Leduc County

Nisku Industrial Business Park

Water Distribution System Analysis

Prepared for

Leduc County

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1.0 Introduction

UMA was commissioned by Leduc County to conduct a water distribution system analysis for the Nisku Industrial Business Park. This area is currently undergoing significant growth. This necessitated the review of the water distribution system and its ability to meet existing needs as well as future demands.

As development continues and population grows, the demands on the water distribution systems will increase necessitating the need for expansion and upgrading. This study is to address these needs and provide a plan to serve the Nisku Industrial Business Park for the next 20 years.

The existing water supply and distribution system is generally adequate in terms of the pressure; however there are some areas experiencing inadequate hydrant coverage and fire flow demands.

2.0 Study Area

2.1 LOCATION

The Nisku Industrial Business Park is located east of Highway 2, south of City of Edmonton limits (41 Avenue SW) and north of Airport Road (10 Avenue) as shown on Figure 2.1. The growth areas have been numbered for ease of identification and are not meant to indicate sequence of development.

2.2 LAND USE

The land use for the existing and future development areas within the Nisku Industrial Business Park are shown on Figure 2.2. The developed area consists predominantly of light industrial and some country single-family residential to the east of the Park. The existing residential area is serviced by the Park's water distribution system with no fire protection.

The anticipated land use for the future development is expected to be light industrial and residential.

2.3 POPULATION PROJECTION

The existing and future land use and population data as provided by the Leduc County were adopted for the study. It is estimated that the existing population is 150 people and approximately 900 ha of industrial area is developed. Population and development densities projected for the year 2013 and 2023 were based on the draft report "Initial Plan Strategy – Leduc County North Area Structure Plan" June 10, 2003, for the single-family residential development.

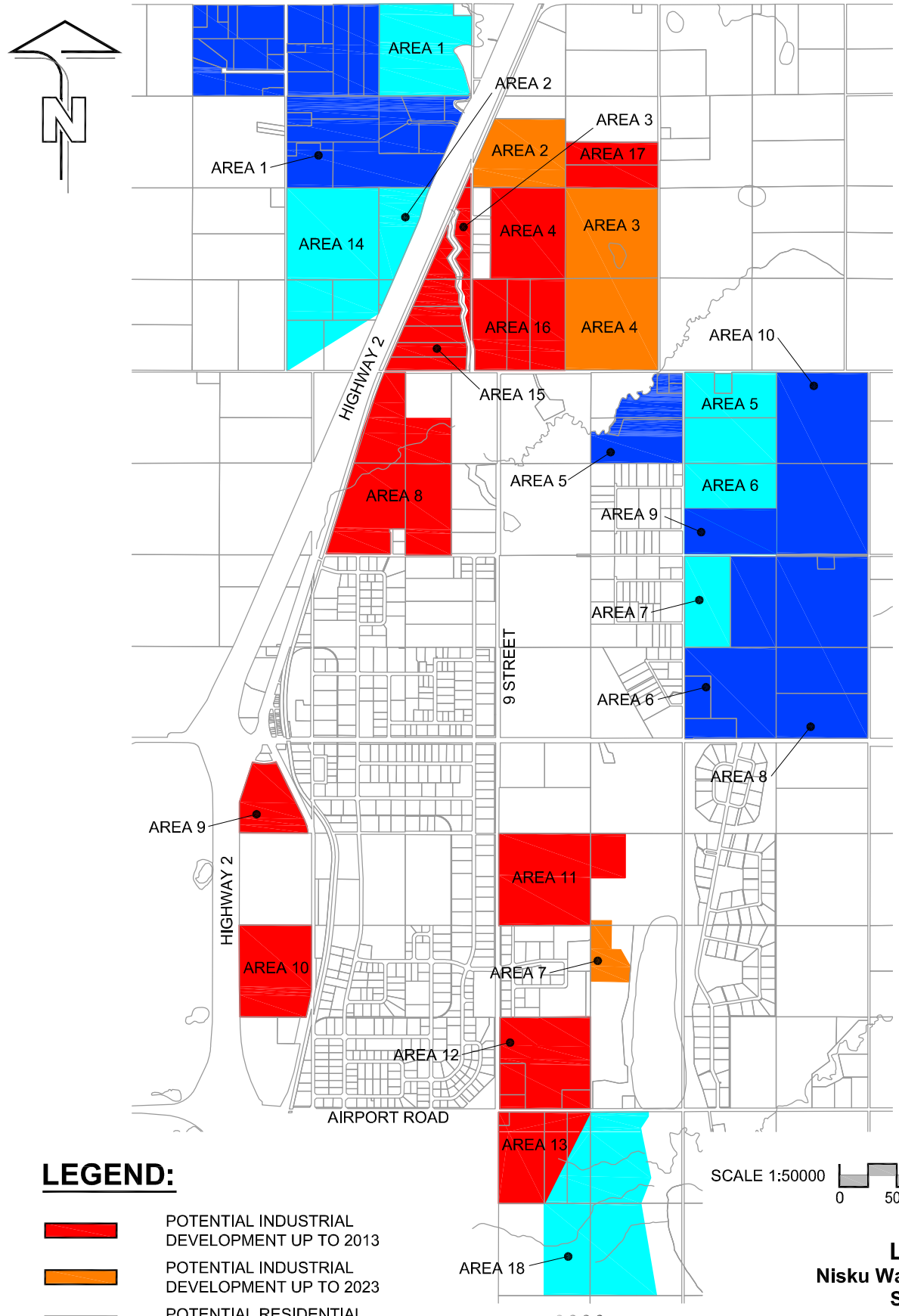
The projected development for the year 2013 and 2023, as provided by Leduc County, is shown on Figure 2.1 and Table 2-1 summarizes the expected growth areas and associated population projections. Development density for Area 1 (residential) for the year 2023 and Area 2 (residential) for the year 2013 was assumed to be 40-lots/quarter section and for the remaining residential development it was assumed to be 90-lots/quarter section. Population density for the future residential development was assumed to be 2.9 people/lot. Based on the development density and population density for the projected growth, the total estimated population for the Nisku Industrial Business Park for the year 2013 and 2023 development is estimated at 1,968 and 4,166 people, respectively.

For the industrial area, the growth was projected based on the information provided by Leduc County and the total estimated non-residential development for the year 2013 and 2023 will be approximately 1,478 hectares and 1,670.1 hectares (gross area), respectively.

Table 2-1: Projected Growth for Year 2013 and 2023

Future Growth Area #	Year 2013			Year 2023		
	Population	Residential Area (ha)	Industrial Area (ha)	Population	Residential Area (ha)	Industrial Area (ha)
1	245	60.0		452	247.3	
2	43	23.6				44.50
3			8.7			63.8
4			52.0			65.0
5	260	63.7		186	45.6	
6	130	31.7		389	95.2	
7	130	31.9				18.7
8			118.6	521	127.3	
9			26.9	130	31.8	
10			50.0	520	127.1	
11			68.5			
12			63.3			
13			48.0			
14	469	114.8				
15			45.6			
16			64.2			
17			32.3			
18	541	132.4				
Total Future	**1818**	**458.1**	**578.1**	**2198**	**674.3**	**192**
Existing	**150**	**400**	**900**	**1968**	**858**	**1478**
Total Existing Plus Future	**1968**	**858.1**	**1478.1**	**4166**	**1532.3**	**1,670**

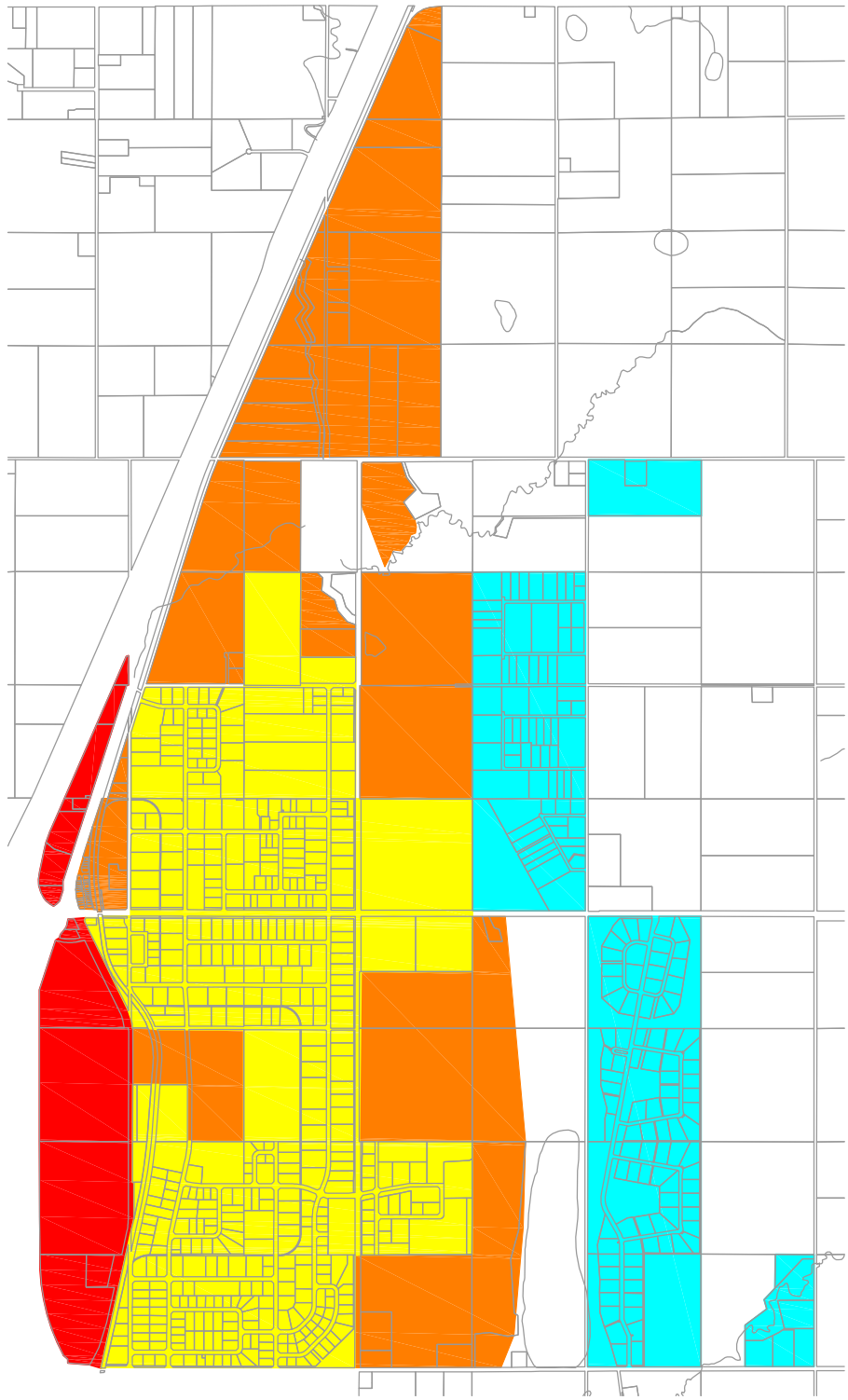
Note: For locations of the future growth area see Figure 2.1.



Leduc County
Nisku Water Distribution System Analysis

Proposed Development

Figure - 2.1



LEGEND:

- AGRICULTURAL
- AGRICULTURAL/COUNTRY RESIDENTIAL
- RESTRICTED INDUSTRIAL
- DIRECT CONTROL INDUSTRIAL
- GENERAL INDUSTRIAL

SCALE 1:50000

0 500 1000 1500 m

Leduc County
Nisku Water Distribution System Analysis

Land Use Plan (2003)

Figure - 2.2

3.0 Water Supply and Distribution System

3.1 GENERAL

This section assesses the capacity of the existing water supply and distribution system, identifies existing system deficiencies and required improvements, identifies impacts of the future development and provides a servicing concept for the year 2013 and 2023.

3.2 FIELD INSPECTIONS AND HYDRANT TESTING

3.2.1 Field Inspection

A field inspection of the existing water supply and reservoir and pumphouse was carried out on January 29, 2003.

PUMPHOUSE FACILITIES

The Nisku Industrial Business Park distribution system is serviced through a single pumphouse located at the reservoir site. The pumps are set to automatically start and stop depending on the system demands. Based on the discussions with the operator, the existing pump capacities are adequate to meet all the current demands.

There is one diesel engine fire pump and three electrical distribution pumps in the pumphouse and currently all of the pumps appear to function reasonably well. The low flow pump (Jockey Pump) is 40 HP and the remaining two electrical pumps are 60 HP each. These pumps were installed in 1983, i.e., 20 years old. With increase in age, the breakdown frequency and maintenance costs will increase. In addition, the hydraulic performance of the pumps also decreases due to wear on the impeller.

RESERVOIR STORAGE

The Nisku Industrial Business Park is currently being serviced by a reservoir located at the pumphouse as well as a truck fill station. The reservoir receives its supply through the Capital Region Southwest Water Services Commission's water supply main located along Highway 2 and feeds directly into the Nisku Reservoir. The Commission is responsible to ensure the treated water quality meets the requirements of Alberta Environment and Canadian Drinking Water Standards. The existing storage capacity of the reservoir is 4.3 ML (4300 m^3).

3.2.2 Hydrant Testing

EPCOR Water Services Inc., conducted hydrant flow tests at 27 locations on April 24-25, 2003 and May 14-15, 2003. The test results are summarized in Table 3-1. It should be noted that during hydrant flow tests the fire pump was turned off and only the lead/lag pumps were running. Detailed test results are also provided in Appendix A.

Table 3-1: Summary of Hydrant Flow Test Results

Test #	Junction No.	Static Pressure		One Port Open				Two Ports Open				Flow through One Port	Flow through Two Ports	Available Flow at 140 kPa
				Flow Hydrant Pressure		Residual Hydrant Pressure		Flow Hydrant Pressure		Residual Hydrant Pressure				
		(psi)	(kPa)	(psi)	(kPa)	(psi)	(kPa)	(psi)	(kPa)	(psi)	(kPa)	(L/s)	(L/s)	(L/s)
23	J-8	65	448	54	372	59	407	41	279	56	386	63	112	266
37	J-28	64	441	49	338	54	372	28	190	46	317	61	96	155
33	J-56	64	441	47	324	50	345	28	193	45	310	60	97	152
17	J-68	62	427	51	352	47	324	28	190	43	296	61	96	147
15	J-74	68	469	48	331	52	359	32	217	44	303	60	101	146
16	J-90	75	517	58	400	58	400	37	255	49	338	65	108	161
34	J-124	60	414	33	228	40	276	19	128	35	241	52	82	105
27	J-198	70	483	32	221	34	234	11	72	15	103	51	65	62
29	J-216	63	434	29	200	35	241	13	86	20	138	49	70	70
24	J-240	65	448	38	262	42	290	18	121	24	165	55	80	84
26	J-242	70	483	48	331	53	365	30	207	45	310	60	99	143
36	J-247	71	490	55	379	64	441	31	210	58	400	63	100	209
38	J-266	77	531	41	283	44	303	16	110	20	138	56	77	77
43	J-277	88	607	48	331	58	400	28	190	47	324	60	96	126
22	J-284	80	552	45	310	48	331	21	141	27	186	59	85	91
30	J-286	62	427	37	255	42	290	16	107	26	179	54	76	82
35	J-289	62	427	51	352	55	379	32	217	48	331	61	101	182
31	J-294	65	448	36	248	40	276	17	114	27	186	53	78	85
21	J-296	65	448	34	234	38	262	10	66	23	159	52	63	65
25	J-304	65	448	42	290	45	310	20	138	35	241	57	85	105
19	J-314	70	483	44	303	48	331	23	155	40	276	58	89	117
32	J-332	68	469	45	310	48	331	25	169	40	276	58	92	123
40	J-374	88	607	44	303	55	379	26	176	42	290	58	93	115
41	J-384	90	621	28	193	58	400	8	52	48	331	48	57	75
20	J-389	73	503	59	407	60	414	42	286	56	386	65	113	208
42	J-395	92	634	10	69	45	310	3	17	38	262	32	37	43
39	J-408	72	496	52	359	50	345	34	231	48	331	62	104	157

NOTE: See Figure 3.1 for hydrant test locations.

3.3 DESIGN CRITERIA

WATER CONSUMPTION RATES

Leduc County provided 2002 water consumption data for the industrial and residential users. Based on the water consumption data, the average volume of water distributed to the Park is approximately 1625 m^3/day or 1749 L/ha/day.

For system-modelling purposes, the existing distribution network was analyzed based on the 2002 consumption rates provided by Leduc County. Water consumption rates for industrial and residential areas in the existing model were based on the actual billings. For the year 2013 and 2023 development conditions, water consumption rates for industrial and residential land use were based on the current Leduc County Design Standards. The water consumption rates used to estimate the future demand are summarized in Table 3-2.

Table 3-2: Water Consumption Rates – Future Demand

Land Use	Average Day Demand	Maximum Day Demand	Peak Hour Demand
Future Residential (L/c/d)	340	680	1020
Future Industrial (L/ha/d)	4,300	8,600	12,900

The minimum pressure for the peak hour demand is 280 kPa at ground level for all nodes in the distribution system.

FIRE FLOWS

The fire flow requirements for the Nisku Industrial Business Park are specified in the County's Servicing Standards.

For fire flow requirements, the Servicing Standards require a minimum residual pressure of 140 kPa, with a maximum day plus fire flow demand. The Servicing Standards specify a fire flow requirement of 230 L/s (13,800 L/m) for light industrial land use. Fire flow requirements are summarized in Table 3-3.

Table 3-3: Fire Flow Rates

Land Use Description	Single-Family Residential	Multi-Family Residential	Walk-up Apartments	Institutional	Commercial	Light Industrial
Additional required Fire flow (L/s)	60	90	115	90	190	230

PIPE SIZES

The maximum value of the Hazen-Williams roughness coefficient (C) is not specified in the Leduc County Servicing Standards. Subsequently, a value of 120 regardless of the pipe material was adopted for the future development based on the City of Edmonton Standards. For the proposed distribution system, a minimum diameter of 200 mm and 300 mm was used for residential and industrial development respectively.

3.4 EXISTING SYSTEM

3.4.1 System Description

STORAGE RESERVOIRS

A reservoir, a truck fill station and a pumphouse are currently servicing the Nisku Industrial Business Park. The reservoir is fed by the Capital Region Southwest Water Services Commission's water supply main located along Highway 2 and feeds directly into the Nisku Reservoir. The total storage capacity of the reservoir is 4.3 ML as indicated in Section 3.2.1. Storage volume requirements for the existing development conditions as per the 1997 Alberta Environmental Protection Standards and Guidelines are summarized in Table 3-4.

Table 3-4: Water Storage Requirements for Existing Development Conditions - AEP

Description	Volume (ML)
Fire Storage (230 L/s for 4 hours)	3.31
Equalization Storage - 25% of Maximum Day Demand (Maximum Day Demand = 2.994 ML/d)	0.75
Emergency Storage - 15% of Average Day Demand (Average Day Demand = 1.625 ML/d)	0.24
Total Required Storage	4.30

This storage requirement is adequate if the water treatment plant is only capable of satisfying the maximum day demands. However, the existing Nisku reservoir is supplied by a single feed from the Water Commission, the actual supply is susceptible to disruptions. Therefore, based on the non secure system it is recommended that the reservoir storage be based on the following empirical formula:

Total storage = fire storage (230 L/s for 4 hours) + 2 times the average day demand

A storage volume requirements for the existing development conditions as per the above formula are summarized in Table 3-5.

Table 3-5: Water Storage Requirements for Existing Development Conditions - Recommended

Description	Volume (ML)
Fire Storage (230 L/s for 4 hours)	3.31
Emergency Storage – 2 times Average Day Demand (Average Day Demand = 1.625 ML/d)	3.25
Total Required Storage	6.56

Based on the above calculations, the existing reservoir storage volume is 2.26 ML short. The duration for fire flow storage is based on Water Supply for Public Fire Protection, Fire Underwriters Survey, dated 1999. The storage requirements for the year 2013 and 2023 development condition are summarized in Tables 3-6 and 3-7 based on the projected growth indicated in Section 2.3.

Table 3-6: Water Storage Requirements for Year 2013 Development Condition

Description	Volume (ML)
Fire Storage (230 L/s for 4 hours)	3.31
Emergency Storage – 2 times Average Day Demand (Average Day Demand = 4.73 ML/d)	9.46
Total Required Storage	12.77

For the year 2013, the Park requires a total storage volume of 12.77 ML. Based on the existing storage volume, an additional 8.47 ML will be required for the future development condition.

Table 3-7: Water Storage Requirements for Year 2023 Development Condition

Description	Volume (ML)
Fire Storage (230 L/s for 4 hours)	3.31
Emergency Storage – 2 times Average Day Demand (Average Day Demand = 6.306 ML/d)	12.60
Total Required Storage	15.91

For the year 2023, the Park requires a total storage volume of 15.91 ML. Based on the existing storage volume, an additional 11.61 ML will be required for the future development condition.

The following two alternatives were considered for further analysis:

1. Alternative 1: Upgrade the existing pumphouse and reservoir. A new reservoir at the existing pumphouse could be constructed to accommodate the 10 year storage requirement including pump(s) ugprading.

2. Alternative 2: New Pumphouse and Reservoir. Instead of expanding the existing reservoir, a second reservoir/pumphouse could be constructed close to the existing fill line servicing Town of Beaumont. This would avoid a fill line from the existing reservoir to the new reservoir resulting in additional operation and maintenance costs.

PUMPHOUSE FACILITIES

The existing distribution system is serviced by an existing pumphouse located west of Sparrow Drive and north of 22 Avenue. The existing electrical pumps are set to automatically start in sequence when the pressure at the pumphouse drops below 450 kPa (65 psi) and the lag pump will stop when the discharge flow rate drops below 44.44 L/s. With further reduction in the discharge flow rate to 22.22 L/s the lead pump will stop and the jockey pump will start. The three electrical pumps are set to operate at 517 kPa (75 psi). The fire pump can be started either manually or automatically and is set to operate at 620 kPa (90 psi). The fire pump will start automatically under any one of the following conditions:

- Upon loss of power in the pumphouse;
- Upon a drop in pressure on the discharge header below 414 kPa (60 psi) and

- Upon a command signal from the Nisku fire hall.

However, in the past it has been observed that the fire pump did not start automatically when there was a drop in pressure in the farthest area.

Table 3-8 provides the description of the existing pumps.

Generally, the pumps have a life span of 15 to 20 years. The pumps are approximately 20 years old and appear to operate well due to the overall low usage. However, actual pump performance curves are not available.

Table 3-8: Summary of Distribution System Pumps at the Pumphouse

Pump Description	Operating Head (m)	Operating Capacity (L/s)
Diesel Fire Pump (Pump 1)	71	300
40 hp Jockey Pump (Pump 2)	52	40
60 hp Lead Pump (Pump 3)	54	69
60 hp Lag Pump (Pump 4)	54	69

The existing pumping sequence is as follows:

- Pump 2
- Pump 3 or 4
- Pump 2+3(or 4)
- Pumps 3+4
- Pumps 1+3(or 4)

The existing truck fill station can deliver a maximum flow of 50 L/s as a result this demand was added to the maximum day and peak hour demands for the existing as well as the future development conditions. However, during fire flow conditions when the pressure at the existing truckfill station drops below 380 kPa (55 psi) there will be no water supply from the existing truckfill station (existing control valves to be readjusted). Table 3-9 provides a summary of the demands for the existing and for the year 2013 and 2023 development. The maximum anticipated demand for the Nisku Industrial Business Park by the year 2013 is approximately 106.6 L/s for maximum day plus a 230 L/s fire flow. The existing pumphouse is set to operate the fire pump with the lead pump and can supply up to a maximum

of 370 L/s at the design operating head of 49 m (or 480 kPa). Hence, the design hydraulic capacity of the existing pumphouse is sufficient for the maximum anticipated demand for the year 2013.

Table 3-9: Summary of Projected Demands

Demand Type	Development Condition		
	Existing	Year 2013	Year 2023
Average Day Demand (L/s)	18.8	54.8	73.0
Maximum Day Demand (L/s)	34.7	106.6	143.0
Peak Hour Demand (L/s)	52.0	159.9	214.5
Maximum Fire Flow Demand (L/s)	230	230	230
Maximum Day Plus Fire Flow Demand (L/s)	264.7	336.6	373.0

SUPPLY SYSTEM

The Capital Region Southwest Water Commission supplies water to the Nisku Reservoir. The supply system to the reservoir is owned and operated by the Water Commission. The supply line operates as a low-pressure system and feeds directly into the Nisku Reservoir. The present Commission's regulation require that all water supplies be delivered to a reservoir and direct connection to the commission mains are not allowed. Hence, the Park's water distribution system cannot be connected directly to the supply line.

WATER DISTRIBUTION SYSTEM

The existing distribution system consists of a looped network with pipe sizes varying from 150 mm to 450 mm in diameter within the Park's core industrial development. The water distribution system is to provide both domestic water supply and fire protection. The domestic water demand is currently being met within the existing development. The fire flow requirement within the majority of the park is not being achieved.

The existing country residential neighbourhood on the east side of Blackmud Creek is serviced through pipes ranging from 75 mm to 200 mm in diameter. The system was designed as potable water service only and did not consider fire protection.

3.4.2 System Modelling

3.4.2.1 Existing Model Setup

The model used in the report was originally developed by Reid Crowther and later updated by Leduc County. The distribution system for Nisku Industrial Business Park was modelled using the AutoCAD version of the WaterCAD program developed by Haestad Methods Inc. This program is a steady state as well as extended period simulation program. The software uses pull-down menus for data entering and editing along with the AutoCAD based graphical interface. The software allows review of the simulation results graphically on the screen and the graphical results can be plotted.

The program requires physical details of the existing distribution system (i.e., pipe diameter, lengths, roughness coefficients, water consumption demands, ground elevations etc.) to represent the distribution through pipes and junction nodes. The distribution system data was obtained from water distribution system drawings. Ground elevations at nodes were estimated from available topographic maps or spot elevations.

The existing system model was updated by Leduc County to include all pipe installed after 1999. The distribution system pipe material was ascertained from the available record drawings and maintenance records. Where possible, the age of distribution mains in various areas were established to estimate the initial pipe roughness coefficients. The roughness coefficients were calibrated using the hydrant flow test data as discussed in section 3.2.2.

The existing distribution system schematic is shown on Figure 3.1. The demands were estimated based on the actual billings as industrial users have varying consumption rates. Water consumption rates from Table 3-2 were used to estimate the demands at various nodes in the system for the future development condition. The size of the water mains included in the model varies from 75 mm to 450 mm in diameter.

3.4.2.2 Pipe Material

The Nisku Industrial Business Park distribution system pipe material consists of mostly asbestos cement and some PVC pipes.

The existing model was calibrated by simulating two scenarios for the Hazen-Williams coefficient (C):

1. C = 130 for both PVC and asbestos pipe materials; and

2. C = 120 for both PVC and asbestos pipe materials.

The system was analyzed with the average day demand and lead / lag pump(s) in operation. The distribution system model results were then compared with the field hydrant test data. The comparison of these measured and simulated results are summarized in Table 3-10.

Based on simulation results in Table 3-10, the hydrant test results match closely with the simulated flows at most locations. For the remaining Nodes (J-8, J-124, J-240, J-242, J-247, J-332 and J-389) the measured flows are either higher or lower and do not appear to be due to the pipe roughness coefficients. The high and low flows at these locations may be due to one or more of the following:

- Partially or fully closed valves in the system, or
- Switching of the pumps during the hydrant tests.

For the subsequent analysis, a roughness coefficient of 130 was adopted for all pipes as the simulation results indicated a better match with the hydrant flow test results compared to the simulation results utilizing a roughness coefficient of 120.

Table 3-10: Comparison of Measured Versus Simulated Fire Flow

Junction No.	Available Flow Based on Hydrant Tests @ 140 kPa (L/s)	Simulated Flow (L/s)	
		C=120	C=130
J-8*	266.1	172.1	172.1
J-28	155.0	160.2	161.6
J-56	152.1	157.8	159.5
J-68	146.8	146.0	149.1
J-74	146.3	147.9	151.0
J-90	161.4	154.6	158.1
J-124*	105.3	128.9	132.8
J-198	61.5	66.5	67.9
J-216	69.7	73.0	73.4
J-240*	83.8	121.9	127.3
J-242*	143.5	107.3	116.0
J-247*	208.5	161.6	162.6
J-266	76.8	78.1	78.5
J-277	125.9	112.2	119.8
J-284	90.6	92.9	100.1
J-286	82.3	74.0	74.4
J-289	182.1	167.9	167.9
J-294	85.1	74.6	75.2
J-296	65.2	63.2	64.9
J-304	105.4	104.8	107.5
J-314	116.9	114.6	121.1
J-332*	122.7	157.0	159.3
J-374	114.6	96.0	103.6
J-384	74.9	62.6	67.7
J-389*	208.2	177.8	177.8
J-395	43.1	32.1	34.6
J-408	157.4	175.9	175.9

Note: * differences between the actual and simulated flows is probably due to partially or fully closed valves and/or switching of the pumps during the hydrant tests.

3.4.3 System Evaluation Under Existing Development Conditions

3.4.3.1 Peak Hour Demand

The existing distribution system was analyzed for the peak hour demand plus the truck fill in operation assuming the lead and jockey pump in operation. With this assumption, a residual pressure of 505 kPa (73 psi) was simulated at the pumphouse for the existing system demands. At present the pumphouse is set to operate at a minimum pressure of 450 kPa (65 psi).

With the above assumption, a minimum residual pressure of 450 kPa (65 psi) was simulated at Node 214 located at 11 Avenue and 5 Street. This minimum residual pressure is well above the recommended minimum pressure of 280 kPa (40 psi). Hence, the existing system is adequate to supply the peak hour demands provided sufficient pressure is maintained at the pumphouse. The detailed simulation results for the existing development condition are included in Appendix B.

3.4.3.2 Maximum Day Plus Fire Flow Demands

The distribution system was analyzed for the maximum day plus fire flow demands based on the assumption that both the lead pump and the fire pump are in operation at a maximum pressure of 520 kPa (75 psi) and 620 kPa (90 psi) respectively.

Simulation runs were carried out to establish the available fire flow at a minimum pressure of 140 kPa at all the locations within the distribution system. The simulation results are illustrated on Figure 3.2 and are summarized in Appendix B. The available fire flows were compared to the recommended minimum required fire flow of 230 L/s for industrial and 60 L/s for residential.

Based on the simulations, the availability of fire flow is inadequate at 75 nodes out of 223 node locations. The north part of the Park, which is industrial, the available fire flow at some node locations is in the order of 130 L/s, where as the recommended minimum fire flow is 230 L/s.

A fire flow of 60 L/s is required for the existing residential development and the available fire flow at most of the nodes in the Vistas is less than 60 L/s.

The fire flow at some of the Nodes at dead-ends of a relatively long pipe did not meet the required fire flow demands. Completion of most of these dead-end loops was considered as part of the future development condition.

Simulation results indicated that while the pumphouse main header maintained a constant pressure of 483 kPa (70 psi) to 517 kPa (75 psi), the far ends of the system experienced significant pressure drops. This is the reason for the fire pump not starting automatically when required due to a high flow requirement at the far reaches of the system.

3.4.3.3 Fire Hydrant Coverage

The maximum hydrant spacing based on the Leduc County Design Standards is 150 m for single-family residential, 120 m for multi-family residential and 100 m for industrial/commercial developments. The hydrant coverage is illustrated on Figure 3.3. The hydrant coverage is insufficient in some core parts of the Park as well as in the existing residential neighbourhood.

3.4.4 System Improvements

For the purpose of the existing upgrades and future system modelling both the alternatives were simulated.

Alternative 1: under this alternative, it was assumed that the existing pumps will be upgraded to operate at 517 kPa (75 psi). The water distribution system was analyzed using a fixed grade source (ground elevation = 713.7 m) with hydraulic grade line (HGL) of 766.4 m along with the existing jockey, lead and lag pumps.

Alternative 2: under this alternative, it was assumed that a new pumphouse and reservoir will be constructed east of 9 Street and approximately 27 Avenue. The existing fill line currently servicing the Town of Beaumont will be utilized to fill the new reservoir and it was assumed that the fill line has sufficient capacity. The new pumphouse will be set to operate at 690 kPa (100 psi) and the water distribution system was analyzed using a fixed grade source (ground elevation = 699.0 m) with hydraulic grade line (HGL) of 769.4 m. To simulate the worse case scenario, the existing pumps were turned off for both the peak hour and maximum day plus fire flow demands for this alternative.

System improvements were first evaluated for the year 2023 development condition for both the alternatives. The required improvements were then incorporated for the existing development condition. The existing system improvements were evaluated with the future development condition. The first stage of improvements will provide fire protection within the Park's core industrial development including the northwest portion. Detailed simulation results are

included in Appendix C and D for Alternatives 1 and 2, respectively. The second stage of existing improvements will provide fire protection for the existing residential (Vistas) along with the future development. Figures 3.4 and 3.5 illustrates the first stage of improvements for the existing developed condition for Alternatives 1 and 2 respectively. The future servicing requirements for the 2013 and 2023 development condition are discussed in Section 3.5.

Tables 3-11 and 3-12 summarize the system improvements for Alternative 1 and 2 respectively to address some of the deficiencies within the existing distribution system in addition to the water reservoir and pumphouse upgrades.

Table 3-11: Existing System Improvements - Alternative 1

Pipe Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material
P-130	J-90	J-94	191.5	450	PVC
P-338	J-274	J-276	41.5	300	PVC
P-358	J-274	J-294	170.5	300	PVC
P-479*	J-395	J-396	570	200	PVC
P-504*	J-398	J-396	390.5	200	PVC
P-1040	J-1050	J-243	807	300	PVC
P-1160	J-365	J-1140	280	450	PVC
P-1200	J-1140	J-1160	795.0	300	PVC
P-1210	J-1160	J-1050	1510.5	300	PVC
P-1240	J-317	J-1195	517	300	PVC
P-1250	J-1195	J-262	406	300	PVC
P-1260	J-236	J-1005	270	450	PVC
P-1265	J-1005	J-296	162	450	PVC
P-1270	J-219	J-140	198.0	300	PVC
P-1280	J-225	J-176	432.5	300	PVC
P-1340	J-10	J-146	36.5	300	PVC
P-1370	J-1220	J-356	228.0	300	PVC
P-1375	J-1220	J-536	303.5	300	PVC
P-1390	J-300	J-1205	285.5	300	PVC
P-1430	J-1195	J-536	1082	300	PVC
P-1450	J-281	J-1205	286.5	300	PVC

* These pipes can be upgraded in conjunction with the future development condition.

Table 3-12: Existing System Improvements - Alternative 2

Pipe Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material
P-130	J-90	J-94	191.5	450	PVC
P-338	J-274	J-276	41.5	300	PVC
P-358	J-274	J-294	170.5	300	PVC
P-394	J-32	J-318	45.5	200	PVC
P-479*	J-395	J-396	570	200	PVC
P-504*	J-398	J-396	390.5	200	PVC
P-1040	J-1050	J-243	807	300	PVC
P-1050	J-1050	J-1060	231.5	300	PVC
P-1110	J-1000	R-3	774.5	450	PVC
P-1120	J-1000	J-1150	764.5	450	PVC
P-1160	J-365	J-1140	280	450	PVC
P-1170	J-94	J-1140	586.5	450	PVC
P-1180	J-90	J-1150	198.5	450	PVC
P-1190	J-1000	J-1060	836.0	300	PVC
P-1240	J-317	J-1195	517	300	PVC
P-1250	J-1195	J-262	406	300	PVC
P-1260	J-236	J-1005	270	450	PVC
P-1265	J-1005	J-296	162	450	PVC
P-1270	J-219	J-140	198.0	300	PVC
P-1280	J-225	J-176	432.5	300	PVC
P-1340	J-10	J-146	36.5	300	PVC
P-1370	J-1220	J-356	228.0	300	PVC
P-1375	J-1220	J-536	303.5	300	PVC
P-1390	J-300	J-1205	285.5	300	PVC
P-1430	J-1195	J-536	1082	300	PVC
P-1450	J-281	J-1205	286.5	300	PVC

* These pipes can be upgraded in conjunction with the future development condition.

From Tables 3-11 and 3-12, pipes P-130 to P-504 indicates upgrading of the existing water mains and pipes P-1040 to P-1450 indicates additional looping. Additional pipes and upgrades required for the second stage were included with the year 2013 development condition. The available fire flow with the above improvements are summarized in Table 3-13 for the existing, year 2013 and 2023 development conditions for both the alternatives.

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-6	280	280	280	280	Industrial
J-8	280	280	280	280	Industrial
J-10	280	280	280	278	Industrial
J-12	280	280	280	276	Industrial
J-16	280	280	280	276	Industrial
J-22	280	280	280	265	Industrial
J-24	280	280	280	267	Industrial
J-28	280	280	264	247	Industrial
J-30	280	280	280	276	Industrial
J-32	280	280	280	276	Industrial
J-34	280	280	280	275	Industrial
J-36	280	280	280	275	Industrial
J-38	280	280	280	273	Industrial
J-40	280	280	280	272	Industrial
J-42	280	280	280	270	Industrial
J-50	229	205	280	271	Industrial
J-56	280	280	280	269	Industrial
J-60	280	280	280	271	Industrial
J-64	280	280	280	273	Industrial
J-68	280	280	280	274	Industrial
J-74	280	280	280	275	Industrial
J-76	280	280	280	276	Industrial
J-82	280	280	280	277	Industrial
J-90	280	280	280	278	Industrial
J-94	110	280	280	279	Industrial
J-98	257	248	253	237	Industrial
J-102	280	274	269	251	Industrial
J-104	255	245	247	231	Industrial
J-108	280	280	280	275	Industrial
J-112	280	280	280	274	Industrial
J-117	280	280	280	278	Industrial
J-118	280	280	280	278	Industrial
J-120	280	280	280	277	Industrial
J-124	280	280	280	276	Industrial
J-130	280	280	280	280	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-134	280	280	280	270	Industrial
J-136	280	280	280	280	Industrial
J-140	117	280	280	280	Industrial
J-142	280	280	280	273	Industrial
J-144	280	280	280	270	Industrial
J-146	143	280	280	278	Industrial
J-148	225	219	280	280	Industrial
J-150	240	234	280	269	Industrial
J-152	280	280	280	280	Industrial
J-162	280	280	280	267	Industrial
J-164	280	280	280	267	Industrial
J-166	280	280	280	266	Industrial
J-168	280	280	280	262	Industrial
J-172	280	280	280	267	Industrial
J-174	280	280	280	268	Industrial
J-176	116	280	280	271	Industrial
J-178	280	280	280	265	Industrial
J-180	280	280	280	265	Industrial
J-198	256	280	280	257	Industrial
J-202	246	280	280	255	Industrial
J-206	235	280	280	254	Industrial
J-210	224	280	280	252	Industrial
J-212	219	280	280	251	Industrial
J-214	211	279	280	250	Industrial
J-216	204	265	280	250	Industrial
J-217	280	280	280	280	Industrial
J-218	280	280	280	280	Industrial
J-219	280	280	280	280	Industrial
J-221	280	280	280	280	Industrial
J-222	201	270	280	251	Industrial
J-223	280	280	280	274	Industrial
J-224	206	280	280	252	Industrial
J-225	280	280	280	270	Industrial
J-226	280	280	280	264	Industrial
J-227	280	280	280	272	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-228	161	280	280	255	Industrial
J-229	280	280	280	280	Industrial
J-230	280	280	280	275	Industrial
J-231	280	280	280	264	Industrial
J-232	280	280	280	263	Industrial
J-233	280	280	280	261	Industrial
J-234	133	246	244	257	Industrial
J-235	280	280	280	259	Industrial
J-236	280	280	280	257	Industrial
J-237	145	132	280	280	Industrial
J-238	145	132	280	280	Industrial
J-239	145	132	280	280	Industrial
J-240	214	267	274	252	Industrial
J-241	145	132	280	280	Industrial
J-242	140	128	280	280	Industrial
J-243	136	124	280	280	Industrial
J-244	231	280	280	251	Industrial
J-245	280	280	280	280	Industrial
J-246	280	268	264	251	Industrial
J-247	280	270	265	251	Industrial
J-248	205	280	280	251	Industrial
J-249	280	280	280	280	Industrial
J-250	244	280	280	252	Industrial
J-251	280	280	280	280	Industrial
J-252	219	256	261	244	Industrial
J-253	280	280	280	280	Industrial
J-254	280	280	280	280	Industrial
J-255	280	280	280	280	Industrial
J-256	208	236	245	230	Industrial
J-257	280	280	280	277	Industrial
J-258	280	280	280	272	Industrial
J-259	280	280	280	265	Industrial
J-260	243	280	280	253	Industrial
J-261	280	280	280	265	Industrial
J-262	223	280	280	255	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-263	280	280	280	270	Industrial
J-264	244	280	280	254	Industrial
J-265	276	280	280	269	Industrial
J-266	241	280	280	254	Industrial
J-267	100	100	100	100	Residential
J-268	230	280	280	251	Industrial
J-269	91	81	100	100	Residential
J-270	83	74	97	100	Residential
J-271	200	280	280	250	Industrial
J-272	227	280	280	248	Industrial
J-273	90	81	100	100	Residential
J-274	209	266	280	245	Industrial
J-275	129	117	244	258	Industrial
J-276	202	258	280	244	Industrial
J-277	129	117	247	263	Industrial
J-278	217	280	280	250	Industrial
J-279	196	280	280	250	Industrial
J-280	186	280	280	249	Industrial
J-281	183	280	280	248	Industrial
J-282	204	257	272	250	Industrial
J-283	194	280	280	250	Industrial
J-284	191	280	280	251	Industrial
J-285	191	280	280	252	Industrial
J-286	209	265	277	250	Industrial
J-287	191	280	280	252	Industrial
J-288	192	280	280	251	Industrial
J-289	280	280	280	275	Industrial
J-290	214	280	280	251	Industrial
J-291	213	280	280	251	Industrial
J-292	280	280	280	267	Industrial
J-293	280	280	280	280	Industrial
J-294	184	259	280	245	Industrial
J-296	145	280	280	255	Industrial
J-298	183	249	266	246	Industrial
J-300	193	280	280	246	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-301	280	280	280	280	Industrial
J-302	228	280	280	248	Industrial
J-303	280	276	270	256	Industrial
J-304	222	266	270	252	Industrial
J-306	222	280	280	248	Industrial
J-307	60	52	58	63	Residential
J-308	217	278	280	248	Industrial
J-309	51	44	48	50	Residential
J-310	280	280	280	280	Industrial
J-311	280	280	280	280	Industrial
J-312	47	41	44	45	Residential
J-313	280	280	280	270	Industrial
J-314	239	280	280	250	Industrial
J-315	268	280	280	266	Industrial
J-316	235	280	280	264	Industrial
J-317	212	280	280	261	Industrial
J-318	256	256	246	231	Industrial
J-321	280	280	280	272	Industrial
J-322	248	280	280	252	Industrial
J-324	254	280	280	255	Industrial
J-332	257	280	280	256	Industrial
J-337	280	280	280	265	Industrial
J-342	245	280	280	252	Industrial
J-348	206	280	280	251	Industrial
J-349	199	251	280	249	Industrial
J-350	216	280	280	254	Industrial
J-351	124	112	213	225	Industrial
J-352	280	280	280	280	Industrial
J-353	273	268	280	264	Industrial
J-356	177	280	280	253	Industrial
J-357	62	57	100	100	Residential
J-358	52	47	60	62	Residential
J-359	78	72	100	100	Residential
J-360	63	58	77	86	Residential
J-362	280	280	280	265	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-363	280	280	280	280	Industrial
J-364	100	100	100	100	Residential
J-365	280	280	280	280	Industrial
J-367	280	280	280	280	Industrial
J-369	280	280	280	280	Industrial
J-370	92	83	100	100	Residential
J-371	280	280	280	280	Industrial
J-372	95	86	100	100	Residential
J-373	280	280	280	280	Industrial
J-374	100	100	100	100	Residential
J-375	280	280	280	280	Industrial
J-376	100	100	100	100	Residential
J-377	280	280	280	280	Industrial
J-378	100	100	100	100	Residential
J-379	100	100	100	100	Residential
J-380	100	100	100	100	Residential
J-381	280	280	280	280	Industrial
J-382	96	100	100	100	Residential
J-383	73	72	100	100	Residential
J-384	70	68	100	100	Residential
J-386	43	40	100	100	Residential
J-388	89	89	99	100	Residential
J-389	280	280	280	280	Industrial
J-390	51	46	100	100	Residential
J-391	280	280	280	280	Industrial
J-392	45	41	100	100	Residential
J-394	39	35	100	100	Residential
J-395	36	33	100	100	Residential
J-396	30	32	100	100	Residential
J-398	31	32	100	100	Residential
J-400	37	34	100	100	Residential
J-401	280	280	280	280	Industrial
J-402	37	34	80	88	Residential
J-403	280	280	280	280	Industrial
J-404	280	280	280	280	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-406	280	280	280	280	Industrial
J-407	280	280	280	280	Industrial
J-408	280	280	280	280	Industrial
J-410	280	280	280	280	Industrial
J-411	280	280	280	280	Industrial
J-536	138	280	280	253	Industrial
J-538	228	280	280	254	Industrial
J-1005		280	280	255	Industrial
J-1010			99	100	Residential
J-1020			279	280	Industrial
J-1030			100	100	Residential
J-1035			243	279	Industrial
J-1040			263	280	Industrial
J-1050			280	280	Industrial
J-1060			280	280	Industrial
J-1065			249	271	Industrial
J-1070			100	100	Residential
J-1080			100	100	Residential
J-1090			100	100	Residential
J-1100			86	100	Residential
J-1120			100	100	Residential
J-1130			100	100	Residential
J-1140			280	280	Industrial
J-1150			280	278	Industrial
J-1160			280	280	Industrial
J-1170			280	262	Industrial
J-1180			262	242	Industrial
J-1190			268	249	Industrial
J-1195		280	280	256	Industrial
J-1200			280	245	Industrial
J-1205		280	280	245	Industrial
J-1210			280	236	Industrial
J-1215			100	100	Residential
J-1220		280	280	253	Industrial
J-1230			280	252	Industrial

TABLE 3-13
SUMMARY OF SIMULATION RESULTS
WITH PROPOSED IMPROVEMENTS FOR
MAXIMUM DAY PLUS FIRE FLOW ANALYSIS

Fire Flow at Node Number	Available Fire Flow Rate @ 140 kPa (L/s)				Adjacent Land Use
	Existing System without Improvements	Existing System with Improvements	Year 2013	Year 2023	
J-1240			280	250	Industrial
J-1250			280	243	Industrial
J-2000				100	Residential
J-2010				277	Industrial
J-2020				269	Industrial
J-2030				271	Industrial
J-2050				100	Residential
J-2060				100	Residential
J-2070				253	Industrial
J-2080				89	Residential
J-2090				100	Residential
PUMPHOUSE - 1	280	280	280	280	Industrial
PUMPHOUSE - 2	280	280	280	280	Industrial
PUMPHOUSE - 3	280	280	280	280	Industrial
PUMPHOUSE - 4	280	280	280	280	Industrial
Truck Fill	220	262	268	250	Industrial

From Table 3-13, it is clear that both the alternatives provided similar results and there is an increase in the available fire flows with improvements at most of the nodes. However, at certain locations there is a decrease in the available fire flow with improvements due to the following:

- The maximum day demands increased with the future development conditions.
- The maximum operating pressure in the pumphouse was reduced from 620 kPa (90 psi) to 517 kPa (75 psi) for the maximum day demand plus fire flow for Alternative 1.

The proposed first stage improvements include upgrading and looping of approximately 8.0 km and 9.1 km of water mains for Alternative 1 and 2 respectively. With the proposed improvements, the peak hour demand was simulated for the existing without improvements, existing with improvements and the year 2013 and 2023 development conditions. The simulation results are summarized in Table 3-14.

Table 3-14: Summary of Simulation Results with Proposed Improvements for Peak Hour Analysis

Development Condition	Minimum Simulated Pressure (kPa)	Minimum Pressure at Node Number	Maximum Simulated Pressure (kPa)	Maximum Pressure at Node Number
Existing Without Improvements	450	J-214	745	J-243
Existing With Improvements - Alternative 1	466	J-40	750	J-243
Existing With Improvements - Alternative 2	485	J-40	775	J-243
Year 2013 - Alternative 1	375	J-1260	725	J-269
Year 2013 - Alternative 2	367	J-1260	747	J-1000
Year 2023 - Alternative 1	360	J-1260	704	J-267
Year 2023 - Alternative 2	336	J-1260	730	J-1000

With the proposed improvements for both the alternatives, the minimum pressure for the peak hour demands will be adequate for up to the year 2023. For all the development conditions the simulated pressure are well above the minimum required pressure of 280 kPa.

3.5 WATER SERVICING

3.5.1 Future Servicing

The proposed distribution system for Alternative 1 for the year 2013 and 2023 are illustrated on Figure 3.6 and 3.7 respectively. Similarly, the proposed distribution system for Alternative 2 for the year 2013 and 2023 are illustrated on Figure 3.8 and 3.9 respectively. For both the alternatives a 450 mm diameter main is proposed along Sparrow Drive and Airport Road up to 9 Street and a 300 mm diameter from 9 Street to tie to the existing dead-end at the South Vista Road. A 450 mm diameter is proposed along 25 Avenue with some 300 mm diameter mains to tie to the existing industrial subdivision located north west of the Park. A 200 mm diameter main is proposed to provide fire protection for the existing residential subdivision (Vistas) along Range Road 245 with some looping and upgrading of the existing pipes within the subdivision. The existing dead-ends within the distribution system does not meet the required fire flow demands for all the development conditions and it is recommended that they are looped for the ultimate development condition. Simulation results for Alternative 1 for the year 2013 and 2023 are summarized in Appendix E and F respectively. Similarly simulation results for Alternative 2 for the year 2013 and 2023 are summarized in Appendix G and H respectively.

FIGURE 3.1 - SHEET 2 OF 2

FOR CONTINUATION - REFER TO FIGURE 3.1 - SHEET 1 OF 2

LEGEND:

- HYDRANT TESTING LOCATION

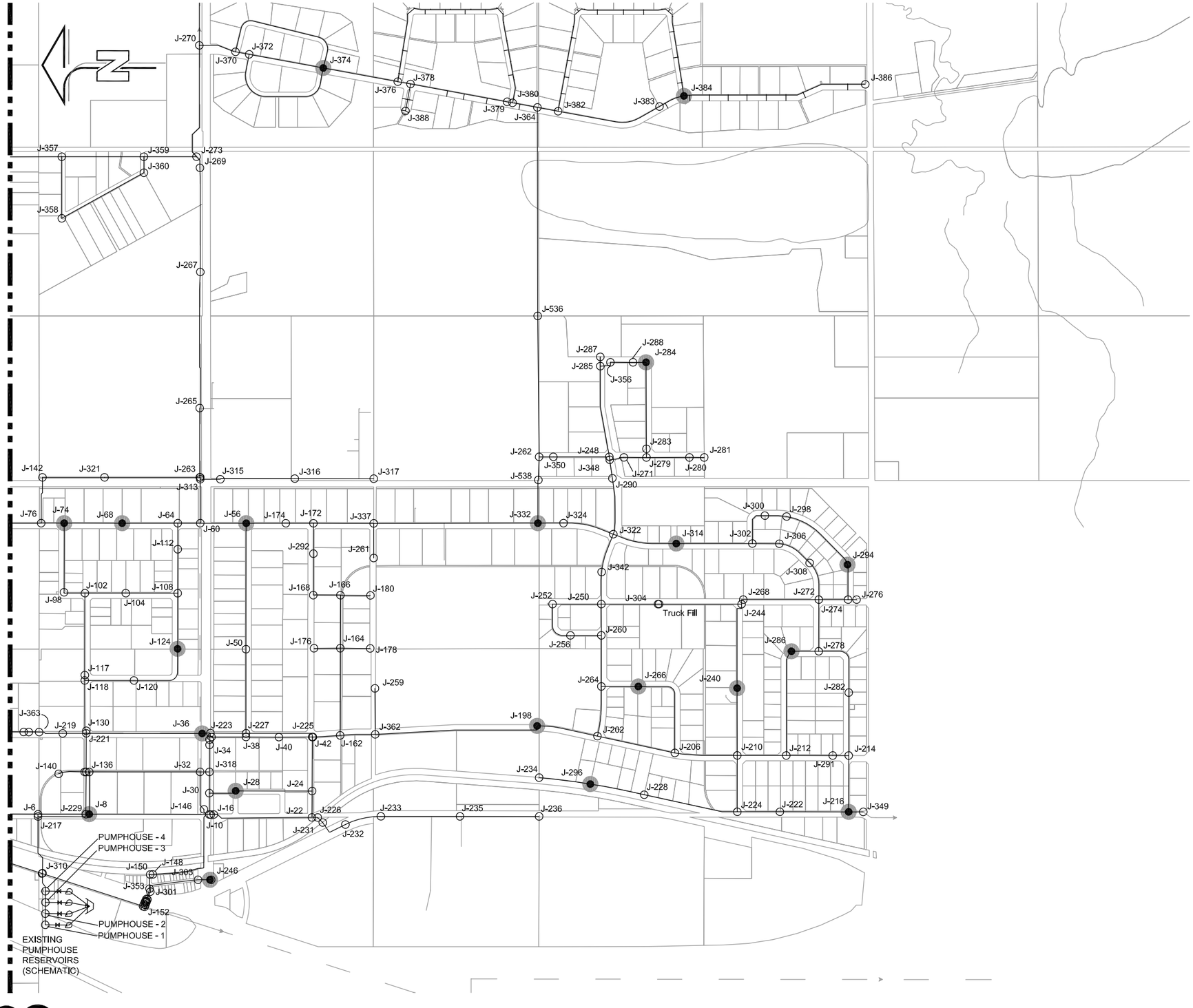
SCALE 1:20000 m
0 200 400 600

Leduc County
Nisku Water Distribution System Analysis

Existing Water Distribution System - Sheet 2 of 2

Figure - 3.1

FOR CONTINUATION - REFER TO FIGURE 3.1 - SHEET 1 OF 2



LEGEND:

HYDRANT TESTING LOCATION

NOTE:

JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.

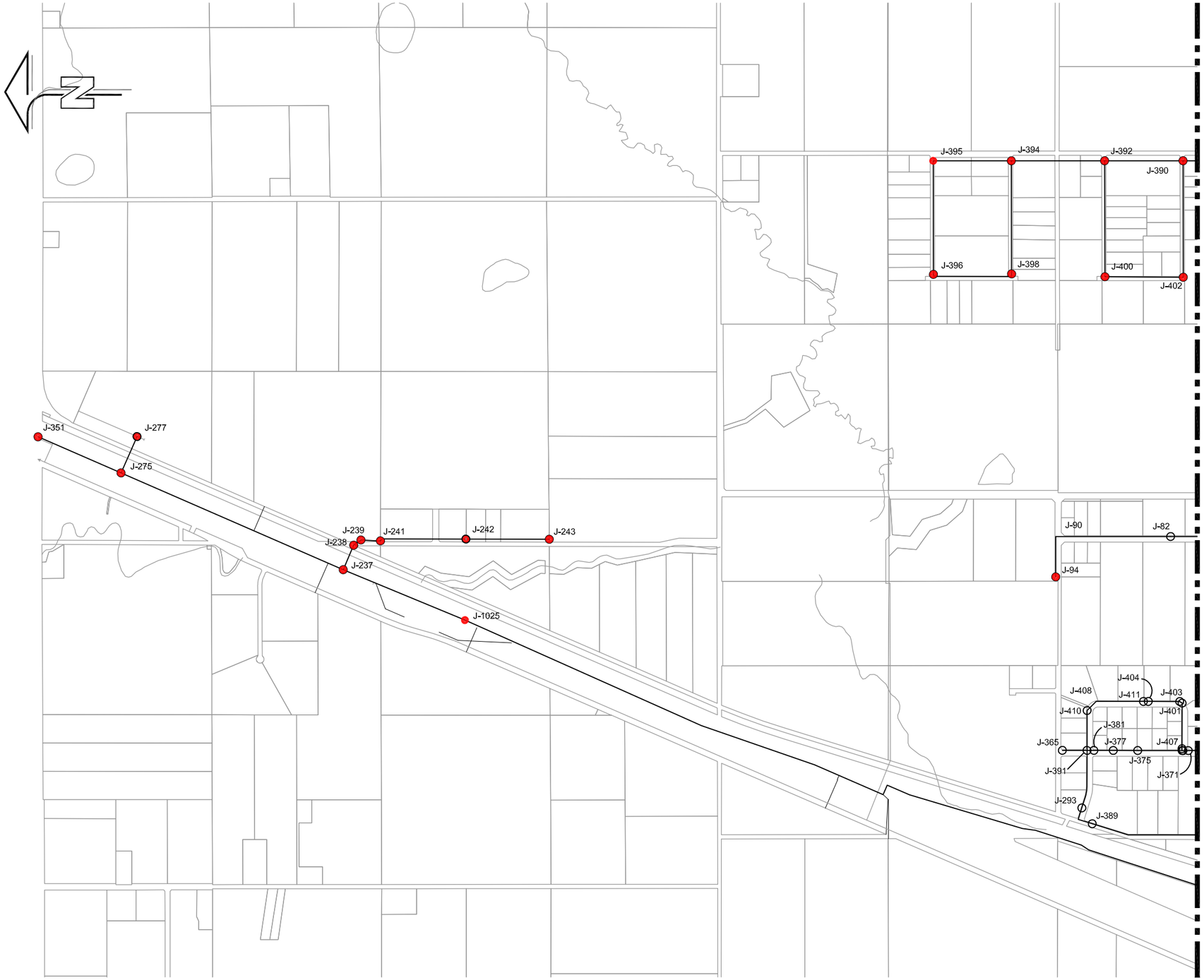
SCALE 1:20000

0 200 400 600 m

Leduc County
Nisku Water Distribution
System Analysis

Existing Water Distribution System - Sheet 2 of 2

Figure - 3.1



LEGEND:

- FAILS FIRE FLOW DEMANDS

FOR CONTINUATION - REFER TO FIGURE 3.2 - SHEET 2 OF 2

SCALE 1:20000

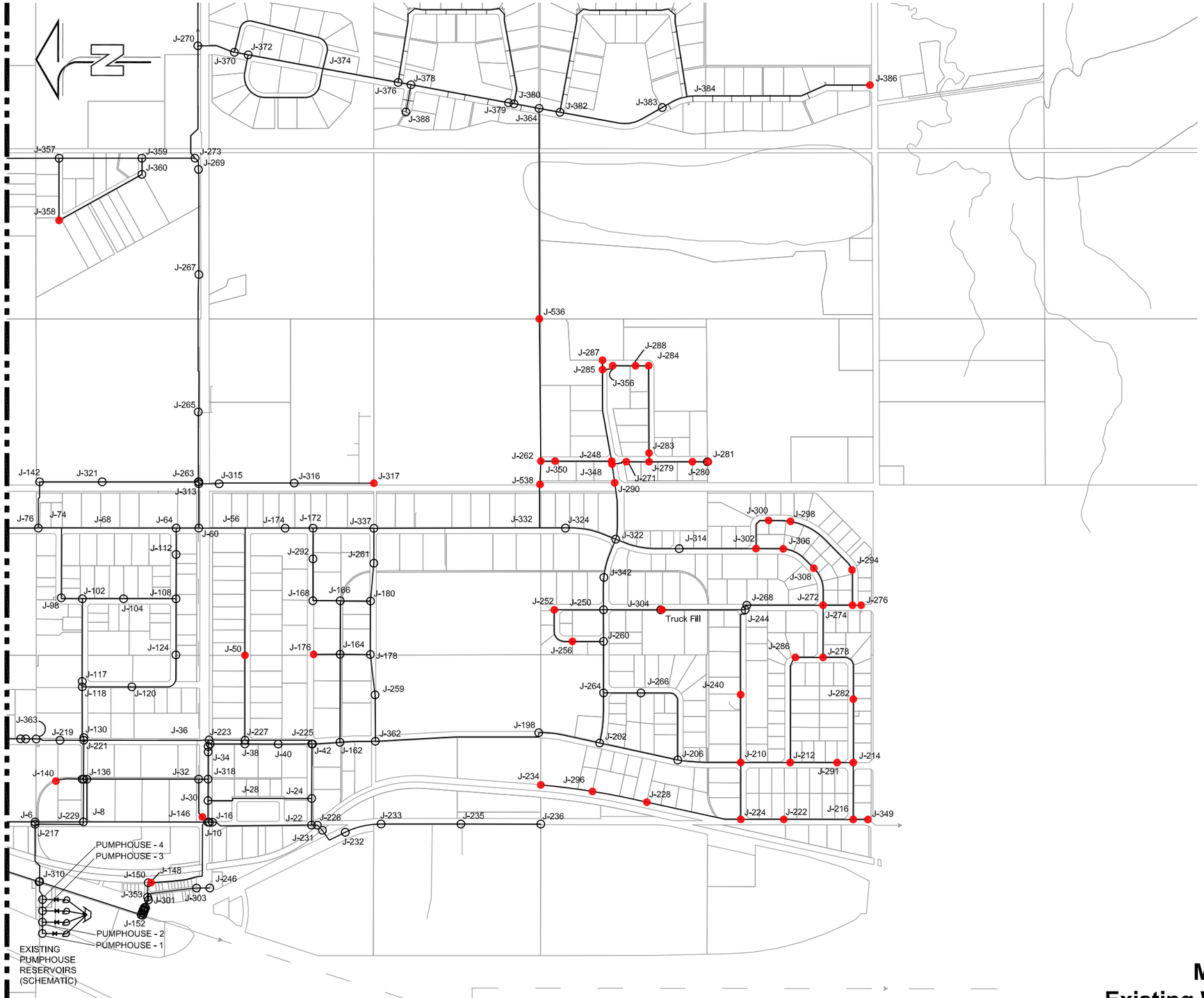
0 200 400 600 m

Leduc County
Nisku Water Distribution
System Analysis

Maximum Day and Fire Flow Demand
Existing Without Improvements - Sheet 1 of 2

Figure - 3.2

FOR CONTINUATION - REFER TO FIGURE 3.2 - SHEET 1 OF 2



LEGEND:

- FAILS FIRE FLOW DEMANDS

NOTE:

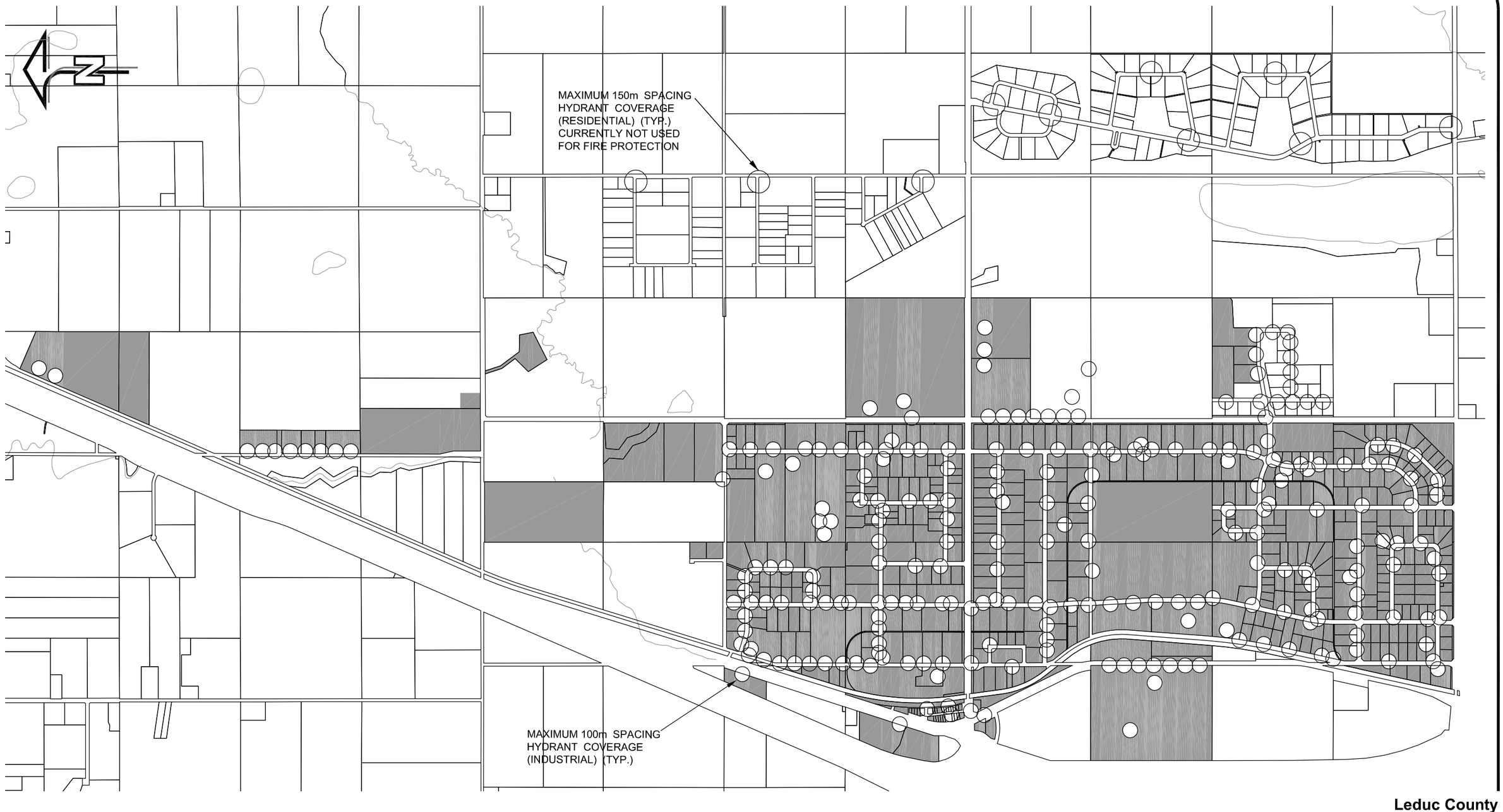
JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.

SCALE 1:20000 m
0 200 400 600

Leduc County
Nisku Water Distribution
System Analysis

Maximum Day and Fire Flow Demand Existing Without Improvements - Sheet 2 of 2

Figure - 3.2



LEGEND:

INSUFFICIENT HYDRANT COVERAGE

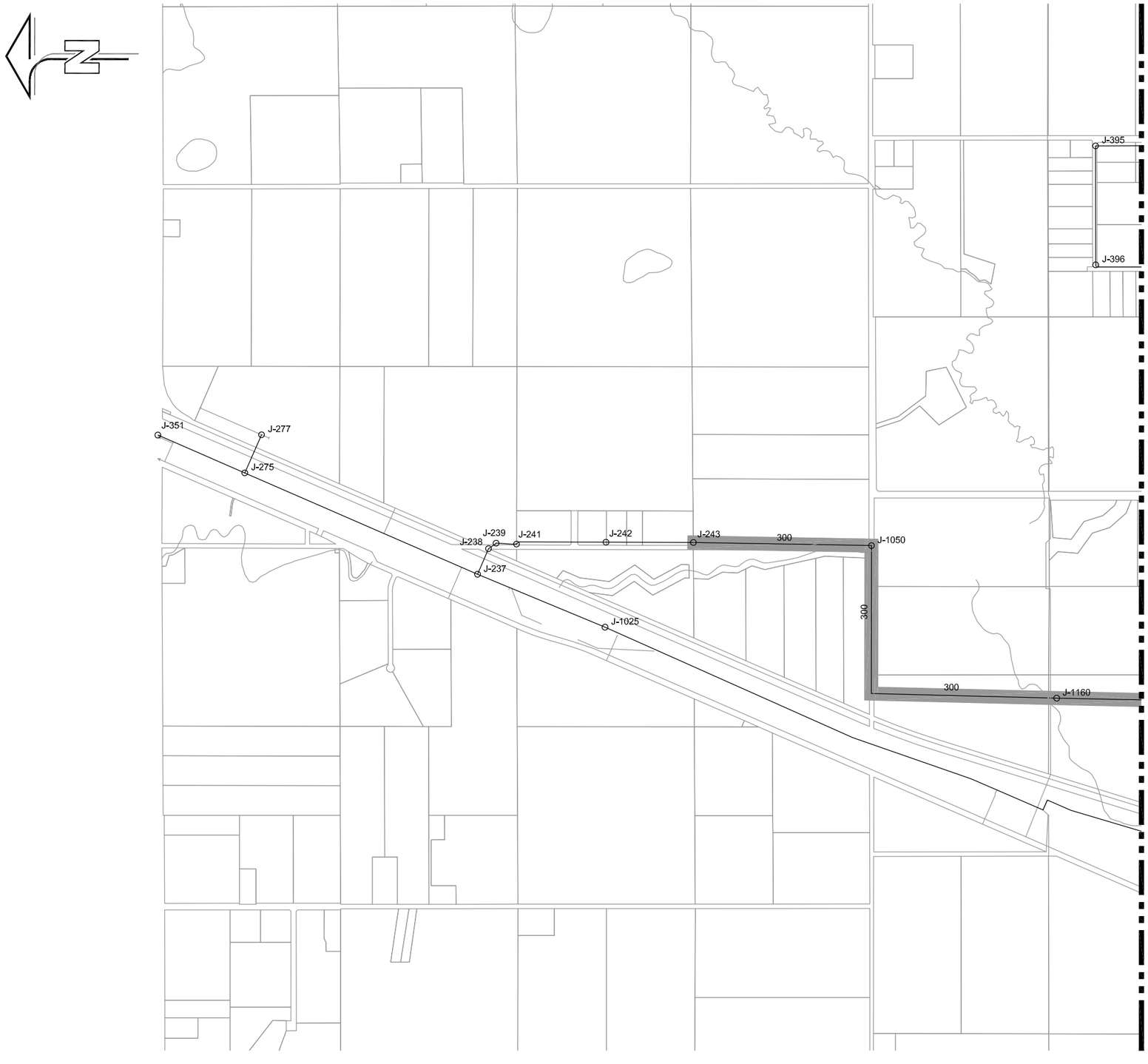
SCALE 1:25000

0 250 500 750 m

Leduc County
Nisku Water Distribution System Analysis

Fire Hydrant Coverage

Figure - 3.3



FOR CONTINUATION - REFER TO FIGURE 3.4 - SHEET 2 OF 2

LEGEND:

J-302 — PROPOSED SYSTEM IMPROVEMENTS C/W PIPE DIAMETER (mm)

NOTE:

JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.

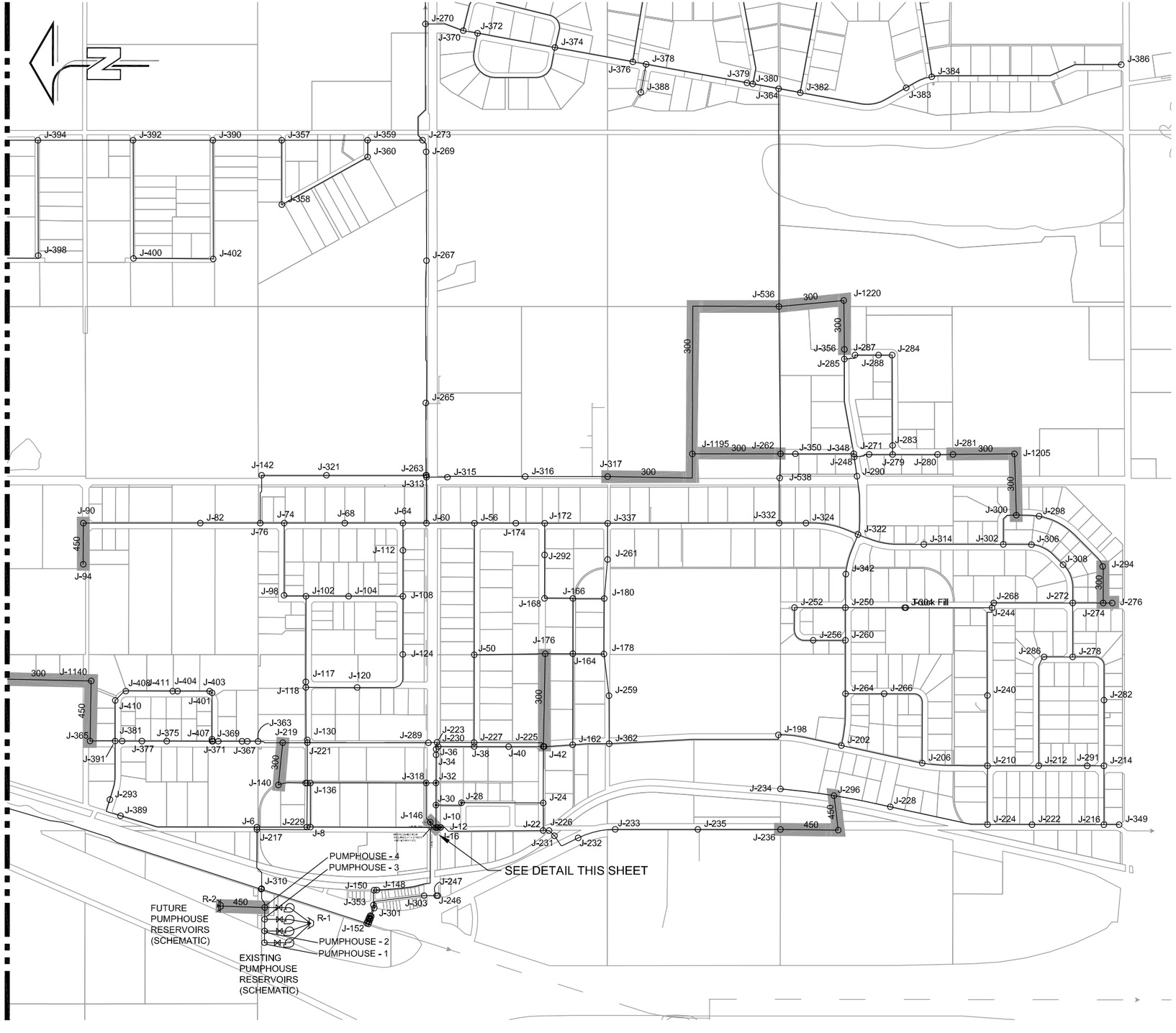
SCALE 1:20000 0 200 400 600 m

Leduc County
Nisku Water Distribution System Analysis

Proposed System Improvements for Alternative 1 - Sheet 1 of 2

Figure - 3.4

FOR CONTINUATION - REFER TO FIGURE 3.4 - SHEET 1 OF 2

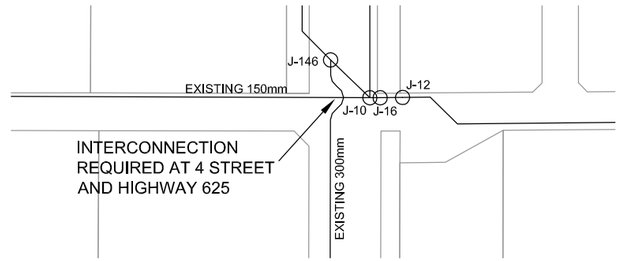


LEGEND:

J-110 — PROPOSED SYSTEM IMPROVEMENTS C/W PIPE DIAMETER (mm)

NOTE:

JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.



DETAIL

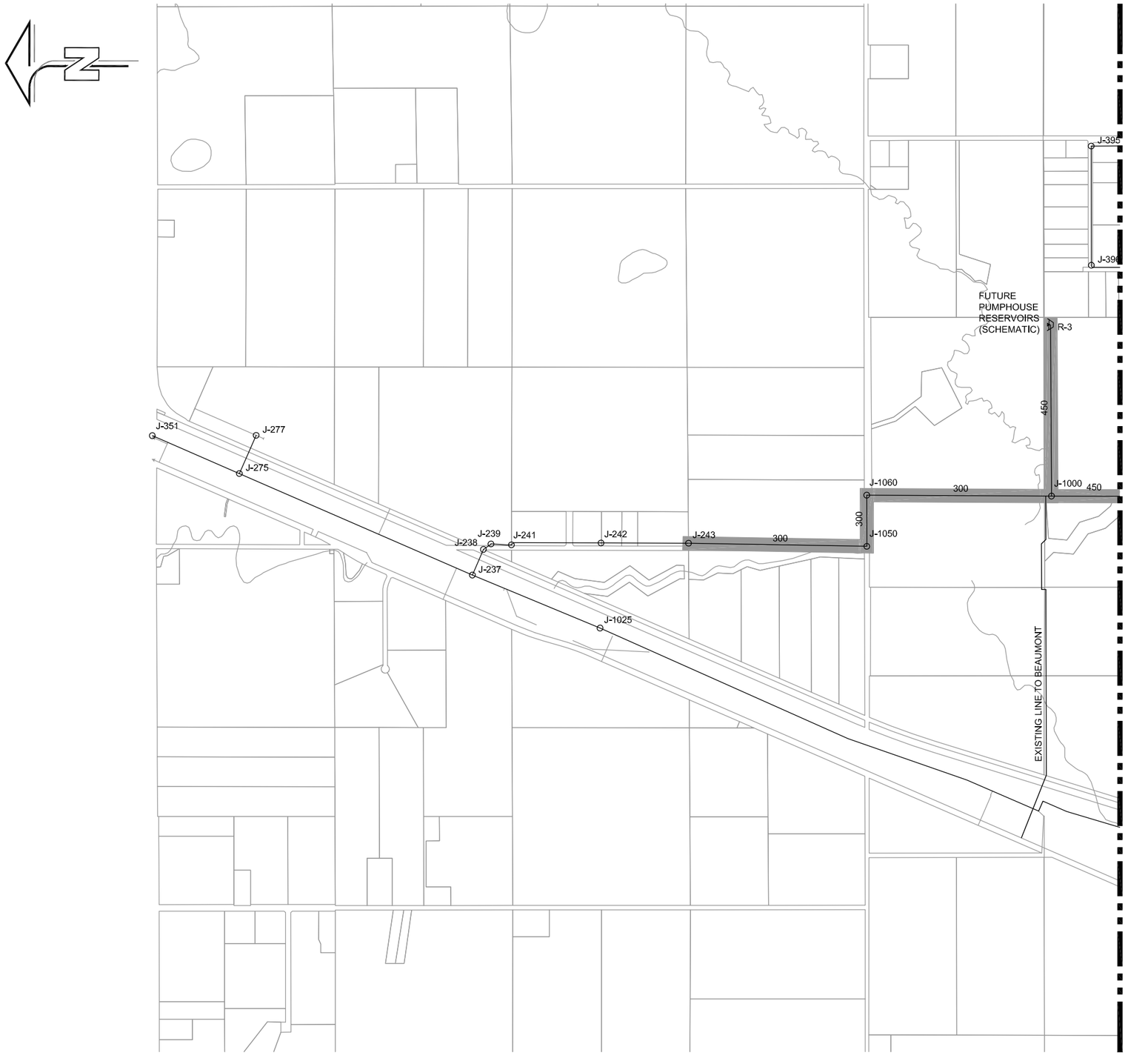
N.T.S

SCALE 1:20000 0 200 400 600 m

Leduc County
Nisku Water Distribution
System Analysis

Proposed System Improvements for Alternative 1 - Sheet 2 of 2

Figure - 3.4



LEGEND:

PROPOSED SYSTEM IMPROVEMENTS C/W PIPE DIAMETER (mm)

NOTE:

JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.

SCALE 1:20000

0 200 400 600 m

Leduc County
Nisku Water Distribution System Analysis

Proposed System Improvements for Alternative 2 - Sheet 1 of 2

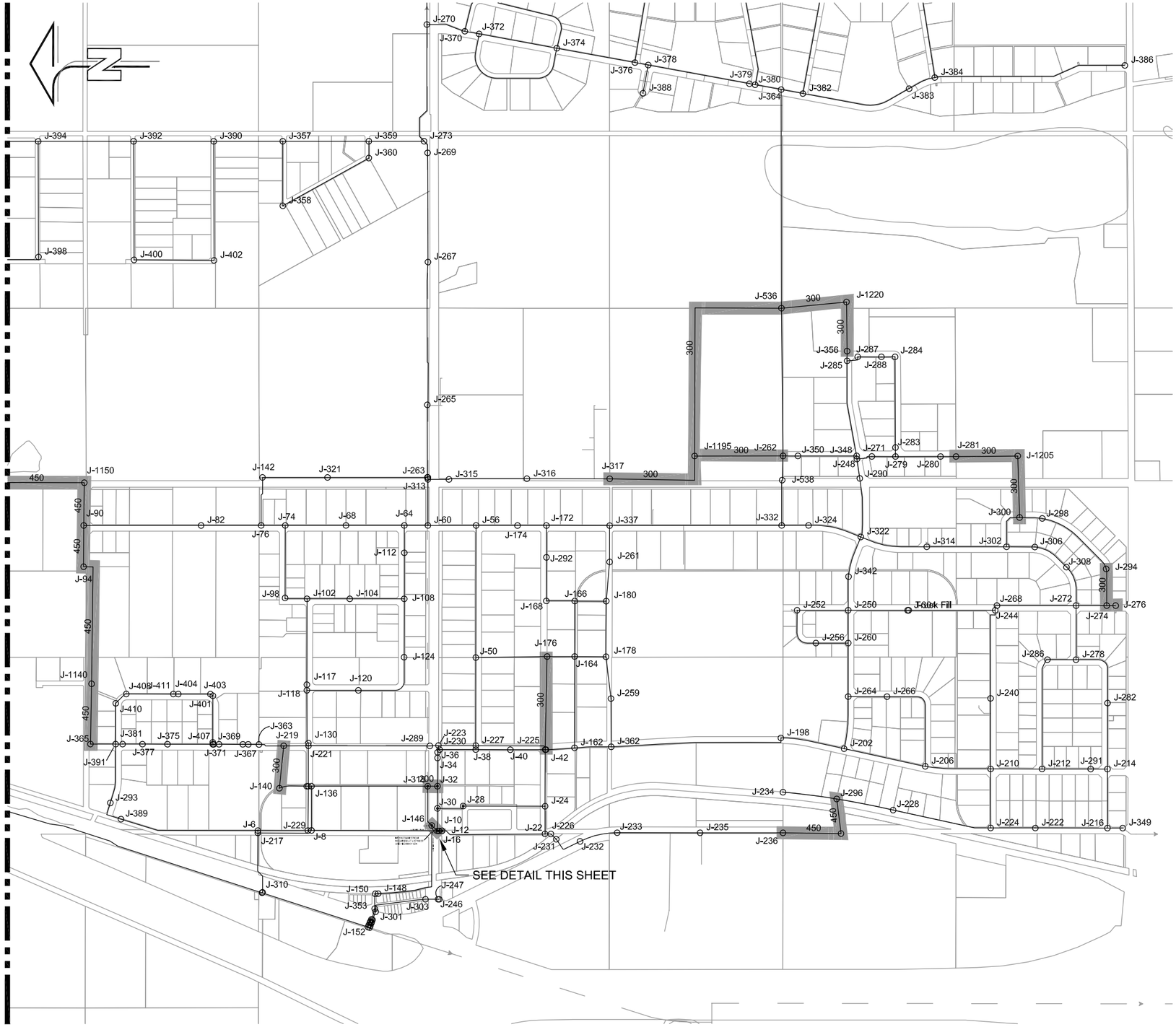
Figure - 3.5

B SIZE 11" x 17" (279mm x 432mm)

PLOT:

UMA FILE NAME:

FOR CONTINUATION - REFER TO FIGURE 3.5 - SHEET 2 OF 2

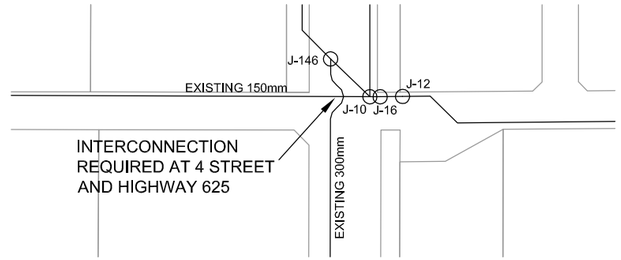


LEGEND:

450 — PROPOSED SYSTEM IMPROVEMENTS C/W PIPE DIAMETER (mm)

NOTE:

JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.



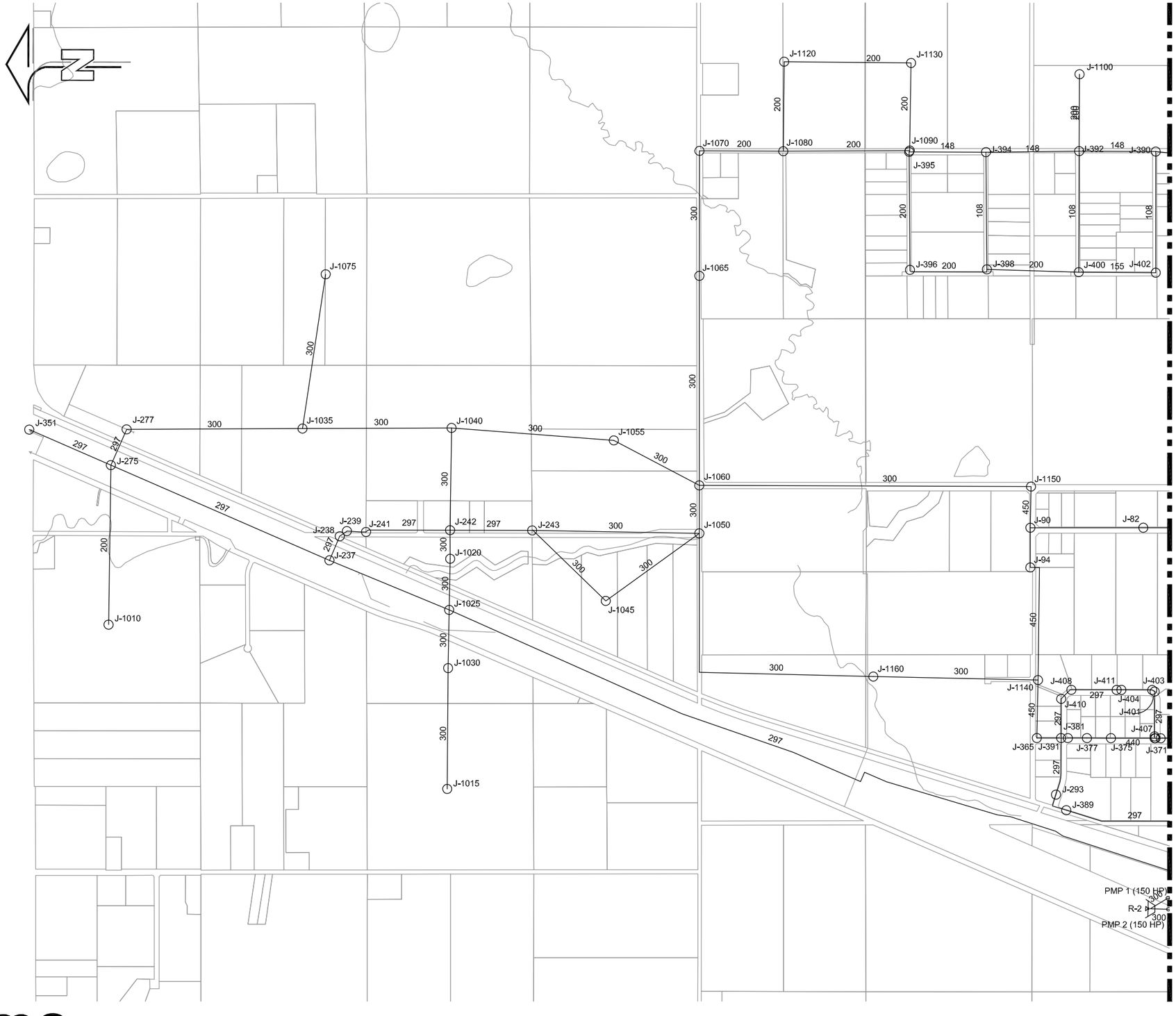
DETAIL
N.T.S

SCALE 1:20000
0 200 400 600 m

Leduc County
Nisku Water Distribution
System Analysis

Proposed System Improvements for Alternative 2 - Sheet 2 of 2

Figure - 3.5



FOR CONTINUATION - REFER TO FIGURE 3.6 - SHEET 2 OF 2

SCALE 1:20000 m
0 200 400 600

Leduc County
Nisku Water Distribution System Analysis

2013 Water Distribution System for Alternative 1 - Sheet 1 of 2

Figure - 3.6

FOR CONTINUATION - REFER TO FIGURE 3.6 - SHEET 1 OF 2

NOTE:

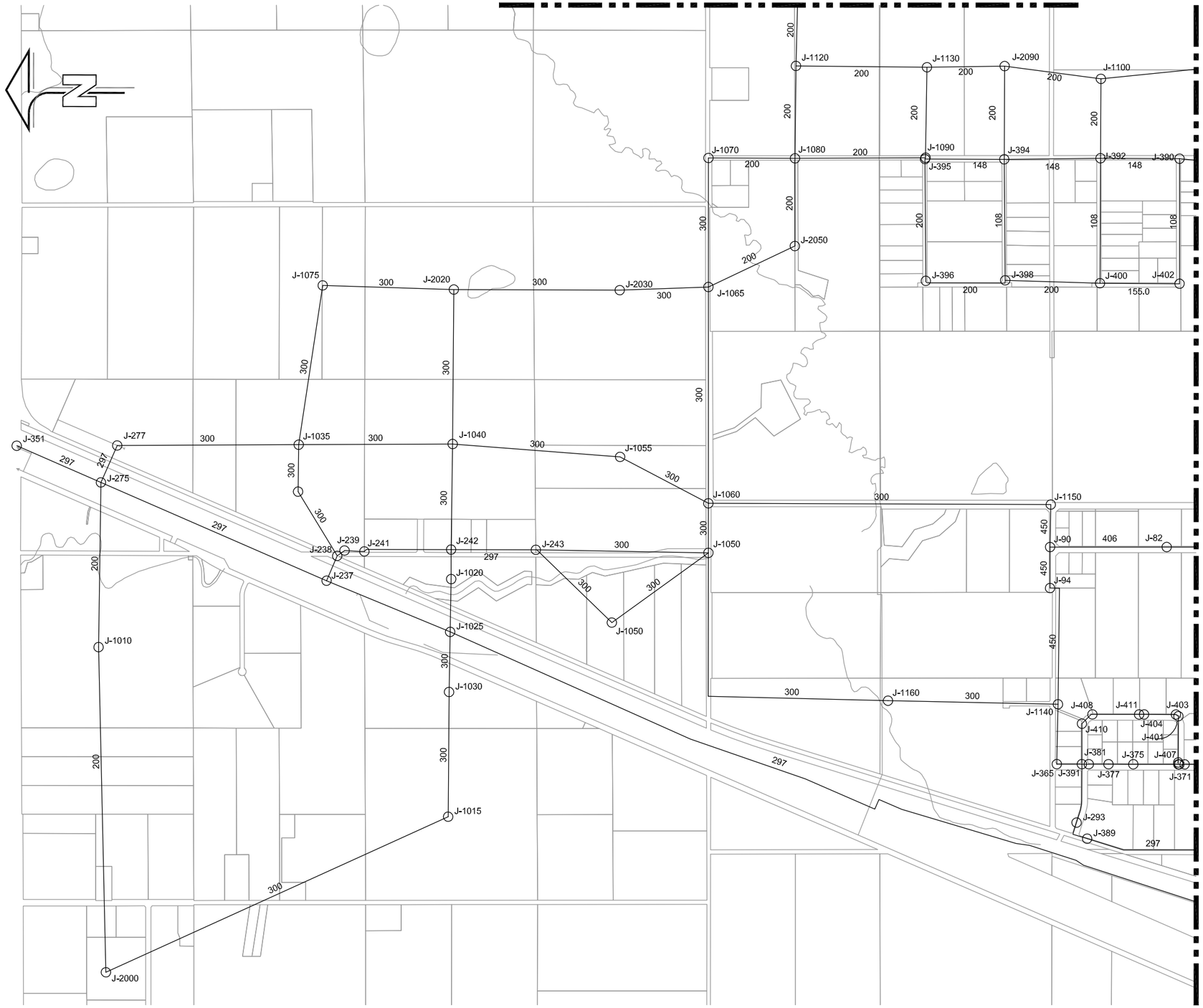
JUNCTIONS 307, 309 AND 312; EAST OF JUNCTION 270, ARE NOT SHOWN.

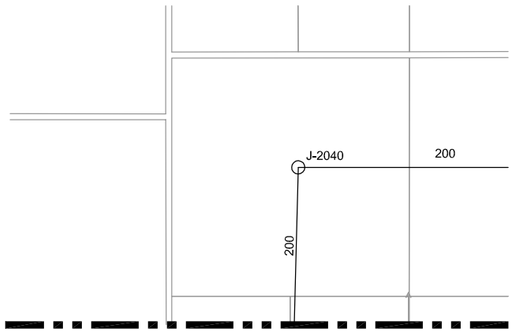
Leduc Country
Nisku Water Distribution System Analysis

2013 Water Distribution System for Alternative 1 - Sheet 2 of 2

Figure - 3.6

FOR CONTINUATION REFER TO THIS SHEET





FOR CONTINUATION REFER TO THIS SHEET

FOR CONTINUATION - REFER TO FIGURE 3.7 - SHEET 2 OF 2

SCALE 1:20000

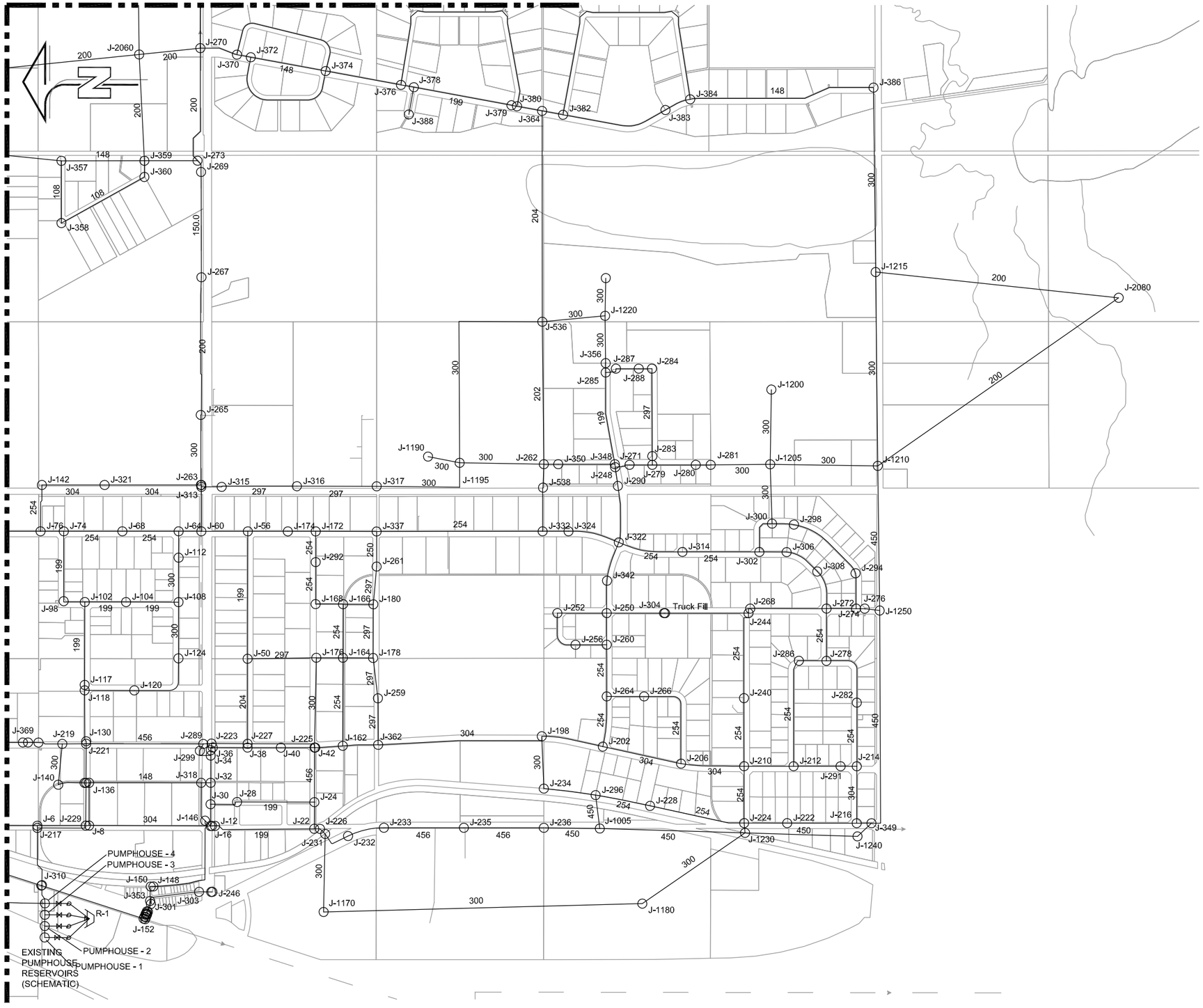
0 200 400 600 m

Leduc Country
Nisku Water Distribution
System Analysis

2023 Water Distribution System for Alternative 1- Sheet 1 of 2

Figure - 3.7

FOR CONTINUATION REFER TO THIS SHEET



FOR CONTINUATION - REFER TO FIGURE 3.7 - SHEET 1 OF 2

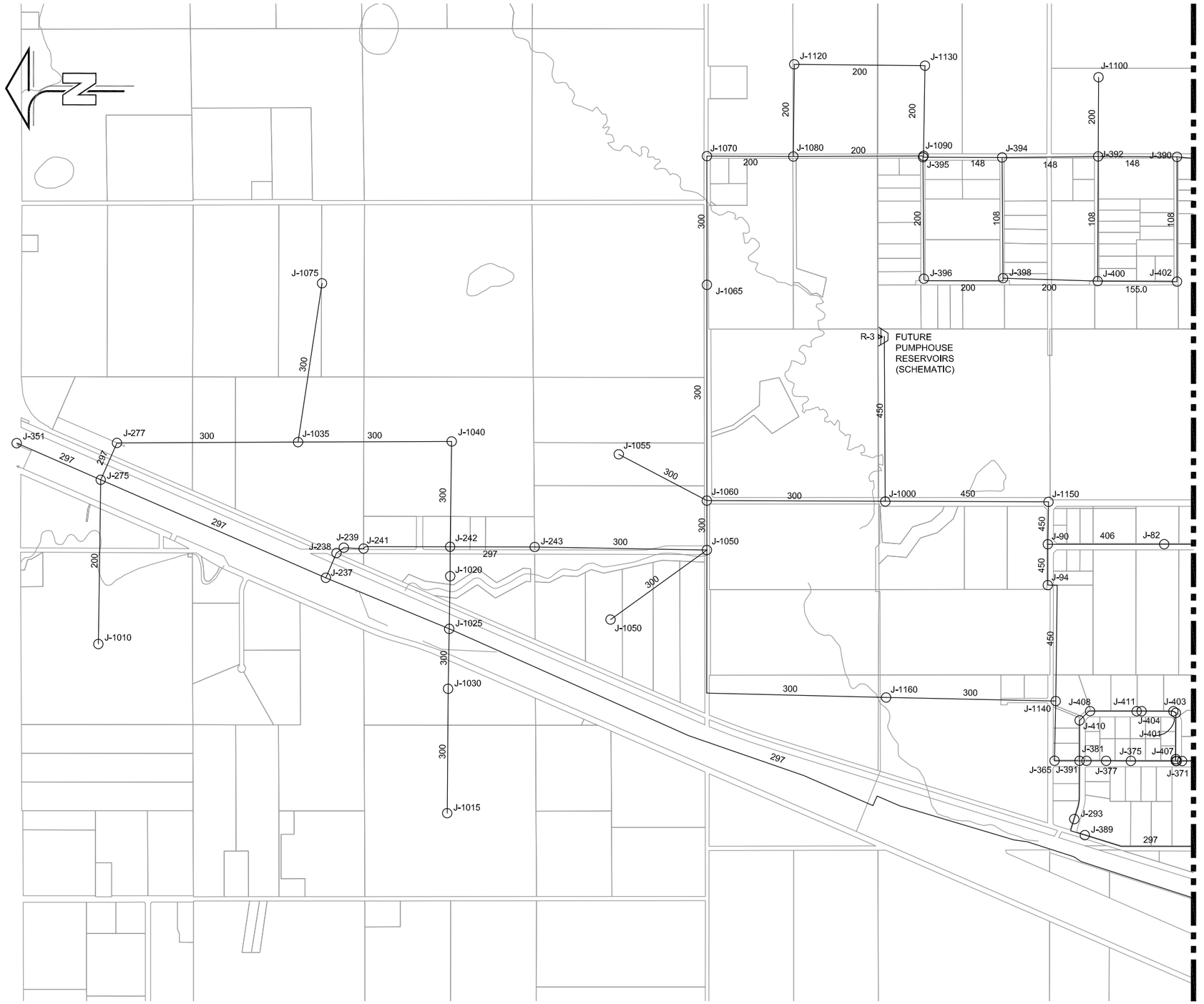
FOR CONTINUATION REFER TO THIS SHEET

SCALE 1:20000 m
0 200 400 600

Leduc County
Nisku Water Distribution System Analysis

2023 Water Distribution System for Alternative 1 - Sheet 2 of 2

Figure - 3.7



SCALE 1:20000 m
0 200 400 600

FOR CONTINUATION - REFER TO FIGURE 3.8 - SHEET 2 OF 2

Leduc Country
Nisku Water Distribution
System Analysis

2013 Water Distribution System for Alternative 2- Sheet 1 of 2

Figure - 3.8

FOR CONTINUATION - REFER TO FIGURE 3.8 - SHEET 1 OF 2

FOR CONTINUATION REFER TO THIS SHEET

FOR CONTINUATION REFER TO THIS SHEET

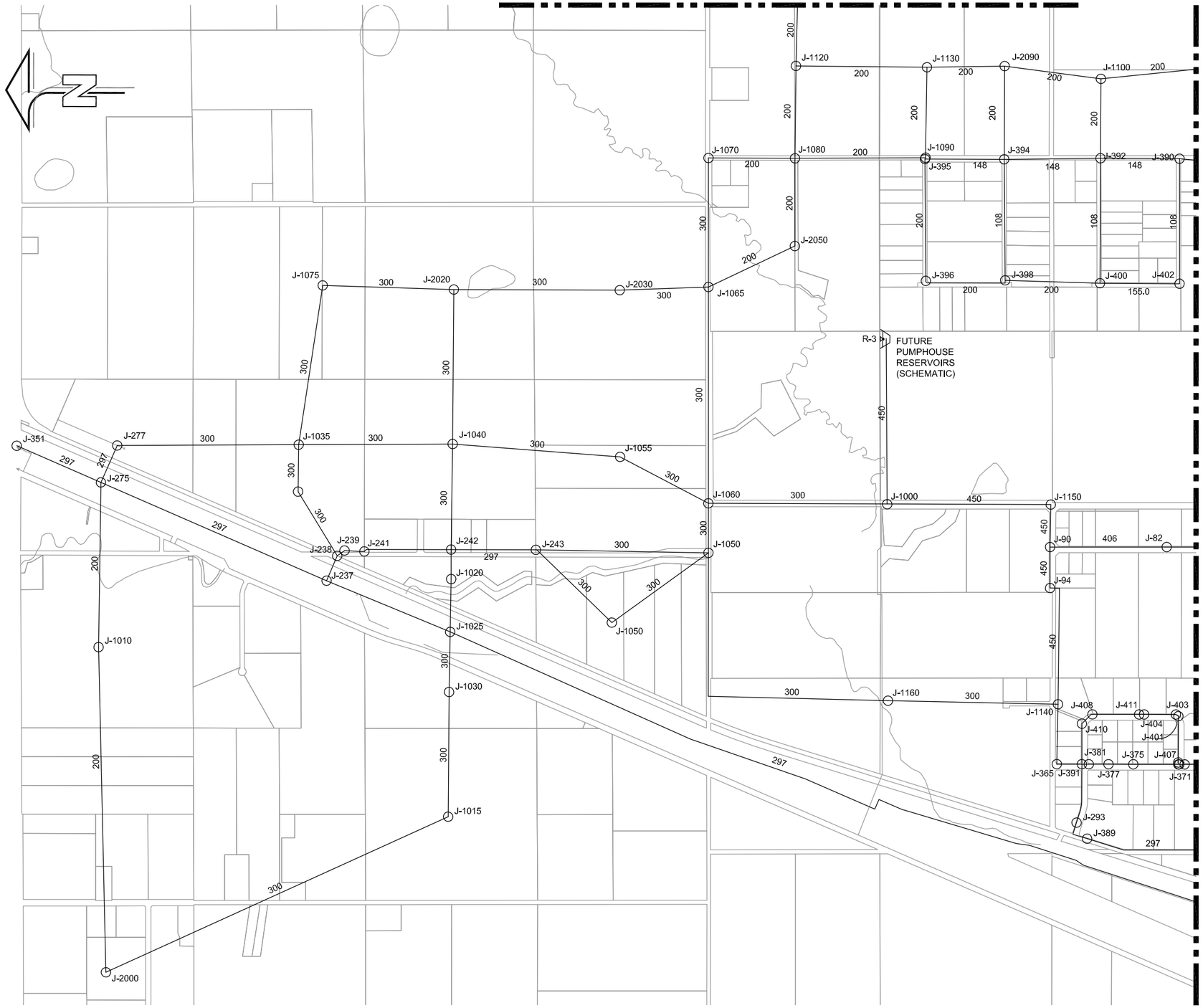
SCALE 1:20000
0 200 400 600 m

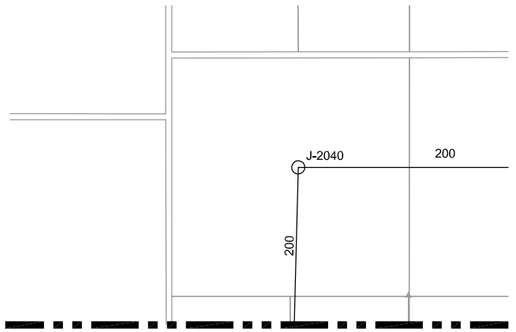
Leduc County
Nisku Water Distribution
System Analysis

2013 Water Distribution System for Alternative 2 - Sheet 2 of 2

Figure - 3.8

FOR CONTINUATION REFER TO THIS SHEET





FOR CONTINUATION REFER TO THIS SHEET

FOR CONTINUATION - REFER TO FIGURE 3.9 - SHEET 2 OF 2

SCALE 1:20000
0 200 400 600 m

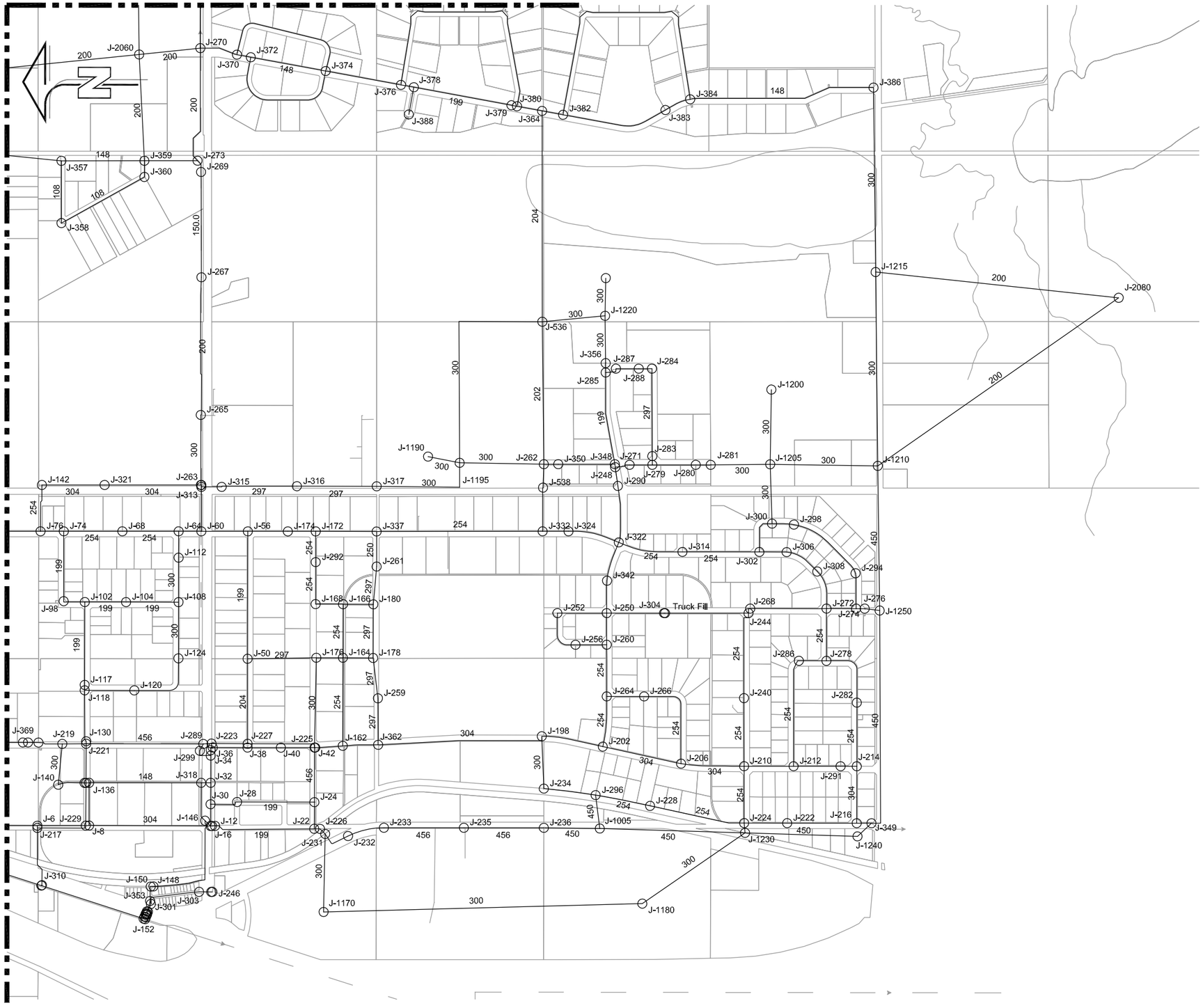
Leduc Country
Nisku Water Distribution
System Analysis

2023 Water Distribution System for Alternative 2 - Sheet 1 of 2

Figure - 3.9

FOR CONTINUATION REFER TO THIS SHEET

FOR CONTINUATION - REFER TO FIGURE 3.9 - SHEET 1 OF 2



FOR CONTINUATION REFER TO THIS SHEET

SCALE 1:20000

0 200 400 600 m

Leduc County
Nisku Water Distribution System Analysis

2023 Water Distribution System for Alternative 2 - Sheet 2 of 2

Figure - 3.9

4.0 Cost Estimating

Tables 4-1 and 4-2 provide the estimated costs for the proposed system improvements for the existing development condition for Alternative 1 and 2 respectively. The costs are based on 2003 average rates, assume C900 P.V.C water main and are valid for both upgraded water mains and new water mains. They include the costs of:

- Main line valves as required
- New and replaced hydrants as required
- Connections to the existing system
- Reconnections of private water services
- A 30% contingency and engineering allowance

The cost does not include the effects of annual inflation and G.S.T.

Table 4-1: Summary of Estimated Costs for the Existing System Improvements for Alternative 1

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-130	J-90	J-94	450	191.5	550	$ 105,325
P-338	J-274	J-276	300	41.5	400	$ 16,600
P-358	J-274	J-294	300	170.5	400	$ 68,200
P-1040	J-1050	J-243	300	807.0	400	$ 322,800
P-1160	J-365	J-1140	450	280.0	550	$ 154,000
P-1200	J-1140	J-1160	300	795.0	400	$ 318,000
P-1210	J-1160	J-1050	300	1510.5	400	$ 604,200
P-1240	J-317	J-1195	300	517.0	400	$ 206,800
P-1250	J-1195	J-262	300	405.5	400	$ 162,200
P-1260	J-236	J-1005	450	269.5	550	$ 148,225
P-1265	J-1005	J-296	450	162.0	550	$ 89,100
P-1270	J-219	J-140	300	198.0	400	$ 79,200
P-1280	J-225	J-176	300	432.5	400	$ 173,000
P-1340	J-10	J-146	300	36.5	400	$ 14,600
P-1370	J-1220	J-356	300	228.0	400	$ 91,200
P-1375	J-1220	J-536	300	303.5	400	$ 121,400
P-1390	J-300	J-1205	300	285.5	400	$ 114,200
P-1430	J-1195	J-536	300	1082.0	400	$ 432,800
P-1450	J-281	J-1205	300	286.5	400	$ 114,600
					Subtotal	**$ 3,336,450**
					Contingency (30%)	**$ 1,000,935**
					Total	**$ 4,337,385**

Table 4-2: Summary of Estimated Costs for the Existing System Improvements for Alternative 2

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-130	J-90	J-94	450	191.5	550	$ 105,325
P-338	J-274	J-276	300	41.5	400	$ 16,600
P-358	J-274	J-294	300	170.5	400	$ 68,200
P-394	J-32	J-318	200	45.5	325	$ 14,788
P-1040	J-1050	J-243	300	807.0	400	$ 322,800
P-1050	J-1050	J-1060	300	231.5	400	$ 92,600
P-1110	J-1000	R-3	450	774.5	550	$ 425,975
P-1120	J-1000	J-1150	450	764.5	550	$ 420,475
P-1160	J-365	J-1140	450	280.00	550	$ 154,000
P-1170	J-1140	J-94	450	586.50	550	$ 322,575
P-1180	J-90	J-1150	450	198.5	550	$ 109,175
P-1190	J-1000	J-1060	300	836.0	400	$ 334,400
P-1240	J-317	J-1195	300	517.0	400	$ 206,800
P-1250	J-1195	J-262	300	405.5	400	$ 162,200
P-1260	J-236	J-1005	450	269.5	550	$ 148,225
P-1265	J-1005	J-296	450	162.0	550	$ 89,100
P-1270	J-219	J-140	300	198.0	400	$ 79,200
P-1280	J-225	J-176	300	432.5	400	$ 173,000
P-1340	J-10	J-146	300	36.5	400	$ 14,600
P-1370	J-1220	J-356	300	228.0	400	$ 91,200
P-1375	J-1220	J-536	300	303.5	400	$ 121,400
P-1390	J-300	J-1205	300	285.5	400	$ 114,200
P-1430	J-1195	J-536	300	1082.0	400	$ 432,800
P-1450	J-281	J-1205	300	286.5	400	$ 114,600
					Subtotal	**$ 4,134,238**
					Contingency (30%)	**$ 1,240,271**
					Total	**$ 5,374,509**

The total estimated cost for upgrades to the existing water distribution system as discussed in Section 3.4.4 in addition to the water reservoir and Pumphouse upgrades is approximately $4.3 Million and $5.4 Million for Alternative 1 and 2 respectively.

It should be noted that both the alternatives provide similar level of service in terms of pressures and available fire flows; however, the improvement cost for Alternative 1 is lower than Alternative 2 by approximately $1.1 Million.

The cost estimates for the future servicing requirements for Alternative 1 are summarized in Tables 4-3 and 4-4 for the year 2013 and 2023 development conditions. Similarly, the cost estimates for the future servicing requirements for Alternative 2 are summarized in Tables 4-5 and 4-6 for the year 2013 and 2023 development conditions.

Table 4-3: Cost Estimate for Year 2013 Water Distribution System - Alternative 1

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-479*	J-395	J-396	200	569.5	325	$ 185,088
P-504*	J-398	J-396	200	390.5	325	$ 126,913
P-1000	J-275	J-1010	200	770	325	$ 250,250
P-1010	J-242	J-1020	300	138	400	$ 55,200
P-1015	J-1030	J-1015	300	583	400	$ 233,200
P-1020	J-1025	J-1030	300	281	400	$ 112,400
P-1025	J-1025	J-1020	300	247	400	$ 98,800
P-1030	J-242	J-1040	300	494	400	$ 197,600
P-1035	J-1035	J-1075	300	753.00	400	$ 301,200
P-1045	J-1050	J-1045	300	557.00	400	$ 222,800
P-1050	J-1050	J-1060	300	231.5	400	$ 92,600
P-1055	J-1060	J-1055	300	466	400	$ 186,400
P-1060	J-1060	J-1065	300	1011.5	400	$ 404,600
P-1065	J-1065	J-1070	300	603	400	$ 241,200
P-1070	J-1070	J-1080	200	404.5	325	$ 131,463
P-1080	J-1080	J-1090	200	610.5	325	$ 198,413
P-1090	J-1090	J-395	200	7	325	$ 2,275
P-1100	J-392	J-1100	200	371	325	$ 120,575
P-1130	J-1080	J-1120	200	432	325	$ 140,400
P-1140	J-1120	J-1130	200	612.5	325	$ 199,063
P-1150	J-1130	J-1090	200	422.50	325	$ 137,313
P-1170	J-1140	J-94	450	586.50	550	$ 322,575
P-1205	J-1200	J-1205	300	360	400	$ 144,000
P-1220	J-231	J-1170	300	375.50	400	$ 150,200
P-1230	J-1230	J-1180	300	600.50	400	$ 240,200
P-1245	J-1260	J-1210	200	1414	325	$ 459,550
P-1255	J-1260	J-1215	200	1177	325	$ 382,525
P-1350	J-1035	J-277	300	848.5	400	$ 339,400
P-1355	J-1040	J-1035	300	719.5	400	$ 287,800
P-1380	J-400	J-398	200	443.5	325	$ 144,138
P-1405	J-276	J-1250	300	73.5	400	$ 29,400
P-1410	J-1250	J-1210	450	687.50	550	$ 378,125
P-1420	J-1170	J-1180	300	1535	400	$ 614,000
P-1440	J-1210	J-1215	300	933.00	400	$ 373,200
P-1445	J-1215	J-386	300	888	400	$ 355,200
P-1460	J-1205	J-1210	300	518.00	400	$ 207,200
P-1470	J-1250	J-349	450	1077	550	$ 592,350
P-1480	J-1230	J-1240	450	542	550	$ 298,100
P-1500	J-1005	J-1230	450	699.50	550	$ 384,725
P-1510	J-1230	J-224	300	47.5	400	$ 19,000
P-1520	J-1240	J-349	450	92.5	550	$ 50,875
P-1530	J-1190	J-1195	300	155	400	$ 62,000
P-1710	J-1040	J-1055	300	785	400	$ 314,000
P-1720	J-1045	J-243	300	492.0	400	$ 196,800
P-1730	J-50	J-176	300	331	400	$ 132,400
					Subtotal	**$ 10,115,513**
					Contingency (30%)	**$ 3,034,654**
					Total	**$ 13,150,166**

Table 4-4: Cost Estimate for Year 2023 Water Distribution System - Alternative 1

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-2000	J-1010	J-2000	200	1,520.50	325	$ 494,163
P-2010	J-2000	J-1015	200	1,757.50	325	$ 571,188
P-2020	J-2010	J-1035	300	219.5	400	$ 87,800
P-2025	J-1075	J-2020	300	613.5	400	$ 245,400
P-2040	J-2020	J-1040	300	722	400	$ 288,800
P-2045	J-1120	J-2040	200	813.5	325	$ 264,388
P-2050	J-2020	J-2030	300	775.5	400	$ 310,200
P-2055	J-2065	J-2040	200	2459	325	$ 799,175
P-2065	J-2060	J-2065	200	765.00	325	$ 248,625
P-2075	J-2065	J-307	200	497	325	$ 161,525
P-2080	J-1065	J-2030	300	415	400	$ 166,000
P-2090	J-2050	J-1065	200	447.00	325	$ 145,275
P-2100	J-2050	J-1080	200	410.00	325	$ 133,250
P-2110	J-2060	J-1100	200	1067	325	$ 346,775
P-2120	J-270	J-2060	200	296.5	325	$ 96,363
P-2130	J-359	J-2060	200	512	325	$ 166,400
P-2200	J-234	J-198	300	252	400	$ 100,800
P-2210	J-238	J-2010	300	352	400	$ 140,800
P-2220	J-2090	J-1100	200	454	325	$ 147,550
P-2230	J-394	J-2090	200	436	325	$ 141,700
P-2240	J-2090	J-1130	200	363.5	325	$ 118,138
P-2250	J-1220	J-2070	300	182	400	$ 72,800
					Subtotal	**$ 5,247,113**
					Contingency (30%)	**$ 1,574,134**
					Total	**$ 6,821,246**

Table 4-5: Cost Estimate for Year 2013 Water Distribution System - Alternative 2

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-479*	J-395	J-396	200	569.5	325	$ 185,088
P-504*	J-398	J-396	200	390.5	325	$ 126,913
P-1000	J-275	J-1010	200	770	325	$ 250,250
P-1010	J-242	J-1020	300	138	400	$ 55,200
P-1015	J-1030	J-1015	200	583	325	$ 189,475
P-1020	J-1025	J-1030	300	281	400	$ 112,400
P-1025	J-1025	J-1020	300	247	400	$ 98,800
P-1030	J-242	J-1040	300	494	400	$ 197,600
P-1035	J-1035	J-1075	300	753.00	400	$ 301,200
P-1045	J-1050	J-1045	300	557.00	400	$ 222,800
P-1055	J-1060	J-1055	300	466	400	$ 186,400
P-1060	J-1060	J-1065	300	1011.5	400	$ 404,600
P-1065	J-1065	J-1070	300	603	400	$ 241,200
P-1070	J-1070	J-1080	200	404.5	325	$ 131,463
P-1080	J-1080	J-1090	200	610.5	325	$ 198,413
P-1090	J-1090	J-395	200	7	325	$ 2,275
P-1100	J-392	J-1100	200	371	325	$ 120,575
P-1130	J-1080	J-1120	200	432	325	$ 140,400
P-1140	J-1120	J-1130	200	612.5	325	$ 199,063
P-1150	J-1130	J-1090	200	422.5	325	$ 137,313
P-1200	J-1140	J-1160	300	795	400	$ 318,000
P-1205	J-1200	J-1205	300	360.00	400	$ 144,000
P-1210	J-1160	J-1050	300	1,510.50	400	$ 604,200
P-1220	J-231	J-1170	300	375.5	400	$ 150,200
P-1230	J-1230	J-1180	300	600.5	400	$ 240,200
P-1245	J-1260	J-1210	200	1414	325	$ 459,550
P-1255	J-1260	J-1215	200	1177	325	$ 382,525
P-1350	J-1035	J-277	300	848.5	400	$ 339,400
P-1355	J-1040	J-1035	300	719.5	400	$ 287,800
P-1380	J-400	J-398	200	443.50	325	$ 144,138
P-1405	J-276	J-1250	300	73.5	400	$ 29,400
P-1410	J-1250	J-1210	450	687.50	550	$ 378,125
P-1420	J-1170	J-1180	300	1535	400	$ 614,000
P-1440	J-1210	J-1215	300	933.00	400	$ 373,200
P-1445	J-1215	J-386	300	888	400	$ 355,200
P-1460	J-1205	J-1210	300	518	400	$ 207,200
P-1470	J-1250	J-349	450	1,077.00	550	$ 592,350
P-1480	J-1230	J-1240	450	542	550	$ 298,100
P-1500	J-1005	J-1230	450	699.5	550	$ 384,725
P-1510	J-1230	J-224	300	47.5	400	$ 19,000
P-1520	J-1240	J-349	450	92.5	550	$ 50,875
P-1530	J-1190	J-1195	300	155.0	400	$ 62,000
P-1730	J-50	J-176	300	331	400	$ 132,400
					Subtotal	**$ 10,068,013**
					Contingency (30%)	**$ 3,020,404**
					Total	**$ 13,088,416**

Table 4-6: Cost Estimate for Year 2023 Water Distribution System - Alternative 2

Pipe Label	From Node	To Node	Diameter (mm)	Length (m)	Unit Price ($/m)	Amount ($)
P-1710	J-1040	J-1055	300	785.00	400	$ 314,000
P-1720	J-1045	J-243	300	492.00	400	$ 196,800
P-2000	J-1010	J-2000	200	1520.5	325	$ 494,163
P-2010	J-2000	J-1015	200	1757.5	325	$ 571,188
P-2020	J-2010	J-1035	300	219.5	400	$ 87,800
P-2025	J-1075	J-2020	300	613.5	400	$ 245,400
P-2040	J-2020	J-1040	300	722	400	$ 288,800
P-2045	J-1120	J-2040	200	813.5	325	$ 264,388
P-2050	J-2020	J-2030	300	775.50	400	$ 310,200
P-2055	J-2065	J-2040	200	2459	325	$ 799,175
P-2065	J-2060	J-2065	200	765	325	$ 248,625
P-2075	J-2065	J-307	200	497.00	325	$ 161,525
P-2080	J-1065	J-2030	300	415.00	400	$ 166,000
P-2090	J-2050	J-1065	200	447	325	$ 145,275
P-2200	J-234	J-198	300	252	400	$ 100,800
P-2100	J-2050	J-1080	200	410	325	$ 133,250
P-2110	J-2060	J-1100	200	1067	325	$ 346,775
P-2120	J-270	J-2060	200	296.5	325	$ 96,363
P-2130	J-359	J-2060	200	512	325	$ 166,400
P-2210	J-238	J-2010	300	352	400	$ 140,800
P-2220	J-2090	J-1100	200	454	325	$ 147,550
P-2230	J-394	J-2090	200	436	325	$ 141,700
P-2240	J-2090	J-1130	200	363.5	325	$ 118,138
P-2250	J-1220	J-2070	300	182	400	$ 72,800
					Subtotal	**$ 5,757,913**
					Contingency (30%)	**$ 1,727,374**
					Total	**$ 7,485,286**

5.0 Implementation Plan

For the existing system the proposed improvements should be implement in the following order:

- Make improvements to the existing pumphouse/reservoir or construct a new pumphouse/reservoir.
- Install the proposed water mains listed in Table 4-1 or Table 4-2 to improve the fire flow requirements within the Park's core existing industrial development.
- Provide fire protection for the existing residential (Vistas) and industrial development (north west portion of the Park) along with future developments.

6.0 Conclusions and Recommendations

STORAGE RESERVOIR

- The existing storage capacity of the reservoir is 4.3 ML.
- As the actual supply is susceptible to disruptions, it is recommended that the storage be designed for the fire flow plus two times the average day demand. Based on this criteria, the reservoir storage should be 6.56 ML or 2.26 ML greater than existing capacity.
- For the year 2013, the storage requirements are estimated at 12.77 ML or an additional 8.47 ML above the existing design.
- This additional storage can be achieved by expanding the existing reservoir or constructing a new pumphouse and reservoir at a different location.
- It was assumed that the existing fill line servicing the Town of Beaumont would be used to fill the new reservoir. However, approval from the Capital Region Southwest Water Services Commission would be required for the tie-in.

PUMPHOUSE FACILITIES

- The design hydraulic capacity of the existing pumphouse is sufficient for the anticipated maximum demand for the year 2013.
- Generally, the pumps have a life span of 15 to 20 years. The pumps are approximately 20 years old; however, they appear to operate satisfactorily. With age, operation and maintenance costs may increase.

DISTRIBUTION SYSTEM – EXISTING

- Hydrant coverage is insufficient in some parts of the industrial park as well as the existing residential neighbourhood. A detailed verification of the hydrant is required to establish additional hydrant coverage requirements.
- The existing system is adequate to supply the peak hour demands provided sufficient pressure is maintained at the pumphouse.
- The existing system is inadequate to supply maximum day plus fire flow demands within the north and south part of the industrial park as well the existing residential development.
- The first stage of improvements will provide fire protection within the Park's core industrial development including the industrial development within the

north section of the park. The proposed improvements include upgrading and looping of approximately 8.0 km and 9.1 km of water mains for Alternative 1 and 2 respectively.

- The second stage of improvements will provide fire protection to the existing residential development and the future development. The proposed second stage of improvements include upgrading and looping for the year 2013 development condition will consist of approximately 25.3 km and 25.5 km of water mains with pipe diameters ranging from 200 to 450 mm for Alternatives 1 and 2 respectively.

DISTRIBUTION SYSTEM – FUTURE

- For the future development, a 450 mm diameter main is proposed along Sparrow Drive and Airport Road up to 9 Street and a 300 mm diameter from 9 Street to tie to the existing dead-end at the South Vista Road.
- A 450 mm diameter is proposed along 25 Avenue with some 300 mm diameter mains to tie to the existing industrial subdivision located north west of the Park.
- A 200 mm diameter main is proposed to provide fire protection for the existing residential subdivision (Vistas) along Range Road 245 with some looping and upgrading of the existing pipes within the subdivision.
- The existing dead-ends within the distribution system should be looped for the ultimate development condition..

COST ESTIMATING

- Cost estimates for the existing system improvements is approximately $4.3 million and $5.4 Million for Alternative 1 and 2 respectively.
- Both the alternatives provide similar level of service in terms of pressures and available fire flows; however, the improvement cost for Alternative 1 is lower than Alternative 2 by approximately $1.1 Million.
- Provision of each new hydrant is estimated to cost approximately $10,000.
- The costs for Alternative 1 for the year 2013 and the year 2023 are $13.2 Million and $6.8 Million respectively.
- The cost for Alternative 2 for the year 2013 and the year 2023 are $13.1 Million and $7.5 Million respectively.

7.0 Report Submittal

This report has been prepared and submitted by UMA Engineering Ltd., as documented below:

UMA PERMIT	ENGINEER'S STAMP

UMA ENGINEERING LTD.
THIRD PARTY DISCLAIMER

This report has been prepared by UMA Engineering Ltd. ("UMA") for the benefit of the client to whom it is addressed. The information and data contained herein represent UMA's best professional judgement in light of the knowledge and information available to UMA at the time of preparation. Except as required by law, this report and the information and data contained herein are to be treated as confidential and may be used and relied upon only by the client, its officers and employees. UMA denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this report or any of its contents without the express written consent of UMA and the client.

Appendix A -
Hydrant Test Results

EPCOR

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EPCOR Water Services Inc.
- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 07-May-200

Flow Test No: 15 **Test Date:** 24-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 7 Av: 23 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N22 Residual Press (psi) : 52.0

Flow Test Hydrant No : N20 Pitot Gauge Reading (1) - Pressure (psi) : 48

Flow Rate (Litres/sec.) : 60 **Flow Rate (U.S. gpm) :** 951

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N22 Residual Press (psi) : 44.0

Flow Test Hydrant No : N20 Pitot Gauge Reading (1) - Pressure (psi) : 31

Pitot Gauge Reading (2) - Pressure (psi) : 32

Flow Rate (Litres/sec.) : 101 **Flow Rate (U.S. gpm) :** 1,607

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N22 Residual Press (psi) :

Flow Test Hydrant No : N20 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 2

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

Information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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- Operations -
Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test: No: 16 **Test Date:** 24-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 8 Av: 25 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 75

Static Hydrant No: N3 Residual Press (psi) : 58.0

Flow Test Hydrant No : N2A Pitot Gauge Reading (1) - Pressure (psi) : 58

Flow Rate (Litres/sec.) : 65 **Flow Rate (U.S. gpm) :** 1,026

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 75

Static Hydrant No: N3 Residual Press (psi) : 49.0

Flow Test Hydrant No : N2A Pitot Gauge Reading (1) - Pressure (psi) : 36

Pitot Gauge Reading (2) - Pressure (psi) : 38

Flow Rate (Litres/sec.) : 108 **Flow Rate (U.S. gpm) :** 1,714

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 75

Static Hydrant No: N3 Residual Press (psi) :

Flow Test Hydrant No : N2A Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 29

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

Information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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- Operations -
Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 17 **Test Date:** 24-APR-2003 **Test Time:** 10:30:00

Nearest Intersection St: 8 Av: Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N18 Residual Press (psi) : 47.0

Flow Test Hydrant No : N17 Pitot Gauge Reading (1) - Pressure (psi) : 51

Flow Rate (Litres/sec.) : 61 **Flow Rate (U.S. gpm) :** 974

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N18 Residual Press (psi) : 43.0

Flow Test Hydrant No : N17 Pitot Gauge Reading (1) - Pressure (psi) : 27

Pitot Gauge Reading (2) - Pressure (psi) : 28

Flow Rate (Litres/sec.) : 96 **Flow Rate (U.S. gpm) :** 1,522

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N18 Residual Press (psi) :

Flow Test Hydrant No : N17 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 1

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

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Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 19 **Test Date:** 24-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 8 Av: 15 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 Inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N110 Residual Press (psi) : 48.0

Flow Test Hydrant No : N111 Pitot Gauge Reading (1) - Pressure (psi) : 44

Flow Rate (Litres/sec.) : 58 **Flow Rate (U.S. gpm) :** 919

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N110 Residual Press (psi) : 40.0

Flow Test Hydrant No : N111 Pitot Gauge Reading (1) - Pressure (psi) : 22

Pitot Gauge Reading (2) - Pressure (psi) : 23

Flow Rate (Litres/sec.) : 89 **Flow Rate (U.S. gpm) :** 1405

Test with 3 or 4 2.5 Inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N110 Residual Press (psi) :

Flow Test Hydrant No : N111 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 11

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 20 **Test Date:** 24-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 4 Av: 24 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 73

Static Hydrant No: N221 Residual Press (psi) : 60.0

Flow Test Hydrant No : N220 Pitot Gauge Reading (1) - Pressure (psi) : 59

Flow Rate (Litres/sec.) : 65 **Flow Rate (U.S. gpm) :** 1,033

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 73

tic Hydrant No: N221 Residual Press (psi) : 56.0

Flow Test Hydrant No : N220 Pitot Gauge Reading (1) - Pressure (psi) : 41

Pitot Gauge Reading (2) - Pressure (psi) : 42

Flow Rate (Litres/sec.) : 113 **Flow Rate (U.S. gpm) :** 1,795

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 73

Static Hydrant No: N221 Residual Press (psi) :

Flow Test Hydrant No : N220 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 25

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 21 **Test Date:** 25-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: Sparrow Drive Av: 15 Plan No: 4 +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N141 Residual Press (psi) : 38.0

Flow Test Hydrant No : N140 Pitot Gauge Reading (1) - Pressure (psi) : 34

Flow Rate (Litres/sec.) : 52 Flow Rate (U.S. gpm) : 829

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

tic Hydrant No: N141 Residual Press (psi) : 23.0

Flow Test Hydrant No : N140 Pitot Gauge Reading (1) - Pressure (psi) : 9

Pitot Gauge Reading (2) - Pressure (psi) : 10

Flow Rate (Litres/sec.) : 63 Flow Rate (U.S. gpm) : 995

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N141 Residual Press (psi) :

Flow Test Hydrant No : N140 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : Flow Rate (U.S. gpm) :

Remarks Nisku Test 15

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Printed Date : 07-May-200

Flow Test No: 22 **Test Date:** 25-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 2 Av: 14 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 80

Static Hydrant No: N189 Residual Press (psi) : 48.0

Flow Test Hydrant No : N190 Pitot Gauge Reading (1) - Pressure (psi) : 46

Flow Rate (Litres/sec.) : 59 **Flow Rate (U.S. gpm) :** 935

Test with two 2.5 Inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 80

Static Hydrant No: N189 Residual Press (psi) : 27.0

Flow Test Hydrant No : N190 Pitot Gauge Reading (1) - Pressure (psi) : 20

Pitot Gauge Reading (2) - Pressure (psi) : 21

Flow Rate (Litres/sec.) : 85 **Flow Rate (U.S. gpm) :** 1,354

Test with 3 or 4 2.5 Inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 80

Static Hydrant No: N189 Residual Press (psi) :

Flow Test Hydrant No : N190 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 23

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Printed Date : 07-May-200

Flow Test No: 23 **Test Date:** 25-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 4 Av: 22 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N45 Residual Press (psi) : 59.0

Flow Test Hydrant No : N45A Pitot Gauge Reading (1) - Pressure (psi) : 54

Flow Rate (Litres/sec.) : 63 **Flow Rate (U.S. gpm) :** 997

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

tic Hydrant No: N45 Residual Press (psi) : 58.0

Flow Test Hydrant No : N45A Pitot Gauge Reading (1) - Pressure (psi) : 40

Pitot Gauge Reading (2) - Pressure (psi) : 41

Flow Rate (Litres/sec.) : 112 **Flow Rate (U.S. gpm) :** 1,777

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 66

Static Hydrant No: N45 Residual Press (psi) :

Flow Test Hydrant No : N45A Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 30

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Printed Date : 07-May-200

Flow Test No: 24 **Test Date:** 24-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 6 Av: 13 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N134 Residual Press (psi) : 42.0

Flow Test Hydrant No : N133 Pitot Gauge Reading (1) - Pressure (psi) : 38

Flow Rate (Litres/sec.) : 55 **Flow Rate (U.S. gpm) :** 866

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Ic Hydrant No: N134 Residual Press (psi) : 24.0

Flow Test Hydrant No : N133 Pitot Gauge Reading (1) - Pressure (psi) : 17

Pitot Gauge Reading (2) - Pressure (psi) : 18

Flow Rate (Litres/sec.) : 80 **Flow Rate (U.S. gpm) :** 1271

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 66

Static Hydrant No: N134 Residual Press (psi) :

Flow Test Hydrant No : N133 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 14

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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- Operations -
Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 25 **Test Date:** 25-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 7 Av: 15 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N109 Residual Press (psi) : 45.0

Flow Test Hydrant No : N132 Pitot Gauge Reading (1) - Pressure (psi) : 42

Flow Rate (Litres/sec.) : 57 **Flow Rate (U.S. gpm) :** 902

Test with two 2.5 Inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N109 Residual Press (psi) : 35.0

Flow Test Hydrant No : N132 Pitot Gauge Reading (1) - Pressure (psi) : 19

Pitot Gauge Reading (2) - Pressure (psi) : 21

Flow Rate (Litres/sec.) : 85 **Flow Rate (U.S. gpm) :** 1,340

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N109 Residual Press (psi) :

Flow Test Hydrant No : N132 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 13

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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- Operations -
Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 26 **Test Date:** 25-APR-2002 **Test Time:** 00:00:00

Nearest Intersection St: 9 Av: 18 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N232 Residual Press (psi) : 53.0

Flow Test Hydrant No : N233 Pitot Gauge Reading (1) - Pressure (psi) : 48

Flow Rate (Litres/sec.) : 60 **Flow Rate (U.S. gpm) :** 951

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

tic Hydrant No: N232 Residual Press (psi) : 45.0

Flow Test Hydrant No : N233 Pitot Gauge Reading (1) - Pressure (psi) : 29

Pitot Gauge Reading (2) - Pressure (psi) : 31

Flow Rate (Litres/sec.) : 99 **Flow Rate (U.S. gpm) :** 1,576

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N232 Residual Press (psi) :

Flow Test Hydrant No : N233 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 27

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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- Operations -
Hydrant Flow Test

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Printed Date : 07-May-200

Flow Test No: 27 Test Date: 25-APR-2003 **Test Time:** 00:00:00

Nearest Intersection St: 5 Av: 16 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N93 Residual Press (psi) : 34.0

Flow Test Hydrant No : N94 Pitot Gauge Reading (1) - Pressure (psi) : 32

Flow Rate (Litres/sec.) : 51 **Flow Rate (U.S. gpm) :** 809

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

ic Hydrant No: N93 Residual Press (psi) : 15.0

Flow Test Hydrant No : N94 Pitot Gauge Reading (1) - Pressure (psi) : 10

Pitot Gauge Reading (2) - Pressure (psi) : 11

Flow Rate (Litres/sec.) : 65 **Flow Rate (U.S. gpm) :** 1,036

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 70

Static Hydrant No: N93 Residual Press (psi) : 0

Flow Test Hydrant No : N94 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 10

Test By: Ray Zelmer / Scott Holland

Disclaimer

Approved By: Ronald Poon

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 29 **Test Date:** 14-MAY-2003 **Test Time:** 10:50:00

Nearest Intersection St: 4 Av: 11 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 63

Static Hydrant No: N146 Residual Press (psi) : 35.0

Flow Test Hydrant No : N147 Pitot Gauge Reading (1) - Pressure (psi) : 29

Flow Rate (Litres/sec.) : 49 **Flow Rate (U.S. gpm) :** 778

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 63

Static Hydrant No: N146 Residual Press (psi) : 20.0

Flow Test Hydrant No : N147 Pitot Gauge Reading (1) - Pressure (psi) : 12

Pitot Gauge Reading (2) - Pressure (psi) : 13

Flow Rate (Litres/sec.) : 70 **Flow Rate (U.S. gpm) :** 1,111

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 63

Static Hydrant No: N146 Residual Press (psi) :

Flow Test Hydrant No : N147 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 16

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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- Operations -
Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 30 **Test Date:** 14-MAY-2003 **Test Time:** 11:05:00

Nearest Intersection St: 5 Av: 12 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N150 Residual Press (psi) : 42.0

Flow Test Hydrant No : N151 Pitot Gauge Reading (1) - Pressure (psi) : 37

Flow Rate (Litres/sec.) : 54 **Flow Rate (U.S. gpm) :** 857

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N150 Residual Press (psi) : 26.0

Flow Test Hydrant No : N151 Pitot Gauge Reading (1) - Pressure (psi) : 15

Pitot Gauge Reading (2) - Pressure (psi) : 16

Flow Rate (Litres/sec.) : 76 **Flow Rate (U.S. gpm) :** 1,211

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N150 Residual Press (psi) :

Flow Test Hydrant No : N151 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate (Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 17

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 31 **Test Date:** 14-MAY-2003 **Test Time:** 11:58:00

Nearest Intersection St: 8A Av: 11 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N120 Residual Press (psi) : 40.0

Flow Test Hydrant No : N119 Pitot Gauge Reading (1) - Pressure (psi) : 36

Flow Rate (Litres/sec.) : 53 **Flow Rate (U.S. gpm) :** 848

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N120 Residual Press (psi) : 27.0

Flow Test Hydrant No : N119 Pitot Gauge Reading (1) - Pressure (psi) : 16

Pitot Gauge Reading (2) - Pressure (psi) : 17

Flow Rate (Litres/sec.) : 78 **Flow Rate (U.S. gpm) :** 1,241

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 65

Static Hydrant No: N120 Residual Press (psi) :

Flow Test Hydrant No : N119 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 12

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further representations or warranties, express or implied, in relation to the test information contained herein.

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Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 32 **Test Date:** 14-MAY-2003 **Test Time:** 12:16:00

Nearest Intersection St: 8 Av: 16 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N85 Residual Press (psi) : 48.0

Flow Test Hydrant No : N86 Pitot Gauge Reading (1) - Pressure (psi) : 45

Flow Rate (Litres/sec.) : 58 **Flow Rate (U.S. gpm) :** 927

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N85 Residual Press (psi) : 40.0

Flow Test Hydrant No : N86 Pitot Gauge Reading (1) - Pressure (psi) : 24

Pitot Gauge Reading (2) - Pressure (psi) : 25

Flow Rate (Litres/sec.) : 92 **Flow Rate (U.S. gpm) :** 1,454

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 68

Static Hydrant No: N85 Residual Press (psi) :

Flow Test Hydrant No : N86 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 9

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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- Operations -
Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 33 **Test Date:** 14-MAY-2003 **Test Time:** 12:45:00

Nearest Intersection St: 8 Av: 19 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N67 Residual Press (psi) : 50.0

Flow Test Hydrant No : N68 Pitot Gauge Reading (1) - Pressure (psi) : 47

Flow Rate (Litres/sec.) : 60 **Flow Rate (U.S. gpm) :** 943

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N67 Residual Press (psi) : 45.0

Flow Test Hydrant No : N68 Pitot Gauge Reading (1) - Pressure (psi) : 27

Pitot Gauge Reading (2) - Pressure (psi) : 29

Flow Rate (Litres/sec.) : 97 **Flow Rate (U.S. gpm) :** 1,533

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N67 Residual Press (psi) :

Flow Test Hydrant No : N68 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 7, did not do #5 due to line break

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 34 **Test Date:** 14-MAY-2003 **Test Time:** 13:03:00

Nearest Intersection St: 7 Av: 21 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 60

Static Hydrant No: N27 Residual Press (psi) : 40.0

Flow Test Hydrant No : N28 Pitot Gauge Reading (1) - Pressure (psi) : 33

Flow Rate (Litres/sec.) : 52 **Flow Rate (U.S. gpm) :** 819

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 60

Static Hydrant No: N27 Residual Press (psi) : 35.0

Flow Test Hydrant No : N28 Pitot Gauge Reading (1) - Pressure (psi) : 18

Pitot Gauge Reading (2) - Pressure (psi) : 19

Flow Rate (Litres/sec.) : 82 **Flow Rate (U.S. gpm) :** 1,299

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 60

Static Hydrant No: N27 Residual Press (psi) :

Flow Test Hydrant No : N28 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 3

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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- Operations -
Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 35 **Test Date:** 14-MAY-2003 **Test Time:** 13:20:00

Nearest Intersection St: 5 Av: 20 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N35 Residual Press (psi) : 55.0

Flow Test Hydrant No : N36 Pitot Gauge Reading (1) - Pressure (psi) : 51

Flow Rate (Litres/sec.) : 61 **Flow Rate (U.S. gpm) :** 974

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N35 Residual Press (psi) : 48.0

Flow Test Hydrant No : N36 Pitot Gauge Reading (1) - Pressure (psi) : 31

Pitot Gauge Reading (2) - Pressure (psi) : 32

Flow Rate (Litres/sec.) : 101 **Flow Rate (U.S. gpm) :** 1,607

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 62

Static Hydrant No: N35 Residual Press (psi) :

Flow Test Hydrant No : N36 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Test 4

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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- Operations -
Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 36 **Test Date:** 15-MAY-2003 **Test Time:** 14:30:00

Nearest Intersection St: Sparrow Drive Av: Highway 625 Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size: _____

Neighborhood: _____ Stage: _____ City Project No: _____

For: _____ Attn: _____ Ph. No : (780) - - _____ Fax No: - _____

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 71

Static Hydrant No: N50A Residual Press (psi) : 64.0

Flow Test Hydrant No : N50 Pitot Gauge Reading (1) - Pressure (psi) : 55

Flow Rate (Litres/sec.) : 63 **Flow Rate (U.S. gpm) :** 1,004

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 71

Static Hydrant No: N50A Residual Press (psi) : 58.0

Flow Test Hydrant No : N50 Pitot Gauge Reading (1) - Pressure (psi) : 30

Pitot Gauge Reading (2) - Pressure (psi) : 31

Flow Rate (Litres/sec.) : 100 **Flow Rate (U.S. gpm) :** 1,587

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 71

Static Hydrant No: N50A Residual Press (psi) : _____

Flow Test Hydrant No : N50 Pitot Gauge Reading (1) - Pressure (psi) : _____

Flow Test Hydrant No : _____ Pitot Gauge Reading (2) - Pressure (psi) : _____

Pitot Gauge Reading (3) - Pressure (psi) : _____

Pitot Gauge Reading (4) - Pressure (psi) : _____

Flow Rate(Litres/sec.) : _____ **Flow Rate (U.S. gpm) :** _____

Remarks Nisku Test 5, main break repaired

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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Hydrant Flow Test

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Printed Date : 16-May-200

Flow Test No: 37 **Test Date:** 15-MAY-2003 **Test Time:** 11:57:00

Nearest Intersection St: 4 Av: Sparrow Street Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N56 Residual Press (psi) : 54.0

Flow Test Hydrant No : N57A Pitot Gauge Reading (1) - Pressure (psi) : 49

Flow Rate (Litres/sec.) : 61 **Flow Rate (U.S. gpm) :** 959

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N56 Residual Press (psi) : 46.0

Flow Test Hydrant No : N57A Pitot Gauge Reading (1) - Pressure (psi) : 27

Pitot Gauge Reading (2) - Pressure (psi) : 28

Flow Rate (Litres/sec.) : 96 **Flow Rate (U.S. gpm) :** 1,522

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 64

Static Hydrant No: N56 Residual Press (psi) :

Flow Test Hydrant No : N57A Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Flow Test 6, 2 1/2" cap missing on hyd. 57.
PUMP 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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Printed Date : 16-May-200

Flow Test No: 38 **Test Date:** 15-MAY-2003 **Test Time:** 12:15:00

Nearest Intersection St: 6 Av: 14A Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No :(780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 77

Static Hydrant No: N136 Residual Press (psi) : 44.0

Flow Test Hydrant No : N138A Pitot Gauge Reading (1) - Pressure (psi) : 41

Flow Rate (Litres/sec.) : 56 **Flow Rate (U.S. gpm) :** 893

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 77

Static Hydrant No: N136 Residual Press (psi) : 20.0

Flow Test Hydrant No : N138A Pitot Gauge Reading (1) - Pressure (psi) : 15

Pitot Gauge Reading (2) - Pressure (psi) : 17

Flow Rate (Litres/sec.) : 77 **Flow Rate (U.S. gpm) :** 1,226

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 77

Static Hydrant No: N136 Residual Press (psi) :

Flow Test Hydrant No : N138A Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Flow Test 29, AVK hydrant

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

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- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 16-May-200

Flow Test No: 39 **Test Date:** 15-MAY-2003 **Test Time:** 12:35:00

Nearest Intersection St: 5A Av: 24 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 72

Static Hydrant No: N207 Residual Press (psi) : 50.0

Flow Test Hydrant No : N208 Pitot Gauge Reading (1) - Pressure (psi) : 52

Flow Rate (Litres/sec.) : 62 **Flow Rate (U.S. gpm) :** 982

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 72

Static Hydrant No: N207 Residual Press (psi) : 48.0

Flow Test Hydrant No : N208 Pitot Gauge Reading (1) - Pressure (psi) : 33

Pitot Gauge Reading (2) - Pressure (psi) : 34

Flow Rate (Litres/sec.) : 104 **Flow Rate (U.S. gpm) :** 1,647

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 72

Static Hydrant No: N207 Residual Press (psi) :

Flow Test Hydrant No : N208 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks **Nisku Flow Test 24, pumps kicked in with second port.**

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

essential elements for living

EPCOR Water Services Inc.
- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 16-May-200

Flow Test No: 40 **Test Date:** 15-MAY-2003 **Test Time:** 12:57:00

Nearest Intersection St: Vista Road South Av: _____ Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size: _____

Neighborhood: _____ Stage: _____ City Project No: _____

For: _____ Attn: _____ Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N166 Residual Press (psi) : 55.0

Flow Test Hydrant No : N165 Pitot Gauge Reading (1) - Pressure (psi) : 44

Flow Rate (Litres/sec.) : 58 **Flow Rate (U.S. gpm) :** 919

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N166 Residual Press (psi) : 42.0

Flow Test Hydrant No : N165 Pitot Gauge Reading (1) - Pressure (psi) : 26

Pitot Gauge Reading (2) - Pressure (psi) : 25

Flow Rate (Litres/sec.) : 93 **Flow Rate (U.S. gpm) :** 1,477

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N166 Residual Press (psi) : _____

Flow Test Hydrant No : N165 Pitot Gauge Reading (1) - Pressure (psi) : _____

Flow Test Hydrant No : _____ Pitot Gauge Reading (2) - Pressure (psi) : _____

Pitot Gauge Reading (3) - Pressure (psi) : _____

Pitot Gauge Reading (4) - Pressure (psi) : _____

Flow Rate(Litres/sec.) : _____ **Flow Rate (U.S. gpm) :** _____

Remarks Nisku Flow Test 19

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

essential elements for living

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- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 16-May-200

Flow Test No: 41 **Test Date:** 15-MAY-2003 **Test Time:** 13:20:00

Nearest Intersection St: Brenda Drive Av: _____ Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size: _____

Neighborhood: _____ Stage: _____ City Project No: _____

For: _____ Attn: _____ Ph. No : (780) - - _____ Fax No: - _____

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 90

Static Hydrant No: N161 Residual Press (psi) : 58.0

Flow Test Hydrant No : N162 Pitot Gauge Reading (1) - Pressure (psi) : 28

Flow Rate (Litres/sec.) : 48 **Flow Rate (U.S. gpm) :** 767

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 90

Static Hydrant No: N161 Residual Press (psi) : 48.0

Flow Test Hydrant No : N162 Pitot Gauge Reading (1) - Pressure (psi) : 7

Pitot Gauge Reading (2) - Pressure (psi) : 8

Flow Rate (Litres/sec.) : 57 **Flow Rate (U.S. gpm) :** 905

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 90

Static Hydrant No: N161 Residual Press (psi) : _____

Flow Test Hydrant No : N162 Pitot Gauge Reading (1) - Pressure (psi) : _____

Flow Test Hydrant No : _____ Pitot Gauge Reading (2) - Pressure (psi) : _____

Pitot Gauge Reading (3) - Pressure (psi) : _____

Pitot Gauge Reading (4) - Pressure (psi) : _____

Flow Rate(Litres/sec.) : _____ **Flow Rate (U.S. gpm) :** _____

Remarks Nisku Flow Test 18

PUMP 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

essential elements for living

EPCOR Water Services Inc.
- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 16-May-200

Flow Test No: 42 **Test Date:** 15-MAY-2003 **Test Time:** 13:40:00

Nearest Intersection St: Beau Vista Blvd Av: Davison Drive Plan No: + +

Residential / Industrial ☐ **(X = Industrial)** Main Size: _____

Neighborhood: _____ Stage: _____ City Project No: _____

For: _____ Attn: _____ Ph. No : (780) - - _____ Fax No: - _____

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 92

Static Hydrant No: N168 Residual Press (psi) : 45.0

Flow Test Hydrant No : N169 Pitot Gauge Reading (1) - Pressure (psi) : 10

Flow Rate (Litres/sec.) : 32 **Flow Rate (U.S. gpm) :** 508

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 92

Static Hydrant No: N168 Residual Press (psi) : 38.0

Flow Test Hydrant No : N169 Pitot Gauge Reading (1) - Pressure (psi) : 2

Pitot Gauge Reading (2) - Pressure (psi) : 3

Flow Rate (Litres/sec.) : 37 **Flow Rate (U.S. gpm) :** 581

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 92

Static Hydrant No: N168 Residual Press (psi) : _____

Flow Test Hydrant No : N169 Pitot Gauge Reading (1) - Pressure (psi) : _____

Flow Test Hydrant No : _____ Pitot Gauge Reading (2) - Pressure (psi) : _____

Pitot Gauge Reading (3) - Pressure (psi) : _____

Pitot Gauge Reading (4) - Pressure (psi) : _____

Flow Rate(Litres/sec.) : _____ **Flow Rate (U.S. gpm) :** _____

Remarks Nisku Flow Test 20

PUMP 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

essential elements for living

EPCOR Water Services Inc.
- Operations -
Hydrant Flow Test

CUSTOMER COP

Printed Date : 16-May-200

Flow Test No: 43 **Test Date:** 15-MAY-2003 **Test Time:** 14:03:00

Nearest Intersection St: 8 Av: Highway 2 Plan No: + +

Residential / Industrial ☐ (X = Industrial) Main Size:

Neighborhood: Ledcor site Stage: City Project No:

For: Attn: Ph. No : (780) - - Fax No: -

Diffuser Used: 2.5" Pollard (Correction Factor Used)

Test with one 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N172 Residual Press (psi) : 58.0

Flow Test Hydrant No : N171 Pitot Gauge Reading (1) - Pressure (psi) : 48

Flow Rate (Litres/sec.) : 60 **Flow Rate (U.S. gpm) :** 951

Test with two 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N172 Residual Press (psi) : 47.0

Flow Test Hydrant No : N171 Pitot Gauge Reading (1) - Pressure (psi) : 28

Pitot Gauge Reading (2) - Pressure (psi) : 27

Flow Rate (Litres/sec.) : 96 **Flow Rate (U.S. gpm) :** 1,522

Test with 3 or 4 2.5 inch nozzle flowing Coefficient : 0.9 Static Pressure (psi) : 88

Static Hydrant No: N172 Residual Press (psi) :

Flow Test Hydrant No : N171 Pitot Gauge Reading (1) - Pressure (psi) :

Flow Test Hydrant No : Pitot Gauge Reading (2) - Pressure (psi) :

Pitot Gauge Reading (3) - Pressure (psi) :

Pitot Gauge Reading (4) - Pressure (psi) :

Flow Rate(Litres/sec.) : **Flow Rate (U.S. gpm) :**

Remarks Nisku Flow Test 21, hyd needs stem shortened

PUMPS 3 and 4 RUNNING

Test By: Ray Zelmer / Scott Holland **Approved By:** Ronald Poon

Disclaimer

The information contained within this Hydrant Flow Test form is reliable as at the test date and may be used for the limited purpose of verifying water flows and pressure at the subject location. Variations due to system configuration changes after the test date, beyond the control of EPCOR Water Services, would affect system performance. The test information may become unreliable as a result of such changes, at any time, without notice. EPCOR Water Services makes no further

Appendix B -
Existing Development Condition – Without Improvements
Simulation Results

Scenario: Peak Hour - Existing
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	530.3	764.78
J-8	5,909,058.66	97,351.20	713.60	0.30	499.9	764.67
J-10	5,908,474.10	97,361.23	710.20	0.00	531.5	764.51
J-12	5,908,467.18	97,361.38	710.20	0.00	531.4	764.50
J-16	5,908,452.20	97,361.89	710.20	0.34	531.4	764.50
J-22	5,907,974.55	97,357.96	710.00	0.09	532.2	764.38
J-24	5,907,976.56	97,486.24	712.72	0.84	505.5	764.37
J-28	5,908,348.52	97,479.26	713.10	0.55	502.6	764.45
J-30	5,908,476.15	97,465.75	713.60	0.00	498.0	764.49
J-32	5,908,477.92	97,568.92	715.10	0.00	483.3	764.48
J-34	5,908,480.33	97,699.94	717.10	0.17	463.5	764.46
J-36	5,908,480.81	97,725.97	717.10	0.00	463.5	764.46
J-38	5,908,303.69	97,742.34	717.30	0.00	461.2	764.42
J-40	5,908,143.29	97,745.11	717.70	0.17	457.0	764.40
J-42	5,907,977.83	97,749.04	717.00	0.03	463.4	764.35
J-50	5,908,312.36	98,169.75	716.20	0.90	470.2	764.24
J-56	5,908,324.08	98,782.89	713.20	1.27	497.3	764.01
J-60	5,908,547.69	98,778.44	712.60	0.00	503.7	764.07
J-64	5,908,657.02	98,776.18	712.50	0.24	505.1	764.11
J-68	5,908,927.88	98,770.56	711.60	0.13	513.9	764.11
J-74	5,909,209.82	98,764.73	710.10	0.14	528.6	764.11
J-76	5,909,321.64	98,762.41	709.30	0.33	536.3	764.10
J-82	5,909,600.55	98,756.43	706.80	0.64	560.8	764.10
J-90	5,910,145.40	98,745.06	699.50	0.21	632.2	764.10
J-94	5,910,141.73	98,553.50	699.50	0.16	632.2	764.10
J-98	5,909,203.58	98,428.34	712.50	0.25	505.9	764.19
J-102	5,909,101.64	98,426.21	713.00	0.22	501.3	764.22
J-104	5,908,903.10	98,430.23	713.50	0.44	496.3	764.21
J-108	5,908,650.47	98,435.34	714.90	0.51	482.6	764.21
J-112	5,908,654.55	98,649.36	713.80	0.32	492.8	764.15
J-117	5,909,093.99	98,027.43	715.00	0.30	483.6	764.42
J-118	5,909,093.47	98,001.39	715.00	0.21	483.6	764.42
J-120	5,908,854.44	98,006.14	714.70	0.09	486.0	764.36
J-124	5,908,645.32	98,164.72	715.80	0.10	474.4	764.27
J-130	5,909,081.17	97,756.51	714.30	0.00	491.8	764.56
J-134	5,909,084.75	97,555.92	714.50	0.19	490.6	764.63
J-136	5,909,062.84	97,556.57	714.50	0.40	490.7	764.64
J-140	5,909,211.44	97,544.32	715.20	0.03	483.8	764.63
J-142	5,909,320.00	98,985.50	707.40	0.02	554.7	764.08
J-144	5,908,552.32	99,001.45	712.60	0.28	503.6	764.06
J-146	5,908,500.88	97,385.99	711.00	0.08	526.1	764.76
J-148	5,908,743.01	97,064.41	711.00	0.12	529.5	765.11
J-150	5,908,756.07	97,063.51	711.00	0.00	529.6	765.12
J-152	5,908,779.46	96,905.96	710.70	0.00	532.9	765.15
J-162	5,907,845.59	97,760.01	714.80	0.06	481.7	764.02
J-164	5,907,853.69	98,184.20	715.30	0.11	475.4	763.88
J-166	5,907,858.51	98,441.75	715.50	0.30	473.2	763.85
J-168	5,907,990.55	98,439.52	715.20	0.07	476.1	763.85
J-172	5,907,997.17	98,789.35	713.00	0.15	497.6	763.84
J-174	5,908,131.47	98,786.69	713.20	0.27	496.3	763.91
J-176	5,907,981.73	98,181.34	715.80	0.15	470.5	763.88
J-178	5,907,708.34	98,186.08	715.20	0.50	475.2	763.75

Scenario: Peak Hour - Existing
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	487.7	763.74
J-198	5,906,888.62	97,825.94	710.60	0.00	509.9	762.71
J-202	5,906,593.95	97,782.31	709.60	0.28	515.8	762.30
J-206	5,906,215.61	97,708.31	712.00	0.12	490.6	762.13
J-210	5,905,911.78	97,702.33	713.40	0.03	475.3	761.97
J-212	5,905,673.44	97,707.07	714.50	0.23	464.3	761.94
J-214	5,905,369.47	97,713.12	715.90	1.24	450.5	761.93
J-216	5,905,364.01	97,439.05	715.60	7.62	453.4	761.93
J-217	5,909,307.40	97,334.51	710.88	0.13	527.6	764.79
J-218	5,909,077.55	97,556.13	714.50	0.00	490.6	764.63
J-219	5,909,195.57	97,741.44	714.00	0.00	494.9	764.57
J-221	5,909,080.95	97,744.08	714.53	0.03	489.7	764.57
J-222	5,905,698.60	97,432.40	714.40	0.07	465.3	761.94
J-223	5,908,477.48	97,757.92	717.21	0.28	462.4	764.45
J-224	5,905,905.82	97,428.26	714.10	0.02	468.3	761.95
J-225	5,907,981.51	97,748.90	717.00	0.00	463.6	764.37
J-226	5,907,946.73	97,358.07	710.00	0.00	532.2	764.38
J-227	5,908,303.93	97,760.54	717.18	0.14	462.3	764.42
J-228	5,906,360.39	97,501.77	711.60	0.31	492.8	761.95
J-229	5,909,074.75	97,350.43	713.60	0.15	500.0	764.69
J-230	5,908,471.28	97,739.11	717.10	0.00	463.4	764.45
J-231	5,907,921.40	97,334.01	709.20	0.04	540.0	764.38
J-232	5,907,811.00	97,326.52	708.90	0.00	542.9	764.38
J-233	5,907,639.32	97,370.09	707.90	0.00	552.7	764.38
J-234	5,906,873.52	97,574.28	711.60	0.27	492.8	761.95
J-235	5,907,254.44	97,377.87	708.90	0.00	542.9	764.38
J-236	5,906,869.56	97,385.66	709.67	0.00	535.4	764.38
J-237	5,913,524.07	98,517.56	689.20	0.28	743.1	765.13
J-238	5,913,476.73	98,634.61	689.45	0.00	740.6	765.13
J-239	5,913,442.90	98,660.40	690.60	0.00	729.4	765.13
J-240	5,905,918.98	98,029.82	712.40	0.74	484.4	761.89
J-241	5,913,350.24	98,658.09	690.80	0.00	727.4	765.13
J-242	5,912,944.99	98,674.90	690.05	0.00	734.8	765.13
J-243	5,912,549.09	98,682.16	689.00	0.33	745.0	765.13
J-244	5,905,905.76	98,439.24	709.18	0.06	515.0	761.81
J-245	5,908,776.14	96,915.33	710.70	0.00	532.9	765.15
J-246	5,908,458.63	97,044.00	709.95	0.27	540.2	765.15
J-247	5,908,464.31	97,043.90	710.05	0.00	539.2	765.15
J-248	5,906,562.22	99,128.24	701.60	0.00	593.3	762.22
J-249	5,908,771.98	96,927.06	705.50	0.00	583.7	765.15
J-250	5,906,588.47	98,425.23	707.60	0.28	532.2	761.98
J-251	5,908,770.14	96,932.26	705.50	0.00	583.7	765.15
J-252	5,906,825.65	98,420.35	709.60	0.12	512.7	761.99
J-253	5,908,766.64	96,942.13	710.70	0.00	532.9	765.15
J-254	5,908,783.08	96,917.79	710.70	0.00	532.8	765.14
J-255	5,908,778.19	96,929.26	705.50	0.00	583.7	765.14
J-256	5,906,735.40	98,269.84	710.30	0.02	506.1	762.01
J-257	5,908,776.00	96,934.34	705.50	0.00	583.7	765.14
J-258	5,908,771.86	96,943.98	710.70	0.00	532.8	765.14
J-259	5,907,681.11	97,992.32	713.39	0.22	492.9	763.75
J-260	5,906,585.22	98,273.05	708.00	0.17	528.7	762.03
J-261	5,907,700.54	98,626.53	713.40	0.13	492.4	763.71

Scenario: Peak Hour - Existing
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	585.3	762.31
J-263	5,908,554.64	99,001.40	713.20	0.00	497.8	764.06
J-264	5,906,579.90	98,024.41	708.70	0.43	523.0	762.14
J-265	5,908,562.13	99,338.47	708.40	0.28	544.5	764.03
J-266	5,906,399.93	98,028.05	708.00	0.39	529.8	762.14
J-267	5,908,572.77	100,001.17	689.40	0.18	726.8	763.67
J-268	5,905,898.13	98,461.32	709.20	0.06	515.0	761.82
J-269	5,908,585.09	100,508.03	688.80	0.00	722.1	762.59
J-270	5,908,600.64	101,103.84	697.20	1.31	638.7	762.46
J-271	5,906,493.28	99,141.39	702.90	0.00	580.6	762.22
J-272	5,905,530.79	98,468.96	712.00	0.15	488.5	761.92
J-273	5,908,603.09	100,561.75	690.60	0.00	704.2	762.55
J-274	5,905,388.62	98,471.86	711.20	0.01	496.3	761.92
J-275	5,914,588.31	98,954.88	690.35	1.73	731.7	765.12
J-276	5,905,347.08	98,472.70	711.90	1.75	489.5	761.92
J-277	5,914,515.82	99,129.18	692.25	0.25	713.2	765.12
J-278	5,905,525.90	98,217.56	713.80	0.49	471.0	761.93
J-279	5,906,383.63	99,143.48	703.40	0.00	575.7	762.22
J-280	5,906,174.59	99,147.94	704.45	0.00	565.4	762.22
J-281	5,906,102.58	99,149.32	704.40	0.00	565.9	762.22
J-282	5,905,375.58	98,019.54	714.80	0.17	461.2	761.93
J-283	5,906,384.67	99,185.47	704.70	0.00	562.9	762.22
J-284	5,906,395.12	99,606.40	702.20	0.00	587.4	762.22
J-285	5,906,617.35	99,583.11	700.20	0.14	607.0	762.22
J-286	5,905,658.69	98,214.91	714.10	0.52	468.1	761.93
J-287	5,906,568.55	99,602.91	700.90	0.00	600.1	762.22
J-288	5,906,458.61	99,605.06	701.40	0.00	595.2	762.22
J-289	5,908,517.34	97,755.28	716.36	0.00	470.8	764.46
J-290	5,906,547.32	99,038.54	702.77	0.00	581.6	762.20
J-291	5,905,447.34	97,711.57	715.54	0.00	454.1	761.93
J-292	5,907,994.37	98,641.67	713.93	0.00	488.5	763.84
J-293	5,909,994.96	97,459.73	706.55	0.00	568.5	764.64
J-294	5,905,394.69	98,642.02	710.50	0.08	503.3	761.92
J-296	5,906,623.71	97,548.19	711.60	0.00	492.8	761.95
J-298	5,905,695.90	98,870.15	708.60	0.28	522.1	761.95
J-300	5,905,801.61	98,872.46	707.20	0.15	535.9	761.95
J-301	5,908,753.24	96,979.98	711.00	0.00	529.9	765.15
J-302	5,905,859.76	98,735.04	708.60	0.24	522.3	761.97
J-303	5,908,522.69	97,042.82	711.00	0.42	529.9	765.15
J-304	5,906,312.67	98,430.89	708.24	0.00	521.5	761.52
J-306	5,905,728.41	98,736.90	709.90	0.33	509.4	761.95
J-307	5,908,622.68	102,230.99	714.40	0.00	470.3	762.46
J-308	5,905,579.15	98,646.58	712.00	0.47	488.7	761.93
J-309	5,908,642.41	103,175.71	712.93	0.00	484.7	762.46
J-310	5,909,279.69	97,059.38	707.10	0.00	568.2	765.16
J-311	5,909,282.51	97,057.24	707.10	0.01	568.2	765.16
J-312	5,909,434.20	103,817.29	707.50	0.00	537.9	762.46
J-313	5,908,552.13	98,992.36	710.15	0.00	527.6	764.06
J-314	5,906,229.89	98,727.43	706.40	0.55	544.7	762.06
J-315	5,908,454.45	98,994.29	710.00	0.00	529.1	764.06
J-316	5,908,092.47	99,005.00	710.25	0.00	526.6	764.06
J-317	5,907,708.27	99,012.60	708.20	0.00	546.7	764.06

Scenario: Peak Hour - Existing
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	512.4	764.56
J-321	5,909,018.07	98,991.77	710.00	0.17	529.2	764.07
J-322	5,906,537.16	98,766.80	706.30	0.08	546.5	762.14
J-324	5,906,780.50	98,815.29	707.40	0.00	537.7	762.34
J-332	5,906,905.11	98,812.64	709.10	0.93	522.1	762.44
J-337	5,907,703.90	98,795.12	710.50	0.52	520.2	763.65
J-342	5,906,589.89	98,581.45	707.10	0.31	537.8	762.05
J-348	5,906,564.17	99,142.81	701.60	0.20	593.3	762.22
J-349	5,905,292.97	97,440.46	715.60	0.57	453.4	761.93
J-350	5,906,836.65	99,137.08	702.50	0.21	585.2	762.29
J-351	5,914,985.65	99,118.12	694.80	0.00	688.2	765.12
J-352	5,908,787.17	96,908.26	710.70	0.00	532.9	765.15
J-353	5,908,757.47	96,994.16	711.00	0.05	529.8	765.13
J-356	5,906,618.36	99,628.21	700.20	0.12	607.0	762.22
J-357	5,909,258.32	100,547.78	691.00	0.24	697.9	762.31
J-358	5,909,251.92	100,248.17	691.00	0.35	698.1	762.33
J-359	5,908,858.94	100,556.29	691.00	0.06	699.1	762.43
J-360	5,908,857.28	100,478.32	691.00	0.12	698.9	762.41
J-362	5,907,675.38	97,768.48	712.30	0.00	503.6	763.75
J-363	5,909,310.68	97,745.32	713.10	0.00	503.8	764.57
J-364	5,906,949.71	100,836.01	691.50	0.15	692.6	762.27
J-365	5,910,093.16	97,731.00	707.20	0.03	561.6	764.59
J-367	5,909,360.67	97,744.77	712.10	0.00	513.6	764.57
J-369	5,909,385.67	97,744.30	711.85	0.00	516.0	764.57
J-370	5,908,423.93	101,076.18	691.00	0.14	698.6	762.38
J-371	5,909,495.65	97,742.23	711.65	0.00	518.0	764.58
J-372	5,908,357.20	101,065.19	691.00	0.39	698.4	762.36
J-373	5,909,520.64	97,741.76	711.00	0.00	524.4	764.58
J-374	5,907,995.30	101,006.31	691.00	0.52	697.8	762.30
J-375	5,909,735.60	97,737.72	710.50	0.02	529.3	764.58
J-376	5,907,631.31	100,947.18	691.00	0.34	697.6	762.28
J-377	5,909,851.58	97,735.54	709.20	0.01	542.0	764.58
J-378	5,907,569.28	100,937.06	690.70	0.37	700.5	762.28
J-379	5,907,097.59	100,860.13	690.80	0.57	699.5	762.27
J-380	5,907,070.76	100,855.75	691.60	0.16	691.7	762.27
J-381	5,909,943.56	97,733.81	707.40	0.00	559.7	764.59
J-382	5,906,848.42	100,819.49	691.00	0.35	697.3	762.25
J-383	5,906,355.74	100,852.67	691.40	0.36	693.2	762.23
J-384	5,906,237.87	100,906.65	691.40	0.92	693.1	762.22
J-386	5,905,356.70	100,981.32	693.10	0.57	676.4	762.21
J-388	5,907,590.72	100,805.57	690.70	0.23	700.5	762.28
J-389	5,909,944.06	97,385.51	706.90	0.32	565.3	764.66
J-390	5,909,578.24	100,572.53	691.00	0.18	696.6	762.18
J-391	5,909,976.00	97,733.20	707.25	0.00	561.1	764.59
J-392	5,909,947.68	100,567.17	691.00	0.77	695.9	762.10
J-394	5,910,397.44	100,552.88	691.00	0.15	695.3	762.04
J-395	5,910,768.00	100,546.28	691.00	0.73	695.1	762.02
J-396	5,910,752.17	99,977.20	691.00	0.83	694.9	762.00
J-398	5,910,381.11	99,987.28	691.00	0.16	695.0	762.01
J-400	5,909,937.68	99,983.00	691.00	0.46	695.9	762.11
J-401	5,909,529.41	97,966.96	711.90	0.00	515.6	764.58
J-402	5,909,566.00	99,988.28	691.00	0.14	696.0	762.11

Scenario: Peak Hour - Existing
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	511.7	764.58
J-404	5,909,690.09	97,971.58	713.05	0.19	504.3	764.58
J-406	5,909,525.03	97,741.68	710.80	0.00	526.3	764.58
J-407	5,909,525.21	97,750.68	711.50	0.11	519.5	764.58
J-408	5,909,931.45	97,966.98	708.15	0.00	552.3	764.58
J-410	5,909,979.59	97,922.51	707.90	0.02	554.8	764.58
J-411	5,909,713.09	97,971.14	712.95	0.00	505.3	764.58
J-536	5,906,927.24	99,821.22	703.00	0.00	580.3	762.29
J-538	5,906,907.40	99,022.87	703.00	0.00	580.9	762.35
J-1025	5,912,941.46	98,290.11	690.00	0.00	735.3	765.13
PUMPHOUSE - 1	5,909,261.30	96,808.08	713.70	0.13	505.3	765.33
PUMPHOUSE - 2	5,909,262.07	96,862.84	713.70	1.43	505.3	765.33
PUMPHOUSE - 3	5,909,262.83	96,917.20	713.70	0.00	505.2	765.32
PUMPHOUSE - 4	5,909,263.60	96,971.96	713.70	1.37	505.1	765.31
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	520.9	761.46

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	24.64	0.35	0.14	0.56	764.56	764.42
P-3	Jockey Pump	Jockey Pump PRV	1.40	150.0	100.0	39.40	2.23	0.08	54.48	765.49	765.41
P-4	Jockey Pump PRV	PUMPHOUSE - 1	1.50	150.0	100.0	39.40	2.23	0.08	54.47	765.41	765.33
P-6	PUMPHOUSE - 1	PUMPHOUSE - 2	1.40	450.0	100.0	39.27	0.25	0.00	1.01	765.33	765.33
P-8	Lead Pump	Lead Pump PRV	1.20	200.0	100.0	62.58	1.99	0.04	31.56	771.73	771.70
P-10	Lead Pump PRV	PUMPHOUSE - 2	1.70	200.0	100.0	62.58	1.99	1.20	705.84	766.53	765.33
P-12	Lag Pump	Lag Pump PRV	1.20	200.0	100.0	0.00	0.00	0.00	0.00	0.00	0.00
P-14	Lag Pump PRV	PUMPHOUSE - 3	1.70	200.0	100.0	-0.00	0.00	0.00	0.00	765.32	765.32
P-16	PUMPHOUSE - 2	PUMPHOUSE - 3	1.40	450.0	100.0	100.43	0.63	0.01	6.54	765.33	765.32
P-18	Fire Pump	Fire Pump PRV	0.80	300.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-20	Fire Pump PRV	PUMPHOUSE - 4	2.10	300.0	100.0	-0.00	0.00	0.00	0.00	765.31	765.31
P-22	PUMPHOUSE - 3	PUMPHOUSE - 4	1.40	450.0	100.0	100.43	0.63	0.01	6.54	765.32	765.31
P-24	R-1	Jockey Pump	5.00	150.0	100.0	39.40	2.23	0.27	54.47	712.37	712.10
P-26	R-1	Lead Pump	5.00	200.0	100.0	62.58	1.99	0.16	31.60	712.37	712.21
P-28	R-1	Lag Pump	5.00	200.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-30	R-1	Fire Pump	5.00	300.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	765.15	765.15
P-34	PUMPHOUSE - 4	J-310	92.00	450.0	100.0	99.06	0.62	0.15	1.59	765.31	765.16
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	765.15	765.15
P-40	J-10	J-12	1.20	148.0	130.0	6.07	0.35	0.01	5.64	764.51	764.50
P-42	J-12	J-16	3.50	202.0	130.0	6.07	0.19	0.00	0.43	764.50	764.50
P-45	J-10	J-8	584.50	304.0	130.0	-19.22	0.26	0.17	0.29	764.51	764.67
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	765.15	765.15
P-50	J-362	J-259	224.00	297.0	130.0	2.89	0.04	0.00	0.01	763.75	763.75
P-52	J-16	J-22	506.20	199.0	130.0	5.73	0.18	0.12	0.24	764.50	764.38
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.15	765.15
P-58	J-24	J-28	372.00	199.0	130.0	-5.19	0.17	0.08	0.20	764.37	764.45
P-60	J-337	J-261	168.50	250.0	130.0	-11.81	0.24	0.05	0.32	763.65	763.71
P-62	J-28	J-30	139.00	199.0	130.0	-5.74	0.18	0.04	0.28	764.45	764.49
P-64	J-30	J-10	104.50	304.0	130.0	-13.15	0.18	0.02	0.16	764.49	764.51
P-66	J-30	J-32	103.00	304.0	130.0	7.41	0.10	0.01	0.05	764.49	764.48
P-68	J-32	J-34	131.00	304.0	130.0	13.95	0.19	0.02	0.17	764.48	764.46
P-70	J-34	J-36	26.00	304.0	130.0	13.77	0.19	0.00	0.18	764.46	764.46
P-74	J-38	J-40	160.50	304.0	130.0	13.96	0.19	0.03	0.16	764.42	764.40
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.15	765.15

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	765.15	765.15
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.15	765.15
P-88	J-50	J-56	613.50	199.0	130.0	7.22	0.23	0.23	0.37	764.24	764.01
P-90	J-352	J-254	10.50	202.0	130.0	4.85	0.15	0.00	0.31	765.15	765.14
P-92	J-254	J-255	12.50	202.0	130.0	4.85	0.15	0.00	0.18	765.14	765.14
P-94	J-255	J-257	5.50	202.0	130.0	4.85	0.15	0.00	0.20	765.14	765.14
P-96	J-257	J-258	10.50	202.0	130.0	4.85	0.15	0.00	0.18	765.14	765.14
P-98	J-258	J-353	52.50	202.0	130.0	4.85	0.15	0.01	0.17	765.14	765.13
P-100	J-350	J-262	69.00	202.0	130.0	-6.15	0.19	0.02	0.25	762.29	762.31
P-102	J-68	J-64	271.00	254.0	130.0	-1.54	0.03	0.00	0.01	764.11	764.11
P-104	J-74	J-68	282.00	254.0	130.0	-1.41	0.03	0.00	0.01	764.11	764.11
P-106	J-321	J-263	463.50	304.0	130.0	5.40	0.07	0.01	0.03	764.07	764.06
P-108	J-263	J-144	2.50	304.0	130.0	-3.95	0.05	0.00	0.06	764.06	764.06
P-112	J-74	J-76	112.00	254.0	130.0	6.93	0.14	0.01	0.11	764.11	764.10
P-114	J-76	J-82	279.00	406.0	130.0	1.01	0.01	0.00	0.00	764.10	764.10
P-116	J-82	J-90	545.00	406.0	130.0	0.37	0.00	0.00	0.00	764.10	764.10
P-118	J-263	J-265	337.00	300.0	130.0	9.35	0.13	0.03	0.08	764.06	764.03
P-120	J-265	J-267	665.50	200.0	130.0	9.07	0.29	0.37	0.55	764.03	763.67
P-122	J-267	J-269	507.00	150.0	130.0	8.89	0.50	1.08	2.13	763.67	762.59
P-124	J-269	J-273	60.50	200.0	130.0	8.89	0.28	0.03	0.57	762.59	762.55
P-126	J-273	J-270	565.00	200.0	130.0	4.71	0.15	0.09	0.17	762.55	762.46
P-128	J-273	J-359	256.00	155.0	130.0	4.18	0.22	0.12	0.47	762.55	762.43
P-130	J-90	J-94	191.50	145.0	130.0	0.16	0.01	0.00	0.00	764.10	764.10
P-132	J-98	J-74	336.50	199.0	130.0	5.65	0.18	0.08	0.24	764.19	764.11
P-134	J-270	J-370	182.00	148.0	130.0	3.40	0.20	0.07	0.41	762.46	762.38
P-136	J-102	J-98	106.00	199.0	130.0	5.90	0.19	0.03	0.27	764.22	764.19
P-140	J-102	J-104	198.50	199.0	130.0	2.09	0.07	0.01	0.04	764.22	764.21
P-142	J-108	J-104	252.50	199.0	130.0	-1.65	0.05	0.01	0.02	764.21	764.21
P-146	J-108	J-112	214.00	300.0	120.0	16.86	0.24	0.06	0.28	764.21	764.15
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	765.12	765.12
P-150	J-112	J-64	127.00	300.0	120.0	16.55	0.23	0.03	0.27	764.15	764.11
P-152	J-275	J-277	189.00	297.0	130.0	0.25	0.00	0.00	0.00	765.12	765.12
P-154	J-117	J-102	399.00	199.0	130.0	8.21	0.26	0.19	0.49	764.42	764.22
P-156	J-332	J-324	124.50	254.0	130.0	20.67	0.41	0.10	0.83	762.44	762.34
P-158	J-118	J-120	239.00	300.0	120.0	15.91	0.23	0.06	0.25	764.42	764.36

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-160	J-124	J-120	349.00	300.0	120.0	-15.83	0.22	0.09	0.25	764.27	764.36
P-164	J-124	J-108	270.50	300.0	120.0	15.72	0.22	0.07	0.24	764.27	764.21
P-168	J-118	J-117	26.00	300.0	120.0	8.51	0.12	0.00	0.08	764.42	764.42
P-180	J-8	J-136	205.50	204.0	130.0	5.11	0.16	0.04	0.19	764.67	764.64
P-184	J-134	J-140	128.50	148.0	130.0	0.03	0.00	0.00	0.00	764.63	764.63
P-186	J-76	J-142	225.50	254.0	130.0	5.59	0.11	0.02	0.07	764.10	764.08
P-194	J-148	J-146	535.50	150.0	130.0	4.68	0.26	0.35	0.65	765.11	764.76
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	765.15	765.15
P-196	J-148	J-150	13.00	150.0	130.0	-4.80	0.27	0.01	0.69	765.11	765.12
P-208	J-42	J-162	132.50	304.0	130.0	58.11	0.80	0.33	2.49	764.35	764.02
P-212	J-162	J-164	424.50	254.0	130.0	12.72	0.25	0.14	0.34	764.02	763.88
P-214	J-164	J-166	257.50	254.0	130.0	7.26	0.14	0.03	0.12	763.88	763.85
P-216	J-166	J-168	132.00	254.0	130.0	2.13	0.04	0.00	0.01	763.85	763.85
P-222	J-172	J-174	134.50	254.0	130.0	-16.22	0.32	0.07	0.53	763.84	763.91
P-224	J-174	J-56	192.50	254.0	130.0	-16.49	0.33	0.10	0.52	763.91	764.01
P-226	J-164	J-176	128.00	148.0	130.0	0.15	0.01	0.00	0.00	763.88	763.88
P-228	J-164	J-178	145.50	148.0	130.0	5.19	0.30	0.13	0.88	763.88	763.75
P-230	J-166	J-180	146.00	148.0	130.0	4.83	0.28	0.11	0.77	763.85	763.74
P-238	J-198	J-202	298.50	304.0	130.0	42.43	0.58	0.40	1.34	762.71	762.30
P-260	J-202	J-206	385.50	304.0	130.0	23.96	0.33	0.17	0.45	762.30	762.13
P-262	J-206	J-210	304.50	304.0	130.0	26.04	0.36	0.16	0.53	762.13	761.97
P-266	J-210	J-212	238.50	304.0	130.0	10.60	0.15	0.02	0.10	761.97	761.94
P-270	J-214	J-216	274.00	304.0	130.0	3.82	0.05	0.00	0.01	761.93	761.93
P-273	J-310	J-217	285.00	450.0	100.0	90.92	0.57	0.37	1.31	765.16	764.79
P-274	J-216	J-222	334.50	254.0	130.0	-4.37	0.09	0.02	0.05	761.93	761.94
P-275	J-217	J-6	10.50	450.0	100.0	34.22	0.22	0.01	0.57	764.79	764.78
P-276	J-134	J-218	7.00	148.0	130.0	-0.22	0.01	0.00	0.00	764.63	764.63
P-277	J-218	J-136	14.50	148.0	130.0	-2.76	0.16	0.01	0.36	764.63	764.64
P-278	J-222	J-224	207.50	254.0	130.0	-4.44	0.09	0.01	0.05	761.94	761.95
P-280	J-228	J-224	462.00	254.0	130.0	-0.59	0.01	0.00	0.00	761.95	761.95
P-283	J-363	J-219	118.00	455.7	130.0	13.52	0.08	0.00	0.02	764.57	764.57
P-285	J-218	J-221	188.00	455.7	130.0	54.27	0.33	0.06	0.34	764.63	764.57
P-286	J-221	J-219	114.50	455.7	130.0	-13.52	0.08	0.00	0.03	764.57	764.57
P-288	J-40	J-225	162.00	304.0	130.0	13.79	0.19	0.03	0.17	764.40	764.37
P-289	J-225	J-42	3.50	304.0	130.0	58.15	0.80	0.02	5.49	764.37	764.35

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-290	J-224	J-210	274.00	254.0	130.0	-5.05	0.10	0.02	0.06	761.95	761.97
P-293	J-225	J-24	262.50	455.7	130.0	-9.95	0.06	0.00	0.01	764.37	764.37
P-294	J-210	J-240	327.50	254.0	130.0	10.36	0.20	0.08	0.23	761.97	761.89
P-297	J-36	J-230	22.50	304.0	130.0	13.77	0.19	0.00	0.22	764.46	764.45
P-298	J-240	J-244	431.00	254.0	130.0	9.62	0.19	0.09	0.20	761.89	761.81
P-299	J-230	J-38	167.50	304.0	130.0	13.96	0.19	0.03	0.17	764.45	764.42
P-300	J-223	J-230	25.00	297.0	130.0	0.18	0.00	0.00	0.00	764.45	764.45
P-301	J-24	J-22	128.50	455.7	130.0	-5.59	0.03	0.00	0.01	764.37	764.38
P-303	J-22	J-226	28.00	455.7	130.0	0.04	0.00	0.00	0.00	764.38	764.38
P-305	J-227	J-50	409.50	204.0	130.0	8.12	0.25	0.17	0.42	764.42	764.24
P-306	J-223	J-227	173.50	455.7	130.0	42.67	0.26	0.04	0.21	764.45	764.42
P-307	J-227	J-225	336.50	455.7	130.0	34.41	0.21	0.04	0.13	764.42	764.37
P-308	J-250	J-252	237.00	254.0	130.0	-3.36	0.07	0.01	0.03	761.98	761.99
P-309	J-217	J-229	243.00	455.7	130.0	56.56	0.35	0.10	0.39	764.79	764.69
P-310	J-6	J-229	233.00	297.0	130.0	19.94	0.29	0.09	0.39	764.78	764.69
P-311	J-229	J-8	16.00	297.0	130.0	24.62	0.36	0.02	1.13	764.69	764.67
P-312	J-252	J-256	219.00	199.0	130.0	-3.48	0.11	0.02	0.10	761.99	762.01
P-313	J-229	J-218	205.50	455.7	130.0	51.73	0.32	0.06	0.30	764.69	764.63
P-314	J-260	J-256	150.00	199.0	130.0	3.50	0.11	0.01	0.10	762.03	762.01
P-315	J-226	J-231	35.00	455.7	130.0	0.04	0.00	0.00	0.00	764.38	764.38
P-316	J-231	J-232	143.50	455.7	130.0	0.00	0.00	0.00	0.00	764.38	764.38
P-317	J-232	J-233	178.50	455.7	130.0	0.00	0.00	0.00	0.00	764.38	764.38
P-318	J-260	J-250	152.00	254.0	130.0	11.49	0.23	0.04	0.28	762.03	761.98
P-319	J-233	J-235	385.00	455.7	130.0	0.00	0.00	0.00	0.00	764.38	764.38
P-320	J-264	J-260	248.50	254.0	130.0	15.17	0.30	0.11	0.46	762.14	762.03
P-321	J-235	J-236	385.00	455.7	130.0	0.00	0.00	0.00	0.00	764.38	764.38
P-322	J-311	J-1025	3,915.00	297.0	130.0	2.58	0.04	0.03	0.01	765.16	765.13
P-322a	J-1025	J-237	625.50	297.0	130.0	2.58	0.04	0.00	0.01	765.13	765.13
P-323	J-237	J-275	1,150.50	297.0	130.0	1.98	0.03	0.01	0.00	765.13	765.12
P-324	J-264	J-202	243.50	254.0	130.0	-18.19	0.36	0.16	0.67	762.14	762.30
P-325	J-237	J-238	126.50	297.0	130.0	0.33	0.00	0.00	0.00	765.13	765.13
P-326	J-264	J-266	180.00	254.0	130.0	2.60	0.05	0.00	0.02	762.14	762.14
P-327	J-238	J-239	43.00	297.0	130.0	0.33	0.00	0.00	0.00	765.13	765.13
P-328	J-266	J-206	485.00	254.0	130.0	2.21	0.04	0.01	0.01	762.14	762.13
P-329	J-239	J-241	92.50	297.0	130.0	0.33	0.00	0.00	0.00	765.13	765.13

Scenario: Pe hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-330	J-244	J-268	30.00	254.0	130.0	-11.30	0.22	0.01	0.35	761.81	761.82
P-331	J-241	J-242	409.50	297.0	130.0	0.33	0.00	0.00	0.00	765.13	765.13
P-332	J-268	J-272	367.50	254.0	130.0	-11.36	0.22	0.10	0.27	761.82	761.92
P-333	J-242	J-243	396.00	297.0	130.0	0.33	0.00	0.00	0.00	765.13	765.13
P-335	J-248	J-348	14.50	199.0	130.0	-4.91	0.16	0.00	0.24	762.22	762.22
P-336	J-272	J-274	142.00	254.0	130.0	-0.79	0.02	0.00	0.00	761.92	761.92
P-337	J-248	J-271	76.00	297.0	130.0	-0.57	0.01	0.00	0.00	762.22	762.22
P-338	J-274	J-276	41.50	254.0	130.0	1.75	0.03	0.00	0.01	761.92	761.92
P-339	J-271	J-279	109.50	297.0	130.0	-0.57	0.01	0.00	0.00	762.22	762.22
P-340	J-272	J-278	251.50	254.0	130.0	-4.14	0.08	0.01	0.04	761.92	761.93
P-341	J-279	J-280	209.00	297.0	130.0	0.00	0.00	0.00	0.00	762.22	762.22
P-342	J-278	J-282	329.50	254.0	130.0	-1.63	0.03	0.00	0.01	761.93	761.93
P-343	J-280	J-281	72.00	297.0	130.0	0.00	0.00	0.00	0.00	762.22	762.22
P-344	J-279	J-283	42.00	297.0	130.0	-0.57	0.01	0.00	0.00	762.22	762.22
P-345	J-283	J-284	421.00	297.0	130.0	-0.57	0.01	0.00	0.00	762.22	762.22
P-346	J-214	J-282	306.50	254.0	130.0	1.80	0.04	0.00	0.01	761.93	761.93
P-347	J-348	J-285	445.00	199.0	130.0	0.83	0.03	0.00	0.01	762.22	762.22
P-348	J-285	J-356	45.00	199.0	130.0	0.12	0.00	0.00	0.00	762.22	762.22
P-349	J-285	J-287	64.00	297.0	130.0	0.57	0.01	0.00	0.00	762.22	762.22
P-350	J-278	J-286	133.00	254.0	130.0	-3.00	0.06	0.00	0.02	761.93	761.93
P-351	J-287	J-288	110.00	297.0	130.0	0.57	0.01	0.00	0.00	762.22	762.22
P-352	J-212	J-286	517.50	254.0	130.0	3.52	0.07	0.02	0.03	761.94	761.93
P-353	J-288	J-284	63.50	297.0	130.0	0.57	0.01	0.00	0.00	762.22	762.22
P-354	J-221	J-130	12.50	297.0	130.0	24.64	0.36	0.01	0.92	764.57	764.56
P-355	J-221	J-289	563.50	455.7	130.0	43.13	0.26	0.11	0.19	764.57	764.46
P-356	J-289	J-223	40.00	455.7	130.0	43.13	0.26	0.01	0.21	764.46	764.45
P-357	J-322	J-290	274.00	199.0	130.0	-5.49	0.18	0.06	0.23	762.14	762.20
P-358	J-274	J-294	170.50	199.0	130.0	-2.55	0.08	0.01	0.06	761.92	761.92
P-359	J-290	J-248	91.00	199.0	130.0	-5.49	0.18	0.02	0.23	762.20	762.22
P-360	J-212	J-291	226.00	304.0	130.0	6.86	0.09	0.01	0.04	761.94	761.93
P-361	J-291	J-214	78.00	304.0	130.0	6.86	0.09	0.00	0.05	761.93	761.93
P-362	J-294	J-298	389.00	199.0	130.0	-2.62	0.08	0.02	0.06	761.92	761.95
P-363	J-168	J-292	202.00	254.0	130.0	2.07	0.04	0.00	0.01	763.85	763.84
P-364	J-292	J-172	147.50	254.0	130.0	2.07	0.04	0.00	0.01	763.84	763.84
P-365	J-389	J-293	126.50	297.0	130.0	13.90	0.20	0.02	0.19	764.66	764.64

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-366	J-298	J-300	106.00	199.0	130.0	-2.90	0.09	0.01	0.07	761.95	761.95
P-367	J-293	J-391	276.50	297.0	130.0	13.90	0.20	0.05	0.19	764.64	764.59
P-368	J-300	J-302	187.00	199.0	130.0	-3.05	0.10	0.01	0.08	761.95	761.97
P-369	J-410	J-408	67.00	297.0	130.0	2.79	0.04	0.00	0.01	764.58	764.58
P-371	J-234	J-296	251.00	254.0	130.0	-0.27	0.01	0.00	0.00	761.95	761.95
P-372	J-306	J-302	131.50	254.0	130.0	-7.36	0.15	0.02	0.12	761.95	761.97
P-373	J-296	J-228	267.50	254.0	130.0	-0.27	0.01	0.00	0.00	761.95	761.95
P-374	J-306	J-308	179.00	254.0	130.0	7.03	0.14	0.02	0.11	761.95	761.93
P-376	J-308	J-272	191.00	254.0	130.0	6.57	0.13	0.02	0.10	761.93	761.92
P-378	J-302	J-314	370.00	254.0	130.0	-10.66	0.21	0.09	0.24	761.97	762.06
P-381	J-250	J-304	276.00	254.0	130.0	29.14	0.58	0.46	1.67	761.98	761.52
P-382	J-304	Truck Fill	5.50	254.0	130.0	29.14	0.58	0.06	11.27	761.52	761.46
P-383	Truck Fill	J-244	401.50	254.0	130.0	-20.86	0.41	0.35	0.86	761.46	761.81
P-384	J-270	J-307	1,127.50	200.0	130.0	0.00	0.00	0.00	0.00	762.46	762.46
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	762.46	762.46
P-386	J-314	J-322	313.50	254.0	130.0	-11.20	0.22	0.08	0.26	762.06	762.14
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	762.46	762.46
P-388	J-60	J-313	214.00	289.0	130.0	4.22	0.06	0.01	0.02	764.07	764.06
P-389	J-313	J-144	9.00	289.0	130.0	4.22	0.06	0.00	0.08	764.06	764.06
P-390	J-313	J-315	97.50	233.3	130.0	0.00	0.00	0.00	0.00	764.06	764.06
P-391	J-315	J-316	363.50	297.0	130.0	0.00	0.00	0.00	0.00	764.06	764.06
P-392	J-322	J-324	250.50	254.0	130.0	-20.67	0.41	0.20	0.81	762.14	762.34
P-393	J-316	J-317	384.50	297.0	130.0	0.00	0.00	0.00	0.00	764.06	764.06
P-394	J-32	J-318	45.50	148.0	130.0	-6.54	0.38	0.08	1.69	764.48	764.56
P-395	J-318	J-136	539.50	148.0	130.0	-1.95	0.11	0.08	0.14	764.56	764.64
P-396	J-146	J-318	190.50	150.0	100.0	4.59	0.26	0.20	1.02	764.76	764.56
P-402	J-332	J-337	799.00	254.0	130.0	-29.43	0.58	1.21	1.52	762.44	763.65
P-410	J-172	J-337	293.50	254.0	130.0	18.14	0.36	0.19	0.64	763.84	763.65
P-412	J-322	J-342	193.50	254.0	130.0	14.87	0.29	0.09	0.45	762.14	762.05
P-414	J-342	J-250	156.50	254.0	130.0	14.56	0.29	0.07	0.43	762.05	761.98
P-444	J-370	J-372	67.50	148.0	130.0	2.94	0.17	0.02	0.31	762.38	762.36
P-446	J-372	J-374	366.50	148.0	130.0	2.27	0.13	0.07	0.18	762.36	762.30
P-448	J-374	J-376	369.00	199.0	130.0	2.35	0.08	0.02	0.05	762.30	762.28
P-450	J-376	J-378	63.00	199.0	130.0	1.66	0.05	0.00	0.03	762.28	762.28
P-452	J-378	J-379	478.00	199.0	130.0	1.06	0.03	0.01	0.01	762.28	762.27

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-453	J-379	J-380	27.00	199.0	130.0	0.49	0.02	0.00	0.00	762.27	762.27
P-454	J-380	J-364	122.50	199.0	130.0	0.67	0.02	0.00	0.00	762.27	762.27
P-456	J-364	J-382	102.50	148.0	130.0	2.20	0.13	0.02	0.18	762.27	762.25
P-457	J-382	J-383	516.50	148.0	130.0	1.13	0.07	0.03	0.05	762.25	762.23
P-458	J-383	J-384	130.50	148.0	130.0	0.78	0.05	0.00	0.03	762.23	762.22
P-460	J-384	J-386	893.50	148.0	130.0	0.57	0.03	0.01	0.01	762.22	762.21
P-462	J-370	J-374	693.00	75.0	130.0	0.31	0.07	0.09	0.13	762.38	762.30
P-464	J-374	J-372	636.50	75.0	130.0	-0.28	0.06	0.07	0.11	762.30	762.36
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	762.28	762.28
P-468	J-380	J-376	1,258.50	148.0	130.0	-0.34	0.02	0.01	0.01	762.27	762.28
P-470	J-382	J-384	1,373.00	148.0	130.0	0.71	0.04	0.03	0.02	762.25	762.22
P-474	J-390	J-392	369.50	148.0	130.0	2.46	0.14	0.08	0.21	762.18	762.10
P-476	J-392	J-394	450.00	148.0	130.0	1.86	0.11	0.06	0.13	762.10	762.04
P-478	J-394	J-395	370.50	148.0	130.0	1.18	0.07	0.02	0.05	762.04	762.02
P-479	J-395	J-396	569.50	108.0	130.0	0.45	0.05	0.02	0.04	762.02	762.00
P-480	J-394	J-398	566.00	108.0	130.0	0.53	0.06	0.03	0.06	762.04	762.01
P-482	J-392	J-400	584.50	108.0	130.0	-0.18	0.02	0.00	0.01	762.10	762.11
P-484	J-390	J-402	584.50	108.0	130.0	0.78	0.08	0.07	0.12	762.18	762.11
P-490	J-216	J-349	71.00	304.0	130.0	0.57	0.01	0.00	0.00	761.93	761.93
P-494	J-350	J-348	272.50	202.0	130.0	5.95	0.19	0.07	0.25	762.29	762.22
P-496	J-310	J-311	4.00	304.0	130.0	8.14	0.11	0.00	0.22	765.16	765.16
P-502	J-402	J-400	371.50	155.0	130.0	0.64	0.03	0.01	0.01	762.11	762.11
P-504	J-398	J-396	390.50	108.0	130.0	0.37	0.04	0.01	0.03	762.01	762.00
P-506	J-311	J-352	517.00	305.0	130.0	5.54	0.08	0.01	0.03	765.16	765.15
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.01	765.15	765.15
P-509	J-142	J-321	302.00	304.0	130.0	5.57	0.08	0.01	0.03	764.08	764.07
P-514	J-353	J-150	72.00	200.0	130.0	4.80	0.15	0.01	0.19	765.13	765.12
P-526	J-359	J-357	399.50	148.0	130.0	3.02	0.18	0.12	0.31	762.43	762.31
P-528	J-538	J-262	113.00	202.0	130.0	7.83	0.24	0.05	0.40	762.35	762.31
P-529	J-262	J-536	686.00	202.0	130.0	1.68	0.05	0.02	0.02	762.31	762.29
P-530	J-357	J-390	321.00	148.0	130.0	3.41	0.20	0.13	0.40	762.31	762.18
P-532	J-357	J-358	299.50	108.0	130.0	-0.64	0.07	0.02	0.08	762.31	762.33
P-534	J-358	J-360	457.00	108.0	130.0	-0.98	0.11	0.08	0.18	762.33	762.41
P-536	J-360	J-359	78.00	108.0	130.0	-1.10	0.12	0.02	0.24	762.41	762.43
P-542	J-162	J-362	170.50	304.0	130.0	45.33	0.62	0.27	1.56	764.02	763.75

Scenario: Pe Hour - Existing
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-544	J-362	J-198	808.50	304.0	130.0	42.43	0.58	1.05	1.30	763.75	762.71
P-548	J-363	J-367	50.00	440.3	130.0	-13.52	0.09	0.00	0.03	764.57	764.57
P-550	J-367	J-369	25.00	440.3	130.0	-13.52	0.09	0.00	0.02	764.57	764.57
P-552	J-369	J-371	110.00	440.3	130.0	-13.52	0.09	0.00	0.02	764.57	764.58
P-554	J-371	J-373	25.00	440.3	130.0	-13.52	0.09	0.00	0.04	764.58	764.58
P-558	J-375	J-377	116.00	440.3	130.0	-11.06	0.07	0.00	0.02	764.58	764.58
P-560	J-377	J-381	92.00	440.3	130.0	-11.07	0.07	0.00	0.02	764.58	764.59
P-566	J-6	J-389	643.50	297.0	130.0	14.22	0.21	0.12	0.19	764.78	764.66
P-570	J-381	J-391	32.50	440.3	130.0	-11.07	0.07	0.00	0.02	764.59	764.59
P-572	J-391	J-365	117.00	440.3	130.0	0.03	0.00	0.00	0.00	764.59	764.59
P-576	J-332	J-538	211.00	202.0	130.0	7.83	0.24	0.09	0.42	762.44	762.35
P-578	J-373	J-406	4.50	440.3	130.0	-13.52	0.09	0.00	0.05	764.58	764.58
P-580	J-406	J-375	210.50	440.3	130.0	-11.04	0.07	0.00	0.02	764.58	764.58
P-584	J-404	J-403	149.00	297.0	130.0	2.59	0.04	0.00	0.01	764.58	764.58
P-588	J-403	J-401	14.00	297.0	130.0	2.59	0.04	0.00	0.01	764.58	764.58
P-592	J-401	J-407	216.50	297.0	130.0	2.59	0.04	0.00	0.01	764.58	764.58
P-594	J-64	J-60	109.50	254.0	130.0	14.77	0.29	0.05	0.45	764.11	764.07
P-595	J-60	J-56	223.50	254.0	130.0	10.54	0.21	0.05	0.23	764.07	764.01
P-596	J-407	J-406	9.00	297.0	130.0	2.48	0.04	0.00	0.02	764.58	764.58
P-598	J-364	J-536	1,015.00	204.0	130.0	-1.68	0.05	0.02	0.02	762.27	762.29
P-600	J-411	J-408	218.50	297.0	130.0	-2.79	0.04	0.00	0.01	764.58	764.58
P-606	J-410	J-391	189.50	297.0	130.0	-2.80	0.04	0.00	0.01	764.58	764.59
P-608	J-411	J-404	23.00	297.0	130.0	2.79	0.04	0.00	0.01	764.58	764.58
P-1300	J-259	J-178	195.50	300.0	120.0	2.67	0.04	0.00	0.01	763.75	763.75
P-1310	J-261	J-180	183.00	300.0	120.0	-11.94	0.17	0.03	0.15	763.71	763.74
P-1330	J-178	J-180	258.00	300.0	120.0	7.36	0.10	0.02	0.06	763.75	763.74

Scenario: Maximum Day + FF - Existing
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	536.9	280.00	468.8	J-40
J-8	230.00	230.20	true	280.00	489.4	280.00	458.4	J-40
J-10	230.00	230.00	true	280.00	486.0	280.00	443.1	J-40
J-12	230.00	230.00	true	280.00	413.3	280.00	414.6	J-16
J-16	230.00	230.23	true	280.00	402.7	280.00	416.8	J-12
J-22	230.00	230.06	true	280.00	481.1	280.00	430.2	J-40
J-24	230.00	230.56	true	280.00	462.4	280.00	429.9	J-40
J-28	230.00	230.37	true	280.00	257.6	280.00	436.6	J-40
J-30	230.00	230.00	true	280.00	454.9	280.00	440.3	J-40
J-32	230.00	230.00	true	280.00	441.9	280.00	435.8	J-34
J-34	230.00	230.12	true	280.00	425.3	280.00	430.4	J-36
J-36	230.00	230.00	true	280.00	428.0	280.00	429.8	J-34
J-38	230.00	230.00	true	280.00	408.8	280.00	418.3	J-40
J-40	230.00	230.11	true	280.00	404.6	280.00	422.6	J-38
J-42	230.00	230.02	true	280.00	428.2	280.00	428.8	J-40
J-50	230.00	230.60	true	243.13	140.0	280.00	467.2	J-40
J-56	230.00	230.85	true	280.00	352.6	280.00	388.0	J-174
J-60	230.00	230.00	true	280.00	352.7	280.00	352.0	J-263
J-64	230.00	230.16	true	280.00	351.3	280.00	352.0	J-112
J-68	230.00	230.09	true	280.00	274.2	280.00	344.4	J-74
J-74	230.00	230.09	true	280.00	290.7	280.00	314.4	J-76
J-76	230.00	230.22	true	280.00	273.1	280.00	297.5	J-82
J-82	230.00	230.43	true	280.00	268.5	280.00	273.1	J-76
J-90	230.00	230.14	true	280.00	281.5	280.00	268.5	J-82
J-94	230.00	230.11	false	112.80	140.0	280.00	549.7	J-40
J-98	230.00	230.17	true	280.00	140.8	280.00	272.7	J-102
J-102	230.00	230.14	true	280.00	217.2	280.00	263.4	J-98
J-104	230.00	230.29	true	277.49	140.0	280.00	310.8	J-102
J-108	230.00	230.34	true	280.00	329.4	280.00	349.9	J-124
J-112	230.00	230.21	true	280.00	334.6	280.00	351.9	J-108
J-117	230.00	230.20	true	280.00	387.5	280.00	397.9	J-118
J-118	230.00	230.14	true	280.00	397.0	280.00	397.2	J-117
J-120	230.00	230.06	true	280.00	352.9	280.00	364.6	J-124
J-124	230.00	230.07	true	280.00	317.0	280.00	358.5	J-108
J-130	230.00	230.00	true	280.00	471.0	280.00	448.7	J-40
J-134	230.00	230.13	true	280.00	232.2	280.00	225.3	J-140
J-136	230.00	230.27	true	280.00	384.4	280.00	456.9	J-40
J-140	230.00	230.02	false	120.23	140.0	280.00	531.7	J-134
J-142	230.00	230.01	true	280.00	279.2	280.00	292.9	J-321
J-144	230.00	230.18	true	280.00	290.5	280.00	285.4	J-263
J-146	230.00	230.06	false	146.08	140.0	280.00	542.5	J-318
J-148	230.00	230.08	true	230.87	140.0	280.00	215.0	J-150
J-150	230.00	230.00	true	246.92	140.0	280.00	146.4	J-148
J-152	230.00	230.00	true	280.00	376.9	280.00	374.0	J-303
J-162	230.00	230.04	true	280.00	412.0	280.00	402.7	J-214
J-164	230.00	230.07	true	280.00	312.6	280.00	307.7	J-176
J-166	230.00	230.20	true	280.00	295.9	280.00	322.1	J-168
J-168	230.00	230.04	true	280.00	282.2	280.00	322.7	J-166
J-172	230.00	230.10	true	280.00	357.3	280.00	362.9	J-292
J-174	230.00	230.18	true	280.00	341.5	280.00	384.5	J-172

Scenario: Maximum Day + FF - Existing
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	false	121.25	140.0	280.00	534.6	J-164
J-178	230.00	230.34	true	280.00	336.9	280.00	370.1	J-180
J-180	230.00	230.17	true	280.00	338.1	280.00	356.1	J-261
J-198	230.00	230.00	true	280.00	256.5	280.00	229.6	J-214
J-202	230.00	230.19	true	280.00	233.1	280.00	185.2	J-214
J-206	230.00	230.08	true	280.00	175.4	280.00	151.0	J-214
J-210	230.00	230.02	true	269.33	160.8	280.00	140.0	J-214
J-212	230.00	230.15	true	262.53	144.4	280.00	140.0	J-214
J-214	230.00	230.82	true	251.96	140.0	280.00	148.8	J-349
J-216	230.00	235.08	true	241.87	140.0	280.00	140.0	J-349
J-217	230.00	230.09	true	280.00	536.8	280.00	469.8	J-40
J-218	230.00	230.00	true	280.00	484.8	280.00	454.5	J-40
J-219	230.00	230.00	true	280.00	479.4	280.00	450.2	J-40
J-221	230.00	230.02	true	280.00	479.3	280.00	449.3	J-40
J-222	230.00	230.05	true	236.63	140.0	280.00	187.3	J-224
J-223	230.00	230.19	true	280.00	439.2	280.00	435.5	J-40
J-224	230.00	230.02	true	242.11	140.0	280.00	163.1	J-222
J-225	230.00	230.00	true	280.00	431.3	280.00	428.5	J-40
J-226	230.00	230.00	true	280.00	479.0	280.00	430.2	J-40
J-227	230.00	230.09	true	280.00	434.4	280.00	432.8	J-40
J-228	230.00	230.21	false	182.83	140.0	280.00	140.0	J-234
J-229	230.00	230.10	true	280.00	500.7	280.00	460.5	J-40
J-230	230.00	230.00	true	280.00	432.2	280.00	432.8	J-40
J-231	230.00	230.03	true	280.00	484.6	280.00	430.2	J-40
J-232	230.00	230.00	true	280.00	478.5	280.00	430.2	J-40
J-233	230.00	230.00	true	280.00	478.2	280.00	430.2	J-40
J-234	230.00	230.18	false	147.84	140.0	280.00	218.4	J-296
J-235	230.00	230.00	true	280.00	446.1	280.00	430.2	J-40
J-236	230.00	230.00	true	280.00	416.3	280.00	430.2	J-40
J-237	230.00	230.19	false	147.35	194.9	280.00	140.0	J-351
J-238	230.00	230.00	false	147.35	171.3	280.00	140.0	J-351
J-239	230.00	230.00	false	147.35	153.6	280.00	140.0	J-351
J-240	230.00	230.49	true	253.17	140.0	280.00	200.8	J-214
J-241	230.00	230.00	false	147.14	140.0	280.00	141.7	J-351
J-242	230.00	230.00	false	141.79	140.0	280.00	150.3	J-243
J-243	230.00	230.22	false	137.61	140.0	280.00	177.9	J-242
J-244	230.00	230.04	true	276.50	140.0	280.00	146.5	J-268
J-245	230.00	230.00	true	280.00	368.6	280.00	365.7	J-303
J-246	230.00	230.18	true	280.00	188.2	280.00	192.5	J-247
J-247	230.00	230.00	true	280.00	192.5	280.00	193.5	J-246
J-248	230.00	230.00	false	228.76	169.8	280.00	140.0	J-283
J-249	230.00	230.00	true	280.00	412.3	280.00	358.5	J-303
J-250	230.00	230.19	true	280.00	199.7	280.00	178.9	J-214
J-251	230.00	230.00	true	280.00	408.2	280.00	354.4	J-303
J-252	230.00	230.08	true	257.72	140.0	280.00	200.7	J-256
J-253	230.00	230.00	true	280.00	351.0	280.00	348.1	J-303
J-254	230.00	230.00	true	280.00	335.2	280.00	337.1	J-258
J-255	230.00	230.00	true	280.00	356.2	280.00	306.6	J-258
J-256	230.00	230.01	true	242.70	140.0	280.00	257.2	J-252
J-257	230.00	230.00	true	280.00	340.6	280.00	290.5	J-258

Scenario: Maximum Day + FF - Existing
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	280.00	264.8	280.00	265.9	J-353
J-259	230.00	230.15	true	280.00	360.0	280.00	360.2	J-178
J-260	230.00	230.12	true	280.00	183.3	280.00	171.3	J-256
J-261	230.00	230.09	true	280.00	328.5	280.00	354.4	J-180
J-262	230.00	230.00	true	248.51	140.0	280.00	162.8	J-350
J-263	230.00	230.00	true	280.00	282.9	280.00	291.8	J-144
J-264	230.00	230.29	true	280.00	199.8	280.00	177.8	J-214
J-265	230.00	230.19	true	280.00	204.8	280.00	241.6	J-307
J-266	230.00	230.26	true	280.00	153.8	280.00	172.3	J-214
J-267	60.00	60.12	true	100.00	587.4	100.00	407.3	J-307
J-268	230.00	230.04	true	274.03	140.0	280.00	154.0	J-214
J-269	60.00	60.00	true	95.93	339.1	100.00	140.0	J-307
J-270	60.00	60.87	true	87.48	308.4	100.00	140.0	J-307
J-271	230.00	230.00	false	222.64	156.2	280.00	140.0	J-283
J-272	230.00	230.10	true	270.01	140.0	280.00	142.4	J-276
J-273	60.00	60.00	true	94.92	326.1	100.00	140.0	J-307
J-274	230.00	230.01	true	245.25	146.9	280.00	140.0	J-276
J-275	230.00	231.15	false	130.71	183.5	280.00	140.0	J-351
J-276	230.00	231.16	true	235.92	140.0	280.00	179.7	J-274
J-277	230.00	230.16	false	130.69	140.0	280.00	140.2	J-351
J-278	230.00	230.33	true	257.69	140.0	280.00	147.6	J-286
J-279	230.00	230.00	false	218.33	151.9	280.00	140.0	J-283
J-280	230.00	230.00	false	206.35	140.0	280.00	140.5	J-281
J-281	230.00	230.00	false	202.53	140.0	280.00	158.8	J-280
J-282	230.00	230.11	true	241.59	140.0	280.00	194.0	J-214
J-283	230.00	230.00	false	215.97	140.0	280.00	155.0	J-280
J-284	230.00	230.00	false	211.22	140.0	280.00	149.9	J-288
J-285	230.00	230.09	false	210.79	140.0	280.00	140.0	J-356
J-286	230.00	230.34	true	247.49	140.0	280.00	187.2	J-278
J-287	230.00	230.00	false	210.90	140.0	280.00	149.5	J-288
J-288	230.00	230.00	false	211.63	140.0	280.00	141.3	J-284
J-289	230.00	230.00	true	280.00	448.1	280.00	436.4	J-40
J-290	230.00	230.00	true	239.17	140.0	280.00	162.7	J-283
J-291	230.00	230.00	true	254.02	140.0	280.00	142.8	J-214
J-292	230.00	230.00	true	280.00	305.9	280.00	331.0	J-168
J-293	230.00	230.00	true	280.00	501.6	280.00	458.7	J-40
J-294	230.00	230.05	false	210.98	140.0	280.00	267.4	J-298
J-296	230.00	230.00	false	162.71	140.0	280.00	140.0	J-234
J-298	230.00	230.18	false	208.57	140.0	280.00	225.0	J-300
J-300	230.00	230.10	false	220.11	140.0	280.00	156.7	J-298
J-301	230.00	230.00	true	280.00	326.4	280.00	326.4	J-303
J-302	230.00	230.16	true	266.17	140.0	280.00	149.4	J-306
J-303	230.00	230.28	true	280.00	212.4	280.00	221.7	J-247
J-304	230.00	230.00	true	271.40	140.0	280.00	149.1	Truck Fi
J-306	230.00	230.22	true	259.09	140.0	280.00	156.8	J-308
J-307	60.00	60.00	true	61.98	140.0	100.00	154.4	J-309
J-308	230.00	230.31	true	254.99	140.0	280.00	189.2	J-306
J-309	60.00	60.00	false	52.74	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	607.4	280.00	502.8	J-40
J-311	230.00	230.01	true	280.00	598.7	280.00	502.4	J-40

Scenario: Maximum Day + FF - Existing
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	48.47	140.0	100.00	207.6	J-309
J-313	230.00	230.00	true	280.00	321.9	280.00	295.6	J-263
J-314	230.00	230.36	true	277.16	140.0	280.00	175.9	J-308
J-315	230.00	230.00	true	280.00	182.8	280.00	180.4	J-316
J-316	230.00	230.00	true	249.05	140.0	280.00	160.1	J-317
J-317	230.00	230.00	false	223.14	140.0	280.00	232.2	J-316
J-318	230.00	230.00	true	273.82	140.0	280.00	291.9	J-146
J-321	230.00	230.11	true	280.00	266.0	280.00	309.8	J-263
J-322	230.00	230.05	true	280.00	235.9	280.00	197.4	J-214
J-324	230.00	230.00	true	280.00	207.4	280.00	225.8	J-214
J-332	230.00	230.62	true	280.00	212.6	280.00	241.3	J-214
J-337	230.00	230.34	true	280.00	364.3	280.00	363.3	J-214
J-342	230.00	230.21	true	280.00	194.1	280.00	182.2	J-214
J-348	230.00	230.13	true	230.50	159.5	280.00	140.0	J-283
J-349	230.00	230.38	true	234.36	140.0	280.00	164.7	J-216
J-350	230.00	230.14	true	240.74	140.0	280.00	200.9	J-262
J-351	230.00	230.00	false	125.70	140.0	280.00	210.7	J-277
J-352	230.00	230.00	true	280.00	392.2	280.00	389.3	J-303
J-353	230.00	230.04	true	280.00	163.6	280.00	172.8	J-150
J-356	230.00	230.08	false	193.78	140.0	280.00	225.6	J-285
J-357	60.00	60.16	true	63.99	141.4	100.00	140.0	J-396
J-358	60.00	60.23	false	52.73	140.0	100.00	414.6	J-396
J-359	60.00	60.04	true	80.68	142.0	100.00	140.0	J-396
J-360	60.00	60.08	true	64.81	140.0	100.00	255.0	J-358
J-362	230.00	230.00	true	280.00	402.1	280.00	371.0	J-214
J-363	230.00	230.00	true	280.00	484.6	280.00	450.8	J-40
J-364	60.00	60.10	true	100.00	375.5	100.00	330.4	J-307
J-365	230.00	230.02	true	280.00	517.0	280.00	453.4	J-40
J-367	230.00	230.00	true	280.00	492.4	280.00	451.2	J-40
J-369	230.00	230.00	true	280.00	494.1	280.00	451.3	J-40
J-370	60.00	60.10	true	96.43	273.4	100.00	140.0	J-307
J-371	230.00	230.00	true	280.00	492.7	280.00	451.8	J-40
J-372	60.00	60.26	true	99.75	232.5	100.00	140.0	J-307
J-373	230.00	230.00	true	280.00	497.8	280.00	452.0	J-40
J-374	60.00	60.35	true	100.00	290.1	100.00	241.5	J-307
J-375	230.00	230.01	true	280.00	497.1	280.00	452.7	J-40
J-376	60.00	60.23	true	100.00	323.0	100.00	279.6	J-307
J-377	230.00	230.01	true	280.00	508.1	280.00	453.0	J-40
J-378	60.00	60.25	true	100.00	325.7	100.00	285.0	J-307
J-379	60.00	60.38	true	100.00	359.1	100.00	313.9	J-307
J-380	60.00	60.11	true	100.00	357.6	100.00	316.8	J-307
J-381	230.00	230.00	true	280.00	524.6	280.00	453.3	J-40
J-382	60.00	60.24	true	99.92	160.8	100.00	140.0	J-386
J-383	60.00	60.24	true	75.84	140.0	100.00	145.9	J-386
J-384	60.00	60.61	true	72.97	156.7	100.00	140.0	J-386
J-386	60.00	60.38	false	44.26	140.0	100.00	533.8	J-307
J-388	60.00	60.16	true	92.49	140.0	100.00	325.1	J-307
J-389	230.00	230.21	true	280.00	494.3	280.00	460.5	J-40
J-390	60.00	60.12	false	52.07	140.8	100.00	140.0	J-396
J-391	230.00	230.00	true	280.00	525.6	280.00	453.4	J-40

Scenario: Maximum Day + FF - Existing
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	false	46.25	140.5	100.00	140.0	J-396
J-394	60.00	60.10	false	39.36	140.2	100.00	140.0	J-396
J-395	60.00	60.49	false	36.54	140.0	100.00	167.9	J-396
J-396	60.00	60.55	false	30.97	140.0	100.00	236.9	J-398
J-398	60.00	60.11	false	31.27	140.0	100.00	222.7	J-396
J-400	60.00	60.31	false	38.13	140.0	100.00	168.8	J-402
J-401	230.00	230.00	true	280.00	437.4	280.00	434.8	J-403
J-402	60.00	60.09	false	38.23	140.0	100.00	164.5	J-400
J-403	230.00	230.00	true	280.00	432.0	280.00	436.8	J-404
J-404	230.00	230.13	true	280.00	417.0	280.00	420.5	J-411
J-406	230.00	230.00	true	280.00	499.4	280.00	452.1	J-40
J-407	230.00	230.07	true	280.00	481.8	280.00	452.2	J-40
J-408	230.00	230.00	true	280.00	472.0	280.00	442.7	J-411
J-410	230.00	230.01	true	280.00	481.0	280.00	450.2	J-411
J-411	230.00	230.00	true	280.00	417.6	280.00	419.6	J-404
J-536	230.00	230.00	false	147.44	140.0	280.00	278.7	J-307
J-538	230.00	230.00	true	254.92	140.0	280.00	193.6	J-262
J-1025	230.00	230.00	false	159.04	187.0	280.00	140.0	J-351
PUMPHOUSE - 1	230.00	230.08	true	280.00	553.0	280.00	514.8	J-40
PUMPHOUSE - 2	230.00	230.95	true	280.00	553.6	280.00	514.8	J-40
PUMPHOUSE - 3	230.00	230.00	true	280.00	554.3	280.00	514.8	J-40
PUMPHOUSE - 4	230.00	230.91	true	280.00	555.0	280.00	514.8	J-40
Truck Fill	230.00	230.00	true	269.96	140.0	280.00	155.6	J-304

Appendix C -
Existing Development Condition – with Proposed Improvements for Alternative 1
Simulation Results

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	539.8	765.76
J-8	5,909,058.66	97,351.20	713.60	0.30	509.2	765.63
J-10	5,908,474.10	97,361.23	710.20	0.00	540.9	765.47
J-12	5,908,467.18	97,361.38	710.20	0.00	540.8	765.46
J-16	5,908,452.20	97,361.89	710.20	0.34	540.8	765.46
J-22	5,907,974.55	97,357.96	710.00	0.09	541.3	765.31
J-24	5,907,976.56	97,486.24	712.72	0.84	514.7	765.31
J-28	5,908,348.52	97,479.26	713.10	0.55	511.8	765.40
J-30	5,908,476.15	97,465.75	713.60	0.00	507.4	765.44
J-32	5,908,477.92	97,568.92	715.10	0.00	492.6	765.43
J-34	5,908,480.33	97,699.94	717.10	0.17	472.8	765.41
J-36	5,908,480.81	97,725.97	717.10	0.00	472.7	765.40
J-38	5,908,303.69	97,742.34	717.30	0.00	470.4	765.37
J-40	5,908,143.29	97,745.11	717.70	0.17	466.3	765.34
J-42	5,907,977.83	97,749.04	717.00	0.03	472.8	765.31
J-50	5,908,312.36	98,169.75	716.20	0.90	479.9	765.23
J-56	5,908,324.08	98,782.89	713.20	1.27	507.7	765.07
J-60	5,908,547.69	98,778.44	712.60	0.00	513.5	765.07
J-64	5,908,657.02	98,776.18	712.50	0.24	514.8	765.10
J-68	5,908,927.88	98,770.56	711.60	0.13	523.6	765.10
J-74	5,909,209.82	98,764.73	710.10	0.14	538.2	765.09
J-76	5,909,321.64	98,762.41	709.30	0.33	545.9	765.08
J-82	5,909,600.55	98,756.43	706.80	0.64	570.3	765.08
J-90	5,910,145.40	98,745.06	699.50	0.21	641.8	765.08
J-94	5,910,141.73	98,553.50	699.50	0.16	641.8	765.08
J-98	5,909,203.58	98,428.34	712.50	0.25	515.5	765.17
J-102	5,909,101.64	98,426.21	713.00	0.22	510.8	765.20
J-104	5,908,903.10	98,430.23	713.50	0.44	505.9	765.19
J-108	5,908,650.47	98,435.34	714.90	0.51	492.1	765.19
J-112	5,908,654.55	98,649.36	713.80	0.32	502.4	765.13
J-117	5,909,093.99	98,027.43	715.00	0.30	493.0	765.37
J-118	5,909,093.47	98,001.39	715.00	0.21	493.0	765.37
J-120	5,908,854.44	98,006.14	714.70	0.09	495.4	765.32
J-124	5,908,645.32	98,164.72	715.80	0.10	483.9	765.24
J-130	5,909,081.17	97,756.51	714.30	0.00	501.1	765.50
J-134	5,909,084.75	97,555.92	714.50	0.19	499.8	765.57
J-136	5,909,062.84	97,556.57	714.50	0.40	499.9	765.58
J-140	5,909,211.44	97,544.32	715.20	0.03	492.4	765.51
J-142	5,909,320.00	98,985.50	707.40	0.02	564.2	765.05
J-144	5,908,552.32	99,001.45	712.60	0.28	513.0	765.02
J-146	5,908,500.88	97,385.99	711.00	0.08	533.1	765.47
J-148	5,908,743.01	97,064.41	711.00	0.12	539.3	766.10
J-150	5,908,756.07	97,063.51	711.00	0.00	539.4	766.12
J-152	5,908,779.46	96,905.96	710.70	0.00	542.9	766.17
J-162	5,907,845.59	97,760.01	714.80	0.06	493.2	765.19
J-164	5,907,853.69	98,184.20	715.30	0.11	487.9	765.15
J-166	5,907,858.51	98,441.75	715.50	0.30	485.5	765.11
J-168	5,907,990.55	98,439.52	715.20	0.07	488.3	765.10
J-172	5,907,997.17	98,789.35	713.00	0.15	509.6	765.07
J-174	5,908,131.47	98,786.69	713.20	0.27	507.7	765.07
J-176	5,907,981.73	98,181.34	715.80	0.15	484.4	765.30
J-178	5,907,708.34	98,186.08	715.20	0.50	488.2	765.09

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	500.8	765.07
J-198	5,906,888.62	97,825.94	710.60	0.00	529.9	764.74
J-202	5,906,593.95	97,782.31	709.60	0.28	538.4	764.61
J-206	5,906,215.61	97,708.31	712.00	0.12	514.5	764.57
J-210	5,905,911.78	97,702.33	713.40	0.03	500.6	764.55
J-212	5,905,673.44	97,707.07	714.50	0.23	489.7	764.53
J-214	5,905,369.47	97,713.12	715.90	1.24	475.9	764.53
J-216	5,905,364.01	97,439.05	715.60	7.62	478.9	764.53
J-217	5,909,307.40	97,334.51	710.88	0.13	537.1	765.76
J-218	5,909,077.55	97,556.13	714.50	0.00	499.9	765.58
J-219	5,909,195.57	97,741.44	714.00	0.00	504.1	765.51
J-221	5,909,080.95	97,744.08	714.53	0.03	498.9	765.51
J-222	5,905,698.60	97,432.40	714.40	0.07	491.2	764.59
J-223	5,908,477.48	97,757.92	717.21	0.28	471.6	765.40
J-224	5,905,905.82	97,428.26	714.10	0.02	494.5	764.63
J-225	5,907,981.51	97,748.90	717.00	0.00	472.8	765.31
J-226	5,907,946.73	97,358.07	710.00	0.00	541.2	765.30
J-227	5,908,303.93	97,760.54	717.18	0.14	471.5	765.36
J-228	5,906,360.39	97,501.77	711.60	0.31	522.7	765.00
J-229	5,909,074.75	97,350.43	713.60	0.15	509.4	765.65
J-230	5,908,471.28	97,739.11	717.10	0.00	472.7	765.40
J-231	5,907,921.40	97,334.01	709.20	0.04	549.1	765.30
J-232	5,907,811.00	97,326.52	708.90	0.00	551.9	765.29
J-233	5,907,639.32	97,370.09	707.90	0.00	561.6	765.29
J-234	5,906,873.52	97,574.28	711.60	0.27	524.8	765.22
J-235	5,907,254.44	97,377.87	708.90	0.00	551.6	765.27
J-236	5,906,869.56	97,385.66	709.67	0.00	543.9	765.25
J-237	5,913,524.07	98,517.56	689.20	0.28	748.6	765.69
J-238	5,913,476.73	98,634.61	689.45	0.00	746.0	765.68
J-239	5,913,442.90	98,660.40	690.60	0.00	734.7	765.67
J-240	5,905,918.98	98,029.82	712.40	0.74	509.5	764.46
J-241	5,913,350.24	98,658.09	690.80	0.00	732.7	765.66
J-242	5,912,944.99	98,674.90	690.05	0.00	739.7	765.63
J-243	5,912,549.09	98,682.16	689.00	0.33	749.7	765.61
J-244	5,905,905.76	98,439.24	709.18	0.06	540.0	764.36
J-245	5,908,776.14	96,915.33	710.70	0.00	542.9	766.17
J-246	5,908,458.63	97,044.00	709.95	0.27	550.2	766.17
J-247	5,908,464.31	97,043.90	710.05	0.00	549.2	766.17
J-248	5,906,562.22	99,128.24	701.60	0.00	616.3	764.58
J-249	5,908,771.98	96,927.06	705.50	0.00	593.8	766.17
J-250	5,906,588.47	98,425.23	707.60	0.28	555.9	764.40
J-251	5,908,770.14	96,932.26	705.50	0.00	593.8	766.17
J-252	5,906,825.65	98,420.35	709.60	0.12	536.4	764.41
J-253	5,908,766.64	96,942.13	710.70	0.00	542.9	766.17
J-254	5,908,783.08	96,917.79	710.70	0.00	542.8	766.16
J-255	5,908,778.19	96,929.26	705.50	0.00	593.7	766.16
J-256	5,906,735.40	98,269.84	710.30	0.02	529.7	764.43
J-257	5,908,776.00	96,934.34	705.50	0.00	593.6	766.16
J-258	5,908,771.86	96,943.98	710.70	0.00	542.7	766.15
J-259	5,907,681.11	97,992.32	713.39	0.22	506.0	765.09
J-260	5,906,585.22	98,273.05	708.00	0.17	552.4	764.44
J-261	5,907,700.54	98,626.53	713.40	0.13	505.6	765.06

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	608.4	764.66
J-263	5,908,554.64	99,001.40	713.20	0.00	507.1	765.02
J-264	5,906,579.90	98,024.41	708.70	0.43	546.5	764.54
J-265	5,908,562.13	99,338.47	708.40	0.28	554.0	765.01
J-266	5,906,399.93	98,028.05	708.00	0.39	553.4	764.55
J-267	5,908,572.77	100,001.17	689.40	0.18	738.5	764.86
J-268	5,905,898.13	98,461.32	709.20	0.06	539.9	764.37
J-269	5,908,585.09	100,508.03	688.80	0.00	740.2	764.43
J-270	5,908,600.64	101,103.84	697.20	1.31	657.7	764.41
J-271	5,906,493.28	99,141.39	702.90	0.00	603.6	764.58
J-272	5,905,530.79	98,468.96	712.00	0.15	513.7	764.49
J-273	5,908,603.09	100,561.75	690.60	0.00	722.4	764.41
J-274	5,905,388.62	98,471.86	711.20	0.01	521.5	764.49
J-275	5,914,588.31	98,954.88	690.35	1.73	737.2	765.68
J-276	5,905,347.08	98,472.70	711.90	1.75	514.7	764.49
J-277	5,914,515.82	99,129.18	692.25	0.25	718.7	765.68
J-278	5,905,525.90	98,217.56	713.80	0.49	496.3	764.51
J-279	5,906,383.63	99,143.48	703.40	0.00	598.7	764.57
J-280	5,906,174.59	99,147.94	704.45	0.00	588.3	764.56
J-281	5,906,102.58	99,149.32	704.40	0.00	588.8	764.56
J-282	5,905,375.58	98,019.54	714.80	0.17	486.6	764.52
J-283	5,906,384.67	99,185.47	704.70	0.00	586.0	764.58
J-284	5,906,395.12	99,606.40	702.20	0.00	610.5	764.58
J-285	5,906,617.35	99,583.11	700.20	0.14	630.2	764.59
J-286	5,905,658.69	98,214.91	714.10	0.52	493.4	764.51
J-287	5,906,568.55	99,602.91	700.90	0.00	623.3	764.59
J-288	5,906,458.61	99,605.06	701.40	0.00	618.4	764.58
J-289	5,908,517.34	97,755.28	716.36	0.00	480.0	765.41
J-290	5,906,547.32	99,038.54	702.77	0.00	604.8	764.57
J-291	5,905,447.34	97,711.57	715.54	0.00	479.5	764.53
J-292	5,907,994.37	98,641.67	713.93	0.00	500.6	765.08
J-293	5,909,994.96	97,459.73	706.55	0.00	577.7	765.58
J-294	5,905,394.69	98,642.02	710.50	0.08	528.4	764.49
J-296	5,906,623.71	97,548.19	711.60	0.00	524.8	765.22
J-298	5,905,695.90	98,870.15	708.60	0.28	547.3	764.52
J-300	5,905,801.61	98,872.46	707.20	0.15	561.1	764.53
J-301	5,908,753.24	96,979.98	711.00	0.00	539.9	766.17
J-302	5,905,859.76	98,735.04	708.60	0.24	547.3	764.52
J-303	5,908,522.69	97,042.82	711.00	0.42	539.9	766.17
J-304	5,906,312.67	98,430.89	708.24	0.00	545.7	764.00
J-306	5,905,728.41	98,736.90	709.90	0.33	534.4	764.51
J-307	5,908,622.68	102,230.99	714.40	0.00	489.4	764.41
J-308	5,905,579.15	98,646.58	712.00	0.47	513.8	764.50
J-309	5,908,642.41	103,175.71	712.93	0.00	503.8	764.41
J-310	5,909,279.69	97,059.38	707.10	0.00	578.4	766.20
J-311	5,909,282.51	97,057.24	707.10	0.01	578.3	766.19
J-312	5,909,434.20	103,817.29	707.50	0.00	556.9	764.41
J-313	5,908,552.13	98,992.36	710.15	0.00	537.0	765.02
J-314	5,906,229.89	98,727.43	706.40	0.55	568.9	764.52
J-315	5,908,454.45	98,994.29	710.00	0.00	537.8	764.95
J-316	5,908,092.47	99,005.00	710.25	0.00	534.7	764.88
J-317	5,907,708.27	99,012.60	708.20	0.00	553.9	764.80

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	521.2	765.46
J-321	5,909,018.07	98,991.77	710.00	0.17	538.6	765.04
J-322	5,906,537.16	98,766.80	706.30	0.08	569.9	764.53
J-324	5,906,780.50	98,815.29	707.40	0.00	560.0	764.62
J-332	5,906,905.11	98,812.64	709.10	0.93	543.8	764.67
J-337	5,907,703.90	98,795.12	710.50	0.52	533.7	765.03
J-342	5,906,589.89	98,581.45	707.10	0.31	561.4	764.46
J-348	5,906,564.17	99,142.81	701.60	0.20	616.4	764.58
J-349	5,905,292.97	97,440.46	715.60	0.57	478.9	764.53
J-350	5,906,836.65	99,137.08	702.50	0.21	608.2	764.64
J-351	5,914,985.65	99,118.12	694.80	0.00	693.7	765.68
J-352	5,908,787.17	96,908.26	710.70	0.00	542.9	766.17
J-353	5,908,757.47	96,994.16	711.00	0.05	539.6	766.14
J-356	5,906,618.36	99,628.21	700.20	0.12	630.3	764.60
J-357	5,909,258.32	100,547.78	691.00	0.24	716.1	764.17
J-358	5,909,251.92	100,248.17	691.00	0.35	716.3	764.19
J-359	5,908,858.94	100,556.29	691.00	0.06	717.3	764.29
J-360	5,908,857.28	100,478.32	691.00	0.12	717.1	764.28
J-362	5,907,675.38	97,768.48	712.30	0.00	516.7	765.09
J-363	5,909,310.68	97,745.32	713.10	0.00	512.9	765.51
J-364	5,906,949.71	100,836.01	691.50	0.15	713.8	764.44
J-365	5,910,093.16	97,731.00	707.20	0.03	570.7	765.51
J-367	5,909,360.67	97,744.77	712.10	0.00	522.7	765.51
J-369	5,909,385.67	97,744.30	711.85	0.00	525.2	765.51
J-370	5,908,423.93	101,076.18	691.00	0.14	718.4	764.41
J-371	5,909,495.65	97,742.23	711.65	0.00	527.1	765.51
J-372	5,908,357.20	101,065.19	691.00	0.39	718.4	764.41
J-373	5,909,520.64	97,741.76	711.00	0.00	533.5	765.51
J-374	5,907,995.30	101,006.31	691.00	0.52	718.5	764.41
J-375	5,909,735.60	97,737.72	710.50	0.02	538.4	765.51
J-376	5,907,631.31	100,947.18	691.00	0.34	718.5	764.42
J-377	5,909,851.58	97,735.54	709.20	0.01	551.1	765.51
J-378	5,907,569.28	100,937.06	690.70	0.37	721.5	764.42
J-379	5,907,097.59	100,860.13	690.80	0.57	720.6	764.43
J-380	5,907,070.76	100,855.75	691.60	0.16	712.8	764.43
J-381	5,909,943.56	97,733.81	707.40	0.00	568.8	765.51
J-382	5,906,848.42	100,819.49	691.00	0.35	718.5	764.42
J-383	5,906,355.74	100,852.67	691.40	0.36	714.4	764.39
J-384	5,906,237.87	100,906.65	691.40	0.92	714.3	764.39
J-386	5,905,356.70	100,981.32	693.10	0.57	697.6	764.38
J-388	5,907,590.72	100,805.57	690.70	0.23	721.5	764.42
J-389	5,909,944.06	97,385.51	706.90	0.32	574.6	765.61
J-390	5,909,578.24	100,572.53	691.00	0.18	714.9	764.04
J-391	5,909,976.00	97,733.20	707.25	0.00	570.2	765.51
J-392	5,909,947.68	100,567.17	691.00	0.77	714.1	763.97
J-394	5,910,397.44	100,552.88	691.00	0.15	713.5	763.91
J-395	5,910,768.00	100,546.28	691.00	0.73	713.3	763.89
J-396	5,910,752.17	99,977.20	691.00	0.83	713.3	763.88
J-398	5,910,381.11	99,987.28	691.00	0.16	713.3	763.88
J-400	5,909,937.68	99,983.00	691.00	0.46	714.1	763.97
J-401	5,909,529.41	97,966.96	711.90	0.00	524.7	765.51
J-402	5,909,566.00	99,988.28	691.00	0.14	714.2	763.98

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	520.8	765.51
J-404	5,909,690.09	97,971.58	713.05	0.19	513.4	765.51
J-406	5,909,525.03	97,741.68	710.80	0.00	535.5	765.51
J-407	5,909,525.21	97,750.68	711.50	0.11	528.6	765.51
J-408	5,909,931.45	97,966.98	708.15	0.00	561.4	765.51
J-410	5,909,979.59	97,922.51	707.90	0.02	563.9	765.51
J-411	5,909,713.09	97,971.14	712.95	0.00	514.4	765.51
J-536	5,906,927.24	99,821.22	703.00	0.00	603.0	764.62
J-538	5,906,907.40	99,022.87	703.00	0.00	603.5	764.66
J-1005	5,906,600.14	97,387.90	712.00	0.00	521.0	765.23
J-1025	5,912,941.46	98,290.11	690.00	0.00	741.4	765.75
J-1050	5,911,741.94	98,684.68	690.00	0.00	739.4	765.55
J-1140	5,910,093.50	98,010.88	710.00	0.00	543.3	765.51
J-1160	5,910,888.42	98,011.18	700.00	17.71	640.4	765.43
J-1195	5,907,311.37	99,134.08	712.00	0.00	515.6	764.69
J-1205	5,905,816.29	99,157.77	710.00	0.00	533.8	764.55
J-1220	5,906,625.92	99,855.91	703.00	0.00	602.9	764.61
PUMPHOUSE - 1	5,909,261.30	96,808.08	713.70	0.13	515.8	766.40
PUMPHOUSE - 2	5,909,262.07	96,862.84	713.70	1.43	515.8	766.40
PUMPHOUSE - 3	5,909,262.83	96,917.20	713.70	0.00	515.8	766.40
PUMPHOUSE - 4	5,909,263.60	96,971.96	713.70	1.37	515.7	766.40
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	545.2	763.95

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	23.30	0.33	0.12	0.50	765.50	765.37
P-3	Jockey Pump	Jockey Pump PRV	1.40	150.0	100.0	38.82	2.20	0.07	52.99	766.56	766.48
P-4	Jockey Pump PRV	PUMPHOUSE - 1	1.50	150.0	100.0	38.82	2.20	0.08	52.98	766.48	766.40
P-6	PUMPHOUSE - 1	PUMPHOUSE - 2	1.40	450.0	100.0	38.69	0.24	0.00	1.01	766.40	766.40
P-8	Lead Pump	Lead Pump PRV	1.20	200.0	100.0	20.04	0.64	0.00	3.78	793.07	793.06
P-10	Lead Pump PRV	PUMPHOUSE - 2	1.70	200.0	100.0	20.04	0.64	0.12	72.97	766.53	766.40
P-12	Lag Pump	Lag Pump PRV	1.20	200.0	100.0	0.00	0.00	0.00	0.00	0.00	0.00
P-14	Lag Pump PRV	PUMPHOUSE - 3	1.70	200.0	100.0	-0.00	0.00	0.00	0.00	766.40	766.40
P-16	PUMPHOUSE - 2	PUMPHOUSE - 3	1.40	450.0	100.0	57.30	0.36	0.00	2.18	766.40	766.40
P-18	Fire Pump	Fire Pump PRV	0.80	300.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-20	Fire Pump PRV	PUMPHOUSE - 4	2.10	300.0	100.0	-0.00	0.00	0.00	0.00	766.40	766.40
P-22	PUMPHOUSE - 3	PUMPHOUSE - 4	1.40	450.0	100.0	57.30	0.36	0.00	2.13	766.40	766.40
P-24	R-1	Jockey Pump	5.00	150.0	100.0	38.82	2.20	0.26	52.98	712.37	712.11
P-26	R-1	Lead Pump	5.00	200.0	100.0	20.04	0.64	0.02	3.84	712.37	712.35
P-28	R-1	Lag Pump	5.00	200.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-30	R-1	Fire Pump	5.00	300.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	766.17	766.17
P-34	PUMPHOUSE - 4	J-310	92.00	450.0	100.0	116.76	0.73	0.20	2.16	766.40	766.20
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	766.17	766.17
P-40	J-10	J-12	1.20	148.0	130.0	6.85	0.40	0.01	7.19	765.47	765.46
P-42	J-12	J-16	3.50	202.0	130.0	6.85	0.21	0.00	0.53	765.46	765.46
P-45	J-10	J-8	584.50	304.0	130.0	-18.86	0.26	0.16	0.28	765.47	765.63
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	766.17	766.17
P-50	J-362	J-259	224.00	297.0	130.0	3.34	0.05	0.00	0.01	765.09	765.09
P-52	J-16	J-22	506.20	199.0	130.0	6.51	0.21	0.16	0.31	765.46	765.31
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	766.17	766.17
P-58	J-24	J-28	372.00	199.0	130.0	-5.66	0.18	0.09	0.24	765.31	765.40
P-60	J-337	J-261	168.50	250.0	130.0	-8.34	0.17	0.03	0.17	765.03	765.06
P-62	J-28	J-30	139.00	199.0	130.0	-6.20	0.20	0.04	0.32	765.40	765.44
P-64	J-30	J-10	104.50	304.0	130.0	-17.20	0.24	0.03	0.27	765.44	765.47
P-66	J-30	J-32	103.00	304.0	130.0	11.00	0.15	0.01	0.11	765.44	765.43
P-68	J-32	J-34	131.00	304.0	130.0	14.68	0.20	0.02	0.18	765.43	765.41
P-70	J-34	J-36	26.00	304.0	130.0	14.51	0.20	0.01	0.19	765.41	765.40
P-74	J-38	J-40	160.50	304.0	130.0	14.19	0.20	0.03	0.17	765.37	765.34
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	766.17	766.17

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	766.17	766.17
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	766.17	766.17
P-88	J-50	J-56	613.50	199.0	130.0	5.96	0.19	0.16	0.26	765.23	765.07
P-90	J-352	J-254	10.50	202.0	130.0	6.58	0.21	0.01	0.55	766.17	766.16
P-92	J-254	J-255	12.50	202.0	130.0	6.58	0.21	0.00	0.32	766.16	766.16
P-94	J-255	J-257	5.50	202.0	130.0	6.58	0.21	0.00	0.37	766.16	766.16
P-96	J-257	J-258	10.50	202.0	130.0	6.58	0.21	0.00	0.33	766.16	766.15
P-98	J-258	J-353	52.50	202.0	130.0	6.58	0.21	0.02	0.29	766.15	766.14
P-100	J-350	J-262	69.00	202.0	130.0	-5.87	0.18	0.02	0.23	764.64	764.66
P-102	J-68	J-64	271.00	254.0	130.0	-3.00	0.06	0.01	0.02	765.10	765.10
P-104	J-74	J-68	282.00	254.0	130.0	-2.87	0.06	0.01	0.02	765.09	765.10
P-106	J-321	J-263	463.50	304.0	130.0	6.69	0.09	0.02	0.04	765.04	765.02
P-108	J-263	J-144	2.50	304.0	130.0	0.83	0.01	0.00	0.00	765.02	765.02
P-112	J-74	J-76	112.00	254.0	130.0	8.21	0.16	0.02	0.15	765.09	765.08
P-114	J-76	J-82	279.00	406.0	130.0	1.01	0.01	0.00	0.00	765.08	765.08
P-116	J-82	J-90	545.00	406.0	130.0	0.37	0.00	0.00	0.00	765.08	765.08
P-118	J-263	J-265	337.00	300.0	130.0	5.86	0.08	0.01	0.04	765.02	765.01
P-120	J-265	J-267	665.50	200.0	130.0	5.58	0.18	0.15	0.22	765.01	764.86
P-122	J-267	J-269	507.00	150.0	130.0	5.40	0.31	0.43	0.85	764.86	764.43
P-124	J-269	J-273	60.50	200.0	130.0	5.40	0.17	0.01	0.23	764.43	764.41
P-126	J-273	J-270	565.00	200.0	130.0	1.22	0.04	0.01	0.01	764.41	764.41
P-128	J-273	J-359	256.00	155.0	130.0	4.18	0.22	0.12	0.47	764.41	764.29
P-130	J-90	J-94	191.50	450.0	120.0	0.16	0.00	0.00	0.00	765.08	765.08
P-132	J-98	J-74	336.50	199.0	130.0	5.48	0.18	0.08	0.23	765.17	765.09
P-134	J-270	J-370	182.00	148.0	130.0	-0.09	0.01	0.00	0.00	764.41	764.41
P-136	J-102	J-98	106.00	199.0	130.0	5.73	0.18	0.03	0.26	765.20	765.17
P-140	J-102	J-104	198.50	199.0	130.0	1.83	0.06	0.01	0.03	765.20	765.19
P-142	J-108	J-104	252.50	199.0	130.0	-1.39	0.04	0.00	0.02	765.19	765.19
P-146	J-108	J-112	214.00	300.0	120.0	15.70	0.22	0.05	0.24	765.19	765.13
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	765.68	765.68
P-150	J-112	J-64	127.00	300.0	120.0	15.39	0.22	0.03	0.23	765.13	765.10
P-152	J-275	J-277	189.00	297.0	130.0	0.25	0.00	0.00	0.00	765.68	765.68
P-154	J-117	J-102	399.00	199.0	130.0	7.78	0.25	0.18	0.44	765.37	765.20
P-156	J-332	J-324	124.50	254.0	130.0	13.16	0.26	0.04	0.36	764.67	764.62
P-158	J-118	J-120	239.00	300.0	120.0	15.00	0.21	0.05	0.22	765.37	765.32

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-160	J-124	J-120	349.00	300.0	120.0	-14.92	0.21	0.08	0.22	765.24	765.32
P-164	J-124	J-108	270.50	300.0	120.0	14.82	0.21	0.06	0.22	765.24	765.19
P-168	J-118	J-117	26.00	300.0	120.0	8.08	0.11	0.00	0.07	765.37	765.37
P-180	J-8	J-136	205.50	204.0	130.0	5.89	0.18	0.05	0.25	765.63	765.58
P-184	J-134	J-140	128.50	148.0	130.0	3.59	0.21	0.06	0.45	765.57	765.51
P-186	J-76	J-142	225.50	254.0	130.0	6.87	0.14	0.02	0.11	765.08	765.05
P-194	J-148	J-146	535.50	150.0	130.0	6.40	0.36	0.63	1.17	766.10	765.47
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	766.17	766.17
P-196	J-148	J-150	13.00	150.0	130.0	-6.53	0.37	0.02	1.22	766.10	766.12
P-208	J-42	J-162	132.50	304.0	130.0	33.22	0.46	0.12	0.88	765.31	765.19
P-212	J-162	J-164	424.50	254.0	130.0	6.42	0.13	0.04	0.09	765.19	765.15
P-214	J-164	J-166	257.50	254.0	130.0	8.63	0.17	0.04	0.17	765.15	765.11
P-216	J-166	J-168	132.00	254.0	130.0	5.83	0.12	0.01	0.08	765.11	765.10
P-222	J-172	J-174	134.50	254.0	130.0	-2.02	0.04	0.00	0.01	765.07	765.07
P-224	J-174	J-56	192.50	254.0	130.0	-2.29	0.05	0.00	0.01	765.07	765.07
P-226	J-164	J-176	128.00	148.0	130.0	-5.93	0.34	0.14	1.13	765.15	765.30
P-228	J-164	J-178	145.50	148.0	130.0	3.60	0.21	0.06	0.44	765.15	765.09
P-230	J-166	J-180	146.00	148.0	130.0	2.50	0.15	0.03	0.23	765.11	765.07
P-238	J-198	J-202	298.50	304.0	130.0	23.40	0.32	0.13	0.44	764.74	764.61
P-260	J-202	J-206	385.50	304.0	130.0	11.74	0.16	0.05	0.12	764.61	764.57
P-262	J-206	J-210	304.50	304.0	130.0	7.82	0.11	0.02	0.06	764.57	764.55
P-266	J-210	J-212	238.50	304.0	130.0	8.04	0.11	0.01	0.06	764.55	764.53
P-270	J-214	J-216	274.00	304.0	130.0	-0.99	0.01	0.00	0.00	764.53	764.53
P-273	J-310	J-217	285.00	450.0	100.0	98.60	0.62	0.43	1.52	766.20	765.76
P-274	J-216	J-222	334.50	254.0	130.0	-9.18	0.18	0.06	0.18	764.53	764.59
P-275	J-217	J-6	10.50	450.0	100.0	37.47	0.24	0.01	0.69	765.76	765.76
P-276	J-134	J-218	7.00	148.0	130.0	-3.79	0.22	0.01	0.89	765.57	765.58
P-277	J-218	J-136	14.50	148.0	130.0	-2.93	0.17	0.01	0.41	765.58	765.58
P-278	J-222	J-224	207.50	254.0	130.0	-9.25	0.18	0.04	0.18	764.59	764.63
P-280	J-228	J-224	462.00	254.0	130.0	20.82	0.41	0.38	0.81	765.00	764.63
P-283	J-363	J-219	118.00	455.7	130.0	5.80	0.04	0.00	0.00	765.51	765.51
P-285	J-218	J-221	188.00	455.7	130.0	56.44	0.35	0.07	0.36	765.58	765.51
P-286	J-221	J-219	114.50	455.7	130.0	-9.36	0.06	0.00	0.01	765.51	765.51
P-288	J-40	J-225	162.00	304.0	130.0	14.02	0.19	0.03	0.17	765.34	765.31
P-289	J-225	J-42	3.50	304.0	130.0	33.25	0.46	0.01	1.87	765.31	765.31

Scenario: Peak Hour - [ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-290	J-224	J-210	274.00	254.0	130.0	11.55	0.23	0.08	0.29	764.63	764.55
P-293	J-225	J-24	262.50	455.7	130.0	10.21	0.06	0.00	0.01	765.31	765.31
P-294	J-210	J-240	327.50	254.0	130.0	11.29	0.22	0.09	0.27	764.55	764.46
P-297	J-36	J-230	22.50	304.0	130.0	14.51	0.20	0.01	0.24	765.40	765.40
P-298	J-240	J-244	431.00	254.0	130.0	10.55	0.21	0.10	0.24	764.46	764.36
P-299	J-230	J-38	167.50	304.0	130.0	14.19	0.20	0.03	0.17	765.40	765.37
P-300	J-223	J-230	25.00	297.0	130.0	-0.32	0.00	0.00	0.00	765.40	765.40
P-301	J-24	J-22	128.50	455.7	130.0	15.03	0.09	0.00	0.03	765.31	765.31
P-303	J-22	J-226	28.00	455.7	130.0	21.45	0.13	0.00	0.06	765.31	765.30
P-305	J-227	J-50	409.50	204.0	130.0	6.86	0.21	0.13	0.31	765.36	765.23
P-306	J-223	J-227	173.50	455.7	130.0	42.52	0.26	0.04	0.21	765.40	765.36
P-307	J-227	J-225	336.50	455.7	130.0	35.53	0.22	0.05	0.14	765.36	765.31
P-308	J-250	J-252	237.00	254.0	130.0	-3.17	0.06	0.01	0.03	764.40	764.41
P-309	J-217	J-229	243.00	455.7	130.0	61.00	0.37	0.11	0.46	765.76	765.65
P-310	J-6	J-229	233.00	297.0	130.0	21.50	0.31	0.10	0.44	765.76	765.65
P-311	J-229	J-8	16.00	297.0	130.0	25.05	0.36	0.02	1.16	765.65	765.63
P-312	J-252	J-256	219.00	199.0	130.0	-3.29	0.11	0.02	0.09	764.41	764.43
P-313	J-229	J-218	205.50	455.7	130.0	57.30	0.35	0.08	0.37	765.65	765.58
P-314	J-260	J-256	150.00	199.0	130.0	3.31	0.11	0.01	0.09	764.44	764.43
P-315	J-226	J-231	35.00	455.7	130.0	21.45	0.13	0.00	0.05	765.30	765.30
P-316	J-231	J-232	143.50	455.7	130.0	21.41	0.13	0.01	0.05	765.30	765.29
P-317	J-232	J-233	178.50	455.7	130.0	21.41	0.13	0.01	0.05	765.29	765.29
P-318	J-260	J-250	152.00	254.0	130.0	10.87	0.21	0.04	0.26	764.44	764.40
P-319	J-233	J-235	385.00	455.7	130.0	21.41	0.13	0.02	0.05	765.29	765.27
P-320	J-264	J-260	248.50	254.0	130.0	14.36	0.28	0.10	0.42	764.54	764.44
P-321	J-235	J-236	385.00	455.7	130.0	21.41	0.13	0.02	0.05	765.27	765.25
P-322	J-311	J-1025	3,915.00	297.0	130.0	10.88	0.16	0.44	0.11	766.19	765.75
P-322a	J-1025	J-237	625.50	297.0	130.0	10.88	0.16	0.07	0.11	765.75	765.69
P-323	J-237	J-275	1,150.50	297.0	130.0	1.98	0.03	0.01	0.00	765.69	765.68
P-324	J-264	J-202	243.50	254.0	130.0	-11.38	0.22	0.07	0.28	764.54	764.61
P-325	J-237	J-238	126.50	297.0	130.0	8.62	0.12	0.01	0.08	765.69	765.68
P-326	J-264	J-266	180.00	254.0	130.0	-3.41	0.07	0.01	0.03	764.54	764.55
P-327	J-238	J-239	43.00	297.0	130.0	8.62	0.12	0.00	0.08	765.68	765.67
P-328	J-266	J-206	485.00	254.0	130.0	-3.80	0.07	0.02	0.04	764.55	764.57
P-329	J-239	J-241	92.50	297.0	130.0	8.62	0.12	0.01	0.08	765.67	765.66

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-330	J-244	J-268	30.00	254.0	130.0	-12.41	0.24	0.01	0.42	764.36	764.37
P-331	J-241	J-242	409.50	297.0	130.0	8.62	0.12	0.03	0.07	765.66	765.63
P-332	J-268	J-272	367.50	254.0	130.0	-12.47	0.25	0.12	0.32	764.37	764.49
P-333	J-242	J-243	396.00	297.0	130.0	8.62	0.12	0.03	0.07	765.63	765.61
P-335	J-248	J-348	14.50	199.0	130.0	-6.60	0.21	0.01	0.42	764.58	764.58
P-336	J-272	J-274	142.00	254.0	130.0	-1.42	0.03	0.00	0.01	764.49	764.49
P-337	J-248	J-271	76.00	297.0	130.0	2.74	0.04	0.00	0.01	764.58	764.58
P-338	J-274	J-276	41.50	300.0	120.0	1.75	0.02	0.00	0.00	764.49	764.49
P-339	J-271	J-279	109.50	297.0	130.0	2.74	0.04	0.00	0.01	764.58	764.57
P-340	J-272	J-278	251.50	254.0	130.0	-6.40	0.13	0.02	0.10	764.49	764.51
P-341	J-279	J-280	209.00	297.0	130.0	6.75	0.10	0.01	0.05	764.57	764.56
P-342	J-278	J-282	329.50	254.0	130.0	-3.43	0.07	0.01	0.03	764.51	764.52
P-343	J-280	J-281	72.00	297.0	130.0	6.75	0.10	0.00	0.05	764.56	764.56
P-344	J-279	J-283	42.00	297.0	130.0	-4.01	0.06	0.00	0.02	764.57	764.58
P-345	J-283	J-284	421.00	297.0	130.0	-4.01	0.06	0.01	0.02	764.58	764.58
P-346	J-214	J-282	306.50	254.0	130.0	3.60	0.07	0.01	0.03	764.53	764.52
P-347	J-348	J-285	445.00	199.0	130.0	-1.14	0.04	0.01	0.01	764.58	764.59
P-348	J-285	J-356	45.00	199.0	130.0	-5.29	0.17	0.01	0.23	764.59	764.60
P-349	J-285	J-287	64.00	297.0	130.0	4.01	0.06	0.00	0.03	764.59	764.59
P-350	J-278	J-286	133.00	254.0	130.0	-3.46	0.07	0.00	0.03	764.51	764.51
P-351	J-287	J-288	110.00	297.0	130.0	4.01	0.06	0.00	0.02	764.59	764.58
P-352	J-212	J-286	517.50	254.0	130.0	3.97	0.08	0.02	0.04	764.53	764.51
P-353	J-288	J-284	63.50	297.0	130.0	4.01	0.06	0.00	0.02	764.58	764.58
P-354	J-221	J-130	12.50	297.0	130.0	23.30	0.34	0.01	0.83	765.51	765.50
P-355	J-221	J-289	563.50	455.7	130.0	42.48	0.26	0.10	0.18	765.51	765.41
P-356	J-289	J-223	40.00	455.7	130.0	42.48	0.26	0.01	0.20	765.41	765.40
P-357	J-322	J-290	274.00	199.0	130.0	-3.87	0.12	0.03	0.12	764.53	764.57
P-358	J-274	J-294	170.50	300.0	120.0	-3.18	0.04	0.00	0.01	764.49	764.49
P-359	J-290	J-248	91.00	199.0	130.0	-3.87	0.12	0.01	0.12	764.57	764.58
P-360	J-212	J-291	226.00	304.0	130.0	3.84	0.05	0.00	0.01	764.53	764.53
P-361	J-291	J-214	78.00	304.0	130.0	3.84	0.05	0.00	0.02	764.53	764.53
P-362	J-294	J-298	389.00	199.0	130.0	-3.25	0.10	0.03	0.08	764.49	764.52
P-363	J-168	J-292	202.00	254.0	130.0	5.76	0.11	0.02	0.08	765.10	765.08
P-364	J-292	J-172	147.50	254.0	130.0	5.76	0.11	0.01	0.08	765.08	765.07
P-365	J-389	J-293	126.50	297.0	130.0	15.59	0.23	0.03	0.24	765.61	765.58

Scenario: Peak Hour - F ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-366	J-298	J-300	106.00	199.0	130.0	-3.53	0.11	0.01	0.10	764.52	764.53
P-367	J-293	J-391	276.50	297.0	130.0	15.59	0.23	0.06	0.23	765.58	765.51
P-368	J-300	J-302	187.00	199.0	130.0	3.07	0.10	0.01	0.08	764.53	764.52
P-369	J-410	J-408	67.00	297.0	130.0	1.27	0.02	0.00	0.00	765.51	765.51
P-371	J-234	J-296	251.00	254.0	130.0	-0.27	0.01	0.00	0.00	765.22	765.22
P-372	J-306	J-302	131.50	254.0	130.0	-5.59	0.11	0.01	0.07	764.51	764.52
P-373	J-296	J-228	267.50	254.0	130.0	21.13	0.42	0.22	0.81	765.22	765.00
P-374	J-306	J-308	179.00	254.0	130.0	5.26	0.10	0.01	0.06	764.51	764.50
P-376	J-308	J-272	191.00	254.0	130.0	4.79	0.09	0.01	0.05	764.50	764.49
P-378	J-302	J-314	370.00	254.0	130.0	-2.76	0.05	0.01	0.02	764.52	764.52
P-381	J-250	J-304	276.00	254.0	130.0	27.10	0.53	0.40	1.46	764.40	764.00
P-382	J-304	Truck Fill	5.50	254.0	130.0	27.10	0.53	0.05	9.77	764.00	763.95
P-383	Truck Fill	J-244	401.50	254.0	130.0	-22.90	0.45	0.41	1.03	763.95	764.36
P-384	J-270	J-307	1,127.50	200.0	130.0	0.00	0.00	0.00	0.00	764.41	764.41
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	764.41	764.41
P-386	J-314	J-322	313.50	254.0	130.0	-3.31	0.07	0.01	0.03	764.52	764.53
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	764.41	764.41
P-388	J-60	J-313	214.00	289.0	130.0	14.55	0.22	0.05	0.25	765.07	765.02
P-389	J-313	J-144	9.00	289.0	130.0	-0.55	0.01	0.00	0.00	765.02	765.02
P-390	J-313	J-315	97.50	233.3	130.0	15.10	0.35	0.06	0.66	765.02	764.95
P-391	J-315	J-316	363.50	297.0	130.0	15.10	0.22	0.07	0.20	764.95	764.88
P-392	J-322	J-324	250.50	254.0	130.0	-13.16	0.26	0.09	0.35	764.53	764.62
P-393	J-316	J-317	384.50	297.0	130.0	15.10	0.22	0.08	0.20	764.88	764.80
P-394	J-32	J-318	45.50	148.0	130.0	-3.68	0.21	0.03	0.57	765.43	765.46
P-395	J-318	J-136	539.50	148.0	130.0	-2.56	0.15	0.13	0.23	765.46	765.58
P-396	J-146	J-318	190.50	150.0	100.0	1.12	0.06	0.01	0.07	765.47	765.46
P-402	J-332	J-337	799.00	254.0	130.0	-15.45	0.30	0.37	0.46	764.67	765.03
P-410	J-172	J-337	293.50	254.0	130.0	7.63	0.15	0.04	0.13	765.07	765.03
P-412	J-322	J-342	193.50	254.0	130.0	13.64	0.27	0.07	0.38	764.53	764.46
P-414	J-342	J-250	156.50	254.0	130.0	13.34	0.26	0.06	0.37	764.46	764.40
P-444	J-370	J-372	67.50	148.0	130.0	-0.17	0.01	0.00	0.00	764.41	764.41
P-446	J-372	J-374	366.50	148.0	130.0	-0.50	0.03	0.00	0.01	764.41	764.41
P-448	J-374	J-376	369.00	199.0	130.0	-1.15	0.04	0.00	0.01	764.41	764.42
P-450	J-376	J-378	63.00	199.0	130.0	-1.01	0.03	0.00	0.01	764.42	764.42
P-452	J-378	J-379	478.00	199.0	130.0	-1.62	0.05	0.01	0.02	764.42	764.43

Scenario: Peak Hour - Existing with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-453	J-379	J-380	27.00	199.0	130.0	-2.19	0.07	0.00	0.05	764.43	764.43
P-454	J-380	J-364	122.50	199.0	130.0	-2.82	0.09	0.01	0.07	764.43	764.44
P-456	J-364	J-382	102.50	148.0	130.0	2.20	0.13	0.02	0.18	764.44	764.42
P-457	J-382	J-383	516.50	148.0	130.0	1.13	0.07	0.03	0.05	764.42	764.39
P-458	J-383	J-384	130.50	148.0	130.0	0.78	0.05	0.00	0.03	764.39	764.39
P-460	J-384	J-386	893.50	148.0	130.0	0.57	0.03	0.01	0.01	764.39	764.38
P-462	J-370	J-374	693.00	75.0	130.0	-0.06	0.01	0.00	0.01	764.41	764.41
P-464	J-374	J-372	636.50	75.0	130.0	0.06	0.01	0.00	0.01	764.41	764.41
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	764.42	764.42
P-468	J-380	J-376	1,258.50	148.0	130.0	0.48	0.03	0.01	0.01	764.43	764.42
P-470	J-382	J-384	1,373.00	148.0	130.0	0.71	0.04	0.03	0.02	764.42	764.39
P-474	J-390	J-392	369.50	148.0	130.0	2.46	0.14	0.08	0.21	764.04	763.97
P-476	J-392	J-394	450.00	148.0	130.0	1.86	0.11	0.06	0.13	763.97	763.91
P-478	J-394	J-395	370.50	148.0	130.0	1.26	0.07	0.02	0.06	763.91	763.89
P-479	J-395	J-396	569.50	200.0	120.0	0.53	0.02	0.00	0.00	763.89	763.88
P-480	J-394	J-398	566.00	108.0	130.0	0.45	0.05	0.02	0.04	763.91	763.88
P-482	J-392	J-400	584.50	108.0	130.0	-0.18	0.02	0.00	0.01	763.97	763.97
P-484	J-390	J-402	584.50	108.0	130.0	0.78	0.08	0.07	0.12	764.04	763.98
P-490	J-216	J-349	71.00	304.0	130.0	0.57	0.01	0.00	0.00	764.53	764.53
P-494	J-350	J-348	272.50	202.0	130.0	5.67	0.18	0.06	0.23	764.64	764.58
P-496	J-310	J-311	4.00	304.0	130.0	18.16	0.25	0.00	1.04	766.20	766.19
P-502	J-402	J-400	371.50	155.0	130.0	0.64	0.03	0.01	0.01	763.98	763.97
P-504	J-398	J-396	390.50	200.0	120.0	0.29	0.01	0.00	0.00	763.88	763.88
P-506	J-311	J-352	517.00	305.0	130.0	7.27	0.10	0.02	0.05	766.19	766.17
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	766.17	766.17
P-509	J-142	J-321	302.00	304.0	130.0	6.86	0.09	0.01	0.04	765.05	765.04
P-514	J-353	J-150	72.00	200.0	140.0	6.53	0.21	0.02	0.31	766.14	766.12
P-526	J-359	J-357	399.50	148.0	130.0	3.02	0.18	0.12	0.31	764.29	764.17
P-528	J-538	J-262	113.00	202.0	130.0	1.36	0.04	0.00	0.02	764.66	764.66
P-529	J-262	J-536	686.00	202.0	130.0	2.94	0.09	0.04	0.06	764.66	764.62
P-530	J-357	J-390	321.00	148.0	130.0	3.41	0.20	0.13	0.40	764.17	764.04
P-532	J-357	J-358	299.50	108.0	130.0	-0.64	0.07	0.02	0.08	764.17	764.19
P-534	J-358	J-360	457.00	108.0	130.0	-0.98	0.11	0.08	0.18	764.19	764.28
P-536	J-360	J-359	78.00	108.0	130.0	-1.10	0.12	0.02	0.24	764.28	764.29
P-542	J-162	J-362	170.50	304.0	130.0	26.74	0.37	0.10	0.58	765.19	765.09

Scenario: Peak Hour - sting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-544	J-362	J-198	808.50	304.0	130.0	23.40	0.32	0.35	0.43	765.09	764.74
P-548	J-363	J-367	50.00	440.3	130.0	-5.80	0.04	0.00	0.01	765.51	765.51
P-550	J-367	J-369	25.00	440.3	130.0	-5.80	0.04	0.00	0.01	765.51	765.51
P-552	J-369	J-371	110.00	440.3	130.0	-5.80	0.04	0.00	0.00	765.51	765.51
P-554	J-371	J-373	25.00	440.3	130.0	-5.80	0.04	0.00	0.01	765.51	765.51
P-558	J-375	J-377	116.00	440.3	130.0	-4.85	0.03	0.00	0.00	765.51	765.51
P-560	J-377	J-381	92.00	440.3	130.0	-4.86	0.03	0.00	0.00	765.51	765.51
P-566	J-6	J-389	643.50	297.0	130.0	15.91	0.23	0.15	0.23	765.76	765.61
P-570	J-381	J-391	32.50	440.3	130.0	-4.86	0.03	0.00	0.00	765.51	765.51
P-572	J-391	J-365	117.00	440.3	130.0	9.44	0.06	0.00	0.01	765.51	765.51
P-576	J-332	J-538	211.00	202.0	130.0	1.36	0.04	0.00	0.02	764.67	764.66
P-578	J-373	J-406	4.50	440.3	130.0	-5.80	0.04	0.00	0.02	765.51	765.51
P-580	J-406	J-375	210.50	440.3	130.0	-4.83	0.03	0.00	0.00	765.51	765.51
P-584	J-404	J-403	149.00	297.0	130.0	1.07	0.02	0.00	0.00	765.51	765.51
P-588	J-403	J-401	14.00	297.0	130.0	1.07	0.02	0.00	0.00	765.51	765.51
P-592	J-401	J-407	216.50	297.0	130.0	1.07	0.02	0.00	0.00	765.51	765.51
P-594	J-64	J-60	109.50	254.0	130.0	12.15	0.24	0.03	0.31	765.10	765.07
P-595	J-60	J-56	223.50	254.0	130.0	-2.40	0.05	0.00	0.01	765.07	765.07
P-596	J-407	J-406	9.00	297.0	130.0	0.97	0.01	0.00	0.00	765.51	765.51
P-598	J-364	J-536	1,015.00	204.0	130.0	-5.17	0.16	0.18	0.18	764.44	764.62
P-600	J-411	J-408	218.50	297.0	130.0	-1.27	0.02	0.00	0.00	765.51	765.51
P-606	J-410	J-391	189.50	297.0	130.0	-1.29	0.02	0.00	0.00	765.51	765.51
P-608	J-411	J-404	23.00	297.0	130.0	1.27	0.02	0.00	0.00	765.51	765.51
P-1040	J-1050	J-243	807.00	300.0	120.0	-8.29	0.12	0.06	0.07	765.55	765.61
P-1160	J-365	J-1140	280.00	450.0	120.0	9.41	0.06	0.00	0.01	765.51	765.51
P-1200	J-1140	J-1160	795.00	300.0	120.0	9.41	0.13	0.07	0.09	765.51	765.43
P-1210	J-1160	J-1050	1,510.50	300.0	120.0	-8.29	0.12	0.11	0.07	765.43	765.55
P-1240	J-317	J-1195	517.00	300.0	120.0	15.10	0.21	0.12	0.22	764.80	764.69
P-1250	J-1195	J-262	405.50	300.0	120.0	7.46	0.11	0.02	0.06	764.69	764.66
P-1260	J-236	J-1005	269.50	450.0	120.0	21.41	0.13	0.02	0.06	765.25	765.23
P-1265	J-1005	J-296	162.00	450.0	120.0	21.41	0.13	0.01	0.06	765.23	765.22
P-1270	J-219	J-140	198.00	300.0	120.0	-3.56	0.05	0.00	0.02	765.51	765.51
P-1280	J-225	J-176	432.50	300.0	120.0	6.08	0.09	0.02	0.04	765.31	765.30
P-1300	J-259	J-178	195.50	300.0	120.0	3.12	0.04	0.00	0.01	765.09	765.09
P-1310	J-261	J-180	183.00	300.0	120.0	-8.47	0.12	0.01	0.08	765.06	765.07

Scenario: Peak Hour - ' ting with Upgrades-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1330	J-178	J-180	258.00	300.0	120.0	6.22	0.09	0.01	0.04	765.09	765.07
P-1340	J-10	J-146	36.50	300.0	120.0	-5.20	0.07	0.00	0.03	765.47	765.47
P-1370	J-1220	J-356	228.00	300.0	120.0	5.41	0.08	0.01	0.03	764.61	764.60
P-1375	J-1220	J-536	303.50	300.0	120.0	-5.41	0.08	0.01	0.03	764.61	764.62
P-1390	J-300	J-1205	285.50	300.0	120.0	-6.75	0.10	0.01	0.05	764.53	764.55
P-1430	J-1195	J-536	1,082.00	300.0	120.0	7.64	0.11	0.07	0.06	764.69	764.62
P-1450	J-281	J-1205	286.50	300.0	120.0	6.75	0.10	0.01	0.05	764.56	764.55
P-2500	R-2	PUMPHOUSE - 4	10.00	450.0	120.0	60.84	0.38	0.00	0.41	766.40	766.40

Scenario: MDD + FF - Existing with Upgrades-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	498.5	280.00	430.6	J-40
J-8	230.00	230.20	true	280.00	452.5	280.00	421.5	J-40
J-10	230.00	230.00	true	280.00	457.3	280.00	408.6	J-40
J-12	230.00	230.00	true	280.00	382.9	280.00	384.1	J-16
J-16	230.00	230.23	true	280.00	372.0	280.00	386.3	J-12
J-22	230.00	230.06	true	280.00	451.1	280.00	395.9	J-40
J-24	230.00	230.56	true	280.00	430.3	280.00	395.6	J-40
J-28	230.00	230.37	true	280.00	223.6	280.00	402.0	J-40
J-30	230.00	230.00	true	280.00	421.0	280.00	405.4	J-40
J-32	230.00	230.00	true	280.00	406.0	280.00	400.2	J-34
J-34	230.00	230.12	true	280.00	389.9	280.00	395.1	J-36
J-36	230.00	230.00	true	280.00	392.7	280.00	394.5	J-34
J-38	230.00	230.00	true	280.00	374.0	280.00	383.6	J-40
J-40	230.00	230.11	true	280.00	370.0	280.00	387.8	J-38
J-42	230.00	230.02	true	280.00	394.4	280.00	394.4	J-40
J-50	230.00	230.60	false	226.16	140.0	280.00	422.2	J-40
J-56	230.00	230.85	true	280.00	336.6	280.00	369.2	J-174
J-60	230.00	230.00	true	280.00	358.1	280.00	362.3	J-307
J-64	230.00	230.16	true	280.00	351.4	280.00	349.2	J-112
J-68	230.00	230.09	true	280.00	276.0	280.00	347.1	J-74
J-74	230.00	230.09	true	280.00	294.3	280.00	319.7	J-76
J-76	230.00	230.22	true	280.00	280.4	280.00	304.9	J-82
J-82	230.00	230.43	true	280.00	275.8	280.00	280.4	J-76
J-90	230.00	230.14	true	280.00	288.8	280.00	275.8	J-82
J-94	230.00	230.11	true	280.00	275.8	280.00	275.8	J-82
J-98	230.00	230.17	true	275.92	140.0	280.00	265.9	J-102
J-102	230.00	230.14	true	280.00	202.5	280.00	250.2	J-98
J-104	230.00	230.29	true	271.93	140.0	280.00	303.4	J-102
J-108	230.00	230.34	true	280.00	318.6	280.00	334.8	J-124
J-112	230.00	230.21	true	280.00	329.9	280.00	342.8	J-108
J-117	230.00	230.20	true	280.00	360.6	280.00	370.8	J-118
J-118	230.00	230.14	true	280.00	369.8	280.00	370.0	J-117
J-120	230.00	230.06	true	280.00	329.8	280.00	343.6	J-124
J-124	230.00	230.07	true	280.00	299.8	280.00	344.8	J-108
J-130	230.00	230.00	true	280.00	436.3	280.00	413.4	J-40
J-134	230.00	230.13	true	280.00	303.4	280.00	417.8	J-40
J-136	230.00	230.27	true	280.00	347.1	280.00	420.0	J-40
J-140	230.00	230.02	true	280.00	367.2	280.00	416.0	J-40
J-142	230.00	230.01	true	280.00	294.3	280.00	311.3	J-321
J-144	230.00	230.18	true	280.00	324.6	280.00	319.3	J-263
J-146	230.00	230.06	true	280.00	438.0	280.00	409.1	J-40
J-148	230.00	230.08	true	230.42	140.0	280.00	207.0	J-150
J-150	230.00	230.00	true	247.23	140.0	280.00	149.1	J-148
J-152	230.00	230.00	true	280.00	345.3	280.00	342.4	J-303
J-162	230.00	230.04	true	280.00	392.5	280.00	396.4	J-40
J-164	230.00	230.07	true	280.00	331.3	280.00	359.7	J-166
J-166	230.00	230.20	true	280.00	295.3	280.00	318.8	J-168
J-168	230.00	230.04	true	280.00	276.9	280.00	320.2	J-166
J-172	230.00	230.10	true	280.00	343.6	280.00	350.5	J-292
J-174	230.00	230.18	true	280.00	324.1	280.00	368.4	J-172

Scenario: MDD + FF - Existing with Upgrades-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	279.5	280.00	394.6	J-40
J-178	230.00	230.34	true	280.00	332.7	280.00	365.9	J-180
J-180	230.00	230.17	true	280.00	333.7	280.00	352.1	J-261
J-198	230.00	230.00	true	280.00	334.5	280.00	349.4	J-214
J-202	230.00	230.19	true	280.00	351.3	280.00	333.6	J-214
J-206	230.00	230.08	true	280.00	323.3	280.00	321.8	J-214
J-210	230.00	230.02	true	280.00	317.5	280.00	303.9	J-214
J-212	230.00	230.15	true	280.00	281.2	280.00	279.7	J-291
J-214	230.00	230.82	true	280.00	244.5	280.00	257.5	J-349
J-216	230.00	235.08	true	280.00	212.9	280.00	212.9	J-349
J-217	230.00	230.09	true	280.00	498.3	280.00	431.3	J-40
J-218	230.00	230.00	true	280.00	448.4	280.00	418.1	J-40
J-219	230.00	230.00	true	280.00	445.8	280.00	415.3	J-40
J-221	230.00	230.02	true	280.00	444.2	280.00	414.0	J-40
J-222	230.00	230.05	true	280.00	221.9	280.00	270.8	J-349
J-223	230.00	230.19	true	280.00	404.3	280.00	400.6	J-40
J-224	230.00	230.02	true	280.00	285.2	280.00	295.7	J-222
J-225	230.00	230.00	true	280.00	397.3	280.00	394.3	J-40
J-226	230.00	230.00	true	280.00	449.6	280.00	395.9	J-40
J-227	230.00	230.09	true	280.00	399.7	280.00	398.1	J-40
J-228	230.00	230.21	true	280.00	306.3	280.00	363.0	J-224
J-229	230.00	230.10	true	280.00	463.4	280.00	423.3	J-40
J-230	230.00	230.00	true	280.00	397.1	280.00	397.9	J-40
J-231	230.00	230.03	true	280.00	455.9	280.00	395.9	J-40
J-232	230.00	230.00	true	280.00	452.6	280.00	395.9	J-40
J-233	230.00	230.00	true	280.00	455.9	280.00	396.0	J-40
J-234	230.00	230.18	true	273.68	140.0	280.00	386.5	J-296
J-235	230.00	230.00	true	280.00	432.9	280.00	396.0	J-40
J-236	230.00	230.00	true	280.00	413.5	280.00	391.6	J-1005
J-237	230.00	230.19	true	266.68	194.8	280.00	140.0	J-351
J-238	230.00	230.00	true	271.28	174.4	280.00	140.0	J-351
J-239	230.00	230.00	true	272.73	157.7	280.00	140.0	J-351
J-240	230.00	230.49	true	280.00	222.2	280.00	309.8	J-214
J-241	230.00	230.00	true	275.79	144.2	280.00	140.0	J-351
J-242	230.00	230.00	true	280.00	141.6	280.00	173.8	J-351
J-243	230.00	230.22	true	280.00	164.9	280.00	194.5	J-242
J-244	230.00	230.04	true	280.00	296.1	280.00	303.6	J-268
J-245	230.00	230.00	true	280.00	337.0	280.00	334.1	J-303
J-246	230.00	230.18	true	280.00	156.6	280.00	160.9	J-247
J-247	230.00	230.00	true	280.00	160.9	280.00	161.9	J-246
J-248	230.00	230.00	true	280.00	370.3	280.00	339.1	J-1205
J-249	230.00	230.00	true	280.00	380.7	280.00	326.9	J-303
J-250	230.00	230.19	true	280.00	337.4	280.00	320.3	J-252
J-251	230.00	230.00	true	280.00	376.6	280.00	322.8	J-303
J-252	230.00	230.08	true	280.00	194.6	280.00	266.3	J-256
J-253	230.00	230.00	true	280.00	319.4	280.00	316.5	J-303
J-254	230.00	230.00	true	280.00	308.5	280.00	311.4	J-258
J-255	230.00	230.00	true	280.00	332.5	280.00	283.5	J-258
J-256	230.00	230.01	true	275.48	140.0	280.00	286.9	J-252
J-257	230.00	230.00	true	280.00	318.4	280.00	268.8	J-258

Scenario: MDD + FF - Existing with Upgrades-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	280.00	245.3	280.00	248.3	J-353
J-259	230.00	230.15	true	280.00	355.8	280.00	356.4	J-178
J-260	230.00	230.12	true	280.00	319.2	280.00	307.6	J-256
J-261	230.00	230.09	true	280.00	324.9	280.00	350.1	J-180
J-262	230.00	230.00	true	280.00	369.7	280.00	313.3	J-1195
J-263	230.00	230.00	true	280.00	316.1	280.00	325.8	J-144
J-264	230.00	230.29	true	280.00	332.1	280.00	327.4	J-214
J-265	230.00	230.19	true	280.00	232.4	280.00	247.4	J-307
J-266	230.00	230.26	true	280.00	288.2	280.00	327.2	J-214
J-267	60.00	60.12	true	100.00	506.4	100.00	332.6	J-307
J-268	230.00	230.04	true	280.00	289.4	280.00	305.6	J-244
J-269	60.00	60.00	true	88.82	341.0	100.00	140.0	J-307
J-270	60.00	60.87	true	80.69	308.3	100.00	140.0	J-307
J-271	230.00	230.00	true	280.00	354.4	280.00	332.0	J-1205
J-272	230.00	230.10	true	280.00	297.4	280.00	301.8	J-276
J-273	60.00	60.00	true	87.86	327.9	100.00	140.0	J-307
J-274	230.00	230.01	true	280.00	221.9	280.00	215.1	J-276
J-275	230.00	231.15	false	189.43	183.5	280.00	140.0	J-351
J-276	230.00	231.16	true	280.00	194.5	280.00	221.9	J-274
J-277	230.00	230.16	false	185.03	140.0	280.00	163.4	J-351
J-278	230.00	230.33	true	280.00	253.8	280.00	263.1	J-286
J-279	230.00	230.00	true	280.00	352.9	280.00	324.8	J-1205
J-280	230.00	230.00	true	280.00	321.7	280.00	299.1	J-1205
J-281	230.00	230.00	true	280.00	317.0	280.00	290.0	J-1205
J-282	230.00	230.11	true	280.00	193.1	280.00	270.3	J-214
J-283	230.00	230.00	true	280.00	328.1	280.00	327.9	J-1205
J-284	230.00	230.00	true	280.00	319.1	280.00	329.1	J-307
J-285	230.00	230.09	true	280.00	344.6	280.00	322.0	J-307
J-286	230.00	230.34	true	280.00	213.7	280.00	271.8	J-278
J-287	230.00	230.00	true	280.00	332.9	280.00	324.8	J-307
J-288	230.00	230.00	true	280.00	326.3	280.00	327.2	J-284
J-289	230.00	230.00	true	280.00	413.2	280.00	401.5	J-40
J-290	230.00	230.00	true	280.00	273.1	280.00	346.9	J-214
J-291	230.00	230.00	true	280.00	250.0	280.00	255.0	J-214
J-292	230.00	230.00	true	280.00	295.5	280.00	323.0	J-168
J-293	230.00	230.00	true	280.00	468.1	280.00	423.6	J-40
J-294	230.00	230.05	true	280.00	195.0	280.00	227.0	J-276
J-296	230.00	230.00	true	280.00	380.5	280.00	380.5	J-234
J-298	230.00	230.18	true	280.00	156.5	280.00	313.8	J-276
J-300	230.00	230.10	true	280.00	285.3	280.00	288.1	J-1205
J-301	230.00	230.00	true	280.00	294.8	280.00	294.8	J-303
J-302	230.00	230.16	true	280.00	291.6	280.00	299.4	J-306
J-303	230.00	230.28	true	280.00	180.8	280.00	190.1	J-247
J-304	230.00	230.00	true	280.00	256.8	280.00	267.5	Truck Fi
J-306	230.00	230.22	true	280.00	259.9	280.00	280.2	J-308
J-307	60.00	60.00	false	55.73	140.0	100.00	154.4	J-309
J-308	230.00	230.31	true	280.00	245.5	280.00	300.0	J-306
J-309	60.00	60.00	false	47.27	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	566.6	280.00	461.6	J-40
J-311	230.00	230.01	true	280.00	558.4	280.00	460.4	J-40

Scenario: MDD + FF - Existing with Upgrades-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	43.88	140.0	100.00	187.3	J-309
J-313	230.00	230.00	true	280.00	359.9	280.00	332.0	J-263
J-314	230.00	230.36	true	280.00	285.9	280.00	335.6	J-214
J-315	230.00	230.00	true	280.00	313.8	280.00	332.8	J-316
J-316	230.00	230.00	true	280.00	280.5	280.00	335.3	J-317
J-317	230.00	230.00	true	280.00	291.1	280.00	318.1	J-316
J-318	230.00	230.00	true	280.00	143.4	280.00	408.9	J-40
J-321	230.00	230.11	true	280.00	286.3	280.00	333.0	J-142
J-322	230.00	230.05	true	280.00	370.4	280.00	341.2	J-214
J-324	230.00	230.00	true	280.00	327.2	280.00	347.7	J-332
J-332	230.00	230.62	true	280.00	322.0	280.00	358.7	J-214
J-337	230.00	230.34	true	280.00	363.4	280.00	367.0	J-261
J-342	230.00	230.21	true	280.00	330.4	280.00	333.4	J-214
J-348	230.00	230.13	true	280.00	354.9	280.00	337.6	J-307
J-349	230.00	230.38	true	280.00	178.4	280.00	212.9	J-216
J-350	230.00	230.14	true	280.00	295.3	280.00	319.8	J-1195
J-351	230.00	230.00	false	173.41	140.0	280.00	248.1	J-277
J-352	230.00	230.00	true	280.00	360.6	280.00	357.6	J-303
J-353	230.00	230.04	true	280.00	155.9	280.00	168.1	J-150
J-356	230.00	230.08	true	280.00	324.3	280.00	307.7	J-307
J-357	60.00	60.16	false	59.57	141.3	100.00	140.0	J-396
J-358	60.00	60.23	false	48.88	140.0	100.00	371.5	J-307
J-359	60.00	60.04	true	75.84	141.9	100.00	140.0	J-396
J-360	60.00	60.08	true	60.43	140.0	100.00	240.6	J-358
J-362	230.00	230.00	true	280.00	396.2	280.00	382.3	J-178
J-363	230.00	230.00	true	280.00	451.5	280.00	416.1	J-40
J-364	60.00	60.10	true	100.00	426.9	100.00	317.0	J-307
J-365	230.00	230.02	true	280.00	489.4	280.00	420.1	J-40
J-367	230.00	230.00	true	280.00	459.7	280.00	416.6	J-40
J-369	230.00	230.00	true	280.00	461.5	280.00	416.7	J-40
J-370	60.00	60.10	true	90.53	294.8	100.00	140.0	J-307
J-371	230.00	230.00	true	280.00	460.8	280.00	417.5	J-40
J-372	60.00	60.26	true	94.33	262.1	100.00	140.0	J-307
J-373	230.00	230.00	true	280.00	466.1	280.00	417.7	J-40
J-374	60.00	60.35	true	100.00	301.8	100.00	214.2	J-307
J-375	230.00	230.01	true	280.00	466.3	280.00	418.6	J-40
J-376	60.00	60.23	true	100.00	349.7	100.00	257.4	J-307
J-377	230.00	230.01	true	280.00	477.8	280.00	419.0	J-40
J-378	60.00	60.25	true	100.00	354.7	100.00	263.3	J-307
J-379	60.00	60.38	true	100.00	401.8	100.00	297.4	J-307
J-380	60.00	60.11	true	100.00	401.8	100.00	300.7	J-307
J-381	230.00	230.00	true	280.00	494.7	280.00	419.4	J-40
J-382	60.00	60.24	true	100.00	211.2	100.00	190.4	J-386
J-383	60.00	60.24	true	75.31	140.0	100.00	145.6	J-386
J-384	60.00	60.61	true	72.01	156.7	100.00	140.0	J-386
J-386	60.00	60.38	false	41.72	140.0	100.00	458.3	J-307
J-388	60.00	60.16	true	93.55	140.0	100.00	289.0	J-307
J-389	230.00	230.21	true	280.00	459.6	280.00	424.9	J-40
J-390	60.00	60.12	false	48.19	140.8	100.00	140.0	J-396
J-391	230.00	230.00	true	280.00	496.0	280.00	419.6	J-40

Scenario: MDD + FF - Existing with Upgrades-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	false	42.69	140.4	100.00	140.0	J-396
J-394	60.00	60.10	false	36.24	140.1	100.00	140.0	J-396
J-395	60.00	60.49	false	33.99	140.0	100.00	142.9	J-396
J-396	60.00	60.55	false	33.47	140.0	100.00	143.0	J-398
J-398	60.00	60.11	false	33.18	140.0	100.00	153.6	J-396
J-400	60.00	60.31	false	35.12	140.0	100.00	164.8	J-402
J-401	230.00	230.00	true	280.00	406.2	280.00	403.5	J-403
J-402	60.00	60.09	false	35.21	140.0	100.00	161.0	J-400
J-403	230.00	230.00	true	280.00	400.8	280.00	405.5	J-404
J-404	230.00	230.13	true	280.00	385.9	280.00	389.4	J-411
J-406	230.00	230.00	true	280.00	467.8	280.00	417.8	J-40
J-407	230.00	230.07	true	280.00	450.4	280.00	418.0	J-40
J-408	230.00	230.00	true	280.00	441.3	280.00	411.7	J-411
J-410	230.00	230.01	true	280.00	450.4	280.00	418.8	J-40
J-411	230.00	230.00	true	280.00	386.6	280.00	388.5	J-404
J-536	230.00	230.00	true	280.00	317.0	280.00	283.9	J-307
J-538	230.00	230.00	true	280.00	289.6	280.00	340.9	J-1195
J-1005	230.00	230.00	true	280.00	381.6	280.00	386.2	J-234
J-1025	230.00	230.00	true	280.00	147.6	280.00	164.1	J-351
J-1050	230.00	230.00	true	280.00	208.9	280.00	287.7	J-243
J-1140	230.00	230.00	true	280.00	447.5	280.00	420.9	J-40
J-1160	230.00	241.81	true	280.00	320.6	280.00	430.4	J-40
J-1195	230.00	230.00	true	280.00	278.2	280.00	324.4	J-307
J-1205	230.00	230.00	true	280.00	251.9	280.00	316.8	J-300
J-1220	230.00	230.00	true	280.00	297.4	280.00	298.2	J-307
PUMPHOUSE - 1	230.00	230.08	true	280.00	513.5	280.00	474.5	J-40
PUMPHOUSE - 2	230.00	230.95	true	280.00	514.2	280.00	474.5	J-40
PUMPHOUSE - 3	230.00	230.00	true	280.00	514.7	280.00	474.4	J-40
PUMPHOUSE - 4	230.00	230.91	true	280.00	515.1	280.00	474.4	J-40
Truck Fill	230.00	230.00	true	280.00	253.1	280.00	268.6	J-304

Appendix D -
Existing Development Condition – with Proposed Improvements for Alternative 2
Simulation Results

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	556.5	767.46
J-8	5,909,058.66	97,351.20	713.60	0.30	527.0	767.45
J-10	5,908,474.10	97,361.23	710.20	0.00	559.6	767.38
J-12	5,908,467.18	97,361.38	710.20	0.00	559.5	767.37
J-16	5,908,452.20	97,361.89	710.20	0.34	559.5	767.37
J-22	5,907,974.55	97,357.96	710.00	0.09	560.7	767.30
J-24	5,907,976.56	97,486.24	712.72	0.84	534.2	767.30
J-28	5,908,348.52	97,479.26	713.10	0.55	530.9	767.35
J-30	5,908,476.15	97,465.75	713.60	0.00	526.2	767.37
J-32	5,908,477.92	97,568.92	715.10	0.00	511.5	767.37
J-34	5,908,480.33	97,699.94	717.10	0.17	491.9	767.36
J-36	5,908,480.81	97,725.97	717.10	0.00	491.9	767.36
J-38	5,908,303.69	97,742.34	717.30	0.00	489.7	767.34
J-40	5,908,143.29	97,745.11	717.70	0.17	485.7	767.32
J-42	5,907,977.83	97,749.04	717.00	0.03	492.3	767.30
J-50	5,908,312.36	98,169.75	716.20	0.90	500.3	767.32
J-56	5,908,324.08	98,782.89	713.20	1.27	529.5	767.30
J-60	5,908,547.69	98,778.44	712.60	0.00	535.8	767.35
J-64	5,908,657.02	98,776.18	712.50	0.24	537.5	767.42
J-68	5,908,927.88	98,770.56	711.60	0.13	547.1	767.51
J-74	5,909,209.82	98,764.73	710.10	0.14	562.7	767.59
J-76	5,909,321.64	98,762.41	709.30	0.33	571.3	767.67
J-82	5,909,600.55	98,756.43	706.80	0.64	596.4	767.74
J-90	5,910,145.40	98,745.06	699.50	0.21	669.2	767.88
J-94	5,910,141.73	98,553.50	699.50	0.16	668.7	767.83
J-98	5,909,203.58	98,428.34	712.50	0.25	538.3	767.50
J-102	5,909,101.64	98,426.21	713.00	0.22	533.1	767.47
J-104	5,908,903.10	98,430.23	713.50	0.44	528.0	767.45
J-108	5,908,650.47	98,435.34	714.90	0.51	514.2	767.43
J-112	5,908,654.55	98,649.36	713.80	0.32	524.8	767.43
J-117	5,909,093.99	98,027.43	715.00	0.30	513.3	767.45
J-118	5,909,093.47	98,001.39	715.00	0.21	513.3	767.45
J-120	5,908,854.44	98,006.14	714.70	0.09	516.2	767.45
J-124	5,908,645.32	98,164.72	715.80	0.10	505.4	767.44
J-130	5,909,081.17	97,756.51	714.30	0.00	520.2	767.45
J-134	5,909,084.75	97,555.92	714.50	0.19	518.3	767.45
J-136	5,909,062.84	97,556.57	714.50	0.40	518.2	767.45
J-140	5,909,211.44	97,544.32	715.20	0.03	511.5	767.47
J-142	5,909,320.00	98,985.50	707.40	0.02	588.5	767.53
J-144	5,908,552.32	99,001.45	712.60	0.28	535.7	767.34
J-146	5,908,500.88	97,385.99	711.00	0.08	551.8	767.38
J-148	5,908,743.01	97,064.41	711.00	0.12	552.5	767.45
J-150	5,908,756.07	97,063.51	711.00	0.00	552.5	767.46
J-152	5,908,779.46	96,905.96	710.70	0.00	555.5	767.46
J-162	5,907,845.59	97,760.01	714.80	0.06	513.2	767.24
J-164	5,907,853.69	98,184.20	715.30	0.11	508.2	767.23
J-166	5,907,858.51	98,441.75	715.50	0.30	506.2	767.22
J-168	5,907,990.55	98,439.52	715.20	0.07	509.1	767.22
J-172	5,907,997.17	98,789.35	713.00	0.15	530.6	767.22
J-174	5,908,131.47	98,786.69	713.20	0.27	529.0	767.25
J-176	5,907,981.73	98,181.34	715.80	0.15	504.0	767.30
J-178	5,907,708.34	98,186.08	715.20	0.50	508.6	767.17

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	521.3	767.17
J-198	5,906,888.62	97,825.94	710.60	0.00	550.4	766.84
J-202	5,906,593.95	97,782.31	709.60	0.28	559.0	766.72
J-206	5,906,215.61	97,708.31	712.00	0.12	535.1	766.67
J-210	5,905,911.78	97,702.33	713.40	0.03	521.2	766.66
J-212	5,905,673.44	97,707.07	714.50	0.23	510.3	766.64
J-214	5,905,369.47	97,713.12	715.90	1.24	496.6	766.64
J-216	5,905,364.01	97,439.05	715.60	7.62	499.5	766.64
J-217	5,909,307.40	97,334.51	710.88	0.13	553.7	767.46
J-218	5,909,077.55	97,556.13	714.50	0.00	518.2	767.45
J-219	5,909,195.57	97,741.44	714.00	0.00	523.3	767.47
J-221	5,909,080.95	97,744.08	714.53	0.03	517.9	767.45
J-222	5,905,698.60	97,432.40	714.40	0.07	511.7	766.69
J-223	5,908,477.48	97,757.92	717.21	0.28	490.8	767.36
J-224	5,905,905.82	97,428.26	714.10	0.02	515.0	766.72
J-225	5,907,981.51	97,748.90	717.00	0.00	492.3	767.31
J-226	5,907,946.73	97,358.07	710.00	0.00	560.7	767.29
J-227	5,908,303.93	97,760.54	717.18	0.14	490.9	767.34
J-228	5,906,360.39	97,501.77	711.60	0.31	542.6	767.04
J-229	5,909,074.75	97,350.43	713.60	0.15	527.1	767.45
J-230	5,908,471.28	97,739.11	717.10	0.00	491.9	767.36
J-231	5,907,921.40	97,334.01	709.20	0.04	568.5	767.29
J-232	5,907,811.00	97,326.52	708.90	0.00	571.4	767.29
J-233	5,907,639.32	97,370.09	707.90	0.00	581.1	767.28
J-234	5,906,873.52	97,574.28	711.60	0.27	544.4	767.22
J-235	5,907,254.44	97,377.87	708.90	0.00	571.2	767.26
J-236	5,906,869.56	97,385.66	709.67	0.00	563.5	767.25
J-237	5,913,524.07	98,517.56	689.20	0.28	771.6	768.04
J-238	5,913,476.73	98,634.61	689.45	0.00	769.4	768.07
J-239	5,913,442.90	98,660.40	690.60	0.00	758.2	768.08
J-240	5,905,918.98	98,029.82	712.40	0.74	530.2	766.57
J-241	5,913,350.24	98,658.09	690.80	0.00	756.5	768.09
J-242	5,912,944.99	98,674.90	690.05	0.00	764.5	768.17
J-243	5,912,549.09	98,682.16	689.00	0.33	775.5	768.24
J-244	5,905,905.76	98,439.24	709.18	0.06	560.7	766.48
J-245	5,908,776.14	96,915.33	710.70	0.00	555.5	767.46
J-246	5,908,458.63	97,044.00	709.95	0.27	562.9	767.46
J-247	5,908,464.31	97,043.90	710.05	0.00	561.9	767.46
J-248	5,906,562.22	99,128.24	701.60	0.00	637.4	766.73
J-249	5,908,771.98	96,927.06	705.50	0.00	606.4	767.46
J-250	5,906,588.47	98,425.23	707.60	0.28	576.7	766.53
J-251	5,908,770.14	96,932.26	705.50	0.00	606.4	767.46
J-252	5,906,825.65	98,420.35	709.60	0.12	557.2	766.53
J-253	5,908,766.64	96,942.13	710.70	0.00	555.5	767.46
J-254	5,908,783.08	96,917.79	710.70	0.00	555.5	767.46
J-255	5,908,778.19	96,929.26	705.50	0.00	606.4	767.46
J-256	5,906,735.40	98,269.84	710.30	0.02	550.5	766.55
J-257	5,908,776.00	96,934.34	705.50	0.00	606.4	767.46
J-258	5,908,771.86	96,943.98	710.70	0.00	555.5	767.46
J-259	5,907,681.11	97,992.32	713.39	0.22	526.3	767.17
J-260	5,906,585.22	98,273.05	708.00	0.17	573.1	766.56
J-261	5,907,700.54	98,626.53	713.40	0.13	526.2	767.16

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	629.6	766.83
J-263	5,908,554.64	99,001.40	713.20	0.00	529.9	767.34
J-264	5,906,579.90	98,024.41	708.70	0.43	567.2	766.65
J-265	5,908,562.13	99,338.47	708.40	0.28	576.7	767.33
J-266	5,906,399.93	98,028.05	708.00	0.39	574.1	766.66
J-267	5,908,572.77	100,001.17	689.40	0.18	761.0	767.16
J-268	5,905,898.13	98,461.32	709.20	0.06	560.7	766.49
J-269	5,908,585.09	100,508.03	688.80	0.00	761.9	766.65
J-270	5,908,600.64	101,103.84	697.20	1.31	679.4	766.62
J-271	5,906,493.28	99,141.39	702.90	0.00	624.7	766.73
J-272	5,905,530.79	98,468.96	712.00	0.15	534.5	766.61
J-273	5,908,603.09	100,561.75	690.60	0.00	744.2	766.64
J-274	5,905,388.62	98,471.86	711.20	0.01	542.3	766.61
J-275	5,914,588.31	98,954.88	690.35	1.73	760.3	768.04
J-276	5,905,347.08	98,472.70	711.90	1.75	535.5	766.61
J-277	5,914,515.82	99,129.18	692.25	0.25	741.8	768.04
J-278	5,905,525.90	98,217.56	713.80	0.49	517.0	766.63
J-279	5,906,383.63	99,143.48	703.40	0.00	619.8	766.73
J-280	5,906,174.59	99,147.94	704.45	0.00	609.4	766.72
J-281	5,906,102.58	99,149.32	704.40	0.00	609.8	766.71
J-282	5,905,375.58	98,019.54	714.80	0.17	507.3	766.63
J-283	5,906,384.67	99,185.47	704.70	0.00	607.1	766.73
J-284	5,906,395.12	99,606.40	702.20	0.00	631.6	766.74
J-285	5,906,617.35	99,583.11	700.20	0.14	651.3	766.75
J-286	5,905,658.69	98,214.91	714.10	0.52	514.1	766.63
J-287	5,906,568.55	99,602.91	700.90	0.00	644.4	766.74
J-288	5,906,458.61	99,605.06	701.40	0.00	639.5	766.74
J-289	5,908,517.34	97,755.28	716.36	0.00	499.2	767.37
J-290	5,906,547.32	99,038.54	702.77	0.00	625.8	766.72
J-291	5,905,447.34	97,711.57	715.54	0.00	500.1	766.64
J-292	5,907,994.37	98,641.67	713.93	0.00	521.5	767.22
J-293	5,909,994.96	97,459.73	706.55	0.00	596.9	767.54
J-294	5,905,394.69	98,642.02	710.50	0.08	549.2	766.61
J-296	5,906,623.71	97,548.19	711.60	0.00	544.4	767.22
J-298	5,905,695.90	98,870.15	708.60	0.28	568.2	766.66
J-300	5,905,801.61	98,872.46	707.20	0.15	582.1	766.67
J-301	5,908,753.24	96,979.98	711.00	0.00	552.6	767.46
J-302	5,905,859.76	98,735.04	708.60	0.24	568.2	766.65
J-303	5,908,522.69	97,042.82	711.00	0.42	552.6	767.46
J-304	5,906,312.67	98,430.89	708.24	0.00	566.5	766.12
J-306	5,905,728.41	98,736.90	709.90	0.33	555.3	766.64
J-307	5,908,622.68	102,230.99	714.40	0.00	511.1	766.62
J-308	5,905,579.15	98,646.58	712.00	0.47	534.6	766.63
J-309	5,908,642.41	103,175.71	712.93	0.00	525.5	766.62
J-310	5,909,279.69	97,059.38	707.10	0.00	590.8	767.47
J-311	5,909,282.51	97,057.24	707.10	0.01	590.8	767.47
J-312	5,909,434.20	103,817.29	707.50	0.00	578.6	766.62
J-313	5,908,552.13	98,992.36	710.15	0.00	559.7	767.34
J-314	5,906,229.89	98,727.43	706.40	0.55	589.8	766.66
J-315	5,908,454.45	98,994.29	710.00	0.00	560.3	767.25
J-316	5,908,092.47	99,005.00	710.25	0.00	556.8	767.14
J-317	5,907,708.27	99,012.60	708.20	0.00	575.8	767.03

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	540.0	767.37
J-321	5,909,018.07	98,991.77	710.00	0.17	562.3	767.46
J-322	5,906,537.16	98,766.80	706.30	0.08	590.9	766.68
J-324	5,906,780.50	98,815.29	707.40	0.00	581.1	766.78
J-332	5,906,905.11	98,812.64	709.10	0.93	565.0	766.83
J-337	5,907,703.90	98,795.12	710.50	0.52	554.4	767.15
J-342	5,906,589.89	98,581.45	707.10	0.31	582.2	766.59
J-348	5,906,564.17	99,142.81	701.60	0.20	637.5	766.74
J-349	5,905,292.97	97,440.46	715.60	0.57	499.5	766.64
J-350	5,906,836.65	99,137.08	702.50	0.21	629.4	766.81
J-351	5,914,985.65	99,118.12	694.80	0.00	716.8	768.04
J-352	5,908,787.17	96,908.26	710.70	0.00	555.5	767.46
J-353	5,908,757.47	96,994.16	711.00	0.05	552.5	767.46
J-356	5,906,618.36	99,628.21	700.20	0.12	651.4	766.76
J-357	5,909,258.32	100,547.78	691.00	0.24	737.9	766.39
J-358	5,909,251.92	100,248.17	691.00	0.35	738.1	766.42
J-359	5,908,858.94	100,556.29	691.00	0.06	739.1	766.52
J-360	5,908,857.28	100,478.32	691.00	0.12	738.9	766.50
J-362	5,907,675.38	97,768.48	712.30	0.00	537.0	767.17
J-363	5,909,310.68	97,745.32	713.10	0.00	532.3	767.49
J-364	5,906,949.71	100,836.01	691.50	0.15	735.4	766.64
J-365	5,910,093.16	97,731.00	707.20	0.03	591.2	767.61
J-367	5,909,360.67	97,744.77	712.10	0.00	542.1	767.49
J-369	5,909,385.67	97,744.30	711.85	0.00	544.6	767.50
J-370	5,908,423.93	101,076.18	691.00	0.14	740.1	766.62
J-371	5,909,495.65	97,742.23	711.65	0.00	546.7	767.52
J-372	5,908,357.20	101,065.19	691.00	0.39	740.1	766.62
J-373	5,909,520.64	97,741.76	711.00	0.00	553.2	767.52
J-374	5,907,995.30	101,006.31	691.00	0.52	740.1	766.62
J-375	5,909,735.60	97,737.72	710.50	0.02	558.3	767.55
J-376	5,907,631.31	100,947.18	691.00	0.34	740.1	766.62
J-377	5,909,851.58	97,735.54	709.20	0.01	571.1	767.56
J-378	5,907,569.28	100,937.06	690.70	0.37	743.1	766.62
J-379	5,907,097.59	100,860.13	690.80	0.57	742.1	766.63
J-380	5,907,070.76	100,855.75	691.60	0.16	734.3	766.63
J-381	5,909,943.56	97,733.81	707.40	0.00	588.8	767.57
J-382	5,906,848.42	100,819.49	691.00	0.35	740.1	766.62
J-383	5,906,355.74	100,852.67	691.40	0.36	735.9	766.59
J-384	5,906,237.87	100,906.65	691.40	0.92	735.9	766.59
J-386	5,905,356.70	100,981.32	693.10	0.57	719.1	766.58
J-388	5,907,590.72	100,805.57	690.70	0.23	743.1	766.62
J-389	5,909,944.06	97,385.51	706.90	0.32	593.3	767.53
J-390	5,909,578.24	100,572.53	691.00	0.18	736.6	766.27
J-391	5,909,976.00	97,733.20	707.25	0.00	590.4	767.57
J-392	5,909,947.68	100,567.17	691.00	0.77	735.9	766.19
J-394	5,910,397.44	100,552.88	691.00	0.15	735.3	766.13
J-395	5,910,768.00	100,546.28	691.00	0.73	735.1	766.11
J-396	5,910,752.17	99,977.20	691.00	0.83	735.1	766.11
J-398	5,910,381.11	99,987.28	691.00	0.16	735.1	766.11
J-400	5,909,937.68	99,983.00	691.00	0.46	735.9	766.19
J-401	5,909,529.41	97,966.96	711.90	0.00	544.5	767.54
J-402	5,909,566.00	99,988.28	691.00	0.14	735.9	766.20

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	540.6	767.54
J-404	5,909,690.09	97,971.58	713.05	0.19	533.3	767.54
J-406	5,909,525.03	97,741.68	710.80	0.00	555.1	767.52
J-407	5,909,525.21	97,750.68	711.50	0.11	548.3	767.52
J-408	5,909,931.45	97,966.98	708.15	0.00	581.4	767.56
J-410	5,909,979.59	97,922.51	707.90	0.02	583.9	767.56
J-411	5,909,713.09	97,971.14	712.95	0.00	534.3	767.55
J-536	5,906,927.24	99,821.22	703.00	0.00	624.3	766.79
J-538	5,906,907.40	99,022.87	703.00	0.00	624.7	766.83
J-1000	5,910,911.09	98,929.24	690.00	0.00	769.4	768.61
J-1005	5,906,600.14	97,387.90	712.00	0.00	540.6	767.23
J-1025	5,912,941.46	98,290.11	690.00	0.00	763.0	767.96
J-1050	5,911,741.94	98,684.68	690.00	0.00	767.3	768.40
J-1060	5,911,747.22	98,916.14	692.00	0.00	748.2	768.44
J-1140	5,910,093.50	98,010.88	710.00	0.00	564.5	767.68
J-1150	5,910,146.50	98,943.62	699.00	0.00	675.6	768.03
J-1195	5,907,311.37	99,134.08	712.00	0.00	537.0	766.87
J-1205	5,905,816.29	99,157.77	710.00	0.00	554.8	766.69
J-1220	5,906,625.92	99,855.91	703.00	0.00	624.1	766.77
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	565.9	766.07

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	2.12	0.03	0.00	0.01	767.45	767.45
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	767.46	767.46
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.01	767.46	767.46
P-40	J-10	J-12	1.20	148.0	130.0	4.80	0.28	0.00	3.60	767.38	767.37
P-42	J-12	J-16	3.50	202.0	130.0	4.80	0.15	0.00	0.28	767.37	767.37
P-45	J-10	J-8	584.50	304.0	130.0	-12.09	0.17	0.07	0.12	767.38	767.45
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	767.46	767.46
P-50	J-362	J-259	224.00	297.0	130.0	-0.87	0.01	0.00	0.00	767.17	767.17
P-52	J-16	J-22	506.20	199.0	130.0	4.46	0.14	0.08	0.15	767.37	767.30
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.01	767.46	767.46
P-58	J-24	J-28	372.00	199.0	130.0	-3.95	0.13	0.05	0.12	767.30	767.35
P-60	J-337	J-261	168.50	250.0	130.0	-4.62	0.09	0.01	0.06	767.15	767.16
P-62	J-28	J-30	139.00	199.0	130.0	-4.50	0.14	0.02	0.18	767.35	767.37
P-64	J-30	J-10	104.50	304.0	130.0	-8.52	0.12	0.01	0.07	767.37	767.38
P-66	J-30	J-32	103.00	304.0	130.0	4.02	0.06	0.00	0.02	767.37	767.37
P-68	J-32	J-34	131.00	304.0	130.0	6.71	0.09	0.01	0.04	767.37	767.36
P-70	J-34	J-36	26.00	304.0	130.0	6.54	0.09	0.00	0.04	767.36	767.36
P-74	J-38	J-40	160.50	304.0	130.0	11.34	0.16	0.02	0.11	767.34	767.32
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	767.46	767.46
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	767.46	767.46
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	767.46	767.46
P-88	J-50	J-56	613.50	199.0	130.0	1.82	0.06	0.02	0.03	767.32	767.30
P-90	J-352	J-254	10.50	202.0	130.0	2.21	0.07	0.00	0.07	767.46	767.46
P-92	J-254	J-255	12.50	202.0	130.0	2.21	0.07	0.00	0.04	767.46	767.46
P-94	J-255	J-257	5.50	202.0	130.0	2.21	0.07	0.00	0.04	767.46	767.46
P-96	J-257	J-258	10.50	202.0	130.0	2.21	0.07	0.00	0.04	767.46	767.46
P-98	J-258	J-353	52.50	202.0	130.0	2.21	0.07	0.00	0.04	767.46	767.46
P-100	J-350	J-262	69.00	202.0	130.0	-6.34	0.20	0.02	0.27	766.81	766.83
P-102	J-68	J-64	271.00	254.0	130.0	12.30	0.24	0.08	0.31	767.51	767.42
P-104	J-74	J-68	282.00	254.0	130.0	12.43	0.25	0.09	0.31	767.59	767.51
P-106	J-321	J-263	463.50	304.0	130.0	17.31	0.24	0.11	0.25	767.46	767.34
P-108	J-263	J-144	2.50	304.0	130.0	10.97	0.15	0.00	0.48	767.34	767.34
P-112	J-74	J-76	112.00	254.0	130.0	-18.72	0.37	0.08	0.72	767.59	767.67
P-114	J-76	J-82	279.00	406.0	130.0	-36.54	0.28	0.07	0.24	767.67	767.74
P-116	J-82	J-90	545.00	406.0	130.0	-37.18	0.29	0.14	0.25	767.74	767.88

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-118	J-263	J-265	337.00	300.0	130.0	6.34	0.09	0.01	0.04	767.34	767.33
P-120	J-265	J-267	665.50	200.0	130.0	6.06	0.19	0.17	0.26	767.33	767.16
P-122	J-267	J-269	507.00	150.0	130.0	5.88	0.33	0.50	0.99	767.16	766.65
P-124	J-269	J-273	60.50	200.0	130.0	5.88	0.19	0.02	0.27	766.65	766.64
P-126	J-273	J-270	565.00	200.0	130.0	1.70	0.05	0.01	0.02	766.64	766.62
P-128	J-273	J-359	256.00	155.0	130.0	4.18	0.22	0.12	0.47	766.64	766.52
P-130	J-90	J-94	191.50	450.0	120.0	47.45	0.30	0.05	0.26	767.88	767.83
P-132	J-98	J-74	336.50	199.0	130.0	-6.15	0.20	0.09	0.28	767.50	767.59
P-134	J-270	J-370	182.00	148.0	130.0	0.39	0.02	0.00	0.01	766.62	766.62
P-136	J-102	J-98	106.00	199.0	130.0	-5.90	0.19	0.03	0.27	767.47	767.50
P-140	J-102	J-104	198.50	199.0	130.0	3.32	0.11	0.02	0.09	767.47	767.45
P-142	J-108	J-104	252.50	199.0	130.0	-2.88	0.09	0.02	0.07	767.43	767.45
P-146	J-108	J-112	214.00	300.0	120.0	6.15	0.09	0.01	0.04	767.43	767.43
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	768.04	768.04
P-150	J-112	J-64	127.00	300.0	120.0	5.84	0.08	0.00	0.04	767.43	767.42
P-152	J-275	J-277	189.00	297.0	130.0	0.25	0.00	0.00	0.00	768.04	768.04
P-154	J-117	J-102	399.00	199.0	130.0	-2.36	0.08	0.02	0.05	767.45	767.47
P-156	J-332	J-324	124.50	254.0	130.0	14.15	0.28	0.05	0.41	766.83	766.78
P-158	J-118	J-120	239.00	300.0	120.0	3.97	0.06	0.00	0.02	767.45	767.45
P-160	J-124	J-120	349.00	300.0	120.0	-3.88	0.05	0.01	0.02	767.44	767.45
P-164	J-124	J-108	270.50	300.0	120.0	3.78	0.05	0.00	0.02	767.44	767.43
P-168	J-118	J-117	26.00	300.0	120.0	-2.06	0.03	0.00	0.01	767.45	767.45
P-180	J-8	J-136	205.50	204.0	130.0	0.09	0.00	0.00	0.00	767.45	767.45
P-184	J-134	J-140	128.50	148.0	130.0	-1.75	0.10	0.02	0.12	767.45	767.47
P-186	J-76	J-142	225.50	254.0	130.0	17.50	0.35	0.14	0.63	767.67	767.53
P-194	J-148	J-146	535.50	150.0	130.0	2.04	0.12	0.08	0.14	767.45	767.38
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	767.46	767.46
P-196	J-148	J-150	13.00	150.0	130.0	-2.16	0.12	0.00	0.16	767.45	767.46
P-208	J-42	J-162	132.50	304.0	130.0	24.68	0.34	0.07	0.50	767.30	767.24
P-212	J-162	J-164	424.50	254.0	130.0	2.86	0.06	0.01	0.02	767.24	767.23
P-214	J-164	J-166	257.50	254.0	130.0	3.36	0.07	0.01	0.03	767.23	767.22
P-216	J-166	J-168	132.00	254.0	130.0	-0.14	0.00	0.00	0.00	767.22	767.22
P-222	J-172	J-174	134.50	254.0	130.0	-10.73	0.21	0.03	0.24	767.22	767.25
P-224	J-174	J-56	192.50	254.0	130.0	-11.01	0.22	0.05	0.25	767.25	767.30
P-226	J-164	J-176	128.00	148.0	130.0	-4.02	0.23	0.07	0.55	767.23	767.30

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-228	J-164	J-178	145.50	148.0	130.0	3.41	0.20	0.06	0.40	767.23	767.17
P-230	J-166	J-180	146.00	148.0	130.0	3.20	0.19	0.05	0.36	767.22	767.17
P-238	J-198	J-202	298.50	304.0	130.0	22.64	0.31	0.12	0.42	766.84	766.72
P-260	J-202	J-206	385.50	304.0	130.0	11.47	0.16	0.04	0.11	766.72	766.67
P-262	J-206	J-210	304.50	304.0	130.0	7.88	0.11	0.02	0.06	766.67	766.66
P-266	J-210	J-212	238.50	304.0	130.0	7.43	0.10	0.01	0.05	766.66	766.64
P-270	J-214	J-216	274.00	304.0	130.0	-0.24	0.00	0.00	0.00	766.64	766.64
P-273	J-310	J-217	285.00	450.0	100.0	8.72	0.05	0.00	0.02	767.47	767.46
P-274	J-216	J-222	334.50	254.0	130.0	-8.43	0.17	0.05	0.15	766.64	766.69
P-275	J-217	J-6	10.50	450.0	100.0	-5.18	0.03	0.00	0.01	767.46	767.46
P-276	J-134	J-218	7.00	148.0	130.0	1.56	0.09	0.00	0.16	767.45	767.45
P-277	J-218	J-136	14.50	148.0	130.0	2.29	0.13	0.00	0.26	767.45	767.45
P-278	J-222	J-224	207.50	254.0	130.0	-8.50	0.17	0.03	0.16	766.69	766.72
P-280	J-228	J-224	462.00	254.0	130.0	19.03	0.38	0.32	0.69	767.04	766.72
P-283	J-363	J-219	118.00	455.7	130.0	36.34	0.22	0.02	0.14	767.49	767.47
P-285	J-218	J-221	188.00	455.7	130.0	5.42	0.03	0.00	0.00	767.45	767.45
P-286	J-221	J-219	114.50	455.7	130.0	-34.56	0.21	0.02	0.16	767.45	767.47
P-288	J-40	J-225	162.00	304.0	130.0	11.17	0.15	0.02	0.11	767.32	767.31
P-289	J-225	J-42	3.50	304.0	130.0	24.72	0.34	0.00	1.04	767.31	767.30
P-290	J-224	J-210	274.00	254.0	130.0	10.51	0.21	0.07	0.24	766.72	766.66
P-293	J-225	J-24	262.50	455.7	130.0	12.17	0.07	0.01	0.02	767.31	767.30
P-294	J-210	J-240	327.50	254.0	130.0	10.92	0.22	0.08	0.25	766.66	766.57
P-297	J-36	J-230	22.50	304.0	130.0	6.54	0.09	0.00	0.05	767.36	767.36
P-298	J-240	J-244	431.00	254.0	130.0	10.18	0.20	0.10	0.22	766.57	766.48
P-299	J-230	J-38	167.50	304.0	130.0	11.34	0.16	0.02	0.12	767.36	767.34
P-300	J-223	J-230	25.00	297.0	130.0	4.80	0.07	0.00	0.06	767.36	767.36
P-301	J-24	J-22	128.50	455.7	130.0	15.29	0.09	0.00	0.04	767.30	767.30
P-303	J-22	J-226	28.00	455.7	130.0	19.66	0.12	0.00	0.05	767.30	767.29
P-305	J-227	J-50	409.50	204.0	130.0	2.72	0.08	0.02	0.06	767.34	767.32
P-306	J-223	J-227	173.50	455.7	130.0	32.74	0.20	0.02	0.13	767.36	767.34
P-307	J-227	J-225	336.50	455.7	130.0	29.88	0.18	0.03	0.10	767.34	767.31
P-308	J-250	J-252	237.00	254.0	130.0	-2.98	0.06	0.01	0.02	766.53	766.53
P-309	J-217	J-229	243.00	455.7	130.0	13.76	0.08	0.01	0.03	767.46	767.45
P-310	J-6	J-229	233.00	297.0	130.0	5.01	0.07	0.01	0.03	767.46	767.45
P-311	J-229	J-8	16.00	297.0	130.0	12.48	0.18	0.00	0.30	767.45	767.45

Scenario: Peak Hour - F ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-312	J-252	J-256	219.00	199.0	130.0	-3.10	0.10	0.02	0.08	766.53	766.55
P-313	J-229	J-218	205.50	455.7	130.0	6.14	0.04	0.00	0.01	767.45	767.45
P-314	J-260	J-256	150.00	199.0	130.0	3.12	0.10	0.01	0.08	766.56	766.55
P-315	J-226	J-231	35.00	455.7	130.0	19.66	0.12	0.00	0.04	767.29	767.29
P-316	J-231	J-232	143.50	455.7	130.0	19.61	0.12	0.01	0.05	767.29	767.29
P-317	J-232	J-233	178.50	455.7	130.0	19.61	0.12	0.01	0.04	767.29	767.28
P-318	J-260	J-250	152.00	254.0	130.0	10.24	0.20	0.03	0.23	766.56	766.53
P-319	J-233	J-235	385.00	455.7	130.0	19.61	0.12	0.02	0.04	767.28	767.26
P-320	J-264	J-260	248.50	254.0	130.0	13.53	0.27	0.09	0.37	766.65	766.56
P-321	J-235	J-236	385.00	455.7	130.0	19.61	0.12	0.02	0.04	767.26	767.25
P-322	J-311	J-1025	3,915.00	297.0	130.0	-11.64	0.17	0.50	0.13	767.47	767.96
P-322a	J-1025	J-237	625.50	297.0	130.0	-11.64	0.17	0.08	0.13	767.96	768.04
P-323	J-237	J-275	1,150.50	297.0	130.0	1.98	0.03	0.01	0.00	768.04	768.04
P-324	J-264	J-202	243.50	254.0	130.0	-10.88	0.21	0.06	0.26	766.65	766.72
P-325	J-237	J-238	126.50	297.0	130.0	-13.90	0.20	0.03	0.20	768.04	768.07
P-326	J-264	J-266	180.00	254.0	130.0	-3.08	0.06	0.00	0.02	766.65	766.66
P-327	J-238	J-239	43.00	297.0	130.0	-13.90	0.20	0.01	0.19	768.07	768.08
P-328	J-266	J-206	485.00	254.0	130.0	-3.47	0.07	0.01	0.03	766.66	766.67
P-329	J-239	J-241	92.50	297.0	130.0	-13.90	0.20	0.02	0.18	768.08	768.09
P-330	J-244	J-268	30.00	254.0	130.0	-12.68	0.25	0.01	0.44	766.48	766.49
P-331	J-241	J-242	409.50	297.0	130.0	-13.90	0.20	0.07	0.18	768.09	768.17
P-332	J-268	J-272	367.50	254.0	130.0	-12.74	0.25	0.12	0.33	766.49	766.61
P-333	J-242	J-243	396.00	297.0	130.0	-13.90	0.20	0.07	0.18	768.17	768.24
P-335	J-248	J-348	14.50	199.0	130.0	-7.41	0.24	0.01	0.52	766.73	766.74
P-336	J-272	J-274	142.00	254.0	130.0	-2.02	0.04	0.00	0.01	766.61	766.61
P-337	J-248	J-271	76.00	297.0	130.0	3.01	0.04	0.00	0.01	766.73	766.73
P-338	J-274	J-276	41.50	300.0	120.0	1.75	0.02	0.00	0.01	766.61	766.61
P-339	J-271	J-279	109.50	297.0	130.0	3.01	0.04	0.00	0.01	766.73	766.73
P-340	J-272	J-278	251.50	254.0	130.0	-5.04	0.10	0.02	0.06	766.61	766.63
P-341	J-279	J-280	209.00	297.0	130.0	7.79	0.11	0.01	0.06	766.73	766.72
P-342	J-278	J-282	329.50	254.0	130.0	-2.70	0.05	0.01	0.02	766.63	766.63
P-343	J-280	J-281	72.00	297.0	130.0	7.79	0.11	0.00	0.06	766.72	766.71
P-344	J-279	J-283	42.00	297.0	130.0	-4.78	0.07	0.00	0.03	766.73	766.73
P-345	J-283	J-284	421.00	297.0	130.0	-4.78	0.07	0.01	0.02	766.73	766.74
P-346	J-214	J-282	306.50	254.0	130.0	2.87	0.06	0.01	0.02	766.64	766.63

Scenario: Peak Hour - Existing with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-347	J-348	J-285	445.00	199.0	130.0	-1.48	0.05	0.01	0.02	766.74	766.75
P-348	J-285	J-356	45.00	199.0	130.0	-6.40	0.21	0.01	0.33	766.75	766.76
P-349	J-285	J-287	64.00	297.0	130.0	4.78	0.07	0.00	0.04	766.75	766.74
P-350	J-278	J-286	133.00	254.0	130.0	-2.83	0.06	0.00	0.02	766.63	766.63
P-351	J-287	J-288	110.00	297.0	130.0	4.78	0.07	0.00	0.03	766.74	766.74
P-352	J-212	J-286	517.50	254.0	130.0	3.34	0.07	0.01	0.03	766.64	766.63
P-353	J-288	J-284	63.50	297.0	130.0	4.78	0.07	0.00	0.03	766.74	766.74
P-354	J-221	J-130	12.50	297.0	130.0	2.12	0.03	0.00	0.01	767.45	767.45
P-355	J-221	J-289	563.50	455.7	130.0	37.83	0.23	0.08	0.15	767.45	767.37
P-356	J-289	J-223	40.00	455.7	130.0	37.83	0.23	0.01	0.16	767.37	767.36
P-357	J-322	J-290	274.00	199.0	130.0	-4.40	0.14	0.04	0.15	766.68	766.72
P-358	J-274	J-294	170.50	300.0	120.0	-3.77	0.05	0.00	0.02	766.61	766.61
P-359	J-290	J-248	91.00	199.0	130.0	-4.40	0.14	0.01	0.15	766.72	766.73
P-360	J-212	J-291	226.00	304.0	130.0	3.86	0.05	0.00	0.02	766.64	766.64
P-361	J-291	J-214	78.00	304.0	130.0	3.86	0.05	0.00	0.02	766.64	766.64
P-362	J-294	J-298	389.00	199.0	130.0	-3.85	0.12	0.04	0.11	766.61	766.66
P-363	J-168	J-292	202.00	254.0	130.0	-0.20	0.00	0.00	0.00	767.22	767.22
P-364	J-292	J-172	147.50	254.0	130.0	-0.20	0.00	0.00	0.00	767.22	767.22
P-365	J-389	J-293	126.50	297.0	130.0	-10.57	0.15	0.01	0.12	767.53	767.54
P-366	J-298	J-300	106.00	199.0	130.0	-4.12	0.13	0.01	0.13	766.66	766.67
P-367	J-293	J-391	276.50	297.0	130.0	-10.57	0.15	0.03	0.11	767.54	767.57
P-368	J-300	J-302	187.00	199.0	130.0	3.52	0.11	0.02	0.10	766.67	766.65
P-369	J-410	J-408	67.00	297.0	130.0	7.26	0.10	0.00	0.05	767.56	767.56
P-371	J-234	J-296	251.00	254.0	130.0	-0.27	0.01	0.00	0.00	767.22	767.22
P-372	J-306	J-302	131.50	254.0	130.0	-6.62	0.13	0.01	0.10	766.64	766.65
P-373	J-296	J-228	267.50	254.0	130.0	19.34	0.38	0.18	0.69	767.22	767.04
P-374	J-306	J-308	179.00	254.0	130.0	6.29	0.12	0.02	0.09	766.64	766.63
P-376	J-308	J-272	191.00	254.0	130.0	5.83	0.12	0.02	0.08	766.63	766.61
P-378	J-302	J-314	370.00	254.0	130.0	-3.35	0.07	0.01	0.03	766.65	766.66
P-381	J-250	J-304	276.00	254.0	130.0	27.20	0.54	0.41	1.47	766.53	766.12
P-382	J-304	Truck Fill	5.50	254.0	130.0	27.20	0.54	0.05	9.84	766.12	766.07
P-383	Truck Fill	J-244	401.50	254.0	130.0	-22.80	0.45	0.41	1.02	766.07	766.48
P-384	J-270	J-307	1,127.50	200.0	130.0	0.00	0.00	0.00	0.00	766.62	766.62
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	766.62	766.62
P-386	J-314	J-322	313.50	254.0	130.0	-3.89	0.08	0.01	0.04	766.66	766.68

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	766.62	766.62
P-388	J-60	J-313	214.00	289.0	130.0	7.44	0.11	0.02	0.07	767.35	767.34
P-389	J-313	J-144	9.00	289.0	130.0	-10.70	0.16	0.00	0.50	767.34	767.34
P-390	J-313	J-315	97.50	233.3	130.0	18.14	0.42	0.09	0.93	767.34	767.25
P-391	J-315	J-316	363.50	297.0	130.0	18.14	0.26	0.10	0.29	767.25	767.14
P-392	J-322	J-324	250.50	254.0	130.0	-14.15	0.28	0.10	0.40	766.68	766.78
P-393	J-316	J-317	384.50	297.0	130.0	18.14	0.26	0.11	0.29	767.14	767.03
P-394	J-32	J-318	45.50	200.0	120.0	-2.70	0.09	0.00	0.07	767.37	767.37
P-395	J-318	J-136	539.50	148.0	130.0	-1.98	0.12	0.08	0.14	767.37	767.45
P-396	J-146	J-318	190.50	150.0	100.0	0.72	0.04	0.01	0.03	767.38	767.37
P-402	J-332	J-337	799.00	254.0	130.0	-14.49	0.29	0.33	0.41	766.83	767.15
P-410	J-172	J-337	293.50	254.0	130.0	10.38	0.20	0.07	0.23	767.22	767.15
P-412	J-322	J-342	193.50	254.0	130.0	14.57	0.29	0.08	0.43	766.68	766.59
P-414	J-342	J-250	156.50	254.0	130.0	14.26	0.28	0.06	0.42	766.59	766.53
P-444	J-370	J-372	67.50	148.0	130.0	0.25	0.01	0.00	0.00	766.62	766.62
P-446	J-372	J-374	366.50	148.0	130.0	-0.13	0.01	0.00	0.00	766.62	766.62
P-448	J-374	J-376	369.00	199.0	130.0	-0.67	0.02	0.00	0.00	766.62	766.62
P-450	J-376	J-378	63.00	199.0	130.0	-0.64	0.02	0.00	0.00	766.62	766.62
P-452	J-378	J-379	478.00	199.0	130.0	-1.25	0.04	0.01	0.01	766.62	766.63
P-453	J-379	J-380	27.00	199.0	130.0	-1.82	0.06	0.00	0.03	766.63	766.63
P-454	J-380	J-364	122.50	199.0	130.0	-2.34	0.08	0.01	0.05	766.63	766.64
P-456	J-364	J-382	102.50	148.0	130.0	2.20	0.13	0.02	0.18	766.64	766.62
P-457	J-382	J-383	516.50	148.0	130.0	1.13	0.07	0.03	0.05	766.62	766.59
P-458	J-383	J-384	130.50	148.0	130.0	0.78	0.05	0.00	0.03	766.59	766.59
P-460	J-384	J-386	893.50	148.0	130.0	0.57	0.03	0.01	0.01	766.59	766.58
P-462	J-370	J-374	693.00	75.0	130.0	-0.01	0.00	0.00	0.00	766.62	766.62
P-464	J-374	J-372	636.50	75.0	130.0	0.02	0.00	0.00	0.00	766.62	766.62
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	766.62	766.62
P-468	J-380	J-376	1,258.50	148.0	130.0	0.37	0.02	0.01	0.01	766.63	766.62
P-470	J-382	J-384	1,373.00	148.0	130.0	0.71	0.04	0.03	0.02	766.62	766.59
P-474	J-390	J-392	369.50	148.0	130.0	2.46	0.14	0.08	0.21	766.27	766.19
P-476	J-392	J-394	450.00	148.0	130.0	1.86	0.11	0.06	0.13	766.19	766.13
P-478	J-394	J-395	370.50	148.0	130.0	1.26	0.07	0.02	0.06	766.13	766.11
P-479	J-395	J-396	569.50	200.0	120.0	0.53	0.02	0.00	0.00	766.11	766.11
P-480	J-394	J-398	566.00	108.0	130.0	0.45	0.05	0.02	0.04	766.13	766.11

Scenario: Peak Hour - [ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-482	J-392	J-400	584.50	108.0	130.0	-0.18	0.02	0.00	0.01	766.19	766.19
P-484	J-390	J-402	584.50	108.0	130.0	0.78	0.08	0.07	0.12	766.27	766.20
P-490	J-216	J-349	71.00	304.0	130.0	0.57	0.01	0.00	0.00	766.64	766.64
P-494	J-350	J-348	272.50	202.0	130.0	6.13	0.19	0.07	0.26	766.81	766.74
P-496	J-310	J-311	4.00	304.0	130.0	-8.72	0.12	0.00	0.24	767.47	767.47
P-502	J-402	J-400	371.50	155.0	130.0	0.64	0.03	0.01	0.01	766.20	766.19
P-504	J-398	J-396	390.50	200.0	120.0	0.29	0.01	0.00	0.00	766.11	766.11
P-506	J-311	J-352	517.00	305.0	130.0	2.91	0.04	0.00	0.01	767.47	767.46
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	767.46	767.46
P-509	J-142	J-321	302.00	304.0	130.0	17.48	0.24	0.08	0.25	767.53	767.46
P-514	J-353	J-150	72.00	200.0	140.0	2.16	0.07	0.00	0.04	767.46	767.46
P-526	J-359	J-357	399.50	148.0	130.0	3.02	0.18	0.12	0.31	766.52	766.39
P-528	J-538	J-262	113.00	202.0	130.0	-0.59	0.02	0.00	0.00	766.83	766.83
P-529	J-262	J-536	686.00	202.0	130.0	2.83	0.09	0.04	0.06	766.83	766.79
P-530	J-357	J-390	321.00	148.0	130.0	3.41	0.20	0.13	0.40	766.39	766.27
P-532	J-357	J-358	299.50	108.0	130.0	-0.64	0.07	0.02	0.08	766.39	766.42
P-534	J-358	J-360	457.00	108.0	130.0	-0.98	0.11	0.08	0.18	766.42	766.50
P-536	J-360	J-359	78.00	108.0	130.0	-1.10	0.12	0.02	0.24	766.50	766.52
P-542	J-162	J-362	170.50	304.0	130.0	21.76	0.30	0.07	0.40	767.24	767.17
P-544	J-362	J-198	808.50	304.0	130.0	22.64	0.31	0.33	0.40	767.17	766.84
P-548	J-363	J-367	50.00	440.3	130.0	-36.34	0.24	0.01	0.18	767.49	767.49
P-550	J-367	J-369	25.00	440.3	130.0	-36.34	0.24	0.00	0.15	767.49	767.50
P-552	J-369	J-371	110.00	440.3	130.0	-36.34	0.24	0.02	0.15	767.50	767.52
P-554	J-371	J-373	25.00	440.3	130.0	-36.34	0.24	0.01	0.24	767.52	767.52
P-558	J-375	J-377	116.00	440.3	130.0	-29.40	0.19	0.01	0.10	767.55	767.56
P-560	J-377	J-381	92.00	440.3	130.0	-29.41	0.19	0.01	0.11	767.56	767.57
P-566	J-6	J-389	643.50	297.0	130.0	-10.25	0.15	0.07	0.10	767.46	767.53
P-570	J-381	J-391	32.50	440.3	130.0	-29.41	0.19	0.00	0.13	767.57	767.57
P-572	J-391	J-365	117.00	440.3	130.0	-47.25	0.31	0.03	0.28	767.57	767.61
P-576	J-332	J-538	211.00	202.0	130.0	-0.59	0.02	0.00	0.00	766.83	766.83
P-578	J-373	J-406	4.50	440.3	130.0	-36.34	0.24	0.00	0.38	767.52	767.52
P-580	J-406	J-375	210.50	440.3	130.0	-29.38	0.19	0.02	0.11	767.52	767.55
P-584	J-404	J-403	149.00	297.0	130.0	7.07	0.10	0.01	0.05	767.54	767.54
P-588	J-403	J-401	14.00	297.0	130.0	7.07	0.10	0.00	0.06	767.54	767.54
P-592	J-401	J-407	216.50	297.0	130.0	7.07	0.10	0.01	0.05	767.54	767.52

Scenario: Peak Hour - [illegible]ting with Upgrades-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-594	J-64	J-60	109.50	254.0	130.0	17.90	0.35	0.07	0.64	767.42	767.35
P-595	J-60	J-56	223.50	254.0	130.0	10.46	0.21	0.05	0.23	767.35	767.30
P-596	J-407	J-406	9.00	297.0	130.0	6.96	0.10	0.00	0.12	767.52	767.52
P-598	J-364	J-536	1,015.00	204.0	130.0	-4.69	0.14	0.15	0.15	766.64	766.79
P-600	J-411	J-408	218.50	297.0	130.0	-7.26	0.10	0.01	0.05	767.55	767.56
P-606	J-410	J-391	189.50	297.0	130.0	-7.28	0.11	0.01	0.06	767.56	767.57
P-608	J-411	J-404	23.00	297.0	130.0	7.26	0.10	0.00	0.05	767.55	767.54
P-1040	J-1050	J-243	807.00	300.0	120.0	14.22	0.20	0.16	0.20	768.40	768.24
P-1050	J-1050	J-1060	231.50	300.0	120.0	-14.22	0.20	0.05	0.20	768.40	768.44
P-1110	J-1000	R-3	774.50	450.0	120.0	-99.05	0.62	0.79	1.02	768.61	769.40
P-1120	J-1000	J-1150	764.50	450.0	120.0	84.83	0.53	0.58	0.76	768.61	768.03
P-1160	J-365	J-1140	280.00	450.0	120.0	-47.28	0.30	0.07	0.26	767.61	767.68
P-1170	J-1140	J-94	586.50	450.0	120.0	-47.28	0.30	0.15	0.26	767.68	767.83
P-1180	J-90	J-1150	198.50	450.0	120.0	-84.83	0.53	0.15	0.76	767.88	768.03
P-1190	J-1000	J-1060	836.00	300.0	120.0	14.22	0.20	0.17	0.20	768.61	768.44
P-1240	J-317	J-1195	517.00	300.0	120.0	18.14	0.26	0.16	0.32	767.03	766.87
P-1250	J-1195	J-262	405.50	300.0	120.0	9.76	0.14	0.04	0.10	766.87	766.83
P-1260	J-236	J-1005	269.50	450.0	120.0	19.61	0.12	0.01	0.05	767.25	767.23
P-1265	J-1005	J-296	162.00	450.0	120.0	19.61	0.12	0.01	0.05	767.23	767.22
P-1270	J-219	J-140	198.00	300.0	120.0	1.78	0.03	0.00	0.00	767.47	767.47
P-1280	J-225	J-176	432.50	300.0	120.0	4.17	0.06	0.01	0.02	767.31	767.30
P-1300	J-259	J-178	195.50	300.0	120.0	-1.09	0.02	0.00	0.00	767.17	767.17
P-1310	J-261	J-180	183.00	300.0	120.0	-4.76	0.07	0.00	0.03	767.16	767.17
P-1330	J-178	J-180	258.00	300.0	120.0	1.81	0.03	0.00	0.00	767.17	767.17
P-1340	J-10	J-146	36.50	300.0	120.0	-1.24	0.02	0.00	0.00	767.38	767.38
P-1370	J-1220	J-356	228.00	300.0	120.0	6.52	0.09	0.01	0.05	766.77	766.76
P-1375	J-1220	J-536	303.50	300.0	120.0	-6.52	0.09	0.01	0.05	766.77	766.79
P-1390	J-300	J-1205	285.50	300.0	120.0	-7.79	0.11	0.02	0.07	766.67	766.69
P-1430	J-1195	J-536	1,082.00	300.0	120.0	8.38	0.12	0.08	0.08	766.87	766.79
P-1450	J-281	J-1205	286.50	300.0	120.0	7.79	0.11	0.02	0.07	766.71	766.69

Scenario: MDD + FF - Existing with Upgrades-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	396.8	280.00	339.8	J-40
J-8	230.00	230.20	true	280.00	362.7	280.00	337.9	J-40
J-10	230.00	230.00	true	280.00	374.2	280.00	330.4	J-40
J-12	230.00	230.00	true	280.00	301.6	280.00	302.9	J-16
J-16	230.00	230.23	true	280.00	291.0	280.00	305.1	J-12
J-22	230.00	230.06	true	280.00	378.6	280.00	322.9	J-40
J-24	230.00	230.56	true	280.00	357.9	280.00	322.6	J-40
J-28	230.00	230.37	true	280.00	146.2	280.00	326.3	J-40
J-30	230.00	230.00	true	280.00	340.3	280.00	327.5	J-34
J-32	230.00	230.00	true	280.00	327.4	280.00	323.0	J-34
J-34	230.00	230.12	true	280.00	313.2	280.00	318.7	J-36
J-36	230.00	230.00	true	280.00	316.4	280.00	318.0	J-34
J-38	230.00	230.00	true	280.00	299.2	280.00	309.4	J-40
J-40	230.00	230.11	true	280.00	296.2	280.00	313.3	J-38
J-42	230.00	230.02	true	280.00	322.8	280.00	321.8	J-40
J-50	230.00	230.60	false	214.95	140.0	280.00	391.4	J-40
J-56	230.00	230.85	true	280.00	297.2	280.00	319.5	J-50
J-60	230.00	230.00	true	280.00	347.5	280.00	343.4	J-40
J-64	230.00	230.16	true	280.00	346.5	280.00	340.9	J-112
J-68	230.00	230.09	true	280.00	305.1	280.00	352.5	J-40
J-74	230.00	230.09	true	280.00	369.9	280.00	356.9	J-40
J-76	230.00	230.22	true	280.00	417.4	280.00	362.3	J-40
J-82	230.00	230.43	true	280.00	450.9	280.00	366.2	J-40
J-90	230.00	230.14	true	280.00	554.1	280.00	376.0	J-40
J-94	230.00	230.11	true	280.00	545.2	280.00	370.1	J-40
J-98	230.00	230.17	true	274.97	140.0	280.00	254.1	J-102
J-102	230.00	230.14	true	280.00	184.1	280.00	238.3	J-98
J-104	230.00	230.29	true	265.85	140.0	280.00	296.9	J-102
J-108	230.00	230.34	true	280.00	297.3	280.00	305.7	J-124
J-112	230.00	230.21	true	280.00	318.4	280.00	325.5	J-108
J-117	230.00	230.20	true	280.00	307.0	280.00	316.5	J-118
J-118	230.00	230.14	true	280.00	315.2	280.00	315.6	J-117
J-120	230.00	230.06	true	280.00	285.5	280.00	305.0	J-124
J-124	230.00	230.07	true	280.00	266.2	280.00	317.2	J-120
J-130	230.00	230.00	true	280.00	362.4	280.00	338.4	J-40
J-134	230.00	230.13	true	280.00	221.9	280.00	338.0	J-40
J-136	230.00	230.27	true	280.00	260.9	280.00	337.6	J-40
J-140	230.00	230.02	true	280.00	291.2	280.00	338.8	J-40
J-142	230.00	230.01	true	280.00	355.6	280.00	354.6	J-307
J-144	230.00	230.18	true	280.00	325.8	280.00	319.0	J-307
J-146	230.00	230.06	true	280.00	354.1	280.00	330.5	J-40
J-148	230.00	230.08	false	208.15	140.0	280.00	195.0	J-150
J-150	230.00	230.00	false	219.74	140.0	280.00	147.6	J-148
J-152	230.00	230.00	true	280.00	205.3	280.00	202.4	J-303
J-162	230.00	230.04	true	280.00	324.4	280.00	324.3	J-40
J-164	230.00	230.07	true	280.00	266.1	280.00	296.3	J-166
J-166	230.00	230.20	true	280.00	234.2	280.00	258.7	J-168
J-168	230.00	230.04	true	280.00	217.8	280.00	259.6	J-166
J-172	230.00	230.10	true	280.00	291.1	280.00	296.2	J-292
J-174	230.00	230.18	true	280.00	276.8	280.00	317.5	J-172

Scenario: MDD + FF - Existing with Upgrades-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	208.3	280.00	322.2	J-40
J-178	230.00	230.34	true	280.00	270.1	280.00	304.3	J-180
J-180	230.00	230.17	true	280.00	273.0	280.00	291.9	J-261
J-198	230.00	230.00	true	280.00	272.9	280.00	288.9	J-214
J-202	230.00	230.19	true	280.00	290.8	280.00	273.5	J-214
J-206	230.00	230.08	true	280.00	263.2	280.00	261.7	J-214
J-210	230.00	230.02	true	280.00	257.1	280.00	243.4	J-214
J-212	230.00	230.15	true	280.00	221.0	280.00	219.4	J-291
J-214	230.00	230.82	true	280.00	184.1	280.00	197.1	J-349
J-216	230.00	235.08	true	280.00	152.3	280.00	152.3	J-349
J-217	230.00	230.09	true	280.00	394.8	280.00	339.8	J-40
J-218	230.00	230.00	true	280.00	364.2	280.00	337.7	J-40
J-219	230.00	230.00	true	280.00	372.1	280.00	339.2	J-40
J-221	230.00	230.02	true	280.00	367.2	280.00	337.5	J-40
J-222	230.00	230.05	true	280.00	160.3	280.00	209.9	J-349
J-223	230.00	230.19	true	280.00	329.5	280.00	326.2	J-40
J-224	230.00	230.02	true	280.00	222.5	280.00	233.5	J-222
J-225	230.00	230.00	true	280.00	325.3	280.00	321.5	J-40
J-226	230.00	230.00	true	280.00	377.2	280.00	323.0	J-40
J-227	230.00	230.09	true	280.00	326.2	280.00	324.7	J-40
J-228	230.00	230.21	true	280.00	238.0	280.00	297.4	J-224
J-229	230.00	230.10	true	280.00	371.2	280.00	338.6	J-40
J-230	230.00	230.00	true	280.00	321.3	280.00	322.5	J-36
J-231	230.00	230.03	true	280.00	383.5	280.00	323.0	J-40
J-232	230.00	230.00	true	280.00	380.4	280.00	323.1	J-40
J-233	230.00	230.00	true	280.00	383.8	280.00	323.2	J-40
J-234	230.00	230.18	true	252.12	140.0	280.00	351.6	J-296
J-235	230.00	230.00	true	280.00	361.2	280.00	323.3	J-40
J-236	230.00	230.00	true	280.00	342.1	280.00	320.3	J-1005
J-237	230.00	230.19	true	280.00	225.5	280.00	170.6	J-351
J-238	230.00	230.00	true	280.00	230.6	280.00	192.2	J-351
J-239	230.00	230.00	true	280.00	221.8	280.00	198.8	J-351
J-240	230.00	230.49	true	280.00	162.8	280.00	250.2	J-214
J-241	230.00	230.00	true	280.00	225.5	280.00	212.4	J-351
J-242	230.00	230.00	true	280.00	262.5	280.00	270.5	J-351
J-243	230.00	230.22	true	280.00	310.1	280.00	325.8	J-242
J-244	230.00	230.04	true	280.00	237.5	280.00	245.1	J-268
J-245	230.00	230.00	true	280.00	197.0	280.00	194.1	J-303
J-246	230.00	230.18	true	244.27	140.0	280.00	143.1	J-247
J-247	230.00	230.00	true	245.23	140.0	280.00	141.0	J-246
J-248	230.00	230.00	true	280.00	320.3	280.00	287.4	J-1205
J-249	230.00	230.00	true	280.00	240.7	280.00	186.9	J-303
J-250	230.00	230.19	true	280.00	279.6	280.00	262.5	J-252
J-251	230.00	230.00	true	280.00	236.6	280.00	182.8	J-303
J-252	230.00	230.08	true	278.80	140.0	280.00	211.1	J-256
J-253	230.00	230.00	true	280.00	179.4	280.00	176.5	J-303
J-254	230.00	230.00	true	280.00	169.9	280.00	173.0	J-258
J-255	230.00	230.00	true	280.00	194.4	280.00	145.6	J-258
J-256	230.00	230.01	true	257.53	140.0	280.00	270.5	J-252
J-257	230.00	230.00	true	276.87	189.6	280.00	140.0	J-258

Scenario: MDD + FF - Existing with Upgrades-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	269.17	140.0	280.00	143.0	J-353
J-259	230.00	230.15	true	280.00	291.9	280.00	293.2	J-178
J-260	230.00	230.12	true	280.00	260.9	280.00	249.4	J-256
J-261	230.00	230.09	true	280.00	265.2	280.00	289.5	J-180
J-262	230.00	230.00	true	280.00	324.1	280.00	269.5	J-1195
J-263	230.00	230.00	true	280.00	318.4	280.00	317.6	J-307
J-264	230.00	230.29	true	280.00	272.6	280.00	267.9	J-214
J-265	230.00	230.19	true	280.00	231.4	280.00	234.4	J-307
J-266	230.00	230.26	true	280.00	228.5	280.00	267.5	J-214
J-267	60.00	60.12	true	100.00	526.6	100.00	352.1	J-307
J-268	230.00	230.04	true	280.00	230.9	280.00	247.0	J-244
J-269	60.00	60.00	true	91.57	338.3	100.00	140.0	J-307
J-270	60.00	60.87	true	83.30	308.3	100.00	140.0	J-307
J-271	230.00	230.00	true	280.00	304.3	280.00	280.1	J-1205
J-272	230.00	230.10	true	280.00	239.7	280.00	244.2	J-276
J-273	60.00	60.00	true	90.60	325.4	100.00	140.0	J-307
J-274	230.00	230.01	true	280.00	164.7	280.00	157.8	J-276
J-275	230.00	231.15	false	199.92	183.6	280.00	140.0	J-351
J-276	230.00	231.16	true	278.97	140.0	280.00	167.3	J-274
J-277	230.00	230.16	false	194.60	140.0	280.00	168.3	J-351
J-278	230.00	230.33	true	280.00	194.4	280.00	203.6	J-286
J-279	230.00	230.00	true	280.00	302.6	280.00	272.9	J-1205
J-280	230.00	230.00	true	280.00	270.1	280.00	246.5	J-1205
J-281	230.00	230.00	true	280.00	265.1	280.00	237.2	J-1205
J-282	230.00	230.11	true	277.23	140.0	280.00	215.3	J-214
J-283	230.00	230.00	true	280.00	278.0	280.00	276.0	J-1205
J-284	230.00	230.00	true	280.00	270.4	280.00	286.2	J-288
J-285	230.00	230.09	true	280.00	296.7	280.00	283.0	J-307
J-286	230.00	230.34	true	280.00	154.1	280.00	212.3	J-278
J-287	230.00	230.00	true	280.00	284.7	280.00	285.6	J-307
J-288	230.00	230.00	true	280.00	277.8	280.00	278.5	J-284
J-289	230.00	230.00	true	280.00	338.3	280.00	327.0	J-40
J-290	230.00	230.00	true	280.00	221.2	280.00	289.1	J-214
J-291	230.00	230.00	true	280.00	189.7	280.00	194.6	J-214
J-292	230.00	230.00	true	280.00	239.5	280.00	265.0	J-168
J-293	230.00	230.00	true	280.00	395.6	280.00	344.7	J-40
J-294	230.00	230.05	true	279.24	140.0	280.00	171.7	J-276
J-296	230.00	230.00	true	280.00	309.4	280.00	309.4	J-234
J-298	230.00	230.18	true	267.24	140.0	280.00	280.3	J-276
J-300	230.00	230.10	true	280.00	230.9	280.00	234.4	J-1205
J-301	230.00	230.00	true	280.00	154.8	280.00	154.8	J-303
J-302	230.00	230.16	true	280.00	235.5	280.00	243.1	J-306
J-303	230.00	230.28	true	249.62	140.0	280.00	149.3	J-247
J-304	230.00	230.00	true	280.00	198.8	280.00	209.4	Truck Fi
J-306	230.00	230.22	true	280.00	203.4	280.00	223.6	J-308
J-307	60.00	60.00	false	57.76	140.0	100.00	154.4	J-309
J-308	230.00	230.31	true	280.00	188.6	280.00	243.4	J-306
J-309	60.00	60.00	false	48.98	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	416.0	280.00	342.1	J-40
J-311	230.00	230.01	true	280.00	411.8	280.00	342.7	J-40

Scenario: MDD + FF - Existing with Upgrades-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	45.29	140.0	100.00	193.4	J-309
J-313	230.00	230.00	true	280.00	356.5	280.00	324.7	J-307
J-314	230.00	230.36	true	280.00	230.6	280.00	276.9	J-214
J-315	230.00	230.00	true	280.00	297.2	280.00	312.0	J-316
J-316	230.00	230.00	true	280.00	255.8	280.00	306.2	J-317
J-317	230.00	230.00	true	280.00	258.9	280.00	285.7	J-1195
J-318	230.00	230.00	true	280.00	267.7	280.00	326.6	J-34
J-321	230.00	230.11	true	280.00	323.3	280.00	342.3	J-307
J-322	230.00	230.05	true	280.00	315.7	280.00	282.9	J-214
J-324	230.00	230.00	true	280.00	273.7	280.00	294.5	J-332
J-332	230.00	230.62	true	280.00	268.8	280.00	300.8	J-214
J-337	230.00	230.34	true	280.00	306.3	280.00	308.0	J-261
J-342	230.00	230.21	true	280.00	273.8	280.00	274.6	J-214
J-348	230.00	230.13	true	280.00	305.5	280.00	291.7	J-1205
J-349	230.00	230.38	true	271.16	140.0	280.00	172.5	J-216
J-350	230.00	230.14	true	280.00	248.8	280.00	274.9	J-1195
J-351	230.00	230.00	false	182.27	140.0	280.00	256.2	J-277
J-352	230.00	230.00	true	280.00	220.6	280.00	217.7	J-303
J-353	230.00	230.04	true	244.49	140.0	280.00	149.9	J-150
J-356	230.00	230.08	true	280.00	277.9	280.00	269.6	J-307
J-357	60.00	60.16	true	60.93	141.3	100.00	140.0	J-396
J-358	60.00	60.23	false	50.03	140.0	100.00	388.9	J-396
J-359	60.00	60.04	true	77.42	141.9	100.00	140.0	J-396
J-360	60.00	60.08	true	61.78	140.0	100.00	244.9	J-358
J-362	230.00	230.00	true	280.00	331.1	280.00	318.2	J-178
J-363	230.00	230.00	true	280.00	380.8	280.00	340.7	J-40
J-364	60.00	60.10	true	100.00	443.3	100.00	334.5	J-307
J-365	230.00	230.02	true	280.00	447.2	280.00	349.9	J-40
J-367	230.00	230.00	true	280.00	390.7	280.00	341.4	J-40
J-369	230.00	230.00	true	280.00	393.3	280.00	341.7	J-40
J-370	60.00	60.10	true	93.26	290.2	100.00	140.0	J-307
J-371	230.00	230.00	true	280.00	395.8	280.00	343.0	J-40
J-372	60.00	60.26	true	97.09	255.6	100.00	140.0	J-307
J-373	230.00	230.00	true	280.00	402.4	280.00	343.5	J-40
J-374	60.00	60.35	true	100.00	319.0	100.00	232.2	J-307
J-375	230.00	230.01	true	280.00	408.1	280.00	344.9	J-40
J-376	60.00	60.23	true	100.00	366.6	100.00	275.2	J-307
J-377	230.00	230.01	true	280.00	422.2	280.00	345.8	J-40
J-378	60.00	60.25	true	100.00	371.5	100.00	281.1	J-307
J-379	60.00	60.38	true	100.00	418.3	100.00	315.0	J-307
J-380	60.00	60.11	true	100.00	418.3	100.00	318.3	J-307
J-381	230.00	230.00	true	280.00	441.9	280.00	346.6	J-40
J-382	60.00	60.24	true	100.00	227.6	100.00	206.9	J-386
J-383	60.00	60.24	true	76.75	140.0	100.00	146.4	J-386
J-384	60.00	60.61	true	73.47	156.7	100.00	140.0	J-386
J-386	60.00	60.38	false	42.72	140.0	100.00	482.0	J-307
J-388	60.00	60.16	true	95.08	140.0	100.00	301.7	J-307
J-389	230.00	230.21	true	280.00	382.3	280.00	344.5	J-40
J-390	60.00	60.12	false	49.35	140.7	100.00	140.0	J-396
J-391	230.00	230.00	true	280.00	444.6	280.00	347.2	J-40

Scenario: MDD + FF - Existing with Upgrades-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	false	43.74	140.4	100.00	140.0	J-396
J-394	60.00	60.10	false	37.15	140.1	100.00	140.0	J-396
J-395	60.00	60.49	false	34.85	140.0	100.00	143.0	J-396
J-396	60.00	60.55	false	34.32	140.0	100.00	143.1	J-398
J-398	60.00	60.11	false	34.02	140.0	100.00	154.3	J-396
J-400	60.00	60.31	false	35.99	140.0	100.00	165.9	J-402
J-401	230.00	230.00	true	280.00	347.2	280.00	344.6	J-403
J-402	60.00	60.09	false	36.09	140.0	100.00	162.0	J-400
J-403	230.00	230.00	true	280.00	342.0	280.00	345.1	J-40
J-404	230.00	230.13	true	280.00	327.8	280.00	331.4	J-411
J-406	230.00	230.00	true	280.00	404.5	280.00	343.6	J-40
J-407	230.00	230.07	true	280.00	388.5	280.00	344.0	J-40
J-408	230.00	230.00	true	280.00	384.5	280.00	346.2	J-40
J-410	230.00	230.01	true	280.00	394.1	280.00	346.4	J-40
J-411	230.00	230.00	true	280.00	328.6	280.00	330.5	J-404
J-536	230.00	230.00	true	280.00	272.1	280.00	246.5	J-307
J-538	230.00	230.00	true	280.00	240.6	280.00	294.9	J-1195
J-1000	230.00	230.00	true	280.00	712.3	280.00	439.7	J-40
J-1005	230.00	230.00	true	280.00	310.5	280.00	315.1	J-234
J-1025	230.00	230.00	true	280.00	200.8	280.00	236.0	J-351
J-1050	230.00	230.00	true	280.00	420.1	280.00	422.3	J-40
J-1060	230.00	230.00	true	280.00	446.6	280.00	424.8	J-40
J-1140	230.00	230.00	true	280.00	425.2	280.00	355.9	J-40
J-1150	230.00	230.00	true	280.00	571.3	280.00	388.2	J-40
J-1195	230.00	230.00	true	280.00	236.5	280.00	288.8	J-307
J-1205	230.00	230.00	true	280.00	198.7	280.00	262.7	J-300
J-1220	230.00	230.00	true	280.00	251.8	280.00	260.5	J-307
Truck Fill	230.00	230.00	true	280.00	195.0	280.00	210.5	J-304

Appendix E -
Year 2013 Development Condition for Alternative 1
Simulation Results

Scenario: Peak Hour - Future (10 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	529.0	764.65
J-8	5,909,058.66	97,351.20	713.60	0.30	496.6	764.34
J-10	5,908,474.10	97,361.23	710.20	0.00	526.2	763.97
J-12	5,908,467.18	97,361.38	710.20	0.00	526.0	763.95
J-16	5,908,452.20	97,361.89	710.20	0.34	526.0	763.94
J-22	5,907,974.55	97,357.96	710.00	0.09	523.9	763.53
J-24	5,907,976.56	97,486.24	712.72	0.84	497.8	763.58
J-28	5,908,348.52	97,479.26	713.10	0.55	496.2	763.80
J-30	5,908,476.15	97,465.75	713.60	0.00	492.3	763.91
J-32	5,908,477.92	97,568.92	715.10	0.00	477.4	763.88
J-34	5,908,480.33	97,699.94	717.10	0.17	457.3	763.83
J-36	5,908,480.81	97,725.97	717.10	0.00	457.2	763.82
J-38	5,908,303.69	97,742.34	717.30	0.00	454.6	763.75
J-40	5,908,143.29	97,745.11	717.70	0.17	450.1	763.69
J-42	5,907,977.83	97,749.04	717.00	0.03	456.4	763.63
J-50	5,908,312.36	98,169.75	716.20	0.90	464.2	763.63
J-56	5,908,324.08	98,782.89	713.20	1.27	493.0	763.58
J-60	5,908,547.69	98,778.44	712.60	0.00	499.1	763.60
J-64	5,908,657.02	98,776.18	712.50	0.24	501.0	763.69
J-68	5,908,927.88	98,770.56	711.60	0.13	510.0	763.71
J-74	5,909,209.82	98,764.73	710.10	0.14	525.0	763.74
J-76	5,909,321.64	98,762.41	709.30	0.33	532.8	763.74
J-82	5,909,600.55	98,756.43	706.80	0.64	557.4	763.76
J-90	5,910,145.40	98,745.06	699.50	0.21	629.2	763.79
J-94	5,910,141.73	98,553.50	699.50	0.16	629.3	763.80
J-98	5,909,203.58	98,428.34	712.50	0.25	501.8	763.77
J-102	5,909,101.64	98,426.21	713.00	0.22	497.0	763.78
J-104	5,908,903.10	98,430.23	713.50	0.44	492.0	763.77
J-108	5,908,650.47	98,435.34	714.90	0.51	478.2	763.76
J-112	5,908,654.55	98,649.36	713.80	0.32	488.5	763.71
J-117	5,909,093.99	98,027.43	715.00	0.30	478.6	763.90
J-118	5,909,093.47	98,001.39	715.00	0.21	478.6	763.90
J-120	5,908,854.44	98,006.14	714.70	0.09	481.1	763.86
J-124	5,908,645.32	98,164.72	715.80	0.10	469.8	763.80
J-130	5,909,081.17	97,756.51	714.30	0.00	486.3	763.99
J-134	5,909,084.75	97,555.92	714.50	0.19	486.1	764.17
J-136	5,909,062.84	97,556.57	714.50	0.40	486.5	764.21
J-140	5,909,211.44	97,544.32	715.20	0.03	477.6	764.01
J-142	5,909,320.00	98,985.50	707.40	0.02	550.6	763.66
J-144	5,908,552.32	99,001.45	712.60	0.28	498.7	763.56
J-146	5,908,500.88	97,385.99	711.00	0.08	518.4	763.97
J-148	5,908,743.01	97,064.41	711.00	0.12	533.8	765.55
J-150	5,908,756.07	97,063.51	711.00	0.00	534.2	765.59
J-152	5,908,779.46	96,905.96	710.70	0.00	538.5	765.72
J-162	5,907,845.59	97,760.01	714.80	0.06	477.2	763.56
J-164	5,907,853.69	98,184.20	715.30	0.11	472.1	763.54
J-166	5,907,858.51	98,441.75	715.50	0.30	470.0	763.52
J-168	5,907,990.55	98,439.52	715.20	0.07	472.9	763.52
J-172	5,907,997.17	98,789.35	713.00	0.15	494.4	763.52
J-174	5,908,131.47	98,786.69	713.20	0.27	492.7	763.54
J-176	5,907,981.73	98,181.34	715.80	0.15	468.1	763.63
J-178	5,907,708.34	98,186.08	715.20	0.50	472.5	763.48

Scenario: Peak Hour - Future (10 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	485.2	763.48
J-198	5,906,888.62	97,825.94	710.60	0.00	514.6	763.18
J-202	5,906,593.95	97,782.31	709.60	0.28	523.3	763.07
J-206	5,906,215.61	97,708.31	712.00	0.12	499.4	763.03
J-210	5,905,911.78	97,702.33	713.40	0.03	485.7	763.02
J-212	5,905,673.44	97,707.07	714.50	0.23	474.9	763.02
J-214	5,905,369.47	97,713.12	715.90	1.24	461.2	763.02
J-216	5,905,364.01	97,439.05	715.60	7.62	464.2	763.03
J-217	5,909,307.40	97,334.51	710.88	0.13	526.4	764.67
J-218	5,909,077.55	97,556.13	714.50	0.00	486.3	764.19
J-219	5,909,195.57	97,741.44	714.00	0.00	489.3	764.00
J-221	5,909,080.95	97,744.08	714.53	0.03	484.2	764.00
J-222	5,905,698.60	97,432.40	714.40	0.07	476.4	763.08
J-223	5,908,477.48	97,757.92	717.21	0.28	456.0	763.81
J-224	5,905,905.82	97,428.26	714.10	0.02	479.6	763.10
J-225	5,907,981.51	97,748.90	717.00	0.00	456.4	763.64
J-226	5,907,946.73	97,358.07	710.00	0.00	523.8	763.52
J-227	5,908,303.93	97,760.54	717.18	0.14	455.7	763.74
J-228	5,906,360.39	97,501.77	711.60	0.31	504.8	763.18
J-229	5,909,074.75	97,350.43	713.60	0.15	497.0	764.39
J-230	5,908,471.28	97,739.11	717.10	0.00	457.1	763.81
J-231	5,907,921.40	97,334.01	709.20	0.04	531.5	763.51
J-232	5,907,811.00	97,326.52	708.90	0.00	534.1	763.48
J-233	5,907,639.32	97,370.09	707.90	0.00	543.6	763.44
J-234	5,906,873.52	97,574.28	711.60	0.27	505.2	763.22
J-235	5,907,254.44	97,377.87	708.90	0.00	533.0	763.36
J-236	5,906,869.56	97,385.66	709.67	0.00	524.7	763.29
J-237	5,913,524.07	98,517.56	689.20	0.28	718.6	762.62
J-238	5,913,476.73	98,634.61	689.45	0.00	716.1	762.62
J-239	5,913,442.90	98,660.40	690.60	0.00	704.8	762.62
J-240	5,905,918.98	98,029.82	712.40	0.74	494.5	762.93
J-241	5,913,350.24	98,658.09	690.80	0.00	702.9	762.62
J-242	5,912,944.99	98,674.90	690.05	0.00	710.2	762.62
J-243	5,912,549.09	98,682.16	689.00	0.33	720.4	762.61
J-244	5,905,905.76	98,439.24	709.18	0.06	524.9	762.81
J-245	5,908,776.14	96,915.33	710.70	0.00	538.5	765.72
J-246	5,908,458.63	97,044.00	709.95	0.27	545.8	765.72
J-247	5,908,464.31	97,043.90	710.05	0.00	544.8	765.72
J-248	5,906,562.22	99,128.24	701.60	0.00	600.5	762.96
J-249	5,908,771.98	96,927.06	705.50	0.00	589.3	765.72
J-250	5,906,588.47	98,425.23	707.60	0.28	540.6	762.84
J-251	5,908,770.14	96,932.26	705.50	0.00	589.3	765.72
J-252	5,906,825.65	98,420.35	709.60	0.12	521.1	762.84
J-253	5,908,766.64	96,942.13	710.70	0.00	538.5	765.72
J-254	5,908,783.08	96,917.79	710.70	0.00	538.3	765.70
J-255	5,908,778.19	96,929.26	705.50	0.00	589.1	765.69
J-256	5,906,735.40	98,269.84	710.30	0.02	514.4	762.86
J-257	5,908,776.00	96,934.34	705.50	0.00	589.1	765.69
J-258	5,908,771.86	96,943.98	710.70	0.00	538.1	765.68
J-259	5,907,681.11	97,992.32	713.39	0.22	490.2	763.48
J-260	5,906,585.22	98,273.05	708.00	0.17	537.1	762.88
J-261	5,907,700.54	98,626.53	713.40	0.13	490.0	763.47

Scenario: Peak Hour - Future (10 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	592.3	763.02
J-263	5,908,554.64	99,001.40	713.20	0.00	492.8	763.56
J-264	5,906,579.90	98,024.41	708.70	0.43	531.4	763.00
J-265	5,908,562.13	99,338.47	708.40	0.28	539.7	763.54
J-266	5,906,399.93	98,028.05	708.00	0.39	538.3	763.01
J-267	5,908,572.77	100,001.17	689.40	0.18	724.0	763.38
J-268	5,905,898.13	98,461.32	709.20	0.06	524.8	762.83
J-269	5,908,585.09	100,508.03	688.80	0.00	725.1	762.89
J-270	5,908,600.64	101,103.84	697.20	1.31	642.6	762.86
J-271	5,906,493.28	99,141.39	702.90	0.00	587.8	762.96
J-272	5,905,530.79	98,468.96	712.00	0.15	498.5	762.94
J-273	5,908,603.09	100,561.75	690.60	0.00	707.3	762.87
J-274	5,905,388.62	98,471.86	711.20	0.01	506.4	762.95
J-275	5,914,588.31	98,954.88	690.35	1.73	706.6	762.55
J-276	5,905,347.08	98,472.70	711.90	1.75	499.6	762.95
J-277	5,914,515.82	99,129.18	692.25	0.25	688.1	762.55
J-278	5,905,525.90	98,217.56	713.80	0.49	481.4	762.98
J-279	5,906,383.63	99,143.48	703.40	0.00	582.9	762.96
J-280	5,906,174.59	99,147.94	704.45	0.00	572.5	762.95
J-281	5,906,102.58	99,149.32	704.40	0.00	573.0	762.95
J-282	5,905,375.58	98,019.54	714.80	0.17	471.7	763.00
J-283	5,906,384.67	99,185.47	704.70	0.00	570.2	762.96
J-284	5,906,395.12	99,606.40	702.20	0.00	594.7	762.96
J-285	5,906,617.35	99,583.11	700.20	0.14	614.3	762.97
J-286	5,905,658.69	98,214.91	714.10	0.52	478.5	762.99
J-287	5,906,568.55	99,602.91	700.90	0.00	607.4	762.96
J-288	5,906,458.61	99,605.06	701.40	0.00	602.5	762.96
J-289	5,908,517.34	97,755.28	716.36	0.00	464.5	763.82
J-290	5,906,547.32	99,038.54	702.77	0.00	589.0	762.95
J-291	5,905,447.34	97,711.57	715.54	0.00	464.7	763.02
J-292	5,907,994.37	98,641.67	713.93	0.00	485.3	763.52
J-293	5,909,994.96	97,459.73	706.55	0.00	563.6	764.14
J-294	5,905,394.69	98,642.02	710.50	0.08	513.3	762.95
J-296	5,906,623.71	97,548.19	711.60	0.00	505.2	763.22
J-298	5,905,695.90	98,870.15	708.60	0.28	531.8	762.94
J-300	5,905,801.61	98,872.46	707.20	0.15	545.5	762.94
J-301	5,908,753.24	96,979.98	711.00	0.00	535.5	765.72
J-302	5,905,859.76	98,735.04	708.60	0.24	531.8	762.94
J-303	5,908,522.69	97,042.82	711.00	0.42	535.5	765.72
J-304	5,906,312.67	98,430.89	708.24	0.00	530.5	762.44
J-306	5,905,728.41	98,736.90	709.90	0.33	519.1	762.94
J-307	5,908,622.68	102,230.99	714.40	0.00	474.3	762.86
J-308	5,905,579.15	98,646.58	712.00	0.47	498.5	762.94
J-309	5,908,642.41	103,175.71	712.93	0.00	488.7	762.86
J-310	5,909,279.69	97,059.38	707.10	0.00	574.5	765.80
J-311	5,909,282.51	97,057.24	707.10	0.01	574.2	765.77
J-312	5,909,434.20	103,817.29	707.50	0.00	541.8	762.86
J-313	5,908,552.13	98,992.36	710.15	0.00	522.7	763.56
J-314	5,906,229.89	98,727.43	706.40	0.55	553.3	762.94
J-315	5,908,454.45	98,994.29	710.00	0.00	523.1	763.45
J-316	5,908,092.47	99,005.00	710.25	0.00	519.5	763.33
J-317	5,907,708.27	99,012.60	708.20	0.00	538.4	763.21

Scenario: Peak Hour - Future (10 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	506.4	763.94
J-321	5,909,018.07	98,991.77	710.00	0.17	524.8	763.62
J-322	5,906,537.16	98,766.80	706.30	0.08	554.3	762.94
J-324	5,906,780.50	98,815.29	707.40	0.00	544.3	763.01
J-332	5,906,905.11	98,812.64	709.10	0.93	528.0	763.05
J-337	5,907,703.90	98,795.12	710.50	0.52	518.2	763.45
J-342	5,906,589.89	98,581.45	707.10	0.31	545.9	762.88
J-348	5,906,564.17	99,142.81	701.60	0.20	600.5	762.96
J-349	5,905,292.97	97,440.46	715.60	0.57	464.2	763.03
J-350	5,906,836.65	99,137.08	702.50	0.21	592.2	763.01
J-351	5,914,985.65	99,118.12	694.80	0.00	663.1	762.55
J-352	5,908,787.17	96,908.26	710.70	0.00	538.5	765.72
J-353	5,908,757.47	96,994.16	711.00	0.05	534.8	765.64
J-356	5,906,618.36	99,628.21	700.20	0.12	614.3	762.97
J-357	5,909,258.32	100,547.78	691.00	0.24	700.7	762.59
J-358	5,909,251.92	100,248.17	691.00	0.35	701.0	762.62
J-359	5,908,858.94	100,556.29	691.00	0.06	702.1	762.74
J-360	5,908,857.28	100,478.32	691.00	0.12	701.9	762.72
J-362	5,907,675.38	97,768.48	712.30	0.00	500.9	763.48
J-363	5,909,310.68	97,745.32	713.10	0.00	498.0	763.99
J-364	5,906,949.71	100,836.01	691.50	0.15	698.7	762.89
J-365	5,910,093.16	97,731.00	707.20	0.03	555.0	763.91
J-367	5,909,360.67	97,744.77	712.10	0.00	507.8	763.98
J-369	5,909,385.67	97,744.30	711.85	0.00	510.2	763.98
J-370	5,908,423.93	101,076.18	691.00	0.14	703.3	762.86
J-371	5,909,495.65	97,742.23	711.65	0.00	512.1	763.97
J-372	5,908,357.20	101,065.19	691.00	0.39	703.3	762.86
J-373	5,909,520.64	97,741.76	711.00	0.00	518.4	763.97
J-374	5,907,995.30	101,006.31	691.00	0.52	703.3	762.87
J-375	5,909,735.60	97,737.72	710.50	0.02	523.2	763.96
J-376	5,907,631.31	100,947.18	691.00	0.34	703.4	762.87
J-377	5,909,851.58	97,735.54	709.20	0.01	535.9	763.96
J-378	5,907,569.28	100,937.06	690.70	0.37	706.3	762.87
J-379	5,907,097.59	100,860.13	690.80	0.57	705.4	762.88
J-380	5,907,070.76	100,855.75	691.60	0.16	697.6	762.88
J-381	5,909,943.56	97,733.81	707.40	0.00	553.5	763.95
J-382	5,906,848.42	100,819.49	691.00	0.35	703.5	762.89
J-383	5,906,355.74	100,852.67	691.40	0.36	699.6	762.88
J-384	5,906,237.87	100,906.65	691.40	0.92	699.6	762.88
J-386	5,905,356.70	100,981.32	693.10	0.57	683.2	762.91
J-388	5,907,590.72	100,805.57	690.70	0.23	706.3	762.87
J-389	5,909,944.06	97,385.51	706.90	0.32	561.0	764.23
J-390	5,909,578.24	100,572.53	691.00	0.18	699.2	762.45
J-391	5,909,976.00	97,733.20	707.25	0.00	554.9	763.95
J-392	5,909,947.68	100,567.17	691.00	0.77	698.4	762.36
J-394	5,910,397.44	100,552.88	691.00	0.15	698.3	762.36
J-395	5,910,768.00	100,546.28	691.00	0.73	698.3	762.36
J-396	5,910,752.17	99,977.20	691.00	0.83	698.3	762.35
J-398	5,910,381.11	99,987.28	691.00	0.16	698.3	762.35
J-400	5,909,937.68	99,983.00	691.00	0.46	698.3	762.36
J-401	5,909,529.41	97,966.96	711.90	0.00	509.6	763.96
J-402	5,909,566.00	99,988.28	691.00	0.14	698.4	762.36

Scenario: Peak Hour - Future (10 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	505.6	763.96
J-404	5,909,690.09	97,971.58	713.05	0.19	498.3	763.96
J-406	5,909,525.03	97,741.68	710.80	0.00	520.4	763.97
J-407	5,909,525.21	97,750.68	711.50	0.11	513.5	763.97
J-408	5,909,931.45	97,966.98	708.15	0.00	546.2	763.95
J-410	5,909,979.59	97,922.51	707.90	0.02	548.6	763.95
J-411	5,909,713.09	97,971.14	712.95	0.00	499.2	763.96
J-536	5,906,927.24	99,821.22	703.00	0.00	587.1	762.98
J-538	5,906,907.40	99,022.87	703.00	0.00	587.5	763.03
J-1005	5,906,600.14	97,387.90	712.00	0.00	501.3	763.22
J-1010	5,914,583.44	98,184.90	695.00	2.90	660.5	762.49
J-1015	5,912,932.96	97,426.31	692.00	5.54	691.5	762.66
J-1020	5,912,941.83	98,537.17	690.00	1.30	710.9	762.64
J-1025	5,912,941.46	98,290.11	690.00	0.00	711.4	762.69
J-1030	5,912,940.85	98,009.27	690.00	0.51	711.3	762.68
J-1035	5,913,667.48	99,150.54	695.00	0.00	661.0	762.54
J-1040	5,912,948.05	99,168.66	690.00	7.77	710.0	762.54
J-1045	5,912,186.69	98,349.44	692.00	6.81	691.0	762.60
J-1050	5,911,741.94	98,684.68	690.00	0.00	710.6	762.61
J-1055	5,912,164.06	99,124.69	692.00	9.59	690.4	762.54
J-1060	5,911,747.22	98,916.14	692.00	0.00	690.6	762.57
J-1065	5,911,767.78	99,927.34	691.00	0.00	700.0	762.53
J-1070	5,911,780.04	100,530.45	691.00	0.00	699.8	762.51
J-1075	5,913,570.82	99,897.36	695.00	4.82	660.8	762.52
J-1080	5,911,375.53	100,537.05	692.00	0.00	688.9	762.39
J-1090	5,910,765.45	100,552.84	691.00	0.00	698.3	762.36
J-1100	5,909,953.69	100,938.26	691.00	1.54	698.3	762.35
J-1120	5,911,380.05	100,969.12	695.00	3.07	659.1	762.35
J-1130	5,910,767.70	100,975.54	691.00	1.53	698.3	762.35
J-1140	5,910,093.50	98,010.88	710.00	0.00	526.8	763.82
J-1160	5,910,888.42	98,011.18	700.00	17.71	616.7	763.01
J-1170	5,907,921.21	96,958.49	712.50	4.02	498.1	763.40
J-1180	5,906,388.02	97,030.59	718.00	7.47	441.7	763.13
J-1190	5,907,464.10	99,160.84	712.00	10.23	499.2	763.01
J-1195	5,907,311.37	99,134.08	712.00	0.00	499.4	763.02
J-1200	5,905,818.21	99,517.76	710.00	9.50	517.7	762.90
J-1205	5,905,816.29	99,157.77	710.00	0.00	518.0	762.93
J-1210	5,905,298.16	99,161.16	716.00	7.17	459.3	762.93
J-1215	5,905,328.15	100,093.75	705.00	0.00	566.8	762.91
J-1220	5,906,625.92	99,855.91	703.00	0.00	587.0	762.98
J-1230	5,905,900.56	97,381.30	714.10	0.00	479.7	763.11
J-1240	5,905,358.81	97,375.84	715.60	0.00	464.3	763.05
J-1250	5,905,273.56	98,474.03	711.90	0.00	499.7	762.96
J-1260	5,904,155.48	99,994.25	724.50	6.39	374.9	762.80
PUMPHOUSE - 1	5,909,261.30	96,808.08	713.70	0.13	515.5	766.38
PUMPHOUSE - 2	5,909,262.07	96,862.84	713.70	1.43	515.5	766.38
PUMPHOUSE - 3	5,909,262.83	96,917.20	713.70	0.00	515.5	766.38
PUMPHOUSE - 4	5,909,263.60	96,971.96	713.70	1.37	515.5	766.37
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	530.0	762.39

Scenario: Peak Hc Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	19.83	0.28	0.09	0.37	763.99	763.90
P-3	Jockey Pump	Jockey Pump PRV	1.40	150.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-4	Jockey Pump PRV	PUMPHOUSE - 1	1.50	150.0	100.0	-0.00	0.00	0.00	0.00	766.38	766.38
P-6	PUMPHOUSE - 1	PUMPHOUSE - 2	1.40	450.0	100.0	-0.13	0.00	0.00	0.00	766.38	766.38
P-8	Lead Pump	Lead Pump PRV	1.20	200.0	100.0	22.06	0.70	0.01	4.59	792.66	792.65
P-10	Lead Pump PRV	PUMPHOUSE - 2	1.70	200.0	100.0	22.06	0.70	0.15	88.38	766.53	766.38
P-12	Lag Pump	Lag Pump PRV	1.20	200.0	100.0	22.09	0.70	0.01	4.59	792.65	792.65
P-14	Lag Pump PRV	PUMPHOUSE - 3	1.70	200.0	100.0	22.09	0.70	0.15	88.60	766.53	766.38
P-16	PUMPHOUSE - 2	PUMPHOUSE - 3	1.40	450.0	100.0	20.50	0.13	0.00	0.27	766.38	766.38
P-18	Fire Pump	Fire Pump PRV	0.80	300.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-20	Fire Pump PRV	PUMPHOUSE - 4	2.10	300.0	100.0	-0.00	0.00	0.00	0.00	766.37	766.37
P-22	PUMPHOUSE - 3	PUMPHOUSE - 4	1.40	450.0	100.0	42.60	0.27	0.00	1.22	766.38	766.37
P-24	R-1	Jockey Pump	5.00	150.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-26	R-1	Lead Pump	5.00	200.0	100.0	22.06	0.70	0.02	4.58	712.37	712.35
P-28	R-1	Lag Pump	5.00	200.0	100.0	22.09	0.70	0.02	4.60	712.37	712.35
P-30	R-1	Fire Pump	5.00	300.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	765.72	765.72
P-34	PUMPHOUSE - 4	J-310	92.00	450.0	100.0	206.92	1.30	0.58	6.28	766.37	765.80
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	765.72	765.72
P-40	J-10	J-12	1.20	148.0	130.0	11.32	0.66	0.02	19.35	763.97	763.95
P-42	J-12	J-16	3.50	202.0	130.0	11.32	0.35	0.00	1.40	763.95	763.94
P-45	J-10	J-8	584.50	304.0	130.0	-29.34	0.40	0.37	0.63	763.97	764.34
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	765.72	765.72
P-50	J-362	J-259	224.00	297.0	130.0	1.05	0.02	0.00	0.00	763.48	763.48
P-52	J-16	J-22	506.20	199.0	130.0	10.98	0.35	0.41	0.81	763.94	763.53
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.72	765.72
P-58	J-24	J-28	372.00	199.0	130.0	-9.26	0.30	0.22	0.60	763.58	763.80
P-60	J-337	J-261	168.50	250.0	130.0	-6.33	0.13	0.02	0.10	763.45	763.47
P-62	J-28	J-30	139.00	199.0	130.0	-9.81	0.32	0.10	0.75	763.80	763.91
P-64	J-30	J-10	104.50	304.0	130.0	-26.68	0.37	0.06	0.61	763.91	763.97
P-66	J-30	J-32	103.00	304.0	130.0	16.87	0.23	0.03	0.24	763.91	763.88
P-68	J-32	J-34	131.00	304.0	130.0	22.49	0.31	0.05	0.41	763.88	763.83
P-70	J-34	J-36	26.00	304.0	130.0	22.32	0.31	0.01	0.44	763.83	763.82
P-74	J-38	J-40	160.50	304.0	130.0	20.53	0.28	0.05	0.33	763.75	763.69
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.72	765.72

Scenario: Peak Hc Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	765.72	765.72
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.01	765.72	765.72
P-88	J-50	J-56	613.50	199.0	130.0	3.45	0.11	0.06	0.10	763.63	763.58
P-90	J-352	J-254	10.50	202.0	130.0	10.69	0.33	0.01	1.42	765.72	765.70
P-92	J-254	J-255	12.50	202.0	130.0	10.69	0.33	0.01	0.79	765.70	765.69
P-94	J-255	J-257	5.50	202.0	130.0	10.69	0.33	0.00	0.91	765.69	765.69
P-96	J-257	J-258	10.50	202.0	130.0	10.69	0.33	0.01	0.82	765.69	765.68
P-98	J-258	J-353	52.50	202.0	130.0	10.69	0.33	0.04	0.72	765.68	765.64
P-100	J-350	J-262	69.00	202.0	130.0	-4.84	0.15	0.01	0.16	763.01	763.02
P-102	J-68	J-64	271.00	254.0	130.0	6.38	0.13	0.02	0.09	763.71	763.69
P-104	J-74	J-68	282.00	254.0	130.0	6.51	0.13	0.03	0.09	763.74	763.71
P-106	J-321	J-263	463.50	304.0	130.0	12.65	0.17	0.06	0.14	763.62	763.56
P-108	J-263	J-144	2.50	304.0	130.0	6.40	0.09	0.00	0.15	763.56	763.56
P-112	J-74	J-76	112.00	254.0	130.0	-3.39	0.07	0.00	0.03	763.74	763.74
P-114	J-76	J-82	279.00	406.0	130.0	-16.56	0.13	0.02	0.06	763.74	763.76
P-116	J-82	J-90	545.00	406.0	130.0	-17.20	0.13	0.03	0.06	763.76	763.79
P-118	J-263	J-265	337.00	300.0	130.0	6.25	0.09	0.01	0.04	763.56	763.54
P-120	J-265	J-267	665.50	200.0	130.0	5.97	0.19	0.17	0.25	763.54	763.38
P-122	J-267	J-269	507.00	150.0	130.0	5.79	0.33	0.49	0.96	763.38	762.89
P-124	J-269	J-273	60.50	200.0	130.0	5.79	0.18	0.02	0.26	762.89	762.87
P-126	J-273	J-270	565.00	200.0	130.0	1.32	0.04	0.01	0.02	762.87	762.86
P-128	J-273	J-359	256.00	155.0	130.0	4.47	0.24	0.14	0.53	762.87	762.74
P-130	J-90	J-94	191.50	450.0	120.0	-17.40	0.11	0.01	0.04	763.79	763.80
P-132	J-98	J-74	336.50	199.0	130.0	3.26	0.10	0.03	0.09	763.77	763.74
P-134	J-270	J-370	182.00	148.0	130.0	0.01	0.00	0.00	0.00	762.86	762.86
P-136	J-102	J-98	106.00	199.0	130.0	3.51	0.11	0.01	0.10	763.78	763.77
P-140	J-102	J-104	198.50	199.0	130.0	2.62	0.08	0.01	0.06	763.78	763.77
P-142	J-108	J-104	252.50	199.0	130.0	-2.18	0.07	0.01	0.04	763.76	763.77
P-146	J-108	J-112	214.00	300.0	120.0	14.46	0.20	0.04	0.21	763.76	763.71
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	762.55	762.55
P-150	J-112	J-64	127.00	300.0	120.0	14.14	0.20	0.03	0.20	763.71	763.69
P-152	J-275	J-277	189.00	297.0	130.0	3.13	0.05	0.00	0.01	762.55	762.55
P-154	J-117	J-102	399.00	199.0	130.0	6.34	0.20	0.12	0.30	763.90	763.78
P-156	J-332	J-324	124.50	254.0	130.0	11.70	0.23	0.04	0.29	763.05	763.01
P-158	J-118	J-120	239.00	300.0	120.0	12.97	0.18	0.04	0.17	763.90	763.86

Scenario: Peak Hc · Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-160	J-124	J-120	349.00	300.0	120.0	-12.89	0.18	0.06	0.17	763.80	763.86
P-164	J-124	J-108	270.50	300.0	120.0	12.78	0.18	0.04	0.17	763.80	763.76
P-168	J-118	J-117	26.00	300.0	120.0	6.65	0.09	0.00	0.05	763.90	763.90
P-180	J-8	J-136	205.50	204.0	130.0	9.92	0.30	0.13	0.65	764.34	764.21
P-184	J-134	J-140	128.50	148.0	130.0	6.30	0.37	0.16	1.26	764.17	764.01
P-186	J-76	J-142	225.50	254.0	130.0	12.84	0.25	0.08	0.35	763.74	763.66
P-194	J-148	J-146	535.50	150.0	130.0	10.51	0.59	1.57	2.94	765.55	763.97
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	765.72	765.72
P-196	J-148	J-150	13.00	150.0	130.0	-10.63	0.60	0.04	3.03	765.55	765.59
P-208	J-42	J-162	132.50	304.0	130.0	26.75	0.37	0.08	0.58	763.63	763.56
P-212	J-162	J-164	424.50	254.0	130.0	3.95	0.08	0.02	0.04	763.56	763.54
P-214	J-164	J-166	257.50	254.0	130.0	5.12	0.10	0.02	0.06	763.54	763.52
P-216	J-166	J-168	132.00	254.0	130.0	1.82	0.04	0.00	0.01	763.52	763.52
P-222	J-172	J-174	134.50	254.0	130.0	-8.85	0.17	0.02	0.17	763.52	763.54
P-224	J-174	J-56	192.50	254.0	130.0	-9.12	0.18	0.03	0.17	763.54	763.58
P-226	J-164	J-176	128.00	148.0	130.0	-4.68	0.27	0.09	0.73	763.54	763.63
P-228	J-164	J-178	145.50	148.0	130.0	3.39	0.20	0.06	0.40	763.54	763.48
P-230	J-166	J-180	146.00	148.0	130.0	2.99	0.17	0.05	0.31	763.52	763.48
P-238	J-198	J-202	298.50	304.0	130.0	21.69	0.30	0.11	0.38	763.18	763.07
P-260	J-202	J-206	385.50	304.0	130.0	9.98	0.14	0.03	0.09	763.07	763.03
P-262	J-206	J-210	304.50	304.0	130.0	5.05	0.07	0.01	0.03	763.03	763.02
P-266	J-210	J-212	238.50	304.0	130.0	4.70	0.06	0.01	0.02	763.02	763.02
P-270	J-214	J-216	274.00	304.0	130.0	-6.73	0.09	0.01	0.04	763.02	763.03
P-273	J-310	J-217	285.00	450.0	100.0	164.37	1.03	1.13	3.95	765.80	764.67
P-274	J-216	J-222	334.50	254.0	130.0	-7.81	0.15	0.04	0.13	763.03	763.08
P-275	J-217	J-6	10.50	450.0	100.0	63.69	0.40	0.02	1.93	764.67	764.65
P-276	J-134	J-218	7.00	148.0	130.0	-6.49	0.38	0.02	2.52	764.17	764.19
P-277	J-218	J-136	14.50	148.0	130.0	-5.67	0.33	0.02	1.44	764.19	764.21
P-278	J-222	J-224	207.50	254.0	130.0	-7.88	0.16	0.03	0.14	763.08	763.10
P-280	J-228	J-224	462.00	254.0	130.0	8.52	0.17	0.07	0.15	763.18	763.10
P-283	J-363	J-219	118.00	455.7	130.0	-24.38	0.15	0.01	0.07	763.99	764.00
P-285	J-218	J-221	188.00	455.7	130.0	95.54	0.59	0.18	0.98	764.19	764.00
P-286	J-221	J-219	114.50	455.7	130.0	18.12	0.11	0.01	0.05	764.00	764.00
P-288	J-40	J-225	162.00	304.0	130.0	20.36	0.28	0.06	0.35	763.69	763.64
P-289	J-225	J-42	3.50	304.0	130.0	26.78	0.37	0.00	1.21	763.64	763.63

Scenario: Peak Hc Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-290	J-224	J-210	274.00	254.0	130.0	11.55	0.23	0.08	0.29	763.10	763.02
P-293	J-225	J-24	262.50	455.7	130.0	43.33	0.27	0.06	0.22	763.64	763.58
P-294	J-210	J-240	327.50	254.0	130.0	11.86	0.23	0.10	0.30	763.02	762.93
P-297	J-36	J-230	22.50	304.0	130.0	22.32	0.31	0.01	0.55	763.82	763.81
P-298	J-240	J-244	431.00	254.0	130.0	11.12	0.22	0.11	0.26	762.93	762.81
P-299	J-230	J-38	167.50	304.0	130.0	20.53	0.28	0.06	0.35	763.81	763.75
P-300	J-223	J-230	25.00	297.0	130.0	-1.78	0.03	0.00	0.01	763.81	763.81
P-301	J-24	J-22	128.50	455.7	130.0	51.76	0.32	0.05	0.36	763.58	763.53
P-303	J-22	J-226	28.00	455.7	130.0	62.64	0.38	0.01	0.45	763.53	763.52
P-305	J-227	J-50	409.50	204.0	130.0	6.15	0.19	0.10	0.25	763.74	763.63
P-306	J-223	J-227	173.50	455.7	130.0	59.07	0.36	0.07	0.39	763.81	763.74
P-307	J-227	J-225	336.50	455.7	130.0	52.78	0.32	0.10	0.30	763.74	763.64
P-308	J-250	J-252	237.00	254.0	130.0	-3.42	0.07	0.01	0.03	762.84	762.84
P-309	J-217	J-229	243.00	455.7	130.0	100.55	0.62	0.28	1.17	764.67	764.39
P-310	J-6	J-229	233.00	297.0	130.0	35.52	0.51	0.26	1.14	764.65	764.39
P-311	J-229	J-8	16.00	297.0	130.0	39.56	0.57	0.05	2.82	764.39	764.34
P-312	J-252	J-256	219.00	199.0	130.0	-3.54	0.11	0.02	0.10	762.84	762.86
P-313	J-229	J-218	205.50	455.7	130.0	96.36	0.59	0.20	0.97	764.39	764.19
P-314	J-260	J-256	150.00	199.0	130.0	3.56	0.11	0.02	0.10	762.88	762.86
P-315	J-226	J-231	35.00	455.7	130.0	62.64	0.38	0.01	0.40	763.52	763.51
P-316	J-231	J-232	143.50	455.7	130.0	45.42	0.28	0.03	0.22	763.51	763.48
P-317	J-232	J-233	178.50	455.7	130.0	45.42	0.28	0.04	0.20	763.48	763.44
P-318	J-260	J-250	152.00	254.0	130.0	11.69	0.23	0.04	0.29	762.88	762.84
P-319	J-233	J-235	385.00	455.7	130.0	45.42	0.28	0.08	0.20	763.44	763.36
P-320	J-264	J-260	248.50	254.0	130.0	15.42	0.30	0.12	0.47	763.00	762.88
P-321	J-235	J-236	385.00	455.7	130.0	45.42	0.28	0.08	0.20	763.36	763.29
P-322	J-311	J-1025	3,915.00	297.0	130.0	31.15	0.45	3.08	0.79	765.77	762.69
P-322a	J-1025	J-237	625.50	297.0	130.0	10.77	0.16	0.07	0.11	762.69	762.62
P-323	J-237	J-275	1,150.50	297.0	130.0	7.76	0.11	0.07	0.06	762.62	762.55
P-324	J-264	J-202	243.50	254.0	130.0	-11.43	0.23	0.07	0.28	763.00	763.07
P-325	J-237	J-238	126.50	297.0	130.0	2.73	0.04	0.00	0.01	762.62	762.62
P-326	J-264	J-266	180.00	254.0	130.0	-4.41	0.09	0.01	0.05	763.00	763.01
P-327	J-238	J-239	43.00	297.0	130.0	2.73	0.04	0.00	0.01	762.62	762.62
P-328	J-266	J-206	485.00	254.0	130.0	-4.80	0.09	0.03	0.05	763.01	763.03
P-329	J-239	J-241	92.50	297.0	130.0	2.73	0.04	0.00	0.01	762.62	762.62

Scenario: Peak Hc Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-330	J-244	J-268	30.00	254.0	130.0	-12.20	0.24	0.01	0.41	762.81	762.83
P-331	J-241	J-242	409.50	297.0	130.0	2.73	0.04	0.00	0.01	762.62	762.62
P-332	J-268	J-272	367.50	254.0	130.0	-12.26	0.24	0.11	0.31	762.83	762.94
P-333	J-242	J-243	396.00	297.0	130.0	3.90	0.06	0.01	0.02	762.62	762.61
P-335	J-248	J-348	14.50	199.0	130.0	-5.25	0.17	0.00	0.27	762.96	762.96
P-336	J-272	J-274	142.00	254.0	130.0	-4.86	0.10	0.01	0.06	762.94	762.95
P-337	J-248	J-271	76.00	297.0	130.0	2.96	0.04	0.00	0.01	762.96	762.96
P-338	J-274	J-276	41.50	300.0	120.0	-6.67	0.09	0.00	0.05	762.95	762.95
P-339	J-271	J-279	109.50	297.0	130.0	2.96	0.04	0.00	0.01	762.96	762.96
P-340	J-272	J-278	251.50	254.0	130.0	-8.80	0.17	0.04	0.18	762.94	762.98
P-341	J-279	J-280	209.00	297.0	130.0	6.22	0.09	0.01	0.04	762.96	762.95
P-342	J-278	J-282	329.50	254.0	130.0	-4.87	0.10	0.02	0.05	762.98	763.00
P-343	J-280	J-281	72.00	297.0	130.0	6.22	0.09	0.00	0.04	762.95	762.95
P-344	J-279	J-283	42.00	297.0	130.0	-3.27	0.05	0.00	0.02	762.96	762.96
P-345	J-283	J-284	421.00	297.0	130.0	-3.27	0.05	0.01	0.01	762.96	762.96
P-346	J-214	J-282	306.50	254.0	130.0	5.03	0.10	0.02	0.06	763.02	763.00
P-347	J-348	J-285	445.00	199.0	130.0	-0.83	0.03	0.00	0.01	762.96	762.97
P-348	J-285	J-356	45.00	199.0	130.0	-4.23	0.14	0.01	0.15	762.97	762.97
P-349	J-285	J-287	64.00	297.0	130.0	3.27	0.05	0.00	0.02	762.97	762.96
P-350	J-278	J-286	133.00	254.0	130.0	-4.42	0.09	0.01	0.05	762.98	762.99
P-351	J-287	J-288	110.00	297.0	130.0	3.27	0.05	0.00	0.01	762.96	762.96
P-352	J-212	J-286	517.50	254.0	130.0	4.94	0.10	0.03	0.06	763.02	762.99
P-353	J-288	J-284	63.50	297.0	130.0	3.27	0.05	0.00	0.01	762.96	762.96
P-354	J-221	J-130	12.50	297.0	130.0	19.83	0.29	0.01	0.61	764.00	763.99
P-355	J-221	J-289	563.50	455.7	130.0	57.57	0.35	0.18	0.32	764.00	763.82
P-356	J-289	J-223	40.00	455.7	130.0	57.57	0.35	0.01	0.36	763.82	763.81
P-357	J-322	J-290	274.00	199.0	130.0	-2.30	0.07	0.01	0.05	762.94	762.95
P-358	J-274	J-294	170.50	300.0	120.0	1.80	0.03	0.00	0.00	762.95	762.95
P-359	J-290	J-248	91.00	199.0	130.0	-2.30	0.07	0.00	0.05	762.95	762.96
P-360	J-212	J-291	226.00	304.0	130.0	-0.46	0.01	0.00	0.00	763.02	763.02
P-361	J-291	J-214	78.00	304.0	130.0	-0.46	0.01	0.00	0.00	763.02	763.02
P-362	J-294	J-298	389.00	199.0	130.0	1.72	0.06	0.01	0.03	762.95	762.94
P-363	J-168	J-292	202.00	254.0	130.0	1.76	0.03	0.00	0.01	763.52	763.52
P-364	J-292	J-172	147.50	254.0	130.0	1.76	0.03	0.00	0.01	763.52	763.52
P-365	J-389	J-293	126.50	297.0	130.0	27.79	0.40	0.09	0.71	764.23	764.14

Scenario: Peak Hc Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-366	J-298	J-300	106.00	199.0	130.0	1.44	0.05	0.00	0.02	762.94	762.94
P-367	J-293	J-391	276.50	297.0	130.0	27.79	0.40	0.19	0.68	764.14	763.95
P-368	J-300	J-302	187.00	199.0	130.0	-1.36	0.04	0.00	0.02	762.94	762.94
P-369	J-410	J-408	67.00	297.0	130.0	-4.65	0.07	0.00	0.02	763.95	763.95
P-371	J-234	J-296	251.00	254.0	130.0	-0.27	0.01	0.00	0.00	763.22	763.22
P-372	J-306	J-302	131.50	254.0	130.0	0.46	0.01	0.00	0.00	762.94	762.94
P-373	J-296	J-228	267.50	254.0	130.0	8.83	0.17	0.04	0.16	763.22	763.18
P-374	J-306	J-308	179.00	254.0	130.0	-0.79	0.02	0.00	0.00	762.94	762.94
P-376	J-308	J-272	191.00	254.0	130.0	-1.26	0.02	0.00	0.00	762.94	762.94
P-378	J-302	J-314	370.00	254.0	130.0	-1.15	0.02	0.00	0.00	762.94	762.94
P-381	J-250	J-304	276.00	254.0	130.0	26.74	0.53	0.39	1.42	762.84	762.44
P-382	J-304	Truck Fill	5.50	254.0	130.0	26.74	0.53	0.05	9.51	762.44	762.39
P-383	Truck Fill	J-244	401.50	254.0	130.0	-23.26	0.46	0.42	1.06	762.39	762.81
P-384	J-270	J-307	1,127.50	200.0	130.0	0.00	0.00	0.00	0.00	762.86	762.86
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	762.86	762.86
P-386	J-314	J-322	313.50	254.0	130.0	-1.69	0.03	0.00	0.01	762.94	762.94
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	762.86	762.86
P-388	J-60	J-313	214.00	289.0	130.0	13.34	0.20	0.04	0.21	763.60	763.56
P-389	J-313	J-144	9.00	289.0	130.0	-6.12	0.09	0.00	0.17	763.56	763.56
P-390	J-313	J-315	97.50	233.3	130.0	19.46	0.46	0.10	1.06	763.56	763.45
P-391	J-315	J-316	363.50	297.0	130.0	19.46	0.28	0.12	0.33	763.45	763.33
P-392	J-322	J-324	250.50	254.0	130.0	-11.70	0.23	0.07	0.28	762.94	763.01
P-393	J-316	J-317	384.50	297.0	130.0	19.46	0.28	0.13	0.33	763.33	763.21
P-394	J-32	J-318	45.50	148.0	130.0	-5.62	0.33	0.06	1.27	763.88	763.94
P-395	J-318	J-136	539.50	148.0	130.0	-3.85	0.22	0.27	0.49	763.94	764.21
P-396	J-146	J-318	190.50	150.0	100.0	1.78	0.10	0.03	0.18	763.97	763.94
P-402	J-332	J-337	799.00	254.0	130.0	-16.27	0.32	0.40	0.51	763.05	763.45
P-410	J-172	J-337	293.50	254.0	130.0	10.46	0.21	0.07	0.23	763.52	763.45
P-412	J-322	J-342	193.50	254.0	130.0	12.22	0.24	0.06	0.31	762.94	762.88
P-414	J-342	J-250	156.50	254.0	130.0	11.92	0.24	0.05	0.30	762.88	762.84
P-444	J-370	J-372	67.50	148.0	130.0	-0.08	0.00	0.00	0.00	762.86	762.86
P-446	J-372	J-374	366.50	148.0	130.0	-0.42	0.02	0.00	0.01	762.86	762.87
P-448	J-374	J-376	369.00	199.0	130.0	-1.04	0.03	0.00	0.01	762.87	762.87
P-450	J-376	J-378	63.00	199.0	130.0	-0.93	0.03	0.00	0.01	762.87	762.87
P-452	J-378	J-379	478.00	199.0	130.0	-1.53	0.05	0.01	0.02	762.87	762.88

Scenario: Peak H(· Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-453	J-379	J-380	27.00	199.0	130.0	-2.11	0.07	0.00	0.04	762.88	762.88
P-454	J-380	J-364	122.50	199.0	130.0	-2.72	0.09	0.01	0.06	762.88	762.89
P-456	J-364	J-382	102.50	148.0	130.0	0.82	0.05	0.00	0.03	762.89	762.89
P-457	J-382	J-383	516.50	148.0	130.0	0.30	0.02	0.00	0.00	762.89	762.88
P-458	J-383	J-384	130.50	148.0	130.0	-0.06	0.00	0.00	0.00	762.88	762.88
P-460	J-384	J-386	893.50	148.0	130.0	-0.81	0.05	0.02	0.03	762.88	762.91
P-462	J-370	J-374	693.00	75.0	130.0	-0.05	0.01	0.00	0.00	762.86	762.87
P-464	J-374	J-372	636.50	75.0	130.0	0.05	0.01	0.00	0.00	762.87	762.86
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	762.87	762.87
P-468	J-380	J-376	1,258.50	148.0	130.0	0.45	0.03	0.01	0.01	762.88	762.87
P-470	J-382	J-384	1,373.00	148.0	130.0	0.17	0.01	0.00	0.00	762.89	762.88
P-474	J-390	J-392	369.50	148.0	130.0	2.65	0.15	0.09	0.24	762.45	762.36
P-476	J-392	J-394	450.00	148.0	130.0	0.23	0.01	0.00	0.00	762.36	762.36
P-478	J-394	J-395	370.50	148.0	130.0	-0.01	0.00	0.00	0.00	762.36	762.36
P-479	J-395	J-396	569.50	200.0	120.0	0.51	0.02	0.00	0.00	762.36	762.35
P-480	J-394	J-398	566.00	108.0	130.0	0.09	0.01	0.00	0.00	762.36	762.35
P-482	J-392	J-400	584.50	108.0	130.0	0.11	0.01	0.00	0.00	762.36	762.36
P-484	J-390	J-402	584.50	108.0	130.0	0.87	0.10	0.08	0.15	762.45	762.36
P-490	J-216	J-349	71.00	304.0	130.0	-6.53	0.09	0.00	0.04	763.03	763.03
P-494	J-350	J-348	272.50	202.0	130.0	4.63	0.14	0.04	0.16	763.01	762.96
P-496	J-310	J-311	4.00	304.0	130.0	42.54	0.59	0.02	5.53	765.80	765.77
P-502	J-402	J-400	371.50	155.0	130.0	0.73	0.04	0.01	0.02	762.36	762.36
P-504	J-398	J-396	390.50	200.0	120.0	0.31	0.01	0.00	0.00	762.35	762.35
P-506	J-311	J-352	517.00	305.0	130.0	11.38	0.16	0.06	0.11	765.77	765.72
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	765.72	765.72
P-509	J-142	J-321	302.00	304.0	130.0	12.82	0.18	0.04	0.14	763.66	763.62
P-514	J-353	J-150	72.00	200.0	140.0	10.63	0.34	0.05	0.76	765.64	765.59
P-526	J-359	J-357	399.50	148.0	130.0	3.25	0.19	0.14	0.35	762.74	762.59
P-528	J-538	J-262	113.00	202.0	130.0	3.64	0.11	0.01	0.10	763.03	763.02
P-529	J-262	J-536	686.00	202.0	130.0	2.46	0.08	0.03	0.05	763.02	762.98
P-530	J-357	J-390	321.00	148.0	130.0	3.70	0.22	0.15	0.46	762.59	762.45
P-532	J-357	J-358	299.50	108.0	130.0	-0.70	0.08	0.03	0.10	762.59	762.62
P-534	J-358	J-360	457.00	108.0	130.0	-1.05	0.11	0.09	0.20	762.62	762.72
P-536	J-360	J-359	78.00	108.0	130.0	-1.17	0.13	0.02	0.26	762.72	762.74
P-542	J-162	J-362	170.50	304.0	130.0	22.74	0.31	0.07	0.43	763.56	763.48

Scenario: Peak Hc · Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-544	J-362	J-198	808.50	304.0	130.0	21.69	0.30	0.30	0.37	763.48	763.18
P-548	J-363	J-367	50.00	440.3	130.0	24.38	0.16	0.00	0.08	763.99	763.98
P-550	J-367	J-369	25.00	440.3	130.0	24.38	0.16	0.00	0.07	763.98	763.98
P-552	J-369	J-371	110.00	440.3	130.0	24.38	0.16	0.01	0.07	763.98	763.97
P-554	J-371	J-373	25.00	440.3	130.0	24.38	0.16	0.00	0.11	763.97	763.97
P-558	J-375	J-377	116.00	440.3	130.0	19.41	0.13	0.01	0.05	763.96	763.96
P-560	J-377	J-381	92.00	440.3	130.0	19.40	0.13	0.00	0.05	763.96	763.95
P-566	J-6	J-389	643.50	297.0	130.0	28.11	0.41	0.42	0.66	764.65	764.23
P-570	J-381	J-391	32.50	440.3	130.0	19.40	0.13	0.00	0.06	763.95	763.95
P-572	J-391	J-365	117.00	440.3	130.0	51.82	0.34	0.04	0.34	763.95	763.91
P-576	J-332	J-538	211.00	202.0	130.0	3.64	0.11	0.02	0.10	763.05	763.03
P-578	J-373	J-406	4.50	440.3	130.0	24.38	0.16	0.00	0.17	763.97	763.97
P-580	J-406	J-375	210.50	440.3	130.0	19.43	0.13	0.01	0.05	763.97	763.96
P-584	J-404	J-403	149.00	297.0	130.0	-4.85	0.07	0.00	0.03	763.96	763.96
P-588	J-403	J-401	14.00	297.0	130.0	-4.85	0.07	0.00	0.03	763.96	763.96
P-592	J-401	J-407	216.50	297.0	130.0	-4.85	0.07	0.01	0.03	763.96	763.97
P-594	J-64	J-60	109.50	254.0	130.0	20.28	0.40	0.09	0.81	763.69	763.60
P-595	J-60	J-56	223.50	254.0	130.0	6.94	0.14	0.02	0.11	763.60	763.58
P-596	J-407	J-406	9.00	297.0	130.0	-4.96	0.07	0.00	0.07	763.97	763.97
P-598	J-364	J-536	1,015.00	204.0	130.0	-3.69	0.11	0.10	0.09	762.89	762.98
P-600	J-411	J-408	218.50	297.0	130.0	4.65	0.07	0.01	0.02	763.96	763.95
P-606	J-410	J-391	189.50	297.0	130.0	4.64	0.07	0.00	0.02	763.95	763.95
P-608	J-411	J-404	23.00	297.0	130.0	-4.65	0.07	0.00	0.02	763.96	763.96
P-1000	J-275	J-1010	770.00	200.0	120.0	2.90	0.09	0.06	0.08	762.55	762.49
P-1010	J-242	J-1020	138.00	300.0	120.0	-13.03	0.18	0.02	0.17	762.62	762.64
P-1015	J-1030	J-1015	583.00	300.0	120.0	5.54	0.08	0.02	0.04	762.68	762.66
P-1020	J-1025	J-1030	281.00	300.0	120.0	6.05	0.09	0.01	0.04	762.69	762.68
P-1025	J-1025	J-1020	247.00	300.0	120.0	14.34	0.20	0.05	0.20	762.69	762.64
P-1030	J-242	J-1040	494.00	300.0	120.0	11.86	0.17	0.07	0.14	762.62	762.54
P-1035	J-1035	J-1075	753.00	300.0	120.0	4.82	0.07	0.02	0.03	762.54	762.52
P-1040	J-1050	J-243	807.00	300.0	120.0	-0.05	0.00	0.00	0.00	762.61	762.61
P-1045	J-1050	J-1045	557.00	300.0	120.0	3.29	0.05	0.01	0.01	762.61	762.60
P-1050	J-1050	J-1060	231.50	300.0	120.0	13.28	0.19	0.04	0.18	762.61	762.57
P-1055	J-1060	J-1055	466.00	300.0	120.0	7.43	0.11	0.03	0.06	762.57	762.54
P-1060	J-1060	J-1065	1,011.50	300.0	120.0	5.85	0.08	0.04	0.04	762.57	762.53

Scenario: Peak Hc · Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1065	J-1065	J-1070	603.00	300.0	120.0	5.85	0.08	0.02	0.04	762.53	762.51
P-1070	J-1070	J-1080	404.50	200.0	120.0	5.85	0.19	0.11	0.28	762.51	762.39
P-1080	J-1080	J-1090	610.50	200.0	120.0	2.53	0.08	0.04	0.06	762.39	762.36
P-1090	J-1090	J-395	7.00	200.0	120.0	1.25	0.04	0.00	0.01	762.36	762.36
P-1100	J-392	J-1100	371.00	200.0	120.0	1.54	0.05	0.01	0.02	762.36	762.35
P-1130	J-1080	J-1120	432.00	200.0	120.0	3.33	0.11	0.04	0.10	762.39	762.35
P-1140	J-1120	J-1130	612.50	200.0	120.0	0.26	0.01	0.00	0.00	762.35	762.35
P-1150	J-1130	J-1090	422.50	200.0	120.0	-1.27	0.04	0.01	0.02	762.35	762.36
P-1160	J-365	J-1140	280.00	450.0	120.0	51.80	0.33	0.09	0.31	763.91	763.82
P-1170	J-1140	J-94	586.50	450.0	120.0	17.57	0.11	0.02	0.04	763.82	763.80
P-1200	J-1140	J-1160	795.00	300.0	120.0	34.23	0.48	0.81	1.02	763.82	763.01
P-1205	J-1200	J-1205	360.00	300.0	120.0	-9.50	0.13	0.03	0.10	762.90	762.93
P-1210	J-1160	J-1050	1,510.50	300.0	120.0	16.52	0.23	0.40	0.27	763.01	762.61
P-1220	J-231	J-1170	375.50	300.0	120.0	17.18	0.24	0.11	0.29	763.51	763.40
P-1230	J-1230	J-1180	600.50	300.0	120.0	-5.69	0.08	0.02	0.04	763.11	763.13
P-1240	J-317	J-1195	517.00	300.0	120.0	19.46	0.28	0.19	0.36	763.21	763.02
P-1245	J-1260	J-1210	1,414.00	200.0	120.0	-3.20	0.10	0.13	0.09	762.80	762.93
P-1250	J-1195	J-262	405.50	300.0	120.0	3.66	0.05	0.01	0.02	763.02	763.02
P-1255	J-1260	J-1215	1,177.00	200.0	120.0	-3.19	0.10	0.11	0.09	762.80	762.91
P-1260	J-236	J-1005	269.50	450.0	120.0	45.42	0.29	0.06	0.24	763.29	763.22
P-1265	J-1005	J-296	162.00	450.0	120.0	9.10	0.06	0.00	0.01	763.22	763.22
P-1270	J-219	J-140	198.00	300.0	120.0	-6.27	0.09	0.01	0.04	764.00	764.01
P-1280	J-225	J-176	432.50	300.0	120.0	3.03	0.04	0.00	0.01	763.64	763.63
P-1300	J-259	J-178	195.50	300.0	120.0	0.83	0.01	0.00	0.00	763.48	763.48
P-1310	J-261	J-180	183.00	300.0	120.0	-6.46	0.09	0.01	0.05	763.47	763.48
P-1330	J-178	J-180	258.00	300.0	120.0	3.72	0.05	0.00	0.02	763.48	763.48
P-1340	J-10	J-146	36.50	300.0	120.0	-8.65	0.12	0.00	0.08	763.97	763.97
P-1350	J-1035	J-277	848.50	300.0	120.0	-2.88	0.04	0.01	0.01	762.54	762.55
P-1355	J-1040	J-1035	719.50	300.0	120.0	1.94	0.03	0.00	0.01	762.54	762.54
P-1370	J-1220	J-356	228.00	300.0	120.0	4.35	0.06	0.01	0.02	762.98	762.97
P-1375	J-1220	J-536	303.50	300.0	120.0	-4.35	0.06	0.01	0.02	762.98	762.98
P-1380	J-400	J-398	443.50	200.0	120.0	0.38	0.01	0.00	0.00	762.36	762.35
P-1390	J-300	J-1205	285.50	300.0	120.0	2.66	0.04	0.00	0.01	762.94	762.93
P-1405	J-276	J-1250	73.50	300.0	120.0	-8.41	0.12	0.01	0.08	762.95	762.96
P-1410	J-1250	J-1210	687.50	450.0	120.0	15.55	0.10	0.02	0.03	762.96	762.93

Scenario: Peak Hc · Future (10 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1420	J-1170	J-1180	1,535.00	300.0	120.0	13.16	0.19	0.27	0.17	763.40	763.13
P-1430	J-1195	J-536	1,082.00	300.0	120.0	5.57	0.08	0.04	0.04	763.02	762.98
P-1440	J-1210	J-1215	933.00	300.0	120.0	4.56	0.06	0.02	0.02	762.93	762.91
P-1445	J-1215	J-386	888.00	300.0	120.0	1.38	0.02	0.00	0.00	762.91	762.91
P-1450	J-281	J-1205	286.50	300.0	120.0	6.22	0.09	0.01	0.04	762.95	762.93
P-1460	J-1205	J-1210	518.00	300.0	120.0	-0.62	0.01	0.00	0.00	762.93	762.93
P-1470	J-1250	J-349	1,077.00	450.0	120.0	-23.97	0.15	0.08	0.07	762.96	763.03
P-1480	J-1230	J-1240	542.00	450.0	120.0	31.08	0.20	0.06	0.12	763.11	763.05
P-1500	J-1005	J-1230	699.50	450.0	120.0	36.32	0.23	0.11	0.16	763.22	763.11
P-1510	J-1230	J-224	47.50	300.0	120.0	10.93	0.15	0.01	0.12	763.11	763.10
P-1520	J-1240	J-349	92.50	450.0	120.0	31.08	0.20	0.01	0.12	763.05	763.03
P-1530	J-1190	J-1195	155.00	300.0	120.0	-10.23	0.14	0.02	0.11	763.01	763.02
P-1710	J-1040	J-1055	785.00	300.0	120.0	2.16	0.03	0.00	0.01	762.54	762.54
P-1720	J-1045	J-243	492.00	300.0	120.0	-3.52	0.05	0.01	0.02	762.60	762.61
P-1730	J-50	J-176	331.00	300.0	120.0	1.80	0.03	0.00	0.00	763.63	763.63
P-2500	R-2	PUMPHOUSE - 4	10.00	450.0	120.0	165.69	1.04	0.03	2.63	766.40	766.37

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	483.7	280.00	345.8	J-1260
J-8	230.00	230.20	true	280.00	435.7	280.00	335.2	J-1260
J-10	230.00	230.00	true	280.00	439.8	280.00	321.8	J-1260
J-12	230.00	230.00	true	280.00	365.2	280.00	318.6	J-1260
J-16	230.00	230.23	true	280.00	354.3	280.00	318.2	J-1260
J-22	230.00	230.06	true	280.00	436.0	280.00	297.2	J-1260
J-24	230.00	230.56	true	280.00	414.0	280.00	300.7	J-1260
J-28	230.00	230.37	true	280.00	205.7	280.00	313.9	J-1260
J-30	230.00	230.00	true	280.00	403.2	280.00	319.1	J-1260
J-32	230.00	230.00	true	280.00	388.1	280.00	317.9	J-1260
J-34	230.00	230.12	true	280.00	371.7	280.00	316.4	J-1260
J-36	230.00	230.00	true	280.00	374.5	280.00	316.0	J-1260
J-38	230.00	230.00	true	280.00	355.8	280.00	313.0	J-1260
J-40	230.00	230.11	true	280.00	352.1	280.00	310.8	J-1260
J-42	230.00	230.02	true	280.00	377.2	280.00	306.1	J-1260
J-50	230.00	230.60	true	280.00	294.8	280.00	308.7	J-1260
J-56	230.00	230.85	true	280.00	345.9	280.00	306.4	J-1260
J-60	230.00	230.00	true	280.00	385.8	280.00	310.9	J-1260
J-64	230.00	230.16	true	280.00	380.4	280.00	315.3	J-1260
J-68	230.00	230.09	true	280.00	330.7	280.00	316.8	J-1260
J-74	230.00	230.09	true	280.00	388.6	280.00	318.4	J-1260
J-76	230.00	230.22	true	280.00	424.0	280.00	320.1	J-1260
J-82	230.00	230.43	true	280.00	450.1	280.00	321.3	J-1260
J-90	230.00	230.14	true	280.00	531.0	280.00	323.7	J-1260
J-94	230.00	230.11	true	280.00	534.4	280.00	324.3	J-1260
J-98	230.00	230.17	true	280.00	157.9	280.00	278.6	J-102
J-102	230.00	230.14	true	280.00	218.8	280.00	271.5	J-98
J-104	230.00	230.29	true	278.24	140.0	280.00	309.6	J-102
J-108	230.00	230.34	true	280.00	334.7	280.00	318.3	J-1260
J-112	230.00	230.21	true	280.00	353.5	280.00	316.6	J-1260
J-117	230.00	230.20	true	280.00	353.5	280.00	322.3	J-1260
J-118	230.00	230.14	true	280.00	362.0	280.00	322.4	J-1260
J-120	230.00	230.06	true	280.00	328.8	280.00	321.2	J-1260
J-124	230.00	230.07	true	280.00	306.4	280.00	319.8	J-1260
J-130	230.00	230.00	true	280.00	418.1	280.00	325.4	J-1260
J-134	230.00	230.13	true	280.00	285.3	280.00	330.9	J-1260
J-136	230.00	230.27	true	280.00	329.8	280.00	333.6	J-1260
J-140	230.00	230.02	true	280.00	348.3	280.00	327.5	J-1260
J-142	230.00	230.01	true	280.00	377.8	280.00	315.2	J-1260
J-144	230.00	230.18	true	280.00	363.3	280.00	309.2	J-1260
J-146	230.00	230.06	true	280.00	420.6	280.00	322.4	J-1260
J-148	230.00	230.08	false	228.30	140.0	280.00	206.2	J-150
J-150	230.00	230.00	true	244.93	140.0	280.00	148.9	J-148
J-152	230.00	230.00	true	280.00	338.5	280.00	335.5	J-303
J-162	230.00	230.04	true	280.00	377.7	280.00	302.4	J-1260
J-164	230.00	230.07	true	280.00	319.0	280.00	302.4	J-1260
J-166	230.00	230.20	true	280.00	285.7	280.00	301.7	J-1260
J-168	230.00	230.04	true	280.00	268.8	280.00	301.7	J-1260
J-172	230.00	230.10	true	280.00	340.6	280.00	302.2	J-1260
J-174	230.00	230.18	true	280.00	325.2	280.00	304.2	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	329.2	280.00	308.1	J-1260
J-178	230.00	230.34	true	280.00	323.3	280.00	299.2	J-1260
J-180	230.00	230.17	true	280.00	325.8	280.00	299.0	J-1260
J-198	230.00	230.00	true	280.00	340.4	280.00	286.5	J-1260
J-202	230.00	230.19	true	280.00	367.4	280.00	280.7	J-1260
J-206	230.00	230.08	true	280.00	348.0	280.00	276.7	J-1260
J-210	230.00	230.02	true	280.00	355.9	280.00	272.2	J-1260
J-212	230.00	230.15	true	280.00	330.6	280.00	269.4	J-1260
J-214	230.00	230.82	true	280.00	316.0	280.00	267.2	J-1260
J-216	230.00	235.08	true	280.00	337.7	280.00	266.5	J-1260
J-217	230.00	230.09	true	280.00	483.7	280.00	347.2	J-1260
J-218	230.00	230.00	true	280.00	430.5	280.00	331.1	J-1260
J-219	230.00	230.00	true	280.00	426.6	280.00	326.5	J-1260
J-221	230.00	230.02	true	280.00	425.3	280.00	326.3	J-1260
J-222	230.00	230.05	true	280.00	292.7	280.00	270.6	J-1260
J-223	230.00	230.19	true	280.00	385.7	280.00	314.7	J-1260
J-224	230.00	230.02	true	280.00	362.7	280.00	272.1	J-1260
J-225	230.00	230.00	true	280.00	380.0	280.00	306.5	J-1260
J-226	230.00	230.00	true	280.00	434.9	280.00	296.4	J-1260
J-227	230.00	230.09	true	280.00	381.4	280.00	311.2	J-1260
J-228	230.00	230.21	true	280.00	303.4	280.00	276.0	J-1260
J-229	230.00	230.10	true	280.00	446.8	280.00	337.7	J-1260
J-230	230.00	230.00	true	280.00	378.8	280.00	315.5	J-1260
J-231	230.00	230.03	true	280.00	441.5	280.00	295.5	J-1260
J-232	230.00	230.00	true	280.00	439.5	280.00	293.5	J-1260
J-233	230.00	230.00	true	280.00	445.0	280.00	291.4	J-1260
J-234	230.00	230.18	true	275.91	140.0	280.00	281.1	J-1260
J-235	230.00	230.00	true	280.00	428.2	280.00	286.9	J-1260
J-236	230.00	230.00	true	280.00	416.2	280.00	282.5	J-1260
J-237	230.00	230.19	true	280.00	220.1	280.00	182.7	J-1010
J-238	230.00	230.00	true	280.00	210.8	280.00	191.5	J-1010
J-239	230.00	230.00	true	280.00	199.1	280.00	193.9	J-1010
J-240	230.00	230.49	true	280.00	257.5	280.00	270.9	J-1260
J-241	230.00	230.00	true	280.00	198.9	280.00	198.6	J-1010
J-242	230.00	230.00	true	280.00	259.6	280.00	220.8	J-1010
J-243	230.00	230.22	true	280.00	258.7	280.00	241.5	J-1075
J-244	230.00	230.04	true	280.00	330.9	280.00	269.3	J-1260
J-245	230.00	230.00	true	280.00	330.2	280.00	327.2	J-303
J-246	230.00	230.18	true	280.00	149.7	280.00	154.1	J-247
J-247	230.00	230.00	true	280.00	154.1	280.00	155.0	J-246
J-248	230.00	230.00	true	280.00	410.7	280.00	269.2	J-1260
J-249	230.00	230.00	true	280.00	373.9	280.00	320.0	J-303
J-250	230.00	230.19	true	280.00	362.6	280.00	272.6	J-1260
J-251	230.00	230.00	true	280.00	369.8	280.00	315.9	J-303
J-252	230.00	230.08	true	280.00	219.5	280.00	272.9	J-1260
J-253	230.00	230.00	true	280.00	312.6	280.00	309.6	J-303
J-254	230.00	230.00	true	280.00	301.6	280.00	304.4	J-258
J-255	230.00	230.00	true	280.00	325.5	280.00	276.4	J-258
J-256	230.00	230.01	true	280.00	152.7	280.00	273.1	J-1260
J-257	230.00	230.00	true	280.00	311.4	280.00	261.7	J-258

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	280.00	238.2	280.00	241.1	J-353
J-259	230.00	230.15	true	280.00	345.6	280.00	299.0	J-1260
J-260	230.00	230.12	true	280.00	343.6	280.00	273.6	J-1260
J-261	230.00	230.09	true	280.00	317.9	280.00	298.6	J-1260
J-262	230.00	230.00	true	280.00	397.2	280.00	278.1	J-1260
J-263	230.00	230.00	true	280.00	355.8	280.00	309.3	J-1260
J-264	230.00	230.29	true	280.00	353.8	280.00	276.6	J-1260
J-265	230.00	230.19	true	280.00	280.9	280.00	308.7	J-1260
J-266	230.00	230.26	true	280.00	309.7	280.00	277.1	J-1260
J-267	60.00	60.12	true	100.00	544.5	100.00	378.7	J-1260
J-268	230.00	230.04	true	280.00	325.6	280.00	268.7	J-1260
J-269	60.00	60.00	true	100.00	463.1	100.00	256.2	J-307
J-270	60.00	60.87	true	100.00	327.1	100.00	158.7	J-307
J-271	230.00	230.00	true	280.00	398.5	280.00	268.1	J-1260
J-272	230.00	230.10	true	280.00	356.4	280.00	261.8	J-1260
J-273	60.00	60.00	true	100.00	449.4	100.00	250.2	J-307
J-274	230.00	230.01	true	280.00	364.1	280.00	252.8	J-1260
J-275	230.00	231.15	true	247.15	185.8	280.00	140.0	J-1010
J-276	230.00	231.16	true	280.00	359.6	280.00	251.0	J-1260
J-277	230.00	230.16	true	252.52	141.5	280.00	140.0	J-1010
J-278	230.00	230.33	true	280.00	300.8	280.00	266.6	J-1260
J-279	230.00	230.00	true	280.00	400.9	280.00	267.0	J-1260
J-280	230.00	230.00	true	280.00	384.8	280.00	262.6	J-1260
J-281	230.00	230.00	true	280.00	386.5	280.00	261.2	J-1260
J-282	230.00	230.11	true	280.00	247.3	280.00	267.4	J-1260
J-283	230.00	230.00	true	280.00	374.5	280.00	267.6	J-1260
J-284	230.00	230.00	true	280.00	360.5	280.00	270.1	J-1260
J-285	230.00	230.09	true	280.00	384.1	280.00	271.5	J-1260
J-286	230.00	230.34	true	280.00	261.5	280.00	267.3	J-1260
J-287	230.00	230.00	true	280.00	373.1	280.00	271.0	J-1260
J-288	230.00	230.00	true	280.00	367.2	280.00	270.5	J-1260
J-289	230.00	230.00	true	280.00	394.6	280.00	315.5	J-1260
J-290	230.00	230.00	true	280.00	306.6	280.00	269.7	J-1260
J-291	230.00	230.00	true	280.00	313.8	280.00	267.9	J-1260
J-292	230.00	230.00	true	280.00	289.7	280.00	301.9	J-1260
J-293	230.00	230.00	true	280.00	453.4	280.00	333.5	J-1260
J-294	230.00	230.05	true	280.00	318.4	280.00	253.2	J-1260
J-296	230.00	230.00	true	280.00	387.0	280.00	278.4	J-1260
J-298	230.00	230.18	true	280.00	220.5	280.00	254.8	J-1260
J-300	230.00	230.10	true	280.00	357.1	280.00	255.7	J-1260
J-301	230.00	230.00	true	280.00	288.0	280.00	288.0	J-303
J-302	230.00	230.16	true	280.00	333.0	280.00	262.9	J-1260
J-303	230.00	230.28	true	280.00	174.0	280.00	183.3	J-247
J-304	230.00	230.00	true	280.00	285.1	280.00	271.0	J-1260
J-306	230.00	230.22	true	280.00	304.2	280.00	262.4	J-1260
J-307	60.00	60.00	true	62.07	140.0	100.00	154.4	J-309
J-308	230.00	230.31	true	280.00	293.4	280.00	262.0	J-1260
J-309	60.00	60.00	false	50.84	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	561.4	280.00	383.8	J-1260
J-311	230.00	230.01	true	280.00	551.9	280.00	382.1	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	46.32	140.0	100.00	197.9	J-309
J-313	230.00	230.00	true	280.00	394.8	280.00	308.5	J-1260
J-314	230.00	230.36	true	280.00	317.6	280.00	267.6	J-1260
J-315	230.00	230.00	true	280.00	341.6	280.00	302.3	J-1260
J-316	230.00	230.00	true	280.00	305.2	280.00	297.1	J-1260
J-317	230.00	230.00	true	280.00	314.1	280.00	291.7	J-1260
J-318	230.00	230.00	true	274.35	140.0	280.00	324.9	J-1260
J-321	230.00	230.11	true	280.00	350.2	280.00	313.2	J-1260
J-322	230.00	230.05	true	280.00	395.1	280.00	271.7	J-1260
J-324	230.00	230.00	true	280.00	344.4	280.00	277.8	J-1260
J-332	230.00	230.62	true	280.00	335.9	280.00	280.8	J-1260
J-337	230.00	230.34	true	280.00	358.8	280.00	297.8	J-1260
J-342	230.00	230.21	true	280.00	355.0	280.00	272.0	J-1260
J-348	230.00	230.13	true	280.00	393.7	280.00	270.2	J-1260
J-349	230.00	230.38	true	280.00	346.4	280.00	264.8	J-1260
J-350	230.00	230.14	true	280.00	325.5	280.00	275.7	J-1260
J-351	230.00	230.00	false	213.24	140.0	280.00	259.9	J-1010
J-352	230.00	230.00	true	280.00	353.7	280.00	350.8	J-303
J-353	230.00	230.04	true	280.00	148.7	280.00	160.7	J-150
J-356	230.00	230.08	true	280.00	363.4	280.00	273.3	J-1260
J-357	60.00	60.16	true	100.00	224.9	100.00	286.4	J-358
J-358	60.00	60.23	true	61.50	140.0	100.00	390.2	J-1260
J-359	60.00	60.04	true	100.00	307.8	100.00	301.3	J-307
J-360	60.00	60.08	true	80.00	140.0	100.00	335.1	J-358
J-362	230.00	230.00	true	280.00	385.3	280.00	298.7	J-1260
J-363	230.00	230.00	true	280.00	432.8	280.00	326.5	J-1260
J-364	60.00	60.10	true	100.00	540.9	100.00	370.8	J-1260
J-365	230.00	230.02	true	280.00	479.9	280.00	327.1	J-1260
J-367	230.00	230.00	true	280.00	441.4	280.00	326.6	J-1260
J-369	230.00	230.00	true	280.00	443.4	280.00	326.6	J-1260
J-370	60.00	60.10	true	100.00	356.0	100.00	237.5	J-307
J-371	230.00	230.00	true	280.00	443.6	280.00	326.8	J-1260
J-372	60.00	60.26	true	100.00	346.6	100.00	260.1	J-307
J-373	230.00	230.00	true	280.00	449.4	280.00	326.8	J-1260
J-374	60.00	60.35	true	100.00	414.3	100.00	340.1	J-307
J-375	230.00	230.01	true	280.00	451.2	280.00	327.1	J-1260
J-376	60.00	60.23	true	100.00	459.5	100.00	370.1	J-307
J-377	230.00	230.01	true	280.00	463.7	280.00	327.2	J-1260
J-378	60.00	60.25	true	100.00	464.4	100.00	372.4	J-1260
J-379	60.00	60.38	true	100.00	513.1	100.00	371.4	J-1260
J-380	60.00	60.11	true	100.00	513.4	100.00	371.3	J-1260
J-381	230.00	230.00	true	280.00	481.6	280.00	327.4	J-1260
J-382	60.00	60.24	true	100.00	455.5	100.00	368.3	J-1260
J-383	60.00	60.24	true	100.00	285.1	100.00	365.1	J-1260
J-384	60.00	60.61	true	100.00	329.1	100.00	363.9	J-1260
J-386	60.00	60.38	true	100.00	588.7	100.00	341.2	J-1260
J-388	60.00	60.16	true	100.00	173.3	100.00	372.4	J-1260
J-389	230.00	230.21	true	280.00	444.6	280.00	335.5	J-1260
J-390	60.00	60.12	true	100.00	214.9	100.00	335.9	J-1100
J-391	230.00	230.00	true	280.00	483.3	280.00	327.4	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	true	100.00	178.0	100.00	177.9	J-1100
J-394	60.00	60.10	true	100.00	211.1	100.00	341.3	J-1100
J-395	60.00	60.49	true	100.00	379.9	100.00	381.9	J-1090
J-396	60.00	60.55	true	100.00	259.5	100.00	291.2	J-398
J-398	60.00	60.11	true	100.00	224.5	100.00	247.5	J-400
J-400	60.00	60.31	true	100.00	157.2	100.00	182.4	J-402
J-401	230.00	230.00	true	280.00	390.4	280.00	327.0	J-1260
J-402	60.00	60.09	true	81.44	140.0	100.00	366.2	J-400
J-403	230.00	230.00	true	280.00	385.0	280.00	327.0	J-1260
J-404	230.00	230.13	true	280.00	370.3	280.00	327.1	J-1260
J-406	230.00	230.00	true	280.00	451.2	280.00	326.9	J-1260
J-407	230.00	230.07	true	280.00	434.1	280.00	326.9	J-1260
J-408	230.00	230.00	true	280.00	426.3	280.00	327.1	J-1260
J-410	230.00	230.01	true	280.00	435.7	280.00	327.2	J-1260
J-411	230.00	230.00	true	280.00	371.0	280.00	327.1	J-1260
J-536	230.00	230.00	true	280.00	359.9	280.00	274.9	J-1260
J-538	230.00	230.00	true	280.00	311.8	280.00	278.2	J-1260
J-1005	230.00	230.00	true	280.00	391.1	280.00	278.9	J-1260
J-1010	60.00	61.93	true	100.00	140.6	100.00	387.9	J-1260
J-1015	60.00	63.69	true	100.00	553.4	100.00	388.0	J-1260
J-1020	230.00	230.87	true	280.00	244.6	280.00	222.0	J-1010
J-1025	230.00	230.00	true	280.00	256.5	280.00	225.5	J-1010
J-1030	60.00	60.34	true	100.00	618.5	100.00	388.0	J-1260
J-1035	230.00	230.00	true	252.74	140.1	280.00	140.0	J-1075
J-1040	230.00	235.18	true	280.00	209.6	280.00	175.7	J-1075
J-1045	230.00	234.54	true	280.00	186.9	280.00	246.2	J-1075
J-1050	230.00	230.00	true	280.00	281.0	280.00	253.2	J-1075
J-1055	230.00	236.39	true	280.00	159.9	280.00	220.2	J-1075
J-1060	230.00	230.00	true	280.00	221.1	280.00	226.2	J-1120
J-1065	230.00	230.00	false	227.73	143.4	280.00	140.0	J-1120
J-1070	60.00	60.00	true	100.00	547.4	100.00	386.7	J-1260
J-1075	230.00	233.22	false	194.31	140.0	280.00	333.8	J-1035
J-1080	60.00	60.00	true	100.00	424.8	100.00	385.8	J-1260
J-1090	60.00	60.00	true	100.00	381.2	100.00	381.6	J-395
J-1100	60.00	61.03	true	87.16	140.0	100.00	294.5	J-392
J-1120	60.00	62.05	true	100.00	299.9	100.00	385.7	J-1260
J-1130	60.00	61.02	true	100.00	327.4	100.00	355.5	J-1120
J-1140	230.00	230.00	true	280.00	445.7	280.00	326.5	J-1260
J-1160	230.00	241.81	true	280.00	326.4	280.00	337.9	J-1260
J-1170	230.00	232.68	true	280.00	307.2	280.00	293.0	J-1260
J-1180	230.00	234.98	true	280.00	211.1	280.00	283.0	J-1260
J-1190	230.00	236.82	true	280.00	223.9	280.00	282.2	J-1260
J-1195	230.00	230.00	true	280.00	303.5	280.00	282.2	J-1260
J-1200	230.00	236.33	true	280.00	170.1	280.00	253.4	J-1260
J-1205	230.00	230.00	true	280.00	354.3	280.00	253.4	J-1260
J-1210	230.00	234.78	true	280.00	308.9	280.00	225.5	J-1260
J-1215	60.00	60.00	true	100.00	515.3	100.00	338.1	J-1260
J-1220	230.00	230.00	true	280.00	337.6	280.00	273.8	J-1260
J-1230	230.00	230.00	true	280.00	369.1	280.00	272.4	J-1260
J-1240	230.00	230.00	true	280.00	346.5	280.00	265.9	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-1250	230.00	230.00	true	280.00	368.4	280.00	246.8	J-1260
J-1260	60.00	64.26	true	100.00	154.3	100.00	438.5	J-1180
PUMPHOUSE - 1	230.00	230.08	true	280.00	513.2	280.00	400.3	J-1260
PUMPHOUSE - 2	230.00	230.95	true	280.00	513.9	280.00	400.3	J-1260
PUMPHOUSE - 3	230.00	230.00	true	280.00	514.4	280.00	400.3	J-1260
PUMPHOUSE - 4	230.00	230.91	true	280.00	514.8	280.00	400.2	J-1260
Truck Fill	230.00	230.00	true	280.00	281.8	280.00	270.8	J-1260

Appendix F -
Year 2023 Development Condition for Alternative 1 Simulation Results

Scenario: Peak Hour - Future (20 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	520.5	763.78
J-8	5,909,058.66	97,351.20	713.60	0.30	486.8	763.34
J-10	5,908,474.10	97,361.23	710.20	0.00	515.1	762.83
J-12	5,908,467.18	97,361.38	710.20	0.00	514.8	762.80
J-16	5,908,452.20	97,361.89	710.20	0.34	514.7	762.79
J-22	5,907,974.55	97,357.96	710.00	0.09	511.4	762.25
J-24	5,907,976.56	97,486.24	712.72	0.84	485.3	762.31
J-28	5,908,348.52	97,479.26	713.10	0.55	484.5	762.61
J-30	5,908,476.15	97,465.75	713.60	0.00	480.9	762.74
J-32	5,908,477.92	97,568.92	715.10	0.00	465.9	762.71
J-34	5,908,480.33	97,699.94	717.10	0.17	445.6	762.63
J-36	5,908,480.81	97,725.97	717.10	0.00	445.4	762.61
J-38	5,908,303.69	97,742.34	717.30	0.00	442.6	762.52
J-40	5,908,143.29	97,745.11	717.70	0.17	438.0	762.45
J-42	5,907,977.83	97,749.04	717.00	0.03	444.1	762.37
J-50	5,908,312.36	98,169.75	716.20	0.90	451.8	762.37
J-56	5,908,324.08	98,782.89	713.20	1.27	479.9	762.24
J-60	5,908,547.69	98,778.44	712.60	0.00	485.9	762.24
J-64	5,908,657.02	98,776.18	712.50	0.24	488.0	762.36
J-68	5,908,927.88	98,770.56	711.60	0.13	497.0	762.38
J-74	5,909,209.82	98,764.73	710.10	0.14	511.9	762.40
J-76	5,909,321.64	98,762.41	709.30	0.33	519.7	762.40
J-82	5,909,600.55	98,756.43	706.80	0.64	544.3	762.42
J-90	5,910,145.40	98,745.06	699.50	0.21	616.1	762.45
J-94	5,910,141.73	98,553.50	699.50	0.16	616.2	762.46
J-98	5,909,203.58	98,428.34	712.50	0.25	489.0	762.46
J-102	5,909,101.64	98,426.21	713.00	0.22	484.3	762.49
J-104	5,908,903.10	98,430.23	713.50	0.44	479.3	762.47
J-108	5,908,650.47	98,435.34	714.90	0.51	465.5	762.46
J-112	5,908,654.55	98,649.36	713.80	0.32	475.6	762.40
J-117	5,909,093.99	98,027.43	715.00	0.30	466.6	762.68
J-118	5,909,093.47	98,001.39	715.00	0.21	466.6	762.68
J-120	5,908,854.44	98,006.14	714.70	0.09	469.0	762.62
J-124	5,908,645.32	98,164.72	715.80	0.10	457.3	762.53
J-130	5,909,081.17	97,756.51	714.30	0.00	474.9	762.82
J-134	5,909,084.75	97,555.92	714.50	0.19	475.4	763.08
J-136	5,909,062.84	97,556.57	714.50	0.40	476.0	763.14
J-140	5,909,211.44	97,544.32	715.20	0.03	466.2	762.83
J-142	5,909,320.00	98,985.50	707.40	0.02	537.3	762.30
J-144	5,908,552.32	99,001.45	712.60	0.28	484.9	762.15
J-146	5,908,500.88	97,385.99	711.00	0.08	507.3	762.84
J-148	5,908,743.01	97,064.41	711.00	0.12	529.4	765.10
J-150	5,908,756.07	97,063.51	711.00	0.00	530.0	765.15
J-152	5,908,779.46	96,905.96	710.70	0.00	534.7	765.34
J-162	5,907,845.59	97,760.01	714.80	0.06	464.6	762.27
J-164	5,907,853.69	98,184.20	715.30	0.11	459.4	762.24
J-166	5,907,858.51	98,441.75	715.50	0.30	457.2	762.21
J-168	5,907,990.55	98,439.52	715.20	0.07	460.1	762.21
J-172	5,907,997.17	98,789.35	713.00	0.15	481.5	762.20
J-174	5,908,131.47	98,786.69	713.20	0.27	479.7	762.21
J-176	5,907,981.73	98,181.34	715.80	0.15	455.8	762.37
J-178	5,907,708.34	98,186.08	715.20	0.50	459.8	762.18

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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	472.4	762.17
J-198	5,906,888.62	97,825.94	710.60	0.00	501.6	761.85
J-202	5,906,593.95	97,782.31	709.60	0.28	509.9	761.70
J-206	5,906,215.61	97,708.31	712.00	0.12	485.9	761.65
J-210	5,905,911.78	97,702.33	713.40	0.03	472.1	761.63
J-212	5,905,673.44	97,707.07	714.50	0.23	461.2	761.62
J-214	5,905,369.47	97,713.12	715.90	1.24	447.5	761.62
J-216	5,905,364.01	97,439.05	715.60	7.62	450.5	761.63
J-217	5,909,307.40	97,334.51	710.88	0.13	518.1	763.82
J-218	5,909,077.55	97,556.13	714.50	0.00	475.7	763.10
J-219	5,909,195.57	97,741.44	714.00	0.00	477.8	762.82
J-221	5,909,080.95	97,744.08	714.53	0.03	472.7	762.83
J-222	5,905,698.60	97,432.40	714.40	0.07	462.8	761.69
J-223	5,908,477.48	97,757.92	717.21	0.28	444.2	762.59
J-224	5,905,905.82	97,428.26	714.10	0.02	466.1	761.72
J-225	5,907,981.51	97,748.90	717.00	0.00	444.1	762.38
J-226	5,907,946.73	97,358.07	710.00	0.00	511.2	762.24
J-227	5,908,303.93	97,760.54	717.18	0.14	443.6	762.51
J-228	5,906,360.39	97,501.77	711.60	0.31	491.3	761.81
J-229	5,909,074.75	97,350.43	713.60	0.15	487.4	763.40
J-230	5,908,471.28	97,739.11	717.10	0.00	445.2	762.59
J-231	5,907,921.40	97,334.01	709.20	0.04	518.9	762.22
J-232	5,907,811.00	97,326.52	708.90	0.00	521.4	762.18
J-233	5,907,639.32	97,370.09	707.90	0.00	530.8	762.14
J-234	5,906,873.52	97,574.28	711.60	0.27	491.8	761.85
J-235	5,907,254.44	97,377.87	708.90	0.00	520.1	762.04
J-236	5,906,869.56	97,385.66	709.67	0.00	511.6	761.94
J-237	5,913,524.07	98,517.56	689.20	0.28	681.3	758.82
J-238	5,913,476.73	98,634.61	689.45	0.00	678.8	758.81
J-239	5,913,442.90	98,660.40	690.60	0.00	667.6	758.81
J-240	5,905,918.98	98,029.82	712.40	0.74	480.8	761.53
J-241	5,913,350.24	98,658.09	690.80	0.00	665.7	758.82
J-242	5,912,944.99	98,674.90	690.05	0.00	673.2	758.84
J-243	5,912,549.09	98,682.16	689.00	0.33	683.6	758.85
J-244	5,905,905.76	98,439.24	709.18	0.06	511.1	761.40
J-245	5,908,776.14	96,915.33	710.70	0.00	534.7	765.34
J-246	5,908,458.63	97,044.00	709.95	0.27	542.1	765.34
J-247	5,908,464.31	97,043.90	710.05	0.00	541.1	765.34
J-248	5,906,562.22	99,128.24	701.60	0.00	586.2	761.50
J-249	5,908,771.98	96,927.06	705.50	0.00	585.6	765.34
J-250	5,906,588.47	98,425.23	707.60	0.28	526.7	761.42
J-251	5,908,770.14	96,932.26	705.50	0.00	585.6	765.34
J-252	5,906,825.65	98,420.35	709.60	0.12	507.2	761.43
J-253	5,908,766.64	96,942.13	710.70	0.00	534.7	765.34
J-254	5,908,783.08	96,917.79	710.70	0.00	534.5	765.32
J-255	5,908,778.19	96,929.26	705.50	0.00	585.3	765.30
J-256	5,906,735.40	98,269.84	710.30	0.02	500.6	761.45
J-257	5,908,776.00	96,934.34	705.50	0.00	585.2	765.30
J-258	5,908,771.86	96,943.98	710.70	0.00	534.2	765.28
J-259	5,907,681.11	97,992.32	713.39	0.22	477.5	762.18
J-260	5,906,585.22	98,273.05	708.00	0.17	523.3	761.47
J-261	5,907,700.54	98,626.53	713.40	0.13	477.2	762.15

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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	577.9	761.55
J-263	5,908,554.64	99,001.40	713.20	0.00	479.1	762.15
J-264	5,906,579.90	98,024.41	708.70	0.43	517.8	761.61
J-265	5,908,562.13	99,338.47	708.40	0.28	525.5	762.09
J-266	5,906,399.93	98,028.05	708.00	0.39	524.8	761.62
J-267	5,908,572.77	100,001.17	689.40	0.18	704.0	761.34
J-268	5,905,898.13	98,461.32	709.20	0.06	511.0	761.41
J-269	5,908,585.09	100,508.03	688.80	0.00	687.7	759.07
J-270	5,908,600.64	101,103.84	697.20	1.31	603.2	758.84
J-271	5,906,493.28	99,141.39	702.90	0.00	573.5	761.50
J-272	5,905,530.79	98,468.96	712.00	0.15	484.6	761.51
J-273	5,908,603.09	100,561.75	690.60	0.00	669.4	759.00
J-274	5,905,388.62	98,471.86	711.20	0.01	492.5	761.52
J-275	5,914,588.31	98,954.88	690.35	1.73	669.2	758.73
J-276	5,905,347.08	98,472.70	711.90	1.75	485.6	761.52
J-277	5,914,515.82	99,129.18	692.25	0.25	650.6	758.72
J-278	5,905,525.90	98,217.56	713.80	0.49	467.6	761.57
J-279	5,906,383.63	99,143.48	703.40	0.00	568.6	761.49
J-280	5,906,174.59	99,147.94	704.45	0.00	558.2	761.49
J-281	5,906,102.58	99,149.32	704.40	0.00	558.7	761.49
J-282	5,905,375.58	98,019.54	714.80	0.17	458.0	761.60
J-283	5,906,384.67	99,185.47	704.70	0.00	555.8	761.49
J-284	5,906,395.12	99,606.40	702.20	0.00	580.3	761.49
J-285	5,906,617.35	99,583.11	700.20	0.14	599.9	761.49
J-286	5,905,658.69	98,214.91	714.10	0.52	464.7	761.58
J-287	5,906,568.55	99,602.91	700.90	0.00	593.0	761.49
J-288	5,906,458.61	99,605.06	701.40	0.00	588.1	761.49
J-289	5,908,517.34	97,755.28	716.36	0.00	452.6	762.61
J-290	5,906,547.32	99,038.54	702.77	0.00	574.8	761.50
J-291	5,905,447.34	97,711.57	715.54	0.00	451.0	761.62
J-292	5,907,994.37	98,641.67	713.93	0.00	472.4	762.20
J-293	5,909,994.96	97,459.73	706.55	0.00	552.5	763.00
J-294	5,905,394.69	98,642.02	710.50	0.08	499.3	761.52
J-296	5,906,623.71	97,548.19	711.60	0.00	491.8	761.85
J-298	5,905,695.90	98,870.15	708.60	0.28	517.7	761.50
J-300	5,905,801.61	98,872.46	707.20	0.15	531.4	761.49
J-301	5,908,753.24	96,979.98	711.00	0.00	531.8	765.34
J-302	5,905,859.76	98,735.04	708.60	0.24	517.7	761.50
J-303	5,908,522.69	97,042.82	711.00	0.42	531.8	765.34
J-304	5,906,312.67	98,430.89	708.24	0.00	516.6	761.03
J-306	5,905,728.41	98,736.90	709.90	0.33	505.0	761.50
J-307	5,908,622.68	102,230.99	714.40	0.00	432.9	758.63
J-308	5,905,579.15	98,646.58	712.00	0.47	484.5	761.51
J-309	5,908,642.41	103,175.71	712.93	0.00	447.3	758.63
J-310	5,909,279.69	97,059.38	707.10	0.00	571.2	765.46
J-311	5,909,282.51	97,057.24	707.10	0.01	570.8	765.42
J-312	5,909,434.20	103,817.29	707.50	0.00	500.4	758.63
J-313	5,908,552.13	98,992.36	710.15	0.00	508.9	762.15
J-314	5,906,229.89	98,727.43	706.40	0.55	539.3	761.50
J-315	5,908,454.45	98,994.29	710.00	0.00	509.3	762.04
J-316	5,908,092.47	99,005.00	710.25	0.00	505.5	761.90
J-317	5,907,708.27	99,012.60	708.20	0.00	524.2	761.76

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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	495.1	762.79
J-321	5,909,018.07	98,991.77	710.00	0.17	511.2	762.24
J-322	5,906,537.16	98,766.80	706.30	0.08	540.2	761.50
J-324	5,906,780.50	98,815.29	707.40	0.00	530.2	761.58
J-332	5,906,905.11	98,812.64	709.10	0.93	514.0	761.62
J-337	5,907,703.90	98,795.12	710.50	0.52	505.3	762.13
J-342	5,906,589.89	98,581.45	707.10	0.31	532.0	761.45
J-348	5,906,564.17	99,142.81	701.60	0.20	586.2	761.50
J-349	5,905,292.97	97,440.46	715.60	0.57	450.6	761.64
J-350	5,906,836.65	99,137.08	702.50	0.21	577.8	761.54
J-351	5,914,985.65	99,118.12	694.80	0.00	625.6	758.73
J-352	5,908,787.17	96,908.26	710.70	0.00	534.7	765.34
J-353	5,908,757.47	96,994.16	711.00	0.05	530.7	765.23
J-356	5,906,618.36	99,628.21	700.20	0.12	599.8	761.49
J-357	5,909,258.32	100,547.78	691.00	0.24	661.6	758.60
J-358	5,909,251.92	100,248.17	691.00	0.35	661.7	758.61
J-359	5,908,858.94	100,556.29	691.00	0.06	662.5	758.69
J-360	5,908,857.28	100,478.32	691.00	0.12	662.3	758.67
J-362	5,907,675.38	97,768.48	712.30	0.00	488.2	762.18
J-363	5,909,310.68	97,745.32	713.10	0.00	486.4	762.80
J-364	5,906,949.71	100,836.01	691.50	0.15	679.0	760.88
J-365	5,910,093.16	97,731.00	707.20	0.03	542.6	762.64
J-367	5,909,360.67	97,744.77	712.10	0.00	496.1	762.79
J-369	5,909,385.67	97,744.30	711.85	0.00	498.5	762.79
J-370	5,908,423.93	101,076.18	691.00	0.14	668.8	759.33
J-371	5,909,495.65	97,742.23	711.65	0.00	500.3	762.77
J-372	5,908,357.20	101,065.19	691.00	0.39	670.2	759.48
J-373	5,909,520.64	97,741.76	711.00	0.00	506.6	762.76
J-374	5,907,995.30	101,006.31	691.00	0.52	677.0	760.17
J-375	5,909,735.60	97,737.72	710.50	0.02	511.3	762.74
J-376	5,907,631.31	100,947.18	691.00	0.34	679.7	760.45
J-377	5,909,851.58	97,735.54	709.20	0.01	523.9	762.73
J-378	5,907,569.28	100,937.06	690.70	0.37	682.9	760.48
J-379	5,907,097.59	100,860.13	690.80	0.57	684.4	760.73
J-380	5,907,070.76	100,855.75	691.60	0.16	676.8	760.75
J-381	5,909,943.56	97,733.81	707.40	0.00	541.4	762.72
J-382	5,906,848.42	100,819.49	691.00	0.35	684.1	760.90
J-383	5,906,355.74	100,852.67	691.40	0.36	680.6	760.94
J-384	5,906,237.87	100,906.65	691.40	0.92	680.8	760.96
J-386	5,905,356.70	100,981.32	693.10	0.57	668.6	761.41
J-388	5,907,590.72	100,805.57	690.70	0.23	682.9	760.48
J-389	5,909,944.06	97,385.51	706.90	0.32	550.4	763.14
J-390	5,909,578.24	100,572.53	691.00	0.18	660.8	758.52
J-391	5,909,976.00	97,733.20	707.25	0.00	542.8	762.71
J-392	5,909,947.68	100,567.17	691.00	0.77	660.3	758.47
J-394	5,910,397.44	100,552.88	691.00	0.15	660.1	758.45
J-395	5,910,768.00	100,546.28	691.00	0.73	660.1	758.45
J-396	5,910,752.17	99,977.20	691.00	0.83	660.1	758.45
J-398	5,910,381.11	99,987.28	691.00	0.16	660.1	758.45
J-400	5,909,937.68	99,983.00	691.00	0.46	660.1	758.45
J-401	5,909,529.41	97,966.96	711.90	0.00	497.7	762.75
J-402	5,909,566.00	99,988.28	691.00	0.14	660.2	758.45

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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	493.7	762.75
J-404	5,909,690.09	97,971.58	713.05	0.19	486.3	762.74
J-406	5,909,525.03	97,741.68	710.80	0.00	508.6	762.76
J-407	5,909,525.21	97,750.68	711.50	0.11	501.7	762.76
J-408	5,909,931.45	97,966.98	708.15	0.00	534.1	762.73
J-410	5,909,979.59	97,922.51	707.90	0.02	536.6	762.72
J-411	5,909,713.09	97,971.14	712.95	0.00	487.3	762.74
J-536	5,906,927.24	99,821.22	703.00	0.00	572.4	761.49
J-538	5,906,907.40	99,022.87	703.00	0.00	573.2	761.57
J-1005	5,906,600.14	97,387.90	712.00	0.00	488.0	761.86
J-1010	5,914,583.44	98,184.90	695.00	2.90	622.7	758.62
J-1015	5,912,932.96	97,426.31	692.00	5.54	654.5	758.88
J-1020	5,912,941.83	98,537.17	690.00	1.30	674.1	758.88
J-1025	5,912,941.46	98,290.11	690.00	0.00	675.0	758.97
J-1030	5,912,940.85	98,009.27	690.00	0.51	674.7	758.94
J-1035	5,913,667.48	99,150.54	695.00	0.00	623.6	758.71
J-1040	5,912,948.05	99,168.66	690.00	7.77	672.5	758.71
J-1045	5,912,186.69	98,349.44	692.00	6.81	654.3	758.85
J-1050	5,911,741.94	98,684.68	690.00	0.00	674.1	758.88
J-1055	5,912,164.06	99,124.69	692.00	9.59	652.9	758.71
J-1060	5,911,747.22	98,916.14	692.00	0.00	653.4	758.77
J-1065	5,911,767.78	99,927.34	691.00	0.00	661.5	758.59
J-1070	5,911,780.04	100,530.45	691.00	0.00	661.4	758.58
J-1075	5,913,570.82	99,897.36	695.00	4.82	622.8	758.64
J-1080	5,911,375.53	100,537.05	692.00	0.00	650.8	758.49
J-1090	5,910,765.45	100,552.84	691.00	0.00	660.1	758.45
J-1100	5,909,953.69	100,938.26	691.00	1.54	660.3	758.47
J-1120	5,911,380.05	100,969.12	695.00	3.07	620.7	758.42
J-1130	5,910,767.70	100,975.54	691.00	1.53	660.0	758.44
J-1140	5,910,093.50	98,010.88	710.00	0.00	513.7	762.48
J-1160	5,910,888.42	98,011.18	700.00	17.71	593.1	760.60
J-1170	5,907,921.21	96,958.49	712.50	4.02	485.4	762.09
J-1180	5,906,388.02	97,030.59	718.00	7.47	428.3	761.76
J-1190	5,907,464.10	99,160.84	712.00	10.23	484.8	761.54
J-1195	5,907,311.37	99,134.08	712.00	0.00	485.0	761.56
J-1200	5,905,818.21	99,517.76	710.00	9.50	503.6	761.45
J-1205	5,905,816.29	99,157.77	710.00	0.00	503.9	761.49
J-1210	5,905,298.16	99,161.16	716.00	7.17	445.2	761.49
J-1215	5,905,328.15	100,093.75	705.00	0.00	552.3	761.43
J-1220	5,906,625.92	99,855.91	703.00	0.00	572.4	761.49
J-1230	5,905,900.56	97,381.30	714.10	0.00	466.1	761.73
J-1240	5,905,358.81	97,375.84	715.60	0.00	450.7	761.65
J-1250	5,905,273.56	98,474.03	711.90	0.00	485.7	761.53
J-1260	5,904,155.48	99,994.25	724.50	6.39	360.6	761.34
J-2000	5,914,517.43	96,665.86	695.00	5.33	622.5	758.60
J-2010	5,913,665.97	98,931.19	695.00	6.64	623.7	758.73
J-2020	5,912,957.43	99,890.71	695.00	9.53	622.7	758.62
J-2030	5,912,182.15	99,903.91	695.00	9.71	622.3	758.59
J-2040	5,911,376.83	101,782.46	695.00	6.14	619.9	758.34
J-2050	5,911,367.75	100,127.16	692.00	2.20	651.0	758.51
J-2060	5,908,894.71	101,067.17	697.00	4.60	603.2	758.64
J-2065	5,908,918.21	101,831.57	706.00	6.15	514.1	758.53

Scenario: Peak Hour - Future (20 Yr)-Alt 1
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-2070	5,906,626.36	100,037.75	703.00	2.79	572.4	761.49
J-2090	5,910,404.68	100,988.62	691.00	1.54	660.1	758.45
PUMPHOUSE - 1	5,909,261.30	96,808.08	713.70	0.13	515.4	766.36
PUMPHOUSE - 2	5,909,262.07	96,862.84	713.70	1.43	515.4	766.36
PUMPHOUSE - 3	5,909,262.83	96,917.20	713.70	0.00	515.4	766.36
PUMPHOUSE - 4	5,909,263.60	96,971.96	713.70	1.37	515.3	766.36
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	516.1	760.97

Scenario: Peak H[illegible] Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	24.86	0.35	0.14	0.57	762.82	762.68
P-3	Jockey Pump	Jockey Pump PRV	1.40	150.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-4	Jockey Pump PRV	PUMPHOUSE - 1	1.50	150.0	100.0	-0.00	0.00	0.00	0.00	766.36	766.36
P-6	PUMPHOUSE - 1	PUMPHOUSE - 2	1.40	450.0	100.0	-0.13	0.00	0.00	0.00	766.36	766.36
P-8	Lead Pump	Lead Pump PRV	1.20	200.0	100.0	23.29	0.74	0.01	5.02	792.39	792.38
P-10	Lead Pump PRV	PUMPHOUSE - 2	1.70	200.0	100.0	23.29	0.74	0.17	98.45	766.53	766.36
P-12	Lag Pump	Lag Pump PRV	1.20	200.0	100.0	23.32	0.74	0.01	5.08	792.38	792.37
P-14	Lag Pump PRV	PUMPHOUSE - 3	1.70	200.0	100.0	23.32	0.74	0.17	98.71	766.53	766.36
P-16	PUMPHOUSE - 2	PUMPHOUSE - 3	1.40	450.0	100.0	21.73	0.14	0.00	0.32	766.36	766.36
P-18	Fire Pump	Fire Pump PRV	0.80	300.0	100.0	-0.00	0.00	0.00	0.00	0.00	0.00
P-20	Fire Pump PRV	PUMPHOUSE - 4	2.10	300.0	100.0	-0.00	0.00	0.00	0.00	766.36	766.36
P-22	PUMPHOUSE - 3	PUMPHOUSE - 4	1.40	450.0	100.0	45.06	0.28	0.00	1.38	766.36	766.36
P-24	R-1	Jockey Pump	5.00	150.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-26	R-1	Lead Pump	5.00	200.0	100.0	23.29	0.74	0.03	5.06	712.37	712.34
P-28	R-1	Lag Pump	5.00	200.0	100.0	23.32	0.74	0.03	5.08	712.37	712.34
P-30	R-1	Fire Pump	5.00	300.0	100.0	-0.00	0.00	0.00	0.00	712.37	712.37
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	765.34	765.34
P-34	PUMPHOUSE - 4	J-310	92.00	450.0	100.0	261.55	1.64	0.89	9.72	766.36	765.46
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	765.34	765.34
P-40	J-10	J-12	1.20	148.0	130.0	13.11	0.76	0.03	25.86	762.83	762.80
P-42	J-12	J-16	3.50	202.0	130.0	13.11	0.41	0.01	1.87	762.80	762.79
P-45	J-10	J-8	584.50	304.0	130.0	-34.72	0.48	0.50	0.86	762.83	763.34
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.01	765.34	765.34
P-50	J-362	J-259	224.00	297.0	130.0	2.66	0.04	0.00	0.01	762.18	762.18
P-52	J-16	J-22	506.20	199.0	130.0	12.77	0.41	0.54	1.07	762.79	762.25
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.34	765.34
P-58	J-24	J-28	372.00	199.0	130.0	-10.78	0.35	0.30	0.80	762.31	762.61
P-60	J-337	J-261	168.50	250.0	130.0	-8.21	0.17	0.03	0.16	762.13	762.15
P-62	J-28	J-30	139.00	199.0	130.0	-11.33	0.36	0.14	0.98	762.61	762.74
P-64	J-30	J-10	104.50	304.0	130.0	-32.09	0.44	0.09	0.86	762.74	762.83
P-66	J-30	J-32	103.00	304.0	130.0	20.76	0.29	0.04	0.36	762.74	762.71
P-68	J-32	J-34	131.00	304.0	130.0	27.44	0.38	0.08	0.59	762.71	762.63
P-70	J-34	J-36	26.00	304.0	130.0	27.27	0.38	0.02	0.64	762.63	762.61
P-74	J-38	J-40	160.50	304.0	130.0	23.44	0.32	0.07	0.42	762.52	762.45
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.34	765.34

Scenario: Peak Hr · Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	765.34	765.34
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	765.34	765.34
P-88	J-50	J-56	613.50	199.0	130.0	5.34	0.17	0.13	0.21	762.37	762.24
P-90	J-352	J-254	10.50	202.0	130.0	12.95	0.40	0.02	2.06	765.34	765.32
P-92	J-254	J-255	12.50	202.0	130.0	12.95	0.40	0.01	1.14	765.32	765.30
P-94	J-255	J-257	5.50	202.0	130.0	12.95	0.40	0.01	1.30	765.30	765.30
P-96	J-257	J-258	10.50	202.0	130.0	12.95	0.40	0.01	1.16	765.30	765.28
P-98	J-258	J-353	52.50	202.0	130.0	12.95	0.40	0.05	1.02	765.28	765.23
P-100	J-350	J-262	69.00	202.0	130.0	-4.78	0.15	0.01	0.16	761.54	761.55
P-102	J-68	J-64	271.00	254.0	130.0	5.90	0.12	0.02	0.08	762.38	762.36
P-104	J-74	J-68	282.00	254.0	130.0	6.03	0.12	0.02	0.08	762.40	762.38
P-106	J-321	J-263	463.50	304.0	130.0	14.92	0.21	0.09	0.19	762.24	762.15
P-108	J-263	J-144	2.50	304.0	130.0	1.20	0.02	0.00	0.00	762.15	762.15
P-112	J-74	J-76	112.00	254.0	130.0	-1.30	0.03	0.00	0.00	762.40	762.40
P-114	J-76	J-82	279.00	406.0	130.0	-16.73	0.13	0.02	0.06	762.40	762.42
P-116	J-82	J-90	545.00	406.0	130.0	-17.37	0.13	0.03	0.06	762.42	762.45
P-118	J-263	J-265	337.00	300.0	130.0	13.72	0.19	0.06	0.17	762.15	762.09
P-120	J-265	J-267	665.50	200.0	130.0	13.45	0.43	0.76	1.14	762.09	761.34
P-122	J-267	J-269	507.00	150.0	130.0	13.27	0.75	2.27	4.47	761.34	759.07
P-124	J-269	J-273	60.50	200.0	130.0	13.27	0.42	0.07	1.21	759.07	759.00
P-126	J-273	J-270	565.00	200.0	130.0	6.31	0.20	0.16	0.28	759.00	758.84
P-128	J-273	J-359	256.00	155.0	130.0	6.96	0.37	0.31	1.21	759.00	758.69
P-130	J-90	J-94	191.50	450.0	120.0	-17.58	0.11	0.01	0.04	762.45	762.46
P-132	J-98	J-74	336.50	199.0	130.0	4.87	0.16	0.06	0.18	762.46	762.40
P-134	J-270	J-370	182.00	148.0	130.0	-9.46	0.55	0.50	2.72	758.84	759.33
P-136	J-102	J-98	106.00	199.0	130.0	5.12	0.16	0.02	0.21	762.49	762.46
P-140	J-102	J-104	198.50	199.0	130.0	2.79	0.09	0.01	0.06	762.49	762.47
P-142	J-108	J-104	252.50	199.0	130.0	-2.35	0.08	0.01	0.05	762.46	762.47
P-146	J-108	J-112	214.00	300.0	120.0	17.87	0.25	0.07	0.31	762.46	762.40
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	758.73	758.73
P-150	J-112	J-64	127.00	300.0	120.0	17.56	0.25	0.04	0.30	762.40	762.36
P-152	J-275	J-277	189.00	297.0	130.0	3.24	0.05	0.00	0.01	758.73	758.72
P-154	J-117	J-102	399.00	199.0	130.0	8.13	0.26	0.19	0.48	762.68	762.49
P-156	J-332	J-324	124.50	254.0	130.0	12.24	0.24	0.04	0.31	761.62	761.58
P-158	J-118	J-120	239.00	300.0	120.0	16.22	0.23	0.06	0.26	762.68	762.62

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-160	J-124	J-120	349.00	300.0	120.0	-16.13	0.23	0.09	0.25	762.53	762.62
P-164	J-124	J-108	270.50	300.0	120.0	16.03	0.23	0.07	0.25	762.53	762.46
P-168	J-118	J-117	26.00	300.0	120.0	8.43	0.12	0.00	0.07	762.68	762.68
P-180	J-8	J-136	205.50	204.0	130.0	12.23	0.37	0.20	0.96	763.34	763.14
P-184	J-134	J-140	128.50	148.0	130.0	7.87	0.46	0.25	1.91	763.08	762.83
P-186	J-76	J-142	225.50	254.0	130.0	15.10	0.30	0.11	0.48	762.40	762.30
P-194	J-148	J-146	535.50	150.0	130.0	12.77	0.72	2.26	4.22	765.10	762.84
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	765.34	765.34
P-196	J-148	J-150	13.00	150.0	130.0	-12.89	0.73	0.06	4.34	765.10	765.15
P-208	J-42	J-162	132.50	304.0	130.0	30.92	0.43	0.10	0.77	762.37	762.27
P-212	J-162	J-164	424.50	254.0	130.0	5.33	0.11	0.03	0.07	762.27	762.24
P-214	J-164	J-166	257.50	254.0	130.0	7.03	0.14	0.03	0.11	762.24	762.21
P-216	J-166	J-168	132.00	254.0	130.0	3.73	0.07	0.00	0.03	762.21	762.21
P-222	J-172	J-174	134.50	254.0	130.0	-7.26	0.14	0.02	0.12	762.20	762.21
P-224	J-174	J-56	192.50	254.0	130.0	-7.54	0.15	0.02	0.12	762.21	762.24
P-226	J-164	J-176	128.00	148.0	130.0	-5.47	0.32	0.12	0.97	762.24	762.37
P-228	J-164	J-178	145.50	148.0	130.0	3.65	0.21	0.07	0.46	762.24	762.18
P-230	J-166	J-180	146.00	148.0	130.0	3.00	0.17	0.05	0.32	762.21	762.17
P-238	J-198	J-202	298.50	304.0	130.0	25.22	0.35	0.15	0.51	761.85	761.70
P-260	J-202	J-206	385.50	304.0	130.0	12.11	0.17	0.05	0.13	761.70	761.65
P-262	J-206	J-210	304.50	304.0	130.0	7.05	0.10	0.01	0.05	761.65	761.63
P-266	J-210	J-212	238.50	304.0	130.0	6.75	0.09	0.01	0.04	761.63	761.62
P-270	J-214	J-216	274.00	304.0	130.0	-6.53	0.09	0.01	0.04	761.62	761.63
P-273	J-310	J-217	285.00	450.0	100.0	201.53	1.27	1.65	5.78	765.46	763.82
P-274	J-216	J-222	334.50	254.0	130.0	-8.69	0.17	0.05	0.16	761.63	761.69
P-275	J-217	J-6	10.50	450.0	100.0	78.70	0.49	0.03	2.93	763.82	763.78
P-276	J-134	J-218	7.00	148.0	130.0	-8.06	0.47	0.03	3.82	763.08	763.10
P-277	J-218	J-136	14.50	148.0	130.0	-7.35	0.43	0.03	2.35	763.10	763.14
P-278	J-222	J-224	207.50	254.0	130.0	-8.75	0.17	0.03	0.16	761.69	761.72
P-280	J-228	J-224	462.00	254.0	130.0	9.21	0.18	0.08	0.18	761.81	761.72
P-283	J-363	J-219	118.00	455.7	130.0	-37.08	0.23	0.02	0.14	762.80	762.82
P-285	J-218	J-221	188.00	455.7	130.0	117.96	0.72	0.27	1.45	763.10	762.83
P-286	J-221	J-219	114.50	455.7	130.0	29.24	0.18	0.01	0.11	762.83	762.82
P-288	J-40	J-225	162.00	304.0	130.0	23.27	0.32	0.07	0.44	762.45	762.38
P-289	J-225	J-42	3.50	304.0	130.0	30.95	0.43	0.01	1.62	762.38	762.37

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-290	J-224	J-210	274.00	254.0	130.0	12.29	0.24	0.09	0.32	761.72	761.63
P-293	J-225	J-24	262.50	455.7	130.0	47.71	0.29	0.07	0.27	762.38	762.31
P-294	J-210	J-240	327.50	254.0	130.0	12.57	0.25	0.11	0.33	761.63	761.53
P-297	J-36	J-230	22.50	304.0	130.0	27.27	0.38	0.02	0.80	762.61	762.59
P-298	J-240	J-244	431.00	254.0	130.0	11.82	0.23	0.13	0.29	761.53	761.40
P-299	J-230	J-38	167.50	304.0	130.0	23.44	0.32	0.07	0.44	762.59	762.52
P-300	J-223	J-230	25.00	297.0	130.0	-3.83	0.06	0.00	0.04	762.59	762.59
P-301	J-24	J-22	128.50	455.7	130.0	57.65	0.35	0.06	0.44	762.31	762.25
P-303	J-22	J-226	28.00	455.7	130.0	70.33	0.43	0.02	0.56	762.25	762.24
P-305	J-227	J-50	409.50	204.0	130.0	7.18	0.22	0.14	0.34	762.51	762.37
P-306	J-223	J-227	173.50	455.7	130.0	67.38	0.41	0.09	0.50	762.59	762.51
P-307	J-227	J-225	336.50	455.7	130.0	60.06	0.37	0.13	0.38	762.51	762.38
P-308	J-250	J-252	237.00	254.0	130.0	-3.77	0.07	0.01	0.03	761.42	761.43
P-309	J-217	J-229	243.00	455.7	130.0	122.69	0.75	0.42	1.71	763.82	763.40
P-310	J-6	J-229	233.00	297.0	130.0	43.38	0.63	0.38	1.65	763.78	763.40
P-311	J-229	J-8	16.00	297.0	130.0	47.24	0.68	0.06	3.98	763.40	763.34
P-312	J-252	J-256	219.00	199.0	130.0	-3.89	0.13	0.03	0.12	761.43	761.45
P-313	J-229	J-218	205.50	455.7	130.0	118.67	0.73	0.30	1.44	763.40	763.10
P-314	J-260	J-256	150.00	199.0	130.0	3.91	0.13	0.02	0.12	761.47	761.45
P-315	J-226	J-231	35.00	455.7	130.0	70.33	0.43	0.02	0.49	762.24	762.22
P-316	J-231	J-232	143.50	455.7	130.0	51.53	0.32	0.04	0.27	762.22	762.18
P-317	J-232	J-233	178.50	455.7	130.0	51.53	0.32	0.04	0.25	762.18	762.14
P-318	J-260	J-250	152.00	254.0	130.0	12.85	0.25	0.05	0.35	761.47	761.42
P-319	J-233	J-235	385.00	455.7	130.0	51.53	0.32	0.10	0.25	762.14	762.04
P-320	J-264	J-260	248.50	254.0	130.0	16.94	0.33	0.14	0.56	761.61	761.47
P-321	J-235	J-236	385.00	455.7	130.0	51.53	0.32	0.10	0.25	762.04	761.94
P-322	J-311	J-1025	3,915.00	297.0	130.0	46.37	0.67	6.45	1.65	765.42	758.97
P-322a	J-1025	J-237	625.50	297.0	130.0	16.71	0.24	0.15	0.25	758.97	758.82
P-323	J-237	J-275	1,150.50	297.0	130.0	8.92	0.13	0.09	0.08	758.82	758.73
P-324	J-264	J-202	243.50	254.0	130.0	-12.83	0.25	0.09	0.35	761.61	761.70
P-325	J-237	J-238	126.50	297.0	130.0	7.50	0.11	0.01	0.06	758.82	758.81
P-326	J-264	J-266	180.00	254.0	130.0	-4.54	0.09	0.01	0.05	761.61	761.62
P-327	J-238	J-239	43.00	297.0	130.0	-7.44	0.11	0.00	0.06	758.81	758.81
P-328	J-266	J-206	485.00	254.0	130.0	-4.93	0.10	0.03	0.06	761.62	761.65
P-329	J-239	J-241	92.50	297.0	130.0	-7.44	0.11	0.01	0.06	758.81	758.82

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-330	J-244	J-268	30.00	254.0	130.0	-11.52	0.23	0.01	0.36	761.40	761.41
P-331	J-241	J-242	409.50	297.0	130.0	-7.44	0.11	0.02	0.06	758.82	758.84
P-332	J-268	J-272	367.50	254.0	130.0	-11.58	0.23	0.10	0.28	761.41	761.51
P-333	J-242	J-243	396.00	297.0	130.0	-5.66	0.08	0.01	0.03	758.84	758.85
P-335	J-248	J-348	14.50	199.0	130.0	-3.13	0.10	0.00	0.10	761.50	761.50
P-336	J-272	J-274	142.00	254.0	130.0	-4.34	0.09	0.01	0.05	761.51	761.52
P-337	J-248	J-271	76.00	297.0	130.0	4.10	0.06	0.00	0.03	761.50	761.50
P-338	J-274	J-276	41.50	300.0	120.0	-6.90	0.10	0.00	0.05	761.52	761.52
P-339	J-271	J-279	109.50	297.0	130.0	4.10	0.06	0.00	0.02	761.50	761.49
P-340	J-272	J-278	251.50	254.0	130.0	-10.64	0.21	0.06	0.25	761.51	761.57
P-341	J-279	J-280	209.00	297.0	130.0	3.20	0.05	0.00	0.01	761.49	761.49
P-342	J-278	J-282	329.50	254.0	130.0	-5.79	0.11	0.02	0.08	761.57	761.60
P-343	J-280	J-281	72.00	297.0	130.0	3.20	0.05	0.00	0.01	761.49	761.49
P-344	J-279	J-283	42.00	297.0	130.0	0.89	0.01	0.00	0.00	761.49	761.49
P-345	J-283	J-284	421.00	297.0	130.0	0.89	0.01	0.00	0.00	761.49	761.49
P-346	J-214	J-282	306.50	254.0	130.0	5.96	0.12	0.02	0.08	761.62	761.60
P-347	J-348	J-285	445.00	199.0	130.0	1.24	0.04	0.01	0.01	761.50	761.49
P-348	J-285	J-356	45.00	199.0	130.0	1.99	0.06	0.00	0.04	761.49	761.49
P-349	J-285	J-287	64.00	297.0	130.0	-0.89	0.01	0.00	0.00	761.49	761.49
P-350	J-278	J-286	133.00	254.0	130.0	-5.34	0.11	0.01	0.07	761.57	761.58
P-351	J-287	J-288	110.00	297.0	130.0	-0.89	0.01	0.00	0.00	761.49	761.49
P-352	J-212	J-286	517.50	254.0	130.0	5.86	0.12	0.04	0.08	761.62	761.58
P-353	J-288	J-284	63.50	297.0	130.0	-0.89	0.01	0.00	0.00	761.49	761.49
P-354	J-221	J-130	12.50	297.0	130.0	24.86	0.36	0.01	0.94	762.83	762.82
P-355	J-221	J-289	563.50	455.7	130.0	63.83	0.39	0.22	0.39	762.83	762.61
P-356	J-289	J-223	40.00	455.7	130.0	63.83	0.39	0.02	0.43	762.61	762.59
P-357	J-322	J-290	274.00	199.0	130.0	0.96	0.03	0.00	0.01	761.50	761.50
P-358	J-274	J-294	170.50	300.0	120.0	2.54	0.04	0.00	0.01	761.52	761.52
P-359	J-290	J-248	91.00	199.0	130.0	0.96	0.03	0.00	0.01	761.50	761.50
P-360	J-212	J-291	226.00	304.0	130.0	0.66	0.01	0.00	0.00	761.62	761.62
P-361	J-291	J-214	78.00	304.0	130.0	0.66	0.01	0.00	0.00	761.62	761.62
P-362	J-294	J-298	389.00	199.0	130.0	2.47	0.08	0.02	0.05	761.52	761.50
P-363	J-168	J-292	202.00	254.0	130.0	3.66	0.07	0.01	0.03	762.21	762.20
P-364	J-292	J-172	147.50	254.0	130.0	3.66	0.07	0.01	0.03	762.20	762.20
P-365	J-389	J-293	126.50	297.0	130.0	34.95	0.50	0.14	1.09	763.14	763.00

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-366	J-298	J-300	106.00	199.0	130.0	2.19	0.07	0.00	0.04	761.50	761.49
P-367	J-293	J-391	276.50	297.0	130.0	34.95	0.50	0.29	1.04	763.00	762.71
P-368	J-300	J-302	187.00	199.0	130.0	-2.20	0.07	0.01	0.04	761.49	761.50
P-369	J-410	J-408	67.00	297.0	130.0	-7.14	0.10	0.00	0.05	762.72	762.73
P-371	J-234	J-296	251.00	254.0	130.0	-2.63	0.05	0.00	0.02	761.85	761.85
P-372	J-306	J-302	131.50	254.0	130.0	2.47	0.05	0.00	0.02	761.50	761.50
P-373	J-296	J-228	267.50	254.0	130.0	9.52	0.19	0.05	0.19	761.85	761.81
P-374	J-306	J-308	179.00	254.0	130.0	-2.80	0.06	0.00	0.02	761.50	761.51
P-376	J-308	J-272	191.00	254.0	130.0	-3.26	0.06	0.01	0.03	761.51	761.51
P-378	J-302	J-314	370.00	254.0	130.0	0.03	0.00	0.00	0.00	761.50	761.50
P-381	J-250	J-304	276.00	254.0	130.0	26.72	0.53	0.39	1.42	761.42	761.03
P-382	J-304	Truck Fill	5.50	254.0	130.0	26.72	0.53	0.05	9.50	761.03	760.97
P-383	Truck Fill	J-244	401.50	254.0	130.0	-23.28	0.46	0.42	1.06	760.97	761.40
P-384	J-270	J-307	1,127.50	200.0	130.0	5.01	0.16	0.20	0.18	758.84	758.63
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	758.63	758.63
P-386	J-314	J-322	313.50	254.0	130.0	-0.52	0.01	0.00	0.00	761.50	761.50
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	758.63	758.63
P-388	J-60	J-313	214.00	289.0	130.0	19.75	0.30	0.09	0.44	762.24	762.15
P-389	J-313	J-144	9.00	289.0	130.0	-0.92	0.01	0.00	0.00	762.15	762.15
P-390	J-313	J-315	97.50	233.3	130.0	20.67	0.48	0.12	1.18	762.15	762.04
P-391	J-315	J-316	363.50	297.0	130.0	20.67	0.30	0.13	0.36	762.04	761.90
P-392	J-322	J-324	250.50	254.0	130.0	-12.24	0.24	0.08	0.31	761.50	761.58
P-393	J-316	J-317	384.50	297.0	130.0	20.67	0.30	0.14	0.36	761.90	761.76
P-394	J-32	J-318	45.50	148.0	130.0	-6.69	0.39	0.08	1.76	762.71	762.79
P-395	J-318	J-136	539.50	148.0	130.0	-4.48	0.26	0.35	0.65	762.79	763.14
P-396	J-146	J-318	190.50	150.0	100.0	2.21	0.13	0.05	0.26	762.84	762.79
P-402	J-332	J-337	799.00	254.0	130.0	-18.47	0.36	0.51	0.64	761.62	762.13
P-410	J-172	J-337	293.50	254.0	130.0	10.78	0.21	0.07	0.24	762.20	762.13
P-412	J-322	J-342	193.50	254.0	130.0	10.68	0.21	0.05	0.24	761.50	761.45
P-414	J-342	J-250	156.50	254.0	130.0	10.37	0.20	0.04	0.23	761.45	761.42
P-444	J-370	J-372	67.50	148.0	130.0	-8.55	0.50	0.15	2.24	759.33	759.48
P-446	J-372	J-374	366.50	148.0	130.0	-7.94	0.46	0.69	1.88	759.48	760.17
P-448	J-374	J-376	369.00	199.0	130.0	-10.51	0.34	0.28	0.75	760.17	760.45
P-450	J-376	J-378	63.00	199.0	130.0	-8.22	0.26	0.03	0.53	760.45	760.48
P-452	J-378	J-379	478.00	199.0	130.0	-8.82	0.28	0.25	0.53	760.48	760.73

Scenario: Peak Hr · Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-453	J-379	J-380	27.00	199.0	130.0	-9.39	0.30	0.02	0.72	760.73	760.75
P-454	J-380	J-364	122.50	199.0	130.0	-12.19	0.39	0.12	1.01	760.75	760.88
P-456	J-364	J-382	102.50	148.0	130.0	-2.30	0.13	0.02	0.19	760.88	760.90
P-457	J-382	J-383	516.50	148.0	130.0	-1.56	0.09	0.05	0.09	760.90	760.94
P-458	J-383	J-384	130.50	148.0	130.0	-1.92	0.11	0.02	0.13	760.94	760.96
P-460	J-384	J-386	893.50	148.0	130.0	-3.93	0.23	0.45	0.50	760.96	761.41
P-462	J-370	J-374	693.00	75.0	130.0	-1.06	0.24	0.84	1.21	759.33	760.17
P-464	J-374	J-372	636.50	75.0	130.0	0.99	0.22	0.69	1.08	760.17	759.48
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	760.48	760.48
P-468	J-380	J-376	1,258.50	148.0	130.0	2.64	0.15	0.31	0.24	760.75	760.45
P-470	J-382	J-384	1,373.00	148.0	130.0	-1.09	0.06	0.06	0.05	760.90	760.96
P-474	J-390	J-392	369.50	148.0	130.0	1.85	0.11	0.05	0.12	758.52	758.47
P-476	J-392	J-394	450.00	148.0	130.0	1.05	0.06	0.02	0.04	758.47	758.45
P-478	J-394	J-395	370.50	148.0	130.0	0.06	0.00	0.00	0.00	758.45	758.45
P-479	J-395	J-396	569.50	200.0	120.0	0.42	0.01	0.00	0.00	758.45	758.45
P-480	J-394	J-398	566.00	108.0	130.0	0.05	0.01	0.00	0.00	758.45	758.45
P-482	J-392	J-400	584.50	108.0	130.0	0.39	0.04	0.02	0.03	758.47	758.45
P-484	J-390	J-402	584.50	108.0	130.0	0.73	0.08	0.06	0.10	758.52	758.45
P-490	J-216	J-349	71.00	304.0	130.0	-5.46	0.08	0.00	0.03	761.63	761.64
P-494	J-350	J-348	272.50	202.0	130.0	4.58	0.14	0.04	0.15	761.54	761.50
P-496	J-310	J-311	4.00	304.0	130.0	60.02	0.83	0.04	10.86	765.46	765.42
P-502	J-402	J-400	371.50	155.0	130.0	0.59	0.03	0.00	0.01	758.45	758.45
P-504	J-398	J-396	390.50	200.0	120.0	0.41	0.01	0.00	0.00	758.45	758.45
P-506	J-311	J-352	517.00	305.0	130.0	13.64	0.19	0.08	0.15	765.42	765.34
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	765.34	765.34
P-509	J-142	J-321	302.00	304.0	130.0	15.09	0.21	0.06	0.19	762.30	762.24
P-514	J-353	J-150	72.00	200.0	140.0	12.89	0.41	0.08	1.10	765.23	765.15
P-526	J-359	J-357	399.50	148.0	130.0	2.51	0.15	0.09	0.22	758.69	758.60
P-528	J-538	J-262	113.00	202.0	130.0	5.30	0.17	0.02	0.19	761.57	761.55
P-529	J-262	J-536	686.00	202.0	130.0	3.51	0.11	0.06	0.09	761.55	761.49
P-530	J-357	J-390	321.00	148.0	130.0	2.75	0.16	0.09	0.26	758.60	758.52
P-532	J-357	J-358	299.50	108.0	130.0	-0.48	0.05	0.01	0.05	758.60	758.61
P-534	J-358	J-360	457.00	108.0	130.0	-0.83	0.09	0.06	0.13	758.61	758.67
P-536	J-360	J-359	78.00	108.0	130.0	-0.95	0.10	0.01	0.18	758.67	758.69
P-542	J-162	J-362	170.50	304.0	130.0	25.53	0.35	0.09	0.54	762.27	762.18

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-544	J-362	J-198	808.50	304.0	130.0	22.87	0.32	0.33	0.41	762.18	761.85
P-548	J-363	J-367	50.00	440.3	130.0	37.08	0.24	0.01	0.18	762.80	762.79
P-550	J-367	J-369	25.00	440.3	130.0	37.08	0.24	0.00	0.16	762.79	762.79
P-552	J-369	J-371	110.00	440.3	130.0	37.08	0.24	0.02	0.16	762.79	762.77
P-554	J-371	J-373	25.00	440.3	130.0	37.08	0.24	0.01	0.25	762.77	762.76
P-558	J-375	J-377	116.00	440.3	130.0	29.61	0.19	0.01	0.10	762.74	762.73
P-560	J-377	J-381	92.00	440.3	130.0	29.60	0.19	0.01	0.11	762.73	762.72
P-566	J-6	J-389	643.50	297.0	130.0	35.27	0.51	0.65	1.00	763.78	763.14
P-570	J-381	J-391	32.50	440.3	130.0	29.60	0.19	0.00	0.13	762.72	762.71
P-572	J-391	J-365	117.00	440.3	130.0	71.68	0.47	0.07	0.62	762.71	762.64
P-576	J-332	J-538	211.00	202.0	130.0	5.30	0.17	0.04	0.21	761.62	761.57
P-578	J-373	J-406	4.50	440.3	130.0	37.08	0.24	0.00	0.40	762.76	762.76
P-580	J-406	J-375	210.50	440.3	130.0	29.63	0.19	0.02	0.11	762.76	762.74
P-584	J-404	J-403	149.00	297.0	130.0	-7.34	0.11	0.01	0.06	762.74	762.75
P-588	J-403	J-401	14.00	297.0	130.0	-7.34	0.11	0.00	0.06	762.75	762.75
P-592	J-401	J-407	216.50	297.0	130.0	-7.34	0.11	0.01	0.06	762.75	762.76
P-594	J-64	J-60	109.50	254.0	130.0	23.22	0.46	0.11	1.04	762.36	762.24
P-595	J-60	J-56	223.50	254.0	130.0	3.47	0.07	0.01	0.03	762.24	762.24
P-596	J-407	J-406	9.00	297.0	130.0	-7.44	0.11	0.00	0.14	762.76	762.76
P-598	J-364	J-536	1,015.00	204.0	130.0	-10.03	0.31	0.61	0.60	760.88	761.49
P-600	J-411	J-408	218.50	297.0	130.0	7.14	0.10	0.01	0.05	762.74	762.73
P-606	J-410	J-391	189.50	297.0	130.0	7.13	0.10	0.01	0.05	762.72	762.71
P-608	J-411	J-404	23.00	297.0	130.0	-7.14	0.10	0.00	0.05	762.74	762.74
P-1000	J-275	J-1010	770.00	200.0	120.0	3.95	0.13	0.10	0.14	758.73	758.62
P-1010	J-242	J-1020	138.00	300.0	120.0	-18.03	0.26	0.04	0.31	758.84	758.88
P-1015	J-1030	J-1015	583.00	300.0	120.0	9.82	0.14	0.06	0.10	758.94	758.88
P-1020	J-1025	J-1030	281.00	300.0	120.0	10.33	0.15	0.03	0.11	758.97	758.94
P-1025	J-1025	J-1020	247.00	300.0	120.0	19.33	0.27	0.09	0.36	758.97	758.88
P-1030	J-242	J-1040	494.00	300.0	120.0	16.25	0.23	0.13	0.26	758.84	758.71
P-1035	J-1035	J-1075	753.00	300.0	120.0	9.70	0.14	0.07	0.10	758.71	758.64
P-1040	J-1050	J-243	807.00	300.0	120.0	5.76	0.08	0.03	0.04	758.88	758.85
P-1045	J-1050	J-1045	557.00	300.0	120.0	7.03	0.10	0.03	0.05	758.88	758.85
P-1050	J-1050	J-1060	231.50	300.0	120.0	23.41	0.33	0.12	0.51	758.88	758.77
P-1055	J-1060	J-1055	466.00	300.0	120.0	10.44	0.15	0.05	0.11	758.77	758.71
P-1060	J-1060	J-1065	1,011.50	300.0	120.0	12.96	0.18	0.17	0.17	758.77	758.59

Scenario: Peak Hr · Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1065	J-1065	J-1070	603.00	300.0	120.0	4.97	0.07	0.02	0.03	758.59	758.58
P-1070	J-1070	J-1080	404.50	200.0	120.0	4.97	0.16	0.08	0.21	758.58	758.49
P-1080	J-1080	J-1090	610.50	200.0	120.0	2.81	0.09	0.04	0.07	758.49	758.45
P-1090	J-1090	J-395	7.00	200.0	120.0	1.09	0.03	0.00	0.01	758.45	758.45
P-1100	J-392	J-1100	371.00	200.0	120.0	-0.37	0.01	0.00	0.00	758.47	758.47
P-1130	J-1080	J-1120	432.00	200.0	120.0	4.53	0.14	0.08	0.17	758.49	758.42
P-1140	J-1120	J-1130	612.50	200.0	120.0	-1.79	0.06	0.02	0.03	758.42	758.44
P-1150	J-1130	J-1090	422.50	200.0	120.0	-1.72	0.05	0.01	0.03	758.44	758.45
P-1160	J-365	J-1140	280.00	450.0	120.0	71.65	0.45	0.16	0.56	762.64	762.48
P-1170	J-1140	J-94	586.50	450.0	120.0	17.74	0.11	0.02	0.04	762.48	762.46
P-1200	J-1140	J-1160	795.00	300.0	120.0	53.91	0.76	1.89	2.37	762.48	760.60
P-1205	J-1200	J-1205	360.00	300.0	120.0	-9.50	0.13	0.03	0.10	761.45	761.49
P-1210	J-1160	J-1050	1,510.50	300.0	120.0	36.20	0.51	1.71	1.14	760.60	758.88
P-1220	J-231	J-1170	375.50	300.0	120.0	18.75	0.27	0.13	0.34	762.22	762.09
P-1230	J-1230	J-1180	600.50	300.0	120.0	-7.26	0.10	0.03	0.06	761.73	761.76
P-1240	J-317	J-1195	517.00	300.0	120.0	20.67	0.29	0.21	0.40	761.76	761.56
P-1245	J-1260	J-1210	1,414.00	200.0	120.0	-3.45	0.11	0.15	0.11	761.34	761.49
P-1250	J-1195	J-262	405.50	300.0	120.0	2.99	0.04	0.00	0.01	761.56	761.55
P-1255	J-1260	J-1215	1,177.00	200.0	120.0	-2.94	0.09	0.09	0.08	761.34	761.43
P-1260	J-236	J-1005	269.50	450.0	120.0	51.53	0.32	0.08	0.30	761.94	761.86
P-1265	J-1005	J-296	162.00	450.0	120.0	12.14	0.08	0.00	0.02	761.86	761.85
P-1270	J-219	J-140	198.00	300.0	120.0	-7.84	0.11	0.01	0.07	762.82	762.83
P-1280	J-225	J-176	432.50	300.0	120.0	4.67	0.07	0.01	0.03	762.38	762.37
P-1300	J-259	J-178	195.50	300.0	120.0	2.44	0.03	0.00	0.01	762.18	762.18
P-1310	J-261	J-180	183.00	300.0	120.0	-8.34	0.12	0.01	0.08	762.15	762.17
P-1330	J-178	J-180	258.00	300.0	120.0	5.59	0.08	0.01	0.04	762.18	762.17
P-1340	J-10	J-146	36.50	300.0	120.0	-10.48	0.15	0.00	0.11	762.83	762.84
P-1350	J-1035	J-277	848.50	300.0	120.0	-2.99	0.04	0.01	0.01	758.71	758.72
P-1355	J-1040	J-1035	719.50	300.0	120.0	-1.59	0.02	0.00	0.00	758.71	758.71
P-1370	J-1220	J-356	228.00	300.0	120.0	-1.87	0.03	0.00	0.00	761.49	761.49
P-1375	J-1220	J-536	303.50	300.0	120.0	-0.92	0.01	0.00	0.00	761.49	761.49
P-1380	J-400	J-398	443.50	200.0	120.0	0.52	0.02	0.00	0.00	758.45	758.45
P-1390	J-300	J-1205	285.50	300.0	120.0	4.24	0.06	0.01	0.02	761.49	761.49
P-1405	J-276	J-1250	73.50	300.0	120.0	-8.64	0.12	0.01	0.08	761.52	761.53
P-1410	J-1250	J-1210	687.50	450.0	120.0	20.12	0.13	0.04	0.05	761.53	761.49

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1420	J-1170	J-1180	1,535.00	300.0	120.0	14.73	0.21	0.33	0.21	762.09	761.76
P-1430	J-1195	J-536	1,082.00	300.0	120.0	7.44	0.11	0.07	0.06	761.56	761.49
P-1440	J-1210	J-1215	933.00	300.0	120.0	7.44	0.11	0.06	0.06	761.49	761.43
P-1445	J-1215	J-386	888.00	300.0	120.0	4.50	0.06	0.02	0.02	761.43	761.41
P-1450	J-281	J-1205	286.50	300.0	120.0	3.20	0.05	0.00	0.01	761.49	761.49
P-1460	J-1205	J-1210	518.00	300.0	120.0	-2.06	0.03	0.00	0.01	761.49	761.49
P-1470	J-1250	J-349	1,077.00	450.0	120.0	-28.76	0.18	0.11	0.10	761.53	761.64
P-1480	J-1230	J-1240	542.00	450.0	120.0	34.79	0.22	0.08	0.15	761.73	761.65
P-1500	J-1005	J-1230	699.50	450.0	120.0	39.39	0.25	0.13	0.18	761.86	761.73
P-1510	J-1230	J-224	47.50	300.0	120.0	11.86	0.17	0.01	0.14	761.73	761.72
P-1520	J-1240	J-349	92.50	450.0	120.0	34.79	0.22	0.01	0.15	761.65	761.64
P-1530	J-1190	J-1195	155.00	300.0	120.0	-10.23	0.14	0.02	0.11	761.54	761.56
P-1710	J-1040	J-1055	785.00	300.0	120.0	-0.85	0.01	0.00	0.00	758.71	758.71
P-1720	J-1045	J-243	492.00	300.0	120.0	0.22	0.00	0.00	0.00	758.85	758.85
P-1730	J-50	J-176	331.00	300.0	120.0	0.95	0.01	0.00	0.00	762.37	762.37
P-2000	J-1010	J-2000	1,520.50	200.0	120.0	1.06	0.03	0.02	0.01	758.62	758.60
P-2010	J-2000	J-1015	1,757.50	200.0	120.0	-4.28	0.14	0.28	0.16	758.60	758.88
P-2020	J-2010	J-1035	219.50	300.0	120.0	8.30	0.12	0.02	0.07	758.73	758.71
P-2025	J-1075	J-2020	613.50	300.0	120.0	4.88	0.07	0.02	0.03	758.64	758.62
P-2040	J-2020	J-1040	722.00	300.0	120.0	-10.93	0.15	0.09	0.12	758.62	758.71
P-2045	J-1120	J-2040	813.50	200.0	120.0	3.25	0.10	0.08	0.09	758.42	758.34
P-2050	J-2020	J-2030	775.50	300.0	120.0	6.29	0.09	0.03	0.04	758.62	758.59
P-2055	J-2065	J-2040	2,459.00	200.0	120.0	2.89	0.09	0.19	0.08	758.53	758.34
P-2065	J-2060	J-2065	765.00	200.0	120.0	4.03	0.13	0.11	0.14	758.64	758.53
P-2075	J-2065	J-307	497.00	200.0	120.0	-5.01	0.16	0.10	0.21	758.53	758.63
P-2080	J-1065	J-2030	415.00	300.0	120.0	3.42	0.05	0.01	0.01	758.59	758.59
P-2090	J-2050	J-1065	447.00	200.0	120.0	-4.57	0.15	0.08	0.18	758.51	758.59
P-2100	J-2050	J-1080	410.00	200.0	120.0	2.37	0.08	0.02	0.05	758.51	758.49
P-2110	J-2060	J-1100	1,067.00	200.0	120.0	4.25	0.14	0.17	0.15	758.64	758.47
P-2120	J-270	J-2060	296.50	200.0	120.0	9.45	0.30	0.20	0.68	758.84	758.64
P-2130	J-359	J-2060	512.00	200.0	120.0	3.43	0.11	0.05	0.10	758.69	758.64
P-2200	J-234	J-198	252.00	300.0	120.0	2.35	0.03	0.00	0.01	761.85	761.85
P-2210	J-238	J-2010	352.00	300.0	120.0	14.95	0.21	0.08	0.22	758.81	758.73
P-2220	J-2090	J-1100	454.00	200.0	120.0	-2.35	0.07	0.02	0.05	758.45	758.47
P-2230	J-394	J-2090	436.00	200.0	120.0	0.79	0.03	0.00	0.01	758.45	758.45

Scenario: Peak Hc Future (20 Yr)-Alt 1
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-2240	J-2090	J-1130	363.50	200.0	120.0	1.60	0.05	0.01	0.03	758.45	758.44
P-2250	J-1220	J-2070	182.00	300.0	120.0	2.79	0.04	0.00	0.01	761.49	761.49
P-2500	R-2	PUMPHOUSE - 4	10.00	450.0	120.0	217.86	1.37	0.04	4.38	766.40	766.36

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	473.3	280.00	333.8	J-1260
J-8	230.00	230.20	true	280.00	423.6	280.00	321.6	J-1260
J-10	230.00	230.00	true	280.00	426.7	280.00	307.3	J-1260
J-12	230.00	230.00	true	280.00	351.9	280.00	304.3	J-1260
J-16	230.00	230.23	true	280.00	341.1	280.00	303.9	J-1260
J-22	230.00	230.06	true	280.00	422.8	280.00	283.3	J-1260
J-24	230.00	230.56	true	280.00	400.3	280.00	286.7	J-1260
J-28	230.00	230.37	true	280.00	192.1	280.00	299.8	J-1260
J-30	230.00	230.00	true	280.00	389.9	280.00	304.6	J-1260
J-32	230.00	230.00	true	280.00	374.5	280.00	303.4	J-1260
J-34	230.00	230.12	true	280.00	357.9	280.00	301.9	J-1260
J-36	230.00	230.00	true	280.00	360.6	280.00	301.6	J-1260
J-38	230.00	230.00	true	280.00	341.9	280.00	298.5	J-1260
J-40	230.00	230.11	true	280.00	338.0	280.00	296.4	J-1260
J-42	230.00	230.02	true	280.00	363.2	280.00	291.8	J-1260
J-50	230.00	230.60	true	280.00	280.7	280.00	294.3	J-1260
J-56	230.00	230.85	true	280.00	331.5	280.00	292.0	J-1260
J-60	230.00	230.00	true	280.00	371.1	280.00	296.9	J-1260
J-64	230.00	230.16	true	280.00	365.4	280.00	301.0	J-1260
J-68	230.00	230.09	true	280.00	315.3	280.00	302.3	J-1260
J-74	230.00	230.09	true	280.00	372.8	280.00	303.8	J-1260
J-76	230.00	230.22	true	280.00	407.4	280.00	305.4	J-1260
J-82	230.00	230.43	true	280.00	433.3	280.00	306.4	J-1260
J-90	230.00	230.14	true	280.00	514.0	280.00	308.8	J-1260
J-94	230.00	230.11	true	280.00	517.4	280.00	309.4	J-1260
J-98	230.00	230.17	true	280.00	142.8	280.00	263.7	J-102
J-102	230.00	230.14	true	280.00	203.8	280.00	256.3	J-98
J-104	230.00	230.29	true	271.94	140.0	280.00	302.8	J-102
J-108	230.00	230.34	true	280.00	319.8	280.00	303.8	J-1260
J-112	230.00	230.21	true	280.00	338.5	280.00	302.2	J-1260
J-117	230.00	230.20	true	280.00	338.9	280.00	307.5	J-1260
J-118	230.00	230.14	true	280.00	347.5	280.00	307.5	J-1260
J-120	230.00	230.06	true	280.00	314.1	280.00	306.4	J-1260
J-124	230.00	230.07	true	280.00	291.6	280.00	305.1	J-1260
J-130	230.00	230.00	true	280.00	404.0	280.00	310.6	J-1260
J-134	230.00	230.13	true	280.00	272.1	280.00	316.8	J-1260
J-136	230.00	230.27	true	280.00	317.3	280.00	319.9	J-1260
J-140	230.00	230.02	true	280.00	334.3	280.00	312.9	J-1260
J-142	230.00	230.01	true	280.00	362.2	280.00	301.1	J-1260
J-144	230.00	230.18	true	280.00	348.9	280.00	295.8	J-1260
J-146	230.00	230.06	true	280.00	407.6	280.00	307.8	J-1260
J-148	230.00	230.08	false	226.82	140.0	280.00	205.6	J-150
J-150	230.00	230.00	true	243.32	140.0	280.00	148.7	J-148
J-152	230.00	230.00	true	280.00	333.8	280.00	330.9	J-303
J-162	230.00	230.04	true	280.00	364.5	280.00	288.1	J-1260
J-164	230.00	230.07	true	280.00	305.5	280.00	288.1	J-1260
J-166	230.00	230.20	true	280.00	272.2	280.00	287.4	J-1260
J-168	230.00	230.04	true	280.00	255.2	280.00	287.5	J-1260
J-172	230.00	230.10	true	280.00	326.7	280.00	288.0	J-1260
J-174	230.00	230.18	true	280.00	311.0	280.00	289.9	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	315.0	280.00	293.7	J-1260
J-178	230.00	230.34	true	280.00	310.7	280.00	285.0	J-1260
J-180	230.00	230.17	true	280.00	312.7	280.00	284.8	J-1260
J-198	230.00	230.00	true	280.00	368.2	280.00	269.9	J-1260
J-202	230.00	230.19	true	280.00	367.2	280.00	264.4	J-1260
J-206	230.00	230.08	true	280.00	338.6	280.00	261.2	J-1260
J-210	230.00	230.02	true	280.00	342.0	280.00	257.8	J-1260
J-212	230.00	230.15	true	280.00	316.5	280.00	255.2	J-1260
J-214	230.00	230.82	true	280.00	302.1	280.00	253.3	J-1260
J-216	230.00	235.08	true	280.00	324.1	280.00	252.6	J-1260
J-217	230.00	230.09	true	280.00	473.6	280.00	335.4	J-1260
J-218	230.00	230.00	true	280.00	417.4	280.00	317.1	J-1260
J-219	230.00	230.00	true	280.00	412.4	280.00	311.8	J-1260
J-221	230.00	230.02	true	280.00	411.3	280.00	311.7	J-1260
J-222	230.00	230.05	true	280.00	279.5	280.00	256.7	J-1260
J-223	230.00	230.19	true	280.00	371.6	280.00	300.2	J-1260
J-224	230.00	230.02	true	280.00	349.7	280.00	258.3	J-1260
J-225	230.00	230.00	true	280.00	365.9	280.00	292.3	J-1260
J-226	230.00	230.00	true	280.00	421.7	280.00	282.5	J-1260
J-227	230.00	230.09	true	280.00	367.4	280.00	296.8	J-1260
J-228	230.00	230.21	true	280.00	293.7	280.00	263.4	J-1260
J-229	230.00	230.10	true	280.00	434.9	280.00	324.8	J-1260
J-230	230.00	230.00	true	280.00	364.9	280.00	301.0	J-1260
J-231	230.00	230.03	true	280.00	428.5	280.00	281.7	J-1260
J-232	230.00	230.00	true	280.00	426.8	280.00	279.7	J-1260
J-233	230.00	230.00	true	280.00	432.7	280.00	277.8	J-1260
J-234	230.00	230.18	true	280.00	334.0	280.00	267.6	J-1260
J-235	230.00	230.00	true	280.00	417.0	280.00	273.4	J-1260
J-236	230.00	230.00	true	280.00	406.1	280.00	269.1	J-1260
J-237	230.00	230.19	true	280.00	240.2	280.00	191.7	J-307
J-238	230.00	230.00	true	280.00	242.3	280.00	191.0	J-307
J-239	230.00	230.00	true	280.00	227.1	280.00	190.9	J-307
J-240	230.00	230.49	true	280.00	243.8	280.00	256.5	J-1260
J-241	230.00	230.00	true	280.00	220.6	280.00	190.6	J-307
J-242	230.00	230.00	true	280.00	264.6	280.00	190.2	J-307
J-243	230.00	230.22	true	280.00	257.6	280.00	187.8	J-307
J-244	230.00	230.04	true	280.00	317.1	280.00	255.0	J-1260
J-245	230.00	230.00	true	280.00	325.5	280.00	322.6	J-303
J-246	230.00	230.18	true	280.00	145.1	280.00	149.4	J-247
J-247	230.00	230.00	true	280.00	149.4	280.00	150.4	J-246
J-248	230.00	230.00	true	280.00	396.5	280.00	255.6	J-1260
J-249	230.00	230.00	true	280.00	369.2	280.00	315.4	J-303
J-250	230.00	230.19	true	280.00	349.5	280.00	258.2	J-1260
J-251	230.00	230.00	true	280.00	365.1	280.00	311.3	J-303
J-252	230.00	230.08	true	280.00	206.7	280.00	258.5	J-1260
J-253	230.00	230.00	true	280.00	307.9	280.00	305.0	J-303
J-254	230.00	230.00	true	280.00	296.8	280.00	299.6	J-258
J-255	230.00	230.00	true	280.00	320.7	280.00	271.6	J-258
J-256	230.00	230.01	true	279.99	140.0	280.00	258.7	J-1260
J-257	230.00	230.00	true	280.00	306.6	280.00	256.9	J-258

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	280.00	233.4	280.00	236.2	J-353
J-259	230.00	230.15	true	280.00	333.6	280.00	284.7	J-1260
J-260	230.00	230.12	true	280.00	331.3	280.00	259.1	J-1260
J-261	230.00	230.09	true	280.00	304.7	280.00	284.4	J-1260
J-262	230.00	230.00	true	280.00	383.2	280.00	264.7	J-1260
J-263	230.00	230.00	true	280.00	341.3	280.00	296.0	J-1260
J-264	230.00	230.29	true	280.00	344.8	280.00	261.4	J-1260
J-265	230.00	230.19	true	280.00	269.0	280.00	296.6	J-1260
J-266	230.00	230.26	true	280.00	301.6	280.00	261.8	J-1260
J-267	60.00	60.12	true	100.00	538.4	100.00	372.0	J-1260
J-268	230.00	230.04	true	280.00	311.7	280.00	254.4	J-1260
J-269	60.00	60.00	true	100.00	509.5	100.00	312.9	J-307
J-270	60.00	60.87	true	100.00	449.1	100.00	291.2	J-307
J-271	230.00	230.00	true	280.00	384.3	280.00	254.5	J-1260
J-272	230.00	230.10	true	280.00	342.3	280.00	247.8	J-1260
J-273	60.00	60.00	true	100.00	499.1	100.00	309.0	J-307
J-274	230.00	230.01	true	280.00	350.0	280.00	238.8	J-1260
J-275	230.00	231.15	true	261.53	183.5	280.00	140.0	J-351
J-276	230.00	231.16	true	280.00	345.6	280.00	237.0	J-1260
J-277	230.00	230.16	true	268.55	140.7	280.00	140.0	J-351
J-278	230.00	230.33	true	280.00	286.7	280.00	252.5	J-1260
J-279	230.00	230.00	true	280.00	386.7	280.00	253.4	J-1260
J-280	230.00	230.00	true	280.00	370.7	280.00	248.9	J-1260
J-281	230.00	230.00	true	280.00	372.3	280.00	247.4	J-1260
J-282	230.00	230.11	true	280.00	233.3	280.00	253.4	J-1260
J-283	230.00	230.00	true	280.00	360.3	280.00	254.0	J-1260
J-284	230.00	230.00	true	280.00	346.2	280.00	256.7	J-1260
J-285	230.00	230.09	true	280.00	369.8	280.00	258.2	J-1260
J-286	230.00	230.34	true	280.00	247.4	280.00	253.2	J-1260
J-287	230.00	230.00	true	280.00	358.7	280.00	257.6	J-1260
J-288	230.00	230.00	true	280.00	352.9	280.00	257.0	J-1260
J-289	230.00	230.00	true	280.00	380.5	280.00	300.9	J-1260
J-290	230.00	230.00	true	280.00	292.5	280.00	256.0	J-1260
J-291	230.00	230.00	true	280.00	299.7	280.00	253.9	J-1260
J-292	230.00	230.00	true	280.00	276.0	280.00	287.7	J-1260
J-293	230.00	230.00	true	280.00	439.6	280.00	319.0	J-1260
J-294	230.00	230.05	true	280.00	304.4	280.00	239.2	J-1260
J-296	230.00	230.00	true	280.00	381.0	280.00	265.1	J-1260
J-298	230.00	230.18	true	280.00	206.4	280.00	240.8	J-1260
J-300	230.00	230.10	true	280.00	343.1	280.00	241.8	J-1260
J-301	230.00	230.00	true	280.00	283.3	280.00	283.3	J-303
J-302	230.00	230.16	true	280.00	318.9	280.00	248.9	J-1260
J-303	230.00	230.28	true	280.00	169.3	280.00	178.6	J-247
J-304	230.00	230.00	true	280.00	271.7	280.00	256.7	J-1260
J-306	230.00	230.22	true	280.00	290.2	280.00	248.3	J-1260
J-307	60.00	60.00	true	100.00	163.7	100.00	178.1	J-309
J-308	230.00	230.31	true	280.00	279.3	280.00	247.9	J-1260
J-309	60.00	60.00	true	65.41	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	557.9	280.00	376.3	J-1260
J-311	230.00	230.01	true	280.00	547.5	280.00	374.4	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	54.38	140.0	100.00	236.4	J-309
J-313	230.00	230.00	true	280.00	380.3	280.00	295.0	J-1260
J-314	230.00	230.36	true	280.00	303.7	280.00	253.6	J-1260
J-315	230.00	230.00	true	280.00	327.5	280.00	288.9	J-1260
J-316	230.00	230.00	true	280.00	291.2	280.00	283.9	J-1260
J-317	230.00	230.00	true	280.00	300.0	280.00	278.3	J-1260
J-318	230.00	230.00	true	269.21	140.0	280.00	312.8	J-1260
J-321	230.00	230.11	true	280.00	335.0	280.00	299.3	J-1260
J-322	230.00	230.05	true	280.00	381.3	280.00	257.7	J-1260
J-324	230.00	230.00	true	280.00	330.4	280.00	263.8	J-1260
J-332	230.00	230.62	true	280.00	322.0	280.00	266.8	J-1260
J-337	230.00	230.34	true	280.00	345.2	280.00	283.7	J-1260
J-342	230.00	230.21	true	280.00	341.5	280.00	257.7	J-1260
J-348	230.00	230.13	true	280.00	379.5	280.00	256.6	J-1260
J-349	230.00	230.38	true	280.00	332.8	280.00	251.0	J-1260
J-350	230.00	230.14	true	280.00	311.4	280.00	262.3	J-1260
J-351	230.00	230.00	false	219.70	140.0	280.00	275.2	J-307
J-352	230.00	230.00	true	280.00	349.1	280.00	346.1	J-303
J-353	230.00	230.04	true	280.00	143.7	280.00	155.6	J-150
J-356	230.00	230.08	true	280.00	348.8	280.00	260.1	J-1260
J-357	60.00	60.16	true	100.00	317.3	100.00	313.4	J-307
J-358	60.00	60.23	true	63.52	140.0	100.00	383.6	J-1260
J-359	60.00	60.04	true	100.00	467.5	100.00	304.6	J-307
J-360	60.00	60.08	true	87.47	140.0	100.00	338.0	J-307
J-362	230.00	230.00	true	280.00	374.6	280.00	284.4	J-1260
J-363	230.00	230.00	true	280.00	418.3	280.00	311.8	J-1260
J-364	60.00	60.10	true	100.00	536.6	100.00	363.9	J-1260
J-365	230.00	230.02	true	280.00	463.7	280.00	312.2	J-1260
J-367	230.00	230.00	true	280.00	426.7	280.00	311.9	J-1260
J-369	230.00	230.00	true	280.00	428.7	280.00	311.9	J-1260
J-370	60.00	60.10	true	100.00	421.3	100.00	334.2	J-307
J-371	230.00	230.00	true	280.00	428.6	280.00	312.1	J-1260
J-372	60.00	60.26	true	100.00	398.9	100.00	345.1	J-307
J-373	230.00	230.00	true	280.00	434.3	280.00	312.1	J-1260
J-374	60.00	60.35	true	100.00	430.4	100.00	367.6	J-1260
J-375	230.00	230.01	true	280.00	435.8	280.00	312.3	J-1260
J-376	60.00	60.23	true	100.00	465.6	100.00	366.2	J-1260
J-377	230.00	230.01	true	280.00	448.1	280.00	312.5	J-1260
J-378	60.00	60.25	true	100.00	469.3	100.00	366.0	J-1260
J-379	60.00	60.38	true	100.00	511.8	100.00	364.7	J-1260
J-380	60.00	60.11	true	100.00	511.6	100.00	364.6	J-1260
J-381	230.00	230.00	true	280.00	465.9	280.00	312.6	J-1260
J-382	60.00	60.24	true	100.00	449.5	100.00	361.2	J-1260
J-383	60.00	60.24	true	100.00	277.6	100.00	357.7	J-1260
J-384	60.00	60.61	true	100.00	321.2	100.00	356.5	J-1260
J-386	60.00	60.38	true	100.00	579.3	100.00	332.4	J-1260
J-388	60.00	60.16	true	100.00	178.2	100.00	366.0	J-1260
J-389	230.00	230.21	true	280.00	431.4	280.00	321.1	J-1260
J-390	60.00	60.12	true	100.00	330.5	100.00	320.9	J-307
J-391	230.00	230.00	true	280.00	467.6	280.00	312.6	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	true	100.00	452.2	100.00	327.4	J-307
J-394	60.00	60.10	true	100.00	456.9	100.00	332.6	J-307
J-395	60.00	60.49	true	100.00	498.9	100.00	341.0	J-307
J-396	60.00	60.55	true	100.00	373.0	100.00	336.0	J-307
J-398	60.00	60.11	true	100.00	337.6	100.00	334.4	J-307
J-400	60.00	60.31	true	100.00	270.6	100.00	294.6	J-402
J-401	230.00	230.00	true	280.00	375.1	280.00	312.3	J-1260
J-402	60.00	60.09	true	87.80	140.0	100.00	357.5	J-307
J-403	230.00	230.00	true	280.00	369.7	280.00	312.3	J-1260
J-404	230.00	230.13	true	280.00	355.0	280.00	312.3	J-1260
J-406	230.00	230.00	true	280.00	436.1	280.00	312.1	J-1260
J-407	230.00	230.07	true	280.00	418.9	280.00	312.2	J-1260
J-408	230.00	230.00	true	280.00	410.9	280.00	312.4	J-1260
J-410	230.00	230.01	true	280.00	420.3	280.00	312.4	J-1260
J-411	230.00	230.00	true	280.00	355.7	280.00	312.3	J-1260
J-536	230.00	230.00	true	280.00	346.3	280.00	262.1	J-1260
J-538	230.00	230.00	true	280.00	297.8	280.00	264.5	J-1260
J-1005	230.00	230.00	true	280.00	382.1	280.00	265.5	J-1260
J-1010	60.00	61.93	true	100.00	341.1	100.00	378.7	J-1260
J-1015	60.00	63.69	true	100.00	544.2	100.00	378.8	J-1260
J-1020	230.00	230.87	true	280.00	249.8	280.00	192.8	J-307
J-1025	230.00	230.00	true	280.00	262.4	280.00	197.6	J-307
J-1030	60.00	60.34	true	100.00	598.3	100.00	378.8	J-1260
J-1035	230.00	230.00	true	280.00	179.3	280.00	188.0	J-307
J-1040	230.00	235.18	true	280.00	245.1	280.00	184.3	J-307
J-1045	230.00	234.54	true	280.00	185.6	280.00	188.3	J-307
J-1050	230.00	230.00	true	280.00	280.0	280.00	189.7	J-307
J-1055	230.00	236.39	true	280.00	168.4	280.00	178.2	J-307
J-1060	230.00	230.00	true	280.00	232.0	280.00	179.4	J-307
J-1065	230.00	230.00	true	270.65	204.9	280.00	140.0	J-307
J-1070	60.00	60.00	true	100.00	571.1	100.00	377.8	J-1260
J-1075	230.00	233.22	true	267.99	140.0	280.00	199.4	J-307
J-1080	60.00	60.00	true	100.00	543.8	100.00	363.7	J-307
J-1090	60.00	60.00	true	100.00	500.3	100.00	341.3	J-307
J-1100	60.00	61.03	true	100.00	474.6	100.00	326.5	J-307
J-1120	60.00	62.05	true	100.00	457.9	100.00	343.6	J-307
J-1130	60.00	61.02	true	100.00	495.0	100.00	337.9	J-307
J-1140	230.00	230.00	true	280.00	428.7	280.00	311.6	J-1260
J-1160	230.00	241.81	true	280.00	306.8	280.00	292.2	J-307
J-1170	230.00	232.68	true	280.00	294.3	280.00	279.1	J-1260
J-1180	230.00	234.98	true	280.00	198.2	280.00	269.0	J-1260
J-1190	230.00	236.82	true	280.00	209.8	280.00	268.9	J-1260
J-1195	230.00	230.00	true	280.00	289.4	280.00	268.9	J-1260
J-1200	230.00	236.33	true	280.00	156.0	280.00	239.5	J-1260
J-1205	230.00	230.00	true	280.00	340.3	280.00	239.5	J-1260
J-1210	230.00	234.78	true	280.00	294.9	280.00	211.5	J-1260
J-1215	60.00	60.00	true	100.00	505.8	100.00	328.9	J-1260
J-1220	230.00	230.00	true	280.00	323.0	280.00	260.8	J-1260
J-1230	230.00	230.00	true	280.00	356.4	280.00	258.5	J-1260
J-1240	230.00	230.00	true	280.00	333.0	280.00	252.0	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 1
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-1250	230.00	230.00	true	280.00	354.5	280.00	232.8	J-1260
J-1260	60.00	64.26	true	100.00	144.8	100.00	430.0	J-1180
J-2000	60.00	63.56	true	100.00	240.1	100.00	378.8	J-1260
J-2010	230.00	234.43	true	280.00	160.1	280.00	189.7	J-307
J-2020	230.00	236.35	true	280.00	150.2	280.00	173.9	J-307
J-2030	230.00	236.47	true	269.50	140.0	280.00	161.8	J-307
J-2040	60.00	64.09	true	100.00	284.2	100.00	313.8	J-307
J-2050	60.00	61.47	true	100.00	514.7	100.00	377.5	J-1260
J-2060	60.00	63.06	true	100.00	446.6	100.00	295.3	J-307
J-2065	60.00	64.10	true	100.00	284.5	100.00	237.1	J-307
J-2070	230.00	231.86	true	280.00	232.5	280.00	260.8	J-1260
J-2090	60.00	61.02	true	100.00	481.5	100.00	331.9	J-307
PUMPHOUSE - 1	230.00	230.08	true	280.00	513.1	280.00	394.9	J-1260
PUMPHOUSE - 2	230.00	230.95	true	280.00	513.7	280.00	394.9	J-1260
PUMPHOUSE - 3	230.00	230.00	true	280.00	514.2	280.00	394.9	J-1260
PUMPHOUSE - 4	230.00	230.91	true	280.00	514.6	280.00	394.9	J-1260
Truck Fill	230.00	230.00	true	280.00	268.3	280.00	256.6	J-1260

Appendix G -
Year 2013 Development Condition for Alternative 2
Simulation Results

Scenario: Peak Hour - Future (10 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	513.6	763.08
J-8	5,909,058.66	97,351.20	713.60	0.30	484.1	763.07
J-10	5,908,474.10	97,361.23	710.20	0.00	515.9	762.91
J-12	5,908,467.18	97,361.38	710.20	0.00	515.8	762.90
J-16	5,908,452.20	97,361.89	710.20	0.34	515.7	762.90
J-22	5,907,974.55	97,357.96	710.00	0.09	515.4	762.67
J-24	5,907,976.56	97,486.24	712.72	0.84	489.2	762.71
J-28	5,908,348.52	97,479.26	713.10	0.55	486.8	762.84
J-30	5,908,476.15	97,465.75	713.60	0.00	482.5	762.90
J-32	5,908,477.92	97,568.92	715.10	0.00	467.8	762.90
J-34	5,908,480.33	97,699.94	717.10	0.17	448.1	762.89
J-36	5,908,480.81	97,725.97	717.10	0.00	448.1	762.89
J-38	5,908,303.69	97,742.34	717.30	0.00	445.7	762.84
J-40	5,908,143.29	97,745.11	717.70	0.17	441.5	762.81
J-42	5,907,977.83	97,749.04	717.00	0.03	447.9	762.77
J-50	5,908,312.36	98,169.75	716.20	0.90	456.0	762.79
J-56	5,908,324.08	98,782.89	713.20	1.27	486.1	762.86
J-60	5,908,547.69	98,778.44	712.60	0.00	493.5	763.03
J-64	5,908,657.02	98,776.18	712.50	0.24	495.4	763.12
J-68	5,908,927.88	98,770.56	711.60	0.13	506.3	763.34
J-74	5,909,209.82	98,764.73	710.10	0.14	523.2	763.56
J-76	5,909,321.64	98,762.41	709.30	0.33	533.2	763.78
J-82	5,909,600.55	98,756.43	706.80	0.64	559.2	763.94
J-90	5,910,145.40	98,745.06	699.50	0.21	633.9	764.28
J-94	5,910,141.73	98,553.50	699.50	0.16	632.4	764.12
J-98	5,909,203.58	98,428.34	712.50	0.25	497.0	763.28
J-102	5,909,101.64	98,426.21	713.00	0.22	491.3	763.20
J-104	5,908,903.10	98,430.23	713.50	0.44	486.0	763.16
J-108	5,908,650.47	98,435.34	714.90	0.51	471.9	763.12
J-112	5,908,654.55	98,649.36	713.80	0.32	482.7	763.12
J-117	5,909,093.99	98,027.43	715.00	0.30	470.8	763.10
J-118	5,909,093.47	98,001.39	715.00	0.21	470.8	763.10
J-120	5,908,854.44	98,006.14	714.70	0.09	473.7	763.11
J-124	5,908,645.32	98,164.72	715.80	0.10	463.0	763.11
J-130	5,909,081.17	97,756.51	714.30	0.00	477.4	763.08
J-134	5,909,084.75	97,555.92	714.50	0.19	475.5	763.08
J-136	5,909,062.84	97,556.57	714.50	0.40	475.3	763.07
J-140	5,909,211.44	97,544.32	715.20	0.03	469.0	763.12
J-142	5,909,320.00	98,985.50	707.40	0.02	548.7	763.47
J-144	5,908,552.32	99,001.45	712.60	0.28	493.7	763.05
J-146	5,908,500.88	97,385.99	711.00	0.08	508.1	762.91
J-148	5,908,743.01	97,064.41	711.00	0.12	509.4	763.05
J-150	5,908,756.07	97,063.51	711.00	0.00	509.5	763.06
J-152	5,908,779.46	96,905.96	710.70	0.00	512.5	763.07
J-162	5,907,845.59	97,760.01	714.80	0.06	469.0	762.72
J-164	5,907,853.69	98,184.20	715.30	0.11	464.1	762.72
J-166	5,907,858.51	98,441.75	715.50	0.30	462.1	762.72
J-168	5,907,990.55	98,439.52	715.20	0.07	465.1	762.72
J-172	5,907,997.17	98,789.35	713.00	0.15	486.7	762.73
J-174	5,908,131.47	98,786.69	713.20	0.27	485.3	762.79
J-176	5,907,981.73	98,181.34	715.80	0.15	459.7	762.78
J-178	5,907,708.34	98,186.08	715.20	0.50	464.6	762.67

Scenario: Peak Hour - Future (10 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	477.3	762.67
J-198	5,906,888.62	97,825.94	710.60	0.00	506.9	762.40
J-202	5,906,593.95	97,782.31	709.60	0.28	515.6	762.28
J-206	5,906,215.61	97,708.31	712.00	0.12	491.8	762.25
J-210	5,905,911.78	97,702.33	713.40	0.03	478.0	762.24
J-212	5,905,673.44	97,707.07	714.50	0.23	467.2	762.24
J-214	5,905,369.47	97,713.12	715.90	1.24	453.5	762.24
J-216	5,905,364.01	97,439.05	715.60	7.62	456.5	762.25
J-217	5,909,307.40	97,334.51	710.88	0.13	510.9	763.08
J-218	5,909,077.55	97,556.13	714.50	0.00	475.4	763.08
J-219	5,909,195.57	97,741.44	714.00	0.00	480.8	763.13
J-221	5,909,080.95	97,744.08	714.53	0.03	475.2	763.08
J-222	5,905,698.60	97,432.40	714.40	0.07	468.6	762.28
J-223	5,908,477.48	97,757.92	717.21	0.28	447.0	762.89
J-224	5,905,905.82	97,428.26	714.10	0.02	471.8	762.31
J-225	5,907,981.51	97,748.90	717.00	0.00	447.9	762.77
J-226	5,907,946.73	97,358.07	710.00	0.00	515.3	762.66
J-227	5,908,303.93	97,760.54	717.18	0.14	446.9	762.84
J-228	5,906,360.39	97,501.77	711.60	0.31	496.8	762.36
J-229	5,909,074.75	97,350.43	713.60	0.15	484.2	763.08
J-230	5,908,471.28	97,739.11	717.10	0.00	448.1	762.88
J-231	5,907,921.40	97,334.01	709.20	0.04	523.1	762.64
J-232	5,907,811.00	97,326.52	708.90	0.00	525.7	762.62
J-233	5,907,639.32	97,370.09	707.90	0.00	535.2	762.59
J-234	5,906,873.52	97,574.28	711.60	0.27	497.1	762.40
J-235	5,907,254.44	97,377.87	708.90	0.00	524.8	762.52
J-236	5,906,869.56	97,385.66	709.67	0.00	516.6	762.46
J-237	5,913,524.07	98,517.56	689.20	0.28	722.8	763.06
J-238	5,913,476.73	98,634.61	689.45	0.00	720.4	763.06
J-239	5,913,442.90	98,660.40	690.60	0.00	709.2	763.06
J-240	5,905,918.98	98,029.82	712.40	0.74	486.9	762.15
J-241	5,913,350.24	98,658.09	690.80	0.00	707.2	763.06
J-242	5,912,944.99	98,674.90	690.05	0.00	714.7	763.07
J-243	5,912,549.09	98,682.16	689.00	0.33	726.7	763.25
J-244	5,905,905.76	98,439.24	709.18	0.06	517.4	762.05
J-245	5,908,776.14	96,915.33	710.70	0.00	512.5	763.07
J-246	5,908,458.63	97,044.00	709.95	0.27	519.9	763.07
J-247	5,908,464.31	97,043.90	710.05	0.00	518.9	763.07
J-248	5,906,562.22	99,128.24	701.60	0.00	593.3	762.22
J-249	5,908,771.98	96,927.06	705.50	0.00	563.4	763.07
J-250	5,906,588.47	98,425.23	707.60	0.28	533.1	762.07
J-251	5,908,770.14	96,932.26	705.50	0.00	563.4	763.07
J-252	5,906,825.65	98,420.35	709.60	0.12	513.6	762.08
J-253	5,908,766.64	96,942.13	710.70	0.00	512.5	763.07
J-254	5,908,783.08	96,917.79	710.70	0.00	512.5	763.07
J-255	5,908,778.19	96,929.26	705.50	0.00	563.4	763.07
J-256	5,906,735.40	98,269.84	710.30	0.02	506.9	762.10
J-257	5,908,776.00	96,934.34	705.50	0.00	563.4	763.07
J-258	5,908,771.86	96,943.98	710.70	0.00	512.5	763.07
J-259	5,907,681.11	97,992.32	713.39	0.22	482.3	762.67
J-260	5,906,585.22	98,273.05	708.00	0.17	529.6	762.11
J-261	5,907,700.54	98,626.53	713.40	0.13	482.1	762.66

Scenario: Peak Hour - Future (10 Yr)-Alt 2
Steady State Analysis
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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	585.3	762.31
J-263	5,908,554.64	99,001.40	713.20	0.00	487.9	763.05
J-264	5,906,579.90	98,024.41	708.70	0.43	523.8	762.22
J-265	5,908,562.13	99,338.47	708.40	0.28	534.8	763.04
J-266	5,906,399.93	98,028.05	708.00	0.39	530.7	762.23
J-267	5,908,572.77	100,001.17	689.40	0.18	719.9	762.96
J-268	5,905,898.13	98,461.32	709.20	0.06	517.3	762.06
J-269	5,908,585.09	100,508.03	688.80	0.00	723.4	762.72
J-270	5,908,600.64	101,103.84	697.20	1.31	639.9	762.58
J-271	5,906,493.28	99,141.39	702.90	0.00	580.6	762.22
J-272	5,905,530.79	98,468.96	712.00	0.15	491.1	762.18
J-273	5,908,603.09	100,561.75	690.60	0.00	705.7	762.71
J-274	5,905,388.62	98,471.86	711.20	0.01	499.0	762.19
J-275	5,914,588.31	98,954.88	690.35	1.73	711.0	763.01
J-276	5,905,347.08	98,472.70	711.90	1.75	492.1	762.19
J-277	5,914,515.82	99,129.18	692.25	0.25	692.5	763.01
J-278	5,905,525.90	98,217.56	713.80	0.49	473.8	762.21
J-279	5,906,383.63	99,143.48	703.40	0.00	575.7	762.22
J-280	5,906,174.59	99,147.94	704.45	0.00	565.2	762.20
J-281	5,906,102.58	99,149.32	704.40	0.00	565.7	762.20
J-282	5,905,375.58	98,019.54	714.80	0.17	464.1	762.22
J-283	5,906,384.67	99,185.47	704.70	0.00	563.0	762.22
J-284	5,906,395.12	99,606.40	702.20	0.00	587.5	762.23
J-285	5,906,617.35	99,583.11	700.20	0.14	607.2	762.24
J-286	5,905,658.69	98,214.91	714.10	0.52	470.9	762.21
J-287	5,906,568.55	99,602.91	700.90	0.00	600.3	762.24
J-288	5,906,458.61	99,605.06	701.40	0.00	595.4	762.23
J-289	5,908,517.34	97,755.28	716.36	0.00	455.5	762.90
J-290	5,906,547.32	99,038.54	702.77	0.00	581.8	762.22
J-291	5,905,447.34	97,711.57	715.54	0.00	457.0	762.24
J-292	5,907,994.37	98,641.67	713.93	0.00	477.6	762.73
J-293	5,909,994.96	97,459.73	706.55	0.00	555.4	763.30
J-294	5,905,394.69	98,642.02	710.50	0.08	505.8	762.18
J-296	5,906,623.71	97,548.19	711.60	0.00	497.2	762.40
J-298	5,905,695.90	98,870.15	708.60	0.28	524.4	762.18
J-300	5,905,801.61	98,872.46	707.20	0.15	538.1	762.18
J-301	5,908,753.24	96,979.98	711.00	0.00	509.6	763.07
J-302	5,905,859.76	98,735.04	708.60	0.24	524.4	762.18
J-303	5,908,522.69	97,042.82	711.00	0.42	509.6	763.07
J-304	5,906,312.67	98,430.89	708.24	0.00	523.0	761.68
J-306	5,905,728.41	98,736.90	709.90	0.33	511.6	762.18
J-307	5,908,622.68	102,230.99	714.40	0.00	471.5	762.58
J-308	5,905,579.15	98,646.58	712.00	0.47	491.1	762.18
J-309	5,908,642.41	103,175.71	712.93	0.00	485.9	762.58
J-310	5,909,279.69	97,059.38	707.10	0.00	547.8	763.08
J-311	5,909,282.51	97,057.24	707.10	0.01	547.8	763.08
J-312	5,909,434.20	103,817.29	707.50	0.00	539.1	762.58
J-313	5,908,552.13	98,992.36	710.15	0.00	517.5	763.03
J-314	5,906,229.89	98,727.43	706.40	0.55	545.9	762.18
J-315	5,908,454.45	98,994.29	710.00	0.00	517.7	762.89
J-316	5,908,092.47	99,005.00	710.25	0.00	513.7	762.74
J-317	5,907,708.27	99,012.60	708.20	0.00	532.1	762.57

Scenario: Peak Hour - Future (10 Yr)-Alt 2
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Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	496.2	762.90
J-321	5,909,018.07	98,991.77	710.00	0.17	521.7	763.30
J-322	5,906,537.16	98,766.80	706.30	0.08	547.0	762.19
J-324	5,906,780.50	98,815.29	707.40	0.00	537.0	762.27
J-332	5,906,905.11	98,812.64	709.10	0.93	520.8	762.31
J-337	5,907,703.90	98,795.12	710.50	0.52	510.4	762.66
J-342	5,906,589.89	98,581.45	707.10	0.31	538.5	762.12
J-348	5,906,564.17	99,142.81	701.60	0.20	593.4	762.23
J-349	5,905,292.97	97,440.46	715.60	0.57	456.6	762.25
J-350	5,906,836.65	99,137.08	702.50	0.21	585.2	762.29
J-351	5,914,985.65	99,118.12	694.80	0.00	667.5	763.01
J-352	5,908,787.17	96,908.26	710.70	0.00	512.5	763.07
J-353	5,908,757.47	96,994.16	711.00	0.05	509.5	763.06
J-356	5,906,618.36	99,628.21	700.20	0.12	607.3	762.26
J-357	5,909,258.32	100,547.78	691.00	0.24	702.4	762.77
J-358	5,909,251.92	100,248.17	691.00	0.35	702.1	762.74
J-359	5,908,858.94	100,556.29	691.00	0.06	702.0	762.73
J-360	5,908,857.28	100,478.32	691.00	0.12	702.0	762.73
J-362	5,907,675.38	97,768.48	712.30	0.00	492.9	762.67
J-363	5,909,310.68	97,745.32	713.10	0.00	490.0	763.17
J-364	5,906,949.71	100,836.01	691.50	0.15	692.6	762.27
J-365	5,910,093.16	97,731.00	707.20	0.03	550.6	763.46
J-367	5,909,360.67	97,744.77	712.10	0.00	500.0	763.19
J-369	5,909,385.67	97,744.30	711.85	0.00	502.5	763.20
J-370	5,908,423.93	101,076.18	691.00	0.14	699.4	762.47
J-371	5,909,495.65	97,742.23	711.65	0.00	504.9	763.24
J-372	5,908,357.20	101,065.19	691.00	0.39	699.1	762.43
J-373	5,909,520.64	97,741.76	711.00	0.00	511.4	763.25
J-374	5,907,995.30	101,006.31	691.00	0.52	698.0	762.32
J-375	5,909,735.60	97,737.72	710.50	0.02	516.9	763.31
J-376	5,907,631.31	100,947.18	691.00	0.34	697.7	762.29
J-377	5,909,851.58	97,735.54	709.20	0.01	529.9	763.34
J-378	5,907,569.28	100,937.06	690.70	0.37	700.6	762.29
J-379	5,907,097.59	100,860.13	690.80	0.57	699.5	762.27
J-380	5,907,070.76	100,855.75	691.60	0.16	691.7	762.27
J-381	5,909,943.56	97,733.81	707.40	0.00	547.8	763.37
J-382	5,906,848.42	100,819.49	691.00	0.35	697.3	762.25
J-383	5,906,355.74	100,852.67	691.40	0.36	693.0	762.21
J-384	5,906,237.87	100,906.65	691.40	0.92	692.9	762.20
J-386	5,905,356.70	100,981.32	693.10	0.57	675.9	762.17
J-388	5,907,590.72	100,805.57	690.70	0.23	700.6	762.29
J-389	5,909,944.06	97,385.51	706.90	0.32	551.6	763.26
J-390	5,909,578.24	100,572.53	691.00	0.18	703.0	762.83
J-391	5,909,976.00	97,733.20	707.25	0.00	549.3	763.38
J-392	5,909,947.68	100,567.17	691.00	0.77	703.3	762.87
J-394	5,910,397.44	100,552.88	691.00	0.15	704.6	762.99
J-395	5,910,768.00	100,546.28	691.00	0.73	705.6	763.10
J-396	5,910,752.17	99,977.20	691.00	0.83	704.9	763.03
J-398	5,910,381.11	99,987.28	691.00	0.16	704.6	763.00
J-400	5,909,937.68	99,983.00	691.00	0.46	704.3	762.97
J-401	5,909,529.41	97,966.96	711.90	0.00	503.0	763.29
J-402	5,909,566.00	99,988.28	691.00	0.14	704.2	762.95

Scenario: Peak Hour - Future (10 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	499.1	763.29
J-404	5,909,690.09	97,971.58	713.05	0.19	491.9	763.31
J-406	5,909,525.03	97,741.68	710.80	0.00	513.4	763.26
J-407	5,909,525.21	97,750.68	711.50	0.11	506.6	763.26
J-408	5,909,931.45	97,966.98	708.15	0.00	540.2	763.34
J-410	5,909,979.59	97,922.51	707.90	0.02	542.7	763.35
J-411	5,909,713.09	97,971.14	712.95	0.00	492.9	763.32
J-536	5,906,927.24	99,821.22	703.00	0.00	580.2	762.28
J-538	5,906,907.40	99,022.87	703.00	0.00	580.4	762.31
J-1000	5,910,911.09	98,929.24	690.00	0.00	746.9	766.32
J-1005	5,906,600.14	97,387.90	712.00	0.00	493.3	762.40
J-1010	5,914,583.44	98,184.90	695.00	2.90	665.0	762.95
J-1015	5,912,932.96	97,426.31	692.00	5.54	693.9	762.90
J-1020	5,912,941.83	98,537.17	690.00	1.30	715.1	763.07
J-1025	5,912,941.46	98,290.11	690.00	0.00	715.0	763.06
J-1030	5,912,940.85	98,009.27	690.00	0.51	714.9	763.05
J-1035	5,913,667.48	99,150.54	695.00	0.00	665.5	763.00
J-1040	5,912,948.05	99,168.66	690.00	7.77	714.6	763.01
J-1045	5,912,186.69	98,349.44	692.00	6.81	701.0	763.63
J-1050	5,911,741.94	98,684.68	690.00	0.00	720.9	763.66
J-1055	5,912,164.06	99,124.69	692.00	9.59	703.7	763.90
J-1060	5,911,747.22	98,916.14	692.00	0.00	704.1	763.94
J-1065	5,911,767.78	99,927.34	691.00	0.00	712.4	763.80
J-1070	5,911,780.04	100,530.45	691.00	0.00	711.6	763.71
J-1075	5,913,570.82	99,897.36	695.00	4.82	665.3	762.98
J-1080	5,911,375.53	100,537.05	692.00	0.00	697.6	763.28
J-1090	5,910,765.45	100,552.84	691.00	0.00	705.7	763.10
J-1100	5,909,953.69	100,938.26	691.00	1.54	703.2	762.86
J-1120	5,911,380.05	100,969.12	695.00	3.07	667.0	763.16
J-1130	5,910,767.70	100,975.54	691.00	1.53	705.7	763.11
J-1140	5,910,093.50	98,010.88	710.00	0.00	525.0	763.64
J-1150	5,910,146.50	98,943.62	699.00	0.00	643.0	764.70
J-1160	5,910,888.42	98,011.18	700.00	17.71	622.1	763.56
J-1170	5,907,921.21	96,958.49	712.50	4.02	489.8	762.55
J-1180	5,906,388.02	97,030.59	718.00	7.47	433.8	762.32
J-1190	5,907,464.10	99,160.84	712.00	10.23	492.4	762.31
J-1195	5,907,311.37	99,134.08	712.00	0.00	492.5	762.33
J-1200	5,905,818.21	99,517.76	710.00	9.50	510.3	762.14
J-1205	5,905,816.29	99,157.77	710.00	0.00	510.6	762.18
J-1210	5,905,298.16	99,161.16	716.00	7.17	451.9	762.18
J-1215	5,905,328.15	100,093.75	705.00	0.00	559.5	762.17
J-1220	5,906,625.92	99,855.91	703.00	0.00	580.0	762.27
J-1230	5,905,900.56	97,381.30	714.10	0.00	471.8	762.31
J-1240	5,905,358.81	97,375.84	715.60	0.00	456.6	762.26
J-1250	5,905,273.56	98,474.03	711.90	0.00	492.2	762.19
J-1260	5,904,155.48	99,994.25	724.50	6.39	367.5	762.05
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	522.5	761.62

Scenario: Peak H(· Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	-8.64	0.12	0.02	0.08	763.08	763.10
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	763.07	763.07
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	763.07	763.07
P-40	J-10	J-12	1.20	148.0	130.0	8.37	0.49	0.01	10.73	762.91	762.90
P-42	J-12	J-16	3.50	202.0	130.0	8.37	0.26	0.00	0.79	762.90	762.90
P-45	J-10	J-8	584.50	304.0	130.0	-18.42	0.25	0.16	0.27	762.91	763.07
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	763.07	763.07
P-50	J-362	J-259	224.00	297.0	130.0	-1.10	0.02	0.00	0.00	762.67	762.67
P-52	J-16	J-22	506.20	199.0	130.0	8.03	0.26	0.23	0.45	762.90	762.67
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	763.07	763.07
P-58	J-24	J-28	372.00	199.0	130.0	-6.82	0.22	0.13	0.34	762.71	762.84
P-60	J-337	J-261	168.50	250.0	130.0	-4.28	0.09	0.01	0.05	762.66	762.66
P-62	J-28	J-30	139.00	199.0	130.0	-7.37	0.24	0.06	0.44	762.84	762.90
P-64	J-30	J-10	104.50	304.0	130.0	-11.91	0.16	0.01	0.13	762.90	762.91
P-66	J-30	J-32	103.00	304.0	130.0	4.53	0.06	0.00	0.02	762.90	762.90
P-68	J-32	J-34	131.00	304.0	130.0	8.46	0.12	0.01	0.07	762.90	762.89
P-70	J-34	J-36	26.00	304.0	130.0	8.28	0.11	0.00	0.07	762.89	762.89
P-74	J-38	J-40	160.50	304.0	130.0	16.67	0.23	0.04	0.22	762.84	762.81
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	763.07	763.07
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	763.07	763.07
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	763.07	763.07
P-88	J-50	J-56	613.50	199.0	130.0	-3.81	0.12	0.07	0.11	762.79	762.86
P-90	J-352	J-254	10.50	202.0	130.0	3.05	0.10	0.00	0.12	763.07	763.07
P-92	J-254	J-255	12.50	202.0	130.0	3.05	0.10	0.00	0.08	763.07	763.07
P-94	J-255	J-257	5.50	202.0	130.0	3.05	0.10	0.00	0.09	763.07	763.07
P-96	J-257	J-258	10.50	202.0	130.0	3.05	0.10	0.00	0.08	763.07	763.07
P-98	J-258	J-353	52.50	202.0	130.0	3.05	0.10	0.00	0.07	763.07	763.06
P-100	J-350	J-262	69.00	202.0	130.0	-5.81	0.18	0.02	0.23	762.29	762.31
P-102	J-68	J-64	271.00	254.0	130.0	20.59	0.41	0.22	0.81	763.34	763.12
P-104	J-74	J-68	282.00	254.0	130.0	20.73	0.41	0.23	0.81	763.56	763.34
P-106	J-321	J-263	463.50	304.0	130.0	26.48	0.36	0.25	0.54	763.30	763.05
P-108	J-263	J-144	2.50	304.0	130.0	22.06	0.30	0.00	1.90	763.05	763.05
P-112	J-74	J-76	112.00	254.0	130.0	-31.88	0.63	0.22	1.94	763.56	763.78
P-114	J-76	J-82	279.00	406.0	130.0	-58.88	0.45	0.16	0.58	763.78	763.94
P-116	J-82	J-90	545.00	406.0	130.0	-59.52	0.46	0.33	0.61	763.94	764.28

Scenario: Peak H · Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-118	J-263	J-265	337.00	300.0	130.0	4.42	0.06	0.01	0.02	763.05	763.04
P-120	J-265	J-267	665.50	200.0	130.0	4.14	0.13	0.09	0.13	763.04	762.96
P-122	J-267	J-269	507.00	150.0	130.0	3.96	0.22	0.24	0.48	762.96	762.72
P-124	J-269	J-273	60.50	200.0	130.0	3.96	0.13	0.01	0.13	762.72	762.71
P-126	J-273	J-270	565.00	200.0	130.0	5.61	0.18	0.13	0.23	762.71	762.58
P-128	J-273	J-359	256.00	155.0	130.0	-1.65	0.09	0.02	0.08	762.71	762.73
P-130	J-90	J-94	191.50	450.0	120.0	87.77	0.55	0.16	0.81	764.28	764.12
P-132	J-98	J-74	336.50	199.0	130.0	-11.01	0.35	0.28	0.83	763.28	763.56
P-134	J-270	J-370	182.00	148.0	130.0	4.30	0.25	0.11	0.63	762.58	762.47
P-136	J-102	J-98	106.00	199.0	130.0	-10.77	0.35	0.09	0.83	763.20	763.28
P-140	J-102	J-104	198.50	199.0	130.0	5.03	0.16	0.04	0.19	763.20	763.16
P-142	J-108	J-104	252.50	199.0	130.0	-4.59	0.15	0.04	0.17	763.12	763.16
P-146	J-108	J-112	214.00	300.0	120.0	0.26	0.00	0.00	0.00	763.12	763.12
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	763.01	763.01
P-150	J-112	J-64	127.00	300.0	120.0	-0.06	0.00	0.00	0.00	763.12	763.12
P-152	J-275	J-277	189.00	297.0	130.0	1.81	0.03	0.00	0.00	763.01	763.01
P-154	J-117	J-102	399.00	199.0	130.0	-5.52	0.18	0.09	0.23	763.10	763.20
P-156	J-332	J-324	124.50	254.0	130.0	12.57	0.25	0.04	0.33	762.31	762.27
P-158	J-118	J-120	239.00	300.0	120.0	-3.64	0.05	0.00	0.02	763.10	763.11
P-160	J-124	J-120	349.00	300.0	120.0	3.73	0.05	0.01	0.02	763.11	763.11
P-164	J-124	J-108	270.50	300.0	120.0	-3.83	0.05	0.00	0.02	763.11	763.12
P-168	J-118	J-117	26.00	300.0	120.0	-5.21	0.07	0.00	0.03	763.10	763.10
P-180	J-8	J-136	205.50	204.0	130.0	-0.59	0.02	0.00	0.00	763.07	763.07
P-184	J-134	J-140	128.50	148.0	130.0	-3.00	0.17	0.04	0.32	763.08	763.12
P-186	J-76	J-142	225.50	254.0	130.0	26.67	0.53	0.31	1.38	763.78	763.47
P-194	J-148	J-146	535.50	150.0	130.0	2.87	0.16	0.14	0.27	763.05	762.91
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	763.07	763.07
P-196	J-148	J-150	13.00	150.0	130.0	-2.99	0.17	0.00	0.29	763.05	763.06
P-208	J-42	J-162	132.50	304.0	130.0	20.08	0.28	0.05	0.34	762.77	762.72
P-212	J-162	J-164	424.50	254.0	130.0	0.64	0.01	0.00	0.00	762.72	762.72
P-214	J-164	J-166	257.50	254.0	130.0	0.79	0.02	0.00	0.00	762.72	762.72
P-216	J-166	J-168	132.00	254.0	130.0	-2.76	0.05	0.00	0.02	762.72	762.72
P-222	J-172	J-174	134.50	254.0	130.0	-14.12	0.28	0.05	0.41	762.73	762.79
P-224	J-174	J-56	192.50	254.0	130.0	-14.39	0.28	0.08	0.41	762.79	762.86
P-226	J-164	J-176	128.00	148.0	130.0	-3.50	0.20	0.05	0.42	762.72	762.78

Scenario: Peak H - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-228	J-164	J-178	145.50	148.0	130.0	3.24	0.19	0.05	0.37	762.72	762.67
P-230	J-166	J-180	146.00	148.0	130.0	3.24	0.19	0.05	0.37	762.72	762.67
P-238	J-198	J-202	298.50	304.0	130.0	21.41	0.29	0.11	0.38	762.40	762.28
P-260	J-202	J-206	385.50	304.0	130.0	10.05	0.14	0.03	0.09	762.28	762.25
P-262	J-206	J-210	304.50	304.0	130.0	5.45	0.08	0.01	0.03	762.25	762.24
P-266	J-210	J-212	238.50	304.0	130.0	4.22	0.06	0.00	0.02	762.24	762.24
P-270	J-214	J-216	274.00	304.0	130.0	-5.90	0.08	0.01	0.03	762.24	762.25
P-273	J-310	J-217	285.00	450.0	100.0	-5.82	0.04	0.00	0.01	763.08	763.08
P-274	J-216	J-222	334.50	254.0	130.0	-6.95	0.14	0.04	0.11	762.25	762.28
P-275	J-217	J-6	10.50	450.0	100.0	-13.99	0.09	0.00	0.11	763.08	763.08
P-276	J-134	J-218	7.00	148.0	130.0	2.81	0.16	0.00	0.51	763.08	763.08
P-277	J-218	J-136	14.50	148.0	130.0	3.98	0.23	0.01	0.73	763.08	763.07
P-278	J-222	J-224	207.50	254.0	130.0	-7.01	0.14	0.02	0.11	762.28	762.31
P-280	J-228	J-224	462.00	254.0	130.0	7.61	0.15	0.06	0.13	762.36	762.31
P-283	J-363	J-219	118.00	455.7	130.0	59.37	0.36	0.04	0.34	763.17	763.13
P-285	J-218	J-221	188.00	455.7	130.0	-7.93	0.05	0.00	0.01	763.08	763.08
P-286	J-221	J-219	114.50	455.7	130.0	-56.33	0.35	0.05	0.39	763.08	763.13
P-288	J-40	J-225	162.00	304.0	130.0	16.51	0.23	0.04	0.23	762.81	762.77
P-289	J-225	J-42	3.50	304.0	130.0	20.12	0.28	0.00	0.70	762.77	762.77
P-290	J-224	J-210	274.00	254.0	130.0	10.24	0.20	0.06	0.23	762.31	762.24
P-293	J-225	J-24	262.50	455.7	130.0	43.86	0.27	0.06	0.23	762.77	762.71
P-294	J-210	J-240	327.50	254.0	130.0	11.44	0.23	0.09	0.28	762.24	762.15
P-297	J-36	J-230	22.50	304.0	130.0	8.28	0.11	0.00	0.08	762.89	762.88
P-298	J-240	J-244	431.00	254.0	130.0	10.70	0.21	0.11	0.24	762.15	762.05
P-299	J-230	J-38	167.50	304.0	130.0	16.67	0.23	0.04	0.24	762.88	762.84
P-300	J-223	J-230	25.00	297.0	130.0	8.39	0.12	0.00	0.17	762.89	762.88
P-301	J-24	J-22	128.50	455.7	130.0	49.85	0.31	0.04	0.34	762.71	762.67
P-303	J-22	J-226	28.00	455.7	130.0	57.79	0.35	0.01	0.39	762.67	762.66
P-305	J-227	J-50	409.50	204.0	130.0	4.06	0.12	0.05	0.12	762.84	762.79
P-306	J-223	J-227	173.50	455.7	130.0	48.35	0.30	0.05	0.27	762.89	762.84
P-307	J-227	J-225	336.50	455.7	130.0	44.15	0.27	0.07	0.21	762.84	762.77
P-308	J-250	J-252	237.00	254.0	130.0	-3.26	0.06	0.01	0.03	762.07	762.08
P-309	J-217	J-229	243.00	455.7	130.0	8.03	0.05	0.00	0.01	763.08	763.08
P-310	J-6	J-229	233.00	297.0	130.0	3.49	0.05	0.00	0.02	763.08	763.08
P-311	J-229	J-8	16.00	297.0	130.0	18.13	0.26	0.01	0.62	763.08	763.07

Scenario: Peak Hr - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-312	J-252	J-256	219.00	199.0	130.0	-3.38	0.11	0.02	0.09	762.08	762.10
P-313	J-229	J-218	205.50	455.7	130.0	-6.76	0.04	0.00	0.01	763.08	763.08
P-314	J-260	J-256	150.00	199.0	130.0	3.40	0.11	0.01	0.09	762.11	762.10
P-315	J-226	J-231	35.00	455.7	130.0	57.79	0.35	0.01	0.34	762.66	762.64
P-316	J-231	J-232	143.50	455.7	130.0	41.71	0.26	0.03	0.18	762.64	762.62
P-317	J-232	J-233	178.50	455.7	130.0	41.71	0.26	0.03	0.17	762.62	762.59
P-318	J-260	J-250	152.00	254.0	130.0	11.16	0.22	0.04	0.27	762.11	762.07
P-319	J-233	J-235	385.00	455.7	130.0	41.71	0.26	0.07	0.17	762.59	762.52
P-320	J-264	J-260	248.50	254.0	130.0	14.74	0.29	0.11	0.44	762.22	762.11
P-321	J-235	J-236	385.00	455.7	130.0	41.71	0.26	0.07	0.17	762.52	762.46
P-322	J-311	J-1025	3,915.00	297.0	130.0	2.07	0.03	0.02	0.01	763.08	763.06
P-322a	J-1025	J-237	625.50	297.0	130.0	1.69	0.02	0.00	0.00	763.06	763.06
P-323	J-237	J-275	1,150.50	297.0	130.0	6.44	0.09	0.05	0.04	763.06	763.01
P-324	J-264	J-202	243.50	254.0	130.0	-11.08	0.22	0.06	0.27	762.22	762.28
P-325	J-237	J-238	126.50	297.0	130.0	-5.03	0.07	0.00	0.03	763.06	763.06
P-326	J-264	J-266	180.00	254.0	130.0	-4.09	0.08	0.01	0.04	762.22	762.23
P-327	J-238	J-239	43.00	297.0	130.0	-5.03	0.07	0.00	0.03	763.06	763.06
P-328	J-266	J-206	485.00	254.0	130.0	-4.48	0.09	0.02	0.05	762.23	762.25
P-329	J-239	J-241	92.50	297.0	130.0	-5.03	0.07	0.00	0.03	763.06	763.06
P-330	J-244	J-268	30.00	254.0	130.0	-12.55	0.25	0.01	0.43	762.05	762.06
P-331	J-241	J-242	409.50	297.0	130.0	-5.03	0.07	0.01	0.03	763.06	763.07
P-332	J-268	J-272	367.50	254.0	130.0	-12.61	0.25	0.12	0.32	762.06	762.18
P-333	J-242	J-243	396.00	297.0	130.0	-23.02	0.33	0.18	0.45	763.07	763.25
P-335	J-248	J-348	14.50	199.0	130.0	-6.97	0.22	0.01	0.47	762.22	762.23
P-336	J-272	J-274	142.00	254.0	130.0	-4.70	0.09	0.01	0.05	762.18	762.19
P-337	J-248	J-271	76.00	297.0	130.0	3.63	0.05	0.00	0.02	762.22	762.22
P-338	J-274	J-276	41.50	300.0	120.0	-6.07	0.09	0.00	0.04	762.19	762.19
P-339	J-271	J-279	109.50	297.0	130.0	3.63	0.05	0.00	0.01	762.22	762.22
P-340	J-272	J-278	251.50	254.0	130.0	-7.49	0.15	0.03	0.13	762.18	762.21
P-341	J-279	J-280	209.00	297.0	130.0	8.57	0.12	0.02	0.07	762.22	762.20
P-342	J-278	J-282	329.50	254.0	130.0	-4.20	0.08	0.01	0.04	762.21	762.22
P-343	J-280	J-281	72.00	297.0	130.0	8.57	0.12	0.01	0.08	762.20	762.20
P-344	J-279	J-283	42.00	297.0	130.0	-4.94	0.07	0.00	0.04	762.22	762.22
P-345	J-283	J-284	421.00	297.0	130.0	-4.94	0.07	0.01	0.03	762.22	762.23
P-346	J-214	J-282	306.50	254.0	130.0	4.37	0.09	0.01	0.04	762.24	762.22

Scenario: Peak H - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-347	J-348	J-285	445.00	199.0	130.0	-1.57	0.05	0.01	0.02	762.23	762.24
P-348	J-285	J-356	45.00	199.0	130.0	-6.66	0.21	0.02	0.35	762.24	762.26
P-349	J-285	J-287	64.00	297.0	130.0	4.94	0.07	0.00	0.04	762.24	762.24
P-350	J-278	J-286	133.00	254.0	130.0	-3.77	0.07	0.00	0.03	762.21	762.21
P-351	J-287	J-288	110.00	297.0	130.0	4.94	0.07	0.00	0.03	762.24	762.23
P-352	J-212	J-286	517.50	254.0	130.0	4.29	0.08	0.02	0.04	762.24	762.21
P-353	J-288	J-284	63.50	297.0	130.0	4.94	0.07	0.00	0.03	762.23	762.23
P-354	J-221	J-130	12.50	297.0	130.0	-8.64	0.12	0.00	0.13	763.08	763.08
P-355	J-221	J-289	563.50	455.7	130.0	57.02	0.35	0.18	0.32	763.08	762.90
P-356	J-289	J-223	40.00	455.7	130.0	57.02	0.35	0.01	0.35	762.90	762.89
P-357	J-322	J-290	274.00	199.0	130.0	-3.34	0.11	0.02	0.09	762.19	762.22
P-358	J-274	J-294	170.50	300.0	120.0	1.35	0.02	0.00	0.00	762.19	762.18
P-359	J-290	J-248	91.00	199.0	130.0	-3.34	0.11	0.01	0.09	762.22	762.22
P-360	J-212	J-291	226.00	304.0	130.0	-0.30	0.00	0.00	0.00	762.24	762.24
P-361	J-291	J-214	78.00	304.0	130.0	-0.30	0.00	0.00	0.00	762.24	762.24
P-362	J-294	J-298	389.00	199.0	130.0	1.28	0.04	0.01	0.01	762.18	762.18
P-363	J-168	J-292	202.00	254.0	130.0	-2.82	0.06	0.00	0.02	762.72	762.73
P-364	J-292	J-172	147.50	254.0	130.0	-2.82	0.06	0.00	0.02	762.73	762.73
P-365	J-389	J-293	126.50	297.0	130.0	-17.86	0.26	0.04	0.31	763.26	763.30
P-366	J-298	J-300	106.00	199.0	130.0	1.00	0.03	0.00	0.01	762.18	762.18
P-367	J-293	J-391	276.50	297.0	130.0	-17.86	0.26	0.08	0.30	763.30	763.38
P-368	J-300	J-302	187.00	199.0	130.0	-0.71	0.02	0.00	0.01	762.18	762.18
P-369	J-410	J-408	67.00	297.0	130.0	11.77	0.17	0.01	0.13	763.35	763.34
P-371	J-234	J-296	251.00	254.0	130.0	-1.21	0.02	0.00	0.00	762.40	762.40
P-372	J-306	J-302	131.50	254.0	130.0	-1.36	0.03	0.00	0.01	762.18	762.18
P-373	J-296	J-228	267.50	254.0	130.0	7.92	0.16	0.04	0.13	762.40	762.36
P-374	J-306	J-308	179.00	254.0	130.0	1.03	0.02	0.00	0.00	762.18	762.18
P-376	J-308	J-272	191.00	254.0	130.0	0.57	0.01	0.00	0.00	762.18	762.18
P-378	J-302	J-314	370.00	254.0	130.0	-2.32	0.05	0.01	0.01	762.18	762.18
P-381	J-250	J-304	276.00	254.0	130.0	26.81	0.53	0.39	1.43	762.07	761.68
P-382	J-304	Truck Fill	5.50	254.0	130.0	26.81	0.53	0.05	9.57	761.68	761.62
P-383	Truck Fill	J-244	401.50	254.0	130.0	-23.19	0.46	0.42	1.05	761.62	762.05
P-384	J-270	J-307	1,127.50	200.0	130.0	0.00	0.00	0.00	0.00	762.58	762.58
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	762.58	762.58
P-386	J-314	J-322	313.50	254.0	130.0	-2.86	0.06	0.01	0.02	762.18	762.19

Scenario: Peak H[illegible] - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	762.58	762.58
P-388	J-60	J-313	214.00	289.0	130.0	0.82	0.01	0.00	0.00	763.03	763.03
P-389	J-313	J-144	9.00	289.0	130.0	-21.79	0.33	0.02	2.05	763.03	763.05
P-390	J-313	J-315	97.50	233.3	130.0	22.61	0.53	0.14	1.39	763.03	762.89
P-391	J-315	J-316	363.50	297.0	130.0	22.61	0.33	0.16	0.43	762.89	762.74
P-392	J-322	J-324	250.50	254.0	130.0	-12.57	0.25	0.08	0.32	762.19	762.27
P-393	J-316	J-317	384.50	297.0	130.0	22.61	0.33	0.17	0.43	762.74	762.57
P-394	J-32	J-318	45.50	200.0	120.0	-3.93	0.12	0.01	0.13	762.90	762.90
P-395	J-318	J-136	539.50	148.0	130.0	-2.99	0.17	0.17	0.31	762.90	763.07
P-396	J-146	J-318	190.50	150.0	100.0	0.94	0.05	0.01	0.05	762.91	762.90
P-402	J-332	J-337	799.00	254.0	130.0	-14.91	0.29	0.34	0.43	762.31	762.66
P-410	J-172	J-337	293.50	254.0	130.0	11.15	0.22	0.08	0.26	762.73	762.66
P-412	J-322	J-342	193.50	254.0	130.0	12.97	0.26	0.07	0.35	762.19	762.12
P-414	J-342	J-250	156.50	254.0	130.0	12.67	0.25	0.05	0.33	762.12	762.07
P-444	J-370	J-372	67.50	148.0	130.0	3.75	0.22	0.03	0.48	762.47	762.43
P-446	J-372	J-374	366.50	148.0	130.0	2.98	0.17	0.11	0.31	762.43	762.32
P-448	J-374	J-376	369.00	199.0	130.0	3.25	0.10	0.03	0.08	762.32	762.29
P-450	J-376	J-378	63.00	199.0	130.0	2.36	0.08	0.00	0.05	762.29	762.29
P-452	J-378	J-379	478.00	199.0	130.0	1.75	0.06	0.01	0.03	762.29	762.27
P-453	J-379	J-380	27.00	199.0	130.0	1.18	0.04	0.00	0.01	762.27	762.27
P-454	J-380	J-364	122.50	199.0	130.0	1.57	0.05	0.00	0.02	762.27	762.27
P-456	J-364	J-382	102.50	148.0	130.0	2.62	0.15	0.03	0.25	762.27	762.25
P-457	J-382	J-383	516.50	148.0	130.0	1.39	0.08	0.04	0.07	762.25	762.21
P-458	J-383	J-384	130.50	148.0	130.0	1.03	0.06	0.01	0.04	762.21	762.20
P-460	J-384	J-386	893.50	148.0	130.0	0.99	0.06	0.04	0.04	762.20	762.17
P-462	J-370	J-374	693.00	75.0	130.0	0.41	0.09	0.14	0.21	762.47	762.32
P-464	J-374	J-372	636.50	75.0	130.0	-0.37	0.08	0.11	0.18	762.32	762.43
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	762.29	762.29
P-468	J-380	J-376	1,258.50	148.0	130.0	-0.55	0.03	0.02	0.01	762.27	762.29
P-470	J-382	J-384	1,373.00	148.0	130.0	0.88	0.05	0.04	0.03	762.25	762.20
P-474	J-390	J-392	369.50	148.0	130.0	-1.54	0.09	0.03	0.09	762.83	762.87
P-476	J-392	J-394	450.00	148.0	130.0	-2.88	0.17	0.13	0.29	762.87	762.99
P-478	J-394	J-395	370.50	148.0	130.0	-2.88	0.17	0.11	0.28	762.99	763.10
P-479	J-395	J-396	569.50	200.0	120.0	3.76	0.12	0.07	0.12	763.10	763.03
P-480	J-394	J-398	566.00	108.0	130.0	-0.15	0.02	0.00	0.01	762.99	763.00

Scenario: Peak Hc Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-482	J-392	J-400	584.50	108.0	130.0	-0.97	0.11	0.10	0.18	762.87	762.97
P-484	J-390	J-402	584.50	108.0	130.0	-1.05	0.12	0.12	0.21	762.83	762.95
P-490	J-216	J-349	71.00	304.0	130.0	-6.57	0.09	0.00	0.04	762.25	762.25
P-494	J-350	J-348	272.50	202.0	130.0	5.60	0.17	0.06	0.22	762.29	762.23
P-496	J-310	J-311	4.00	304.0	130.0	5.82	0.08	0.00	0.11	763.08	763.08
P-502	J-402	J-400	371.50	155.0	130.0	-1.19	0.06	0.02	0.04	762.95	762.97
P-504	J-398	J-396	390.50	200.0	120.0	-2.93	0.09	0.03	0.08	763.00	763.03
P-506	J-311	J-352	517.00	305.0	130.0	3.74	0.05	0.01	0.01	763.08	763.07
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	763.07	763.07
P-509	J-142	J-321	302.00	304.0	130.0	26.65	0.37	0.17	0.55	763.47	763.30
P-514	J-353	J-150	72.00	200.0	140.0	2.99	0.10	0.01	0.07	763.06	763.06
P-526	J-359	J-357	399.50	148.0	130.0	-1.52	0.09	0.03	0.09	762.73	762.77
P-528	J-538	J-262	113.00	202.0	130.0	1.41	0.04	0.00	0.02	762.31	762.31
P-529	J-262	J-536	686.00	202.0	130.0	2.09	0.07	0.02	0.03	762.31	762.28
P-530	J-357	J-390	321.00	148.0	130.0	-2.41	0.14	0.07	0.21	762.77	762.83
P-532	J-357	J-358	299.50	108.0	130.0	0.65	0.07	0.03	0.08	762.77	762.74
P-534	J-358	J-360	457.00	108.0	130.0	0.30	0.03	0.01	0.02	762.74	762.73
P-536	J-360	J-359	78.00	108.0	130.0	0.18	0.02	0.00	0.01	762.73	762.73
P-542	J-162	J-362	170.50	304.0	130.0	19.38	0.27	0.05	0.32	762.72	762.67
P-544	J-362	J-198	808.50	304.0	130.0	20.48	0.28	0.27	0.34	762.67	762.40
P-548	J-363	J-367	50.00	440.3	130.0	-59.37	0.39	0.02	0.44	763.17	763.19
P-550	J-367	J-369	25.00	440.3	130.0	-59.37	0.39	0.01	0.38	763.19	763.20
P-552	J-369	J-371	110.00	440.3	130.0	-59.37	0.39	0.04	0.38	763.20	763.24
P-554	J-371	J-373	25.00	440.3	130.0	-59.37	0.39	0.02	0.61	763.24	763.25
P-558	J-375	J-377	116.00	440.3	130.0	-47.91	0.31	0.03	0.25	763.31	763.34
P-560	J-377	J-381	92.00	440.3	130.0	-47.92	0.31	0.03	0.28	763.34	763.37
P-566	J-6	J-389	643.50	297.0	130.0	-17.54	0.25	0.18	0.27	763.08	763.26
P-570	J-381	J-391	32.50	440.3	130.0	-47.92	0.31	0.01	0.33	763.37	763.38
P-572	J-391	J-365	117.00	440.3	130.0	-77.57	0.51	0.08	0.72	763.38	763.46
P-576	J-332	J-538	211.00	202.0	130.0	1.41	0.04	0.00	0.02	762.31	762.31
P-578	J-373	J-406	4.50	440.3	130.0	-59.37	0.39	0.00	0.98	763.25	763.26
P-580	J-406	J-375	210.50	440.3	130.0	-47.89	0.31	0.06	0.26	763.26	763.31
P-584	J-404	J-403	149.00	297.0	130.0	11.58	0.17	0.02	0.13	763.31	763.29
P-588	J-403	J-401	14.00	297.0	130.0	11.58	0.17	0.00	0.14	763.29	763.29
P-592	J-401	J-407	216.50	297.0	130.0	11.58	0.17	0.03	0.14	763.29	763.26

Scenario: Peak H - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-594	J-64	J-60	109.50	254.0	130.0	20.30	0.40	0.09	0.81	763.12	763.03
P-595	J-60	J-56	223.50	254.0	130.0	19.48	0.38	0.16	0.74	763.03	762.86
P-596	J-407	J-406	9.00	297.0	130.0	11.47	0.17	0.00	0.33	763.26	763.26
P-598	J-364	J-536	1,015.00	204.0	130.0	-1.20	0.04	0.01	0.01	762.27	762.28
P-600	J-411	J-408	218.50	297.0	130.0	-11.77	0.17	0.03	0.13	763.32	763.34
P-606	J-410	J-391	189.50	297.0	130.0	-11.79	0.17	0.03	0.14	763.35	763.38
P-608	J-411	J-404	23.00	297.0	130.0	11.77	0.17	0.00	0.13	763.32	763.31
P-1000	J-275	J-1010	770.00	200.0	120.0	2.90	0.09	0.06	0.08	763.01	762.95
P-1010	J-242	J-1020	138.00	300.0	120.0	6.97	0.10	0.01	0.05	763.07	763.07
P-1015	J-1030	J-1015	583.00	200.0	120.0	5.54	0.18	0.15	0.25	763.05	762.90
P-1020	J-1025	J-1030	281.00	300.0	120.0	6.05	0.09	0.01	0.04	763.06	763.05
P-1025	J-1025	J-1020	247.00	300.0	120.0	-5.67	0.08	0.01	0.04	763.06	763.07
P-1030	J-242	J-1040	494.00	300.0	120.0	11.02	0.16	0.06	0.13	763.07	763.01
P-1035	J-1035	J-1075	753.00	300.0	120.0	4.82	0.07	0.02	0.03	763.00	762.98
P-1040	J-1050	J-243	807.00	300.0	120.0	23.35	0.33	0.41	0.50	763.66	763.25
P-1045	J-1050	J-1045	557.00	300.0	120.0	6.81	0.10	0.03	0.05	763.66	763.63
P-1050	J-1050	J-1060	231.50	300.0	120.0	-37.86	0.54	0.29	1.23	763.66	763.94
P-1055	J-1060	J-1055	466.00	300.0	120.0	9.59	0.14	0.05	0.10	763.94	763.90
P-1060	J-1060	J-1065	1,011.50	300.0	120.0	11.97	0.17	0.15	0.15	763.94	763.80
P-1065	J-1065	J-1070	603.00	300.0	120.0	11.97	0.17	0.09	0.15	763.80	763.71
P-1070	J-1070	J-1080	404.50	200.0	120.0	11.97	0.38	0.43	1.05	763.71	763.28
P-1080	J-1080	J-1090	610.50	200.0	120.0	6.01	0.19	0.18	0.29	763.28	763.10
P-1090	J-1090	J-395	7.00	200.0	120.0	7.37	0.23	0.00	0.44	763.10	763.10
P-1100	J-392	J-1100	371.00	200.0	120.0	1.54	0.05	0.01	0.02	762.87	762.86
P-1110	J-1000	R-3	774.50	450.0	120.0	-206.92	1.30	3.08	3.98	766.32	769.40
P-1120	J-1000	J-1150	764.50	450.0	120.0	147.50	0.93	1.62	2.12	766.32	764.70
P-1130	J-1080	J-1120	432.00	200.0	120.0	5.96	0.19	0.13	0.29	763.28	763.16
P-1140	J-1120	J-1130	612.50	200.0	120.0	2.89	0.09	0.05	0.08	763.16	763.11
P-1150	J-1130	J-1090	422.50	200.0	120.0	1.36	0.04	0.01	0.02	763.11	763.10
P-1160	J-365	J-1140	280.00	450.0	120.0	-77.60	0.49	0.18	0.65	763.46	763.64
P-1170	J-1140	J-94	586.50	450.0	120.0	-87.61	0.55	0.47	0.81	763.64	764.12
P-1180	J-90	J-1150	198.50	450.0	120.0	-147.50	0.93	0.42	2.12	764.28	764.70
P-1190	J-1000	J-1060	836.00	300.0	120.0	59.42	0.84	2.38	2.84	766.32	763.94
P-1200	J-1140	J-1160	795.00	300.0	120.0	10.01	0.14	0.08	0.10	763.64	763.56
P-1205	J-1200	J-1205	360.00	300.0	120.0	-9.50	0.13	0.03	0.10	762.14	762.18

Scenario: Peak H - Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1210	J-1160	J-1050	1,510.50	300.0	120.0	-7.70	0.11	0.10	0.06	763.56	763.66
P-1220	J-231	J-1170	375.50	300.0	120.0	16.03	0.23	0.09	0.25	762.64	762.55
P-1230	J-1230	J-1180	600.50	300.0	120.0	-4.54	0.06	0.01	0.02	762.31	762.32
P-1240	J-317	J-1195	517.00	300.0	120.0	22.61	0.32	0.25	0.47	762.57	762.33
P-1245	J-1260	J-1210	1,414.00	200.0	120.0	-3.11	0.10	0.12	0.09	762.05	762.18
P-1250	J-1195	J-262	405.50	300.0	120.0	6.49	0.09	0.02	0.05	762.33	762.31
P-1255	J-1260	J-1215	1,177.00	200.0	120.0	-3.28	0.10	0.11	0.10	762.05	762.17
P-1260	J-236	J-1005	269.50	450.0	120.0	41.71	0.26	0.06	0.20	762.46	762.40
P-1265	J-1005	J-296	162.00	450.0	120.0	9.13	0.06	0.00	0.01	762.40	762.40
P-1270	J-219	J-140	198.00	300.0	120.0	3.03	0.04	0.00	0.01	763.13	763.12
P-1280	J-225	J-176	432.50	300.0	120.0	-3.32	0.05	0.01	0.01	762.77	762.78
P-1300	J-259	J-178	195.50	300.0	120.0	-1.32	0.02	0.00	0.00	762.67	762.67
P-1310	J-261	J-180	183.00	300.0	120.0	-4.42	0.06	0.00	0.02	762.66	762.67
P-1330	J-178	J-180	258.00	300.0	120.0	1.42	0.02	0.00	0.00	762.67	762.67
P-1340	J-10	J-146	36.50	300.0	120.0	-1.85	0.03	0.00	0.00	762.91	762.91
P-1350	J-1035	J-277	848.50	300.0	120.0	-1.56	0.02	0.00	0.00	763.00	763.01
P-1355	J-1040	J-1035	719.50	300.0	120.0	3.26	0.05	0.01	0.01	763.01	763.00
P-1370	J-1220	J-356	228.00	300.0	120.0	6.77	0.10	0.01	0.05	762.27	762.26
P-1375	J-1220	J-536	303.50	300.0	120.0	-6.77	0.10	0.02	0.05	762.27	762.28
P-1380	J-400	J-398	443.50	200.0	120.0	-2.63	0.08	0.03	0.06	762.97	763.00
P-1390	J-300	J-1205	285.50	300.0	120.0	1.56	0.02	0.00	0.00	762.18	762.18
P-1405	J-276	J-1250	73.50	300.0	120.0	-7.81	0.11	0.00	0.07	762.19	762.19
P-1410	J-1250	J-1210	687.50	450.0	120.0	12.50	0.08	0.02	0.02	762.19	762.18
P-1420	J-1170	J-1180	1,535.00	300.0	120.0	12.01	0.17	0.23	0.15	762.55	762.32
P-1430	J-1195	J-536	1,082.00	300.0	120.0	5.89	0.08	0.04	0.04	762.33	762.28
P-1440	J-1210	J-1215	933.00	300.0	120.0	2.86	0.04	0.01	0.01	762.18	762.17
P-1445	J-1215	J-386	888.00	300.0	120.0	-0.42	0.01	0.00	0.00	762.17	762.17
P-1450	J-281	J-1205	286.50	300.0	120.0	8.57	0.12	0.02	0.08	762.20	762.18
P-1460	J-1205	J-1210	518.00	300.0	120.0	0.64	0.01	0.00	0.00	762.18	762.18
P-1470	J-1250	J-349	1,077.00	450.0	120.0	-20.31	0.13	0.06	0.05	762.19	762.25
P-1480	J-1230	J-1240	542.00	450.0	120.0	27.46	0.17	0.05	0.09	762.31	762.26
P-1500	J-1005	J-1230	699.50	450.0	120.0	32.58	0.20	0.09	0.13	762.40	762.31
P-1510	J-1230	J-224	47.50	300.0	120.0	9.67	0.14	0.00	0.10	762.31	762.31
P-1520	J-1240	J-349	92.50	450.0	120.0	27.46	0.17	0.01	0.09	762.26	762.25
P-1530	J-1190	J-1195	155.00	300.0	120.0	-10.23	0.14	0.02	0.11	762.31	762.33

Scenario: Peak H(· Future (10 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1730	J-50	J-176	331.00	300.0	120.0	6.97	0.10	0.02	0.05	762.79	762.78
P-2200	J-234	J-198	252.00	300.0	120.0	0.93	0.01	0.00	0.00	762.40	762.40

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	352.1	280.00	228.5	J-1260
J-8	230.00	230.20	true	280.00	318.4	280.00	226.5	J-1260
J-10	230.00	230.00	true	280.00	329.8	280.00	218.6	J-1260
J-12	230.00	230.00	true	280.00	257.3	280.00	216.4	J-1260
J-16	230.00	230.23	true	280.00	246.7	280.00	216.1	J-1260
J-22	230.00	230.06	true	280.00	337.9	280.00	200.0	J-1260
J-24	230.00	230.56	true	280.00	315.3	280.00	203.0	J-1260
J-28	230.00	230.37	true	265.16	140.0	280.00	229.0	J-1260
J-30	230.00	230.00	true	280.00	295.9	280.00	217.2	J-1260
J-32	230.00	230.00	true	280.00	283.0	280.00	216.6	J-1260
J-34	230.00	230.12	true	280.00	268.6	280.00	215.2	J-1260
J-36	230.00	230.00	true	280.00	271.8	280.00	214.9	J-1260
J-38	230.00	230.00	true	280.00	254.5	280.00	213.1	J-1260
J-40	230.00	230.11	true	280.00	251.5	280.00	211.5	J-1260
J-42	230.00	230.02	true	280.00	278.2	280.00	207.6	J-1260
J-50	230.00	230.60	true	280.00	197.3	280.00	211.6	J-1260
J-56	230.00	230.85	true	280.00	259.3	280.00	216.5	J-1260
J-60	230.00	230.00	true	280.00	308.4	280.00	222.7	J-1260
J-64	230.00	230.16	true	280.00	306.1	280.00	228.9	J-1260
J-68	230.00	230.09	true	280.00	264.9	280.00	236.1	J-1260
J-74	230.00	230.09	true	280.00	330.0	280.00	241.5	J-1260
J-76	230.00	230.22	true	280.00	378.3	280.00	247.0	J-1260
J-82	230.00	230.43	true	280.00	412.0	280.00	252.1	J-1260
J-90	230.00	230.14	true	280.00	515.9	280.00	268.5	J-1260
J-94	230.00	230.11	true	280.00	507.4	280.00	262.2	J-1260
J-98	230.00	230.17	true	259.72	140.0	280.00	241.7	J-102
J-102	230.00	230.14	true	280.00	142.4	280.00	196.9	J-98
J-104	230.00	230.29	true	250.75	140.0	280.00	262.1	J-1260
J-108	230.00	230.34	true	280.00	255.6	280.00	230.4	J-1260
J-112	230.00	230.21	true	280.00	277.3	280.00	229.5	J-1260
J-117	230.00	230.20	true	280.00	264.3	280.00	230.6	J-1260
J-118	230.00	230.14	true	280.00	272.5	280.00	230.5	J-1260
J-120	230.00	230.06	true	280.00	243.1	280.00	231.0	J-1260
J-124	230.00	230.07	true	280.00	224.1	280.00	231.0	J-1260
J-130	230.00	230.00	true	280.00	319.0	280.00	227.0	J-1260
J-134	230.00	230.13	true	280.00	178.2	280.00	227.0	J-1260
J-136	230.00	230.27	true	280.00	216.8	280.00	226.3	J-1260
J-140	230.00	230.02	true	280.00	248.0	280.00	227.7	J-1260
J-142	230.00	230.01	true	280.00	317.5	280.00	236.8	J-1260
J-144	230.00	230.18	true	280.00	290.9	280.00	223.1	J-1260
J-146	230.00	230.06	true	280.00	309.7	280.00	218.7	J-1260
J-148	230.00	230.08	false	197.21	140.0	280.00	189.7	J-150
J-150	230.00	230.00	false	207.90	140.0	280.00	146.9	J-148
J-152	230.00	230.00	true	280.00	158.4	280.00	155.5	J-303
J-162	230.00	230.04	true	280.00	281.0	280.00	205.8	J-1260
J-164	230.00	230.07	true	280.00	223.3	280.00	206.5	J-1260
J-166	230.00	230.20	true	280.00	191.2	280.00	206.4	J-1260
J-168	230.00	230.04	true	280.00	174.9	280.00	206.8	J-1260
J-172	230.00	230.10	true	280.00	249.1	280.00	208.7	J-1260
J-174	230.00	230.18	true	280.00	236.0	280.00	212.3	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	231.4	280.00	210.4	J-1260
J-178	230.00	230.34	true	280.00	228.7	280.00	203.8	J-1260
J-180	230.00	230.17	true	280.00	231.4	280.00	203.9	J-1260
J-198	230.00	230.00	true	280.00	286.0	280.00	188.1	J-1260
J-202	230.00	230.19	true	280.00	285.3	280.00	183.0	J-1260
J-206	230.00	230.08	true	280.00	256.7	280.00	179.8	J-1260
J-210	230.00	230.02	true	280.00	260.3	280.00	176.3	J-1260
J-212	230.00	230.15	true	280.00	234.8	280.00	173.8	J-1260
J-214	230.00	230.82	true	280.00	220.4	280.00	171.8	J-1260
J-216	230.00	235.08	true	280.00	242.3	280.00	171.2	J-1260
J-217	230.00	230.09	true	280.00	350.0	280.00	228.4	J-1260
J-218	230.00	230.00	true	280.00	320.1	280.00	226.6	J-1260
J-219	230.00	230.00	true	280.00	329.0	280.00	228.1	J-1260
J-221	230.00	230.02	true	280.00	323.6	280.00	226.2	J-1260
J-222	230.00	230.05	true	280.00	197.4	280.00	175.2	J-1260
J-223	230.00	230.19	true	280.00	284.8	280.00	214.6	J-1260
J-224	230.00	230.02	true	280.00	267.6	280.00	176.7	J-1260
J-225	230.00	230.00	true	280.00	280.8	280.00	207.8	J-1260
J-226	230.00	230.00	true	280.00	337.0	280.00	199.3	J-1260
J-227	230.00	230.09	true	280.00	281.2	280.00	212.0	J-1260
J-228	230.00	230.21	true	280.00	211.2	280.00	181.5	J-1260
J-229	230.00	230.10	true	280.00	326.8	280.00	227.3	J-1260
J-230	230.00	230.00	true	280.00	276.6	280.00	214.6	J-1260
J-231	230.00	230.03	true	280.00	343.8	280.00	198.6	J-1260
J-232	230.00	230.00	true	280.00	342.4	280.00	196.6	J-1260
J-233	230.00	230.00	true	280.00	348.5	280.00	195.1	J-1260
J-234	230.00	230.18	true	280.00	251.7	280.00	185.6	J-1260
J-235	230.00	230.00	true	280.00	333.3	280.00	191.2	J-1260
J-236	230.00	230.00	true	280.00	322.9	280.00	187.2	J-1260
J-237	230.00	230.19	true	280.00	221.5	280.00	180.9	J-1010
J-238	230.00	230.00	true	280.00	213.1	280.00	190.7	J-1010
J-239	230.00	230.00	true	280.00	201.7	280.00	193.4	J-1010
J-240	230.00	230.49	true	280.00	162.2	280.00	175.2	J-1260
J-241	230.00	230.00	true	280.00	202.1	280.00	198.8	J-1010
J-242	230.00	230.00	true	280.00	269.4	280.00	221.4	J-1075
J-243	230.00	230.22	true	280.00	330.9	280.00	267.3	J-1260
J-244	230.00	230.04	true	280.00	235.8	280.00	173.9	J-1260
J-245	230.00	230.00	true	280.00	150.1	280.00	147.2	J-303
J-246	230.00	230.18	true	230.65	140.0	280.00	142.7	J-247
J-247	230.00	230.00	true	231.49	140.0	280.00	141.0	J-246
J-248	230.00	230.00	true	280.00	318.7	280.00	175.2	J-1260
J-249	230.00	230.00	true	279.99	193.8	280.00	140.0	J-303
J-250	230.00	230.19	true	280.00	268.5	280.00	177.4	J-1260
J-251	230.00	230.00	true	278.38	193.8	280.00	140.0	J-303
J-252	230.00	230.08	true	274.52	140.0	280.00	184.9	J-1260
J-253	230.00	230.00	true	275.94	143.0	280.00	140.0	J-303
J-254	230.00	230.00	true	273.55	140.0	280.00	143.1	J-258
J-255	230.00	230.00	true	265.05	189.1	280.00	140.0	J-258
J-256	230.00	230.01	true	252.33	140.0	280.00	213.3	J-1260
J-257	230.00	230.00	true	260.36	189.7	280.00	140.0	J-258

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	253.33	140.0	280.00	142.3	J-353
J-259	230.00	230.15	true	280.00	251.2	280.00	203.3	J-1260
J-260	230.00	230.12	true	280.00	250.0	280.00	178.2	J-1260
J-261	230.00	230.09	true	280.00	223.8	280.00	203.6	J-1260
J-262	230.00	230.00	true	280.00	307.6	280.00	184.9	J-1260
J-263	230.00	230.00	true	280.00	283.7	280.00	223.5	J-1260
J-264	230.00	230.29	true	280.00	263.2	280.00	180.1	J-1260
J-265	230.00	230.19	true	280.00	209.2	280.00	223.1	J-1260
J-266	230.00	230.26	true	280.00	219.8	280.00	180.5	J-1260
J-267	60.00	60.12	true	100.00	543.0	100.00	373.1	J-1260
J-268	230.00	230.04	true	280.00	230.4	280.00	173.4	J-1260
J-269	60.00	60.00	true	100.00	465.3	100.00	257.5	J-307
J-270	60.00	60.87	true	100.00	328.0	100.00	159.7	J-307
J-271	230.00	230.00	true	280.00	306.4	280.00	174.1	J-1260
J-272	230.00	230.10	true	280.00	261.2	280.00	166.7	J-1260
J-273	60.00	60.00	true	100.00	451.7	100.00	251.5	J-307
J-274	230.00	230.01	true	280.00	268.9	280.00	157.7	J-1260
J-275	230.00	231.15	true	244.81	185.8	280.00	140.0	J-1010
J-276	230.00	231.16	true	280.00	264.4	280.00	155.9	J-1260
J-277	230.00	230.16	true	249.45	140.0	280.00	140.4	J-1010
J-278	230.00	230.33	true	280.00	205.2	280.00	171.3	J-1260
J-279	230.00	230.00	true	280.00	308.6	280.00	173.0	J-1260
J-280	230.00	230.00	true	280.00	291.9	280.00	168.8	J-1260
J-281	230.00	230.00	true	280.00	293.4	280.00	167.2	J-1260
J-282	230.00	230.11	true	280.00	151.7	280.00	172.0	J-1260
J-283	230.00	230.00	true	280.00	282.4	280.00	173.6	J-1260
J-284	230.00	230.00	true	280.00	269.1	280.00	176.4	J-1260
J-285	230.00	230.09	true	280.00	293.2	280.00	178.0	J-1260
J-286	230.00	230.34	true	280.00	165.8	280.00	171.9	J-1260
J-287	230.00	230.00	true	280.00	282.0	280.00	177.4	J-1260
J-288	230.00	230.00	true	280.00	276.0	280.00	176.8	J-1260
J-289	230.00	230.00	true	280.00	293.6	280.00	215.4	J-1260
J-290	230.00	230.00	true	280.00	213.9	280.00	175.5	J-1260
J-291	230.00	230.00	true	280.00	218.1	280.00	172.4	J-1260
J-292	230.00	230.00	true	280.00	196.9	280.00	207.7	J-1260
J-293	230.00	230.00	true	280.00	354.2	280.00	235.6	J-1260
J-294	230.00	230.05	true	280.00	223.4	280.00	158.2	J-1260
J-296	230.00	230.00	true	280.00	298.4	280.00	183.4	J-1260
J-298	230.00	230.18	true	274.65	140.0	280.00	167.4	J-1260
J-300	230.00	230.10	true	280.00	262.7	280.00	160.8	J-1260
J-301	230.00	230.00	true	268.02	140.0	280.00	140.0	J-303
J-302	230.00	230.16	true	280.00	238.4	280.00	168.0	J-1260
J-303	230.00	230.28	true	235.20	140.0	280.00	149.3	J-247
J-304	230.00	230.00	true	280.00	190.5	280.00	175.8	J-1260
J-306	230.00	230.22	true	280.00	209.4	280.00	167.4	J-1260
J-307	60.00	60.00	true	63.00	140.0	100.00	154.4	J-309
J-308	230.00	230.31	true	280.00	198.4	280.00	166.9	J-1260
J-309	60.00	60.00	false	51.75	140.0	100.00	193.2	J-312
J-310	230.00	230.00	true	280.00	369.1	280.00	230.0	J-1260
J-311	230.00	230.01	true	280.00	364.3	280.00	230.4	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	47.10	140.0	100.00	201.4	J-309
J-313	230.00	230.00	true	280.00	320.8	280.00	221.7	J-1260
J-314	230.00	230.36	true	280.00	223.5	280.00	173.0	J-1260
J-315	230.00	230.00	true	280.00	263.4	280.00	214.0	J-1260
J-316	230.00	230.00	true	280.00	224.0	280.00	207.4	J-1260
J-317	230.00	230.00	true	280.00	230.2	280.00	201.1	J-1260
J-318	230.00	230.00	true	280.00	223.4	280.00	218.0	J-1260
J-321	230.00	230.11	true	280.00	286.1	280.00	232.5	J-1260
J-322	230.00	230.05	true	280.00	301.3	280.00	177.3	J-1260
J-324	230.00	230.00	true	280.00	250.9	280.00	183.7	J-1260
J-332	230.00	230.62	true	280.00	242.6	280.00	186.6	J-1260
J-337	230.00	230.34	true	280.00	265.3	280.00	203.1	J-1260
J-342	230.00	230.21	true	280.00	260.9	280.00	177.2	J-1260
J-348	230.00	230.13	true	280.00	302.0	280.00	176.4	J-1260
J-349	230.00	230.38	true	280.00	251.1	280.00	169.6	J-1260
J-350	230.00	230.14	true	280.00	235.3	280.00	182.4	J-1260
J-351	230.00	230.00	false	212.90	140.0	280.00	259.6	J-1010
J-352	230.00	230.00	true	280.00	173.7	280.00	170.7	J-303
J-353	230.00	230.04	true	230.61	140.0	280.00	148.9	J-150
J-356	230.00	230.08	true	280.00	273.2	280.00	180.1	J-1260
J-357	60.00	60.16	true	100.00	237.8	100.00	297.2	J-358
J-358	60.00	60.23	true	62.38	140.0	100.00	395.4	J-1260
J-359	60.00	60.04	true	100.00	315.0	100.00	302.1	J-307
J-360	60.00	60.08	true	80.87	140.0	100.00	340.0	J-358
J-362	230.00	230.00	true	280.00	291.8	280.00	202.8	J-1260
J-363	230.00	230.00	true	280.00	338.3	280.00	229.6	J-1260
J-364	60.00	60.10	true	100.00	536.2	100.00	363.8	J-1260
J-365	230.00	230.02	true	280.00	408.1	280.00	240.7	J-1260
J-367	230.00	230.00	true	280.00	348.4	280.00	230.5	J-1260
J-369	230.00	230.00	true	280.00	351.1	280.00	230.8	J-1260
J-370	60.00	60.10	true	100.00	355.3	100.00	238.4	J-307
J-371	230.00	230.00	true	280.00	354.0	280.00	232.4	J-1260
J-372	60.00	60.26	true	100.00	345.5	100.00	261.0	J-307
J-373	230.00	230.00	true	280.00	360.9	280.00	233.0	J-1260
J-374	60.00	60.35	true	100.00	411.5	100.00	340.4	J-307
J-375	230.00	230.01	true	280.00	367.0	280.00	235.2	J-1260
J-376	60.00	60.23	true	100.00	455.9	100.00	365.8	J-1260
J-377	230.00	230.01	true	280.00	381.4	280.00	235.9	J-1260
J-378	60.00	60.25	true	100.00	460.7	100.00	365.7	J-1260
J-379	60.00	60.38	true	100.00	508.8	100.00	364.5	J-1260
J-380	60.00	60.11	true	100.00	509.1	100.00	364.4	J-1260
J-381	230.00	230.00	true	280.00	401.4	280.00	236.9	J-1260
J-382	60.00	60.24	true	100.00	450.4	100.00	361.2	J-1260
J-383	60.00	60.24	true	100.00	279.6	100.00	357.9	J-1260
J-384	60.00	60.61	true	100.00	323.4	100.00	356.7	J-1260
J-386	60.00	60.38	true	100.00	581.3	100.00	333.5	J-1260
J-388	60.00	60.16	true	100.00	169.6	100.00	365.7	J-1260
J-389	230.00	230.21	true	280.00	340.5	280.00	235.0	J-1260
J-390	60.00	60.12	true	100.00	236.6	100.00	363.2	J-1100
J-391	230.00	230.00	true	280.00	404.3	280.00	237.4	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	true	100.00	207.5	100.00	207.4	J-1100
J-394	60.00	60.10	true	100.00	246.1	100.00	372.4	J-1100
J-395	60.00	60.49	true	100.00	419.9	100.00	381.6	J-1260
J-396	60.00	60.55	true	100.00	296.7	100.00	327.7	J-398
J-398	60.00	60.11	true	100.00	260.4	100.00	282.8	J-400
J-400	60.00	60.31	true	100.00	192.0	100.00	216.4	J-402
J-401	230.00	230.00	true	280.00	306.2	280.00	235.5	J-1260
J-402	60.00	60.09	true	83.80	140.0	100.00	379.8	J-400
J-403	230.00	230.00	true	280.00	300.9	280.00	235.5	J-1260
J-404	230.00	230.13	true	280.00	286.9	280.00	235.9	J-1260
J-406	230.00	230.00	true	280.00	363.0	280.00	233.1	J-1260
J-407	230.00	230.07	true	280.00	347.1	280.00	233.8	J-1260
J-408	230.00	230.00	true	280.00	343.8	280.00	236.5	J-1260
J-410	230.00	230.01	true	280.00	353.5	280.00	236.6	J-1260
J-411	230.00	230.00	true	280.00	287.8	280.00	235.9	J-1260
J-536	230.00	230.00	true	280.00	270.6	280.00	182.1	J-1260
J-538	230.00	230.00	true	280.00	220.6	280.00	184.3	J-1260
J-1000	230.00	230.00	true	280.00	682.1	280.00	333.8	J-1260
J-1005	230.00	230.00	true	280.00	299.3	280.00	183.7	J-1260
J-1010	60.00	61.93	true	100.00	158.2	100.00	381.4	J-1260
J-1015	60.00	63.69	true	100.00	291.1	100.00	381.2	J-1260
J-1020	230.00	230.87	true	280.00	249.8	280.00	225.0	J-1010
J-1025	230.00	230.00	true	280.00	255.1	280.00	226.7	J-1010
J-1030	60.00	60.34	true	100.00	638.4	100.00	381.2	J-1260
J-1035	230.00	230.00	true	244.72	140.1	280.00	140.0	J-1075
J-1040	230.00	235.18	true	272.32	159.0	280.00	140.0	J-1075
J-1045	230.00	234.54	true	280.00	194.5	280.00	278.3	J-1260
J-1050	230.00	230.00	true	280.00	495.8	280.00	278.3	J-1260
J-1055	230.00	236.39	true	280.00	253.6	280.00	285.3	J-1260
J-1060	230.00	230.00	true	280.00	492.2	280.00	285.3	J-1260
J-1065	230.00	230.00	true	271.39	149.3	280.00	140.0	J-1120
J-1070	60.00	60.00	true	100.00	604.5	100.00	383.9	J-1260
J-1075	230.00	233.22	false	192.19	140.0	280.00	328.4	J-1260
J-1080	60.00	60.00	true	100.00	469.9	100.00	382.3	J-1260
J-1090	60.00	60.00	true	100.00	421.4	100.00	381.6	J-1260
J-1100	60.00	61.03	true	89.54	140.0	100.00	302.3	J-392
J-1120	60.00	62.05	true	100.00	344.0	100.00	382.1	J-1260
J-1130	60.00	61.02	true	100.00	369.6	100.00	381.9	J-1260
J-1140	230.00	230.00	true	280.00	388.9	280.00	248.4	J-1260
J-1150	230.00	230.00	true	280.00	533.3	280.00	280.6	J-1260
J-1160	230.00	241.81	true	280.00	334.4	280.00	259.7	J-1260
J-1170	230.00	232.68	true	280.00	210.0	280.00	195.9	J-1260
J-1180	230.00	234.98	true	268.21	140.0	280.00	201.8	J-1260
J-1190	230.00	236.82	true	278.41	140.0	280.00	191.9	J-1260
J-1195	230.00	230.00	true	280.00	215.8	280.00	190.0	J-1260
J-1200	230.00	236.33	true	257.26	140.0	280.00	190.6	J-1260
J-1205	230.00	230.00	true	280.00	260.2	280.00	158.6	J-1260
J-1210	230.00	234.78	true	274.15	223.4	280.00	140.0	J-1260
J-1215	60.00	60.00	true	100.00	507.6	100.00	330.4	J-1260
J-1220	230.00	230.00	true	280.00	247.7	280.00	180.9	J-1260

Scenario: MDD + FF - Future (10 Yr)-Alt2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-1230	230.00	230.00	true	280.00	274.2	280.00	177.0	J-1260
J-1240	230.00	230.00	true	280.00	251.2	280.00	170.6	J-1260
J-1250	230.00	230.00	true	280.00	273.3	280.00	151.7	J-1260
J-1260	60.00	64.26	true	100.00	146.5	100.00	430.4	J-1180
Truck Fill	230.00	230.00	true	280.00	187.2	280.00	175.7	J-1260

Appendix H -
Year 2023 Development Condition for Alternative 2 Simulation Results

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-6	5,909,307.59	97,345.21	710.60	0.06	483.9	760.05
J-8	5,909,058.66	97,351.20	713.60	0.30	454.4	760.03
J-10	5,908,474.10	97,361.23	710.20	0.00	486.0	759.86
J-12	5,908,467.18	97,361.38	710.20	0.00	485.9	759.84
J-16	5,908,452.20	97,361.89	710.20	0.34	485.8	759.84
J-22	5,907,974.55	97,357.96	710.00	0.09	485.3	759.58
J-24	5,907,976.56	97,486.24	712.72	0.84	459.1	759.63
J-28	5,908,348.52	97,479.26	713.10	0.55	456.8	759.77
J-30	5,908,476.15	97,465.75	713.60	0.00	452.6	759.84
J-32	5,908,477.92	97,568.92	715.10	0.00	437.9	759.84
J-34	5,908,480.33	97,699.94	717.10	0.17	418.2	759.83
J-36	5,908,480.81	97,725.97	717.10	0.00	418.2	759.83
J-38	5,908,303.69	97,742.34	717.30	0.00	415.8	759.78
J-40	5,908,143.29	97,745.11	717.70	0.17	411.5	759.74
J-42	5,907,977.83	97,749.04	717.00	0.03	417.9	759.70
J-50	5,908,312.36	98,169.75	716.20	0.90	426.0	759.73
J-56	5,908,324.08	98,782.89	713.20	1.27	456.1	759.81
J-60	5,908,547.69	98,778.44	712.60	0.00	463.9	760.00
J-64	5,908,657.02	98,776.18	712.50	0.24	466.0	760.11
J-68	5,908,927.88	98,770.56	711.60	0.13	477.7	760.41
J-74	5,909,209.82	98,764.73	710.10	0.14	495.4	760.72
J-76	5,909,321.64	98,762.41	709.30	0.33	506.1	761.01
J-82	5,909,600.55	98,756.43	706.80	0.64	532.7	761.24
J-90	5,910,145.40	98,745.06	699.50	0.21	608.6	761.69
J-94	5,910,141.73	98,553.50	699.50	0.16	606.3	761.45
J-98	5,909,203.58	98,428.34	712.50	0.25	468.2	760.34
J-102	5,909,101.64	98,426.21	713.00	0.22	462.1	760.22
J-104	5,908,903.10	98,430.23	713.50	0.44	456.7	760.17
J-108	5,908,650.47	98,435.34	714.90	0.51	442.5	760.11
J-112	5,908,654.55	98,649.36	713.80	0.32	453.2	760.11
J-117	5,909,093.99	98,027.43	715.00	0.30	441.3	760.09
J-118	5,909,093.47	98,001.39	715.00	0.21	441.2	760.09
J-120	5,908,854.44	98,006.14	714.70	0.09	444.3	760.09
J-124	5,908,645.32	98,164.72	715.80	0.10	433.6	760.10
J-130	5,909,081.17	97,756.51	714.30	0.00	447.8	760.05
J-134	5,909,084.75	97,555.92	714.50	0.19	445.8	760.05
J-136	5,909,062.84	97,556.57	714.50	0.40	445.6	760.03
J-140	5,909,211.44	97,544.32	715.20	0.03	439.5	760.10
J-142	5,909,320.00	98,985.50	707.40	0.02	520.6	760.59
J-144	5,908,552.32	99,001.45	712.60	0.28	464.0	760.01
J-146	5,908,500.88	97,385.99	711.00	0.08	478.2	759.86
J-148	5,908,743.01	97,064.41	711.00	0.12	479.7	760.01
J-150	5,908,756.07	97,063.51	711.00	0.00	479.7	760.01
J-152	5,908,779.46	96,905.96	710.70	0.00	482.8	760.03
J-162	5,907,845.59	97,760.01	714.80	0.06	438.9	759.64
J-164	5,907,853.69	98,184.20	715.30	0.11	434.0	759.64
J-166	5,907,858.51	98,441.75	715.50	0.30	432.0	759.64
J-168	5,907,990.55	98,439.52	715.20	0.07	435.0	759.65
J-172	5,907,997.17	98,789.35	713.00	0.15	456.6	759.65
J-174	5,908,131.47	98,786.69	713.20	0.27	455.3	759.72
J-176	5,907,981.73	98,181.34	715.80	0.15	429.7	759.71
J-178	5,907,708.34	98,186.08	715.20	0.50	434.4	759.58

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-180	5,907,712.47	98,444.16	713.90	0.25	447.1	759.58
J-198	5,906,888.62	97,825.94	710.60	0.00	476.4	759.28
J-202	5,906,593.95	97,782.31	709.60	0.28	484.9	759.15
J-206	5,906,215.61	97,708.31	712.00	0.12	461.1	759.11
J-210	5,905,911.78	97,702.33	713.40	0.03	447.2	759.10
J-212	5,905,673.44	97,707.07	714.50	0.23	436.4	759.09
J-214	5,905,369.47	97,713.12	715.90	1.24	422.7	759.09
J-216	5,905,364.01	97,439.05	715.60	7.62	425.7	759.10
J-217	5,909,307.40	97,334.51	710.88	0.13	481.2	760.04
J-218	5,909,077.55	97,556.13	714.50	0.00	445.8	760.05
J-219	5,909,195.57	97,741.44	714.00	0.00	451.2	760.11
J-221	5,909,080.95	97,744.08	714.53	0.03	445.5	760.05
J-222	5,905,698.60	97,432.40	714.40	0.07	437.9	759.14
J-223	5,908,477.48	97,757.92	717.21	0.28	417.1	759.83
J-224	5,905,905.82	97,428.26	714.10	0.02	441.1	759.17
J-225	5,907,981.51	97,748.90	717.00	0.00	417.9	759.70
J-226	5,907,946.73	97,358.07	710.00	0.00	485.1	759.57
J-227	5,908,303.93	97,760.54	717.18	0.14	416.9	759.78
J-228	5,906,360.39	97,501.77	711.60	0.31	466.2	759.24
J-229	5,909,074.75	97,350.43	713.60	0.15	454.5	760.04
J-230	5,908,471.28	97,739.11	717.10	0.00	418.2	759.83
J-231	5,907,921.40	97,334.01	709.20	0.04	492.8	759.56
J-232	5,907,811.00	97,326.52	708.90	0.00	495.5	759.53
J-233	5,907,639.32	97,370.09	707.90	0.00	504.9	759.49
J-234	5,906,873.52	97,574.28	711.60	0.27	466.6	759.28
J-235	5,907,254.44	97,377.87	708.90	0.00	494.4	759.42
J-236	5,906,869.56	97,385.66	709.67	0.00	486.1	759.34
J-237	5,913,524.07	98,517.56	689.20	0.28	690.9	759.80
J-238	5,913,476.73	98,634.61	689.45	0.00	688.5	759.80
J-239	5,913,442.90	98,660.40	690.60	0.00	677.2	759.80
J-240	5,905,918.98	98,029.82	712.40	0.74	456.1	759.00
J-241	5,913,350.24	98,658.09	690.80	0.00	675.4	759.81
J-242	5,912,944.99	98,674.90	690.05	0.00	683.0	759.84
J-243	5,912,549.09	98,682.16	689.00	0.33	695.4	760.05
J-244	5,905,905.76	98,439.24	709.18	0.06	486.5	758.89
J-245	5,908,776.14	96,915.33	710.70	0.00	482.8	760.03
J-246	5,908,458.63	97,044.00	709.95	0.27	490.1	760.03
J-247	5,908,464.31	97,043.90	710.05	0.00	489.1	760.03
J-248	5,906,562.22	99,128.24	701.60	0.00	562.1	759.04
J-249	5,908,771.98	96,927.06	705.50	0.00	533.7	760.03
J-250	5,906,588.47	98,425.23	707.60	0.28	502.2	758.92
J-251	5,908,770.14	96,932.26	705.50	0.00	533.7	760.03
J-252	5,906,825.65	98,420.35	709.60	0.12	482.7	758.92
J-253	5,908,766.64	96,942.13	710.70	0.00	482.8	760.03
J-254	5,908,783.08	96,917.79	710.70	0.00	482.7	760.03
J-255	5,908,778.19	96,929.26	705.50	0.00	533.6	760.03
J-256	5,906,735.40	98,269.84	710.30	0.02	476.1	758.95
J-257	5,908,776.00	96,934.34	705.50	0.00	533.6	760.02
J-258	5,908,771.86	96,943.98	710.70	0.00	482.7	760.02
J-259	5,907,681.11	97,992.32	713.39	0.22	452.1	759.58
J-260	5,906,585.22	98,273.05	708.00	0.17	498.7	758.96
J-261	5,907,700.54	98,626.53	713.40	0.13	451.9	759.58

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-262	5,906,905.80	99,135.64	702.50	0.00	554.2	759.13
J-263	5,908,554.64	99,001.40	713.20	0.00	458.2	760.02
J-264	5,906,579.90	98,024.41	708.70	0.43	493.0	759.08
J-265	5,908,562.13	99,338.47	708.40	0.28	505.0	760.00
J-266	5,906,399.93	98,028.05	708.00	0.39	500.0	759.09
J-267	5,908,572.77	100,001.17	689.40	0.18	688.0	759.69
J-268	5,905,898.13	98,461.32	709.20	0.06	486.4	758.90
J-269	5,908,585.09	100,508.03	688.80	0.00	685.1	758.80
J-270	5,908,600.64	101,103.84	697.20	1.31	601.7	758.68
J-271	5,906,493.28	99,141.39	702.90	0.00	549.4	759.04
J-272	5,905,530.79	98,468.96	712.00	0.15	460.1	759.02
J-273	5,908,603.09	100,561.75	690.60	0.00	667.2	758.77
J-274	5,905,388.62	98,471.86	711.20	0.01	468.0	759.02
J-275	5,914,588.31	98,954.88	690.35	1.73	679.3	759.76
J-276	5,905,347.08	98,472.70	711.90	1.75	461.2	759.02
J-277	5,914,515.82	99,129.18	692.25	0.25	660.7	759.76
J-278	5,905,525.90	98,217.56	713.80	0.49	442.9	759.06
J-279	5,906,383.63	99,143.48	703.40	0.00	544.5	759.04
J-280	5,906,174.59	99,147.94	704.45	0.00	534.1	759.03
J-281	5,906,102.58	99,149.32	704.40	0.00	534.6	759.02
J-282	5,905,375.58	98,019.54	714.80	0.17	433.3	759.08
J-283	5,906,384.67	99,185.47	704.70	0.00	531.8	759.04
J-284	5,906,395.12	99,606.40	702.20	0.00	556.3	759.04
J-285	5,906,617.35	99,583.11	700.20	0.14	575.9	759.04
J-286	5,905,658.69	98,214.91	714.10	0.52	440.1	759.06
J-287	5,906,568.55	99,602.91	700.90	0.00	569.0	759.04
J-288	5,906,458.61	99,605.06	701.40	0.00	564.1	759.04
J-289	5,908,517.34	97,755.28	716.36	0.00	425.6	759.85
J-290	5,906,547.32	99,038.54	702.77	0.00	550.7	759.04
J-291	5,905,447.34	97,711.57	715.54	0.00	426.2	759.09
J-292	5,907,994.37	98,641.67	713.93	0.00	447.5	759.65
J-293	5,909,994.96	97,459.73	706.55	0.00	526.1	760.31
J-294	5,905,394.69	98,642.02	710.50	0.08	474.9	759.02
J-296	5,906,623.71	97,548.19	711.60	0.00	466.6	759.28
J-298	5,905,695.90	98,870.15	708.60	0.28	493.4	759.01
J-300	5,905,801.61	98,872.46	707.20	0.15	507.1	759.01
J-301	5,908,753.24	96,979.98	711.00	0.00	479.8	760.03
J-302	5,905,859.76	98,735.04	708.60	0.24	493.4	759.01
J-303	5,908,522.69	97,042.82	711.00	0.42	479.8	760.03
J-304	5,906,312.67	98,430.89	708.24	0.00	492.1	758.52
J-306	5,905,728.41	98,736.90	709.90	0.33	480.7	759.01
J-307	5,908,622.68	102,230.99	714.40	0.00	432.6	758.61
J-308	5,905,579.15	98,646.58	712.00	0.47	460.1	759.01
J-309	5,908,642.41	103,175.71	712.93	0.00	447.0	758.61
J-310	5,909,279.69	97,059.38	707.10	0.00	518.1	760.04
J-311	5,909,282.51	97,057.24	707.10	0.01	518.1	760.04
J-312	5,909,434.20	103,817.29	707.50	0.00	500.2	758.61
J-313	5,908,552.13	98,992.36	710.15	0.00	487.8	759.99
J-314	5,906,229.89	98,727.43	706.40	0.55	515.0	759.02
J-315	5,908,454.45	98,994.29	710.00	0.00	487.7	759.83
J-316	5,908,092.47	99,005.00	710.25	0.00	483.4	759.64
J-317	5,907,708.27	99,012.60	708.20	0.00	501.5	759.44

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-318	5,908,523.48	97,567.96	712.20	0.00	466.3	759.85
J-321	5,909,018.07	98,991.77	710.00	0.17	492.9	760.36
J-322	5,906,537.16	98,766.80	706.30	0.08	516.0	759.02
J-324	5,906,780.50	98,815.29	707.40	0.00	506.0	759.11
J-332	5,906,905.11	98,812.64	709.10	0.93	489.8	759.15
J-337	5,907,703.90	98,795.12	710.50	0.52	480.2	759.56
J-342	5,906,589.89	98,581.45	707.10	0.31	507.6	758.96
J-348	5,906,564.17	99,142.81	701.60	0.20	562.2	759.04
J-349	5,905,292.97	97,440.46	715.60	0.57	425.8	759.10
J-350	5,906,836.65	99,137.08	702.50	0.21	554.0	759.11
J-351	5,914,985.65	99,118.12	694.80	0.00	635.7	759.76
J-352	5,908,787.17	96,908.26	710.70	0.00	482.8	760.03
J-353	5,908,757.47	96,994.16	711.00	0.05	479.7	760.02
J-356	5,906,618.36	99,628.21	700.20	0.12	576.0	759.05
J-357	5,909,258.32	100,547.78	691.00	0.24	662.6	758.70
J-358	5,909,251.92	100,248.17	691.00	0.35	662.5	758.70
J-359	5,908,858.94	100,556.29	691.00	0.06	662.6	758.70
J-360	5,908,857.28	100,478.32	691.00	0.12	662.6	758.70
J-362	5,907,675.38	97,768.48	712.30	0.00	462.7	759.58
J-363	5,909,310.68	97,745.32	713.10	0.00	460.5	760.15
J-364	5,906,949.71	100,836.01	691.50	0.15	659.5	758.89
J-365	5,910,093.16	97,731.00	707.20	0.03	521.8	760.51
J-367	5,909,360.67	97,744.77	712.10	0.00	470.6	760.18
J-369	5,909,385.67	97,744.30	711.85	0.00	473.1	760.19
J-370	5,908,423.93	101,076.18	691.00	0.14	662.7	758.71
J-371	5,909,495.65	97,742.23	711.65	0.00	475.6	760.24
J-372	5,908,357.20	101,065.19	691.00	0.39	662.8	758.72
J-373	5,909,520.64	97,741.76	711.00	0.00	482.1	760.26
J-374	5,907,995.30	101,006.31	691.00	0.52	663.4	758.79
J-375	5,909,735.60	97,737.72	710.50	0.02	487.7	760.33
J-376	5,907,631.31	100,947.18	691.00	0.34	663.7	758.82
J-377	5,909,851.58	97,735.54	709.20	0.01	500.8	760.37
J-378	5,907,569.28	100,937.06	690.70	0.37	666.7	758.82
J-379	5,907,097.59	100,860.13	690.80	0.57	666.1	758.86
J-380	5,907,070.76	100,855.75	691.60	0.16	658.3	758.87
J-381	5,909,943.56	97,733.81	707.40	0.00	518.7	760.40
J-382	5,906,848.42	100,819.49	691.00	0.35	664.4	758.89
J-383	5,906,355.74	100,852.67	691.40	0.36	660.5	758.89
J-384	5,906,237.87	100,906.65	691.40	0.92	660.5	758.89
J-386	5,905,356.70	100,981.32	693.10	0.57	644.7	758.97
J-388	5,907,590.72	100,805.57	690.70	0.23	666.7	758.82
J-389	5,909,944.06	97,385.51	706.90	0.32	522.2	760.26
J-390	5,909,578.24	100,572.53	691.00	0.18	662.6	758.71
J-391	5,909,976.00	97,733.20	707.25	0.00	520.3	760.41
J-392	5,909,947.68	100,567.17	691.00	0.77	662.6	758.71
J-394	5,910,397.44	100,552.88	691.00	0.15	663.0	758.74
J-395	5,910,768.00	100,546.28	691.00	0.73	663.6	758.81
J-396	5,910,752.17	99,977.20	691.00	0.83	663.2	758.77
J-398	5,910,381.11	99,987.28	691.00	0.16	663.1	758.75
J-400	5,909,937.68	99,983.00	691.00	0.46	663.0	758.74
J-401	5,909,529.41	97,966.96	711.90	0.00	473.7	760.30
J-402	5,909,566.00	99,988.28	691.00	0.14	662.9	758.73

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-403	5,909,541.19	97,974.42	712.30	0.00	469.8	760.31
J-404	5,909,690.09	97,971.58	713.05	0.19	462.7	760.33
J-406	5,909,525.03	97,741.68	710.80	0.00	484.1	760.26
J-407	5,909,525.21	97,750.68	711.50	0.11	477.3	760.27
J-408	5,909,931.45	97,966.98	708.15	0.00	511.0	760.37
J-410	5,909,979.59	97,922.51	707.90	0.02	513.6	760.38
J-411	5,909,713.09	97,971.14	712.95	0.00	463.7	760.33
J-536	5,906,927.24	99,821.22	703.00	0.00	548.7	759.07
J-538	5,906,907.40	99,022.87	703.00	0.00	549.4	759.13
J-1000	5,910,911.09	98,929.24	690.00	0.00	730.6	764.65
J-1005	5,906,600.14	97,387.90	712.00	0.00	462.7	759.28
J-1010	5,914,583.44	98,184.90	695.00	2.90	631.7	759.54
J-1015	5,912,932.96	97,426.31	692.00	5.54	660.7	759.51
J-1020	5,912,941.83	98,537.17	690.00	1.30	683.4	759.83
J-1025	5,912,941.46	98,290.11	690.00	0.00	683.3	759.82
J-1030	5,912,940.85	98,009.27	690.00	0.51	683.1	759.80
J-1035	5,913,667.48	99,150.54	695.00	0.00	633.8	759.76
J-1040	5,912,948.05	99,168.66	690.00	7.77	683.2	759.81
J-1045	5,912,186.69	98,349.44	692.00	6.81	666.5	760.10
J-1050	5,911,741.94	98,684.68	690.00	0.00	687.5	760.25
J-1055	5,912,164.06	99,124.69	692.00	9.59	666.1	760.06
J-1060	5,911,747.22	98,916.14	692.00	0.00	669.3	760.39
J-1065	5,911,767.78	99,927.34	691.00	0.00	672.4	759.71
J-1070	5,911,780.04	100,530.45	691.00	0.00	671.6	759.62
J-1075	5,913,570.82	99,897.36	695.00	4.82	633.4	759.72
J-1080	5,911,375.53	100,537.05	692.00	0.00	657.5	759.18
J-1090	5,910,765.45	100,552.84	691.00	0.00	663.7	758.81
J-1100	5,909,953.69	100,938.26	691.00	1.54	662.6	758.70
J-1120	5,911,380.05	100,969.12	695.00	3.07	624.4	758.80
J-1130	5,910,767.70	100,975.54	691.00	1.53	663.3	758.78
J-1140	5,910,093.50	98,010.88	710.00	0.00	496.5	760.73
J-1150	5,910,146.50	98,943.62	699.00	0.00	619.5	762.30
J-1160	5,910,888.42	98,011.18	700.00	17.71	590.3	760.31
J-1170	5,907,921.21	96,958.49	712.50	4.02	459.5	759.45
J-1180	5,906,388.02	97,030.59	718.00	7.47	403.2	759.20
J-1190	5,907,464.10	99,160.84	712.00	10.23	461.2	759.13
J-1195	5,907,311.37	99,134.08	712.00	0.00	461.4	759.15
J-1200	5,905,818.21	99,517.76	710.00	9.50	479.3	758.97
J-1205	5,905,816.29	99,157.77	710.00	0.00	479.6	759.01
J-1210	5,905,298.16	99,161.16	716.00	7.17	420.9	759.01
J-1215	5,905,328.15	100,093.75	705.00	0.00	528.3	758.98
J-1220	5,906,625.92	99,855.91	703.00	0.00	548.6	759.05
J-1230	5,905,900.56	97,381.30	714.10	0.00	441.1	759.18
J-1240	5,905,358.81	97,375.84	715.60	0.00	425.9	759.12
J-1250	5,905,273.56	98,474.03	711.90	0.00	461.2	759.03
J-1260	5,904,155.48	99,994.25	724.50	6.39	336.4	758.87
J-2000	5,914,517.43	96,665.86	695.00	5.33	630.5	759.42
J-2010	5,913,665.97	98,931.19	695.00	6.64	633.8	759.77
J-2020	5,912,957.43	99,890.71	695.00	9.53	633.3	759.71
J-2030	5,912,182.15	99,903.91	695.00	9.71	633.2	759.69
J-2040	5,911,376.83	101,782.46	695.00	6.14	622.1	758.57
J-2050	5,911,367.75	100,127.16	692.00	2.20	659.4	759.37

Scenario: Peak Hour - Future (20 Yr)-Alt 2
Steady State Analysis
Junction Report

Label	Northing (m)	Easting (m)	Elevation (m)	Demand (l/s)	Pressure (kPa)	Calculated Hydraulic Grade (m)
J-2060	5,908,894.71	101,067.17	697.00	4.60	603.4	758.66
J-2065	5,908,918.21	101,831.57	706.00	6.15	514.5	758.57
J-2070	5,906,626.36	100,037.75	703.00	2.79	548.6	759.05
J-2090	5,910,404.68	100,988.62	691.00	1.54	662.9	758.74
Truck Fill	5,906,307.36	98,431.00	708.24	50.00	491.6	758.47

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1	J-130	J-118	247.50	300.0	120.0	-11.21	0.16	0.03	0.13	760.05	760.09
P-32	J-303	J-247	58.50	297.0	130.0	0.27	0.00	0.00	0.00	760.03	760.03
P-38	J-247	J-246	5.50	297.0	130.0	0.27	0.00	0.00	0.00	760.03	760.03
P-40	J-10	J-12	1.20	148.0	130.0	8.90	0.52	0.01	12.09	759.86	759.84
P-42	J-12	J-16	3.50	202.0	130.0	8.90	0.28	0.00	0.89	759.84	759.84
P-45	J-10	J-8	584.50	304.0	130.0	-19.56	0.27	0.17	0.30	759.86	760.03
P-48	J-245	J-152	10.00	297.0	130.0	-0.69	0.01	0.00	0.00	760.03	760.03
P-50	J-362	J-259	224.00	297.0	130.0	-0.99	0.01	0.00	0.00	759.58	759.58
P-52	J-16	J-22	506.20	199.0	130.0	8.56	0.28	0.26	0.51	759.84	759.58
P-54	J-249	J-245	12.50	297.0	130.0	-0.69	0.01	0.00	0.00	760.03	760.03
P-58	J-24	J-28	372.00	199.0	130.0	-7.29	0.23	0.14	0.38	759.63	759.77
P-60	J-337	J-261	168.50	250.0	130.0	-4.91	0.10	0.01	0.06	759.56	759.58
P-62	J-28	J-30	139.00	199.0	130.0	-7.83	0.25	0.07	0.49	759.77	759.84
P-64	J-30	J-10	104.50	304.0	130.0	-12.57	0.17	0.02	0.15	759.84	759.86
P-66	J-30	J-32	103.00	304.0	130.0	4.73	0.07	0.00	0.02	759.84	759.84
P-68	J-32	J-34	131.00	304.0	130.0	8.90	0.12	0.01	0.07	759.84	759.83
P-70	J-34	J-36	26.00	304.0	130.0	8.72	0.12	0.00	0.07	759.83	759.83
P-74	J-38	J-40	160.50	304.0	130.0	17.80	0.25	0.04	0.25	759.78	759.74
P-80	J-251	J-249	5.50	297.0	130.0	-0.69	0.01	0.00	0.00	760.03	760.03
P-84	J-301	J-253	40.00	297.0	130.0	-0.69	0.01	0.00	0.00	760.03	760.03
P-86	J-253	J-251	10.50	297.0	130.0	-0.69	0.01	0.00	0.00	760.03	760.03
P-88	J-50	J-56	613.50	199.0	130.0	-4.13	0.13	0.08	0.13	759.73	759.81
P-90	J-352	J-254	10.50	202.0	130.0	3.15	0.10	0.00	0.13	760.03	760.03
P-92	J-254	J-255	12.50	202.0	130.0	3.15	0.10	0.00	0.08	760.03	760.03
P-94	J-255	J-257	5.50	202.0	130.0	3.15	0.10	0.00	0.09	760.03	760.02
P-96	J-257	J-258	10.50	202.0	130.0	3.15	0.10	0.00	0.09	760.02	760.02
P-98	J-258	J-353	52.50	202.0	130.0	3.15	0.10	0.00	0.07	760.02	760.02
P-100	J-350	J-262	69.00	202.0	130.0	-6.06	0.19	0.02	0.24	759.11	759.13
P-102	J-68	J-64	271.00	254.0	130.0	24.32	0.48	0.30	1.10	760.41	760.11
P-104	J-74	J-68	282.00	254.0	130.0	24.45	0.48	0.31	1.10	760.72	760.41
P-106	J-321	J-263	463.50	304.0	130.0	31.32	0.43	0.34	0.74	760.36	760.02
P-108	J-263	J-144	2.50	304.0	130.0	22.85	0.31	0.01	2.05	760.02	760.01
P-112	J-74	J-76	112.00	254.0	130.0	-37.59	0.74	0.29	2.63	760.72	761.01
P-114	J-76	J-82	279.00	406.0	130.0	-69.42	0.54	0.22	0.79	761.01	761.24
P-116	J-82	J-90	545.00	406.0	130.0	-70.06	0.54	0.45	0.83	761.24	761.69

Scenario: Peak Hc Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-118	J-263	J-265	337.00	300.0	130.0	8.47	0.12	0.02	0.07	760.02	760.00
P-120	J-265	J-267	665.50	200.0	130.0	8.20	0.26	0.30	0.45	760.00	759.69
P-122	J-267	J-269	507.00	150.0	130.0	8.02	0.45	0.89	1.76	759.69	758.80
P-124	J-269	J-273	60.50	200.0	130.0	8.02	0.26	0.03	0.47	758.80	758.77
P-126	J-273	J-270	565.00	200.0	130.0	4.78	0.15	0.10	0.17	758.77	758.68
P-128	J-273	J-359	256.00	155.0	130.0	3.23	0.17	0.07	0.29	758.77	758.70
P-130	J-90	J-94	191.50	450.0	120.0	109.86	0.69	0.24	1.23	761.69	761.45
P-132	J-98	J-74	336.50	199.0	130.0	-13.00	0.42	0.38	1.13	760.34	760.72
P-134	J-270	J-370	182.00	148.0	130.0	-2.23	0.13	0.03	0.18	758.68	758.71
P-136	J-102	J-98	106.00	199.0	130.0	-12.75	0.41	0.12	1.14	760.22	760.34
P-140	J-102	J-104	198.50	199.0	130.0	5.87	0.19	0.05	0.25	760.22	760.17
P-142	J-108	J-104	252.50	199.0	130.0	-5.43	0.17	0.06	0.23	760.11	760.17
P-146	J-108	J-112	214.00	300.0	120.0	-0.33	0.00	0.00	0.00	760.11	760.11
P-148	J-275	J-351	429.50	297.0	130.0	0.00	0.00	0.00	0.00	759.76	759.76
P-150	J-112	J-64	127.00	300.0	120.0	-0.64	0.01	0.00	0.00	760.11	760.11
P-152	J-275	J-277	189.00	297.0	130.0	-1.96	0.03	0.00	0.01	759.76	759.76
P-154	J-117	J-102	399.00	199.0	130.0	-6.66	0.21	0.13	0.33	760.09	760.22
P-156	J-332	J-324	124.50	254.0	130.0	12.71	0.25	0.04	0.34	759.15	759.11
P-158	J-118	J-120	239.00	300.0	120.0	-5.06	0.07	0.01	0.03	760.09	760.09
P-160	J-124	J-120	349.00	300.0	120.0	5.15	0.07	0.01	0.03	760.10	760.09
P-164	J-124	J-108	270.50	300.0	120.0	-5.25	0.07	0.01	0.03	760.10	760.11
P-168	J-118	J-117	26.00	300.0	120.0	-6.36	0.09	0.00	0.05	760.09	760.09
P-180	J-8	J-136	205.50	204.0	130.0	-0.85	0.03	0.00	0.01	760.03	760.03
P-184	J-134	J-140	128.50	148.0	130.0	-3.37	0.20	0.05	0.40	760.05	760.10
P-186	J-76	J-142	225.50	254.0	130.0	31.51	0.62	0.42	1.88	761.01	760.59
P-194	J-148	J-146	535.50	150.0	130.0	2.98	0.17	0.15	0.28	760.01	759.86
P-195	J-301	J-303	264.00	304.0	130.0	0.69	0.01	0.00	0.00	760.03	760.03
P-196	J-148	J-150	13.00	150.0	130.0	-3.10	0.18	0.00	0.31	760.01	760.01
P-208	J-42	J-162	132.50	304.0	130.0	21.64	0.30	0.05	0.39	759.70	759.64
P-212	J-162	J-164	424.50	254.0	130.0	0.71	0.01	0.00	0.00	759.64	759.64
P-214	J-164	J-166	257.50	254.0	130.0	0.88	0.02	0.00	0.00	759.64	759.64
P-216	J-166	J-168	132.00	254.0	130.0	-2.93	0.06	0.00	0.02	759.64	759.65
P-222	J-172	J-174	134.50	254.0	130.0	-15.30	0.30	0.06	0.47	759.65	759.72
P-224	J-174	J-56	192.50	254.0	130.0	-15.58	0.31	0.09	0.47	759.72	759.81
P-226	J-164	J-176	128.00	148.0	130.0	-3.78	0.22	0.06	0.49	759.64	759.71

Scenario: Peak H · Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-228	J-164	J-178	145.50	148.0	130.0	3.50	0.20	0.06	0.42	759.64	759.58
P-230	J-166	J-180	146.00	148.0	130.0	3.51	0.20	0.06	0.42	759.64	759.58
P-238	J-198	J-202	298.50	304.0	130.0	22.79	0.31	0.13	0.42	759.28	759.15
P-260	J-202	J-206	385.50	304.0	130.0	10.85	0.15	0.04	0.10	759.15	759.11
P-262	J-206	J-210	304.50	304.0	130.0	6.15	0.08	0.01	0.04	759.11	759.10
P-266	J-210	J-212	238.50	304.0	130.0	5.23	0.07	0.01	0.03	759.10	759.09
P-270	J-214	J-216	274.00	304.0	130.0	-6.03	0.08	0.01	0.04	759.09	759.10
P-273	J-310	J-217	285.00	450.0	100.0	-11.31	0.07	0.01	0.03	760.04	760.04
P-274	J-216	J-222	334.50	254.0	130.0	-7.55	0.15	0.04	0.13	759.10	759.14
P-275	J-217	J-6	10.50	450.0	100.0	-16.55	0.10	0.00	0.14	760.04	760.05
P-276	J-134	J-218	7.00	148.0	130.0	3.18	0.19	0.00	0.65	760.05	760.05
P-277	J-218	J-136	14.50	148.0	130.0	4.43	0.26	0.01	0.90	760.05	760.03
P-278	J-222	J-224	207.50	254.0	130.0	-7.62	0.15	0.03	0.13	759.14	759.17
P-280	J-228	J-224	462.00	254.0	130.0	8.19	0.16	0.07	0.14	759.24	759.17
P-283	J-363	J-219	118.00	455.7	130.0	65.57	0.40	0.05	0.41	760.15	760.11
P-285	J-218	J-221	188.00	455.7	130.0	-12.36	0.08	0.00	0.02	760.05	760.05
P-286	J-221	J-219	114.50	455.7	130.0	-62.16	0.38	0.05	0.47	760.05	760.11
P-288	J-40	J-225	162.00	304.0	130.0	17.64	0.24	0.04	0.26	759.74	759.70
P-289	J-225	J-42	3.50	304.0	130.0	21.68	0.30	0.00	0.81	759.70	759.70
P-290	J-224	J-210	274.00	254.0	130.0	10.92	0.22	0.07	0.26	759.17	759.10
P-293	J-225	J-24	262.50	455.7	130.0	46.75	0.29	0.07	0.26	759.70	759.63
P-294	J-210	J-240	327.50	254.0	130.0	11.80	0.23	0.10	0.29	759.10	759.00
P-297	J-36	J-230	22.50	304.0	130.0	8.72	0.12	0.00	0.09	759.83	759.83
P-298	J-240	J-244	431.00	254.0	130.0	11.06	0.22	0.11	0.26	759.00	758.89
P-299	J-230	J-38	167.50	304.0	130.0	17.80	0.25	0.04	0.27	759.83	759.78
P-300	J-223	J-230	25.00	297.0	130.0	9.08	0.13	0.00	0.20	759.83	759.83
P-301	J-24	J-22	128.50	455.7	130.0	53.20	0.33	0.05	0.38	759.63	759.58
P-303	J-22	J-226	28.00	455.7	130.0	61.67	0.38	0.01	0.43	759.58	759.57
P-305	J-227	J-50	409.50	204.0	130.0	4.31	0.13	0.05	0.13	759.78	759.73
P-306	J-223	J-227	173.50	455.7	130.0	51.62	0.32	0.05	0.30	759.83	759.78
P-307	J-227	J-225	336.50	455.7	130.0	47.17	0.29	0.08	0.24	759.78	759.70
P-308	J-250	J-252	237.00	254.0	130.0	-3.42	0.07	0.01	0.03	758.92	758.92
P-309	J-217	J-229	243.00	455.7	130.0	5.12	0.03	0.00	0.00	760.04	760.04
P-310	J-6	J-229	233.00	297.0	130.0	2.93	0.04	0.00	0.01	760.05	760.04
P-311	J-229	J-8	16.00	297.0	130.0	19.01	0.27	0.01	0.68	760.04	760.03

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-312	J-252	J-256	219.00	199.0	130.0	-3.54	0.11	0.02	0.10	758.92	758.95
P-313	J-229	J-218	205.50	455.7	130.0	-11.12	0.07	0.00	0.02	760.04	760.05
P-314	J-260	J-256	150.00	199.0	130.0	3.56	0.11	0.02	0.10	758.96	758.95
P-315	J-226	J-231	35.00	455.7	130.0	61.67	0.38	0.01	0.38	759.57	759.56
P-316	J-231	J-232	143.50	455.7	130.0	44.72	0.27	0.03	0.21	759.56	759.53
P-317	J-232	J-233	178.50	455.7	130.0	44.72	0.27	0.03	0.19	759.53	759.49
P-318	J-260	J-250	152.00	254.0	130.0	11.69	0.23	0.04	0.29	758.96	758.92
P-319	J-233	J-235	385.00	455.7	130.0	44.72	0.27	0.08	0.20	759.49	759.42
P-320	J-264	J-260	248.50	254.0	130.0	15.42	0.30	0.12	0.47	759.08	758.96
P-321	J-235	J-236	385.00	455.7	130.0	44.72	0.27	0.08	0.20	759.42	759.34
P-322	J-311	J-1025	3,915.00	297.0	130.0	7.45	0.11	0.22	0.06	760.04	759.82
P-322a	J-1025	J-237	625.50	297.0	130.0	5.84	0.08	0.02	0.04	759.82	759.80
P-323	J-237	J-275	1,150.50	297.0	130.0	5.63	0.08	0.04	0.03	759.80	759.76
P-324	J-264	J-202	243.50	254.0	130.0	-11.66	0.23	0.07	0.29	759.08	759.15
P-325	J-237	J-238	126.50	297.0	130.0	-0.07	0.00	0.00	0.00	759.80	759.80
P-326	J-264	J-266	180.00	254.0	130.0	-4.18	0.08	0.01	0.04	759.08	759.09
P-327	J-238	J-239	43.00	297.0	130.0	-9.07	0.13	0.00	0.08	759.80	759.80
P-328	J-266	J-206	485.00	254.0	130.0	-4.57	0.09	0.02	0.05	759.09	759.11
P-329	J-239	J-241	92.50	297.0	130.0	-9.07	0.13	0.01	0.08	759.80	759.81
P-330	J-244	J-268	30.00	254.0	130.0	-12.19	0.24	0.01	0.41	758.89	758.90
P-331	J-241	J-242	409.50	297.0	130.0	-9.07	0.13	0.03	0.08	759.81	759.84
P-332	J-268	J-272	367.50	254.0	130.0	-12.24	0.24	0.11	0.31	758.90	759.02
P-333	J-242	J-243	396.00	297.0	130.0	-25.14	0.36	0.21	0.53	759.84	760.05
P-335	J-248	J-348	14.50	199.0	130.0	-5.91	0.19	0.00	0.34	759.04	759.04
P-336	J-272	J-274	142.00	254.0	130.0	-4.48	0.09	0.01	0.05	759.02	759.02
P-337	J-248	J-271	76.00	297.0	130.0	3.70	0.05	0.00	0.02	759.04	759.04
P-338	J-274	J-276	41.50	300.0	120.0	-6.25	0.09	0.00	0.04	759.02	759.02
P-339	J-271	J-279	109.50	297.0	130.0	3.70	0.05	0.00	0.01	759.04	759.04
P-340	J-272	J-278	251.50	254.0	130.0	-8.63	0.17	0.04	0.17	759.02	759.06
P-341	J-279	J-280	209.00	297.0	130.0	6.88	0.10	0.01	0.05	759.04	759.03
P-342	J-278	J-282	329.50	254.0	130.0	-4.77	0.09	0.02	0.05	759.06	759.08
P-343	J-280	J-281	72.00	297.0	130.0	6.88	0.10	0.00	0.05	759.03	759.02
P-344	J-279	J-283	42.00	297.0	130.0	-3.17	0.05	0.00	0.01	759.04	759.04
P-345	J-283	J-284	421.00	297.0	130.0	-3.17	0.05	0.00	0.01	759.04	759.04
P-346	J-214	J-282	306.50	254.0	130.0	4.94	0.10	0.02	0.06	759.09	759.08

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-347	J-348	J-285	445.00	199.0	130.0	-0.26	0.01	0.00	0.00	759.04	759.04
P-348	J-285	J-356	45.00	199.0	130.0	-3.58	0.11	0.00	0.11	759.04	759.05
P-349	J-285	J-287	64.00	297.0	130.0	3.17	0.05	0.00	0.02	759.04	759.04
P-350	J-278	J-286	133.00	254.0	130.0	-4.34	0.09	0.01	0.05	759.06	759.06
P-351	J-287	J-288	110.00	297.0	130.0	3.17	0.05	0.00	0.01	759.04	759.04
P-352	J-212	J-286	517.50	254.0	130.0	4.86	0.10	0.03	0.06	759.09	759.06
P-353	J-288	J-284	63.50	297.0	130.0	3.17	0.05	0.00	0.01	759.04	759.04
P-354	J-221	J-130	12.50	297.0	130.0	-11.21	0.16	0.00	0.20	760.05	760.05
P-355	J-221	J-289	563.50	455.7	130.0	60.98	0.37	0.20	0.36	760.05	759.85
P-356	J-289	J-223	40.00	455.7	130.0	60.98	0.37	0.02	0.40	759.85	759.83
P-357	J-322	J-290	274.00	199.0	130.0	-2.21	0.07	0.01	0.04	759.02	759.04
P-358	J-274	J-294	170.50	300.0	120.0	1.76	0.02	0.00	0.00	759.02	759.02
P-359	J-290	J-248	91.00	199.0	130.0	-2.21	0.07	0.00	0.04	759.04	759.04
P-360	J-212	J-291	226.00	304.0	130.0	0.15	0.00	0.00	0.00	759.09	759.09
P-361	J-291	J-214	78.00	304.0	130.0	0.15	0.00	0.00	0.00	759.09	759.09
P-362	J-294	J-298	389.00	199.0	130.0	1.68	0.05	0.01	0.02	759.02	759.01
P-363	J-168	J-292	202.00	254.0	130.0	-3.00	0.06	0.00	0.02	759.65	759.65
P-364	J-292	J-172	147.50	254.0	130.0	-3.00	0.06	0.00	0.02	759.65	759.65
P-365	J-389	J-293	126.50	297.0	130.0	-19.86	0.29	0.05	0.38	760.26	760.31
P-366	J-298	J-300	106.00	199.0	130.0	1.40	0.05	0.00	0.02	759.01	759.01
P-367	J-293	J-391	276.50	297.0	130.0	-19.86	0.29	0.10	0.36	760.31	760.41
P-368	J-300	J-302	187.00	199.0	130.0	-1.67	0.05	0.00	0.03	759.01	759.01
P-369	J-410	J-408	67.00	297.0	130.0	12.99	0.19	0.01	0.16	760.38	760.37
P-371	J-234	J-296	251.00	254.0	130.0	-1.21	0.02	0.00	0.00	759.28	759.28
P-372	J-306	J-302	131.50	254.0	130.0	-0.08	0.00	0.00	0.00	759.01	759.01
P-373	J-296	J-228	267.50	254.0	130.0	8.50	0.17	0.04	0.15	759.28	759.24
P-374	J-306	J-308	179.00	254.0	130.0	-0.25	0.00	0.00	0.00	759.01	759.01
P-376	J-308	J-272	191.00	254.0	130.0	-0.72	0.01	0.00	0.00	759.01	759.02
P-378	J-302	J-314	370.00	254.0	130.0	-1.99	0.04	0.00	0.01	759.01	759.02
P-381	J-250	J-304	276.00	254.0	130.0	26.81	0.53	0.39	1.43	758.92	758.52
P-382	J-304	Truck Fill	5.50	254.0	130.0	26.81	0.53	0.05	9.57	758.52	758.47
P-383	Truck Fill	J-244	401.50	254.0	130.0	-23.19	0.46	0.42	1.05	758.47	758.89
P-384	J-270	J-307	1,127.50	200.0	130.0	2.83	0.09	0.07	0.06	758.68	758.61
P-385	J-307	J-309	945.00	200.0	130.0	0.00	0.00	0.00	0.00	758.61	758.61
P-386	J-314	J-322	313.50	254.0	130.0	-2.54	0.05	0.01	0.02	759.02	759.02

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-387	J-309	J-312	1,019.00	200.0	130.0	0.00	0.00	0.00	0.00	758.61	758.61
P-388	J-60	J-313	214.00	289.0	130.0	2.46	0.04	0.00	0.01	760.00	759.99
P-389	J-313	J-144	9.00	289.0	130.0	-22.57	0.34	0.02	2.20	759.99	760.01
P-390	J-313	J-315	97.50	233.3	130.0	25.03	0.59	0.16	1.68	759.99	759.83
P-391	J-315	J-316	363.50	297.0	130.0	25.03	0.36	0.19	0.52	759.83	759.64
P-392	J-322	J-324	250.50	254.0	130.0	-12.71	0.25	0.08	0.33	759.02	759.11
P-393	J-316	J-317	384.50	297.0	130.0	25.03	0.36	0.20	0.52	759.64	759.44
P-394	J-32	J-318	45.50	200.0	120.0	-4.16	0.13	0.01	0.15	759.84	759.85
P-395	J-318	J-136	539.50	148.0	130.0	-3.18	0.18	0.19	0.35	759.85	760.03
P-396	J-146	J-318	190.50	150.0	100.0	0.98	0.06	0.01	0.06	759.86	759.85
P-402	J-332	J-337	799.00	254.0	130.0	-16.55	0.33	0.42	0.52	759.15	759.56
P-410	J-172	J-337	293.50	254.0	130.0	12.15	0.24	0.09	0.30	759.65	759.56
P-412	J-322	J-342	193.50	254.0	130.0	12.30	0.24	0.06	0.32	759.02	758.96
P-414	J-342	J-250	156.50	254.0	130.0	11.99	0.24	0.05	0.30	758.96	758.92
P-444	J-370	J-372	67.50	148.0	130.0	-2.09	0.12	0.01	0.16	758.71	758.72
P-446	J-372	J-374	366.50	148.0	130.0	-2.20	0.13	0.06	0.17	758.72	758.79
P-448	J-374	J-376	369.00	199.0	130.0	-3.28	0.11	0.03	0.09	758.79	758.82
P-450	J-376	J-378	63.00	199.0	130.0	-2.66	0.09	0.00	0.06	758.82	758.82
P-452	J-378	J-379	478.00	199.0	130.0	-3.26	0.10	0.04	0.08	758.82	758.86
P-453	J-379	J-380	27.00	199.0	130.0	-3.83	0.12	0.00	0.13	758.86	758.87
P-454	J-380	J-364	122.50	199.0	130.0	-4.96	0.16	0.02	0.19	758.87	758.89
P-456	J-364	J-382	102.50	148.0	130.0	0.06	0.00	0.00	0.00	758.89	758.89
P-457	J-382	J-383	516.50	148.0	130.0	-0.11	0.01	0.00	0.00	758.89	758.89
P-458	J-383	J-384	130.50	148.0	130.0	-0.46	0.03	0.00	0.01	758.89	758.89
P-460	J-384	J-386	893.50	148.0	130.0	-1.57	0.09	0.08	0.09	758.89	758.97
P-462	J-370	J-374	693.00	75.0	130.0	-0.29	0.06	0.07	0.11	758.71	758.79
P-464	J-374	J-372	636.50	75.0	130.0	0.27	0.06	0.06	0.10	758.79	758.72
P-466	J-378	J-388	133.00	148.0	130.0	0.23	0.01	0.00	0.00	758.82	758.82
P-468	J-380	J-376	1,258.50	148.0	130.0	0.97	0.06	0.05	0.04	758.87	758.82
P-470	J-382	J-384	1,373.00	148.0	130.0	-0.19	0.01	0.00	0.00	758.89	758.89
P-474	J-390	J-392	369.50	148.0	130.0	-0.32	0.02	0.00	0.00	758.71	758.71
P-476	J-392	J-394	450.00	148.0	130.0	-1.43	0.08	0.04	0.08	758.71	758.74
P-478	J-394	J-395	370.50	148.0	130.0	-2.27	0.13	0.07	0.18	758.74	758.81
P-479	J-395	J-396	569.50	200.0	120.0	2.86	0.09	0.04	0.08	758.81	758.77
P-480	J-394	J-398	566.00	108.0	130.0	-0.26	0.03	0.01	0.02	758.74	758.75

Scenario: Peak H(· Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-482	J-392	J-400	584.50	108.0	130.0	-0.52	0.06	0.03	0.06	758.71	758.74
P-484	J-390	J-402	584.50	108.0	130.0	-0.49	0.05	0.03	0.05	758.71	758.73
P-490	J-216	J-349	71.00	304.0	130.0	-6.09	0.08	0.00	0.04	759.10	759.10
P-494	J-350	J-348	272.50	202.0	130.0	5.85	0.18	0.07	0.24	759.11	759.04
P-496	J-310	J-311	4.00	304.0	130.0	11.31	0.16	0.00	0.41	760.04	760.04
P-502	J-402	J-400	371.50	155.0	130.0	-0.63	0.03	0.01	0.01	758.73	758.74
P-504	J-398	J-396	390.50	200.0	120.0	-2.03	0.06	0.02	0.04	758.75	758.77
P-506	J-311	J-352	517.00	305.0	130.0	3.84	0.05	0.01	0.01	760.04	760.03
P-508	J-352	J-152	8.00	305.0	130.0	0.69	0.01	0.00	0.00	760.03	760.03
P-509	J-142	J-321	302.00	304.0	130.0	31.49	0.43	0.23	0.75	760.59	760.36
P-514	J-353	J-150	72.00	200.0	140.0	3.10	0.10	0.01	0.08	760.02	760.01
P-526	J-359	J-357	399.50	148.0	130.0	-0.18	0.01	0.00	0.00	758.70	758.70
P-528	J-538	J-262	113.00	202.0	130.0	2.91	0.09	0.01	0.06	759.13	759.13
P-529	J-262	J-536	686.00	202.0	130.0	3.44	0.11	0.06	0.09	759.13	759.07
P-530	J-357	J-390	321.00	148.0	130.0	-0.63	0.04	0.01	0.02	758.70	758.71
P-532	J-357	J-358	299.50	108.0	130.0	0.20	0.02	0.00	0.01	758.70	758.70
P-534	J-358	J-360	457.00	108.0	130.0	-0.14	0.02	0.00	0.00	758.70	758.70
P-536	J-360	J-359	78.00	108.0	130.0	-0.27	0.03	0.00	0.01	758.70	758.70
P-542	J-162	J-362	170.50	304.0	130.0	20.87	0.29	0.06	0.37	759.64	759.58
P-544	J-362	J-198	808.50	304.0	130.0	21.86	0.30	0.31	0.38	759.58	759.28
P-548	J-363	J-367	50.00	440.3	130.0	-65.57	0.43	0.03	0.53	760.15	760.18
P-550	J-367	J-369	25.00	440.3	130.0	-65.57	0.43	0.01	0.46	760.18	760.19
P-552	J-369	J-371	110.00	440.3	130.0	-65.57	0.43	0.05	0.45	760.19	760.24
P-554	J-371	J-373	25.00	440.3	130.0	-65.57	0.43	0.02	0.74	760.24	760.26
P-558	J-375	J-377	116.00	440.3	130.0	-52.90	0.35	0.04	0.31	760.33	760.37
P-560	J-377	J-381	92.00	440.3	130.0	-52.91	0.35	0.03	0.33	760.37	760.40
P-566	J-6	J-389	643.50	297.0	130.0	-19.54	0.28	0.22	0.34	760.05	760.26
P-570	J-381	J-391	32.50	440.3	130.0	-52.91	0.35	0.01	0.40	760.40	760.41
P-572	J-391	J-365	117.00	440.3	130.0	-85.78	0.56	0.10	0.87	760.41	760.51
P-576	J-332	J-538	211.00	202.0	130.0	2.91	0.09	0.01	0.07	759.15	759.13
P-578	J-373	J-406	4.50	440.3	130.0	-65.57	0.43	0.01	1.19	760.26	760.26
P-580	J-406	J-375	210.50	440.3	130.0	-52.88	0.35	0.07	0.31	760.26	760.33
P-584	J-404	J-403	149.00	297.0	130.0	12.79	0.18	0.02	0.16	760.33	760.31
P-588	J-403	J-401	14.00	297.0	130.0	12.79	0.18	0.00	0.18	760.31	760.30
P-592	J-401	J-407	216.50	297.0	130.0	12.79	0.18	0.04	0.16	760.30	760.27

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-594	J-64	J-60	109.50	254.0	130.0	23.44	0.46	0.12	1.05	760.11	760.00
P-595	J-60	J-56	223.50	254.0	130.0	20.98	0.41	0.19	0.84	760.00	759.81
P-596	J-407	J-406	9.00	297.0	130.0	12.69	0.18	0.00	0.40	760.27	760.26
P-598	J-364	J-536	1,015.00	204.0	130.0	-5.17	0.16	0.18	0.18	758.89	759.07
P-600	J-411	J-408	218.50	297.0	130.0	-12.99	0.19	0.03	0.16	760.33	760.37
P-606	J-410	J-391	189.50	297.0	130.0	-13.01	0.19	0.03	0.17	760.38	760.41
P-608	J-411	J-404	23.00	297.0	130.0	12.99	0.19	0.00	0.16	760.33	760.33
P-1000	J-275	J-1010	770.00	200.0	120.0	5.87	0.19	0.22	0.28	759.76	759.54
P-1010	J-242	J-1020	138.00	300.0	120.0	8.11	0.11	0.01	0.07	759.84	759.83
P-1015	J-1030	J-1015	583.00	200.0	120.0	7.90	0.25	0.28	0.49	759.80	759.51
P-1020	J-1025	J-1030	281.00	300.0	120.0	8.41	0.12	0.02	0.08	759.82	759.80
P-1025	J-1025	J-1020	247.00	300.0	120.0	-6.81	0.10	0.01	0.05	759.82	759.83
P-1030	J-242	J-1040	494.00	300.0	120.0	7.96	0.11	0.03	0.07	759.84	759.81
P-1035	J-1035	J-1075	753.00	300.0	120.0	7.49	0.11	0.05	0.06	759.76	759.72
P-1040	J-1050	J-243	807.00	300.0	120.0	15.77	0.22	0.20	0.24	760.25	760.05
P-1045	J-1050	J-1045	557.00	300.0	120.0	16.51	0.23	0.15	0.27	760.25	760.10
P-1050	J-1050	J-1060	231.50	300.0	120.0	-26.09	0.37	0.14	0.62	760.25	760.39
P-1055	J-1060	J-1055	466.00	300.0	120.0	28.00	0.40	0.33	0.71	760.39	760.06
P-1060	J-1060	J-1065	1,011.50	300.0	120.0	27.33	0.39	0.68	0.67	760.39	759.71
P-1065	J-1065	J-1070	603.00	300.0	120.0	12.10	0.17	0.09	0.15	759.71	759.62
P-1070	J-1070	J-1080	404.50	200.0	120.0	12.10	0.39	0.43	1.07	759.62	759.18
P-1080	J-1080	J-1090	610.50	200.0	120.0	8.90	0.28	0.37	0.61	759.18	758.81
P-1090	J-1090	J-395	7.00	200.0	120.0	5.86	0.19	0.00	0.28	758.81	758.81
P-1100	J-392	J-1100	371.00	200.0	120.0	0.86	0.03	0.00	0.01	758.71	758.70
P-1110	J-1000	R-3	774.50	450.0	120.0	-261.55	1.64	4.75	6.14	764.65	769.40
P-1120	J-1000	J-1150	764.50	450.0	120.0	180.13	1.13	2.35	3.08	764.65	762.30
P-1130	J-1080	J-1120	432.00	200.0	120.0	10.92	0.35	0.38	0.89	759.18	758.80
P-1140	J-1120	J-1130	612.50	200.0	120.0	1.95	0.06	0.02	0.04	758.80	758.78
P-1150	J-1130	J-1090	422.50	200.0	120.0	-3.04	0.10	0.04	0.08	758.78	758.81
P-1160	J-365	J-1140	280.00	450.0	120.0	-85.80	0.54	0.22	0.78	760.51	760.73
P-1170	J-1140	J-94	586.50	450.0	120.0	-109.70	0.69	0.72	1.23	760.73	761.45
P-1180	J-90	J-1150	198.50	450.0	120.0	-180.13	1.13	0.61	3.08	761.69	762.30
P-1190	J-1000	J-1060	836.00	300.0	120.0	81.42	1.15	4.26	5.09	764.65	760.39
P-1200	J-1140	J-1160	795.00	300.0	120.0	23.90	0.34	0.42	0.53	760.73	760.31
P-1205	J-1200	J-1205	360.00	300.0	120.0	-9.50	0.13	0.03	0.10	758.97	759.01

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1210	J-1160	J-1050	1,510.50	300.0	120.0	6.19	0.09	0.07	0.04	760.31	760.25
P-1220	J-231	J-1170	375.50	300.0	120.0	16.91	0.24	0.10	0.28	759.56	759.45
P-1230	J-1230	J-1180	600.50	300.0	120.0	-5.42	0.08	0.02	0.03	759.18	759.20
P-1240	J-317	J-1195	517.00	300.0	120.0	25.03	0.35	0.30	0.57	759.44	759.15
P-1245	J-1260	J-1210	1,414.00	200.0	120.0	-3.26	0.10	0.13	0.09	758.87	759.01
P-1250	J-1195	J-262	405.50	300.0	120.0	6.59	0.09	0.02	0.05	759.15	759.13
P-1255	J-1260	J-1215	1,177.00	200.0	120.0	-3.14	0.10	0.10	0.09	758.87	758.98
P-1260	J-236	J-1005	269.50	450.0	120.0	44.72	0.28	0.06	0.23	759.34	759.28
P-1265	J-1005	J-296	162.00	450.0	120.0	9.71	0.06	0.00	0.01	759.28	759.28
P-1270	J-219	J-140	198.00	300.0	120.0	3.40	0.05	0.00	0.01	760.11	760.10
P-1280	J-225	J-176	432.50	300.0	120.0	-3.61	0.05	0.01	0.02	759.70	759.71
P-1300	J-259	J-178	195.50	300.0	120.0	-1.21	0.02	0.00	0.00	759.58	759.58
P-1310	J-261	J-180	183.00	300.0	120.0	-5.05	0.07	0.01	0.03	759.58	759.58
P-1330	J-178	J-180	258.00	300.0	120.0	1.79	0.03	0.00	0.00	759.58	759.58
P-1340	J-10	J-146	36.50	300.0	120.0	-1.91	0.03	0.00	0.00	759.86	759.86
P-1350	J-1035	J-277	848.50	300.0	120.0	2.21	0.03	0.01	0.01	759.76	759.76
P-1355	J-1040	J-1035	719.50	300.0	120.0	7.34	0.10	0.04	0.06	759.81	759.76
P-1370	J-1220	J-356	228.00	300.0	120.0	3.69	0.05	0.00	0.02	759.05	759.05
P-1375	J-1220	J-536	303.50	300.0	120.0	-6.49	0.09	0.01	0.05	759.05	759.07
P-1380	J-400	J-398	443.50	200.0	120.0	-1.61	0.05	0.01	0.03	758.74	758.75
P-1390	J-300	J-1205	285.50	300.0	120.0	2.92	0.04	0.00	0.01	759.01	759.01
P-1405	J-276	J-1250	73.50	300.0	120.0	-7.99	0.11	0.01	0.07	759.02	759.03
P-1410	J-1250	J-1210	687.50	450.0	120.0	15.39	0.10	0.02	0.03	759.03	759.01
P-1420	J-1170	J-1180	1,535.00	300.0	120.0	12.88	0.18	0.26	0.17	759.45	759.20
P-1430	J-1195	J-536	1,082.00	300.0	120.0	8.21	0.12	0.08	0.07	759.15	759.07
P-1440	J-1210	J-1215	933.00	300.0	120.0	5.27	0.07	0.03	0.03	759.01	758.98
P-1445	J-1215	J-386	888.00	300.0	120.0	2.14	0.03	0.01	0.01	758.98	758.97
P-1450	J-281	J-1205	286.50	300.0	120.0	6.88	0.10	0.02	0.05	759.02	759.01
P-1460	J-1205	J-1210	518.00	300.0	120.0	0.30	0.00	0.00	0.00	759.01	759.01
P-1470	J-1250	J-349	1,077.00	450.0	120.0	-23.39	0.15	0.08	0.07	759.03	759.10
P-1480	J-1230	J-1240	542.00	450.0	120.0	30.05	0.19	0.06	0.11	759.18	759.12
P-1500	J-1005	J-1230	699.50	450.0	120.0	35.01	0.22	0.10	0.15	759.28	759.18
P-1510	J-1230	J-224	47.50	300.0	120.0	10.38	0.15	0.01	0.11	759.18	759.17
P-1520	J-1240	J-349	92.50	450.0	120.0	30.05	0.19	0.01	0.11	759.12	759.10
P-1530	J-1190	J-1195	155.00	300.0	120.0	-10.23	0.14	0.02	0.11	759.13	759.15

Scenario: Peak H - Future (20 Yr)-Alt 2
Steady State Analysis
Pipe Report

Label	From Node	To Node	Length (m)	Diameter (mm)	Hazen-Williams C	Discharge (l/s)	Velocity (m/s)	Pressure Pipe Headloss (m)	Headloss Gradient (m/km)	Upstream Structure Hydraulic Grade (m)	Downstream Structure Hydraulic Grade (m)
P-1710	J-1040	J-1055	785.00	300.0	120.0	-18.41	0.26	0.25	0.32	759.81	760.06
P-1720	J-1045	J-243	492.00	300.0	120.0	9.70	0.14	0.05	0.10	760.10	760.05
P-1730	J-50	J-176	331.00	300.0	120.0	7.54	0.11	0.02	0.06	759.73	759.71
P-2000	J-1010	J-2000	1,520.50	200.0	120.0	2.97	0.09	0.12	0.08	759.54	759.42
P-2010	J-2000	J-1015	1,757.50	200.0	120.0	-2.36	0.08	0.09	0.05	759.42	759.51
P-2020	J-2010	J-1035	219.50	300.0	120.0	2.36	0.03	0.00	0.01	759.77	759.76
P-2025	J-1075	J-2020	613.50	300.0	120.0	2.67	0.04	0.01	0.01	759.72	759.71
P-2040	J-2020	J-1040	722.00	300.0	120.0	-11.26	0.16	0.09	0.13	759.71	759.81
P-2045	J-1120	J-2040	813.50	200.0	120.0	5.90	0.19	0.23	0.28	758.80	758.57
P-2050	J-2020	J-2030	775.50	300.0	120.0	4.40	0.06	0.02	0.02	759.71	759.69
P-2055	J-2065	J-2040	2,459.00	200.0	120.0	0.24	0.01	0.00	0.00	758.57	758.57
P-2065	J-2060	J-2065	765.00	200.0	120.0	3.56	0.11	0.09	0.11	758.66	758.57
P-2075	J-2065	J-307	497.00	200.0	120.0	-2.83	0.09	0.04	0.07	758.57	758.61
P-2080	J-1065	J-2030	415.00	300.0	120.0	5.31	0.08	0.01	0.03	759.71	759.69
P-2090	J-2050	J-1065	447.00	200.0	120.0	-9.92	0.32	0.33	0.74	759.37	759.71
P-2100	J-2050	J-1080	410.00	200.0	120.0	7.72	0.25	0.19	0.47	759.37	759.18
P-2110	J-2060	J-1100	1,067.00	200.0	120.0	-2.20	0.07	0.05	0.05	758.66	758.70
P-2120	J-270	J-2060	296.50	200.0	120.0	2.87	0.09	0.02	0.07	758.68	758.66
P-2130	J-359	J-2060	512.00	200.0	120.0	3.09	0.10	0.04	0.09	758.70	758.66
P-2200	J-234	J-198	252.00	300.0	120.0	0.93	0.01	0.00	0.00	759.28	759.28
P-2210	J-238	J-2010	352.00	300.0	120.0	9.00	0.13	0.03	0.09	759.80	759.77
P-2220	J-2090	J-1100	454.00	200.0	120.0	2.87	0.09	0.03	0.08	758.74	758.70
P-2230	J-394	J-2090	436.00	200.0	120.0	0.95	0.03	0.00	0.01	758.74	758.74
P-2240	J-2090	J-1130	363.50	200.0	120.0	-3.46	0.11	0.04	0.11	758.74	758.78
P-2250	J-1220	J-2070	182.00	300.0	120.0	2.79	0.04	0.00	0.01	759.05	759.05

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-6	230.00	230.04	true	280.00	325.4	280.00	201.4	J-1260
J-8	230.00	230.20	true	280.00	291.6	280.00	199.4	J-1260
J-10	230.00	230.00	true	280.00	303.0	280.00	191.6	J-1260
J-12	230.00	230.00	true	280.00	230.4	280.00	189.4	J-1260
J-16	230.00	230.23	true	280.00	219.9	280.00	189.1	J-1260
J-22	230.00	230.06	true	280.00	311.2	280.00	173.2	J-1260
J-24	230.00	230.56	true	280.00	288.5	280.00	176.2	J-1260
J-28	230.00	230.37	true	254.69	140.0	280.00	214.2	J-1260
J-30	230.00	230.00	true	280.00	269.0	280.00	190.2	J-1260
J-32	230.00	230.00	true	280.00	256.1	280.00	189.6	J-1260
J-34	230.00	230.12	true	280.00	241.8	280.00	188.2	J-1260
J-36	230.00	230.00	true	280.00	244.9	280.00	188.0	J-1260
J-38	230.00	230.00	true	280.00	227.7	280.00	186.2	J-1260
J-40	230.00	230.11	true	280.00	224.7	280.00	184.6	J-1260
J-42	230.00	230.02	true	280.00	251.4	280.00	180.8	J-1260
J-50	230.00	230.60	true	280.00	170.6	280.00	184.8	J-1260
J-56	230.00	230.85	true	280.00	233.0	280.00	190.1	J-1260
J-60	230.00	230.00	true	280.00	282.4	280.00	196.2	J-1260
J-64	230.00	230.16	true	280.00	279.8	280.00	202.1	J-1260
J-68	230.00	230.09	true	280.00	238.6	280.00	209.1	J-1260
J-74	230.00	230.09	true	280.00	303.8	280.00	214.7	J-1260
J-76	230.00	230.22	true	280.00	352.3	280.00	219.8	J-1260
J-82	230.00	230.43	true	280.00	386.1	280.00	224.9	J-1260
J-90	230.00	230.14	true	280.00	490.2	280.00	242.0	J-1260
J-94	230.00	230.11	true	280.00	481.2	280.00	235.1	J-1260
J-98	230.00	230.17	true	249.97	140.0	280.00	234.3	J-102
J-102	230.00	230.14	true	269.88	140.0	280.00	191.4	J-98
J-104	230.00	230.29	true	241.19	140.0	280.00	245.3	J-1260
J-108	230.00	230.34	true	280.00	229.1	280.00	203.5	J-1260
J-112	230.00	230.21	true	280.00	251.0	280.00	202.7	J-1260
J-117	230.00	230.20	true	280.00	237.6	280.00	203.6	J-1260
J-118	230.00	230.14	true	280.00	245.7	280.00	203.5	J-1260
J-120	230.00	230.06	true	280.00	216.4	280.00	204.0	J-1260
J-124	230.00	230.07	true	280.00	197.5	280.00	204.1	J-1260
J-130	230.00	230.00	true	280.00	292.0	280.00	200.0	J-1260
J-134	230.00	230.13	true	280.00	151.3	280.00	200.0	J-1260
J-136	230.00	230.27	true	280.00	189.9	280.00	199.2	J-1260
J-140	230.00	230.02	true	280.00	220.9	280.00	200.6	J-1260
J-142	230.00	230.01	true	280.00	291.6	280.00	210.2	J-1260
J-144	230.00	230.18	true	280.00	265.6	280.00	197.3	J-1260
J-146	230.00	230.06	true	280.00	282.8	280.00	191.7	J-1260
J-148	230.00	230.08	false	190.91	140.0	280.00	186.8	J-150
J-150	230.00	230.00	false	201.12	140.0	280.00	146.4	J-148
J-152	230.00	230.00	true	275.65	142.9	280.00	140.0	J-303
J-162	230.00	230.04	true	280.00	254.2	280.00	179.1	J-1260
J-164	230.00	230.07	true	280.00	196.7	280.00	179.7	J-1260
J-166	230.00	230.20	true	280.00	164.5	280.00	179.7	J-1260
J-168	230.00	230.04	true	280.00	148.2	280.00	180.1	J-1260
J-172	230.00	230.10	true	280.00	222.6	280.00	182.1	J-1260
J-174	230.00	230.18	true	280.00	209.6	280.00	185.7	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-176	230.00	230.10	true	280.00	204.6	280.00	183.6	J-1260
J-178	230.00	230.34	true	280.00	202.0	280.00	177.0	J-1260
J-180	230.00	230.17	true	280.00	204.7	280.00	177.1	J-1260
J-198	230.00	230.00	true	280.00	259.3	280.00	161.4	J-1260
J-202	230.00	230.19	true	280.00	258.7	280.00	156.4	J-1260
J-206	230.00	230.08	true	280.00	230.2	280.00	153.2	J-1260
J-210	230.00	230.02	true	280.00	233.7	280.00	149.7	J-1260
J-212	230.00	230.15	true	280.00	208.3	280.00	147.2	J-1260
J-214	230.00	230.82	true	280.00	193.8	280.00	145.3	J-1260
J-216	230.00	235.08	true	280.00	215.7	280.00	144.6	J-1260
J-217	230.00	230.09	true	280.00	323.3	280.00	201.3	J-1260
J-218	230.00	230.00	true	280.00	293.2	280.00	199.6	J-1260
J-219	230.00	230.00	true	280.00	302.0	280.00	201.0	J-1260
J-221	230.00	230.02	true	280.00	296.6	280.00	199.2	J-1260
J-222	230.00	230.05	true	280.00	170.9	280.00	148.6	J-1260
J-223	230.00	230.19	true	280.00	257.9	280.00	187.7	J-1260
J-224	230.00	230.02	true	280.00	241.0	280.00	150.1	J-1260
J-225	230.00	230.00	true	280.00	254.0	280.00	181.0	J-1260
J-226	230.00	230.00	true	280.00	310.3	280.00	172.5	J-1260
J-227	230.00	230.09	true	280.00	254.4	280.00	185.1	J-1260
J-228	230.00	230.21	true	280.00	184.5	280.00	154.9	J-1260
J-229	230.00	230.10	true	280.00	299.9	280.00	200.3	J-1260
J-230	230.00	230.00	true	280.00	249.7	280.00	187.7	J-1260
J-231	230.00	230.03	true	280.00	317.1	280.00	171.8	J-1260
J-232	230.00	230.00	true	280.00	315.7	280.00	169.8	J-1260
J-233	230.00	230.00	true	280.00	321.8	280.00	168.4	J-1260
J-234	230.00	230.18	true	280.00	225.0	280.00	159.0	J-1260
J-235	230.00	230.00	true	280.00	306.6	280.00	164.5	J-1260
J-236	230.00	230.00	true	280.00	296.3	280.00	160.5	J-1260
J-237	230.00	230.19	true	280.00	405.3	280.00	244.2	J-1260
J-238	230.00	230.00	true	280.00	408.8	280.00	244.4	J-1260
J-239	230.00	230.00	true	280.00	393.6	280.00	244.4	J-1260
J-240	230.00	230.49	true	278.07	140.0	280.00	151.3	J-1260
J-241	230.00	230.00	true	280.00	387.2	280.00	244.4	J-1260
J-242	230.00	230.00	true	280.00	433.7	280.00	244.6	J-1260
J-243	230.00	230.22	true	280.00	441.8	280.00	246.4	J-1260
J-244	230.00	230.04	true	280.00	209.3	280.00	147.4	J-1260
J-245	230.00	230.00	true	272.37	143.0	280.00	140.0	J-303
J-246	230.00	230.18	false	223.02	140.0	280.00	142.5	J-247
J-247	230.00	230.00	false	223.80	140.0	280.00	141.0	J-246
J-248	230.00	230.00	true	280.00	292.2	280.00	149.1	J-1260
J-249	230.00	230.00	true	269.62	193.8	280.00	140.0	J-303
J-250	230.00	230.19	true	280.00	242.0	280.00	150.9	J-1260
J-251	230.00	230.00	true	268.10	193.8	280.00	140.0	J-303
J-252	230.00	230.08	true	264.41	140.0	280.00	171.9	J-1260
J-253	230.00	230.00	true	265.79	142.9	280.00	140.0	J-303
J-254	230.00	230.00	true	263.61	140.0	280.00	142.8	J-258
J-255	230.00	230.00	true	255.54	189.2	280.00	140.0	J-258
J-256	230.00	230.01	true	243.21	140.0	280.00	199.1	J-1260
J-257	230.00	230.00	true	251.09	189.8	280.00	140.0	J-258

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-258	230.00	230.00	true	244.40	140.0	280.00	142.0	J-353
J-259	230.00	230.15	true	280.00	224.5	280.00	176.6	J-1260
J-260	230.00	230.12	true	280.00	223.5	280.00	151.6	J-1260
J-261	230.00	230.09	true	280.00	197.1	280.00	176.9	J-1260
J-262	230.00	230.00	true	280.00	281.4	280.00	158.8	J-1260
J-263	230.00	230.00	true	280.00	258.4	280.00	197.6	J-1260
J-264	230.00	230.29	true	280.00	236.6	280.00	153.6	J-1260
J-265	230.00	230.19	true	280.00	186.4	280.00	197.6	J-1260
J-266	230.00	230.26	true	280.00	193.3	280.00	153.9	J-1260
J-267	60.00	60.12	true	100.00	532.9	100.00	355.4	J-1260
J-268	230.00	230.04	true	280.00	203.9	280.00	146.8	J-1260
J-269	60.00	60.00	true	100.00	521.3	100.00	328.9	J-307
J-270	60.00	60.87	true	100.00	463.6	100.00	307.2	J-307
J-271	230.00	230.00	true	280.00	279.9	280.00	148.0	J-1260
J-272	230.00	230.10	true	280.00	234.7	280.00	140.2	J-1260
J-273	60.00	60.00	true	100.00	511.8	100.00	325.1	J-307
J-274	230.00	230.01	true	274.04	252.0	280.00	140.0	J-1260
J-275	230.00	231.15	true	280.00	286.0	280.00	242.5	J-351
J-276	230.00	231.16	true	272.85	249.3	280.00	140.0	J-1260
J-277	230.00	230.16	true	280.00	267.1	280.00	244.4	J-1260
J-278	230.00	230.33	true	280.00	178.6	280.00	144.7	J-1260
J-279	230.00	230.00	true	280.00	282.1	280.00	146.8	J-1260
J-280	230.00	230.00	true	280.00	265.5	280.00	142.7	J-1260
J-281	230.00	230.00	true	280.00	266.9	280.00	141.0	J-1260
J-282	230.00	230.11	true	273.05	140.0	280.00	155.1	J-1260
J-283	230.00	230.00	true	280.00	255.9	280.00	147.5	J-1260
J-284	230.00	230.00	true	280.00	242.5	280.00	150.3	J-1260
J-285	230.00	230.09	true	280.00	266.6	280.00	151.9	J-1260
J-286	230.00	230.34	true	279.65	140.0	280.00	145.8	J-1260
J-287	230.00	230.00	true	280.00	255.4	280.00	151.3	J-1260
J-288	230.00	230.00	true	280.00	249.4	280.00	150.7	J-1260
J-289	230.00	230.00	true	280.00	266.7	280.00	188.4	J-1260
J-290	230.00	230.00	true	280.00	187.4	280.00	149.3	J-1260
J-291	230.00	230.00	true	280.00	191.5	280.00	145.8	J-1260
J-292	230.00	230.00	true	280.00	170.4	280.00	181.0	J-1260
J-293	230.00	230.00	true	280.00	327.0	280.00	208.2	J-1260
J-294	230.00	230.05	true	274.36	207.9	280.00	140.0	J-1260
J-296	230.00	230.00	true	280.00	271.7	280.00	156.7	J-1260
J-298	230.00	230.18	true	264.75	140.0	280.00	155.4	J-1260
J-300	230.00	230.10	true	276.15	243.5	280.00	140.0	J-1260
J-301	230.00	230.00	true	258.30	140.0	280.00	140.0	J-303
J-302	230.00	230.16	true	280.00	211.9	280.00	141.5	J-1260
J-303	230.00	230.28	false	227.14	140.0	280.00	149.3	J-247
J-304	230.00	230.00	true	280.00	164.0	280.00	149.3	J-1260
J-306	230.00	230.22	true	280.00	183.0	280.00	140.9	J-1260
J-307	60.00	60.00	true	100.00	181.4	100.00	195.8	J-309
J-308	230.00	230.31	true	280.00	171.9	280.00	140.4	J-1260
J-309	60.00	60.00	true	67.49	140.0	100.00	193.1	J-312
J-310	230.00	230.00	true	280.00	343.1	280.00	202.8	J-1260
J-311	230.00	230.01	true	280.00	338.6	280.00	203.1	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-312	60.00	60.00	false	55.92	140.0	100.00	244.2	J-309
J-313	230.00	230.00	true	280.00	295.4	280.00	196.0	J-1260
J-314	230.00	230.36	true	280.00	197.0	280.00	146.6	J-1260
J-315	230.00	230.00	true	280.00	238.3	280.00	188.2	J-1260
J-316	230.00	230.00	true	280.00	198.7	280.00	181.5	J-1260
J-317	230.00	230.00	true	280.00	204.6	280.00	175.2	J-1260
J-318	230.00	230.00	true	280.00	196.5	280.00	191.0	J-1260
J-321	230.00	230.11	true	280.00	260.4	280.00	206.2	J-1260
J-322	230.00	230.05	true	280.00	274.9	280.00	150.9	J-1260
J-324	230.00	230.00	true	280.00	224.4	280.00	157.3	J-1260
J-332	230.00	230.62	true	280.00	216.1	280.00	160.2	J-1260
J-337	230.00	230.34	true	280.00	238.7	280.00	176.4	J-1260
J-342	230.00	230.21	true	280.00	234.4	280.00	150.7	J-1260
J-348	230.00	230.13	true	280.00	275.5	280.00	150.2	J-1260
J-349	230.00	230.38	true	280.00	224.5	280.00	143.0	J-1260
J-350	230.00	230.14	true	280.00	209.0	280.00	156.3	J-1260
J-351	230.00	230.00	true	253.82	140.0	280.00	265.2	J-1260
J-352	230.00	230.00	true	280.00	147.7	280.00	144.7	J-303
J-353	230.00	230.04	false	222.74	140.0	280.00	148.3	J-150
J-356	230.00	230.08	true	280.00	246.5	280.00	154.2	J-1260
J-357	60.00	60.16	true	100.00	337.9	100.00	332.4	J-307
J-358	60.00	60.23	true	64.81	140.0	100.00	378.7	J-1260
J-359	60.00	60.04	true	100.00	484.8	100.00	320.7	J-307
J-360	60.00	60.08	true	89.06	140.0	100.00	351.5	J-307
J-362	230.00	230.00	true	280.00	265.1	280.00	176.0	J-1260
J-363	230.00	230.00	true	280.00	311.2	280.00	202.5	J-1260
J-364	60.00	60.10	true	100.00	525.7	100.00	346.0	J-1260
J-365	230.00	230.02	true	280.00	380.7	280.00	213.2	J-1260
J-367	230.00	230.00	true	280.00	321.3	280.00	203.3	J-1260
J-369	230.00	230.00	true	280.00	323.9	280.00	203.6	J-1260
J-370	60.00	60.10	true	100.00	426.0	100.00	348.6	J-307
J-371	230.00	230.00	true	280.00	326.8	280.00	205.1	J-1260
J-372	60.00	60.26	true	100.00	401.4	100.00	353.5	J-1260
J-373	230.00	230.00	true	280.00	333.7	280.00	205.7	J-1260
J-374	60.00	60.35	true	100.00	425.8	100.00	350.0	J-1260
J-375	230.00	230.01	true	280.00	339.7	280.00	207.9	J-1260
J-376	60.00	60.23	true	100.00	458.4	100.00	348.5	J-1260
J-377	230.00	230.01	true	280.00	354.1	280.00	208.6	J-1260
J-378	60.00	60.25	true	100.00	461.7	100.00	348.2	J-1260
J-379	60.00	60.38	true	100.00	502.1	100.00	346.9	J-1260
J-380	60.00	60.11	true	100.00	501.8	100.00	346.8	J-1260
J-381	230.00	230.00	true	280.00	374.1	280.00	209.5	J-1260
J-382	60.00	60.24	true	100.00	437.8	100.00	343.4	J-1260
J-383	60.00	60.24	true	100.00	264.8	100.00	339.9	J-1260
J-384	60.00	60.61	true	100.00	308.1	100.00	338.7	J-1260
J-386	60.00	60.38	true	100.00	562.6	100.00	315.0	J-1260
J-388	60.00	60.16	true	100.00	170.6	100.00	348.2	J-1260
J-389	230.00	230.21	true	280.00	313.4	280.00	207.6	J-1260
J-390	60.00	60.12	true	100.00	353.9	100.00	339.5	J-307
J-391	230.00	230.00	true	280.00	377.1	280.00	209.9	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-392	60.00	60.52	true	100.00	479.0	100.00	348.7	J-307
J-394	60.00	60.10	true	100.00	485.5	100.00	354.3	J-307
J-395	60.00	60.49	true	100.00	530.2	100.00	360.7	J-1260
J-396	60.00	60.55	true	100.00	402.7	100.00	357.2	J-307
J-398	60.00	60.11	true	100.00	366.9	100.00	356.3	J-307
J-400	60.00	60.31	true	100.00	299.6	100.00	323.5	J-402
J-401	230.00	230.00	true	280.00	278.9	280.00	208.1	J-1260
J-402	60.00	60.09	true	90.24	140.0	100.00	365.9	J-1260
J-403	230.00	230.00	true	280.00	273.7	280.00	208.2	J-1260
J-404	230.00	230.13	true	280.00	259.7	280.00	208.5	J-1260
J-406	230.00	230.00	true	280.00	335.8	280.00	205.9	J-1260
J-407	230.00	230.07	true	280.00	319.9	280.00	206.5	J-1260
J-408	230.00	230.00	true	280.00	316.6	280.00	209.1	J-1260
J-410	230.00	230.01	true	280.00	326.3	280.00	209.3	J-1260
J-411	230.00	230.00	true	280.00	260.5	280.00	208.5	J-1260
J-536	230.00	230.00	true	280.00	245.0	280.00	156.4	J-1260
J-538	230.00	230.00	true	280.00	194.2	280.00	158.1	J-1260
J-1000	230.00	230.00	true	280.00	664.8	280.00	311.0	J-1260
J-1005	230.00	230.00	true	280.00	272.7	280.00	157.1	J-1260
J-1010	60.00	61.93	true	100.00	382.4	100.00	365.0	J-1260
J-1015	60.00	63.69	true	100.00	445.5	100.00	364.8	J-1260
J-1020	230.00	230.87	true	280.00	412.2	280.00	243.8	J-1260
J-1025	230.00	230.00	true	280.00	410.1	280.00	242.3	J-1260
J-1030	60.00	60.34	true	100.00	649.9	100.00	364.7	J-1260
J-1035	230.00	230.00	true	280.00	349.0	280.00	244.7	J-1260
J-1040	230.00	235.18	true	280.00	423.6	280.00	245.4	J-1260
J-1045	230.00	234.54	true	280.00	371.4	280.00	247.0	J-1260
J-1050	230.00	230.00	true	280.00	465.6	280.00	247.2	J-1260
J-1055	230.00	236.39	true	280.00	375.0	280.00	248.3	J-1260
J-1060	230.00	230.00	true	280.00	463.8	280.00	250.3	J-1260
J-1065	230.00	230.00	true	280.00	348.6	280.00	192.0	J-307
J-1070	60.00	60.00	true	100.00	624.5	100.00	364.0	J-1260
J-1075	230.00	233.22	true	280.00	277.2	280.00	244.9	J-1260
J-1080	60.00	60.00	true	100.00	584.1	100.00	362.1	J-1260
J-1090	60.00	60.00	true	100.00	531.6	100.00	360.7	J-1260
J-1100	60.00	61.03	true	100.00	501.0	100.00	347.1	J-307
J-1120	60.00	62.05	true	100.00	491.3	100.00	361.0	J-1260
J-1130	60.00	61.02	true	100.00	525.2	100.00	357.6	J-307
J-1140	230.00	230.00	true	280.00	361.5	280.00	220.6	J-1260
J-1150	230.00	230.00	true	280.00	508.7	280.00	254.7	J-1260
J-1160	230.00	241.81	true	280.00	303.3	280.00	230.4	J-1260
J-1170	230.00	232.68	true	280.00	183.3	280.00	169.1	J-1260
J-1180	230.00	234.98	true	255.68	140.0	280.00	191.2	J-1260
J-1190	230.00	236.82	true	267.51	140.0	280.00	179.6	J-1260
J-1195	230.00	230.00	true	280.00	189.8	280.00	163.9	J-1260
J-1200	230.00	236.33	true	247.81	140.0	280.00	178.1	J-1260
J-1205	230.00	230.00	true	274.74	242.9	280.00	140.0	J-1260
J-1210	230.00	234.78	true	257.78	223.5	280.00	140.0	J-1260
J-1215	60.00	60.00	true	100.00	489.0	100.00	311.8	J-1260
J-1220	230.00	230.00	true	280.00	221.0	280.00	155.1	J-1260

Scenario: MDD + FF - Future (20 Yr)-Alt 2
Fire Flow Analysis
Fire Flow Report

Label	Needed Fire Flow (l/s)	Total Flow Needed (l/s)	Satisfies Fire Flow Constraints?	Available Fire Flow (l/s)	Calculated Residual Pressure (kPa)	Fire Flow Upper Limit (l/s)	Calculated Minimum Zone Pressure (kPa)	Minimum Zone Junction
J-1230	230.00	230.00	true	280.00	247.6	280.00	150.4	J-1260
J-1240	230.00	230.00	true	280.00	224.6	280.00	144.0	J-1260
J-1250	230.00	230.00	true	270.16	261.8	280.00	140.0	J-1260
J-1260	60.00	64.26	true	97.37	140.0	100.00	413.9	J-1180
J-2000	60.00	63.56	true	100.00	246.0	100.00	364.9	J-1260
J-2010	230.00	234.43	true	280.00	327.8	280.00	244.5	J-1260
J-2020	230.00	236.35	true	280.00	329.0	280.00	245.0	J-1260
J-2030	230.00	236.47	true	280.00	283.4	280.00	215.5	J-307
J-2040	60.00	64.09	true	100.00	312.2	100.00	335.4	J-307
J-2050	60.00	61.47	true	100.00	563.3	100.00	363.3	J-1260
J-2060	60.00	63.06	true	100.00	463.8	100.00	311.8	J-307
J-2065	60.00	64.10	true	100.00	303.6	100.00	254.9	J-307
J-2070	230.00	231.86	true	276.70	140.0	280.00	159.5	J-1260
J-2090	60.00	61.02	true	100.00	509.8	100.00	353.5	J-307
Truck Fill	230.00	230.00	true	280.00	160.6	280.00	149.1	J-1260