89	1.196	77.0	69.8	65.694
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.00	0.49	0.6	-0.266	1.98	63.745	63.067	L123	64.76	1.015				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.99	0.03	0.4	-0.170	1.95	66.091	65.709	B601SD	66.46	0.369				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.23	0.07	0.3	-0.275	1.97	65.605	65.211	B604SD	66.07	0.465				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.23	0.07	0.3	-0.275	1.97	65.182	64.893	L296	65.77	0.588				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.42	1.49	0.3	-0.927	2.03	72.156	71.786	B80L1	73.88	1.724				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.47	1.55	0.3	-0.917	2.03	70.582	70.220	B87SD	72.44	1.858				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.52	1.61	0.3	-0.910	2.05	69.432	69.033	B85L1	71.32	1.888				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.55	1.72	0.3	-0.890	2.05	69.027	68.621	L51	71.02	1.993				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.77	4.88	0.6	-0.828	2.05	67.722	67.445	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.78	5.20	0.3	-1.180	2.05	63.510	62.465	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.71	5.33	0.3	-1.156	2.05	62.003	61.507	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.82	7.59	0.5	-0.297	2.05	61.507	61.225	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.25	8.37	N/A	N/A	2.03	61.225	60.211	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.30	0.22	0.6	-0.186	1.95	59.856	59.523	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.317	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.04	1.85	0.3	-0.910	1.97	59.197	58.973	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.98	0.49	0.6	-0.263	1.98	62.643	62.304	L45	63.24	0.597				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.10	0.24	0.6	-0.113	2.02	66.862	66.689	B51L1	68.41	1.548				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	1.93	0.82	0.2	-0.889	2.03	74.996	74.836	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.17	0.26	0.5	-0.351	1.95	53.678	53.649	L30	58.92	5.242				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.69	0.01	0.2	-0.206	1.95	72.054	71.758	B103L8	72.87	0.816				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.76	0.28	0.7	0.032	2.00	68.419	67.999	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.092	1.98	65.818	65.711	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.97	65.818	65.809	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.04	-0.01	0.0	-0.515	2.23	49.627	49.627	N/A	N/A	N/A				

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL				
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)		
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	2.89	4.77	N/A	N/A	3.00	49.627	48.500	N/A	N/A	N/A					
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.41	0.59	0.7	-0.236	1.98	60.285	60.072	L23	61.85	1.565					
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552					
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.02	0.30	1.1	0.053	1.95	69.469	69.223	B84L1	69.71	0.241					
																				B84L1	69.71	0.438	83.9	16.8	69.272	
																				B84L4	69.71	0.375	83.9	38.3	69.335	
																				B83L1	70.27	0.915	83.9	45.0	69.355	
																				B83L3	70.27	0.871	83.9	60.0	69.399	
																				B82L1	70.96	1.542	83.9	66.6	69.418	
																				B82L4	70.96	1.497	83.9	81.9	69.463	
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.91	0.06	1.0	0.010	1.95	69.630	69.502	B96L4	70.07	0.440					
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.75	0.33	0.8	-0.096	1.97	71.865	71.085	L52	72.19	0.325					
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.27	0.28	0.9	-0.122	1.95	72.684	71.865	L56	72.93	0.246					
																				L56	72.93	0.954	64.8	8.8	71.976	
																				B73SD	73.17	1.032	64.8	21.6	72.138	
																				L57	73.23	0.853	64.8	40.5	72.377	
																				L58	73.36	0.810	64.8	54.2	72.550	
																				L60	73.51	0.877	64.8	60.8	72.633	
																				L61	73.43	1.004	64.8	44.4	72.426	
																				L62	73.37	1.138	64.8	29.0	72.232	
																				L63	73.28	1.225	64.8	15.0	72.055	
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.25	0.02	0.2	-0.214	1.95	73.482	72.684	L59	73.54	0.058					
																				L59	73.54		0.816	44.4	2.2	72.724
																				B72L1	73.92		0.997	44.4	13.3	72.923
																				B72L2	73.92		0.830	44.4	22.6	73.090
																				B71L1	74.10		0.859	44.4	31.0	73.241
																				B66L4	74.39		1.059	44.4	36.0	73.331
																				B66L1	73.99	0.900	44.4	22.6	73.090	
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.45	0.02	0.2	-0.214	1.95	74.422	73.512	B71L4	74.50	0.078					
																				B71L4	74.50		0.830	45.4	7.9	73.670
																				B70L1	74.89		1.			

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot	USF	Freeboard (2)	Interpolated HGL		
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m ³ /s)	Pipe Vel. (m/s)	Pipe Flow (m ³ /s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)				Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
903 705w	1006 709	65.503	65.287	300	18.0	1.2	0.013	68.393	65.660	1.499	0.106	1.17	0.04	0.4	-0.147	1.95	65.656	65.417	N/A	N/A	N/A			
		67.661	66.113	375	86.0	1.8	0.013	71.209	68.928	2.130	0.235	2.02	0.10	0.4	-0.209	1.98	67.827	66.279	L24	67.63	-0.197			
																			L24	67.63	1.221	86.0	7.2	66.409
																			L25	68.23	1.569	86.0	21.2	66.661
																			L26	68.95	2.010	86.0	36.7	66.940
																			L27	69.33	2.144	86.0	50.4	67.186
																			L28	69.33	1.840	86.0	67.3	67.490
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.42	1.21	0.8	-0.324	2.03	68.381	67.948	L35	69.61	1.229			
																			L35	69.61	1.309	103.5	84.3	68.301
																			L36	70.01	1.762	103.5	71.8	68.248
																			L37	70.32	2.121	103.5	59.9	68.199
																			L38	70.49	2.352	103.5	45.3	68.138
																			L39	70.49	2.390	103.5	36.4	68.100
																			L40	70.36	2.318	103.5	22.5	68.042
																			L46	70.51	2.463	103.5	23.6	68.047
																			L45	70.56	2.454	103.5	37.7	68.106
																			L44	70.58	2.438	103.5	46.4	68.142
																			L43	70.32	2.117	103.5	61.0	68.203
																			L42	70.06	1.809	103.5	72.5	68.251
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.254	84	80.14	-0.092			
																			79	81.31	1.129	74.0	72.1	80.181
																			80	81.20	1.404	74.0	57.7	79.796
																			81	80.82	1.371	74.0	44.7	79.449
																			82	80.66	1.596	74.0	30.3	79.064
																			83	80.27	1.497	74.0	19.4	78.773
																			84	80.14	1.752	74.0	5.0	78.388
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.154	77	81.27	1.038			
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.63	0.01	0.2	-0.190	1.95	78.528	78.372	87	79.42	0.892			
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.63	0.02	0.2	-0.328	1.95	78.254	78.055	41	79.36	1.106			
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	0.97	0.05	0.2	-0.299	1.97	78.055	77.706	34	78.97	0.915			
																			34	78.97	1.225	88.0	9.9	77.745
																			35	79.03	1.228	88.0	24.3	77.802
																			36	79.08	1.243	88.0	33.1	77.837
																			37	79.14	1.246	88.0	47.5	77.894
																			38	79.19	1.268	88.0	54.4	77.922
																			39	79.25	1.271	88.0	68.8	77.979
																			40	79.31	1.296	88.0	77.6	78.014
																			52	79.54	1.495	88.0	85.4	78.045
																			53	79.46	1.440	88.0	79.3	78.020
																			54					

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.731	72.5	57.9	80.039
																				69	80.92	0.791	72.5	69.4	80.129
																				71	80.32	0.662	72.5	9.7	79.658
																				72	80.46	0.700	72.5	22.7	79.760
																				73	80.57	0.696	72.5	37.1	79.874
																				74	80.69	0.746	72.5	45.9	79.944
																				75	80.82	0.762	72.5	60.3	80.058
																				76	81.20	1.064	72.5	70.2	80.136
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.078	1.97	79.581	78.720	59	79.58	-0.001				
																				59	79.58	0.722	76.5	12.3	78.858
																				60	79.72	0.699	76.5	26.7	79.021
																				61	79.86	0.693	76.5	39.7	79.167
																				62	80.00	0.671	76.5	54.1	79.329
																				63	80.12	0.644	76.5	67.2	79.476
																				70	80.18	0.651	76.5	71.9	79.529
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.13	0.26	0.6	-0.238	1.97	78.618	77.706	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.27	0.52	0.8	-0.164	1.98	77.706	75.988	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.41	0.06	0.6	-0.138	1.95	77.614	76.728	90-2	77.72	0.106				
																				88-1	78.32	1.075	88.5	51.6	77.245
																				88-4	78.32	0.863	88.5	72.8	77.457
																				89-1	78.00	1.039	88.5	23.3	76.961
																				89-4	78.00	0.826	88.5	44.5	77.174
																				90-2	77.72	0.966	88.5	2.6	76.754
																				90-4	77.72	0.825	88.5	16.7	76.895
																				96-1	78.46	1.126	88.5	60.5	77.334
																				96-5	78.46	0.877	88.5	85.4	77.583
																				97-1	78.08	1.026	88.5	32.6	77.054
																				97-4	78.08	0.813	88.5	53.8	77.267
																				98-2	77.80	1.014	88.5	5.8	76.786
																				98-5	77.80	0.812	88.5	26.0	76.988
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.67	0.19	0.5	-0.253	1.95	76.614	75.982	100-1	77.19	0.576				
																				100-1	77.19	1.056	75.0	18.0	76.134
																				100-4	77.19	0.878	75.0	39.2	76.312
																				90-1	77.72	1.145	75.0	70.4	76.575
																				91-1	77.47	1.180	75.0	36.5	76.290
																				91-5	77.47	0.950	75.0	63.8	76.520
																				92-1	77.33	1.278	75.0	8.3	76.052
																				92-4	77.33	1.099	75.0	29.5	76.231
																				98-1	77.80	1.197	75.0	73.7	76.603
																				99-1	77.47	1.102	75.0	45.8	76.368
																				99-4	77.47	0.923	75.0	67.0	76.547
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.75	0.07	0.3	-0.228	1.95	77.890	75.982	101-1	77.24	-0.650				
																				102	77.52	0.921	119.0	38.5	76.599
																				102	77.52	0.776	119.0	47.5	76.744
																				101-1	77.24	0.739	119.0	32.4	76.501
																				101-4	77.24	1.078	119.0	11.2	76.162
																				103-1	78.08	0.891	119.0	75.3	77.189
																				103-4	78.08	1.231	119.0	54.1	76.849
																				104-1	78.52	0.986	119.0	96.8	77.534
																				104-3	78.52	1.228	119.0	81.7	77.292

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				105-1	78.53	0.662	119.0	117.6	77.868
																				105-3	78.53	0.890	119.0	103.4	77.640
																				93-1	77.74	1.155	119.0	37.6	76.585
																				93-5	77.74	1.591	119.0	10.4	76.149
																				94-1	77.88	0.737	119.0	72.4	77.143
																				94-5	77.88	1.175	119.0	45.1	76.705
																				95-1	78.67	0.976	119.0	106.8	77.694
																				95-5	78.67	1.413	119.0	79.5	77.257
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.00	0.02	0.1	-0.277	1.95	77.890	76.973	25	78.18	0.290				
																				17	78.54	1.362	114.5	25.6	77.178
																				18	78.54	1.306	114.5	32.6	77.234
																				19	78.59	1.088	114.5	66.1	77.502
																				20	78.59	1.527	114.5	11.2	77.063
																				21	78.58	0.962	114.5	80.5	77.618
																				22	78.67	0.983	114.5	89.2	77.687
																				23	78.75	1.468	114.5	38.6	77.282
																				24	78.75	1.353	114.5	53.0	77.397
																				25	78.18	1.179	114.5	3.5	77.001
																				26	78.23	1.171	114.5	10.8	77.059
																				27	78.29	1.115	114.5	25.2	77.175
																				28	78.34	0.537	114.5	103.6	77.803
																				29	78.40	0.952	114.5	59.3	77.448
																				30	78.45	1.205	114.5	34.0	77.245
31	78.51	1.149	114.5	48.4	77.361																				
32	78.56	0.997	114.5	73.7	77.563																				
33	78.56	0.927	114.5	82.4	77.633																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	2.07	77.936	77.720	Est. Fut.	78.68	0.744				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.89	1.02	0.7	-0.172	1.98	75.982	75.303	N/A	N/A	N/A				
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.17	0.09	0.5	-0.229	2.05	75.679	75.333	96-1	76.43	0.751				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.35	1.12	0.8	-0.276	2.02	75.299	74.877	100-4	76.17	0.871				
																				98	76.29	1.204	78.0	38.6	75.086
																				98	76.29	1.253	78.0	29.6	75.037
																				100-4	76.17	1.285	78.0	1.4	74.885
																				97-1	76.30	1.180	78.0	45.0	75.120
																				97-4	76.30	1.065	78.0	66.2	75.235
																				99-1	76.23	1.309	78.0	8.1	74.921
																				99-3	76.23	1.227	78.0	23.2	75.003
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.81	0.06	0.4	-0.161	2.02	74.877	73.213	113-2	74.43	-0.447				
																				114	74.86	1.303	86.5	17.9	73.557
																				114	74.86	1.130	86.5	26.9	73.730
																				102-1	75.69	1.429	86.5	54.5	74.261
																				102-4	75.69	1.021	86.5	75.7	74.669
																				103-1	75.32	1.593	86.5	26.7	73.727
																				103-4	75.32	1.186	86.5	47.9	74.134
																				104-1	74.57	1.263	86.5	4.9	73.307
																				104-3	74.57	0.972	86.5	20.0	73.598
																				113-2	74.43	1.132	86.5	4.4	73.298
																				113-3	74.43	0.996	86.5	11.5	73.434
115-1	75.54	1.686	86.5	33.3	73.854																				
																				115-3	75.54	1.396	86.5	48.4	74.144

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				116-1	75.93	1.657	86.5	55.1	74.273																				
																				116-4	75.93	1.249	86.5	76.3	74.681																				
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.24	1.15	0.7	-0.205	2.03	74.877	73.924	48	75.25	0.373																								
																				48	75.25	1.273	88.5	4.9	73.977																				
																				49	75.59	1.458	88.5	19.3	74.132																				
																				50	76.24	1.960	88.5	33.1	74.280																				
																				100-1	76.17	1.506	88.5	68.7	74.664																				
																				100-3	76.17	1.354	88.5	82.8	74.816																				
																				101-2	76.39	1.883	88.5	54.1	74.507																				
																				101-3	76.39	1.797	88.5	62.1	74.593																				
																				518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.41	0.11	0.7	-0.118	2.02	73.213	70.670	108-1	71.98	-1.233				
																																								106	73.27	0.737	87.5	64.1	72.533
																																								106	73.27	0.999	87.5	55.1	72.271
																																								112	73.88	1.225	87.5	68.3	72.655
																																								112	73.88	0.963	87.5	77.3	72.917
105-1	73.98	1.261	87.5	70.5	72.719																																								
105-3	73.98	0.822	87.5	85.6	73.158																																								
107-1	72.82	1.348	87.5	27.6	71.472																																								
107-4	72.82	0.732	87.5	48.8	72.088																																								
108-1	71.98	1.139	87.5	5.9	70.841																																								
108-3	71.98	0.700	87.5	21.0	71.280																																								
109-1	72.10	1.322	87.5	3.7	70.778																																								
109-3	72.10	0.884	87.5	18.8	71.216																																								
110-1	72.62	1.223	87.5	25.0	71.397																																								
110-3	72.62	0.785	87.5	40.1	71.835																																								
111-1	73.30	1.284	87.5	46.3	72.016																																								
111-3	73.30	0.831	87.5	61.9	72.469																																								
113-1	74.43	1.327	87.5	83.7	73.103																																								
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.87	0.43	0.4	-0.279	2.02	70.453	70.035	22	71.62	1.167																								
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.56	0.60	0.5	-0.251	2.02	69.487	66.639	15	67.95	-1.537																								
																				15	67.95	1.114	79.5	5.5	66.836																				
																				16	68.22	0.764	79.5	22.8	67.456																				
																				17	68.77	1.031	79.5	30.7	67.739																				
																				18	69.45	1.195	79.5	45.1	68.255																				
																				19	70.14	1.420	79.5	58.1	68.720																				
																				20	70.77	1.534	79.5	72.5	69.236																				
																				21	71.17	1.769	79.5	77.1	69.401																				
																				521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.50	0.02	0.1	-0.301	1.95	76.920	76.577	15	78.33	1.410				
																				522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.56	0.07	0.1	-0.350	1.95	76.532	73.233	9	75.24	-1.292				
																																								9	75.24	1.566	69.5	9.3	73.674
																																								10	75.66	1.459	69.5	20.4	74.201
																																								11	76.22	1.335	69.5	34.8	74.885
12	76.80	1.497	69.5	43.6	75.303																																								
																				13	77.37	1.384	69.5	58.0	75.986																				
																				14	77.72	1.378	69.5	65.5	76.342																				
																				523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.53	0.07	0.3	-0.313	1.95	73.233	73.222	7	75.09	1.857				
																				524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.93	0.18	0.5	-0.307	1.97	73.222	72.983	5	74.99	1.768				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.00	1.36	0.4	-0.502	2.02	72.358	70.256	32	71.51	-0.848																								
																				32	71.51	1.177	60.0	2.2	70.333																				
																				33	72.20	1.608	60.0	9.6	70.592																				

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.56	1.0	-0.158	2.03	67.276	66.781	13	67.89	0.614																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				70-1	79.75	1.394	92.0	58.1	78.356
																				70-4	79.75	0.965	92.0	80.7	78.785
																				71-1	79.32	1.584	92.0	25.5	77.737
																				71-4	79.32	1.154	92.0	48.1	78.166
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.39	0.10	0.3	-0.220	1.95	77.227	74.937	79	76.31	-0.917				
																				74	77.04	1.116	77.5	33.4	75.924
																				74	77.04	0.865	77.5	41.9	76.175
																				75	76.55	1.161	77.5	15.3	75.389
																				75	76.55	0.907	77.5	23.9	75.643
																				76	77.90	0.847	77.5	71.6	77.053
																				76	77.90	1.098	77.5	63.1	76.802
																				77	77.34	0.831	77.5	53.2	76.509
																				77	77.34	1.082	77.5	44.7	76.258
																				79	76.31	1.240	77.5	4.5	75.070
																				73-1	77.95	1.479	77.5	51.9	76.471
73-4	77.95	0.812	77.5	74.5	77.138																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.10	0.4	-0.190	1.95	74.911	74.577	80-4	75.75	0.839				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.63	0.12	0.4	-0.209	1.95	74.507	73.529	81-3	74.96	0.453				
																				78-2	75.03	1.463	30.5	1.2	73.567
																				78-3	75.03	1.280	30.5	6.9	73.750
																				78-4	75.03	1.020	30.5	15.0	74.010
																				80-1	75.75	1.625	30.5	18.6	74.125
																				80-3	75.75	1.281	30.5	29.3	74.469
																				81-3	74.96	1.312	30.5	3.7	73.648
																				81-4	74.96	1.059	30.5	11.6	73.901
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.255	1.95	73.485	72.278	82-1	74.07	0.585				
																				59	74.11	1.482	54.5	15.8	72.628
																				60	74.12	1.173	54.5	30.2	72.947
																				78-1	75.03	1.784	54.5	43.7	73.246
																				81-1	74.96	1.674	54.5	45.5	73.286
																				81-2	74.96	1.522	54.5	52.4	73.438
																				82-1	74.07	1.480	54.5	14.1	72.590
																				82-4	74.07	0.979	54.5	36.7	73.091
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.53	0.01	0.1	-0.233	2.03	74.653	74.616	89	75.57	0.917				
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.50	0.03	0.2	-0.208	2.02	74.616	73.415	87	74.99	0.374				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.73	0.03	0.1	-0.216	2.02	73.378	72.290	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.20	0.47	0.7	-0.236	1.98	72.278	71.942	83-1	73.46	1.182				
543	305																								

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.63	1.36	0.5	-0.410	2.02	69.049	67.276	27	68.65	-0.399				
																				27	68.65	1.235	60.0	4.7	67.415
																				28	69.07	1.230	60.0	19.1	67.840
																				29	69.63	1.586	60.0	26.0	68.044
																				30	70.23	1.760	60.0	40.4	68.470
																				31	70.87	2.193	60.0	47.4	68.677
																				38	68.95	1.246	60.0	14.5	67.704
																				39	69.64	1.510	60.0	28.9	68.130
																				40	70.34	1.953	60.0	37.6	68.387
																				41	71.03	2.300	60.0	49.2	68.730
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.17	0.34	0.7	-0.162	2.02	76.623	76.238	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.41	0.31	0.4	-0.319	1.97	71.175	70.453	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	-0.11	0.00	0.1	0.037	2.05	68.003	68.003	9-2	68.47	0.467				
																				10-1	68.47	0.467	7.0	3.5	68.003
																				10-2	68.47	0.467	7.0	2.8	68.003
																				11-1	68.62	0.617	7.0	5.3	68.003
																				11-2	68.62	0.617	7.0	5.3	68.003
																				12-2	68.54	0.537	7.0	1.7	68.003
																				9-2	68.50	0.497	7.0	2.4	68.003
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.10	1.1	0.092	1.98	68.003	67.685	6-1	68.23	0.227				
																				12-1	68.54	0.562	32.5	29.9	67.978
																				13-1	68.43	0.620	32.5	12.8	67.810
																				13-2	68.43	0.538	32.5	21.2	67.892
																				14-2	68.42	0.709	32.5	2.7	67.711
																				6-1	68.23	0.461	32.5	8.6	67.769
																				6-2	68.23	0.504	32.5	4.2	67.726
																				7-1	68.28	0.491	32.5	10.6	67.789
																				7-2	68.28	0.500	32.5	9.7	67.780
																				8-1	68.36	0.541	32.5	13.7	67.819
																				8-2	68.36	0.463	32.5	21.7	67.897
																				9-1	68.50	0.554	32.5	26.7	67.946
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.15	0.25	1.2	0.050	1.98	67.685	67.255	17-1	68.23	0.545				
																				14-1	68.42	0.766	77.0	71.4	67.654
																				15-1	68.42	0.870	77.0	52.9	67.550
																				15-2	68.42	0.823	77.0	61.3	67.597
																				16-1	68.29	0.843	77.0	34.4	67.447
																				16-2	68.29	0.796	77.0	42.8	67.494
																				17-1	68.23	0.890	77.0	15.2	67.340
																				17-2	68.23	0.843	77.0	23.6	67.387
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.89	0.30	0.5	-0.268	1.98	66.690	65.527							

Table C-1D: Pipe Data and Hydraulic Simulation Results for the August 4th, 1988 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.37	4.23	N/A	N/A	2.30	51.347	50.615	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.83	N/A	N/A	2.37	51.347	50.615	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.59	6.16	N/A	N/A	2.22	53.113	53.111	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.67	2.98	N/A	N/A	1.65	53.169	53.113	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	5.38	N/A	N/A	2.13	53.168	53.113	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	-0.37	3.42	N/A	N/A	2.73	53.172	53.170	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.88	1.55	N/A	N/A	3.63	53.180	53.172	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.16	N/A	N/A	2.52	53.180	53.172	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.41	2.95	N/A	N/A	2.03	53.182	53.180	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.07	1.89	N/A	N/A	1.77	53.192	53.182	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	2.99	N/A	N/A	2.05	53.191	53.182	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.58	5.31	N/A	N/A	2.03	53.193	53.192	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.46	2.62	N/A	N/A	1.63	53.203	53.193	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	4.45	N/A	N/A	2.05	53.203	53.193	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.74	8.36	N/A	N/A	2.05	57.840	57.207	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	8.16	7.13	N/A	N/A	2.15	56.105	53.750	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.70	8.36	N/A	N/A	2.03	59.474	58.308	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.81	8.36	N/A	N/A	2.05	57.207	56.567	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.61	6.06	N/A	N/A	2.35	51.392	51.347	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	3.40	6.06	N/A	N/A	2.33	53.111	51.392	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	53.110	51.392	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.11	8.36	N/A	N/A	2.05	58.308	57.840	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.76	7.26	N/A	N/A	2.10	56.121	56.104	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.67	8.10	N/A	N/A	2.07	56.261	56.121	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.08	8.32	N/A	N/A	2.05	56.567	56.261	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.17	8.37	N/A	N/A	2.03	60.211	59.474	N/A	N/A	N/A			

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.130 Interpolated HGL elevation

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.80	0.04	0.2	-0.206	1.45	62.762	59.940	B92L1	61.17	-1.592																							
																				B92L1	61.17	1.162	90.9	2.2	60.008																			
																				B93	61.89	1.612	90.9	10.9	60.278																			
																				B94	62.24	1.257	90.9	33.6	60.983																			
																				B95	62.74	1.077	90.9	55.5	61.663																			
																				B96	63.53	1.249	90.9	75.4	62.281																			
																				B97	63.52	1.280	90.9	74.1	62.240																			
																				B98	62.59	1.163	90.9	47.9	61.427																			
																				B99	61.56	1.474	90.9	4.7	60.086																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	1.80	0.19	1.0	-0.025	1.43	59.940	59.747	B92L3	61.17	1.230			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	2.93	0.21	0.7	-0.137	1.43	59.648	58.294	L88	60.83	1.182			
																																								L88	60.83	2.377	45.2	5.3
L89	61.05	2.103	45.2	21.8	58.947																																							
L90	60.93	1.731	45.2	30.2	59.199																																							
L91	60.90	1.285	45.2	44.1	59.615																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.14	0.22	0.7	-0.172	1.45	58.263	57.853	L85	58.99	0.727																							
																				L85	58.99	1.085	34.0	4.3	57.905																			
																				L86	59.79	1.772	34.0	13.7	58.018																			
																				L87	60.00	1.790	34.0	29.6	58.210																			
105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.28	0.56	0.9	-0.106	1.45	57.853	57.184	L81	58.16	0.307																							
																				L81	58.16	0.857	66.9	11.9	57.303																			
																				L80	58.39	1.177	66.9	2.9	57.213																			
																				L82	58.22	0.772	66.9	26.4	57.448																			
																				L83	58.40	0.794	66.9	42.2	57.606																			
																				L84	58.95	1.234	66.9	53.2	57.716																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.78	0.57	1.0	-0.105	1.45	57.184	57.012	L79	58.44	1.256																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.40	0.56	0.9	-0.238	1.45	56.971	56.889	L74	58.91	1.939																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.44	0.56	0.9	-0.244	1.45	56.889	56.727	L73	59.22	2.331																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.45	0.16	0.6	-0.167	1.43	60.704	57.853	L75	59.26	-1.444																							
																				L75	59.26	0.978	116.3	17.5	58.282																			
																				L76	59.55	0.788	116.3	37.1	58.762																			
																				B103SD	60.07	0.827	116.3	56.7	59.243																			
																				B104SD	60.75	1.041	116.3	75.7	59.709																			
																				B105SD	61.36	1.186	116.3	94.7	60.174																			
																				B106SD	62.05	1.407	116.3	113.8	60.643																			
																				B102L1	61.93	1.295	116.3	113.5	60.635																			
																				B102L4	61.55	1.469	116.3	90.9	60.081																			
																				B101L1	60.92	1.150	116.3	78.2	59.770																			
																				B101L4	60.52	1.304	116.3	55.6	59.216																			
B100L1	59.97	1.009	116.3	45.2	58.961																																							
B100L4	59.58	1.173	116.3	22.6	58.407																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.66	0.00	0.0	-0.260	1.43	63.196	62.725	L60	63.78	0.584																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.63	0.02	0.1	-0.221	1.43	62.725	60.890	L66	62.23	-0.495																							
																				L66	62.23	1.312	65.6	1.0	60.918																			
																				L65	62.47	1.163	65.6	14.9	61.307																			
																				L64	62.67	1.050	65.6	26.1	61.620																			
																				L63	63.00	0.946	65.6	41.6	62.054																			
																				L62	63.31	1.080	65.6	47.9	62.230																			
																				L61	63.58	1.042	65.6	58.9	62.538																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	1.73	0.06	0.2	-0.251	1.43	60.861	59.847	B108L4	61.64	0.779																							

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.21	1.91	0.3	-0.938	1.47	58.097	57.678	L71	59.63	1.533				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.79	1.91	0.3	-0.814	1.47	56.362	56.233	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.08	0.06	0.0	-1.089	1.45	65.289	64.940	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.24	0.09	0.0	-1.064	1.45	63.968	63.144	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.24	1.05	0.2	-1.025	1.45	62.685	62.389	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.26	1.12	0.2	-1.013	1.45	61.107	60.684	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.27	1.42	0.3	-0.913	1.45	59.787	59.441	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	61.820	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.66	0.22	0.7	-0.124	1.43	61.821	60.259	B109L4	61.76	-0.061				
																				B109L4	61.76	0.873	62.4	25.1	60.887
																				B109L1	61.76	0.875	62.4	25.0	60.885
																				B110SD	62.44	1.107	62.4	42.9	61.333
																				B111SD	63.15	1.422	62.4	58.7	61.728
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	2.94	0.57	0.6	-0.312	1.48	59.061	58.090	L18	59.42	0.359				
																				L18	59.42	1.252	64.4	5.2	58.168
																				L19	60.08	1.743	64.4	16.4	58.337
																				L20	60.56	1.985	64.4	32.2	58.576
																				L21	60.98	2.258	64.4	41.9	58.722
																				L22	61.39	2.433	64.4	57.5	58.957
																				L24	61.34	2.520	64.4	48.4	58.820
																				L35	61.06	2.478	64.4	32.6	58.582
																				L26	60.61	2.202	64.4	21.1	58.408
																				L27	59.90	1.727	64.4	5.5	58.173
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.01	0.58	0.5	-0.319	1.48	56.886	55.924	L14	57.61	0.724				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	2.89	0.62	0.6	-0.288	1.48	54.757	53.845	L9	55.68	0.923				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.38	0.62	0.6	-0.202	1.48	53.845	53.551	N/A	N/A	N/A				
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.56	5.59	0.6	-0.500	1.48	52.716	52.617	N/A	N/A	N/A				
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	1.53	5.50	0.6	-0.485	1.50	52.617	52.582	N/A	N/A	N/A				
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	1.38	5.37	0.5	-0.406	1.50	52.582	52.499	N/A	N/A	N/A				
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.130	2.119	9.588	1.27	5.23	0.5	-0.267	1.50	52.499	52.441	N/A	N/A	N/A				
Chan1A	Chan1A.1	50.130	49.970	N/A	105.0	N/A	N/A	N/A	N/A	N/A	N/A	0.73	5.09	N/A	N/A	1.52	52.441	52.356	N/A	N/A	N/A				
136	137	48.960	48.919	2550	43.5	0.1	0.013	54.450	54.449	2.054	10.492	1.82	4.47	0.4	-1.313	1.80	50.197	50.145	N/A	N/A	N/A				
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	1.86	4.47	0.4	-1.304	1.82	50.145	49.721	N/A	N/A	N/A				
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	2.44	4.47	0.2	-2.066	1.82	49.490	49.467	N/A	N/A	N/A				
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	0.00	N/A	N/A	0.00	49.490	49.467	N/A	N/A	N/A				
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	-0.10	-0.02	0.0	-0.492	1.82	49.468	49.467	N/A	N/A	N/A				
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	2.96	0.46	0.6	-0.276	1.47	60.397	59.286	L52	60.19	-0.207				
																				L52	60.19	0.837	61.7	3.7	59.353
																				L51	60.63	1.155	61.7	10.5	59.475
																				L50	61.53	1.725	61.7	28.8	59.805
																				L49	62.36	2.420	61.7	36.3	59.940
																				L48	62.74	2.455	61.7	55.5	60.285
																				L47	63.79	3.420	61.7	60.2	60.370
																				L44	62.69	2.590	61.7	45.2	60.100
																				L43	61.84	1.873	61.7	37.8	59.967
																				L42	61.29	1.667	61.7	18.7	59.623
																				L41	60.68	1.191	61.7	11.3	59.489
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.55	0.67	0.6	-0.198	1.45	57.343	56.040	L36	57.89	0.547				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.19	1.35	0.7	-0.327	1.47	62.877	62.630	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.23	1.37	0.7	-0.330	1.47	61.037	60.004	N/A	N/A	N/A				

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.82	4.16	0.5	-0.985	1.48	53.093	52.903	L3	58.26	5.167				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.71	5.09	0.5	-0.947	1.48	52.903	52.716	L8	55.21	2.307				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.30	0.12	0.4	-0.199	1.47	69.841	67.845	B54L4	69.35	-0.491				
																				B54L4	69.35	1.392	83.1	4.7	67.958
																				B54L1	69.35	0.943	83.1	23.4	68.407
																				B56L4	70.19	1.617	83.1	30.3	68.573
																				B56L1	70.19	1.108	83.1	51.5	69.082
																				B57SD	70.63	1.193	83.1	66.3	69.437
																				B43L4	71.22	1.612	83.1	73.4	69.608
																				B58L4	70.88	1.207	83.1	76.1	69.673
																				B58L1	70.88	1.719	83.1	54.8	69.161
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.04	0.12	0.4	-0.180	1.47	67.808	67.497	B53L3	68.90	1.092				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.28	0.46	0.8	-0.196	1.45	66.465	65.387	B47L4	66.63	0.165				
																				B47L4	66.63	1.089	119.4	17.1	65.541
																				B47L1	66.63	0.897	119.4	38.3	65.733
																				B48L4	67.21	1.416	119.4	45.1	65.794
																				B48L1	67.21	1.224	119.4	66.3	65.986
																				B49L4	67.77	1.725	119.4	72.9	66.045
																				B49L1	67.77	1.533	119.4	94.1	66.237
																				B50SD	68.07	1.696	119.4	109.3	66.374
																				B51L3	68.41	1.982	119.4	115.3	66.428
																				B59L4	68.18	1.819	119.4	107.9	66.361
																				B59L1	68.18	2.010	119.4	86.7	66.170
																				B60SD	67.97	1.863	119.4	79.8	66.107
																				B61L4	67.31	1.339	119.4	64.7	65.971
																				B61L1	67.31	1.530	119.4	43.5	65.780
																				B62L4	66.89	1.170	119.4	36.9	65.720
																				B62L1	66.89	1.361	119.4	15.7	65.529
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.70	0.58	0.6	-0.281	1.45	65.304	64.304	L41	65.57	0.266				
																				L41	65.57	1.252	83.2	1.2	64.318
																				L42	65.98	1.507	83.2	14.1	64.473
																				L43	66.07	1.452	83.2	26.1	64.618
																				L44	66.12	1.329	83.2	40.5	64.791
																				L45	66.23	1.314	83.2	50.9	64.916
																				L46	66.87	1.775	83.2	65.8	65.095
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	1.78	0.09	0.3	-0.196	1.45	66.126	65.363	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.05	0.53	0.3	-0.415	1.47	71.012	70.230	B102L5	72.70	1.688				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	0.00	0.00	0.0	-0.315	0.00	71.012	69.841	B42SD	71.19	0.178				
																				B42SD	71.19	1.205	71.4	8.8	69.985
																				B41L1	71.59	1.498	71.4	15.3	70.092
																				B41L4	71.59	1.149	71.4	36.6	70.441
																				B40L1	71.88	1.334	71.4	43.0	70.546
																				B40L3	71.88	1.086	71.4	58.1	70.794
																				B563L1	72.21	1.349	71.4	62.2	70.861
																				B45L1	71.98	1.224	71.4	55.8	70.756
																				B45L4	71.98	1.573	71.4	34.5	70.407
																				B44SD	71.47	1.178	71.4	27.5	70.292
																				B43L1	71.47	1.434	71.4	11.9	70.036
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.57	2.59	0.4	-0.869	1.47	56.233	55.808	L32	58.76	2.527				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.33	0.22	1.1	0.064	1.45	60.259	59.986	N/A	N/A	N/A				

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL			
		Invert	Invert	/ Height	Length	Slope		Cover Elev.	Cover Elev.	Vel.	Flow	Pipe Vel.	Pipe Flow	Design Flow	U/S (1)	to Peak	U/S HGL	D/S HGL				Length HGL	Dist. From D/S MH	HGL	
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)		(m)	(h)	(m)	(m)		(m)	(m)	(m)			
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.14	2.58	0.4	-0.721	1.47	55.808	55.541	L11	58.85	3.042				
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.09	2.80	0.3	-1.049	1.48	53.518	53.093	N/A	N/A	N/A				
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.01	0.18	0.3	-0.436	1.43	53.988	53.926	L22	54.73	0.742				
																			L22	54.73	0.747	28.2	25.9	53.983	
																			L21	54.73	0.744	28.2	27.4	53.986	
																			L20	55.10	1.124	28.2	22.9	53.976	
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.18	0.23	0.4	-0.398	1.45	53.926	53.636	L19	55.79	1.864				
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.65	0.58	0.6	-0.274	1.47	64.285	63.914	L39	65.04	0.755				
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.67	0.61	0.7	-0.262	1.47	63.907	63.559	L37	64.89	0.983				
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.46	0.74	0.7	-0.266	1.47	63.342	62.935	L34	64.28	0.938				
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.38	0.02	0.1	-0.237	1.43	67.449	67.095	L339	68.56	1.111				
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	2.97	0.33	0.5	-0.256	1.45	65.513	64.330	L347	65.57	0.057				
																			L347	65.57	1.206	52.4	1.5	64.364	
																			L346	66.07	1.221	52.4	23.0	64.849	
																			L345	66.61	1.558	52.4	32.0	65.052	
																			L344	67.15	1.768	52.4	46.6	65.382	
																			3-1	66.15	1.061	52.4	33.6	65.089	
																			1	65.55	0.731	52.4	21.7	64.819	
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.44	0.62	0.6	-0.214	1.45	63.870	62.900	L58	64.18	0.310				
																			L58	64.18	0.948	55.0	18.8	63.232	
																			L57	64.44	0.905	55.0	36.0	63.535	
																			L56	64.75	0.989	55.0	48.8	63.761	
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.32	0.98	0.6	-0.456	1.47	69.092	68.994	18-1	69.48	0.388				
																			18-1	69.48	0.463	80.5	18.7	69.017	
																			18-2	69.48	0.453	80.5	27.1	69.027	
																			19-1	69.51	0.471	80.5	37.2	69.039	
																			19-2	69.51	0.460	80.5	45.6	69.050	

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL		
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m ³ /s)	Pipe Vel. (m/s)	Pipe Flow (m ³ /s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)				Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			B38L1	69.31	1.440	101.9	70.6	67.870
																			B39L4	69.62	1.575	101.9	77.7	68.045
																			B39L1	69.62	1.049	101.9	99.0	68.571
																			B47L1	69.23	0.812	101.9	92.8	68.418
																			B47L4	69.23	1.375	101.9	70.0	67.855
																			B48L1	68.82	1.091	101.9	64.9	67.725
																			B48L4	68.82	1.615	101.9	43.7	67.205
																			B49SD	68.53	1.490	101.9	37.0	67.040
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.31	0.00	-0.1	-0.254	1.43	69.518	69.595	B96L1	70.07	0.552			
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.20	1.66	0.5	-0.420	1.47	68.828	67.952	Fut. Est.	72.09	3.262			
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.04	0.04	0.3	-0.234	1.43	72.445	71.799	B107L1	72.89	0.445			
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.75	0.04	0.3	-0.142	1.45	71.799	71.786	N/A	N/A	N/A			
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.42	0.20	1.1	-0.071	1.45	71.786	71.569	N/A	N/A	N/A			
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.41	0.48	0.5	-0.312	1.45	71.393	71.061	N/A	N/A	N/A			
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.92	0.02	0.3	-0.187	1.45	72.377	71.759	B102L1	72.70	0.323			
																			B102L1	72.70	0.906	106.5	6.0	71.794
																			B102L5	72.70	0.737	106.5	35.1	71.963
																			B103L1	72.87	0.851	106.5	44.8	72.019
																			B103L4	72.87	0.729	106.5	65.8	72.141
																			B104L1	73.05	0.851	106.5	75.8	72.199
																			B104L5	73.05	0.684	106.5	104.5	72.366
																			B105L10	73.24	0.899	106.5	100.3	72.341
																			B105L6	73.24	1.059	106.5	72.7	72.181
																			B106L10	73.08	0.959	106.5	62.3	72.121
																			B106L6	73.08	1.117	106.5	35.1	71.963
																			B107L10	72.89	0.978	106.5	26.3	71.912
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.04	0.04	0.4	-0.136	1.45	71.759	71.540	B107L6	72.89	1.131			
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.31	0.55	0.4	-0.448	1.47	70.217	69.991	B100SD	72.25	2.033			
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.51	0.17	0.8	-0.144	1.45	63.122	62.611	L1	64.26	1.138			
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.05	0.34	0.6	-0.252	1.45								

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.65	0.07	0.6	-0.134	1.43	69.147	67.982	L34	69.22	0.073				
																				L34	69.22	0.982	82.8	18.2	68.238
																				L33	69.36	0.902	82.8	33.8	68.458
																				L32	69.53	0.951	82.8	42.4	68.579
																				L31	69.62	0.837	82.8	56.9	68.783
																				L30	69.82	0.912	82.8	65.8	68.908
																				L29	70.07	0.953	82.8	80.7	69.117
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.32	0.9	-0.087	1.45	67.136	66.113	L325	67.35	0.214				
																				L325	67.35	1.193	72.5	3.1	66.157
																				L326	67.53	1.152	72.5	18.8	66.378
																				L327	67.79	1.297	72.5	26.9	66.493
																				L328	67.99	1.194	72.5	48.4	66.796
																				B614SD	68.21	1.095	72.5	71.0	67.115
																				L333	67.98	0.865	72.5	71.0	67.115
																				L332	67.91	0.921	72.5	62.1	66.989
																				L331	67.79	1.067	72.5	43.2	66.723
																				L330	67.63	1.023	72.5	35.0	66.607
																				L329	67.47	1.131	72.5	16.0	66.339
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.05	0.32	0.9	0.008	1.45	66.113	65.832	L324	67.08	0.967				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.17	0.33	0.6	-0.169	1.45	65.771	64.556	L319	65.72	-0.051				
																				L319	65.72	0.833	77.0	21.0	64.887
																				L320	66.05	0.858	77.0	40.3	65.192
																				L321	66.39	1.072	77.0	48.3	65.318
																				L322	66.71	1.100	77.0	66.8	65.610
																				L323	66.89	1.233	77.0	69.8	65.657
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	2.91	0.42	0.5	-0.292	1.45	63.719	63.041	L123	64.76	1.041				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	0.96	0.03	0.3	-0.178	1.45	66.083	65.701	B601SD	66.46	0.377				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.20	0.07	0.3	-0.282	1.45	65.598	65.204	B604SD	66.07	0.472				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.20	0.06	0.3	-0.282	1.47	65.175	64.886	L296	65.77	0.595				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	1.99	0.71	0.1	-1.111	1.53	71.972	71.607	B80L1	73.88	1.908				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.01	0.76	0.2	-1.100	1.53	70.399	70.041	B87SD	72.44	2.041				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.06	0.79	0.2	-1.093	1.53	69.249	68.851	B85L1	71.32	2.071				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.12	0.87	0.2	-1.075	1.55	68.842	68.438	L51	71.02	2.178				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.46	3.31	0.4	-1.048	1.50	67.502	67.248	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.29	3.53	0.2	-1.325	1.50	63.365	62.324	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.30	3.67	0.2	-1.308	1.50	61.851	61.319	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.55	5.80	0.4	-0.567	1.50	61.237	61.032	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.07	6.05	N/A	N/A	1.50	61.032	60.086	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.27	0.21	0.5	-0.195	1.43	59.847	59.515	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.288	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	1.98	1.64	0.3	-0.955	1.47	59.152	58.938	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	2.89	0.42	0.5	-0.290	1.45	62.616	62.278	L45	63.24	0.624				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.05	0.13	0.3	-0.266	1.52	66.709	66.465	B51L1	68.41	1.701				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	1.42	0.28	0.1	-1.084	1.52	74.801	74.645	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.15	0.23	0.4	-0.393	1.45	53.636	53.546	L30	58.92	5.284				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.67	0.01	0.2	-0.213	1.45	72.047	71.752	B103L8	72.87	0.823				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.71	0.26	0.7	0.004	1.48	68.391	67.982	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.11	0.28	0.9	-0.102	1.45	65.808	65.700	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.04	N/A	N/A	1.45	65.808	65.771	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.07	-0.01	0.0	-0.674	1.85	49.468	49.468	N/A	N/A	N/A				

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	2.19	3.39	N/A	N/A	4.02	49.467	48.500	N/A	N/A	N/A			
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.32	0.49	0.6	-0.287	1.47	60.234	60.022	L23	61.85	1.616			
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.449	L338	68.61	0.552			
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.02	0.25	0.9	-0.091	1.45	69.325	69.092	B84L1	69.71	0.385			
																			B84L1	69.71	0.571	83.9	16.8	69.139
																			B84L4	69.71	0.512	83.9	38.3	69.198
																			B83L1	70.27	1.053	83.9	45.0	69.217
																			B83L3	70.27	1.011	83.9	60.0	69.259
																			B82L1	70.96	1.683	83.9	66.6	69.277
																			B82L4	70.96	1.641	83.9	81.9	69.319
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.88	0.06	0.9	-0.025	1.43	69.595	69.435	B96L4	70.07	0.475			
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.74	0.31	0.8	-0.115	1.47	71.846	71.073	L52	72.19	0.344			
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.27	0.8	-0.129	1.45	72.677	71.846	L56	72.93	0.253			
																			L56	72.93	0.971	64.8	8.8	71.959
																			B73SD	73.17	1.047	64.8	21.6	72.123
																			L57	73.23	0.865	64.8	40.5	72.365
																			L58	73.36	0.819	64.8	54.2	72.541
																			L60	73.51	0.884	64.8	60.8	72.626
																			L61	73.43	1.015	64.8	44.4	72.415
																			L62	73.37	1.152	64.8	29.0	72.218
																			L63	73.28	1.242	64.8	15.0	72.038
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.18	0.02	0.1	-0.224	1.45	73.472	72.677	L59	73.54	0.068			
																			L59	73.54	0.824	44.4	2.2	72.716
																			B72L1	73.92	1.005	44.4	13.3	72.915
																			B72L2	73.92	0.838	44.4	22.6	73.082
																			B71L1	74.10	0.868	44.4	31.0	73.232
																			B66L4	74.39	1.068	44.4	36.0	73.322
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.36	0.02	0.1	-0.223	1.43	74.413	73.502	B66L1	73.99	0.908	44.4	22.6	73.082
																			B71L4	74.50	0.087			
																			B71L4	74.50	0.839	45.4	7.9	73.661
																			B70L1	74.89	1.071	45.4	15.8	73.819
																			B70L2	74.89	0.882	45.4	25.2	74.008
																			B69L1	75.49	1.318	45.4	33.4	74.172
																			B69L2	75.49	1.117	45.4	43.4	74.373
																			B68L1	76.39	2.017	45.4	43.4	74.373
																			B67L4	75.19	1.018	45.4	33.4	74.172
80300	80301	65.336	64.940	450	36.0	1.1	0.013	66.728	65.751	1.880	0.299	2.13	0.28	0.9	-0.104	1.47	65.682	65.284	N/A	N/A	N/A			
901	902	69.073	67.903	300	65.0	1.8	0.013	71.873	70.716	1.835	0.130	1.16	0.01	0.1	-0.237	1.43	69.136	67.979	L13	69.13	-0.006			
																			L13	69.13	1.009	65.0	8.0	68.121
																			L12	69.49	1.157	65.0	19.9	68.333
																			L11	69.68	1.053	65.0	36.4	68.627
																			L10	69.81	0.994	65.0	47.0	68.816
																			L9	69.81	0.710	65.0	63.0	69.100
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	1.81	0.04	0.2	-0.204	1.43	67.979	65.655	L18	66.92	-1.059			
																			L18	66.92	1.030	72.3	7.3	65.890
																			L17	67.35	0.943	72.3	23.4	66.407
																			L16	67.80	1.036	72.3	34.5	66.764
																			L15	68.21	0.916	72.3	51.0	67.294
																			L14	68.67	0.980	72.3	63.3	67.690

U/S MH	D/S MH	U/S Invert	D/S Invert	Pipe Dia. / Height	Pipe Length	Pipe Slope	n	U/S MH Cover Elev.	D/S MH Cover Elev.	Design Vel.	Design Flow	Peak Pipe Vel.	Peak Pipe Flow	Peak / Design Flow	Surcharge U/S (1)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
		(m)	(m)	(mm)	(m)	(%)		(m)	(m)	(m/s)	(m ³ /s)	(m/s)	(m ³ /s)	(m)	(m)	(m)	(m)	(m)							
903 705w	1006 709	65.503	65.287	300	18.0	1.2	0.013	68.393	65.660	1.499	0.106	1.13	0.04	0.3	-0.163	1.45	65.640	65.406	N/A	N/A	N/A				
		67.661	66.113	375	86.0	1.8	0.013	71.209	68.928	2.130	0.235	1.85	0.07	0.3	-0.234	1.47	67.802	66.253	L24	67.63	-0.172				
																				L24	67.63	1.247	86.0	7.2	66.383
																				L25	68.23	1.595	86.0	21.2	66.635
																				L26	68.95	2.036	86.0	36.7	66.914
																		L27	69.33	2.169	86.0	50.4	67.161		
																		L28	69.33	1.865	86.0	67.3	67.465		
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.26	0.82	0.5	-0.503	1.50	68.202	67.839	L35	69.61	1.408				
																		L35	69.61	1.475	103.5	84.3	68.135		
																		L36	70.01	1.919	103.5	71.8	68.091		
																		L37	70.32	2.271	103.5	59.9	68.049		
																		L38	70.49	2.492	103.5	45.3	67.998		
																		L39	70.49	2.523	103.5	36.4	67.967		
																		L40	70.36	2.442	103.5	22.5	67.918		
																		L46	70.51	2.588	103.5	23.6	67.922		
																		L45	70.56	2.589	103.5	37.7	67.971		
																		L44	70.58	2.578	103.5	46.4	68.002		
																		L43	70.32	2.267	103.5	61.0	68.053		
																		L42	70.06	1.967	103.5	72.5	68.093		
																		L41	69.67	1.531	103.5	85.4	68.139		
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.240	84	80.14	-0.092				
																		79	81.31	1.129	74.0	72.1	80.181		
																		80	81.20	1.407	74.0	57.7	79.793		
																		81	80.82	1.377	74.0	44.7	79.443		
																		82	80.66	1.604	74.0	30.3	79.056		
																		83	80.27	1.508	74.0	19.4	78.762		
																		84	80.14	1.765	74.0	5.0	78.375		
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.143	77	81.27	1.038				
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.59	0.01	0.2	-0.202	1.45	78.516	78.363	87	79.42	0.904				
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.59	0.02	0.1	-0.342	1.45	78.240	78.045	41	79.36	1.120				
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	0.93	0.05	0.2	-0.309	1.45	78.045	77.691	34	78.97	0.925				
																		34	78.97	1.239	88.0	9.9	77.731		
																		35	79.03	1.241	88.0	24.3	77.789		
																		36	79.08	1.256	88.0	33.1	77.824		
																		37	79.14	1.258	88.0	47.5	77.882		
																		38	79.19	1.280	88.0	54.4	77.910		

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.742	72.5	57.9	80.028
																				69	80.92	0.801	72.5	69.4	80.119
																				71	80.32	0.672	72.5	9.7	79.648
																				72	80.46	0.710	72.5	22.7	79.750
																				73	80.57	0.706	72.5	37.1	79.864
																				74	80.69	0.757	72.5	45.9	79.933
																				75	80.82	0.773	72.5	60.3	80.047
																				76	81.20	1.075	72.5	70.2	80.125
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.24	0.8	-0.088	1.45	79.571	78.713	59	79.58	0.009				
																				59	79.58	0.729	76.5	12.3	78.851
																				60	79.72	0.708	76.5	26.7	79.012
																				61	79.86	0.702	76.5	39.7	79.158
																				62	80.00	0.680	76.5	54.1	79.320
																				63	80.12	0.653	76.5	67.2	79.467
																				70	80.18	0.661	76.5	71.9	79.519
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.12	0.25	0.6	-0.242	1.45	78.614	77.691	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.24	0.49	0.8	-0.179	1.47	77.691	75.974	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.38	0.05	0.5	-0.145	1.43	77.607	76.721	90-2	77.72	0.113				
																				88-1	78.32	1.082	88.5	51.6	77.238
																				88-4	78.32	0.870	88.5	72.8	77.450
																				89-1	78.00	1.046	88.5	23.3	76.954
																				89-4	78.00	0.833	88.5	44.5	77.167
																				90-2	77.72	0.973	88.5	2.6	76.747
																				90-4	77.72	0.832	88.5	16.7	76.888
																				96-1	78.46	1.133	88.5	60.5	77.327
																				96-5	78.46	0.884	88.5	85.4	77.576
																				97-1	78.08	1.033	88.5	32.6	77.047
																				97-4	78.08	0.820	88.5	53.8	77.260
																				98-2	77.80	1.021	88.5	5.8	76.779
98-5	77.80	0.819	88.5	26.0	76.981																				
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.19	0.5	-0.250	1.45	76.617	75.956	100-1	77.19	0.573				
																				100-1	77.19	1.075	75.0	18.0	76.115
																				100-4	77.19	0.889	75.0	39.2	76.301
																				90-1	77.72	1.144	75.0	70.4	76.576
																				91-1	77.47	1.192	75.0	36.5	76.278
																				91-5	77.47	0.952	75.0	63.8	76.518
																				92-1	77.33	1.301	75.0	8.3	76.029
																				92-4	77.33	1.114	75.0	29.5	76.216
																				98-1	77.80	1.194	75.0	73.7	76.606
																				99-1	77.47	1.110	75.0	45.8	76.360
																				99-4	77.47	0.924	75.0	67.0	76.546
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.70	0.07	0.3	-0.236	1.45	77.882	75.956	101-1	77.24	-0.642				
																				102	77.52	0.941	119.0	38.5	76.579
																				102	77.52	0.795	119.0	47.5	76.725
																				101-1	77.24	0.760	119.0	32.4	76.480
																				101-4	77.24	1.103	119.0	11.2	76.137
																				103-1	78.08	0.905	119.0	75.3	77.175
																				103-4	78.08	1.248	119.0	54.1	76.832
																				104-1	78.52	0.997	119.0	96.8	77.523
																				104-3	78.52	1.242	119.0	81.7	77.278

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				105-1	78.53	0.671	119.0	117.6	77.859
																				105-3	78.53	0.900	119.0	103.4	77.630
																				93-1	77.74	1.175	119.0	37.6	76.565
																				93-5	77.74	1.616	119.0	10.4	76.124
																				94-1	77.88	0.752	119.0	72.4	77.128
																				94-5	77.88	1.194	119.0	45.1	76.686
																				95-1	78.67	0.985	119.0	106.8	77.685
																				95-5	78.67	1.427	119.0	79.5	77.243
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	0.96	0.02	0.1	-0.285	1.45	77.882	76.965	25	78.18	0.298				
																				17	78.54	1.370	114.5	25.6	77.170
																				18	78.54	1.314	114.5	32.6	77.226
																				19	78.59	1.096	114.5	66.1	77.494
																				20	78.59	1.535	114.5	11.2	77.055
																				21	78.58	0.970	114.5	80.5	77.610
																				22	78.67	0.991	114.5	89.2	77.679
																				23	78.75	1.476	114.5	38.6	77.274
																				24	78.75	1.361	114.5	53.0	77.389
																				25	78.18	1.187	114.5	3.5	76.993
																				26	78.23	1.179	114.5	10.8	77.051
																				27	78.29	1.123	114.5	25.2	77.167
																				28	78.34	0.545	114.5	103.6	77.795
																				29	78.40	0.960	114.5	59.3	77.440
																				30	78.45	1.213	114.5	34.0	77.237
31	78.51	1.157	114.5	48.4	77.353																				
32	78.56	1.005	114.5	73.7	77.555																				
33	78.56	0.935	114.5	82.4	77.625																				
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.25	0.19	0.7	-0.008	1.43	77.913	77.706	Est. Fut.	78.68	0.767				
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.87	0.97	0.7	-0.198	1.47	75.956	75.286	N/A	N/A	N/A				
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	0.91	0.04	0.2	-0.317	1.55	75.591	75.258	96-1	76.43	0.839				
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.31	1.02	0.7	-0.317	1.48	75.258	74.836	100-4	76.17	0.912				
																				98	76.29	1.245	78.0	38.6	75.045
																				98	76.29	1.294	78.0	29.6	74.996
																				100-4	76.17	1.326	78.0	1.4	74.844
																				97-1	76.30	1.221	78.0	45.0	75.079
																				97-4	76.30	1.106	78.0	66.2	75.194
																				99-1	76.23	1.350	78.0	8.1	74.880
																				99-3	76.23	1.268	78.0	23.2	74.962
517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.49	0.03	0.2	-0.202	1.48	74.836	73.178	113-2	74.43	-0.406				
																				114	74.86	1.339	86.5	17.9	73.521
																				114	74.86	1.166	86.5	26.9	73.694
																				102-1	75.69	1.467	86.5	54.5	74.223
																				102-4	75.69	1.061	86.5	75.7	74.629
																				103-1	75.32	1.630	86.5	26.7	73.690
																				103-4	75.32	1.224	86.5	47.9	74.096
																				104-1	74.57	1.298	86.5	4.9	73.272
																				104-3	74.57	1.009	86.5	20.0	73.561
																				113-2	74.43	1.168	86.5	4.4	73.262
																				113-3	74.43	1.032	86.5	11.5	73.398
																				115-1	75.54	1.724	86.5	33.3	73.816
115-3	75.54	1.434	86.5	48.4	74.106																				

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL			
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m³/s)	Pipe Vel. (m/s)	Pipe Flow (m³/s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)		Length HGL (m)	Dist. From D/S MH (m)	HGL (m)			
																				116-1	75.93	1.696	86.5	55.1	74.234
																				116-4	75.93	1.290	86.5	76.3	74.640
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.22	1.07	0.6	-0.246	1.48	74.836	73.899	48	75.25	0.414				
																				48	75.25	1.299	88.5	4.9	73.951
																				49	75.59	1.487	88.5	19.3	74.103
																				50	76.24	1.991	88.5	33.1	74.245
																				100-1	76.17	1.544	88.5	68.7	74.626
																				100-3	76.17	1.394	88.5	82.8	74.776
																				101-2	76.39	1.918	88.5	54.1	74.472
																				101-3	76.39	1.834	88.5	62.1	74.556
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.23	0.08	0.5	-0.153	1.50	73.178	70.636	108-1	71.98	-1.198				
																				106	73.27	0.772	87.5	64.1	72.498
																				106	73.27	1.033	87.5	55.1	72.237
																				112	73.88	1.260	87.5	68.3	72.620
																				112	73.88	0.998	87.5	77.3	72.882
																				105-1	73.98	1.296	87.5	70.5	72.684
																				105-3	73.98	0.857	87.5	85.6	73.123
																				107-1	72.82	1.382	87.5	27.6	71.438
																				107-4	72.82	0.766	87.5	48.8	72.054
																				108-1	71.98	1.173	87.5	5.9	70.807
																				108-3	71.98	0.734	87.5	21.0	71.246
																				109-1	72.10	1.357	87.5	3.7	70.743
																				109-3	72.10	0.918	87.5	18.8	71.182
																				110-1	72.62	1.258	87.5	25.0	71.362
																				110-3	72.62	0.819	87.5	40.1	71.801
111-1	73.30	1.319	87.5	46.3	71.981																				
111-3	73.30	0.866	87.5	61.9	72.434																				
113-1	74.43	1.362	87.5	83.7	73.068																				
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.79	0.38	0.4	-0.307	1.47	70.425	70.013	22	71.62	1.195				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.43	0.54	0.5	-0.268	1.45	69.470	66.607	15	67.95	-1.520				
																				15	67.95	1.145	79.5	5.5	66.805
																				16	68.22	0.792	79.5	22.8	67.428
																				17	68.77	1.057	79.5	30.7	67.713
																				18	69.45	1.219	79.5	45.1	68.231
																				19	70.14	1.441	79.5	58.1	68.699
																				20	70.77	1.552	79.5	72.5	69.218
																				21	71.17	1.786	79.5	77.1	69.384
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.43	0.02	0.1	-0.307	1.45	76.914	76.571	15	78.33	1.416				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.43	0.06	0.1	-0.352	1.43	76.530	73.222	9	75.24	-1.290				
																				9	75.24	1.575	69.5	9.3	73.665
																				10	75.66	1.467	69.5	20.4	74.193
																				11	76.22	1.342	69.5	34.8	74.878
																				12	76.80	1.503	69.5	43.6	75.297
																				13	77.37				

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				34	72.90	1.916	60.0	21.2	70.984
																				35	73.59	2.199	60.0	32.8	71.391
																				36	74.30	2.405	60.0	47.2	71.895
																				42	71.67	1.208	60.0	6.3	70.462
																				43	72.31	1.701	60.0	10.5	70.609
																				44	73.07	1.956	60.0	24.9	71.114
																				45	73.65	2.291	60.0	31.9	71.359
																				46	74.31	2.446	60.0	46.3	71.864
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.79	1.47	0.9	-0.199	1.50	67.235	66.740	13	67.89	0.655				
																				11	67.97	1.166	65.0	8.4	66.804
																				12	67.91	0.992	65.0	23.4	66.918
																				13	67.89	0.905	65.0	32.2	66.985
																				14	67.89	0.795	65.0	46.6	67.095
																				23	68.16	1.272	65.0	19.4	66.888
																				24	68.23	1.234	65.0	33.6	66.996
																				25	68.23	1.130	65.0	47.3	67.100
																				26	68.28	1.091	65.0	58.9	67.189
																				37	68.30	1.076	65.0	63.5	67.224
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.59	2.02	0.7	-0.309	1.48	66.607	65.694	7	66.89	0.283				
																				7	66.89	1.163	39.0	1.4	65.727
																				8	67.37	1.390	39.0	12.2	65.980
																				9	67.82	1.566	39.0	23.9	66.254
																				10	67.97	1.403	39.0	37.3	66.567
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.17	2.02	0.6	-0.365	1.50	65.348	64.666	6	66.10	0.752				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.04	2.05	0.6	-0.375	1.50	63.919	62.048	1	63.88	-0.039				
																				1	63.88	1.556	64.5	9.5	62.324
																				2	63.92	1.199	64.5	23.2	62.721
																				3	64.39	1.333	64.5	34.8	63.057
																				4	64.86	1.417	64.5	48.1	63.443
																				5	65.44	1.625	64.5	60.9	63.815
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	2.73	2.05	1.0	0.012	1.50	62.048	61.895	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	1.93	2.12	0.9	-0.010	1.50	61.895	61.448	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.54	0.03	0.2	-0.200	1.45	78.995	77.247	61	78.31	-0.685				
																				61	78.31	0.955	92.0	5.7	77.355
																				62	78.72	1.091	92.0	20.1	77.629
																				63	78.74	0.851	92.0	33.8	77.889
																				64	79.82	1.123	92.0	76.3	78.697
																				64	79.82	1.279	92.0	68.1	78.541
																				65	79.96	1.138	92.0	82.9	78.822
																				65	79.96	1.229	92.0	78.1	78.731
																				66	80.11	1.223	92.0	86.3	78.887
																				66	80.11	1.256	92.0	84.6	78.854
																				67	80.11	1.147	92.0	90.3	78.963
																				67	80.11	1.185	92.0	88.3	78.925
																				68	79.92	0.946	92.0	90.9	78.974
																				68	79.92	0.925	92.0	92.0	78.995
																				69	79.99	1.016	92.0	90.9	78.974
																				69	79.99	1.065	92.0	88.3	78.925
																				72	78.57	1.028	92.0	15.5	77.542
																				72	78.57	1.190	92.0	7.0	77.380

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				70-1	79.75	1.399	92.0	58.1	78.351
																				70-4	79.75	0.970	92.0	80.7	78.780
																				71-1	79.32	1.589	92.0	25.5	77.732
																				71-4	79.32	1.159	92.0	48.1	78.161
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.37	0.10	0.3	-0.223	1.43	77.224	74.934	79	76.31	-0.914				
																				74	77.04	1.119	77.5	33.4	75.921
																				74	77.04	0.868	77.5	41.9	76.172
																				75	76.55	1.164	77.5	15.3	75.386
																				75	76.55	0.910	77.5	23.9	75.640
																				76	77.90	0.850	77.5	71.6	77.050
																				76	77.90	1.101	77.5	63.1	76.799
																				77	77.34	0.834	77.5	53.2	76.506
																				77	77.34	1.085	77.5	44.7	76.255
																				79	76.31	1.243	77.5	4.5	75.067
																				73-1	77.95	1.482	77.5	51.9	76.468
73-4	77.95	0.815	77.5	74.5	77.135																				
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.92	0.10	0.4	-0.195	1.45	74.906	74.574	80-4	75.75	0.844				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.61	0.12	0.4	-0.212	1.45	74.504	73.526	81-3	74.96	0.456				
																				78-2	75.03	1.466	30.5	1.2	73.564
																				78-3	75.03	1.283	30.5	6.9	73.747
																				78-4	75.03	1.023	30.5	15.0	74.007
																				80-1	75.75	1.628	30.5	18.6	74.122
																				80-3	75.75	1.284	30.5	29.3	74.466
																				81-3	74.96	1.315	30.5	3.7	73.645
																				81-4	74.96	1.062	30.5	11.6	73.898
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.98	0.33	0.5	-0.257	1.45	73.483	72.271	82-1	74.07	0.587				
																				59	74.11	1.488	54.5	15.8	72.622
																				60	74.12	1.177	54.5	30.2	72.943
																				78-1	75.03	1.787	54.5	43.7	73.243
																				81-1	74.96	1.677	54.5	45.5	73.283
																				81-2	74.96	1.524	54.5	52.4	73.436
																				82-1	74.07	1.485	54.5	14.1	72.585
																				82-4	74.07	0.983	54.5	36.7	73.087
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.08	0.00	0.0	-0.275	1.30	74.611	74.611	89	75.57	0.959				
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.45	0.02	0.2	-0.213	1.45	74.611	73.410	87	74.99	0.379				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.69	0.02	0.1	-0.222	1.45	73.372	72.286	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.19	0.46	0.7	-0.243	1.45	72.271	71.938	83-1	73.46	1.189				

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.55	1.27	0.5	-0.426	1.48	69.033	67.235	27	68.65	-0.383				
																				27	68.65	1.274	60.0	4.7	67.376
																				28	69.07	1.263	60.0	19.1	67.807
																				29	69.63	1.616	60.0	26.0	68.014
																				30	70.23	1.784	60.0	40.4	68.446
																				31	70.87	2.215	60.0	47.4	68.655
																				38	68.95	1.280	60.0	14.5	67.670
																				39	69.64	1.539	60.0	28.9	68.101
																				40	70.34	1.978	60.0	37.6	68.362
																				41	71.03	2.321	60.0	49.2	68.709
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	1.82	0.15	0.3	-0.308	1.52	76.477	76.121	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.37	0.29	0.4	-0.325	1.43	71.169	70.440	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	-0.08	0.00	0.0	-0.010	1.50	67.956	67.956	9-2	68.47	0.514				
																				10-1	68.47	0.514	7.0	3.5	67.956
																				10-2	68.47	0.514	7.0	2.8	67.956
																				11-1	68.62	0.664	7.0	5.3	67.956
																				11-2	68.62	0.664	7.0	5.3	67.956
																				12-2	68.54	0.584	7.0	1.7	67.956
																				9-2	68.50	0.544	7.0	2.4	67.956
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.42	0.09	1.1	0.045	1.45	67.956	67.673	6-1	68.23	0.274				
																				12-1	68.54	0.607	32.5	29.9	67.933
																				13-1	68.43	0.646	32.5	12.8	67.784
																				13-2	68.43	0.572	32.5	21.2	67.858
																				14-2	68.42	0.723	32.5	2.7	67.697
																				6-1	68.23	0.482	32.5	8.6	67.748
																				6-2	68.23	0.520	32.5	4.2	67.710
																				7-1	68.28	0.515	32.5	10.6	67.765
																				7-2	68.28	0.523	32.5	9.7	67.757
																				8-1	68.36	0.568	32.5	13.7	67.792
																				8-2	68.36	0.498	32.5	21.7	67.862
																				9-1	68.50	0.595	32.5	26.7	67.905
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.13	0.24	1.1	0.038	1.45	67.673	67.251	17-1	68.23	0.557				
																				14-1	68.42	0.778	77.0	71.4	67.642
																				15-1	68.42	0.879	77.0	52.9	67.541
																				15-2	68.42	0.833	77.0	61.3	67.587
																				16-1	68.29	0.850	77.0	34.4	67.440
																				16-2	68.29	0.804	77.0	42.8	67.486
																				17-1	68.23	0.896	77.0	15.2	67.334
																				17-2	68.23	0.850	77.0	23.6	67.380
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.88	0.30	0.5	-0.272	1.45	66.686	65.524	4-1	66.76	0.074				
																				4-1	66.76	1.200	51.5	1.6	65.560
																				4-2	66.76	1.010	51.5	10.0	65.750
																				5-1	67.15	1.127	51.5	22.1	66.023
																				5-2	67.15	0.929	51.5	30.9	66.221
																				L343	67.62	1.902	51.5	8.6	65.718
																				L342	67.97	1.986	51.5	20.4	65.984
																				L341	68.19	1.935	51.5	32.4	66.255
																				L340	68.40	1.856	51.5	45.2	66.544
Chan1B	Chan1B.1	49.260	49.220	N/A	30.0	N/A	N/A	N/A	N/A	N/A	N/A	0.51	5.94	N/A	N/A	1.62	52.172	52.169	N/A	N/A	N/A				
Chan1B.4	136	48.990	48.960	N/A	27.7	N/A	N/A	N/A	N/A	N/A	N/A	1.13	4.48	N/A	N/A	1.78	50.417	50.197	N/A	N/A	N/A				

Table C-1E: Pipe Data and Hydraulic Simulation Results for the August 8th, 1996 Historical Event (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.32	4.11	N/A	N/A	1.73	51.101	50.417	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.38	N/A	N/A	1.78	51.101	50.417	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.56	4.81	N/A	N/A	1.62	52.108	52.102	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.79	3.18	N/A	N/A	1.50	52.169	52.108	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.84	N/A	N/A	1.62	52.169	52.108	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	0.33	2.39	N/A	N/A	1.95	52.180	52.172	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.86	1.53	N/A	N/A	2.35	52.192	52.180	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.29	N/A	N/A	1.95	52.192	52.180	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.36	2.71	N/A	N/A	1.62	52.201	52.192	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.35	2.40	N/A	N/A	1.53	52.218	52.201	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.73	N/A	N/A	1.63	52.218	52.201	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.60	4.05	N/A	N/A	1.57	52.225	52.218	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.99	3.53	N/A	N/A	1.48	52.356	52.225	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.89	N/A	N/A	1.58	52.356	52.224	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.52	6.04	N/A	N/A	1.52	57.711	57.058	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	6.39	5.55	N/A	N/A	1.60	55.190	53.750	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.44	6.04	N/A	N/A	1.50	59.354	58.173	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.65	6.04	N/A	N/A	1.52	57.048	56.419	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.63	4.50	N/A	N/A	1.73	51.146	51.101	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	2.55	4.54	N/A	N/A	1.72	52.102	51.146	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	52.102	51.146	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.92	6.04	N/A	N/A	1.52	58.173	57.711	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.77	5.61	N/A	N/A	1.57	55.254	55.188	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.66	6.00	N/A	N/A	1.53	55.927	55.256	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.94	6.02	N/A	N/A	1.53	56.418	55.926	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.95	6.05	N/A	N/A	1.50	60.086	59.354	N/A	N/A	N/A			

Note:

(1) A negative surcharge implies that the pipe is not flowing full

(2) Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.017 Interpolated HGL elevation

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																						
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																				
100	101	62.668	59.665	300	91.0	3.3	0.013	65.525	62.973	2.485	0.176	1.97	0.06	0.4	-0.175	0.93	62.793	60.187	B92L1	61.17	-1.623																							
																				B92L1	61.17	0.920	90.9	2.2	60.250																			
																				B93	61.89	1.391	90.9	10.9	60.499																			
																				B94	62.24	1.090	90.9	33.6	61.150																			
																				B95	62.74	0.962	90.9	55.5	61.778																			
																				B96	63.53	1.181	90.9	75.4	62.349																			
																				B97	63.52	1.209	90.9	74.1	62.311																			
																				B98	62.59	1.030	90.9	47.9	61.560																			
																				B99	61.56	1.238	90.9	4.7	60.322																			
																				101	102	59.590	59.440	375	12.5	1.2	0.013	62.973	62.958	1.739	0.192	2.39	0.26	1.4	0.222	0.93	60.187	59.821	B92L3	61.17	0.983			
																				102	104	59.410	58.060	375	45.0	3.0	0.013	62.958	62.440	2.750	0.304	3.04	0.29	1.0	0.036	0.97	59.821	58.603	L88	60.83	1.009			
																																								L88	60.83	2.084	45.2	5.3
L89	61.05	1.860	45.2	21.8	59.190																																							
L90	60.93	1.513	45.2	30.2	59.417																																							
L91	60.90	1.109	45.2	44.1	59.791																																							
104	105	57.985	57.509	450	34.0	1.4	0.013	62.440	61.173	2.121	0.337	2.14	0.31	0.9	0.168	0.97	58.603	58.196	L85	58.99	0.387																							
																				L85	58.99	0.743	34.0	4.3	58.247																			
																				L86	59.79	1.430	34.0	13.7	58.360																			
																				L87	60.00	1.450	34.0	29.6	58.550																			
																				105	106	57.359	56.689	600	67.0	1.0	0.013	61.173	60.340	2.172	0.614	2.41	0.68	1.1	0.237	0.97	58.196	57.265	L81	58.16	-0.036			
																				L81	58.16	0.729	66.9	11.9	57.431																			
																				L80	58.39	1.085	66.9	2.9	57.305																			
																				L82	58.22	0.588	66.9	26.4	57.632																			
																				L83	58.40	0.548	66.9	42.2	57.852																			
																				L84	58.95	0.945	66.9	53.2	58.005																			
106	107	56.614	56.534	675	16.0	0.5	0.013	60.340	60.597	1.661	0.594	1.96	0.68	1.1	-0.024	0.97	57.265	57.059	L79	58.44	1.175																							
107	108	56.384	56.338	825	23.0	0.2	0.013	60.597	60.999	1.201	0.642	1.49	0.68	1.1	-0.161	0.97	57.048	56.957	L74	58.91	1.862																							
108	200	56.308	56.277	825	15.5	0.2	0.013	60.999	61.047	1.201	0.642	1.55	0.68	1.1	-0.176	0.97	56.957	56.775	L73	59.22	2.263																							
109	105	60.496	57.584	375	116.5	2.5	0.013	63.958	61.173	2.510	0.277	2.51	0.19	0.7	-0.135	0.93	60.736	58.196	L75	59.26	-1.476																							
																				L75	59.26	0.682	116.3	17.5	58.578																			
																				L76	59.55	0.544	116.3	37.1	59.006																			
																				B103SD	60.07	0.636	116.3	56.7	59.434																			
																				B104SD	60.75	0.901	116.3	75.7	59.849																			
																				B105SD	61.36	1.096	116.3	94.7	60.264																			
																				B106SD	62.05	1.369	116.3	113.8	60.681																			
																				B102L1	61.93	1.255	116.3	113.5	60.675																			
																				B102L4	61.55	1.369	116.3	90.9	60.181																			
																				B101L1	60.92	1.016	116.3	78.2	59.904																			
																				B101L4	60.52	1.110	116.3	55.6	59.410																			
																				B100L1	59.97	0.787	116.3	45.2	59.183																			
B100L4	59.58	0.890	116.3	22.6	58.690																																							
110	111	63.156	62.676	300	48.0	1.0	0.013	66.059	65.794	1.368	0.097	0.86	0.01	0.1	-0.237	0.93	63.219	62.753	L60	63.78	0.561																							
111	112	62.646	60.812	300	65.5	2.8	0.013	65.794	64.056	2.289	0.162	1.94	0.04	0.3	-0.193	0.95	62.753	60.919	L66	62.23	-0.523																							
																				L66	62.23	1.283	65.6	1.0	60.947																			
																				L65	62.47	1.134	65.6	14.9	61.336																			
																				L64	62.67	1.021	65.6	26.1	61.649																			
																				L63	63.00	0.918	65.6	41.6	62.082																			
																				L62	63.31	1.052	65.6	47.9	62.258																			
																				L61	63.58	1.014	65.6	58.9	62.566																			
112	1120	60.737	59.667	375	53.5	2.0	0.013	64.056	63.228	2.245	0.248	2.00	0.09	0.4	-0.213	0.95	60.899	59.875	B108L4	61.64	0.741																							

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
113	114	57.385	57.059	1650	66.5	0.5	0.013	62.782	61.278	2.984	6.380	2.29	2.25	0.4	-0.866	0.98	58.169	57.736	L71	59.63	1.461				
114	200	55.526	55.482	1650	9.0	0.5	0.013	61.278	61.047	2.984	6.380	1.85	2.25	0.4	-0.725	0.98	56.451	56.318	N/A	N/A	N/A				
115	116	65.178	64.832	1200	49.5	0.7	0.013	70.750	68.745	2.884	3.262	1.40	0.14	0.0	-1.031	0.95	65.347	64.997	N/A	N/A	N/A				
116	117	63.832	63.010	1200	117.5	0.7	0.013	68.745	66.917	2.884	3.262	1.59	0.20	0.1	-0.999	0.97	64.033	63.210	N/A	N/A	N/A				
117	118	62.210	61.920	1500	58.0	0.5	0.013	66.917	66.057	2.829	4.998	2.30	1.20	0.2	-0.996	0.97	62.714	62.419	N/A	N/A	N/A				
118	119	60.620	60.200	1500	84.0	0.5	0.013	66.057	64.379	2.829	4.998	2.36	1.28	0.3	-0.979	0.97	61.141	60.718	N/A	N/A	N/A				
119	1190	59.200	58.892	1500	61.5	0.5	0.013	64.379	63.173	2.829	4.998	2.33	1.62	0.3	-0.871	0.97	59.829	59.480	N/A	N/A	N/A				
120	121	63.357	62.345	300	22.5	4.5	0.013	66.462	65.307	2.902	0.205	0.00	0.00	0.0	-0.300	0.00	63.357	62.475	B112L4	64.20	0.843				
121	201	61.570	59.820	375	62.5	2.8	0.013	65.307	62.895	2.656	0.293	2.71	0.30	1.0	0.530	0.95	62.475	60.504	B109L4	61.76	-0.715				
																				B109L4	61.76	0.463	62.4	25.1	61.297
																				B109L1	61.76	0.466	62.4	25.0	61.294
																				B110SD	62.44	0.581	62.4	42.9	61.859
																				B111SD	63.15	0.792	62.4	58.7	62.358
122	123	58.698	57.730	675	64.5	1.5	0.013	63.780	61.537	2.877	1.030	3.13	0.77	0.8	-0.235	1.03	59.138	58.166	L18	59.42	0.282				
																				L18	59.42	1.176	64.4	5.2	58.244
																				L19	60.08	1.666	64.4	16.4	58.414
																				L20	60.56	1.908	64.4	32.2	58.652
																				L21	60.98	2.182	64.4	41.9	58.798
																				L22	61.39	2.356	64.4	57.5	59.034
																				L24	61.34	2.443	64.4	48.4	58.897
																				L35	61.06	2.402	64.4	32.6	58.658
																				L26	60.61	2.126	64.4	21.1	58.484
																				L27	59.90	1.651	64.4	5.5	58.249
123	124	56.530	55.570	675	60.0	1.6	0.013	61.537	59.444	2.971	1.063	3.21	0.77	0.7	-0.244	1.03	56.961	55.997	L14	57.61	0.649				
124	125	54.370	53.402	675	60.5	1.6	0.013	59.444	57.486	2.971	1.063	3.01	0.83	0.8	-0.194	1.03	54.851	54.128	L9	55.68	0.829				
125	126	53.372	53.180	675	12.0	1.6	0.013	57.486	57.303	2.971	1.063	2.58	0.83	0.8	0.081	1.03	54.128	54.124	N/A	N/A	N/A				
126	127	50.816	50.762	2400	34.0	0.2	0.013	57.303	54.548	2.189	9.902	1.72	7.26	0.7	0.908	1.07	54.124	54.121	N/A	N/A	N/A				
127	128	50.702	50.618	2400	52.5	0.2	0.013	54.548	54.596	2.189	9.902	1.72	7.24	0.7	1.019	1.07	54.121	54.119	N/A	N/A	N/A				
128	129	50.588	50.396	2400	120.0	0.2	0.013	54.596	55.185	2.189	9.902	1.56	7.20	0.7	1.132	1.07	54.120	54.115	N/A	N/A	N/A				
129	130	50.366	50.302	2400	43.0	0.2	0.013	55.185	54.130	2.119	9.588	1.54	7.16	0.7	1.349	1.07	54.115	54.112	N/A	N/A	N/A				
Chan1A	Chan1A.1	50.130	49.970	N/A	105.0	N/A	N/A	N/A	N/A	N/A	N/A	0.80	7.44	N/A	N/A	1.10	54.112	54.111	N/A	N/A	N/A				
136	137	48.960	48.919	2550	43.5	0.1	0.013	54.450	54.449	2.054	10.492	2.11	7.31	0.7	-0.914	2.07	50.596	50.537	N/A	N/A	N/A				
137	138	48.899	48.781	2550	84.5	0.1	0.013	54.449	54.371	2.132	10.888	2.17	7.31	0.7	-0.912	2.07	50.537	49.997	N/A	N/A	N/A				
138	Pond1	48.556	48.520	3000	18.0	0.2	0.013	54.371	52.000	2.840	20.073	2.83	7.31	0.4	-1.732	2.05	49.824	49.796	N/A	N/A	N/A				
138	13801	N/A	N/A	N/A	N/A	N/A	N/A	54.371	54.248	N/A	N/A	0.00	0.02	N/A	N/A	2.60	49.824	49.797	N/A	N/A	N/A				
139	Pond1	48.610	48.542	1350	19.5	0.4	0.013	53.949	52.000	2.206	3.158	-0.10	-0.03	0.0	-0.164	1.35	49.796	49.796	N/A	N/A	N/A				
141	142	60.073	58.966	600	61.5	1.8	0.013	65.120	62.053	2.914	0.824	3.09	0.55	0.7	-0.237	1.02	60.436	59.325	L52	60.19	-0.246				
																				L52	60.19	0.798	61.7	3.7	59.392
																				L51	60.63	1.116	61.7	10.5	59.514
																				L50	61.53	1.686	61.7	28.8	59.844
																				L49	62.36	2.381	61.7	36.3	59.979
																				L48	62.74	2.416	61.7	55.5	60.324
																				L47	63.79	3.381	61.7	60.2	60.409
																				L44	62.69	2.551	61.7	45.2	60.139
																				L43	61.84	1.834	61.7	37.8	60.006
																				L42	61.29	1.628	61.7	18.7	59.662
																				L41	60.68	1.152	61.7	11.3	59.528
142	146	56.866	55.650	675	76.0	1.6	0.013	62.053	59.797	2.971	1.063	2.61	0.82	0.8	-0.107	1.02	57.434	56.095	L36	57.89	0.456				
143	144	62.304	62.067	900	21.5	1.1	0.013	66.000	65.691	2.985	1.899	3.36	2.06	1.1	-0.054	1.03	63.150	62.885	N/A	N/A	N/A				
144	145	60.467	59.438	900	93.5	1.1	0.013	65.691	62.503	2.985	1.899	3.40	2.09	1.1	0.066	1.05	61.433	60.259	N/A	N/A	N/A				

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
145	146	52.128	51.900	1950	57.0	0.4	0.013	62.503	59.797	2.976	8.887	2.87	5.23	0.6	0.051	1.05	54.129	54.127	L3	58.26	4.131				
146	126	51.750	51.438	2100	89.0	0.4	0.013	59.797	57.303	2.962	10.258	2.81	6.44	0.6	0.277	1.07	54.127	54.124	L8	55.21	1.083				
149	150	69.665	67.673	375	83.0	2.4	0.013	73.027	70.740	2.459	0.272	2.85	0.32	1.2	1.096	1.02	71.136	68.267	B54L4	69.35	-1.786				
																				B54L4	69.35	0.921	83.1	4.7	68.429
																				B54L1	69.35	0.275	83.1	23.4	69.075
																				B56L4	70.19	0.877	83.1	30.3	69.313
																				B56L1	70.19	0.145	83.1	51.5	70.045
																				B57SD	70.63	0.074	83.1	66.3	70.556
																				B43L4	71.22	0.419	83.1	73.4	70.801
																				B58L4	70.88	-0.014	83.1	76.1	70.894
																				B58L1	70.88	0.721	83.1	54.8	70.159
150	1500	67.613	67.325	375	12.0	2.4	0.013	70.740	70.549	2.459	0.272	2.88	0.32	1.2	0.279	1.02	68.267	67.700	B53L3	68.90	0.633				
151	152	66.061	64.985	600	119.5	0.9	0.013	70.273	68.426	2.060	0.583	2.69	0.76	1.3	0.685	1.02	67.346	65.534	B47L4	66.63	-0.716				
																				B47L4	66.63	0.836	119.4	17.1	65.794
																				B47L1	66.63	0.515	119.4	38.3	66.115
																				B48L4	67.21	0.992	119.4	45.1	66.218
																				B48L1	67.21	0.670	119.4	66.3	66.540
																				B49L4	67.77	1.130	119.4	72.9	66.640
																				B49L1	67.77	0.808	119.4	94.1	66.962
																				B50SD	68.07	0.877	119.4	109.3	67.193
																				B51L3	68.41	1.126	119.4	115.3	67.284
																				B59L4	68.18	1.009	119.4	107.9	67.171
																				B59L1	68.18	1.330	119.4	86.7	66.850
																				B60SD	67.97	1.225	119.4	79.8	66.745
																				B61L4	67.31	0.794	119.4	64.7	66.516
																				B61L1	67.31	1.116	119.4	43.5	66.194
																				B62L4	66.89	0.796	119.4	36.9	66.094
																				B62L1	66.89	1.118	119.4	15.7	65.772
152	207	64.910	63.914	675	83.0	1.2	0.013	68.426	67.607	2.573	0.921	2.91	0.94	1.0	-0.100	1.03	65.485	64.480	L41	65.57	0.085				
																				L41	65.57	1.076	83.2	1.2	64.494
																				L42	65.98	1.330	83.2	14.1	64.650
																				L43	66.07	1.275	83.2	26.1	64.795
																				L44	66.12	1.151	83.2	40.5	64.969
																				L45	66.23	1.135	83.2	50.9	65.095
																				L46	66.87	1.595	83.2	65.8	65.275
153	152	65.947	65.210	375	33.5	2.2	0.013	69.666	68.426	2.355	0.260	2.00	0.14	0.5	-0.137	0.95	66.185	65.485	N/A	N/A	N/A				
154	328	70.602	69.900	825	58.5	1.2	0.013	74.160	74.460	2.942	1.572	2.26	0.91	0.6	-0.226	1.03	71.201	70.367	B102L5	72.70	1.499				
154	149	71.027	69.740	300	71.5	1.8	0.013	74.160	73.027	1.835	0.130	1.56	0.06	0.4	-0.126	1.10	71.201	71.136	B42SD	71.19	-0.011				
																				B42SD	71.19	0.046	71.4	8.8	71.144
																				B41L1	71.59	0.440	71.4	15.3	71.150
																				B41L4	71.59	0.421	71.4	36.6	71.169
																				B40L1	71.88	0.705	71.4	43.0	71.175
																				B40L3	71.88	0.691	71.4	58.1	71.189
																				B563L1	72.21	1.017	71.4	62.2	71.193
																				B45L1	71.98	0.793	71.4	55.8	71.187
																				B45L4	71.98	0.813	71.4	34.5	71.167
																				B44SD	71.47	0.309	71.4	27.5	71.161
																				B43L1	71.47	0.323	71.4	11.9	71.147
200	202	55.452	54.939	1650	114.0	0.5	0.013	61.047	61.215	2.859	6.114	2.65	3.06	0.5	-0.784	0.98	56.318	55.905	L32	58.76	2.442				
201	1190	59.745	59.657	450	17.5	0.5	0.013	62.895	63.173	1.268	0.202	1.91	0.30	1.5	0.309	0.95	60.504	60.039	N/A	N/A	N/A				

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL				
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)		
202	203	54.879	54.793	1650	19.0	0.5	0.013	61.215	60.844	2.859	6.114	2.25	3.07	0.5	-0.624	0.98	55.905	55.618	L11	58.85	2.945					
203	145	52.617	52.188	1950	122.5	0.4	0.013	60.844	62.503	2.819	8.418	2.09	3.30	0.4	-0.435	1.00	54.132	54.129	N/A	N/A	N/A					
205	206	53.674	53.604	750	28.0	0.3	0.013	57.025	57.752	1.260	0.557	1.02	0.20	0.4	-0.289	0.97	54.135	54.135	L22	54.73	0.595					
																				L22	54.73	0.595	28.2	25.9	54.135	
																				L21	54.73	0.595	28.2	27.4	54.135	
																				L20	55.10	0.965	28.2	22.9	54.135	
206	2060	53.574	53.309	750	106.0	0.3	0.013	57.752	60.580	1.260	0.557	1.23	0.28	0.5	-0.189	0.95	54.135	54.132	L19	55.79	1.655					
207	208	63.884	63.524	675	30.0	1.2	0.013	67.607	66.998	2.573	0.921	2.84	0.94	1.0	-0.079	1.03	64.480	64.110	L39	65.04	0.560					
208	209	63.494	63.158	675	28.0	1.2	0.013	66.998	66.429	2.573	0.921	2.86	0.97	1.1	-0.059	1.03	64.110	63.750	L37	64.89	0.780					
209	143	62.858	62.454	750	50.5	0.8	0.013	66.429	66.000	2.254	0.996	2.64	1.21	1.2	0.088	1.03	63.696	63.150	L34	64.28	0.584					
210	404	67.386	67.033	300	13.5	2.9	0.013	69.707	69.352	2.330	0.165	1.42	0.02	0.1	-0.235	1.05	67.451	67.098	L339	68.56	1.109					
211	213	65.244	64.063	525	52.5	2.3	0.013	68.274	67.022	2.980	0.645	3.00	0.35	0.5	-0.248	1.02	65.521	64.337	L347	65.57	0.049					
																				L347	65.57	1.199	52.4	1.5	64.371	
																				L346	66.07	1.213	52.4	23.0	64.857	
																				L345	66.61	1.550	52.4	32.0	65.060	
																				L344	67.15	1.760	52.4	46.6	65.390	
																				3-1	66.15	1.054	52.4	33.6	65.096	
																				1	65.55	0.723	52.4	21.7	64.827	
213	143	63.409	62.529	675	55.0	1.6	0.013	67.022	66.000	2.971	1.063	2.58	0.86	0.8	-0.066	1.02	64.018	63.150	L58	64.18	0.162					
																				L58	64.18		0.733	55.0	18.8	63.447
																				L57	64.44		0.722	55.0	36.0	63.718
																				L56	64.75	0.830	55.0	48.8	63.920	
218	219	68.348	68.227	1200	80.5	0.2	0.013	71.456	71.102	1.335	1.510	1.59	1.52	1.0	-0.251	1.05	69.297	69.158	18-1	69.48	0.183					
																				18-1	69.48		0.290	80.5	18.7	69.190
																				18-2	69.48		0.275	80.5	27.1	69.205
																				19-1	69.51		0.288	80.5	37.2	69.222
																				19-2	69.51		0.273	80.5	45.6	69.237
																				20-1	69.54		0.285	80.5	55.9	69.255
																				20-2	69.54	0.271	80.5	64.4	69.269	
																				21-1	69.57	0.283	80.5	74.5	69.287	
219	7050	68.207	67.957	450	71.5	0.4	0.013	71.102	71.058	1.061	0.169	1.80	0.29	1.7	0.501	1.07	69.158	68.436	N/A	N/A	N/A					
219	219w	N/A	N/A	N/A	N/A	N/A	N/A	71.102	71.102	N/A	N/A	0.00	1.35	N/A	N/A	1.07	69.157	68.490	N/A	N/A	N/A					
220	221	69.598	69.023	825	57.5	1.0	0.013	73.729	71.992	2.685	1.435	2.71	0.94	0.7	-0.319	1.03	70.104	69.586	B92L1	70.77	0.666					
221	222	68.948	68.760	900	37.5	0.5	0.013	71.992	71.788	2.012	1.280	2.08	1.00	0.8	-0.262	1.03	69.586	69.430	B94L4	70.08	0.494					
222	218	68.685	68.461	975	64.0	0.4	0.013	71.788	71.456	1.776	1.326	1.65	1.02	0.8	-0.230	1.05	69.430	69.297	21-2	69.57	0.140					
																				21-2	69.57	0.267	64.0	2.7	69.303	
																				22-1	69.60	0.277	64.0	12.7	69.323	
																				22-2	69.60	0.259	64.0	21.2	69.341	
																				23-1	69.63	0.268	64.0	31.1	69.362	
																				23-2	69.63	0.251	64.0	39.4	69.379	
																				24-1	69.67	0.270	64.0	49.5	69.400	
																				24-2	69.67	0.252	64.0	58.0	69.418	
																				B95-1	69.95	0.620	64.0	15.9	69.330	
																				B95-4	69.95	0.575	64.0	37.7	69.375	
																				B94-1	70.08	0.689	64.0	45.4	69.391	
223	153	68.527	65.977	375	102.0	2.5	0.013	71.844	69.666	2.510	0.277	2.18	0.10	0.3	-0.223	0.95	68.679	66.185	B36SD	68.23	-0.449					
																				B36SD	68.23		1.663	101.9	15.6	66.567
																				B37L4	68.70		1.984	101.9	21.7	66.716
																				B37L1	68.70		1.465	101.9	42.9	67.235
																				B38L4	69.31		1.916	101.9	49.4	67.394

U/S MH	D/S MH	U/S	D/S	Pipe Dia.	Pipe	Pipe	n	U/S MH	D/S MH	Design	Design	Peak	Peak	Peak /	Surcharge	Time	Max.	Max.	Lot Number	USF	Freeboard (2)	Interpolated HGL		
		Invert	Invert	/ Height	Length	Slope		Cover Elev. (m)	Cover Elev. (m)	Vel. (m/s)	Flow (m³/s)	Pipe Vel. (m/s)	Pipe Flow (m³/s)	Design Flow	U/S (1) (m)	to Peak (h)	U/S HGL (m)	D/S HGL (m)				Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
																			B38L1	69.31	1.397	101.9	70.6	67.913
																			B39L4	69.62	1.533	101.9	77.7	68.087
																			B39L1	69.62	1.012	101.9	99.0	68.608
																			B47L1	69.23	0.774	101.9	92.8	68.456
																			B47L4	69.23	1.332	101.9	70.0	67.898
																			B48L1	68.82	1.047	101.9	64.9	67.773
																			B48L4	68.82	1.565	101.9	43.7	67.255
																			B49SD	68.53	1.439	101.9	37.0	67.091
223	2210	69.472	69.350	300	30.5	0.4	0.013	71.844	71.910	0.865	0.061	-0.53	-0.01	-0.2	-0.221	1.03	69.551	69.704	B96L1	70.07	0.519			
305	1004	68.048	67.350	1200	97.0	0.7	0.013	74.190	72.210	2.925	3.308	2.28	2.03	0.6	-0.295	1.05	68.953	68.030	Fut. Est.	72.09	3.137			
321	322	72.304	71.596	375	118.0	0.6	0.013	75.189	74.573	1.230	0.136	1.09	0.06	0.4	-0.208	0.95	72.471	71.896	B107L1	72.89	0.419			
322	323	71.566	71.482	375	14.0	0.6	0.013	74.573	74.458	1.230	0.136	0.73	0.05	0.4	-0.045	0.95	71.896	71.884	N/A	N/A	N/A			
323	324	71.407	71.255	450	38.0	0.4	0.013	74.458	74.375	1.134	0.180	1.48	0.23	1.3	0.027	0.97	71.884	71.658	N/A	N/A	N/A			
324	154	70.880	70.662	825	43.5	0.5	0.013	74.375	74.160	1.899	1.015	1.67	0.85	0.8	-0.047	1.03	71.658	71.219	N/A	N/A	N/A			
326	327	72.264	71.625	300	106.5	0.6	0.013	75.062	74.527	1.060	0.075	0.99	0.03	0.4	-0.164	0.95	72.400	71.792	B102L1	72.70	0.300			
																			B102L1	72.70	0.874	106.5	6.0	71.826
																			B102L5	72.70	0.708	106.5	35.1	71.992
																			B103L1	72.87	0.822	106.5	44.8	72.048
																			B103L4	72.87	0.702	106.5	65.8	72.168
																			B104L1	73.05	0.825	106.5	75.8	72.225
																			B104L5	73.05	0.661	106.5	104.5	72.389
																			B105L10	73.24	0.875	106.5	100.3	72.365
																			B105L6	73.24	1.033	106.5	72.7	72.207
																			B106L10	73.08	0.932	106.5	62.3	72.148
																			B106L6	73.08	1.088	106.5	35.1	71.992
																			B107L10	72.89	0.948	106.5	26.3	71.942
327	324	71.595	71.405	300	19.0	1.0	0.013	74.527	74.375	1.368	0.097	1.11	0.05	0.5	-0.103	0.97	71.792	71.658	B107L6	72.89	1.098			
328	220	69.840	69.628	825	23.5	0.9	0.013	74.460	73.729	2.547	1.362	2.62	0.94	0.7	-0.298	1.03	70.367	70.132	B100SD	72.25	1.883			
700	701	62.816	62.320	450	85.5	0.6	0.013	68.120	66.290	1.365	0.217	1.54	0.20	0.9	-0.103	1.02	63.163	62.636	L1	64.26	1.097			
701	702	62.175	61.555	600	77.5	0.8	0.013	66.290	65.902	1.942	0.549	2.17	0.47	0.9	-0.171	1.02	62.604</							

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
800	705	68.981	67.736	300	83.0	1.5	0.013	71.774	71.209	1.675	0.118	1.74	0.08	0.7	-0.113	1.02	69.168	68.014	L34	69.22	0.052				
																				L34	69.22	0.952	82.8	18.2	68.268
																				L33	69.36	0.875	82.8	33.8	68.485
																				L32	69.53	0.925	82.8	42.4	68.605
																				L31	69.62	0.813	82.8	56.9	68.807
																				L30	69.82	0.889	82.8	65.8	68.931
																				L29	70.07	0.931	82.8	80.7	69.139
801	802	66.773	65.685	450	72.5	1.5	0.013	69.959	69.091	2.196	0.349	2.34	0.34	1.0	-0.038	1.02	67.185	66.139	L325	67.35	0.165				
																				L325	67.35	1.166	72.5	3.1	66.184
																				L326	67.53	1.120	72.5	18.8	66.410
																				L327	67.79	1.263	72.5	26.9	66.527
																				L328	67.99	1.153	72.5	48.4	66.837
																				B614SD	68.21	1.047	72.5	71.0	67.163
																				L333	67.98	0.817	72.5	71.0	67.163
																				L332	67.91	0.875	72.5	62.1	67.035
																				L331	67.79	1.028	72.5	43.2	66.762
																				L330	67.63	0.986	72.5	35.0	66.644
																				L329	67.47	1.100	72.5	16.0	66.370
802	803w	65.655	65.490	450	11.0	1.5	0.013	69.091	68.865	2.196	0.349	2.10	0.34	1.0	0.034	1.02	66.139	65.848	L324	67.08	0.941				
803	804	65.415	64.253	525	77.5	1.5	0.013	68.865	67.626	2.433	0.527	2.21	0.38	0.7	-0.127	1.03	65.813	64.584	L319	65.72	-0.093				
																				L319	65.72	0.801	77.0	21.0	64.919
																				L320	66.05	0.823	77.0	40.3	65.227
																				L321	66.39	1.035	77.0	48.3	65.355
																				L322	66.71	1.060	77.0	66.8	65.650
																				L323	66.89	1.192	77.0	69.8	65.698
804	1410	63.411	62.736	600	37.5	1.8	0.013	67.626	66.028	2.914	0.824	3.02	0.50	0.6	-0.260	1.02	63.751	63.073	L123	64.76	1.009				
805	806	65.961	65.580	300	63.5	0.6	0.013	68.761	68.412	1.060	0.075	1.01	0.03	0.4	-0.163	0.97	66.098	65.716	B601SD	66.46	0.362				
806	807	65.430	65.037	450	65.5	0.6	0.013	68.412	68.055	1.389	0.221	1.24	0.07	0.3	-0.270	0.97	65.610	65.216	B604SD	66.07	0.460				
807	804	65.007	64.719	450	48.0	0.6	0.013	68.055	67.626	1.389	0.221	1.24	0.07	0.3	-0.270	0.98	65.187	64.898	L296	65.77	0.583				
1000	1001	71.583	71.225	1500	71.5	0.5	0.013	80.657	76.179	2.829	4.998	2.53	1.77	0.4	-0.869	1.03	72.214	71.841	B80L1	73.88	1.666				
1001	1002	69.999	69.647	1500	70.5	0.5	0.013	76.179	73.972	2.829	4.998	2.59	1.84	0.4	-0.856	1.03	70.643	70.280	B87SD	72.44	1.797				
1002	1003	68.842	68.447	1500	79.0	0.5	0.013	73.972	73.177	2.829	4.998	2.65	1.95	0.4	-0.842	1.05	69.500	69.099	B85L1	71.32	1.820				
1003	1004	68.417	68.015	1500	80.5	0.5	0.013	73.177	72.210	2.829	4.998	2.68	2.08	0.4	-0.819	1.05	69.098	68.690	L51	71.02	1.922				
1004	10050	66.600	66.376	1950	80.0	0.3	0.013	72.210	71.960	2.521	7.530	2.89	5.60	0.7	-0.731	1.07	67.819	67.526	N/A	N/A	N/A				
1005	1006	62.740	61.706	1950	79.5	1.3	0.013	69.850	65.660	5.433	16.224	4.97	6.00	0.4	-1.114	1.07	63.576	62.528	N/A	N/A	N/A				
1006	1007	61.209	60.689	1950	40.0	1.3	0.013	65.660	64.500	5.433	16.224	4.66	6.15	0.4	-1.042	1.07	62.117	61.714	N/A	N/A	N/A				
1007	1008	59.854	59.607	1950	19.0	1.3	0.013	64.500	69.050	5.433	16.224	2.92	8.54	0.5	-0.090	1.08	61.714	61.404	N/A	N/A	N/A				
Chan2	Chan2.3	59.607	58.730	N/A	15.1	N/A	N/A	N/A	N/A	N/A	N/A	3.49	11.05	N/A	N/A	1.07	61.404	60.333	N/A	N/A	N/A				
1120	113	59.592	59.277	450	17.5	1.8	0.013	63.228	62.782	2.405	0.383	2.36	0.25	0.6	-0.167	0.95	59.875	59.540	N/A	N/A	N/A				
1150	115	66.416	66.378	1050	7.5	0.5	0.013	70.780	70.750	2.230	1.931	0.00	0.00	0.0	-1.050	0.00	66.416	65.346	N/A	N/A	N/A				
1190	113	58.457	58.366	1650	18.5	0.5	0.013	63.173	62.782	2.984	6.380	2.06	1.93	0.3	-0.891	0.97	59.216	58.988	N/A	N/A	N/A				
1410	141	62.306	61.973	600	18.5	1.8	0.013	66.028	65.120	2.914	0.824	3.00	0.50	0.6	-0.258	1.02	62.648	62.310	L45	63.24	0.592				
1500	151	66.525	66.211	450	16.5	1.9	0.013	70.549	70.273	2.471	0.393	2.12	0.34	0.9	0.653	1.02	67.628	67.346	B51L1	68.41	0.782				
2000	1000	74.535	74.383	1350	38.0	0.4	0.013	80.886	80.657	2.358	3.376	2.00	0.93	0.3	-0.856	1.03	75.029	74.869	N/A	N/A	N/A				
2060	203	53.279	53.255	750	9.5	0.3	0.013	60.580	60.844	1.260	0.557	1.21	0.28	0.5	0.103	0.93	54.132	54.132	L30	58.92	4.788				
3270	328	71.960	71.672	300	57.5	0.5	0.013	74.781	74.460	0.967	0.068	0.73	0.02	0.2	-0.195	1.02	72.065	71.768	B103L8	72.87	0.805				
7050	705	67.937	67.685	450	14.0	1.8	0.013	71.058	71.209	2.405	0.383	1.78	0.29	0.8	0.049	1.07	68.436	68.014	N/A	N/A	N/A				
803w	80300	65.460	65.356	450	9.5	1.1	0.013	68.865	66.728	1.880	0.299	2.12	0.29	1.0	-0.087	1.03	65.823	65.715	N/A	N/A	N/A				
803w	803	N/A	N/A	N/A	N/A	N/A	N/A	68.865	68.865	N/A	N/A	0.00	0.05	N/A	N/A	1.02	65.823	65.813	N/A	N/A	N/A				
13801	139	48.792	48.654	1350	46.0	0.3	0.013	54.248	53.949	2.042	2.923	-0.10	0.02	0.0	-0.345	2.65	49.797	49.796	N/A	N/A	N/A				

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (⁽¹⁾) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (⁽²⁾) (m)	Interpolated HGL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Pond1	Out	N/A	N/A	N/A	N/A	N/A	N/A	52.000	52.000	N/A	N/A	3.69	6.38	N/A	N/A	2.67	49.796	48.500	N/A	N/A	N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1220	122	59.846	59.639	675	23.0	0.9	0.013	64.579	63.780	2.228	0.797	2.46	0.66	0.8	-0.201	1.03	60.320	60.107	L23	61.85	1.530																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
2100	210	68.058	67.416	300	53.5	1.2	0.013	70.887	69.707	1.499	0.106	0.00	0.00	0.0	-0.300	0.00	68.058	67.451	L338	68.61	0.552																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
2180	218	68.816	68.648	600	84.0	0.2	0.013	72.848	71.456	0.971	0.275	1.06	0.30	1.1	0.126	0.98	69.542	69.297	B84L1	69.71	0.168																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			B84L1	69.71	0.364				83.9	16.8	69.346																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B84L4	69.71	0.301				83.9	38.3	69.409																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B83L1	70.27	0.842	83.9	45.0	69.428																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			B83L3	70.27	0.798	83.9	60.0	69.472																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			B82L1	70.96	1.469	83.9	66.6	69.491																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			B82L4	70.96	1.424	83.9	81.9	69.536																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
2210	221	69.320	69.248	300	18.0	0.4	0.013	71.910	71.992	0.865	0.061	0.99	0.07	1.2	0.084	0.93	69.704	69.586	B96L4	70.07	0.366																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
3060	305	71.436	70.730	525	78.5	0.9	0.013	74.790	74.190	1.885	0.408	1.76	0.34	0.8	-0.084	0.97	71.877	71.092	L52	72.19	0.313																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
3061	3060	72.356	71.511	450	65.0	1.3	0.013	75.440	74.790	2.044	0.325	2.28	0.29	0.9	-0.114	0.95	72.692	71.877	L56	72.93	0.238																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			L56	72.93	0.942				64.8	8.8	71.988																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B73SD	73.17	1.021	64.8	21.6	72.149																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L57	73.23	0.844	64.8	40.5	72.386																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L58	73.36	0.801	64.8	54.2	72.559																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L60	73.51	0.868	64.8	60.8	72.642																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L61	73.43	0.995	64.8	44.4	72.435																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L62	73.37	1.128	64.8	29.0	72.242																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																			L63	73.28	1.214	64.8	15.0	72.066																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
3062	3061	73.396	72.506	300	44.5	2.0	0.013	76.271	75.440	1.935	0.137	1.39	0.03	0.2	-0.202	0.95	73.494	72.692	L59	73.54	0.046																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			L59	73.54	0.808				44.4	2.2	72.732																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B72L1	73.92	0.988				44.4	13.3	72.932																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B72L2	73.92	0.820				44.4	22.6	73.100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B71L1	74.10	0.848				44.4	31.0	73.252																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B66L4	74.39	1.048				44.4	36.0	73.342																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B66L1	73.99	0.890				44.4	22.6	73.100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
3063	3062	74.336	73.426	300	45.5	2.0	0.013	77.323	76.271	1.935	0.137	1.56	0.03	0.2	-0.201	0.95	74.435	73.524	B71L4	74.50	0.065																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			B71L4	74.50	0.817				45.4	7.9	73.683																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B70L1	74.89	1.049				45.4	15.8	73.841																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B70L2	74.89	0.860				45.4	25.2	74.030																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B69L1	75.49	1.296				45.4	33.4	74.194																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B69L2	75.49	1.095				45.4	43.4	74.395																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B68L1	76.39	1.995				45.4	43.4	74.395																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B67L4	75.19	0.996				45.4	33.4	74.194																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			B67L1	74.79	1.107				45.4	7.9	73.683																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
80300 901	80301 902	65.336 69.073	64.940 67.903	450 300	36.0 65.0	1.1 1.8	0.013 0.013	66.728 71.873	65.751 70.716	1.880 1.835	0.299 0.130	2.13 1.34	0.29 0.02	1.0 0.2	-0.090 -0.215	1.03 0.93	65.696 69.158	65.299 68.004	N/A L13	N/A 69.13	N/A -0.028																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			L13	69.13	0.984				65.0	8.0	68.146																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L12	69.49	1.133				65.0	19.9	68.357																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L11	69.68	1.030				65.0	36.4	68.650																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L10	69.81	0.972				65.0	47.0	68.838																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L9	69.81	0.688				65.0	63.0	69.122																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
902	903	67.883	65.563	300	72.5	3.2	0.013	70.716	68.393	2.447	0.173	2.07	0.06	0.3	-0.179	0.93	68.004	65.688	L18	66.92	-1.084																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																			L18	66.92	0.998				72.3	7.3	65.922																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L17	67.35	0.912				72.3	23.4	66.438																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L16	67.80	1.007				72.3	34.5	66.793																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L15	68.21	0.888				72.3	51.0	67.322																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																			L14	68.67	0.954				72.3	63.3	67.716																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard ⁽²⁾ (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
903 705w	1006 709	65.503 67.661	65.287 66.113	300 375	18.0 86.0	1.2 1.8	0.013 0.013	68.393 71.209	65.660 68.928	1.499 2.130	0.106 0.235	1.24 2.14	0.06 0.12	0.5 0.5	-0.115 -0.184	0.95 1.00	65.688 67.852	65.441 66.304	N/A L24	N/A 67.63	N/A -0.222			
																			L24	67.63	1.196	86.0	7.2	66.434
																			L25	68.23	1.544	86.0	21.2	66.686
																			L26	68.95	1.985	86.0	36.7	66.965
																			L27	69.33	2.119	86.0	50.4	67.211
																			L28	69.33	1.815	86.0	67.3	67.515
219w	1004	67.505	67.350	1200	103.5	0.2	0.013	71.102	72.210	1.335	1.510	1.52	1.45	1.0	-0.215	1.07	68.490	68.008	L35	69.61	1.120			
																			L35	69.61	1.209	103.5	84.3	68.401
																			L36	70.01	1.668	103.5	71.8	68.342
																			L37	70.32	2.033	103.5	59.9	68.287
																			L38	70.49	2.271	103.5	45.3	68.219
																			L39	70.49	2.312	103.5	36.4	68.178
																			L40	70.36	2.247	103.5	22.5	68.113
																			L46	70.51	2.392	103.5	23.6	68.118
																			L45	70.56	2.376	103.5	37.7	68.184
																			L44	70.58	2.356	103.5	46.4	68.224
																			L43	70.32	2.028	103.5	61.0	68.292
																			L42	70.06	1.714	103.5	72.5	68.346
																			L41	69.67	1.264	103.5	85.4	68.406
501	503	80.293	78.998	300	74.0	1.8	0.013	83.090	81.790	1.810	0.128	0.00	0.00	0.0	-0.361	0.00	80.232	78.275	84	80.14	-0.092			
																			79	81.31	1.128	74.0	72.1	80.182
																			80	81.20	1.399	74.0	57.7	79.801
																			81	80.82	1.363	74.0	44.7	79.457
																			82	80.66	1.584	74.0	30.3	79.076
																			83	80.27	1.482	74.0	19.4	78.788
																			84	80.14	1.733	74.0	5.0	78.407
501	505	80.232	80.053	300	17.0	1.1	0.013	83.090	82.920	1.402	0.099	0.00	0.00	0.0	-0.300	0.00	80.232	80.167	77	81.27	1.038			
502	503	78.418	78.282	300	34.0	0.4	0.013	81.120	81.790	0.865	0.061	0.64	0.02	0.3	-0.184	0.95	78.534	78.377	87	79.42	0.886			
503	504	78.132	77.949	450	73.0	0.3	0.013	81.790	81.360	0.896	0.143	0.69	0.03	0.2	-0.307	0.95	78.275	78.070	41	79.36	1.085			
504	509	77.904	77.420	450	88.0	0.6	0.013	81.360	80.780	1.329	0.211	1.03	0.06	0.3	-0.284	0.97	78.070	77.714	34	78.97	0.900			
																			34	78.97	1.216	88.0	9.9	77.754
																			35	79.03	1.218	88.0	24.3	77.812
																			36	79.08	1.232	88.0	33.1	77.848
																			37	79.14	1.234	88.0	47.5	77.906
																			38	79.19	1.256	88.0	54.4	77.934
																			39	79.25	1.258	88.0	68.8	77.992
																			40	79.31	1.282	88.0	77.6	78.028
																			52	79.54	1.481	88.0	85.4	78.059
																			53	79.46	1.425	88.0	79.3	78.035
																			54	79.43	1.453	88.0	64.9	77.977
																			55	79.43	1.506	88.0	51.9	77.924
																			56	79.32	1.454	88.0	37.5	77.866
																			57	79.23	1.408	88.0	26.6	77.822
																			58	79.12	1.359	88.0	11.6	77.761
505	506	80.048	79.359	300	72.5	1.0	0.013	82.920	82.190	1.333	0.094	1.06	0.03	0.3	-0.181	0.93	80.167	79.595	64	80.26	0.093			
																			64	80.26	0.626	72.5	4.9	79.634
																			65	80.40	0.661	72.5	18.2	79.739
																			66	80.54	0.688	72.5	32.6	79.852
																			67	80.65	0.712	72.5	43.5	79.938

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				68	80.77	0.718	72.5	57.9	80.052
																				69	80.92	0.777	72.5	69.4	80.143
																				71	80.32	0.648	72.5	9.7	79.672
																				72	80.46	0.686	72.5	22.7	79.774
																				73	80.57	0.682	72.5	37.1	79.888
																				74	80.69	0.733	72.5	45.9	79.957
																				75	80.82	0.749	72.5	60.3	80.071
																				76	81.20	1.051	72.5	70.2	80.149
506	508	79.209	78.406	450	76.5	1.1	0.013	82.190	81.480	1.837	0.292	1.76	0.25	0.9	-0.064	0.97	79.595	78.727	59	79.58	-0.015				
																				59	79.58	0.713	76.5	12.3	78.867
																				60	79.72	0.690	76.5	26.7	79.030
																				61	79.86	0.683	76.5	39.7	79.177
																				62	80.00	0.659	76.5	54.1	79.341
																				63	80.12	0.631	76.5	67.2	79.489
																				70	80.18	0.637	76.5	71.9	79.543
508	509	78.331	77.385	525	86.0	1.1	0.013	81.480	80.780	2.084	0.451	2.14	0.27	0.6	-0.233	0.97	78.623	77.714	N/A	N/A	N/A				
509	514	77.345	75.629	525	78.0	2.2	0.013	80.780	78.700	2.947	0.638	3.28	0.54	0.8	-0.156	0.97	77.714	76.006	N/A	N/A	N/A				
510	511	77.452	76.567	300	88.5	1.0	0.013	80.260	79.410	1.368	0.097	1.44	0.06	0.6	-0.130	0.95	77.622	76.737	90-2	77.72	0.098				
																				88-1	78.32	1.067	88.5	51.6	77.253
																				88-4	78.32	0.855	88.5	72.8	77.465
																				89-1	78.00	1.030	88.5	23.3	76.970
																				89-4	78.00	0.818	88.5	44.5	77.182
																				90-2	77.72	0.957	88.5	2.6	76.763
																				90-4	77.72	0.816	88.5	16.7	76.904
																				96-1	78.46	1.118	88.5	60.5	77.342
																				96-5	78.46	0.869	88.5	85.4	77.591
																				97-1	78.08	1.017	88.5	32.6	77.063
																				97-4	78.08	0.805	88.5	53.8	77.275
																				98-2	77.80	1.005	88.5	5.8	76.795
																				98-5	77.80	0.803	88.5	26.0	76.997
511	514	76.342	75.629	525	75.0	1.0	0.013	79.410	78.700	1.936	0.419	1.68	0.20	0.5	-0.246	0.95	76.621	76.006	100-1	77.19	0.569				
																				100-1	77.19	1.036	75.0	18.0	76.154
																				100-4	77.19	0.863	75.0	39.2	76.327
																				90-1	77.72	1.137	75.0	70.4	76.583
																				91-1	77.47	1.165	75.0	36.5	76.305
																				91-5	77.47	0.941	75.0	63.8	76.529
																				92-1	77.33	1.256	75.0	8.3	76.074
																				92-4	77.33	1.082	75.0	29.5	76.248
																				98-1	77.80	1.190	75.0	73.7	76.610
																				99-1	77.47	1.088	75.0	45.8	76.382
																				99-4	77.47	0.915	75.0	67.0	76.555
512	514	77.743	75.779	375	119.0	1.7	0.013	80.670	78.700	2.039	0.225	1.82	0.09	0.4	-0.212	0.95	77.906	76.006	101-1	77.24	-0.666				
																				102	77.52	0.899	119.0	38.5	76.621
																				102	77.52	0.756	119.0	47.5	76.764
																				101-1	77.24	0.717	119.0	32.4	76.523
																				101-4	77.24	1.055	119.0	11.2	76.185
																				103-1	78.08	0.872	119.0	75.3	77.208
																				103-4	78.08	1.210	119.0	54.1	76.870
																				104-1	78.52	0.968	119.0	96.8	77.552
																				104-3	78.52	1.210	119.0	81.7	77.310

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL																							
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)																					
																				105-1	78.53	0.646	119.0	117.6	77.884																				
																				105-3	78.53	0.873	119.0	103.4	77.657																				
																				93-1	77.74	1.134	119.0	37.6	76.606																				
																				93-5	77.74	1.568	119.0	10.4	76.172																				
																				94-1	77.88	0.718	119.0	72.4	77.162																				
																				94-5	77.88	1.154	119.0	45.1	76.726																				
																				95-1	78.67	0.959	119.0	106.8	77.711																				
																				95-5	78.67	1.395	119.0	79.5	77.275																				
512	521	77.792	76.876	375	114.5	0.8	0.013	80.670	80.040	1.420	0.157	1.09	0.03	0.2	-0.261	0.95	77.906	76.988	25	78.18	0.274																								
																				17	78.54	1.347	114.5	25.6	77.193																				
																				18	78.54	1.291	114.5	32.6	77.249																				
																				19	78.59	1.072	114.5	66.1	77.518																				
																				20	78.59	1.512	114.5	11.2	77.078																				
																				21	78.58	0.947	114.5	80.5	77.633																				
																				22	78.67	0.967	114.5	89.2	77.703																				
																				23	78.75	1.453	114.5	38.6	77.297																				
																				24	78.75	1.337	114.5	53.0	77.413																				
																				25	78.18	1.164	114.5	3.5	77.016																				
																				26	78.23	1.155	114.5	10.8	77.075																				
																				27	78.29	1.100	114.5	25.2	77.190																				
																				28	78.34	0.521	114.5	103.6	77.819																				
																				29	78.40	0.937	114.5	59.3	77.463																				
																				30	78.45	1.189	114.5	34.0	77.261																				
																				31	78.51	1.134	114.5	48.4	77.376																				
																				32	78.56	0.981	114.5	73.7	77.579																				
33	78.56	0.911	114.5	82.4	77.649																																								
6100	509	77.471	77.420	450	6.0	0.9	0.013	80.780	80.780	1.653	0.263	1.31	0.21	0.8	0.015	1.05	77.936	77.720	Est. Fut.	78.68	0.744																								
514	516	75.254	74.735	900	86.5	0.6	0.013	78.700	78.090	2.204	1.402	1.90	1.05	0.8	-0.148	0.98	76.006	75.332	N/A	N/A	N/A																								
515	516	75.458	75.125	450	74.0	0.5	0.013	78.460	78.090	1.203	0.191	1.27	0.12	0.6	-0.182	1.07	75.726	75.370	96-1	76.43	0.704																								
516	517	74.675	74.207	900	78.0	0.6	0.013	78.090	77.580	2.204	1.402	2.39	1.19	0.9	-0.243	1.05	75.332	74.906	100-4	76.17	0.838																								
																				98	76.29	1.173	78.0	38.6	75.117																				
																				98	76.29	1.222	78.0	29.6	75.068																				
																				100-4	76.17	1.256	78.0	1.4	74.914																				
																				97-1	76.30	1.148	78.0	45.0	75.152																				
																				97-4	76.30	1.032	78.0	66.2	75.268																				
																				99-1	76.23	1.280	78.0	8.1	74.950																				
																				99-3	76.23	1.197	78.0	23.2	75.033																				
																				517	518	74.738	73.051	300	86.5	2.0	0.013	77.580	75.900	1.910	0.135	1.97	0.08	0.6	-0.132	1.05	74.906	73.239	113-2	74.43	-0.476				
																																								114	74.86	1.276	86.5	17.9	73.584
																																								114	74.86	1.103	86.5	26.9	73.757
																																								102-1	75.69	1.401	86.5	54.5	74.289
																																								102-4	75.69	0.992	86.5	75.7	74.698
103-1	75.32	1.566	86.5	26.7	73.754																																								
103-4	75.32	1.158	86.5	47.9	74.162																																								
104-1	74.57	1.237	86.5	4.9	73.333																																								
104-3	74.57	0.946	86.5	20.0	73.624																																								
113-2	74.43	1.106	86.5	4.4	73.324																																								
113-3	74.43	0.969	86.5	11.5	73.461																																								
115-1	75.54	1.659	86.5	33.3	73.881																																								
115-3	75.54	1.368	86.5	48.4	74.172																																								

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				116-1	75.93	1.629	86.5	55.1	74.301
																				116-4	75.93	1.221	86.5	76.3	74.709
517	525	74.182	73.385	900	88.5	0.9	0.013	77.580	76.700	2.700	1.717	2.25	1.20	0.7	-0.176	1.05	74.906	73.940	48	75.25	0.344				
																				48	75.25	1.257	88.5	4.9	73.993
																				49	75.59	1.439	88.5	19.3	74.151
																				50	76.24	1.939	88.5	33.1	74.301
																				100-1	76.17	1.480	88.5	68.7	74.690
																				100-3	76.17	1.326	88.5	82.8	74.844
																				101-2	76.39	1.859	88.5	54.1	74.531
																				101-3	76.39	1.772	88.5	62.1	74.618
518	519	73.031	70.493	300	87.5	2.9	0.013	75.900	73.320	2.330	0.165	2.50	0.13	0.8	-0.092	1.07	73.239	70.694	108-1	71.98	-1.259				
																				106	73.27	0.712	87.5	64.1	72.558
																				106	73.27	0.973	87.5	55.1	72.297
																				112	73.88	1.199	87.5	68.3	72.681
																				112	73.88	0.938	87.5	77.3	72.942
																				105-1	73.98	1.235	87.5	70.5	72.745
																				105-3	73.98	0.796	87.5	85.6	73.184
																				107-1	72.82	1.323	87.5	27.6	71.497
																				107-4	72.82	0.707	87.5	48.8	72.113
																				108-1	71.98	1.114	87.5	5.9	70.866
																				108-3	71.98	0.675	87.5	21.0	71.305
																				109-1	72.10	1.298	87.5	3.7	70.802
																				109-3	72.10	0.859	87.5	18.8	71.241
																				110-1	72.62	1.199	87.5	25.0	71.421
																				110-3	72.62	0.760	87.5	40.1	71.860
111-1	73.30	1.259	87.5	46.3	72.041																				
111-3	73.30	0.806	87.5	61.9	72.494																				
113-1	74.43	1.302	87.5	83.7	73.128																				
519	520	70.132	69.761	600	13.5	2.8	0.013	73.320	72.860	3.601	1.018	2.90	0.46	0.4	-0.268	1.07	70.464	70.043	22	71.62	1.156				
520	527	69.138	66.316	600	79.5	3.6	0.013	72.860	70.040	4.092	1.157	3.63	0.62	0.5	-0.249	1.07	69.489	66.658	15	67.95	-1.539				
																				15	67.95	1.096	79.5	5.5	66.854
																				16	68.22	0.750	79.5	22.8	67.470
																				17	68.77	1.019	79.5	30.7	67.751
																				18	69.45	1.186	79.5	45.1	68.264
																				19	70.14	1.413	79.5	58.1	68.727
																				20	70.77	1.530	79.5	72.5	69.240
																				21	71.17	1.766	79.5	77.1	69.404
521	522	76.846	76.507	375	11.5	3.0	0.013	80.040	79.690	2.727	0.301	1.61	0.03	0.1	-0.289	0.95	76.932	76.588	15	78.33	1.398				
522	523	76.432	73.096	450	69.5	4.8	0.013	79.690	77.160	3.927	0.625	2.55	0.08	0.1	-0.341	0.97	76.541	73.246	9	75.24	-1.301				
																				9	75.24	1.553	69.5	9.3	73.687
																				10	75.66	1.447	69.5	20.4	74.213
																				11	76.22	1.324	69.5	34.8	74.896
																				12	76.80	1.487	69.5	43.6	75.313
																				13	77.37	1.374	69.5	58.0	75.996
																				14	77.72	1.369	69.5	65.5	76.351
523	524	72.946	72.929	600	11.5	0.2	0.013	77.160	77.090	0.841	0.238	0.56	0.08	0.3	-0.300	0.97	73.246	73.233	7	75.09	1.844				
524	525	72.854	72.720	675	67.0	0.2	0.013	77.090	76.700	1.051	0.376	0.95	0.19	0.5	-0.296	0.98	73.233	72.991	5	74.99	1.757				
525	5260	71.960	69.860	900	60.0	3.5	0.013	76.700	73.260	5.324	3.387	5.06	1.42	0.4	-0.491	1.05	72.369	70.267	32	71.51	-0.859				
																				32	71.51	1.166	60.0	2.2	70.344
																				33	72.20	1.597	60.0	9.6	70.603

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				34	72.90	1.890	60.0	21.2	71.010
																				35	73.59	2.174	60.0	32.8	71.416
																				36	74.30	2.379	60.0	47.2	71.921
																				42	71.67	1.182	60.0	6.3	70.488
																				43	72.31	1.675	60.0	10.5	70.635
																				44	73.07	1.931	60.0	24.9	71.139
																				45	73.65	2.265	60.0	31.9	71.385
																				46	74.31	2.421	60.0	46.3	71.889
526	527	66.534	66.046	900	65.0	0.8	0.013	69.960	70.040	2.464	1.568	2.81	1.63	1.0	-0.129	1.07	67.305	66.795	13	67.89	0.585				
																				11	67.97	1.109	65.0	8.4	66.861
																				12	67.91	0.931	65.0	23.4	66.979
																				13	67.89	0.842	65.0	32.2	67.048
																				14	67.89	0.729	65.0	46.6	67.161
																				23	68.16	1.213	65.0	19.4	66.947
																				24	68.23	1.171	65.0	33.6	67.059
																				25	68.23	1.064	65.0	47.3	67.166
																				26	68.28	1.023	65.0	58.9	67.257
																				37	68.30	1.007	65.0	63.5	67.293
527	528	66.016	65.119	900	39.0	2.3	0.013	70.040	68.520	4.316	2.745	4.68	2.27	0.8	-0.258	1.07	66.658	65.743	7	66.89	0.232				
																				7	66.89	1.114	39.0	1.4	65.776
																				8	67.37	1.341	39.0	12.2	66.029
																				9	67.82	1.516	39.0	23.9	66.304
																				10	67.97	1.352	39.0	37.3	66.618
528	529	64.813	64.165	900	18.5	3.5	0.013	68.520	67.570	5.324	3.387	5.30	2.27	0.7	-0.322	1.07	65.391	64.704	6	66.10	0.709				
529	530	63.394	61.136	900	64.5	3.5	0.013	67.570	64.600	5.324	3.387	5.03	2.29	0.7	-0.306	1.07	63.988	62.265	1	63.88	-0.108				
																				1	63.88	1.361	64.5	9.5	62.519
																				2	63.92	1.035	64.5	23.2	62.885
																				3	64.39	1.195	64.5	34.8	63.195
																				4	64.86	1.310	64.5	48.1	63.550
																				5	65.44	1.548	64.5	60.9	63.892
530	531	61.061	60.930	975	14.5	0.9	0.013	64.600	64.460	2.848	2.126	3.01	2.29	1.1	0.229	1.07	62.265	62.091	N/A	N/A	N/A				
531	1007	60.705	60.647	1200	16.5	0.4	0.013	64.460	64.500	2.039	2.307	2.02	2.37	1.0	0.186	1.07	62.091	61.714	N/A	N/A	N/A				
533	534	78.895	77.147	300	92.0	1.9	0.013	81.720	79.950	1.886	0.133	1.61	0.04	0.3	-0.192	0.95	79.003	77.255	61	78.31	-0.693				
																				61	78.31	0.947	92.0	5.7	77.363
																				62	78.72	1.083	92.0	20.1	77.637
																				63	78.74	0.843	92.0	33.8	77.897
																				64	79.82	1.115	92.0	76.3	78.705
																				64	79.82	1.271	92.0	68.1	78.549
																				65	79.96	1.130	92.0	82.9	78.830
																				65	79.96	1.221	92.0	78.1	78.739
																				66	80.11	1.215	92.0	86.3	78.895
																				66	80.11	1.248	92.0	84.6	78.862
																				67	80.11	1.139	92.0	90.3	78.971
																				67	80.11	1.177	92.0	88.3	78.933
																				68	79.92	0.938	92.0	90.9	78.982
																				68	79.92	0.917	92.0	92.0	79.003
																				69	79.99	1.008	92.0	90.9	78.982
																				69	79.99	1.057	92.0	88.3	78.933
																				72	78.57	1.021	92.0	15.5	77.550
																				72	78.57	1.182	92.0	7.0	77.388

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
																				70-1	79.75	1.391	92.0	58.1	78.359
																				70-4	79.75	0.962	92.0	80.7	78.788
																				71-1	79.32	1.581	92.0	25.5	77.740
																				71-4	79.32	1.151	92.0	48.1	78.169
534	535	77.072	74.786	375	77.5	3.0	0.013	79.950	77.660	2.727	0.301	2.41	0.11	0.4	-0.217	0.97	77.230	74.939	79	76.31	-0.920				
																				74	77.04	1.114	77.5	33.4	75.926
																				74	77.04	0.862	77.5	41.9	76.178
																				75	76.55	1.159	77.5	15.3	75.391
																				75	76.55	0.904	77.5	23.9	75.646
																				76	77.90	0.844	77.5	71.6	77.056
																				76	77.90	1.096	77.5	63.1	76.804
																				77	77.34	0.828	77.5	53.2	76.512
																				77	77.34	1.080	77.5	44.7	76.260
																				79	76.31	1.238	77.5	4.5	75.072
																				73-1	77.95	1.477	77.5	51.9	76.473
																				73-4	77.95	0.809	77.5	74.5	77.141
535	536	74.726	74.415	375	13.5	2.3	0.013	77.660	77.340	2.408	0.266	1.94	0.11	0.4	-0.187	0.97	74.914	74.579	80-4	75.75	0.836				
536	537	74.341	73.365	375	30.5	3.2	0.013	77.340	76.470	2.840	0.314	2.65	0.13	0.4	-0.207	0.97	74.509	73.531	81-3	74.96	0.451				
																				78-2	75.03	1.461	30.5	1.2	73.569
																				78-3	75.03	1.278	30.5	6.9	73.752
																				78-4	75.03	1.018	30.5	15.0	74.012
																				80-1	75.75	1.623	30.5	18.6	74.127
																				80-3	75.75	1.279	30.5	29.3	74.471
																				81-3	74.96	1.310	30.5	3.7	73.650
																				81-4	74.96	1.057	30.5	11.6	73.903
537	541	73.215	71.989	525	54.5	2.3	0.013	76.470	75.480	2.980	0.645	2.99	0.34	0.5	-0.254	0.97	73.486	72.286	82-1	74.07	0.584				
																				59	74.11	1.476	54.5	15.8	72.634
																				60	74.12	1.169	54.5	30.2	72.951
																				78-1	75.03	1.782	54.5	43.7	73.248
																				81-1	74.96	1.672	54.5	45.5	73.288
																				81-2	74.96	1.520	54.5	52.4	73.440
																				82-1	74.07	1.474	54.5	14.1	72.596
																				82-4	74.07	0.976	54.5	36.7	73.094
538	539	74.586	74.554	300	8.0	0.4	0.013	77.430	77.390	0.865	0.061	0.64	0.01	0.2	-0.208	1.05	74.678	74.635	89	75.57	0.892				
539	540	74.524	73.324	300	60.0	2.0	0.013	77.390	76.130	1.935	0.137	1.62	0.04	0.3	-0.194	1.05	74.630	73.429	87	74.99	0.360				
540	541	73.294	72.214	300	27.0	4.0	0.013	76.130	75.480	2.736	0.193	1.84	0.04	0.2	-0.203	1.05	73.391	72.301	N/A	N/A	N/A				
541	543	71.689	71.532	825	78.5	0.2	0.013	75.480	75.730	1.201	0.642	1.21	0.48	0.8	-0.228	1.05	72.286	71.947	83-1	73.46	1.174				
543	305	70.720	70.220	1200	78.0	0.6	0.013	75.730	74.190	2.758	3.119	2.56	1.18	0.4	-0.685	1.05	71.235	70.732	N/A	N/A	N/A				
544	538	74.846	74.616	300	46.0	0.5	0.013	77.700	77.430	0.967	0.068	0.70	0.01	0.2	-0.214	1.03	74.932	74.697	57	75.47	0.538				
544	543	74.567	72.417	600	86.0	2.5	0.013	77.700	75.730	3.434	0.971	3.68	0.66	0.7	-0.235	1.03	74.932	72.781	N/A	N/A	N/A				
545	515	75.873	75.478	450	79.0	0.5	0.013	78.890	78.460	1.268	0.202	1.31	0.12	0.6	-0.202	1.03	76.121	75.726	94-1	76.73	0.609				
545	544	75.805	74.597	600	105.0	1.2	0.013	78.890	77.700	2.329	0.658	2.36	0.36	0.5	-0.284	1.03	76.121	74.932	56	76.20	0.079				
																				51	77.19	1.371	105.0	78.3	75.819
																				52	77.15	1.493	105.0	64.0	75.657
																				53	76.91	1.377	105.0	53.1	75.533
																				54	76.63	1.260	105.0	38.7	75.370
																				55	76.37	1.119	105.0	28.2	75.251
																				56	76.20	1.112	105.0	13.8	75.088
																				91-1	77.44	1.530	105.0	86.4	75.910
																				91-4	77.44	1.331	105.0	103.9	76.109

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m³/s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m³/s)	Peak / Design Flow	Surcharge U/S (¹) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (²) (m)	Interpolated HGL			
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)	
5260	526	68.634	66.534	825	60.0	3.5	0.013	73.260	69.960	5.024	2.685	4.68	1.42	0.5	-0.398	1.05	69.061	67.305	27	68.65	-0.411				
																				27	68.65	1.207	60.0	4.7	67.443
																				28	69.07	1.206	60.0	19.1	67.864
																				29	69.63	1.564	60.0	26.0	68.066
																				30	70.23	1.743	60.0	40.4	68.487
																				31	70.87	2.178	60.0	47.4	68.692
																				38	68.95	1.221	60.0	14.5	67.729
																				39	69.64	1.489	60.0	28.9	68.151
																				40	70.34	1.935	60.0	37.6	68.405
																				41	71.03	2.285	60.0	49.2	68.745
DICB500	545	76.260	75.924	525	24.0	1.4	0.013	78.590	78.890	2.351	0.509	2.24	0.41	0.8	-0.106	1.03	76.679	76.280	N/A	N/A	N/A				
5040	519	70.894	70.192	600	39.0	1.8	0.013	74.000	73.320	2.914	0.824	2.44	0.31	0.4	-0.319	0.97	71.175	70.464	N/A	N/A	N/A				
401	402	67.666	67.641	300	7.0	0.4	0.013	70.551	70.446	0.809	0.057	0.06	0.00	0.0	0.049	0.87	68.015	68.015	9-2	68.47	0.455				
																				10-1	68.47	0.455	7.0	3.5	68.015
																				10-2	68.47	0.455	7.0	2.8	68.015
																				11-1	68.62	0.605	7.0	5.3	68.015
																				11-2	68.62	0.605	7.0	5.3	68.015
																				12-2	68.54	0.525	7.0	1.7	68.015
																				9-2	68.50	0.485	7.0	2.4	68.015
402	403	67.611	67.335	300	32.5	0.9	0.013	70.446	70.295	1.261	0.089	1.41	0.10	1.1	0.104	1.00	68.015	67.690	6-1	68.23	0.215				
																				12-1	68.54	0.551	32.5	29.9	67.989
																				13-1	68.43	0.612	32.5	12.8	67.818
																				13-2	68.43	0.528	32.5	21.2	67.902
																				14-2	68.42	0.703	32.5	2.7	67.717
																				6-1	68.23	0.454	32.5	8.6	67.776
																				6-2	68.23	0.498	32.5	4.2	67.732
																				7-1	68.28	0.484	32.5	10.6	67.796
																				7-2	68.28	0.493	32.5	9.7	67.787
																				8-1	68.36	0.533	32.5	13.7	67.827
																				8-2	68.36	0.453	32.5	21.7	67.907
																				9-1	68.50	0.543	32.5	26.7	67.957
403	404	67.110	66.917	525	77.0	0.3	0.013	70.295	69.352	0.993	0.215	1.16	0.25	1.2	0.055	1.02	67.690	67.257	17-1	68.23	0.540				
																				14-1	68.42	0.761	77.0	71.4	67.659
																				15-1	68.42	0.866	77.0	52.9	67.554
																				15-2	68.42	0.818	77.0	61.3	67.602
																				16-1	68.29	0.840	77.0	34.4	67.450
																				16-2	68.29	0.792	77.0	42.8	67.498
																				17-1	68.23	0.888	77.0	15.2	67.342
																				17-2	68.23	0.840	77.0	23.6	67.390
404	211	66.433	65.274	525	51.5	2.3	0.013	69.352	68.274	2.980	0.645	2.90	0.31	0.5	-0.267	1.02	66.691	65.529	4-1	66.76	0.069				
																				4-1	66.76	1.195	51.5	1.6	65.565
																				4-2	66.76	1.005	51.5	10.0	65.755
																				5-1	67.15	1.122	51.5	22.1	66.028
																				5-2	67.15	0.924	51.5	30.9	66.226
																				L343	67.62	1.897	51.5	8.6	65.723
																				L342	67.97	1.981	51.5	20.4	65.989
																				L341	68.19	1.930	51.5	32.4	66.260
																				L340	68.40	1.851	51.5	45.2	66.549
Chan1B	Chan1B.1	49.260	49.220	N/A	30.0	N/A	N/A	N/A	N/A	N/A	N/A	0.56	7.77	N/A	N/A	1.07	54.093	54.093	N/A	N/A	N/A				
Chan1B.4	136	48.990	48.960	N/A	27.7	N/A	N/A	N/A	N/A	N/A	N/A	1.18	7.31	N/A	N/A	2.05	50.761	50.596	N/A	N/A	N/A				

Table C-1F: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm + 20% (Interim Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Vel. (m/s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL		
																						Length HGL (m)	Dist. From D/S MH (m)	HGL (m)
Chan1B.3	Chan1B.4	48.970	48.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.39	4.25	N/A	N/A	1.53	51.502	50.761	N/A	N/A	N/A			
Chan1B.3	Chan1B.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.07	N/A	N/A	2.05	51.502	50.761	N/A	N/A	N/A			
Chan1B.2	Chan1B.rd1	49.200	49.110	N/A	57.7	N/A	N/A	N/A	N/A	N/A	N/A	0.60	7.37	N/A	N/A	1.92	54.035	54.035	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	49.220	49.200	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.89	3.36	N/A	N/A	0.98	54.093	54.035	N/A	N/A	N/A			
Chan1B.1	Chan1B.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	6.28	N/A	N/A	1.83	54.092	54.034	N/A	N/A	N/A			
Chan1A.6	Chan1B	49.450	49.260	N/A	115.0	N/A	N/A	N/A	N/A	N/A	N/A	0.35	4.58	N/A	N/A	2.25	54.090	54.093	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	49.470	49.450	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	0.91	1.61	N/A	N/A	3.75	54.090	54.090	N/A	N/A	N/A			
Chan1A.5	Chan1A.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.19	N/A	N/A	2.25	54.090	54.090	N/A	N/A	N/A			
Chan1A.4	Chan1A.5	49.700	49.470	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.40	3.50	N/A	N/A	2.23	54.094	54.090	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	49.720	49.700	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	1.39	2.46	N/A	N/A	1.00	54.100	54.094	N/A	N/A	N/A			
Chan1A.3	Chan1A.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	3.32	N/A	N/A	1.08	54.100	54.093	N/A	N/A	N/A			
Chn1A.2	Chan1A.3	49.950	49.720	N/A	145.0	N/A	N/A	N/A	N/A	N/A	N/A	0.66	6.21	N/A	N/A	1.08	54.103	54.100	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	49.970	49.950	N/A	10.0	N/A	N/A	N/A	N/A	N/A	N/A	2.17	3.87	N/A	N/A	0.95	54.111	54.103	N/A	N/A	N/A			
Chan1A.1	Chn1A.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	4.85	N/A	N/A	1.12	54.111	54.103	N/A	N/A	N/A			
Chan2.5	Chan2.6	57.010	56.360	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	2.92	11.04	N/A	N/A	1.08	57.969	57.367	N/A	N/A	N/A			
Chan2.7	Chan1B	53.600	52.700	N/A	35.0	N/A	N/A	N/A	N/A	N/A	N/A	9.37	8.21	N/A	N/A	1.50	56.862	54.093	N/A	N/A	N/A			
Chan2.4	Chan2.5w	58.730	56.810	N/A	27.5	N/A	N/A	N/A	N/A	N/A	N/A	2.92	11.04	N/A	N/A	1.07	59.598	58.439	N/A	N/A	N/A			
Chan2.6	Chan2.6w	56.160	55.060	N/A	55.6	N/A	N/A	N/A	N/A	N/A	N/A	1.95	11.02	N/A	N/A	1.08	57.367	56.921	N/A	N/A	N/A			
Chan1B.rd2	Chan1B.3	49.070	48.970	N/A	63.3	N/A	N/A	N/A	N/A	N/A	N/A	0.65	7.31	N/A	N/A	1.95	51.549	51.502	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	49.170	49.150	N/A	24.0	N/A	N/A	N/A	N/A	N/A	N/A	4.08	7.31	N/A	N/A	1.93	54.035	51.549	N/A	N/A	N/A			
Chan1B.rd1	Chan1B.rd2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	N/A	N/A	0.00	54.033	51.549	N/A	N/A	N/A			
Chan2.5w	Chan2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.27	11.04	N/A	N/A	1.08	58.439	57.969	N/A	N/A	N/A			
Chan2.7w	Chan2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.81	10.37	N/A	N/A	1.52	56.856	56.857	N/A	N/A	N/A			
Chan2.6.1	Chan2.7w	55.060	53.600	N/A	73.3	N/A	N/A	N/A	N/A	N/A	N/A	1.76	10.05	N/A	N/A	1.05	56.870	56.869	N/A	N/A	N/A			
Chan2.6w	Chan2.6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.20	10.77	N/A	N/A	1.05	56.920	56.862	N/A	N/A	N/A			
Chan2.3	Chan2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.36	11.04	N/A	N/A	1.07	60.333	59.597	N/A	N/A	N/A			

Note:

⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

⁽²⁾ Conservative estimate of freeboard based on U/S HGL and lowest USF connected to pipe. Actual HGL / freeboard at all connecting lots interpolated where conservative estimate does not meet freeboard requirements.

69.190 Interpolated HGL elevation

Attachment D

Ultimate Conditions Road Ponding Depths

Table D-7: Ponding at Major Low Points for the 100-Year Chicago Storm and the 100-Year Chicago Storm +20% ⁽¹⁾

DDSWMM Segment ID	Max. Static Ponding Depth ⁽²⁾ (cm)	100-Year, 3-Hour Chicago Storm			100-Year, 3-Hour Chicago Storm + 20%		
		Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)	Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)
LP1003NE	8.0	1.00	12.4	20.4	1.00	14.6	22.6
LP1003NW	8.0	1.00	8.6	16.6	1.00	9.6	17.6
LP101NE	12.8	1.00	6.6	19.3	1.00	7.2	20.0
LP101SE	9.0	1.00	8.8	17.8	1.00	9.9	18.9
LP105SE (4)	12.8	1.00	13.6	26.4	1.00	17.4	30.2
LP105SW	5.0	1.00	17.6	22.6	1.00	22.6	27.6
LP109NW	5.0	1.00	7.9	12.9	1.00	9.2	14.2
LP109SW	12.8	1.00	7.6	20.4	1.00	8.7	21.5
LP121NW	14.0	10.00	7.6	21.6	10.00	9.0	23.0
LP121SW	14.0	10.00	15.1	29.1	10.00	18.4	32.4
LP134SW	16.5	5.00	8.2	24.7	5.00	9.5	26.0
LP135SE	5.5	6.00	17.2	22.7	6.00	22.1	27.6
LP142NE	5.0	1.00	12.7	17.7	1.00	16.9	21.9
LP142SE	12.8	1.00	12.4	25.1	1.00	16.3	29.0
LP147SE	12.8	1.00	14.6	27.4	1.00	19.3	32.1
LP147SW	11.0	1.00	14.8	25.8	1.00	19.7	30.7
LP151NE	12.8	1.00	9.9	22.6	1.00	11.6	24.3
LP151NW	5.0	1.00	11.0	16.0	1.00	13.2	18.2
LP200NE	12.8	1.00	13.1	25.9	1.00	15.4	28.1
LP200NW	4.0	1.00	12.3	16.3	1.00	14.9	18.9
LP205SE	5.0	1.00	9.9	14.9	1.00	11.0	16.0
LP209NE	26.0	4.66	9.1	35.1	15.00	10.4	36.4
LP209NW	26.0	10.04	5.9	31.9	15.00	6.3	32.3
LP213NE	9.0	1.00	10.0	19.0	1.00	12.5	21.5
LP213SE	10.0	1.00	9.3	19.3	1.00	11.5	21.5
LP2180NW	11.0	6.00	9.3	20.3	6.00	11.0	22.0
LP2180S1	13.0	1.00	13.5	26.5	1.00	15.3	28.3
LP218SE	13.0	2.00	11.2	24.2	2.00	14.0	27.0
LP218SW	4.0	1.00	12.1	16.1	1.00	14.8	18.8
LP219N1	5.0	1.00	7.9	12.9	1.00	10.2	15.2

Table D-7: Ponding at Major Low Points for the 100-Year Chicago Storm and the 100-Year Chicago Storm +20% ⁽¹⁾

DDSWMM Segment ID	Max. Static Ponding Depth ⁽²⁾ (cm)	100-Year, 3-Hour Chicago Storm			100-Year, 3-Hour Chicago Storm + 20%		
		Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)	Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)
LP219N2	13.0	2.00	9.2	22.2	2.00	11.0	24.0
LP219NE	13.0	1.00	4.4	17.3	1.00	5.9	18.8
LP219SE	17.0	6.00	6.7	23.7	6.00	8.0	25.0
LP2210NE	13.0	2.00	5.8	18.8	2.00	6.3	19.3
LP2210NW	13.0	1.00	4.7	17.7	1.00	5.5	18.5
LP305N1	17.0	4.00	15.7	32.7	4.00	19.7	36.7
LP305N2	13.0	2.00	12.0	25.0	2.00	13.7	26.7
LP305NW	10.0	6.00	17.0	26.9	6.00	21.4	31.4
LP305SW (4)	16.0	6.00	10.6	26.6	6.00	13.8	29.8
LP3061N1	13.0	2.00	13.5	26.5	2.00	16.2	29.2
LP3061N2	4.0	1.00	12.8	16.8	1.00	16.0	20.0
LP323SE	15.0	5.00	11.7	26.7	5.00	12.9	27.9
LP323SW	15.0	0.43	6.4	21.4	0.62	6.9	21.9
LP324NW	4.0	0.00	9.5	13.5	0.00	11.7	15.7
LP324SW	13.0	3.00	12.7	25.7	3.00	14.1	27.1
LP402SE	24.0	1.00	7.8	31.8	1.00	8.6	32.6
LP402SW	22.0	1.00	4.2	26.2	1.00	4.6	26.6
LP403NE	13.0	1.00	9.5	22.5	1.00	11.4	24.4
LP403NW	7.0	1.00	9.3	16.3	1.00	11.5	18.5
LP403SW	20.0	1.00	9.4	29.4	1.00	10.3	30.3
LP506NE	13.0	3.00	10.6	23.6	3.00	11.8	24.8
LP506NW	13.0	3.00	9.3	22.3	3.00	10.7	23.7
LP511NE	14.0	3.00	12.0	26.0	3.00	14.3	28.3
LP512E1	9.0	0.57	3.2	12.2	1.00	3.5	12.5
LP512SE	11.0	1.00	7.3	18.3	1.00	8.8	19.8
LP514NW	19.0	4.00	14.1	33.1	4.00	16.4	35.4
LP514SE	13.0	2.00	13.9	26.9	2.00	16.1	29.1
LP516SE	8.0	1.00	6.9	14.9	1.00	7.6	15.6
LP517SE (4)	14.0	4.00	8.9	22.9	4.00	10.8	24.8
LP520NE	12.0	1.00	12.9	24.9	1.00	15.6	27.6

Table D-7: Ponding at Major Low Points for the 100-Year Chicago Storm and the 100-Year Chicago Storm +20% ⁽¹⁾

DDSWMM Segment ID	Max. Static Ponding Depth ⁽²⁾ (cm)	100-Year, 3-Hour Chicago Storm			100-Year, 3-Hour Chicago Storm + 20%		
		Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)	Storage Used (m ³)	Flow Depth ⁽³⁾ (cm)	Total Depth (cm)
LP520NW	6.0	1.00	11.0	17.0	1.00	12.8	18.8
LP524SE	13.0	4.00	9.2	22.2	4.00	10.4	23.4
LP526NE	3.0	1.00	13.6	16.6	1.00	16.5	19.5
LP526SE	14.0	4.00	12.7	26.7	4.00	15.2	29.2
LP531NW	13.0	1.00	18.4	31.4	1.00	24.1	37.1
LP537NW	11.0	1.00	13.7	24.6	1.00	16.1	27.1
LP537SE	13.0	1.00	11.9	24.9	1.00	13.7	26.7
LP541SW	15.0	4.00	7.7	22.6	4.00	8.6	23.6
LP541W1	15.0	5.00	7.2	22.2	5.00	8.4	23.4
LP6100SE	13.0	4.00	15.2	28.2	4.00	18.7	31.7
LP6100SW	6.0	1.00	14.2	20.2	1.00	17.9	23.9
LP700NE	13.0	3.00	6.6	19.6	3.00	7.2	20.2
LP700SE	13.0	3.00	7.9	20.9	3.00	9.2	22.2
LP709NE	13.0	3.00	7.7	20.7	3.00	9.2	22.2
LP709NW	10.0	1.00	6.7	16.7	1.00	8.5	18.5
LP7710NE	5.0	0.00	6.7	11.7	0.00	7.5	12.5
LP7710NW	5.0	0.00	6.9	11.9	0.00	7.7	12.7
LP800NE	13.0	3.00	4.7	17.7	3.00	5.2	18.2
LP800SE	11.0	2.00	6.1	17.1	2.00	6.7	17.7
LP803SE	12.8	1.00	10.0	22.7	1.00	11.5	24.2
LP803SW	5.0	1.00	10.2	15.2	1.00	12.1	17.1
Total		188.70	m3		204.62	m3	

⁽¹⁾ As per DDSWMM models for the 100-year, 3-hour Chicago storm and the 100-year, 3-hour Chicago storm + 20%.

⁽²⁾ As per DSEL grading plan.

⁽³⁾ Flow depth on major system inflow segment; set to 0 cm for calculation of total water depth where flow is contained within ponding area without overflow.

⁽⁴⁾ Flow depth calculated based on flow across road crown acting as a broad crested triangular weir.