

Town of Morinville Utility Master Plan Update

Final Report

Town of Morinville

60712168

March 2024



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March 19, 2024

Project #
60712168

Subject: Town of Morinville Utility Master Plan Update

Dear Vivian:

AECOM Canada Ltd. (AECOM) is pleased to submit our final report for the Utility Master Plan Update for the Town of Morinville.

Any comments received will be incorporated into the final report. Please feel free to contact us with any questions or clarifications.

Sincerely,
AECOM Canada Ltd.

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1 Introduction

1.1 Background

In 2008, the Town of Morinville's Municipal Utility Servicing Plan was completed by AECOM, which addressed water and wastewater servicing within the Town. An update to the Municipal Utility Servicing Plan was then completed in 2016 by AECOM to address the rapid growth experienced by Morinville, and included servicing recommendations for the Morinville Leisure Centre, that was subsequently constructed in 2018. A stormwater study for the areas south of the CN Rail was completed by AECOM in 2017.

Since 2016, the Town has seen ongoing requests for development and continual growth with a population of 9,800 in 2016 and a current population of approximately 10,500. With ongoing development including some significant expansions including new schools, new commercial development on 100 Street, a new leisure center and new neighbourhood development such as Westwinds in the south, Grandin Heights and Notre Dame in the north east drawing more people to Morinville, the Town has identified the need to again update their plans with the goal of improving and expanding the capacity of their water, wastewater and stormwater systems to support the ongoing development.

AECOM has been retained by the Town of Morinville to complete a Utility Master Plan Update. This report includes a water master plan, wastewater master plan, and stormwater master plan.

1.2 Scope of Work

The scope of work included the following:

- A data collection stage, where all relevant data was reviewed and assessed to further develop our understanding of the Town's water, wastewater and stormwater systems.
- A demand analysis stage, where water consumption and flow monitoring data was assessed to update water consumption rates, peaking factors, dry and wet weather flows, diurnal curves, etc. so that system demand is accurately represented in the evaluations.
- A review of the Town's Engineering Design Standards; including a comparison to other similar municipalities to determine if any updates should be made to provide more clarity or updates for the management and design of each utility system.
- A model calibration stage, where each model was updated with existing system demands and models tested to validate the accuracy of each.
- An existing system review, where each system was evaluated based on their performance during industry accepted modelling demand scenarios. Any system deficiencies were identified, and recommended improvements were identified to meet the Town's Engineering Design Standards.
- A servicing concept stage, where the existing, interim, and ultimate development conditions will be planned and assessed to identify any required upgrades and the infrastructure requirements for existing and future development. This will include an implementation plan that identifies the timing and triggers for infrastructure requirements.
- A report development stage, where the findings of each study will be detailed with figures of the assessment results, and cost estimates will be provided for all recommended work.

For each system the scope of work included the following tasks:

Water Master Plan	Wastewater Master Plan	Storm Master Plan
<ul style="list-style-type: none"> • Model Update and Calibration • Hydrant Testing • Existing System Assessment • Future Servicing Concept • System Improvements • Cost Estimates 	<ul style="list-style-type: none"> • Model Update and Calibration • Existing System Assessment • Future Servicing Concept • System Improvements • Cost Estimates 	<ul style="list-style-type: none"> • Model Development • Existing System Assessment • Future Servicing Concept • System Improvements • Cost Estimates

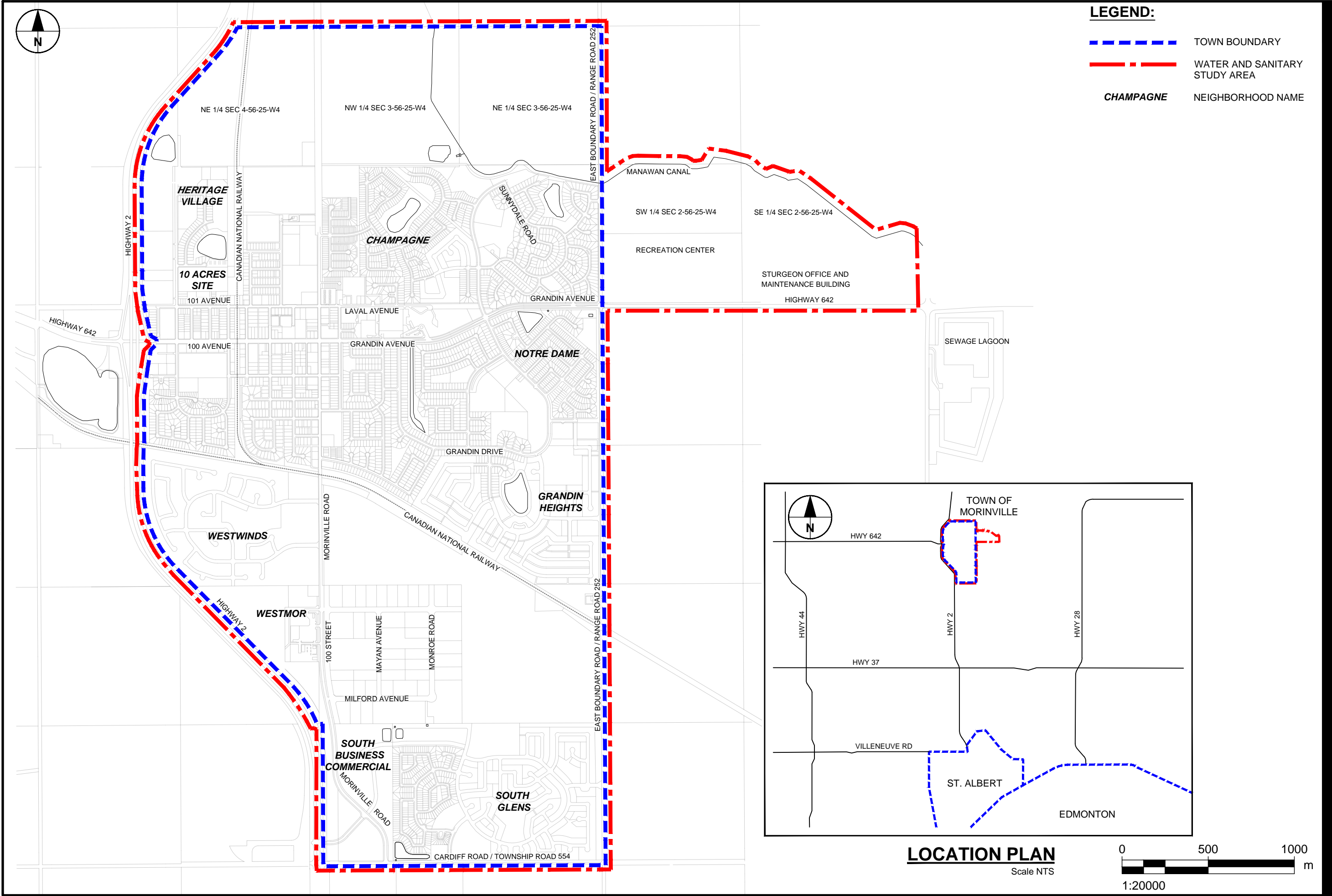
1.3 Study Area

The Town of Morinville is located approximately 15 km north of the City of St. Albert, east of Highway 2. The Town is bordered by undeveloped lands to the north, East Boundary Road (Range Road 252) to the east, Cardiff Road (Township Road 554) to the south, and Highway 2 to the west. The study area is illustrated in **Figure 1.1**.

The study area for the wastewater collection and water distribution system encompasses the Town limits as well as SW¼ -2-56-25 W4 and SE¼-2-56-25 W4. These two additional quarter sections include the proposed Morinville Recreation Center and future Sturgeon County lands.

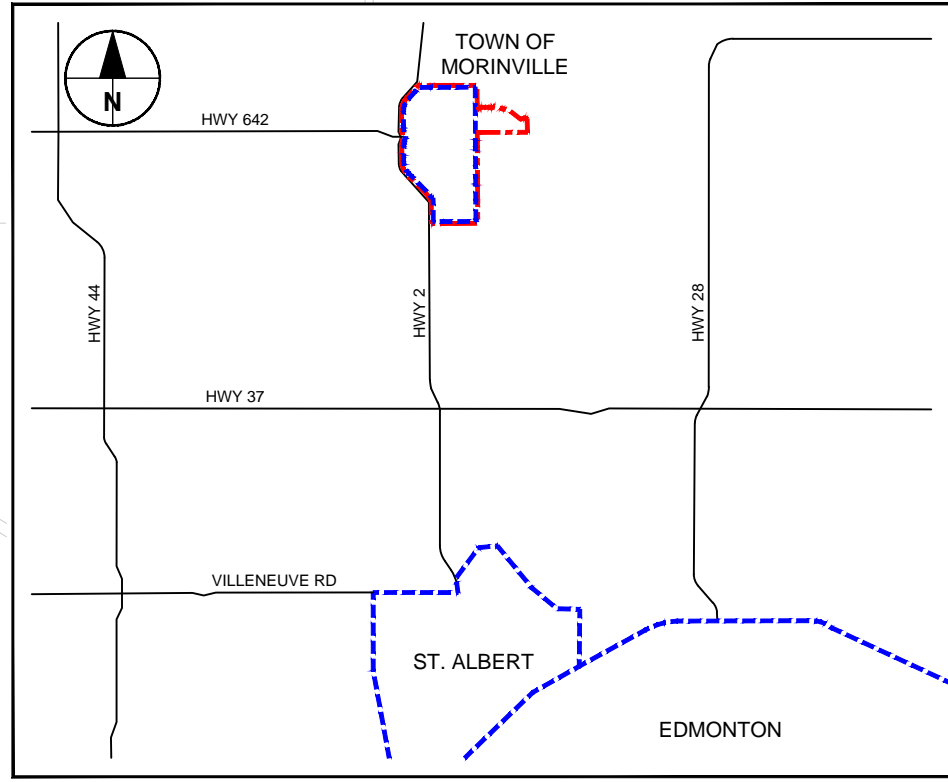
The study area for the stormwater system consists of only future development areas, located south of the Canadian National Railway (CNR) line that bisects the Town and future development areas at the north edge of the Town Boundary. A stormwater drainage assessment for areas north of the CNR line was performed as part of the Stormwater Implementation Study (Merge Consulting Ltd., 1980) and found that the majority of this area drains to the north, towards Manawan Canal. The study area south of the CNR generally drains south towards Carrot Creek.

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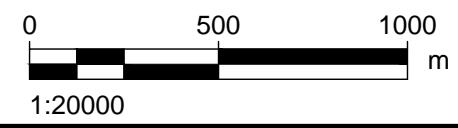


LEGEND:

- - - TOWN BOUNDARY
- . - . WATER AND SANITARY STUDY AREA
- CHAMPAGNE** NEIGHBORHOOD NAME



LOCATION PLAN
Scale NTS



2 Data Collection and Review

2.1 Existing Reports and Documents

The following reports pertaining to the Town of Morinville water and wastewater systems have been reviewed and the applicable data incorporated into the study:

Town of Morinville Municipal Utility Servicing Plan, AECOM, January 2008

The report evaluated the Town of Morinville water distribution, wastewater collection, and stormwater management systems. A Wastewater Collection System Assessment was completed and it suggested increasing capacity to the Morinville Municipal and Morinville Business Park Pump Station, upgrading discharging mains to the Lagoon and the Municipal Pump Station, and upsizing 101 Avenue sewer trunks. A water distribution system assessment was completed and suggested increasing both the storage and pumping capacity at the south reservoir, as well as pipe upgrades for the existing development scenario to meet the pressure and fire flow requirements.

Town of Morinville Municipal Utility Servicing Plan Update, AECOM, September 2016

The report evaluated the Town of Morinville water distribution and wastewater collection systems.

The wastewater collection system assessment recommended hydraulic improvements to the 101 Avenue trunk from 99 Street to 101A Street, the 100 Street main from 101 Avenue to 100 Avenue, and the main on Grandin Drive from 98 Avenue to 101 Avenue. Recommendations were also made to support interim and ultimate development, including capacity improvements along 97a Avenue, 87 Avenue, the Business Park lift station and forcemain, and Westwinds lift station and forcemain, and the combined forcemain servicing the Business Park and Cardiff.

The water distribution system assessment recommended local improvements to the water mains along 99 Avenue at 104 Street and 107 St, 98 Avenue and 98 Street, 101 Avenue and 104 Street, and 100 Avenue and 99 Street to improve fire flows to existing development. No water main upgrades were identified to support future development. The reservoir and pumphouses are adequate to support development up to approximately 18,000 people.

Town of Morinville Municipal Utility Servicing Plan – Stormwater Management Plan Update, AECOM, February 2017

The report evaluated the Town of Morinville stormwater management system for the areas south of the CPR line. The stormwater assessment provided flood mitigation options for flooding experienced in the Morinville Industrial Park and South Glens neighbourhood. Two options were presented for the Industrial Park, and an option for South Glens. To support future development, servicing options were developed including individual facility pump stations or shared facility pump stations, as well as shallow and deep trunk sewer options.

Carrot Creek Regional Drainage Master Plan – Final Report, Stantec, November 2022

The report provided a regional master drainage plan for the Carrot Creek watershed. Member municipalities for the study included the City of St. Albert, Town of Morinville and Sturgeon County. The study established a unit allowable discharge rate of 2.5 L/s/ha for areas that will contribute stormwater to Carrot Creek and its tributaries.

Other relevant information obtained for and incorporated into the study includes:

- 2023 flow monitoring data
- 2018-2022 water consumption data
- Land Use Bylaw 3/2012 Schedule A Land Use District Map (Amended to Bylaw 1/2023 Jan, 2023)
- Morinville Municipal Design Standards, June 2023

- As-Built Drawings:
 - Grandin Heights Stage 7
 - Meadows of Morinville
 - Notre Dame Stage 6
 - Village Champlain Stage 2B
 - Westwinds Stage 1 and 2
 - Westwinds Stage 4
 - Westwinds Lift Station

2.2 Land Use and Development Staging Plan

The Town of Morinville consists primarily of residential areas with some industrial and commercial areas. In general, the area north of the Canadian National Railway (CNR) is largely developed while the area south of the CNR is approximately 50% developed. North of CNR, there is a central business district located along 100 Avenue and 100 Street. Located south of the CNR, there are industrial and commercial developments, such as the Morinville Business Park. The remainder of the Town is comprised of residential areas with neighbourhood commercial areas, parks, schools, and undeveloped land.

The future development area projections were determined through communications with the Town of Morinville. During the interim development stage, the majority of undeveloped land north of the CN Railway will be developed, with the exception of the N ½ of Sections 3-56-25-W4 and 4-56-25-W4, which are anticipated to be developed in the ultimate development stage. South of the CN Railway, areas adjacent to existing roads and developments are planned to be developed in the interim stage, with full build out of the area by the ultimate development stage.

The land use and development staging for the existing and future development areas within the Town of Morinville is shown on **Figure 2.1** and **Figure 2.2**, respectively. Development staging areas are summarized in **Table 2.1** below.

Table 2.1: Development Staging Areas

Land Use Type	Development Staging Areas (ha)			
	Existing	Interim	Ultimate	TOTAL
Residential	231	119	327	677
Non-residential	116	68	33	217
TOTAL	347	187	360	894

2.3 Population Projection

The Town of Morinville’s population was estimated be to 10,498 people in 2022, based on the Alberta Government’s open data set. Historical yearly estimates from the Alberta open data indicate the population of Morinville increased 2.34% from 2018 to 2022. The annualized population growth rates have slowed since 2016, as shown in **Table 2.2**.

Table 2.2: Population Growth History

Year	Population	Annualized Growth Rate
2011	8,569	-
2014	9,402	3.4%
2016	10,164	5.2%
2018	10,319	0.8%
2020	10,452	1.3%
2022	10,498	0.4%

For comparison, the Town of Morinville’s 2020 Municipal Census listed the official population at 10,578, with a growth of 685 residents or 6.92% increase since the 2016 Municipal Census population of 9,893.

The 2023 population was estimated based on four annual growth rates: 1.5%, 2.5% and 3.5%. Population projections are shown in **Table 2.3**. These growth rates were selected to capture the range of population growth rates seen in the past.

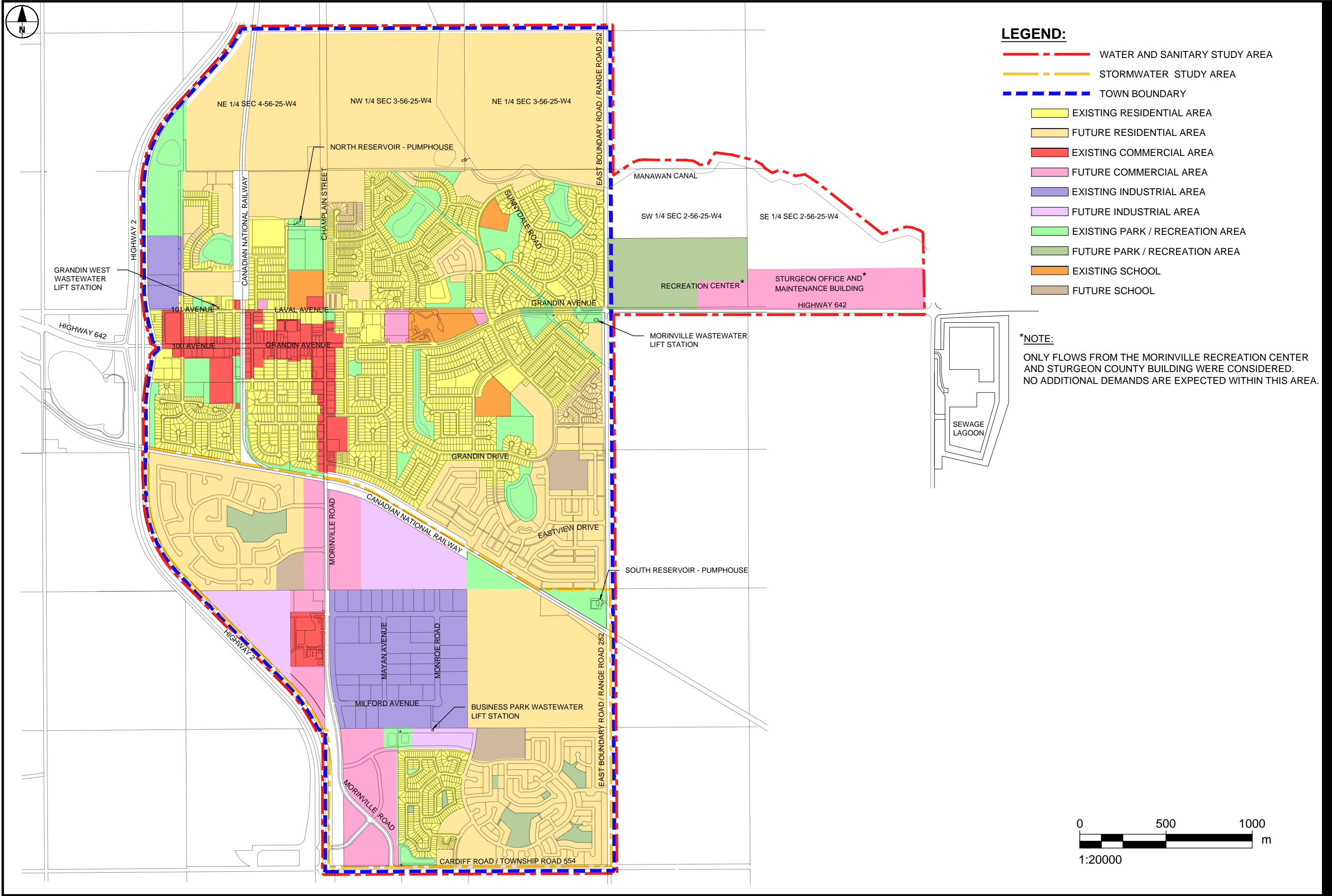
The future development area projections were determined through communications with the Town of Morinville. The estimated population increase in the Town for the interim and ultimate development is estimated at 6,345 and 12,457 people, respectively. Population increase is estimated based on 39.5 people per hectare, if not indicated otherwise in the approved Area Structure Plans (ASPs). The estimated population increases for interim and ultimate development stages were then added to the four 2023 population projections of various growth rates to the total Town population was calculated. The approximate timeframe for the Town to attain these projected populations are shown in **Table 2.3**.

Table 2.3: Population Growth Projections

Development Stages	Projected Population Increase	3.5% Annual Growth Rate		2.5% Annual Growth Rate		1.5% Annual Growth Rate	
		Total Population	Population Attainment Year	Total Population	Population Attainment Year	Total Population	Population Attainment Year
2022	-	10,498	2022	10,498	2022	10,498	2022
2023 (Existing)	Varies	10,865	2023	10,760	2023	10,655	2023
Interim	6,345	17,210	2036-2037	17,105	2041-2042	17,000	2054-2055
Ultimate	12,457	29,667	2052-2053	29,562	2063-2064	29,457	2091-2092

With 3.5% annual growth rate, the interim and ultimate scenarios are projected to be reached by 2037 and 2053, corresponding to approximately 15 years and 30 years, respectively. Under the 2.5% growth scenario, the timing for the interim and ultimate development scenarios would extend to approximately 20 years and 40 years. The time to reach the interim and ultimate development scenarios is further extended under the slower population growth scenario of 1.5%, which would result in development of the interim and ultimate scenarios is approximately 30 and 70 years.

The 2023 population projection used for the existing development stage was based on the 3.5% annual population projections. The current population density for the Town of Morinville is calculated to be 2.8 residents per lot. The population density is based on the 3,806 developed residential lots and the projected 2023 population of 10,865 people.

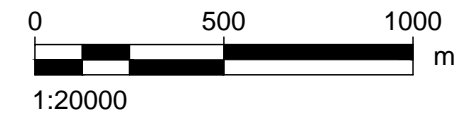


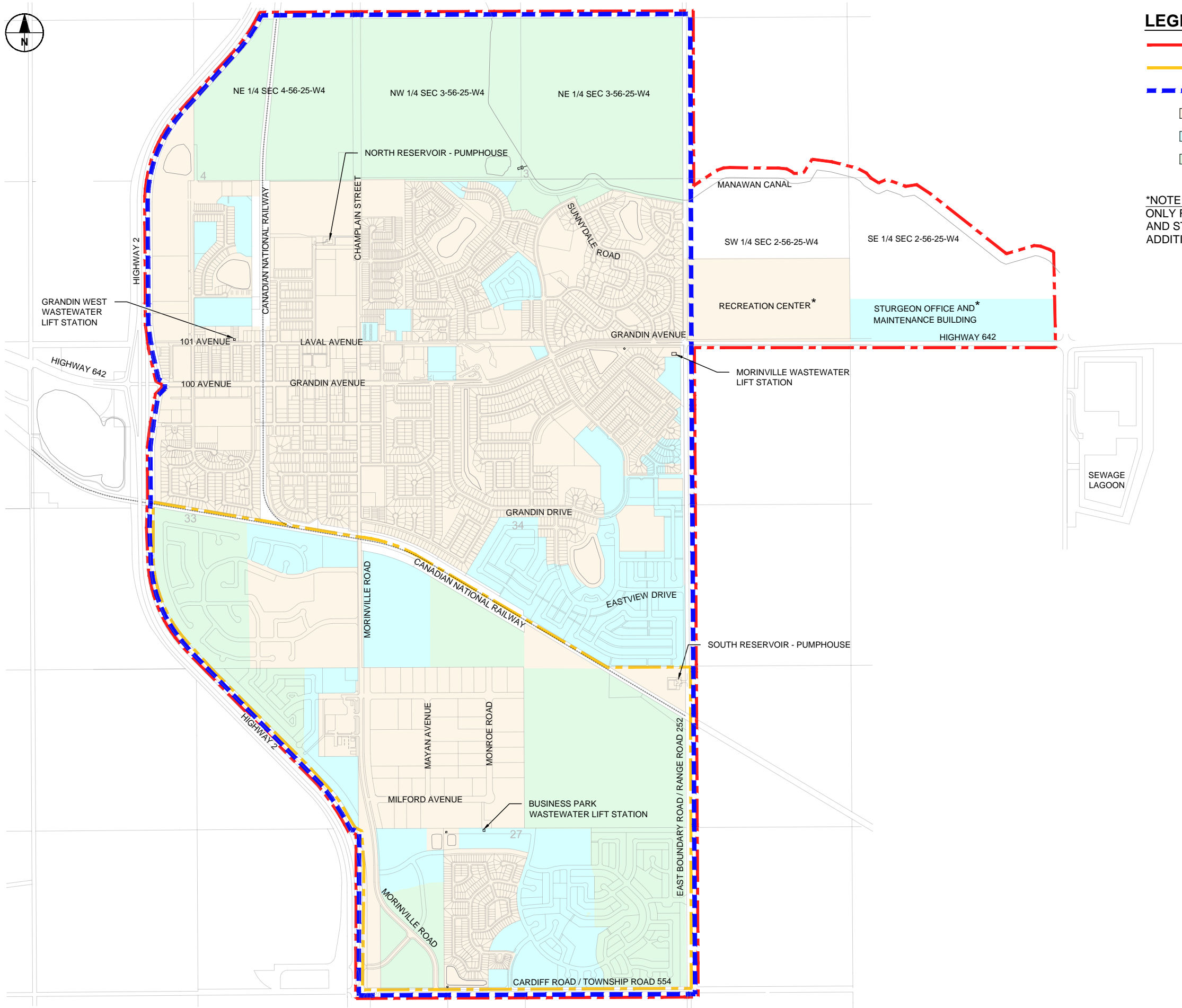
LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - STORMWATER STUDY AREA
- - - TOWN BOUNDARY
- EXISTING RESIDENTIAL AREA
- FUTURE RESIDENTIAL AREA
- EXISTING COMMERCIAL AREA
- FUTURE COMMERCIAL AREA
- EXISTING INDUSTRIAL AREA
- FUTURE INDUSTRIAL AREA
- EXISTING PARK / RECREATION AREA
- FUTURE PARK / RECREATION AREA
- EXISTING SCHOOL
- FUTURE SCHOOL

***NOTE:**

ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

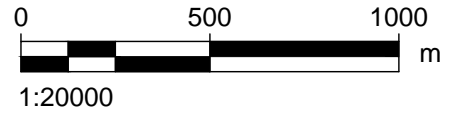




LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - STORMWATER STUDY AREA
- - - TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.



3 Water Master Plan

3.1 General

This section assesses the capacity of the existing water distribution system, identifies existing system deficiencies, and required improvements, identifies impacts of future development on the existing system, and provides a servicing concept for the interim and the ultimate development conditions.

3.2 Study Data

The land use and population data used for the water distribution system evaluation is summarized in Section 2.0. Existing water consumption rates are discussed in the following sections.

3.3 Water Model Development Criteria

3.3.1 Water Consumption

Water demands that were considered for this assessment are as follows:

Average Day Demand

The Average Day Demand (ADD) provides a baseline of the water consumption demands. It is calculated as the annual average water consumption rates. The ADD is used to analyze typical operating conditions and indicates trends in water consumption rates over time. ADD is also used in the sizing of storage reservoirs.

Maximum Day Demand

The Maximum Day Demand (MDD) is typically calculated as a 5-day rolling average. The water consumption over the maximum 5-day period is averaged and compared to the Average Day Demand to provide a peaking factor, usually 1.7 to 2 times the ADD. Use of a 5-day rolling average helps to account for atypically high peak days that may occur due to fire, water main breaks, etc. The MDD is used for the assessment of fire flow scenarios, such that the system can be designed to provide fire protection during high demand periods.

Peak Hour Demand

Peak Hour Demand (PHD) indicates the highest one-hour peak in daily water usage. The PHD is compared to the ADD to determine a peaking factor, usually 3 times the ADD. The PHD is used to assess the system during peak flow conditions, particularly for pumping systems.

Water consumption data has been provided by the Town of Morinville for the years 2018 to 2022 and a summary is presented in **Table 3.1**. Daily water consumption data was provided and has been used to determine an Average Day Demand (ADD) for the existing system.

Table 3.1: Existing Water Demand Summary

Month	2022 (m ³)	2021 (m ³)	2020 (m ³)	2019 (m ³)	2018 (m ³)
January	68,510	63,678	66,079	66,609	69,428
February	61,473	58,162	57,696	61,131	62,674
March	69,153	65,604	66,428	69,878	68,490
April	65,533	63,298	64,316	67,381	66,018
May	69,631	69,323	69,358	74,328	50,249
June	66,573	69,631	66,114	69,079	65,572
July	71,821	74,447	67,121	67,848	68,794
August	73,093	71,442	72,381	67,157	66,930
September	66,230	64,415	63,452	65,509	61,002
October	64,680	67,914	64,676	66,080	68,176
November	61,890	64,368	60,872	62,335	63,512
December	64,411	67,757	63,278	65,876	67,074
TOTAL (m³/yr)	802,998	800,039	781,771	803,211	777,919
Total ADD (L/s)	25.46	25.37	24.79	25.47	24.67

The total water consumption for the Town of Morinville in 2022 was 25.5 L/s, as shown in **Table 3.1**. From 2018 to 2022 the average day demand is increasing at approximately 0.8% per year. However, it should be noted that there was a slight decrease in overall demand between 2015 and 2018. Total average day demands for the last 10 years have remained relatively static, with only a 0.2% per year increase since 2013. The highest ADD experienced in the last 10 years was a rate of 25.9 L/s in 2015, as shown in **Table 3.2**.

Table 3.2: Historic Water Demand Summary

Year	Total ADD (L/s)
2012	24.12
2013	25.05
2014	25.73
2015	25.90
2018	24.67
2019	25.47
2020	24.79
2021	25.37
2022	25.46

The relatively flat ADD indicates that although the Town has experienced growth, the unit water consumption rates are decreasing. This is typical of what other municipalities within the region are experiencing, generally due to more efficient appliances and fixtures as well as water conservation measures.

Existing water consumption rates for the Town of Morinville are detailed in **Table 3.3**. An average water consumption rate of 2,500 L/ha/day was used for all existing non-residential areas. The existing non-residential demands were adopted from the Northwest Regional Utility Study (AECOM 2008) as well as the previous Municipal Utility Servicing Plan Update, AECOM, 2016 (“2016 MUSP Update”). For strictly residential developments, it was determined that the average day demand is approximately 180 L/person/day. A peaking factor of 2 for maximum day demand and 3 for the peak hour demand of 3 were adopted from the 2016 MUSP Update. These peaking factors are consistent with surrounding towns as well as municipal guidelines.

Table 3.3: Existing Water Consumption Rates

Land Use Type	Average Day Demand	Maximum Day Demand	Peak Hour Demand
Residential (L/person/day)	181	362	543
Commercial / Institutional (L/ha/day)	2,500	5,000	7,500

Future residential and non-residential water consumption rates were confirmed through discussions with the Town of Morinville. The design criteria for residential average day demands of 360 L/person/day as indicated in the Municipal Engineering Standards is a composite value for the entire Town of Morinville. Therefore, for strictly residential developments, a water consumption rate of 320 L/person/day was used. For non-residential areas, the rates in the Municipal Engineering Standards for commercial and industrial land uses were determined to be too high for Master Planning purposes, and therefore rates of 2,500 L/ha/day and 6,170 L/ha/day are used to represent actual water consumption observed, as well as allows for higher demand industrial users compared to the existing condition. A comparison of design standards of different municipalities is shown in Appendix J.

A peaking factor of 2 and 3 for maximum day demand and peak hour demand were used for both future residential and non-residential area. The peaking factor of 4.0 as indicated in the Municipal Engineering Standards for peak hour demands was determined to be too high for Master Planning purposes, and therefore was not used. **Table 3.4** details the water consumption rates for future development scenarios.

Table 3.4: Future Water Consumption Rates

Land Use Type	Average Day Demand	Maximum Day Demand	Peak Hour Demand
Residential (L/person/day)	320	640	960
Commercial / Institutional (L/ha/day)	2,500	5,000	7,500
Industrial (L/ha/day)	6,170	12,340	18,510

Similar to the wastewater servicing, the residential water consumption rate of 320 L/person/day as seen in **Table 3.4** is conservative when compared to the Town’s actual water consumption and sewage flow at the ACRWC pump station.

Table 3.5 below outlines the approximate demand in the Town. The ADD, MDD and PHD demand flows are 25.5 L/s, 50.9 L/s. and 76.4 L/s, respectively.

Table 3.5: Existing Water Distribution System Demands

Development Condition	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)	Maximum Day Demand plus Fire Flow (L/s)
Existing	25.5	50.9	300.9	76.4

As seen in **Table 3.5**, the maximum day demand plus fire flow scenario is the governing scenario for the existing development condition. Fire flows are discussed in the following Section 3.3.2.

3.3.2 Fire Flow Requirements

As required by the Town of Morinville Municipal Engineering Standards, the fire flow requirements are in accordance with the recommended practice of the Insurance Bureau of Canada. The fire flow requirements were based on the Town of Morinville Municipal Engineering Standards; however, the residential fire flow requirements were separated to distinguish between single family and multi-family areas, with a higher figure flow requirement for multi-family areas. The fire flow requirement for commercial areas was expanded to include all non-residential properties in addition to commercial areas. The water distribution system was evaluated for the following fire flow requirements:

- Single Family Residential: 115 L/s
- Multi – Family Residential: 180 L/s
- Non – Residential (Commercial, Industrial, Institutional, etc.): 250 L/s

The Town of Morinville Municipal Engineering Standards require that the maximum spacing between hydrants, measured along curb lines, is 150 m in single family residential areas and 90 m in multi-family residential, school, industrial, and commercial areas.

3.3.3 Peaking Factors

As discussed in Section 3.3.1, maximum day demand (MDD) and peak hour demand (PHD) are utilized to assess the water distribution system during high and peak demand scenarios.

The Maximum Day Demand (MDD) is typically calculated as a 5-day rolling average from supply data. Since this data was not available as part of this study, a MDD peaking factor of 2 was utilized which corresponds to the rate from the Town of Morinville Municipal Engineering Standards.

The peaking factor for PHD is generally confirmed utilizing the highest hourly peak flow rate supplied by the water system. However, hourly consumption data was not available as part of this study. Therefore, a PHD peaking factor of 3 was utilized which corresponds to the rate previously used in the 2016 MUSP Update. In similar communities MDD peaking factors ranges from 1.7 to 2 and PHD from 3 to 4. Therefore, the peaking factors utilized provide a reasonable assumption for the purpose of this study.

3.3.4 Minimum Pressure Requirements

As indicated in the Town of Morinville Municipal Engineering standards, the minimum pressure in the system shall be 280 kPa during the peak hour demand (PHD) scenario.

The normal operating pressure range for residential distribution shall be between 350 kPa to 550 kPa.

3.3.5 Pipe Requirements

For the water distribution system analysis, the Municipal Engineering Standards require the following pipe diameters:

- For mains servicing cul-de-sacs, minimum size shall be 150 mm;
- For mains servicing single detached residential, minimum size shall be 200 mm; and
- For commercial / industrial development, minimum main size shall be 300 mm.

Distribution lines in cul-de-sacs having more than 21 single residence houses must be looped.

3.4 Existing Water Distribution System

The Town of Morinville existing water distribution system consists of two reservoir-pumphouses and a looped network of water distribution pipes providing both domestic water supply and fire protection. The Town receives its water from EPCOR Water Services. As detailed in Section 3.2.1, the average day demand for the existing development scenario for the Town of Morinville is 25.5 L/s.

The existing water distribution system for the Town of Morinville is shown on **Figure 3.1**. Note that node names for all pipes in the existing, interim, and ultimate development scenarios are shown in Appendix A on Figures A.1 and A.2.

3.4.1 Existing System Description

The Town of Morinville water distribution system consists mainly of asbestos cement pipes in the older areas and PVC pipes in the newer areas of the distribution system. The north reservoir supplies the system through a 400 mm water main, and the south reservoir supplies the system through a 500 mm water main. The existing model was calibrated during the 2008 Town of Morinville Municipal Utility Servicing Plan (AECOM) and is discussed in Section 3.4.2.2 to determine the appropriate Hazen-Williams coefficients.

3.4.1.1 Supply System

The south reservoir is filled from the Morinville Booster station located in St. Albert. Water from the supply line is discharged into the reservoir at zero pressure and is then re-pumped to the distribution system. The south reservoir is filled based on the reservoir levels, and the north reservoir is typically filled at night by the south reservoir.

3.4.1.2 Storage Reservoirs

The south reservoir has a capacity of 14,310 m³ and is located in the NE¼-27-55-25-W4M, west of Range Road 252 and north of the CN rail line. The reservoir is fed by the Morinville water supply main, located west of Highway 2. The north reservoir has a capacity of 2,270 m³ and is located between 100 and 101A Streets, north of 105 Avenue. The total storage capacity of the two reservoirs is 16,580 m³. As per the April 2012 Alberta Environment Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, storage volume requirements are detailed in **Table 3.6**, and include:

- Fire storage from the Fire Underwriters Survey based on a flow of 250 L/s;
- 25% of Maximum Day Demand for equalization storage; and
- 15% of Average Day Demand for emergency storage

Table 3.6: Alberta Environment Water Storage Requirements for Existing Development Condition

Description	Volume (m ³)
Fire Storage: 250 L/s for 3.25 hours	2,925
Equalization Storage: 25% of Maximum Day Demand (MDD = 50.9 L/s)	1,100
Emergency Storage: 15% of Average Day Demand (ADD = 25.5 L/s)	330
TOTAL	4,355

As per the Alberta Environment Standards and Guidelines, this storage requirement is adequate if the supply source is capable of satisfying the maximum day demands. Since the Town of Morinville reservoir is supplied by a single feed from EPCOR, the actual supply is susceptible to disruptions. Therefore, because of the non-secure system, it is recommended that the reservoir storage be based on the following empirical formula:

$$\text{Total Storage} = \text{Fire Storage (250 L/s for 3.25 Hours)} + 2 \text{ Times the Average Day Demand}$$

The Regional Water Customers Group (RWCG) has made a recommendation to all its members to design reservoirs with two average days storage plus fire storage; the Town of Morinville is a member of the RWCG. Design of two average days storage enables the RWCG to collectively manage the high 5 day draw rates off EPCOR Water to minimize financial rate implications to the regional customers from excessively high draw rates.

The storage volume requirement for the existing development condition as per the above formula is summarized in **Table 3.7**.

Table 3.7: Recommended (RWCG) Water Storage for Existing Development Condition

Storage Location	Volume (m ³)
North Reservoir Fire Storage: 50% of 250 L/s for 3.25 hours	1,463
South Reservoir Fire Storage: 70% of 250 L/s for 3.25 hours	2,048
Emergency Storage: 2 x Average Day Demand (ADD = 25.5 L/s)	4,400
TOTAL	7,910

Since both the north and south reservoirs are servicing the water distribution system, each reservoir would need to have certain fire storage volume to fulfill the requirements. To assess the fire storage volume required at each pumphouse location, a fire flow analysis was conducted and the percentage of the flow that each pumphouse will contribute during fire scenarios at various locations was determined. The recommended fire storage requirement at north and south reservoirs is approximately 50% and 70%, respectively, of the minimum required fire storage volume of 2,925 m³. Therefore, the recommended fire storage requirements for the north and south reservoirs are 1,463 m³ and 2,048 m³, respectively, for a total required fire storage volume of 3,510 m³.

Upon further evaluation of the existing system, it was found that the south pumphouse has pumping capacity to supply the existing peak hour demand. Therefore, all the emergency storage can be provided at the south reservoir. The water in the north reservoir, however, will need to be circulated to avoid water quality issues. The storage requirement for the north and the south reservoirs is 1,463 m³ and 6,447 m³, respectively, and is less than the available storage volume at each reservoir. No additional storage is required at either reservoir to service the existing development.

3.4.1.3 Pumphouse Facilities

The Town of Morinville water distribution system is serviced by two pumphouses; one located at the south reservoir, and one located at the north reservoir. The south pumphouse contains pumps P-101 through P-104 that, in case of a power failure, can be powered by a generator-set. In addition, at the south reservoir there is space available for a future pump, P-105. The north reservoir contains pumps P-201 through P-203. Pump details for both south and north pumphouses are detailed in **Table 3.8**.

Table 3.8: Reservoir - Pumphouse Details

Pump Number	Description	Power	Capacity
P-101 (Service)	Distribution Pump	60 HP	72 L/s at 55 m
P-102 (Service)	Distribution Pump	60 HP	72 L/s at 55 m
P-103 (Service)	Distribution Pump	60 HP	72 L/s at 55 m
P-104 (Duty)	Distribution Pump	125 HP	150 L/s at 55 m
P-105 (Duty)*	Distribution Pump	125 HP	150 L/s at 55 m
P-201 (Service)	Reservoir Turnover Pump	10 HP	13.5 L/s at 42.7 m
P-202 (Service)	Reservoir Turnover Pump	10 HP	13.5 L/s at 42.7 m
P-203 (Service)	Distribution Pump	Engine	168 L/s at 55 m

* P-105 proposed for future development when pumping requirements exceed existing pumping capacity

AECOM proposed the following pumping philosophy in the 2010 Morinville South Reservoir Pumphouse Upgrade pre-design report.

During normal operating conditions, pump P-104 (150 L/s) at the south reservoir will act as the lead pump. P-104 is a variable speed pump that will operate at the required speed to provide a constant discharge pressure of 520 kPa (75 psi). As the demand increases, the pump speed will increase. If the speed of the lead pump reaches 100% (approximately 150 L/s), the first service pump (72 L/s) will start and pump to 100% speed allowing the duty pump to ramp down in speed while maintaining the discharge pressure at 520 kPa. To ensure adequate reservoir turnover at the north reservoir, during normal operating conditions, P-201 will operate between 6 AM and 8 AM every day, and P-202 will operate between 6 PM and 8 PM every day. At 10 PM, the reservoir fill valve will be opened to fill the north reservoir. P-203 will be used to assist the pumps at the south reservoir pumphouse during maximum day demand plus fire flow scenarios. The north pumphouse actual operating regime may vary but the intention is that there is a 100% turnover of the water in the reservoir within 7 days.

During low demand periods (winter), a service pump (72 L/s) at the south pumphouse will be set as the lead pump. If the demand increases to where the lead service pump is at 100% speed, the first lag service pump (72 L/s) will operate in unison with the lead service pump with both pumps operating at the same speed to maintain the distribution system pressure. If the demand further increases to where the lead and first lag service pumps are both operating at 100% speed, the second lag service pump (72 L/s) will start and run in unison with the lead and first lag service pumps with all pumps operating at the same speed. If the demand were to further increase where all three service pumps are operating at 100% speed, the control system will revert to the normal demand conditions and the lead duty pump (150 L/s) will start and operate in unison with the service pumps to maintain a constant distribution system pressure.

P-105 is planned for future installation; therefore, the capacity of the south pumphouse is approximately 216 L/s (assuming the largest pump is out of service). The capacity of the new diesel engine driven pump at the north pumphouse is approximately 168 L/s, providing a design capacity of approximately 384 L/s. This design capacity satisfies the existing system maximum day demand plus fire flow requirements of 302 L/s.

With the installation of P-105 at the south pumphouse, the capacity of the south pumphouse will be approximately 366 L/s (assuming one of the largest pumps is out of service). Including the operation of the engine driven pump at the north pumphouse, the design capacity is approximately 534 L/s which satisfies the ultimate development scenario maximum day plus fire flow requirements (469 L/s). Future servicing is further discussed in Section 3.5.

3.4.2 System Modelling

The following sections detail the modelling development and results for the existing water distribution system for the Town of Morinville.

3.4.2.1 Existing Model Development

The water distribution system for the Town of Morinville was modelled using WaterCAD Connect Edition Update 3, developed by Bentley Systems Inc. This program has the capacity to model both steady state and extended period simulations. The software uses pull-down menus for data entering and editing along with an AutoCAD based graphical interface. The software allows for review of simulation results graphically on the screen and the graphical results can also be plotted as required.

The program requires physical details of the existing distribution system such as pipe diameters, lengths, roughness coefficients, water consumption demands, and ground elevations to represent the water distribution system through pipes and junction nodes. The distribution system data was obtained from water distribution system drawings. Ground elevations at nodes were estimated using topographic maps provided by the Town of Morinville or spot elevations.

The existing water distribution system schematic is shown on **Figure 3.1**, with pipe diameters colour coded. The pipe materials are shown on **Figure 3.2**. Water consumption rates from **Table 3.1** through **Table 3.4** were used to estimate the demands at the various nodes in the system for the existing development condition. The assigned water consumption boundaries for the existing water distribution system are illustrated on **Figure 3.3**.

3.4.2.2 Model Verification

During the 2008 Municipal Utility Servicing Plan Update (AECOM), the Town of Morinville water distribution system model was calibrated to determine appropriate Hazen-Williams roughness coefficients (C) for the systems different pipe materials. The pipe materials consist of asbestos cement (AC) in older areas and PVC in newer areas of the distribution system.

As per the recommendations of the 2008 Municipal Servicing Plan Update, for subsequent analysis a roughness coefficient of 100 for asbestos cement and 110 for PVC pipes was adopted to represent the hydrant flow tests taken in 2008. For proposed PVC pipes during upgrade, interim, and ultimate development scenarios a roughness coefficient of 120 will be used.

3.4.3 System Evaluation – Existing Development Condition

Hydraulic analyses for the following demands were carried out for the Town of Morinville water distribution system:

- Peak Hour Demand; and
- Maximum Day Demand plus Fire Flow.

As detailed in Section 3.3.4, the peak hour demand was evaluated such that the minimum pressure in the system should remain above 280 kPa. As detailed in Section 3.3.2, the maximum day demand plus fire flow scenario was evaluated such that a fire flow was applied at each node based on the recommended minimum required fire flows of 250 L/s for non-residential areas, 180 L/s for multi-family residential, and 115 L/s for single family residential. The minimum residual pressure remaining in the system during the maximum day demand plus fire flow scenario shall be 140 kPa.

As described in Section 3.4.2, water consumption boundaries were developed and the demand for each consumption boundary was applied to the nearest node.

3.4.3.1 Peak Hour Demand – Existing Development Condition

The existing water distribution system was analyzed for peak hour demand, assuming that pump P-104 (150 L/s) was in operation at the south reservoir-pumphouse, and no other pumps were operational. The pressure setting at the south reservoir-pumphouse was set to 520 kPa (75 psi). The peak hour demand for the Town in the existing development condition is 76.4 L/s. **Table 3.9** summarizes the results of the existing system peak hour demand analysis. The peak hour demand results of the existing system are illustrated on **Figure 3.4**. The detailed simulation results for the existing development condition with peak hour demand are included in Appendix B.

Table 3.9: Existing System Analysis – Peak Hour Demand

Number of Nodes (No.)	Minimum Pressure (kPa)	Maximum Pressure (kPa)	Nodes with High Pressure		Nodes with Low Pressure	
			(No.)	(%)	(No.)	(%)
499	483	547	0	0%	0	0%

As seen in **Table 3.9**, no nodes within the water distribution system were outside of the recommended range of 280 kPa (40 psi) to 550 kPa (80 psi), with pressures in the system ranging from 483-547 kPa. Therefore, the existing system is adequate to supply the peak hour demands, provided a pressure of 520 kPa is maintained at the south reservoir-pumphouse.

3.4.3.2 Maximum Day Demand Plus Fire Flow – Existing Development Condition

The existing distribution system was analyzed for the maximum day demand plus fire flow based on the assumption that the engine pump (P-203) at the north reservoir-pumphouse is operational as well as the three distribution pumps (P-101, P-102, and P-103) at the south reservoir-pumphouse are operational. Therefore, the pumping capacity is 384 L/s; and the pressure at both reservoir-pumphouses was set to 520 kPa (75 psi).

Simulation runs were carried out to establish the available fire flow at a minimum pressure of 140 kPa at all locations within the Town of Morinville water distribution system. The maximum day demand for the existing water distribution system is 50.9 L/s, plus fire flow of 250 L/s for non-residential areas, 180 L/s for multi-family residential, and 115 L/s for single family residential properties. **Table 3.10** summarizes the results of the existing system maximum day demand plus fire flow analysis. The maximum day demand plus fire flow results of the existing system are illustrated on **Figure 3.5**. The detailed simulation results for the existing development condition are included in Appendix B.

Table 3.10: Existing System Analysis – Maximum Day Demand plus Fire Flow

Single Family Residential Nodes (No.)	Multi-Family Residential Nodes (No.)	Non-Residential Nodes (No.)	Single Family Residential Nodes Failing Fire Flow Requirements		Multi-Family Residential Nodes Failing Fire Flow Requirements		Non-Residential Nodes Failing Fire Flow Requirements		Total Nodes Failing Fire Flow Requirements	
			(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
399	12	88	14	4%	1	8%	7	8%	22	4%

As seen in **Table 3.10**, the available fire flows were found to be inadequate at 22 of 499 node locations shown as yellow, orange and red dots on **Figure 3.5**. The areas include 14 single family residential nodes, 1 multi-family residential node, and 7 non-residential nodes.

3.4.4 Existing System Deficiencies

The majority of the systems deficiencies within the Town of Morinville water distribution system were found at stub-ends within residential areas. These areas have been deemed acceptable as the available fire flow in these areas range from 88 to 115 L/s at the failing nodes. In addition, adjacent to the stub end the available fire flow is greater than the recommended flow.

As seen on **Figure 3.5**, 22 node locations do not meet the fire flow requirements as detailed in Section 3.4.3.2; however, only 11 of these nodes have been identified as system deficiencies. These 11 deficiencies are found in the following five areas:

- The Morinville Arena at 99 Avenue and 104 Street;
- The multi-family residential area near 99 Avenue and 107 Street;
- The residential area near 98 Avenue and 98 Street;
- Downtown near 101 Avenue and 104 Street; and
- Near the Sobeys grocery store near 100 Avenue and 99 Street.

The available fire flows at all 22 nodes are shown in **Table 3.11**:

Table 3.11: Existing System Deficiencies

Node	Land Use Type	Required Fire Flow (L/s)	Available Fire Flow (L/s)	Percentage of Required Flow (%)	Category
J-N2361E	Single Family Residential	115	106	92%	System Deficiency
J-N2362E	Single Family Residential	115	89	77%	System Deficiency
J-N2363E	Single Family Residential	115	85	74%	System Deficiency
J-N2300E	Commercial	250	208	83%	System Deficiency
J-N2301E	Single Family Residential	115	109	95%	System Deficiency
J-N4320E	Commercial	250	227	91%	System Deficiency
J-N4420E	Commercial	250	194	78%	System Deficiency

Node	Land Use Type	Required Fire Flow (L/s)	Available Fire Flow (L/s)	Percentage of Required Flow (%)	Category
J-N4430E	Commercial	250	207	83%	System Deficiency
J-N4081E	Multi-Family Residential	180	109	61%	System Deficiency
J-N4082E	Single Family Residential	115	90	78%	System Deficiency
J-139	Commercial	250	201	80%	System Deficiency
J-2181E	Single Family Residential	115	105	91%	Acceptable Stub-End
J-N2255E	Single Family Residential	115	107	93%	Acceptable Stub-End
J-N3301E	Single Family Residential	115	108	94%	Acceptable Stub-End
J-N3321E	Single Family Residential	115	105	91%	Acceptable Stub-End
J-N1342E	Single Family Residential	115	97	84%	Acceptable Stub-End
J-N2383E	Single Family Residential	115	88	77%	Acceptable Stub-End
J-N4481E	Single Family Residential	115	80	70%	Acceptable Stub-End
J-N4491E	Single Family Residential	115	89	77%	Acceptable Stub-End
J-N4104E	Single Family Residential	115	87	76%	Acceptable Stub-End
J-S2051E	Commercial	250	220	88%	Acceptable Stub-End
J-143	Commercial	250	234	94%	Acceptable Stub-End

During subsequent development stages, the remaining areas that do not meet the fire flow requirement in the existing development condition are improved via additional looping. Therefore, no improvement recommendations have been made at these locations.

For areas that are noted as deficient in fire flow (excluding acceptable stub-ends), conceptual level system improvements have been identified which are further discussed in Section 3.4.5. For the purposes of this study, insufficient available fire flow is identified as below the required fire flow for each land use as designated in the Town of Morinville Municipal Design Standards (June 2023). For areas that do not meet the required fire flow in the future, the Fire Underwriters Survey (FUS) building specific fire flow requirement should be completed to determine if additional fire protection measures (sprinklers, on-site fire pump) should be provided. In all cases for Morinville, improvements were recommended to meet the required fire flow with the exception of the stub ends.

3.4.5 System Improvements

The main deficiencies in the Town of Morinville water distribution system were further evaluated for improvement alternatives. The improvement alternatives for the existing system are shown on **Figure 3.6**. These improvement alternatives will focus on providing the required fire flow to the areas described in the previous section. The upgrades were considered only for main lines in the water distribution system where upgrades would be the most cost effective and provide the greatest benefit. Upgrades implemented to improve local deficiencies, such as within cul-de-sacs, should be considered as secondary upgrades, and could be implemented with pipe replacement or

local road improvements. Some of the local deficiencies in the existing system are solved in the future scenarios, due to additional looping of the system. Therefore, upgrades are not recommended in these areas.

The proposed system upgrades required to provide adequate pressure and fire flows to the existing system are summarized in **Table 3.12**.

Table 3.12: Proposed Water Main Upgrades to Existing System

Location	From Node	To Node	Existing Pipe Diameter (mm)	Upgraded Pipe Diameter (mm)	Length (m)
100 Ave & 99 St	J-N2300E	J-N2310E	150	200	69
101 Ave & 104 St	J-N4320E	J-N4310E	150	250	105
99 Ave & 107 St	J-N4080E	J-N4081E	150	200	85
98 Ave & 98 St	J-N2380E	J-N2363E	N/A	200	85
Morinville Arena	J-139	J-N4420E	N/A	250	167
TOTAL					510

As indicated in **Table 3.12**, approximately 510 m of pipe upgrades are recommended with new pipe and replacement pipe diameters ranging from 200 mm to 300 mm.

3.4.5.1 Peak Hour Demand – Upgraded System

The existing plus upgrades water distribution system was analyzed for peak hour demand, assuming that pump P-104 (150 L/s) was in operation at the south pumphouse, and no other pumps were operational. The pressure setting at the south reservoir was set to 520 kPa (75 psi).

Table 3.13 summarizes the results of the existing system peak hour demand analysis. The peak hour demand results of the existing system plus improvements are illustrated on **Figure 3.7**. The detailed simulation results for the existing development condition with improvements with peak hour demand are included in Appendix C.

Table 3.13: Existing System Plus Improvements Analysis – Peak Hour Demand

Number of Nodes (No.)	Minimum Pressure (kPa)	Maximum Pressure (kPa)	Nodes with High Pressure		Nodes with Low Pressure	
			(No.)	(%)	(No.)	(%)
499	483	547	0	0%	0	0%

As seen in **Table 3.13**, no nodes within the water distribution system were outside of the recommended range of 280 kPa (40 psi) to 550 kPa (80 psi), with pressures in the system ranging from 483-547 kPa. Therefore, the upgraded system is adequate to supply the peak hour demands, provided a pressure of 520 kPa is maintained at the south reservoir-pumphouse.

3.4.5.2 Maximum Day Demand Plus Fire Flows – Upgraded System

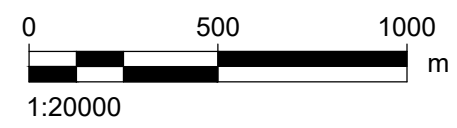
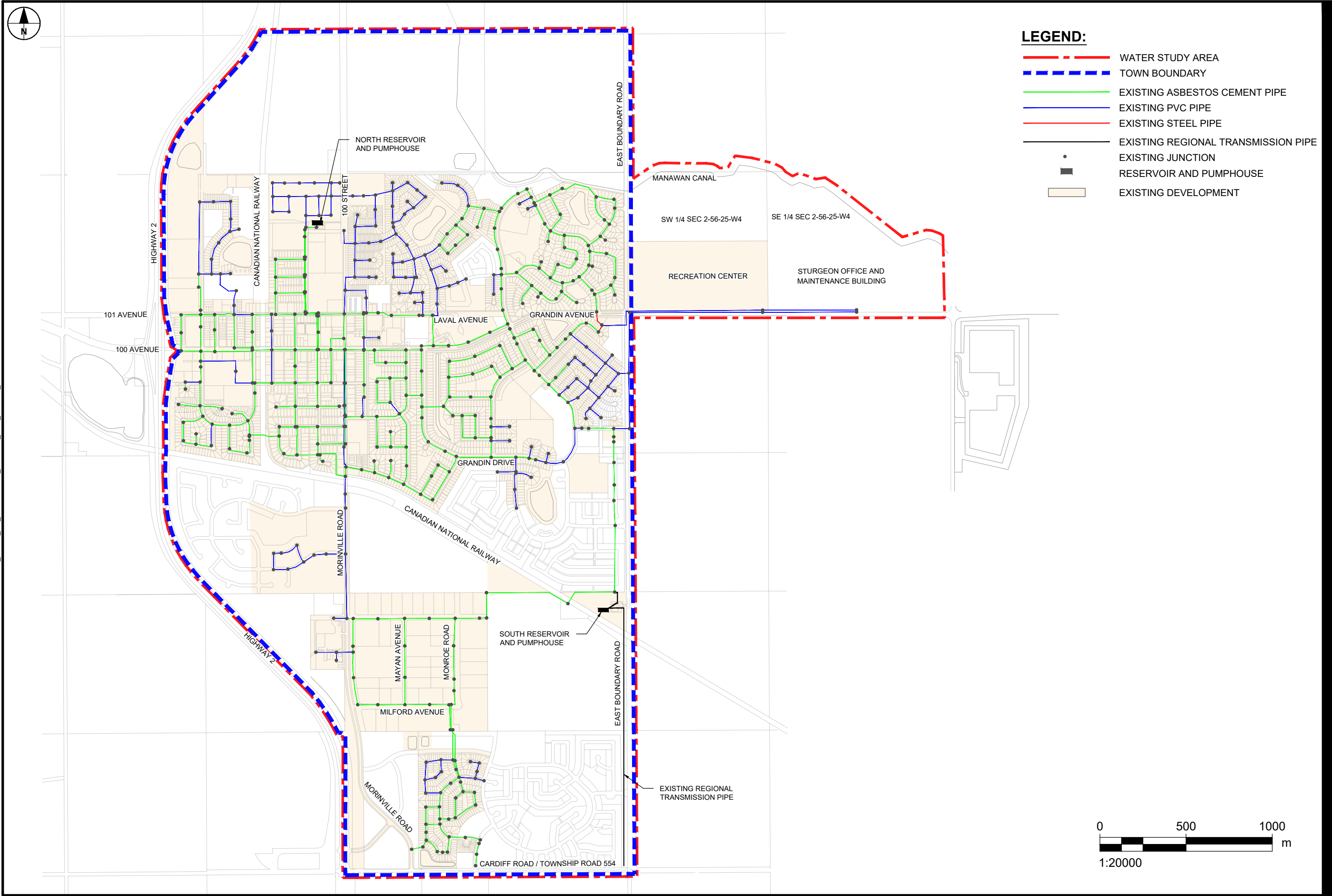
With the proposed pipe upgrades indicated in **Figure 3.8**, the improved water distribution system was analyzed for the maximum day demand plus fire flow scenario. Similar to the existing system, pumps P-101, P-102, P-103, and P-203 were assumed operational for a pumping capacity of 384 L/s.

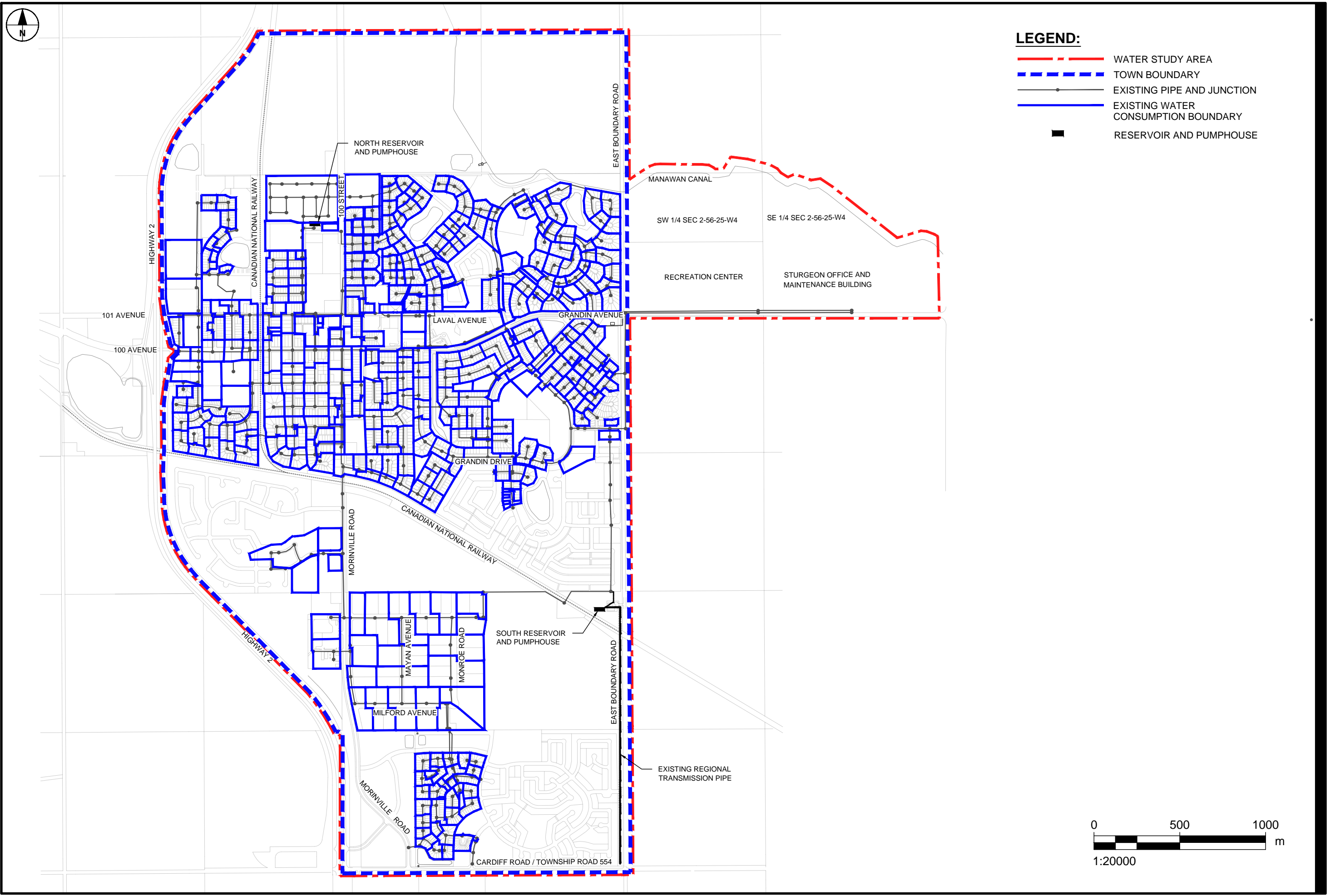
Table 3.14 summarizes the results of the existing system maximum day demand plus fire flow analysis. The maximum day demand plus fire flow results of the existing system with improvements are illustrated on **Figure 3.8**. The detailed simulation results for the existing development condition with improvements are included in Appendix C.

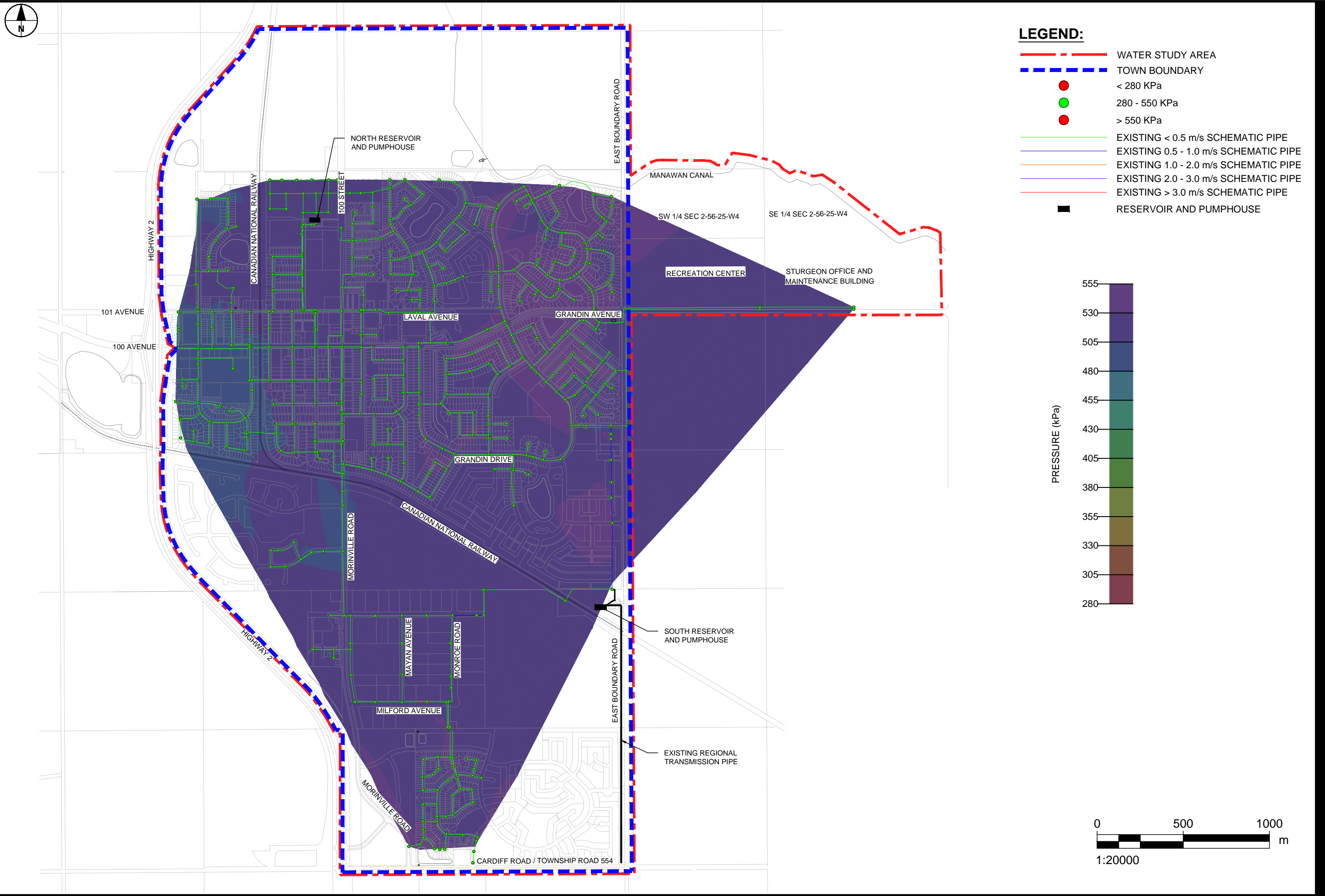
Table 3.14: Existing System Plus Improvements Analysis – Maximum Day Demand plus Fire Flow

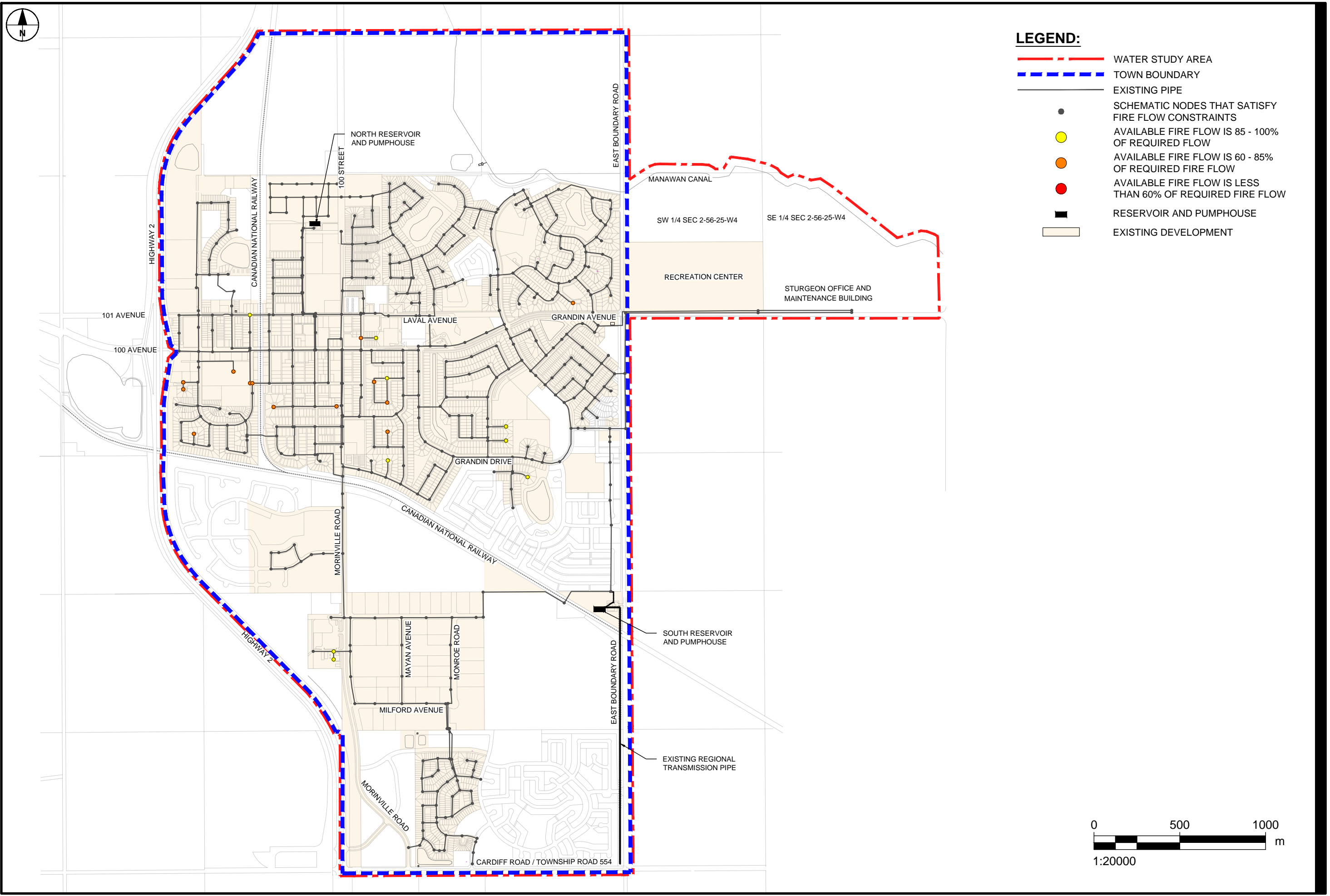
Single Family Residential Nodes (No.)	Multi-Family Residential Nodes (No.)	Non-Residential Nodes (No.)	Single Family Residential Nodes Failing Fire Flow Requirements		Multi-Family Residential Nodes Failing Fire Flow Requirements		Non-Residential Nodes Failing Fire Flow Requirements		Total Nodes Failing Fire Flow Requirements	
			(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
399	12	90	9	2%	0	0%	0	0%	9	2%

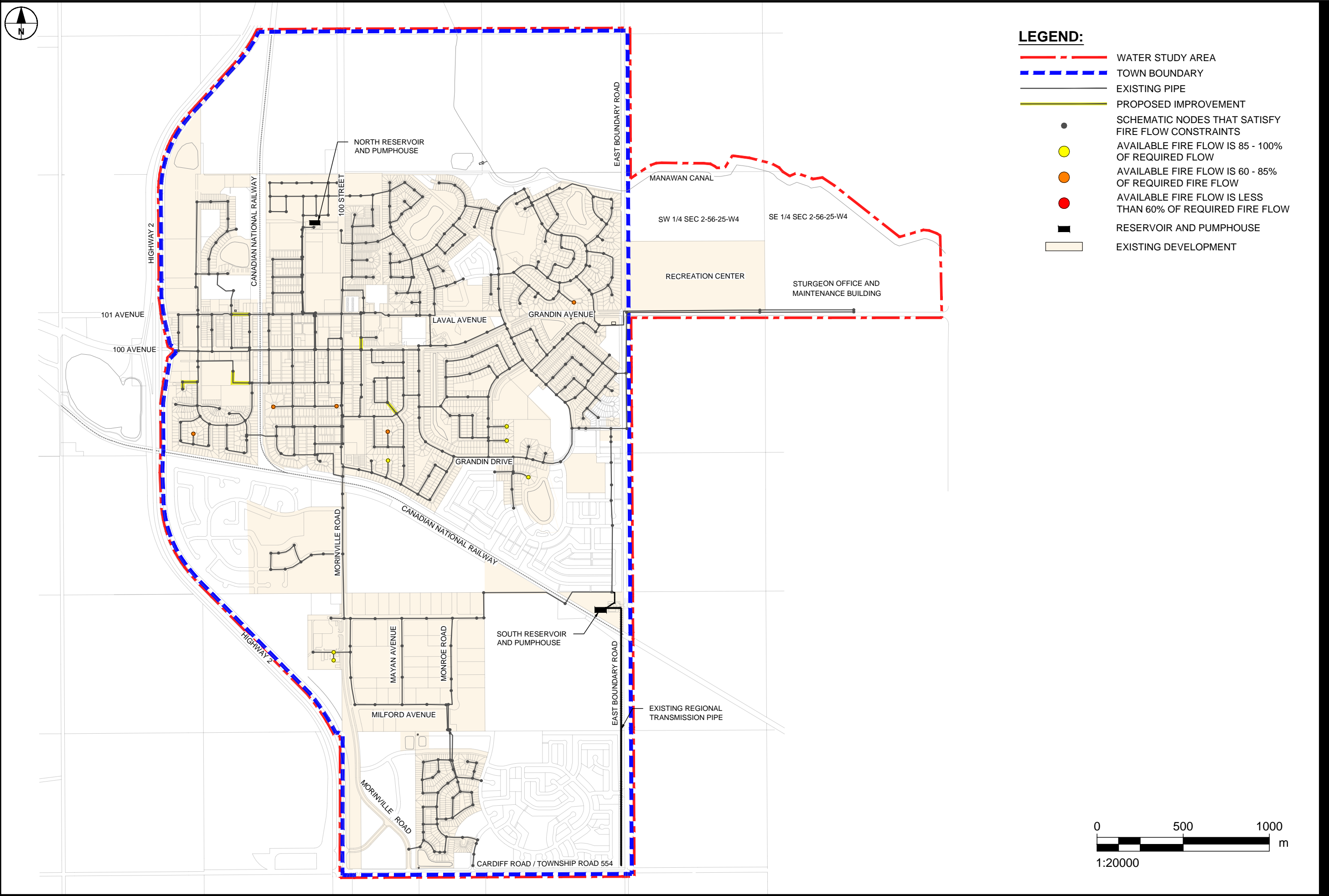
As seen in **Table 3.14**, the available fire flows were found to be inadequate at 9 of 499 node locations shown as yellow, orange and red dots on **Figure 3.8**. The areas include 9 single family residential nodes, located at dead-ends or cul-de-sacs.



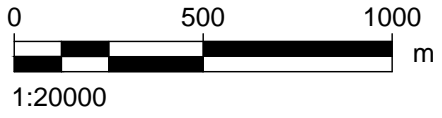








- LEGEND:**
- - - WATER STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING PIPE
 - PROPOSED IMPROVEMENT
 - SCHEMATIC NODES THAT SATISFY FIRE FLOW CONSTRAINTS
 - AVAILABLE FIRE FLOW IS 85 - 100% OF REQUIRED FLOW
 - AVAILABLE FIRE FLOW IS 60 - 85% OF REQUIRED FIRE FLOW
 - AVAILABLE FIRE FLOW IS LESS THAN 60% OF REQUIRED FIRE FLOW
 - RESERVOIR AND PUMPHOUSE
 - EXISTING DEVELOPMENT



3.5 Future Water Distribution System

The future development scenarios for the interim and ultimate were analyzed assuming all recommended upgrades have been implemented. As discussed in Section 3.5.2, the average day demand for the interim and ultimate development scenarios are 51.1 L/s and 99.2 L/s, respectively.

3.5.1 Storage Reservoirs

As discussed in Section 3.4.1.2, the north reservoir requires a fire storage volume of 1,463 m³, and the south reservoir requires a fire storage volume of 2,048 m³ for a total fire storage of 3,510 m³. The overall storage requirements for the interim and ultimate development conditions are summarized in **Table 3.15** and **Table 3.16** respectively.

Table 3.15: Water Storage Requirements for Interim Development Scenario

Storage Requirement	Volume (m ³)
Fire Storage Requirement	3,510
Emergency Storage: 2 x Average Day Demand (ADD = 51.1 L/s)	8,836
TOTAL	12,346

Table 3.16: Water Storage Development for Ultimate Development Scenario

Storage Requirement	Volume (m ³)
Fire Storage Requirement	3,510
Emergency Storage: 2 x Average Day Demand (ADD = 99.2 L/s)	17,150
TOTAL	20,660

As detailed in Section 3.4.1, the capacity of the north and south reservoirs is 2,270 m³ and 14,310 m³, respectively, for a total capacity of 16,580 m³. Therefore, the current capacity of the reservoirs meets the RWCG recommended storage capacity for the interim development condition; however, an additional 4,080 m³ is required for the ultimate development.

It is recommended that additional storage be added to the south reservoir when the storage requirement reaches the current capacity of 16,580 m³. This volume corresponds to an ADD of 75.6 L/s, or when the population of the Town of Morinville reaches approximately 22,900 persons (approximately 720 ha of total developed area).

There is room at the south reservoir to be expanded by an additional 7,500 m³, for a total volume at the south reservoir of 21,810 m³, equating to a total storage for the Town of Morinville of 24,080 m³ including the north reservoir. With this expansion, the storage capacity for the Town of Morinville is sufficient until the average day demand reaches approximately 119 L/s, or a population of approximately 34,200 (approximately 1000 ha of total developed area).

Similar to the existing condition, the south pumphouse will be utilized to fulfill the required peak hour demands, limiting the north reservoir-pumphouse to contribute only during the fire conditions. The water in the north reservoir, however, will still need to be turned over at least once per week to avoid water quality issues. Thus, the pumping philosophy will remain the same as described in Section 3.4.1.

3.5.2 Pumphouse Facilities

The future demand rates and pumping requirements for the Town of Morinville are based on the projected growth indicated in Section 3.3.1. The pumping requirements are summarized in **Table 3.17**.

Table 3.17: Pumping Requirements

Demand Scenario	Existing (L/s)	Future (L/s)	
		Interim	Ultimate
Average Day Demand	25.5	51.1	99.2
Maximum Day Demand	50.9	102.3	198.5
Peak Hour Demand	764	153.4	297.7
Fire Flow	250	250	250
MDD plus Fire Flow	300.9	352.3	448.5

As indicated in **Table 3.17**, the required flows for the interim and ultimate development conditions are governed by the maximum day demand plus fire flow scenario, at approximately 350 L/s and 450 L/s, respectively.

As stated in Section 3.4.1, the current capacity of the north and south pumphouses are 168 L/s and 216 L/s, respectively, for a total pumping capacity of approximately 384 L/s, assuming that the largest pump at the south reservoir (P-104) is out of service. Therefore, the current capacity of the pumphouses is satisfactory for the interim development scenario. Similar to the existing condition, pumps P-201 and P-202 are to ensure water turnover in the north reservoir within 7 days.

With the addition of pump P-105 (150 L/s) at the south pumphouse, the total pumping capacity increases to 534 L/s which satisfy the pumping requirements for the ultimate development scenario. It is recommended to install pump P-105 for when the pumping requirement reaches 384 L/s, which is equivalent to an average day demand of 67 L/s or a population of approximately 20,850 persons (approximately 652 ha of developed area).

3.5.2.1 Morinville Booster Station

The existing Morinville Booster Station, located in St. Albert at the Oakmont Reservoir and Pumphouse, has a supply capacity of approximately 100 L/s based the operation of one of the two existing booster pumps. The booster station was designed with additional space to allow for the installation of a third pumping unit.

In the 2016 MUSP Update, it was recommended to install a third booster pump with capacity equal to 100 L/s (125 HP) when the population of Morinville reaches 12,000 people, which equated to a projected ADD for the Town of Morinville of approximately 37.5 L/s. As discussed in earlier sections, the population of Morinville is currently 10,865 people, and the ADD has remained relatively flat at 25.5 L/s. It is still recommended to install the third pump when the demand of Morinville reaches 37.5 L/s; however, this is not anticipated to occur at a population of approximately 13,370 persons. The operation of the new pump with one of the existing booster pumps will provide a capacity of 200 L/s with the third pump acting as a stand-by pump.

3.5.3 Water Distribution Evaluation – Future Development Conditions

This section details the proposed water servicing plans and modelling results of the interim and ultimate development conditions. Each development scenario was modelled for both peak hour and maximum day demand plus fire flow scenarios.

The proposed service concept and modelling results for the peak hour demand and maximum day demand plus fire flow scenario for the interim development condition are detailed on **Figure 3.9**, **Figure 3.10**, and, **Figure 3.11** respectively. Detailed simulation results for the interim development condition are detailed in Appendix D.

For the ultimate development, the proposed service concept and modelling results for the peak hour demand and maximum day demand plus fire flow scenario are detailed on **Figure 3.12**, **Figure 3.13**, and, **Figure 3.14** respectively. Detailed simulation results for the ultimate development condition are detailed in Appendix E.

3.5.3.1 Peak Hour Demand – Interim Development Condition

The proposed service concept for the interim development condition is detailed on **Figure 3.9**. The peak hour demand scenario for the interim development condition was modelled with pump P-104 and one distribution pump (P-103) operational maintaining a pressure of 520 kPa at the pumphouse. The peak hour demand for the Town in the interim development condition is 153.4 L/s. **Table 3.18** summarizes the results of the interim system peak hour demand analysis. The peak hour demand results of the interim system are illustrated on **Figure 3.10**. The detailed simulation results for the interim development condition with peak hour demand are included in Appendix D.

Table 3.18: Interim System Analysis – Peak Hour Demand

Number of Nodes (No.)	Minimum Pressure (kPa)	Maximum Pressure (kPa)	Nodes with High Pressure		Nodes with Low Pressure	
			(No.)	(%)	(No.)	(%)
499	451	523	0	0%	0	0%

As seen in **Table 3.18**, no nodes within the water distribution system were outside of the recommended range of 280 kPa (40 psi) to 550 kPa (80 psi), with pressures in the system ranging from 451-523 kPa. Therefore, the interim system is adequate to supply the peak hour demands, provided a pressure of 520 kPa is maintained at the south reservoir-pumphouse.

3.5.3.2 Maximum Day Demand Plus Fire Flow – Interim Development Condition

Similar to the existing condition, the maximum day demand plus fire flow for the interim development condition was modelled assuming that the largest pump at the south reservoir was out of service. Therefore, the total pumping capacity of the water distribution system is 384 L/s with an initial pressure setting at both reservoirs at 520 kPa.

Simulation runs were carried out to establish the available fire flow at a minimum pressure of 140 kPa at all locations within the Town of Morinville water distribution system. The maximum day demand for the interim water distribution system is 102.3 L/s, plus fire flow of 250 L/s for non-residential areas, 180 L/s for multi-family residential, and 115 L/s for single family residential properties. **Table 3.19** summarizes the results of the interim system maximum day demand plus fire flow analysis. The maximum day demand plus fire flow results of the interim system are illustrated on **Figure 3.11**. The detailed simulation results for the interim development condition are included in Appendix D.

Table 3.19 Interim System Analysis – Maximum Day Demand plus Fire Flow

Single Family Residential Nodes (No.)	Multi-Family Residential Nodes (No.)	Non-Residential Nodes (No.)	Single Family Residential Nodes Failing Fire Flow Requirements		Multi-Family Residential Nodes Failing Fire Flow Requirements		Non-Residential Nodes Failing Fire Flow Requirements		Total Nodes Failing Fire Flow Requirements	
			(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
453	12	98	9	2%	0	0%	4	4%	13	2%

As seen in **Table 3.19**, the available fire flows were found to be inadequate at 13 of 563 node locations shown as yellow, orange and red dots on **Figure 3.11**. The areas include 9 single family residential nodes, 0 multi-family residential node, and 4 non-residential nodes. The Town of Morinville water distribution is considered adequate to provide fire flows in the interim development scenario.

3.5.3.1 Peak Hour Demand – Ultimate Development Condition

The proposed service concept for the ultimate development condition is detailed on **Figure 3.12**. The peak hour demand scenario for the ultimate development condition was modelled with pumps P-101, P-102, P-103, and P-104 operational maintaining a pressure of 520 kPa. The peak hour demand for the Town in the ultimate development condition is 297.7 L/s. **Table 3.20** summarizes the results of the ultimate system peak hour demand analysis. The peak hour demand results of the ultimate system are illustrated on **Figure 3.13**. The detailed simulation results for the ultimate development condition with peak hour demand are included in Appendix E.

Table 3.20: Ultimate System Analysis – Peak Hour Demand

Number of Nodes (No.)	Minimum Pressure (kPa)	Maximum Pressure (kPa)	Nodes with High Pressure		Nodes with Low Pressure	
			(No.)	(%)	(No.)	(%)
499	369	519	0	0%	0	0%

As seen in **Table 3.20**, no nodes within the water distribution system were outside of the recommended range of 280 kPa (40 psi) to 550 kPa (80 psi), with pressures in the system ranging from 369-519 kPa. Therefore, the ultimate system is adequate to supply the peak hour demands, provided a pressure of 520 kPa is maintained at the south reservoir-pumphouse.

3.5.3.1 Maximum Day Demand Plus Fire Flow – Ultimate Development Condition

As stated in Section 3.5.2, for the ultimate development condition an additional 150 L/s pump (P-105) is required to meet the pumping requirements of the maximum day demand plus fire flow condition. Similar to the previous development conditions, the system was modelled with one of the largest pumps at the south reservoir out of service (P-105), therefore the modelled pumping capacity is 534 L/s with an initial pressure at the reservoir at 520 kPa.

Simulation runs were carried out to establish the available fire flow at a minimum pressure of 140 kPa at all locations within the Town of Morinville water distribution system. The maximum day demand for the ultimate water distribution system is 102.3 L/s, plus fire flow of 250 L/s for non-residential areas, 180 L/s for multi-family residential, and 115 L/s for single family residential properties. **Table 3.21** summarizes the results of the ultimate system maximum day demand plus fire flow analysis. The maximum day demand plus fire flow results of the ultimate system are illustrated on **Figure 3.14**. The detailed simulation results for the ultimate development condition are included in Appendix E.

Table 3.21 Ultimate System Analysis – Maximum Day Demand plus Fire Flow

Single Family Residential Nodes (No.)	Multi-Family Residential Nodes (No.)	Non-Residential Nodes (No.)	Single Family Residential Nodes Failing Fire Flow Requirements		Multi-Family Residential Nodes Failing Fire Flow Requirements		Non-Residential Nodes Failing Fire Flow Requirements		Total Nodes Failing Fire Flow Requirements	
			(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
495	12	105	10	2%	0	0%	0	0%	10	2%

As seen in **Table 3.21**, the available fire flows were found to be inadequate at 10 of 612 node locations shown as yellow, orange and red dots on **Figure 3.14**. The areas include 10 single family residential nodes, 0 multi-family residential node, and 0 non-residential nodes. Upgrades in these locations should be considered as secondary upgrades and could be completed when road maintenance or other utility replacement occurs. The Town of Morinville water distribution is considered adequate to provide fire flows in the ultimate development scenario.

3.6 Water Distribution Implementation Plan

Recommendations for the implementation of improvements can be raised on the benefits they provide to the system, either by increasing the available pressure or flow. Consideration should also be given to other factors, such as stakeholder’s acceptance, public consultation, and traffic disruptions. Proposed watermain sizing and costs are conceptual and should be confirmed during the preliminary design stage.

3.7 Water Distribution System Cost Estimates

This section details the costs of the improvements to the Town of Morinville water distribution system. Costs are based on 2023 dollars, and include installation, cost for all fittings, and 40% for engineering and contingencies. The unit costs vary based on the location of the proposed upgrades, ground conditions, development, and surface rehabilitation.

3.7.1 Existing System Improvements Cost Estimates

A summary of the water distribution pipe upgrades is shown in **Table 3.22**.

Table 3.22: Existing Water System Improvements Cost Estimate

Location	Length (m)	Diameter (mm)	Total Cost
100 Ave & 99 St	69	200	\$48,400
101 Ave & 104 St	105	250	\$78,500
99 Ave & 107 St	85	200	\$59,700
98 Ave & 98 St	85	200	\$59,300
Morinville Arena	167	250	\$125,200
Sub-Total			\$371,100
Engineering (10%)			\$37,200
Contingency (30%)			\$111,400
Total			\$519,700

There is no proposed reservoir storage or pumping upgrades proposed for the existing development condition, therefore, the total estimated cost for the existing development improvements is approximately \$519,700.

3.7.2 Interim Development Cost Estimate

A summary of the proposed water distribution pipes is detailed in **Table 3.23**.

Table 3.23: Interim Water System Cost Estimate

Location	Diameter (mm)	Length (m)	Total Cost
Champagne	200	523	\$261,600
Grandin Heights	200	6,025	\$3,012,700
Meadows of Morinville	200	201	\$100,300
North of Business Park	300	904	\$587,900
NW Morinville	200	213	\$106,500
South Glens	200	671	\$335,400
	300	2,121	\$1,378,700
Westwinds	200	1,083	\$541,300
	300	654	\$425,300
Westmor Landing	250	480	\$264,100
Existing System Connections	26		\$78,000
Morinville Booster Station	-		\$300,000
Sub-Total			\$7,391,800
Engineering (10%)			\$739,200
Contingency (30%)			\$2,217,600
Total			\$10,348,600

There are no proposed reservoir storage or pumping upgrades proposed for the interim development condition within the Town of Morinville, therefore, the total estimated cost for the interim development condition within Morinville is approximately \$10.4 million including the additional pump at the Morinville Booster Station.

3.7.3 Ultimate Development Cost Estimate

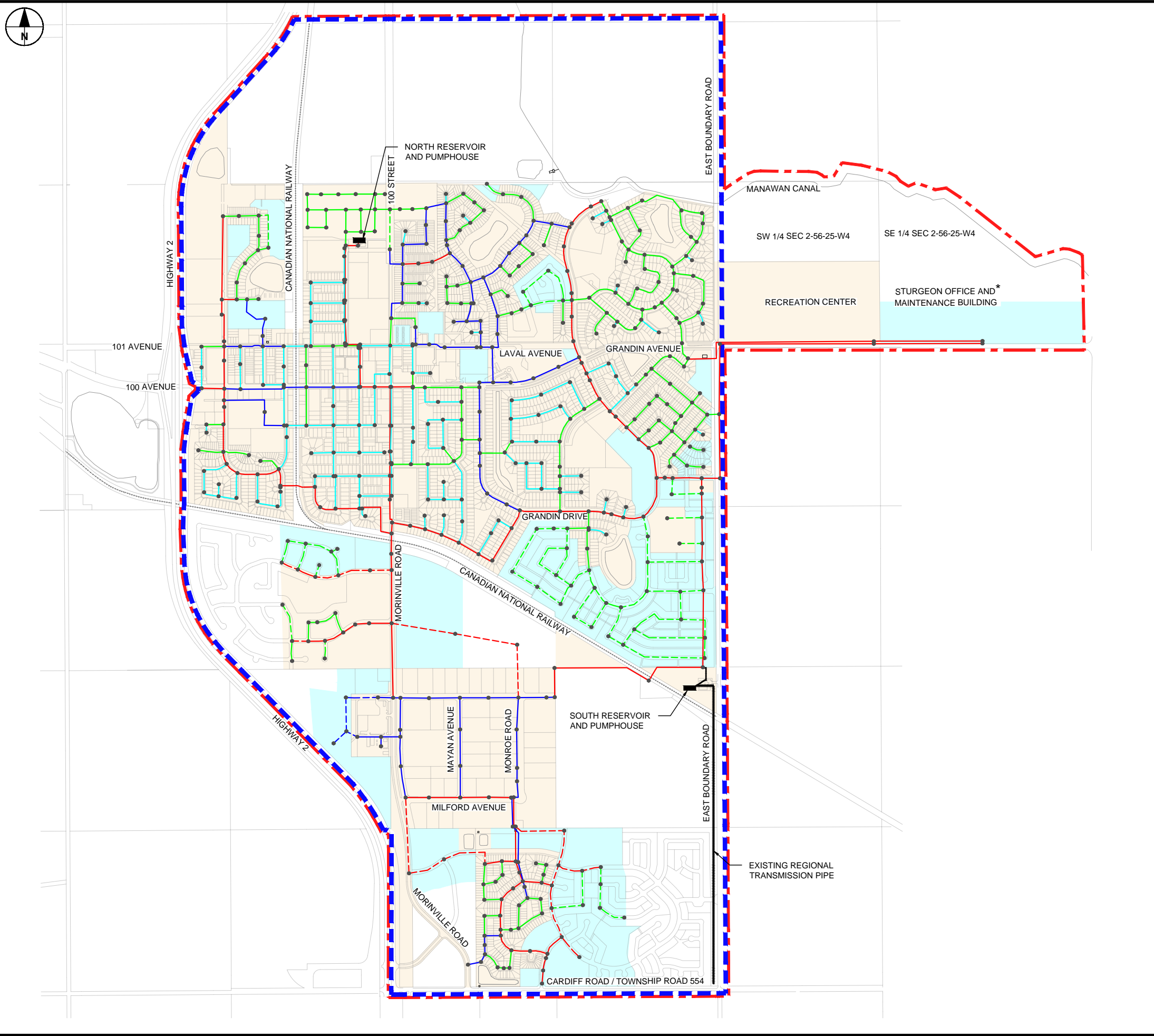
A summary of the proposed water distribution pipes is detailed in **Table 3.24**.

Table 3.24: Ultimate Water System Cost Estimate

Location	Diameter (mm)	Length (m)	Total Cost
East of Industrial Park	250	953	\$524,300
	300	886	\$575,700
North of Business Park	300	932	\$605,600
North District	200	1,051	\$525,400
	250	184	\$101,400
	300	3,344	\$2,173,900
South Glens	200	1,899	\$949,600
	250	594	\$327,000
	300	1,453	\$944,300
Westwinds	200	2,626	\$1,312,900
	300	760	\$493,700
Westmor Landing	250	998	\$549,100
Existing System Connections	8		\$24,000
Reservoir Upgrade	-	-	\$4,500,000

Location	Diameter (mm)	Length (m)	Total Cost
Pumphouse Upgrade	-	-	\$370,000
Sub-Total			\$13,976,900
Engineering (10%)			\$1,397,700
Contingency (30%)			\$4,193,100
Total			\$19,567,700

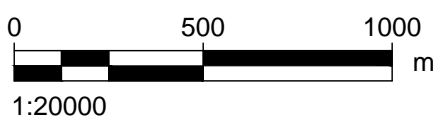
For the ultimate development condition, the south reservoir is proposed to expand by an additional 7,500 m³. The estimated cost for the south reservoir expansion including 40% for engineering and contingency is \$6.3 million. In addition, it is proposed to install pump P-105 at the south reservoir-pumphouse. The estimated cost for the pump including 40% for engineering and contingency is approximately \$0.52 million. Therefore, the total estimated cost for the ultimate development condition including 40% for engineering and contingency is approximately \$19.6 million.

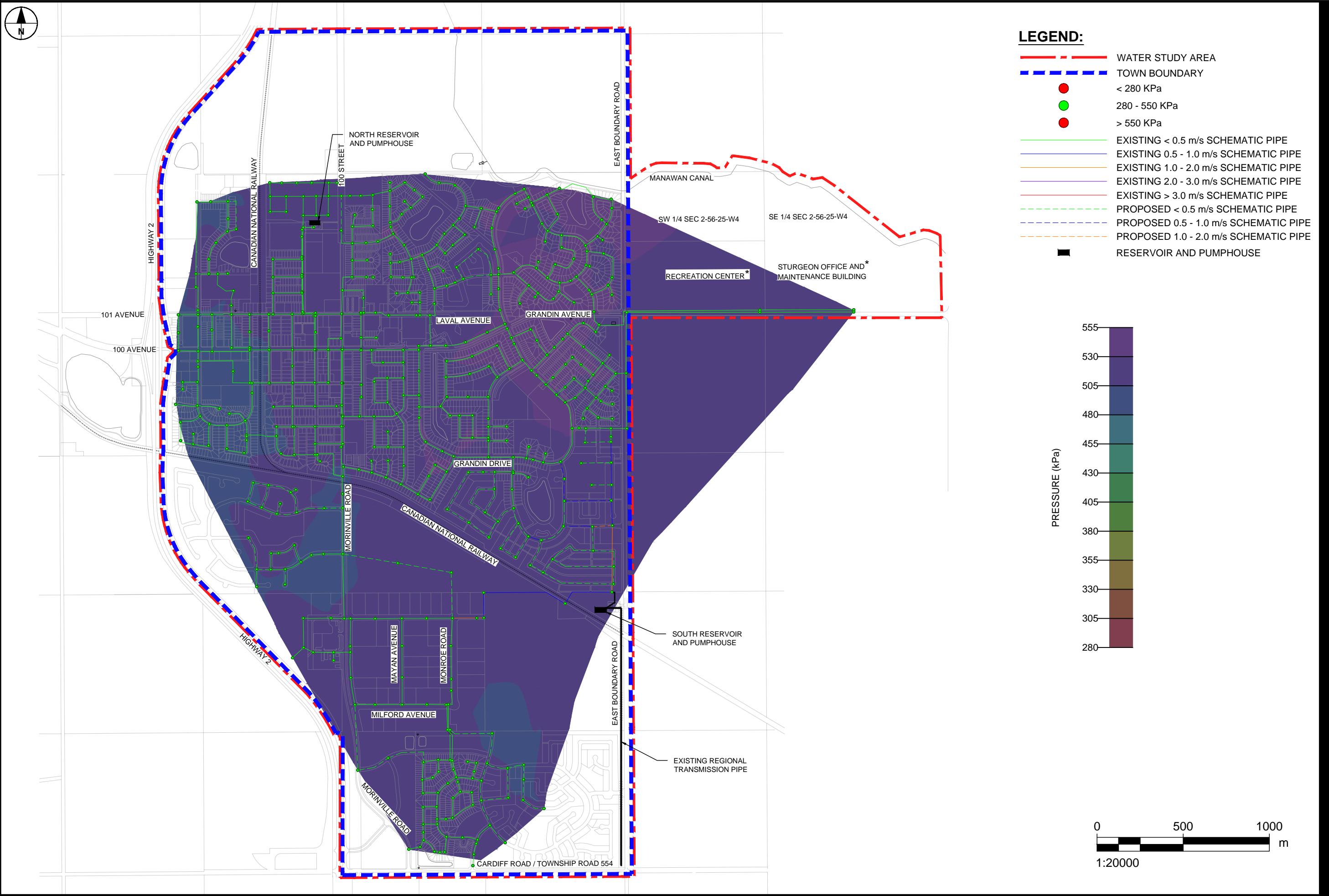


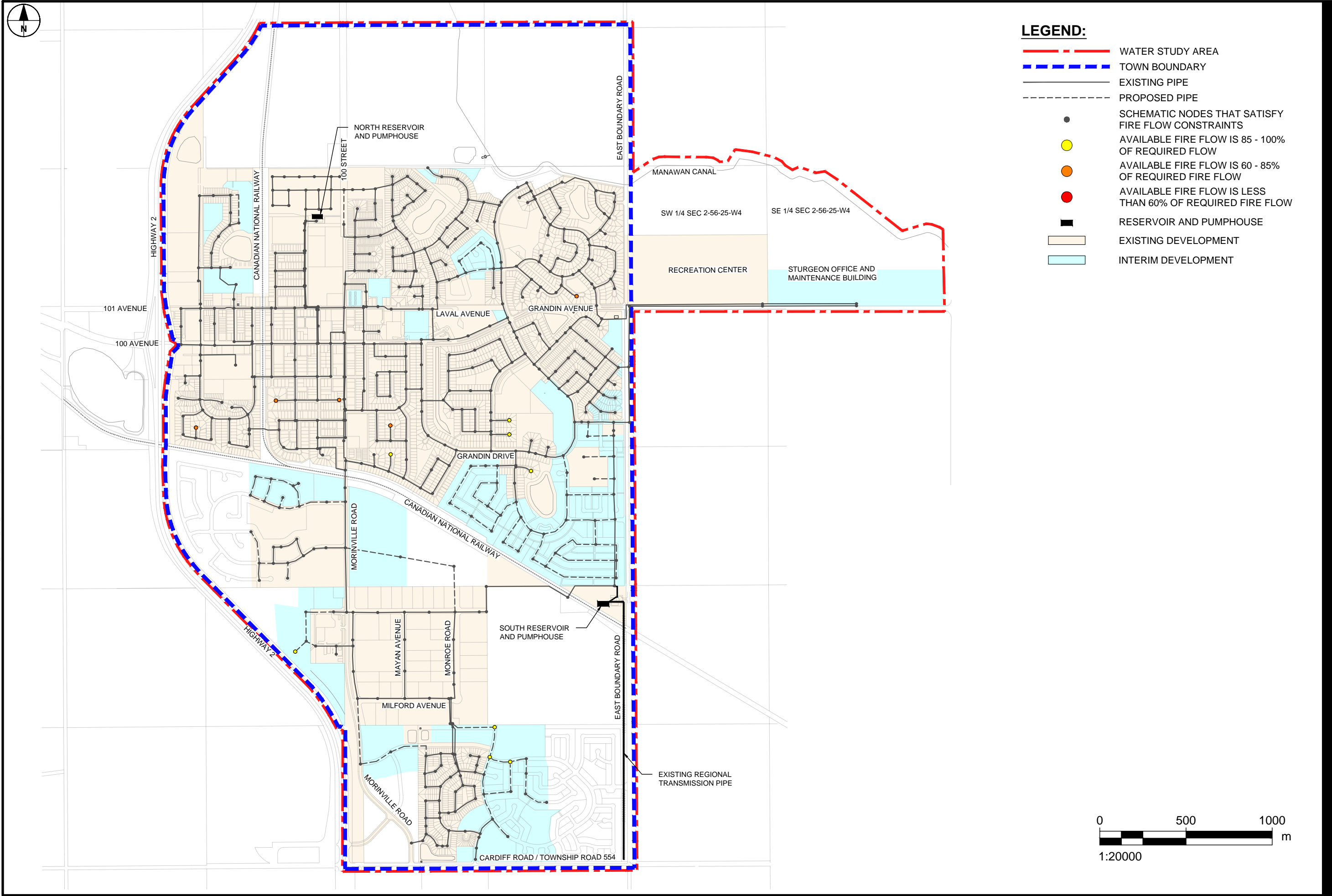
LEGEND:

- - - WATER STUDY AREA
- - - TOWN BOUNDARY
- - - EXISTING REGIONAL TRANSMISSION PIPE
- EXISTING 150 mm PIPE
- EXISTING 200 mm PIPE
- EXISTING 250 mm PIPE
- EXISTING 300 mm PIPE
- EXISTING 400 mm PIPE
- EXISTING 500 mm PIPE
- - - PROPOSED 200 mm PIPE
- - - PROPOSED 250 mm PIPE
- - - PROPOSED 300 mm PIPE
- - - PROPOSED 400 mm PIPE
- EXISTING JUNCTION
- RESERVOIR AND PUMPHOUSE
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT

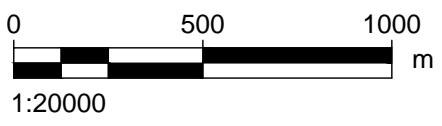
***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

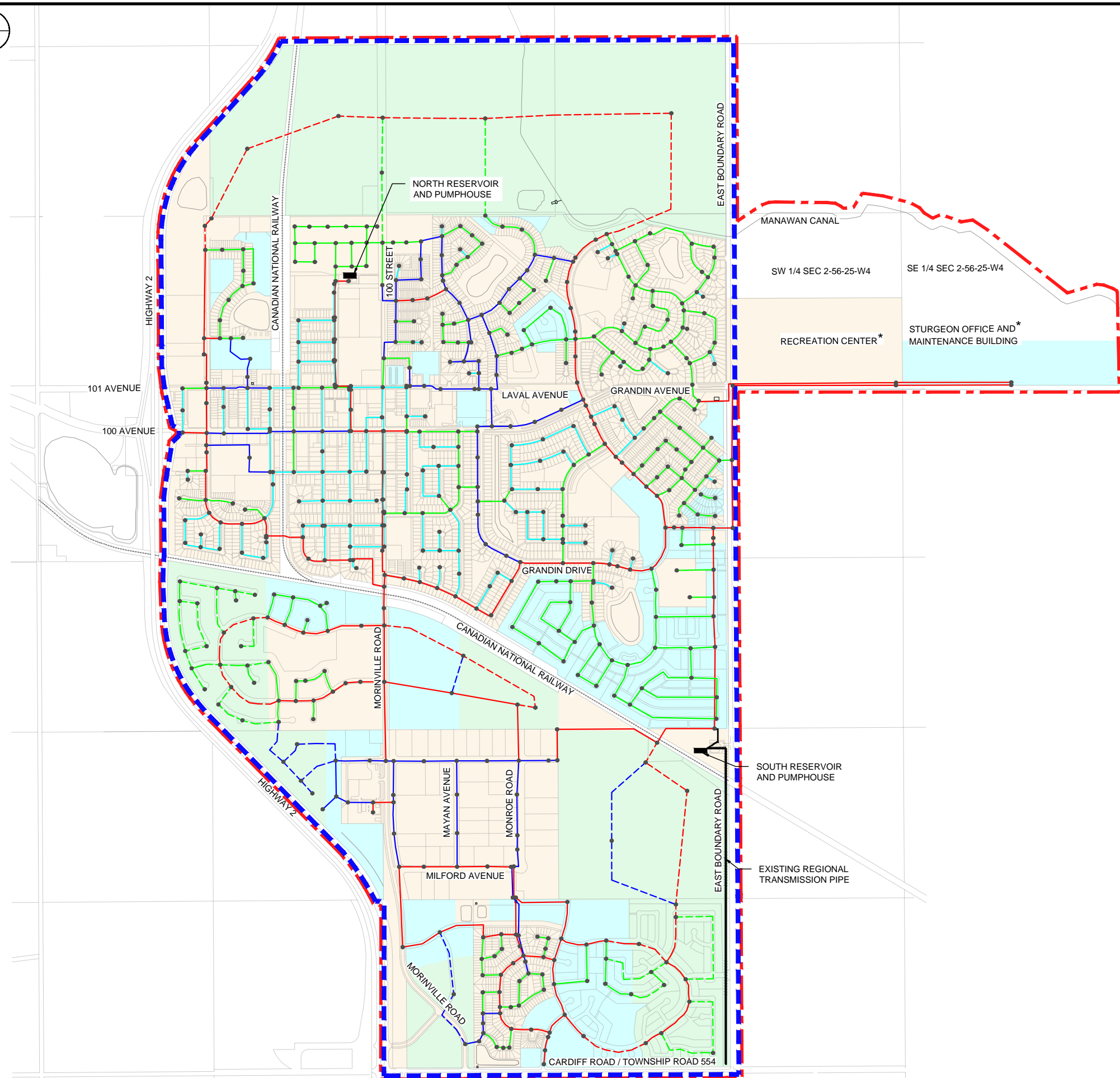






- LEGEND:**
- - - WATER STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING PIPE
 - - - PROPOSED PIPE
 - SCHEMATIC NODES THAT SATISFY FIRE FLOW CONSTRAINTS
 - AVAILABLE FIRE FLOW IS 85 - 100% OF REQUIRED FLOW
 - AVAILABLE FIRE FLOW IS 60 - 85% OF REQUIRED FIRE FLOW
 - AVAILABLE FIRE FLOW IS LESS THAN 60% OF REQUIRED FIRE FLOW
 - RESERVOIR AND PUMPHOUSE
 - EXISTING DEVELOPMENT
 - INTERIM DEVELOPMENT



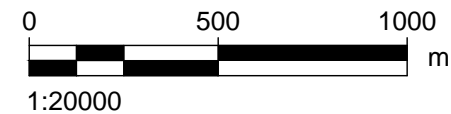


LEGEND:

- - - WATER STUDY AREA
- - - TOWN BOUNDARY
- EXISTING 150 mm PIPE
- EXISTING 200 mm PIPE
- EXISTING 250 mm PIPE
- EXISTING 300 mm PIPE
- EXISTING 400 mm PIPE
- EXISTING 500 mm PIPE
- - - PROPOSED 200 mm PIPE
- - - PROPOSED 250 mm PIPE
- - - PROPOSED 300 mm PIPE
- EXISTING JUNCTION
- RESERVOIR AND PUMPHOUSE
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT

***NOTE:**

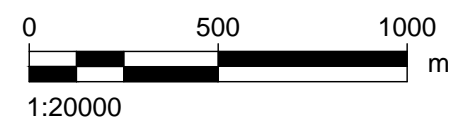
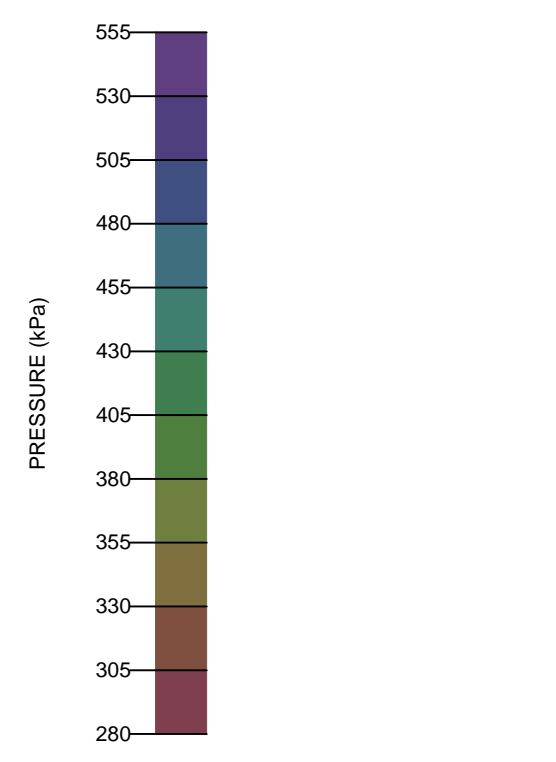
ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

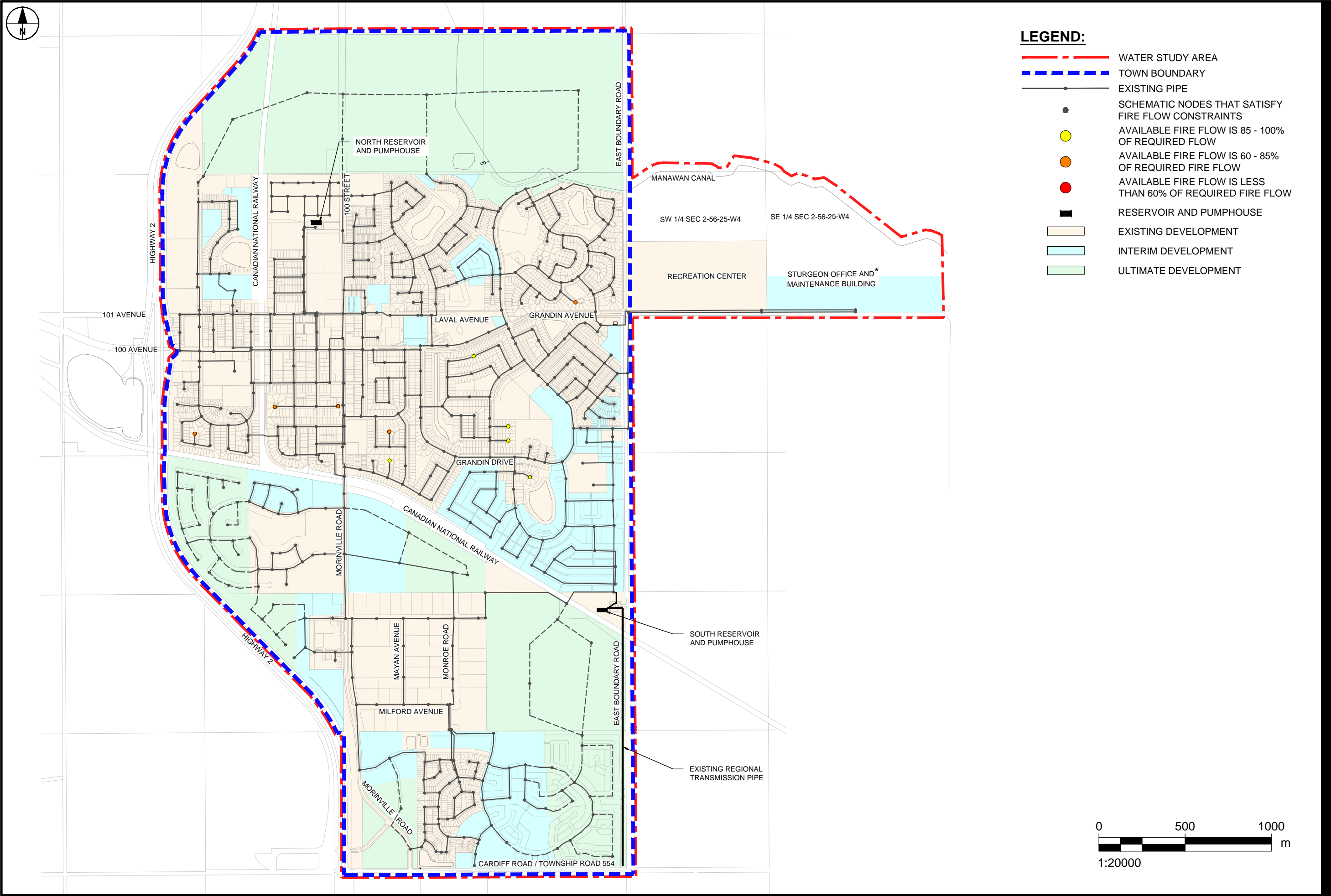




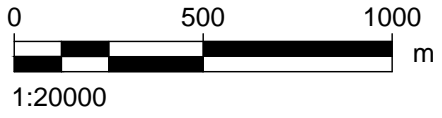
LEGEND:

- - - WATER STUDY AREA
- - - TOWN BOUNDARY
- < 280 KPa
- 280 - 550 KPa
- > 550 KPa
- EXISTING < 0.5 m/s SCHEMATIC PIPE
- EXISTING 0.5 - 1.0 m/s SCHEMATIC PIPE
- EXISTING 1.0 - 2.0 m/s SCHEMATIC PIPE
- EXISTING 2.0 - 3.0 m/s SCHEMATIC PIPE
- EXISTING > 3.0 m/s SCHEMATIC PIPE
- - - PROPOSED < 0.5 m/s SCHEMATIC PIPE
- - - PROPOSED 0.5 - 1.0 m/s SCHEMATIC PIPE
- - - PROPOSED 1.0 - 2.0 m/s SCHEMATIC PIPE
- RESERVOIR AND PUMPHOUSE





- LEGEND:**
- - - WATER STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING PIPE
 - SCHEMATIC NODES THAT SATISFY FIRE FLOW CONSTRAINTS
 - AVAILABLE FIRE FLOW IS 85 - 100% OF REQUIRED FIRE FLOW
 - AVAILABLE FIRE FLOW IS 60 - 85% OF REQUIRED FIRE FLOW
 - AVAILABLE FIRE FLOW IS LESS THAN 60% OF REQUIRED FIRE FLOW
 - RESERVOIR AND PUMPHOUSE
 - EXISTING DEVELOPMENT
 - INTERIM DEVELOPMENT
 - ULTIMATE DEVELOPMENT



4 Wastewater Master Plan

4.1 General

The Wastewater Master Plan for the Town of Morinville was last updated in 2016. The purpose of this study is to update the existing wastewater collection model to reflect new development within Morinville as well as to assess the system performance and identify improvements to address existing system deficiencies and future development servicing.

4.2 Existing System Modelling and Assessment

This section outlines the development and calibration of the detailed model of the wastewater collection system and the assessment of the hydraulic performance for existing conditions.

4.2.1 Existing System Description

The Town of Morinville wastewater collection system is shown on **Figure 4.1**.

The Town is a member of the former Alberta Capital Region Wastewater Commission (ACRWC) now named Arrow Engineering. The Town's wastewater flows to the Morinville Pump Station and flows via forcemain to the ACRWC St. Albert Regional Trunk (START), near the City of St. Albert. There are two main feeds entering the Morinville Pump Station: flow from the north side of Morinville, and flow from a combined forcemain from the Morinville Business Park Pump Station and the Cardiff Pump Station. The capacity of the ACRWC Morinville Pump Station is approximately 190 L/s. The ACRWC pump station is configured such that any flows exceeding the capacity is conveyed to the Morinville Wastewater Storage Lagoon. With one pump operating, the maximum flow to the lagoon is 265 L/s. With two and three pumps operating, the maximum flows to the lagoon are 530 L/s and 795 L/s, respectively, based on an operating pressure set point of 450 kPa. The lagoon can then drain by gravity back to the system when capacity is available.

The Morinville Business Park Pump Station is rated at approximately 37.5 L/s at 22.65m and Cardiff Pump Station is rated at roughly 26.5 L/s at 38.7m. The Hamlet of Cardiff's wastewater generation rates are assumed to be consistent with the values used in the 2016 MUSP Update.

The wastewater collection system within the Town consists of gravity collector mains and four pump stations. Wastewater from the West Winds development area flows to the West Winds Pump Station, which is rated at approximately 85 L/s at 19.8m of head. Wastewater from south part of Town converges at the Business Park Pump Station, which pumps to the ACRWC Morinville Pump Station via forcemain. This 200 mm diameter forcemain conveys flow from the Morinville Business Park Pump Station to a 250 mm diameter combined forcemain near East Boundary Road. The 250 mm force main is shared with the Hamlet of Cardiff.

All wastewater flows from the Town of Morinville north of the CN railway is conveyed to the ACRWC Morinville Pump Station by a gravity trunk running along Laval Avenue (101 Avenue). This trunk ranges from 250 to 750 mm in diameter. The Grandin West Pump Station with a capacity of 41 L/s is located at the west end of Town on Laval Avenue near 105 Street. This pump station services the western part of the Morinville and pumps 41 L/s to the Laval Avenue Trunk near 99 Street via a 250 mm force main.

4.2.2 Model Development

XP-SWMM, an industry accepted modelling software program, was used to develop the detailed model of the wastewater collection system. The XP-SWMM Runoff Layer was used to generate wet weather flows and the XP-SWMM Hydraulics Layer to generate the dry weather flows and then route both the wet weather and dry weather flows through the wastewater collection system.

The existing model was updated using as-built data provided by the Town. Appendix F contains a list of the wastewater collection system information including pipe diameter, upstream and downstream invert elevations, and slope.

A comprehensive model was updated with the available as-built information. Approximately 53 km of sewer and 600 manholes have been included.

The Town was delineated into sanitary sewer catchment areas that were used in both dry and wet weather flow calculations. Each catchment area contains only residential or non-residential development but not both. The differentiation between types of development allows for the adjustment of rates for specific industries and specific flow patterns for residential and non-residential development.

The catchment areas were delineated based on the locations where the sewage would enter the system. Smaller basins allow for input of flow into all pipes, which simulates the routing and in-system storage, examination of localized problems, and a more stable model. **Figure 4.2** shows the sanitary sewer catchment areas.

4.2.3 Model Verification

The sanitary system assessments for the existing development condition as well as for future development conditions were completed in 2016 as part of the Town of Morinville Utility Servicing Plan Update by AECOM. The detailed model of the sanitary system was developed using computer modelling software XP-SWMM version 12. The existing system model was calibrated based on water consumption data and flow monitoring data at the Morinville pump station available at that time.

Additional areas developed since the time of the 2016 MUSP Update were confirmed with The Town and incorporated into the existing system model and additional sanitary sewer catchment areas were delineated. Updated hyetographs and diurnal curves were developed based on new flow monitoring data and were applied to all developed areas. This is discussed in detail in Section 4.3.3.1.

4.2.3.1 Dry Weather Flow Verification

Water consumption data from the Town and flow monitoring data at the ACRWC Morinville Pump Station were used to determine the residential and non-residential sewage generation rates. Dry weather flow was calibrated using the determined rates. High water demand users' water records were also utilized in the wastewater master plan. Some of the high water users include the six schools located in Morinville. We have assumed the wastewater generation rate for the high water demand users are the same as their water demand, under the existing development scenario.

Wastewater flow monitoring data from northern Morinville were collected at the ACRWC Morinville Pump Station. Based on the data during dry periods, the average daily wastewater flow is approximately 165 L/p/d and the wastewater peaking factor is approximately 1.4. Based on water consumption records, the average daily residential water used per capita is 181 L/p/d, and the average daily water usage for non-residential developments are 2,500 L/ha/d. The average daily residential sewage generation rates and water consumption rates are lower than the previous study, which determined the wastewater generation rate to be 213 L/p/d, and the average daily

water consumption rate to be 205 L/p/d indicating a general downward trend in water use. To be conservative, a residential sewage generation rate of 250 L/p/d was used for existing areas for this study. A non-residential sewage generation rate of 2500 L/ha/d was used consistent with the previous study and the non-residential water consumption.

A residential flow of 250 L/c/d and a non-residential flow of 2500 L/ha/d were selected for this study. The actual water usages for high water users, including institutional areas, are also represented in the model. For residential areas, the number of developed lots was tallied and the population density of 2.8 people per lot was calculated based on the total number of residential units divided by the projected total population in 2015. The non-residential flows were based on gross area.

A comparison of design standards of different municipalities is shown in Appendix J.

A diurnal flow pattern for the residential areas was developed using the flow monitoring data and is shown in **Figure 4.3** and includes a peaking factor of 1.4. The flow pattern for the non-residential areas is also shown in **Figure 4.3**.

The modelled dry weather flow was compared to monitored dry weather flow. Monitored flow data from the winter was used for dry weather flow comparisons, as it represents minimal runoff infiltration and inflow into the collection system on a typical day. **Table 4.1** summarizes the monitored and modelled volumes and peaks for a typical day. Appendix G shows the hydrographs for the modelled and monitored dry weather flows.

Table 4.1: Dry Weather Flow Calibration Summary

Site	Monitored Peak Flow (L/s)	Model Peak Flow (L/s)	Model/Monitored Flow Ratio (%)	Monitored Volume (m ³)	Model Volume (m ³)	Model/Monitor Volume Ratio (%)	Comparison Flow/Volume
Morinville PS Inflow	50.4	49.2	97%	3,300	3,172	96%	Good/Good

The model results are compared to the monitored values as a percentage. Results within 10% are considered good, from 10 to 20% are considered fair, and results differing by greater than 20% were considered high or low. The dry weather flow modelled volumes and peak flow rates are very consistent with the monitored data.

4.2.3.2 Wet Weather Flow Verification

As discussed in Section 4.2, rainfall events from summer 2023 were used to verify and calibrate the wet weather flow. A summary of the four events utilized for the calibration is provided in **Table 4.2**.

Table 4.2: Calibration Events

Date	Event #	Rain Event Duration (hr)	Amount of Rain (mm)	Intensity (mm/hr)	Return Period
June 14, 2023	Event 1	4	9.10	2.28	< 1: 2 Year
June 15, 2023	Event 2	10	29.60	2.96	~1:2 Year
June 18-19, 2023	Event 3	22	64.50	2.93	~ 1:5 Year
July 17-18, 2023	Event 4	12	41.40	3.45	1:2 Year

As seen in the above table, all the rain events had a return period of approximately 1:2 Year with the exception of Event 3 which was a 1:5 year event.

Rainfall data was provided by the ACRWC for the Morinville rain gauge between April 2022 to September 2023. However, the ACRWC noted that there were issues with the gauge prior to July 2023 and therefore this dataset was excluded. Instead, corresponding hourly rain gauge information was collected from the Government of Canada St Albert Research Centre Station for the summer months of 2023.

The XP-SWMM Runoff Layer was used to generate the wet weather flow in the model. The wet weather flow in the sanitary system varies significantly with the depth and distribution of rainfall and the type of servicing. In order to simulate the inflow and infiltration process, an effective drainage area was identified for each basin. Only a portion of runoff will enter the sanitary sewer which means only a portion of the basin area is contributing runoff to the sanitary sewer. Therefore, an effective area is used to generate the runoff that will enter the sanitary sewer. The primary calibration parameter for wet weather flow is the effective area. The effective area is adjusted until the volume of runoff and peak flow generated represents the inflow/infiltration shown in the flow monitoring data. In the 2016 MUSP Update, the effective area for area with suspected foundation drains connected to the wastewater system is determined to be 8%, and for areas without foundation drains connected, the effective drainage area is determined to be 2%.

The soil parameters include the maximum infiltration rate, the minimum infiltration rate, and the decay rate of infiltration. The maximum infiltration rate depends on the soil type, surface vegetation, and initial moisture content; the soil type and surface vegetation can be easily identified; and the moisture content can vary significantly. The minimum infiltration rate is essentially the saturated hydraulic conductivity of the soil. A maximum infiltration value of 80 mm/hr and a minimum infiltration value of 3.5 mm/hr were used. The decay rate of infiltration is the rate of decrease of infiltration capacity and is dependent on the initial moisture conditions. A value of 0.001/sec was used for decay rate of infiltration; the model recommends this value where no field data is available.

The infiltration parameters include the depression storage and Manning’s n for both the pervious and impervious areas. Depression storage is the depth of depression in the ground surface, in millimeters, that must be filled before runoff will occur. A pervious area depression storage of 6.4 mm and impervious area depression storage of 3.2 mm were used. A residential area percent impervious of 50% and a non-residential area percent impervious of 30% were used.

The model was calibrated during wet weather by simulating each rainfall event within the wastewater model and comparing the results of the flow monitoring to the modelled flows. Results of the wet weather flow calibration are summarized in **Table 4.3**. Similar to the dry weather flow, peak flow and volume ratios were compared to qualify the calibration.

Table 4.3: Wet Weather Flow Calibration Results

Date	Event #	Peak L/s		Peak Flow Ratio	Volume (over rain duration) (m ³ /d)		Volume Ratio	Comparison Flow/Volume
		Model	Monitor		Model	Monitor		
14-Jun	Event 1	72.7	77.4	94%	3,913	5,281	74%	Good/Low
15-Jun	Event 2	127.7	123.2	104%	7,156	7,276	98%	Good/Good
18/19-Jun	Event 3	164.1	162.4	101%	7,009	8,075	87%	Good/Fair
17/18-Jul	Event 4	117.3	148.4	79%	7,192	6,529	110%	Low/Good
Average				94%			92%	Good/Good

Similar to the dry weather calibration, wet weather results within 10% were considered good, from 10 to 20% were considered fair, and results differing by greater than 20% were considered high or low. The peak flows are relatively consistent with the monitored data in each site for the three rain events. The modelled volumes also

compared well to the monitored volumes, apart from Events 1 & 3 which have lower volumes. Graphs illustrating the wet weather flow calibration results are also shown in Appendix G. The modelled flows match up relatively well with the monitor data. Events 1 & 2 match the peaks and volumes fairly, while Event 3 matches the peak well but has a lower tail than the monitored data. Event 4 matches the monitored shape well but has lower peak flow. On average, the data compares very well with the average of the peak flow 6% lower and the average volume 8% lower than the monitored data.

4.2.4 Summary of Design Criteria

The existing wastewater collection system design criteria based on the calibrated model are summarized in **Table 4.4**.

Table 4.4: Summary of Existing Wastewater Collection System Design Criteria

Parameter	Town of Morinville Design Criteria
Residential Sewage Generation Rate	250 L/c/d
Non Residential Sewage Generation Rate	2500 L/ha/d
High Water User Sewage Generation Rate	Varies (actual water consumption)
Population Density for Existing Developments	2.8 ppl/lot
Effective Drainage Area for Area with Weeping Tile	8%
Effective Drainage Area for Area without Weeping Tile	2%

4.2.5 Existing System Evaluation

The existing system was assessed to examine the system performance for rainfall events and to identify any deficiencies in the system.

The existing system was evaluated to assess the system performance with the proposed sewage generation rates by examining the following parameters:

- The capacity utilization within the system to identify potential locations where pipe flow exceeds pipe capacity; and
- The hydraulic grade line (HGL) within the system to identify potential surcharge locations.

The magnitude of surcharging at manholes was calculated by subtracting the maximum hydraulic grade line (HGL) from the ground elevation and was divided into 3 levels, as outlined in **Table 4.5**. An additional rating of light green is also included for manholes that are not surcharging as the HGL is within the wastewater main, but the depth of the manhole is less than 2.5 m. Red and blue nodes indicate that the HGL is within 2.5 m to ground. These nodes are at risk of possible basement flooding if located in a residential development area.

Table 4.5: Manhole Surcharge Levels

Rating	Depth of HGL Below Ground (m)
Green	More than 2.5
Light Green	Less than 2.5 m, but HGL within Wastewater Main
Blue	1.0 to 2.5
Red	0.0 to 1.0

The capacity utilization in the pipe was calculated by taking the ratio of the peak flow in the pipe to the pipe capacity and was divided into 3 levels as outlined in **Table 4.6**. Red indicates that the pipes are above capacity, blue is the cautionary range, and green indicates that capacity is available.

Table 4.6: Pipe Capacity Utilization Levels

Rating	Ratio of Peak Flow to Pipe Capacity
Green	0.0 to 1.2
Blue	1.2 to 2.0
Red	Above 2.0

Figure 4.4 and **Figure 4.5** illustrate the surcharge and capacity utilization levels in the existing system for dry weather flow as well as during the 25 year 4 hour rainfall event. The colour of the nodes or manholes indicates the level of surcharging and the colours of the pipes indicate the capacity utilization.

4.2.5.1 Dry Weather Flow

The modelling results for the existing system under dry weather flow conditions are shown in **Figure 4.4**. The existing wastewater collection system has sufficient capacity to convey dry weather flow. All mains are conveying flow under capacity and the maximum HGL at most manholes are more than 2.5 m below ground level. These manholes are highlighted in green. At several locations on the northwestern part of town the simulated HGL is between 1.0 and 2.5 m below ground level. However, these manholes are shallow so this does not indicate surcharging in the system as the maximum HGL is still within the diameter of the wastewater mains. These manholes are represented by the light green colour. All wastewater mains under existing conditions have sufficient capacity to convey dry weather flows.

4.2.5.2 25 Year 4 Hour Event

The modelling result for the existing system for the 25 year 4 hour rainfall event is shown in **Figure 4.5**. The majority of manholes that surcharged to blue level (HGL is more than 1m but less than 2.5 m below ground elevation) are located west of Grandin Drive, near the central business district. There are also some manholes with simulated depth of HGL less than 2.5 m below ground level; however, these manholes are not surcharging because the invert elevation is less than 2.5 m from ground elevations and the HGL is within the wastewater mains. Manholes with HGLs within its mains are represented by the light green coloured manholes. There are also many red manholes within the area bordered by 100 Street and 105 Street, between 104 Avenue and 98 Avenue. These red manholes represent where the HGL is less than 1 m from the ground elevation. Four manholes are surcharged to ground.

During this rainfall event, the peak overflow to the sewage lagoon is approximately 282 L/s. Improvements to the wastewater collection system are recommended in Section 4.5. The 25 year 4 hour rainfall event is the most critical event for the Morinville wastewater collection system.

4.3 Wastewater Servicing Plan

4.3.1 General

A sanitary servicing plan was developed for the Town of Morinville for both the interim and ultimate development scenarios. The system was analyzed to identify deficiencies as well as any required improvements.

4.3.2 Design Criteria

The design criteria for interim and ultimate development is listed in **Table 4.7**.

Table 4.7: Summary of Future Wastewater Collection System Design Criteria

Parameter	Town of Morinville Design Criteria
Residential Development Sewage Generation Rate	320 L/c/d
Residential Sewage Peaking Factor	$2.6 * (\text{Total Population} / 1000)^{-0.1}$
Commercial Development Sewage Generation Rate	2500 L/ha/d
Industrial Development Sewage Generation Rate	6170 L/ha/d
Infiltration/Inflow Allowance	0.28 L/s/ha
Population Density for Future Developments	39.5 people/ha*

The criteria is consistent with what was used in previous studies as well as will ACRWC guidelines. The Town has updated their standards since the previous study to more conservative generation rates of 350 L/c/d for residential and 22,500 L/ha/d for commercial. For the purposes of this study it is recommended to maintain the design criteria listed above. Water consumption is trending downward and these rates are closer to actual wastewater generation. This will avoid oversized infrastructure. Any specific developments with high demands can be assessed on a case by case basis.

4.3.3 Interim Development Plan

Figure 4.6 shows the interim development areas in blue, based on information from the Town’s Planning and Economic Development Group, as well as the interim wastewater servicing connections to the existing system. Connections were placed where areas could best be serviced by gravity as well as where capacity was available. In the Heritage Village neighbourhood in the northwest area of Morinville, the remaining undeveloped areas will be serviced and connected to existing north-south direction wastewater mains connected to the Laval Avenue Trunk and eventually to the Grandin West pump station. Undeveloped land in the Notre Dame/Grandin Heights neighbourhood is also anticipated to be developed during the interim development stage. Wastewater in this area will be collected and transported to existing gravity mains on Grandin Drive.

South of the CN railway, portions of the Westwinds neighbourhood, Westmor area, land north of the Morinville Business Park are anticipated to be further developed in the interim stage. Wastewater flows from Westwinds and land north of Morinville Business Park are collected at the Westwinds Pump Station. The flow is then conveyed through a forcemain to gravity mains on Morinville Road, the Industrial Park. Wastewater flows from the Westmor area is discharged directly into the future main on Morinville Road. The northern portion of South Business Commercial area and western portion of South Glens neighbourhood are also anticipated to be developed in the interim stage. Wastewater generated from these areas are connected to gravity pipes and discharged into nearby wastewater mains.

4.3.4 Interim System Analysis

The surcharge level and capacity utilization during interim development were evaluated for dry weather flow and the 25 year 4 hour rainfall event.

4.3.4.1 Dry Weather Flow

The modelling results for the interim system under dry weather conditions are shown on **Figure 4.7**. Several nodes are light green indicating that the hydraulic grade line is less than 2.5 m from the ground level. However, these wastewater mains are shallow and do not indicate surcharging in the system as the maximum hydraulic grade line is still within the diameter of the pipe. The majority of the system has sufficient capacity to convey dry weather flow for interim development, including the West Winds Pump Station, Morinville Pump Station, and the Morinville Business Park Pump Station.

4.3.4.2 25 Year 4 Hour Event

The modelling results for the interim system for the 25 year 4 hour rainfall event are shown on **Figure 4.8**. The majority of the system contains green or blue nodes; however, one red node is located along 100 Street at the tie-in location of the West Winds Pump Station forcemain. Therefore, improvements are recommended in the downstream 200 mm gravity pipe in Section 4.4. Approximately 423 L/s of peak flow is diverted to the lagoon.

4.3.5 Ultimate Development Plan

Figure 4.9 shows the ultimate development areas in green as well as the wastewater sewer connections to the existing system. Connections were placed where areas could best be serviced by gravity as well as where capacity was available. Applicable area structure plans were also reviewed.

The three most northern quarter sections of the Town will be serviced under ultimate development stage. Wastewater from the most western quarter section bordered by Highway 2 to the west, NE $\frac{1}{4}$ -4-56-25-W4, discharges through the 450 mm connection at the intersection of 105 Avenue and 99 Street. Based on preliminary information, this area may require pumphouse and forcemain to convey flow to existing wastewater sewer system. Conveyance options should be investigated during the design stage. NW $\frac{1}{4}$ -3-56-25-W4 is anticipated to be serviced through gravity mains and connecting to the 375 mm main at the northern end of 107 Avenue. NE $\frac{1}{4}$ -3-56-25-W4, bordered by East Boundary Road to the east, transports wastewater flow by gravity to the 525 mm connection at the corner of Grandin Drive and Sunnydale Road.

Based on communications with the Town of Morinville's Planning and Economic Development Department, the remainder of the undeveloped areas in South Morinville will be developed in the ultimate stage. The generated wastewater will be discharged to nearby wastewater mains through gravity pipes, as shown in **Figure 4.9**.

It is assumed that for study area outside the town's boundary (i.e., SW $\frac{1}{4}$ -2-56-285-W4, and SE $\frac{1}{4}$ -2-56-25-W4), only flows from the Morinville Recreation Complex and Sturgeon County buildings were considered for the study update. No additional demands are expected within this area.

4.3.6 Ultimate System Analysis

The surcharge level and capacity utilization for the ultimate development condition were also evaluated for dry weather flow and the 25 year 4 hour rainfall event.

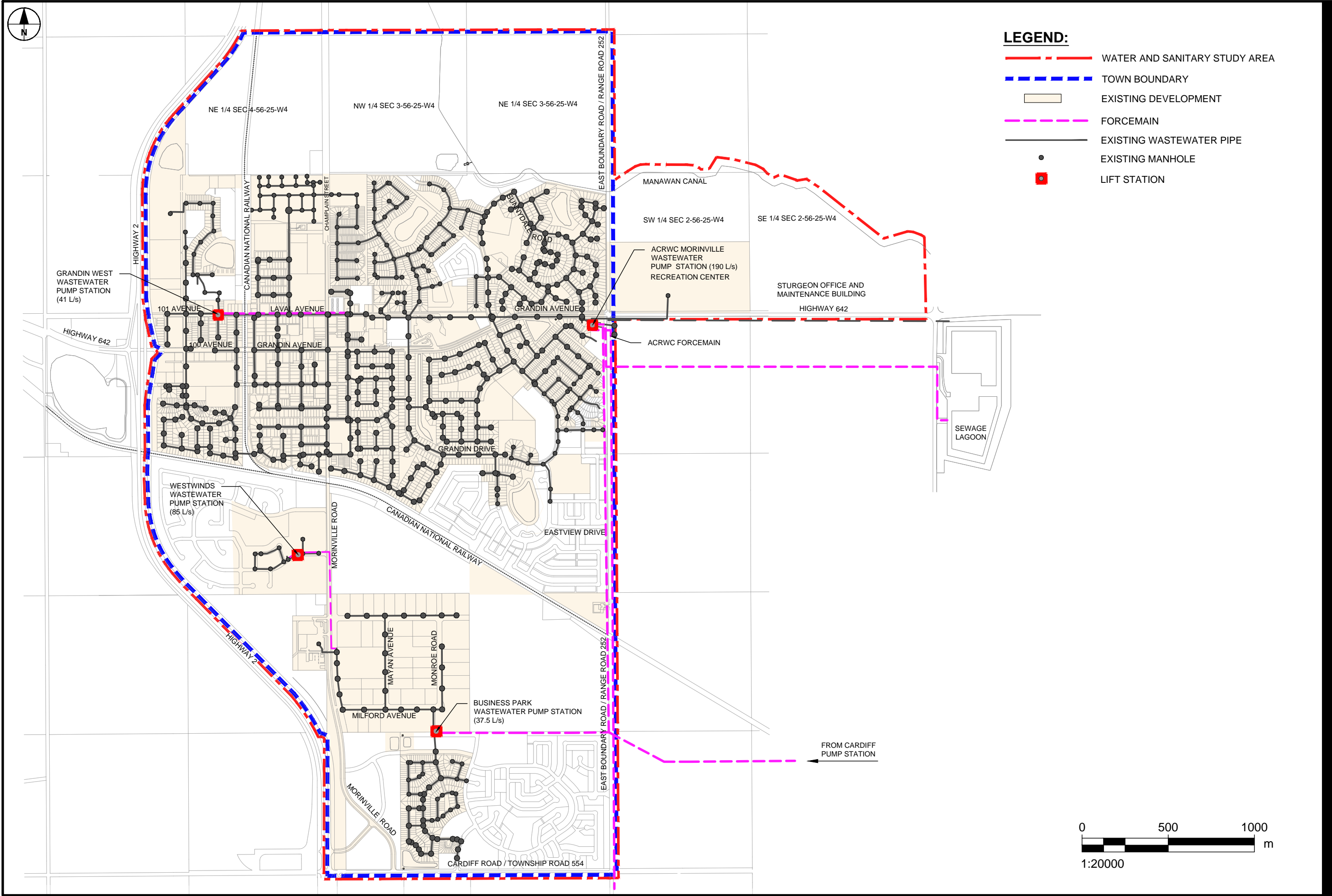
4.3.6.1 Dry Weather Flow

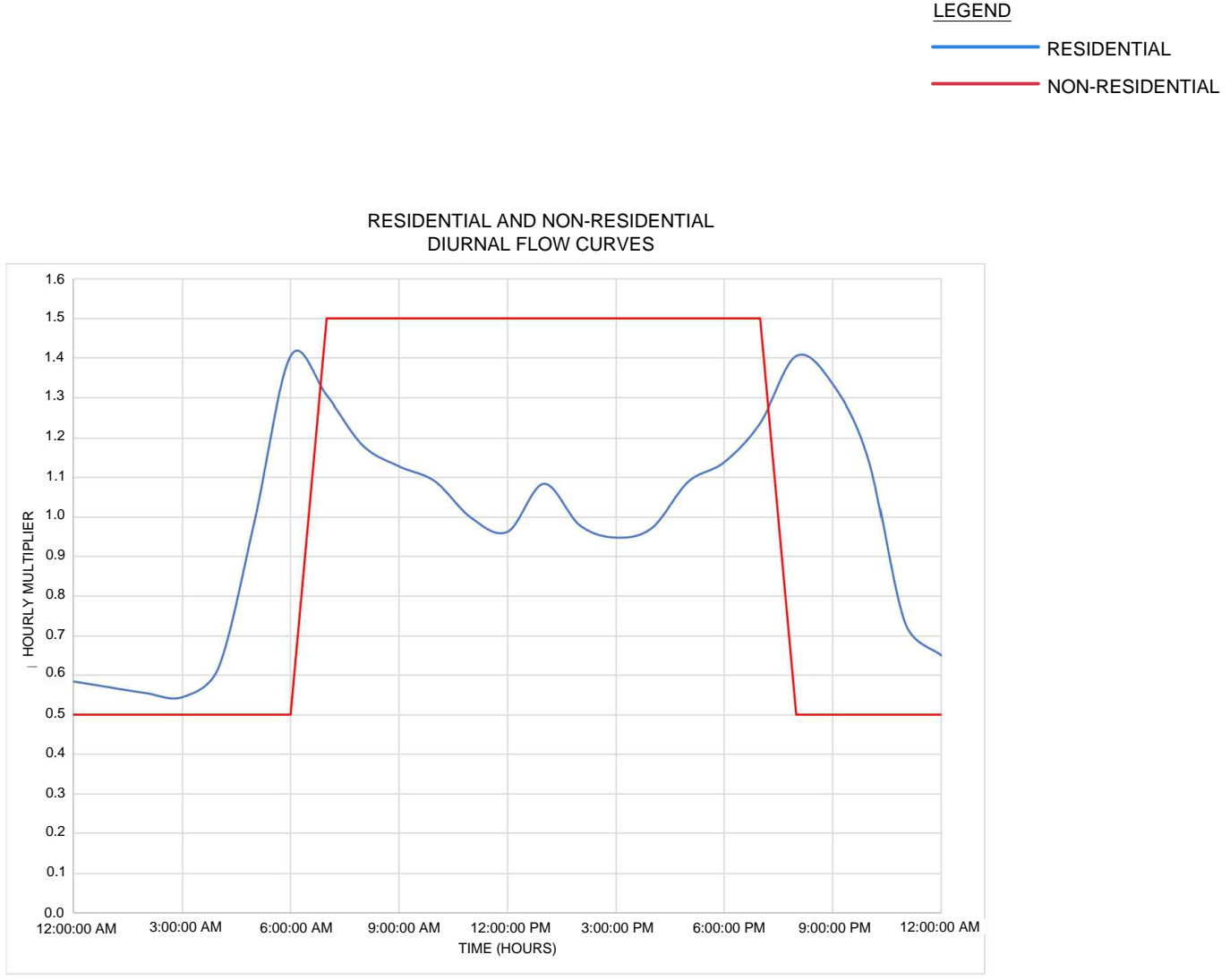
The modelling results for the ultimate system under dry weather conditions are shown on **Figure 4.10**. Several nodes are light green indicating that the hydraulic grade line is less than 2.5 m from the ground level. However, these wastewater mains are shallow and do not indicate surcharging in the system as the maximum hydraulic grade line is still within the diameter of the pipe. The wastewater system in the north portion of Morinville (north of the CN railway) has sufficient capacity. However, the Morinville Pump Station is at capacity and there is a risk for roughly 80 L/s of dry weather flow to be redirected to the sewage lagoon daily at peak times.

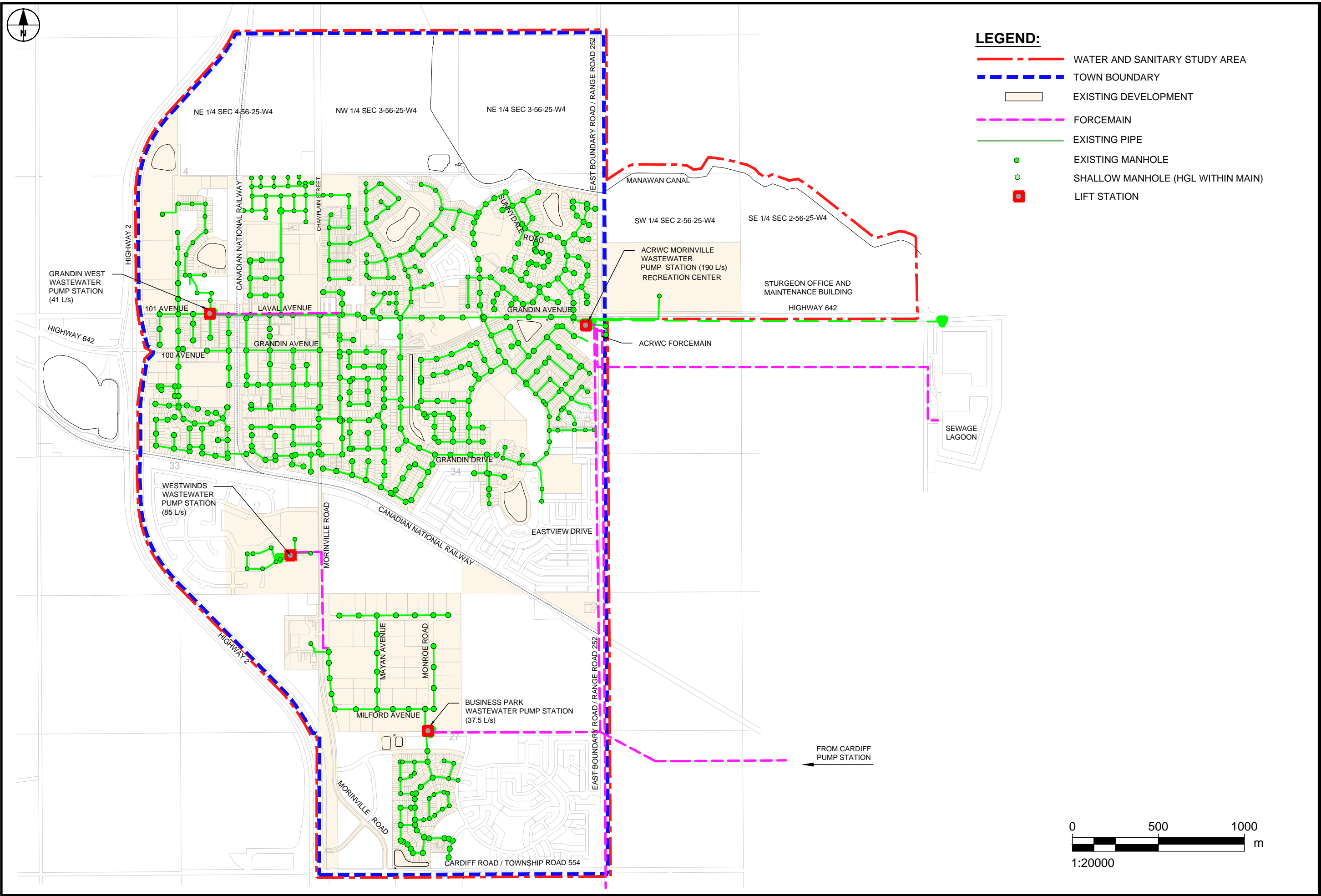
The existing system can effectively convey dry weather flow in southern Morinville. However, the Morinville Business Park Pump Station does not have sufficient capacity to convey flows to the Morinville Pump Station. Approximately 80 L/s of dry weather flow is collected upstream of the Business Park Pump Station but the pump station only has 37.5 L/s pumping capacity.

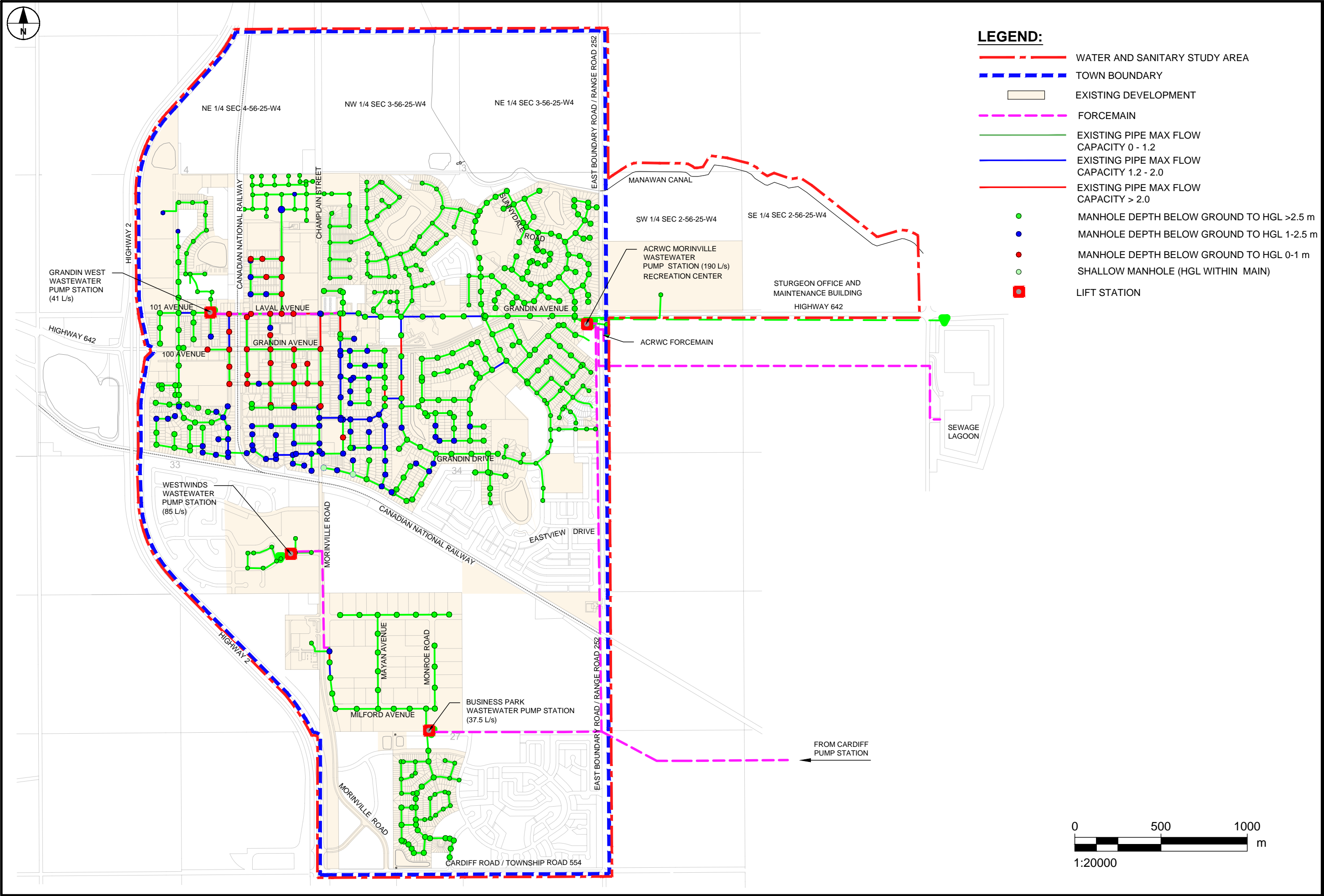
4.3.6.2 25 Year 4 Hour Event

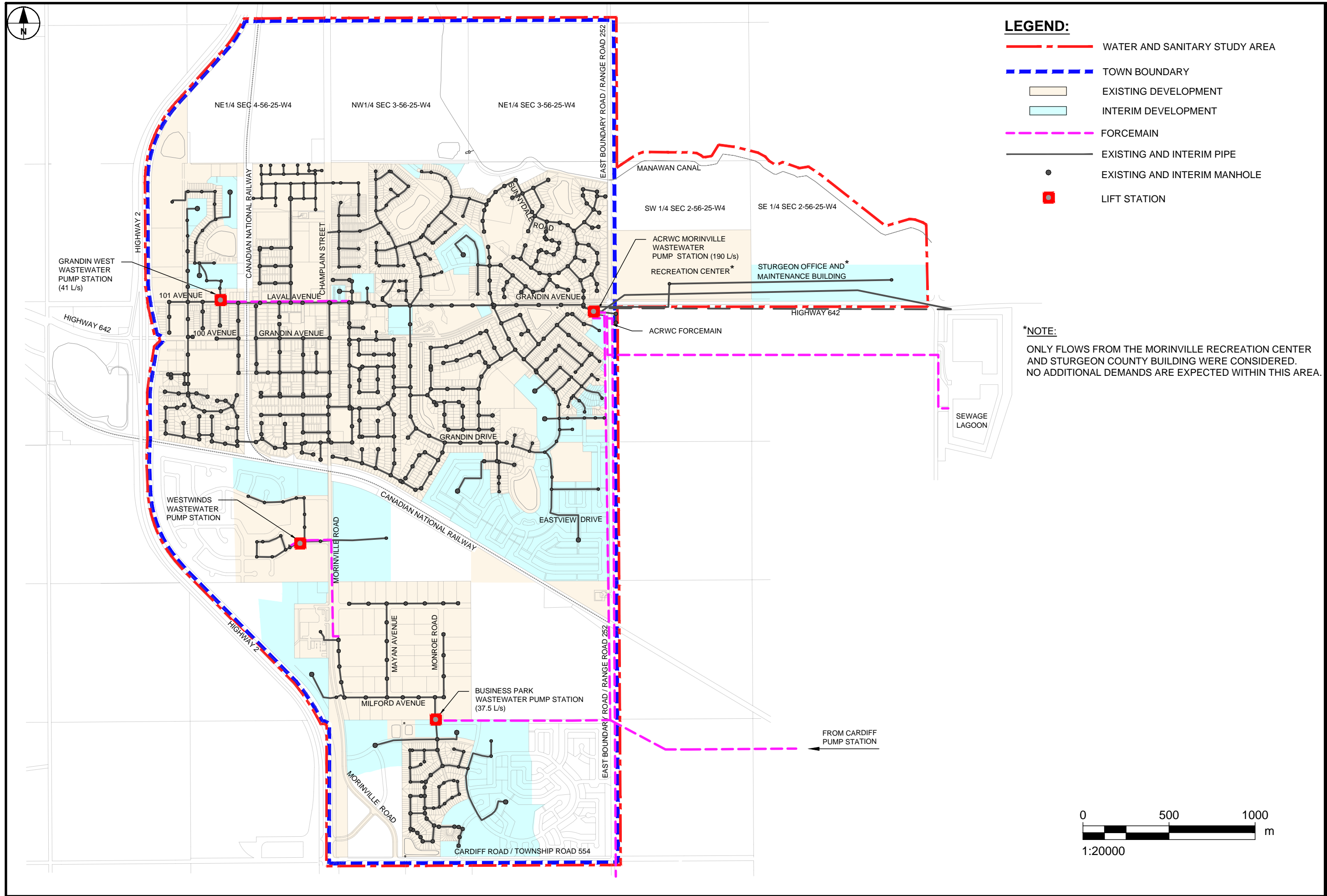
The modelling results for the ultimate system for the 25 year 4 hour rainfall event are shown on **Figure 4.11**. The majority of the system is surcharged and many manholes in South Morinville are flooding. The existing system does not have adequate capacity to convey ultimate wet weather flow. The Business Park lift station is over capacity in the south and the Laval Avenue trunk is over capacity in the North. Improvements are recommended in Section 4.4. Approximately 487 L/s of peak flow is diverted to the lagoon.

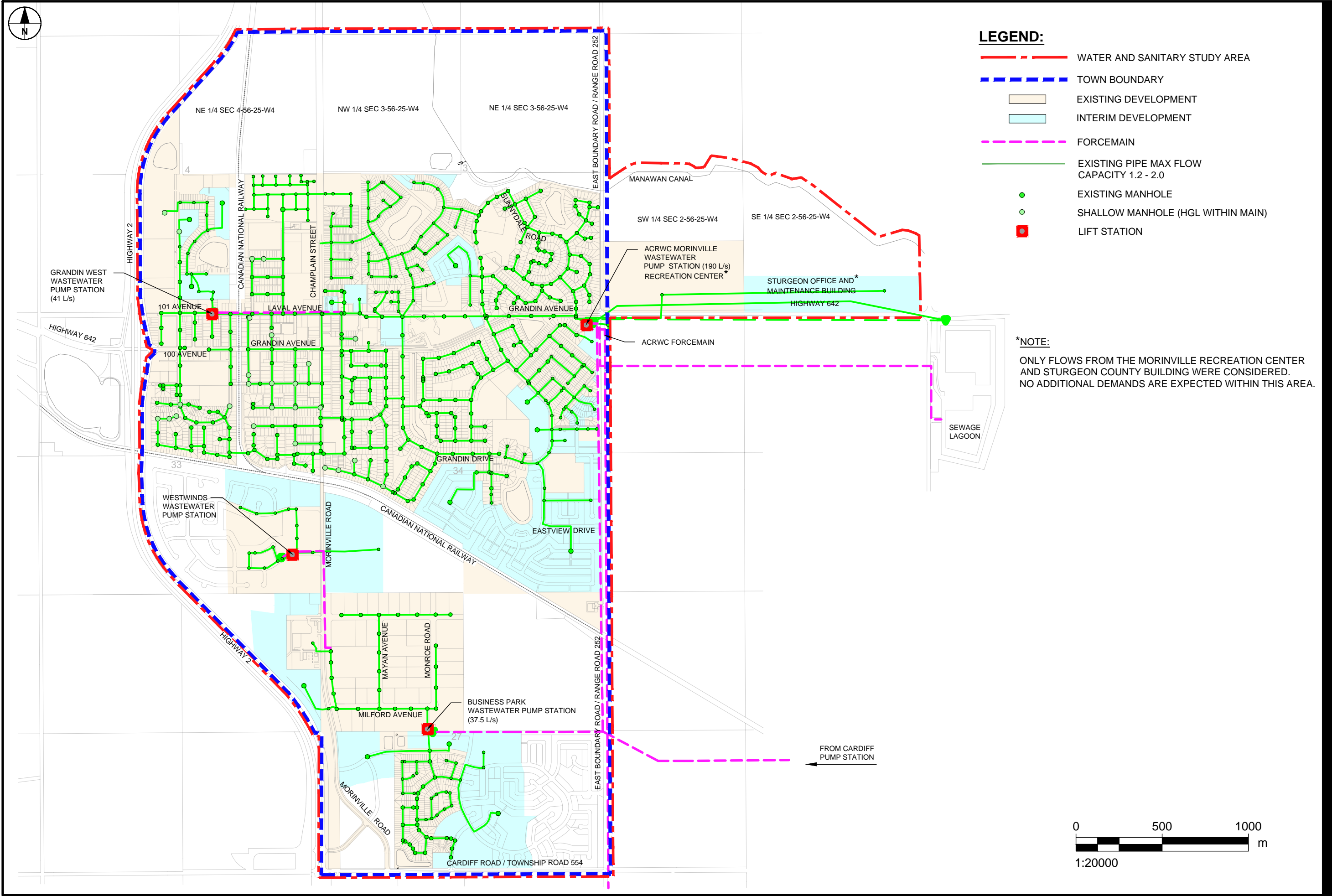








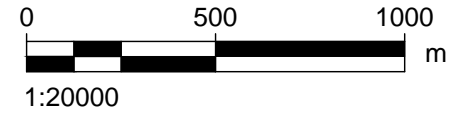


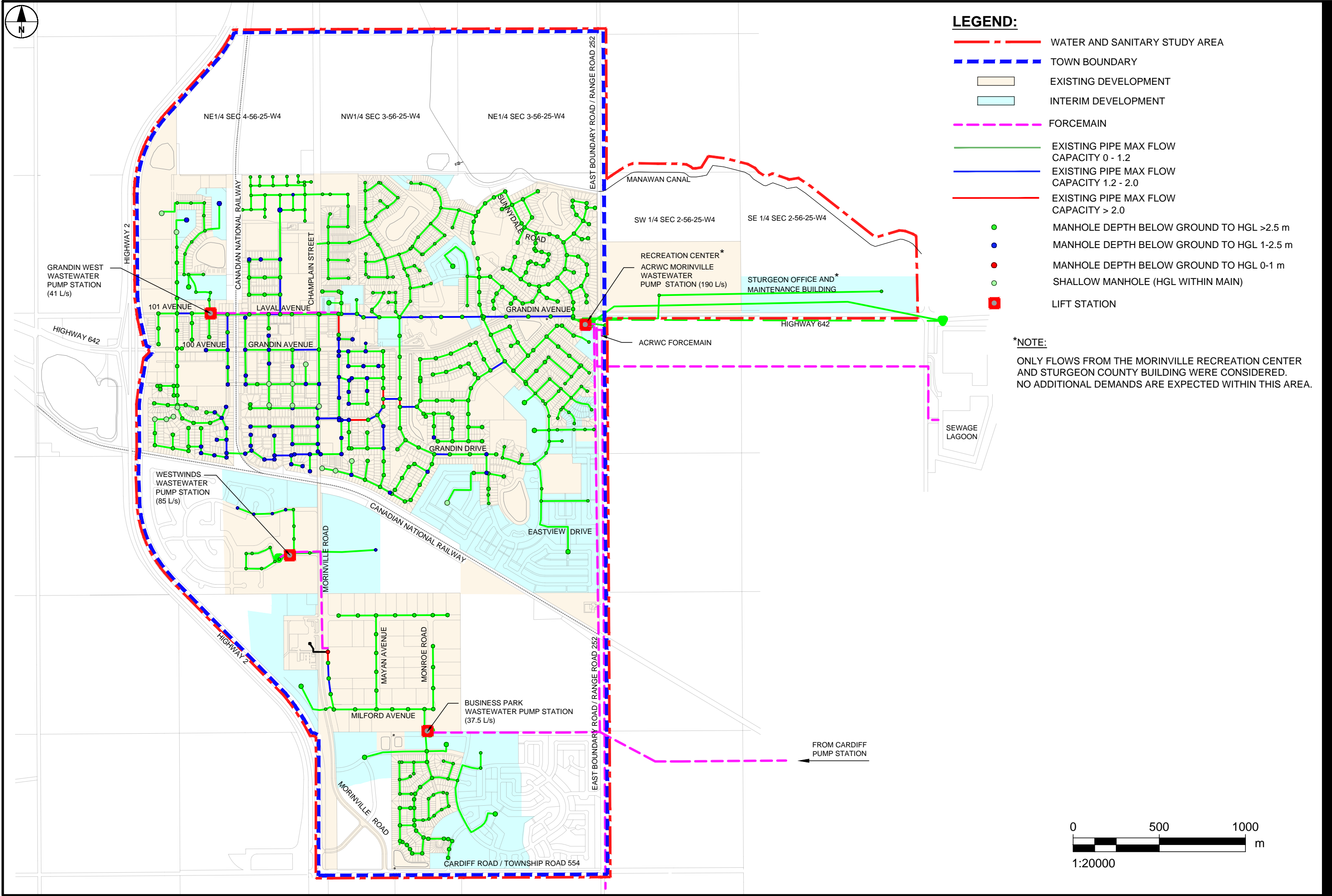


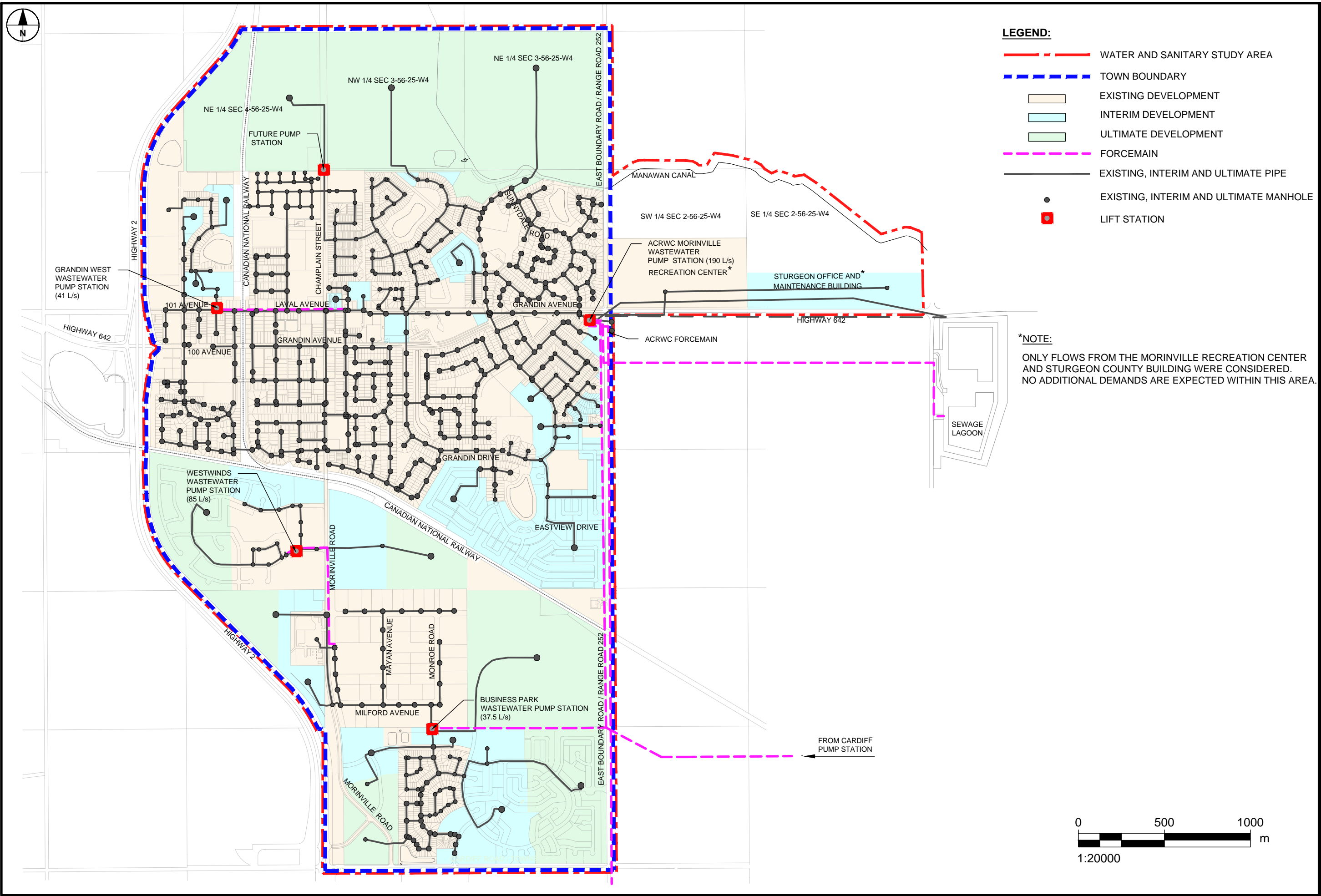
LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- - - FORCEMAIN
- EXISTING PIPE MAX FLOW CAPACITY 1.2 - 2.0
- EXISTING MANHOLE
- SHALLOW MANHOLE (HGL WITHIN MAIN)
- LIFT STATION

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.



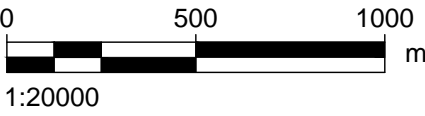


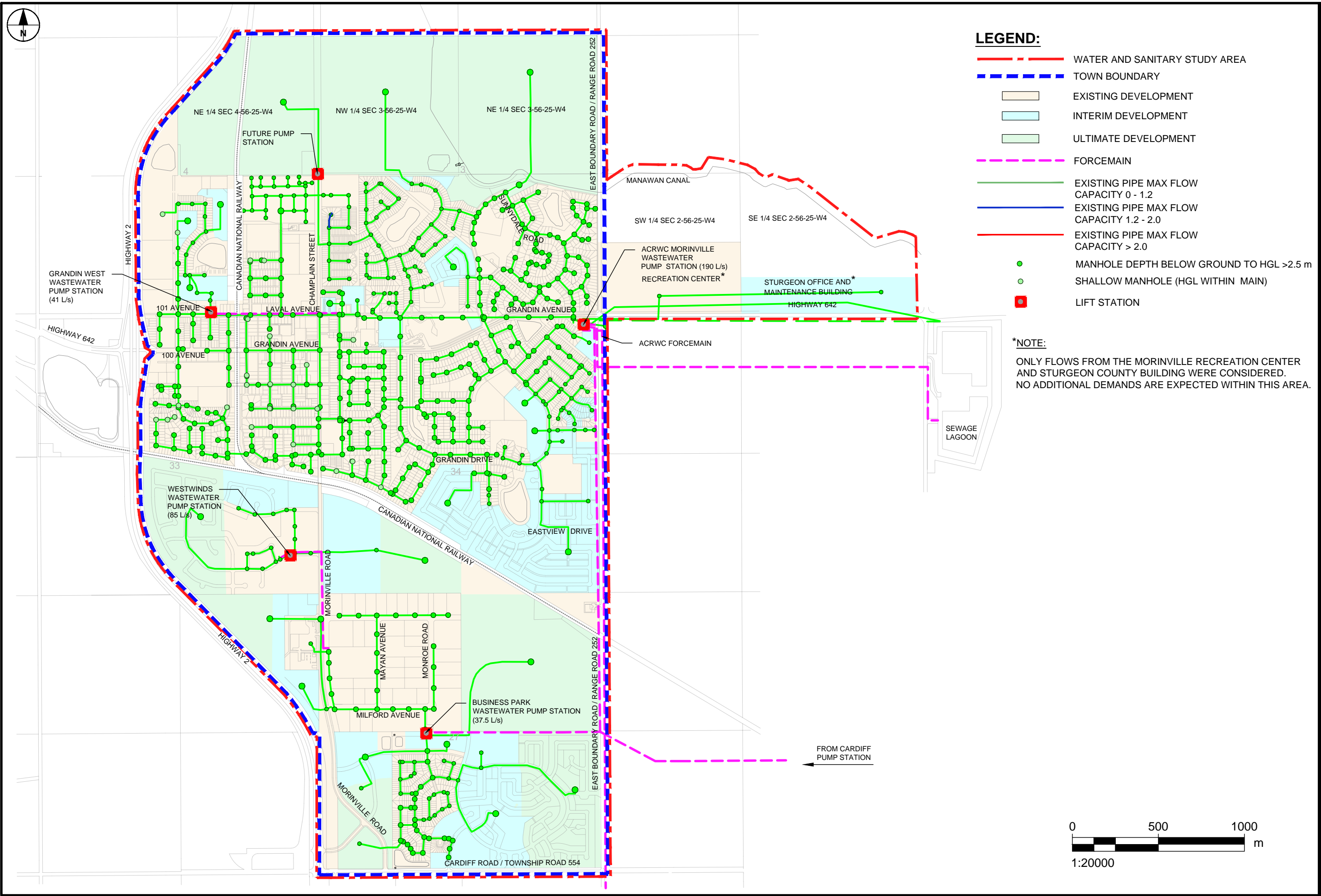


LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT
- - - FORCEMAIN
- EXISTING, INTERIM AND ULTIMATE PIPE
- EXISTING, INTERIM AND ULTIMATE MANHOLE
- LIFT STATION

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

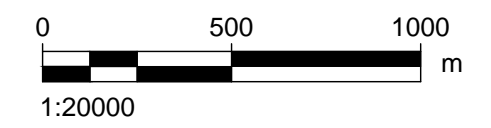


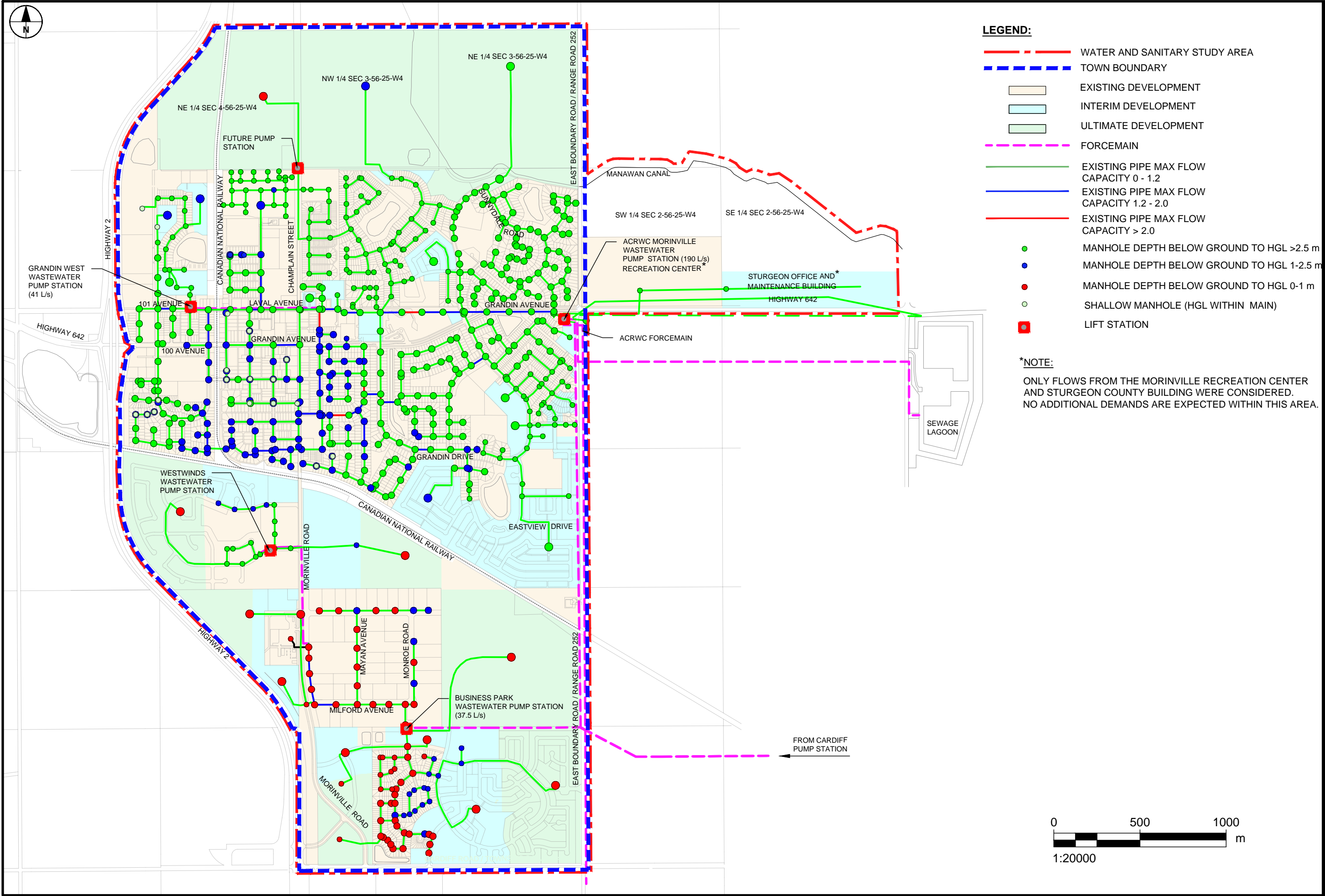


LEGEND:

- WATER AND SANITARY STUDY AREA
- TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT
- FORCEMAIN
- EXISTING PIPE MAX FLOW CAPACITY 0 - 1.2
- EXISTING PIPE MAX FLOW CAPACITY 1.2 - 2.0
- EXISTING PIPE MAX FLOW CAPACITY > 2.0
- MANHOLE DEPTH BELOW GROUND TO HGL >2.5 m
- SHALLOW MANHOLE (HGL WITHIN MAIN)
- LIFT STATION

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

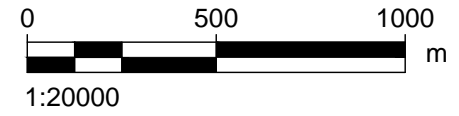




LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT
- - - FORCEMAIN
- EXISTING PIPE MAX FLOW CAPACITY 0 - 1.2
- EXISTING PIPE MAX FLOW CAPACITY 1.2 - 2.0
- EXISTING PIPE MAX FLOW CAPACITY > 2.0
- MANHOLE DEPTH BELOW GROUND TO HGL >2.5 m
- MANHOLE DEPTH BELOW GROUND TO HGL 1-2.5 m
- MANHOLE DEPTH BELOW GROUND TO HGL 0-1 m
- SHALLOW MANHOLE (HGL WITHIN MAIN)
- LIFT STATION

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED.
 NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.



4.4 System Improvements

This section identifies existing system improvements and provides wastewater servicing requirements for the Town of Morinville for interim and ultimate development. The Town of Morinville does not commonly experience basement flooding. The basis for improvements was to maintain the hydraulic grade line below 693.5 m in the lowest area of the Town. This corresponds to the lowest basement elevation in the Grandin area where the Town has experienced flooding in the past. In the area east of Grandin which is the older areas of Town where weeping tile is still connected the criteria for improvements was to maintain the HGL at least 1 m. This is because this area has not experienced basement flooding in the past and due to the higher levels of infiltration and inflow (I/I), pipe upgrades to maintain the HGL below 2.5 m would be extensive. I/I reduction measures can be considered. The 25 year 4 hour rainfall event was adopted as a basis for improvement as it is the most critical rainfall event.

Most of the red manholes (HGL less than 1m from ground elevation) in the existing system are located between 105 Street and 100 Street, north of 98 Avenue and south of 104 Avenue. The cause for the high wastewater surcharge level is caused by high wet weather flows due to weeping tiles connections and a lack of conveyance capacity in the wastewater collection system near the intersection of 101 Avenue and 100 Street. Currently the diameters in the over utilized mains are 200 mm to 250 mm.

For this area, the criterion for improvement was to maintain the hydraulic grade line below 1 m below the ground. To eliminate all manholes surcharging between 1 m and 2.5 m in this area of Town would involve extensive upgrades. Since significant basement flooding has not been experienced it is recommended that infiltration and inflow sources be reduced as the opportunity arises rather than extensive pipe upgrades. Proposed replacement and twin main diameters are proposed below, if the existing main is in good condition, a twin relief main could be added at a higher elevation. Options should be further investigated during the design stage.

The 116 m long, 250 mm diameter main on 101 Avenue, from 100 Street to 99 Street requires upsizing. This main can be replaced with a 450 mm main or be twinned with a 375 mm main. By upsizing this segment of wastewater main, the majority of the red manholes in the problem area are eliminated and changed to blue manholes, where the HGL is more than 1m but less than 2.5 m from ground elevation.

Another area of improvement is directly upstream of the main on 101 Avenue. The 225 m long, 250 mm diameter main on 101 Avenue from 101A Street to 100 Street requires either replacement or twinning. This segment of main should be replaced with 375 mm pipes or twinned with 300 mm pipes. This improvement eliminates conveyance issues and decreases the HGL in the northern portion of the problem area.

The high HGL in the southern portion of the problem area can be alleviated by upsizing a 210 m long segment of 200 mm diameter wastewater main on 100 Street, from 101 Avenue to 100 Avenue. This main can be replaced with a 300 mm main or be twinned with a 250 mm main. This improvement work will improve system performance in the southern portion of the problem area.

4.4.1 Existing System Improvements

The improvement locations are shown in [Figure 4.12](#), and the improved existing wastewater system is shown in [Figure 4.13](#).

Most of the red manholes (HGL less than 1m from ground elevation) in the existing system are located between 105 Street and 100 Street, north of 98 Avenue and south of 104 Avenue. The cause for the high wastewater surcharge level is caused by high wet weather flows due to foundation drain connections and a lack of conveyance capacity in the wastewater collection system near the intersection of 101 Avenue and 100 Street. Currently the diameters in the over utilized mains are 200 mm to 250 mm.

For this area, the criterion for improvement was to maintain the hydraulic grade line below 1 m below the ground. To eliminate all manholes surcharging between 1 m and 2.5 m in this area would involve extensive upgrades. Since significant basement flooding has not been experienced it is recommended that infiltration and inflow sources be reduced as the opportunity arises rather than extensive pipe upgrades. Proposed replacement and twin main diameters are proposed below, if the existing main is in good condition, a twin relief main could be added at a higher elevation. Options should be further investigated during the design stage.

The 116 m long, 250 mm diameter main on 101 Avenue, from 100 Street to 99 Street requires upsizing. This main can be replaced with a 450 mm main or be twinned with a 375 mm main. By upsizing this segment of wastewater main, the majority of the red manholes in the problem area are eliminated and changed to blue manholes, where the HGL is more than 1m but less than 2.5 m from ground elevation.

Another area of improvement is directly upstream of the main on 101 Avenue. The 225 m long, 250 mm diameter main on 101 Avenue from 101A Street to 100 Street requires either replacement or twinning. This segment of main should be replaced with 375 mm pipes or twinned with 300 mm pipes. This improvement eliminates conveyance issues and decreases the HGL in the northern portion of the problem area.

The high HGL in the southern portion of the problem area can be alleviated by upsizing a 210 m long segment of 200 mm diameter wastewater main on 100 Street, from 101 Avenue to 100 Avenue. This main can be replaced with a 300 mm main or be twinned with a 250 mm main. This improvement work will improve system performance in the southern portion of the problem area.

For the area near Grandin Drive and 95 Street, the maximum hydraulic grade line increases after the improvements outlined above are implemented increasing the basement flooding risk. This is caused by over utilized mains on Grandin Drive, from 98 Avenue to 101 Avenue. Approximately 475 m of 375 mm diameter main is required to be upsized to 525 mm diameter, or twinned with 375 mm diameter mains, during the existing stage.

As seen on **Figure 4.13**, the proposed improvements eliminate the surcharged manholes in the downtown area of Morinville.

4.4.2 Interim System Improvements

The improvement locations are shown in **Figure 4.14**. The improved interim wastewater system under 25 year 4 hour rainfall event is shown in **Figure 4.15**.

In the interim development stage with the 25 year 4 hour rainfall event, the wastewater collection system, with recommended improvements implemented, does not have sufficient capacity to convey wet weather flow. In southern Morinville, the collection system is surcharged. One red manhole is simulated south of the intersection of 100 Street and 90Ave, at the tie-in location of the West Winds Pump Station forcemain. This surcharged manhole is caused by the increased pumped flows from the new West Winds developed areas in the Interim System. It is recommended that this segment of pipe be upsized from 200 mm to 300 mm from 90 Avenue to 87 Avenue. Although the Business Park pump station is over capacity, the pumps are able to keep up for the short duration event without negative upstream impacts. Elsewhere in northern Morinville, the HGL is more than 1 m below ground elevation, hence no further improvements are recommended in Morinville north of the CN Railway, during the interim development stage.

As seen on **Figure 4.15**, the proposed improvements eliminates the surcharged manhole located in southern Morinville.

4.4.3 Ultimate System Improvements

The recommended improvement locations are shown in **Figure 4.16**, and the improved ultimate wastewater system is shown in **Figure 4.17**.

Under ultimate development stage, the majority of the collection system is surcharged. In southern Morinville, the existing wastewater collection system cannot effectively convey flow to the Business Park Pump Station causing the entire system to surcharge. The Business Park Pump Station is recommended to be upgraded to 70 L/s. The Business Park Pump Station forcemain should also be upsized from 200 mm to 350 mm in diameter, or be twinned with 250 mm diameter main, in order to accommodate the increase in wastewater flow. Flows to the Business Park station should be monitored and the timing will depend on the actual flows as areas develop.

The wastewater main under 87 Avenue (also called Milford Avenue) is also required to be upsized from 250 mm to 300 mm diameter. Currently the pipes in this area act as a bottleneck for the upstream system, compounding conveyances issue in south Morinville with the increased level of development.

The combined forcemain, along East Boundary Road, conveying flow from Morinville Business Park Pump Station and Cardiff Pump Station is also suggested to be upsized from 250 mm to 400 mm diameter, or be twinned with 300 mm diameter forcemain. Alternatively, a direct connection to the ACRWC forcemain can be considered, dependent on available capacity in the ACRWC forcemain and ACRWC policy. A review of the operation of the Business Park and Cardiff pump stations in relation to the combined forcemain should be conducted prior to upgrades.

Under ultimate conditions, the dry weather flow at the Morinville pump station exceeds the capacity and flow is directed to the lagoon. As conservative standard sewage generation rates were used for future development areas, it is recommended that the flow be monitored prior to considering pump station upgrades. Under wet weather flow conditions, the maximum flow diverted to the lagoons is approximately 490 L/s which is within the capacity of the station to pump to the lagoons.

As seen on **Figure 4.17**, the proposed improvements eliminates the surcharged manholes located in southern Morinville.

4.4.4 Infiltration and Inflow Discussion

The older are of Town is in a surcharged condition, at risk of basement flooding based on the model results. However, upgrades to accommodate the high infiltration would be extensive and expensive and because the area has not experienced significant basement flooding or complaints, improvements are not recommended at this time. Instead, infiltration and inflow improvements over time are recommended. Strategies are presented in **Table 4.8** and **4.9**.

As the areas age, a CCTV inspection and condition assessment program is recommended with the use of standardized coding using NASSCO guidelines. This would allow the Town to proactively address potential structural concerns, failures and infiltration and inflow defects before they become emergencies. CIPP lining is a good option for rehabilitation of aging pipe as it can provide a fully structural repair, preventing more costly and disruptive dig ups while reducing infiltration especially if T-liners for service connections and end seals are utilized. Manhole inspections are also useful as manholes can be a significant source of infiltration. There are manhole lining and rehabilitation options available that mitigate infiltration.

Improvements on private property are difficult to implement but can be addressed as areas redevelop. Any foundation drain connections to the sanitary sewer can be removed redirected to the storm if available or discharged to the ground.

A condition assessment and potential lining program is recommended as part of an overall asset management plan for the Town. As budget allows, inspection of all the sewers should be undertaken. Repair recommendations and prioritizations can then be made such the Town can incorporate rehabilitation costs into their long term budgets.

4.4.4.1 Infiltration and Inflow Sources and Control

Infiltration consists of groundwater that enters the sanitary sewer system through defects in sanitary sewer pipes, service laterals and manholes. This includes cracks, joints and root intrusion points. Inflow consists of direct flow of runoff into the sanitary sewer. Some examples of inflow are roof drain downspout connections, foundation drain connections, and storm cross connections.

Infiltration and inflow (I/I) uses capacity in the sanitary sewer system and can cause basement flooding, sewer backups, and surface flooding and causes constraints on both conveyance system capacity. It also impacts the regional transmission system causing wastewater overflows (SSOs) and impacting treatment capacity. ACRWC's Wet Weather Strategy aims to reduce or eliminate SSOs.

The water added to the system due to I/I can negatively impact the performance and efficiency of the wastewater treatment facility and increase pumping and treatment costs, energy consumption, and maintenance requirements. These negative impacts result in higher wastewater treatment costs, which are transferred to the users through increases in rates.

Generally, strategies to mitigate and manage I/I can include:

- Storage.
- Conveyance.
- I/I Reduction Measures including:
 - Cross connection disconnection.
 - Manhole inserts and/or new lids in sags.
 - Pipe lining.
 - Roof leader disconnection.
 - Weeping tile redirection.
 - Lot grading.
 - Groundwater pumping.

Each strategy has advantages and challenges. Storage and conveyance options both provide additional capacity for wet weather flow within the sewer system. Conveyance improvements may decrease the likelihood of basement flooding but would ultimately increase the flows travelling to the ACRWC treatment plant which, ACRWC has indicated, may incur a cost. The large diameter pipes required to convey the wet weather flows also pose a maintenance concern during low flow periods as solids can build up due to low velocities.

Storage can also be effective in reducing the risk of basement flooding and does not increase the peak flow to the ACRWC treatment plant. However, storage facilities often have concerns with difficult maintenance and odour.

I/I reduction measures can include improvements on both public and private property. On-lot reduction measures such as roof leader disconnection, weeping tile disconnection and lot grading may have good long-term impacts, but they can be difficult to implement on existing systems, disruptive to owners and expensive. In addition, the benefit can be difficult to predict.

Public property improvements such as repairing cracked pipes and manholes would have a dual benefit, extending the life of the infrastructure while reducing the potential for infiltration. Cross connections between the sanitary and storm maybe difficult to identify, but if found and corrected, would have a significant impact. Manholes located in gas can be a significant source of I/I. A manhole insert which significantly reduces the inflow can be used.

Flow monitoring can then be conducted to confirm the effectiveness of the improvements and the model recalibrated to quantify the I/I reduction. Conveyance and storage improvements can then be reassessed.

Inflow and infiltration sources, identification methods and control measures are described in **Table 4.8** and **4.9**.

Table 4.8: Inflow Sources, Identification and Controls

Inflow Source	Identification Method	Control Measure
Roof drain (private)	Visual inspection Smoke testing	Disconnect and run on surface
Uncapped cleanouts (public or private)	Visual inspection Smoke testing	Replace cap
Storm sewer cross-connection (public)	Smoke testing Dye testing	Excavate and redirect to storm sewer or ditch if available
Manholes covers (public)	Visual inspection LIDAR to check for sags	Replace cover or install insert pan
Foundation drains (private)	Review neighbourhood design drawings	Disconnect and run on surface Disconnect and connect to stormwater pipe Lot grading

Table 4.9: Infiltration Sources, Identification and Controls

Infiltration Source	Identification Method	Control Measure
Leaky pipes (public)	CCTV inspection	Lining Replacement
Leaky laterals (private)	CCTV inspection	Lining Replacement
Deteriorated Manholes (public)	Visual Inspection CCTV inspection	Coating Replacement

4.4.4.2 ACRWC/Arrow Utilities Infiltration and Inflow

Arrow Utilities formerly ACRWC (Alberta Capital Region Wastewater Commission) has an ongoing goal of reducing infiltration and inflow throughout their system to which the Town of Morinville contributes. Member municipalities are encouraged to invest in infiltration reduction which in turn may help keep utility rates from increasing. While all of the Town of Morinville drains to the ACRWC Morinville Pump Station, the Station is equipped with an overflow system that allows flow to be diverted to the Morinville Lagoons during periods of high flows, operational issues at the station or when the ACRWC is experiencing high flows elsewhere in their system. The lagoon is used as temporary storage and the wastewater is pumped back to the ACRWC when capacity is available. This allows the Town and ACRWC to jointly manage their wet weather flows that are discharged to ACRWC.

4.4.5 Improvement Summary

A summary of the recommended improvements is provided in **Table 4.10**.

Table 4.10: Wastewater Collection System Improvement Summary

Improvement Location	Length (m)	Improvements		
		Existing	Interim	Ultimate
101 Avenue Trunk from 100 Street to 99 Street	125	450 mm/375 mm	-	-
101 Avenue Trunk from 101A Street to 100 Street	225	375 mm/300 mm	-	-
100 Street Main from 101 Avenue to 100 Avenue	225	300 mm/250 mm	-	-
Grandin Dr from 98 Avenue to 101 Avenue	475	525 mm/375 mm		
100 Street from 90 Avenue to 87 Avenue	370	-	300 mm/250 mm	-
87 Avenue from 100 Street to 98 Street	250	-	-	300 mm/200 mm
Business Park Lift Station	-	-	-	70 L/s
Business Park Lift Station Forcemain	1010	-	-	350 mm/250 mm
Combined Forcemain (Business Park and Cardiff)	2475	-	-	400 mm/300 mm

4.5 Cost Estimates

Costs for the wastewater line improvements are based on the depth, length, and size of the pipe, as well as the type of ground level rehabilitation required. Built out areas will require roadway restorations while pipes in open areas require grass restorations only. It is recommended that these improvements are integrated into the street improvement program or combined with other pipe improvement projects. Cost estimates are in 2023 dollars and include supply, installation, excavation, manholes and restoration work. The cost estimate also includes 10% for engineering and 30% for contingency. A summary of the cost for the required improvements are provided below. For gravity pipe upgrades, the costs for both replacement and twinning are shown. Detailed cost estimates are provided in Appendix H.

4.5.1 Existing System Improvements Cost Estimates

Cost estimates for existing wastewater collection system improvements are listed in **Table 4.11**. In total, approximately 1025 m of pipes are recommended to be improved. Both replacement and twinning costs are shown.

Table 4.11: Existing System Improvement Cost Summary

Pipe ID	Location	Length (m)	Replacement Diameter (mm)	Twin Diameter (mm)	Replacement Cost	Twin Cost
LSE0456-8	101 Avenue Trunk from 100 Street to 99 St	116	450	375	\$119,200	\$107,700
LSE0456-7	101 Avenue Trunk from 101A Street to 100 St	154	375	300	\$138,200	\$122,800
LSE0456-6		69	375	300	\$70,200	\$63,300
LNE3356-49	100 Street Main from 101 Avenue to 100 Avenue	206	300	250	\$159,100	\$138,500
LNW3455-27	Grandin Dr, from 98 Avenue to 101 Avenue	112	525	375	\$1,096,600	\$936,000
LNW3455-25		122	525	375		
LNW3455-26		122	525	375		
LNW3455-24		122	525	375		
Sub-Total					\$1,583,300	\$1,368,300
Engineering (10%)					\$158,300	\$136,800
Contingency (30%)					\$475,000	\$410,500
Total					\$2,216,600	\$1,915,600

4.5.2 Interim System Improvements Cost Estimates

Cost estimate for recommended improvements during the interim stage are summarized below in **Table 4.12**. In total, approximately 370 m of pipes are recommended to be improved. Both replacement and twinning costs are shown.

Table 4.12: Interim System Improvement Cost Summary

Pipe ID	Location	Length (m)	Replacement Diameter (mm)	Twin Diameter (mm)	Replacement Cost	Twin Cost
LNW2755-16	100 St from 90 Ave to 87 Ave	91	300	250	\$75,800	\$66,700
LNW2755-15		92	300	250	\$76,200	\$67,000
LNW2755-14		90	300	250	\$75,200	\$66,200
LNW2755-13		99	300	250	\$81,400	\$71,500
Sub-Total					\$308,600	\$271,400
Engineering (10%)					\$30,860	\$27,140
Contingency (30%)					\$92,580	\$81,420
Total					\$432,000	\$380,000

4.5.3 Ultimate System Improvements Cost Estimates

Cost estimate for recommended improvements during the ultimate stage are summarized in **Table 4.13**. In total, approximately 250 m of pipes are recommended to be improved. Also, 1000 m of 350 mm forcemain are recommended, as well as 2500 m of 400 mm forcemain. Both replacement and twinning costs are shown. Additionally, the capacity of the Business Park Lift Station is recommended to be upgraded from 37.5 L/s to 70 L/s.

Table 4.13: Ultimate System Improvement Cost Summary

Pipe ID	Location	Length (m)	Replacement Diameter (mm)	Twin Diameter (mm)	Replacement Cost	Twin Cost
LNW2755-18	87 Ave from 100 St to 98 St	124	300	200	\$101,700	\$77,000
LNW2755-17		124	300	200	\$101,700	\$76,900
Business Park Lift Station (70 L/s)		Lump Sum			\$1,235,000	
Business Park Forcemain		1010	350	250	\$787,800	\$712,100
Combined Forcemain		2450	400	300	\$2,156,000	\$1,911,000
Combined Forcemain Railway & Pipeline Crossing		40	400	300	\$126,000	\$120,000
Sub-Total					\$4,508,200	\$4,132,000
Engineering (10%)					\$450,820	\$413,200
Contingency (30%)					\$1,352,460	\$1,239,600
Total					\$6,311,500	\$5,784,800

4.6 Implementation Plan

For the existing wastewater collection system, if upgrades are pursued it is recommended the 250 mm diameter pipe on 101 Avenue, from 100 Street to 99 Street be upgraded first. Other upgrades on 101 Avenue and 100 Street will also need to be completed to reduce the risk of flooding in the upstream system during heavy rainfall events. Upgrades on Grandin Drive should take place simultaneously with other upgrades on 101 Avenue and prior to interim development occurring upstream.

The Town has not typically experienced basement flooding due to wet weather flows therefore, it is recommended that areas with recommended improvements including 101 Avenue, 100 Street and Grandin Drive and surrounding area be inspected by CCTV for structural and infiltration defects. If they are in poor condition, the capacity upgrades suggested can be completed in conjunction with any required replacements. If the structural condition is adequate, there may be opportunity to reduce I/I in the upstream sewer system by lining and rehabilitating pipes and manholes. As the capacity constraints are during wet weather flow only, a rehabilitation program may buy back system capacity and reduce the need for upsizing of pipe for wet weather flow alone. This also avoids any maintenance concerns with low velocities during dry weather periods. A condition assessment would be recommended before any existing system upgrades are pursued. Condition assessment of the upgrade locations would be recommended to be completed first. Long term the Town should consider inspection on all their pipe assets as part of an asset management program.

For the future development scenarios, it is recommended that pump station and conveyance improvements occur as required in stages as development proceeds. Based on the areas currently under development, it is recommended that improvements required in the interim stage be implemented in the near future.

The interim stage improvements include the following:

- Upsize wastewater mains on 100 Street, from 90 Avenue to 87 Avenue. This improvement work is recommended when new wastewater flows are generated in the Westwinds neighbourhood. This segment of pipe is undersized and causes surcharging at the tie-in location of the West Winds Pump Station forcemain on 100 Street. It is recommended to be upsized from 200 mm to 300 mm diameter in order to effectively convey flows.

The ultimate stage improvements include the following:

- Improvements to the Morinville Business Park Wastewater Pump Station and forcemain should be completed as required by nearby developments. The 200 mm diameter forcemain is required to be upsized from 200 mm to 350 mm diameter or twinned with 250 mm diameter forcemain. Decision on improvement timeline and improvement options should be based on further pipe condition assessments.
- The combined forcemain is also recommended to be upsized to 400 mm diameter or twinned with 300 mm forcemain. A review of the operation of the Business Park and Cardiff pump stations in relation to the combined forcemain should be conducted prior to upgrades.
- Upsize wastewater mains on 87 Avenue, from 100 Street to 98 Street. This improvement work is recommended when new wastewater flows are generated in Westwinds neighbourhood, Westmor neighbourhood, and area north of Morinville Business Park. This segment of pipe is acting as the bottle neck to the upstream system. It is recommended to be upsized from 250 mm to 300 mm diameter in order to effectively convey flow to the Business Park Pump Station. Actual flow should be monitored as areas develop.

Table 4.14 summarizes the recommended improvement timing.

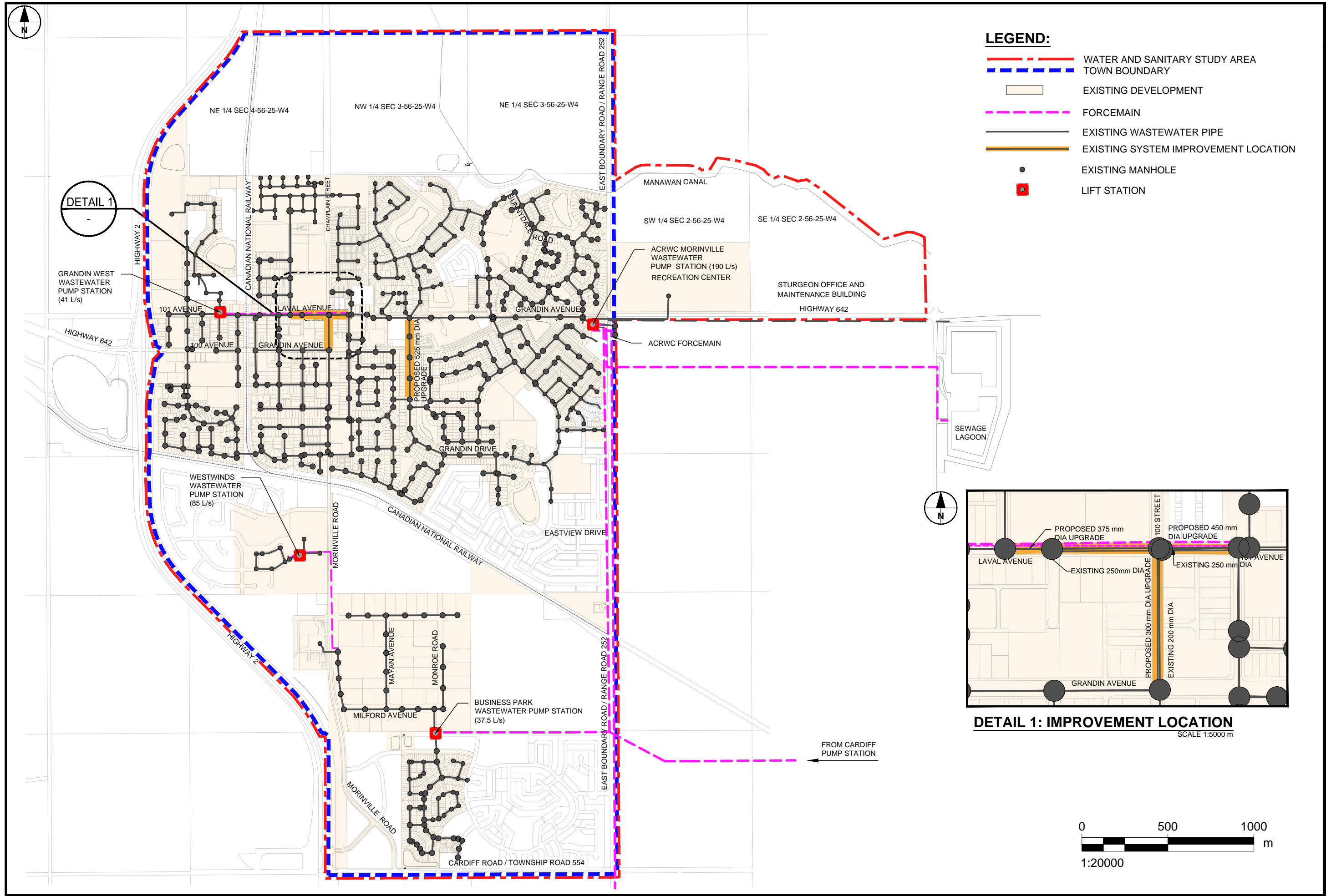
Table 4.14: Improvement Implementation Summary

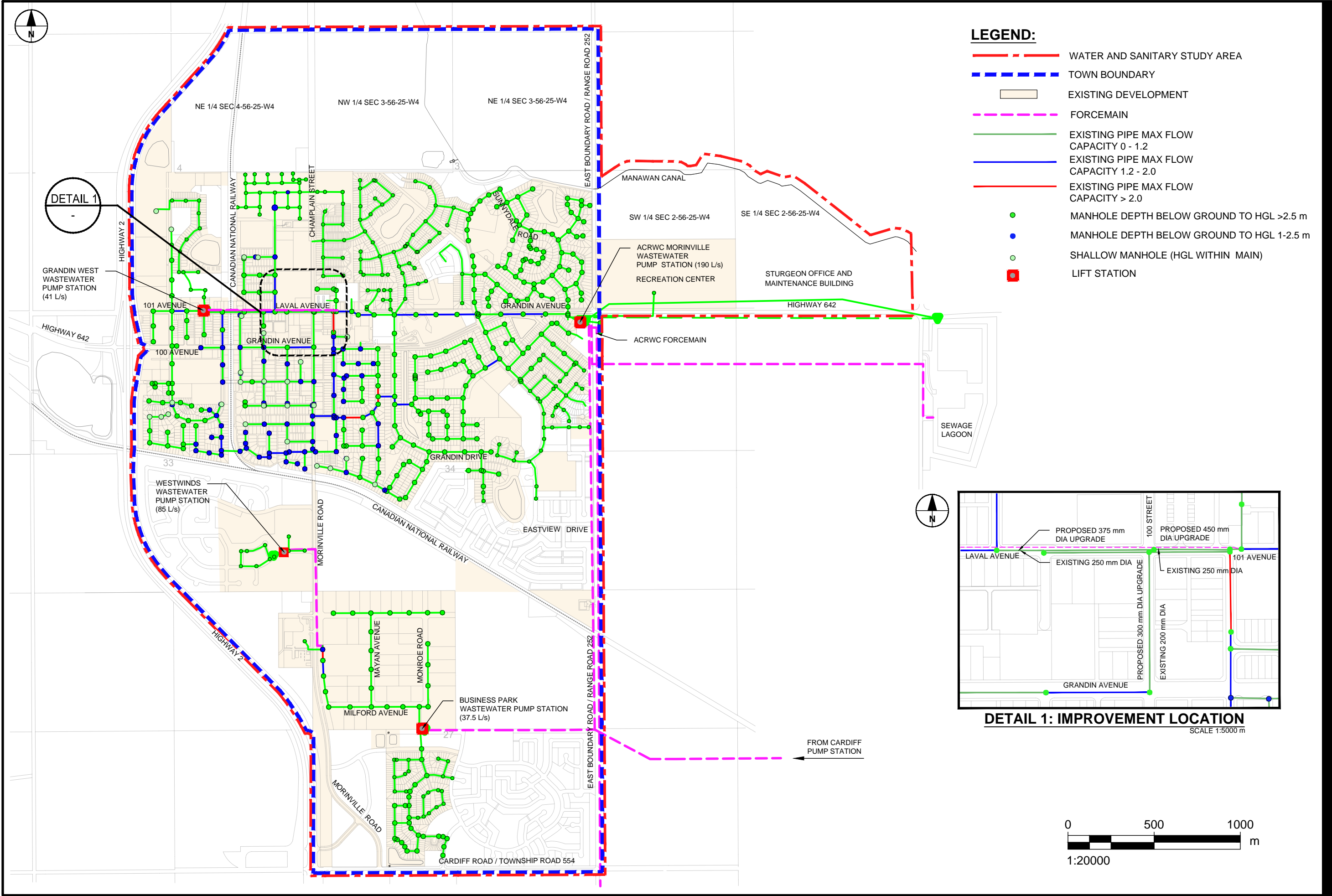
Improvement Location	Length (m)	Improvement Timing*		
		Existing	Interim	Ultimate
101 Ave Trunk from 100 St to 99 St	125	when practical pending condition assessment	-	-
101 Ave Trunk from 101A St to 100 St	225	when practical pending condition assessment	-	-
100 St Main from 101 Ave to 100 Ave	225	When practical pending condition assessment	-	-
Grandin Dr from 98 Ave to 101 Ave	475	When practical and prior to Notre Dame development pending condition assessment	-	-
100 St from 90 Ave to 87 Ave	370	-	In conjunction with interim development in Westwinds. Total population increase in area noted above is 350 residents.	-

Improvement Location	Length (m)	Improvement Timing*		
		Existing	Interim	Ultimate
87 Ave from 100 St to 98 St	250	-	-	In conjunction with ultimate development south of CN Railway in parts of the following quarter sections: SW-33-35-25-W4, SE-33-35-25-W4, SW-34-55-25-W4, SE-34-55-25-W4, and NE-28-55-25-W4. Total population increase in area noted above is 1967 residents.
Business Park Lift Station	-	-	-	In conjunction with ultimate development in the area south of CN Railway. Total population increase in area noted above is 8488 residents. Monitor flow to confirm
Business Park Lift Station Forcemain	1010	-	-	In conjunction with Business Park lift station upgrades.
Combined Forcemain (Business Park and Cardiff)	2475	-	-	In conjunction with Business Park lift station upgrades.

*The corresponding population increases threshold for each improvement can also be affected by non-residential development sewage generation.

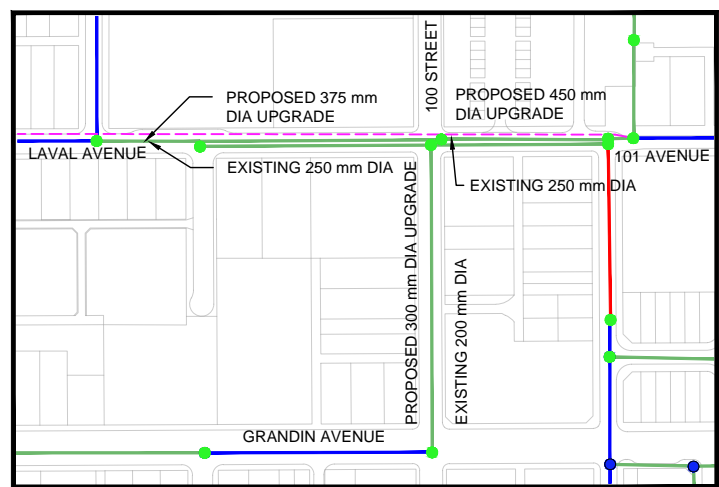
As areas develop and applications for development are received by the Town, it is recommended a review be completed to make sure proposed plans align with the plan and if they differ that the impacts are assessed. Developments with higher than normal water demands should be analysed on a case by case basis.



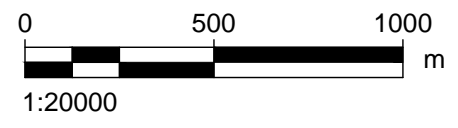


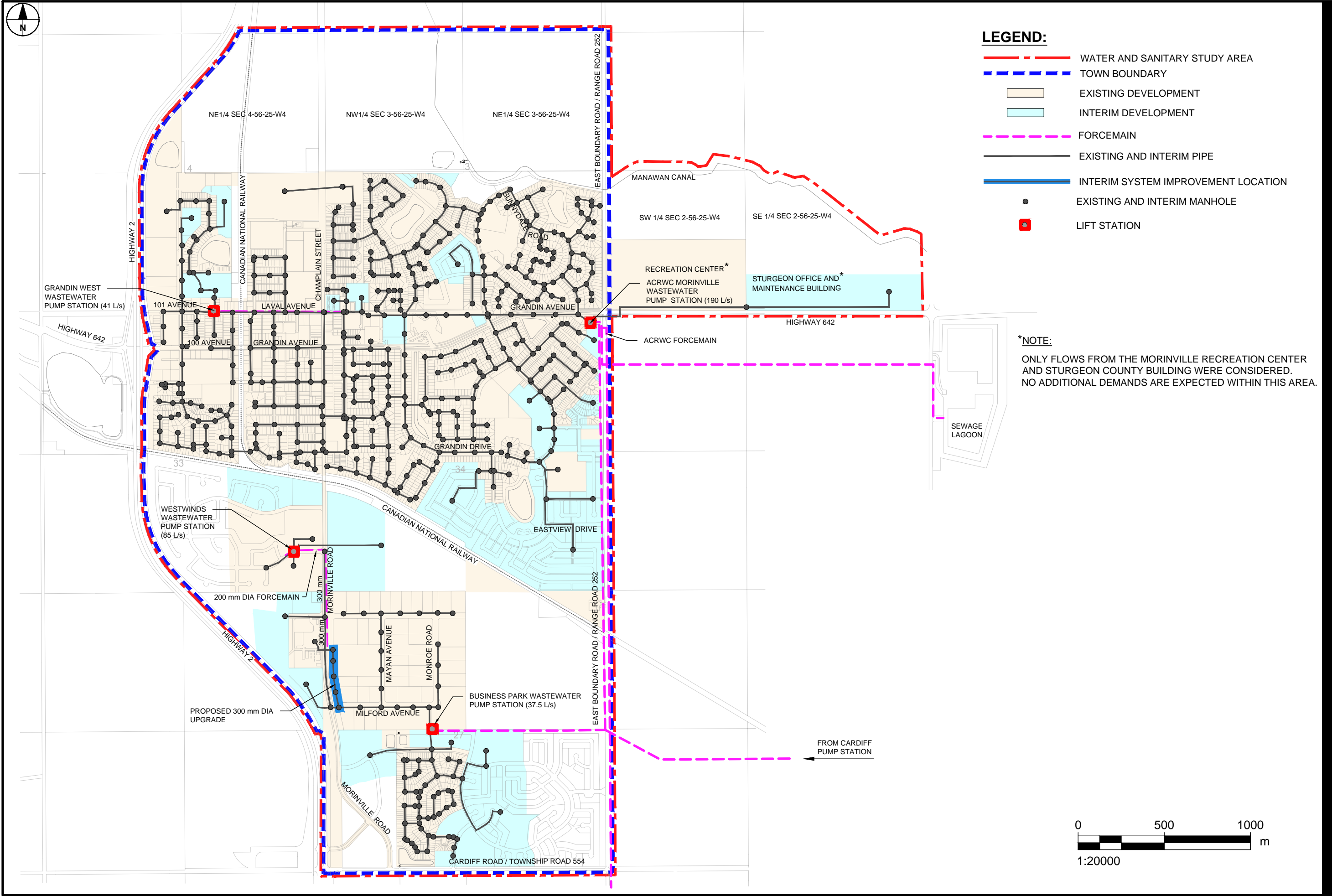
- LEGEND:**
- - - WATER AND SANITARY STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING DEVELOPMENT
 - - - FORCEMAIN
 - EXISTING PIPE MAX FLOW CAPACITY 0 - 1.2
 - EXISTING PIPE MAX FLOW CAPACITY 1.2 - 2.0
 - EXISTING PIPE MAX FLOW CAPACITY > 2.0
 - MANHOLE DEPTH BELOW GROUND TO HGL >2.5 m
 - MANHOLE DEPTH BELOW GROUND TO HGL 1-2.5 m
 - SHALLOW MANHOLE (HGL WITHIN MAIN)
 - LIFT STATION

DETAIL 1
-



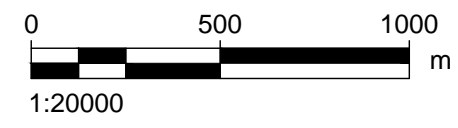
DETAIL 1: IMPROVEMENT LOCATION
SCALE 1:5000 m

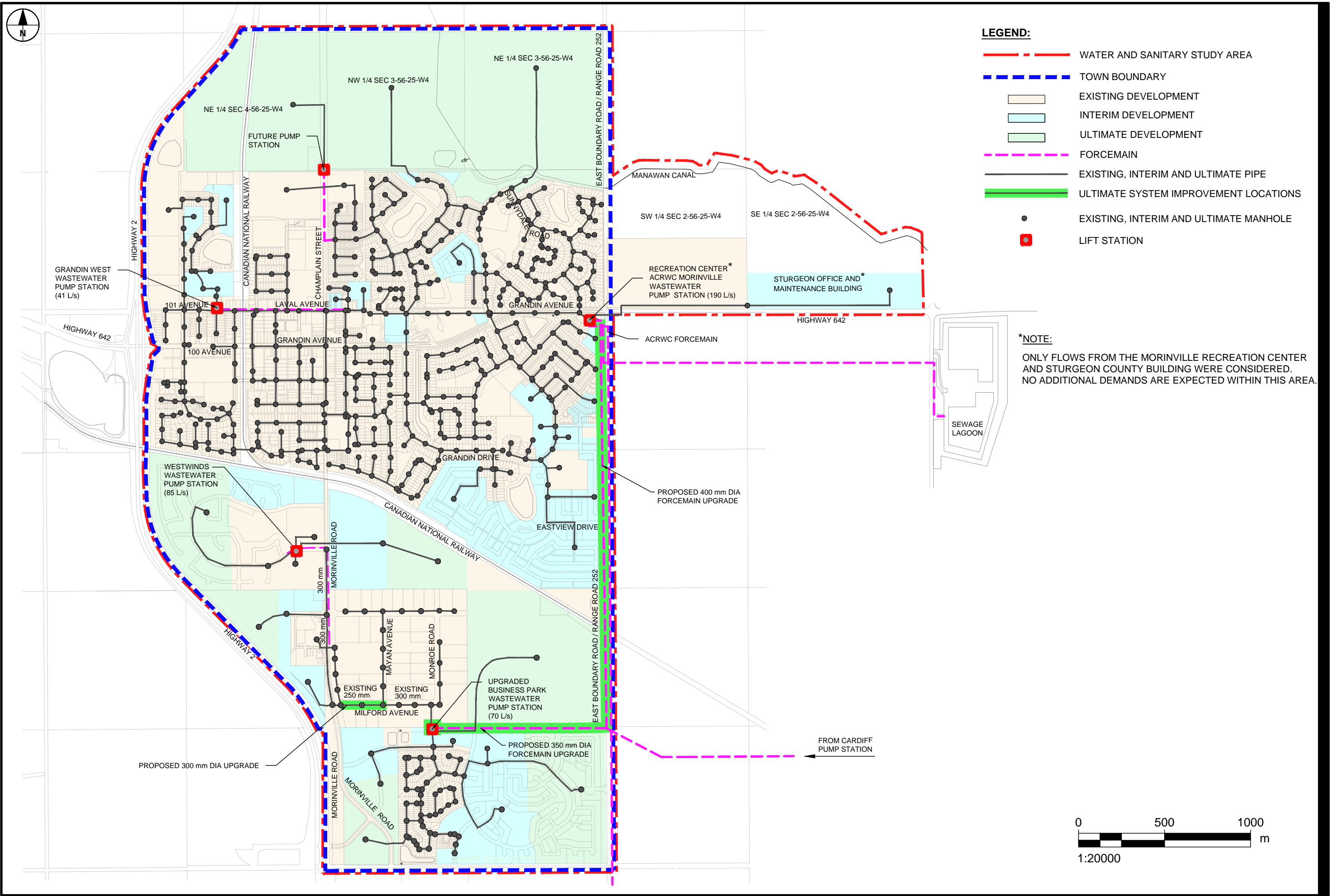




- LEGEND:**
- - - WATER AND SANITARY STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING DEVELOPMENT
 - INTERIM DEVELOPMENT
 - - - FORCEMAIN
 - EXISTING AND INTERIM PIPE
 - INTERIM SYSTEM IMPROVEMENT LOCATION
 - EXISTING AND INTERIM MANHOLE
 - LIFT STATION

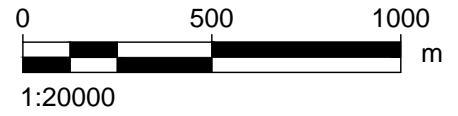
***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

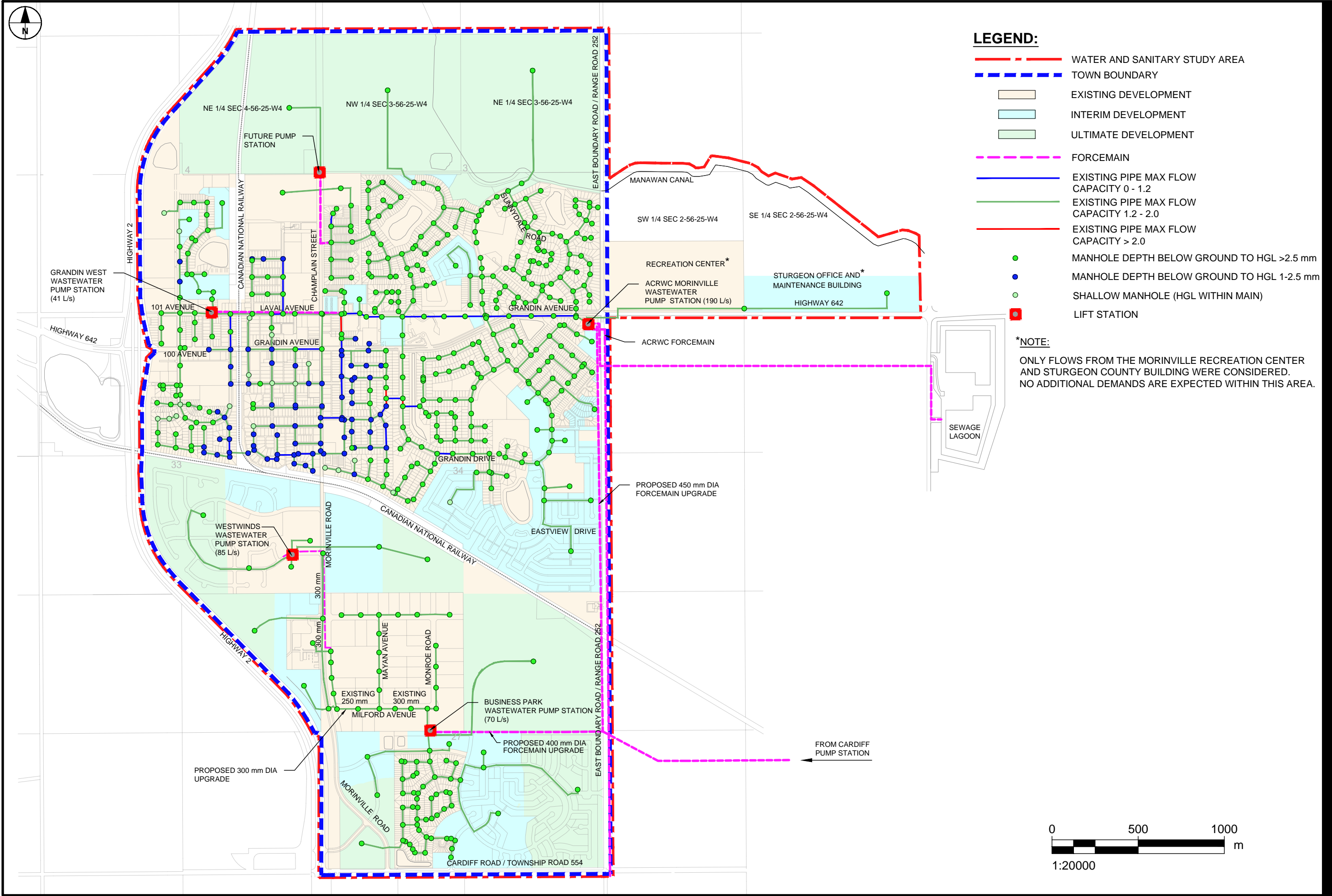




- LEGEND:**
- - - WATER AND SANITARY STUDY AREA
 - - - TOWN BOUNDARY
 - EXISTING DEVELOPMENT
 - INTERIM DEVELOPMENT
 - ULTIMATE DEVELOPMENT
 - - - FORCEMAIN
 - EXISTING, INTERIM AND ULTIMATE PIPE
 - ULTIMATE SYSTEM IMPROVEMENT LOCATIONS
 - EXISTING, INTERIM AND ULTIMATE MANHOLE
 - LIFT STATION

***NOTE:**
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.



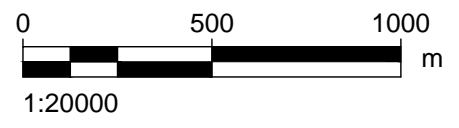


LEGEND:

- - - WATER AND SANITARY STUDY AREA
- - - TOWN BOUNDARY
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT
- - - FORCEMAIN
- EXISTING PIPE MAX FLOW CAPACITY 0 - 1.2
- EXISTING PIPE MAX FLOW CAPACITY 1.2 - 2.0
- EXISTING PIPE MAX FLOW CAPACITY > 2.0
- MANHOLE DEPTH BELOW GROUND TO HGL >2.5 mm
- MANHOLE DEPTH BELOW GROUND TO HGL 1-2.5 mm
- SHALLOW MANHOLE (HGL WITHIN MAIN)
- LIFT STATION

***NOTE:**

ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.



5 Stormwater Servicing Plan

The focus of this plan is to provide a servicing concept for future development. The plan is limited to the major stormwater system including proposed stormwater management facilities and major drainage pathways for future development areas.

5.1 Previous Stormwater Studies

A summary of the previous reports reviewed for this plan are provided below.

Carrot Creek Regional Drainage Master Plan, Stantec, 2022

A joint study including the City of St. Albert, Sturgeon County and Town of Morinville, the master plan assesses the capacity of Carrot Creek, suggests proactive protection measures and stormwater servicing recommendations for future development in the basin. The report recommended that all future developments within the Carrot Creek basin have stormwater management facilities (SWMFs) that attenuate peak flow to a release rate of 2.5 L/s/ha. SWMFs should be sized for the 100 year 24 hour event with the 1978 event accommodated within the facility freeboard.

Town of Morinville Municipal Utility Servicing Plan Stormwater Management Plan Update, AECOM, 2017

The Town of Morinville retained AECOM Canada Ltd. to update the previous Stormwater Management Plan in 2008, perform a stormwater drainage assessment of the existing development condition and establish a Stormwater Servicing Concept for the ultimate development condition. The study area consisted of only areas located south of the Canadian National Railway (CNR) line.

Flood alleviation options were also proposed for the flooding problems experienced by the Morinville Industrial Park and South Glens Subdivision. These problems occur due to the limited conveyance capacity of downstream channels during snowmelt and spring runoff.

Due to differing recommendations on allowable discharge rates, several options were presented including 2.5 L/s/ha, 1.9 L/s/ha and 1.65 L/s/ha as well a zero discharge option for spring melt conditions when culverts and ditches are frozen.

Town of Morinville Municipal Utility Servicing Plan, UMA-AECOM, 2008

The report evaluated and reviewed the Town's storm drainage, water distribution and sanitary sewer systems. A Stormwater Management Plan was outlined for the study area and suggested nine stormwater management facilities (SWMFs) to control stormwater runoff. Due to the limited elevation change within the area's topography, pumping was recommended to discharge runoff from the SWMFs to their proposed drainage routes.

The Stormwater Management Plan was based on a pre-development allowable discharge rate of 2.5 L/s/ha for Carrot Creek. This discharge rate was adopted following a regional analysis which established a flow versus drainage area relationship based on Water Survey of Canada records. The analysis was compared to the Big Lake Stormwater Management Plan (Associated Engineering, 2008) and the 2.5 L/s/ha rate was selected.

Town of Morinville Stormwater Implementation Study and Stormwater Implementation Servicing Reports, Merge Consulting Ltd., July 1980 and April 1981

This Study assessed the performance of the Town's municipal utilities north of the CNR line and provided a plan for future development including cost sharing.

Stormwater Management Concept, AE, 1979

This study assesses the limited flow capacity of the canal and identified flood hazard limits and mitigation recommendations.

Manawan Canal Study Sunshine Lake Estates, Northwest Hydraulics, 1979

This report developed a conceptual storm water management master plan for the Town to accommodate future growth and protect the Town from flooding. The study includes the areas north of the CN Rail.

5.2 Topographic Data

Topographic data was provided by the Town of Morinville and consisted of a Digital Elevation Model (DEM) file from which 0.25 m contours were generated by AECOM in 2015. This information was used to assess the drainage patterns throughout the study area and are shown in **Figure 5.1**.

The Town is flat with an elevation difference of only 3 to 5 meters across the Town. Areas north of the CNR generally drain north towards the Manawan Canal. Areas south of the rail drain south towards drainage channels flowing south towards Carrot Creek.

5.3 Existing Stormwater System Description

As described in Section 5.2, the Town’s drainage is divided into north and south draining areas by the CN Rail. North of the CNR, older areas do not have stormwater controls and rely on minor system drainage. Some areas do not have underground storm systems and run overland. The minor system capacity is excluded from the scope of this study. Newer areas, generally north of 101/Laval Avenue drain to stormwater management facilities Lake C, Lake A and Lake Q-3 as shown in **Figure 5.2**. Naming is consistent with the original study completed in 1979. The Lakes drain to a stormwater trunk and eventually to Stormwater Lift Station 1 which pumps to the Manawan Canal. The Lift station has two screw pumps and was upgraded in 2017. Two addition SWMFs in Grandin/Notre Dame have pumped discharges and drain to the Manawan Canal near Highway 642.

The station was originally constructed in 1980 / 1981 and consisted of a wet well / dry well arrangement with two Archimedes screw pumps and provision for a third pump. The pump station was upgraded in 2017/2018 which involved removing one of the screw pumps which had failed and installing two new solids handling submersible pumps with new discharge piping. The remaining original screw pump was be left in place to act as a standby pump when one of the submersible pumps is out for maintenance. In the future, if additional land is developed beyond the Town boundary, the remaining screw pump can be removed and a third submersible pump can be installed.

The current arrangement consists of two pumps operating in a duty standby scenario, with the third pump (original screw pump) operating as a backup in case both new pumps are unavailable. The pump details are outlined in **Table 5.1**.

Table 5.1: North Stormwater Pump Details

Pump Number	Operation	Description	Capacity
P-101	Lead / Lag Pump	67 kW (90 HP) 885 RPM, Constant Speed, 600 Volt, 3 Phase	640 L/s at 5.2 m TDH
P-102	Spare (existing screw pump)	74.5 kW (100 HP) 1800 RPM, Constant Speed, 600 Volt, 3 Phase	630 L/s
P-103	Lead / Lag Pump	67 kW (90 HP) 885 RPM, Constant Speed, 600 Volt, 3 Phase	640 L/s at 5.2 m TDH

South of the rail, the industrial area drains via ditches and culverts to one of two channels flowing south eventually to Carrot Creek. The main conveyance from north to south is the ditch along 100 Street. There are 3 existing stormwater management facilities, one in the new Westwinds development, one on the south side of the South Glens neighbourhood (SWMF 8) and one at the north side of South Glen which consists of two interconnected facilities (SWMF 9A). The Westwinds SWMF has a pumped discharge while SWMFs 8 and 9A drain by gravity. Undeveloped areas are currently agricultural with low points and potholes throughout.

5.4 Design Criteria

The 2023 Municipal Design Standards specify a 100 year event (127 mm over 24 hours) for design of major system stormwater management. Previous Design Standards specified the 1978 historical event (133 mm over 20.4 hours). However, existing stormwater management facilities vary in their storage volume and may have been designed for a lesser event. For this study, stormwater storage volumes are based on the current standard of the 100 year event, however it is recommended that the facilities be designed such that the 1978 event can be contained within the facility freeboard.

A comparison of design standards of different municipalities is shown in Appendix J.

Allowable discharge rates are based on previous studies on the two receiving water bodies. For the Manawan Canal (areas north of the CN Railway) the established allowable discharge rate is 1.65 L/s/ha (Northwest Hydraulics, 1979). For Carrot Creek (areas south of the CN Railway) the established allowable discharge rate is 2.5 L/s/ha (Stantec, 2022).

5.5 Hydrological Parameters

The hydrological analysis was carried out utilizing XP-SWMM, an industry accepted stormwater management model. The hydrological parameters summarized in **Table 5.2** were used to establish the runoff volumes and peak flows generated by drainage basins.

Table 5.2: Summary of Hydrological Parameters

Hydrological Parameter	Value
Depression Storage	
Pervious Area	6.4 mm
Impervious Area	3.2 mm
Manning's Coefficient	
Pervious Area	0.25
Impervious Area	0.015
Infiltration	
Initial Rate	75 mm/hr
Final Rate	3.5 mm/hr
Decay Factor	0.00115 s ⁻¹
Average Ground Slope	0.0061 m/m

Percent imperviousness for existing and future conditions was determined by individually assessing each drainage basin and calculating a weighted average based on land use. **Table 5.3** summarizes the assumed percent imperviousness of each type of land use during rainfall events.

Table 5.3: Percent Imperviousness by Land Use for Rainfall Events

Land Use	Imperviousness (%)
Commercial	90
Industrial	80
Morinville Industrial Park	20
Low Density Residential	50
Medium and High Density Residential	70
Park/Recreational/Institutional	10
Undeveloped	10

The Morinville Industrial Park was given a lower imperviousness than other industrial areas due to the Park’s lower density of buildings, flat slopes and vegetated drainage ditches. Residential areas were given an imperviousness of 50%, except where medium and high density residential development was specified by an Area Structure Plan or Land Use Bylaw.

5.6 North Catchment Concept Plan

A model was developed for the major stormwater system for the Town of Morinville, north of the CN Railway including six stormwater management facilities (3 existing, 3 proposed) as well as the interconnections between the ponds and the pump station discharging to the Manawan Canal. Existing SWMFs in Grandin and Notre Dame were not modelled as they have individual pump stations draining to ditches leading to the Manawan Canal downstream.

Drainage Basins were delineated based on available information including the original Stormwater Concept (AE, 1979), aerial photos, LiDAR data and the Town’s utility base map. Imperviousness was estimated based on land use and aerial photography. An overview of the system is illustrated in **Figure 5.2**.

The total area draining to the north stormwater pump station is approximately 610 ha. At the recommended pre-development rate of 1.65 L/s/ha the allowable discharge rate is approximately 1006 L/s. The current pump station capacity of 1080 L/s (540 L/s x 2) is therefore appropriate.

Lakes A and C are equipped with control manholes to restrict the flow to the allowable discharge rate. It is recommended that the gate settings be verified in the field and adjusted as required to maintain appropriate water levels. Lake Q3 does not currently have an orifice or control and relies on the pump station flow to control the system discharge.

Pond dimensions were estimated based on as-built drawings if available or the previous reports. The design high water levels of some of the facilities are exceeded during the 100 year event in the model. However, the water level remains outside of areas that would cause property damage other than vegetation. The water level following an actual rain event should be monitored and compared to the design elevations.

Required volumes for proposed SWMFs are shown in **Table 5.4**. Proposed SWMFs should be equipped with control structures with an allowable discharge rate of 1.65 L/s/ha with gravity drainage to the existing pump station. Depending on the order of development SWMF Q-1 should be designed such that SWMF D can drain to it by gravity. The proposed stormwater concept is illustrated in **Figure 5.3**.

Table 5.4 Proposed North SWMFs

Basin/SWMF Name	Contributing Area (ha)	Imperviousness (%)	Proposed Volume 100 year 24 Hour (m ³)	Maximum Discharge Rate (m ³ /s)
SWMF D	64.3	50	49,500	0.11
SWMF Q-1	55.5	50	31,000	0.92
SWMF Q-2	78.3	50	50,300	0.13

5.7 South Catchment Concept Plan

The area draining to the Carrot Creek Basin consists of approximately 4 km², located south of the Canadian National Railway (CNR) line that bisects the Town.

Currently, the study area consists of undeveloped land to the east with industrial, residential and commercial land use to the west along 100 Street. Area Structure Plans for South Glens, Westmor, and South Business Commercial have been approved to guide future development in the study area while development in Westwinds is underway following the approved neighbourhood design.

The south catchment area is outlined in **Figure 5.2**.

Due to the relatively flat study area, pond bottom elevations were found to be lower than adjacent ditch elevations. The servicing concept therefore will require pump stations dedicated to each facility. The pump station will be required to discharge their respective SWMF's flow into the Morinville Road Conveyance System via forcemain.

Stormwater management facilities are proposed within each of the delineated catchments. Several options for discharge were explored in the 2017 Study including individual pumped discharge, shared pump discharge and a new underground storm trunk on the east side of 100 Street. These options will depend on the timing of development, land ownership and the degree of cooperation between developers. The Westwinds SWMF (SWMF 2) has been developed since the 2017 Study and includes a dedicated pumped discharge. Proposed SWMFs 3-7 were also assumed to include a dedicated pumped discharge.

Proposed SWMF volumes based on the 100 year 4 hour event and a discharge rate of 2.5 L/s/ha (per the Carrot Creek Study) are summarized below.

Table 5.5 Proposed South SWMFs Volumes

Facility ID	Basin Area (ha)	100 Year Event Storage Volume (m ³)	Maximum Discharge Rate (m ³ /s)
SWMF 3	17.5	16,000	0.04
SWMF 4	14.4	9,700	0.04
SWMF 5	54.2	38,300	0.14

Facility ID	Basin Area (ha)	100 Year Event Storage Volume (m ³)	Maximum Discharge Rate (m ³ /s)
SWMF 6*	21.3	12,500	0.035
SWMF 7	86.4	51,100	0.216
SWMF 8**	20.6	14,800	0.052
SWMF 9A**	31.1	25,800	0.053
SWMF 9B	15.4	3,700	0.039

*maximum discharge rate for SWMF 6 is 1.65 L/s/ha as it will drain north to the Manawan Canal

**existing facilities

The Stormwater Servicing Concept for the future development condition is outlined on **Figure 5.3** and described in detail below.

Stormwater Management Facility 3

The majority of Basin 3 has already been developed as part of the Westmor Business Park. Runoff from this commercial development is collected by a series of catch basin manholes located in the parking lot and discharged into the south-flowing ditch along Morinville Road.

Further development in Basin 3 will require either construction of SWMF 3, or on-site storage (consisting of additional catch basin manholes) to collect and store runoff. Runoff collected by the facility/storage system can be discharged into the Morinville Road Conveyance System.

The use of on-site storage and catch basin manholes could potentially eliminate SWMF 3 and a pump station from the Servicing Concept. This system would need to be gravity-driven to avoid redundancy but may be difficult to implement due to the relatively flat study area. For this reason, the Servicing Concept assumes the implementation of SWMF 3, complete with a pump station. Any catch basin manholes proposed in Basin 3 should be equipped with orifices to limit discharge to allowable rates. Runoff would be collected by the catch basin manholes and discharged to the Morinville Road Conveyance System at the specified allowable rate.

Stormwater Management Facility 4

Drainage from an external area of 14.2 ha in the Fr. Harnois and Old Towne Districts (an area north of the CNR line, as delineated on **Figure 5.3**) is collected by a 450 mm diameter storm sewer near Morinville Road and discharged into Basin 4. During high rainfall events, runoff is attenuated upstream of the existing 450 mm diameter storm sewer in an existing storage ditch. The storm sewer acts as a constriction and limits discharge into the downstream channel. The estimated high water level for the 1978 rainfall event encroaches on the backs of several property lots adjacent to the storage ditch. Aside from this external area and the Public Utility Lot north of the CNR line in Basin 6, no other drainage areas are assumed to cross the CNR line into the study area. This report assumes that sewer outlet flows continue to be routed directly into the Morinville Road Conveyance System

Runoff from Basin 4 will be collected by proposed SWMF 4. The SWMF has been located at a naturally occurring depression in the basin. Runoff collected by the facility will be discharged into the Morinville Road Conveyance System (currently a ditch system).

A north-south ridge in the basin's topography separates Basin 4 from Basin 5. The Servicing Concept assumes that post-development grading will follow existing ground elevations and two basins will continue to be separated by the north-south ridge.

Stormwater Management Facility 5

Basin 5's topography consists of undulating farmland and heavily treed areas. The runoff direction for this basin was difficult to ascertain from field reconnaissance and contours. The majority of the basin appears to generally drain towards the CNR line, but flow direction within the heavily treed areas could not be confirmed. The existing system assessment therefore assumes that basin runoff flows towards the CNR line where it collects at low points and dissipates through evaporation and infiltration. However, during large rainfall events, basin runoff may exceed the area's depression storage and flow to Morinville Road.

SWMF 5 will collect runoff from Basin 5. Existing contours were used to delineate the extents of the basin with the assumption that post-development grading will follow existing ground elevations. The Servicing Concept also assumes that basin re-grading caused by future development will redirect runoff from the 8.3 ha external area currently draining to Basin 10 (shown in **Figure 5.2**) to SWMF 5. Runoff collected by SWMF 5 will be discharged into the Morinville Road Conveyance System. SWMF 5 is proposed to be located in the low area north of the Industrial Park.

Stormwater Management Facility 6

The existing system assessment assumes that Basin 6 runoff drains toward the CNR line where it collects at a low point in the CNR ditch. The assessment assumes that the collected runoff dissipates through evaporation, as field reconnaissance noted that this low point does not appear to drain. The existing culvert was assumed to either connect drainage from the Public Utility Lot to the south side of the CNR, or to pool Public Utility Lot runoff on the north side of the tracks until the runoff dissipates through evaporation. During large rainfall events, basin runoff likely exceeds the area's depression storage and flows to East Boundary Road.

Runoff generated by Basin 6 is proposed to be collected in SWMF 6. The Public Utility Corridor, located in north of the CNR line, has been included in Basin 6 due to its exclusion from the Grandin Heights ASP. The Public Utility Corridor is connected to areas south of the CNR by an existing culvert. Preliminary design should review whether this culvert connection is suitable for future development.

Existing contours were used to delineate the west and south edges of Basin 6 with the assumption that post-development grading will follow existing ground elevations. This implies that the Developer will need to split the quarter section's drainage between SWMF's 5, 6 and 7. Since the existing ridge that separates these basins can be easily overcome by re-grading during land development, the Town may consider sizing SWMF 6 for the full quarter section of land.

The proposed location of SWMF 6 is in the low lying area south of the CNR line. It is suggested that SWMF 6 discharges into the East Boundary Road (EBR) ditch. There is a proposed storm sewer along EBR. Preliminary design of EBR shows two storm sewers split by a high point along the CNR line: one north-draining sewer that carries flow into Grandin Heights and one south-draining sewer that carries flow into South Glens. The Servicing Concept assumes that runoff collected by SWMF 6 is discharged into the north-draining EBR storm sewer. This flow route has several advantages, including:

- Using the Manawan Canal drainage course – drainage north of the CNR line primarily discharges into Manawan Canal, which has a more defined and developed drainage course than Carrot Creek.
- Reducing flow into Carrot Creek – additional runoff volumes generated by land development is a concern due to Carrot Creek's limited conveyance capacity and erodibility.
- Avoiding the contribution of runoff to South Glens – the south-draining EBR storm sewer discharges into SWMF 7, which discharges into the Sturgeon County drainage ditch via the Cardiff Road ditch network.

- Reducing the size of SWMF 7 – since the south-draining EBR storm sewer discharges into SWMF 7; rerouting flow will reduce the facility's required storage volume.

Since the receiving water course of the north-draining EBR storm sewer is Manawan Canal (via Grandin Heights), SWMF 6 has been designed to meet the Canal's allowable discharge rate of 1.65 L/s/ha. The future EBR storm sewer and Grandin Height's SWMF, pump, forcemain and drainage ditch designs will need to be reviewed to ensure that the system has sufficient capacity to accommodate flows from SWMF 6.

Stormwater Management Facility 7

Basin 7's topography suggested that runoff collects at a low point in the southwest corner of the basin. The stormwater assessment assumes that runoff from the basin dissipates through evaporation, as an outlet for the low point could not be confirmed.

The South Glens Stage 4 drawings propose three facilities for the area: SWMF 7A, SWMF 7B, SWMF 7C. These three facilities have been collectively referred to as SWMF 7 in this report.

Runoff collected by SWMF 7B and SWMF 7C is discharged into SWMF 7A prior to controlled release via forcemain into the Cardiff Road south ditch. Since these three SWMFs act in conjunction with each other, they have been assessed as a single SWMF in the model. During preliminary design, it is suggested that connecting SWMF 7B and SWMF 7C to SWMF 7A via gravity drainage system is explored in order to limit the number of pump stations.

Stormwater Management Facility 8

Stage 1, 2 and 3 of the South Glens Subdivision have been constructed, including SWMFs in the southwest and northwest corners of the subdivision. Basin 8 runoff is routed by existing major and minor systems to existing SWMF 8, where it is collected and discharged into a ditch on the south side of Cardiff Road, between Morinville Road and 94 Street. The ditch conveys flow south, eventually connecting to the Highway 2 ditch network prior to discharging into Carrot Creek.

Existing SWMF 8 collects runoff from Stage 1 and 2. Discharge from the facility is pumped through an existing culvert under Cardiff Road and routed south through a ditch that joins the Highway 2 drainage ditch. The SWMF was designed to store approximately 15,800 m³ during the 100 year storm event and has a maximum capacity of approximately 22,000 m³ (includes the use of freeboard volume). The pump station on the southwest corner of the SWMF discharges at a release rate of 0.041 m³/s (2 L/s/ha).

The Servicing Concept maintains the maximum discharge rate specified by the South Glens record drawings and calculates storage requirements for each scenario based on the specified rate. The calculated storage requirements are then compared to the existing pond's capacity to determine whether pond expansion is required.

For SWMF 8, the as-built drawings specify a maximum capacity of 22,000 m³, which is larger than 14,800 m³ required by the 100 year event and 17,800 m³ required by the critical 1978 event. Therefore, the facility's capacity appears to be adequate, although it should be noted that the 17,800 m³ required by the 1978 event will exceed the pond's High Water Level (the High Water Level provides approximately 15,800 m³ of storage during the 100 year storm event).

Stormwater Management Facility 9A

Basin 9 is split into Basin 9A and 9B along the Morinville Road alignment. Runoff east of Morinville Road (Basin 9A) is routed to existing SWMF 9A, where it is collected and discharged into a ditch on the south end of the Industrial Park. This ditch carries flow west toward the three existing culverts under Morinville Road. Runoff west of Morinville Road (Basin 9B) is collected by the Highway 2 ditch.

The northwest corner of the South Glens subdivision is serviced by the two conjoined cells of SWMF 9A, located on the northern border between South Glens subdivision and the Morinville Industrial Park. The east cell of SWMF 9A was designed to store approximately 11,800 m³ during the 100 year storm event and has a maximum capacity of approximately 14,600 m³. The SWMF 9A east cell pump station discharges at a release rate of 0.064 m³/s. (2 L/s/ha).

The two pond cells are connected by a culvert that equalizes the water level between the cells. The west cell storage capacity was estimated at approximately 7,000 m³ for the 100-year storm event and 10,000 m³ for the maximum capacity (includes the use of freeboard volume) by assuming a trapezoidal pond with physical characteristics similar to the east cell; 3.5H:1V side slopes, normal water level of 693.55 m, high water level of 696.82 m and top of freeboard elevation of 697.55 m. The total capacity of SWMF 9A is therefore assumed to be approximately 18,800 m³ during the 100-year storm event and 24,600 m³ at maximum capacity (includes the use of freeboard volume).

It should be noted that Spencer Environmental has previously identified a Class II Wet Meadow and Class IV Deep Marsh in Basin 9, as per the wetland assessment outlined in their "Environmental Overview, Ditch Realignment and Wetlands Assessment for HWY 2:36/Cardiff Intersection Improvements" report. Approximate locations of these wetlands are shown on [Figure 5.2](#) and [Figure 5.3](#).

The Servicing Concept maintains the maximum discharge rate specified by the South Glens design drawings and calculates storage requirements for each scenario based on the specified rate. The calculated storage requirements were then compared to the existing pond's capacity to determine whether pond expansion is required.

For SWMF 9A, the assumed maximum capacity is 24,600 m³, which is very close to the 25,800 m³ required by the 100 year event. The pump discharge for the existing facility could also be increased to the latest documented allowable discharge rate of 2.5 L/s/ha.

Stormwater Management Facility 9B

SWMF 9B collects runoff from Basin 9B. The land in this area is currently within the Town's boundary but is not owned by the Town. Due to the existing road right of way and future plans for a Highway 2 and Cardiff Road overpass, it has been assumed that Basin 9B will either remain undeveloped or will be developed as parkland. Runoff collected by the facility will be discharged into the Highway 2 ditch. If development occurs the small amount of required storage can likely be accommodated by on site storage, catch basins or ditches.

Morinville Industrial Park

The Morinville Industrial Park (Basin 10) consists of approximately 64.5 ha of industrial development. An external area of 8.3 ha of undeveloped land currently appears to drain into the Park from Basin 5(15 ha); the extents of the area may have changed due to re-grading of land from agricultural works and land cultivation. Runoff from the Industrial Park flows via ditches to the southwest corner of the basin, where it discharges through three culverts into the Highway 2 drainage ditch in Basin 9B. The Park has no minor storm sewer system.

The Morinville Industrial Park's drainage ditches were originally designed such that runoff from the basin could be stored within the Park during large rainfall events, but the existing ditches do not comply with the original ditches proposed by the as-built drawings. The combination of reduced ditch cross sections, regraded ditch slopes, undersized or plugged access road culverts and vegetation growth significantly limits the conveyance capacity of these channels. Landowners within the Industrial Park also appear to have modified the drainage network over time by re-grading or filling channels and installing culverts to reroute flow, thereby further interfering with the Park's intended design.

The model assumed that positive drainage was being maintained by the Park's infrastructure, but due to the area's low slope, age and modifications, it is likely that there are low points and depressions within the system that do not drain.

The Servicing Concept assumes that the existing drainage pattern will not change for the future development condition, aside from the development of the 8.3 ha external area contributing drainage to the Park. Future regrading of Basin 5 redirects drainage from this external area to SWMF 5. It is recommended that future lot developments within the Park consider on site stormwater management.

Alberta Transportation Highway 2 and Cardiff Road Facilities

The majority of runoff within the study area south of the CNR drains south, eventually discharging into either Alberta Transportation's Highway 2 ditch system or Sturgeon County's drainage ditch. Both outlets carry flow south and discharge into Carrot Creek.

Since Alberta Transportation's Highway 2 ditch system and Sturgeon County's drainage ditch are the two primary outlets for Morinville's south catchment area, the existing system is heavily dependent on the conveyance capacity of these channels. In 2017, the condition of these drainage channels includes overgrown vegetation, undulating (and sometimes, reversed) slopes and poorly maintained culverts. Since then, it appears that some maintenance has been completed on the two ditches however any lack of maintenance going forward can reduced conveyance capacity and cause drainage to pool and freeze, thereby creating ice blockages during spring runoff.

Plans for the future Highway 2 and Cardiff Road overpass include the construction of several SWMFs to accommodate interchange drainage. Alberta Transportation was contacted in 2017 to discuss the possibility of using these proposed facilities in the Town's servicing concept. This would allow both parties to share the cost of the facilities and eliminate the need for SWMF 9B construction.

Preliminary discussions indicated that overpass construction was a low priority for Alberta Transportation and not planned for at least 15 – 20 years. Alberta Transportation representatives also questioned the capacity of the proposed facilities to accommodate drainage from the Town. The servicing concept assumes that these facilities are unavailable for the Town's use.

Trunk Sewer System

The Morinville Road Conveyance System currently consists of ditches along Morinville Road which carry runoff south toward three culverts in the southwest corner of the Industrial Park. These culverts carry drainage across Morinville Road into the Highway 2 ditch. Runoff then continues to flow south until it is outside of the study area.

The Town's long-term development plan may include urbanizing Morinville Road to include a curb and gutter system, complete with an underground trunk sewer to convey storm flow. The 2017 report assessed options at a conceptual level in order to determine the feasibility of the trunk sewer option depending on whether SWMFs had combined or individual pump stations. As Westwinds has installed an individual pump station only this option is

carried in this report. Further study and discussion will be required to confirm the alignment, depth, size and benefit of the upgrade, as well as to explore the option's feasibility in more detail.

The new trunk would consist of approximately 1200 m of sewer extending from Basin 4 in the north, to the southwest corner of the Industrial Park, where the sewer discharges into the existing Highway 2 ditch on the west side of Morinville Road in Basin 9B, as shown on **Figure 5.3**. SWMF 2, SWMF 3, SWMF 4 and SWMF 5 discharge at a controlled rate into the sewer via forcemain. SWMF 9A pumps into the Industrial Park's south ditch, where drainage from SWMF 9A and runoff from the Industrial Park bypass the trunk sewer by flowing through the three existing culverts under Morinville Road.

The estimated pipe size of the trunk sewer is 1200 mm. This assumes that runoff from the Fr. Harnois and Old Towne Districts bypass SWMF 4 and flows directly into the proposed trunk sewer. If runoff is routed through SWMF 4, the size of the trunk sewer may be reduced. Pipe sizes were calculated based on the maximum discharge rates of contributing basins and assumed an allowable discharge rate of 2.5 L/s/ha. The sizing is based on no surcharging in the proposed pipe.

Due to elevation constraints across the study areas, a minimum pipe slope of 0.10% was used for the trunk sewer. The depth of cover was estimated to vary between 0.3 m and 0.8 m above the top of pipe. The flat topography in the Town is challenging for an underground storm system that discharges to a ditch system. As stated above, the alignment, size and slope must be confirmed in a subsequent design phase.

The proposed drainage outlets for the study area include Alberta Transportation's Highway 2 ditches, Sturgeon County's drainage ditch and Manawan Canal. It should be noted that the Servicing Concept does not consider the specific capacity and properties of these downstream conveyance channels, only the established allowable stormwater discharge rates. Preliminary design should investigate these details and confirm the appropriate pumping rates, ditch capacity and, if applicable, ditch erosion protection requirements to accommodate facility discharge.

5.7.1 Water Quality Discussion

The primary purpose of stormwater management facilities is to collect the runoff generated by developments and control the outflow to the receiving watercourse to allowable discharge rates. However, a secondary purpose is to provide water quality enhancement. Alberta Environment requires that a minimum of 80% of sediments with a particle size of 75 µm or greater be removed from stormwater runoff.

Stormwater quality enhancement can be provided by preserving and enhancing existing wetlands, creating wetlands, constructing wet ponds and constructing dry ponds, all listed in decreasing value of contribution to the preservation of natural conditions.

The servicing concept recommends the use of wet ponds for all basins within the study area. However, during preliminary design, alternative facility types can be assessed to determine if they can provide better water quality enhancement or additional cost/benefit. In addition to wet ponds, water quality enhancement can be addressed by using Best Management Practices (BMP's). Several BMP's, such as:

- Oil and Grit Separators – locating oil and grit separators at the stormwater outfall allows the removal of sediment and pollutants from the stormwater before entering the receiving waterbody. Oil and grit separators may also be appropriate for the existing stormwater system in Valleyview to provide some quality enhancement. It is important to note that regular maintenance of these units is required.
- Vegetative zones – in and around a wet pond enhances pollutant removal capabilities.

- Vegetated swales – discharge into grassed channels/ditches provides sediment an opportunity to settle out of the stormwater while being conveyed to the receiving waterbody.

The following sections briefly summarize alternative facility types:

Wetlands

Wetlands provide sediment retention, filtration, and pollution reduction through biological processes and are suitable for drainage areas greater than 5 ha. As wetlands can reduce soluble pollutants, wetlands are generally applicable to residential, commercial, and industrial areas where the nutrient loading is relatively high. In general, wetlands have been found to lower BOD, TSS, and nitrogen concentrations to 10% to 20% of the level at the inflow point. For total phosphorus, metals, and organic compounds, the removal efficiency varies significantly but is typically between 20% and 90%.

Wet Ponds

Wet ponds are water bodies that temporarily store stormwater runoff to promote the settlement of suspended pollutants and to restrict discharge to predetermined levels. Wet ponds have two storage zones: a lower permanent storage and an upper active storage. The permanent storage will always exist irrespective of the inflow while the water level in upper storage will fluctuate in response to the inflow volume.

The deep permanent storage is the wet pond's primary water quality enhancement mechanism. Runoff entering the wet pond will slow down and thus induce the settlement of suspended pollutants. Biological processes, such as nitrogen uptake by algae, are established in the permanent storage and help reduce the concentration of soluble contaminants. However, due to the smaller biological contact area, wet ponds are not as efficient as wetlands in reducing these concentrations.

Dry Ponds

The primary purpose of a dry pond is to provide temporary stormwater storage to reduce the peak outflow rate. Dry ponds drain down to a dry condition at the end of the rainfall event. Being primarily designed for temporary and short duration stormwater retention, the dry pond has minimal water quality enhancement capabilities without the inclusion of a small wet pond forebay to trap some of the suspended sediment. The dry pond's very limited ability to reduce the concentration of soluble contaminants limits its application.

Low Impact Development Features

Low impact Development (LID) is an approach to manage stormwater runoff using on-site naturalized features that provide some storage and water quality benefits. Common LID Facilities include the following:

- Bioretention Basins
- Box Planters
- Soil Cells
- Bioretention Gardens

There are many options to provide storage and/or reduce stormwater runoff for infill development including incorporating green spaces and parks in the infill development planning, green or blue roofs on infill buildings or on-site stormwater reuse.

These LID facilities are designed to retain and store runoff from smaller rainfall events, which ultimately drain back into the storm sewer system once the soil media has become saturated. They also provide a water quality benefit.

5.7.2 Stormwater Cost Estimates

Conceptual level cost estimates for the proposed Stormwater Management Facilities are summarized in **Table 5.6**. Proposed facility estimates were based on a wet pond configuration. The estimates include the installation of control structures, or pump stations where required.

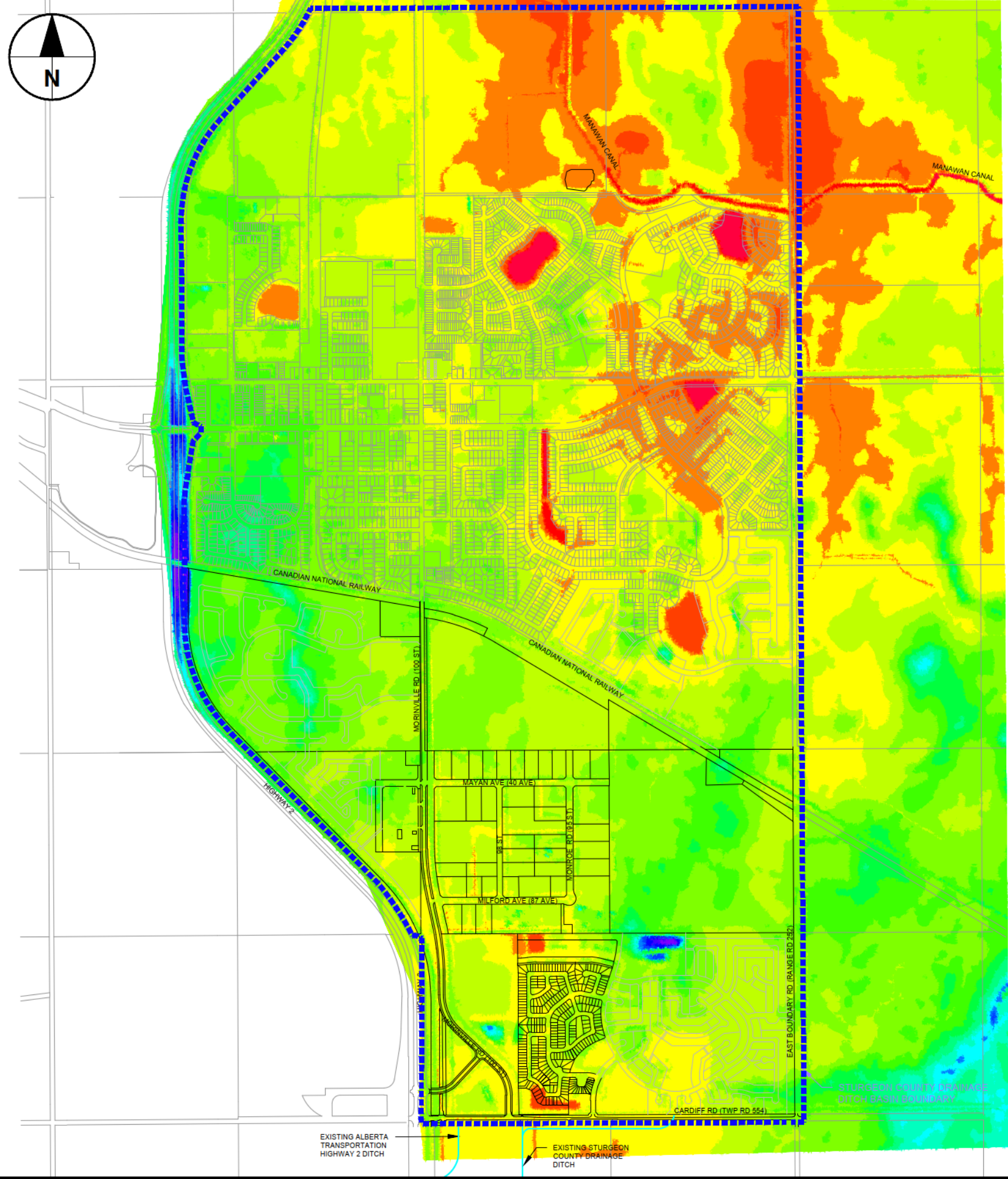
Costs include an allowance of 10% for Engineering and 30% for Contingency. Detailed cost estimate summaries are included in Appendix I.


All SWMFs should be designed to ensure that there is sufficient freeboard to and provisions should be made the the event of pump station failure. If the designer cannot achieve sufficient freeboard, generators (or other means) may need to be considered. The estimates provided assume that generators are required.

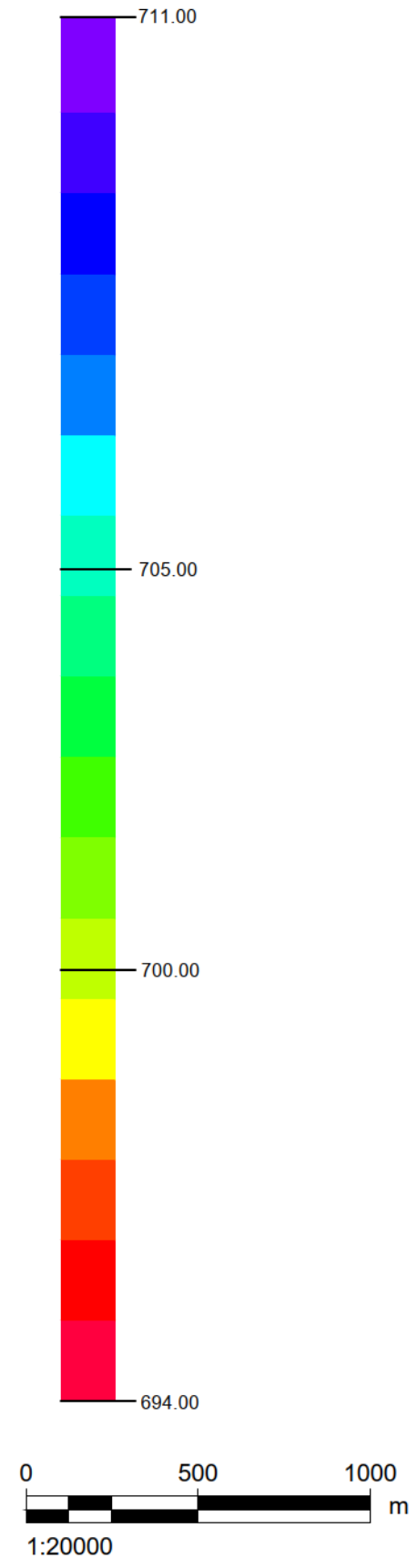
Table 5.6: Stormwater Servicing Concept Cost Estimates

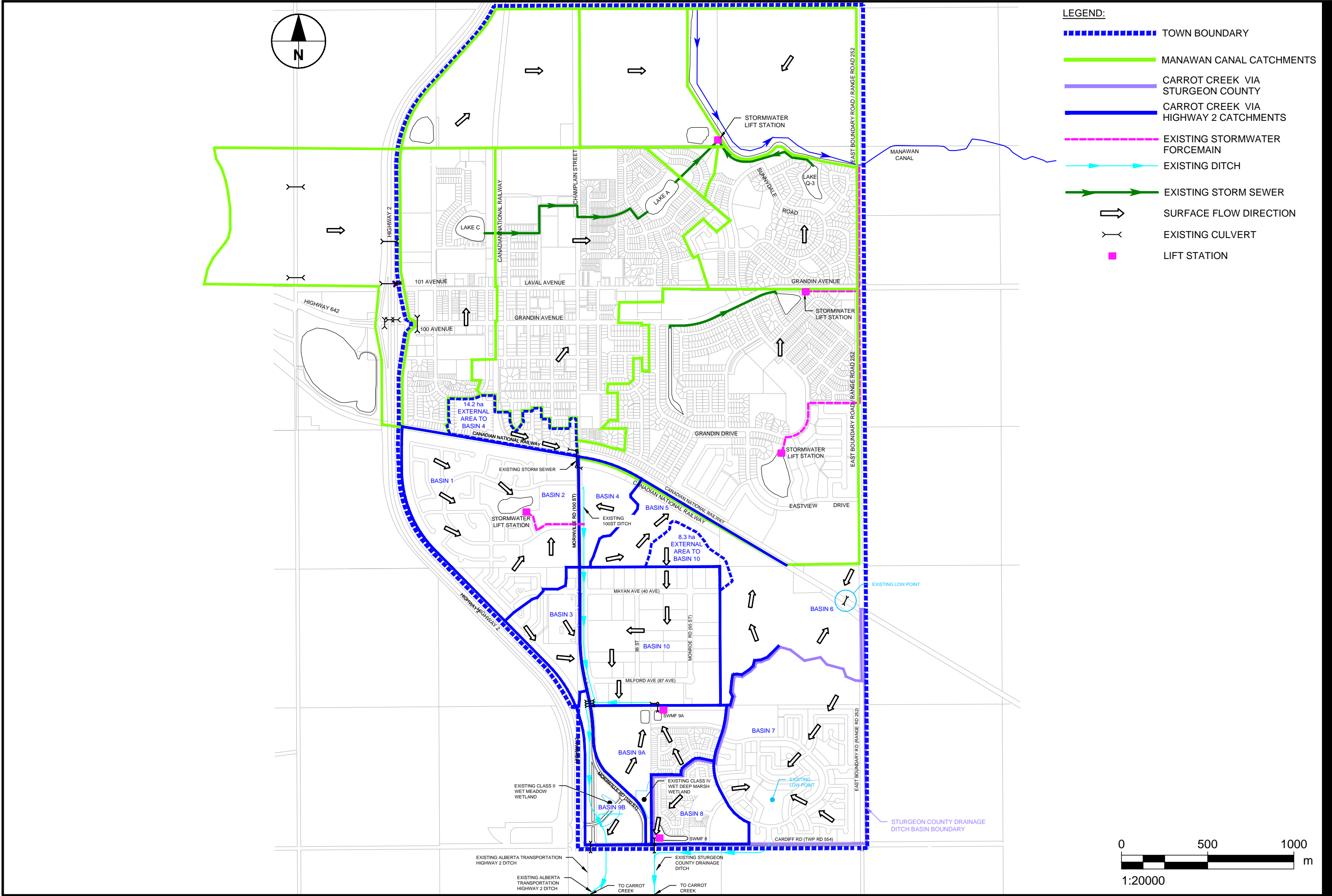
Facility ID	Facility Cost
SWMF D	\$5,453,000
SWMF Q1	\$3,934,000
SWMF Q2	\$5,516,000
SWMF 3	\$2,968,000
SWMF 4	\$2,254,000
SWMF 5	\$5,229,000
SWMF 6	\$2,289,000
SWMF 7	\$7,791,000
SWMF 9B	\$1,680,000
Total	\$22,211,000

The cost for a new trunk sewer along 100 Street is estimated to be \$7,630,000.

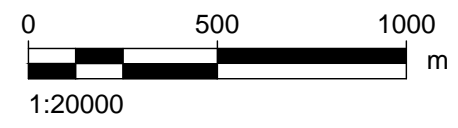


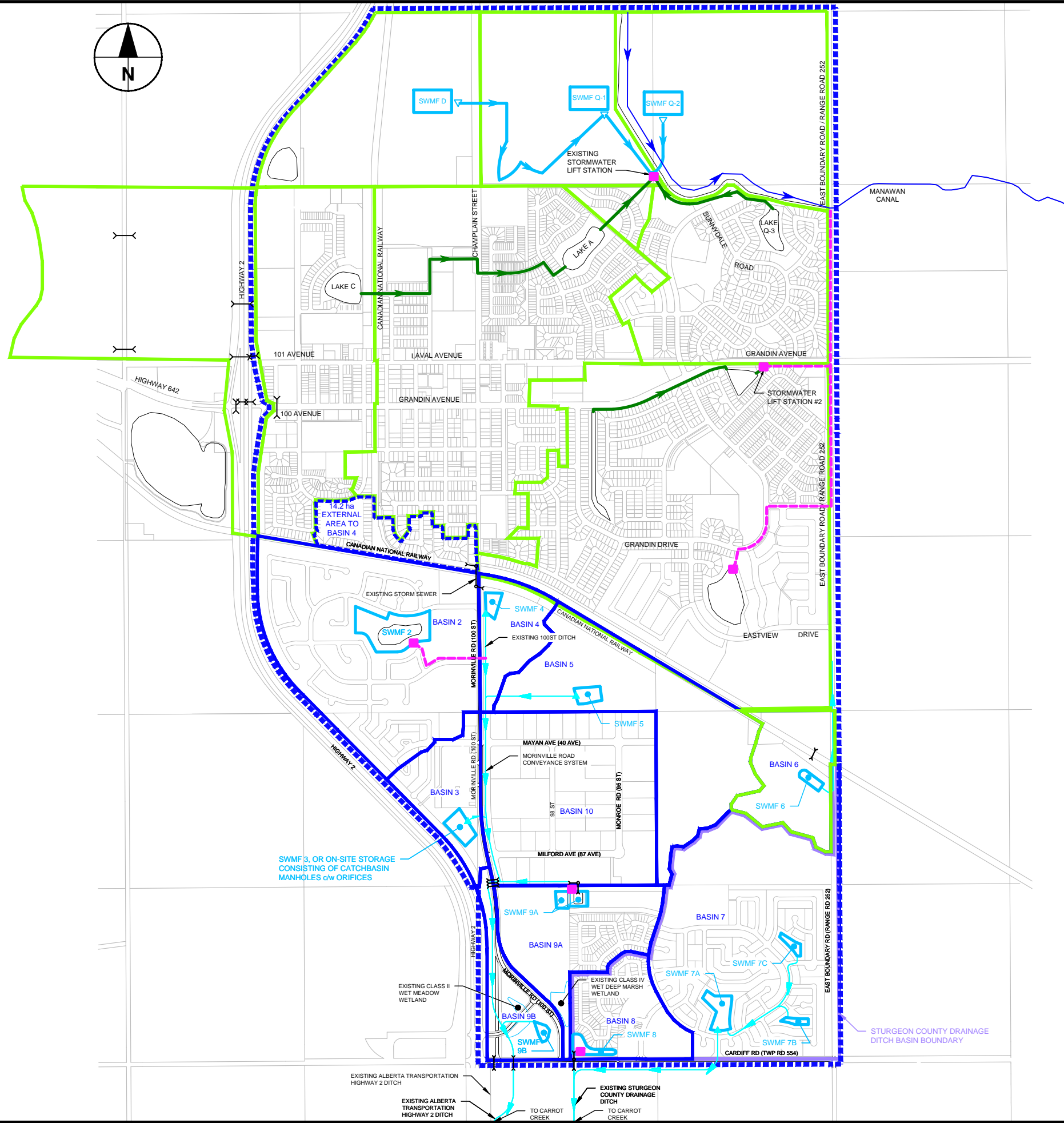
LEGEND:
 TOWN BOUNDARY



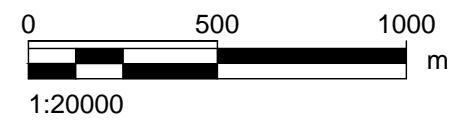


- LEGEND:**
- - - - - TOWN BOUNDARY
 - MANAWAN CANAL CATCHMENTS
 - CARROT CREEK VIA STURGEON COUNTY
 - CARROT CREEK VIA HIGHWAY 2 CATCHMENTS
 - - - - - EXISTING STORMWATER FORCEMAIN
 - EXISTING DITCH
 - EXISTING STORM SEWER
 - ⇨ SURFACE FLOW DIRECTION
 - | | EXISTING CULVERT
 - LIFT STATION





- LEGEND:**
- - - - - TOWN BOUNDARY
 - MANAWAN CANAL CATCHMENTS
 - CARROT CREEK VIA HIGHWAY 2 CATCHMENTS
 - CARROT CREEK VIA STURGEON COUNTY
 - - - - - EXISTING STORMWATER FORCEMAIN
 - PROPOSED STORMWATER MANAGEMENT FACILITY (SWMF)
 - EXISTING DITCH
 - PROPOSED DRAINAGE ROUTE
 - EXISTING STORM SEWER
 - ▲ PROPOSED LIFT STATION
 - X EXISTING CULVERT
 - LIFT STATION



6 Conclusions and Recommendations

6.1 Population and Land Use Projections

- The land use and population data provided by the Town of Morinville were adopted for this study update.
- As per the Government of Alberta open data set, the 2022 population of the Town of Morinville is 10,498 residents. It is recommended to consider a 3.5% growth rate for future population projections.
- The total estimated population increase for the Town of Morinville for the interim and ultimate development scenario is estimated at 6,345 and 12,457 residents, respectively.

6.2 Water Distribution System

6.2.1 Model Development

- The Town of Morinville water distribution system was modelled using WaterCAD Connect Edition Update 3, developed by Bentley Systems Inc. The model was developed based on the information provided by the Town and reflects the existing 2023 water distribution system and projected development for the interim and ultimate development scenarios.

6.2.2 Water Distribution Assessment – Existing System

- It was determined that the existing water distribution system meets the pressure requirements as per the recommended minimum pressure guideline 280 kPa.
- However, it was found that 22 node locations failed to meet the fire flow requirements. While most inadequate node locations are located at stub-end in small cul-de-sacs where adjacent nodes meet the fire flow requirement, five locations were noted as deficiencies in the system.
- The areas which are recommended to be upgraded include:
 - The Morinville Arena at 99 Avenue and 104 Street;
 - The multi-family residential area near 99 Avenue and 107 Street;
 - The residential area near 98 Avenue and 98 Street;
 - Downtown near 101 Avenue and 104 Street; and
 - Near the Sobeys grocery store near 100 Avenue and 99 Street.
- The existing pumping capacity of the Morinville water distribution system is 384 L/s assuming that the largest pump at the south reservoir is not operational and only the fire pump at the north reservoir is operational. Under these assumptions, the pumping capacity is adequate for the existing system. The pumping operating philosophy is detailed in Section 3.4.1.
- The existing storage capacity of the Morinville water distribution system is 2,270 m³ at the north reservoir and 14,310 m³ at the south reservoir for a total storage capacity of 16,580 m³. The recommended storage capacity for the existing system is 1,463 m³ at the north reservoir and 6,447 m³ at the south reservoir for a total recommended storage of 7,910 m³. Therefore, the storage capacity for the water distribution system is adequate for the existing development condition.

6.2.3 Water Distribution Assessment – Future System

- The future water distribution system was modelled in two development scenarios, interim and ultimate development.
- Pipe upgrades have been proposed based on the projected development provided by the Town of Morinville. It was determined that with the proposed pipe networks for both interim and ultimate development, the water

distribution system is able to provide adequate pressures during the peak hour demand scenario, with no further upgrades required for the existing system.

- During the maximum day demand plus fire flow analysis, it was found that 13 of 563 node locations and 10 of 612 node locations in the interim and ultimate development scenarios, respectively, did not meet the recommended fire flows. These node locations, however, were not determined to be system deficiencies because they are either to be looped in the ultimate development scenario or are located at stub-ends in cul-de-sacs where adjacent nodes provided adequate fire protection.
- The existing pumping capacity of the water distribution system is 384 L/s, and the pumping requirement for the interim development is 352 L/s. Therefore, the existing pumping capacity is sufficient for the interim development condition.
- The existing storage capacity of the water distribution system is 16,580 m³, and the storage requirement for the interim development is 12,346 m³. Therefore, the existing storage capacity is sufficient for the interim development condition.
- The pumping requirement for the ultimate development condition is 450 L/s. Therefore, the existing pumping capacity (384 L/s) is insufficient to provide the required capacity. It is recommended to install an additional pump, P-105, at 150 L/s with 55 m of head. With this additional pump, the total pumping capacity of the Morinville water distribution system is 534 L/s assuming one of the 150 L/s pumps is out of service.
- The storage requirement for the ultimate development condition is 20,660 m³. Therefore, the existing storage capacity (16,580 m³) is insufficient for the ultimate development condition. It is recommended to install an additional 7,500 m³ of storage at the south reservoir. With this additional storage, the capacity of the south reservoir will be 21,810 m³ and the total storage is 24,080 m³ including the north reservoir.

6.2.4 Water Distribution Implementation Plan

- It is recommended to proceed with the existing system improvements to bring the existing system up to the fire flow requirements as per the Morinville Municipal Engineering Standards.
- Consideration should also be given to other factors, such as stakeholder acceptance, public consultation and traffic disruptions. Recommendations for the implementation for water distribution system expansion for interim and ultimate development scenarios should be based on the progression of development within the Town of Morinville.
- It is recommended to add the additional 7,500 m³ of storage at the south reservoir when the average day demand reaches approximately 76 L/s, which corresponds to a population of approximately 22,900, or approximately 720 ha of developed area.
- Once the additional storage has been implemented, the storage capacity is sufficient until the average day demand reaches approximately 119 L/s, corresponding to a population of approximately 34,200, or 1000 ha of developed area.
- It is recommended to install the additional pump (P-105) in the south pumphouse when the pumping requirement reaches 384 L/s which equates to an average day demand of approximately 67 L/s, corresponding to a population of approximately 20,850, or 652 ha of developed area.
- It is recommended to install an additional 100 L/s pump at the Morinville Booster Station when the Average Day Demand within Morinville reaches approximately 37.5 L/s, corresponding to a population of approximately 13,370 people.

Table 6.1 details a summary of the cost estimate for the water distribution system.

Table 6.1: Water System Cost Summary

Item	Diameter (mm)	Quantity	Total Cost (\$)
Upgrades			
100 Ave & 99 St	200	69	\$48,400
101 Ave & 104 St	250	105	\$78,500
99 Ave & 107 St	200	85	\$59,700
98 Ave & 98 St	200	85	\$59,300
Morinville Arena	250	167	\$125,200
Upgrades Subtotal	-	510	\$371,100
Upgrades Engineering (10%)	-	-	\$37,200
Upgrades Contingency (30%)	-	-	\$111,400
Upgrades Total	-	-	\$519,700
Interim			
Champagne	200	523	\$261,600
Grandin Heights	200	6,025	\$3,012,700
Meadows of Morinville	200	201	\$100,300
North of Business Park	300	904	\$587,900
NW Morinville	200	213	\$106,500
South Glens	200	671	\$335,400
	300	2,121	\$1,378,700
Westwinds	200	1,083	\$541,300
	300	654	\$425,300
Westmor Landing	250	480	\$264,100
Connections to Existing System	26	-	\$78,000
Morinville Booster Station	-	-	\$300,000
Interim Subtotal	-	12,875	\$7,391,800
Interim Engineering (10%)	-	-	\$739,200
Interim Contingency (30%)	-	-	\$2,217,600
Interim Total	-	-	\$10,348,600
Ultimate			
East of Industrial Park	250	953	\$524,300
	300	886	\$575,700
North of Business Park	300	932	\$605,600
	200	1,051	\$525,400
North District	250	184	\$101,400
	300	3,344	\$2,173,900
South Glens	200	1,899	\$949,600
	250	594	\$327,000
	300	1,453	\$944,300
Westwinds	200	2,626	\$1,312,900
	300	760	\$493,700
Westmor Landing	250	998	\$549,100
Connections to Existing System	8	-	\$24,000
Reservoir Upgrade	-	-	\$4,500,000
Pumphouse Upgrade	-	-	\$370,000
Ultimate Subtotal	-	15,679	\$13,976,900
Ultimate Engineering (10%)	-	-	\$1,397,700
Ultimate Contingency (30%)	-	-	\$4,193,100
Ultimate Total	-	-	\$19,567,700

Item	Diameter (mm)	Quantity	Total Cost (\$)
Subtotal			\$21,739,800
Engineering (10%)			\$2,174,100
Contingency (30%)			\$6,522,100
TOTAL			\$30,436,000

6.3 Wastewater Collection System

6.3.1 Model Development

- The model of the existing wastewater collection system was updated based on available data from The Town, using XP-SWMM which reflects the 2015 wastewater collection system. XP-SWMM is an industry accepted software package.
- The data collected were used to update the wastewater system model for areas constructed since the 2016 MUSP Update, including pipe and manhole locations, length, invert elevations, rim elevations, and diameter and pump station pump information and elevations. Wastewater catchment areas were delineated and land use type and population information were incorporated into the model.

6.3.2 Model Verification

- Residential wastewater flow monitoring data were collected at the ACRWC Morinville Pump Station, the average daily sewage flow is approximately 165 L/c/d.
- It was determined that a residential flow of 250 L/c/d and a non-residential flow of 2500 L/ha/d be used for the study, in order to be conservative. The actual water usage for high water users are also represented in the model.
- Rainfall data from summer 2023 was used to verify the model calibration previously completed since the 2016 MUSP Update.

The design criteria based on the verified model are summarized in **Table 6.2**.

Table 6.2: Summary of Existing Wastewater System Design Criteria

Parameter	Town of Morinville Design Criteria
Residential Sewage Generation Rate	250 L/c/d
Non Residential Sewage Generation Rate	2500 L/ha/d
High Water User Sewage Generation Rate	Varies
Population Density for Existing Developments	2.8 ppl/lot
Effective Drainage Area for Area with Weeping Tile	8 %
Effective Drainage Area for Area without Weeping Tile	2 %

The design criteria for future development scenarios are summarized in **Table 6.3**.

Table 6.3: Summary of Future Wastewater System Design Criteria

Parameter	Town of Morinville Design Criteria
Residential Development Sewage Generation Rate	320 L/c/d
Residential Sewage Peaking Factor	$2.6 * (\text{Total Population} / 1000)^{-0.1}$
Commercial Development Sewage Generation Rate	2500 L/ha/d
Industrial Development Sewage Generation Rate	6170 L/ha/d
Infiltration/Inflow Allowance	0.28 L/s/ha
Population Density for Future Developments	39.5 people/ha*

6.3.3 System Modelling and Assessment – Existing System

- Consistent with the 2016 MUSP Update, the 25 year 4 hour rainfall event is the most critical event for the Morinville wastewater collection system. Therefore, the wastewater system was evaluated based on dry weather flow and based on 25 year 4 hour rainfall events for wet weather flow condition.
- The existing system has sufficient capacity to convey dry weather flow. For the 25 year 4 hour rainfall event the collection system is surcharged. In the western part of town, the hydraulic grade lines within many manholes are less than 1 m from the ground elevation. Numerous manholes south of 101 Avenue and west of Grandin Drive are also surcharged.

6.3.4 Existing System Improvements

- The basis for improvements was to maintain the hydraulic grade line below 693.5 m in the lowest area of the Town and to maintain the HGL at least 1m below ground in the older areas. Most of the red manholes (HGL less than 1m from ground elevation) in the existing system are located between 105 Street and 100 Street, north of 98 Avenue and south of 104 Avenue. The lack of conveyance capacity in the collection system near the intersection of 101 Avenue and 100 Street contributes to the high surcharge levels.
- It is recommended to improve system capacity by upsizing approximately 550 m of wastewater mains near the intersection of 101 Avenue and 100 Street. The diameter of the upsized mains varies from 300 mm to 450 mm.
- On Grandin Drive, from 98 Avenue to 101 Avenue, approximately 475 m of 375 mm diameter main is required to be upsized to 525 mm diameter, or twinned with 375 mm diameter mains, during the existing stage.

6.3.5 System Modelling and Assessment – Interim System

- The existing system has sufficient capacity to convey dry weather flow under interim development conditions.
- During the 25 year 4 hour rainfall event, the majority of the system contains green or blue nodes; however, one red node is located along 100 Street at the tie-in location of the West Winds Pump Station forcemain.

6.3.6 Interim System Improvements

- Approximately 370 m of pipes are recommended to be improved on 100 Street from 90 Avenue to 87 Avenue.
 - This improvement work is recommended when new wastewater flows are generated in Westwinds neighbourhood. This segment of pipe is undersized and causes surcharging at the tie-in location of the West Winds Pump Station forcemain on 100 Street.

6.3.7 System Modelling and Assessment – Ultimate System

- During the ultimate development scenario under dry weather flow condition, the existing collection system in northern Morinville has sufficient capacity to convey flow. In southern Morinville, the existing system can effectively convey dry weather flow to the Business Park Pump Station. Approximately 80 L/s of dry weather flow is generated upstream of the Business Park Pump Station but the pump station only has capacity for 37.5 L/s of wastewater flow before the backup pump is turned on.
- During the 25 year 4 hour event, the majority of the system is surcharged and many manholes in South Morinville are flooding.

6.3.8 Ultimate System Improvements

- Approximately 250 m of pipes are recommended to be improved on 87 Avenue from 100 Street to 98 Street.
 - This improvement work is recommended when new wastewater flows are generated in Westwinds neighbourhood, Westmor neighbourhood, and area north of Morinville Business Park (population increase of 1,970 residents). This segment of pipe is acting as the bottle neck to the upstream system. It is recommended to be upsized from 250 mm to 300 mm diameter in order to effectively convey flow to the Business Park Pump Station.
- Morinville Business Park Pump Station should also increase its capacity from 37.5 L/s to 70 L/s and its forcemain upsized from 200 mm to 350 mm diameter or twinned with 250 mm forcemain.
 - In conjunction with ultimate development in the area south of CN Railway. Total population increase in area is 8,490 residents.
- The combined forcemain on East Boundary Road should be upsized to 400 mm diameter or twinned with a 300 mm diameter forcemain.

A summary of proposed improvements for all development stages are shown below in **Table 6.4**.

Table 6.4: Wastewater Collection System Improvement Summary

Improvement Location	Length (m)	Improvements		
		Existing	Interim	Ultimate
101 Avenue Trunk from 100 Street to 99 Street	125	450 mm/375 mm	-	-
101 Avenue Trunk from 101A Street to 100 Street	225	375 mm/300 mm	-	-
100 Street Main from 101 Avenue to 100 Avenue	225	300 mm/250 mm	-	-
Grandin Dr from 98 Avenue to 101 Avenue	475	525 mm/375 mm		
100 Street from 90 Avenue to 87 Avenue	370	-	300 mm/250 mm	-
87 Avenue from 100 Street to 98 Street	250	-	-	300 mm/200 mm
Business Park Lift Station	-	-	-	70 L/s
Business Park Lift Station Forcemain	1010	-	-	350 mm/250 mm
Combined Forcemain (Business Park and Cardiff)	2475	-	-	400 mm/300 mm

6.3.9 Cost Estimates

- Pipe replacement cost estimates for the existing, interim, and ultimate systems are summarized below in **Table 6.5**. The total cost includes 30% contingency and 10% engineering costs. Detailed cost estimates are provided in Appendix H.

Table 6.5: Wastewater Collection System Improvements Cost Summary

Improvement Location	Improvement Cost*			
	Existing	Interim	Ultimate	SUM
101 Avenue Trunk from 100 Street to 99 Street	\$166,900	-	-	\$166,900
101 Avenue Trunk from 101A Street to 100 Street	\$291,800	-	-	\$291,800
100 Street Main from 101 Avenue to 100 Avenue	\$222,700	-	-	\$222,700
Grandin Dr, from 98 Avenue to 101 Avenue	\$1,535,200	-	-	\$1,535,200
100 Street from 90 Avenue to 87 Avenue	-	\$432,000	-	\$432,000
87 Avenue from 100 Street to 98 Street	-	-	\$284,800	\$284,800
Business Park Lift Station	-	-	\$1,729,000	\$1,729,000
Business Park Lift Station Forcemain	-	-	\$1,102,900	\$1,102,900
Combined Forcemain (Business Park and Cardiff)	-	-	\$3,194,800	\$3,194,800
TOTAL	\$2,216,600	\$432,000	\$6,311,500	\$8,960,100

*Individual costs include 10% engineering and 30% contingency costs. Pipe replacement costs shown.

6.3.10 Implementation Plan

- Although basement flooding has not occurred recently, many areas of the Town have the potential to surcharge between 2.5 m and 1 m of the ground during the 25 year 4hour rainfall event. Extensive improvements and upgrade to most of the main wastewater mains would be required to completely eliminate the risk of basement flooding in these areas. Flow monitoring should continue to determine the extent of infiltration and inflow throughout the Town and sources of infiltration and inflow should be identified and mitigated where possible.
- Recommended improvements for the existing stage should be implemented following the results of a condition assessment program to determine if infiltration and inflow reduction is a valid option to reduce wet weather flows.
- It is recommended that pump station and conveyance improvements occur in stages as required as development proceeds. However, based on the areas currently under development, improvements required for the interim stage should be implemented in the near future. The business park pump station should be monitored as areas develop.
- The alignment of future trunks is conceptual. Actual slopes and sizing should be confirmed in the design phase.
- Future development areas may require neighbourhood pump stations depending on the final grading plan of these areas.
- A summary of the recommended implementation plan is shown in **Table 6.6** below.

Table 6.6: Improvement Implementation Summary

Improvement Location	Length (m)	Improvement Timing*		
		Existing	Interim	Ultimate
101 Ave Trunk from 100 St to 99 St	125	when practical, dependent on condition assessment	-	-
101 Ave Trunk from 101A St to 100 St	225	when practical, dependent on condition assessment	-	-

Improvement Location	Length (m)	Improvement Timing*		
		Existing	Interim	Ultimate
100 St Main from 101 Ave to 100 Ave	225	when practical, dependent on condition assessment	-	-
Grandin Dr from 98 Ave to 101 Ave	475	When practical and prior to Notre Dame development	-	-
100 St from 90 Ave to 87 Ave	370	-	In conjunction with interim development in Westwinds. Total population increase in area noted above is 350 residents.	-
87 Ave from 100 St to 98 St	250	-	-	In conjunction with ultimate development south of CN Railway in parts of the following quarter sections: SW-33-35-25-W4, SE-33-35-25-W4, SW-34-55-25-W4, SE-34-55-25-W4, and NE-28-55-25-W4. Total population increase in area noted above is 1967 residents.
Business Park Lift Station	-	-	-	In conjunction with ultimate development in the area south of CN Railway. Total population increase in area noted above is 8488 residents.
Business Park Lift Station Forcemain	1010	-	-	In conjunction with Business Park lift station upgrades.
Combined Forcemain (Business Park and Cardiff)	2475	-	-	In conjunction with Business Park lift station upgrades.

6.4 Stormwater Servicing Plan

the Town of Morinville has two Drainage catchments one north of the CN Rail and one to the south. The north catchment drains to Manawan Canal and the south to ditches which eventually drain to Carrot Creet. Previous studies have established allowable discharge rates of 1.65 and 2.5 L/s/ha for each of these catchments respectively. A stormwater concept has been developed for undeveloped area in the northern and southern parts of the Town. Sub-catchments have been delineated and stormwater management facilities sized assuming new development generally follows existing drainage patterns. Due to the flat topography in the Town of Morinville, many of the SWMFs will require pump stations. An option was also presented that includes the urbanization of Morinville road/100 Street ditch to include a trunk sewer. A summary of proposed stormwater improvements is included below.

Table 6.7: Stormwater Servicing Concept Summary

Facility ID	Required Volume (m ³)	Facility Cost
SWMF D	49,500	\$5,453,000
SWMF Q1	31,000	\$3,934,000
SWMF Q2	50,300	\$5,516,000
SWMF 3	16,000	\$2,968,000
SWMF 4	9,700	\$2,254,000

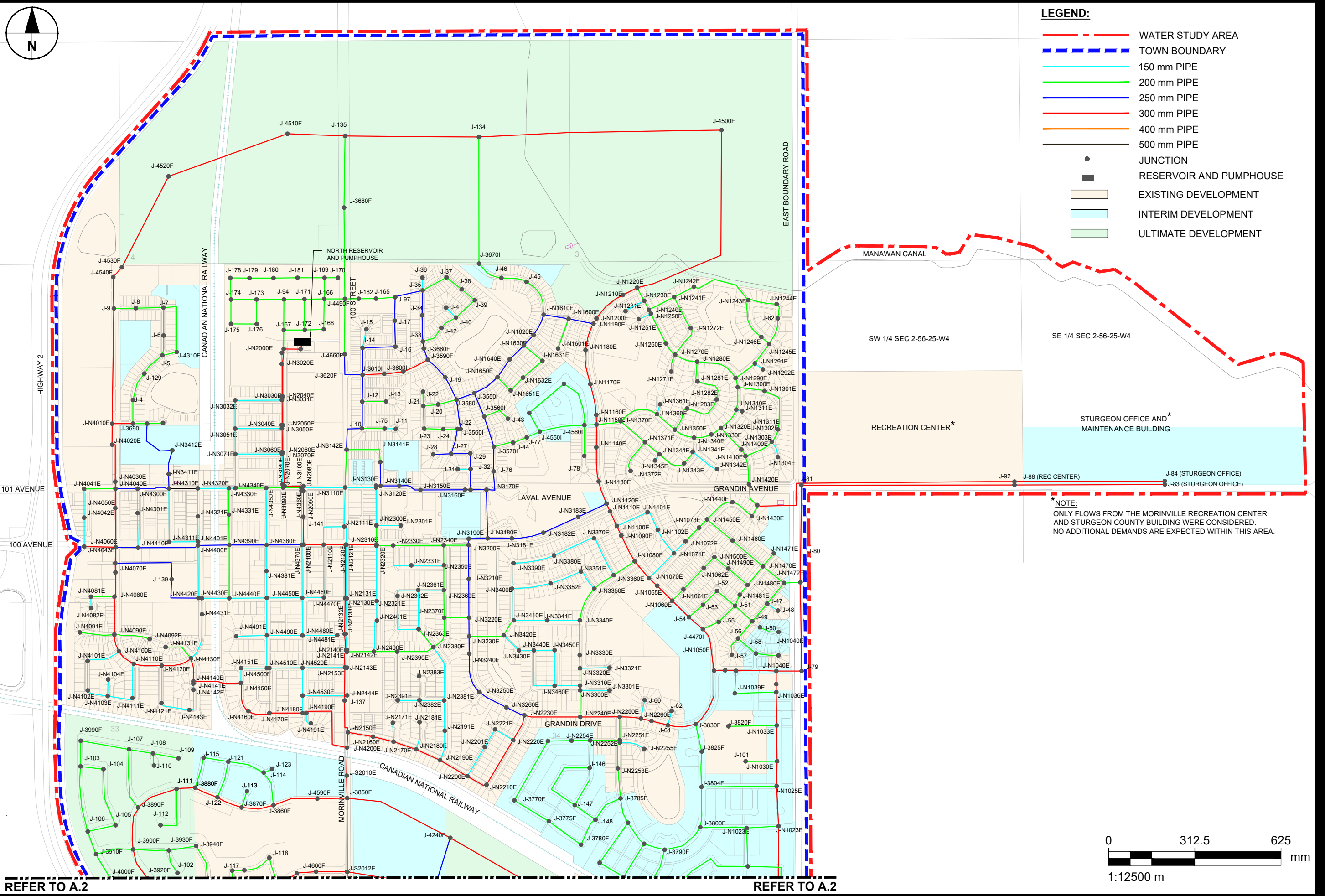
Facility ID	Required Volume (m ³)	Facility Cost
SWMF 5	38,300	\$5,229,000
SWMF 6	12,500	\$2,289,000
SWMF 7	51,100	\$7,791,000
SWMF 9B	3,700	\$1,680,000
Total	131,300	\$22,211,000
100 Street Trunk Sewer		\$7,630,000

6.5 Infill Development Discussion

As discussed with the Town, some of the older areas within the Town approximately between 100 Avenue and the CN rail are larger sized lots and may be candidates for redevelopment such as skinny homes and duplexes. Although this type of redevelopment may increase population density, it is not expected to have a large impact on the water or wastewater system capacity. Fixtures and appliances installed in new homes (especially new washing machines and toilets) use significantly less water and per person water use is trending downwards as a result. In addition, newer construction practices prohibiting the connection of roof leaders and foundations drains to sanitary sewers results in decreased wet weather flows. From a stormwater perspective, the lot redevelopment can increase impervious area which would lead to an increase in stormwater runoff. This could be mitigated with absorbent landscaping, rain barrels, rain gardens or other Low Impact Development LID features. LID is discussed in more detail in Section 5.7.1.

Appendix **A**

Water Distribution System – Schematic Node Locations



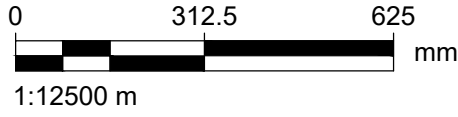
REFER TO A.2

REFER TO A.2

LEGEND:

- WATER STUDY AREA
- TOWN BOUNDARY
- 150 mm PIPE
- 200 mm PIPE
- 250 mm PIPE
- 300 mm PIPE
- 400 mm PIPE
- 500 mm PIPE
- JUNCTION
- RESERVOIR AND PUMPHOUSE
- EXISTING DEVELOPMENT
- INTERIM DEVELOPMENT
- ULTIMATE DEVELOPMENT

*NOTE:
 ONLY FLOWS FROM THE MORINVILLE RECREATION CENTER AND STURGEON COUNTY BUILDING WERE CONSIDERED. NO ADDITIONAL DEMANDS ARE EXPECTED WITHIN THIS AREA.

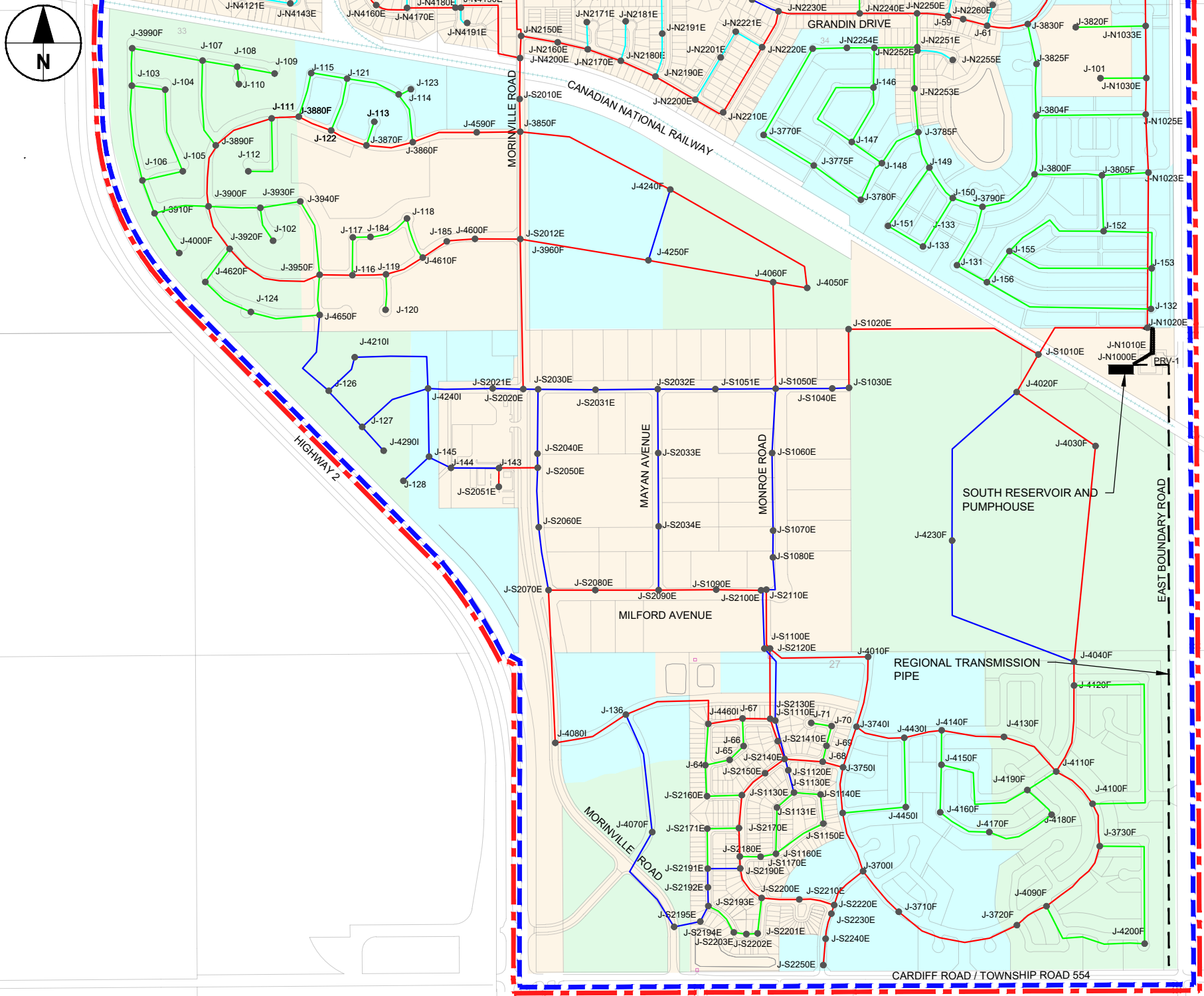


MORINVILLE WATER DISTRIBUTION SYSTEM
 SCHEMATIC NODE LOCATIONS
 NORTH DEVELOPMENT AREA














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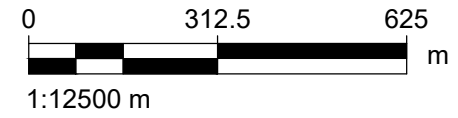
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REFER TO A.1



LEGEND:

-  WATER STUDY AREA
-  TOWN BOUNDARY
-  150 mm PIPE
-  200 mm PIPE
-  250 mm PIPE
-  300 mm PIPE
-  400 mm PIPE
-  500 mm PIPE
-  JUNCTION
-  RESERVOIR AND PUMPHOUSE
-  EXISTING DEVELOPMENT
-  INTERIM DEVELOPMENT
-  ULTIMATE DEVELOPMENT



Appendix **B**

Existing Development Water Distribution System Results

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	550.7	754.57
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.069	539	754.57
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.095	539.1	754.58
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.134	539.6	754.59
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.109	539.3	754.6
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.077	535.5	754.62
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.08	536.3	754.6
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.096	533.2	754.58
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.089	539	754.58
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.09	544.9	754.57
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.087	542.9	754.57
195	J-S2100E	23,886.25	5,961,252.83	699	0.081	543.9	754.57
196	J-S2080E	23,585.41	5,961,251.56	699	0.081	543.9	754.57
197	J-S2070E	23,468.77	5,961,251.56	699	0.059	543.9	754.57
198	J-S2060E	23,444.47	5,961,408.54	699	0.05	543.8	754.57
199	J-S2040E	23,441.07	5,961,591.28	699	0.068	543.8	754.56
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.054	531	754.56
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.117	533.1	754.57
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.046	532.1	754.67
203	J-S2010E	23,396.57	5,962,474.58	700	0	533.5	754.51
204	J-N4200E	23,397.75	5,962,576.48	701	0	523.7	754.51
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.036	526.6	754.51
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.115	539.3	754.51
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.038	539.3	754.51
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.042	532.5	754.51
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.023	539.3	754.51
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.056	532.5	754.51
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.05	540.3	754.51
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.05	541.3	754.51
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.046	552.1	754.51
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.05	556	754.51
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.065	552.6	754.51
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.05	542.3	754.51
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.061	552.1	754.51
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.079	541.4	754.51
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	542.4	754.52
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	544.3	754.52
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.046	546.3	754.52
222	J-N2255E	24,475.27	5,962,571.66	700	0.031	533.6	754.52
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.027	545.3	754.52
224	J-N2260E	24,501.40	5,962,673.31	699	0	543.4	754.52
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.023	547.2	754.51
226	J-N3301E	24,349.68	5,962,783.56	699	0.096	543.3	754.51
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.073	555	754.51
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.056	548.2	754.51
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.031	546.2	754.51
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.061	547.2	754.51
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.027	547.2	754.51
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	551.1	754.51
233	J-N3321E	24,349.51	5,962,866.08	700	0.065	533.5	754.51
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.172	548.2	754.51
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.069	551.1	754.51
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.05	547.2	754.51
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.061	549.1	754.51
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.061	551.1	754.51
239	J-N3350E	24,294.46	5,963,152.24	698.6	0.554	547.2	754.51
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.069	551.1	754.51
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.073	556	754.51
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.115	559.9	754.51
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.038	555	754.51
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.056	561.9	754.52
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.115	562.2	754.52
246	J-N1050E	24,728.87	5,962,855.33	698	0	553.3	754.53
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.079	545.7	754.56
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	535.9	754.66
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	524	754.85
250	J-S1010E	24,688.47	5,961,838.45	701	0	526.5	754.79
251	J-S1020E	24,215.83	5,961,901.63	700	0	535.5	754.71
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.038	564.9	754.52
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.042	565.9	754.53
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.061	546.4	754.53
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.023	559.9	754.51
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.073	568.8	754.52
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.056	559	754.52
258	J-N1420E	24,855.27	5,963,531.46	698	0	553.2	754.52
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.046	550.2	754.51

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.027	563.8	754.51
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.027	555	754.51
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.015	554	754.51
263	J-N1311E	24,830.34	5,963,795.82	698	0.05	553.1	754.51
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.027	554	754.51
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.061	549.1	754.51
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.046	549.2	754.51
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.031	554	754.51
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	552.1	754.51
269	J-N1292E	24,905.57	5,963,948.00	698	0.065	553	754.51
270	J-N1245E	24,928.90	5,964,040.14	697	0.031	562.8	754.51
271	J-N1244E	24,955.72	5,964,184.39	697	0.056	562.8	754.51
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.056	567.7	754.51
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.042	552.1	754.51
274	J-N1281E	24,668.79	5,963,904.06	698	0.056	553	754.51
275	J-N1282E	24,737.99	5,963,838.74	697	0.061	562.8	754.51
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.05	556	754.51
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.038	564.8	754.51
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.019	557	754.51
279	J-N1242E	24,655.18	5,964,247.76	698	0.056	553	754.51
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.027	559.9	754.51
281	J-N1272E	24,643.90	5,964,097.68	698	0.05	553	754.51
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.031	545.2	754.51
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.031	549.1	754.51
284	J-N1240E	24,492.27	5,964,163.87	698	0	553	754.51
285	J-N1220E	24,450.28	5,964,244.12	698	0	553	754.51
286	J-N1210E	24,398.26	5,964,217.60	698	0	553	754.51
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.023	555	754.51
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.031	556	754.51
289	J-N1170E	24,279.97	5,963,894.02	698	0	553	754.51
290	J-N1160E	24,301.35	5,963,782.73	698	0	553.1	754.51
291	J-N1150E	24,302.39	5,963,747.88	698	0.161	553.1	754.51
292	J-N1370E	24,390.29	5,963,759.89	698	0.031	553.1	754.51
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.023	557.9	754.51
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.046	559.9	754.51
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.046	549.1	754.51
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.023	567.7	754.51
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.031	556	754.51
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.015	565.8	754.51
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.065	563.8	754.51
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.031	567.7	754.51
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.046	555	754.51
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	559.9	754.51
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.05	558	754.51
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	558.9	754.51
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	555	754.51
306	J-N3182E	24,109.98	5,963,355.50	698	0	553	754.51
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	550.1	754.51
308	J-N3190E	23,838.79	5,963,334.11	699	0.032	543.2	754.51
309	J-N3210E	23,839.27	5,963,187.82	699	0.056	543.2	754.51
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.092	547.1	754.51
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.056	550.1	754.51
312	J-N3420E	23,966.13	5,962,983.37	698	0	553	754.51
313	J-N3240E	23,840.96	5,962,916.81	698	0.05	553	754.51
314	J-N3250E	23,877.98	5,962,777.15	698	0.056	553.1	754.51
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.05	548.2	754.51
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.065	544.2	754.51
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.073	547.1	754.51
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.038	537.4	754.51
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.05	529.5	754.51
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.056	527.6	754.51
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.061	544.5	754.51
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.088	543.7	754.51
323	J-N2370E	23,750.00	5,963,047.05	699	0.046	543.2	754.51
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.05	538.3	754.5
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.065	545.2	754.5
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.084	552	754.5
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.042	541.3	754.5
328	J-N3200E	23,838.64	5,963,310.50	699	0.031	543.2	754.51
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.023	544.2	754.5
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.027	550.1	754.5
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.069	546.1	754.5
332	J-N2350E	23,748.75	5,963,237.41	699	0	543.2	754.5
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.138	549	754.5
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.021	551	754.5
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.203	548.1	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	547.1	754.5
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.056	547.1	754.5
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.027	538.3	754.5
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.067	545	754.5
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.018	539.3	754.5
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.021	539.3	754.5
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	539.3	754.5
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.016	539.3	754.51
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.011	534.4	754.51
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	538.3	754.5
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.047	538.3	754.5
347	J-N2120E	23,392.51	5,963,312.31	699	0.045	543.2	754.5
348	J-N2121E	23,395.90	5,963,312.31	699	0	543.2	754.5
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.022	544.2	754.5
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.007	547.1	754.5
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	539.3	754.5
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	544.1	754.5
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	544.1	754.5
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.066	544.1	754.5
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.015	544.1	754.5
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.038	534.4	754.5
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	534.4	754.5
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.069	538.3	754.5
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	538.3	754.5
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.073	538.3	754.5
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.031	539.3	754.5
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.056	538.3	754.5
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.138	536.4	754.5
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.038	534.9	754.51
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.073	534.9	754.51
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.056	532.5	754.51
367	J-N4510E	23,116.00	5,962,864.49	700	0.042	533.4	754.5
368	J-N4500E	23,107.06	5,962,864.49	700	0.05	533.4	754.5
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.038	524.6	754.5
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.038	528.5	754.5
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.038	530.5	754.5
372	J-N4490E	23,107.28	5,962,982.98	700	0.061	533.4	754.5
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.046	532.4	754.5
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.057	540.2	754.5
375	J-N4350E	23,104.18	5,963,517.50	699	0.042	543.2	754.5
376	J-N3090E	23,166.53	5,963,519.61	699	0	543.2	754.5
377	J-N2070E	23,171.01	5,963,524.71	699	0	543.2	754.5
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	537.3	754.5
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	545.1	754.5
380	J-N2050E	23,164.50	5,963,745.83	699	0	543.2	754.5
381	J-N2040E	23,164.50	5,963,849.54	699	0	543.2	754.5
382	J-N2020E	23,168.07	5,964,021.69	699	0	543.2	754.5
383	J-N2010E	23,229.47	5,964,021.52	699	0.01	543.2	754.5
384	J-N3010E	23,161.69	5,964,008.03	699	0.454	543.2	754.5
385	J-N3030E	23,160.50	5,963,849.48	699	0.031	543.2	754.5
386	J-N3031E	23,161.50	5,963,836.74	699	0.038	543.2	754.5
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	545.1	754.5
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.056	545.1	754.5
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	537.3	754.5
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.056	537.3	754.5
391	J-N3032E	22,992.17	5,963,835.82	699	0.061	543.2	754.5
392	J-N3051E	22,992.42	5,963,732.81	700	0.061	533.4	754.5
393	J-N3071E	22,992.67	5,963,640.74	700	0.065	533.4	754.5
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	537.3	754.5
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.027	536.3	754.5
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.052	527.5	754.5
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.031	530.4	754.5
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.031	532.4	754.5
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.006	532.4	754.5
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.096	531.4	754.5
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	521.6	754.5
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.026	521.6	754.5
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.071	520.6	754.5
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	520.6	754.5
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.046	528.5	754.5
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.079	529.4	754.5
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.033	520.6	754.5
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.031	526.5	754.5
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.171	522.6	754.5
410	J-N4410E	22,639.90	5,963,300.90	701	0.04	523.6	754.5
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	528.5	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	536.3	754.5
413	J-N4010E	22,546.33	5,963,750.87	700	0.117	533.3	754.5
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.131	527.5	754.5
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	525.5	754.5
416	J-N4041E	22,443.94	5,963,514.35	701	0	523.6	754.5
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.056	518.7	754.5
418	J-N4043E	22,444.72	5,963,305.56	701	0.232	523.6	754.5
419	J-N4070E	22,557.86	5,963,211.47	701	0.55	523.6	754.5
420	J-N4080E	22,553.97	5,963,123.99	701.5	0.698	518.7	754.5
421	J-N4081E	22,468.80	5,963,123.50	701	0	523.6	754.5
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.073	514.8	754.5
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.073	516.7	754.5
424	J-N4092E	22,681.89	5,962,970.03	702	0.107	513.8	754.5
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.056	512.8	754.5
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.05	518.7	754.5
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.061	516.7	754.5
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.027	512.8	754.5
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.05	508.9	754.5
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.065	506.9	754.5
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.046	514.8	754.5
432	J-N4121E	22,725.05	5,962,737.13	701	0.056	523.6	754.5
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.069	526.5	754.5
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.019	525.5	754.5
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.008	524.6	754.5
436	J-N4431E	22,871.76	5,963,060.11	701	0.05	523.6	754.5
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.046	520.7	754.5
438	J-N4131E	22,739.70	5,962,940.69	702	0.134	513.8	754.5
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.092	546.2	754.51
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.031	541.3	754.51
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.019	560.2	754.51
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	559	754.51
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.023	549.1	754.51
444	J-N1246E	24,900.57	5,964,065.27	697	0.038	562.8	754.51
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	556	754.51
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.056	559.9	754.51
447	J-N1400E	24,827.83	5,963,657.23	698	0.05	553.1	754.51
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.046	566.9	754.53
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.065	565.9	754.52
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.046	528.5	754.5
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.031	524.6	754.5
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.103	528.5	754.5
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.027	531.4	754.5
454	J-N3020E	23,160.99	5,963,967.57	699	0	543.2	754.5
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.031	544.3	754.52
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.065	565.4	754.52
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.084	552.5	754.53
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.061	547.8	754.53
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	549	754.5
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.02	549	754.5
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.184	548.1	754.5
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	546.1	754.5
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.054	548.1	754.5
464	J-N3160E	23,825.34	5,963,511.25	699	0.039	543.2	754.5
465	J-N3170E	23,903.33	5,963,511.58	699	0.084	543.2	754.5
466	J-N3180E	23,907.72	5,963,334.91	699	0	543.2	754.51
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	530	754.55
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.055	532.3	754.69
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.027	539.3	754.5
470	J-N1250E	24,499.78	5,964,149.64	698	0.027	553	754.51
471	J-N1251E	24,455.84	5,964,129.52	698	0.046	553	754.51
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.027	558.9	754.51
473	J-N1230E	24,475.43	5,964,196.22	698	0	553	754.51
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	552.2	754.57
475	J-S2140E	24,039.65	5,960,875.68	698	0.077	553.7	754.57
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	550.7	754.57
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.061	547.5	754.57
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.056	536.5	754.57
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.046	548.8	754.57
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.056	552.2	754.57
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.038	548.8	754.57
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.042	548.8	754.57
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.042	548.8	754.57
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	548.8	754.57
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.038	548.8	754.57
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.056	547.8	754.57
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.023	548.8	754.57

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.038	546.8	754.57
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.167	548.8	754.57
490	J-S2220E	24,180.05	5,960,467.40	698.65	0.523	547.3	754.57
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	548.8	754.57
492	J-S2240E	24,158.72	5,960,383.61	698.5	0.508	548.8	754.57
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	551.2	754.57
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	539	754.57
495	J-S2195E	23,781.62	5,960,412.85	698	0	553.7	754.57
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	548.8	754.57
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.056	541.8	754.57
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.061	540.4	754.57
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.046	533.5	754.57
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.027	537.9	754.57
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.046	540.9	754.57
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	550.7	754.57
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	539	754.57
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	550.7	754.57
505	J-S1110E	24,033.48	5,960,926.97	698	0.054	553.7	754.57
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.03	555	754.51
507	J-N1600E	24,201.37	5,964,131.25	698	0.056	553	754.51
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.065	545.7	754.5
509	J-N1620E	24,074.31	5,964,072.83	699	0.031	543.2	754.5
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.023	538.3	754.5
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.038	538.3	754.5
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.061	540.8	754.5
513	J-N1632E	24,036.37	5,963,917.92	700	0.042	533.4	754.5
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	538.3	754.5
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	545.6	754.5
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.061	548.1	754.51
517	J-N1060E	24,577.21	5,963,109.12	697	0	563	754.52
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.069	555.7	754.53
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.056	560.6	754.53
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.046	508.9	754.5
521	J-N4082E	22,469.20	5,963,082.83	701	0.031	523.6	754.5
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	561.1	754.53
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.065	561.1	754.53
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.09	559.1	754.53
526	J-N1471E	24,945.50	5,963,280.47	699	0	543.5	754.53
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	546.4	754.53
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	549.4	754.54
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.083	529	754.55
530	J-S2050E	23,441.95	5,961,556.46	699	0	543.8	754.56
531	J-S2051E	23,344.97	5,961,508.86	699	0.127	543.8	754.56
532	J-N1065E	24,522.60	5,963,163.07	697	0.855	563	754.52
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.157	529.4	754.5
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	529.4	754.5
537	J-3550I	23,858.78	5,963,861.50	697.8	0.077	554.9	754.5
538	J-3560I	23,895.14	5,963,776.63	698.8	0.077	545.1	754.5
539	J-3570I	23,930.36	5,963,667.29	699	0.077	543.2	754.5
540	J-3580I	23,794.98	5,963,838.03	698	0.065	553	754.5
541	J-3590F	23,690.63	5,963,983.45	697.5	0.061	557.8	754.5
542	J-3600I	23,601.86	5,963,939.64	698.3	0.096	550	754.5
543	J-3610I	23,453.97	5,963,928.59	699	0.132	543.2	754.5
544	J-3620F	23,389.20	5,964,002.63	699.6	0	537.3	754.5
548	J-3660F	23,675.98	5,964,023.67	697	0	562.7	754.5
551	J-3690I	22,621.02	5,963,751.20	699.5	0	538.2	754.5
557	J-3750I	24,202.10	5,960,810.43	700	0	534.1	754.57
563	J-3830F	24,662.04	5,962,661.31	699	0.023	543.4	754.53
564	J-3840F	24,769.05	5,962,856.55	698	0	553.3	754.54
565	J-S2011E	23,398.12	5,962,393.08	701	0	523.8	754.52
576	J-S2012E	23,398.36	5,962,126.10	701	0.043	523.9	754.53
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	538.3	754.5
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	538.3	754.5
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	539.3	754.51
611	J-4310F	22,779.97	5,964,010.72	699.5	0	538.2	754.5
614	J-3785F	24,389.79	5,962,392.01	698.7	0.031	546.3	754.52
615	J-N1023E	24,962.79	5,962,291.29	699	0	545.4	754.73
618	J-N1025E	24,955.73	5,962,436.30	699	0	545	754.69
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	539.4	754.62
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	548.9	754.58
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	548.8	754.57
622	J-3810F	24,808.50	5,962,854.71	698.5	0	548.5	754.54
629	J-4460I	23,866.43	5,960,918.16	700.5	0.09	529.2	754.57
630	J-4470I	24,688.40	5,963,006.16	698	0	553.2	754.53
632	J-4490F	23,389.95	5,964,203.21	699.2	0	541.2	754.5
638	J-4550I	24,097.29	5,963,722.12	698.5	0	548.1	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
639	J-4560I	24,258.63	5,963,745.67	698	0	553.1	754.51
643	J-4600F	23,285.48	5,962,126.23	701.38	0.099	520.2	754.53
644	J-4610F	23,155.29	5,962,079.75	700.83	0.01	525.6	754.53
1317	J-2	22,730.02	5,963,753.33	700.5	0.023	528.5	754.5
1319	J-3	22,672.82	5,963,751.17	700.5	0	528.5	754.5
1323	J-4	22,621.02	5,963,836.43	700	0.061	533.3	754.5
1325	J-5	22,727.82	5,963,998.44	700.25	0.042	530.9	754.5
1327	J-6	22,732.18	5,964,070.61	701	0.071	523.6	754.5
1329	J-7	22,731.10	5,964,172.06	700.75	0.061	526	754.5
1331	J-8	22,631.81	5,964,169.90	701.5	0.077	518.7	754.5
1333	J-9	22,551.95	5,964,168.82	701	0	523.6	754.5
1337	J-10	23,451.65	5,963,733.50	699	0.102	543.2	754.5
1340	J-11	23,574.41	5,963,732.15	699.25	0.102	540.7	754.5
1342	J-12	23,453.00	5,963,830.63	698.75	0.132	545.6	754.5
1345	J-13	23,538.85	5,963,831.54	699.25	0.107	540.7	754.5
1347	J-14	23,454.35	5,964,026.24	699.1	0.061	542.2	754.5
1349	J-15	23,467.84	5,964,093.69	699.25	0	540.7	754.5
1351	J-16	23,573.06	5,964,030.28	699.25	0	540.7	754.5
1353	J-17	23,570.36	5,964,124.71	699	0	543.2	754.5
1355	J-18	23,532.59	5,963,931.81	699	0.096	543.2	754.5
1358	J-19	23,754.37	5,963,918.75	698.75	0.061	545.6	754.5
1361	J-20	23,728.46	5,963,820.53	698.75	0.029	545.6	754.5
1363	J-21	23,674.50	5,963,815.14	698.75	0.061	545.6	754.5
1365	J-22	23,673.42	5,963,866.94	699.25	0.036	540.7	754.5
1367	J-23	23,677.74	5,963,733.12	699	0.061	543.2	754.5
1369	J-24	23,746.80	5,963,730.96	699	0.042	543.2	754.5
1371	J-25	23,809.40	5,963,732.04	699	0.077	543.2	754.5
1374	J-26	23,798.19	5,963,731.64	699	0	543.2	754.5
1377	J-27	23,775.20	5,963,641.81	699.25	0	540.7	754.5
1379	J-28	23,710.13	5,963,639.34	699.5	0.065	538.3	754.5
1381	J-29	23,844.51	5,963,643.58	699.25	0.042	540.7	754.5
1383	J-30	23,845.57	5,963,511.32	699	0	543.2	754.5
1387	J-31	23,799.25	5,963,585.59	699.75	0.084	535.8	754.5
1388	J-32	23,845.57	5,963,586.29	699.5	0	538.3	754.5
1392	J-33	23,672.77	5,964,049.27	698.75	0.042	545.6	754.5
1394	J-34	23,670.18	5,964,144.24	699	0.065	543.2	754.5
1396	J-35	23,671.91	5,964,234.03	698.75	0.042	545.6	754.5
1398	J-36	23,671.05	5,964,280.65	699	0.023	543.2	754.5
1400	J-37	23,758.25	5,964,281.52	698.75	0.029	545.6	754.5
1402	J-38	23,813.50	5,964,238.35	698.75	0	545.6	754.5
1404	J-39	23,860.99	5,964,198.64	698.5	0.013	548.1	754.5
1406	J-40	23,792.78	5,964,135.61	698.5	0.013	548.1	754.5
1408	J-41	23,757.38	5,964,171.87	699.25	0	540.7	754.5
1410	J-42	23,740.12	5,964,098.49	698.5	0.006	548.1	754.5
1414	J-43	23,980.99	5,963,768.68	699.75	0.077	535.8	754.5
1416	J-44	24,000.53	5,963,681.98	700	0.036	533.4	754.5
1419	J-45	24,049.06	5,964,265.48	698.75	0.077	545.7	754.5
1421	J-46	23,957.33	5,964,279.51	698.75	0.071	545.7	754.5
1424	J-47	24,921.74	5,963,097.95	698.75	0	545.9	754.53
1426	J-48	24,960.60	5,963,073.13	699.25	0.048	541.1	754.53
1428	J-49	24,867.78	5,963,034.28	698.75	0.027	545.9	754.53
1432	J-51	24,805.19	5,963,090.39	698.5	0.023	548.4	754.53
1434	J-52	24,739.36	5,963,144.35	698.25	0.042	550.8	754.53
1436	J-53	24,688.64	5,963,093.63	698.25	0.084	550.8	754.53
1438	J-54	24,637.92	5,963,049.38	698.25	0	550.8	754.53
1443	J-55	24,746.03	5,963,032.58	698.5	0.071	548.4	754.53
1446	J-56	24,815.86	5,962,971.87	698.75	0.04	545.9	754.53
1448	J-57	24,793.42	5,962,913.17	699.25	0.036	541	754.53
1450	J-58	24,880.62	5,962,917.48	698.75	0.079	545.9	754.53
1452	J-59	24,463.42	5,962,681.55	699.25	0	540.9	754.52
1455	J-60	24,477.23	5,962,748.02	699	0.102	543.4	754.52
1457	J-61	24,560.98	5,962,657.37	698.5	0	548.3	754.52
1460	J-62	24,574.79	5,962,709.17	698.75	0.09	545.9	754.52
1464	J-64	23,859.42	5,960,815.72	699.25	0.061	541.4	754.57
1467	J-65	23,919.85	5,960,828.67	698.5	0	548.8	754.57
1469	J-66	23,954.39	5,960,863.21	699.25	0.061	541.4	754.57
1471	J-67	23,951.80	5,960,932.28	698.75	0.061	546.3	754.57
1475	J-68	24,151.23	5,960,824.36	699.5	0	539	754.57
1477	J-69	24,160.73	5,960,864.07	700.5	0.048	529.2	754.57
1479	J-70	24,173.68	5,960,913.28	699.75	0.048	536.5	754.57
1481	J-71	24,122.74	5,960,921.05	699.25	0.042	541.4	754.57
1485	J-73	23,863.50	5,960,738.53	699.2	0.054	541.9	754.57
1488	J-74	24,008.12	5,960,795.72	699.25	0.029	541.4	754.57
1491	J-75	23,533.91	5,963,732.98	699.5	0	538.3	754.5
1494	J-76	23,929.23	5,963,577.78	699	0.071	543.2	754.5
1497	J-77	24,049.40	5,963,701.17	699.25	0.376	540.8	754.5

**Existing Development
Average Day Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1500	J-78	24,258.00	5,963,633.98	699	0.174	543.3	754.51
1508	J-79	25,046.68	5,962,853.87	700	0	533.9	754.56
1510	J-80	25,042.43	5,963,175.51	700.5	0	528.9	754.54
1512	J-81	25,046.04	5,963,527.62	699	0	543.6	754.54
1514	J-82	24,960.02	5,964,132.73	698.2	0	551.1	754.51
1521	J-83	26,363.57	5,963,530.33	700	0	533.7	754.53
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	523.9	754.53
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.294	533.7	754.53
1550	J-92	25,818.46	5,963,541.11	700	0	533.7	754.53
1557	J-94	23,168.88	5,964,201.54	698.35	0.042	549.5	754.5
1563	J-97	23,572.11	5,964,208.92	698.89	0.079	544.2	754.5
1609	J-116	22,980.29	5,962,035.89	700.36	0.04	530.2	754.53
1612	J-117	22,981.58	5,962,130.00	700.07	0.04	533	754.53
1613	J-118	23,116.29	5,962,177.05	700.4	0.036	529.8	754.53
1614	J-119	23,064.08	5,962,037.98	700.61	0.071	527.7	754.53
1644	J-129	22,662.34	5,963,932.49	700.13	0	532	754.5
1681	J-137	23,388.97	5,962,746.95	700.04	0	533.1	754.51
1684	J-138	22,557.14	5,963,245.10	700.93	0	524.3	754.5
1687	J-139	22,761.26	5,963,186.30	702.75	0	506.4	754.5
1701	J-140	23,586.96	5,963,525.74	698.45	0.048	548.6	754.5
1704	J-141	23,239.49	5,963,413.52	699.38	0.268	539.4	754.5
1711	J-143	23,345.33	5,961,555.68	699	0	543.8	754.56
1714	J-144	23,225.95	5,961,556.04	699	0	543.8	754.56
1786	J-165	23,502.59	5,964,204.60	699.08	0.128	542.3	754.5
1789	J-166	23,315.10	5,964,203.31	698.91	0.042	544	754.5
1792	J-167	23,168.27	5,964,090.48	698.75	0.042	545.6	754.5
1795	J-168	23,313.56	5,964,092.80	698.77	0.042	545.4	754.5
1798	J-169	23,315.88	5,964,279.82	698.79	0.042	545.2	754.5
1800	J-170	23,364.57	5,964,279.82	698.98	0.042	543.4	754.5
1802	J-171	23,243.23	5,964,202.54	698.64	0.042	546.7	754.5
1805	J-172	23,244.78	5,964,090.48	698.87	0.042	544.4	754.5
1809	J-173	23,069.34	5,964,200.99	699.45	0.042	538.8	754.5
1811	J-174	22,976.60	5,964,200.99	699.89	0.042	534.4	754.5
1813	J-175	22,976.60	5,964,112.89	700.15	0.042	531.9	754.5
1815	J-176	23,070.12	5,964,112.12	699.74	0.042	535.9	754.5
1819	J-178	22,974.67	5,964,279.75	700.05	0.042	532.9	754.5
1822	J-179	23,044.05	5,964,278.86	699.77	0.042	535.6	754.5
1825	J-180	23,130.99	5,964,278.86	699.49	0.042	538.4	754.5
1828	J-181	23,217.93	5,964,279.83	699.24	0.042	540.8	754.5
1832	J-182	23,439.83	5,964,204.12	699.15	0	541.7	754.5
1835	J-183	24,885.31	5,963,455.51	698.5	0	548.3	754.53
1838	J-184	23,025.30	5,962,131.36	700.17	0.075	532	754.53
1841	J-185	23,215.32	5,962,120.15	701.11	0.123	522.8	754.53

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-1.744	0.02	0	0.005
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-4.263	0.09	0.01	0.074
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-4.358	0.09	0.01	0.077
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-4.492	0.09	0.02	0.081
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-4.601	0.09	0.01	0.084
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	5.896	0.12	0.02	0.134
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	5.816	0.12	0.02	0.131
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	1.44	0.03	0	0.01
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	1.351	0.03	0	0.009
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	1.261	0.03	0	0.007
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-1.557	0.02	0	0.005
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	2.731	0.04	0	0.013
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	2.65	0.04	0	0.013
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	2.591	0.05	0	0.03
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	2.346	0.05	0	0.024
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-4.164	0.08	0.01	0.07
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-4.281	0.09	0.01	0.074
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-10.574	0.22	0.06	0.396
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	5.836	0.08	0	0.045
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	2.733	0.04	0	0.013
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-0.49	0.01	0	0.001
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-0.605	0.01	0	0
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.042	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-0.685	0.01	0	0.002
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.056	0	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-0.764	0.01	0	0.001
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-1.337	0.02	0	0.004
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.155	0.01	0	0.002
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.201	0.01	0	0.003
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.251	0.01	0	0.005
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	1.233	0.02	0	0.003
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-1.598	0.02	0	0.005
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-3.074	0.04	0	0.017
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-4.274	0.06	0	0.03
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.166	0.01	0	0
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.046	0	0	0
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	1.121	0.04	0	0.019
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.096	0.01	0	0.001
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.21	0.01	0	0.003
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.323	0.02	0	0.008
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.169	0.01	0	0.002
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.23	0.01	0	0.004
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	1.002	0.03	0	0.017
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	0.513	0.03	0	0.019
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	0.462	0.01	0	0.004
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.065	0	0	0
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.288	0.02	0	0.006
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.203	0.01	0	0.004
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.264	0.02	0	0.005
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.135	0.01	0	0.002
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.277	0.02	0	0.006
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	1.096	0.04	0	0.018
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-1.526	0.05	0	0.033
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-4.856	0.07	0	0.039
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-8.615	0.12	0.02	0.112
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	10.675	0.15	0.05	0.166
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	10.675	0.15	0.08	0.166
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.264	0.02	0	0.005
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-0.493	0.03	0	0.017
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-0.566	0.03	0	0.023
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-0.622	0.04	0	0.026
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	2.121	0.07	0.01	0.061
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	0.815	0.03	0	0.01
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.05	0	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.391	0.01	0	0.003
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-0.625	0.02	0	0.006
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-0.686	0.02	0	0.008
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-0.732	0.02	0	0.009
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	0.989	0.03	0	0.015
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	0.502	0.02	0	0.004
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.065	0	0	0
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	0.437	0.01	0	0.003
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.128	0	0	0
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	0.456	0.01	0	0.003
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.151	0	0	0
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.207	0.01	0	0.001

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.268	0.01	0	0.002
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.318	0.01	0	0.002
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-0.419	0.01	0	0.003
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.256	0.01	0	0.001
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.2	0.01	0	0.001
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.135	0	0	0.001
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.185	0.01	0	0.001
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.031	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-0.565	0.02	0	0.005
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.308	0.01	0	0.001
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	0.503	0.01	0	0
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	0.503	0.01	0	0.001
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-1.561	0.02	0	0.005
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-1.561	0.02	0	0.005
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-1.561	0.02	0	0.004
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.006	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.006	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.046	0	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.063	0	0	0
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.032	0	0	0
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.143	0	0	0
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.197	0.01	0	0.001
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.228	0.01	0	0
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.289	0.01	0	0.001
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.065	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.031	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.046	0	0	0
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-1.901	0.03	0	0.007
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-1.901	0.03	0	0.007
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-1.951	0.03	0	0.007
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	1.774	0.04	0	0.014
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	1.774	0.04	0	0.015
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	1.774	0.04	0	0.015
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-1.044	0.02	0	0.005
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-2.033	0.04	0	0.019
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.292	0.02	0	0.007
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-0.831	0.03	0	0.01
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-1.258	0.03	0	0.008
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-1.308	0.03	0	0.008
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-1.364	0.03	0	0.009
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-1.414	0.03	0	0.009
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	0.524	0.03	0	0.019
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.459	0.03	0	0.015
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.23	0.01	0	0.004
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.05	0	0	0
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.142	0.01	0	0.002
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.086	0	0	0
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.297	0.01	0	0.001
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.23	0.01	0	0.001
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	0.621	0.02	0	0.006
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.191	0.01	0	0.003
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.071	0	0	0.001
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.013	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.055	0	0	0.001
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.313	0.01	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-0.988	0.02	0	0.005
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	0.697	0.02	0	0.008
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.236	0.01	0	0.005
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.38	0.01	0	0.002
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.075	0	0	0
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.239	0.01	0	0.004
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.203	0.01	0	0.003
801	P-1760	J-N2300E	J-N2310E	69.05	148.6	Asbestos Cement	100	-0.463	0.03	0	0.016
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-1.131	0.07	0	0.07
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-0.905	0.03	0	0.012
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.281	0.02	0	0.006
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.323	0.01	0	0.003
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.152	0.01	0	0
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.195	0.01	0	0.012
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.079	0	0	0.001
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.275	0.02	0	0.005
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.161	0.01	0	0.002
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.006	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	2.238	0.03	0	0.008
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-0.565	0.01	0	0

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-0.668	0.01	0	0.001
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.423	0.02	0	0.012
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.292	0.02	0	0.007
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.181	0.01	0	0.003
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.108	0.01	0	0.001
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-2.759	0.04	0	0.013
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.238	0.01	0	0.004
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.078	0	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-1.071	0.02	0	0.004
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	1.284	0.03	0	0.011
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-2.651	0.04	0	0.012
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.025	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.078	0	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.18	0.01	0	0.003
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.043	0	0	0
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.216	0.01	0	0.004
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.216	0.01	0	0.004
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.024	0	0	0
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.031	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.286	0.02	0	0.006
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.25	0.01	0	0.004
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.15	0.01	0	0.002
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.238	0.01	0	0.005
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-2.974	0.04	0	0.017
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.056	0	0	0.002
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-3.103	0.04	0	0.017
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.479	0.03	0	0.017
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	0.743	0.04	0	0.034
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-2.317	0.03	0	0.01
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-2.355	0.03	0	0.01
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-2.698	0.04	0	0.013
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.483	0.03	0	0.016
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.128	0.01	0	0.002
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.248	0.01	0	0.005
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.214	0.01	0	0.003
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-1.06	0.02	0	0.006
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.079	0	0	0
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-0.35	0.01	0	0.001
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.393	0.01	0	0.003
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	1.005	0.01	0	0.002
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.11	0	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.043	0	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	0.895	0.01	0	0.001
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	0.75	0.01	0	0.002
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	0.638	0.01	0	0.001
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.01	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.326	0.02	0	0.005
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	0.524	0.01	0	0.001
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.115	0.01	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.044	0	0	0
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.106	0.01	0	0.001
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.112	0.01	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.006	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.125	0.01	0	0.002
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.145	0.01	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.02	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.152	0.01	0	0.001
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.024	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.037	0	0	0
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.075	0	0	0
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.023	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.116	0.01	0	0.001
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.028	0	0	0
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-0.387	0.01	0	0.003
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	0.416	0.02	0	0.013
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-1.023	0.02	0	0.005
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.134	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.29	0.02	0	0.007
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.05	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.019	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	0.338	0.02	0	0.009
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.026	0	0	0
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.122	0.01	0	0.002
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-0.359	0.02	0	0.006
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-1.125	0.02	0	0.007
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	-0.191	0.01	0	0.003

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.262	0.02	0	0.006
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.125	0.01	0	0.001
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.046	0	0	0
894	P-2810	J-N4320E	J-N4310E	104.59	148.6	Asbestos Cement	100	0.358	0.02	0	0.009
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.205	0.01	0	0.003
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.238	0.01	0	0.005
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.16	0	0	0.001
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.006	0	0	0
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.165	0.01	0	0.002
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-0.931	0.02	0	0.004
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.123	0	0	0
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.286	0	0	0.001
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.26	0	0	0
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-0.391	0.01	0	0.001
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-0.726	0.01	0	0.003
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.006	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.006	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.062	0	0	0.001
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.294	0	0	0
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-0.509	0.01	0	0.001
912	P-3000	J-N4080E	J-N4081E	85.17	148.6	Asbestos Cement	100	0.031	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-1.238	0.02	0	0.003
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.073	0	0	0
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.107	0	0	0
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-1.491	0.02	0	0.005
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.067	0	0	0.001
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	0.017	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.044	0	0	0.001
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.117	0.01	0	0.001
921	P-3090	J-N4111E	J-N4110E	125.39	148.6	Asbestos Cement	100	-0.167	0.01	0	0.002
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	1.614	0.02	0	0.005
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-1.846	0.03	0	0.007
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.156	0.01	0	0.002
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.212	0.01	0	0.003
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.281	0.02	0	0.006
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-2.442	0.03	0	0.011
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.155	0.01	0	0.002
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	2.103	0.03	0	0.009
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	1.736	0.02	0	0.005
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.134	0	0	0
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.188	0.01	0	0.003
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-0.645	0.02	0	0.007
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-0.538	0.02	0	0.006
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.319	0.02	0	0.007
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-0.411	0.02	0	0.012
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-0.366	0.01	0	0.002
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-0.397	0.01	0	0.003
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.217	0.01	0	0.001
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.325	0.02	0	0.008
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.392	0.02	0	0.011
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.204	0.01	0	0.003
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-3.255	0.05	0	0.02
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-3.274	0.05	0	0.018
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-3.725	0.05	0	0.024
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-3.725	0.05	0	0.023
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.318	0.01	0	0.003
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.222	0.01	0	0
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.184	0.01	0	0
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-0.727	0.02	0	0.008
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-0.727	0.02	0	0.009
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	0.456	0.01	0	0.003
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.056	0	0	0
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	1.259	0.04	0	0.023
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	1.209	0.04	0	0.022
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.116	0	0	0.001
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.07	0	0	0
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-1.055	0.03	0	0.018
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-0.897	0.03	0	0.012
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.209	0.01	0	0.003
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.163	0.01	0	0.003
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.3	0.02	0	0.007
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.331	0	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	0.389	0.01	0	0
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.286	0	0	0

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.126	0.01	0	0.002
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.099	0.01	0	0.001
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.128	0.01	0	0
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.128	0.01	0	0.002
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.058	0	0	0
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.12	0	0	0
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.031	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-0.925	0.05	0	0.055
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-0.99	0.03	0	0.015
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-1.212	0.04	0	0.018
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-1.296	0.04	0	0.021
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.081	0	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.081	0	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	0.539	0.01	0	0.001
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.355	0.01	0	0.002
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-0.741	0.02	0	0.003
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	1.774	0.04	0	0.014
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.281	0.01	0	0
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-2.055	0.04	0	0.019
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	6.456	0.13	0.01	0.159
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	10.675	0.15	0.02	0.166
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	10.62	0.22	0.02	0.399
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.308	0.02	0	0.006
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.335	0.02	0	0.007
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.222	0.01	0	0
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.295	0.01	0	0.001
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.046	0	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.027	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-0.503	0.02	0	0.004
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-0.53	0.02	0	0.006
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	1.744	0.02	0	0.006
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	1.097	0.02	0	0.003
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	1.02	0.01	0	0.002
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	1.112	0.02	0	0.003
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.27	0.01	0	0.001
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.224	0.01	0	0.001
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.311	0.01	0	0
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.273	0.01	0	0
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.231	0.01	0	0.002
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.189	0.01	0	0
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.189	0.01	0	0
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.151	0	0	0.001
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-1.103	0.02	0	0.002
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-1.269	0.02	0	0.005
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.786	0.01	0	0.001
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.143	0	0	0
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	1.198	0.02	0	0.002
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	1.031	0.01	0	0.003
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	0.508	0.01	0	0
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	0.508	0.01	0	0.001
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-0.521	0.02	0	0.004
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.233	0.01	0	0.001
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.294	0.01	0	0.002
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.34	0.01	0	0.002
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.391	0.01	0	0.003
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.345	0.01	0	0.003
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-0.757	0.02	0	0.003
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-0.521	0.02	0	0.004
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-1.638	0.02	0	0.005
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-2.45	0.03	0	0.011
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	0.811	0.02	0	0.003
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	0.811	0.02	0	0.004
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	0.757	0.02	0	0.003
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	0.48	0.01	0	0
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-1.53	0.02	0	0.004
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	1.979	0.04	0	0.018
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	1.862	0.04	0	0.016
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	1.649	0.03	0	0.013
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	1.618	0.03	0	0.013
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	1.125	0.02	0	0.006
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.471	0.02	0	0.003
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.41	0.01	0	0.003
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.368	0.01	0	0.002

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.368	0.01	0	0.002
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-1.087	0.02	0	0.006
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.061	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-0.857	0.03	0	0.012
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-0.926	0.03	0	0.013
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.046	0	0	0.001
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.031	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-0.982	0.03	0	0.012
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-0.982	0.03	0	0.012
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-1.047	0.03	0	0.014
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.862	0.03	0	0.01
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.275	0.01	0	0.002
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-2.219	0.07	0.01	0.055
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.083	0	0	0
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	2.541	0.05	0	0.028
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	2.414	0.05	0	0.026
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-4.707	0.07	0	0.037
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-5.562	0.08	0	0.049
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.323	0.01	0	0.001
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.166	0	0	0
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	1.454	0.03	0	0.009
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.073	0	0	0
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.081	0	0	0.001
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	1.305	0.03	0	0.007
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	0.559	0.01	0	0
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.229	0.01	0	0.001
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-0.611	0.01	0	0.002
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-4.655	0.07	0.01	0.03
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	8.615	0.12	0	0.094
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-5.836	0.08	0	0.046
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	6.373	0.09	0.02	0.054
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	5.836	0.08	0.01	0.045
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-2.279	0.03	0	0.008
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-2.279	0.03	0	0.008
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	1.283	0.02	0	0.003
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.326	0.02	0	0.008
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.326	0.02	0	0.008
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.32	0.02	0	0.008
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	2.449	0.03	0	0.009
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	0.737	0.04	0	0.028
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.011	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.031	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-14.789	0.21	0.12	0.303
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-14.789	0.21	0.03	0.303
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-14.789	0.21	0.04	0.303
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-14.789	0.21	0.04	0.304
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-14.789	0.21	0.04	0.303
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-14.789	0.21	0.01	0.302
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-14.789	0.21	0.01	0.305
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-8.615	0.12	0	0.111
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-3.96	0.06	0	0.027
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.174	0.01	0	0
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-0.494	0.01	0	0
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.143	0	0	0.001
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.023	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.155	0	0	0
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.051	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.02	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.081	0	0	0
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.158	0.01	0	0
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.158	0	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.166	0	0	0
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	0.584	0.01	0	0.002
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.38	0.01	0	0.001
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.141	0	0	0
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.107	0	0	0
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	0.375	0.01	0	0.001
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.314	0.01	0	0.001
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.314	0.01	0	0
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	0.463	0.01	0	0.001
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	0.367	0.01	0	0
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	1.292	0.03	0	0.007

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	1.231	0.03	0	0.007
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.092	0	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.063	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.036	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.034	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.095	0	0	0
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.144	0	0	0
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.137	0	0	0
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.221	0	0	0
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.358	0.01	0	0.001
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.065	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-0.423	0.01	0	0.001
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-0.78	0.02	0	0.004
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-1.329	0.03	0	0.009
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-0.465	0.01	0	0.001
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-0.549	0.01	0	0.001
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.084	0	0	0.002
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	0.611	0.01	0	0
1395	P-5863	J-33	J-34	95	250	PVC	110	0.416	0.01	0	0.001
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.351	0.01	0	0.001
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.023	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.091	0	0	0
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.12	0	0	0.001
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.12	0	0	0
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.133	0	0	0
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.147	0	0	0
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.153	0	0	0.001
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.077	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-0.412	0.01	0	0.003
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.148	0	0	0.001
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.071	0	0	0
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	1.47	0.05	0	0.026
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.048	0	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	1.422	0.05	0	0.024
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	1.24	0.04	0	0.019
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	0.833	0.03	0	0.01
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	0.791	0.03	0	0.008
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-4.705	0.07	0	0.036
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-3.998	0.06	0	0.027
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	0.707	0.02	0	0.007
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.275	0.01	0	0.002
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.109	0	0	0.001
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.038	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.155	0	0	0
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.036	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.079	0	0	0.001
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-4.44	0.06	0	0.033
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-4.542	0.06	0	0.034
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.102	0.01	0	0
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-4.542	0.06	0	0.029
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-4.632	0.07	0	0.03
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.09	0.01	0	0.001
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.253	0.01	0	0.001
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.181	0.01	0	0
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.181	0.01	0	0
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-0.343	0	0	0
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-0.647	0.01	0	0.001
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.242	0.01	0	0.001
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.138	0	0	0
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.138	0	0	0
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.09	0	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.042	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	0.374	0.01	0	0.002
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.32	0.01	0	0.002
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	0.882	0.01	0	0.002
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	0.853	0.01	0	0.001
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.102	0	0	0
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.102	0.01	0	0.002
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-0.57	0.01	0	0.001
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-0.641	0.01	0	0.002
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-0.376	0.01	0	0.001
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.174	0.01	0	0.001

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	6.095	0.09	0	0.042
1511	P-5926	J-79	J-80	321.67	300	PVC	120	6.095	0.09	0.01	0.042
1513	P-5927	J-80	J-81	352.13	300	PVC	120	2.406	0.03	0	0.007
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.184	0.01	0	0
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.184	0.01	0	0.001
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-3.689	0.12	0.01	0.119
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	2.112	0.03	0	0.012
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	2.406	0.03	0.01	0.007
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	2.112	0.03	0	0.006
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-2.112	0.03	0.01	0.006
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-2.112	0.03	0	0.006
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.314	0.01	0	0.001
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.378	0.01	0	0.001
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.107	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.178	0	0	0
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.067	0	0	0
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.084	0	0	0
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.094	0	0	0
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.094	0	0	0
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	3.186	0.05	0	0.015
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	3.186	0.05	0	0.015
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	0.041	0	0	0
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.041	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	0	0	0	0
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-0.639	0.01	0	0.002
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-0.687	0.01	0	0.003
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-1.061	0.02	0	0.002
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-1.329	0.02	0	0.004
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	110	0.127	0	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	110	0.127	0	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	110	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-0.613	0.02	0	0.004
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-0.485	0.02	0	0.003
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.187	0.01	0	0
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.113	0	0	0
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.087	0	0	0
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.225	0.01	0	0.001
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.042	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.125	0	0	0
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.131	0	0	0
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.032	0	0	0
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.045	0	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.036	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.195	0.01	0	0.001
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.08	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.01	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.032	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.074	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.027	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.015	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.057	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.141	0	0	0
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.099	0	0	0
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-0.485	0.02	0	0.003
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-0.485	0.02	0	0.002
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.009	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	2.121	0.07	0.01	0.061
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.027	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.048	0	0	0
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.272	0	0	0.001
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-0.395	0.01	0	0

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	532.7	752.73
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.207	521	752.73
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.285	521.6	752.79
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.402	522.4	752.83
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.327	523.1	752.95
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.231	520.2	753.05
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.24	519.7	752.9
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.288	515.3	752.76
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.267	521.1	752.74
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.27	526.9	752.73
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.261	524.8	752.72
195	J-S2100E	23,886.25	5,961,252.83	699	0.243	525.8	752.73
196	J-S2080E	23,585.41	5,961,251.56	699	0.243	525.6	752.71
197	J-S2070E	23,468.77	5,961,251.56	699	0.177	525.5	752.7
198	J-S2060E	23,444.47	5,961,408.54	699	0.15	525.2	752.66
199	J-S2040E	23,441.07	5,961,591.28	699	0.204	524.8	752.62
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.162	511.8	752.59
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.351	514.5	752.67
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.138	520.5	753.48
203	J-S2010E	23,396.57	5,962,474.58	700	0	511.6	752.27
204	J-N4200E	23,397.75	5,962,576.48	701	0	501.5	752.24
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.108	504.3	752.23
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.345	517.1	752.23
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.114	517.1	752.23
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.126	510.2	752.23
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.069	517.1	752.23
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.168	510.2	752.23
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.15	518.1	752.23
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.15	519.1	752.24
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.138	529.9	752.24
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.15	533.8	752.24
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.195	530.4	752.24
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.15	520.1	752.24
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.183	529.9	752.25
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.237	519.4	752.27
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	520.7	752.31
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	522.7	752.31
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.138	524.6	752.31
222	J-N2255E	24,475.27	5,962,571.66	700	0.093	511.9	752.31
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.081	523.7	752.31
224	J-N2260E	24,501.40	5,962,673.31	699	0	522	752.34
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.069	525.2	752.26
226	J-N3301E	24,349.68	5,962,783.56	699	0.288	521.2	752.26
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.219	532.8	752.24
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.168	525.9	752.24
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.093	524	752.24
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.183	525	752.24
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.081	525.1	752.26
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	529	752.26
233	J-N3321E	24,349.51	5,962,866.08	700	0.195	511.4	752.26
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.515	526.1	752.25
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.207	528.8	752.23
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.15	525	752.24
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.183	527	752.24
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.183	529	752.25
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.662	525.1	752.25
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.207	528.9	752.24
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.219	533.8	752.25
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.345	537.8	752.25
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.114	533	752.27
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.168	540.1	752.29
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.345	540.6	752.31
246	J-N1050E	24,728.87	5,962,855.33	698	0	532.6	752.42
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.237	526.6	752.61
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	523.3	753.37
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	523.7	754.81
250	J-S1010E	24,688.47	5,961,838.45	701	0	522.8	754.42
251	J-S1020E	24,215.83	5,961,901.63	700	0	526.5	753.79
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.114	543.3	752.32
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.126	544.7	752.36
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.183	525.1	752.36
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.069	538	752.27
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.219	546.9	752.28
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.168	537.3	752.3
258	J-N1420E	24,855.27	5,963,531.46	698	0	531.6	752.32
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.138	528.2	752.27

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.081	541.8	752.26
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.081	532.8	752.25
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.045	531.8	752.24
263	J-N1311E	24,830.34	5,963,795.82	698	0.15	530.9	752.24
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.081	531.8	752.24
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.183	527	752.25
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.138	527.1	752.26
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.093	531.8	752.24
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	529.8	752.23
269	J-N1292E	24,905.57	5,963,948.00	698	0.195	530.8	752.23
270	J-N1245E	24,928.90	5,964,040.14	697	0.093	540.6	752.23
271	J-N1244E	24,955.72	5,964,184.39	697	0.168	540.5	752.23
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.168	545.4	752.23
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.126	529.8	752.23
274	J-N1281E	24,668.79	5,963,904.06	698	0.168	530.8	752.23
275	J-N1282E	24,737.99	5,963,838.74	697	0.183	540.6	752.23
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.15	533.7	752.24
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.114	542.6	752.24
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.057	534.7	752.24
279	J-N1242E	24,655.18	5,964,247.76	698	0.168	530.7	752.23
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.081	537.6	752.23
281	J-N1272E	24,643.90	5,964,097.68	698	0.15	530.7	752.23
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.093	522.9	752.23
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.093	526.8	752.23
284	J-N1240E	24,492.27	5,964,163.87	698	0	530.7	752.23
285	J-N1220E	24,450.28	5,964,244.12	698	0	530.7	752.22
286	J-N1210E	24,398.26	5,964,217.60	698	0	530.7	752.22
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.069	532.6	752.22
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.093	533.6	752.23
289	J-N1170E	24,279.97	5,963,894.02	698	0	530.8	752.23
290	J-N1160E	24,301.35	5,963,782.73	698	0	530.8	752.24
291	J-N1150E	24,302.39	5,963,747.88	698	0.483	530.8	752.24
292	J-N1370E	24,390.29	5,963,759.89	698	0.093	530.8	752.24
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.069	535.7	752.24
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.138	537.7	752.24
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.138	526.9	752.24
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.069	545.5	752.24
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.093	533.8	752.24
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.045	543.5	752.24
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.195	541.6	752.24
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.093	545.5	752.24
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.138	532.8	752.24
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	537.7	752.24
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.15	535.8	752.25
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	536.8	752.25
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	532.8	752.24
306	J-N3182E	24,109.98	5,963,355.50	698	0	530.7	752.22
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	527.6	752.21
308	J-N3190E	23,838.79	5,963,334.11	699	0.096	520.7	752.2
309	J-N3210E	23,839.27	5,963,187.82	699	0.168	520.7	752.21
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.276	524.7	752.21
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.168	527.7	752.22
312	J-N3420E	23,966.13	5,962,983.37	698	0	530.8	752.23
313	J-N3240E	23,840.96	5,962,916.81	698	0.15	530.7	752.23
314	J-N3250E	23,877.98	5,962,777.15	698	0.168	530.8	752.24
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.15	526	752.24
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.195	521.8	752.22
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.219	524.6	752.21
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.114	514.8	752.2
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.15	507	752.2
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.168	505	752.2
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.183	521.9	752.2
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.264	521.2	752.2
323	J-N2370E	23,750.00	5,963,047.05	699	0.138	520.7	752.2
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.15	515.8	752.2
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.195	522.6	752.2
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.252	529.4	752.2
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.126	518.7	752.2
328	J-N3200E	23,838.64	5,963,310.50	699	0.093	520.7	752.2
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.069	521.6	752.2
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.081	527.4	752.19
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.207	523.5	752.19
332	J-N2350E	23,748.75	5,963,237.41	699	0	520.6	752.2
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.414	526.2	752.17
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.063	528.2	752.17
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.609	525.2	752.17

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	524.4	752.18
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.168	524.4	752.18
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.081	515.7	752.19
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.201	522.4	752.2
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.054	516.7	752.2
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.063	516.7	752.2
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	516.7	752.2
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.048	516.8	752.2
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.033	511.9	752.2
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	515.7	752.19
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.141	515.7	752.19
347	J-N2120E	23,392.51	5,963,312.31	699	0.135	520.4	752.18
348	J-N2121E	23,395.90	5,963,312.31	699	0	520.4	752.18
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.066	521.3	752.17
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.021	524.2	752.16
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	516.4	752.17
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	521.2	752.16
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	521.2	752.16
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.199	521.2	752.16
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.045	521.2	752.16
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.114	511.5	752.16
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	511.5	752.16
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.207	515.4	752.16
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	515.4	752.16
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.219	515.4	752.16
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.093	516.4	752.16
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.168	515.7	752.19
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.414	513.8	752.2
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.114	512.4	752.2
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.219	512.4	752.2
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.168	509.9	752.2
367	J-N4510E	23,116.00	5,962,864.49	700	0.126	510.7	752.18
368	J-N4500E	23,107.06	5,962,864.49	700	0.15	510.7	752.18
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.114	501.8	752.17
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.114	505.8	752.18
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.114	507.8	752.19
372	J-N4490E	23,107.28	5,962,982.98	700	0.183	510.5	752.16
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.138	509.5	752.16
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.171	517.3	752.16
375	J-N4350E	23,104.18	5,963,517.50	699	0.126	520.2	752.16
376	J-N3090E	23,166.53	5,963,519.61	699	0	520.2	752.16
377	J-N2070E	23,171.01	5,963,524.71	699	0	520.2	752.16
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	514.4	752.16
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	522.2	752.15
380	J-N2050E	23,164.50	5,963,745.83	699	0	520.2	752.15
381	J-N2040E	23,164.50	5,963,849.54	699	0	520.2	752.15
382	J-N2020E	23,168.07	5,964,021.69	699	0	520.2	752.15
383	J-N2010E	23,229.47	5,964,021.52	699	0.03	520.2	752.15
384	J-N3010E	23,161.69	5,964,008.03	699	1.362	520.2	752.15
385	J-N3030E	23,160.50	5,963,849.48	699	0.093	520.2	752.15
386	J-N3031E	23,161.50	5,963,836.74	699	0.114	520.2	752.15
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	522.2	752.15
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.168	522.2	752.15
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	514.3	752.15
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.168	514.3	752.15
391	J-N3032E	22,992.17	5,963,835.82	699	0.183	520.2	752.15
392	J-N3051E	22,992.42	5,963,732.81	700	0.183	510.4	752.15
393	J-N3071E	22,992.67	5,963,640.74	700	0.195	510.4	752.15
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	514.3	752.15
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.081	513.3	752.15
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.156	504.5	752.15
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.093	507.5	752.15
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.093	509.4	752.15
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.018	509.3	752.14
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.288	508.4	752.14
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	498.6	752.14
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.078	498.6	752.15
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.214	497.7	752.15
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	497.7	752.15
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.138	505.6	752.16
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.237	506.3	752.14
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.099	497.6	752.14
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.093	503.4	752.14
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.513	499.5	752.14
410	J-N4410E	22,639.90	5,963,300.90	701	0.12	500.5	752.14
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	505.3	752.14

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	513.2	752.14
413	J-N4010E	22,546.33	5,963,750.87	700	0.351	510.2	752.14
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.393	504.4	752.14
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	502.4	752.14
416	J-N4041E	22,443.94	5,963,514.35	701	0	500.5	752.14
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.168	495.6	752.14
418	J-N4043E	22,444.72	5,963,305.56	701	0.696	500.5	752.14
419	J-N4070E	22,557.86	5,963,211.47	701	1.65	500.5	752.14
420	J-N4080E	22,553.97	5,963,123.99	701.5	2.094	495.6	752.14
421	J-N4081E	22,468.80	5,963,123.50	701	0	500.5	752.14
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.219	491.7	752.14
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.219	493.6	752.14
424	J-N4092E	22,681.89	5,962,970.03	702	0.321	490.7	752.14
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.168	489.8	752.14
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.15	495.6	752.14
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.183	493.7	752.14
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.081	489.7	752.14
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.15	485.8	752.14
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.195	483.9	752.14
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.138	491.8	752.15
432	J-N4121E	22,725.05	5,962,737.13	701	0.168	500.6	752.15
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.207	503.6	752.15
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.057	502.6	752.16
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.024	501.7	752.16
436	J-N4431E	22,871.76	5,963,060.11	701	0.15	500.6	752.15
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.138	497.7	752.15
438	J-N4131E	22,739.70	5,962,940.69	702	0.402	490.9	752.15
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.276	524	752.24
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.093	519.2	752.26
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.057	538.3	752.27
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	536.9	752.26
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.069	526.8	752.23
444	J-N1246E	24,900.57	5,964,065.27	697	0.114	540.5	752.23
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	533.8	752.24
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.168	537.9	752.26
447	J-N1400E	24,827.83	5,963,657.23	698	0.15	531.1	752.26
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.138	545.7	752.36
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.195	544.7	752.35
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.138	505.7	752.18
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.093	501.7	752.16
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.309	505.3	752.14
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.081	508.5	752.16
454	J-N3020E	23,160.99	5,963,967.57	699	0	520.2	752.15
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.093	522.7	752.31
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.195	544.1	752.34
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.252	531.5	752.37
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.183	526.9	752.4
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	526.2	752.17
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.06	526.2	752.17
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.552	525.2	752.16
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	523.2	752.16
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.162	525.2	752.17
464	J-N3160E	23,825.34	5,963,511.25	699	0.117	520.4	752.17
465	J-N3170E	23,903.33	5,963,511.58	699	0.253	520.4	752.18
466	J-N3180E	23,907.72	5,963,334.91	699	0	520.7	752.2
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	510.4	752.55
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.165	521.7	753.61
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.081	516.7	752.19
470	J-N1250E	24,499.78	5,964,149.64	698	0.081	530.7	752.23
471	J-N1251E	24,455.84	5,964,129.52	698	0.138	530.7	752.23
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.081	536.6	752.23
473	J-N1230E	24,475.43	5,964,196.22	698	0	530.7	752.23
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	534.1	752.72
475	J-S2140E	24,039.65	5,960,875.68	698	0.231	535.5	752.72
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	532.6	752.72
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.183	529.3	752.72
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.168	518.4	752.71
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.138	530.6	752.71
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.168	534	752.71
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.114	530.6	752.71
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.126	530.6	752.71
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.126	530.6	752.71
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	530.6	752.71
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.114	530.6	752.71
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.168	529.6	752.71
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.069	530.6	752.71

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.114	528.6	752.71
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.501	530.5	752.71
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.569	529.1	752.71
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	530.5	752.71
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.524	530.5	752.71
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	533	752.71
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	520.8	752.72
495	J-S2195E	23,781.62	5,960,412.85	698	0	535.5	752.71
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	530.6	752.71
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.168	523.7	752.72
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.183	522.2	752.72
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.138	515.4	752.72
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.081	519.8	752.72
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.138	522.8	752.72
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	532.6	752.72
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	521	752.73
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	532.7	752.73
505	J-S1110E	24,033.48	5,960,926.97	698	0.162	535.6	752.72
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.091	532.6	752.22
507	J-N1600E	24,201.37	5,964,131.25	698	0.168	530.6	752.21
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.195	523.1	752.2
509	J-N1620E	24,074.31	5,964,072.83	699	0.093	520.6	752.19
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.069	515.6	752.19
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.114	515.6	752.18
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.183	518.1	752.18
513	J-N1632E	24,036.37	5,963,917.92	700	0.126	510.7	752.18
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	515.6	752.18
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	522.9	752.18
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.183	525.7	752.21
517	J-N1060E	24,577.21	5,963,109.12	697	0	541.7	752.35
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.207	534.4	752.36
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.168	539.4	752.37
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.138	485.8	752.14
521	J-N4082E	22,469.20	5,963,082.83	701	0.093	500.5	752.14
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	540	752.37
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.195	540	752.38
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.27	538.2	752.39
526	J-N1471E	24,945.50	5,963,280.47	699	0	522.6	752.4
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	525.5	752.39
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	528.9	752.44
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.249	509.4	752.55
530	J-S2050E	23,441.95	5,961,556.46	699	0	524.9	752.63
531	J-S2051E	23,344.97	5,961,508.86	699	0.381	524.9	752.63
532	J-N1065E	24,522.60	5,963,163.07	697	2.565	541.4	752.32
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.471	506.3	752.14
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	506.3	752.14
537	J-3550I	23,858.78	5,963,861.50	697.8	0.231	532.1	752.17
538	J-3560I	23,895.14	5,963,776.63	698.8	0.231	522.4	752.17
539	J-3570I	23,930.36	5,963,667.29	699	0.231	520.4	752.17
540	J-3580I	23,794.98	5,963,838.03	698	0.195	530.2	752.17
541	J-3590F	23,690.63	5,963,983.45	697.5	0.183	535	752.16
542	J-3600I	23,601.86	5,963,939.64	698.3	0.288	527.1	752.16
543	J-3610I	23,453.97	5,963,928.59	699	0.396	520.3	752.16
544	J-3620F	23,389.20	5,964,002.63	699.6	0	514.4	752.16
548	J-3660F	23,675.98	5,964,023.67	697	0	539.8	752.16
551	J-3690I	22,621.02	5,963,751.20	699.5	0	515.1	752.14
557	J-3750I	24,202.10	5,960,810.43	700	0	515.9	752.72
563	J-3830F	24,662.04	5,962,661.31	699	0.07	522.4	752.37
564	J-3840F	24,769.05	5,962,856.55	698	0	532.9	752.45
565	J-S2011E	23,398.12	5,962,393.08	701	0	502.1	752.3
576	J-S2012E	23,398.36	5,962,126.10	701	0.129	503	752.39
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	515.7	752.2
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	515.7	752.2
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	516.8	752.2
611	J-4310F	22,779.97	5,964,010.72	699.5	0	515.1	752.13
614	J-3785F	24,389.79	5,962,392.01	698.7	0.093	524.6	752.31
615	J-N1023E	24,962.79	5,962,291.29	699	0	537.5	753.92
618	J-N1025E	24,955.73	5,962,436.30	699	0	534.2	753.58
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	524.3	753.07
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	531.3	752.79
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	530.6	752.72
622	J-3810F	24,808.50	5,962,854.71	698.5	0	528.3	752.48
629	J-4460I	23,866.43	5,960,918.16	700.5	0.27	511.1	752.72
630	J-4470I	24,688.40	5,963,006.16	698	0	532.3	752.39
632	J-4490F	23,389.95	5,964,203.21	699.2	0	518.2	752.15
638	J-4550I	24,097.29	5,963,722.12	698.5	0	525.3	752.17

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
639	J-4560I	24,258.63	5,963,745.67	698	0	530.8	752.24
643	J-4600F	23,285.48	5,962,126.23	701.38	0.297	499.3	752.39
644	J-4610F	23,155.29	5,962,079.75	700.83	0.029	504.6	752.39
1317	J-2	22,730.02	5,963,753.33	700.5	0.069	505.3	752.14
1319	J-3	22,672.82	5,963,751.17	700.5	0	505.3	752.14
1323	J-4	22,621.02	5,963,836.43	700	0.183	510.2	752.13
1325	J-5	22,727.82	5,963,998.44	700.25	0.126	507.8	752.13
1327	J-6	22,732.18	5,964,070.61	701	0.213	500.4	752.13
1329	J-7	22,731.10	5,964,172.06	700.75	0.183	502.9	752.13
1331	J-8	22,631.81	5,964,169.90	701.5	0.231	495.6	752.13
1333	J-9	22,551.95	5,964,168.82	701	0	500.5	752.13
1337	J-10	23,451.65	5,963,733.50	699	0.306	520.3	752.16
1340	J-11	23,574.41	5,963,732.15	699.25	0.306	517.8	752.16
1342	J-12	23,453.00	5,963,830.63	698.75	0.396	522.7	752.16
1345	J-13	23,538.85	5,963,831.54	699.25	0.321	517.8	752.16
1347	J-14	23,454.35	5,964,026.24	699.1	0.183	519.3	752.16
1349	J-15	23,467.84	5,964,093.69	699.25	0	517.8	752.16
1351	J-16	23,573.06	5,964,030.28	699.25	0	517.8	752.16
1353	J-17	23,570.36	5,964,124.71	699	0	520.3	752.16
1355	J-18	23,532.59	5,963,931.81	699	0.288	520.3	752.16
1358	J-19	23,754.37	5,963,918.75	698.75	0.183	522.8	752.16
1361	J-20	23,728.46	5,963,820.53	698.75	0.087	522.8	752.17
1363	J-21	23,674.50	5,963,815.14	698.75	0.183	522.8	752.17
1365	J-22	23,673.42	5,963,866.94	699.25	0.108	517.9	752.17
1367	J-23	23,677.74	5,963,733.12	699	0.183	520.4	752.17
1369	J-24	23,746.80	5,963,730.96	699	0.126	520.4	752.17
1371	J-25	23,809.40	5,963,732.04	699	0.231	520.4	752.17
1374	J-26	23,798.19	5,963,731.64	699	0	520.4	752.17
1377	J-27	23,775.20	5,963,641.81	699.25	0	517.9	752.17
1379	J-28	23,710.13	5,963,639.34	699.5	0.195	515.5	752.17
1381	J-29	23,844.51	5,963,643.58	699.25	0.126	517.9	752.17
1383	J-30	23,845.57	5,963,511.32	699	0	520.4	752.17
1387	J-31	23,799.25	5,963,585.59	699.75	0.252	513	752.17
1388	J-32	23,845.57	5,963,586.29	699.5	0	515.5	752.17
1392	J-33	23,672.77	5,964,049.27	698.75	0.126	522.7	752.16
1394	J-34	23,670.18	5,964,144.24	699	0.195	520.3	752.16
1396	J-35	23,671.91	5,964,234.03	698.75	0.126	522.7	752.16
1398	J-36	23,671.05	5,964,280.65	699	0.069	520.3	752.16
1400	J-37	23,758.25	5,964,281.52	698.75	0.087	522.7	752.16
1402	J-38	23,813.50	5,964,238.35	698.75	0	522.7	752.16
1404	J-39	23,860.99	5,964,198.64	698.5	0.039	525.2	752.16
1406	J-40	23,792.78	5,964,135.61	698.5	0.039	525.2	752.16
1408	J-41	23,757.38	5,964,171.87	699.25	0	517.8	752.16
1410	J-42	23,740.12	5,964,098.49	698.5	0.018	525.2	752.16
1414	J-43	23,980.99	5,963,768.68	699.75	0.231	513.1	752.17
1416	J-44	24,000.53	5,963,681.98	700	0.108	510.6	752.17
1419	J-45	24,049.06	5,964,265.48	698.75	0.231	523.1	752.2
1421	J-46	23,957.33	5,964,279.51	698.75	0.213	523.1	752.2
1424	J-47	24,921.74	5,963,097.95	698.75	0	525.2	752.42
1426	J-48	24,960.60	5,963,073.13	699.25	0.144	520.3	752.42
1428	J-49	24,867.78	5,963,034.28	698.75	0.081	525.1	752.4
1432	J-51	24,805.19	5,963,090.39	698.5	0.069	527.4	752.39
1434	J-52	24,739.36	5,963,144.35	698.25	0.126	529.8	752.38
1436	J-53	24,688.64	5,963,093.63	698.25	0.252	529.8	752.38
1438	J-54	24,637.92	5,963,049.38	698.25	0	529.7	752.38
1443	J-55	24,746.03	5,963,032.58	698.5	0.213	527.4	752.39
1446	J-56	24,815.86	5,962,971.87	698.75	0.12	525.1	752.4
1448	J-57	24,793.42	5,962,913.17	699.25	0.108	520.2	752.4
1450	J-58	24,880.62	5,962,917.48	698.75	0.237	525.1	752.4
1452	J-59	24,463.42	5,962,681.55	699.25	0	519.5	752.33
1455	J-60	24,477.23	5,962,748.02	699	0.306	521.9	752.33
1457	J-61	24,560.98	5,962,657.37	698.5	0	527	752.35
1460	J-62	24,574.79	5,962,709.17	698.75	0.27	524.6	752.35
1464	J-64	23,859.42	5,960,815.72	699.25	0.183	523.3	752.72
1467	J-65	23,919.85	5,960,828.67	698.5	0	530.6	752.72
1469	J-66	23,954.39	5,960,863.21	699.25	0.183	523.3	752.72
1471	J-67	23,951.80	5,960,932.28	698.75	0.183	528.2	752.72
1475	J-68	24,151.23	5,960,824.36	699.5	0	520.8	752.72
1477	J-69	24,160.73	5,960,864.07	700.5	0.144	511	752.72
1479	J-70	24,173.68	5,960,913.28	699.75	0.144	518.4	752.72
1481	J-71	24,122.74	5,960,921.05	699.25	0.126	523.3	752.72
1485	J-73	23,863.50	5,960,738.53	699.2	0.162	523.7	752.72
1488	J-74	24,008.12	5,960,795.72	699.25	0.087	523.3	752.72
1491	J-75	23,533.91	5,963,732.98	699.5	0	515.4	752.16
1494	J-76	23,929.23	5,963,577.78	699	0.213	520.4	752.17
1497	J-77	24,049.40	5,963,701.17	699.25	1.128	517.9	752.17

**Existing Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1500	J-78	24,258.00	5,963,633.98	699	0.522	521	752.24
1508	J-79	25,046.68	5,962,853.87	700	0	514.7	752.59
1510	J-80	25,042.43	5,963,175.51	700.5	0	508.8	752.49
1512	J-81	25,046.04	5,963,527.62	699	0	523.3	752.47
1514	J-82	24,960.02	5,964,132.73	698.2	0	528.8	752.23
1521	J-83	26,363.57	5,963,530.33	700	0	513	752.41
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	503.2	752.41
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.882	513.1	752.42
1550	J-92	25,818.46	5,963,541.11	700	0	512.9	752.4
1557	J-94	23,168.88	5,964,201.54	698.35	0.126	526.5	752.15
1563	J-97	23,572.11	5,964,208.92	698.89	0.237	521.3	752.16
1609	J-116	22,980.29	5,962,035.89	700.36	0.12	509.2	752.39
1612	J-117	22,981.58	5,962,130.00	700.07	0.12	512.1	752.39
1613	J-118	23,116.29	5,962,177.05	700.4	0.108	508.9	752.39
1614	J-119	23,064.08	5,962,037.98	700.61	0.213	506.8	752.39
1644	J-129	22,662.34	5,963,932.49	700.13	0	508.9	752.13
1681	J-137	23,388.97	5,962,746.95	700.04	0	510.7	752.22
1684	J-138	22,557.14	5,963,245.10	700.93	0	501.2	752.14
1687	J-139	22,761.26	5,963,186.30	702.75	0	483.3	752.14
1701	J-140	23,586.96	5,963,525.74	698.45	0.144	525.8	752.17
1704	J-141	23,239.49	5,963,413.52	699.38	0.804	516.5	752.16
1711	J-143	23,345.33	5,961,555.68	699	0	524.9	752.63
1714	J-144	23,225.95	5,961,556.04	699	0	524.9	752.63
1786	J-165	23,502.59	5,964,204.60	699.08	0.384	519.4	752.16
1789	J-166	23,315.10	5,964,203.31	698.91	0.126	521	752.15
1792	J-167	23,168.27	5,964,090.48	698.75	0.126	522.6	752.15
1795	J-168	23,313.56	5,964,092.80	698.77	0.126	522.4	752.15
1798	J-169	23,315.88	5,964,279.82	698.79	0.126	522.2	752.15
1800	J-170	23,364.57	5,964,279.82	698.98	0.126	520.4	752.15
1802	J-171	23,243.23	5,964,202.54	698.64	0.126	523.8	752.15
1805	J-172	23,244.78	5,964,090.48	698.87	0.126	521.5	752.15
1809	J-173	23,069.34	5,964,200.99	699.45	0.126	515.8	752.15
1811	J-174	22,976.60	5,964,200.99	699.89	0.126	511.5	752.15
1813	J-175	22,976.60	5,964,112.89	700.15	0.126	508.9	752.15
1815	J-176	23,070.12	5,964,112.12	699.74	0.126	512.9	752.15
1819	J-178	22,974.67	5,964,279.75	700.05	0.126	509.9	752.15
1822	J-179	23,044.05	5,964,278.86	699.77	0.126	512.6	752.15
1825	J-180	23,130.99	5,964,278.86	699.49	0.126	515.4	752.15
1828	J-181	23,217.93	5,964,279.83	699.24	0.126	517.8	752.15
1832	J-182	23,439.83	5,964,204.12	699.15	0	518.8	752.15
1835	J-183	24,885.31	5,963,455.51	698.5	0	527.1	752.36
1838	J-184	23,025.30	5,962,131.36	700.17	0.225	511.1	752.39
1841	J-185	23,215.32	5,962,120.15	701.11	0.369	501.9	752.39

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-5.231	0.07	0.01	0.045
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-12.787	0.26	0.06	0.563
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-13.072	0.27	0.04	0.586
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-13.474	0.27	0.12	0.62
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-13.801	0.28	0.1	0.648
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	17.688	0.36	0.15	1.027
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	17.448	0.36	0.14	1.001
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	4.319	0.09	0.01	0.075
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	4.052	0.08	0.01	0.067
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	3.782	0.08	0.01	0.059
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-4.672	0.07	0.01	0.036
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	8.193	0.12	0.02	0.101
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	7.95	0.11	0.01	0.096
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	7.773	0.16	0.04	0.224
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	7.038	0.14	0.03	0.187
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-12.49	0.25	0.08	0.539
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-12.841	0.26	0.09	0.567
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-31.72	0.65	0.43	3.028
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	17.507	0.25	0.04	0.347
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	8.198	0.12	0.01	0.103
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-1.468	0.02	0	0.005
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-1.813	0.03	0	0.006
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.126	0.01	0	0.001
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-2.053	0.03	0	0.008
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-2.29	0.03	0	0.009
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-4.012	0.06	0	0.027
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.465	0.03	0	0.015
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.603	0.03	0	0.025
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.753	0.04	0	0.037
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	3.697	0.05	0	0.024
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-4.795	0.07	0	0.038
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-9.221	0.13	0.03	0.126
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-12.821	0.18	0.03	0.233
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.498	0.02	0	0.004
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.138	0	0	0
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	3.363	0.11	0.01	0.143
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.288	0.02	0	0.005
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.63	0.04	0.01	0.027
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.97	0.06	0	0.061
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.508	0.03	0	0.018
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.691	0.04	0	0.032
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	3.006	0.1	0	0.113
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.54	0.09	0.01	0.141
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	1.385	0.04	0	0.028
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.195	0.01	0	0.003
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.863	0.05	0.01	0.048
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.609	0.04	0	0.025
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.792	0.05	0	0.041
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.404	0.02	0	0.012
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.83	0.05	0.01	0.045
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	3.288	0.11	0.01	0.137
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-4.578	0.15	0.02	0.252
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-14.568	0.21	0.02	0.296
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-25.844	0.37	0.12	0.853
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	32.023	0.45	0.39	1.268
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	32.023	0.45	0.62	1.268
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.793	0.05	0.01	0.041
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-1.479	0.09	0.02	0.131
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.698	0.1	0.01	0.169
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.866	0.11	0.02	0.2
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	6.362	0.2	0.05	0.464
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	2.446	0.08	0.01	0.079
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.15	0.01	0	0.003
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	1.173	0.04	0	0.021
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-1.876	0.06	0	0.049
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-2.059	0.07	0.01	0.057
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-2.197	0.07	0	0.065
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	2.967	0.1	0	0.112
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.506	0.05	0	0.032
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.195	0.01	0	0.004
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	1.311	0.04	0	0.025
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.384	0.01	0	0.003
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	1.368	0.04	0	0.027
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.453	0.01	0	0.003
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.621	0.02	0	0.006

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.804	0.03	0	0.01
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.954	0.03	0	0.014
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.256	0.04	0	0.023
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.768	0.02	0	0.009
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.6	0.02	0	0.006
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.404	0.01	0	0.003
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.554	0.02	0	0.005
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.093	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-1.695	0.05	0	0.041
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.923	0.03	0	0.013
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	1.51	0.02	0	0.004
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	1.51	0.02	0	0.005
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-4.681	0.07	0	0.036
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-4.681	0.07	0	0.036
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-4.681	0.07	0	0.034
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.017	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.019	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.138	0.01	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.188	0.01	0	0.001
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.095	0	0	0.001
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.428	0.01	0	0.003
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.59	0.02	0	0.006
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.683	0.02	0	0.007
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.866	0.03	0	0.012
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.195	0.01	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.093	0.01	0	0.003
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-5.703	0.08	0	0.052
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-5.703	0.08	0.01	0.052
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-5.853	0.08	0	0.055
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	5.322	0.11	0.01	0.111
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	5.322	0.11	0.02	0.111
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	5.322	0.11	0.01	0.112
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-3.133	0.06	0.01	0.041
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-6.099	0.12	0.01	0.142
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.877	0.05	0	0.049
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-2.491	0.08	0.01	0.082
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-3.775	0.08	0	0.059
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-3.925	0.08	0.01	0.063
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-4.093	0.08	0.01	0.068
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-4.243	0.09	0.01	0.073
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.572	0.09	0.02	0.146
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	1.377	0.08	0.01	0.114
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.691	0.04	0	0.032
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.15	0.01	0	0.002
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.427	0.02	0	0.012
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.259	0.01	0	0.005
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.892	0.03	0	0.013
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.69	0.02	0	0.007
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.862	0.06	0	0.047
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.573	0.03	0	0.022
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.213	0.01	0	0.004
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.039	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.165	0.01	0	0.003
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.938	0.02	0	0.006
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-2.965	0.06	0	0.038
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	2.09	0.07	0.01	0.059
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.707	0.04	0	0.033
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.914	0.05	0.01	0.054
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-1.139	0.04	0	0.019
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.225	0.01	0	0.001
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.716	0.04	0	0.034
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.609	0.04	0	0.02
801	P-1760	J-N2300E	J-N2310E	69.05	148.6	Asbestos Cement	100	-1.388	0.08	0.01	0.116
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-3.392	0.2	0	0.61
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-2.716	0.09	0.01	0.096
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.844	0.05	0.01	0.046
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.968	0.03	0	0.014
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.456	0.03	0	0
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.585	0.03	0	0.012
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.239	0.01	0	0.001
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.824	0.05	0	0.045
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.482	0.03	0	0.016
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.018	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	6.714	0.09	0.01	0.059
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.696	0.02	0	0.022

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-2.004	0.03	0	0.007
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	1.267	0.07	0.01	0.098
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.877	0.05	0.01	0.05
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.544	0.03	0	0.02
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.324	0.02	0	0.008
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-8.276	0.12	0.01	0.103
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.713	0.04	0.01	0.034
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.233	0.01	0	0.007
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-3.213	0.05	0	0.017
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	3.851	0.08	0	0.067
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-7.953	0.11	0.01	0.096
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.074	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.233	0.01	0	0.007
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.541	0.03	0	0.02
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.13	0.01	0	0.001
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.647	0.04	0	0.027
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.647	0.04	0.01	0.028
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.071	0	0	0
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.093	0.01	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.857	0.05	0.01	0.047
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.749	0.04	0	0.037
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.449	0.03	0	0.014
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.714	0.04	0	0.033
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-8.923	0.13	0	0.122
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.168	0.01	0	0.003
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-9.31	0.13	0.04	0.129
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	1.438	0.08	0.01	0.124
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	2.228	0.13	0	0.286
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-6.951	0.1	0.01	0.075
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-7.065	0.1	0.01	0.077
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-8.094	0.11	0.01	0.099
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	1.449	0.08	0.01	0.126
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.383	0.02	0	0.011
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.745	0.04	0	0.037
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.641	0.04	0	0.028
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-3.181	0.06	0.01	0.042
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.237	0.01	0	0.005
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-1.051	0.03	0	0.017
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-1.179	0.04	0	0.02
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	3.014	0.04	0	0.016
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.329	0	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.129	0.01	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	2.685	0.04	0	0.013
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	2.251	0.03	0	0.009
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	1.914	0.03	0	0.007
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.03	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.979	0.06	0	0.06
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	1.57	0.02	0	0.005
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.344	0.02	0	0.019
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.132	0.01	0	0.006
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.319	0.02	0	0.007
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.336	0.02	0	0.019
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.017	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.375	0.02	0	0.01
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.435	0.03	0	0.016
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.059	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.457	0.03	0	0.015
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.074	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.109	0.01	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.225	0.01	0	0.004
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.068	0	0	0.001
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.349	0.02	0	0.009
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.086	0	0	0.001
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-1.162	0.04	0	0.02
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	1.247	0.07	0	0.094
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-3.07	0.06	0.01	0.041
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.402	0.01	0	0.003
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.869	0.05	0.01	0.049
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.152	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.059	0	0	0.001
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	1.015	0.06	0.01	0.065
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.077	0	0	0.001
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.365	0.02	0	0.01
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-1.078	0.06	0	0.076
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-3.375	0.07	0.01	0.047
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	-0.573	0.03	0	0.023

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.787	0.05	0	0.041
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.374	0.02	0	0.01
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
894	P-2810	J-N4320E	J-N4310E	104.59	148.6	Asbestos Cement	100	1.074	0.06	0.01	0.072
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.615	0.04	0	0.026
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.714	0.04	0	0.034
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.481	0.01	0	0.001
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.019	0	0	0
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.494	0.03	0	0.017
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-2.792	0.06	0.01	0.034
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.369	0.01	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.857	0.01	0	0.002
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.779	0.01	0	0.001
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-1.172	0.02	0	0.003
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-2.178	0.04	0	0.021
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.018	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.018	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.186	0.01	0	0.003
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.882	0.01	0	0.002
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-1.526	0.02	0	0.004
912	P-3000	J-N4080E	J-N4081E	85.17	148.6	Asbestos Cement	100	0.093	0.01	0	0.001
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-3.713	0.05	0	0.024
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.219	0.01	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.321	0.01	0	0.002
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-4.472	0.06	0	0.033
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.2	0.01	0	0.003
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	0.05	0	0	0.001
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.133	0.01	0	0.002
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.352	0.02	0	0.009
921	P-3090	J-N4111E	J-N4110E	125.39	148.6	Asbestos Cement	100	-0.502	0.03	0	0.018
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	4.84	0.07	0	0.038
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-5.537	0.08	0	0.049
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.469	0.03	0	0.016
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.637	0.04	0	0.027
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.844	0.05	0	0.047
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-7.327	0.1	0.01	0.083
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.466	0.03	0	0.015
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.413	0.02	0	0.012
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	6.309	0.09	0.01	0.062
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	5.206	0.07	0	0.044
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.402	0.01	0	0.003
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.563	0.03	0	0.022
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.934	0.06	0	0.051
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.614	0.05	0	0.036
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.958	0.06	0.01	0.059
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.234	0.07	0.01	0.093
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-1.097	0.04	0	0.018
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-1.19	0.04	0	0.02
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.652	0.02	0	0.007
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.975	0.06	0	0.06
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-1.175	0.07	0.01	0.085
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.611	0.04	0	0.025
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-9.765	0.14	0.01	0.141
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-9.822	0.14	0.01	0.142
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-11.175	0.16	0.01	0.179
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-11.175	0.16	0.01	0.181
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.955	0.03	0	0.014
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.666	0.02	0	0.006
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.552	0.02	0	0.005
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-2.179	0.07	0	0.064
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-2.179	0.07	0	0.064
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	1.368	0.04	0	0.026
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	3.778	0.12	0.01	0.179
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	3.628	0.12	0.02	0.164
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.348	0.01	0	0.002
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.21	0.01	0	0.001
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-3.163	0.1	0.01	0.127
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-2.689	0.09	0.01	0.095
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.628	0.04	0	0.026
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.49	0.03	0	0.018
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.916	0.05	0.01	0.054
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.901	0.05	0	0.05
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.994	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	1.166	0.02	0	0.003
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.857	0.01	0	0.001

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.379	0.02	0	0.011
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.298	0.02	0	0.006
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.383	0.02	0	0.011
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.383	0.02	0	0.01
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.174	0.01	0	0.001
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.36	0.01	0	0
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.093	0.01	0	0.001
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-2.773	0.16	0.03	0.419
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-2.968	0.1	0.01	0.114
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-3.637	0.12	0.02	0.139
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-3.889	0.12	0.02	0.156
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.242	0.01	0	0.011
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.242	0.01	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.616	0.03	0	0.01
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	1.064	0.03	0	0.014
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-2.224	0.05	0	0.022
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	5.322	0.11	0.01	0.111
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.842	0.02	0	0.003
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-6.164	0.13	0.03	0.146
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	19.366	0.39	0.04	1.213
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	32.023	0.45	0.19	1.268
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	31.858	0.65	0.13	3.053
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.925	0.05	0	0.056
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-1.006	0.06	0.01	0.053
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.667	0.02	0	0.009
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.886	0.03	0	0.012
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.138	0.01	0	0.002
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.081	0	0	0.001
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-1.51	0.05	0	0.033
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-1.591	0.05	0	0.035
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	5.231	0.07	0.01	0.044
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	3.292	0.05	0	0.019
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	3.061	0.04	0	0.016
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	3.335	0.05	0	0.019
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.81	0.03	0	0.01
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.672	0.02	0	0.007
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.933	0.02	0	0.005
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.819	0.02	0	0.003
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.693	0.02	0	0.007
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.567	0.02	0	0.007
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.567	0.02	0	0.005
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.453	0.01	0	0.003
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-3.309	0.05	0	0.019
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-3.807	0.05	0	0.025
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-2.357	0.03	0	0.011
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.429	0.01	0	0.001
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	3.594	0.05	0	0.022
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	3.093	0.04	0	0.017
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.524	0.02	0	0.003
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.524	0.02	0	0.005
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-1.564	0.05	0	0.034
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.698	0.02	0	0.008
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.881	0.03	0	0.012
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-1.019	0.03	0	0.016
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	1.171	0.04	0	0.021
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	1.033	0.03	0	0.016
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-2.272	0.05	0	0.022
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-1.564	0.05	0	0.034
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-4.915	0.07	0	0.039
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-7.349	0.1	0	0.085
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	2.434	0.05	0	0.026
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	2.434	0.05	0	0.026
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	2.272	0.05	0	0.023
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	1.441	0.02	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-4.588	0.06	0	0.035
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	5.938	0.12	0.01	0.136
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	5.587	0.11	0.01	0.122
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	4.948	0.1	0.01	0.096
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	4.855	0.1	0	0.094
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	3.373	0.07	0	0.048
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	1.413	0.05	0	0.028
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	1.23	0.04	0	0.022
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	1.104	0.04	0	0.018

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	1.104	0.04	0	0.018
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-3.259	0.07	0	0.045
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.183	0.01	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-2.569	0.08	0	0.087
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-2.776	0.09	0.01	0.1
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.093	0.01	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-2.944	0.09	0.01	0.093
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-2.944	0.09	0.01	0.094
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-3.139	0.1	0.01	0.105
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-2.585	0.08	0.01	0.073
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.825	0.03	0	0.01
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-6.657	0.21	0.04	0.424
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.249	0.01	0	0.001
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	7.623	0.16	0.03	0.216
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	7.242	0.15	0.01	0.195
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-14.12	0.2	0.01	0.278
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-16.685	0.24	0.03	0.379
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.97	0.02	0	0.004
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.499	0.01	0	0.001
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	4.363	0.09	0.01	0.065
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.219	0	0	0
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.243	0	0	0
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	3.913	0.08	0	0.053
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	1.675	0.02	0	0.005
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.687	0.02	0	0.007
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.833	0.04	0	0.014
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-13.965	0.2	0.05	0.228
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	25.844	0.37	0.03	0.716
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-17.507	0.25	0.03	0.347
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	19.117	0.27	0.15	0.409
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	17.507	0.25	0.09	0.347
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-6.837	0.1	0.01	0.061
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-6.837	0.1	0	0.06
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	3.847	0.05	0	0.025
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.979	0.06	0	0.061
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.979	0.06	0.01	0.061
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.96	0.06	0.01	0.058
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	7.347	0.1	0	0.069
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	2.21	0.13	0	0.225
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.033	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.093	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-44.366	0.63	0.89	2.319
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-44.366	0.63	0.21	2.319
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-44.366	0.63	0.34	2.319
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-44.366	0.63	0.3	2.319
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-44.366	0.63	0.28	2.319
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-44.366	0.63	0.11	2.319
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-44.366	0.63	0.07	2.318
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-25.844	0.37	0.03	0.851
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-11.879	0.17	0.03	0.202
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.522	0.02	0	0.003
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-1.481	0.02	0	0.003
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.43	0.01	0	0.003
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.069	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.463	0.01	0	0.003
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.154	0	0	0.001
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.059	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.242	0.01	0	0.001
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.473	0.02	0	0.003
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.473	0.01	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.499	0.01	0	0.001
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	1.751	0.04	0	0.012
1343	P-5833	J-10	J-12	97.69	250	PVC	110	1.139	0.02	0	0.005
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.422	0.01	0	0.002
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.321	0.01	0	0.002
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	1.125	0.02	0	0.005
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.942	0.02	0	0.004
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.942	0.02	0	0.004
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	1.387	0.02	0	0.003
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	1.099	0.02	0	0.003
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	3.874	0.08	0	0.052

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	3.691	0.08	0	0.047
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.275	0.01	0	0.001
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.188	0.01	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.108	0	0	0.001
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.103	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.286	0.01	0	0.001
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.431	0.01	0	0.001
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.412	0.01	0	0.003
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.662	0.01	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-1.074	0.02	0	0.005
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.195	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-1.269	0.03	0	0.006
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-2.341	0.05	0	0.022
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-3.988	0.08	0	0.066
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-1.395	0.03	0	0.008
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-1.647	0.03	0	0.01
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.252	0.01	0	0.005
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.833	0.04	0	0.011
1395	P-5863	J-33	J-34	95	250	PVC	110	1.248	0.03	0	0.006
1397	P-5864	J-34	J-35	89.81	250	PVC	110	1.053	0.02	0	0.005
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.069	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.277	0.01	0	0.001
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.364	0.01	0	0.002
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.364	0.01	0	0.002
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.403	0.01	0	0.002
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.442	0.01	0	0.002
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.46	0.01	0	0.003
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.231	0.01	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-1.236	0.04	0	0.018
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.444	0.01	0	0.003
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.213	0.01	0	0.001
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	4.411	0.14	0.02	0.197
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.144	0.01	0	0.002
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	4.267	0.14	0.02	0.186
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	3.721	0.12	0.01	0.144
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	2.5	0.08	0.01	0.069
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	2.374	0.08	0	0.063
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-14.115	0.2	0.02	0.278
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-11.993	0.17	0.01	0.206
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	2.122	0.07	0	0.051
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.825	0.03	0	0.009
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.327	0.01	0	0.002
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.114	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.465	0.01	0	0.004
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.108	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.237	0.01	0	0.001
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-13.319	0.19	0.02	0.25
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-13.625	0.19	0.01	0.259
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.306	0.02	0	0.007
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-13.625	0.19	0.01	0.219
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-13.895	0.2	0.02	0.227
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.27	0.02	0	0.004
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.76	0.02	0	0.007
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.544	0.02	0	0.004
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.544	0.02	0	0.005
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-1.03	0.01	0	0.002
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-1.94	0.03	0	0.006
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.727	0.02	0	0.006
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.414	0.01	0	0.001
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.414	0.01	0	0.002
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.27	0.01	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.126	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	1.121	0.04	0	0.015
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.959	0.03	0	0.012
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	2.647	0.04	0	0.012
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	2.56	0.04	0	0.012
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.306	0.01	0	0.002
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.306	0.02	0	0.006
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-1.71	0.03	0	0.012
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-1.923	0.04	0	0.014
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-1.128	0.04	0	0.016
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.522	0.02	0	0.003

**Existing Development
Peak Hour Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	18.285	0.26	0.02	0.32
1511	P-5926	J-79	J-80	321.67	300	PVC	120	18.285	0.26	0.1	0.321
1513	P-5927	J-80	J-81	352.13	300	PVC	120	7.217	0.1	0.02	0.057
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.552	0.02	0	0.004
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.552	0.02	0	0.005
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-11.068	0.35	0.06	0.912
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	6.335	0.09	0	0.05
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	7.217	0.1	0.05	0.057
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	6.335	0.09	0.01	0.045
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-6.335	0.09	0.05	0.045
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-6.335	0.09	0.01	0.045
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.942	0.02	0	0.004
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-1.134	0.02	0	0.006
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.322	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.535	0.01	0	0.001
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.202	0.01	0	0.001
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.251	0.01	0	0.001
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.28	0.01	0	0.001
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.28	0.01	0	0.001
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	9.558	0.14	0.01	0.113
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	9.558	0.14	0.01	0.113
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	0.124	0	0	0
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.124	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	0	0	0	0
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.918	0.04	0	0.017
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-2.062	0.04	0	0.019
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-3.184	0.05	0	0.017
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-3.988	0.06	0	0.027
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	110	0.381	0.01	0	0.001
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	110	0.381	0.01	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	110	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.84	0.06	0	0.032
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-1.456	0.05	0	0.021
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.56	0.02	0	0.003
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.338	0.01	0	0.002
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.262	0.01	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.674	0.02	0	0.005
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.126	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.375	0.01	0	0.002
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.394	0.01	0	0.002
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.097	0	0	0.001
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.136	0	0	0.001
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.107	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.586	0.02	0	0.004
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.239	0.01	0	0.001
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.031	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.095	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.221	0.01	0	0.001
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.082	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.044	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.17	0.01	0	0.001
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.422	0.01	0	0.002
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.296	0.01	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-1.456	0.05	0	0.022
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-1.456	0.05	0	0.021
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.027	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	6.362	0.2	0.04	0.465
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.082	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.143	0	0	0
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.815	0.01	0	0.001
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-1.184	0.02	0	0.002

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	115	TRUE	239.299	158.4	140	J-4460I
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.138	250	TRUE	260.243	149.7	140	J-4460I
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.19	250	TRUE	258.641	140	165.2	J-S1070E
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.268	250	TRUE	258.674	140	164	J-S1080E
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.218	250	TRUE	273.176	140	183.2	J-S1070E
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.154	250	TRUE	310.616	140	157.8	J-S1060E
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.16	250	TRUE	291.167	140	200.1	J-S2032E
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.192	250	TRUE	299.204	140	167.1	J-S2033E
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.178	250	TRUE	271.727	140	197.6	J-S2034E
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.18	250	TRUE	267.79	140	204	J-S2033E
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.174	250	TRUE	281.171	140	147.5	J-69
195	J-S2100E	23,886.25	5,961,252.83	699	0.162	250	TRUE	270.518	143.2	140	J-69
196	J-S2080E	23,585.41	5,961,251.56	699	0.162	250	TRUE	272.684	140	153.2	J-S2070E
197	J-S2070E	23,468.77	5,961,251.56	699	0.118	250	TRUE	268.244	140	167.1	J-S2080E
198	J-S2060E	23,444.47	5,961,408.54	699	0.1	250	TRUE	264.135	140	200.4	J-S2070E
199	J-S2040E	23,441.07	5,961,591.28	699	0.136	250	TRUE	279.857	140	148	J-S2051E
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.108	250	TRUE	323.166	140	165.4	J-S2040E
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.234	250	TRUE	294.969	140	204.3	J-S2032E
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.092	250	TRUE	316.808	140	173.6	J-S1030E
203	J-S2010E	23,396.57	5,962,474.58	700	0	115	TRUE	350	266.7	263	J-S2011E
204	J-N4200E	23,397.75	5,962,576.48	701	0	180	TRUE	350	293.1	304.6	J-S2011E
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.072	250	TRUE	350	299.8	308.1	J-N4200E
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.23	115	TRUE	350	279.7	283.2	J-N2171E
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.076	115	TRUE	350	261.5	254.7	J-N2171E
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.084	115	TRUE	127.477	140	463.6	J-N4110E
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.046	115	TRUE	350	249.1	242.3	J-N2181E
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.112	115	FALSE	105.108	140	470.3	J-139
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.1	115	TRUE	350	245.5	265.3	J-N2181E
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.1	115	TRUE	350	235.2	251.7	J-N2210E
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.092	115	TRUE	173.089	140	304.7	J-N2221E
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.1	115	TRUE	186.944	140	256.7	J-N2201E
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.13	115	TRUE	350	255.4	270.6	J-N2221E
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.1	115	TRUE	350	228	252.8	J-N2200E
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.122	115	TRUE	350	273.1	281.7	J-N3260E
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.158	115	TRUE	350	254	270	J-N2255E
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	115	TRUE	350	234.3	225.4	J-N2255E
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	115	TRUE	229.839	150.8	140	J-N2255E
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.092	115	TRUE	168.059	140	303.3	J-N2255E
222	J-N2255E	24,475.27	5,962,571.66	700	0.062	115	FALSE	106.679	140	427	J-N2252E
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.054	115	TRUE	167.93	140	141	J-3785F
224	J-N2260E	24,501.40	5,962,673.31	699	0	115	TRUE	350	232.4	240.4	J-59
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.046	115	TRUE	309.232	143.9	140	J-N3301E
226	J-N3301E	24,349.68	5,962,783.56	699	0.192	115	FALSE	108.492	140	464.9	J-N3321E
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.146	115	TRUE	171.822	140	190.9	J-N3450E
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.112	115	TRUE	164.103	140	181.9	J-N3450E
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.062	115	TRUE	174.667	140	222.4	J-N3440E
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.122	115	TRUE	137.594	140	287.4	J-N3440E
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.054	115	TRUE	306.395	140.1	166	J-N3321E
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	115	TRUE	267.314	157.6	140	J-N3321E
233	J-N3321E	24,349.51	5,962,866.08	700	0.13	115	FALSE	104.65	140	460.9	J-N3330E
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.343	250	TRUE	274.498	140	235.1	J-N3341E
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.138	115	TRUE	267.926	140	249.4	J-N3341E
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.1	115	TRUE	173.608	140	194.3	J-N3390E
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.122	115	TRUE	138.643	140	328	J-N3351E
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.122	115	TRUE	158.549	140	253.9	J-N3352E
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.108	115	TRUE	285.42	140	176.2	J-N3351E
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.138	115	TRUE	129.343	140	253.5	J-N3380E
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.146	115	TRUE	115.853	140.2	312.9	J-N3390E
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.23	115	TRUE	128.632	140	256	J-N3380E
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.076	115	TRUE	317.412	140	176.8	J-N3370E
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.112	115	TRUE	350	284.5	301.8	J-N1090E
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.23	115	TRUE	350	282.9	293.4	J-N1065E
246	J-N1050E	24,728.87	5,962,855.33	698	0	180	TRUE	350	301.9	308	J-3840F
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.158	115	TRUE	350	303.9	294.6	J-79
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	115	TRUE	350	276	310.7	J-N1033E
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	115	TRUE	350	408.1	408.3	J-N1010E
250	J-S1010E	24,688.47	5,961,838.45	701	0	115	TRUE	350	239.7	284.9	J-S1020E
251	J-S1020E	24,215.83	5,961,901.63	700	0	250	TRUE	332.193	140	158	J-S1030E
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.076	115	TRUE	236.672	140	238.8	J-N1102E
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.084	115	TRUE	297.213	140	158.6	J-N1073E
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.122	115	TRUE	276.591	140	235.9	J-183
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.046	115	TRUE	350	272.3	282.7	J-N1090E
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.146	115	TRUE	166.963	140	257.5	J-N1102E
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.112	115	TRUE	162.733	140	281.9	J-N1101E
258	J-N1420E	24,855.27	5,963,531.46	698	0	115	TRUE	271.151	140	245.1	J-N1410E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.092	115	TRUE	271.964	140	164	J-N1400E
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.054	115	TRUE	225.329	143.9	140	J-N1304E
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.054	115	TRUE	277.508	140	177.2	J-N1330E
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.03	115	TRUE	252.469	141	140	J-N1311E
263	J-N1311E	24,830.34	5,963,795.82	698	0.1	115	TRUE	175.055	140	332.4	J-N1310E
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.054	115	TRUE	268.59	140	161.7	J-N1301E
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.122	115	TRUE	223.112	140	231.4	J-N1302E
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.092	115	TRUE	214.703	140	205.2	J-N1304E
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.062	115	TRUE	266.735	140	155.7	J-N1291E
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	115	TRUE	219.406	140	141	J-N1292E
269	J-N1292E	24,905.57	5,963,948.00	698	0.13	115	TRUE	141.619	140	355.8	J-N1291E
270	J-N1245E	24,928.90	5,964,040.14	697	0.062	115	TRUE	204.988	140	140.6	J-82
271	J-N1244E	24,955.72	5,964,184.39	697	0.112	115	TRUE	184.256	140.1	159.1	J-82
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.112	115	TRUE	201.015	140.1	157.2	J-82
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.084	115	TRUE	260.746	140	167.2	J-N1281E
274	J-N1281E	24,668.79	5,963,904.06	698	0.112	115	TRUE	230.317	140	213.1	J-N1282E
275	J-N1282E	24,737.99	5,963,838.74	697	0.122	115	TRUE	218.463	140	241.6	J-N1281E
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.1	115	TRUE	228.921	140	223.8	J-N1282E
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.076	115	TRUE	272.055	140	162.8	J-N1283E
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.038	115	TRUE	276.807	140	154.4	J-N1342E
279	J-N1242E	24,655.18	5,964,247.76	698	0.112	115	TRUE	214.922	140	247.9	J-82
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.054	115	TRUE	250.058	140	154.4	J-N1242E
281	J-N1272E	24,643.90	5,964,097.68	698	0.1	115	TRUE	226.968	140	255.2	J-N1270E
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.062	115	TRUE	255.582	140	143.9	J-N1271E
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.062	115	TRUE	191.766	140.1	296.9	J-N1270E
284	J-N1240E	24,492.27	5,964,163.87	698	0	115	TRUE	277.502	140	144.3	J-N1251E
285	J-N1220E	24,450.28	5,964,244.12	698	0	115	TRUE	319.423	140	168	J-N1210E
286	J-N1210E	24,398.26	5,964,217.60	698	0	115	TRUE	327.292	140.1	144.5	J-N1220E
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.046	115	TRUE	350	144.7	149.7	J-N1210E
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.062	115	TRUE	350	155.1	181.8	J-N1190E
289	J-N1170E	24,279.97	5,963,894.02	698	0	180	TRUE	350	162.8	190.8	J-N1180E
290	J-N1160E	24,301.35	5,963,782.73	698	0	180	TRUE	350	187.3	194.8	J-78
291	J-N1150E	24,302.39	5,963,747.88	698	0.322	115	TRUE	350	198.3	188.5	J-78
292	J-N1370E	24,390.29	5,963,759.89	698	0.062	115	TRUE	292.917	140	161.6	J-N1371E
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.046	115	TRUE	247.332	140	142	J-N1361E
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.092	115	TRUE	147.788	140	382.4	J-N1360E
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.092	115	TRUE	228.85	140	154.7	J-N1372E
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.046	115	TRUE	226.735	140	140	J-N1345E
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.062	115	TRUE	230.775	140	212.9	J-N1342E
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.03	115	TRUE	245.471	150.8	140	J-N1342E
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.13	115	TRUE	155.108	140	337.9	J-N1371E
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.062	115	TRUE	157.713	140	337.8	J-N1344E
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.092	115	FALSE	96.587	140	468.3	J-N1343E
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	115	TRUE	350	215.8	214.9	J-78
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.1	115	TRUE	350	241.3	254.3	J-78
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	115	TRUE	350	271	278	J-N1130E
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	115	TRUE	350	187.5	248.2	J-N3182E
306	J-N3182E	24,109.98	5,963,355.50	698	0	250	TRUE	350	162.1	248.2	J-N3181E
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	250	TRUE	350	195.4	243.3	J-N3182E
308	J-N3190E	23,838.79	5,963,334.11	699	0.064	250	TRUE	350	248.5	265.8	J-N3200E
309	J-N3210E	23,839.27	5,963,187.82	699	0.112	115	TRUE	350	197.7	290.5	J-N3200E
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.184	115	TRUE	350	243.1	278.5	J-N3230E
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.112	115	TRUE	350	233.9	254.2	J-N3240E
312	J-N3420E	23,966.13	5,962,983.37	698	0	115	TRUE	300.606	140	179.8	J-N3410E
313	J-N3240E	23,840.96	5,962,916.81	698	0.1	115	TRUE	350	196.1	259	J-N3250E
314	J-N3250E	23,877.98	5,962,777.15	698	0.112	115	TRUE	350	170.4	253.7	J-N3260E
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.1	115	TRUE	350	207	251.3	J-N3250E
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.13	115	TRUE	171.494	140	337.4	J-N2381E
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.146	115	TRUE	183.174	140	199.3	J-N2383E
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.076	115	TRUE	141.223	147.8	140	J-N2383E
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.1	115	FALSE	87.551	140	364	J-N2382E
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.112	115	TRUE	136.951	140	253.1	J-N2383E
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.122	115	TRUE	300.611	140	193.1	J-N2391E
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.176	115	TRUE	302.42	140	249	J-N2391E
323	J-N2370E	23,750.00	5,963,047.05	699	0.092	115	TRUE	350	153.5	218.5	J-N2360E
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.1	115	TRUE	302.393	140	142.9	J-N2363E
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.13	115	FALSE	105.688	144.1	140.2	J-N2363E
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.168	115	FALSE	89.011	140	195.5	J-N2363E
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.084	115	FALSE	84.918	140	235.5	J-N2362E
328	J-N3200E	23,838.64	5,963,310.50	699	0.062	115	TRUE	350	251.4	265	J-N3190E
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.046	115	TRUE	350	163.6	221.3	J-N2350E
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.054	115	TRUE	346.955	140	222.1	J-N2331E
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.138	115	TRUE	173.374	140	439	J-N2350E
332	J-N2350E	23,748.75	5,963,237.41	699	0	115	TRUE	324.912	140	222.7	J-N2360E
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.276	115	TRUE	336.916	140	160.1	J-N3130E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.042	250	FALSE	207.726	142.9	140	J-N2301E
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.406	115	FALSE	108.665	140	412.6	J-N2300E
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	250	TRUE	350	286.4	296.7	J-N2320E
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.112	115	TRUE	350	241	281.2	J-N2330E
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.054	115	TRUE	148.306	140	277.4	J-N2401E
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.134	115	TRUE	325.334	140	198.6	J-N2401E
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.036	250	TRUE	350	299.2	305.2	J-N2141E
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.042	250	TRUE	350	261.4	280.6	J-N2133E
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	250	TRUE	350	222.3	282	J-N2400E
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.032	250	TRUE	350	225.7	252.4	J-N2144E
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.022	115	TRUE	172.351	140	422	J-N4530E
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	250	TRUE	350	198.9	284.4	J-N2133E
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.094	250	TRUE	350	292	295.4	J-N2131E
347	J-N2120E	23,392.51	5,963,312.31	699	0.09	250	TRUE	350	322.4	322.2	J-139
348	J-N2121E	23,395.90	5,963,312.31	699	0	250	TRUE	350	321.5	322.4	J-139
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.044	115	TRUE	272.928	140	405.7	J-139
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.014	250	TRUE	336.208	140	285.6	J-N3142E
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	250	TRUE	350	316.8	317.4	J-139
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	250	TRUE	350	285.4	317.5	J-139
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	250	TRUE	350	315.8	316.5	J-139
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.133	250	TRUE	350	316.1	317	J-139
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.03	115	TRUE	350	318.7	316.4	J-139
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.076	250	TRUE	350	314.2	311.6	J-139
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	250	TRUE	350	308.1	309.7	J-139
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.138	115	TRUE	243.683	140	228	J-N4470E
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	115	TRUE	172.256	140	382.6	J-N4460E
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.146	115	TRUE	154.315	140	141	J-N4481E
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.062	115	FALSE	80.47	140	403.7	J-N4480E
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.112	115	TRUE	235.576	140	358.1	J-N4530E
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.276	115	TRUE	250.714	140	310.8	J-N2144E
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.076	115	TRUE	350	236.2	238.1	J-N4191E
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.146	115	TRUE	350	237.1	234.7	J-N4191E
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.112	115	TRUE	148.514	140	445	J-N4110E
367	J-N4510E	23,116.00	5,962,864.49	700	0.084	115	TRUE	265.719	140	182.8	J-N4500E
368	J-N4500E	23,107.06	5,962,864.49	700	0.1	115	TRUE	265.748	140	182.8	J-N4510E
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.076	115	TRUE	350	170	194.8	J-N4131E
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.076	115	TRUE	350	187.9	204.6	J-N4150E
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.076	115	TRUE	350	208.4	217.9	J-N4160E
372	J-N4490E	23,107.28	5,962,982.98	700	0.122	115	TRUE	205.485	144.9	140	J-N4491E
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.092	115	TRUE	261.169	140	276.8	J-N4381E
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.114	250	TRUE	350	247	266.8	J-N4381E
375	J-N4350E	23,104.18	5,963,517.50	699	0.084	115	TRUE	350	156.6	255.3	J-N4340E
376	J-N3090E	23,166.53	5,963,519.61	699	0	250	TRUE	350	259.3	294	J-N4350E
377	J-N2070E	23,171.01	5,963,524.71	699	0	250	TRUE	350	317.6	312.3	J-N3080E
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	115	TRUE	350	307.6	319	J-N2070E
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	250	TRUE	350	317.7	314.9	J-N3060E
380	J-N2050E	23,164.50	5,963,745.83	699	0	250	TRUE	350	319.6	325.4	J-N3040E
381	J-N2040E	23,164.50	5,963,849.54	699	0	180	TRUE	350	331.4	334.9	J-N3030E
382	J-N2020E	23,168.07	5,964,021.69	699	0	180	TRUE	350	364.3	361.3	J-175
383	J-N2010E	23,229.47	5,964,021.52	699	0.02	250	TRUE	350	371	375.6	J-175
384	J-N3010E	23,161.69	5,964,008.03	699	0.908	115	TRUE	322.65	140	206.1	J-N3020E
385	J-N3030E	23,160.50	5,963,849.48	699	0.062	115	TRUE	350	274.2	290.7	J-N3031E
386	J-N3031E	23,161.50	5,963,836.74	699	0.076	115	TRUE	344.919	140	254	J-N3032E
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	115	TRUE	350	268	285.4	J-N3050E
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.112	115	TRUE	350	141.2	282.7	J-N3051E
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	115	TRUE	350	253.1	264	J-N3070E
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.112	115	TRUE	350	174.8	274.3	J-N3060E
391	J-N3032E	22,992.17	5,963,835.82	699	0.122	115	TRUE	165.562	140	380.8	J-N3051E
392	J-N3051E	22,992.42	5,963,732.81	700	0.122	115	TRUE	220.034	140.1	269.9	J-N3032E
393	J-N3071E	22,992.67	5,963,640.74	700	0.13	115	TRUE	239.169	140	331.5	J-N3051E
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	250	TRUE	329.464	140	248.6	J-N4330E
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.054	115	TRUE	318.516	140	221.8	J-N4331E
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.104	250	TRUE	350	205.8	222.3	J-N4400E
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.062	115	TRUE	275.824	140	275.8	J-N4430E
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.062	250	TRUE	306.684	140	254.5	J-N4330E
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.012	250	FALSE	227.14	140	261.8	J-N4321E
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.192	115	TRUE	177.148	140	365.1	J-N4320E
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	250	TRUE	284.534	140.1	191.2	J-N4311E
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.052	250	TRUE	349.782	140	148.7	J-N4401E
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.143	250	FALSE	194.281	140	203.8	J-N4430E
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	250	FALSE	207.264	140	156.8	J-N4420E
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.092	115	FALSE	89.341	140	433	J-N4490E
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.158	115	TRUE	293.273	140	145.4	J-N3411E
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.066	115	TRUE	155.38	140	408	J-N4401E
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.062	115	TRUE	295.796	140	173.1	J-8

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.342	115	TRUE	173.015	140	385.2	J-139
410	J-N4410E	22,639.90	5,963,300.90	701	0.08	250	TRUE	318.875	140	166.2	J-N4301E
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	250	TRUE	306.585	146	140	J-8
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	250	TRUE	280.872	152.1	140	J-8
413	J-N4010E	22,546.33	5,963,750.87	700	0.234	250	TRUE	272.805	153.9	140	J-8
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.262	115	TRUE	311.848	140	144.8	J-8
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	250	TRUE	322.973	148.7	140	J-139
416	J-N4041E	22,443.94	5,963,514.35	701	0	115	TRUE	210.557	140	239.4	J-N4042E
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.112	115	TRUE	164.067	140	348.9	J-N4041E
418	J-N4043E	22,444.72	5,963,305.56	701	0.464	115	TRUE	295.009	140	168.8	J-N4042E
419	J-N4070E	22,557.86	5,963,211.47	701	1.1	115	TRUE	319.253	147.5	140	J-139
420	J-N4080E	22,553.97	5,963,123.99	701.5	1.396	115	TRUE	318.86	140	144.9	J-N4082E
421	J-N4081E	22,468.80	5,963,123.50	701	0	180	FALSE	109.035	140	140	J-N4082E
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.146	115	TRUE	318.143	141	140	J-N4092E
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.146	115	TRUE	168.624	140	385.9	J-N4092E
424	J-N4092E	22,681.89	5,962,970.03	702	0.214	115	TRUE	165.54	140	390.3	J-N4090E
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.112	115	TRUE	319.717	140	147.5	J-N4104E
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.1	115	TRUE	130.988	140	215.1	J-N4102E
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.122	115	TRUE	116.778	140	212	J-N4104E
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.054	115	TRUE	115.965	143.9	140	J-N4104E
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.1	115	TRUE	128.668	140	205.3	J-N4104E
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.13	115	TRUE	320.231	140	144.4	J-N4111E
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.092	115	TRUE	330.662	140	147.3	J-N4110E
432	J-N4121E	22,725.05	5,962,737.13	701	0.112	115	TRUE	145.391	140	288.4	J-N4143E
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.138	115	TRUE	151.206	140	265.5	J-N4121E
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.038	115	TRUE	225.626	140	198.5	J-N4143E
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.016	115	TRUE	347.946	140	140	J-N4141E
436	J-N4431E	22,871.76	5,963,060.11	701	0.1	115	TRUE	170.427	140	312.1	J-N4430E
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.092	115	TRUE	338.218	146.9	140	J-N4131E
438	J-N4131E	22,739.70	5,962,940.69	702	0.268	115	TRUE	179.848	140.1	390	J-N4110E
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.184	115	TRUE	169.425	140	417.3	J-N3340E
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.062	115	TRUE	260.425	140	200.7	J-N3321E
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.038	115	TRUE	350	272.2	282.4	J-N1100E
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	115	TRUE	350	270	279.1	J-N1120E
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.046	115	TRUE	242.238	140	206.9	J-N1270E
444	J-N1246E	24,900.57	5,964,065.27	697	0.076	115	TRUE	194.733	140.1	176.8	J-82
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	115	TRUE	269.698	140	199	J-N1320E
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.112	115	TRUE	120.464	140	410.9	J-N1302E
447	J-N1400E	24,827.83	5,963,657.23	698	0.1	115	TRUE	264.709	140	183.8	J-N1410E
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.092	115	TRUE	270.297	140	235.2	J-N1430E
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.13	115	TRUE	268.52	140	176.3	J-N1072E
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.092	115	TRUE	214.474	140	373.9	J-N4500E
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.062	115	TRUE	344.616	140	142.9	J-N4142E
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.206	250	TRUE	301.878	144.4	140	J-8
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.054	115	TRUE	191.468	140.1	391.1	J-N4450E
454	J-N3020E	23,160.99	5,963,967.57	699	0	180	TRUE	239.591	140	392.2	J-N3010E
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.062	115	TRUE	221.593	150.8	140	J-N2255E
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.13	115	TRUE	242.993	140	251.8	J-N1073E
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.168	115	TRUE	282.493	140	272.8	J-N1450E
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.122	115	TRUE	350	152.5	148.2	J-N1471E
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	115	TRUE	341.242	140	147.1	J-N3120E
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.04	250	TRUE	350	152.3	166.2	J-N3130E
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.368	115	TRUE	334.171	140	213.8	J-N3140E
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	180	TRUE	350	151.8	194.9	J-75
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.108	250	TRUE	347.521	140	189.4	J-140
464	J-N3160E	23,825.34	5,963,511.25	699	0.078	250	TRUE	350	208.9	236	J-30
465	J-N3170E	23,903.33	5,963,511.58	699	0.168	250	TRUE	350	241.8	254.6	J-76
466	J-N3180E	23,907.72	5,963,334.91	699	0	250	TRUE	350	259	281.9	J-N3181E
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	250	TRUE	328.501	141	140	J-S2021E
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.11	250	TRUE	321.546	140	155.6	J-S1040E
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.054	115	TRUE	160.585	140	227	J-N2321E
470	J-N1250E	24,499.78	5,964,149.64	698	0.054	115	TRUE	264.607	140	140	J-N1251E
471	J-N1251E	24,455.84	5,964,129.52	698	0.092	115	TRUE	146.635	140	398.8	J-N1250E
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.054	115	TRUE	125.572	140	445.4	J-N1230E
473	J-N1230E	24,475.43	5,964,196.22	698	0	115	TRUE	286.963	140	145.9	J-N1231E
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	115	TRUE	223.466	162.8	140	J-4460I
475	J-S2140E	24,039.65	5,960,875.68	698	0.154	115	TRUE	220.465	162.1	140	J-69
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	115	TRUE	217.944	161.5	140	J-69
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.122	115	TRUE	219.21	147.6	140	J-S2170E
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.112	115	TRUE	214.349	140	152.6	J-S2180E
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.092	115	TRUE	196.015	140	197.4	J-S2192E
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.112	115	TRUE	206.404	142	140.1	J-S2192E
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.076	115	TRUE	199.592	140	142.7	J-S2194E
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.084	115	TRUE	194.942	140	140	J-S2194E
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.084	115	TRUE	183.604	140.1	158.4	J-S2202E

**Existing Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	115	TRUE	183.749	140.1	157.8	J-S2203E
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.076	115	TRUE	185.349	140.1	153.1	J-S2202E
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.112	115	TRUE	204.785	140.7	140.1	J-S2220E
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.046	115	TRUE	213.006	141.6	140.1	J-S2220E
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.076	115	TRUE	215.442	140	140.5	J-S2170E
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.334	115	TRUE	194.842	141.6	140.1	J-S2220E
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.046	115	TRUE	186.604	140.1	141.6	J-S2240E
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	115	TRUE	185.091	140	140	J-S2240E
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.016	115	TRUE	179.89	140.1	142.5	J-S2250E
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	115	TRUE	175.64	140.1	156.7	J-S2240E
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	115	TRUE	203.356	140	163.5	J-S1160E
495	J-S2195E	23,781.62	5,960,412.85	698	0	115	TRUE	174.423	140.1	181.4	J-S2194E
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	115	TRUE	185.431	140.1	145	J-S2195E
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.112	115	TRUE	200.909	140	158.1	J-S1150E
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.122	115	TRUE	179.677	140.1	178	J-S1140E
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.092	115	TRUE	182.596	140.1	172.1	J-S1150E
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.054	115	TRUE	199.858	140	144.5	J-S1140E
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.092	115	TRUE	190.235	140.1	184.8	J-S1140E
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	115	TRUE	204.374	141.6	140.1	J-S1130E
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	250	TRUE	260.996	148.9	140	J-69
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	115	TRUE	229.18	140	159.9	J-S1110E
505	J-S1110E	24,033.48	5,960,926.97	698	0.108	115	TRUE	211.255	140	153.3	J-S1130E
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.061	250	TRUE	350	156.7	157.7	J-N1200E
507	J-N1600E	24,201.37	5,964,131.25	698	0.112	115	TRUE	337.574	144.9	140	J-N1601E
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.13	115	TRUE	330.894	140	140	J-46
509	J-N1620E	24,074.31	5,964,072.83	699	0.062	115	TRUE	332.38	140	175.1	J-N1630E
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.046	115	TRUE	335.766	140	163	J-N1631E
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.076	115	TRUE	334.037	140	178.7	J-N1630E
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.122	115	TRUE	268.36	140	206.8	J-N1632E
513	J-N1632E	24,036.37	5,963,917.92	700	0.084	115	TRUE	256.943	140	234.6	J-N1651E
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	115	TRUE	277.898	140	177	J-N1632E
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	115	TRUE	350	153.7	152.6	J-N1651E
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.122	115	TRUE	183.419	140.1	409.6	J-N1600E
517	J-N1060E	24,577.21	5,963,109.12	697	0	180	TRUE	350	286.4	285	J-N1061E
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.138	115	TRUE	323.666	140.1	218.7	J-N1062E
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.112	115	TRUE	280.805	140	198.9	J-N1500E
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.092	115	FALSE	86.503	140	288.7	J-N4103E
521	J-N4082E	22,469.20	5,963,082.83	701	0.062	115	FALSE	90.445	140	245.6	J-N4081E
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	115	TRUE	281.738	140	195.8	J-N1062E
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.13	115	TRUE	296.155	140	190.9	J-N1500E
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.18	115	TRUE	350	167.1	203.9	J-N1490E
526	J-N1471E	24,945.50	5,963,280.47	699	0	180	TRUE	243.101	140	342.3	J-N1470E
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	115	TRUE	350	148.4	225.5	J-N1480E
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	115	TRUE	350	196.5	223.1	J-48
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.166	250	TRUE	277.021	140	245.8	J-S2020E
530	J-S2050E	23,441.95	5,961,556.46	699	0	250	TRUE	274.683	140	140	J-S2051E
531	J-S2051E	23,344.97	5,961,508.86	699	0.254	250	FALSE	219.734	140	182.1	J-144
532	J-N1065E	24,522.60	5,963,163.07	697	1.71	115	TRUE	350	282	292.9	J-N1070E
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.314	115	TRUE	282.272	140	153.2	J-N3412E
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	115	TRUE	270.601	140	175.8	J-2
537	J-3550I	23,858.78	5,963,861.50	697.8	0.154	115	TRUE	350	234.1	231.3	J-43
538	J-3560I	23,895.14	5,963,776.63	698.8	0.154	115	TRUE	350	169.8	160.5	J-43
539	J-3570I	23,930.36	5,963,667.29	699	0.154	115	TRUE	350	150.7	140.9	J-44
540	J-3580I	23,794.98	5,963,838.03	698	0.13	115	TRUE	350	240.4	232.4	J-22
541	J-3590F	23,690.63	5,963,983.45	697.5	0.122	115	TRUE	350	212.9	208.5	J-41
542	J-3600I	23,601.86	5,963,939.64	698.3	0.192	115	TRUE	350	189.1	195.2	J-18
543	J-3610I	23,453.97	5,963,928.59	699	0.264	115	TRUE	350	181.1	175.2	J-3620F
544	J-3620F	23,389.20	5,964,002.63	699.6	0	115	TRUE	272.949	140	329.3	J-3610I
548	J-3660F	23,675.98	5,964,023.67	697	0	115	TRUE	350	182	171.3	J-33
551	J-3690I	22,621.02	5,963,751.20	699.5	0	115	TRUE	273.856	147.3	140	J-8
557	J-3750I	24,202.10	5,960,810.43	700	0	115	TRUE	203.878	140	152	J-69
563	J-3830F	24,662.04	5,962,661.31	699	0.046	250	TRUE	350	244.8	264	J-62
564	J-3840F	24,769.05	5,962,856.55	698	0	115	TRUE	350	296.8	300.7	J-3810F
565	J-S2011E	23,398.12	5,962,393.08	701	0	250	TRUE	350	230	248.5	J-4600F
576	J-S2012E	23,398.36	5,962,126.10	701	0.086	250	TRUE	350	156.1	152.4	J-4600F
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	250	TRUE	350	289.3	308	J-N2140E
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	115	TRUE	214.27	140	429.4	J-N4110E
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	250	TRUE	350	300	307	J-N2143E
611	J-4310F	22,779.97	5,964,010.72	699.5	0	115	TRUE	164.956	140	216.4	J-5
614	J-3785F	24,389.79	5,962,392.01	698.7	0.062	115	TRUE	136.744	140	261.5	J-N2253E
615	J-N1023E	24,962.79	5,962,291.29	699	0	115	TRUE	350	304.1	327.9	J-N1025E
618	J-N1025E	24,955.73	5,962,436.30	699	0	115	TRUE	350	288.3	298.4	J-N1030E
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	115	TRUE	350	282.6	317.6	J-N1030E
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	115	TRUE	350	300.5	309.9	J-N1039E
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	115	TRUE	350	302.6	305.8	J-79

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
622	J-3810F	24,808.50	5,962,854.71	698.5	0	115	TRUE	350	289.1	306	J-3840F
629	J-4460I	23,866.43	5,960,918.16	700.5	0.18	115	TRUE	211.907	140	169.2	J-64
630	J-4470I	24,688.40	5,963,006.16	698	0	180	TRUE	350	285.4	289.2	J-55
632	J-4490F	23,389.95	5,964,203.21	699.2	0	115	TRUE	317.521	140	191.5	J-182
638	J-4550I	24,097.29	5,963,722.12	698.5	0	115	TRUE	169.071	140	219.6	J-77
639	J-4560I	24,258.63	5,963,745.67	698	0	115	TRUE	274.579	149.8	140	J-78
643	J-4600F	23,285.48	5,962,126.23	701.38	0.198	250	TRUE	316.447	140	142.7	J-185
644	J-4610F	23,155.29	5,962,079.75	700.83	0.019	250	TRUE	282.998	140	142.2	J-119
1317	J-2	22,730.02	5,963,753.33	700.5	0.046	115	TRUE	204.279	140	274.9	J-3
1319	J-3	22,672.82	5,963,751.17	700.5	0	115	TRUE	262.913	140	140	J-2
1323	J-4	22,621.02	5,963,836.43	700	0.122	115	TRUE	218.408	140	162.1	J-129
1325	J-5	22,727.82	5,963,998.44	700.25	0.084	115	TRUE	187.207	140.1	147.4	J-4310F
1327	J-6	22,732.18	5,964,070.61	701	0.142	115	TRUE	183.92	140.1	185.2	J-5
1329	J-7	22,731.10	5,964,172.06	700.75	0.122	115	TRUE	188.931	140.1	177.4	J-6
1331	J-8	22,631.81	5,964,169.90	701.5	0.154	115	TRUE	200.378	140	174.4	J-7
1333	J-9	22,551.95	5,964,168.82	701	0	115	TRUE	227.505	140	148.2	J-8
1337	J-10	23,451.65	5,963,733.50	699	0.204	115	TRUE	343.283	144.9	140	J-75
1340	J-11	23,574.41	5,963,732.15	699.25	0.204	115	TRUE	145.834	140	342.5	J-75
1342	J-12	23,453.00	5,963,830.63	698.75	0.264	115	TRUE	349.695	144.9	140	J-13
1345	J-13	23,538.85	5,963,831.54	699.25	0.214	115	TRUE	220.326	140	377.9	J-12
1347	J-14	23,454.35	5,964,026.24	699.1	0.122	115	TRUE	338.671	141.5	140	J-15
1349	J-15	23,467.84	5,964,093.69	699.25	0	115	TRUE	135.014	140	456.8	J-14
1351	J-16	23,573.06	5,964,030.28	699.25	0	115	TRUE	329.783	140	193	J-17
1353	J-17	23,570.36	5,964,124.71	699	0	115	TRUE	336.469	140	171.7	J-16
1355	J-18	23,532.59	5,963,931.81	699	0.192	115	TRUE	350	178.5	191	J-3620F
1358	J-19	23,754.37	5,963,918.75	698.75	0.122	115	TRUE	350	201.6	251.3	J-41
1361	J-20	23,728.46	5,963,820.53	698.75	0.058	115	TRUE	309.351	140	170.1	J-22
1363	J-21	23,674.50	5,963,815.14	698.75	0.122	115	TRUE	289.359	144.9	140	J-22
1365	J-22	23,673.42	5,963,866.94	699.25	0.072	115	TRUE	223.973	140	289.5	J-21
1367	J-23	23,677.74	5,963,733.12	699	0.122	115	TRUE	289.313	140	217.6	J-22
1369	J-24	23,746.80	5,963,730.96	699	0.084	115	TRUE	313.481	140	181.6	J-23
1371	J-25	23,809.40	5,963,732.04	699	0.154	115	TRUE	350	183.3	189.8	J-26
1374	J-26	23,798.19	5,963,731.64	699	0	115	TRUE	350	183.5	189.8	J-25
1377	J-27	23,775.20	5,963,641.81	699.25	0	115	TRUE	350	155.5	153	J-28
1379	J-28	23,710.13	5,963,639.34	699.5	0.13	115	TRUE	305.282	140	249.9	J-27
1381	J-29	23,844.51	5,963,643.58	699.25	0.084	115	TRUE	350	158.9	188.9	J-28
1383	J-30	23,845.57	5,963,511.32	699	0	115	TRUE	350	228.3	232.5	J-N3160E
1387	J-31	23,799.25	5,963,585.59	699.75	0.168	115	TRUE	162.012	140	440.2	J-32
1388	J-32	23,845.57	5,963,586.29	699.5	0	115	TRUE	350	174.6	172.2	J-31
1392	J-33	23,672.77	5,964,049.27	698.75	0.084	115	TRUE	350	150.3	156.7	J-41
1394	J-34	23,670.18	5,964,144.24	699	0.13	115	TRUE	336.881	140	185.9	J-36
1396	J-35	23,671.91	5,964,234.03	698.75	0.084	115	TRUE	343.272	142.4	140	J-36
1398	J-36	23,671.05	5,964,280.65	699	0.046	115	TRUE	161.092	140	438.6	J-35
1400	J-37	23,758.25	5,964,281.52	698.75	0.058	115	TRUE	268.276	140	175.9	J-38
1402	J-38	23,813.50	5,964,238.35	698.75	0	115	TRUE	250.716	140	185.6	J-39
1404	J-39	23,860.99	5,964,198.64	698.5	0.026	115	TRUE	246.594	140	196.5	J-38
1406	J-40	23,792.78	5,964,135.61	698.5	0.026	115	TRUE	251.88	147.3	140	J-41
1408	J-41	23,757.38	5,964,171.87	699.25	0	115	TRUE	140.518	140	396.7	J-40
1410	J-42	23,740.12	5,964,098.49	698.5	0.012	115	TRUE	274.183	140	163.5	J-41
1414	J-43	23,980.99	5,963,768.68	699.75	0.154	115	TRUE	207.547	140	398.5	J-3560I
1416	J-44	24,000.53	5,963,681.98	700	0.072	115	TRUE	229.717	140	147.4	J-77
1419	J-45	24,049.06	5,964,265.48	698.75	0.154	115	TRUE	178.585	140	140	J-46
1421	J-46	23,957.33	5,964,279.51	698.75	0.142	115	TRUE	146.082	140	258.9	J-45
1424	J-47	24,921.74	5,963,097.95	698.75	0	115	TRUE	308.103	144.9	140	J-48
1426	J-48	24,960.60	5,963,073.13	699.25	0.096	115	TRUE	155.155	140	417.7	J-47
1428	J-49	24,867.78	5,963,034.28	698.75	0.054	115	TRUE	312.497	144.9	140	J-57
1432	J-51	24,805.19	5,963,090.39	698.5	0.046	115	TRUE	350	210	228.3	J-57
1434	J-52	24,739.36	5,963,144.35	698.25	0.084	115	TRUE	331.25	140	238.2	J-53
1436	J-53	24,688.64	5,963,093.63	698.25	0.168	115	TRUE	341.482	140.1	213.5	J-52
1438	J-54	24,637.92	5,963,049.38	698.25	0	115	TRUE	350	278.5	285.4	J-53
1443	J-55	24,746.03	5,963,032.58	698.5	0.142	115	TRUE	350	154.8	268.7	J-51
1446	J-56	24,815.86	5,962,971.87	698.75	0.08	115	TRUE	208.69	144.9	140	J-57
1448	J-57	24,793.42	5,962,913.17	699.25	0.072	115	TRUE	171.089	140	261.7	J-58
1450	J-58	24,880.62	5,962,917.48	698.75	0.158	115	TRUE	166.119	140	270.8	J-57
1452	J-59	24,463.42	5,962,681.55	699.25	0	115	TRUE	350	229.5	232	J-60
1455	J-60	24,477.23	5,962,748.02	699	0.204	115	TRUE	139.553	140	464.7	J-139
1457	J-61	24,560.98	5,962,657.37	698.5	0	115	TRUE	350	239.9	237.4	J-62
1460	J-62	24,574.79	5,962,709.17	698.75	0.18	115	TRUE	156.345	140	459.4	J-N2255E
1464	J-64	23,859.42	5,960,815.72	699.25	0.122	115	TRUE	209.04	140	162.7	J-65
1467	J-65	23,919.85	5,960,828.67	698.5	0	115	TRUE	203.13	140	160.4	J-66
1469	J-66	23,954.39	5,960,863.21	699.25	0.122	115	TRUE	202.451	140	169	J-65
1471	J-67	23,951.80	5,960,932.28	698.75	0.122	115	TRUE	217.725	156.8	140	J-4460I
1475	J-68	24,151.23	5,960,824.36	699.5	0	115	TRUE	207.588	149.8	140	J-69
1477	J-69	24,160.73	5,960,864.07	700.5	0.096	115	TRUE	182.346	140.1	147.4	J-70
1479	J-70	24,173.68	5,960,913.28	699.75	0.096	115	TRUE	162.355	140	144.9	J-71

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1481	J-71	24,122.74	5,960,921.05	699.25	0.084	115	TRUE	147.423	140	201.4	J-70
1485	J-73	23,863.50	5,960,738.53	699.2	0.108	115	TRUE	203.96	140	183.9	J-64
1488	J-74	24,008.12	5,960,795.72	699.25	0.058	115	TRUE	219.625	142.7	140	J-69
1491	J-75	23,533.91	5,963,732.98	699.5	0	115	TRUE	221.829	140	142.4	J-11
1494	J-76	23,929.23	5,963,577.78	699	0.142	115	TRUE	350	173.3	193.9	J-44
1497	J-77	24,049.40	5,963,701.17	699.25	0.752	115	TRUE	192.192	140.1	147.4	J-4550I
1500	J-78	24,258.00	5,963,633.98	699	0.348	115	TRUE	179.29	140	356.7	J-4560I
1508	J-79	25,046.68	5,962,853.87	700	0	115	TRUE	350	274	288.8	J-80
1510	J-80	25,042.43	5,963,175.51	700.5	0	115	TRUE	350	220.6	242.1	J-81
1512	J-81	25,046.04	5,963,527.62	699	0	250	TRUE	343.302	140	180.1	J-88 (Rec Center)
1514	J-82	24,960.02	5,964,132.73	698.2	0	115	TRUE	181.884	140.1	178.8	J-N1244E
1521	J-83	26,363.57	5,963,530.33	700	0	250	TRUE	272.915	149.1	140	J-84 (Sturgeon Office)
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	250	TRUE	272.565	140	150.7	J-83
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.588	250	TRUE	281.516	140	154.7	J-84 (Sturgeon Office)
1550	J-92	25,818.46	5,963,541.11	700	0	250	TRUE	274.475	140	163.3	J-84 (Sturgeon Office)
1557	J-94	23,168.88	5,964,201.54	698.35	0.084	115	TRUE	327.235	140.5	140.1	J-175
1563	J-97	23,572.11	5,964,208.92	698.89	0.158	115	TRUE	350	148.7	166.9	J-17
1609	J-116	22,980.29	5,962,035.89	700.36	0.08	115	TRUE	261.599	140	157.2	J-117
1612	J-117	22,981.58	5,962,130.00	700.07	0.08	115	TRUE	232.75	140	159.2	J-184
1613	J-118	23,116.29	5,962,177.05	700.4	0.072	115	TRUE	233.804	140	186.2	J-184
1614	J-119	23,064.08	5,962,037.98	700.61	0.142	115	TRUE	269.039	140	143.5	J-116
1644	J-129	22,662.34	5,963,932.49	700.13	0	115	TRUE	195.184	140	171.6	J-5
1681	J-137	23,388.97	5,962,746.95	700.04	0	250	TRUE	350	288.9	315.3	J-N2150E
1684	J-138	22,557.14	5,963,245.10	700.93	0	115	TRUE	316.185	157.8	140	J-139
1687	J-139	22,761.26	5,963,186.30	702.75	0	250	FALSE	200.945	140	358.3	J-138
1701	J-140	23,586.96	5,963,525.74	698.45	0.096	115	TRUE	347.432	140	188.9	J-N3150E
1704	J-141	23,239.49	5,963,413.52	699.38	0.536	115	TRUE	350	303	313.7	J-139
1711	J-143	23,345.33	5,961,555.68	699	0	250	FALSE	234.017	140	140	J-S2051E
1714	J-144	23,225.95	5,961,556.04	699	0	115	TRUE	201.917	140.1	231.5	J-S2051E
1786	J-165	23,502.59	5,964,204.60	699.08	0.256	115	TRUE	323.942	140	199.3	J-182
1789	J-166	23,315.10	5,964,203.31	698.91	0.084	115	TRUE	338.903	140	145.9	J-170
1792	J-167	23,168.27	5,964,090.48	698.75	0.084	115	TRUE	350	189.8	191.3	J-175
1795	J-168	23,313.56	5,964,092.80	698.77	0.084	115	TRUE	307.075	140	234.8	J-172
1798	J-169	23,315.88	5,964,279.82	698.79	0.084	115	TRUE	276.885	141.9	140	J-170
1800	J-170	23,364.57	5,964,279.82	698.98	0.084	115	TRUE	232.72	140	264.5	J-169
1802	J-171	23,243.23	5,964,202.54	698.64	0.084	115	TRUE	332.63	140	175.2	J-175
1805	J-172	23,244.78	5,964,090.48	698.87	0.084	115	TRUE	335.878	140	164.4	J-168
1809	J-173	23,069.34	5,964,200.99	699.45	0.084	115	TRUE	262.963	140	141.8	J-176
1811	J-174	22,976.60	5,964,200.99	699.89	0.084	115	TRUE	250.738	140	154.7	J-175
1813	J-175	22,976.60	5,964,112.89	700.15	0.084	115	TRUE	231.448	140	192.5	J-176
1815	J-176	23,070.12	5,964,112.12	699.74	0.084	115	TRUE	233.909	140	179.7	J-175
1819	J-178	22,974.67	5,964,279.75	700.05	0.084	115	TRUE	238.263	140	179.5	J-179
1822	J-179	23,044.05	5,964,278.86	699.77	0.084	115	TRUE	234.899	140	190.4	J-178
1825	J-180	23,130.99	5,964,278.86	699.49	0.084	115	TRUE	237.192	140	188.8	J-179
1828	J-181	23,217.93	5,964,279.83	699.24	0.084	115	TRUE	247.678	140	177.1	J-180
1832	J-182	23,439.83	5,964,204.12	699.15	0	115	TRUE	315.542	140	199.5	J-4490F
1835	J-183	24,885.31	5,963,455.51	698.5	0	115	TRUE	302.081	140	170.2	J-N1430E
1838	J-184	23,025.30	5,962,131.36	700.17	0.15	115	TRUE	228.522	140	174.4	J-117
1841	J-185	23,215.32	5,962,120.15	701.11	0.246	115	TRUE	298.429	140	142.7	J-4610F

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-3.488	0.05	0	0.021
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-8.525	0.17	0.03	0.265
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-8.715	0.18	0.02	0.278
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-8.983	0.18	0.06	0.293
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-9.201	0.19	0.05	0.306
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	11.792	0.24	0.07	0.484
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	11.632	0.24	0.07	0.473
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	2.879	0.06	0.01	0.035
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	2.701	0.06	0.01	0.031
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	2.521	0.05	0	0.028
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-3.115	0.04	0	0.017
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	5.462	0.08	0.01	0.048
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	5.3	0.07	0.01	0.045
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	5.182	0.11	0.02	0.106
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	4.692	0.1	0.01	0.088
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-8.327	0.17	0.04	0.254
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-8.561	0.17	0.04	0.268
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-21.147	0.43	0.2	1.429
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	11.671	0.17	0.02	0.164
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	5.465	0.08	0	0.047
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-0.979	0.01	0	0.002
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-1.209	0.02	0	0.003
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.084	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-1.369	0.02	0	0.004
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-1.527	0.02	0	0.004
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-2.675	0.04	0	0.013
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.31	0.02	0	0.007
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.402	0.02	0	0.012
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.502	0.03	0	0.018
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	2.465	0.03	0	0.011
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-3.197	0.05	0	0.018
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-6.147	0.09	0.01	0.059
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-8.547	0.12	0.02	0.11
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.332	0.01	0	0.002
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.092	0	0	0.001
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	2.242	0.07	0.01	0.067
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.192	0.01	0	0.003
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.42	0.02	0	0.013
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.647	0.04	0	0.028
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.339	0.02	0	0.009
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.461	0.03	0	0.015
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	2.004	0.06	0	0.057
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.027	0.06	0.01	0.066
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	0.923	0.03	0	0.013
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.13	0.01	0	0.001
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.575	0.03	0	0.023
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.406	0.02	0	0.012
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.528	0.03	0	0.019
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.27	0.02	0	0.006
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.554	0.03	0	0.021
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	2.192	0.07	0.01	0.065
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-3.052	0.1	0.01	0.119
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-9.712	0.14	0.01	0.14
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-17.229	0.24	0.06	0.402
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	21.349	0.3	0.19	0.599
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	21.349	0.3	0.29	0.598
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.529	0.03	0	0.019
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-0.986	0.06	0.01	0.062
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.132	0.07	0.01	0.08
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.244	0.07	0.01	0.095
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	4.241	0.14	0.02	0.22
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	1.63	0.05	0	0.037
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.1	0.01	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.782	0.03	0	0.01
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-1.25	0.04	0	0.024
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-1.372	0.04	0	0.027
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-1.464	0.05	0	0.031
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	1.978	0.06	0	0.052
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.004	0.03	0	0.015
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.13	0.01	0	0.002
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	0.874	0.03	0	0.012
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.256	0.01	0	0.001
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	0.912	0.03	0	0.013
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.302	0.01	0	0.002
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.414	0.01	0	0.003

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.536	0.02	0	0.004
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.636	0.02	0	0.007
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-0.838	0.03	0	0.011
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.512	0.02	0	0.004
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.4	0.01	0	0.003
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.269	0.01	0	0.001
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.369	0.01	0	0.002
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.062	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-1.13	0.04	0	0.019
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.616	0.02	0	0.006
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	1.006	0.01	0	0.001
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	1.006	0.01	0	0.002
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-3.121	0.04	0	0.017
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-3.121	0.04	0	0.017
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-3.121	0.04	0	0.017
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.011	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.013	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.092	0.01	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.125	0	0	0.001
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.063	0	0	0
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.285	0.01	0	0.002
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.393	0.01	0	0.003
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.455	0.01	0	0.003
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.577	0.02	0	0.006
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.13	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.062	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-3.802	0.05	0	0.025
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-3.802	0.05	0	0.024
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-3.902	0.06	0	0.026
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	3.548	0.07	0.01	0.052
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	3.548	0.07	0.01	0.052
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	3.548	0.07	0.01	0.053
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-2.089	0.04	0	0.02
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-4.066	0.08	0	0.067
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.585	0.03	0	0.023
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-1.661	0.05	0	0.039
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-2.517	0.05	0	0.028
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-2.617	0.05	0	0.03
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-2.729	0.06	0	0.032
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-2.829	0.06	0	0.035
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.048	0.06	0.01	0.069
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.918	0.05	0.01	0.054
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.461	0.03	0	0.015
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.285	0.02	0	0.007
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.173	0.01	0	0.002
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.595	0.02	0	0.005
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.46	0.01	0	0.004
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.241	0.04	0	0.022
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.382	0.02	0	0.011
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.142	0.01	0	0.002
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.026	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.11	0.01	0	0.001
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.625	0.01	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-1.977	0.04	0	0.018
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	1.393	0.04	0.01	0.028
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.471	0.03	0	0.016
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.609	0.04	0	0.025
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.759	0.02	0	0.009
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.15	0	0	0.001
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.477	0.03	0	0.016
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.406	0.02	0	0.01
801	P-1760	J-N2300E	J-N2310E	69.05	148.6	Asbestos Cement	100	-0.925	0.05	0	0.055
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-2.261	0.13	0	0.279
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-1.81	0.06	0	0.046
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.563	0.03	0	0.022
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.646	0.02	0	0.007
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.304	0.02	0	0
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.39	0.02	0	0.012
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.159	0.01	0	0.001
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.549	0.03	0	0.021
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.321	0.02	0	0.008
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.012	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	4.476	0.06	0.01	0.028
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.131	0.02	0	0

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-1.336	0.02	0	0.003
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.845	0.05	0	0.046
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.585	0.03	0	0.023
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.363	0.02	0	0.009
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.216	0.01	0	0.004
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-5.517	0.08	0	0.049
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.475	0.03	0	0.016
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.155	0.01	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-2.142	0.03	0	0.009
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	2.567	0.05	0	0.033
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-5.302	0.08	0	0.045
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.049	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.155	0.01	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.36	0.02	0	0.009
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.087	0	0	0.001
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.431	0.02	0	0.013
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.431	0.02	0	0.014
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.047	0	0	0.001
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.062	0	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.571	0.03	0	0.023
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.499	0.03	0	0.018
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.299	0.02	0	0.006
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.476	0.03	0	0.015
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-5.948	0.08	0	0.055
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.112	0.01	0	0
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-6.206	0.09	0.02	0.061
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.959	0.06	0.01	0.058
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	1.485	0.09	0	0.135
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-4.634	0.07	0	0.035
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-4.71	0.07	0	0.036
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-5.396	0.08	0.01	0.047
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.966	0.06	0.01	0.06
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.255	0.01	0	0.005
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.497	0.03	0	0.017
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.427	0.02	0	0.013
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-2.12	0.04	0	0.02
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.158	0.01	0	0.002
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-0.7	0.02	0	0.008
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.786	0.03	0	0.01
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	2.009	0.03	0	0.008
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.219	0	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.086	0	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	1.79	0.03	0	0.006
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	1.5	0.02	0	0.005
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	1.276	0.02	0	0.003
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.02	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.653	0.04	0	0.025
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	1.046	0.01	0	0.003
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.23	0.01	0	0.019
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.087	0.01	0	0.006
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.213	0.01	0	0.003
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.224	0.01	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.011	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.25	0.01	0	0.005
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.29	0.02	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.04	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.05	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.072	0	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.149	0.01	0	0.002
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.046	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.233	0.01	0	0.004
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.057	0	0	0.001
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-0.774	0.02	0	0.009
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	0.832	0.05	0	0.044
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-2.047	0.04	0	0.019
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.268	0.01	0	0.001
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.58	0.03	0	0.023
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.101	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.039	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	0.677	0.04	0	0.03
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.051	0	0	0
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.243	0.01	0	0.005
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-0.719	0.04	0	0.035
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-2.25	0.05	0	0.022
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	-0.382	0.02	0	0.01

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.524	0.03	0	0.017
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.249	0.01	0	0.005
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
894	P-2810	J-N4320E	J-N4310E	104.59	148.6	Asbestos Cement	100	0.716	0.04	0	0.034
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.41	0.02	0	0.012
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.476	0.03	0	0.016
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.321	0.01	0	0.001
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.013	0	0	0
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.329	0.02	0	0.008
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-1.861	0.04	0	0.016
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.246	0.01	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.571	0.01	0	0
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.52	0.01	0	0.001
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-0.782	0.01	0	0.001
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-1.452	0.03	0	0.01
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.012	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.012	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.124	0.01	0	0.001
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.588	0.01	0	0.001
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-1.017	0.01	0	0.002
912	P-3000	J-N4080E	J-N4081E	85.17	148.6	Asbestos Cement	100	0.062	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-2.475	0.04	0	0.011
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.146	0	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.214	0.01	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-2.981	0.04	0	0.015
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.133	0.01	0	0.002
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	0.033	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.089	0.01	0	0.001
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.235	0.01	0	0.004
921	P-3090	J-N4111E	J-N4110E	125.39	148.6	Asbestos Cement	100	-0.335	0.02	0	0.008
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	3.227	0.05	0	0.018
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-3.691	0.05	0	0.023
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.312	0.02	0	0.008
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.424	0.02	0	0.013
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.563	0.03	0	0.022
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-4.885	0.07	0.01	0.039
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.311	0.02	0	0.007
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.275	0.02	0	0.006
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	4.206	0.06	0	0.03
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	3.471	0.05	0	0.02
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.268	0.01	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.375	0.02	0	0.01
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.289	0.04	0	0.025
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.076	0.03	0	0.017
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.639	0.04	0	0.027
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-0.823	0.05	0.01	0.044
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-0.731	0.02	0	0.008
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-0.793	0.03	0	0.009
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.434	0.01	0	0.003
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.65	0.04	0	0.028
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.784	0.05	0.01	0.04
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.408	0.02	0	0.012
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-6.51	0.09	0	0.066
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-6.548	0.09	0.01	0.067
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-7.45	0.11	0	0.085
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-7.45	0.11	0	0.085
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.637	0.02	0	0.006
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.444	0.01	0	0.004
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.368	0.01	0	0.002
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-1.453	0.05	0	0.03
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-1.453	0.05	0	0.03
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	0.912	0.03	0	0.013
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	2.519	0.08	0	0.083
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	2.419	0.08	0.01	0.078
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.232	0.01	0	0.001
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.14	0	0	0
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-2.109	0.07	0	0.06
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-1.793	0.06	0	0.045
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.419	0.02	0	0.013
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.327	0.02	0	0.008
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.61	0.04	0	0.025
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.6	0.03	0	0.023
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.662	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	0.777	0.01	0	0
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.571	0.01	0	0.001

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.252	0.01	0	0.005
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.198	0.01	0	0.003
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.255	0.01	0	0.004
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.255	0.01	0	0.005
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.116	0	0	0.001
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.24	0.01	0	0
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.062	0	0	0.001
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-1.849	0.11	0.01	0.198
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-1.979	0.06	0	0.054
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-2.425	0.08	0.01	0.065
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-2.593	0.08	0.01	0.074
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.161	0.01	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.161	0.01	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.077	0.02	0	0.004
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.709	0.02	0	0.007
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-1.483	0.03	0	0.01
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	3.548	0.07	0	0.052
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.561	0.01	0	0.002
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-4.109	0.08	0.01	0.069
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	12.911	0.26	0.02	0.573
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	21.349	0.3	0.09	0.599
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	21.239	0.43	0.06	1.44
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.617	0.04	0	0.026
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.671	0.04	0	0.025
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.445	0.01	0	0
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.591	0.02	0	0.006
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.092	0.01	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.054	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-1.006	0.03	0	0.015
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-1.06	0.03	0	0.018
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	3.488	0.05	0	0.021
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	2.194	0.03	0	0.009
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	2.04	0.03	0	0.008
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	2.224	0.03	0	0.009
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.54	0.02	0	0.005
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.448	0.01	0	0.004
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.622	0.01	0	0.002
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.546	0.01	0	0.002
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.462	0.01	0	0.004
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.378	0.01	0	0.002
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.378	0.01	0	0.003
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.302	0.01	0	0.002
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-2.206	0.03	0	0.009
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-2.538	0.04	0	0.01
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-1.572	0.02	0	0.005
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.286	0.01	0	0.001
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	2.396	0.03	0	0.01
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	2.062	0.03	0	0.008
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.016	0.01	0	0.003
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.016	0.01	0	0.002
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-1.042	0.03	0	0.017
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.465	0.01	0	0.004
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.587	0.02	0	0.005
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.679	0.02	0	0.008
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.781	0.03	0	0.009
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.689	0.02	0	0.008
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-1.514	0.03	0	0.01
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-1.042	0.03	0	0.015
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-3.277	0.05	0	0.019
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-4.899	0.07	0	0.04
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	1.622	0.03	0	0.013
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	1.622	0.03	0	0.012
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	1.514	0.03	0	0.011
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	0.96	0.01	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-3.059	0.04	0	0.017
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	3.959	0.08	0.01	0.064
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	3.725	0.08	0.01	0.057
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	3.299	0.07	0	0.046
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	3.237	0.07	0	0.044
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	2.249	0.05	0	0.023
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.942	0.03	0	0.014
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.82	0.03	0	0.01
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.736	0.02	0	0.008

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.736	0.02	0	0.009
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-2.173	0.04	0	0.021
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.122	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-1.713	0.05	0	0.04
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-1.851	0.06	0.01	0.047
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.062	0	0	0.002
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-1.963	0.06	0	0.045
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-1.963	0.06	0	0.044
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-2.093	0.07	0	0.049
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-1.723	0.06	0	0.035
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.55	0.02	0	0.005
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-4.438	0.14	0.02	0.2
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.166	0	0	0
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	5.082	0.1	0.02	0.102
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	4.828	0.1	0	0.092
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-9.413	0.13	0.01	0.13
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-11.123	0.16	0.01	0.179
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.647	0.01	0	0.003
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.333	0.01	0	0
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	2.909	0.06	0	0.03
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.146	0	0	0.001
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.162	0	0	0.001
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	2.609	0.05	0	0.025
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	1.117	0.02	0	0.002
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.458	0.01	0	0.003
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.222	0.02	0	0.005
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-9.31	0.13	0.02	0.108
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	17.229	0.24	0.01	0.337
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-11.671	0.17	0.01	0.164
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	12.745	0.18	0.07	0.193
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	11.671	0.17	0.04	0.164
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-4.558	0.06	0	0.029
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-4.558	0.06	0	0.028
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	2.565	0.04	0	0.012
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.652	0.04	0	0.029
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.652	0.04	0	0.029
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.64	0.04	0.01	0.028
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	4.898	0.07	0	0.032
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	1.474	0.08	0	0.103
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.022	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.062	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-29.577	0.42	0.42	1.094
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-29.577	0.42	0.1	1.095
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-29.577	0.42	0.16	1.095
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-29.577	0.42	0.14	1.094
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-29.577	0.42	0.13	1.094
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-29.577	0.42	0.05	1.096
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-29.577	0.42	0.03	1.095
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-17.229	0.24	0.02	0.402
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-7.919	0.11	0.02	0.095
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.348	0.01	0	0.002
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-0.987	0.01	0	0.001
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.287	0.01	0	0
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.046	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.309	0.01	0	0.002
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.103	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.039	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.161	0.01	0	0.001
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.315	0.01	0	0.001
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.315	0	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.333	0.01	0	0.001
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	1.168	0.02	0	0.005
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.76	0.02	0	0.003
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.282	0.01	0	0
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.214	0.01	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	0.751	0.02	0	0.002
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.629	0.01	0	0.002
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.629	0.01	0	0.002
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	0.925	0.01	0	0.001
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	0.733	0.01	0	0.001
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	2.583	0.05	0	0.025

**Existing Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	2.461	0.05	0	0.022
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.183	0.01	0	0.001
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.125	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.072	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.069	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.191	0.01	0	0.001
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.287	0.01	0	0
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.275	0.01	0	0.001
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.441	0.01	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.716	0.01	0	0.002
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.13	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-0.846	0.02	0	0.003
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-1.561	0.03	0	0.011
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-2.659	0.05	0	0.031
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-0.93	0.02	0	0.004
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-1.098	0.02	0	0.005
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.168	0.01	0	0.002
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.222	0.02	0	0.009
1395	P-5863	J-33	J-34	95	250	PVC	110	0.833	0.02	0	0.002
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.703	0.01	0	0.002
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.046	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.182	0.01	0	0.001
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.24	0.01	0	0
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.24	0.01	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.266	0.01	0	0.002
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.292	0.01	0	0.001
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.304	0.01	0	0.001
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.154	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-0.824	0.03	0	0.009
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.296	0.01	0	0.002
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.142	0	0	0
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	2.941	0.09	0.01	0.093
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.096	0.01	0	0.002
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	2.845	0.09	0.01	0.088
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	2.481	0.08	0.01	0.068
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	1.667	0.05	0	0.032
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	1.583	0.05	0	0.029
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-9.41	0.13	0.01	0.131
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-7.995	0.11	0.01	0.097
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.415	0.05	0	0.024
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.55	0.02	0	0.003
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.218	0.01	0	0
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.076	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.31	0.01	0	0.001
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.072	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.158	0.01	0	0.001
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-8.879	0.13	0.01	0.118
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-9.083	0.13	0	0.122
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.204	0.01	0	0.003
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-9.083	0.13	0.01	0.103
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-9.263	0.13	0.01	0.107
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.18	0.01	0	0.003
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.506	0.02	0	0.004
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.363	0.01	0	0.001
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.363	0.01	0	0.003
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-0.686	0.01	0	0.001
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-1.293	0.02	0	0.002
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.485	0.02	0	0.003
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.276	0	0	0
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.276	0.01	0	0
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.18	0.01	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.084	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	0.747	0.02	0	0.008
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.639	0.02	0	0.005
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	1.764	0.02	0	0.005
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	1.706	0.02	0	0.006
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.204	0.01	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.204	0.01	0	0.004
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-1.14	0.02	0	0.005
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-1.282	0.03	0	0.007
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-0.752	0.02	0	0.007
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.348	0.01	0	0.001

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	12.19	0.17	0.01	0.151
1511	P-5926	J-79	J-80	321.67	300	PVC	120	12.19	0.17	0.05	0.151
1513	P-5927	J-80	J-81	352.13	300	PVC	120	4.811	0.07	0.01	0.027
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.368	0.01	0	0.002
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.368	0.01	0	0.003
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-7.379	0.23	0.03	0.429
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	4.223	0.06	0	0.012
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	4.811	0.07	0.02	0.027
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	4.223	0.06	0.01	0.021
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-4.223	0.06	0.02	0.021
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-4.223	0.06	0.01	0.021
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.629	0.01	0	0.002
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.756	0.02	0	0.003
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.214	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.356	0.01	0	0
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.134	0	0	0.001
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.168	0.01	0	0
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.187	0.01	0	0.001
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.187	0.01	0	0.001
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	6.372	0.09	0.01	0.054
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	6.372	0.09	0.01	0.054
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	0.083	0	0	0
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.083	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	0	0	0	0
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.279	0.03	0	0.009
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-1.375	0.03	0	0.009
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-2.123	0.03	0	0.008
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-2.659	0.04	0	0.013
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	110	0.254	0.01	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	110	0.254	0.01	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	110	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.226	0.04	0	0.015
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-0.97	0.03	0	0.01
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.374	0.01	0	0.001
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.225	0.01	0	0.001
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.175	0.01	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.449	0.01	0	0.003
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.084	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.25	0.01	0	0.001
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.262	0.01	0	0.001
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.065	0	0	0
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.091	0	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.071	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.391	0.01	0	0.002
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.159	0.01	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.02	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.064	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.148	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.055	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.029	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.113	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.281	0.01	0	0.001
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.197	0.01	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-0.97	0.03	0	0.009
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-0.97	0.03	0	0.011
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.018	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	4.241	0.14	0.02	0.219
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.054	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.096	0	0	0.001
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.543	0.01	0	0.001
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-0.789	0.01	0	0.001

Appendix **C**

Existing Development plus Improvements Water Distribution System Results

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	550.7	754.57
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.069	539	754.57
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.095	539.1	754.58
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.134	539.6	754.59
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.109	539.3	754.6
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.077	535.5	754.62
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.08	536.3	754.6
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.096	533.2	754.58
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.089	539	754.58
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.09	544.9	754.57
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.087	542.9	754.57
195	J-S2100E	23,886.25	5,961,252.83	699	0.081	543.9	754.57
196	J-S2080E	23,585.41	5,961,251.56	699	0.081	543.9	754.57
197	J-S2070E	23,468.77	5,961,251.56	699	0.059	543.9	754.57
198	J-S2060E	23,444.47	5,961,408.54	699	0.05	543.8	754.57
199	J-S2040E	23,441.07	5,961,591.28	699	0.068	543.8	754.56
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.054	531	754.56
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.117	533.1	754.57
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.046	532.1	754.67
203	J-S2010E	23,396.57	5,962,474.58	700	0	533.5	754.51
204	J-N4200E	23,397.75	5,962,576.48	701	0	523.7	754.51
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.036	526.6	754.51
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.115	539.3	754.51
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.038	539.3	754.51
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.042	532.5	754.51
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.023	539.3	754.51
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.056	532.5	754.51
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.05	540.3	754.51
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.05	541.3	754.51
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.046	552.1	754.51
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.05	556	754.51
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.065	552.6	754.51
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.05	542.3	754.51
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.061	552.1	754.51
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.079	541.4	754.51
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	542.4	754.52
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	544.3	754.52
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.046	546.3	754.52
222	J-N2255E	24,475.27	5,962,571.66	700	0.031	533.6	754.52
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.027	545.3	754.52
224	J-N2260E	24,501.40	5,962,673.31	699	0	543.4	754.52
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.023	547.2	754.51
226	J-N3301E	24,349.68	5,962,783.56	699	0.096	543.3	754.51
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.073	555	754.51
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.056	548.2	754.51
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.031	546.2	754.51
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.061	547.2	754.51
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.027	547.2	754.51
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	551.1	754.51
233	J-N3321E	24,349.51	5,962,866.08	700	0.065	533.5	754.51
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.172	548.2	754.51
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.069	551.1	754.51
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.05	547.2	754.51
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.061	549.1	754.51
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.061	551.1	754.51
239	J-N3350E	24,294.46	5,963,152.24	698.6	0.554	547.2	754.51
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.069	551.1	754.51
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.073	556	754.51
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.115	559.9	754.51
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.038	555	754.51
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.056	561.9	754.52
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.115	562.2	754.52
246	J-N1050E	24,728.87	5,962,855.33	698	0	553.3	754.53
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.079	545.7	754.56
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	535.9	754.66
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	524	754.85
250	J-S1010E	24,688.47	5,961,838.45	701	0	526.5	754.79
251	J-S1020E	24,215.83	5,961,901.63	700	0	535.5	754.71
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.038	564.9	754.52
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.042	565.9	754.53
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.061	546.4	754.53
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.023	559.9	754.51
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.073	568.8	754.52
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.056	559	754.52
258	J-N1420E	24,855.27	5,963,531.46	698	0	553.2	754.52
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.046	550.2	754.51

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.027	563.8	754.51
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.027	555	754.51
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.015	554	754.51
263	J-N1311E	24,830.34	5,963,795.82	698	0.05	553.1	754.51
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.027	554	754.51
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.061	549.2	754.51
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.046	549.2	754.51
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.031	554	754.51
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	552.1	754.51
269	J-N1292E	24,905.57	5,963,948.00	698	0.065	553.1	754.51
270	J-N1245E	24,928.90	5,964,040.14	697	0.031	562.8	754.51
271	J-N1244E	24,955.72	5,964,184.39	697	0.056	562.8	754.51
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.056	567.7	754.51
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.042	552.1	754.51
274	J-N1281E	24,668.79	5,963,904.06	698	0.056	553	754.51
275	J-N1282E	24,737.99	5,963,838.74	697	0.061	562.8	754.51
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.05	556	754.51
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.038	564.8	754.51
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.019	557	754.51
279	J-N1242E	24,655.18	5,964,247.76	698	0.056	553	754.51
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.027	559.9	754.51
281	J-N1272E	24,643.90	5,964,097.68	698	0.05	553	754.51
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.031	545.2	754.51
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.031	549.1	754.51
284	J-N1240E	24,492.27	5,964,163.87	698	0	553	754.51
285	J-N1220E	24,450.28	5,964,244.12	698	0	553	754.51
286	J-N1210E	24,398.26	5,964,217.60	698	0	553	754.51
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.023	555	754.51
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.031	556	754.51
289	J-N1170E	24,279.97	5,963,894.02	698	0	553	754.51
290	J-N1160E	24,301.35	5,963,782.73	698	0	553.1	754.51
291	J-N1150E	24,302.39	5,963,747.88	698	0.161	553.1	754.51
292	J-N1370E	24,390.29	5,963,759.89	698	0.031	553.1	754.51
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.023	557.9	754.51
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.046	559.9	754.51
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.046	549.1	754.51
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.023	567.7	754.51
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.031	556	754.51
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.015	565.8	754.51
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.065	563.8	754.51
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.031	567.7	754.51
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.046	555	754.51
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	559.9	754.51
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.05	558	754.51
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	558.9	754.51
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	555	754.51
306	J-N3182E	24,109.98	5,963,355.50	698	0	553	754.51
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	550.1	754.51
308	J-N3190E	23,838.79	5,963,334.11	699	0.032	543.2	754.51
309	J-N3210E	23,839.27	5,963,187.82	699	0.056	543.2	754.51
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.092	547.1	754.51
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.056	550.1	754.51
312	J-N3420E	23,966.13	5,962,983.37	698	0	553	754.51
313	J-N3240E	23,840.96	5,962,916.81	698	0.05	553	754.51
314	J-N3250E	23,877.98	5,962,777.15	698	0.056	553.1	754.51
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.05	548.2	754.51
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.065	544.2	754.51
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.073	547.1	754.51
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.038	537.3	754.51
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.05	529.5	754.51
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.056	527.6	754.51
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.061	544.5	754.5
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.088	543.7	754.51
323	J-N2370E	23,750.00	5,963,047.05	699	0.046	543.2	754.51
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.05	538.3	754.5
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.065	545.2	754.5
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.084	552	754.5
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.042	541.3	754.51
328	J-N3200E	23,838.64	5,963,310.50	699	0.031	543.2	754.51
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.023	544.2	754.5
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.027	550.1	754.5
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.069	546.1	754.5
332	J-N2350E	23,748.75	5,963,237.41	699	0	543.2	754.5
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.138	549	754.5
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.021	551	754.5
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.203	548.1	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	547.1	754.5
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.056	547.1	754.5
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.027	538.3	754.5
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.067	545	754.5
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.018	539.3	754.5
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.021	539.3	754.5
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	539.3	754.5
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.016	539.3	754.51
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.011	534.4	754.51
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	538.3	754.5
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.047	538.3	754.5
347	J-N2120E	23,392.51	5,963,312.31	699	0.045	543.2	754.5
348	J-N2121E	23,395.90	5,963,312.31	699	0	543.2	754.5
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.022	544.2	754.5
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.007	547.1	754.5
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	539.3	754.5
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	544.1	754.5
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	544.1	754.5
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.066	544.1	754.5
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.015	544.1	754.5
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.038	534.4	754.5
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	534.4	754.5
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.069	538.3	754.5
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	538.3	754.5
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.073	538.3	754.5
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.031	539.3	754.5
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.056	538.3	754.5
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.138	536.4	754.5
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.038	534.9	754.51
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.073	534.9	754.51
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.056	532.5	754.51
367	J-N4510E	23,116.00	5,962,864.49	700	0.042	533.4	754.5
368	J-N4500E	23,107.06	5,962,864.49	700	0.05	533.4	754.5
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.038	524.6	754.5
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.038	528.5	754.5
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.038	530.5	754.5
372	J-N4490E	23,107.28	5,962,982.98	700	0.061	533.4	754.5
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.046	532.4	754.5
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.057	540.2	754.5
375	J-N4350E	23,104.18	5,963,517.50	699	0.042	543.2	754.5
376	J-N3090E	23,166.53	5,963,519.61	699	0	543.2	754.5
377	J-N2070E	23,171.01	5,963,524.71	699	0	543.2	754.5
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	537.3	754.5
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	545.1	754.5
380	J-N2050E	23,164.50	5,963,745.83	699	0	543.2	754.5
381	J-N2040E	23,164.50	5,963,849.54	699	0	543.2	754.5
382	J-N2020E	23,168.07	5,964,021.69	699	0	543.2	754.5
383	J-N2010E	23,229.47	5,964,021.52	699	0.01	543.2	754.5
384	J-N3010E	23,161.69	5,964,008.03	699	0.454	543.2	754.5
385	J-N3030E	23,160.50	5,963,849.48	699	0.031	543.2	754.5
386	J-N3031E	23,161.50	5,963,836.74	699	0.038	543.2	754.5
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	545.1	754.5
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.056	545.1	754.5
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	537.3	754.5
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.056	537.3	754.5
391	J-N3032E	22,992.17	5,963,835.82	699	0.061	543.2	754.5
392	J-N3051E	22,992.42	5,963,732.81	700	0.061	533.4	754.5
393	J-N3071E	22,992.67	5,963,640.74	700	0.065	533.4	754.5
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	537.3	754.5
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.027	536.3	754.5
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.052	527.5	754.5
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.031	530.4	754.5
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.031	532.4	754.5
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.006	532.4	754.5
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.096	531.4	754.5
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	521.6	754.5
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.026	521.6	754.5
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.071	520.6	754.5
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	520.6	754.5
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.046	528.5	754.5
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.079	529.4	754.5
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.033	520.6	754.5
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.031	526.5	754.5
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.171	522.6	754.5
410	J-N4410E	22,639.90	5,963,300.90	701	0.04	523.6	754.5
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	528.5	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	536.3	754.5
413	J-N4010E	22,546.33	5,963,750.87	700	0.117	533.4	754.5
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.131	527.5	754.5
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	525.5	754.5
416	J-N4041E	22,443.94	5,963,514.35	701	0	523.6	754.5
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.056	518.7	754.5
418	J-N4043E	22,444.72	5,963,305.56	701	0.232	523.6	754.5
419	J-N4070E	22,557.86	5,963,211.47	701	0.55	523.6	754.5
420	J-N4080E	22,553.97	5,963,123.99	701.5	0.698	518.7	754.5
421	J-N4081E	22,468.80	5,963,123.50	701	0	523.6	754.5
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.073	514.8	754.5
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.073	516.7	754.5
424	J-N4092E	22,681.89	5,962,970.03	702	0.107	513.8	754.5
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.056	512.8	754.5
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.05	518.7	754.5
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.061	516.7	754.5
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.027	512.8	754.5
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.05	508.9	754.5
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.065	506.9	754.5
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.046	514.8	754.5
432	J-N4121E	22,725.05	5,962,737.13	701	0.056	523.6	754.5
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.069	526.5	754.5
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.019	525.6	754.5
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.008	524.6	754.5
436	J-N4431E	22,871.76	5,963,060.11	701	0.05	523.6	754.5
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.046	520.7	754.5
438	J-N4131E	22,739.70	5,962,940.69	702	0.134	513.8	754.5
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.092	546.2	754.51
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.031	541.3	754.51
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.019	560.2	754.51
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	559	754.51
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.023	549.1	754.51
444	J-N1246E	24,900.57	5,964,065.27	697	0.038	562.8	754.51
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	556	754.51
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.056	559.9	754.51
447	J-N1400E	24,827.83	5,963,657.23	698	0.05	553.1	754.51
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.046	566.9	754.53
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.065	565.9	754.52
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.046	528.5	754.5
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.031	524.6	754.5
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.103	528.5	754.5
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.027	531.4	754.5
454	J-N3020E	23,160.99	5,963,967.57	699	0	543.2	754.5
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.031	544.3	754.52
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.065	565.4	754.52
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.084	552.5	754.53
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.061	547.8	754.53
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	549	754.5
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.02	549	754.5
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.184	548.1	754.5
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	546.1	754.5
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.054	548.1	754.5
464	J-N3160E	23,825.34	5,963,511.25	699	0.039	543.2	754.5
465	J-N3170E	23,903.33	5,963,511.58	699	0.084	543.2	754.5
466	J-N3180E	23,907.72	5,963,334.91	699	0	543.2	754.51
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	530	754.55
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.055	532.3	754.69
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.027	539.3	754.5
470	J-N1250E	24,499.78	5,964,149.64	698	0.027	553	754.51
471	J-N1251E	24,455.84	5,964,129.52	698	0.046	553	754.51
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.027	558.9	754.51
473	J-N1230E	24,475.43	5,964,196.22	698	0	553	754.51
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	552.2	754.57
475	J-S2140E	24,039.65	5,960,875.68	698	0.077	553.7	754.57
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	550.7	754.57
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.061	547.5	754.57
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.056	536.5	754.57
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.046	548.8	754.57
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.056	552.2	754.57
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.038	548.8	754.57
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.042	548.8	754.57
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.042	548.8	754.57
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	548.8	754.57
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.038	548.8	754.57
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.056	547.8	754.57
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.023	548.8	754.57

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.038	546.8	754.57
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.167	548.8	754.57
490	J-S2220E	24,180.05	5,960,467.40	698.65	0.523	547.3	754.57
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	548.8	754.57
492	J-S2240E	24,158.72	5,960,383.61	698.5	0.508	548.8	754.57
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	551.2	754.57
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	539	754.57
495	J-S2195E	23,781.62	5,960,412.85	698	0	553.7	754.57
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	548.8	754.57
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.056	541.8	754.57
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.061	540.4	754.57
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.046	533.5	754.57
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.027	537.9	754.57
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.046	540.9	754.57
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	550.7	754.57
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	539	754.57
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	550.7	754.57
505	J-S1110E	24,033.48	5,960,926.97	698	0.054	553.7	754.57
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.03	555	754.51
507	J-N1600E	24,201.37	5,964,131.25	698	0.056	553	754.51
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.065	545.7	754.5
509	J-N1620E	24,074.31	5,964,072.83	699	0.031	543.2	754.5
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.023	538.3	754.5
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.038	538.3	754.5
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.061	540.8	754.5
513	J-N1632E	24,036.37	5,963,917.92	700	0.042	533.4	754.5
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	538.3	754.5
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	545.6	754.5
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.061	548.1	754.51
517	J-N1060E	24,577.21	5,963,109.12	697	0	563	754.52
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.069	555.7	754.53
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.056	560.6	754.53
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.046	508.9	754.5
521	J-N4082E	22,469.20	5,963,082.83	701	0.031	523.6	754.5
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	561.1	754.53
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.065	561.1	754.53
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.09	559.1	754.53
526	J-N1471E	24,945.50	5,963,280.47	699	0	543.5	754.53
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	546.4	754.53
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	549.4	754.54
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.083	529	754.55
530	J-S2050E	23,441.95	5,961,556.46	699	0	543.8	754.56
531	J-S2051E	23,344.97	5,961,508.86	699	0.127	543.8	754.56
532	J-N1065E	24,522.60	5,963,163.07	697	0.855	563	754.52
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.157	529.4	754.5
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	529.4	754.5
537	J-3550I	23,858.78	5,963,861.50	697.8	0.077	554.9	754.5
538	J-3560I	23,895.14	5,963,776.63	698.8	0.077	545.1	754.5
539	J-3570I	23,930.36	5,963,667.29	699	0.077	543.2	754.5
540	J-3580I	23,794.98	5,963,838.03	698	0.065	553	754.5
541	J-3590F	23,690.63	5,963,983.45	697.5	0.061	557.8	754.5
542	J-3600I	23,601.86	5,963,939.64	698.3	0.096	550	754.5
543	J-3610I	23,453.97	5,963,928.59	699	0.132	543.2	754.5
544	J-3620F	23,389.20	5,964,002.63	699.6	0	537.3	754.5
548	J-3660F	23,675.98	5,964,023.67	697	0	562.7	754.5
551	J-3690I	22,621.02	5,963,751.20	699.5	0	538.2	754.5
557	J-3750I	24,202.10	5,960,810.43	700	0	534.1	754.57
563	J-3830F	24,662.04	5,962,661.31	699	0.023	543.4	754.53
564	J-3840F	24,769.05	5,962,856.55	698	0	553.3	754.54
565	J-S2011E	23,398.12	5,962,393.08	701	0	523.8	754.52
576	J-S2012E	23,398.36	5,962,126.10	701	0.043	523.9	754.53
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	538.3	754.5
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	538.3	754.5
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	539.3	754.51
611	J-4310F	22,779.97	5,964,010.72	699.5	0	538.2	754.5
614	J-3785F	24,389.79	5,962,392.01	698.7	0.031	546.3	754.52
615	J-N1023E	24,962.79	5,962,291.29	699	0	545.4	754.73
618	J-N1025E	24,955.73	5,962,436.30	699	0	545	754.69
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	539.4	754.62
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	548.9	754.58
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	548.8	754.57
622	J-3810F	24,808.50	5,962,854.71	698.5	0	548.5	754.54
629	J-4460I	23,866.43	5,960,918.16	700.5	0.09	529.2	754.57
630	J-4470I	24,688.40	5,963,006.16	698	0	553.2	754.53
632	J-4490F	23,389.95	5,964,203.21	699.2	0	541.2	754.5
638	J-4550I	24,097.29	5,963,722.12	698.5	0	548.1	754.5

Existing Development
Average Day Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
639	J-4560I	24,258.63	5,963,745.67	698	0	553.1	754.51
643	J-4600F	23,285.48	5,962,126.23	701.38	0.099	520.2	754.53
644	J-4610F	23,155.29	5,962,079.75	700.83	0.01	525.6	754.53
1317	J-2	22,730.02	5,963,753.33	700.5	0.023	528.5	754.5
1319	J-3	22,672.82	5,963,751.17	700.5	0	528.5	754.5
1323	J-4	22,621.02	5,963,836.43	700	0.061	533.4	754.5
1325	J-5	22,727.82	5,963,998.44	700.25	0.042	530.9	754.5
1327	J-6	22,732.18	5,964,070.61	701	0.071	523.6	754.5
1329	J-7	22,731.10	5,964,172.06	700.75	0.061	526	754.5
1331	J-8	22,631.81	5,964,169.90	701.5	0.077	518.7	754.5
1333	J-9	22,551.95	5,964,168.82	701	0	523.6	754.5
1337	J-10	23,451.65	5,963,733.50	699	0.102	543.2	754.5
1340	J-11	23,574.41	5,963,732.15	699.25	0.102	540.7	754.5
1342	J-12	23,453.00	5,963,830.63	698.75	0.132	545.6	754.5
1345	J-13	23,538.85	5,963,831.54	699.25	0.107	540.7	754.5
1347	J-14	23,454.35	5,964,026.24	699.1	0.061	542.2	754.5
1349	J-15	23,467.84	5,964,093.69	699.25	0	540.7	754.5
1351	J-16	23,573.06	5,964,030.28	699.25	0	540.7	754.5
1353	J-17	23,570.36	5,964,124.71	699	0	543.2	754.5
1355	J-18	23,532.59	5,963,931.81	699	0.096	543.2	754.5
1358	J-19	23,754.37	5,963,918.75	698.75	0.061	545.6	754.5
1361	J-20	23,728.46	5,963,820.53	698.75	0.029	545.6	754.5
1363	J-21	23,674.50	5,963,815.14	698.75	0.061	545.6	754.5
1365	J-22	23,673.42	5,963,866.94	699.25	0.036	540.7	754.5
1367	J-23	23,677.74	5,963,733.12	699	0.061	543.2	754.5
1369	J-24	23,746.80	5,963,730.96	699	0.042	543.2	754.5
1371	J-25	23,809.40	5,963,732.04	699	0.077	543.2	754.5
1374	J-26	23,798.19	5,963,731.64	699	0	543.2	754.5
1377	J-27	23,775.20	5,963,641.81	699.25	0	540.7	754.5
1379	J-28	23,710.13	5,963,639.34	699.5	0.065	538.3	754.5
1381	J-29	23,844.51	5,963,643.58	699.25	0.042	540.7	754.5
1383	J-30	23,845.57	5,963,511.32	699	0	543.2	754.5
1387	J-31	23,799.25	5,963,585.59	699.75	0.084	535.8	754.5
1388	J-32	23,845.57	5,963,586.29	699.5	0	538.3	754.5
1392	J-33	23,672.77	5,964,049.27	698.75	0.042	545.6	754.5
1394	J-34	23,670.18	5,964,144.24	699	0.065	543.2	754.5
1396	J-35	23,671.91	5,964,234.03	698.75	0.042	545.6	754.5
1398	J-36	23,671.05	5,964,280.65	699	0.023	543.2	754.5
1400	J-37	23,758.25	5,964,281.52	698.75	0.029	545.6	754.5
1402	J-38	23,813.50	5,964,238.35	698.75	0	545.6	754.5
1404	J-39	23,860.99	5,964,198.64	698.5	0.013	548.1	754.5
1406	J-40	23,792.78	5,964,135.61	698.5	0.013	548.1	754.5
1408	J-41	23,757.38	5,964,171.87	699.25	0	540.7	754.5
1410	J-42	23,740.12	5,964,098.49	698.5	0.006	548.1	754.5
1414	J-43	23,980.99	5,963,768.68	699.75	0.077	535.8	754.5
1416	J-44	24,000.53	5,963,681.98	700	0.036	533.4	754.5
1419	J-45	24,049.06	5,964,265.48	698.75	0.077	545.7	754.5
1421	J-46	23,957.33	5,964,279.51	698.75	0.071	545.7	754.5
1424	J-47	24,921.74	5,963,097.95	698.75	0	545.9	754.53
1426	J-48	24,960.60	5,963,073.13	699.25	0.048	541.1	754.53
1428	J-49	24,867.78	5,963,034.28	698.75	0.027	545.9	754.53
1432	J-51	24,805.19	5,963,090.39	698.5	0.023	548.4	754.53
1434	J-52	24,739.36	5,963,144.35	698.25	0.042	550.8	754.53
1436	J-53	24,688.64	5,963,093.63	698.25	0.084	550.8	754.53
1438	J-54	24,637.92	5,963,049.38	698.25	0	550.8	754.53
1443	J-55	24,746.03	5,963,032.58	698.5	0.071	548.4	754.53
1446	J-56	24,815.86	5,962,971.87	698.75	0.04	545.9	754.53
1448	J-57	24,793.42	5,962,913.17	699.25	0.036	541	754.53
1450	J-58	24,880.62	5,962,917.48	698.75	0.079	545.9	754.53
1452	J-59	24,463.42	5,962,681.55	699.25	0	540.9	754.52
1455	J-60	24,477.23	5,962,748.02	699	0.102	543.4	754.52
1457	J-61	24,560.98	5,962,657.37	698.5	0	548.3	754.52
1460	J-62	24,574.79	5,962,709.17	698.75	0.09	545.9	754.52
1464	J-64	23,859.42	5,960,815.72	699.25	0.061	541.4	754.57
1467	J-65	23,919.85	5,960,828.67	698.5	0	548.8	754.57
1469	J-66	23,954.39	5,960,863.21	699.25	0.061	541.4	754.57
1471	J-67	23,951.80	5,960,932.28	698.75	0.061	546.3	754.57
1475	J-68	24,151.23	5,960,824.36	699.5	0	539	754.57
1477	J-69	24,160.73	5,960,864.07	700.5	0.048	529.2	754.57
1479	J-70	24,173.68	5,960,913.28	699.75	0.048	536.5	754.57
1481	J-71	24,122.74	5,960,921.05	699.25	0.042	541.4	754.57
1485	J-73	23,863.50	5,960,738.53	699.2	0.054	541.9	754.57
1488	J-74	24,008.12	5,960,795.72	699.25	0.029	541.4	754.57
1491	J-75	23,533.91	5,963,732.98	699.5	0	538.3	754.5
1494	J-76	23,929.23	5,963,577.78	699	0.071	543.2	754.5
1497	J-77	24,049.40	5,963,701.17	699.25	0.376	540.8	754.5

**Existing Development
Average Day Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1500	J-78	24,258.00	5,963,633.98	699	0.174	543.3	754.51
1508	J-79	25,046.68	5,962,853.87	700	0	533.9	754.56
1510	J-80	25,042.43	5,963,175.51	700.5	0	528.9	754.54
1512	J-81	25,046.04	5,963,527.62	699	0	543.6	754.54
1514	J-82	24,960.02	5,964,132.73	698.2	0	551.1	754.51
1521	J-83	26,363.57	5,963,530.33	700	0	533.7	754.53
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	523.9	754.53
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.294	533.7	754.53
1550	J-92	25,818.46	5,963,541.11	700	0	533.7	754.53
1557	J-94	23,168.88	5,964,201.54	698.35	0.042	549.5	754.5
1563	J-97	23,572.11	5,964,208.92	698.89	0.079	544.2	754.5
1609	J-116	22,980.29	5,962,035.89	700.36	0.04	530.2	754.53
1612	J-117	22,981.58	5,962,130.00	700.07	0.04	533	754.53
1613	J-118	23,116.29	5,962,177.05	700.4	0.036	529.8	754.53
1614	J-119	23,064.08	5,962,037.98	700.61	0.071	527.7	754.53
1644	J-129	22,662.34	5,963,932.49	700.13	0	532.1	754.5
1681	J-137	23,388.97	5,962,746.95	700.04	0	533.1	754.51
1684	J-138	22,557.14	5,963,245.10	700.93	0	524.3	754.5
1687	J-139	22,761.26	5,963,186.30	702.75	0	506.4	754.5
1701	J-140	23,586.96	5,963,525.74	698.45	0.048	548.6	754.5
1704	J-141	23,239.49	5,963,413.52	699.38	0.268	539.4	754.5
1711	J-143	23,345.33	5,961,555.68	699	0	543.8	754.56
1714	J-144	23,225.95	5,961,556.04	699	0	543.8	754.56
1786	J-165	23,502.59	5,964,204.60	699.08	0.128	542.3	754.5
1789	J-166	23,315.10	5,964,203.31	698.91	0.042	544	754.5
1792	J-167	23,168.27	5,964,090.48	698.75	0.042	545.6	754.5
1795	J-168	23,313.56	5,964,092.80	698.77	0.042	545.4	754.5
1798	J-169	23,315.88	5,964,279.82	698.79	0.042	545.2	754.5
1800	J-170	23,364.57	5,964,279.82	698.98	0.042	543.4	754.5
1802	J-171	23,243.23	5,964,202.54	698.64	0.042	546.7	754.5
1805	J-172	23,244.78	5,964,090.48	698.87	0.042	544.4	754.5
1809	J-173	23,069.34	5,964,200.99	699.45	0.042	538.8	754.5
1811	J-174	22,976.60	5,964,200.99	699.89	0.042	534.4	754.5
1813	J-175	22,976.60	5,964,112.89	700.15	0.042	531.9	754.5
1815	J-176	23,070.12	5,964,112.12	699.74	0.042	535.9	754.5
1819	J-178	22,974.67	5,964,279.75	700.05	0.042	532.9	754.5
1822	J-179	23,044.05	5,964,278.86	699.77	0.042	535.6	754.5
1825	J-180	23,130.99	5,964,278.86	699.49	0.042	538.4	754.5
1828	J-181	23,217.93	5,964,279.83	699.24	0.042	540.8	754.5
1832	J-182	23,439.83	5,964,204.12	699.15	0	541.7	754.5
1835	J-183	24,885.31	5,963,455.51	698.5	0	548.3	754.53
1838	J-184	23,025.30	5,962,131.36	700.17	0.075	532	754.53
1841	J-185	23,215.32	5,962,120.15	701.11	0.123	522.8	754.53

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-1.744	0.02	0	0.006
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-4.263	0.09	0.01	0.074
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-4.358	0.09	0.01	0.077
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-4.492	0.09	0.02	0.081
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-4.601	0.09	0.01	0.085
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	5.897	0.12	0.02	0.134
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	5.817	0.12	0.02	0.131
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	1.44	0.03	0	0.01
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	1.351	0.03	0	0.009
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	1.261	0.03	0	0.008
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-1.557	0.02	0	0.005
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	2.731	0.04	0	0.013
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	2.65	0.04	0	0.012
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	2.591	0.05	0	0.03
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	2.346	0.05	0	0.025
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-4.164	0.08	0.01	0.071
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-4.281	0.09	0.01	0.074
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-10.574	0.22	0.06	0.396
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	5.836	0.08	0	0.046
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	2.752	0.04	0	0.013
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-0.492	0.01	0	0.001
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-0.607	0.01	0	0.001
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.042	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-0.687	0.01	0	0.001
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.056	0	0	0
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-0.766	0.01	0	0.002
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-1.348	0.02	0	0.003
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.156	0.01	0	0.002
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.202	0.01	0	0.003
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.252	0.01	0	0.005
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	1.242	0.02	0	0.004
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-1.609	0.02	0	0.005
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-3.08	0.04	0	0.017
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-4.277	0.06	0	0.03
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.166	0.01	0	0
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.046	0	0	0
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	1.118	0.04	0	0.019
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.096	0.01	0	0.001
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.21	0.01	0	0.004
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.323	0.02	0	0.008
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.169	0.01	0	0.002
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.23	0.01	0	0.005
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	0.999	0.03	0	0.017
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	0.513	0.03	0	0.018
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	0.459	0.01	0	0.004
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.065	0	0	0
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.288	0.02	0	0.006
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.203	0.01	0	0.003
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.264	0.02	0	0.006
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.135	0.01	0	0.002
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.277	0.02	0	0.006
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	1.099	0.04	0	0.018
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-1.529	0.05	0	0.033
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-4.854	0.07	0	0.039
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-8.615	0.12	0.02	0.112
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	10.675	0.15	0.05	0.166
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	10.675	0.15	0.08	0.166
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.265	0.02	0	0.005
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-0.493	0.03	0	0.017
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-0.566	0.03	0	0.022
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-0.622	0.04	0	0.027
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	2.119	0.07	0.01	0.061
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	0.815	0.03	0	0.01
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.05	0	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.391	0.01	0	0.003
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-0.625	0.02	0	0.006
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-0.686	0.02	0	0.008
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-0.732	0.02	0	0.009
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	0.988	0.03	0	0.015
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	0.502	0.02	0	0.004
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.065	0	0	0
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	0.437	0.01	0	0.003
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.128	0	0	0.001
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	0.456	0.01	0	0.004
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.151	0	0	0.001
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.207	0.01	0	0.001

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.268	0.01	0	0.002
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.318	0.01	0	0.002
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-0.418	0.01	0	0.003
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.256	0.01	0	0.001
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.2	0.01	0	0.001
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.134	0	0	0
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.184	0.01	0	0.001
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.031	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-0.564	0.02	0	0.005
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.307	0.01	0	0.002
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	0.502	0.01	0	0
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	0.502	0.01	0	0.001
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-1.558	0.02	0	0.004
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-1.558	0.02	0	0.005
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-1.558	0.02	0	0.004
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.006	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.006	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.046	0	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.063	0	0	0
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.032	0	0	0
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.143	0	0	0
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.197	0.01	0	0.001
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.228	0.01	0	0.001
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.289	0.01	0	0.001
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.065	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.031	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.046	0	0	0
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-1.898	0.03	0	0.006
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-1.898	0.03	0	0.007
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-1.948	0.03	0	0.007
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	1.771	0.04	0	0.014
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	1.771	0.04	0	0.015
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	1.771	0.04	0	0.015
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-1.023	0.02	0	0.005
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-2.028	0.04	0	0.019
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.292	0.02	0	0.006
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-0.831	0.03	0	0.011
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-1.253	0.03	0	0.008
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-1.303	0.03	0	0.008
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-1.359	0.03	0	0.009
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-1.409	0.03	0	0.009
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	0.532	0.03	0	0.02
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.467	0.03	0	0.016
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.23	0.01	0	0.004
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.05	0	0	0
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.142	0.01	0	0.002
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.086	0	0	0
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.261	0.01	0	0.001
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.37	0.01	0	0.002
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	0.498	0.02	0	0.004
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.005	0	0	0
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.018	0	0	0
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.066	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	0.077	0	0	0.001
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.307	0.01	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-0.967	0.02	0	0.004
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	0.73	0.02	0	0.009
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.25	0.01	0	0.005
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.319	0.02	0	0.008
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.443	0.01	0	0.003
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.124	0	0	0
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.33	0.02	0	0.008
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.203	0.01	0	0.003
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-0.554	0.02	0	0.003
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-1.177	0.07	0	0.087
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-0.952	0.03	0	0.013
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.28	0.02	0	0.006
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.286	0.01	0	0.002
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.177	0.01	0	0
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.171	0.01	0	0
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.116	0	0	0
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.286	0.02	0	0.006
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.148	0.01	0	0.001
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.006	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	2.245	0.03	0	0.008
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-0.533	0.01	0	0

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-0.622	0.01	0	0.001
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.41	0.02	0	0.012
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.268	0.02	0	0.006
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.211	0.01	0	0.004
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.12	0.01	0	0.002
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-2.733	0.04	0	0.014
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.263	0.02	0	0.005
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.067	0	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-1.071	0.02	0	0.004
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	1.291	0.03	0	0
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-2.639	0.04	0	0.012
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.044	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.067	0	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.177	0.01	0	0.003
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.042	0	0	0
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.215	0.01	0	0.004
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.215	0.01	0	0.003
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.03	0	0	0
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.031	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.276	0.02	0	0.006
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.252	0.01	0	0.005
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.137	0.01	0	0.002
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.253	0.01	0	0.005
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-2.955	0.04	0	0.017
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.056	0	0	0
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-3.084	0.04	0	0.017
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.472	0.03	0	0.015
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	0.738	0.04	0	0.034
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-2.28	0.03	0	0.009
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-2.318	0.03	0	0.01
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-2.664	0.04	0	0.012
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.498	0.03	0	0.018
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.134	0.01	0	0.002
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.257	0.01	0	0.005
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.218	0.01	0	0.003
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-1.071	0.02	0	0.006
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.072	0	0	0.001
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-0.365	0.01	0	0.002
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.396	0.01	0	0.003
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	1.004	0.01	0	0.002
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.12	0	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.031	0	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	0.884	0.01	0	0.001
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	0.737	0.01	0	0.002
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	0.62	0.01	0	0.001
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.01	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.329	0.02	0	0.01
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	0.497	0.01	0	0
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.123	0.01	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.033	0	0	0
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.104	0.01	0	0.001
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.117	0.01	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.013	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.123	0.01	0	0.002
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.148	0.01	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.025	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.151	0.01	0	0.001
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.033	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.028	0	0	0
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.08	0	0	0
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.009	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.12	0.01	0	0.001
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.046	0	0	0.001
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-0.394	0.01	0	0.003
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	0.44	0.03	0	0.013
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-1.041	0.02	0	0.005
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.026	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.303	0.02	0	0.007
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.051	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.02	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	0.362	0.02	0	0.01
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.097	0.01	0	0.001
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.193	0.01	0	0.002
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-0.346	0.02	0	0.012
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-1.035	0.02	0	0.005
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.064	0	0	0

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.483	0.03	0	0.017
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.247	0.01	0	0.004
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.046	0	0	0
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	0.453	0.01	0	0.001
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.12	0.01	0	0.002
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.153	0.01	0	0.001
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.171	0	0	0
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.045	0	0	0
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.126	0.01	0	0.001
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-0.599	0.01	0	0.002
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.095	0	0	0
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.286	0	0	0
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.283	0	0	0
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-0.414	0.01	0	0.001
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-0.433	0.01	0	0.001
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.011	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.011	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.067	0	0	0.001
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.299	0	0	0
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-0.354	0.01	0	0
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.031	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-1.083	0.02	0	0.003
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.073	0	0	0
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.107	0	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-1.336	0.02	0	0.004
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.032	0	0	0
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.018	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.079	0	0	0
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.152	0.01	0	0.002
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.202	0.01	0	0.001
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	1.424	0.02	0	0.004
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-1.691	0.02	0	0.005
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.145	0.01	0	0.002
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.201	0.01	0	0.003
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.27	0.02	0	0.006
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-2.387	0.03	0	0.01
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.164	0.01	0	0.002
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.237	0.01	0	0.004
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	2.059	0.03	0	0.008
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	1.592	0.02	0	0.005
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.134	0	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.287	0.02	0	0.006
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-0.629	0.02	0	0.007
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-0.539	0.02	0	0.005
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.32	0.02	0	0.007
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-0.412	0.02	0	0.013
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-0.363	0.01	0	0.002
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-0.394	0.01	0	0.002
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.22	0.01	0	0.001
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.325	0.02	0	0.007
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.392	0.02	0	0.011
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.204	0.01	0	0.003
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-3.25	0.05	0	0.018
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-3.269	0.05	0	0.019
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-3.72	0.05	0	0.024
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-3.72	0.05	0	0.023
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.318	0.01	0	0.001
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.222	0.01	0	0
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.184	0.01	0	0.001
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-0.726	0.02	0	0.008
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-0.726	0.02	0	0.009
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	0.456	0.01	0	0.003
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.056	0	0	0.001
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	1.259	0.04	0	0.023
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	1.209	0.04	0	0.022
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.115	0	0	0
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.069	0	0	0.001
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-1.054	0.03	0	0.016
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-0.914	0.03	0	0.012
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.191	0.01	0	0.003
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.145	0.01	0	0.001
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.309	0.02	0	0.007
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.289	0.02	0	0.003
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.32	0	0	0.009
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	0.389	0.01	0	0
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.286	0	0	0

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.125	0.01	0	0.002
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.098	0.01	0	0.001
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.125	0.01	0	0.002
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.125	0.01	0	0.001
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.058	0	0	0
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.12	0	0	0
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.031	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-0.924	0.05	0	0.055
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-0.989	0.03	0	0.015
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-1.212	0.04	0	0.018
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-1.296	0.04	0	0.021
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.018	0	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.018	0	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	0.576	0.01	0	0.002
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.392	0.01	0	0.002
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-0.716	0.01	0	0.003
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	-1.771	0.04	0	0.014
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.275	0.01	0	0
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-2.046	0.04	0	0.019
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	6.456	0.13	0.01	0.157
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	10.675	0.15	0.02	0.166
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	10.62	0.22	0.02	0.399
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.307	0.02	0	0.007
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.334	0.02	0	0.007
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.222	0.01	0	0.005
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.295	0.01	0	0.001
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.046	0	0	0.002
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.027	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-0.502	0.02	0	0.004
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-0.529	0.02	0	0.004
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	1.744	0.02	0	0.006
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	1.097	0.02	0	0.003
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	1.02	0.01	0	0.003
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	1.112	0.02	0	0.002
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.27	0.01	0	0.002
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.224	0.01	0	0.001
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.311	0.01	0	0
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.273	0.01	0	0.002
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.231	0.01	0	0.001
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.189	0.01	0	0
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.189	0.01	0	0
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.151	0	0	0.001
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-1.103	0.02	0	0.002
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-1.269	0.02	0	0.003
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.786	0.01	0	0.002
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.143	0	0	0
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	1.198	0.02	0	0.003
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	1.031	0.01	0	0.002
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	0.508	0.01	0	0
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	0.508	0.01	0	0.001
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-0.521	0.02	0	0.006
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.233	0.01	0	0.001
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.294	0.01	0	0.001
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.34	0.01	0	0.002
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.391	0.01	0	0.003
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.345	0.01	0	0.002
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-0.757	0.02	0	0.004
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-0.521	0.02	0	0.004
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-1.638	0.02	0	0.005
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-2.45	0.03	0	0.011
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	0.811	0.02	0	0.004
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	0.811	0.02	0	0.003
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	0.757	0.02	0	0.003
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	0.479	0.01	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-1.527	0.02	0	0.005
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	1.975	0.04	0	0.017
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	1.858	0.04	0	0.016
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	1.645	0.03	0	0.013
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	1.614	0.03	0	0.011
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	1.122	0.02	0	0.006
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.47	0.02	0	0.004
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.409	0.01	0	0.002
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.367	0.01	0	0.002

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1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.367	0.01	0	0.003
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-1.084	0.02	0	0.007
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.061	0	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-0.856	0.03	0	0.012
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-0.925	0.03	0	0.013
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.046	0	0	0
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.031	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-0.981	0.03	0	0.012
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-0.981	0.03	0	0.012
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-1.046	0.03	0	0.014
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.862	0.03	0	0.009
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.274	0.01	0	0
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-2.219	0.07	0.01	0.055
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.083	0	0	0
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	2.541	0.05	0	0.028
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	2.414	0.05	0	0.026
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-4.705	0.07	0	0.035
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-5.56	0.08	0	0.049
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.323	0.01	0	0
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.166	0	0	0
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	1.45	0.03	0	0.008
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.068	0	0	0
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.086	0	0	0
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	1.305	0.03	0	0.008
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	0.557	0.01	0	0
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.209	0.01	0	0.001
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-0.625	0.01	0	0.002
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-4.658	0.07	0.01	0.03
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	8.615	0.12	0	0.092
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-5.836	0.08	0	0.045
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	6.373	0.09	0.02	0.054
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	5.836	0.08	0.01	0.045
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-2.286	0.03	0	0.008
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-2.286	0.03	0	0.008
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	1.292	0.02	0	0.003
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.327	0.02	0	0.008
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.327	0.02	0	0.008
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.321	0.02	0	0.008
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	2.481	0.04	0	0.009
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	0.727	0.04	0	0.028
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.012	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.031	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-14.788	0.21	0.12	0.303
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-14.788	0.21	0.03	0.303
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-14.788	0.21	0.04	0.303
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-14.788	0.21	0.04	0.303
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-14.788	0.21	0.04	0.303
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-14.788	0.21	0.01	0.304
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-14.788	0.21	0.01	0.302
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-8.615	0.12	0	0.111
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-3.957	0.06	0	0.027
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.174	0.01	0	0
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-0.494	0.01	0	0.001
1272	P-6440F	J-N2380E	J-N2363E	84.6	200	PVC	120	0.186	0.01	0	0.001
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.143	0	0	0
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.023	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.154	0	0	0
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.051	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.02	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.081	0	0	0
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.158	0.01	0	0.001
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.158	0	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.166	0	0	0
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	0.6	0.01	0	0.002
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.396	0.01	0	0.001
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.157	0	0	0
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.107	0	0	0
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	0.39	0.01	0	0.001
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.329	0.01	0	0.001
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.329	0.01	0	0.001
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	0.461	0.01	0	0.001
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	0.365	0.01	0	0

**Existing Development
Average Day Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	1.304	0.03	0	0.007
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	1.243	0.03	0	0.007
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.09	0	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.061	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.036	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.036	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.097	0	0	0
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.153	0	0	0.001
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.139	0	0	0.001
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.23	0	0	0
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.37	0.01	0	0.001
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.065	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-0.435	0.01	0	0
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-0.755	0.02	0	0.004
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-1.316	0.03	0	0.008
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-0.477	0.01	0	0.001
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-0.561	0.01	0	0.002
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.084	0	0	0
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	0.625	0.01	0	0
1395	P-5863	J-33	J-34	95	250	PVC	110	0.427	0.01	0	0.001
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.362	0.01	0	0.001
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.023	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.095	0	0	0
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.124	0	0	0
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.124	0	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.137	0	0	0
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.15	0	0	0
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.156	0.01	0	0.001
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.077	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-0.412	0.01	0	0.003
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.148	0	0	0.001
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.071	0	0	0
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	1.47	0.05	0	0.025
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.048	0	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	1.422	0.05	0	0.025
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	1.24	0.04	0	0.019
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	0.833	0.03	0	0.009
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	0.791	0.03	0	0.008
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-4.703	0.07	0	0.037
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-3.996	0.06	0	0.027
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	0.707	0.02	0	0.007
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.274	0.01	0	0.002
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.11	0	0	0
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.039	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.155	0	0	0
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.036	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.079	0	0	0
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-4.443	0.06	0	0.033
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-4.545	0.06	0	0.034
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.102	0.01	0	0
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-4.545	0.06	0	0.029
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-4.635	0.07	0	0.03
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.09	0.01	0	0
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.253	0.01	0	0.001
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.181	0.01	0	0.001
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.181	0.01	0	0
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-0.343	0	0	0
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-0.647	0.01	0	0.001
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.242	0.01	0	0.001
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.138	0	0	0
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.138	0	0	0
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.09	0	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.042	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	0.374	0.01	0	0.002
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.32	0.01	0	0.002
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	0.882	0.01	0	0.001
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	0.853	0.01	0	0.002
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.102	0	0	0
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.102	0.01	0	0
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-0.575	0.01	0	0.002
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-0.646	0.01	0	0.002
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-0.376	0.01	0	0.001

Existing Development
Average Day Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.174	0.01	0	0.001
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	6.094	0.09	0	0.042
1511	P-5926	J-79	J-80	321.67	300	PVC	120	6.094	0.09	0.01	0.042
1513	P-5927	J-80	J-81	352.13	300	PVC	120	2.405	0.03	0	0.007
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.184	0.01	0	0.001
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.184	0.01	0	0
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-3.689	0.12	0.01	0.119
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	2.111	0.03	0	0
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	2.405	0.03	0.01	0.007
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	2.111	0.03	0	0.006
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-2.111	0.03	0.01	0.006
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-2.111	0.03	0	0.006
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.329	0.01	0	0
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.392	0.01	0	0.001
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.107	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.178	0	0	0
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.067	0	0	0
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.084	0	0	0
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.093	0	0	0.001
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.093	0	0	0
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	3.208	0.05	0	0.015
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	3.208	0.05	0	0.015
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-0.28	0	0	0
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.196	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-0.476	0.01	0	0.001
1691	P-6020	J-139	J-N4420E	166.87	250	PVC	120	-0.476	0.01	0	0.001
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-0.614	0.01	0	0.001
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-0.662	0.01	0	0.003
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-1.042	0.01	0	0.002
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-1.31	0.02	0	0.003
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	0.127	0	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.127	0	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	120	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-0.643	0.02	0	0.005
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-0.515	0.02	0	0.003
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.157	0.01	0	0.001
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.107	0	0	0
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.1	0	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.227	0.01	0	0.001
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.042	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.128	0	0	0
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.146	0	0	0.001
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.008	0	0	0
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.058	0	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.024	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.193	0.01	0	0.001
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.078	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.011	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.031	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.073	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.025	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.017	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.059	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.143	0	0	0
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.101	0	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-0.515	0.02	0	0.003
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-0.515	0.02	0	0.002
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.008	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	2.119	0.07	0.01	0.06
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.027	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.048	0	0	0
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.272	0	0	0
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-0.395	0.01	0	0

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	532.7	752.73
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.207	521	752.73
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.285	521.6	752.79
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.402	522.4	752.83
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.327	523.1	752.95
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.231	520.2	753.05
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.24	519.7	752.9
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.288	515.3	752.76
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.267	521.1	752.74
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.27	526.9	752.73
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.261	524.8	752.72
195	J-S2100E	23,886.25	5,961,252.83	699	0.243	525.8	752.73
196	J-S2080E	23,585.41	5,961,251.56	699	0.243	525.6	752.71
197	J-S2070E	23,468.77	5,961,251.56	699	0.177	525.5	752.7
198	J-S2060E	23,444.47	5,961,408.54	699	0.15	525.2	752.66
199	J-S2040E	23,441.07	5,961,591.28	699	0.204	524.8	752.62
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.162	511.8	752.59
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.351	514.5	752.67
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.138	520.5	753.48
203	J-S2010E	23,396.57	5,962,474.58	700	0	511.6	752.27
204	J-N4200E	23,397.75	5,962,576.48	701	0	501.5	752.24
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.108	504.3	752.23
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.345	517.1	752.23
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.114	517.1	752.23
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.126	510.2	752.23
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.069	517.1	752.23
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.168	510.2	752.23
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.15	518.1	752.23
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.15	519.1	752.24
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.138	529.9	752.24
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.15	533.8	752.24
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.195	530.4	752.24
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.15	520.1	752.24
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.183	529.9	752.25
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.237	519.4	752.27
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	520.7	752.31
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	522.7	752.31
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.138	524.6	752.31
222	J-N2255E	24,475.27	5,962,571.66	700	0.093	511.9	752.31
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.081	523.7	752.31
224	J-N2260E	24,501.40	5,962,673.31	699	0	522	752.34
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.069	525.2	752.26
226	J-N3301E	24,349.68	5,962,783.56	699	0.288	521.2	752.26
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.219	532.8	752.24
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.168	525.9	752.24
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.093	524	752.24
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.183	525	752.24
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.081	525.1	752.26
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	529	752.26
233	J-N3321E	24,349.51	5,962,866.08	700	0.195	511.4	752.26
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.515	526.1	752.25
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.207	528.8	752.23
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.15	525	752.24
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.183	527	752.24
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.183	529	752.25
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.662	525.1	752.25
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.207	528.9	752.24
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.219	533.8	752.25
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.345	537.8	752.25
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.114	533	752.27
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.168	540.1	752.29
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.345	540.6	752.31
246	J-N1050E	24,728.87	5,962,855.33	698	0	532.6	752.42
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.237	526.6	752.61
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	523.3	753.37
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	523.7	754.81
250	J-S1010E	24,688.47	5,961,838.45	701	0	522.8	754.42
251	J-S1020E	24,215.83	5,961,901.63	700	0	526.5	753.79
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.114	543.3	752.32
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.126	544.7	752.36
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.183	525.1	752.36
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.069	538	752.27
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.219	546.9	752.28
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.168	537.3	752.3
258	J-N1420E	24,855.27	5,963,531.46	698	0	531.6	752.32
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.138	528.2	752.27

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.081	541.8	752.26
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.081	532.9	752.25
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.045	531.9	752.24
263	J-N1311E	24,830.34	5,963,795.82	698	0.15	530.9	752.24
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.081	531.8	752.24
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.183	527	752.25
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.138	527.1	752.26
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.093	531.8	752.24
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	529.8	752.24
269	J-N1292E	24,905.57	5,963,948.00	698	0.195	530.8	752.23
270	J-N1245E	24,928.90	5,964,040.14	697	0.093	540.6	752.23
271	J-N1244E	24,955.72	5,964,184.39	697	0.168	540.5	752.23
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.168	545.4	752.23
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.126	529.8	752.23
274	J-N1281E	24,668.79	5,963,904.06	698	0.168	530.8	752.23
275	J-N1282E	24,737.99	5,963,838.74	697	0.183	540.6	752.23
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.15	533.7	752.24
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.114	542.6	752.24
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.057	534.7	752.24
279	J-N1242E	24,655.18	5,964,247.76	698	0.168	530.7	752.23
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.081	537.6	752.23
281	J-N1272E	24,643.90	5,964,097.68	698	0.15	530.7	752.23
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.093	522.9	752.23
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.093	526.8	752.23
284	J-N1240E	24,492.27	5,964,163.87	698	0	530.7	752.23
285	J-N1220E	24,450.28	5,964,244.12	698	0	530.7	752.22
286	J-N1210E	24,398.26	5,964,217.60	698	0	530.7	752.22
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.069	532.6	752.22
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.093	533.7	752.23
289	J-N1170E	24,279.97	5,963,894.02	698	0	530.8	752.23
290	J-N1160E	24,301.35	5,963,782.73	698	0	530.8	752.24
291	J-N1150E	24,302.39	5,963,747.88	698	0.483	530.8	752.24
292	J-N1370E	24,390.29	5,963,759.89	698	0.093	530.8	752.24
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.069	535.7	752.24
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.138	537.7	752.24
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.138	526.9	752.24
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.069	545.5	752.24
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.093	533.8	752.24
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.045	543.5	752.24
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.195	541.6	752.24
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.093	545.5	752.24
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.138	532.8	752.24
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	537.7	752.24
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.15	535.8	752.25
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	536.8	752.25
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	532.8	752.24
306	J-N3182E	24,109.98	5,963,355.50	698	0	530.7	752.22
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	527.6	752.21
308	J-N3190E	23,838.79	5,963,334.11	699	0.096	520.7	752.2
309	J-N3210E	23,839.27	5,963,187.82	699	0.168	520.7	752.21
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.276	524.7	752.21
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.168	527.7	752.22
312	J-N3420E	23,966.13	5,962,983.37	698	0	530.8	752.23
313	J-N3240E	23,840.96	5,962,916.81	698	0.15	530.7	752.23
314	J-N3250E	23,877.98	5,962,777.15	698	0.168	530.8	752.24
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.15	526	752.24
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.195	521.8	752.22
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.219	524.6	752.2
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.114	514.8	752.2
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.15	507	752.2
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.168	505	752.2
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.183	521.9	752.2
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.264	521.2	752.2
323	J-N2370E	23,750.00	5,963,047.05	699	0.138	520.7	752.2
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.15	515.8	752.2
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.195	522.6	752.2
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.252	529.5	752.2
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.126	518.7	752.2
328	J-N3200E	23,838.64	5,963,310.50	699	0.093	520.7	752.2
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.069	521.6	752.2
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.081	527.4	752.19
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.207	523.5	752.19
332	J-N2350E	23,748.75	5,963,237.41	699	0	520.6	752.2
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.414	526.2	752.17
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.063	528.2	752.17
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.609	525.3	752.17

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	524.3	752.18
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.168	524.4	752.18
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.081	515.7	752.19
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.201	522.4	752.2
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.054	516.7	752.2
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.063	516.7	752.2
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	516.7	752.2
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.048	516.8	752.2
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.033	511.9	752.2
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	515.6	752.19
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.141	515.6	752.19
347	J-N2120E	23,392.51	5,963,312.31	699	0.135	520.4	752.18
348	J-N2121E	23,395.90	5,963,312.31	699	0	520.4	752.18
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.066	521.3	752.17
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.021	524.2	752.16
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	516.4	752.17
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	521.2	752.16
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	521.2	752.16
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.199	521.2	752.16
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.045	521.2	752.16
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.114	511.5	752.16
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	511.5	752.16
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.207	515.4	752.16
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	515.4	752.16
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.219	515.4	752.16
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.093	516.4	752.16
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.168	515.7	752.19
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.414	513.8	752.2
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.114	512.4	752.2
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.219	512.4	752.2
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.168	509.9	752.2
367	J-N4510E	23,116.00	5,962,864.49	700	0.126	510.7	752.18
368	J-N4500E	23,107.06	5,962,864.49	700	0.15	510.7	752.18
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.114	501.8	752.18
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.114	505.8	752.18
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.114	507.8	752.19
372	J-N4490E	23,107.28	5,962,982.98	700	0.183	510.5	752.16
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.138	509.5	752.16
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.171	517.3	752.16
375	J-N4350E	23,104.18	5,963,517.50	699	0.126	520.2	752.15
376	J-N3090E	23,166.53	5,963,519.61	699	0	520.2	752.16
377	J-N2070E	23,171.01	5,963,524.71	699	0	520.2	752.16
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	514.4	752.16
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	522.2	752.15
380	J-N2050E	23,164.50	5,963,745.83	699	0	520.2	752.15
381	J-N2040E	23,164.50	5,963,849.54	699	0	520.2	752.15
382	J-N2020E	23,168.07	5,964,021.69	699	0	520.2	752.15
383	J-N2010E	23,229.47	5,964,021.52	699	0.03	520.2	752.15
384	J-N3010E	23,161.69	5,964,008.03	699	1.362	520.2	752.15
385	J-N3030E	23,160.50	5,963,849.48	699	0.093	520.2	752.15
386	J-N3031E	23,161.50	5,963,836.74	699	0.114	520.2	752.15
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	522.2	752.15
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.168	522.2	752.15
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	514.3	752.15
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.168	514.3	752.15
391	J-N3032E	22,992.17	5,963,835.82	699	0.183	520.2	752.15
392	J-N3051E	22,992.42	5,963,732.81	700	0.183	510.4	752.15
393	J-N3071E	22,992.67	5,963,640.74	700	0.195	510.4	752.15
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	514.3	752.15
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.081	513.3	752.15
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.156	504.5	752.15
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.093	507.4	752.15
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.093	509.4	752.15
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.018	509.3	752.14
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.288	508.3	752.14
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	498.6	752.14
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.078	498.6	752.14
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.214	497.6	752.14
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	497.6	752.15
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.138	505.6	752.16
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.237	506.4	752.14
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.099	497.6	752.14
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.093	503.4	752.14
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.513	499.5	752.14
410	J-N4410E	22,639.90	5,963,300.90	701	0.12	500.5	752.14
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	505.4	752.14

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	513.2	752.14
413	J-N4010E	22,546.33	5,963,750.87	700	0.351	510.3	752.14
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.393	504.4	752.14
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	502.5	752.14
416	J-N4041E	22,443.94	5,963,514.35	701	0	500.5	752.14
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.168	495.6	752.14
418	J-N4043E	22,444.72	5,963,305.56	701	0.696	500.5	752.14
419	J-N4070E	22,557.86	5,963,211.47	701	1.65	500.5	752.14
420	J-N4080E	22,553.97	5,963,123.99	701.5	2.094	495.6	752.14
421	J-N4081E	22,468.80	5,963,123.50	701	0	500.5	752.14
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.219	491.7	752.14
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.219	493.7	752.14
424	J-N4092E	22,681.89	5,962,970.03	702	0.321	490.7	752.14
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.168	489.8	752.15
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.15	495.7	752.15
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.183	493.7	752.15
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.081	489.8	752.15
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.15	485.9	752.15
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.195	483.9	752.15
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.138	491.8	752.15
432	J-N4121E	22,725.05	5,962,737.13	701	0.168	500.6	752.15
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.207	503.6	752.16
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.057	502.7	752.16
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.024	501.7	752.16
436	J-N4431E	22,871.76	5,963,060.11	701	0.15	500.6	752.15
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.138	497.7	752.16
438	J-N4131E	22,739.70	5,962,940.69	702	0.402	490.9	752.16
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.276	524	752.24
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.093	519.2	752.26
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.057	538.3	752.27
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	536.9	752.26
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.069	526.8	752.23
444	J-N1246E	24,900.57	5,964,065.27	697	0.114	540.6	752.23
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	533.8	752.24
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.168	537.9	752.26
447	J-N1400E	24,827.83	5,963,657.23	698	0.15	531.1	752.26
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.138	545.7	752.36
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.195	544.7	752.35
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.138	505.7	752.18
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.093	501.7	752.16
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.309	505.4	752.14
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.081	508.5	752.16
454	J-N3020E	23,160.99	5,963,967.57	699	0	520.2	752.15
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.093	522.7	752.31
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.195	544.1	752.34
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.252	531.5	752.37
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.183	526.9	752.4
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	526.2	752.17
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.06	526.2	752.17
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.552	525.2	752.17
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	523.2	752.16
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.162	525.3	752.17
464	J-N3160E	23,825.34	5,963,511.25	699	0.117	520.4	752.17
465	J-N3170E	23,903.33	5,963,511.58	699	0.253	520.4	752.18
466	J-N3180E	23,907.72	5,963,334.91	699	0	520.7	752.2
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	510.4	752.55
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.165	521.7	753.61
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.081	516.7	752.19
470	J-N1250E	24,499.78	5,964,149.64	698	0.081	530.7	752.23
471	J-N1251E	24,455.84	5,964,129.52	698	0.138	530.7	752.23
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.081	536.6	752.23
473	J-N1230E	24,475.43	5,964,196.22	698	0	530.7	752.23
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	534.1	752.72
475	J-S2140E	24,039.65	5,960,875.68	698	0.231	535.5	752.72
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	532.6	752.72
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.183	529.3	752.72
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.168	518.4	752.71
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.138	530.6	752.71
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.168	534	752.71
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.114	530.6	752.71
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.126	530.6	752.71
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.126	530.6	752.71
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	530.6	752.71
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.114	530.6	752.71
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.168	529.6	752.71
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.069	530.6	752.71

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.114	528.6	752.71
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.501	530.5	752.71
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.569	529.1	752.71
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	530.5	752.71
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.524	530.5	752.71
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	533	752.71
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	520.8	752.72
495	J-S2195E	23,781.62	5,960,412.85	698	0	535.5	752.71
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	530.6	752.71
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.168	523.7	752.72
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.183	522.2	752.72
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.138	515.4	752.72
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.081	519.8	752.72
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.138	522.8	752.72
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	532.6	752.72
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	521	752.73
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	532.7	752.73
505	J-S1110E	24,033.48	5,960,926.97	698	0.162	535.6	752.72
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.091	532.6	752.22
507	J-N1600E	24,201.37	5,964,131.25	698	0.168	530.6	752.21
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.195	523.1	752.2
509	J-N1620E	24,074.31	5,964,072.83	699	0.093	520.6	752.19
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.069	515.6	752.19
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.114	515.6	752.18
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.183	518.1	752.19
513	J-N1632E	24,036.37	5,963,917.92	700	0.126	510.7	752.18
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	515.6	752.18
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	522.9	752.18
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.183	525.7	752.21
517	J-N1060E	24,577.21	5,963,109.12	697	0	541.7	752.35
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.207	534.4	752.36
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.168	539.4	752.37
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.138	485.9	752.15
521	J-N4082E	22,469.20	5,963,082.83	701	0.093	500.5	752.14
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	540	752.37
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.195	540	752.38
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.27	538.2	752.39
526	J-N1471E	24,945.50	5,963,280.47	699	0	522.6	752.4
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	525.5	752.39
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	528.9	752.44
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.249	509.4	752.55
530	J-S2050E	23,441.95	5,961,556.46	699	0	524.9	752.63
531	J-S2051E	23,344.97	5,961,508.86	699	0.381	524.9	752.63
532	J-N1065E	24,522.60	5,963,163.07	697	2.565	541.4	752.32
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.471	506.4	752.14
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	506.4	752.14
537	J-3550I	23,858.78	5,963,861.50	697.8	0.231	532.1	752.17
538	J-3560I	23,895.14	5,963,776.63	698.8	0.231	522.4	752.17
539	J-3570I	23,930.36	5,963,667.29	699	0.231	520.4	752.17
540	J-3580I	23,794.98	5,963,838.03	698	0.195	530.2	752.17
541	J-3590F	23,690.63	5,963,983.45	697.5	0.183	535	752.16
542	J-3600I	23,601.86	5,963,939.64	698.3	0.288	527.1	752.16
543	J-3610I	23,453.97	5,963,928.59	699	0.396	520.3	752.16
544	J-3620F	23,389.20	5,964,002.63	699.6	0	514.4	752.16
548	J-3660F	23,675.98	5,964,023.67	697	0	539.8	752.16
551	J-3690I	22,621.02	5,963,751.20	699.5	0	515.2	752.14
557	J-3750I	24,202.10	5,960,810.43	700	0	515.9	752.72
563	J-3830F	24,662.04	5,962,661.31	699	0.07	522.4	752.37
564	J-3840F	24,769.05	5,962,856.55	698	0	532.9	752.45
565	J-S2011E	23,398.12	5,962,393.08	701	0	502.1	752.3
576	J-S2012E	23,398.36	5,962,126.10	701	0.129	503	752.39
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	515.7	752.2
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	515.7	752.2
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	516.8	752.2
611	J-4310F	22,779.97	5,964,010.72	699.5	0	515.2	752.14
614	J-3785F	24,389.79	5,962,392.01	698.7	0.093	524.6	752.31
615	J-N1023E	24,962.79	5,962,291.29	699	0	537.5	753.92
618	J-N1025E	24,955.73	5,962,436.30	699	0	534.2	753.58
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	524.3	753.07
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	531.3	752.79
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	530.6	752.72
622	J-3810F	24,808.50	5,962,854.71	698.5	0	528.3	752.49
629	J-4460I	23,866.43	5,960,918.16	700.5	0.27	511.1	752.72
630	J-4470I	24,688.40	5,963,006.16	698	0	532.3	752.39
632	J-4490F	23,389.95	5,964,203.21	699.2	0	518.2	752.15
638	J-4550I	24,097.29	5,963,722.12	698.5	0	525.3	752.17

Existing Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
639	J-4560I	24,258.63	5,963,745.67	698	0	530.8	752.24
643	J-4600F	23,285.48	5,962,126.23	701.38	0.297	499.3	752.39
644	J-4610F	23,155.29	5,962,079.75	700.83	0.029	504.6	752.39
1317	J-2	22,730.02	5,963,753.33	700.5	0.069	505.4	752.14
1319	J-3	22,672.82	5,963,751.17	700.5	0	505.4	752.14
1323	J-4	22,621.02	5,963,836.43	700	0.183	510.3	752.14
1325	J-5	22,727.82	5,963,998.44	700.25	0.126	507.8	752.14
1327	J-6	22,732.18	5,964,070.61	701	0.213	500.5	752.14
1329	J-7	22,731.10	5,964,172.06	700.75	0.183	502.9	752.14
1331	J-8	22,631.81	5,964,169.90	701.5	0.231	495.6	752.14
1333	J-9	22,551.95	5,964,168.82	701	0	500.5	752.14
1337	J-10	23,451.65	5,963,733.50	699	0.306	520.3	752.16
1340	J-11	23,574.41	5,963,732.15	699.25	0.306	517.8	752.16
1342	J-12	23,453.00	5,963,830.63	698.75	0.396	522.7	752.16
1345	J-13	23,538.85	5,963,831.54	699.25	0.321	517.8	752.16
1347	J-14	23,454.35	5,964,026.24	699.1	0.183	519.3	752.16
1349	J-15	23,467.84	5,964,093.69	699.25	0	517.8	752.16
1351	J-16	23,573.06	5,964,030.28	699.25	0	517.8	752.16
1353	J-17	23,570.36	5,964,124.71	699	0	520.3	752.16
1355	J-18	23,532.59	5,963,931.81	699	0.288	520.3	752.16
1358	J-19	23,754.37	5,963,918.75	698.75	0.183	522.8	752.17
1361	J-20	23,728.46	5,963,820.53	698.75	0.087	522.8	752.17
1363	J-21	23,674.50	5,963,815.14	698.75	0.183	522.8	752.17
1365	J-22	23,673.42	5,963,866.94	699.25	0.108	517.9	752.17
1367	J-23	23,677.74	5,963,733.12	699	0.183	520.4	752.17
1369	J-24	23,746.80	5,963,730.96	699	0.126	520.4	752.17
1371	J-25	23,809.40	5,963,732.04	699	0.231	520.4	752.17
1374	J-26	23,798.19	5,963,731.64	699	0	520.4	752.17
1377	J-27	23,775.20	5,963,641.81	699.25	0	517.9	752.17
1379	J-28	23,710.13	5,963,639.34	699.5	0.195	515.5	752.17
1381	J-29	23,844.51	5,963,643.58	699.25	0.126	517.9	752.17
1383	J-30	23,845.57	5,963,511.32	699	0	520.4	752.17
1387	J-31	23,799.25	5,963,585.59	699.75	0.252	513	752.17
1388	J-32	23,845.57	5,963,586.29	699.5	0	515.5	752.17
1392	J-33	23,672.77	5,964,049.27	698.75	0.126	522.7	752.16
1394	J-34	23,670.18	5,964,144.24	699	0.195	520.3	752.16
1396	J-35	23,671.91	5,964,234.03	698.75	0.126	522.7	752.16
1398	J-36	23,671.05	5,964,280.65	699	0.069	520.3	752.16
1400	J-37	23,758.25	5,964,281.52	698.75	0.087	522.7	752.16
1402	J-38	23,813.50	5,964,238.35	698.75	0	522.7	752.16
1404	J-39	23,860.99	5,964,198.64	698.5	0.039	525.2	752.16
1406	J-40	23,792.78	5,964,135.61	698.5	0.039	525.2	752.16
1408	J-41	23,757.38	5,964,171.87	699.25	0	517.8	752.16
1410	J-42	23,740.12	5,964,098.49	698.5	0.018	525.2	752.16
1414	J-43	23,980.99	5,963,768.68	699.75	0.231	513.1	752.17
1416	J-44	24,000.53	5,963,681.98	700	0.108	510.6	752.17
1419	J-45	24,049.06	5,964,265.48	698.75	0.231	523.1	752.2
1421	J-46	23,957.33	5,964,279.51	698.75	0.213	523.1	752.2
1424	J-47	24,921.74	5,963,097.95	698.75	0	525.2	752.42
1426	J-48	24,960.60	5,963,073.13	699.25	0.144	520.3	752.42
1428	J-49	24,867.78	5,963,034.28	698.75	0.081	525.1	752.4
1432	J-51	24,805.19	5,963,090.39	698.5	0.069	527.4	752.39
1434	J-52	24,739.36	5,963,144.35	698.25	0.126	529.8	752.38
1436	J-53	24,688.64	5,963,093.63	698.25	0.252	529.8	752.38
1438	J-54	24,637.92	5,963,049.38	698.25	0	529.7	752.38
1443	J-55	24,746.03	5,963,032.58	698.5	0.213	527.4	752.39
1446	J-56	24,815.86	5,962,971.87	698.75	0.12	525.1	752.4
1448	J-57	24,793.42	5,962,913.17	699.25	0.108	520.2	752.4
1450	J-58	24,880.62	5,962,917.48	698.75	0.237	525.1	752.4
1452	J-59	24,463.42	5,962,681.55	699.25	0	519.5	752.33
1455	J-60	24,477.23	5,962,748.02	699	0.306	521.9	752.33
1457	J-61	24,560.98	5,962,657.37	698.5	0	527	752.35
1460	J-62	24,574.79	5,962,709.17	698.75	0.27	524.6	752.35
1464	J-64	23,859.42	5,960,815.72	699.25	0.183	523.3	752.72
1467	J-65	23,919.85	5,960,828.67	698.5	0	530.6	752.72
1469	J-66	23,954.39	5,960,863.21	699.25	0.183	523.3	752.72
1471	J-67	23,951.80	5,960,932.28	698.75	0.183	528.2	752.72
1475	J-68	24,151.23	5,960,824.36	699.5	0	520.8	752.72
1477	J-69	24,160.73	5,960,864.07	700.5	0.144	511	752.72
1479	J-70	24,173.68	5,960,913.28	699.75	0.144	518.4	752.72
1481	J-71	24,122.74	5,960,921.05	699.25	0.126	523.3	752.72
1485	J-73	23,863.50	5,960,738.53	699.2	0.162	523.7	752.72
1488	J-74	24,008.12	5,960,795.72	699.25	0.087	523.3	752.72
1491	J-75	23,533.91	5,963,732.98	699.5	0	515.4	752.16
1494	J-76	23,929.23	5,963,577.78	699	0.213	520.4	752.17
1497	J-77	24,049.40	5,963,701.17	699.25	1.128	518	752.17

**Existing Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1500	J-78	24,258.00	5,963,633.98	699	0.522	521	752.24
1508	J-79	25,046.68	5,962,853.87	700	0	514.7	752.59
1510	J-80	25,042.43	5,963,175.51	700.5	0	508.8	752.49
1512	J-81	25,046.04	5,963,527.62	699	0	523.3	752.47
1514	J-82	24,960.02	5,964,132.73	698.2	0	528.8	752.23
1521	J-83	26,363.57	5,963,530.33	700	0	513	752.41
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	503.2	752.41
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.882	513.1	752.42
1550	J-92	25,818.46	5,963,541.11	700	0	512.9	752.4
1557	J-94	23,168.88	5,964,201.54	698.35	0.126	526.5	752.15
1563	J-97	23,572.11	5,964,208.92	698.89	0.237	521.3	752.16
1609	J-116	22,980.29	5,962,035.89	700.36	0.12	509.2	752.39
1612	J-117	22,981.58	5,962,130.00	700.07	0.12	512.1	752.39
1613	J-118	23,116.29	5,962,177.05	700.4	0.108	508.8	752.39
1614	J-119	23,064.08	5,962,037.98	700.61	0.213	506.8	752.39
1644	J-129	22,662.34	5,963,932.49	700.13	0	509	752.14
1681	J-137	23,388.97	5,962,746.95	700.04	0	510.7	752.22
1684	J-138	22,557.14	5,963,245.10	700.93	0	501.2	752.14
1687	J-139	22,761.26	5,963,186.30	702.75	0	483.4	752.14
1701	J-140	23,586.96	5,963,525.74	698.45	0.144	525.8	752.17
1704	J-141	23,239.49	5,963,413.52	699.38	0.804	516.5	752.16
1711	J-143	23,345.33	5,961,555.68	699	0	524.9	752.63
1714	J-144	23,225.95	5,961,556.04	699	0	524.9	752.63
1786	J-165	23,502.59	5,964,204.60	699.08	0.384	519.4	752.16
1789	J-166	23,315.10	5,964,203.31	698.91	0.126	521	752.15
1792	J-167	23,168.27	5,964,090.48	698.75	0.126	522.6	752.15
1795	J-168	23,313.56	5,964,092.80	698.77	0.126	522.4	752.15
1798	J-169	23,315.88	5,964,279.82	698.79	0.126	522.2	752.15
1800	J-170	23,364.57	5,964,279.82	698.98	0.126	520.4	752.15
1802	J-171	23,243.23	5,964,202.54	698.64	0.126	523.7	752.15
1805	J-172	23,244.78	5,964,090.48	698.87	0.126	521.5	752.15
1809	J-173	23,069.34	5,964,200.99	699.45	0.126	515.8	752.15
1811	J-174	22,976.60	5,964,200.99	699.89	0.126	511.5	752.15
1813	J-175	22,976.60	5,964,112.89	700.15	0.126	508.9	752.15
1815	J-176	23,070.12	5,964,112.12	699.74	0.126	512.9	752.15
1819	J-178	22,974.67	5,964,279.75	700.05	0.126	509.9	752.15
1822	J-179	23,044.05	5,964,278.86	699.77	0.126	512.6	752.15
1825	J-180	23,130.99	5,964,278.86	699.49	0.126	515.4	752.15
1828	J-181	23,217.93	5,964,279.83	699.24	0.126	517.8	752.15
1832	J-182	23,439.83	5,964,204.12	699.15	0	518.8	752.15
1835	J-183	24,885.31	5,963,455.51	698.5	0	527.1	752.36
1838	J-184	23,025.30	5,962,131.36	700.17	0.225	511.1	752.39
1841	J-185	23,215.32	5,962,120.15	701.11	0.369	501.9	752.39

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-5.231	0.07	0.01	0.044
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-12.788	0.26	0.06	0.563
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-13.073	0.27	0.04	0.586
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-13.475	0.27	0.12	0.62
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-13.802	0.28	0.1	0.648
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	17.689	0.36	0.15	1.027
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	17.449	0.36	0.14	1.001
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	4.319	0.09	0.01	0.076
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	4.052	0.08	0.01	0.067
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	3.782	0.08	0.01	0.059
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-4.673	0.07	0.01	0.036
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	8.194	0.12	0.02	0.102
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	7.951	0.11	0.01	0.096
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	7.774	0.16	0.04	0.224
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	7.039	0.14	0.03	0.186
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-12.491	0.25	0.08	0.539
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-12.842	0.26	0.09	0.568
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-31.722	0.65	0.43	3.028
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	17.509	0.25	0.04	0.347
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	8.256	0.12	0.01	0.103
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-1.476	0.02	0	0.004
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-1.821	0.03	0	0.006
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.126	0.01	0	0.001
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-2.061	0.03	0	0.009
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-2.298	0.03	0	0.009
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-4.044	0.06	0	0.027
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.469	0.03	0	0.016
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.607	0.04	0	0.025
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.757	0.04	0	0.038
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	3.725	0.05	0	0.024
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-4.827	0.07	0	0.038
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-9.238	0.13	0.03	0.127
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-12.83	0.18	0.03	0.233
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.498	0.02	0	0.004
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.138	0	0	0
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	3.355	0.11	0.01	0.142
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.288	0.02	0	0.005
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.63	0.04	0.01	0.027
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.969	0.06	0	0.059
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.507	0.03	0	0.019
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.69	0.04	0	0.032
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	2.998	0.1	0	0.113
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.539	0.09	0.01	0.141
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	1.378	0.04	0	0.027
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.195	0.01	0	0.003
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.865	0.05	0.01	0.048
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.609	0.04	0	0.025
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.792	0.05	0	0.041
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.406	0.02	0	0.012
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.832	0.05	0.01	0.045
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	3.297	0.11	0.01	0.138
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-4.588	0.15	0.02	0.254
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-14.563	0.21	0.02	0.295
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-25.845	0.37	0.12	0.853
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	32.025	0.45	0.39	1.268
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	32.025	0.45	0.62	1.268
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.794	0.05	0.01	0.041
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-1.478	0.09	0.02	0.131
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.697	0.1	0.01	0.168
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.865	0.11	0.02	0.201
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	6.358	0.2	0.05	0.464
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	2.444	0.08	0.01	0.079
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.15	0.01	0	0.003
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	1.172	0.04	0	0.02
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-1.874	0.06	0	0.048
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-2.057	0.07	0.01	0.057
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-2.195	0.07	0	0.065
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	2.965	0.09	0	0.115
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.505	0.05	0	0.032
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.195	0.01	0	0.002
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	1.31	0.04	0	0.024
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.384	0.01	0	0.002
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	1.367	0.04	0	0.027
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.452	0.01	0	0.003
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.62	0.02	0	0.006

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.803	0.03	0	0.01
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.953	0.03	0	0.014
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.255	0.04	0	0.022
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.767	0.02	0	0.009
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.599	0.02	0	0.006
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.403	0.01	0	0.003
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.553	0.02	0	0.005
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.093	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-1.693	0.05	0	0.04
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.921	0.03	0	0.013
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	1.506	0.02	0	0.004
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	1.506	0.02	0	0.005
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-4.673	0.07	0	0.036
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-4.673	0.07	0	0.036
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-4.673	0.07	0	0.036
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.017	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.019	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.188	0.01	0	0.001
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.095	0	0	0
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.428	0.01	0	0.003
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.59	0.02	0	0.006
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.683	0.02	0	0.007
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.866	0.03	0	0.012
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.195	0.01	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.093	0.01	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-5.695	0.08	0	0.051
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-5.695	0.08	0.01	0.052
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-5.845	0.08	0	0.054
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	5.314	0.11	0.01	0.111
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	5.314	0.11	0.02	0.111
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	5.314	0.11	0.01	0.11
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-3.068	0.06	0.01	0.04
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-6.085	0.12	0.01	0.142
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.876	0.05	0	0.049
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-2.493	0.08	0.01	0.082
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-3.76	0.08	0	0.058
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-3.91	0.08	0.01	0.063
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-4.078	0.08	0.01	0.068
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-4.228	0.09	0.01	0.072
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.597	0.09	0.02	0.151
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	1.402	0.08	0.01	0.118
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.69	0.04	0	0.032
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.15	0.01	0	0.002
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.426	0.02	0	0.013
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.258	0.01	0	0.005
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.782	0.03	0	0.01
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-1.11	0.04	0	0.018
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.493	0.05	0	0.032
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.016	0	0	0
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.053	0	0	0
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.199	0.01	0	0.003
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	0.232	0.01	0	0.004
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.921	0.02	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-2.9	0.06	0	0.036
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	2.188	0.07	0.01	0.065
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.749	0.04	0.01	0.037
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.956	0.06	0.01	0.058
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-1.328	0.04	0	0.026
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.372	0.01	0	0.002
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.991	0.06	0.01	0.062
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.609	0.04	0	0.021
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-1.663	0.05	0	0.027
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-3.53	0.2	0	0.663
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-2.857	0.09	0.01	0.105
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.841	0.05	0.01	0.046
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.857	0.03	0	0.011
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.532	0.03	0	0.02
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.512	0.03	0	0.024
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.347	0.01	0	0.002
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.859	0.05	0	0.048
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.445	0.03	0	0.014
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.018	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	6.735	0.1	0.01	0.059
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.599	0.02	0	0

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-1.866	0.03	0	0.006
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	1.23	0.07	0.01	0.093
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.804	0.05	0.01	0.042
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.632	0.04	0	0.027
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.361	0.02	0	0.01
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-8.199	0.12	0.01	0.102
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.788	0.05	0.01	0.041
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.2	0.01	0	0.007
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-3.212	0.05	0	0.017
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	3.872	0.08	0	0.067
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-7.916	0.11	0.01	0.095
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.131	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.2	0.01	0	0.007
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.531	0.03	0	0.019
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.127	0.01	0	0.001
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.644	0.04	0	0.027
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.644	0.04	0.01	0.028
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.09	0.01	0	0.001
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.093	0.01	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.827	0.05	0.01	0.045
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.756	0.04	0	0.038
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.412	0.02	0	0.012
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.758	0.04	0	0.039
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-8.865	0.13	0	0.117
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.168	0.01	0	0.003
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-9.252	0.13	0.03	0.127
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	1.416	0.08	0.01	0.12
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	2.215	0.13	0	0.278
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-6.84	0.1	0.01	0.073
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-6.954	0.1	0.01	0.076
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-7.993	0.11	0.01	0.097
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	1.493	0.09	0.02	0.133
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.402	0.02	0	0.012
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.77	0.04	0.01	0.039
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.654	0.04	0	0.029
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-3.214	0.07	0.01	0.043
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.215	0.01	0	0.004
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-1.095	0.04	0	0.018
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-1.188	0.04	0	0.02
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	3.012	0.04	0	0.016
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.359	0.01	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.093	0.01	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	2.653	0.04	0	0.013
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	2.21	0.03	0	0.009
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	1.86	0.03	0	0.006
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.03	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.987	0.06	0	0.06
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	1.49	0.02	0	0.004
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.37	0.02	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.098	0.01	0	0
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.312	0.02	0	0.007
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.35	0.02	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.038	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.369	0.02	0	0.009
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.443	0.03	0	0.016
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.074	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.452	0.03	0	0.015
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.083	0	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.239	0.01	0	0.004
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.027	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.359	0.02	0	0.009
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.137	0.01	0	0.002
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-1.183	0.04	0	0.021
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	1.32	0.08	0	0.106
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-3.124	0.06	0.01	0.041
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.077	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.91	0.05	0.01	0.053
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.154	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.061	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	1.086	0.06	0.01	0.073
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.29	0.02	0	0.006
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.578	0.03	0	0.023
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-1.039	0.06	0	0.064
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-3.106	0.06	0	0.041
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.191	0.01	0	0.003

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-1.45	0.08	0	0.122
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.74	0.04	0	0.037
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	1.358	0.03	0	0.006
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.361	0.02	0	0.01
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.46	0.03	0	0.015
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.513	0.01	0	0.002
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.135	0.01	0	0.001
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.378	0.02	0	0.01
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-1.798	0.04	0	0.015
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.285	0.01	0	0
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.858	0.01	0	0.002
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.85	0.01	0	0.001
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-1.243	0.02	0	0.003
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-1.3	0.03	0	0.008
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.033	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.033	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.201	0.01	0	0.004
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.897	0.01	0	0.001
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-1.062	0.02	0	0.002
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.093	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-3.249	0.05	0	0.018
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.219	0.01	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.321	0.01	0	0.002
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-4.008	0.06	0	0.027
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.095	0.01	0	0.001
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.055	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.238	0.01	0	0.005
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.457	0.03	0	0.014
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.607	0.02	0	0.004
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	4.271	0.06	0	0.03
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-5.073	0.07	0	0.042
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.435	0.03	0	0.013
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.603	0.03	0	0.025
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.81	0.05	0	0.043
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-7.16	0.1	0.01	0.079
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.493	0.03	0	0.017
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.71	0.04	0	0.035
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	6.176	0.09	0.01	0.06
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	4.776	0.07	0	0.037
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.402	0.01	0	0.003
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.86	0.05	0.01	0.048
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.886	0.06	0	0.049
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.617	0.05	0	0.036
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.959	0.06	0.01	0.059
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.235	0.07	0.01	0.093
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-1.09	0.03	0	0.018
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-1.183	0.04	0	0.022
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.66	0.02	0	0.007
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.975	0.06	0	0.06
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-1.177	0.07	0.01	0.085
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.613	0.04	0	0.026
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-9.75	0.14	0.01	0.141
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-9.807	0.14	0.01	0.142
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-11.159	0.16	0.01	0.181
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-11.159	0.16	0.01	0.179
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.954	0.03	0	0.014
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.665	0.02	0	0.008
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.551	0.02	0	0.005
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-2.178	0.07	0	0.064
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-2.178	0.07	0	0.065
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	1.367	0.04	0	0.027
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	3.776	0.12	0.01	0.177
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	3.626	0.12	0.02	0.164
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.345	0.01	0	0.003
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.207	0.01	0	0.001
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-3.163	0.1	0.01	0.128
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-2.742	0.09	0.01	0.098
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.572	0.03	0	0.022
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.434	0.03	0	0.014
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.926	0.05	0.01	0.055
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.867	0.05	0	0.05
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.96	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	1.167	0.02	0	0.003
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.858	0.01	0	0.001

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.376	0.02	0	0.01
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.295	0.02	0	0.007
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.375	0.02	0	0.009
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.375	0.02	0	0.011
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.174	0.01	0	0.001
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.36	0.01	0	0
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.093	0.01	0	0.001
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-2.773	0.16	0.03	0.418
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-2.968	0.1	0.01	0.114
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-3.635	0.12	0.02	0.138
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-3.887	0.12	0.02	0.156
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.055	0	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.055	0	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.727	0.04	0	0.011
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	1.175	0.04	0	0.017
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-2.148	0.04	0	0.021
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	5.314	0.11	0.01	0.111
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.825	0.02	0	0.003
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-6.138	0.13	0.03	0.145
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	19.368	0.39	0.04	1.215
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	32.025	0.45	0.19	1.268
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	31.86	0.65	0.13	3.053
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.922	0.05	0	0.054
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-1.003	0.06	0.01	0.053
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.666	0.02	0	0.005
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.885	0.03	0	0.012
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.138	0.01	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.081	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-1.506	0.05	0	0.032
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-1.587	0.05	0	0.037
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	5.231	0.07	0.01	0.045
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	3.292	0.05	0	0.018
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	3.061	0.04	0	0.017
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	3.335	0.05	0	0.019
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.81	0.03	0	0.01
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.672	0.02	0	0.007
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.933	0.02	0	0.005
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.819	0.02	0	0.003
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.693	0.02	0	0.008
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.567	0.02	0	0.005
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.567	0.02	0	0.005
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.453	0.01	0	0.003
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-3.309	0.05	0	0.019
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-3.807	0.05	0	0.025
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-2.357	0.03	0	0.009
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.429	0.01	0	0.001
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	3.594	0.05	0	0.022
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	3.093	0.04	0	0.017
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.524	0.02	0	0.007
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.524	0.02	0	0.003
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-1.564	0.05	0	0.034
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.698	0.02	0	0.007
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.881	0.03	0	0.012
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-1.019	0.03	0	0.016
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	1.171	0.04	0	0.02
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	1.033	0.03	0	0.016
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-2.272	0.05	0	0.023
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-1.564	0.05	0	0.034
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-4.916	0.07	0	0.039
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-7.349	0.1	0	0.085
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	2.434	0.05	0	0.026
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	2.434	0.05	0	0.026
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	2.272	0.05	0	0.023
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	1.437	0.02	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-4.58	0.06	0	0.035
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	5.926	0.12	0.01	0.135
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	5.575	0.11	0.01	0.121
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	4.936	0.1	0.01	0.097
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	4.843	0.1	0	0.093
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	3.364	0.07	0	0.048
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	1.409	0.05	0	0.028
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	1.226	0.04	0	0.022
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	1.1	0.04	0	0.017

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	1.1	0.04	0	0.019
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-3.25	0.07	0	0.045
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.183	0.01	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-2.569	0.08	0	0.087
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-2.776	0.09	0.01	0.1
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.093	0.01	0	0.002
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-2.944	0.09	0.01	0.093
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-2.944	0.09	0.01	0.093
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-3.139	0.1	0.01	0.106
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-2.586	0.08	0.01	0.073
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.822	0.03	0	0.008
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-6.656	0.21	0.04	0.424
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.249	0.01	0	0.001
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	7.624	0.16	0.03	0.216
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	7.243	0.15	0.01	0.197
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-14.113	0.2	0.01	0.278
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-16.678	0.24	0.03	0.379
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.969	0.02	0	0.004
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.498	0.01	0	0.001
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	4.351	0.09	0.01	0.064
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.204	0	0	0
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.258	0.01	0	0
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	3.916	0.08	0	0.053
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	1.67	0.02	0	0.005
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.627	0.02	0	0.005
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.876	0.04	0	0.014
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-13.974	0.2	0.05	0.229
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	25.845	0.37	0.03	0.714
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-17.509	0.25	0.03	0.347
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	19.119	0.27	0.15	0.409
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	17.509	0.25	0.09	0.348
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-6.858	0.1	0.01	0.062
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-6.858	0.1	0	0.06
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	3.875	0.05	0	0.026
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.981	0.06	0	0.061
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.981	0.06	0.01	0.061
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.963	0.06	0.01	0.059
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	7.444	0.11	0	0.072
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	2.18	0.13	0	0.225
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.035	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.093	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-44.364	0.63	0.89	2.319
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-44.364	0.63	0.21	2.319
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-44.364	0.63	0.34	2.319
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-44.364	0.63	0.3	2.319
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-44.364	0.63	0.28	2.319
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-44.364	0.63	0.11	2.319
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-44.364	0.63	0.07	2.318
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-25.845	0.37	0.03	0.853
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-11.871	0.17	0.03	0.202
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.522	0.02	0	0.003
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-1.481	0.02	0	0.004
1272	P-6440F	J-N2380E	J-N2363E	84.6	200	PVC	120	0.557	0.02	0	0.004
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.429	0.01	0	0.003
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.069	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.463	0.01	0	0.003
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.154	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.059	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.242	0.01	0	0.001
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.473	0.02	0	0.004
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.473	0.01	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.498	0.01	0	0.001
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	1.801	0.04	0	0.013
1343	P-5833	J-10	J-12	97.69	250	PVC	110	1.189	0.02	0	0.006
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.472	0.01	0	0.001
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.321	0.01	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	1.17	0.02	0	0.005
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.987	0.02	0	0.004
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.987	0.02	0	0.004
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	1.382	0.02	0	0.003
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	1.094	0.02	0	0.002

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	3.912	0.08	0	0.053
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	3.729	0.08	0	0.048
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.269	0.01	0	0.001
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.182	0.01	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.108	0	0	0.001
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.109	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.292	0.01	0	0.001
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.46	0.01	0	0.001
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.418	0.01	0	0.003
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.691	0.01	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-1.11	0.02	0	0.005
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.195	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-1.305	0.03	0	0.006
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-2.265	0.05	0	0.022
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-3.947	0.08	0	0.063
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-1.431	0.03	0	0.009
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-1.683	0.03	0	0.011
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.252	0.01	0	0.005
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.876	0.04	0	0.011
1395	P-5863	J-33	J-34	95	250	PVC	110	1.281	0.03	0	0.007
1397	P-5864	J-34	J-35	89.81	250	PVC	110	1.086	0.02	0	0.005
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.069	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.286	0.01	0	0.002
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.373	0.01	0	0.002
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.373	0.01	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.412	0.01	0	0.003
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.451	0.01	0	0.002
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.469	0.02	0	0.003
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.231	0.01	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-1.236	0.04	0	0.018
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.444	0.01	0	0.003
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.213	0.01	0	0.001
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	4.411	0.14	0.02	0.198
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.144	0.01	0	0.002
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	4.267	0.14	0.02	0.186
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	3.721	0.12	0.01	0.144
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	2.5	0.08	0.01	0.069
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	2.374	0.08	0	0.062
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-14.11	0.2	0.02	0.278
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-11.988	0.17	0.01	0.205
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	2.122	0.07	0	0.051
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.822	0.03	0	0.009
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.33	0.01	0	0.002
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.117	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.465	0.01	0	0.003
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.108	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.237	0.01	0	0.001
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-13.328	0.19	0.02	0.25
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-13.634	0.19	0.01	0.261
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.306	0.02	0	0.005
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-13.634	0.19	0.01	0.219
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-13.904	0.2	0.02	0.227
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.27	0.02	0	0.006
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.76	0.02	0	0.008
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.544	0.02	0	0.005
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.544	0.02	0	0.003
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-1.03	0.01	0	0.002
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-1.94	0.03	0	0.005
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.727	0.02	0	0.008
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.414	0.01	0	0
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.414	0.01	0	0.004
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.27	0.01	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.126	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	1.121	0.04	0	0.015
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.959	0.03	0	0.012
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	2.647	0.04	0	0.012
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	2.56	0.04	0	0.012
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.306	0.01	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.306	0.02	0	0.007
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-1.725	0.04	0	0.012
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-1.938	0.04	0	0.014
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-1.128	0.04	0	0.016

Existing Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.522	0.02	0	0.004
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	18.282	0.26	0.02	0.32
1511	P-5926	J-79	J-80	321.67	300	PVC	120	18.282	0.26	0.1	0.32
1513	P-5927	J-80	J-81	352.13	300	PVC	120	7.215	0.1	0.02	0.057
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.552	0.02	0	0.005
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.552	0.02	0	0.005
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-11.067	0.35	0.06	0.912
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	6.333	0.09	0	0.05
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	7.215	0.1	0.05	0.057
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	6.333	0.09	0.01	0.045
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-6.333	0.09	0.05	0.045
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-6.333	0.09	0.01	0.045
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.987	0.02	0	0.004
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-1.177	0.02	0	0.006
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.322	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.535	0.01	0	0
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.202	0.01	0	0.001
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.251	0.01	0	0.001
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.28	0.01	0	0.001
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.28	0.01	0	0.002
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	9.624	0.14	0.01	0.115
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	9.624	0.14	0.01	0.115
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-0.839	0.01	0	0.001
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.588	0.01	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-1.427	0.03	0	0.008
1691	P-6020	J-139	J-N4420E	166.87	250	PVC	120	-1.427	0.03	0	0.007
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.842	0.04	0	0.015
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-1.986	0.04	0	0.018
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-3.126	0.04	0	0.017
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-3.93	0.06	0	0.026
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	0.381	0.01	0	0.001
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.381	0.01	0	0.002
1715	P-6032	J-143	J-144	119.38	250	PVC	120	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.928	0.06	0	0.035
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-1.544	0.05	0	0.024
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.472	0.02	0	0.002
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.322	0.01	0	0.001
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.3	0.01	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.681	0.02	0	0.006
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.126	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.384	0.01	0	0.002
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.437	0.01	0	0.002
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.025	0	0	0
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.174	0.01	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.073	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.579	0.02	0	0.004
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.234	0.01	0	0.001
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.033	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.093	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.219	0.01	0	0.001
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.075	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.051	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.177	0.01	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.429	0.01	0	0.002
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.303	0.01	0	0.002
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-1.544	0.05	0	0.024
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-1.544	0.05	0	0.024
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.024	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	6.358	0.2	0.04	0.464
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.082	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.143	0	0	0
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.815	0.01	0	0.001
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-1.184	0.02	0	0.002

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	115	TRUE	239.371	158.4	140	J-4460I
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.138	250	TRUE	260.333	149.7	140	J-4460I
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.19	250	TRUE	258.725	140	165.2	J-S1070E
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.268	250	TRUE	258.757	140	164	J-S1080E
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.218	250	TRUE	273.262	140	183.3	J-S1070E
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.154	250	TRUE	310.727	140	157.8	J-S1060E
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.16	250	TRUE	291.272	140	200.1	J-S2032E
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.192	250	TRUE	299.329	140	167.1	J-S2033E
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.178	250	TRUE	271.828	140	197.6	J-S2034E
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.18	250	TRUE	267.887	140	204.1	J-S2033E
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.174	250	TRUE	281.277	140	147.5	J-69
195	J-S2100E	23,886.25	5,961,252.83	699	0.162	250	TRUE	270.618	143.2	140	J-69
196	J-S2080E	23,585.41	5,961,251.56	699	0.162	250	TRUE	272.789	140	153.2	J-S2070E
197	J-S2070E	23,468.77	5,961,251.56	699	0.118	250	TRUE	268.347	140	167.1	J-S2080E
198	J-S2060E	23,444.47	5,961,408.54	699	0.1	250	TRUE	264.238	140	200.4	J-S2070E
199	J-S2040E	23,441.07	5,961,591.28	699	0.136	250	TRUE	279.982	140	148	J-S2051E
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.108	250	TRUE	323.361	140	165.4	J-S2040E
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.234	250	TRUE	295.106	140	204.3	J-S2032E
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.092	250	TRUE	316.895	140	173.6	J-S1030E
203	J-S2010E	23,396.57	5,962,474.58	700	0	115	TRUE	350	267.7	263.9	J-S2011E
204	J-N4200E	23,397.75	5,962,576.48	701	0	180	TRUE	350	294.1	305.5	J-S2011E
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.072	250	TRUE	350	300.7	309	J-N4200E
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.23	115	TRUE	350	280.4	283.9	J-N2171E
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.076	115	TRUE	350	262.2	255.3	J-N2171E
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.084	115	TRUE	127.501	140	463.9	J-N4110E
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.046	115	TRUE	350	249.7	242.8	J-N2181E
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.112	115	FALSE	105.121	140	470.6	J-139
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.1	115	TRUE	350	245.9	265.8	J-N2181E
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.1	115	TRUE	350	235.5	252	J-N2210E
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.092	115	TRUE	173.108	140	304.7	J-N2221E
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.1	115	TRUE	186.966	140	256.7	J-N2201E
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.13	115	TRUE	350	255.5	270.8	J-N2221E
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.1	115	TRUE	350	228.3	253.1	J-N2200E
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.122	115	TRUE	350	273.2	281.7	J-N3260E
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.158	115	TRUE	350	254.1	270.1	J-N2255E
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	115	TRUE	350	234.4	225.6	J-N2255E
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	115	TRUE	229.861	150.8	140	J-N2255E
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.092	115	TRUE	168.069	140	303.4	J-N2255E
222	J-N2255E	24,475.27	5,962,571.66	700	0.062	115	FALSE	106.682	140	427	J-N2252E
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.054	115	TRUE	167.94	140	141	J-3785F
224	J-N2260E	24,501.40	5,962,673.31	699	0	115	TRUE	350	232.5	240.6	J-59
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.046	115	TRUE	309.266	143.9	140	J-N3301E
226	J-N3301E	24,349.68	5,962,783.56	699	0.192	115	FALSE	108.496	140	464.9	J-N3321E
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.146	115	TRUE	171.837	140	190.9	J-N3450E
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.112	115	TRUE	164.118	140	181.9	J-N3450E
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.062	115	TRUE	174.686	140	222.4	J-N3440E
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.122	115	TRUE	137.603	140	287.4	J-N3440E
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.054	115	TRUE	306.451	140	166	J-N3321E
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	115	TRUE	267.366	157.6	140	J-N3321E
233	J-N3321E	24,349.51	5,962,866.08	700	0.13	115	FALSE	104.654	140	460.9	J-N3330E
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.343	250	TRUE	274.566	140	235.1	J-N3341E
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.138	115	TRUE	268.004	140	249.4	J-N3341E
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.1	115	TRUE	173.632	140	194.3	J-N3390E
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.122	115	TRUE	138.656	140	328	J-N3351E
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.122	115	TRUE	158.567	140	253.9	J-N3352E
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.108	115	TRUE	285.511	140	176.2	J-N3351E
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.138	115	TRUE	129.355	140	253.5	J-N3380E
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.146	115	TRUE	115.861	140.2	312.9	J-N3390E
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.23	115	TRUE	128.644	140	256	J-N3380E
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.076	115	TRUE	317.516	140	176.8	J-N3370E
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.112	115	TRUE	350	284.9	302.2	J-N1090E
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.23	115	TRUE	350	283.3	293.8	J-N1065E
246	J-N1050E	24,728.87	5,962,855.33	698	0	180	TRUE	350	302.2	308.3	J-3840F
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.158	115	TRUE	350	304.1	294.9	J-79
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	115	TRUE	350	276.1	310.9	J-N1033E
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	115	TRUE	350	408.2	408.4	J-N1010E
250	J-S1010E	24,688.47	5,961,838.45	701	0	115	TRUE	350	239.8	285	J-S1020E
251	J-S1020E	24,215.83	5,961,901.63	700	0	250	TRUE	332.267	140	158	J-S1030E
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.076	115	TRUE	236.741	140	238.9	J-N1102E
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.084	115	TRUE	297.331	140	158.6	J-N1073E
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.122	115	TRUE	276.696	140	235.9	J-183
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.046	115	TRUE	350	272.8	283.2	J-N1090E
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.146	115	TRUE	166.991	140	257.6	J-N1102E
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.112	115	TRUE	162.759	140	281.9	J-N1101E
258	J-N1420E	24,855.27	5,963,531.46	698	0	115	TRUE	271.259	140	245.2	J-N1410E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.092	115	TRUE	272.086	140	164	J-N1400E
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.054	115	TRUE	225.404	143.9	140	J-N1304E
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.054	115	TRUE	277.647	140	177.3	J-N1330E
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.03	115	TRUE	252.578	141	140	J-N1311E
263	J-N1311E	24,830.34	5,963,795.82	698	0.1	115	TRUE	175.095	140	332.5	J-N1310E
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.054	115	TRUE	268.721	140	161.7	J-N1301E
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.122	115	TRUE	223.19	140	231.4	J-N1302E
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.092	115	TRUE	214.771	140	205.2	J-N1304E
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.062	115	TRUE	266.866	140	155.7	J-N1291E
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	115	TRUE	219.485	140	141	J-N1292E
269	J-N1292E	24,905.57	5,963,948.00	698	0.13	115	TRUE	141.644	140	355.9	J-N1291E
270	J-N1245E	24,928.90	5,964,040.14	697	0.062	115	TRUE	205.053	140	140.6	J-82
271	J-N1244E	24,955.72	5,964,184.39	697	0.112	115	TRUE	184.305	140.1	159.2	J-82
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.112	115	TRUE	201.075	140.1	157.3	J-82
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.084	115	TRUE	260.874	140	167.2	J-N1281E
274	J-N1281E	24,668.79	5,963,904.06	698	0.112	115	TRUE	230.408	140	213.1	J-N1282E
275	J-N1282E	24,737.99	5,963,838.74	697	0.122	115	TRUE	218.538	140	241.7	J-N1281E
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.1	115	TRUE	229.008	140	223.8	J-N1282E
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.076	115	TRUE	272.193	140	162.8	J-N1283E
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.038	115	TRUE	276.953	140	154.4	J-N1342E
279	J-N1242E	24,655.18	5,964,247.76	698	0.112	115	TRUE	215	140	248	J-82
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.054	115	TRUE	250.175	140	154.4	J-N1242E
281	J-N1272E	24,643.90	5,964,097.68	698	0.1	115	TRUE	227.059	140	255.3	J-N1270E
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.062	115	TRUE	255.709	140	143.9	J-N1271E
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.062	115	TRUE	191.824	140.1	297	J-N1270E
284	J-N1240E	24,492.27	5,964,163.87	698	0	115	TRUE	277.664	140	144.3	J-N1251E
285	J-N1220E	24,450.28	5,964,244.12	698	0	115	TRUE	319.639	140	168.1	J-N1210E
286	J-N1210E	24,398.26	5,964,217.60	698	0	115	TRUE	327.532	140.1	144.4	J-N1220E
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.046	115	TRUE	350	145.4	150.3	J-N1210E
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.062	115	TRUE	350	155.7	182.5	J-N1190E
289	J-N1170E	24,279.97	5,963,894.02	698	0	180	TRUE	350	163.4	191.5	J-N1180E
290	J-N1160E	24,301.35	5,963,782.73	698	0	180	TRUE	350	188	195.4	J-78
291	J-N1150E	24,302.39	5,963,747.88	698	0.322	115	TRUE	350	198.9	189.1	J-78
292	J-N1370E	24,390.29	5,963,759.89	698	0.062	115	TRUE	293.098	140	161.6	J-N1371E
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.046	115	TRUE	247.442	140	142	J-N1361E
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.092	115	TRUE	147.816	140	382.5	J-N1360E
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.092	115	TRUE	228.941	140	154.7	J-N1372E
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.046	115	TRUE	226.82	140	140	J-N1345E
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.062	115	TRUE	230.866	140	213	J-N1342E
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.03	115	TRUE	245.577	150.8	140	J-N1342E
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.13	115	TRUE	155.139	140	338	J-N1371E
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.062	115	TRUE	157.745	140	337.8	J-N1344E
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.092	115	FALSE	96.595	140	468.4	J-N1343E
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	115	TRUE	350	216.4	215.5	J-78
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.1	115	TRUE	350	241.9	254.9	J-78
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	115	TRUE	350	271.6	278.6	J-N1130E
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	115	TRUE	350	188.2	249	J-N3182E
306	J-N3182E	24,109.98	5,963,355.50	698	0	250	TRUE	350	162.9	249.1	J-N3181E
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	250	TRUE	350	196.3	244.2	J-N3182E
308	J-N3190E	23,838.79	5,963,334.11	699	0.064	250	TRUE	350	250	267.4	J-N3200E
309	J-N3210E	23,839.27	5,963,187.82	699	0.112	115	TRUE	350	199.4	292.5	J-N3200E
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.184	115	TRUE	350	244	279.1	J-N3230E
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.112	115	TRUE	350	234.4	254.6	J-N3240E
312	J-N3420E	23,966.13	5,962,983.37	698	0	115	TRUE	300.686	140	179.9	J-N3410E
313	J-N3240E	23,840.96	5,962,916.81	698	0.1	115	TRUE	350	196.4	259.1	J-N3250E
314	J-N3250E	23,877.98	5,962,777.15	698	0.112	115	TRUE	350	170.5	253.7	J-N3260E
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.1	115	TRUE	350	207.1	251.3	J-N3250E
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.13	115	TRUE	171.988	140	339.9	J-N2381E
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.146	115	TRUE	184.883	140	201.3	J-N2383E
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.076	115	TRUE	142.294	147.8	140	J-N2383E
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.1	115	FALSE	87.823	140	365.3	J-N2382E
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.112	115	TRUE	138.039	140	254.5	J-N2383E
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.122	115	TRUE	309.19	140	200.6	J-N2391E
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.176	115	TRUE	327.214	140	151.1	J-N2363E
323	J-N2370E	23,750.00	5,963,047.05	699	0.092	115	TRUE	350	154.3	226.5	J-N2360E
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.1	115	TRUE	326.335	140	232.6	J-N2361E
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.13	115	TRUE	207.101	140.1	215.2	J-N2362E
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.168	115	TRUE	151.042	140	362.8	J-N2361E
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.084	115	TRUE	263.744	140	206.6	J-N2362E
328	J-N3200E	23,838.64	5,963,310.50	699	0.062	115	TRUE	350	253.2	266.6	J-N3190E
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.046	115	TRUE	350	171.8	234.8	J-N2350E
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.054	115	TRUE	348.403	140	224.4	J-N2331E
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.138	115	TRUE	174.093	140	442.6	J-N2350E
332	J-N2350E	23,748.75	5,963,237.41	699	0	115	TRUE	334.139	140	224.2	J-N2331E
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.276	115	TRUE	343.277	140	159.5	J-N3130E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.042	250	TRUE	325.941	142.9	140	J-N2301E
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.406	115	TRUE	120.703	140	466.9	J-139
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	250	TRUE	350	289.2	296.3	J-N2301E
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.112	115	TRUE	350	243.3	283.4	J-N2330E
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.054	115	TRUE	148.421	140	277.7	J-N2401E
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.134	115	TRUE	329.318	140	197.2	J-N2401E
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.036	250	TRUE	350	300.1	306.2	J-N2141E
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.042	250	TRUE	350	262.6	281.7	J-N2133E
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	250	TRUE	350	224.4	286	J-N2400E
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.032	250	TRUE	350	226.7	253.4	J-N2144E
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.022	115	TRUE	172.439	140	422.3	J-N4530E
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	250	TRUE	350	199.7	285.2	J-N2133E
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.094	250	TRUE	350	292.8	296.2	J-N2131E
347	J-N2120E	23,392.51	5,963,312.31	699	0.09	250	TRUE	350	323.3	322.5	J-139
348	J-N2121E	23,395.90	5,963,312.31	699	0	250	TRUE	350	322.4	322.7	J-139
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.044	115	TRUE	272.94	140	405.7	J-139
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.014	250	TRUE	337.373	140	287.3	J-N3142E
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	250	TRUE	350	317.4	317.3	J-139
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	250	TRUE	350	285.6	316.9	J-139
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	250	TRUE	350	316.1	315.9	J-139
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.133	250	TRUE	350	316.3	316.4	J-139
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.03	115	TRUE	350	319	315.8	J-139
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.076	250	TRUE	350	314.7	311.1	J-139
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	250	TRUE	350	308.6	309	J-139
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.138	115	TRUE	243.832	140	228	J-N4470E
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	115	TRUE	172.297	140	382.8	J-N4460E
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.146	115	TRUE	154.362	140	141	J-N4481E
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.062	115	FALSE	80.477	140	403.8	J-N4480E
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.112	115	TRUE	235.795	140	358.6	J-N4530E
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.276	115	TRUE	251.033	140	311	J-N2144E
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.076	115	TRUE	350	238.2	240	J-N4191E
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.146	115	TRUE	350	239	236.6	J-N4191E
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.112	115	TRUE	148.62	140	446.1	J-N4110E
367	J-N4510E	23,116.00	5,962,864.49	700	0.084	115	TRUE	266.041	140	182.9	J-N4500E
368	J-N4500E	23,107.06	5,962,864.49	700	0.1	115	TRUE	266.053	140	182.9	J-N4510E
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.076	115	TRUE	350	174.7	201.1	J-N4140E
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.076	115	TRUE	350	191.4	208.7	J-N4150E
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.076	115	TRUE	350	211.1	221	J-N4160E
372	J-N4490E	23,107.28	5,962,982.98	700	0.122	115	TRUE	205.591	144.9	140	J-N4491E
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.092	115	TRUE	261.653	140	276.8	J-N4381E
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.114	250	TRUE	350	247.7	267.8	J-N4381E
375	J-N4350E	23,104.18	5,963,517.50	699	0.084	115	TRUE	350	157.5	256.9	J-N4340E
376	J-N3090E	23,166.53	5,963,519.61	699	0	250	TRUE	350	259.6	294.5	J-N4350E
377	J-N2070E	23,171.01	5,963,524.71	699	0	250	TRUE	350	317.8	312.6	J-N3080E
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	115	TRUE	350	307.8	319.2	J-N2070E
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	250	TRUE	350	317.9	315.1	J-N3060E
380	J-N2050E	23,164.50	5,963,745.83	699	0	250	TRUE	350	319.7	325.5	J-N3040E
381	J-N2040E	23,164.50	5,963,849.54	699	0	180	TRUE	350	331.4	335	J-N3030E
382	J-N2020E	23,168.07	5,964,021.69	699	0	180	TRUE	350	364.3	361.4	J-175
383	J-N2010E	23,229.47	5,964,021.52	699	0.02	250	TRUE	350	371	375.6	J-139
384	J-N3010E	23,161.69	5,964,008.03	699	0.908	115	TRUE	322.663	140	206.1	J-N3020E
385	J-N3030E	23,160.50	5,963,849.48	699	0.062	115	TRUE	350	274.3	290.8	J-N3031E
386	J-N3031E	23,161.50	5,963,836.74	699	0.076	115	TRUE	344.948	140	254.1	J-N3032E
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	115	TRUE	350	268.1	285.6	J-N3050E
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.112	115	TRUE	350	141.4	282.9	J-N3051E
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	115	TRUE	350	253.3	264.3	J-N3070E
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.112	115	TRUE	350	175	274.5	J-N3060E
391	J-N3032E	22,992.17	5,963,835.82	699	0.122	115	TRUE	165.57	140	380.8	J-N3051E
392	J-N3051E	22,992.42	5,963,732.81	700	0.122	115	TRUE	220.063	140.1	269.9	J-N3032E
393	J-N3071E	22,992.67	5,963,640.74	700	0.13	115	TRUE	239.253	140	331.5	J-N3051E
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	250	TRUE	330.732	140	251.6	J-N4330E
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.054	115	TRUE	322.128	140	219.2	J-N4331E
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.104	250	TRUE	350	206.9	222.6	J-N4400E
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.062	115	TRUE	282.14	140	319.7	J-N4430E
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.062	250	TRUE	307.779	140	257.4	J-N4330E
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.012	250	TRUE	303.062	140	196.8	J-N4310E
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.192	115	TRUE	182.683	140.1	383.6	J-N4401E
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	250	TRUE	285.761	140	192.5	J-N4311E
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.052	250	TRUE	350	141.1	150.1	J-N4401E
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.143	250	TRUE	292.773	140	179.5	J-139
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	250	TRUE	277.651	140	194.2	J-N4431E
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.092	115	FALSE	89.35	140	433	J-N4490E
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.158	115	TRUE	316.79	140	145	J-N3411E
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.066	115	TRUE	155.883	140	408.7	J-N4401E
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.062	115	TRUE	314.728	140	175.5	J-N4301E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.342	115	TRUE	176.736	140	400.8	J-8
410	J-N4410E	22,639.90	5,963,300.90	701	0.08	250	TRUE	330.359	140	174.5	J-N4301E
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	250	TRUE	327.276	144.4	140	J-8
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	250	TRUE	297.419	151.3	140	J-8
413	J-N4010E	22,546.33	5,963,750.87	700	0.234	250	TRUE	288.455	153.8	140	J-8
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.262	115	TRUE	331.557	140	148.3	J-8
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	250	TRUE	347.583	141.8	140	J-N4042E
416	J-N4041E	22,443.94	5,963,514.35	701	0	115	TRUE	218.056	140	245.8	J-N4042E
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.112	115	TRUE	167.638	140	357.3	J-N4041E
418	J-N4043E	22,444.72	5,963,305.56	701	0.464	115	TRUE	311.141	140	172.2	J-N4042E
419	J-N4070E	22,557.86	5,963,211.47	701	1.1	115	TRUE	344.986	140	149.3	J-N4080E
420	J-N4080E	22,553.97	5,963,123.99	701.5	1.396	115	TRUE	335.453	140	144.9	J-N4082E
421	J-N4081E	22,468.80	5,963,123.50	701	0	180	TRUE	225.265	140	140	J-N4082E
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.146	115	TRUE	329.13	141	140	J-N4092E
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.146	115	TRUE	170.756	140	391.7	J-N4092E
424	J-N4092E	22,681.89	5,962,970.03	702	0.214	115	TRUE	167.582	140	396	J-N4090E
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.112	115	TRUE	328.896	140	148.9	J-N4104E
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.1	115	TRUE	138.38	140	241.3	J-N4102E
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.122	115	TRUE	129.543	140	252.7	J-N4104E
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.054	115	TRUE	138.65	143.9	140	J-N4104E
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.1	115	TRUE	216.784	140	185.5	J-N4104E
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.13	115	TRUE	327.756	140	142.6	J-N4111E
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.092	115	TRUE	336.136	140	150.5	J-N4110E
432	J-N4121E	22,725.05	5,962,737.13	701	0.112	115	TRUE	145.858	140	289.2	J-N4143E
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.138	115	TRUE	151.691	140	266.3	J-N4121E
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.038	115	TRUE	227.006	140	199.4	J-N4143E
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.016	115	TRUE	350	143	143	J-N4141E
436	J-N4431E	22,871.76	5,963,060.11	701	0.1	115	TRUE	184.241	140.1	368.5	J-N4430E
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.092	115	TRUE	341.898	146.9	140	J-N4131E
438	J-N4131E	22,739.70	5,962,940.69	702	0.268	115	TRUE	180.621	140.1	393.3	J-N4110E
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.184	115	TRUE	169.444	140	417.4	J-N3340E
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.062	115	TRUE	260.475	140	200.7	J-N3321E
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.038	115	TRUE	350	272.7	282.9	J-N1100E
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	115	TRUE	350	270.5	279.7	J-N1120E
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.046	115	TRUE	242.348	140	206.9	J-N1270E
444	J-N1246E	24,900.57	5,964,065.27	697	0.076	115	TRUE	194.79	140.1	176.8	J-82
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	115	TRUE	269.829	140	199	J-N1320E
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.112	115	TRUE	120.479	140	410.9	J-N1302E
447	J-N1400E	24,827.83	5,963,657.23	698	0.1	115	TRUE	264.824	140	183.8	J-N1410E
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.092	115	TRUE	270.39	140	235.3	J-N1430E
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.13	115	TRUE	268.611	140	176.3	J-N1072E
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.092	115	TRUE	214.848	140	374.1	J-N4500E
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.062	115	TRUE	347.938	140	143.1	J-N4142E
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.206	250	TRUE	321.864	142.7	140	J-8
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.054	115	TRUE	191.572	140.1	391.4	J-N4450E
454	J-N3020E	23,160.99	5,963,967.57	699	0	180	TRUE	239.594	140	392.2	J-N3010E
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.062	115	TRUE	221.613	150.8	140	J-N2255E
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.13	115	TRUE	243.063	140	251.8	J-N1073E
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.168	115	TRUE	282.594	140	272.9	J-N1450E
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.122	115	TRUE	350	152.8	148.5	J-N1471E
459	J-N3130E	23,503.09	5,963,526.14	698.4	0	115	TRUE	347.149	140	148.1	J-N3120E
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.04	250	TRUE	350	163.2	178.5	J-N3130E
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.368	115	TRUE	337.559	140	216.3	J-N3140E
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	180	TRUE	350	156	198.6	J-75
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.108	250	TRUE	350	140.3	191.5	J-140
464	J-N3160E	23,825.34	5,963,511.25	699	0.078	250	TRUE	350	211.8	238.6	J-30
465	J-N3170E	23,903.33	5,963,511.58	699	0.168	250	TRUE	350	243.8	256.5	J-76
466	J-N3180E	23,907.72	5,963,334.91	699	0	250	TRUE	350	260.1	283	J-N3181E
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	250	TRUE	328.721	141	140	J-S2021E
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.11	250	TRUE	321.629	140	155.6	J-S1040E
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.054	115	TRUE	160.813	140	227	J-N2321E
470	J-N1250E	24,499.78	5,964,149.64	698	0.054	115	TRUE	264.749	140	140	J-N1251E
471	J-N1251E	24,455.84	5,964,129.52	698	0.092	115	TRUE	146.663	140	398.9	J-N1250E
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.054	115	TRUE	125.591	140	445.5	J-N1230E
473	J-N1230E	24,475.43	5,964,196.22	698	0	115	TRUE	287.148	140	145.9	J-N1231E
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	115	TRUE	223.527	162.8	140	J-4460I
475	J-S2140E	24,039.65	5,960,875.68	698	0.154	115	TRUE	220.524	162.1	140	J-69
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	115	TRUE	218.001	161.5	140	J-69
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.122	115	TRUE	219.267	147.6	140	J-S2170E
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.112	115	TRUE	214.403	140	152.6	J-S2180E
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.092	115	TRUE	196.056	140	197.4	J-S2192E
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.112	115	TRUE	206.451	142	140.1	J-S2192E
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.076	115	TRUE	199.635	140	142.7	J-S2194E
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.084	115	TRUE	194.983	140	140	J-S2194E
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.084	115	TRUE	183.639	140.1	158.4	J-S2202E

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	115	TRUE	183.784	140.1	157.8	J-S2203E
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.076	115	TRUE	185.385	140.1	153.1	J-S2202E
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.112	115	TRUE	204.831	140.7	140.1	J-S2220E
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.046	115	TRUE	213.058	141.6	140.1	J-S2220E
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.076	115	TRUE	215.495	140	140.5	J-S2170E
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.334	115	TRUE	194.883	141.6	140.1	J-S2220E
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.046	115	TRUE	186.64	140.1	141.6	J-S2240E
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	115	TRUE	185.127	140	140	J-S2240E
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.016	115	TRUE	179.924	140.1	142.5	J-S2250E
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	115	TRUE	175.671	140.1	156.7	J-S2240E
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	115	TRUE	203.402	140	163.5	J-S1160E
495	J-S2195E	23,781.62	5,960,412.85	698	0	115	TRUE	174.454	140.1	181.4	J-S2194E
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	115	TRUE	185.467	140.1	145	J-S2195E
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.112	115	TRUE	200.954	140	158.1	J-S1150E
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.122	115	TRUE	179.711	140.1	178	J-S1140E
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.092	115	TRUE	182.632	140.1	172.1	J-S1150E
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.054	115	TRUE	199.902	140	144.5	J-S1140E
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.092	115	TRUE	190.274	140.1	184.8	J-S1140E
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	115	TRUE	204.421	141.6	140.1	J-S1130E
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	250	TRUE	261.087	148.9	140	J-69
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	115	TRUE	229.241	140	159.9	J-S1110E
505	J-S1110E	24,033.48	5,960,926.97	698	0.108	115	TRUE	211.305	140	153.4	J-S1130E
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.061	250	TRUE	350	157.4	158.4	J-N1200E
507	J-N1600E	24,201.37	5,964,131.25	698	0.112	115	TRUE	337.888	144.9	140	J-N1601E
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.13	115	TRUE	331.244	140	140	J-46
509	J-N1620E	24,074.31	5,964,072.83	699	0.062	115	TRUE	332.79	140	175.2	J-N1630E
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.046	115	TRUE	336.234	140	163.1	J-N1631E
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.076	115	TRUE	334.536	140	178.7	J-N1630E
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.122	115	TRUE	268.671	140	207	J-N1632E
513	J-N1632E	24,036.37	5,963,917.92	700	0.084	115	TRUE	257.233	140	234.8	J-N1651E
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	115	TRUE	278.255	140	177.1	J-N1632E
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	115	TRUE	350	155.1	154	J-N1651E
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.122	115	TRUE	183.489	140.1	409.7	J-N1600E
517	J-N1060E	24,577.21	5,963,109.12	697	0	180	TRUE	350	286.8	285.3	J-N1061E
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.138	115	TRUE	323.805	140	218.6	J-N1062E
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.112	115	TRUE	280.898	140	198.9	J-N1500E
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.092	115	FALSE	95.287	140	317.1	J-N4103E
521	J-N4082E	22,469.20	5,963,082.83	701	0.062	115	TRUE	134.693	140	360.6	J-N4081E
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	115	TRUE	281.832	140	195.8	J-N1062E
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.13	115	TRUE	296.261	140	190.9	J-N1500E
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.18	115	TRUE	350	167.4	204.2	J-N1490E
526	J-N1471E	24,945.50	5,963,280.47	699	0	180	TRUE	243.166	140	342.4	J-N1470E
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	115	TRUE	350	148.7	225.8	J-N1480E
528	J-N1472E	24,981.95	5,963,173.17	698.4	0	115	TRUE	350	196.8	223.4	J-48
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.166	250	TRUE	277.172	140	245.9	J-S2020E
530	J-S2050E	23,441.95	5,961,556.46	699	0	250	TRUE	274.802	140	140	J-S2051E
531	J-S2051E	23,344.97	5,961,508.86	699	0.254	250	FALSE	226.015	140	177.8	J-143
532	J-N1065E	24,522.60	5,963,163.07	697	1.71	115	TRUE	350	282.4	293.3	J-N1070E
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.314	115	TRUE	301.962	140	153.3	J-N3412E
536	J-N3412E	22,763.88	5,963,654.13	700.4	0	115	TRUE	287.573	140	178	J-2
537	J-3550I	23,858.78	5,963,861.50	697.8	0.154	115	TRUE	350	235.9	233.1	J-43
538	J-3560I	23,895.14	5,963,776.63	698.8	0.154	115	TRUE	350	171.7	162.4	J-43
539	J-3570I	23,930.36	5,963,667.29	699	0.154	115	TRUE	350	152.6	142.8	J-44
540	J-3580I	23,794.98	5,963,838.03	698	0.13	115	TRUE	350	242.5	234.5	J-22
541	J-3590F	23,690.63	5,963,983.45	697.5	0.122	115	TRUE	350	215	210.5	J-41
542	J-3600I	23,601.86	5,963,939.64	698.3	0.192	115	TRUE	350	191.2	197.3	J-18
543	J-3610I	23,453.97	5,963,928.59	699	0.264	115	TRUE	350	183.3	177.4	J-3620F
544	J-3620F	23,389.20	5,964,002.63	699.6	0	115	TRUE	273.427	140	329.9	J-3610I
548	J-3660F	23,675.98	5,964,023.67	697	0	115	TRUE	350	184	173.4	J-33
551	J-3690I	22,621.02	5,963,751.20	699.5	0	115	TRUE	289.476	146.1	140	J-6
557	J-3750I	24,202.10	5,960,810.43	700	0	115	TRUE	203.925	140	152	J-69
563	J-3830F	24,662.04	5,962,661.31	699	0.046	250	TRUE	350	245	264.1	J-62
564	J-3840F	24,769.05	5,962,856.55	698	0	115	TRUE	350	297	301	J-3810F
565	J-S2011E	23,398.12	5,962,393.08	701	0	250	TRUE	350	230.9	249.3	J-4600F
576	J-S2012E	23,398.36	5,962,126.10	701	0.086	250	TRUE	350	156.8	153.1	J-4600F
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	250	TRUE	350	290.1	308.9	J-N2140E
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	115	TRUE	214.406	140	429.8	J-N4110E
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	250	TRUE	350	301	308	J-N2143E
611	J-4310F	22,779.97	5,964,010.72	699.5	0	115	TRUE	168.929	140	220.2	J-5
614	J-3785F	24,389.79	5,962,392.01	698.7	0.062	115	TRUE	136.749	140	261.6	J-N2253E
615	J-N1023E	24,962.79	5,962,291.29	699	0	115	TRUE	350	304.2	328	J-N1025E
618	J-N1025E	24,955.73	5,962,436.30	699	0	115	TRUE	350	288.5	298.6	J-N1030E
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	115	TRUE	350	282.9	317.7	J-N1030E
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	115	TRUE	350	300.7	310.1	J-N1039E
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	115	TRUE	350	302.8	306.1	J-79

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
622	J-3810F	24,808.50	5,962,854.71	698.5	0	115	TRUE	350	289.4	306.3	J-3840F
629	J-4460I	23,866.43	5,960,918.16	700.5	0.18	115	TRUE	211.96	140	169.2	J-64
630	J-4470I	24,688.40	5,963,006.16	698	0	180	TRUE	350	285.7	289.5	J-55
632	J-4490F	23,389.95	5,964,203.21	699.2	0	115	TRUE	317.685	140	191.6	J-182
638	J-4550I	24,097.29	5,963,722.12	698.5	0	115	TRUE	169.193	140	219.7	J-77
639	J-4560I	24,258.63	5,963,745.67	698	0	115	TRUE	274.74	149.8	140	J-78
643	J-4600F	23,285.48	5,962,126.23	701.38	0.198	250	TRUE	316.74	140	142.7	J-185
644	J-4610F	23,155.29	5,962,079.75	700.83	0.019	250	TRUE	283.211	140	142.2	J-119
1317	J-2	22,730.02	5,963,753.33	700.5	0.046	115	TRUE	212.144	140	284.7	J-3
1319	J-3	22,672.82	5,963,751.17	700.5	0	115	TRUE	278.737	140	140	J-2
1323	J-4	22,621.02	5,963,836.43	700	0.122	115	TRUE	227.516	140	163.9	J-129
1325	J-5	22,727.82	5,963,998.44	700.25	0.084	115	TRUE	193.051	140.1	147.4	J-4310F
1327	J-6	22,732.18	5,964,070.61	701	0.142	115	TRUE	189.59	140.1	187.4	J-5
1329	J-7	22,731.10	5,964,172.06	700.75	0.122	115	TRUE	195.046	140	179.8	J-6
1331	J-8	22,631.81	5,964,169.90	701.5	0.154	115	TRUE	207.757	140	176.3	J-7
1333	J-9	22,551.95	5,964,168.82	701	0	115	TRUE	238.06	140	149.3	J-8
1337	J-10	23,451.65	5,963,733.50	699	0.204	115	TRUE	344.652	144.9	140	J-75
1340	J-11	23,574.41	5,963,732.15	699.25	0.204	115	TRUE	145.976	140	342.9	J-75
1342	J-12	23,453.00	5,963,830.63	698.75	0.264	115	TRUE	350	146.9	142	J-13
1345	J-13	23,538.85	5,963,831.54	699.25	0.214	115	TRUE	220.699	140	378.7	J-12
1347	J-14	23,454.35	5,964,026.24	699.1	0.122	115	TRUE	339.484	141.5	140	J-15
1349	J-15	23,467.84	5,964,093.69	699.25	0	115	TRUE	135.089	140	457.1	J-14
1351	J-16	23,573.06	5,964,030.28	699.25	0	115	TRUE	330.482	140	193.1	J-17
1353	J-17	23,570.36	5,964,124.71	699	0	115	TRUE	337.153	140	171.9	J-16
1355	J-18	23,532.59	5,963,931.81	699	0.192	115	TRUE	350	180.7	193.2	J-3620F
1358	J-19	23,754.37	5,963,918.75	698.75	0.122	115	TRUE	350	203.8	253.5	J-41
1361	J-20	23,728.46	5,963,820.53	698.75	0.058	115	TRUE	309.975	140	170.2	J-22
1363	J-21	23,674.50	5,963,815.14	698.75	0.122	115	TRUE	289.883	144.9	140	J-22
1365	J-22	23,673.42	5,963,866.94	699.25	0.072	115	TRUE	224.263	140	289.9	J-21
1367	J-23	23,677.74	5,963,733.12	699	0.122	115	TRUE	289.836	140	217.9	J-22
1369	J-24	23,746.80	5,963,730.96	699	0.084	115	TRUE	314.143	140	181.8	J-23
1371	J-25	23,809.40	5,963,732.04	699	0.154	115	TRUE	350	185.4	191.9	J-26
1374	J-26	23,798.19	5,963,731.64	699	0	115	TRUE	350	185.6	191.9	J-25
1377	J-27	23,775.20	5,963,641.81	699.25	0	115	TRUE	350	157.7	155.2	J-28
1379	J-28	23,710.13	5,963,639.34	699.5	0.13	115	TRUE	305.938	140	250.3	J-27
1381	J-29	23,844.51	5,963,643.58	699.25	0.084	115	TRUE	350	161.2	191.1	J-28
1383	J-30	23,845.57	5,963,511.32	699	0	115	TRUE	350	230.9	235.1	J-N3160E
1387	J-31	23,799.25	5,963,585.59	699.75	0.168	115	TRUE	162.149	140	440.7	J-32
1388	J-32	23,845.57	5,963,586.29	699.5	0	115	TRUE	350	177	174.6	J-31
1392	J-33	23,672.77	5,964,049.27	698.75	0.084	115	TRUE	350	152.3	158.7	J-41
1394	J-34	23,670.18	5,964,144.24	699	0.13	115	TRUE	337.624	140	186.1	J-36
1396	J-35	23,671.91	5,964,234.03	698.75	0.084	115	TRUE	344.017	142.4	140	J-36
1398	J-36	23,671.05	5,964,280.65	699	0.046	115	TRUE	161.202	140	439	J-35
1400	J-37	23,758.25	5,964,281.52	698.75	0.058	115	TRUE	268.665	140	176	J-38
1402	J-38	23,813.50	5,964,238.35	698.75	0	115	TRUE	251.101	140	185.7	J-39
1404	J-39	23,860.99	5,964,198.64	698.5	0.026	115	TRUE	246.962	140	196.6	J-38
1406	J-40	23,792.78	5,964,135.61	698.5	0.026	115	TRUE	252.279	147.3	140	J-41
1408	J-41	23,757.38	5,964,171.87	699.25	0	115	TRUE	140.597	140	397	J-40
1410	J-42	23,740.12	5,964,098.49	698.5	0.012	115	TRUE	274.603	140	163.5	J-41
1414	J-43	23,980.99	5,963,768.68	699.75	0.154	115	TRUE	207.763	140	399	J-3560I
1416	J-44	24,000.53	5,963,681.98	700	0.072	115	TRUE	230.011	140	147.4	J-77
1419	J-45	24,049.06	5,964,265.48	698.75	0.154	115	TRUE	178.66	140	140	J-46
1421	J-46	23,957.33	5,964,279.51	698.75	0.142	115	TRUE	146.126	140	259	J-45
1424	J-47	24,921.74	5,963,097.95	698.75	0	115	TRUE	308.222	144.9	140	J-48
1426	J-48	24,960.60	5,963,073.13	699.25	0.096	115	TRUE	155.174	140	417.8	J-47
1428	J-49	24,867.78	5,963,034.28	698.75	0.054	115	TRUE	312.623	144.9	140	J-57
1432	J-51	24,805.19	5,963,090.39	698.5	0.046	115	TRUE	350	210.3	228.6	J-57
1434	J-52	24,739.36	5,963,144.35	698.25	0.084	115	TRUE	331.363	140	238.2	J-53
1436	J-53	24,688.64	5,963,093.63	698.25	0.168	115	TRUE	341.596	140.1	213.5	J-52
1438	J-54	24,637.92	5,963,049.38	698.25	0	115	TRUE	350	278.9	285.7	J-53
1443	J-55	24,746.03	5,963,032.58	698.5	0.142	115	TRUE	350	155.1	269	J-51
1446	J-56	24,815.86	5,962,971.87	698.75	0.08	115	TRUE	208.732	144.9	140	J-57
1448	J-57	24,793.42	5,962,913.17	699.25	0.072	115	TRUE	171.114	140	261.7	J-58
1450	J-58	24,880.62	5,962,917.48	698.75	0.158	115	TRUE	166.142	140	270.8	J-57
1452	J-59	24,463.42	5,962,681.55	699.25	0	115	TRUE	350	229.7	232.1	J-60
1455	J-60	24,477.23	5,962,748.02	699	0.204	115	TRUE	139.56	140	464.8	J-139
1457	J-61	24,560.98	5,962,657.37	698.5	0	115	TRUE	350	240	237.6	J-62
1460	J-62	24,574.79	5,962,709.17	698.75	0.18	115	TRUE	156.356	140	459.4	J-N2255E
1464	J-64	23,859.42	5,960,815.72	699.25	0.122	115	TRUE	209.09	140	162.8	J-65
1467	J-65	23,919.85	5,960,828.67	698.5	0	115	TRUE	203.175	140	160.4	J-66
1469	J-66	23,954.39	5,960,863.21	699.25	0.122	115	TRUE	202.497	140	169	J-65
1471	J-67	23,951.80	5,960,932.28	698.75	0.122	115	TRUE	217.781	156.8	140	J-4460I
1475	J-68	24,151.23	5,960,824.36	699.5	0	115	TRUE	207.639	149.8	140	J-69
1477	J-69	24,160.73	5,960,864.07	700.5	0.096	115	TRUE	182.382	140.1	147.4	J-70
1479	J-70	24,173.68	5,960,913.28	699.75	0.096	115	TRUE	162.381	140	144.9	J-71

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1481	J-71	24,122.74	5,960,921.05	699.25	0.084	115	TRUE	147.443	140	201.4	J-70
1485	J-73	23,863.50	5,960,738.53	699.2	0.108	115	TRUE	204.006	140	184	J-64
1488	J-74	24,008.12	5,960,795.72	699.25	0.058	115	TRUE	219.684	142.7	140	J-69
1491	J-75	23,533.91	5,963,732.98	699.5	0	115	TRUE	222.289	140	142.4	J-11
1494	J-76	23,929.23	5,963,577.78	699	0.142	115	TRUE	350	175.2	195.8	J-44
1497	J-77	24,049.40	5,963,701.17	699.25	0.752	115	TRUE	192.368	140.1	147.4	J-4550I
1500	J-78	24,258.00	5,963,633.98	699	0.348	115	TRUE	179.341	140	356.8	J-4560I
1508	J-79	25,046.68	5,962,853.87	700	0	115	TRUE	350	274.2	289.1	J-80
1510	J-80	25,042.43	5,963,175.51	700.5	0	115	TRUE	350	220.9	242.4	J-81
1512	J-81	25,046.04	5,963,527.62	699	0	250	TRUE	343.409	140	180.2	J-88 (Rec Center)
1514	J-82	24,960.02	5,964,132.73	698.2	0	115	TRUE	181.932	140.1	178.9	J-N1244E
1521	J-83	26,363.57	5,963,530.33	700	0	250	TRUE	273.016	149.1	140	J-84 (Sturgeon Office)
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	250	TRUE	272.665	140	150.7	J-83
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.588	250	TRUE	281.621	140	154.7	J-84 (Sturgeon Office)
1550	J-92	25,818.46	5,963,541.11	700	0	250	TRUE	274.576	140	163.4	J-84 (Sturgeon Office)
1557	J-94	23,168.88	5,964,201.54	698.35	0.084	115	TRUE	327.301	140.5	140.1	J-175
1563	J-97	23,572.11	5,964,208.92	698.89	0.158	115	TRUE	350	150.4	168.6	J-17
1609	J-116	22,980.29	5,962,035.89	700.36	0.08	115	TRUE	261.769	140	157.2	J-117
1612	J-117	22,981.58	5,962,130.00	700.07	0.08	115	TRUE	232.873	140	159.2	J-184
1613	J-118	23,116.29	5,962,177.05	700.4	0.072	115	TRUE	233.93	140	186.2	J-184
1614	J-119	23,064.08	5,962,037.98	700.61	0.142	115	TRUE	269.223	140	143.5	J-116
1644	J-129	22,662.34	5,963,932.49	700.13	0	115	TRUE	201.761	140	173.6	J-5
1681	J-137	23,388.97	5,962,746.95	700.04	0	250	TRUE	350	289.9	316.3	J-N2150E
1684	J-138	22,557.14	5,963,245.10	700.93	0	115	TRUE	349.016	140	143.9	J-N4070E
1687	J-139	22,761.26	5,963,186.30	702.75	0	250	TRUE	289.464	140	200.2	J-N4420E
1701	J-140	23,586.96	5,963,525.74	698.45	0.096	115	TRUE	350	142.3	190.3	J-N3150E
1704	J-141	23,239.49	5,963,413.52	699.38	0.536	115	TRUE	350	303.3	313	J-139
1711	J-143	23,345.33	5,961,555.68	699	0	250	FALSE	239.067	140	140	J-S2051E
1714	J-144	23,225.95	5,961,556.04	699	0	115	TRUE	209.401	140	223.3	J-S2051E
1786	J-165	23,502.59	5,964,204.60	699.08	0.256	115	TRUE	324.309	140	199.2	J-182
1789	J-166	23,315.10	5,964,203.31	698.91	0.084	115	TRUE	339.001	140	145.9	J-170
1792	J-167	23,168.27	5,964,090.48	698.75	0.084	115	TRUE	350	189.9	191.5	J-175
1795	J-168	23,313.56	5,964,092.80	698.77	0.084	115	TRUE	307.134	140	234.8	J-172
1798	J-169	23,315.88	5,964,279.82	698.79	0.084	115	TRUE	276.934	141.9	140	J-170
1800	J-170	23,364.57	5,964,279.82	698.98	0.084	115	TRUE	232.752	140	264.5	J-169
1802	J-171	23,243.23	5,964,202.54	698.64	0.084	115	TRUE	332.704	140	175.3	J-175
1805	J-172	23,244.78	5,964,090.48	698.87	0.084	115	TRUE	335.946	140	164.5	J-168
1809	J-173	23,069.34	5,964,200.99	699.45	0.084	115	TRUE	262.999	140	141.8	J-176
1811	J-174	22,976.60	5,964,200.99	699.89	0.084	115	TRUE	250.771	140	154.7	J-175
1813	J-175	22,976.60	5,964,112.89	700.15	0.084	115	TRUE	231.476	140	192.5	J-176
1815	J-176	23,070.12	5,964,112.12	699.74	0.084	115	TRUE	233.937	140	179.7	J-175
1819	J-178	22,974.67	5,964,279.75	700.05	0.084	115	TRUE	238.294	140	179.5	J-179
1822	J-179	23,044.05	5,964,278.86	699.77	0.084	115	TRUE	234.929	140	190.4	J-178
1825	J-180	23,130.99	5,964,278.86	699.49	0.084	115	TRUE	237.224	140	188.8	J-179
1828	J-181	23,217.93	5,964,279.83	699.24	0.084	115	TRUE	247.714	140	177.1	J-180
1832	J-182	23,439.83	5,964,204.12	699.15	0	115	TRUE	315.771	140	199.4	J-4490F
1835	J-183	24,885.31	5,963,455.51	698.5	0	115	TRUE	302.216	140	170.2	J-N1430E
1838	J-184	23,025.30	5,962,131.36	700.17	0.15	115	TRUE	228.639	140	174.4	J-117
1841	J-185	23,215.32	5,962,120.15	701.11	0.246	115	TRUE	298.677	140	142.7	J-4610F

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-3.488	0.05	0	0.021
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-8.525	0.17	0.03	0.266
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-8.715	0.18	0.02	0.276
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-8.983	0.18	0.06	0.293
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-9.201	0.19	0.05	0.306
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	11.793	0.24	0.07	0.485
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	11.633	0.24	0.07	0.472
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	2.879	0.06	0.01	0.035
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	2.701	0.06	0.01	0.032
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	2.521	0.05	0	0.028
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-3.115	0.04	0	0.017
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	5.463	0.08	0.01	0.048
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	5.301	0.07	0.01	0.046
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	5.183	0.11	0.02	0.105
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	4.692	0.1	0.01	0.088
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-8.327	0.17	0.04	0.255
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-8.561	0.17	0.04	0.268
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-21.148	0.43	0.2	1.429
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	11.672	0.17	0.02	0.164
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	5.504	0.08	0	0.049
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-0.984	0.01	0	0.002
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-1.214	0.02	0	0.003
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.084	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-1.374	0.02	0	0.004
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-1.532	0.02	0	0.004
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-2.696	0.04	0	0.013
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.313	0.02	0	0.008
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.405	0.02	0	0.011
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.505	0.03	0	0.019
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	2.483	0.04	0	0.011
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-3.218	0.05	0	0.018
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-6.159	0.09	0.01	0.06
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-8.554	0.12	0.02	0.11
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	0.332	0.01	0	0.001
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	0.092	0	0	0.001
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	2.237	0.07	0.01	0.067
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.192	0.01	0	0.003
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.42	0.02	0	0.012
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.646	0.04	0	0.029
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.338	0.02	0	0.008
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.46	0.03	0	0.015
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	1.999	0.06	0	0.057
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.026	0.06	0.01	0.066
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	0.918	0.03	0	0.013
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.13	0.01	0	0.001
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.577	0.03	0	0.023
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.406	0.02	0	0.012
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.528	0.03	0	0.019
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.271	0.02	0	0.006
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.555	0.03	0	0.021
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	2.198	0.07	0.01	0.065
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-3.059	0.1	0.01	0.12
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-9.708	0.14	0.01	0.139
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-17.23	0.24	0.06	0.402
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	21.35	0.3	0.19	0.599
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	21.35	0.3	0.29	0.598
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.53	0.03	0	0.02
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-0.985	0.06	0.01	0.062
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.131	0.07	0.01	0.08
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.243	0.07	0.01	0.095
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	4.238	0.14	0.02	0.22
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	1.629	0.05	0	0.037
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.1	0.01	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.781	0.03	0	0.009
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-1.249	0.04	0	0.023
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-1.371	0.04	0	0.027
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-1.463	0.05	0	0.031
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	1.976	0.06	0	0.054
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.003	0.03	0	0.015
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.13	0.01	0	0
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	0.873	0.03	0	0.012
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.256	0.01	0	0.001
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	0.911	0.03	0	0.012
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.302	0.01	0	0.001
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.414	0.01	0	0.003

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.536	0.02	0	0.005
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.636	0.02	0	0.006
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-0.837	0.03	0	0.011
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.511	0.02	0	0.004
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.399	0.01	0	0.003
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.269	0.01	0	0.001
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.369	0.01	0	0.002
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.062	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-1.129	0.04	0	0.019
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.614	0.02	0	0.007
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	1.004	0.01	0	0.003
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	1.004	0.01	0	0.002
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-3.115	0.04	0	0.017
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-3.115	0.04	0	0.017
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-3.115	0.04	0	0.017
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	0.012	0	0	0
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.013	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.092	0.01	0	0.002
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.125	0	0	0
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.063	0	0	0
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.285	0.01	0	0.001
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.393	0.01	0	0.003
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.455	0.01	0	0.004
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.577	0.02	0	0.004
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.13	0	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.062	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-3.797	0.05	0	0.024
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-3.797	0.05	0	0.025
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-3.897	0.06	0	0.025
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	3.542	0.07	0.01	0.052
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	3.542	0.07	0.01	0.052
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	3.542	0.07	0.01	0.052
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-2.045	0.04	0	0.019
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-4.057	0.08	0	0.068
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.584	0.03	0	0.023
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-1.662	0.05	0	0.038
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-2.507	0.05	0	0.027
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-2.607	0.05	0	0.029
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-2.719	0.06	0	0.033
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-2.819	0.06	0	0.034
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.064	0.06	0.01	0.071
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.934	0.05	0.01	0.056
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.46	0.03	0	0.015
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.284	0.02	0	0.006
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.172	0.01	0	0.003
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.521	0.02	0	0.004
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.74	0.02	0	0.009
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	0.996	0.03	0	0.016
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.01	0	0	0
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.035	0	0	0
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.133	0.01	0	0.002
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	0.155	0.01	0	0.002
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.614	0.01	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-1.933	0.04	0	0.017
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	1.459	0.05	0.01	0.03
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.499	0.03	0	0.017
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.637	0.04	0	0.028
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.885	0.03	0	0.012
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.248	0.01	0	0.001
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.661	0.04	0	0.029
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.406	0.02	0	0.009
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-1.109	0.04	0	0.013
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-2.353	0.14	0	0.314
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-1.904	0.06	0	0.05
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.561	0.03	0	0.022
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-0.571	0.02	0	0.005
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	0.355	0.02	0	0.02
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.341	0.02	0	0.012
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	0.231	0.01	0	0.001
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.573	0.03	0	0.023
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.297	0.02	0	0.007
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.012	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	4.49	0.06	0.01	0.028
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.066	0.02	0	0

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-1.244	0.02	0	0.003
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.82	0.05	0	0.044
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.536	0.03	0	0.02
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.422	0.02	0	0.013
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.24	0.01	0	0.004
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-5.466	0.08	0	0.048
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.525	0.03	0	0.019
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.133	0.01	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-2.141	0.03	0	0.009
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	2.581	0.05	0	0.033
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-5.277	0.07	0	0.045
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.087	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.133	0.01	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.354	0.02	0	0.009
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.085	0	0	0
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.429	0.02	0	0.013
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.429	0.02	0	0.013
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.06	0	0	0
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.062	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.552	0.03	0	0.021
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.504	0.03	0	0.018
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.275	0.02	0	0.006
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.505	0.03	0	0.018
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-5.91	0.08	0	0.055
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.112	0.01	0	0
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-6.168	0.09	0.02	0.06
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.944	0.05	0.01	0.057
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	1.477	0.09	0	0.126
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-4.56	0.06	0	0.034
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-4.636	0.07	0	0.036
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-5.329	0.08	0.01	0.046
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.995	0.06	0.01	0.063
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.268	0.02	0	0.006
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.513	0.03	0	0.019
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.436	0.03	0	0.014
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-2.143	0.04	0	0.02
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.143	0.01	0	0.002
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-0.73	0.02	0	0.008
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.792	0.03	0	0.01
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	2.008	0.03	0	0.008
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.239	0	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.062	0	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	1.769	0.03	0	0.006
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	1.474	0.02	0	0.004
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	1.24	0.02	0	0.004
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.02	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.658	0.04	0	0.03
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	0.993	0.01	0	0.002
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.247	0.01	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.065	0	0	0
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.209	0.01	0	0.003
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.234	0.01	0	0.019
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.025	0	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.246	0.01	0	0.005
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.295	0.02	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.05	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.302	0.02	0	0.007
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.068	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.054	0	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.159	0.01	0	0.002
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	-0.017	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.239	0.01	0	0.004
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-0.789	0.03	0	0.01
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	0.88	0.05	0	0.047
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-2.082	0.04	0	0.02
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.052	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.607	0.03	0	0.025
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.103	0	0	0.001
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.041	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	0.724	0.04	0	0.035
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.194	0.01	0	0.003
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.386	0.02	0	0.011
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-0.692	0.04	0	0.035
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-2.071	0.04	0	0.019
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.128	0.01	0	0.002

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.966	0.06	0	0.058
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.493	0.03	0	0.017
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	0.905	0.02	0	0.003
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.241	0.01	0	0.004
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.307	0.02	0	0.007
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.342	0.01	0	0.001
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	0.09	0.01	0	0.001
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.252	0.01	0	0.005
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-1.199	0.02	0	0.007
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.19	0	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	0.572	0.01	0	0
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.567	0.01	0	0.001
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-0.829	0.01	0	0.002
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-0.867	0.02	0	0.004
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.022	0	0	0
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.022	0	0	0
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.134	0.01	0	0.002
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.598	0.01	0	0.001
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-0.708	0.01	0	0.002
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.062	0	0	0.001
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-2.166	0.03	0	0.009
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.146	0	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.214	0.01	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-2.672	0.04	0	0.012
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.063	0	0	0
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.037	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.159	0.01	0	0.002
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.405	0.01	0	0.002
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	2.847	0.04	0	0.014
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-3.382	0.05	0	0.02
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.29	0.02	0	0.007
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.402	0.02	0	0.012
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.54	0.03	0	0.02
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-4.773	0.07	0.01	0.038
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.328	0.02	0	0.008
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.473	0.03	0	0.017
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	4.117	0.06	0	0.028
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	3.184	0.05	0	0.018
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.268	0.01	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.573	0.03	0	0.023
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.257	0.04	0	0.023
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.078	0.03	0	0.017
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.639	0.04	0	0.027
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-0.823	0.05	0.01	0.044
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-0.726	0.02	0	0.008
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-0.788	0.03	0	0.009
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	-0.44	0.01	0	0.003
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.65	0.04	0	0.029
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.785	0.05	0.01	0.04
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.409	0.02	0	0.012
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-6.5	0.09	0	0.066
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-6.538	0.09	0.01	0.067
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-7.439	0.11	0	0.085
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-7.439	0.11	0	0.085
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.636	0.02	0	0.007
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.444	0.01	0	0.002
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.368	0.01	0	0.002
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-1.452	0.05	0	0.03
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-1.452	0.05	0	0.03
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	0.911	0.03	0	0.013
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	2.517	0.08	0	0.083
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	2.417	0.08	0.01	0.078
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.23	0.01	0	0.001
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.138	0	0	0.001
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-2.109	0.07	0	0.061
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-1.828	0.06	0	0.046
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.382	0.02	0	0.011
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.29	0.02	0	0.006
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.617	0.04	0	0.026
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.578	0.03	0	0.02
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.64	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	0.778	0.01	0	0
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	0.572	0.01	0	0.001

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.251	0.01	0	0.005
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.197	0.01	0	0.003
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.25	0.01	0	0.004
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.25	0.01	0	0.005
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	-0.116	0	0	0
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	-0.24	0.01	0	0.008
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.062	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-1.849	0.11	0.01	0.197
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-1.979	0.06	0	0.054
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-2.423	0.08	0.01	0.065
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-2.591	0.08	0.01	0.074
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.037	0	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.037	0	0	0
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.151	0.02	0	0.005
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.783	0.02	0	0.008
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-1.432	0.03	0	0.01
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	3.542	0.07	0	0.052
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.55	0.01	0	0.002
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-4.092	0.08	0.01	0.068
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	12.912	0.26	0.02	0.573
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	21.35	0.3	0.09	0.598
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	21.24	0.43	0.06	1.442
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.615	0.04	0	0.025
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.669	0.04	0	0.025
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.444	0.01	0	0.005
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.59	0.02	0	0.006
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.092	0.01	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.054	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-1.004	0.03	0	0.015
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-1.058	0.03	0	0.016
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	3.488	0.05	0	0.021
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	2.194	0.03	0	0.009
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	2.04	0.03	0	0.008
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	2.224	0.03	0	0.009
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.54	0.02	0	0.005
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.448	0.01	0	0.003
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.622	0.01	0	0.003
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.546	0.01	0	0.002
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.462	0.01	0	0.003
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.378	0.01	0	0.002
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.378	0.01	0	0.003
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.302	0.01	0	0.002
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-2.206	0.03	0	0.009
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-2.538	0.04	0	0.013
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-1.572	0.02	0	0.004
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.286	0.01	0	0
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	2.396	0.03	0	0.01
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	2.062	0.03	0	0.008
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.016	0.01	0	0
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.016	0.01	0	0.002
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-1.042	0.03	0	0.016
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.465	0.01	0	0.004
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.587	0.02	0	0.005
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.679	0.02	0	0.008
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.781	0.03	0	0.009
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.689	0.02	0	0.008
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-1.514	0.03	0	0.01
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-1.042	0.03	0	0.017
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-3.277	0.05	0	0.019
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-4.9	0.07	0	0.034
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	1.622	0.03	0	0.013
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	1.622	0.03	0	0.012
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	1.514	0.03	0	0.011
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	0.958	0.01	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-3.053	0.04	0	0.016
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	3.95	0.08	0.01	0.064
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	3.716	0.08	0.01	0.057
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	3.29	0.07	0	0.046
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	3.228	0.07	0	0.043
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	2.243	0.05	0	0.023
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.939	0.03	0	0.014
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.817	0.03	0	0.01
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.733	0.02	0	0.008

Existing Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.733	0.02	0	0.009
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-2.167	0.04	0	0.021
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.122	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-1.712	0.05	0	0.042
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-1.85	0.06	0.01	0.047
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.092	0.01	0	0
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.062	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-1.962	0.06	0	0.043
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-1.962	0.06	0	0.044
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-2.092	0.07	0	0.05
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-1.724	0.06	0	0.034
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0	0	0	0
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-0.548	0.02	0	0.003
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-4.437	0.14	0.02	0.2
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.166	0	0	0
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	5.083	0.1	0.02	0.102
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	4.828	0.1	0	0.092
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-9.409	0.13	0.01	0.132
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-11.119	0.16	0.01	0.178
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	0.646	0.01	0	0.003
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.332	0.01	0	0
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	2.9	0.06	0	0.03
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	0.136	0	0	0
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.172	0	0	0
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	2.611	0.05	0	0.025
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	1.114	0.02	0	0.002
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0	0	0	0
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.418	0.01	0	0.003
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.251	0.03	0	0.007
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-9.316	0.13	0.02	0.108
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	17.23	0.24	0.01	0.338
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-11.672	0.17	0.01	0.164
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	12.746	0.18	0.07	0.193
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	11.672	0.17	0.04	0.164
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-4.572	0.06	0	0.029
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-4.572	0.06	0	0.029
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	2.583	0.04	0	0.012
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.654	0.04	0	0.028
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.654	0.04	0	0.029
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.642	0.04	0.01	0.028
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	4.963	0.07	0	0.034
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	1.453	0.08	0	0.103
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.023	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	-0.062	0	0	0
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-29.576	0.42	0.42	1.094
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-29.576	0.42	0.1	1.094
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-29.576	0.42	0.16	1.095
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-29.576	0.42	0.14	1.094
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-29.576	0.42	0.13	1.095
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-29.576	0.42	0.05	1.096
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-29.576	0.42	0.03	1.092
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-17.23	0.24	0.02	0.402
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-7.914	0.11	0.02	0.095
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0	0	0	0
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.348	0.01	0	0.002
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-0.987	0.01	0	0.002
1272	P-6440F	J-N2380E	J-N2363E	84.6	200	PVC	120	0.372	0.01	0	0.002
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.286	0.01	0	0
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.046	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.309	0.01	0	0.002
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.103	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.039	0	0	0
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.161	0.01	0	0.001
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.315	0.01	0	0.001
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.315	0	0	0
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.332	0.01	0	0.001
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	1.201	0.02	0	0.006
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.793	0.02	0	0.003
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.315	0.01	0	0
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.214	0.01	0	0
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	0.78	0.02	0	0.003
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0	0	0	0
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.658	0.01	0	0.002
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.658	0.01	0	0.002
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	0.922	0.01	0	0.001
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	0.73	0.01	0	0.001

Existing Development
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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	2.608	0.05	0	0.025
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	2.486	0.05	0	0.023
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.179	0.01	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.121	0	0	0.001
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.072	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.073	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.195	0.01	0	0.001
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.307	0.01	0	0.001
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.279	0.01	0	0.001
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.461	0.01	0	0
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.74	0.02	0	0.002
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.13	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-0.87	0.02	0	0.003
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-1.51	0.03	0	0.011
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-2.631	0.05	0	0.03
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-0.954	0.02	0	0.004
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-1.122	0.02	0	0.005
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.168	0.01	0	0.002
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.251	0.03	0	0.006
1395	P-5863	J-33	J-34	95	250	PVC	110	0.855	0.02	0	0.003
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.725	0.01	0	0.002
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.046	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.19	0.01	0	0.001
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.248	0.01	0	0.001
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.248	0.01	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.274	0.01	0	0.001
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.3	0.01	0	0.001
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.312	0.01	0	0.002
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.154	0	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-0.824	0.03	0	0.009
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.296	0.01	0	0.002
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.142	0	0	0
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	2.941	0.09	0.01	0.093
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.096	0.01	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	2.845	0.09	0.01	0.087
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	(N/A)	(N/A)	(N/A)	(N/A)
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	2.481	0.08	0.01	0.068
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	1.666	0.05	0	0.033
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	1.582	0.05	0	0.029
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-9.406	0.13	0.01	0.131
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-7.992	0.11	0.01	0.097
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.414	0.05	0	0.024
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-0.548	0.02	0	0.005
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	0.22	0.01	0	0.001
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	0.078	0	0	0
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.31	0.01	0	0.002
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.072	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.158	0.01	0	0
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-8.886	0.13	0.01	0.119
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-9.09	0.13	0	0.122
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.204	0.01	0	0.003
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-9.09	0.13	0.01	0.103
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-9.27	0.13	0.01	0.107
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.18	0.01	0	0.003
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.506	0.02	0	0.004
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.363	0.01	0	0.001
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.363	0.01	0	0.002
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-0.686	0.01	0	0.001
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-1.293	0.02	0	0.002
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.485	0.02	0	0.004
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	0.276	0	0	0
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.276	0.01	0	0.002
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.18	0.01	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.084	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	0	0	0	0
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	0.747	0.02	0	0.008
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.639	0.02	0	0.006
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	1.764	0.02	0	0.006
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	1.706	0.02	0	0.006
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.204	0.01	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.204	0.01	0	0.002
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-1.15	0.02	0	0.005
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-1.292	0.03	0	0.007
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	0	0	0	0
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-0.752	0.02	0	0.007

Existing Development
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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.348	0.01	0	0.002
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	12.188	0.17	0.01	0.151
1511	P-5926	J-79	J-80	321.67	300	PVC	120	12.188	0.17	0.05	0.151
1513	P-5927	J-80	J-81	352.13	300	PVC	120	4.81	0.07	0.01	0.027
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.368	0.01	0	0.002
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.368	0.01	0	0.003
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-7.378	0.23	0.03	0.429
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	4.222	0.06	0	0.025
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	4.81	0.07	0.02	0.027
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	4.222	0.06	0.01	0.021
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-4.222	0.06	0.02	0.021
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-4.222	0.06	0.01	0.021
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.658	0.01	0	0.002
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.785	0.02	0	0.002
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.214	0	0	0
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-0.356	0.01	0	0.001
1618	P-5985	J-116	J-117	94.12	200	PVC	120	0.134	0	0	0
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.168	0.01	0	0.001
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.187	0.01	0	0.001
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.187	0.01	0	0.001
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	6.416	0.09	0.01	0.054
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	6.416	0.09	0.01	0.054
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-0.559	0.01	0	0
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.392	0.01	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-0.951	0.02	0	0.004
1691	P-6020	J-139	J-N4420E	166.87	250	PVC	120	-0.951	0.02	0	0.003
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.228	0.03	0	0.008
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-1.324	0.03	0	0.008
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-2.084	0.03	0	0.008
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-2.62	0.04	0	0.012
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	0.254	0.01	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.254	0.01	0	0.002
1715	P-6032	J-143	J-144	119.38	250	PVC	120	0	0	0	0
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.285	0.04	0	0.017
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-1.029	0.03	0	0.012
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.315	0.01	0	0.001
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.214	0.01	0	0.001
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.2	0.01	0	0
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.454	0.01	0	0.002
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.084	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.256	0.01	0	0
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.291	0.01	0	0.001
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.017	0	0	0.001
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.116	0	0	0.001
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.049	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.386	0.01	0	0.002
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.156	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.022	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.062	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.146	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.05	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.034	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.118	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.286	0.01	0	0.001
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.202	0.01	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-1.029	0.03	0	0.01
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-1.029	0.03	0	0.012
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.016	0	0	0
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	4.238	0.14	0.02	0.218
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	0.054	0	0	0
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.096	0	0	0
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-0.543	0.01	0	0
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-0.789	0.01	0	0.001

Appendix **D**

Interim Development Water Distribution System Results

Interim Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	545.8	754.07
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.069	534.1	754.08
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.095	534.2	754.09
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.134	534.8	754.09
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.109	534.5	754.12
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.077	530.8	754.14
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.08	531.6	754.11
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.096	528.4	754.09
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.089	534.2	754.09
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.09	540.1	754.08
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.087	538.1	754.08
195	J-S2100E	23,886.25	5,961,252.83	699	0.081	539	754.08
196	J-S2080E	23,585.41	5,961,251.56	699	0.081	539	754.08
197	J-S2070E	23,468.77	5,961,251.56	699	0.059	539	754.08
198	J-S2060E	23,444.47	5,961,408.54	699	0.05	539	754.08
199	J-S2040E	23,441.07	5,961,591.28	699	0.068	539.1	754.08
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.054	526.3	754.08
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.117	528.4	754.09
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.046	528.6	754.31
203	J-S2010E	23,396.57	5,962,474.58	700	0	529.2	754.07
204	J-N4200E	23,397.75	5,962,576.48	701	0	519.4	754.07
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.036	522.3	754.07
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.115	535	754.07
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.038	535	754.07
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.042	528.2	754.07
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.023	535.1	754.07
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.056	528.2	754.07
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.05	536.1	754.07
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.05	537.1	754.08
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.046	547.9	754.08
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.05	551.8	754.08
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.065	548.4	754.08
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.05	538.1	754.08
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.061	547.9	754.09
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.079	537.3	754.1
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	538.4	754.12
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	540.5	754.12
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.046	542.4	754.12
222	J-N2255E	24,475.27	5,962,571.66	700	0.031	529.7	754.12
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.027	541.5	754.13
224	J-N2260E	24,501.40	5,962,673.31	699	0	539.5	754.12
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.023	543.1	754.09
226	J-N3301E	24,349.68	5,962,783.56	699	0.096	539.2	754.09
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.073	550.9	754.09
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.056	544	754.09
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.031	542	754.08
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.061	543	754.09
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.027	543.1	754.09
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	547	754.09
233	J-N3321E	24,349.51	5,962,866.08	700	0.065	529.4	754.09
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.174	544	754.09
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.069	546.9	754.08
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.05	543	754.08
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.061	545	754.09
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.061	547	754.09
239	J-N3350E	24,294.46	5,963,152.24	698.6	0.554	543.1	754.09
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.069	546.9	754.09
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.073	551.8	754.09
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.115	555.8	754.09
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.038	550.9	754.09
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.056	557.8	754.09
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.115	558	754.1
246	J-N1050E	24,728.87	5,962,855.33	698	0.33	549.3	754.13
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.079	541.6	754.14
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	531.8	754.24
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	523.9	754.83
250	J-S1010E	24,688.47	5,961,838.45	701	0	525.3	754.68
251	J-S1020E	24,215.83	5,961,901.63	700	0	532.7	754.43
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.038	560.8	754.1
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.042	561.8	754.1
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.061	542.2	754.1
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.023	555.7	754.09
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.073	564.6	754.09
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.056	554.8	754.09
258	J-N1420E	24,855.27	5,963,531.46	698	0	549	754.09
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.046	545.9	754.08

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.027	559.6	754.08
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.027	550.8	754.08
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.015	549.8	754.08
263	J-N1311E	24,830.34	5,963,795.82	698	0.05	548.8	754.08
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.027	549.8	754.08
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.061	544.9	754.08
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.046	544.9	754.08
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.031	549.8	754.07
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	547.8	754.07
269	J-N1292E	24,905.57	5,963,948.00	698	0.065	548.8	754.07
270	J-N1245E	24,928.90	5,964,040.14	697	0.031	558.6	754.07
271	J-N1244E	24,955.72	5,964,184.39	697	0.056	558.6	754.07
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.056	563.5	754.07
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.042	547.8	754.07
274	J-N1281E	24,668.79	5,963,904.06	698	0.056	548.8	754.07
275	J-N1282E	24,737.99	5,963,838.74	697	0.061	558.6	754.07
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.05	551.7	754.07
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.038	560.5	754.07
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.019	552.7	754.07
279	J-N1242E	24,655.18	5,964,247.76	698	0.056	548.8	754.07
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.027	555.6	754.07
281	J-N1272E	24,643.90	5,964,097.68	698	0.05	548.8	754.07
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.031	540.9	754.07
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.031	544.9	754.07
284	J-N1240E	24,492.27	5,964,163.87	698	0	548.8	754.07
285	J-N1220E	24,450.28	5,964,244.12	698	0	548.8	754.07
286	J-N1210E	24,398.26	5,964,217.60	698	0	548.8	754.07
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.023	550.7	754.07
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.031	551.7	754.07
289	J-N1170E	24,279.97	5,963,894.02	698	0	548.8	754.07
290	J-N1160E	24,301.35	5,963,782.73	698	0	548.8	754.07
291	J-N1150E	24,302.39	5,963,747.88	698	0.161	548.8	754.07
292	J-N1370E	24,390.29	5,963,759.89	698	0.031	548.8	754.07
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.023	553.7	754.07
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.046	555.6	754.07
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.046	544.9	754.07
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.023	563.5	754.07
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.031	551.7	754.07
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.015	561.5	754.07
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.065	559.5	754.07
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.031	563.5	754.07
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.046	550.7	754.07
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	555.6	754.07
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.05	553.7	754.08
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	554.7	754.08
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	550.8	754.08
306	J-N3182E	24,109.98	5,963,355.50	698	0	548.8	754.07
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	545.8	754.07
308	J-N3190E	23,838.79	5,963,334.11	699	0.032	539	754.07
309	J-N3210E	23,839.27	5,963,187.82	699	0.056	539	754.07
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.092	542.9	754.07
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.056	545.9	754.08
312	J-N3420E	23,966.13	5,962,983.37	698	0	548.9	754.08
313	J-N3240E	23,840.96	5,962,916.81	698	0.05	548.8	754.08
314	J-N3250E	23,877.98	5,962,777.15	698	0.056	548.9	754.08
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.05	544	754.08
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.065	539.9	754.07
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.073	542.9	754.07
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.038	533.1	754.07
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.05	525.2	754.07
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.056	523.3	754.07
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.061	540.2	754.07
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.088	539.4	754.07
323	J-N2370E	23,750.00	5,963,047.05	699	0.046	539	754.07
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.05	534.1	754.07
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.065	540.9	754.07
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.084	547.8	754.07
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.042	537	754.07
328	J-N3200E	23,838.64	5,963,310.50	699	0.031	539	754.07
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.023	539.9	754.07
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.027	545.8	754.06
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.069	541.9	754.07
332	J-N2350E	23,748.75	5,963,237.41	699	0	538.9	754.07
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.138	544.7	754.06
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.021	546.7	754.06
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.203	543.8	754.06

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	542.8	754.06
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.056	542.8	754.06
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.027	534	754.06
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.067	540.7	754.06
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.018	535	754.06
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.021	535	754.06
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	535	754.06
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.016	535	754.06
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.011	530.1	754.06
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	534	754.06
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.047	534	754.06
347	J-N2120E	23,392.51	5,963,312.31	699	0.045	538.9	754.06
348	J-N2121E	23,395.90	5,963,312.31	699	0	538.9	754.06
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.022	539.8	754.06
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.007	542.8	754.06
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	534.9	754.06
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	539.8	754.06
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	539.8	754.06
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.066	539.8	754.06
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.015	539.8	754.06
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.038	530	754.06
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	530	754.06
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.069	534	754.06
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	534	754.06
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.073	533.9	754.06
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.031	534.9	754.06
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.056	534	754.06
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.138	532	754.06
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.038	530.6	754.06
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.073	530.6	754.06
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.056	528.1	754.06
367	J-N4510E	23,116.00	5,962,864.49	700	0.042	529.1	754.06
368	J-N4500E	23,107.06	5,962,864.49	700	0.05	529.1	754.06
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.038	520.3	754.06
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.038	524.2	754.06
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.038	526.1	754.06
372	J-N4490E	23,107.28	5,962,982.98	700	0.061	529.1	754.06
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.046	528.1	754.06
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.057	535.9	754.06
375	J-N4350E	23,104.18	5,963,517.50	699	0.042	538.8	754.06
376	J-N3090E	23,166.53	5,963,519.61	699	0	538.8	754.06
377	J-N2070E	23,171.01	5,963,524.71	699	0	538.8	754.06
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	533	754.06
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	540.8	754.06
380	J-N2050E	23,164.50	5,963,745.83	699	0	538.8	754.06
381	J-N2040E	23,164.50	5,963,849.54	699	0	538.8	754.06
382	J-N2020E	23,168.07	5,964,021.69	699	0	538.8	754.06
383	J-N2010E	23,229.47	5,964,021.52	699	0.01	538.8	754.06
384	J-N3010E	23,161.69	5,964,008.03	699	0.454	538.8	754.06
385	J-N3030E	23,160.50	5,963,849.48	699	0.031	538.8	754.06
386	J-N3031E	23,161.50	5,963,836.74	699	0.038	538.8	754.06
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	540.8	754.06
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.056	540.8	754.06
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	533	754.06
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.056	533	754.06
391	J-N3032E	22,992.17	5,963,835.82	699	0.061	538.8	754.06
392	J-N3051E	22,992.42	5,963,732.81	700	0.061	529	754.06
393	J-N3071E	22,992.67	5,963,640.74	700	0.065	529	754.06
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	533	754.06
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.027	532	754.06
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.052	523.2	754.06
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.031	526.1	754.06
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.031	528.1	754.06
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.006	528	754.05
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.096	527	754.05
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	517.3	754.05
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.026	517.3	754.05
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.071	516.3	754.05
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	516.3	754.05
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.046	524.2	754.06
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.079	525.1	754.05
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.033	516.3	754.05
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.031	522.1	754.05
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.171	518.2	754.05
410	J-N4410E	22,639.90	5,963,300.90	701	0.04	519.2	754.05
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	524.1	754.05

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	531.9	754.05
413	J-N4010E	22,546.33	5,963,750.87	700	0.117	529	754.05
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.129	523.1	754.05
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	521.2	754.05
416	J-N4041E	22,443.94	5,963,514.35	701	0	519.2	754.05
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.056	514.3	754.05
418	J-N4043E	22,444.72	5,963,305.56	701	0.232	519.2	754.05
419	J-N4070E	22,557.86	5,963,211.47	701	0.55	519.2	754.05
420	J-N4080E	22,553.97	5,963,123.99	701.5	0.698	514.3	754.05
421	J-N4081E	22,468.80	5,963,123.50	701	0	519.2	754.05
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.073	510.4	754.05
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.073	512.4	754.05
424	J-N4092E	22,681.89	5,962,970.03	702	0.107	509.4	754.05
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.056	508.5	754.05
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.05	514.3	754.05
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.061	512.4	754.05
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.027	508.5	754.05
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.05	504.5	754.05
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.065	502.6	754.05
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.046	510.4	754.05
432	J-N4121E	22,725.05	5,962,737.13	701	0.056	519.2	754.05
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.069	522.2	754.06
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.019	521.2	754.06
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.008	520.2	754.06
436	J-N4431E	22,871.76	5,963,060.11	701	0.05	519.2	754.05
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.046	516.3	754.06
438	J-N4131E	22,739.70	5,962,940.69	702	0.134	509.5	754.06
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.092	542.1	754.09
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.031	537.2	754.09
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.019	556.1	754.09
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	554.7	754.08
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.023	544.9	754.07
444	J-N1246E	24,900.57	5,964,065.27	697	0.038	558.6	754.07
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	551.7	754.08
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.056	555.7	754.08
447	J-N1400E	24,827.83	5,963,657.23	698	0.05	548.9	754.08
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.046	562.8	754.1
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.065	561.8	754.1
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.046	524.2	754.06
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.031	520.2	754.06
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.103	524.1	754.05
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.027	527.1	754.06
454	J-N3020E	23,160.99	5,963,967.57	699	0	538.8	754.06
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.031	540.5	754.12
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.065	561.3	754.1
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.084	548.4	754.11
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.061	543.7	754.11
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.211	544.7	754.06
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.02	544.7	754.06
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.184	543.8	754.06
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	541.8	754.06
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.054	543.8	754.06
464	J-N3160E	23,825.34	5,963,511.25	699	0.039	538.9	754.06
465	J-N3170E	23,903.33	5,963,511.58	699	0.084	538.9	754.06
466	J-N3180E	23,907.72	5,963,334.91	699	0	539	754.07
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	525.4	754.08
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.055	529	754.36
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.027	535	754.06
470	J-N1250E	24,499.78	5,964,149.64	698	0.027	548.8	754.07
471	J-N1251E	24,455.84	5,964,129.52	698	0.046	548.8	754.07
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.027	554.6	754.07
473	J-N1230E	24,475.43	5,964,196.22	698	0	548.8	754.07
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	547.3	754.07
475	J-S2140E	24,039.65	5,960,875.68	698	0.077	548.7	754.07
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	545.8	754.07
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.061	542.6	754.07
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.056	531.6	754.07
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.046	543.8	754.07
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.056	547.3	754.07
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.038	543.8	754.07
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.042	543.8	754.07
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.042	543.8	754.07
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	543.8	754.07
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.038	543.8	754.07
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.056	542.8	754.07
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.023	543.8	754.07

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.038	541.9	754.07
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.167	543.8	754.07
490	J-S2220E	24,180.05	5,960,467.40	698.65	0.523	542.3	754.07
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	543.8	754.07
492	J-S2240E	24,158.72	5,960,383.61	698.5	0.508	543.8	754.07
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	546.3	754.07
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	534.1	754.07
495	J-S2195E	23,781.62	5,960,412.85	698	0	548.7	754.07
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	543.8	754.07
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.056	536.9	754.07
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.061	535.4	754.07
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.046	528.6	754.07
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.027	533	754.07
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.046	536	754.07
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	545.8	754.07
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	534.1	754.08
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	545.9	754.07
505	J-S1110E	24,033.48	5,960,926.97	698	0.054	548.8	754.07
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.03	550.7	754.07
507	J-N1600E	24,201.37	5,964,131.25	698	0.056	548.7	754.07
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.065	541.4	754.07
509	J-N1620E	24,074.31	5,964,072.83	699	0.031	538.9	754.07
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.023	534	754.07
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.038	534	754.07
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.061	536.5	754.07
513	J-N1632E	24,036.37	5,963,917.92	700	0.042	529.1	754.07
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	534	754.07
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	541.4	754.07
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.061	543.8	754.07
517	J-N1060E	24,577.21	5,963,109.12	697	0	558.9	754.11
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.069	551.6	754.11
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.056	556.5	754.11
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.046	504.5	754.05
521	J-N4082E	22,469.20	5,963,082.83	701	0.031	519.2	754.05
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	557	754.11
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.065	557	754.11
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.09	555	754.11
526	J-N1471E	24,945.50	5,963,280.47	699	0.289	539.4	754.11
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	542.3	754.11
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.093	545.3	754.12
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.145	524.4	754.08
530	J-S2050E	23,441.95	5,961,556.46	699	0	539	754.08
531	J-S2051E	23,344.97	5,961,508.86	699	0.244	539	754.08
532	J-N1065E	24,522.60	5,963,163.07	697	0.855	558.8	754.1
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.157	525.1	754.05
536	J-N3412E	22,763.88	5,963,654.13	700.4	0.63	525.1	754.05
537	J-3550I	23,858.78	5,963,861.50	697.8	0.077	550.7	754.06
538	J-3560I	23,895.14	5,963,776.63	698.8	0.077	540.9	754.06
539	J-3570I	23,930.36	5,963,667.29	699	0.077	538.9	754.06
540	J-3580I	23,794.98	5,963,838.03	698	0.065	548.7	754.06
541	J-3590F	23,690.63	5,963,983.45	697.5	0.061	553.5	754.06
542	J-3600I	23,601.86	5,963,939.64	698.3	0.096	545.7	754.06
543	J-3610I	23,453.97	5,963,928.59	699	0.132	538.9	754.06
544	J-3620F	23,389.20	5,964,002.63	699.6	0	533	754.06
548	J-3660F	23,675.98	5,964,023.67	697	0	558.4	754.06
549	J-3670I	23,876.32	5,964,331.38	698.5	0.167	543.8	754.07
551	J-3690I	22,621.02	5,963,751.20	699.5	0	533.9	754.05
552	J-3700I	24,251.71	5,960,551.59	700	0.833	529.1	754.07
553	J-3710F	24,340.82	5,960,450.73	699.3	0.833	536	754.07
556	J-3740I	24,235.46	5,960,911.51	700	0	529.1	754.07
557	J-3750I	24,202.10	5,960,810.43	700	0	529.1	754.07
558	J-3760F	24,126.63	5,962,599.83	698.5	0.515	544.4	754.12
559	J-3770F	24,004.27	5,962,385.31	698.5	0.515	544.4	754.12
560	J-3780F	24,246.39	5,962,223.62	698.8	0.515	541.5	754.12
561	J-3790F	24,549.31	5,962,206.03	699.2	0.281	538.1	754.19
562	J-3800F	24,678.90	5,962,287.47	699.5	0.281	535.4	754.21
563	J-3830F	24,662.04	5,962,661.31	699	0.023	539.6	754.13
564	J-3840F	24,769.05	5,962,856.55	698	0	549.4	754.13
565	J-S2011E	23,398.12	5,962,393.08	701	0.175	519.4	754.07
566	J-3860F	23,130.75	5,962,367.08	699.08	0.391	538.1	754.07
567	J-3870F	23,015.45	5,962,359.04	700	0	529.1	754.07
568	J-3880F	22,846.82	5,962,430.77	700.62	0.391	523.1	754.06
574	J-3940F	22,850.61	5,962,219.38	700.12	0.391	528.1	754.08
575	J-3950F	22,898.73	5,962,037.18	700.62	0.391	523.2	754.08
576	J-S2012E	23,398.36	5,962,126.10	701	0.043	519.5	754.08
581	J-4010F	24,264.46	5,961,085.30	701.5	0	514.5	754.07

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
586	J-4060F	24,028.16	5,962,018.57	699.1	0	538.5	754.12
588	J-4080I	23,485.64	5,960,871.34	699	0.104	539	754.07
594	J-4140F	24,447.99	5,960,902.33	701	0.833	519.3	754.06
595	J-4150F	24,447.17	5,960,816.61	702	0.833	509.5	754.06
596	J-4160F	24,443.99	5,960,698.17	700	0.833	529	754.05
597	J-4170F	24,566.08	5,960,649.02	700	0.833	529	754.05
602	J-4220I	23,168.73	5,961,753.64	699.3	0.18	536.1	754.08
605	J-4250F	23,717.61	5,962,073.19	699.3	0.721	536.3	754.1
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	534	754.06
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	534	754.06
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	535	754.06
611	J-4310F	22,779.97	5,964,010.72	699.5	0.474	533.9	754.05
612	J-3775F	24,129.33	5,962,308.95	698.5	0.515	544.4	754.12
613	J-3755F	24,211.83	5,962,601.84	698.5	0	544.4	754.12
614	J-3785F	24,389.79	5,962,392.01	698.7	0.031	542.5	754.13
615	J-N1023E	24,962.79	5,962,291.29	699	0	541.7	754.35
616	J-3805F	24,846.93	5,962,284.57	699.5	0.281	535.8	754.25
617	J-3804F	24,683.36	5,962,433.13	699.4	0.281	536.4	754.2
618	J-N1025E	24,955.73	5,962,436.30	699	0.281	540.9	754.27
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	535.3	754.2
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	544.7	754.16
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	544.7	754.15
622	J-3810F	24,808.50	5,962,854.71	698.5	0	544.5	754.14
623	J-3815F	24,803.86	5,962,773.23	699	0.281	539.7	754.14
624	J-3820F	24,781.43	5,962,653.26	699.5	0.281	535.3	754.2
625	J-3825F	24,683.97	5,962,561.99	701	0.281	520.3	754.16
626	J-4430I	24,354.53	5,960,883.84	700.5	0.178	524.2	754.06
627	J-4440I	24,201.33	5,960,696.57	699.5	0	534	754.07
628	J-4450I	24,358.13	5,960,711.56	700	0.833	529.1	754.06
629	J-4460I	23,866.43	5,960,918.16	700.5	0.09	524.3	754.07
630	J-4470I	24,688.40	5,963,006.16	698	0.33	549.2	754.12
632	J-4490F	23,389.95	5,964,203.21	699.2	0	536.9	754.06
638	J-4550I	24,097.29	5,963,722.12	698.5	0	543.8	754.07
639	J-4560I	24,258.63	5,963,745.67	698	0	548.7	754.07
640	J-4570I	24,058.45	5,963,789.70	699.1	0.726	537.9	754.07
641	J-4580I	24,184.55	5,963,895.50	700	0.726	529.1	754.07
642	J-4590F	23,289.98	5,962,391.46	700.9	0.139	520.3	754.07
643	J-4600F	23,285.48	5,962,126.23	701.38	0.099	515.8	754.08
644	J-4610F	23,155.29	5,962,079.75	700.83	0.01	521.1	754.08
648	J-4650F	22,898.74	5,961,936.72	700.91	0.391	520.3	754.08
1317	J-2	22,730.02	5,963,753.33	700.5	0.023	524.1	754.05
1319	J-3	22,672.82	5,963,751.17	700.5	0	524.1	754.05
1323	J-4	22,621.02	5,963,836.43	700	0.061	529	754.05
1325	J-5	22,727.82	5,963,998.44	700.25	0.042	526.5	754.05
1327	J-6	22,732.18	5,964,070.61	701	0.071	519.2	754.05
1329	J-7	22,731.10	5,964,172.06	700.75	0.061	521.6	754.05
1331	J-8	22,631.81	5,964,169.90	701.5	0.077	514.3	754.05
1333	J-9	22,551.95	5,964,168.82	701	0.285	519.2	754.05
1337	J-10	23,451.65	5,963,733.50	699	0.102	538.9	754.06
1340	J-11	23,574.41	5,963,732.15	699.25	0.102	536.4	754.06
1342	J-12	23,453.00	5,963,830.63	698.75	0.132	541.3	754.06
1345	J-13	23,538.85	5,963,831.54	699.25	0.107	536.4	754.06
1347	J-14	23,454.35	5,964,026.24	699.1	0.191	537.9	754.06
1349	J-15	23,467.84	5,964,093.69	699.25	0.185	536.4	754.06
1351	J-16	23,573.06	5,964,030.28	699.25	0.207	536.4	754.06
1353	J-17	23,570.36	5,964,124.71	699	0.148	538.9	754.06
1355	J-18	23,532.59	5,963,931.81	699	0.096	538.9	754.06
1358	J-19	23,754.37	5,963,918.75	698.75	0.061	541.3	754.06
1361	J-20	23,728.46	5,963,820.53	698.75	0.029	541.3	754.06
1363	J-21	23,674.50	5,963,815.14	698.75	0.061	541.3	754.06
1365	J-22	23,673.42	5,963,866.94	699.25	0.036	536.4	754.06
1367	J-23	23,677.74	5,963,733.12	699	0.061	538.9	754.06
1369	J-24	23,746.80	5,963,730.96	699	0.042	538.9	754.06
1371	J-25	23,809.40	5,963,732.04	699	0.077	538.9	754.06
1374	J-26	23,798.19	5,963,731.64	699	0	538.9	754.06
1377	J-27	23,775.20	5,963,641.81	699.25	0	536.5	754.06
1379	J-28	23,710.13	5,963,639.34	699.5	0.065	534	754.06
1381	J-29	23,844.51	5,963,643.58	699.25	0.042	536.5	754.06
1383	J-30	23,845.57	5,963,511.32	699	0	538.9	754.06
1387	J-31	23,799.25	5,963,585.59	699.75	0.084	531.6	754.06
1388	J-32	23,845.57	5,963,586.29	699.5	0	534	754.06
1392	J-33	23,672.77	5,964,049.27	698.75	0.042	541.3	754.06
1394	J-34	23,670.18	5,964,144.24	699	0.065	538.9	754.06
1396	J-35	23,671.91	5,964,234.03	698.75	0.042	541.3	754.06
1398	J-36	23,671.05	5,964,280.65	699	0.023	538.9	754.06
1400	J-37	23,758.25	5,964,281.52	698.75	0.029	541.3	754.06

Interim Development							
Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1402	J-38	23,813.50	5,964,238.35	698.75	0	541.3	754.06
1404	J-39	23,860.99	5,964,198.64	698.5	0.013	543.8	754.06
1406	J-40	23,792.78	5,964,135.61	698.5	0.013	543.8	754.06
1408	J-41	23,757.38	5,964,171.87	699.25	0	536.4	754.06
1410	J-42	23,740.12	5,964,098.49	698.5	0.006	543.8	754.06
1414	J-43	23,980.99	5,963,768.68	699.75	0.077	531.6	754.06
1416	J-44	24,000.53	5,963,681.98	700	0.036	529.1	754.07
1419	J-45	24,049.06	5,964,265.48	698.75	0.077	541.4	754.07
1421	J-46	23,957.33	5,964,279.51	698.75	0.071	541.4	754.07
1424	J-47	24,921.74	5,963,097.95	698.75	0	541.9	754.12
1426	J-48	24,960.60	5,963,073.13	699.25	0.048	537	754.12
1428	J-49	24,867.78	5,963,034.28	698.75	0.027	541.9	754.12
1430	J-50	24,895.84	5,963,012.69	699	0	539.4	754.12
1432	J-51	24,805.19	5,963,090.39	698.5	0.023	544.3	754.11
1434	J-52	24,739.36	5,963,144.35	698.25	0.042	546.7	754.11
1436	J-53	24,688.64	5,963,093.63	698.25	0.084	546.7	754.11
1438	J-54	24,637.92	5,963,049.38	698.25	0	546.7	754.11
1443	J-55	24,746.03	5,963,032.58	698.5	0.071	544.3	754.12
1446	J-56	24,815.86	5,962,971.87	698.75	0.04	541.9	754.12
1448	J-57	24,793.42	5,962,913.17	699.25	0.036	537	754.12
1450	J-58	24,880.62	5,962,917.48	698.75	0.079	541.9	754.12
1452	J-59	24,463.42	5,962,681.55	699.25	0	537	754.12
1455	J-60	24,477.23	5,962,748.02	699	0.102	539.5	754.12
1457	J-61	24,560.98	5,962,657.37	698.5	0	544.4	754.13
1460	J-62	24,574.79	5,962,709.17	698.75	0.09	542	754.13
1464	J-64	23,859.42	5,960,815.72	699.25	0.061	536.5	754.07
1467	J-65	23,919.85	5,960,828.67	698.5	0	543.9	754.07
1469	J-66	23,954.39	5,960,863.21	699.25	0.061	536.5	754.07
1471	J-67	23,951.80	5,960,932.28	698.75	0.061	541.4	754.07
1475	J-68	24,151.23	5,960,824.36	699.5	0	534	754.07
1477	J-69	24,160.73	5,960,864.07	700.5	0.048	524.3	754.07
1479	J-70	24,173.68	5,960,913.28	699.75	0.048	531.6	754.07
1481	J-71	24,122.74	5,960,921.05	699.25	0.042	536.5	754.07
1485	J-73	23,863.50	5,960,738.53	699.2	0.054	537	754.07
1488	J-74	24,008.12	5,960,795.72	699.25	0.029	536.5	754.07
1491	J-75	23,533.91	5,963,732.98	699.5	0	534	754.06
1494	J-76	23,929.23	5,963,577.78	699	0.071	538.9	754.06
1497	J-77	24,049.40	5,963,701.17	699.25	0.376	536.5	754.07
1500	J-78	24,258.00	5,963,633.98	699	0.174	539	754.07
1508	J-79	25,046.68	5,962,853.87	700	0	529.9	754.14
1510	J-80	25,042.43	5,963,175.51	700.5	0	524.8	754.13
1512	J-81	25,046.04	5,963,527.62	699	0	539.5	754.12
1514	J-82	24,960.02	5,964,132.73	698.2	0	546.8	754.07
1521	J-83	26,363.57	5,963,530.33	700	0	529.6	754.11
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0.22	519.8	754.11
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.294	529.6	754.11
1550	J-92	25,818.46	5,963,541.11	700	0	529.6	754.11
1557	J-94	23,168.88	5,964,201.54	698.35	0.042	545.2	754.06
1563	J-97	23,572.11	5,964,208.92	698.89	0.079	539.9	754.06
1567	J-99	24,962.99	5,962,995.96	699.25	0.122	537	754.12
1569	J-100	24,962.35	5,962,910.88	699	0.081	539.4	754.12
1571	J-101	24,843.21	5,962,526.29	698.5	0.281	545.5	754.24
1601	J-113	23,034.88	5,962,417.94	700.25	0.391	526.7	754.06
1603	J-114	23,096.04	5,962,483.59	700.27	0	526.5	754.06
1606	J-115	22,877.49	5,962,538.98	700.76	0.391	521.7	754.06
1609	J-116	22,980.29	5,962,035.89	700.36	0.04	525.7	754.08
1612	J-117	22,981.58	5,962,130.00	700.07	0.04	528.6	754.08
1613	J-118	23,116.29	5,962,177.05	700.4	0.036	525.3	754.08
1614	J-119	23,064.08	5,962,037.98	700.61	0.071	523.3	754.08
1617	J-120	23,062.79	5,961,949.52	700.91	0.391	520.3	754.08
1622	J-121	22,967.10	5,962,525.57	699.88	0.391	530.3	754.06
1625	J-122	22,927.50	5,962,396.04	700.53	0.391	523.9	754.06
1629	J-123	23,125.71	5,962,499.02	700.25	0.391	526.7	754.06
1641	J-128	23,107.26	5,961,523.64	699.75	0.18	531.7	754.08
1644	J-129	22,662.34	5,963,932.49	700.13	0.111	527.7	754.05
1651	J-131	24,486.06	5,962,060.83	699.27	1.37	537.6	754.19
1654	J-132	24,968.91	5,961,951.84	699.38	1.37	536.6	754.21
1657	J-133	24,401.29	5,962,107.21	700.25	0.785	527.6	754.16
1678	J-136	23,661.31	5,960,941.42	698.75	0.104	541.4	754.07
1681	J-137	23,388.97	5,962,746.95	700.04	0	528.8	754.07
1684	J-138	22,557.14	5,963,245.10	700.93	0	519.9	754.05
1687	J-139	22,761.26	5,963,186.30	702.75	0	502.1	754.05
1701	J-140	23,586.96	5,963,525.74	698.45	0.048	544.3	754.06
1704	J-141	23,239.49	5,963,413.52	699.38	0.268	535.1	754.06
1711	J-143	23,345.33	5,961,555.68	699	0	539	754.08
1714	J-144	23,225.95	5,961,556.04	699	0	539.1	754.08

Interim Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1716	J-145	23,170.80	5,961,583.05	699.59	0	533.3	754.08
1722	J-146	24,277.82	5,962,502.87	698.64	0	543	754.12
1725	J-147	24,223.72	5,962,367.72	698.57	0	543.7	754.13
1729	J-148	24,298.95	5,962,314.98	698.75	0	542	754.13
1732	J-149	24,416.81	5,962,303.73	698.9	0	540.8	754.15
1735	J-150	24,475.11	5,962,227.73	699.07	0	539.2	754.17
1738	J-151	24,314.17	5,962,158.57	699.57	0	534.2	754.16
1742	J-152	24,851.03	5,962,145.44	699.48	0	535.8	754.22
1745	J-153	24,970.64	5,962,052.96	699.41	0	536.3	754.21
1752	J-155	24,616.38	5,962,095.62	699.27	0	537.6	754.21
1757	J-156	24,560.35	5,962,018.25	699.29	0	537.4	754.2
1786	J-165	23,502.59	5,964,204.60	699.08	0.128	538	754.06
1789	J-166	23,315.10	5,964,203.31	698.91	0.042	539.7	754.06
1792	J-167	23,168.27	5,964,090.48	698.75	0.042	541.3	754.06
1795	J-168	23,313.56	5,964,092.80	698.77	0.042	541.1	754.06
1798	J-169	23,315.88	5,964,279.82	698.79	0.042	540.9	754.06
1800	J-170	23,364.57	5,964,279.82	698.98	0.042	539	754.06
1802	J-171	23,243.23	5,964,202.54	698.64	0.042	542.4	754.06
1805	J-172	23,244.78	5,964,090.48	698.87	0.042	540.1	754.06
1809	J-173	23,069.34	5,964,200.99	699.45	0.042	534.4	754.06
1811	J-174	22,976.60	5,964,200.99	699.89	0.042	530.1	754.06
1813	J-175	22,976.60	5,964,112.89	700.15	0.042	527.6	754.06
1815	J-176	23,070.12	5,964,112.12	699.74	0.042	531.6	754.06
1819	J-178	22,974.67	5,964,279.75	700.05	0.042	528.6	754.06
1822	J-179	23,044.05	5,964,278.86	699.77	0.042	531.3	754.06
1825	J-180	23,130.99	5,964,278.86	699.49	0.042	534	754.06
1828	J-181	23,217.93	5,964,279.83	699.24	0.042	536.5	754.06
1832	J-182	23,439.83	5,964,204.12	699.15	0	537.4	754.06
1835	J-183	24,885.31	5,963,455.51	698.5	0	544.2	754.1
1838	J-184	23,025.30	5,962,131.36	700.17	0.075	527.6	754.08
1841	J-185	23,215.32	5,962,120.15	701.11	0.123	518.4	754.08

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-4.781	0.07	0.01	0.038
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-5.219	0.11	0.01	0.107
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-5.314	0.11	0.01	0.111
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-5.448	0.11	0.02	0.116
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-5.557	0.11	0.02	0.12
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	6.243	0.13	0.02	0.15
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	6.163	0.13	0.02	0.145
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	2.811	0.06	0.01	0.034
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	2.722	0.06	0.01	0.032
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	2.632	0.05	0	0.03
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	1.219	0.02	0	0.003
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	1.326	0.02	0	0.004
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	1.245	0.02	0	0.003
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	-1.298	0.03	0	0.008
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	-1.269	0.03	0	0.008
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-3.138	0.06	0.01	0.042
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-3.255	0.07	0.01	0.045
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-19.297	0.39	0.17	1.206
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	2.467	0.03	0	0.009
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	-0.527	0.01	0	0
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-3.136	0.04	0	0.017
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-3.251	0.05	0	0.018
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.042	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-3.331	0.05	0	0.02
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.056	0	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-3.41	0.05	0	0.02
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-4.054	0.06	0	0.028
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.523	0.03	0	0.019
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.569	0.03	0	0.023
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.619	0.04	0	0.025
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	3.581	0.05	0	0.022
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-4.315	0.06	0	0.031
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-6.579	0.09	0.01	0.068
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-8.762	0.12	0.02	0.115
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-2.735	0.09	0.01	0.082
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-0.567	0.02	0	0.004
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	2.105	0.07	0.01	0.06
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.096	0.01	0	0.001
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.385	0.02	0	0.011
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	0.674	0.04	0	0.03
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.345	0.02	0	0.009
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.406	0.02	0	0.012
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	1.986	0.06	0	0.052
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	0.864	0.05	0	0.049
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	1.094	0.04	0	0.018
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.065	0	0	0.001
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.481	0.03	0	0.017
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.336	0.02	0	0.008
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.397	0.02	0	0.012
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.195	0.01	0	0.002
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.337	0.02	0	0.008
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	0.826	0.03	0	0.01
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-1.316	0.04	0	0.025
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-6.741	0.1	0.01	0.071
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-4.975	0.07	0.01	0.04
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	19.398	0.27	0.16	0.501
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	19.398	0.27	0.25	0.501
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.083	0	0	0.001
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-0.731	0.04	0	0.035
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-0.804	0.05	0	0.042
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-0.86	0.05	0	0.047
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	2.878	0.09	0.01	0.107
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	1.08	0.03	0	0.018
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.05	0	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.464	0.01	0	0.004
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-0.89	0.03	0	0.012
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-0.951	0.03	0	0.014
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-0.997	0.03	0	0.015
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	1.328	0.04	0	0.026
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	0.623	0.02	0	0.007
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.065	0	0	0
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	0.558	0.02	0	0.005
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.184	0.01	0	0.001
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	0.674	0.02	0	0.007
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.053	0	0	0
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.109	0	0	0.001

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.17	0.01	0	0.001
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.22	0.01	0	0.001
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-0.631	0.02	0	0.006
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.377	0.01	0	0.003
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.321	0.01	0	0.002
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.156	0	0	0.001
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.206	0.01	0	0.001
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.031	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-0.685	0.02	0	0.008
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.45	0.01	0	0.003
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	0.744	0.01	0	0.001
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	0.744	0.01	0	0.001
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-1.473	0.02	0	0.004
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-1.473	0.02	0	0.004
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-1.473	0.02	0	0.004
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	-0.512	0.02	0	0.005
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	-0.304	0.01	0	0.001
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.046	0	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.373	0.01	0	0.003
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.239	0.01	0	0.001
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.35	0.01	0	0.002
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.404	0.01	0	0.003
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.435	0.01	0	0.004
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.496	0.02	0	0.003
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.065	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.031	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.046	0	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-3.815	0.05	0	0.025
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-3.815	0.05	0	0.025
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-3.865	0.05	0	0.025
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	2.194	0.04	0	0.022
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	2.194	0.04	0	0.022
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	2.194	0.04	0	0.022
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-1.728	0.04	0	0.014
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-3.593	0.07	0	0.054
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-0.643	0.04	0	0.028
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-1.602	0.05	0	0.036
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-2.047	0.04	0	0.019
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-2.097	0.04	0	0.019
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-2.153	0.04	0	0.021
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-2.203	0.04	0	0.022
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	0.594	0.03	0	0.024
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.529	0.03	0	0.02
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.366	0.02	0	0.01
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.05	0	0	0
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.278	0.02	0	0.006
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.222	0.01	0	0.004
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-0.956	0.03	0	0.014
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-0.905	0.03	0	0.013
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	0.822	0.03	0	0.01
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.24	0.01	0	0.005
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.096	0.01	0	0.001
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	0.012	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.079	0	0	0.001
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.457	0.01	0	0
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-1.672	0.03	0	0.013
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	1.196	0.04	0	0.021
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.428	0.02	0	0.013
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.497	0.03	0	0.017
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.532	0.02	0	0.005
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.035	0	0	0
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.246	0.01	0	0.005
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.203	0.01	0	0.003
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-0.47	0.01	0	0.002
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-1.82	0.1	0	0.192
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-1.597	0.05	0	0.035
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.279	0.02	0	0.006
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-1.116	0.04	0	0.019
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-0.299	0.02	0	0
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.635	0.04	0	0.024
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-0.716	0.02	0	0.008
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	0.081	0	0	0
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.318	0.02	0	0.008
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.01	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	2.137	0.03	0	0.007
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.218	0.02	0	0

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-1.35	0.02	0	0.003
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.437	0.03	0	0.014
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.198	0.01	0	0.003
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.349	0.02	0	0.009
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.217	0.01	0	0.004
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-3.309	0.05	0	0.02
820	P-2010	J-N3110E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.411	0.02	0	0.012
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.039	0	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-1.126	0.02	0	0
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	1.871	0.04	0	0.022
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-3.228	0.05	0	0.018
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.091	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.039	0	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.168	0.01	0	0.002
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.159	0.01	0	0.002
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.298	0.02	0	0.007
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.298	0.02	0	0.007
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	0.083	0	0	0.001
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.031	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.429	0.02	0	0.013
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.164	0.01	0	0.002
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.307	0.02	0	0.007
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	0.005	0	0	0
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-2.865	0.04	0	0.017
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.056	0	0	0.002
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-2.994	0.04	0	0.016
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.537	0.03	0	0.02
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	0.764	0.04	0	0.042
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-2.487	0.04	0	0.011
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-2.525	0.04	0	0.012
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-2.832	0.04	0	0.014
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.409	0.02	0	0.012
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.021	0	0	0
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.281	0.02	0	0.006
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-1.544	0.03	0	0.011
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	-0.097	0.01	0	0.001
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-0.744	0.02	0	0.01
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.488	0.02	0	0.003
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	1.06	0.01	0	0.002
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.379	0.01	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	-0.256	0.01	0	0.006
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	0.681	0.01	0	0.001
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	0.475	0.01	0	0.001
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	0.299	0	0	0
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.011	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.358	0.02	0	0.01
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	0.081	0	0	0
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.219	0.01	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	0.092	0.01	0	0
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.068	0	0	0
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.176	0.01	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.108	0.01	0	0
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.087	0	0	0.001
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.206	0.01	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.119	0.01	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.123	0.01	0	0.001
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.121	0.01	0	0.001
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	0.06	0	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.139	0.01	0	0.002
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.186	0.01	0	0.003
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.26	0.01	0	0.005
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-0.604	0.02	0	0.005
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	0.864	0.05	0	0.05
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-1.658	0.03	0	0.013
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	0.033	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.44	0.03	0	0.014
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.191	0.01	0	0.001
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.16	0.01	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	0.646	0.04	0	0.028
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.234	0.01	0	0.004
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.33	0.02	0	0.008
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-0.604	0.03	0	0.029
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-1.734	0.04	0	0.014
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.117	0.01	0	0.001

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-0.692	0.04	0	0.029
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.441	0.03	0	0.014
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.046	0	0	0
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	0.874	0.02	0	0.002
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.241	0.01	0	0.004
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.274	0.02	0	0.006
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	-0.004	0	0	0
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-0.087	0.01	0	0
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.258	0.01	0	0.005
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-0.987	0.02	0	0.005
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.052	0	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	1.07	0.02	0	0.003
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-0.993	0.01	0	0.002
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-1.122	0.02	0	0.003
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-0.689	0.01	0	0.003
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.127	0	0	0.001
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.127	0.01	0	0.001
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.183	0.01	0	0.003
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.415	0.01	0	0
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-0.661	0.01	0	0.002
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.031	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-1.39	0.02	0	0.004
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.073	0	0	0
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.107	0	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-1.643	0.02	0	0.005
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.01	0	0	0
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.04	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.101	0.01	0	0.001
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.174	0.01	0	0.002
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.224	0.01	0	0.001
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	1.709	0.02	0	0.006
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-1.998	0.03	0	0.007
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.178	0.01	0	0.002
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.234	0.01	0	0.005
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.303	0.02	0	0.007
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-2.707	0.04	0	0.013
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.09	0.01	0	0.001
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.251	0.01	0	0.005
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	2.347	0.03	0	0.01
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	1.866	0.03	0	0.007
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.134	0	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.301	0.02	0	0.007
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.184	0.04	0	0.021
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-0.958	0.03	0	0.014
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.546	0.03	0	0.021
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-0.638	0.04	0	0.027
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-0.998	0.03	0	0.015
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-1.029	0.03	0	0.016
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	0.186	0.01	0	0.001
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.458	0.03	0	0.015
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.452	0.03	0	0.015
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.264	0.02	0	0.005
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-5.35	0.08	0	0.045
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-5.369	0.08	0	0.047
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-6.058	0.09	0	0.058
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-6.058	0.09	0	0.058
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.417	0.01	0	0.003
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.287	0.01	0	0
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.249	0.01	0	0.001
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-1.145	0.04	0	0.02
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-1.145	0.04	0	0.019
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	0.529	0.02	0	0.004
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.056	0	0	0
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	1.752	0.06	0	0.044
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	1.702	0.05	0	0.04
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	0.597	0.02	0	0.006
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	0.551	0.02	0	0.005
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-1.112	0.04	0	0.018
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-1.773	0.06	0	0.044
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.305	0.02	0	0.007
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.259	0.01	0	0.004
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.269	0.02	0	0.005
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.322	0.02	0	0.007
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.353	0	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	1.173	0.02	0	0
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	1.07	0.02	0	0.002

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.101	0.01	0	0.001
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.074	0	0	0.001
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.096	0.01	0	0
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.096	0.01	0	0.001
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	2.23	0.07	0.01	0.056
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	2.168	0.07	0	0.051
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.031	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-0.982	0.06	0	0.062
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-1.047	0.03	0	0.016
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-1.75	0.06	0	0.036
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-1.834	0.06	0.01	0.038
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.241	0.01	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.452	0.01	0	0.005
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	0.81	0.02	0	0.003
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.626	0.02	0	0.005
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-1.384	0.03	0	0.009
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	2.194	0.04	0	0.021
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.425	0.01	0	0.001
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-2.619	0.05	0.01	0.03
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	1.815	0.04	0	0.014
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	19.398	0.27	0.07	0.501
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	19.343	0.39	0.05	1.212
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.306	0.02	0	0.007
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.333	0.02	0	0.007
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.321	0.01	0	0
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.394	0.01	0	0.002
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.046	0	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.027	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-0.744	0.02	0	0.008
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-0.771	0.02	0	0.01
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	2	0.03	0	0.007
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	3.096	0.04	0	0.017
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	3.019	0.04	0	0.017
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	1.113	0.02	0	0.003
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.332	0.01	0	0.002
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.286	0.01	0	0.001
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.424	0.01	0	0.002
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.386	0.01	0	0
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.344	0.01	0	0.002
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.302	0.01	0	0
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.302	0.01	0	0.003
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.264	0.01	0	0.002
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-1.687	0.02	0	0.005
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-1.905	0.03	0	0.008
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.725	0.01	0	0.001
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.195	0	0	0
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	1.895	0.03	0	0.006
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	1.728	0.02	0	0.006
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	0.508	0.01	0	0
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	0.508	0.01	0	0.001
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-1.218	0.04	0	0.022
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.536	0.02	0	0.005
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.597	0.02	0	0.005
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.643	0.02	0	0.007
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.783	0.03	0	0.009
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.737	0.02	0	0.008
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-1.454	0.03	0	0.01
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-1.218	0.04	0	0.023
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	1.138	0.02	0	0.003
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-0.37	0.01	0	0
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	1.508	0.03	0	0.011
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	1.508	0.03	0	0.011
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	1.454	0.03	0	0.01
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	0.721	0.01	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-1.442	0.02	0	0.004
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	2.132	0.04	0	0.02
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	2.015	0.04	0	0.019
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	1.635	0.03	0	0.012
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	1.604	0.03	0	0.013
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	1.114	0.02	0	0.006
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.467	0.01	0	0.003
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.406	0.01	0	0.003
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.364	0.01	0	0.002

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.364	0.01	0	0.002
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-1.076	0.02	0	0.006
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.061	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-0.975	0.03	0	0.014
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-1.044	0.03	0	0.017
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.046	0	0	0
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.031	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-1.1	0.04	0	0.015
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-1.1	0.04	0	0.015
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-1.165	0.04	0	0.017
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.109	0	0	0
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.289	0.01	0	0.001
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-1.146	0.04	0	0.016
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-2.293	0.07	0.01	0.059
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	0.895	0.02	0	0.004
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	-1.348	0.03	0	0.009
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	-1.201	0.02	0	0.006
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-6.773	0.1	0	0.073
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-7.628	0.11	0.01	0.088
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	1.039	0.02	0	0.006
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	0.882	0.02	0	0.003
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	1.44	0.03	0	0.008
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-0.721	0.01	0	0.002
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-0.875	0.02	0	0.003
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	2.084	0.04	0	0.016
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	1.214	0.02	0	0.002
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0.516	0.01	0	0.001
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.129	0	0	0
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-0.929	0.02	0	0.003
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	0.167	0.01	0	0
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	0.697	0.01	0	0.001
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	0.833	0.01	0	0.001
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	0.668	0.01	0	0.001
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	0.059	0	0	0
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-3.884	0.12	0.02	0.131
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-0.126	0	0	0
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	7.957	0.11	0	0.08
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-2.467	0.03	0	0.009
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	1.672	0.02	0	0.004
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-0.391	0.01	0	0.002
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	0.92	0.01	0	0.002
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	5.518	0.08	0.01	0.041
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	-2.78	0.04	0	0.01
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	-2.78	0.04	0	0.011
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	7.42	0.1	0.02	0.06
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	2.499	0.08	0	0.058
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	1.666	0.05	0	0.027
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	0.833	0.03	0	0.008
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	0.75	0.02	0	0.002
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	7.42	0.1	0.02	0.071
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	6.699	0.09	0.02	0.059
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-2.173	0.03	0	0.007
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-2.173	0.03	0	0.008
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	3.631	0.05	0	0.022
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.315	0.02	0	0.008
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.315	0.02	0	0.007
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.305	0.02	0	0.007
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	1.892	0.03	0	0.005
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	0.682	0.04	0	0.019
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	2.484	0.04	0	0.008
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.263	0	0	0
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-0.456	0.01	0	0.003
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-0.971	0.03	0	0.01
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	0.574	0.02	0	0.003
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	0.574	0.02	0	0.004
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	2.257	0.07	0.01	0.057
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-31.737	0.45	0.48	1.247
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-5.589	0.18	0.04	0.257
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-10.753	0.34	0.1	0.864
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	1.424	0.05	0	0.02
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-15.449	0.22	0.03	0.329
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-20.984	0.3	0.08	0.58
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-5.254	0.17	0.06	0.229
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-15.168	0.21	0.04	0.318
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-14.887	0.21	0.04	0.307
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-11.624	0.16	0.01	0.194

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-11.624	0.16	0.01	0.194
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-7.957	0.11	0	0.098
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-2.982	0.09	0.01	0.08
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-3.263	0.1	0.01	0.095
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.281	0.01	0	0.001
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	6.116	0.19	0.03	0.303
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	-3.332	0.05	0	0.013
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	-3.448	0.05	0	0.015
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-0.969	0.01	0	0.001
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	-1.863	0.03	0	0.005
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	-0.062	0	0	0
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	-0.895	0.03	0	0.009
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-7.501	0.11	0.01	0.086
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	0.516	0.02	0	0.003
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0.3	0.01	0	0.001
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	120	2.692	0.09	0	0.078
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	110	1.334	0.04	0	0.018
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	0.268	0.01	0	0.001
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	-0.458	0.01	0	0.002
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-1.184	0.04	0	0.015
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	2.876	0.04	0	0.012
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	2.737	0.04	0	0.01
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-2.058	0.03	0	0.007
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	-0.391	0.01	0	0.001
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.229	0.01	0	0.001
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.023	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.492	0.02	0	0.003
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	-0.022	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.093	0	0	0.001
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.328	0.01	0	0.001
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.405	0.01	0	0.002
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-0.69	0.01	0	0.001
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.252	0.01	0	0
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	0.755	0.02	0	0.002
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.551	0.01	0	0.002
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.312	0.01	0	0.001
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.107	0	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	0.686	0.01	0	0.002
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.185	0.01	0	0.002
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.31	0.01	0	0
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.103	0	0	0.001
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	1.118	0.02	0	0.002
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	1.022	0.01	0	0.002
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	2.265	0.05	0	0.02
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	2.204	0.04	0	0.018
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.049	0	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.02	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.036	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.077	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.138	0	0	0
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.295	0.01	0	0
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.18	0.01	0	0
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.372	0.01	0	0
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.552	0.01	0	0.002
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.065	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-0.617	0.01	0	0.002
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-1.423	0.03	0	0.011
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-2.166	0.04	0	0.021
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-0.659	0.01	0	0.001
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-0.743	0.02	0	0.003
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.084	0	0	0
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	0.929	0.02	0	0.003
1395	P-5863	J-33	J-34	95	250	PVC	110	0.655	0.01	0	0.002
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.59	0.01	0	0.001
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.023	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.171	0.01	0	0
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.2	0.01	0	0.001
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.2	0.01	0	0
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.213	0.01	0	0.001
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.226	0.01	0	0.001
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.232	0.01	0	0.001
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.077	0	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	0.654	0.02	0	0.005
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.315	0.01	0	0.001
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.238	0.01	0	0.002

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	1.281	0.04	0	0.02
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.048	0	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	1.233	0.04	0	0.019
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.122	0.01	0	0
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	0.848	0.03	0	0.009
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	0.766	0.02	0	0.008
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	0.724	0.02	0	0.007
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-6.653	0.09	0.01	0.069
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-6.013	0.09	0	0.057
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	0.64	0.02	0	0.006
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-1.146	0.04	0	0.017
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-1.087	0.03	0	0.014
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-1.158	0.04	0	0.016
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.236	0.01	0	0.001
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.036	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.16	0.01	0	0
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-6.027	0.09	0	0.058
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-6.129	0.09	0	0.059
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.102	0.01	0	0.001
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-6.129	0.09	0	0.049
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-6.219	0.09	0.01	0.052
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.09	0.01	0	0
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	0.666	0.02	0	0.006
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.302	0.01	0	0.001
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.302	0.01	0	0.002
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	1.52	0.02	0	0.003
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	1.096	0.02	0	0.002
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.363	0.01	0	0.002
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	2.67	0.04	0	0.01
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.138	0	0	0
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.09	0	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.042	0	0	0.001
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	2.532	0.04	0	0.01
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	0.907	0.03	0	0.011
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	0.853	0.03	0	0.009
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	0.35	0	0	0
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	0.321	0	0	0
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.102	0	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.102	0.01	0	0
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-0.297	0.01	0	0
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-0.368	0.01	0	0.001
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	1.066	0.03	0	0.014
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	0.69	0.02	0	0.007
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.174	0.01	0	0.001
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	6.57	0.09	0	0.048
1511	P-5926	J-79	J-80	321.67	300	PVC	120	6.57	0.09	0.01	0.048
1513	P-5927	J-80	J-81	352.13	300	PVC	120	2.903	0.04	0	0.011
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.24	0.01	0	0.001
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.24	0.01	0	0.001
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-3.667	0.12	0.01	0.118
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	2.609	0.04	0	0.012
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	2.903	0.04	0.01	0.011
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	2.609	0.04	0	0.009
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-2.389	0.03	0.01	0.007
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-2.389	0.03	0	0.007
1564	P-5954	J-17	J-97	84.22	250	PVC	110	-0.045	0	0	0.001
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.696	0.01	0	0.002
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.122	0	0	0
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.081	0	0	0
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.281	0.01	0	0.001
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	6.397	0.2	0.04	0.33
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	0.391	0.01	0	0.002
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-0.674	0.02	0	0.005
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	0.243	0.01	0	0.001
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-1.173	0.02	0	0.002
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-0.995	0.01	0	0.002
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-1.457	0.02	0	0.003
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-0.218	0.01	0	0.001
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.369	0.01	0	0.001
1621	P-5988	J-119	J-120	88.63	200	PVC	120	0.391	0.01	0	0.002
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-0.148	0	0	0
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-0.283	0.01	0	0.001
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	1.281	0.02	0	0.002
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	0.634	0.01	0	0.001
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.255	0.01	0	0.001
1630	P-5994	J-114	J-123	33.43	200	PVC	120	0.391	0.01	0	0.002

Interim Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.431	0.01	0	0.003
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.32	0.01	0	0.002
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-2.121	0.07	0.01	0.043
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	2.38	0.03	0	0.007
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	2.276	0.03	0	0.007
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	2.574	0.04	0	0.01
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	2.574	0.04	0	0.01
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-0.848	0.01	0	0.001
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	-0.111	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-0.738	0.02	0	0.003
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.282	0.03	0	0.008
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-1.33	0.03	0	0.008
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-1.05	0.01	0	0.002
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-1.318	0.02	0	0.004
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	-0.174	0.01	0	0.001
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	-0.146	0	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.244	0	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	120	-0.39	0.01	0	0.001
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	0.57	0.01	0	0.001
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.18	0	0	0
1719	P-6035	J-144	J-145	61.41	250	PVC	120	-0.39	0.01	0	0.001
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-1.187	0.04	0	0.014
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-0.696	0.02	0	0.005
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-1.187	0.04	0	0.015
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-0.492	0.02	0	0.003
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-1.486	0.05	0	0.022
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-2.673	0.09	0.01	0.066
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-4.961	0.16	0.02	0.206
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-3.625	0.12	0.01	0.115
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-5.746	0.18	0.02	0.271
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-1.336	0.04	0	0.018
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-1.336	0.04	0	0.018
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-4.883	0.16	0.03	0.2
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-2.153	0.07	0	0.044
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-2.579	0.08	0.01	0.061
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-0.426	0.01	0	0.002
1755	P-6060	J-152	J-155	274.29	200	PVC	120	2.304	0.07	0.01	0.05
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-2.143	0.07	0.01	0.044
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-3.513	0.11	0.01	0.109
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-0.783	0.02	0	0.007
1760	P-6064	J-155	J-156	95.53	200	PVC	120	2.731	0.09	0.01	0.068
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-0.572	0.02	0	0.004
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-0.96	0.03	0	0.01
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	-0.288	0.01	0	0.001
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	-0.082	0	0	0
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.252	0.01	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.294	0.01	0	0.001
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.042	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.25	0.01	0	0.001
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.371	0.01	0	0.001
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	-0.248	0.01	0	0.001
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.21	0.01	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	-0.079	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.126	0	0	0
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.04	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.04	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.002	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.044	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	0.042	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.084	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.126	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.21	0.01	0	0
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.168	0.01	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-0.444	0.01	0	0.003
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-0.444	0.01	0	0.002
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.49	0.02	0	0.003
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	2.878	0.09	0.01	0.107
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-0.258	0.01	0	0.002
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.333	0.01	0	0.001
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-1.836	0.03	0	0.004
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-1.959	0.03	0	0.005

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	495.1	748.89
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.207	483.8	748.93
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.285	484.6	749.01
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.402	485.6	749.07
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.327	486.8	749.24
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.231	484.3	749.39
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.24	483.7	749.22
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.288	479.1	749.06
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.267	484.6	749.02
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.27	490	748.97
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.261	487.7	748.94
195	J-S2100E	23,886.25	5,961,252.83	699	0.243	488.7	748.93
196	J-S2080E	23,585.41	5,961,251.56	699	0.243	488.7	748.93
197	J-S2070E	23,468.77	5,961,251.56	699	0.177	488.6	748.93
198	J-S2060E	23,444.47	5,961,408.54	699	0.15	488.7	748.94
199	J-S2040E	23,441.07	5,961,591.28	699	0.204	488.9	748.95
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.162	476.2	748.96
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.351	478.6	749.01
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.138	493.1	750.69
203	J-S2010E	23,396.57	5,962,474.58	700	0	478.2	748.86
204	J-N4200E	23,397.75	5,962,576.48	701	0	468.4	748.86
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.108	471.3	748.86
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.345	484.1	748.87
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.114	484.3	748.88
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.126	477.4	748.88
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.069	484.4	748.89
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.168	477.5	748.89
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.15	485.5	748.91
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.15	486.7	748.93
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.138	497.7	748.95
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.15	501.7	748.96
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.195	498.4	748.98
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.15	487.8	748.94
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.183	498.2	749
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.237	488.4	749.11
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	490.6	749.23
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	493.1	749.28
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.138	495.1	749.29
222	J-N2255E	24,475.27	5,962,571.66	700	0.093	482.4	749.29
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.081	494.5	749.33
224	J-N2260E	24,501.40	5,962,673.31	699	0	492.1	749.28
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.069	493.9	749.06
226	J-N3301E	24,349.68	5,962,783.56	699	0.288	489.9	749.06
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.219	501.3	749.02
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.168	494.3	749
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.093	492.2	748.99
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.183	493.3	749.01
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.081	493.8	749.05
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	497.6	749.05
233	J-N3321E	24,349.51	5,962,866.08	700	0.195	480	749.05
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.522	494.5	749.03
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.207	497	748.98
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.15	493.2	749
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.183	495.3	749.01
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.183	497.3	749.02
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.662	493.5	749.03
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.207	497.2	749
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.219	502.1	749
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.345	506.1	749.02
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.114	501.4	749.03
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.168	508.4	749.05
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.345	509	749.09
246	J-N1050E	24,728.87	5,962,855.33	698	0.99	502.5	749.35
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.237	495.7	749.45
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	491.9	750.16
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	522.6	754.7
250	J-S1010E	24,688.47	5,961,838.45	701	0	513.9	753.51
251	J-S1020E	24,215.83	5,961,901.63	700	0	505.3	751.63
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.114	511.8	749.09
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.126	513.2	749.14
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.183	493.5	749.13
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.069	506	749
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.219	515.1	749.03
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.168	505.6	749.06
258	J-N1420E	24,855.27	5,963,531.46	698	0	499.7	749.06
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.138	495.9	748.97

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.081	509.5	748.96
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.081	500.4	748.93
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.045	499.4	748.93
263	J-N1311E	24,830.34	5,963,795.82	698	0.15	498.4	748.93
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.081	499.4	748.92
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.183	494.6	748.93
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.138	494.7	748.95
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.093	499.3	748.92
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	497.3	748.91
269	J-N1292E	24,905.57	5,963,948.00	698	0.195	498.3	748.91
270	J-N1245E	24,928.90	5,964,040.14	697	0.093	508	748.91
271	J-N1244E	24,955.72	5,964,184.39	697	0.168	508	748.91
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.168	512.9	748.91
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.126	497.3	748.91
274	J-N1281E	24,668.79	5,963,904.06	698	0.168	498.2	748.91
275	J-N1282E	24,737.99	5,963,838.74	697	0.183	508	748.91
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.15	501.2	748.91
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.114	510	748.91
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.057	502.2	748.91
279	J-N1242E	24,655.18	5,964,247.76	698	0.168	498.2	748.9
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.081	505	748.9
281	J-N1272E	24,643.90	5,964,097.68	698	0.15	498.2	748.9
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.093	490.4	748.9
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.093	494.3	748.9
284	J-N1240E	24,492.27	5,964,163.87	698	0	498.2	748.9
285	J-N1220E	24,450.28	5,964,244.12	698	0	498.1	748.89
286	J-N1210E	24,398.26	5,964,217.60	698	0	498.1	748.89
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.069	500	748.89
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.093	501	748.9
289	J-N1170E	24,279.97	5,963,894.02	698	0	498.1	748.9
290	J-N1160E	24,301.35	5,963,782.73	698	0	498.2	748.9
291	J-N1150E	24,302.39	5,963,747.88	698	0.483	498.2	748.9
292	J-N1370E	24,390.29	5,963,759.89	698	0.093	498.2	748.91
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.069	503.1	748.91
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.138	505.1	748.91
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.138	494.3	748.91
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.069	512.9	748.91
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.093	501.2	748.91
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.045	511	748.91
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.195	509	748.91
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.093	512.9	748.91
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.138	500.2	748.91
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	505.2	748.92
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.15	503.5	748.94
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	504.6	748.96
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	500.5	748.94
306	J-N3182E	24,109.98	5,963,355.50	698	0	498.3	748.92
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	495.2	748.9
308	J-N3190E	23,838.79	5,963,334.11	699	0.096	488.2	748.89
309	J-N3210E	23,839.27	5,963,187.82	699	0.168	488.3	748.9
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.276	492.4	748.91
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.168	495.6	748.94
312	J-N3420E	23,966.13	5,962,983.37	698	0	498.9	748.98
313	J-N3240E	23,840.96	5,962,916.81	698	0.15	498.6	748.95
314	J-N3250E	23,877.98	5,962,777.15	698	0.168	498.8	748.97
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.15	494.1	748.99
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.195	489.2	748.89
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.219	492	748.87
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.114	482.1	748.86
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.15	474.3	748.86
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.168	472.3	748.86
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.183	489.2	748.86
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.264	488.6	748.87
323	J-N2370E	23,750.00	5,963,047.05	699	0.138	488.2	748.88
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.15	483.2	748.87
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.195	490	748.87
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.252	496.9	748.87
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.126	486.1	748.87
328	J-N3200E	23,838.64	5,963,310.50	699	0.093	488.2	748.89
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.069	489.1	748.87
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.081	494.6	748.84
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.207	490.9	748.86
332	J-N2350E	23,748.75	5,963,237.41	699	0	488.1	748.87
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.414	493.4	748.81
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.063	495.4	748.82
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.609	492.4	748.82

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	491.5	748.82
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.168	491.5	748.82
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.081	482.8	748.83
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.201	489.6	748.84
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.054	483.8	748.84
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.063	483.8	748.84
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	483.8	748.84
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.048	483.8	748.84
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.033	478.9	748.83
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	482.7	748.83
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.141	482.7	748.83
347	J-N2120E	23,392.51	5,963,312.31	699	0.135	487.5	748.82
348	J-N2121E	23,395.90	5,963,312.31	699	0	487.5	748.82
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.066	488.4	748.81
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.021	491.4	748.81
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	483.5	748.8
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	488.3	748.79
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	488.3	748.79
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.199	488.3	748.79
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.045	488.3	748.79
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.114	478.5	748.79
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	478.5	748.79
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.207	482.4	748.79
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	482.4	748.79
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.219	482.4	748.79
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.093	483.4	748.79
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.168	482.7	748.82
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.414	480.8	748.82
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.114	479.3	748.82
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.219	479.3	748.82
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.168	476.9	748.82
367	J-N4510E	23,116.00	5,962,864.49	700	0.126	477.6	748.8
368	J-N4500E	23,107.06	5,962,864.49	700	0.15	477.6	748.8
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.114	468.7	748.79
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.114	472.7	748.8
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.114	474.8	748.81
372	J-N4490E	23,107.28	5,962,982.98	700	0.183	477.5	748.79
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.138	476.5	748.78
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.171	484.3	748.78
375	J-N4350E	23,104.18	5,963,517.50	699	0.126	487.2	748.78
376	J-N3090E	23,166.53	5,963,519.61	699	0	487.3	748.79
377	J-N2070E	23,171.01	5,963,524.71	699	0	487.3	748.79
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	481.4	748.79
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	489.2	748.79
380	J-N2050E	23,164.50	5,963,745.83	699	0	487.3	748.79
381	J-N2040E	23,164.50	5,963,849.54	699	0	487.3	748.79
382	J-N2020E	23,168.07	5,964,021.69	699	0	487.3	748.79
383	J-N2010E	23,229.47	5,964,021.52	699	0.03	487.3	748.79
384	J-N3010E	23,161.69	5,964,008.03	699	1.362	487.2	748.79
385	J-N3030E	23,160.50	5,963,849.48	699	0.093	487.3	748.79
386	J-N3031E	23,161.50	5,963,836.74	699	0.114	487.3	748.79
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	489.2	748.79
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.168	489.2	748.79
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	481.4	748.79
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.168	481.4	748.79
391	J-N3032E	22,992.17	5,963,835.82	699	0.183	487.2	748.79
392	J-N3051E	22,992.42	5,963,732.81	700	0.183	477.5	748.78
393	J-N3071E	22,992.67	5,963,640.74	700	0.195	477.4	748.78
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	481.3	748.78
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.081	480.2	748.77
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.156	471.4	748.77
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.093	474.4	748.77
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.093	476.3	748.77
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.018	476.1	748.75
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.288	475.1	748.75
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	465.4	748.75
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.078	465.4	748.76
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.214	464.4	748.76
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	464.5	748.76
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.138	472.6	748.79
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.237	473.1	748.74
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.099	464.4	748.75
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.093	470.2	748.74
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.513	466.3	748.74
410	J-N4410E	22,639.90	5,963,300.90	701	0.12	467.3	748.75
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	472.1	748.74

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	479.9	748.74
413	J-N4010E	22,546.33	5,963,750.87	700	0.351	477	748.74
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.387	471.2	748.74
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	469.3	748.75
416	J-N4041E	22,443.94	5,963,514.35	701	0	467.3	748.74
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.168	462.4	748.74
418	J-N4043E	22,444.72	5,963,305.56	701	0.696	467.3	748.75
419	J-N4070E	22,557.86	5,963,211.47	701	1.65	467.3	748.75
420	J-N4080E	22,553.97	5,963,123.99	701.5	2.094	462.4	748.75
421	J-N4081E	22,468.80	5,963,123.50	701	0	467.3	748.75
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.219	458.5	748.75
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.219	460.5	748.75
424	J-N4092E	22,681.89	5,962,970.03	702	0.321	457.6	748.75
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.168	456.6	748.75
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.15	462.5	748.75
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.183	460.5	748.76
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.081	456.6	748.76
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.15	452.7	748.76
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.195	450.8	748.76
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.138	458.6	748.76
432	J-N4121E	22,725.05	5,962,737.13	701	0.168	467.5	748.77
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.207	470.5	748.77
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.057	469.5	748.77
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.024	468.6	748.78
436	J-N4431E	22,871.76	5,963,060.11	701	0.15	467.4	748.76
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.138	464.6	748.77
438	J-N4131E	22,739.70	5,962,940.69	702	0.402	457.7	748.77
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.276	492.3	749
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.093	487.8	749.04
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.057	506.4	749.01
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	504.7	748.97
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.069	494.3	748.9
444	J-N1246E	24,900.57	5,964,065.27	697	0.114	508	748.91
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	501.3	748.92
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.168	505.6	748.96
447	J-N1400E	24,827.83	5,963,657.23	698	0.15	498.8	748.96
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.138	514.1	749.13
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.195	513.1	749.13
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.138	472.7	748.8
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.093	468.6	748.78
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.309	472.1	748.74
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.081	475.5	748.78
454	J-N3020E	23,160.99	5,963,967.57	699	0	487.3	748.79
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.093	493.1	749.29
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.195	512.6	749.12
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.252	500.1	749.17
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.183	495.7	749.21
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.633	493.4	748.81
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.06	493.4	748.81
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.552	492.4	748.81
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	490.4	748.8
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.162	492.5	748.82
464	J-N3160E	23,825.34	5,963,511.25	699	0.117	487.7	748.83
465	J-N3170E	23,903.33	5,963,511.58	699	0.253	487.8	748.84
466	J-N3180E	23,907.72	5,963,334.91	699	0	488.2	748.88
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	475.2	748.96
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.165	496.9	751.07
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.081	483.8	748.84
470	J-N1250E	24,499.78	5,964,149.64	698	0.081	498.2	748.9
471	J-N1251E	24,455.84	5,964,129.52	698	0.138	498.2	748.9
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.081	504	748.9
473	J-N1230E	24,475.43	5,964,196.22	698	0	498.1	748.9
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	496.5	748.88
475	J-S2140E	24,039.65	5,960,875.68	698	0.231	497.9	748.87
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	494.9	748.86
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.183	491.6	748.86
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.168	480.7	748.86
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.138	492.9	748.86
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.168	496.3	748.86
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.114	492.9	748.86
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.126	492.9	748.86
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.126	492.8	748.86
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	492.8	748.86
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.114	492.8	748.86
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.168	491.8	748.86
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.069	492.9	748.86

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.114	490.9	748.86
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.501	492.8	748.85
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.569	491.3	748.85
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	492.7	748.85
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.524	492.7	748.85
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	495.2	748.85
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	483.2	748.87
495	J-S2195E	23,781.62	5,960,412.85	698	0	497.7	748.86
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	492.9	748.86
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.168	486.1	748.88
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.183	484.7	748.88
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.138	477.8	748.88
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.081	482.3	748.89
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.138	485.3	748.88
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	495.1	748.89
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	483.8	748.93
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	495.4	748.92
505	J-S1110E	24,033.48	5,960,926.97	698	0.162	498.2	748.9
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.091	500	748.89
507	J-N1600E	24,201.37	5,964,131.25	698	0.168	497.9	748.88
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.195	490.5	748.87
509	J-N1620E	24,074.31	5,964,072.83	699	0.093	487.9	748.86
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.069	483	748.85
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.114	483	748.85
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.183	485.4	748.85
513	J-N1632E	24,036.37	5,963,917.92	700	0.126	478.1	748.85
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	483	748.85
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	490.3	748.85
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.183	493	748.88
517	J-N1060E	24,577.21	5,963,109.12	697	0	510.6	749.17
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.207	503.3	749.17
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.168	508.3	749.19
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.138	452.7	748.76
521	J-N4082E	22,469.20	5,963,082.83	701	0.093	467.3	748.75
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	508.9	749.19
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.195	508.9	749.2
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.27	507.1	749.21
526	J-N1471E	24,945.50	5,963,280.47	699	0.867	491.4	749.21
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	494.4	749.22
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.279	497.7	749.26
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.498	474.2	748.95
530	J-S2050E	23,441.95	5,961,556.46	699	0	488.8	748.95
531	J-S2051E	23,344.97	5,961,508.86	699	0.762	488.8	748.95
532	J-N1065E	24,522.60	5,963,163.07	697	2.565	510	749.12
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.471	473.1	748.74
536	J-N3412E	22,763.88	5,963,654.13	700.4	1.89	473.1	748.74
537	J-3550I	23,858.78	5,963,861.50	697.8	0.231	499.5	748.84
538	J-3560I	23,895.14	5,963,776.63	698.8	0.231	489.7	748.84
539	J-3570I	23,930.36	5,963,667.29	699	0.231	487.8	748.84
540	J-3580I	23,794.98	5,963,838.03	698	0.195	497.5	748.83
541	J-3590F	23,690.63	5,963,983.45	697.5	0.183	502.1	748.81
542	J-3600I	23,601.86	5,963,939.64	698.3	0.288	494.3	748.8
543	J-3610I	23,453.97	5,963,928.59	699	0.396	487.4	748.8
544	J-3620F	23,389.20	5,964,002.63	699.6	0	481.5	748.8
548	J-3660F	23,675.98	5,964,023.67	697	0	507	748.8
549	J-3670I	23,876.32	5,964,331.38	698.5	0.501	492.9	748.86
551	J-3690I	22,621.02	5,963,751.20	699.5	0	481.9	748.74
552	J-3700I	24,251.71	5,960,551.59	700	2.499	478.1	748.85
553	J-3710F	24,340.82	5,960,450.73	699.3	2.499	484.9	748.85
556	J-3740I	24,235.46	5,960,911.51	700	0	478.1	748.85
557	J-3750I	24,202.10	5,960,810.43	700	0	478.1	748.85
558	J-3760F	24,126.63	5,962,599.83	698.5	1.545	497	749.28
559	J-3770F	24,004.27	5,962,385.31	698.5	1.545	497	749.28
560	J-3780F	24,246.39	5,962,223.62	698.8	1.545	494.2	749.3
561	J-3790F	24,549.31	5,962,206.03	699.2	0.843	494.9	749.77
562	J-3800F	24,678.90	5,962,287.47	699.5	0.843	493.6	749.93
563	J-3830F	24,662.04	5,962,661.31	699	0.07	492.7	749.35
564	J-3840F	24,769.05	5,962,856.55	698	0	502.8	749.37
565	J-S2011E	23,398.12	5,962,393.08	701	0.525	468.5	748.87
566	J-3860F	23,130.75	5,962,367.08	699.08	1.173	487.1	748.85
567	J-3870F	23,015.45	5,962,359.04	700	0	478	748.84
568	J-3880F	22,846.82	5,962,430.77	700.62	1.173	471.9	748.84
574	J-3940F	22,850.61	5,962,219.38	700.12	1.173	477.7	748.93
575	J-3950F	22,898.73	5,962,037.18	700.62	1.173	472.9	748.94
576	J-S2012E	23,398.36	5,962,126.10	701	0.129	469.3	748.95
581	J-4010F	24,264.46	5,961,085.30	701.5	0	463.6	748.86

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
586	J-4060F	24,028.16	5,962,018.57	699.1	0	491	749.27
588	J-4080I	23,485.64	5,960,871.34	699	0.312	488.4	748.91
594	J-4140F	24,447.99	5,960,902.33	701	2.499	468.1	748.83
595	J-4150F	24,447.17	5,960,816.61	702	2.499	457.9	748.79
596	J-4160F	24,443.99	5,960,698.17	700	2.499	477.3	748.76
597	J-4170F	24,566.08	5,960,649.02	700	2.499	477.2	748.76
602	J-4220I	23,168.73	5,961,753.64	699.3	0.54	485.9	748.95
605	J-4250F	23,717.61	5,962,073.19	699.3	2.163	487.4	749.1
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	482.8	748.83
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	482.8	748.83
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	483.9	748.84
611	J-4310F	22,779.97	5,964,010.72	699.5	1.422	481.8	748.73
612	J-3775F	24,129.33	5,962,308.95	698.5	1.545	497	749.29
613	J-3755F	24,211.83	5,962,601.84	698.5	0	497	749.29
614	J-3785F	24,389.79	5,962,392.01	698.7	0.093	496	749.38
615	J-N1023E	24,962.79	5,962,291.29	699	0	509.2	751.03
616	J-3805F	24,846.93	5,962,284.57	699.5	0.843	496.8	750.26
617	J-3804F	24,683.36	5,962,433.13	699.4	0.843	494.3	749.91
618	J-N1025E	24,955.73	5,962,436.30	699	0.843	502.9	750.38
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	492.7	749.84
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	499.7	749.56
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	499.3	749.52
622	J-3810F	24,808.50	5,962,854.71	698.5	0	498.2	749.4
623	J-3815F	24,803.86	5,962,773.23	699	0.843	493.8	749.45
624	J-3820F	24,781.43	5,962,653.26	699.5	0.843	492.7	749.84
625	J-3825F	24,683.97	5,962,561.99	701	0.843	475.5	749.58
626	J-4430I	24,354.53	5,960,883.84	700.5	0.534	473.1	748.84
627	J-4440I	24,201.33	5,960,696.57	699.5	0	483	748.85
628	J-4450I	24,358.13	5,960,711.56	700	2.499	478	748.84
629	J-4460I	23,866.43	5,960,918.16	700.5	0.27	473.5	748.88
630	J-4470I	24,688.40	5,963,006.16	698	0.99	501.5	749.24
632	J-4490F	23,389.95	5,964,203.21	699.2	0	485.4	748.8
638	J-4550I	24,097.29	5,963,722.12	698.5	0	492.8	748.86
639	J-4560I	24,258.63	5,963,745.67	698	0	497.9	748.88
640	J-4570I	24,058.45	5,963,789.70	699.1	2.178	486.9	748.85
641	J-4580I	24,184.55	5,963,895.50	700	2.178	478.2	748.86
642	J-4590F	23,289.98	5,962,391.46	700.9	0.417	469.4	748.86
643	J-4600F	23,285.48	5,962,126.23	701.38	0.297	465.5	748.95
644	J-4610F	23,155.29	5,962,079.75	700.83	0.029	470.9	748.94
648	J-4650F	22,898.74	5,961,936.72	700.91	1.173	470	748.93
1317	J-2	22,730.02	5,963,753.33	700.5	0.069	472.1	748.74
1319	J-3	22,672.82	5,963,751.17	700.5	0	472.1	748.74
1323	J-4	22,621.02	5,963,836.43	700	0.183	477	748.74
1325	J-5	22,727.82	5,963,998.44	700.25	0.126	474.5	748.73
1327	J-6	22,732.18	5,964,070.61	701	0.213	467.2	748.73
1329	J-7	22,731.10	5,964,172.06	700.75	0.183	469.6	748.73
1331	J-8	22,631.81	5,964,169.90	701.5	0.231	462.3	748.73
1333	J-9	22,551.95	5,964,168.82	701	0.855	467.2	748.74
1337	J-10	23,451.65	5,963,733.50	699	0.306	487.4	748.8
1340	J-11	23,574.41	5,963,732.15	699.25	0.306	485	748.8
1342	J-12	23,453.00	5,963,830.63	698.75	0.396	489.8	748.8
1345	J-13	23,538.85	5,963,831.54	699.25	0.321	485	748.8
1347	J-14	23,454.35	5,964,026.24	699.1	0.366	486.4	748.8
1349	J-15	23,467.84	5,964,093.69	699.25	0.555	484.9	748.8
1351	J-16	23,573.06	5,964,030.28	699.25	0.621	484.9	748.8
1353	J-17	23,570.36	5,964,124.71	699	0.444	487.4	748.8
1355	J-18	23,532.59	5,963,931.81	699	0.288	487.4	748.8
1358	J-19	23,754.37	5,963,918.75	698.75	0.183	490	748.82
1361	J-20	23,728.46	5,963,820.53	698.75	0.087	490.1	748.83
1363	J-21	23,674.50	5,963,815.14	698.75	0.183	490.1	748.83
1365	J-22	23,673.42	5,963,866.94	699.25	0.108	485.2	748.83
1367	J-23	23,677.74	5,963,733.12	699	0.183	487.7	748.83
1369	J-24	23,746.80	5,963,730.96	699	0.126	487.7	748.83
1371	J-25	23,809.40	5,963,732.04	699	0.231	487.7	748.83
1374	J-26	23,798.19	5,963,731.64	699	0	487.7	748.83
1377	J-27	23,775.20	5,963,641.81	699.25	0	485.3	748.83
1379	J-28	23,710.13	5,963,639.34	699.5	0.195	482.8	748.83
1381	J-29	23,844.51	5,963,643.58	699.25	0.126	485.3	748.83
1383	J-30	23,845.57	5,963,511.32	699	0	487.7	748.84
1387	J-31	23,799.25	5,963,585.59	699.75	0.252	480.4	748.83
1388	J-32	23,845.57	5,963,586.29	699.5	0	482.8	748.83
1392	J-33	23,672.77	5,964,049.27	698.75	0.126	489.9	748.8
1394	J-34	23,670.18	5,964,144.24	699	0.195	487.4	748.8
1396	J-35	23,671.91	5,964,234.03	698.75	0.126	489.8	748.8
1398	J-36	23,671.05	5,964,280.65	699	0.069	487.4	748.8
1400	J-37	23,758.25	5,964,281.52	698.75	0.087	489.8	748.8

Interim Development
Peak Hour Demand

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1402	J-38	23,813.50	5,964,238.35	698.75	0	489.9	748.8
1404	J-39	23,860.99	5,964,198.64	698.5	0.039	492.3	748.8
1406	J-40	23,792.78	5,964,135.61	698.5	0.039	492.3	748.8
1408	J-41	23,757.38	5,964,171.87	699.25	0	485	748.8
1410	J-42	23,740.12	5,964,098.49	698.5	0.018	492.3	748.8
1414	J-43	23,980.99	5,963,768.68	699.75	0.231	480.4	748.84
1416	J-44	24,000.53	5,963,681.98	700	0.108	478.1	748.85
1419	J-45	24,049.06	5,964,265.48	698.75	0.231	490.5	748.86
1421	J-46	23,957.33	5,964,279.51	698.75	0.213	490.4	748.86
1424	J-47	24,921.74	5,963,097.95	698.75	0	494.2	749.24
1426	J-48	24,960.60	5,963,073.13	699.25	0.144	489.3	749.24
1428	J-49	24,867.78	5,963,034.28	698.75	0.081	494	749.23
1430	J-50	24,895.84	5,963,012.69	699	0	491.6	749.23
1432	J-51	24,805.19	5,963,090.39	698.5	0.069	496.4	749.22
1434	J-52	24,739.36	5,963,144.35	698.25	0.126	498.8	749.22
1436	J-53	24,688.64	5,963,093.63	698.25	0.252	498.8	749.21
1438	J-54	24,637.92	5,963,049.38	698.25	0	498.8	749.21
1443	J-55	24,746.03	5,963,032.58	698.5	0.213	496.5	749.23
1446	J-56	24,815.86	5,962,971.87	698.75	0.12	494	749.23
1448	J-57	24,793.42	5,962,913.17	699.25	0.108	489.1	749.23
1450	J-58	24,880.62	5,962,917.48	698.75	0.237	494	749.23
1452	J-59	24,463.42	5,962,681.55	699.25	0	489.5	749.27
1455	J-60	24,477.23	5,962,748.02	699	0.306	491.9	749.26
1457	J-61	24,560.98	5,962,657.37	698.5	0	497.2	749.31
1460	J-62	24,574.79	5,962,709.17	698.75	0.27	494.8	749.31
1464	J-64	23,859.42	5,960,815.72	699.25	0.183	485.7	748.88
1467	J-65	23,919.85	5,960,828.67	698.5	0	493	748.88
1469	J-66	23,954.39	5,960,863.21	699.25	0.183	485.7	748.88
1471	J-67	23,951.80	5,960,932.28	698.75	0.183	490.6	748.88
1475	J-68	24,151.23	5,960,824.36	699.5	0	483	748.86
1477	J-69	24,160.73	5,960,864.07	700.5	0.144	473.3	748.86
1479	J-70	24,173.68	5,960,913.28	699.75	0.144	480.6	748.86
1481	J-71	24,122.74	5,960,921.05	699.25	0.126	485.5	748.86
1485	J-73	23,863.50	5,960,738.53	699.2	0.162	486.1	748.87
1488	J-74	24,008.12	5,960,795.72	699.25	0.087	485.6	748.86
1491	J-75	23,533.91	5,963,732.98	699.5	0	482.5	748.8
1494	J-76	23,929.23	5,963,577.78	699	0.213	487.8	748.84
1497	J-77	24,049.40	5,963,701.17	699.25	1.128	485.4	748.85
1500	J-78	24,258.00	5,963,633.98	699	0.522	488.1	748.88
1508	J-79	25,046.68	5,962,853.87	700	0	483.7	749.42
1510	J-80	25,042.43	5,963,175.51	700.5	0	477.7	749.31
1512	J-81	25,046.04	5,963,527.62	699	0	492.1	749.29
1514	J-82	24,960.02	5,964,132.73	698.2	0	496.3	748.91
1521	J-83	26,363.57	5,963,530.33	700	0	481.5	749.2
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0.66	471.7	749.2
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.882	481.7	749.21
1550	J-92	25,818.46	5,963,541.11	700	0	481.4	749.18
1557	J-94	23,168.88	5,964,201.54	698.35	0.126	493.6	748.79
1563	J-97	23,572.11	5,964,208.92	698.89	0.237	488.5	748.8
1567	J-99	24,962.99	5,962,995.96	699.25	0.366	489.1	749.23
1569	J-100	24,962.35	5,962,910.88	699	0.243	491.6	749.23
1571	J-101	24,843.21	5,962,526.29	698.5	0.843	505.6	750.16
1601	J-113	23,034.88	5,962,417.94	700.25	1.173	475.6	748.84
1603	J-114	23,096.04	5,962,483.59	700.27	0	475.4	748.84
1606	J-115	22,877.49	5,962,538.98	700.76	1.173	470.6	748.84
1609	J-116	22,980.29	5,962,035.89	700.36	0.12	475.4	748.94
1612	J-117	22,981.58	5,962,130.00	700.07	0.12	478.3	748.94
1613	J-118	23,116.29	5,962,177.05	700.4	0.108	475	748.94
1614	J-119	23,064.08	5,962,037.98	700.61	0.213	473	748.94
1617	J-120	23,062.79	5,961,949.52	700.91	1.173	470	748.94
1622	J-121	22,967.10	5,962,525.57	699.88	1.173	479.2	748.84
1625	J-122	22,927.50	5,962,396.04	700.53	1.173	472.8	748.84
1629	J-123	23,125.71	5,962,499.02	700.25	1.173	475.6	748.84
1641	J-128	23,107.26	5,961,523.64	699.75	0.54	481.5	748.95
1644	J-129	22,662.34	5,963,932.49	700.13	0.333	475.7	748.73
1651	J-131	24,486.06	5,962,060.83	699.27	4.11	494.8	749.82
1654	J-132	24,968.91	5,961,951.84	699.38	4.11	494.6	749.92
1657	J-133	24,401.29	5,962,107.21	700.25	2.355	482.6	749.56
1678	J-136	23,661.31	5,960,941.42	698.75	0.312	490.8	748.89
1681	J-137	23,388.97	5,962,746.95	700.04	0	477.7	748.85
1684	J-138	22,557.14	5,963,245.10	700.93	0	468	748.75
1687	J-139	22,761.26	5,963,186.30	702.75	0	450.2	748.75
1701	J-140	23,586.96	5,963,525.74	698.45	0.144	493	748.82
1704	J-141	23,239.49	5,963,413.52	699.38	0.804	483.6	748.79
1711	J-143	23,345.33	5,961,555.68	699	0	488.8	748.95
1714	J-144	23,225.95	5,961,556.04	699	0	488.8	748.95

**Interim Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1716	J-145	23,170.80	5,961,583.05	699.59	0	483.1	748.95
1722	J-146	24,277.82	5,962,502.87	698.64	0	495.8	749.3
1725	J-147	24,223.72	5,962,367.72	698.57	0	496.5	749.3
1729	J-148	24,298.95	5,962,314.98	698.75	0	494.9	749.31
1732	J-149	24,416.81	5,962,303.73	698.9	0	495.5	749.52
1735	J-150	24,475.11	5,962,227.73	699.07	0	494.6	749.61
1738	J-151	24,314.17	5,962,158.57	699.57	0	489.1	749.55
1742	J-152	24,851.03	5,962,145.44	699.48	0	494.9	750.05
1745	J-153	24,970.64	5,962,052.96	699.41	0	494.6	749.95
1752	J-155	24,616.38	5,962,095.62	699.27	0	495.9	749.94
1757	J-156	24,560.35	5,962,018.25	699.29	0	495.3	749.89
1786	J-165	23,502.59	5,964,204.60	699.08	0.384	486.5	748.8
1789	J-166	23,315.10	5,964,203.31	698.91	0.126	488.1	748.79
1792	J-167	23,168.27	5,964,090.48	698.75	0.126	489.7	748.79
1795	J-168	23,313.56	5,964,092.80	698.77	0.126	489.5	748.79
1798	J-169	23,315.88	5,964,279.82	698.79	0.126	489.3	748.79
1800	J-170	23,364.57	5,964,279.82	698.98	0.126	487.5	748.79
1802	J-171	23,243.23	5,964,202.54	698.64	0.126	490.8	748.79
1805	J-172	23,244.78	5,964,090.48	698.87	0.126	488.5	748.79
1809	J-173	23,069.34	5,964,200.99	699.45	0.126	482.9	748.79
1811	J-174	22,976.60	5,964,200.99	699.89	0.126	478.6	748.79
1813	J-175	22,976.60	5,964,112.89	700.15	0.126	476	748.79
1815	J-176	23,070.12	5,964,112.12	699.74	0.126	480	748.79
1819	J-178	22,974.67	5,964,279.75	700.05	0.126	477	748.79
1822	J-179	23,044.05	5,964,278.86	699.77	0.126	479.7	748.79
1825	J-180	23,130.99	5,964,278.86	699.49	0.126	482.5	748.79
1828	J-181	23,217.93	5,964,279.83	699.24	0.126	484.9	748.79
1832	J-182	23,439.83	5,964,204.12	699.15	0	485.9	748.8
1835	J-183	24,885.31	5,963,455.51	698.5	0	495.5	749.13
1838	J-184	23,025.30	5,962,131.36	700.17	0.225	477.3	748.94
1841	J-185	23,215.32	5,962,120.15	701.11	0.369	468.2	748.94

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-14.341	0.2	0.04	0.287
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-15.652	0.32	0.08	0.818
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-15.937	0.32	0.06	0.846
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-16.339	0.33	0.17	0.886
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-16.666	0.34	0.15	0.919
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	18.718	0.38	0.17	1.14
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	18.478	0.38	0.16	1.113
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	8.434	0.17	0.04	0.26
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	8.167	0.17	0.04	0.245
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	7.897	0.16	0.04	0.23
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	3.662	0.05	0	0.023
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	3.974	0.06	0	0.027
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	3.731	0.05	0	0.024
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	-3.898	0.08	0.01	0.062
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	-3.831	0.08	0.01	0.06
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-9.405	0.19	0.05	0.319
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-9.756	0.2	0.05	0.341
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-57.852	1.18	1.3	9.214
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	7.27	0.1	0.01	0.069
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	-1.666	0.02	0	0.005
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-9.415	0.13	0.01	0.131
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-9.76	0.14	0.01	0.14
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.126	0.01	0	0.001
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-10	0.14	0.01	0.147
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-10.237	0.14	0.01	0.153
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-12.159	0.17	0.02	0.211
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-1.569	0.09	0.02	0.145
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-1.707	0.1	0.01	0.17
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-1.857	0.11	0.02	0.199
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	10.74	0.15	0.01	0.167
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-12.942	0.18	0.02	0.237
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-19.717	0.28	0.1	0.517
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-26.257	0.37	0.13	0.878
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-8.19	0.26	0.05	0.622
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-1.694	0.05	0	0.034
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	6.304	0.2	0.04	0.457
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.288	0.02	0	0.005
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	1.155	0.07	0.02	0.083
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	2.019	0.12	0.01	0.232
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-1.033	0.06	0.01	0.068
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-1.216	0.07	0.01	0.091
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	5.947	0.19	0.01	0.41
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	2.589	0.15	0.03	0.369
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	3.276	0.1	0.01	0.136
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.195	0.01	0	0.003
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-1.441	0.08	0.01	0.124
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-1.007	0.06	0.01	0.064
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-1.19	0.07	0.01	0.087
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.584	0.03	0	0.024
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-1.01	0.06	0.01	0.064
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	2.48	0.08	0.01	0.081
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-3.95	0.13	0.02	0.193
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-20.194	0.29	0.04	0.54
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-14.914	0.21	0.04	0.308
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	58.155	0.82	1.19	3.828
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	58.155	0.82	1.88	3.828
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.251	0.01	0	0.005
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-2.189	0.13	0.03	0.27
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-2.408	0.14	0.02	0.322
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-2.576	0.15	0.04	0.365
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	8.621	0.28	0.08	0.816
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	3.236	0.1	0.01	0.133
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.15	0.01	0	0.003
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	1.391	0.04	0	0.027
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-2.666	0.09	0.01	0.093
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-2.849	0.09	0.02	0.105
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-2.987	0.1	0.01	0.115
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	3.976	0.13	0.01	0.197
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.865	0.06	0	0.047
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.195	0.01	0	0.004
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	1.67	0.05	0	0.039
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.55	0.02	0	0.005
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	2.019	0.06	0.01	0.055
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.157	0.01	0	0.001
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.325	0.01	0	0.002

Interim Development
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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.508	0.02	0	0.004
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.658	0.02	0	0.007
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.889	0.06	0	0.048
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	1.127	0.04	0	0.019
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.959	0.03	0	0.014
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.467	0.01	0	0.003
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.617	0.02	0	0.006
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.093	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-2.05	0.07	0	0.056
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	1.345	0.04	0	0.027
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	2.223	0.03	0	0.009
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	2.223	0.03	0	0.009
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-4.406	0.06	0	0.032
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-4.406	0.06	0	0.032
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-4.406	0.06	0	0.032
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	-1.529	0.05	0	0.033
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	-0.909	0.03	0	0.013
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-1.116	0.04	0	0.018
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.713	0.02	0	0.008
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-1.046	0.03	0	0.016
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-1.208	0.04	0	0.021
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-1.301	0.04	0	0.025
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-1.484	0.05	0	0.03
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.195	0.01	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.093	0.01	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-11.419	0.16	0.02	0.188
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-11.419	0.16	0.02	0.188
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-11.569	0.16	0.02	0.192
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	6.57	0.13	0.02	0.164
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	6.57	0.13	0.02	0.164
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	6.57	0.13	0.02	0.164
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-5.163	0.11	0.01	0.105
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-10.752	0.22	0.03	0.408
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-1.926	0.11	0.02	0.213
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-4.797	0.15	0.04	0.276
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-6.124	0.12	0.01	0.144
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-6.274	0.13	0.02	0.151
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-6.442	0.13	0.02	0.158
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-6.592	0.13	0.01	0.164
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.772	0.1	0.02	0.183
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	1.577	0.09	0.02	0.147
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	1.096	0.06	0.01	0.075
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.15	0.01	0	0.002
783	P-1580	J-N2383E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.832	0.05	0	0.045
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.664	0.04	0.01	0.029
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-2.869	0.09	0.01	0.106
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-2.717	0.09	0.01	0.096
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	2.458	0.08	0.01	0.08
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.727	0.04	0	0.035
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.29	0.02	0	0.006
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	0.038	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.242	0.01	0	0.005
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-1.346	0.03	0	0.01
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-4.995	0.1	0.01	0.099
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	3.58	0.11	0.03	0.16
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-1.281	0.07	0.01	0.1
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-1.488	0.09	0.02	0.132
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-1.581	0.05	0	0.035
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.093	0	0	0
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.711	0.04	0	0.034
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.609	0.04	0	0.02
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-1.383	0.04	0	0.019
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-5.441	0.31	0.01	1.465
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-4.78	0.15	0.02	0.273
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.829	0.05	0.01	0.045
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-3.35	0.11	0.01	0.142
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-0.9	0.05	0	0.061
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-1.898	0.11	0	0.208
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-2.158	0.07	0.01	0.063
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	0.26	0.01	0	0.005
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.957	0.06	0.01	0.059
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.031	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	6.345	0.09	0.01	0.053
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-3.672	0.05	0	0.022

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-4.059	0.06	0	0.027
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	1.291	0.07	0.01	0.102
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.564	0.03	0	0.022
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-1.035	0.06	0.01	0.067
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.661	0.04	0	0.029
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-9.882	0.14	0.01	0.144
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	1.245	0.07	0.02	0.095
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.108	0.01	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-3.343	0.05	0	0.021
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	5.622	0.11	0	0.133
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-9.647	0.14	0.01	0.137
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	0.281	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.108	0.01	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.496	0.03	0	0.017
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.486	0.03	0	0.016
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.895	0.05	0	0.051
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.895	0.05	0.01	0.052
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	0.259	0.01	0	0.005
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.093	0.01	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	1.287	0.07	0.02	0.101
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.483	0.03	0	0.016
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.924	0.05	0.01	0.055
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	0.027	0	0	0
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-8.549	0.12	0	0.111
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-8.936	0.13	0.03	0.119
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	1.602	0.09	0.02	0.151
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	2.277	0.13	0	0.295
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-7.433	0.11	0.01	0.084
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-7.547	0.11	0.01	0.087
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-8.462	0.12	0.01	0.108
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	1.211	0.07	0.01	0.09
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.053	0	0	0.001
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.837	0.05	0.01	0.046
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.914	0.05	0.01	0.054
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-4.641	0.09	0.01	0.086
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	-0.302	0.02	0	0.007
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-2.247	0.07	0	0.068
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-1.461	0.05	0	0.031
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	3.144	0.04	0	0.016
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	1.149	0.02	0	0.008
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	-0.786	0.05	0	0.039
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	1.994	0.03	0	0.008
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	1.376	0.02	0	0.004
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	0.846	0.01	0	0.001
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.031	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	1.077	0.06	0	0.07
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	0.181	0	0	0
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.665	0.04	0	0.019
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	0.287	0.02	0	0.006
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.194	0.01	0	0.002
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.53	0.03	0	0.019
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.335	0.02	0	0.006
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.252	0.01	0	0.005
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.619	0.04	0	0.016
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.366	0.02	0	0.012
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.363	0.02	0	0.009
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.367	0.02	0	0.01
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	0.184	0.01	0	0.003
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.42	0.02	0	0.013
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	0.421	0.02	0	0.012
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.562	0.03	0	0.022
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.787	0.05	0.01	0.041
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-1.818	0.06	0.01	0.045
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	2.606	0.15	0.01	0.372
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-4.986	0.1	0.01	0.098
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	0.104	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-1.319	0.08	0.01	0.106
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.582	0.02	0	0.005
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.489	0.02	0	0.003
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	1.943	0.11	0.02	0.217
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.703	0.04	0	0.033
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.991	0.06	0.01	0.062
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-1.813	0.1	0	0.192
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-5.215	0.11	0.01	0.107
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.355	0.02	0	0.009

Interim Development
Peak Hour Demand

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891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-2.076	0.12	0	0.244
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-1.33	0.08	0.01	0.108
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	2.628	0.05	0	0.021
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.723	0.04	0.01	0.035
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.822	0.05	0	0.044
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	-0.004	0	0	0
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-0.262	0.02	0	0.006
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.775	0.04	0	0.039
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-2.968	0.06	0.01	0.038
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.165	0	0	0
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	3.209	0.05	0	0.018
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-2.976	0.04	0	0.016
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-3.363	0.05	0	0.02
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-2.074	0.04	0	0.019
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.377	0.01	0	0.003
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.377	0.02	0	0.001
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.545	0.03	0	0.021
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-1.241	0.02	0	0.003
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-1.964	0.03	0	0.007
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.093	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-4.151	0.06	0	0.029
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.219	0.01	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.321	0.01	0	0.002
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-4.91	0.07	0	0.039
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.032	0	0	0
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.118	0.01	0	0.001
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.301	0.02	0	0.007
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.52	0.03	0	0.019
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.67	0.02	0	0.005
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	5.11	0.07	0	0.042
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-5.975	0.08	0.01	0.057
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.531	0.03	0	0.02
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.699	0.04	0	0.032
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.906	0.05	0	0.053
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-8.098	0.11	0.02	0.1
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.262	0.02	0	0.005
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.746	0.04	0	0.037
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	7.017	0.1	0.01	0.076
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	5.582	0.08	0.01	0.049
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.402	0.01	0	0.003
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.896	0.05	0.01	0.052
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-3.556	0.11	0.01	0.158
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-2.87	0.09	0.01	0.107
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-1.636	0.09	0.02	0.157
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.912	0.11	0.02	0.211
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-2.988	0.1	0.01	0.115
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-3.081	0.1	0.01	0.121
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	0.555	0.02	0	0.005
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-1.373	0.08	0.01	0.114
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-1.355	0.08	0.02	0.111
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.791	0.05	0.01	0.041
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-16.02	0.23	0.01	0.352
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-16.077	0.23	0.04	0.354
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-18.14	0.26	0.01	0.442
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-18.14	0.26	0.03	0.443
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	1.247	0.04	0	0.024
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.859	0.03	0	0.012
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.745	0.02	0	0.009
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-3.43	0.11	0.01	0.148
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-3.43	0.11	0.01	0.149
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	1.586	0.05	0	0.035
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	5.247	0.17	0.01	0.325
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	5.097	0.16	0.03	0.309
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	1.786	0.06	0.01	0.044
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	1.648	0.05	0	0.038
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-3.331	0.11	0.01	0.139
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-5.313	0.17	0.03	0.333
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.916	0.05	0	0.053
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.778	0.04	0	0.04
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.801	0.05	0.01	0.042
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.963	0.06	0	0.06
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-1.056	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	3.518	0.05	0	0.021
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	3.209	0.05	0	0.018

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969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.295	0.02	0	0.006
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.214	0.01	0	0.004
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.285	0.02	0	0.006
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.285	0.02	0	0.006
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	6.682	0.21	0.04	0.427
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	6.496	0.21	0	0.404
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.093	0.01	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-2.941	0.17	0.03	0.466
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-3.136	0.1	0.01	0.126
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-5.243	0.17	0.03	0.272
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-5.495	0.18	0.04	0.297
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.738	0.02	0	0.011
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-1.371	0.04	0	0.027
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	2.404	0.05	0	0.021
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	1.852	0.06	0.01	0.039
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-4.141	0.08	0.01	0.07
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	6.57	0.13	0.01	0.164
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-1.25	0.03	0	0.008
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-7.82	0.16	0.04	0.226
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	5.413	0.11	0	0.115
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	58.155	0.82	0.56	3.828
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	57.99	1.18	0.39	9.256
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.91	0.05	0	0.053
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.991	0.06	0.01	0.052
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.959	0.03	0	0.014
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-1.178	0.04	0	0.02
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.138	0.01	0	0.002
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.081	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-2.223	0.07	0	0.066
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-2.304	0.07	0	0.071
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	6.001	0.08	0.01	0.057
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	9.289	0.13	0.01	0.128
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	9.058	0.13	0.01	0.123
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	3.338	0.05	0	0.019
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.995	0.03	0	0.015
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.857	0.03	0	0.011
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	1.272	0.03	0	0.008
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	1.158	0.02	0	0.006
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	1.032	0.03	0	0.016
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.906	0.03	0	0.014
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.906	0.03	0	0.013
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.792	0.03	0	0.009
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-5.062	0.07	0	0.041
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-5.714	0.08	0	0.053
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-2.175	0.03	0	0.008
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.584	0.01	0	0.002
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	5.686	0.08	0	0.052
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	5.185	0.07	0	0.043
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.524	0.02	0	0.007
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.524	0.02	0	0.005
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-3.653	0.12	0.01	0.167
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-1.609	0.05	0.01	0.036
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-1.792	0.06	0	0.045
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-1.93	0.06	0	0.051
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	2.35	0.08	0	0.073
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	2.212	0.07	0.01	0.066
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-4.361	0.09	0	0.078
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-3.653	0.12	0.01	0.166
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	3.419	0.05	0	0.02
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-1.104	0.02	0	0.006
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	4.523	0.09	0.01	0.082
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	4.523	0.09	0.02	0.082
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	4.361	0.09	0.01	0.077
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	2.154	0.03	0	0.007
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-4.313	0.06	0	0.031
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	6.376	0.13	0.01	0.155
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	6.025	0.12	0.01	0.14
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	4.885	0.1	0.01	0.095
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	4.792	0.1	0	0.091
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	3.327	0.07	0	0.047
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	1.395	0.04	0	0.027
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	1.212	0.04	0	0.022
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	1.086	0.03	0	0.018

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	1.086	0.03	0	0.018
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-3.213	0.07	0	0.044
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.183	0.01	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-2.921	0.09	0.01	0.11
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-3.128	0.1	0.01	0.125
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.138	0.01	0	0.001
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.093	0.01	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-3.296	0.11	0.01	0.116
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-3.296	0.11	0.01	0.115
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-3.491	0.11	0.01	0.129
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.328	0.01	0	0.002
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.867	0.03	0	0.01
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-3.433	0.11	0.01	0.124
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-6.872	0.22	0.04	0.449
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	2.762	0.06	0	0.027
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	-4.048	0.08	0.01	0.067
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	-3.627	0.07	0	0.054
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-20.289	0.29	0.02	0.544
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-22.854	0.32	0.05	0.679
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	3.118	0.06	0	0.034
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	2.647	0.05	0	0.025
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	4.3	0.09	0.01	0.062
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-2.14	0.04	0	0.018
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-2.602	0.05	0	0.025
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	6.209	0.13	0.01	0.124
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	3.611	0.05	0	0.019
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	1.567	0.03	0	0.009
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.332	0.01	0	0.002
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-2.754	0.06	0	0.028
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	0.501	0.02	0	0.003
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	2.092	0.03	0	0.006
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	2.499	0.04	0	0.008
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	2.005	0.03	0	0.006
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	0.181	0.01	0	0.001
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-11.646	0.37	0.16	1.002
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-0.385	0.01	0	0
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	23.851	0.34	0.02	0.616
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-7.27	0.1	0.01	0.068
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	5.015	0.07	0	0.029
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-1.173	0.04	0	0.014
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	2.651	0.04	0	0.011
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	16.423	0.23	0.08	0.309
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	-8.34	0.12	0.01	0.075
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	-8.34	0.12	0.02	0.088
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	22.237	0.31	0.12	0.461
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	7.497	0.24	0.04	0.443
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	4.998	0.16	0.02	0.209
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	2.499	0.08	0.01	0.058
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	2.264	0.05	0	0.016
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	22.237	0.31	0.17	0.541
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	20.074	0.28	0.14	0.448
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-6.455	0.09	0.01	0.054
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-6.455	0.09	0	0.055
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	10.89	0.15	0.03	0.172
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.935	0.05	0	0.056
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.935	0.05	0.01	0.056
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.904	0.05	0.01	0.053
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	5.609	0.08	0	0.043
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	2.032	0.12	0	0.197
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	7.452	0.11	0.02	0.061
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.788	0.01	0	0.001
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-1.364	0.04	0	0.019
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-2.909	0.09	0.01	0.077
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	1.726	0.05	0	0.03
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	1.726	0.05	0	0.029
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	6.763	0.22	0.05	0.437
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-95.134	1.35	3.68	9.525
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-16.752	0.53	0.33	1.964
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-32.236	1.03	0.77	6.599
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	4.264	0.14	0.02	0.156
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-46.306	0.66	0.23	2.51
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-62.899	0.89	0.64	4.427
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-15.75	0.5	0.48	1.752
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-45.463	0.64	0.32	2.426
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-44.62	0.63	0.28	2.344
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-34.839	0.49	0.07	1.482

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-34.839	0.49	0.04	1.482
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-23.851	0.34	0.03	0.734
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-8.938	0.28	0.05	0.613
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-9.781	0.31	0.11	0.725
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.843	0.03	0	0.008
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	18.328	0.58	0.24	2.319
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	-9.996	0.14	0.01	0.105
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	-10.345	0.15	0.01	0.111
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-2.906	0.04	0	0.011
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	-5.59	0.08	0	0.036
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	-0.185	0.01	0	0
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	-2.684	0.09	0.01	0.066
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-22.476	0.32	0.11	0.658
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	1.567	0.05	0	0.024
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0.9	0.03	0	0.01
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	8.06	0.26	0.03	0.604
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	120	3.992	0.13	0.02	0.138
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	0.81	0.03	0	0.008
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	-1.368	0.04	0	0.019
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-3.546	0.11	0.02	0.111
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	8.628	0.12	0.01	0.094
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	8.211	0.12	0.01	0.073
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-6.173	0.09	0.01	0.05
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	-1.173	0.04	0	0.014
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.688	0.02	0	0.006
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.069	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	1.476	0.05	0	0.026
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	-0.066	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.279	0.01	0	0.001
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.984	0.03	0	0.012
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-1.215	0.04	0	0.019
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-2.07	0.03	0	0.007
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.757	0.02	0	0.003
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	2.184	0.04	0	0.018
1343	P-5833	J-10	J-12	97.69	250	PVC	110	1.572	0.03	0	0.009
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.855	0.02	0	0.004
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.321	0.01	0	0.002
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	1.927	0.04	0	0.014
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.555	0.03	0	0.018
1352	P-5838	J-14	J-16	118.78	250	PVC	110	1.006	0.02	0	0.004
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.385	0.01	0	0.001
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	3.323	0.05	0	0.016
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	3.035	0.04	0	0.014
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	6.731	0.14	0.01	0.144
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	6.548	0.13	0.01	0.136
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.153	0	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.066	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.108	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.225	0.01	0	0.001
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.408	0.01	0	0.002
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.87	0.02	0	0.003
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.534	0.02	0	0.004
1376	P-5852	J-26	J-25	11.22	250	PVC	110	1.101	0.02	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-1.635	0.03	0	0.01
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.195	0	0	0.001
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-1.83	0.04	0	0.013
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-4.258	0.09	0	0.074
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-6.466	0.13	0.01	0.159
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-1.956	0.04	0	0.014
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-2.208	0.04	0	0.018
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.252	0.01	0	0.005
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	2.754	0.06	0	0.029
1395	P-5863	J-33	J-34	95	250	PVC	110	1.939	0.04	0	0.014
1397	P-5864	J-34	J-35	89.81	250	PVC	110	1.744	0.04	0	0.012
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.069	0	0	0.002
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.506	0.02	0	0.003
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.593	0.02	0	0.005
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.593	0.02	0	0.005
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.632	0.02	0	0.005
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.671	0.02	0	0.007
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.689	0.02	0	0.006
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.231	0.01	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	1.946	0.06	0	0.043
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.945	0.03	0	0.011
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.714	0.02	0	0.006

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	3.839	0.12	0.01	0.153
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.144	0.01	0	0.002
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	3.695	0.12	0.01	0.143
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.366	0.02	0	0.008
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	2.54	0.08	0.01	0.071
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	2.295	0.07	0.01	0.06
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	2.169	0.07	0	0.053
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-19.933	0.28	0.04	0.527
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-18.015	0.25	0.03	0.437
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.917	0.06	0	0.042
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-3.433	0.11	0.01	0.125
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-3.258	0.1	0.01	0.113
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-3.471	0.11	0.01	0.127
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.708	0.02	0	0.006
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.108	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.48	0.02	0	0.004
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-18.067	0.26	0.03	0.439
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-18.373	0.26	0.02	0.454
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.306	0.02	0	0.005
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-18.373	0.26	0.02	0.38
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-18.643	0.26	0.04	0.39
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.27	0.02	0	0.006
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	1.997	0.06	0	0.046
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.906	0.03	0	0.011
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.906	0.03	0	0.011
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	4.561	0.06	0	0.028
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	3.289	0.05	0	0.016
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-1.089	0.03	0	0.015
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	8.009	0.11	0.01	0.082
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.414	0.01	0	0.002
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.27	0.01	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.126	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	7.595	0.11	0	0.073
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	2.72	0.09	0.01	0.081
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	2.558	0.08	0.01	0.072
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	1.049	0.01	0	0.002
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	0.962	0.01	0	0.002
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.306	0.01	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.306	0.02	0	0.006
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-0.888	0.02	0	0.003
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-1.101	0.02	0	0.005
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	3.182	0.1	0.01	0.108
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	2.054	0.07	0	0.048
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.522	0.02	0	0.003
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	19.688	0.28	0.02	0.367
1511	P-5926	J-79	J-80	321.67	300	PVC	120	19.688	0.28	0.11	0.368
1513	P-5927	J-80	J-81	352.13	300	PVC	120	8.698	0.12	0.02	0.081
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.718	0.02	0	0.008
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.718	0.02	0	0.008
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-10.99	0.35	0.05	0.899
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	7.816	0.11	0	0.062
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	8.698	0.12	0.07	0.081
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	7.816	0.11	0.02	0.066
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-7.156	0.1	0.06	0.056
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-7.156	0.1	0.01	0.057
1564	P-5954	J-17	J-97	84.22	250	PVC	110	-0.059	0	0	0
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-2.055	0.04	0	0.016
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.366	0.01	0	0.001
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.243	0.01	0	0.001
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.843	0.03	0	0.007
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	19.171	0.61	0.32	2.52
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	1.173	0.04	0	0.014
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-2.023	0.06	0	0.039
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	0.73	0.02	0	0.006
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-3.519	0.05	0	0.015
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-2.984	0.04	0	0.011
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-4.37	0.06	0	0.023
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-0.655	0.02	0	0.005
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-1.108	0.04	0	0.013
1621	P-5988	J-119	J-120	88.63	200	PVC	120	1.173	0.04	0	0.014
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-0.443	0.01	0	0.002
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-0.85	0.03	0	0.008
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	3.842	0.05	0	0.018
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	1.903	0.03	0	0.005
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.766	0.02	0	0.007
1630	P-5994	J-114	J-123	33.43	200	PVC	120	1.173	0.04	0	0.016

Interim Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	1.293	0.04	0	0.02
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.96	0.03	0	0.012
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-6.358	0.2	0.05	0.326
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	7.14	0.1	0.01	0.056
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	6.828	0.1	0.01	0.052
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	7.641	0.11	0.01	0.074
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	7.641	0.11	0.01	0.075
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-2.53	0.04	0	0.012
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	-0.314	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-2.216	0.05	0	0.018
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-3.835	0.08	0	0.061
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-3.979	0.08	0.01	0.064
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-3.107	0.04	0	0.017
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-3.911	0.06	0	0.026
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	-0.522	0.02	0	0.003
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	-0.422	0.01	0	0
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.762	0.02	0	0.002
1715	P-6032	J-143	J-144	119.38	250	PVC	120	-1.184	0.02	0	0.005
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	1.724	0.04	0	0.01
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.54	0.01	0	0.001
1719	P-6035	J-144	J-145	61.41	250	PVC	120	-1.184	0.02	0	0.005
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-3.557	0.11	0.01	0.111
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-2.084	0.07	0.01	0.042
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-3.557	0.11	0.01	0.111
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-1.473	0.05	0.01	0.022
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-4.454	0.14	0.02	0.169
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-8.012	0.26	0.06	0.501
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-14.868	0.47	0.15	1.575
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-10.865	0.35	0.08	0.88
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-17.223	0.55	0.16	2.068
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-4.003	0.13	0.02	0.138
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-4.003	0.13	0.01	0.139
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-14.64	0.47	0.21	1.53
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-6.455	0.21	0.03	0.335
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-7.732	0.25	0.1	0.469
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-1.277	0.04	0.01	0.017
1755	P-6060	J-152	J-155	274.29	200	PVC	120	6.909	0.22	0.1	0.381
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-6.42	0.2	0.05	0.332
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-10.53	0.34	0.07	0.831
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-2.345	0.07	0.02	0.051
1760	P-6064	J-155	J-156	95.53	200	PVC	120	8.186	0.26	0.05	0.521
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.759	0.06	0	0.03
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-2.942	0.09	0.01	0.078
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	-0.926	0.03	0	0.01
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	-0.278	0.01	0	0.001
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.778	0.02	0	0.007
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.895	0.03	0	0.009
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.126	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.769	0.02	0	0.007
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-1.143	0.04	0	0.013
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	-0.774	0.02	0	0.006
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.652	0.02	0	0.005
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	-0.248	0.01	0	0.001
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.365	0.01	0	0.001
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.1	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.113	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.013	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.139	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	0.139	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.265	0.01	0	0.001
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.391	0.01	0	0.002
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.643	0.02	0	0.005
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.517	0.02	0	0.003
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-1.375	0.04	0	0.019
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-1.375	0.04	0	0.019
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	1.465	0.05	0	0.032
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	8.621	0.28	0.07	0.816
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-0.775	0.02	0	0.007
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-1	0.03	0	0.011
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-5.507	0.08	0	0.035
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-5.876	0.08	0	0.039

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	115	TRUE	252.802	171.6	140	J-4150F
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.138	250	TRUE	263.245	161.4	140	J-4150F
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.19	250	TRUE	265.037	140	164.5	J-4150F
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.268	250	TRUE	264.738	140	165	J-S1080E
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.218	250	TRUE	280.235	140.1	182.3	J-S1070E
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.154	250	TRUE	329.417	146.7	140	J-4150F
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.16	250	TRUE	295.133	140.1	189.1	J-S2032E
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.192	250	TRUE	293.805	140.1	165.4	J-S2033E
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.178	250	TRUE	266.249	140	195.1	J-S2034E
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.18	250	TRUE	262.954	140	195.8	J-4150F
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.174	250	TRUE	273.687	146.6	140	J-4150F
195	J-S2100E	23,886.25	5,961,252.83	699	0.162	250	TRUE	268.315	148.9	140	J-4150F
196	J-S2080E	23,585.41	5,961,251.56	699	0.162	250	TRUE	271.92	140.1	141.3	J-4150F
197	J-S2070E	23,468.77	5,961,251.56	699	0.118	250	TRUE	272.941	144.9	140	J-4150F
198	J-S2060E	23,444.47	5,961,408.54	699	0.1	250	TRUE	271.24	140.1	182.2	J-4150F
199	J-S2040E	23,441.07	5,961,591.28	699	0.136	250	TRUE	286.867	140.1	158.2	J-S2050E
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.108	250	TRUE	303.907	140	160.1	J-S2021E
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.234	250	TRUE	282.819	140.1	204.6	J-4150F
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.092	250	TRUE	328.732	140.1	170.6	J-S1030E
203	J-S2010E	23,396.57	5,962,474.58	700	0	115	TRUE	350	223.2	218.5	J-S2011E
204	J-N4200E	23,397.75	5,962,576.48	701	0	180	TRUE	350	252.9	261.7	J-S2011E
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.072	250	TRUE	350	261.7	268.9	J-N4200E
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.23	115	TRUE	350	243.4	247.7	J-N2171E
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.076	115	TRUE	350	226.6	219.8	J-N2171E
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.084	115	TRUE	126.614	140	459.2	J-N4110E
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.046	115	TRUE	350	215.7	208.8	J-N2181E
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.112	115	FALSE	104.401	140	465.8	J-N4110E
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.1	115	TRUE	350	213.5	232.1	J-N2181E
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.1	115	TRUE	350	205.3	222.7	J-N2210E
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.092	115	TRUE	172.979	140	304.6	J-N2221E
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.1	115	TRUE	187.098	140	256.8	J-N2201E
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.13	115	TRUE	350	230.2	244.5	J-N2221E
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.1	115	TRUE	350	199.5	223.2	J-N2200E
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.122	115	TRUE	350	251.2	258.8	J-N3260E
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.158	115	TRUE	350	245.7	269.8	J-N3301E
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	115	TRUE	350	245.9	251.6	J-N2255E
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	115	TRUE	309.147	148.9	140	J-N2255E
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.092	115	TRUE	256.332	140	147.1	J-3755F
222	J-N2255E	24,475.27	5,962,571.66	700	0.062	115	FALSE	113.137	140.2	459	J-N2252E
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.054	115	TRUE	268.57	140	244.1	J-N2255E
224	J-N2260E	24,501.40	5,962,673.31	699	0	115	TRUE	350	238.8	247.2	J-59
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.046	115	TRUE	308.621	143.9	140	J-N3301E
226	J-N3301E	24,349.68	5,962,783.56	699	0.192	115	FALSE	108.161	140	462.7	J-N3321E
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.146	115	TRUE	172.029	140	190.9	J-N3450E
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.112	115	TRUE	164.098	140	182	J-N3450E
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.062	115	TRUE	174.774	140	222.6	J-N3440E
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.122	115	TRUE	137.297	140	286.7	J-N3440E
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.054	115	TRUE	305.984	140	165.1	J-N3321E
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	115	TRUE	272.07	157.7	140.1	J-N3321E
233	J-N3321E	24,349.51	5,962,866.08	700	0.13	115	FALSE	104.24	140	458.5	J-N3330E
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.348	250	TRUE	278.199	140	237.2	J-N3341E
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.138	115	TRUE	271.153	140	252.2	J-N3341E
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.1	115	TRUE	173.578	140	194.3	J-N3390E
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.122	115	TRUE	138.235	140	326.9	J-N3351E
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.122	115	TRUE	158.33	140	253.5	J-N3352E
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.108	115	TRUE	288.54	140	176.9	J-N3351E
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.138	115	TRUE	128.884	140	252.8	J-N3380E
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.146	115	TRUE	115.391	140	311.5	J-N3390E
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.23	115	TRUE	128.182	140	255.2	J-N3380E
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.076	115	TRUE	312.93	140	175.9	J-N3370E
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.112	115	TRUE	350	254.7	272.7	J-N1070E
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.23	115	TRUE	350	252	262.1	J-N1065E
246	J-N1050E	24,728.87	5,962,855.33	698	0.66	180	TRUE	350	275.4	274.4	J-84 (Sturgeon Office)
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.158	115	TRUE	350	254.1	245.3	J-79
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	115	TRUE	350	240.8	254.5	J-101
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	115	TRUE	350	389.5	389.9	J-N1010E
250	J-S1010E	24,688.47	5,961,838.45	701	0	115	TRUE	350	220.8	272.3	J-S1020E
251	J-S1020E	24,215.83	5,961,901.63	700	0	250	TRUE	337.415	140.1	163.2	J-S1030E
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.076	115	TRUE	238.261	140	240.4	J-N1102E
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.084	115	TRUE	296.655	140	158.7	J-N1073E
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.122	115	TRUE	278.747	140	237.1	J-N1440E
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.046	115	TRUE	350	246	255.7	J-N1090E
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.146	115	TRUE	166.868	140	257.3	J-N1102E
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.112	115	TRUE	162.537	140	281.7	J-N1101E
258	J-N1420E	24,855.27	5,963,531.46	698	0	115	TRUE	274.851	140	250.2	J-N1410E

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.092	115	TRUE	277.631	140	165.3	J-N1400E
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.054	115	TRUE	228.243	143.9	140	J-N1304E
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.054	115	TRUE	284.884	140	179.8	J-N1330E
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.03	115	TRUE	258.088	141	140.1	J-N1311E
263	J-N1311E	24,830.34	5,963,795.82	698	0.1	115	TRUE	176.051	140	334.5	J-N1310E
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.054	115	TRUE	275.884	140	162.6	J-N1301E
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.122	115	TRUE	226.379	140	233.6	J-N1302E
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.092	115	TRUE	217.195	140	206.2	J-N1304E
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.062	115	TRUE	274.084	140	156.8	J-N1291E
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	115	TRUE	222.843	140	141	J-N1292E
269	J-N1292E	24,905.57	5,963,948.00	698	0.13	115	TRUE	141.827	140	356.4	J-N1291E
270	J-N1245E	24,928.90	5,964,040.14	697	0.062	115	TRUE	207.504	140	140.9	J-82
271	J-N1244E	24,955.72	5,964,184.39	697	0.112	115	TRUE	185.774	140	159.6	J-82
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.112	115	TRUE	203.31	140.1	157.7	J-N1244E
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.084	115	TRUE	267.958	140	168.7	J-N1281E
274	J-N1281E	24,668.79	5,963,904.06	698	0.112	115	TRUE	234.782	140	215.5	J-N1282E
275	J-N1282E	24,737.99	5,963,838.74	697	0.122	115	TRUE	222.046	140	244.8	J-N1281E
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.1	115	TRUE	233.503	140	226.4	J-N1282E
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.076	115	TRUE	280.913	140.1	164.5	J-N1283E
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.038	115	TRUE	285.627	140	155.7	J-N1342E
279	J-N1242E	24,655.18	5,964,247.76	698	0.112	115	TRUE	218.181	140	250.9	J-82
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.054	115	TRUE	256.036	140	155.3	J-N1242E
281	J-N1272E	24,643.90	5,964,097.68	698	0.1	115	TRUE	231.107	140	259.4	J-N1270E
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.062	115	TRUE	262.392	140	143.9	J-N1271E
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.062	115	TRUE	193.764	140.1	300	J-N1270E
284	J-N1240E	24,492.27	5,964,163.87	698	0	115	TRUE	285.972	140	144.6	J-N1251E
285	J-N1220E	24,450.28	5,964,244.12	698	0	115	TRUE	319.942	140	167.9	J-N1210E
286	J-N1210E	24,398.26	5,964,217.60	698	0	115	TRUE	326.605	140	144.5	J-N1220E
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.046	115	TRUE	346.956	140	145.3	J-N1210E
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.062	115	TRUE	350	146.7	170.1	J-N1190E
289	J-N1170E	24,279.97	5,963,894.02	698	0	180	TRUE	350	162.1	185.6	J-N1180E
290	J-N1160E	24,301.35	5,963,782.73	698	0	180	TRUE	350	196.5	207	J-N1170E
291	J-N1150E	24,302.39	5,963,747.88	698	0.322	115	TRUE	350	211.6	212.4	J-4580I
292	J-N1370E	24,390.29	5,963,759.89	698	0.062	115	TRUE	300.079	140.2	162	J-N1371E
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.046	115	TRUE	254.094	140	142	J-N1361E
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.092	115	TRUE	148.384	140	384.2	J-N1360E
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.092	115	TRUE	234.094	140	154.7	J-N1372E
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.046	115	TRUE	231.461	140	140	J-N1345E
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.062	115	TRUE	235.821	140	215.7	J-N1342E
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.03	115	TRUE	251.722	150.8	140	J-N1342E
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.13	115	TRUE	155.947	140	340	J-N1371E
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.062	115	TRUE	158.6	140	339.8	J-N1344E
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.092	115	FALSE	96.349	140	466.9	J-N1343E
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	115	TRUE	350	216.8	229.4	J-4580I
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.1	115	TRUE	350	227.1	252	J-N1140E
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	115	TRUE	350	248.2	255.3	J-N1110E
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	115	TRUE	350	157.1	214.9	J-N3182E
306	J-N3182E	24,109.98	5,963,355.50	698	0	250	TRUE	346.119	140	223.2	J-N3181E
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	250	TRUE	350	162.7	210.3	J-N3182E
308	J-N3190E	23,838.79	5,963,334.11	699	0.064	250	TRUE	350	217.3	234.7	J-N3200E
309	J-N3210E	23,839.27	5,963,187.82	699	0.112	115	TRUE	350	166.9	259.6	J-N3200E
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.184	115	TRUE	350	212.5	248.6	J-N3230E
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.112	115	TRUE	350	204.3	225.1	J-N3240E
312	J-N3420E	23,966.13	5,962,983.37	698	0	115	TRUE	299.512	140.1	179.7	J-N3410E
313	J-N3240E	23,840.96	5,962,916.81	698	0.1	115	TRUE	350	167.5	229.7	J-N3230E
314	J-N3250E	23,877.98	5,962,777.15	698	0.112	115	TRUE	350	144.1	228.6	J-N3260E
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.1	115	TRUE	350	182.7	226	J-N3250E
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.13	115	TRUE	171.341	140	338.5	J-N2381E
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.146	115	TRUE	184.318	140	200.9	J-N2383E
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.076	115	TRUE	141.483	147.9	140.1	J-N2383E
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.1	115	FALSE	87.247	140	362.6	J-N2382E
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.112	115	TRUE	137.228	140	253.3	J-N2383E
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.122	115	TRUE	305.523	140	199.1	J-N2391E
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.176	115	TRUE	320.392	140	150.6	J-N2363E
323	J-N2370E	23,750.00	5,963,047.05	699	0.092	115	TRUE	343.488	140	209.3	J-N2360E
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.1	115	TRUE	319.672	140	229.3	J-N2361E
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.13	115	TRUE	206.826	140.1	215	J-N2362E
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.168	115	TRUE	150.329	140	360.8	J-N2361E
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.084	115	TRUE	264.766	140	207.1	J-N2362E
328	J-N3200E	23,838.64	5,963,310.50	699	0.062	115	TRUE	350	220.4	233.9	J-N3190E
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.046	115	TRUE	349.733	140	202.9	J-N2350E
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.054	115	TRUE	337.441	140.1	219.6	J-N2331E
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.138	115	TRUE	173.415	140	440.4	J-N2350E
332	J-N2350E	23,748.75	5,963,237.41	699	0	115	TRUE	325.994	140	220.3	J-N2331E
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.276	115	TRUE	337.255	140.1	159.3	J-N3130E

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.042	250	TRUE	319.796	142.9	140	J-N2301E
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.406	115	TRUE	119.972	140	462.3	J-139
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	250	TRUE	350	257.1	264.4	J-N2301E
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.112	115	TRUE	350	211.1	251.5	J-N2330E
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.054	115	TRUE	147.564	140	276.3	J-N2401E
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.134	115	TRUE	321.832	140	194.6	J-N2401E
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.036	250	TRUE	350	265.2	271.4	J-N2141E
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.042	250	TRUE	350	227.9	247.1	J-N2133E
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	250	TRUE	350	189.9	252.2	J-N2400E
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.032	250	TRUE	350	190.8	217.2	J-N2144E
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.022	115	TRUE	171.294	140	418.7	J-N4530E
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	250	TRUE	350	166.1	251.4	J-N2133E
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.094	250	TRUE	350	259.2	262.6	J-N2131E
347	J-N2120E	23,392.51	5,963,312.31	699	0.09	250	TRUE	350	291	289	J-139
348	J-N2121E	23,395.90	5,963,312.31	699	0	250	TRUE	350	290.1	289.1	J-139
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.044	115	TRUE	272.455	140	403.1	J-139
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.014	250	TRUE	331.872	140.1	286.6	J-N3142E
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	250	TRUE	350	285.8	284.4	J-139
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	250	TRUE	350	257.6	287.8	J-139
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	250	TRUE	350	287.9	286.7	J-139
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.133	250	TRUE	350	288.5	287.5	J-139
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.03	115	TRUE	350	290.9	286.7	J-139
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.076	250	TRUE	350	284	279.3	J-139
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	250	TRUE	350	277.9	277.1	J-139
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.138	115	TRUE	243.133	140	227.7	J-N4470E
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	115	TRUE	171.247	140	379.9	J-N4460E
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.146	115	TRUE	153.3	140	141	J-N4481E
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.062	115	FALSE	79.929	140	400.5	J-N4480E
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.112	115	TRUE	235.004	140	357.1	J-N4530E
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.276	115	TRUE	250.443	140	310.5	J-N2144E
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.076	115	TRUE	350	200.8	202.6	J-N4191E
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.146	115	TRUE	350	201.5	199.1	J-N4191E
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.112	115	TRUE	147.418	140	441.5	J-N4110E
367	J-N4510E	23,116.00	5,962,864.49	700	0.084	115	TRUE	265.604	140	182.8	J-N4500E
368	J-N4500E	23,107.06	5,962,864.49	700	0.1	115	TRUE	265.61	140	182.8	J-N4510E
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.076	115	TRUE	349.608	140	166.3	J-N4140E
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.076	115	TRUE	350	155.3	172.6	J-N4150E
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.076	115	TRUE	350	174.6	184.5	J-N4160E
372	J-N4490E	23,107.28	5,962,982.98	700	0.122	115	TRUE	204.48	144.9	140	J-N4491E
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.092	115	TRUE	261.08	140	276.2	J-N4381E
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.114	250	TRUE	350	216	236	J-N4381E
375	J-N4350E	23,104.18	5,963,517.50	699	0.084	115	TRUE	345.897	140	236.8	J-N4340E
376	J-N3090E	23,166.53	5,963,519.61	699	0	250	TRUE	350	231.7	266.4	J-N4350E
377	J-N2070E	23,171.01	5,963,524.71	699	0	250	TRUE	350	291.2	285.9	J-N3080E
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	115	TRUE	350	281.2	292.1	J-139
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	250	TRUE	350	293.9	291.2	J-N3060E
380	J-N2050E	23,164.50	5,963,745.83	699	0	250	TRUE	350	298.1	303.8	J-N3040E
381	J-N2040E	23,164.50	5,963,849.54	699	0	180	TRUE	350	311.9	315.4	J-N3030E
382	J-N2020E	23,168.07	5,964,021.69	699	0	180	TRUE	350	354.1	347.6	J-139
383	J-N2010E	23,229.47	5,964,021.52	699	0.02	250	TRUE	350	365.7	364.8	J-139
384	J-N3010E	23,161.69	5,964,008.03	699	0.908	115	TRUE	322.248	140	205.9	J-N3020E
385	J-N3030E	23,160.50	5,963,849.48	699	0.062	115	TRUE	350	254.7	271.1	J-N3031E
386	J-N3031E	23,161.50	5,963,836.74	699	0.076	115	TRUE	338.618	140.1	250.2	J-N3032E
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	115	TRUE	350	246.4	263.8	J-N3050E
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.112	115	TRUE	342.607	140.1	275.6	J-N3051E
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	115	TRUE	350	229.3	240.2	J-N3070E
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.112	115	TRUE	350	150.6	250.1	J-N3060E
391	J-N3032E	22,992.17	5,963,835.82	699	0.122	115	TRUE	164.644	140	378	J-N3051E
392	J-N3051E	22,992.42	5,963,732.81	700	0.122	115	TRUE	218.867	140	268.8	J-N3032E
393	J-N3071E	22,992.67	5,963,640.74	700	0.13	115	TRUE	237.634	140	329.3	J-N3051E
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	250	TRUE	324.007	140.1	247	J-N4330E
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.054	115	TRUE	316.388	140	216.3	J-N4331E
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.104	250	TRUE	350	173.8	189.1	J-N4400E
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.062	115	TRUE	280.185	140	317	J-N4430E
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.062	250	TRUE	304.264	140.1	255.2	J-N4330E
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.012	250	TRUE	299.494	140	195.1	J-N4310E
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.192	115	TRUE	181.116	140	379.8	J-N4401E
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	250	TRUE	283.519	140	191.5	J-N4311E
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.052	250	TRUE	337.737	140.1	148.5	J-N4401E
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.143	250	TRUE	290.982	140	178.7	J-139
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	250	TRUE	275.322	140	193.5	J-N4431E
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.092	115	FALSE	88.695	140	429.1	J-N4490E
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.158	115	TRUE	310.533	140.1	144.8	J-N3411E
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.066	115	TRUE	154.441	140	404.3	J-N4401E
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.062	115	TRUE	308.851	140.1	174.7	J-N4301E

Interim Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.342	115	TRUE	175.131	140	396.1	J-8
410	J-N4410E	22,639.90	5,963,300.90	701	0.08	250	TRUE	321.693	140.1	172.7	J-N4301E
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	250	TRUE	318.701	145.1	140	J-8
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	250	TRUE	294.272	151.6	140	J-8
413	J-N4010E	22,546.33	5,963,750.87	700	0.234	250	TRUE	285.399	153.8	140	J-8
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.258	115	TRUE	322.492	140	146.8	J-8
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	250	TRUE	334.973	142.3	140	J-N4042E
416	J-N4041E	22,443.94	5,963,514.35	701	0	115	TRUE	216.272	140	244.3	J-N4042E
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.112	115	TRUE	166.077	140	353.6	J-N4041E
418	J-N4043E	22,444.72	5,963,305.56	701	0.464	115	TRUE	306.096	140.1	171.1	J-N4042E
419	J-N4070E	22,557.86	5,963,211.47	701	1.1	115	TRUE	333.172	140	148.5	J-N4080E
420	J-N4080E	22,553.97	5,963,123.99	701.5	1.396	115	TRUE	325.629	140	144.9	J-N4082E
421	J-N4081E	22,468.80	5,963,123.50	701	0	180	TRUE	223.749	140	140	J-N4082E
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.146	115	TRUE	320.573	141	140	J-N4092E
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.146	115	TRUE	169.299	140	387.7	J-N4092E
424	J-N4092E	22,681.89	5,962,970.03	702	0.214	115	TRUE	166.128	140	392	J-N4090E
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.112	115	TRUE	320.379	140	148.4	J-N4104E
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.1	115	TRUE	137.157	140	239.6	J-N4102E
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.122	115	TRUE	128.389	140	250.7	J-N4104E
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.054	115	TRUE	137.373	144	140.1	J-N4104E
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.1	115	TRUE	215.286	140	184.9	J-N4104E
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.13	115	TRUE	319.379	140	142.6	J-N4111E
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.092	115	TRUE	326.095	140	149.4	J-N4110E
432	J-N4121E	22,725.05	5,962,737.13	701	0.112	115	TRUE	144.629	140	286.9	J-N4143E
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.138	115	TRUE	150.437	140	264.3	J-N4121E
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.038	115	TRUE	225.742	140	198.7	J-N4143E
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.016	115	TRUE	338.097	140	140	J-N4141E
436	J-N4431E	22,871.76	5,963,060.11	701	0.1	115	TRUE	182.817	140	365.2	J-N4430E
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.092	115	TRUE	330.57	146.8	140	J-N4131E
438	J-N4131E	22,739.70	5,962,940.69	702	0.268	115	TRUE	179.198	140	389.5	J-N4110E
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.184	115	TRUE	169.391	140	417.3	J-N3340E
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.062	115	TRUE	264.348	140	203.1	J-N3321E
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.038	115	TRUE	350	244.9	255.7	J-N1100E
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	115	TRUE	350	245.9	255.8	J-N1120E
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.046	115	TRUE	247.701	140	209.9	J-N1270E
444	J-N1246E	24,900.57	5,964,065.27	697	0.076	115	TRUE	196.725	140.1	177.7	J-82
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	115	TRUE	277.42	140	201.3	J-N1320E
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.112	115	TRUE	120.206	140	409.8	J-N1302E
447	J-N1400E	24,827.83	5,963,657.23	698	0.1	115	TRUE	270.366	140	185	J-N1410E
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.092	115	TRUE	272.417	140	237	J-N1430E
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.13	115	TRUE	270.736	140	177	J-N1072E
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.092	115	TRUE	213.668	140	372	J-N4500E
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.062	115	TRUE	335.472	140	143	J-N4142E
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.206	250	TRUE	314.327	143.5	140	J-8
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.054	115	TRUE	190.396	140	388.5	J-N4450E
454	J-N3020E	23,160.99	5,963,967.57	699	0	180	TRUE	236.87	140	387.1	J-N3010E
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.062	115	TRUE	301.062	150.8	140	J-N2255E
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.13	115	TRUE	244.549	140	252.8	J-N1073E
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.168	115	TRUE	283.671	140	274.3	J-N1450E
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.122	115	TRUE	339.63	144.3	140	J-N1471E
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.422	115	TRUE	340.555	140.1	147.8	J-N3120E
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.04	250	TRUE	350	144.5	159.2	J-N3130E
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.368	115	TRUE	333.284	140.1	214.2	J-N3140E
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	180	TRUE	350	144.3	190.5	J-75
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.108	250	TRUE	344.232	140	188.8	J-140
464	J-N3160E	23,825.34	5,963,511.25	699	0.078	250	TRUE	350	197.6	224.7	J-30
465	J-N3170E	23,903.33	5,963,511.58	699	0.168	250	TRUE	350	230.4	249.3	J-76
466	J-N3180E	23,907.72	5,963,334.91	699	0	250	TRUE	350	228	250.2	J-N3181E
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	250	TRUE	308.38	140	140.5	J-S2021E
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.11	250	TRUE	330.886	140.1	160.3	J-S1040E
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.054	115	TRUE	159.957	140	226.1	J-N2321E
470	J-N1250E	24,499.78	5,964,149.64	698	0.054	115	TRUE	272.221	140	140	J-N1251E
471	J-N1251E	24,455.84	5,964,129.52	698	0.092	115	TRUE	147.005	140	400	J-N1250E
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.054	115	TRUE	125.546	140	445.3	J-N1230E
473	J-N1230E	24,475.43	5,964,196.22	698	0	115	TRUE	293.418	140	145.9	J-N1231E
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	115	TRUE	251.321	169.6	140	J-4150F
475	J-S2140E	24,039.65	5,960,875.68	698	0.154	115	TRUE	249.37	168.7	140	J-4150F
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	115	TRUE	247.726	168.7	140	J-4150F
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.122	115	TRUE	248.214	152	140	J-4150F
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.112	115	TRUE	245.816	140	147.1	J-4150F
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.092	115	TRUE	219.455	140	210.7	J-4150F
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.112	115	TRUE	237.147	141.3	140	J-S2192E
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.076	115	TRUE	227.256	140	143.7	J-S2193E
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.084	115	TRUE	220.448	140	140	J-S2194E
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.084	115	TRUE	205.231	140	163.6	J-S2202E

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	115	TRUE	205.998	140	160.7	J-S2203E
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.076	115	TRUE	208.966	140	155.1	J-S2202E
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.112	115	TRUE	244.883	140	146	J-S2201E
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.046	115	TRUE	248.17	140.2	140.6	J-4150F
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.076	115	TRUE	247.978	141.8	140	J-S2170E
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.334	115	TRUE	242.974	140	146.4	J-3700I
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.046	115	TRUE	242.188	140.1	140	J-3700I
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	115	TRUE	238.794	140	140	J-S2240E
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.016	115	TRUE	228.302	140	142.4	J-S2250E
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	115	TRUE	219.147	140	166.3	J-S2240E
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	115	TRUE	222.494	140	160.2	J-S1160E
495	J-S2195E	23,781.62	5,960,412.85	698	0	115	TRUE	190.75	140	189.7	J-S2194E
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	115	TRUE	206.463	140	144.9	J-S2195E
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.112	115	TRUE	215.016	140	156.2	J-S1150E
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.122	115	TRUE	187.111	140	181	J-S1140E
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.092	115	TRUE	190.248	140	175.3	J-S1150E
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.054	115	TRUE	209.617	140	147	J-S1140E
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.092	115	TRUE	199.384	140	188.5	J-S1140E
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	115	TRUE	214.166	140	141.5	J-S1130E
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	250	TRUE	263.574	160	140	J-4150F
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	115	TRUE	236.721	140	164.2	J-S1110E
505	J-S1110E	24,033.48	5,960,926.97	698	0.108	115	TRUE	219.447	140	160.4	J-S1130E
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.061	250	TRUE	350	143.3	144.4	J-N1200E
507	J-N1600E	24,201.37	5,964,131.25	698	0.112	115	TRUE	331.383	144.9	140	J-N1601E
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.13	115	TRUE	324.198	140	140	J-46
509	J-N1620E	24,074.31	5,964,072.83	699	0.062	115	TRUE	324.899	140	173.2	J-N1630E
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.046	115	TRUE	327.832	140	162.5	J-N1631E
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.076	115	TRUE	327.164	140	176.1	J-N1630E
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.122	115	TRUE	270.412	140	208.3	J-N1632E
513	J-N1632E	24,036.37	5,963,917.92	700	0.084	115	TRUE	258.75	140	236	J-N1651E
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	115	TRUE	279.882	140.1	177.6	J-N1632E
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	115	TRUE	345.201	141.9	140	J-N1651E
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.122	115	TRUE	183.765	140	410.5	J-N1600E
517	J-N1060E	24,577.21	5,963,109.12	697	0	180	TRUE	350	253.8	252.1	J-N1061E
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.138	115	TRUE	316.165	140	215.1	J-N1062E
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.112	115	TRUE	282.21	140	199.3	J-N1500E
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.092	115	FALSE	94.458	140	314.3	J-N4103E
521	J-N4082E	22,469.20	5,963,082.83	701	0.062	115	TRUE	133.487	140	357	J-N4081E
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	115	TRUE	282.982	140	196.4	J-N1062E
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.13	115	TRUE	295.671	140	191	J-N1500E
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.18	115	TRUE	346.651	140	176.6	J-N1490E
526	J-N1471E	24,945.50	5,963,280.47	699	0.578	180	TRUE	243.756	140	344.2	J-N1470E
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	115	TRUE	340.061	140.1	213.7	J-N1480E
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.186	115	TRUE	350	157.7	184.7	J-48
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.332	250	TRUE	282.006	140.1	167.9	J-4220I
530	J-S2050E	23,441.95	5,961,556.46	699	0	250	TRUE	288.72	140.1	150.6	J-S2051E
531	J-S2051E	23,344.97	5,961,508.86	699	0.508	250	TRUE	256.281	140	187.7	J-143
532	J-N1065E	24,522.60	5,963,163.07	697	1.71	115	TRUE	350	250.5	261.8	J-N1070E
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.314	115	TRUE	298.302	140	152.7	J-N3412E
536	J-N3412E	22,763.88	5,963,654.13	700.4	1.26	115	TRUE	284.605	140	177.3	J-2
537	J-3550I	23,858.78	5,963,861.50	697.8	0.154	115	TRUE	350	222.3	217.7	J-N1632E
538	J-3560I	23,895.14	5,963,776.63	698.8	0.154	115	TRUE	350	176	166.7	J-43
539	J-3570I	23,930.36	5,963,667.29	699	0.154	115	TRUE	350	188.2	202.6	J-44
540	J-3580I	23,794.98	5,963,838.03	698	0.13	115	TRUE	350	229.6	221.6	J-22
541	J-3590F	23,690.63	5,963,983.45	697.5	0.122	115	TRUE	350	210.7	205.3	J-41
542	J-3600I	23,601.86	5,963,939.64	698.3	0.192	115	TRUE	350	192	200.7	J-18
543	J-3610I	23,453.97	5,963,928.59	699	0.264	115	TRUE	350	197.6	202.5	J-15
544	J-3620F	23,389.20	5,964,002.63	699.6	0	115	TRUE	329.141	140.1	265.2	J-3610I
548	J-3660F	23,675.98	5,964,023.67	697	0	115	TRUE	350	178.3	167	J-33
549	J-3670I	23,876.32	5,964,331.38	698.5	0.334	115	TRUE	127.63	140	220.3	J-46
551	J-3690I	22,621.02	5,963,751.20	699.5	0	115	TRUE	286.072	147.5	140	J-8
552	J-3700I	24,251.71	5,960,551.59	700	1.666	115	TRUE	239.133	140	146.9	J-3710F
553	J-3710F	24,340.82	5,960,450.73	699.3	1.666	115	TRUE	225.293	140	178	J-3700I
556	J-3740I	24,235.46	5,960,911.51	700	0	250	FALSE	239.587	159.5	140	J-4150F
557	J-3750I	24,202.10	5,960,810.43	700	0	115	TRUE	242.957	155.7	140	J-4150F
558	J-3760F	24,126.63	5,962,599.83	698.5	1.03	115	TRUE	203.618	140	199.5	J-3770F
559	J-3770F	24,004.27	5,962,385.31	698.5	1.03	115	TRUE	186.231	140.1	208	J-3775F
560	J-3780F	24,246.39	5,962,223.62	698.8	1.03	115	TRUE	211.183	140	172.3	J-3775F
561	J-3790F	24,549.31	5,962,206.03	699.2	0.562	115	TRUE	311.032	140.1	182.1	J-133
562	J-3800F	24,678.90	5,962,287.47	699.5	0.562	115	TRUE	335.896	140	219.1	J-3790F
563	J-3830F	24,662.04	5,962,661.31	699	0.046	250	TRUE	350	253.9	257.7	J-3825F
564	J-3840F	24,769.05	5,962,856.55	698	0	115	TRUE	350	268.3	271.2	J-3810F
565	J-S2011E	23,398.12	5,962,393.08	701	0.35	250	TRUE	350	185.4	186.3	J-4590F
566	J-3860F	23,130.75	5,962,367.08	699.08	0.782	115	TRUE	296.492	156.6	140.2	J-115
567	J-3870F	23,015.45	5,962,359.04	700	0	115	TRUE	280.273	144.2	140	J-3880F

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
568	J-3880F	22,846.82	5,962,430.77	700.62	0.782	115	TRUE	260.349	140.1	153.7	J-115
574	J-3940F	22,850.61	5,962,219.38	700.12	0.782	115	TRUE	149.964	140	348.8	J-4650F
575	J-3950F	22,898.73	5,962,037.18	700.62	0.782	115	TRUE	244.651	142.8	140	J-4650F
576	J-S2012E	23,398.36	5,962,126.10	701	0.086	250	TRUE	339.463	143.7	140	J-4600F
581	J-4010F	24,264.46	5,961,085.30	701.5	0	250	FALSE	240.593	140	150	J-4150F
586	J-4060F	24,028.16	5,962,018.57	699.1	0	250	TRUE	320.787	140.1	177.8	J-4150F
588	J-4080I	23,485.64	5,960,871.34	699	0.208	250	TRUE	256.46	140	157.7	J-136
594	J-4140F	24,447.99	5,960,902.33	701	1.666	115	TRUE	216.745	150	140	J-4150F
595	J-4150F	24,447.17	5,960,816.61	702	1.666	115	TRUE	167.927	140	159.4	J-4170F
596	J-4160F	24,443.99	5,960,698.17	700	1.666	115	TRUE	138.444	140	140	J-4170F
597	J-4170F	24,566.08	5,960,649.02	700	1.666	115	TRUE	116.165	140	237.5	J-4160F
602	J-4220I	23,168.73	5,961,753.64	699.3	0.36	250	TRUE	267.792	140	170.6	J-128
605	J-4250F	23,717.61	5,962,073.19	699.3	1.442	250	TRUE	318.988	140.1	190.5	J-4060F
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	250	TRUE	350	255.7	274.3	J-N2140E
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	115	TRUE	213.615	140.1	427	J-N4110E
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	250	TRUE	350	265.4	272.4	J-N2143E
611	J-4310F	22,779.97	5,964,010.72	699.5	0.948	115	TRUE	190.629	140.1	177.3	J-6
612	J-3775F	24,129.33	5,962,308.95	698.5	1.03	115	TRUE	191.572	140.1	187.5	J-3770F
613	J-3755F	24,211.83	5,962,601.84	698.5	0	115	TRUE	224.08	140	153.8	J-3760F
614	J-3785F	24,389.79	5,962,392.01	698.7	0.062	115	TRUE	290.364	140	176.2	J-148
615	J-N1023E	24,962.79	5,962,291.29	699	0	115	TRUE	350	297.9	305	J-3805F
616	J-3805F	24,846.93	5,962,284.57	699.5	0.562	115	TRUE	340.371	140	163.3	J-152
617	J-3804F	24,683.36	5,962,433.13	699.4	0.562	115	TRUE	348.529	140	217.5	J-3825F
618	J-N1025E	24,955.73	5,962,436.30	699	0.562	115	TRUE	350	270.5	272.8	J-N1030E
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	115	TRUE	350	234.2	234.2	J-3820F
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	115	TRUE	350	254.1	260.6	J-79
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	115	TRUE	350	253.3	255.1	J-79
622	J-3810F	24,808.50	5,962,854.71	698.5	0	115	TRUE	350	259.3	263.3	J-3815F
623	J-3815F	24,803.86	5,962,773.23	699	0.562	115	TRUE	338.275	140.1	284.7	J-79
624	J-3820F	24,781.43	5,962,653.26	699.5	0.562	115	TRUE	190.191	140	443.1	J-N1033E
625	J-3825F	24,683.97	5,962,561.99	701	0.562	115	TRUE	327.247	140	284.4	J-3804F
626	J-4430I	24,354.53	5,960,883.84	700.5	0.356	250	FALSE	228.627	155	140.1	J-4150F
627	J-4440I	24,201.33	5,960,696.57	699.5	0	115	TRUE	243.317	147.2	140	J-4150F
628	J-4450I	24,358.13	5,960,711.56	700	1.666	115	TRUE	208.544	140	211.2	J-4150F
629	J-4460I	23,866.43	5,960,918.16	700.5	0.18	115	TRUE	251.285	140	146.6	J-4150F
630	J-4470I	24,688.40	5,963,006.16	698	0.66	180	TRUE	350	252.3	255.5	J-55
632	J-4490F	23,389.95	5,964,203.21	699.2	0	115	TRUE	350	146.9	174.3	J-182
638	J-4550I	24,097.29	5,963,722.12	698.5	0	115	TRUE	312.744	140	152.7	J-4570I
639	J-4560I	24,258.63	5,963,745.67	698	0	115	TRUE	332.488	149.8	140	J-78
640	J-4570I	24,058.45	5,963,789.70	699.1	1.452	115	TRUE	274.522	140	210.4	J-4580I
641	J-4580I	24,184.55	5,963,895.50	700	1.452	115	TRUE	253.843	140	262.5	J-4570I
642	J-4590F	23,289.98	5,962,391.46	700.9	0.278	250	TRUE	331.581	140.1	141.4	J-115
643	J-4600F	23,285.48	5,962,126.23	701.38	0.198	250	TRUE	307.842	140	142.6	J-185
644	J-4610F	23,155.29	5,962,079.75	700.83	0.019	250	TRUE	278.141	140.8	140	J-4650F
648	J-4650F	22,898.74	5,961,936.72	700.91	0.782	115	TRUE	177.976	140.1	298.4	J-3950F
1317	J-2	22,730.02	5,963,753.33	700.5	0.046	115	TRUE	210.058	140	282	J-3
1319	J-3	22,672.82	5,963,751.17	700.5	0	115	TRUE	275.508	140	140	J-2
1323	J-4	22,621.02	5,963,836.43	700	0.122	115	TRUE	227.896	140	167.8	J-129
1325	J-5	22,727.82	5,963,998.44	700.25	0.084	115	TRUE	199.538	140	147	J-6
1327	J-6	22,732.18	5,964,070.61	701	0.142	115	TRUE	187.552	140.1	191.5	J-7
1329	J-7	22,731.10	5,964,172.06	700.75	0.122	115	TRUE	199.513	140	154	J-6
1331	J-8	22,631.81	5,964,169.90	701.5	0.154	115	TRUE	209.221	140	181.4	J-7
1333	J-9	22,551.95	5,964,168.82	701	0.57	115	TRUE	237.346	140	151.5	J-8
1337	J-10	23,451.65	5,963,733.50	699	0.204	115	TRUE	344.009	144.9	140	J-75
1340	J-11	23,574.41	5,963,732.15	699.25	0.204	115	TRUE	146.27	140	343.7	J-75
1342	J-12	23,453.00	5,963,830.63	698.75	0.264	115	TRUE	350	150.7	145.8	J-13
1345	J-13	23,538.85	5,963,831.54	699.25	0.214	115	TRUE	224.809	140.1	386.9	J-12
1347	J-14	23,454.35	5,964,026.24	699.1	0.244	115	TRUE	340.863	141.5	140	J-15
1349	J-15	23,467.84	5,964,093.69	699.25	0.37	115	TRUE	134.979	140	458.2	J-14
1351	J-16	23,573.06	5,964,030.28	699.25	0.414	115	TRUE	329.572	140.1	188.5	J-17
1353	J-17	23,570.36	5,964,124.71	699	0.296	115	TRUE	333.237	140.1	174.5	J-16
1355	J-18	23,532.59	5,963,931.81	699	0.192	115	TRUE	350	186.6	207.1	J-3600I
1358	J-19	23,754.37	5,963,918.75	698.75	0.122	115	TRUE	350	194.5	244.7	J-41
1361	J-20	23,728.46	5,963,820.53	698.75	0.058	115	TRUE	311.332	140	170.5	J-22
1363	J-21	23,674.50	5,963,815.14	698.75	0.122	115	TRUE	293.744	144.9	140	J-22
1365	J-22	23,673.42	5,963,866.94	699.25	0.072	115	TRUE	226.498	140	292.6	J-21
1367	J-23	23,677.74	5,963,733.12	699	0.122	115	TRUE	293.673	140	219.8	J-22
1369	J-24	23,746.80	5,963,730.96	699	0.084	115	TRUE	314.909	140	182	J-23
1371	J-25	23,809.40	5,963,732.04	699	0.154	115	TRUE	350	172.4	178.8	J-26
1374	J-26	23,798.19	5,963,731.64	699	0	115	TRUE	350	172.6	178.8	J-25
1377	J-27	23,775.20	5,963,641.81	699.25	0	115	TRUE	350	144.8	142.3	J-28
1379	J-28	23,710.13	5,963,639.34	699.5	0.13	115	TRUE	307.858	140	251.6	J-27
1381	J-29	23,844.51	5,963,643.58	699.25	0.084	115	TRUE	350	148.4	178.5	J-28
1383	J-30	23,845.57	5,963,511.32	699	0	115	TRUE	350	217	221.1	J-N3160E
1387	J-31	23,799.25	5,963,585.59	699.75	0.168	115	TRUE	162.364	140	441.4	J-32

Interim Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1388	J-32	23,845.57	5,963,586.29	699.5	0	115	TRUE	350	163.7	161.2	J-31
1392	J-33	23,672.77	5,964,049.27	698.75	0.084	115	TRUE	350	144.9	150.2	J-41
1394	J-34	23,670.18	5,964,144.24	699	0.13	115	TRUE	335.619	140.1	183.5	J-36
1396	J-35	23,671.91	5,964,234.03	698.75	0.084	115	TRUE	339.695	142.4	140	J-36
1398	J-36	23,671.05	5,964,280.65	699	0.046	115	TRUE	161.062	140	438.5	J-35
1400	J-37	23,758.25	5,964,281.52	698.75	0.058	115	TRUE	270.128	140	176.7	J-38
1402	J-38	23,813.50	5,964,238.35	698.75	0	115	TRUE	253.579	140	186.7	J-39
1404	J-39	23,860.99	5,964,198.64	698.5	0.026	115	TRUE	249.865	140	197.7	J-38
1406	J-40	23,792.78	5,964,135.61	698.5	0.026	115	TRUE	254.946	147.3	140	J-41
1408	J-41	23,757.38	5,964,171.87	699.25	0	115	TRUE	140.507	140	396.7	J-40
1410	J-42	23,740.12	5,964,098.49	698.5	0.012	115	TRUE	277.051	140	163.9	J-41
1414	J-43	23,980.99	5,963,768.68	699.75	0.154	115	TRUE	211.454	140.1	407.4	J-3560I
1416	J-44	24,000.53	5,963,681.98	700	0.072	115	TRUE	313.965	140	193.8	J-77
1419	J-45	24,049.06	5,964,265.48	698.75	0.154	115	TRUE	178.065	140	140	J-46
1421	J-46	23,957.33	5,964,279.51	698.75	0.142	115	TRUE	145.249	140	142.4	J-3670I
1424	J-47	24,921.74	5,963,097.95	698.75	0	115	TRUE	303.715	144.9	140	J-48
1426	J-48	24,960.60	5,963,073.13	699.25	0.096	115	TRUE	154.459	140	415.5	J-47
1428	J-49	24,867.78	5,963,034.28	698.75	0.054	115	TRUE	306.86	144.9	140	J-57
1430	J-50	24,895.84	5,963,012.69	699	0	115	TRUE	171.241	142.6	140.1	J-99
1432	J-51	24,805.19	5,963,090.39	698.5	0.046	115	TRUE	350	173.9	191.3	J-57
1434	J-52	24,739.36	5,963,144.35	698.25	0.084	115	TRUE	321.547	140	233.4	J-53
1436	J-53	24,688.64	5,963,093.63	698.25	0.168	115	TRUE	329.893	140	208.5	J-52
1438	J-54	24,637.92	5,963,049.38	698.25	0	115	TRUE	350	245.2	251.7	J-53
1443	J-55	24,746.03	5,963,032.58	698.5	0.142	115	TRUE	342.934	140.1	248.9	J-51
1446	J-56	24,815.86	5,962,971.87	698.75	0.08	115	TRUE	208.581	144.9	140	J-57
1448	J-57	24,793.42	5,962,913.17	699.25	0.072	115	TRUE	170.453	140	258.5	J-100
1450	J-58	24,880.62	5,962,917.48	698.75	0.158	115	TRUE	164.788	142.6	140.1	J-100
1452	J-59	24,463.42	5,962,681.55	699.25	0	115	TRUE	350	237	239.4	J-60
1455	J-60	24,477.23	5,962,748.02	699	0.204	115	TRUE	140.603	140	461.2	J-139
1457	J-61	24,560.98	5,962,657.37	698.5	0	115	TRUE	350	246.1	243.7	J-62
1460	J-62	24,574.79	5,962,709.17	698.75	0.18	115	TRUE	158.064	140	457.4	J-139
1464	J-64	23,859.42	5,960,815.72	699.25	0.122	115	TRUE	237.8	140	167.2	J-65
1467	J-65	23,919.85	5,960,828.67	698.5	0	115	TRUE	229.071	140	167.8	J-66
1469	J-66	23,954.39	5,960,863.21	699.25	0.122	115	TRUE	228.996	140	174	J-65
1471	J-67	23,951.80	5,960,932.28	698.75	0.122	115	TRUE	252.263	156.6	140	J-4150F
1475	J-68	24,151.23	5,960,824.36	699.5	0	115	TRUE	244.693	156.1	140	J-4150F
1477	J-69	24,160.73	5,960,864.07	700.5	0.096	115	TRUE	206.902	140	147.3	J-70
1479	J-70	24,173.68	5,960,913.28	699.75	0.096	115	TRUE	177.575	140	144.9	J-71
1481	J-71	24,122.74	5,960,921.05	699.25	0.084	115	TRUE	157.677	140.1	210.3	J-70
1485	J-73	23,863.50	5,960,738.53	699.2	0.108	115	TRUE	228.38	140	195.8	J-4150F
1488	J-74	24,008.12	5,960,795.72	699.25	0.058	115	TRUE	247.681	150	140	J-4150F
1491	J-75	23,533.91	5,963,732.98	699.5	0	115	TRUE	225.491	140	142.4	J-11
1494	J-76	23,929.23	5,963,577.78	699	0.142	115	TRUE	350	184.6	226.8	J-3570I
1497	J-77	24,049.40	5,963,701.17	699.25	0.752	115	TRUE	307.02	140	211.6	J-44
1500	J-78	24,258.00	5,963,633.98	699	0.348	115	TRUE	197.445	140.1	383.5	J-4580I
1508	J-79	25,046.68	5,962,853.87	700	0	115	TRUE	350	225.7	243.1	J-80
1510	J-80	25,042.43	5,963,175.51	700.5	0	115	TRUE	350	178.3	200.3	J-81
1512	J-81	25,046.04	5,963,527.62	699	0	250	TRUE	329.445	140.1	177.5	J-88 (Rec Center)
1514	J-82	24,960.02	5,964,132.73	698.2	0	115	TRUE	183.346	140	179.2	J-N1244E
1521	J-83	26,363.57	5,963,530.33	700	0	250	TRUE	274.272	149.1	140	J-84 (Sturgeon Office)
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0.44	250	TRUE	273.937	140	150.7	J-83
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.588	250	TRUE	282.216	140	154.9	J-84 (Sturgeon Office)
1550	J-92	25,818.46	5,963,541.11	700	0	250	TRUE	275.95	140	163.3	J-84 (Sturgeon Office)
1557	J-94	23,168.88	5,964,201.54	698.35	0.084	115	TRUE	336.869	140.1	141.7	J-175
1563	J-97	23,572.11	5,964,208.92	698.89	0.158	115	TRUE	346.072	140	159.7	J-17
1567	J-99	24,962.99	5,962,995.96	699.25	0.244	115	TRUE	150.426	140	222.2	J-50
1569	J-100	24,962.35	5,962,910.88	699	0.162	115	TRUE	143.65	140	226.9	J-58
1571	J-101	24,843.21	5,962,526.29	698.5	0.562	115	TRUE	232.458	140	414.2	J-N1030E
1601	J-113	23,034.88	5,962,417.94	700.25	0.782	115	TRUE	216.922	140	274.9	J-3880F
1603	J-114	23,096.04	5,962,483.59	700.27	0	115	TRUE	241.605	140	140.2	J-123
1606	J-115	22,877.49	5,962,538.98	700.76	0.782	115	TRUE	234.086	140	214.2	J-121
1609	J-116	22,980.29	5,962,035.89	700.36	0.08	115	TRUE	256.512	145.4	140	J-4650F
1612	J-117	22,981.58	5,962,130.00	700.07	0.08	115	TRUE	230.959	140	159	J-184
1613	J-118	23,116.29	5,962,177.05	700.4	0.072	115	TRUE	232.137	140	185.4	J-184
1614	J-119	23,064.08	5,962,037.98	700.61	0.142	115	TRUE	264.333	142.9	140	J-120
1617	J-120	23,062.79	5,961,949.52	700.91	0.782	115	TRUE	192.453	140	298.4	J-4650F
1622	J-121	22,967.10	5,962,525.57	699.88	0.782	115	TRUE	252.546	140	158.3	J-115
1625	J-122	22,927.50	5,962,396.04	700.53	0.782	115	TRUE	270.087	140.4	140	J-3880F
1629	J-123	23,125.71	5,962,499.02	700.25	0.782	115	TRUE	213.558	140	212.2	J-114
1641	J-128	23,107.26	5,961,523.64	699.75	0.36	250	FALSE	233.817	140	216.1	J-145
1644	J-129	22,662.34	5,963,932.49	700.13	0.222	115	TRUE	204.978	140	180.7	J-5
1651	J-131	24,486.06	5,962,060.83	699.27	2.74	115	TRUE	255.324	140	193.8	J-156
1654	J-132	24,968.91	5,961,951.84	699.38	2.74	115	TRUE	207.842	140.1	228.7	J-153
1657	J-133	24,401.29	5,962,107.21	700.25	1.57	115	TRUE	231.364	140	195.4	J-151
1678	J-136	23,661.31	5,960,941.42	698.75	0.208	250	TRUE	255.02	140	151.8	J-4460I

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1681	J-137	23,388.97	5,962,746.95	700.04	0	250	TRUE	350	252.7	278.3	J-N2150E
1684	J-138	22,557.14	5,963,245.10	700.93	0	115	TRUE	336.311	140	143.7	J-N4070E
1687	J-139	22,761.26	5,963,186.30	702.75	0	250	TRUE	287.404	140	199.8	J-N4420E
1701	J-140	23,586.96	5,963,525.74	698.45	0.096	115	TRUE	344.508	140	187.4	J-N3150E
1704	J-141	23,239.49	5,963,413.52	699.38	0.536	115	TRUE	350	274	282.7	J-139
1711	J-143	23,345.33	5,961,555.68	699	0	250	TRUE	274.643	140.1	140.1	J-S2051E
1714	J-144	23,225.95	5,961,556.04	699	0	115	TRUE	266.526	140	147.2	J-128
1716	J-145	23,170.80	5,961,583.05	699.59	0	115	TRUE	262.266	141.7	140.1	J-128
1722	J-146	24,277.82	5,962,502.87	698.64	0	115	TRUE	235.397	140	173.5	J-147
1725	J-147	24,223.72	5,962,367.72	698.57	0	115	TRUE	235.972	140	171.6	J-146
1729	J-148	24,298.95	5,962,314.98	698.75	0	115	TRUE	254.033	140	148.3	J-3780F
1732	J-149	24,416.81	5,962,303.73	698.9	0	115	TRUE	284.931	140	155.8	J-151
1735	J-150	24,475.11	5,962,227.73	699.07	0	115	TRUE	289.62	140	140.3	J-133
1738	J-151	24,314.17	5,962,158.57	699.57	0	115	TRUE	230.513	140	192.4	J-133
1742	J-152	24,851.03	5,962,145.44	699.48	0	115	TRUE	265.012	140	169.2	J-153
1745	J-153	24,970.64	5,962,052.96	699.41	0	115	TRUE	230.02	140	159.4	J-132
1752	J-155	24,616.38	5,962,095.62	699.27	0	115	TRUE	243.723	140	198.1	J-153
1757	J-156	24,560.35	5,962,018.25	699.29	0	115	TRUE	251.265	140	179.8	J-155
1786	J-165	23,502.59	5,964,204.60	699.08	0.256	115	TRUE	324.938	140.1	213.8	J-182
1789	J-166	23,315.10	5,964,203.31	698.91	0.084	115	TRUE	350	151.4	156.4	J-170
1792	J-167	23,168.27	5,964,090.48	698.75	0.084	115	TRUE	350	201.6	208.9	J-175
1795	J-168	23,313.56	5,964,092.80	698.77	0.084	115	TRUE	319.495	140.1	239.6	J-172
1798	J-169	23,315.88	5,964,279.82	698.79	0.084	115	TRUE	287.685	141.9	140	J-170
1800	J-170	23,364.57	5,964,279.82	698.98	0.084	115	TRUE	237.575	140	269.2	J-169
1802	J-171	23,243.23	5,964,202.54	698.64	0.084	115	TRUE	343.959	140	176.9	J-175
1805	J-172	23,244.78	5,964,090.48	698.87	0.084	115	TRUE	345.195	140	168.3	J-168
1809	J-173	23,069.34	5,964,200.99	699.45	0.084	115	TRUE	269.656	140	142.1	J-176
1811	J-174	22,976.60	5,964,200.99	699.89	0.084	115	TRUE	256.309	140	155.2	J-175
1813	J-175	22,976.60	5,964,112.89	700.15	0.084	115	TRUE	235.041	140	193.8	J-176
1815	J-176	23,070.12	5,964,112.12	699.74	0.084	115	TRUE	237.638	140	181.1	J-175
1819	J-178	22,974.67	5,964,279.75	700.05	0.084	115	TRUE	242.86	140	181.1	J-179
1822	J-179	23,044.05	5,964,278.86	699.77	0.084	115	TRUE	239.318	140	192	J-178
1825	J-180	23,130.99	5,964,278.86	699.49	0.084	115	TRUE	241.99	140	190.4	J-179
1828	J-181	23,217.93	5,964,279.83	699.24	0.084	115	TRUE	253.849	140	178.5	J-180
1832	J-182	23,439.83	5,964,204.12	699.15	0	115	TRUE	330.519	140.1	196.3	J-165
1835	J-183	24,885.31	5,963,455.51	698.5	0	115	TRUE	300.396	140.2	169.8	J-N1430E
1838	J-184	23,025.30	5,962,131.36	700.17	0.15	115	TRUE	226.672	140	173.8	J-117
1841	J-185	23,215.32	5,962,120.15	701.11	0.246	115	TRUE	292.727	140	141.9	J-4650F

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-9.513	0.13	0.02	0.134
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-10.209	0.21	0.04	0.371
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-10.399	0.21	0.03	0.383
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-10.667	0.22	0.08	0.402
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-10.885	0.22	0.07	0.418
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	12.145	0.25	0.08	0.512
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	11.985	0.24	0.07	0.499
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	5.574	0.11	0.02	0.121
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	5.396	0.11	0.02	0.114
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	5.216	0.11	0.02	0.107
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	2.608	0.04	0	0.012
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	2.434	0.03	0	0.011
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	2.272	0.03	0	0.009
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	-2.873	0.06	0.01	0.035
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	-2.667	0.05	0	0.031
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-5.985	0.12	0.02	0.138
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-6.219	0.13	0.02	0.148
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-37.524	0.76	0.58	4.133
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	3.803	0.05	0	0.02
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	-1.628	0.02	0	0.004
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-5.993	0.08	0.01	0.057
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-6.223	0.09	0	0.061
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.084	0	0	0.001
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-6.383	0.09	0.01	0.064
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-6.541	0.09	0.01	0.067
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-7.731	0.11	0.01	0.091
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.995	0.06	0.01	0.063
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-1.087	0.06	0.01	0.073
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-1.187	0.07	0.01	0.087
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	6.836	0.1	0.01	0.073
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-8.253	0.12	0.01	0.103
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-12.536	0.18	0.05	0.223
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-16.744	0.24	0.05	0.381
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-5.092	0.16	0.02	0.258
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-0.95	0.03	0	0.012
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	4.051	0.13	0.02	0.202
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.192	0.01	0	0.002
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.731	0.04	0.01	0.035
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	1.27	0.07	0.01	0.099
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.65	0.04	0	0.028
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.772	0.04	0.01	0.039
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	3.813	0.12	0	0.179
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.65	0.1	0.01	0.16
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	2.109	0.07	0	0.06
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.13	0.01	0	0.001
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.892	0.05	0.01	0.052
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.632	0.04	0	0.027
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.754	0.04	0	0.038
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.359	0.02	0	0.009
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.643	0.04	0	0.028
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	1.623	0.05	0	0.037
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-2.573	0.08	0.01	0.087
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-12.849	0.18	0.02	0.233
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-9.652	0.14	0.02	0.137
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	37.726	0.53	0.53	1.718
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	37.726	0.53	0.84	1.717
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	-0.159	0.01	0	0.002
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-1.381	0.08	0.01	0.115
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.527	0.09	0.01	0.139
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.639	0.09	0.02	0.158
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	5.492	0.18	0.04	0.354
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	2.066	0.07	0.01	0.058
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.1	0.01	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	0.886	0.03	0	0.012
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-1.686	0.05	0	0.039
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-1.808	0.06	0.01	0.045
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-1.9	0.06	0	0.049
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	2.518	0.08	0	0.084
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.188	0.04	0	0.02
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.13	0.01	0	0.002
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	1.058	0.03	0	0.017
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.341	0.01	0	0.002
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	1.268	0.04	0	0.023
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.099	0	0	0
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-0.211	0.01	0	0.001

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-0.333	0.01	0	0.002
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-0.433	0.01	0	0.003
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.192	0.04	0	0.02
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	0.696	0.02	0	0.008
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	0.584	0.02	0	0.006
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.289	0.01	0	0.002
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.389	0.01	0	0.002
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.062	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-1.283	0.04	0	0.024
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	0.819	0.03	0	0.01
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	1.343	0.02	0	0.004
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	1.343	0.02	0	0.003
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-2.761	0.04	0	0.013
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-2.761	0.04	0	0.014
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-2.761	0.04	0	0.013
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	-0.903	0.03	0	0.013
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	-0.545	0.02	0	0.005
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.092	0.01	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.683	0.02	0	0.008
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.42	0.01	0	0.003
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.642	0.02	0	0.006
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.75	0.02	0	0.009
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.812	0.03	0	0.01
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.934	0.03	0	0.013
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.13	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.062	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-7.261	0.1	0.01	0.082
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-7.261	0.1	0.01	0.081
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-7.361	0.1	0.01	0.083
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	4.1	0.08	0.01	0.069
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	4.1	0.08	0.01	0.068
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	4.1	0.08	0.01	0.068
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-3.206	0.07	0.01	0.044
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-6.722	0.14	0.01	0.171
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-1.208	0.07	0.01	0.089
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-2.985	0.1	0.01	0.115
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-3.849	0.08	0	0.061
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-3.949	0.08	0.01	0.064
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-4.061	0.08	0.01	0.068
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-4.161	0.08	0.01	0.07
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.09	0.06	0.01	0.074
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.96	0.06	0.01	0.058
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.688	0.04	0	0.031
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.512	0.03	0	0.019
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.4	0.02	0	0.011
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-1.793	0.06	0.01	0.044
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-1.73	0.06	0.01	0.042
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.51	0.05	0	0.033
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.494	0.03	0	0.017
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.198	0.01	0	0.003
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	0.03	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.166	0.01	0	0.003
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-0.819	0.02	0	0.003
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-3.094	0.06	0	0.041
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	2.174	0.07	0.01	0.064
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.771	0.04	0.01	0.039
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.909	0.05	0.01	0.053
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.916	0.03	0	0.012
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.007	0	0	0
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-0.417	0.02	0	0.012
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.406	0.02	0	0.01
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-0.865	0.03	0	0.009
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-3.238	0.19	0	0.558
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-2.891	0.09	0.01	0.107
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.459	0.03	0	0.015
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-2.071	0.07	0	0.058
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-0.551	0.03	0	0.02
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-1.11	0.06	0	0.073
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-1.37	0.04	0	0.027
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	0.26	0.01	0	0.005
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.637	0.04	0	0.027
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.02	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	3.487	0.05	0	0.018
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-2.145	0.03	0	0.022

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-2.373	0.03	0	0.01
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	0.724	0.04	0	0.035
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.309	0.02	0	0.007
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.555	0.03	0	0.021
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.371	0.02	0	0.01
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-5.542	0.08	0	0.049
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.635	0.04	0	0.027
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.101	0.01	0	0
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-0.875	0.01	0	0.004
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	3.738	0.08	0	0.055
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-5.333	0.08	0	0.046
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	-0.078	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.101	0.01	0	0
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.123	0.01	0	0.001
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	0.428	0.02	0	0.013
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.579	0.03	0	0.024
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.579	0.03	0	0.023
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	0.291	0.02	0	0.007
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.062	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.838	0.05	0.01	0.046
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.239	0.01	0	0.005
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.615	0.04	0	0.025
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-5.173	0.07	0	0.044
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.112	0.01	0	0.002
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-5.431	0.08	0.01	0.047
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.965	0.06	0.01	0.059
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	1.319	0.08	0	0.109
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-4.606	0.07	0	0.035
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-4.682	0.07	0	0.036
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-5.197	0.07	0.01	0.044
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	0.582	0.03	0	0.023
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	-0.083	0	0	0.001
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.452	0.03	0	0.014
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.579	0.03	0	0.023
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-3.186	0.06	0.01	0.043
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	-0.356	0.02	0	0.009
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-1.729	0.06	0	0.042
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-0.836	0.03	0	0.011
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	0.742	0.01	0	0.001
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	1	0.01	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	-0.893	0.05	0	0.051
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	-0.258	0	0	0.001
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	-0.706	0.01	0	0.001
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	-1.049	0.01	0	0.002
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	2.731	0.04	0	0.013
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.932	0.05	0	0.055
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	-1.524	0.02	0	0.005
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.475	0.03	0	0.019
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	0.437	0.03	0	0.012
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	0.059	0	0	0
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.344	0.02	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	0.403	0.02	0	0.013
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.025	0	0	0
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.448	0.03	0	0.016
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	0.423	0.02	0	0.012
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.107	0.01	0	0.001
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	0.302	0.02	0	0.007
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	0.18	0.01	0	0.002
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.316	0.02	0	0.007
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	0.374	0.02	0	0.011
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.418	0.02	0	0.013
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.662	0.04	0	0.029
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-1.29	0.04	0	0.024
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	1.951	0.11	0.01	0.219
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-3.433	0.07	0.01	0.049
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	0.149	0	0	0
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.88	0.05	0.01	0.05
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	0.535	0.02	0	0.004
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	0.473	0.02	0	0.003
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	1.362	0.08	0.01	0.112
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.482	0.03	0	0.017
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.674	0.04	0	0.03
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-1.237	0.07	0	0.093
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-3.653	0.07	0.01	0.055
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.287	0.02	0	0.006

Interim Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-1.373	0.08	0	0.116
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.966	0.06	0.01	0.059
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	1.833	0.04	0	0.011
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.497	0.03	0	0.017
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.563	0.03	0	0.021
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.089	0	0	0
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-0.171	0.01	0	0.003
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.513	0.03	0	0.018
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-2.077	0.04	0	0.019
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.198	0	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	2.135	0.03	0	0.008
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-1.904	0.03	0	0.007
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-2.162	0.03	0	0.008
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-1.484	0.03	0	0.011
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.239	0.01	0	0.001
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.239	0.01	0	0.004
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.351	0.02	0	0.009
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.815	0.01	0	0.001
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-1.076	0.02	0	0.002
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.062	0	0	0.001
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-2.534	0.04	0	0.011
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.146	0	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.214	0.01	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-3.04	0.04	0	0.016
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	0.038	0	0	0
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.062	0	0	0
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.184	0.01	0	0.003
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.33	0.02	0	0.008
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.43	0.01	0	0.002
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	3.19	0.05	0	0.018
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-3.75	0.05	0	0.024
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.325	0.02	0	0.008
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.437	0.03	0	0.014
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.575	0.03	0	0.022
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-5.075	0.07	0.01	0.042
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.126	0.01	0	0.001
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.407	0.02	0	0.012
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	4.384	0.06	0	0.032
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	3.517	0.05	0	0.021
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.268	0.01	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.507	0.03	0	0.018
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-2.213	0.07	0.01	0.065
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.777	0.06	0	0.043
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-1.023	0.06	0.01	0.067
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.207	0.07	0.01	0.089
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-1.917	0.06	0.01	0.05
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-1.979	0.06	0	0.054
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	0.361	0.01	0	0.002
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.876	0.05	0	0.049
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.873	0.05	0.01	0.049
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.497	0.03	0	0.017
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-10.126	0.14	0.01	0.15
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-10.164	0.14	0.02	0.152
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-11.461	0.16	0.01	0.189
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-11.461	0.16	0.01	0.189
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	0.77	0.02	0	0.01
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.543	0.02	0	0.006
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.467	0.01	0	0.003
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-2.164	0.07	0	0.064
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-2.164	0.07	0	0.064
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	1.016	0.03	0	0.016
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	3.335	0.11	0	0.14
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	3.235	0.1	0.01	0.132
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	1.131	0.04	0	0.019
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	1.039	0.03	0	0.016
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-2.134	0.07	0	0.061
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-3.332	0.11	0.01	0.14
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.637	0.04	0	0.027
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.545	0.03	0	0.021
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.438	0.03	0	0.014
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.613	0.04	0	0.027
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.675	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	2.341	0.03	0	0.009
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	2.135	0.03	0	0.009

Interim Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.059	0	0	0.001
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.005	0	0	0
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	0.024	0	0	0.002
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	0.024	0	0	0
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	4.266	0.14	0.02	0.186
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	4.142	0.13	0	0.177
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.062	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-1.874	0.11	0.01	0.203
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-2.004	0.06	0	0.055
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-3.35	0.11	0.01	0.119
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-3.518	0.11	0.02	0.13
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	-0.414	0.01	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	-0.836	0.03	0	0.014
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.363	0.03	0	0.008
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	0.995	0.03	0	0.012
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-2.442	0.05	0	0.026
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	4.1	0.08	0.01	0.068
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-0.755	0.02	0	0.002
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-4.855	0.1	0.02	0.094
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	3.21	0.07	0	0.044
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	37.726	0.53	0.25	1.718
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	37.616	0.77	0.17	4.152
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.513	0.03	0	0.019
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.567	0.03	0	0.018
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-0.578	0.02	0	0.005
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-0.724	0.02	0	0.008
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.092	0.01	0	0.002
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.054	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-1.343	0.04	0	0.026
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-1.397	0.04	0	0.028
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	3.961	0.06	0	0.026
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	6.204	0.09	0	0.061
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	6.05	0.09	0	0.058
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	2.237	0.03	0	0.009
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.664	0.02	0	0.007
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.572	0.02	0	0.006
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.848	0.02	0	0.003
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.772	0.02	0	0.003
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	0.688	0.02	0	0.007
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	0.604	0.02	0	0.007
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	0.604	0.02	0	0.005
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	0.528	0.02	0	0.005
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-3.375	0.05	0	0.02
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-3.809	0.05	0	0.025
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-1.461	0.02	0	0.004
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.388	0.01	0	0.001
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	3.791	0.05	0	0.024
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	3.457	0.05	0	0.021
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.016	0.01	0	0.003
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.016	0.01	0	0.002
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-2.425	0.08	0	0.078
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	0	0	0	0
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	0	0	0	0
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-1.068	0.03	0	0.017
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-1.19	0.04	0	0.022
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-1.282	0.04	0	0.024
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	1.561	0.05	0	0.034
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	1.469	0.05	0	0.031
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-2.897	0.06	0	0.036
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-2.425	0.08	0	0.078
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	2.446	0.03	0	0.011
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-0.558	0.01	0	0
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	3.005	0.06	0.01	0.038
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	3.005	0.06	0.01	0.038
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	2.897	0.06	0	0.036
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	1.297	0.02	0	0.003
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-2.699	0.04	0	0.013
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	3.935	0.08	0.01	0.063
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	3.701	0.08	0.01	0.057
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	2.941	0.06	0	0.037
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	2.879	0.06	0	0.036
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	1.989	0.04	0	0.019
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	0.844	0.03	0	0.011
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	0.722	0.02	0	0.008
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	0.638	0.02	0	0.007

Interim Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	0.638	0.02	0	0.007
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	-1.913	0.04	0	0.016
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.122	0	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-1.858	0.06	0	0.047
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-1.996	0.06	0.01	0.054
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.062	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-2.108	0.07	0	0.051
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-2.108	0.07	0	0.05
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-2.238	0.07	0.01	0.057
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.21	0.01	0	0
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.578	0.02	0	0.004
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-2.208	0.07	0	0.054
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-4.427	0.14	0.02	0.2
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	2.001	0.04	0	0.015
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	-2.973	0.06	0.01	0.038
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	-2.531	0.05	0	0.03
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-12.92	0.18	0.01	0.237
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-14.63	0.21	0.02	0.297
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	2.083	0.04	0	0.017
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	1.769	0.04	0	0.012
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	2.551	0.05	0	0.024
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-1.229	0.03	0	0.006
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-1.537	0.03	0	0.01
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	3.626	0.07	0	0.046
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	2.05	0.03	0	0.007
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	0.642	0.01	0	0.002
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	0.215	0.01	0	0.001
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.547	0.03	0	0.01
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	0.334	0.01	0	0.001
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	1.395	0.02	0	0.003
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	1.666	0.02	0	0.004
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	1.345	0.02	0	0.003
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	0.186	0.01	0	0
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-7.606	0.24	0.07	0.455
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	-0.295	0	0	0
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	15.418	0.22	0.01	0.274
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-3.803	0.05	0	0.02
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	3.344	0.05	0	0.013
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-0.782	0.02	0	0.007
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	1.209	0.02	0	0.002
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	9.905	0.14	0.03	0.121
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	-5.552	0.08	0.01	0.035
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	-5.552	0.08	0.01	0.042
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	14.339	0.2	0.05	0.204
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	4.998	0.16	0.02	0.209
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	3.332	0.11	0.01	0.099
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	1.666	0.05	0	0.027
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	1.669	0.03	0	0.009
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	14.339	0.2	0.08	0.24
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	12.897	0.18	0.06	0.197
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-3.56	0.05	0	0.018
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-3.56	0.05	0	0.018
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	6.936	0.1	0.01	0.074
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.517	0.03	0	0.018
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.517	0.03	0	0.019
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.497	0.03	0	0.017
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	3.045	0.04	0	0.014
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	1.247	0.07	0	0.085
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	5.026	0.07	0.01	0.029
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	-0.522	0.01	0	0.001
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-0.844	0.03	0	0.008
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-1.874	0.06	0	0.034
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	1.216	0.04	0	0.015
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	1.216	0.04	0	0.016
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	4.32	0.14	0.02	0.19
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-61.715	0.87	1.65	4.273
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-10.844	0.35	0.15	0.877
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-20.956	0.67	0.35	2.973
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	2.676	0.09	0.01	0.066
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-29.961	0.42	0.1	1.12
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-40.759	0.58	0.29	1.982
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-10.236	0.33	0.21	0.788
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-29.399	0.42	0.14	1.082
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-28.837	0.41	0.13	1.045
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-22.509	0.32	0.03	0.66

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-22.509	0.32	0.02	0.659
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-15.418	0.22	0.01	0.329
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-5.766	0.18	0.02	0.272
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-6.328	0.2	0.05	0.323
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.562	0.02	0	0.004
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	11.788	0.38	0.1	1.024
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	-6.664	0.09	0	0.05
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	-6.897	0.1	0.01	0.052
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-1.937	0.03	0	0.005
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	-3.726	0.05	0	0.017
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	-0.123	0	0	0
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	-1.789	0.06	0	0.031
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-14.463	0.2	0.05	0.291
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	0.642	0.02	0	0.005
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0.6	0.02	0	0.004
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	5.082	0.16	0.01	0.256
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	120	2.485	0.08	0.01	0.057
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	0.655	0.02	0	0.005
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	-0.797	0.03	0	0.007
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-2.249	0.07	0.01	0.048
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	5.752	0.08	0	0.044
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	5.474	0.08	0.01	0.035
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-4.115	0.06	0	0.024
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	-0.782	0.02	0	0.007
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-0.463	0.01	0	0.003
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.046	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	0.984	0.03	0	0.012
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	-0.044	0	0	0
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	-0.186	0.01	0	0.001
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	-0.656	0.02	0	0.006
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	-0.81	0.03	0	0.008
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-1.38	0.02	0	0.003
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-0.509	0.01	0	0.001
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	1.21	0.02	0	0.006
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.802	0.02	0	0.002
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	0.324	0.01	0	0.001
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.214	0.01	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	1.085	0.02	0	0.005
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.37	0.02	0	0.009
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.471	0.01	0	0.001
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.057	0	0	0
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	1.858	0.03	0	0.005
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	1.666	0.02	0	0.005
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	3.841	0.08	0	0.051
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	3.719	0.08	0	0.048
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	0.134	0	0	0
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	0.076	0	0	0
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.072	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.118	0	0	0
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.24	0.01	0	0.001
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	0.479	0.01	0	0.001
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.324	0.01	0	0.001
1376	P-5852	J-26	J-25	11.22	250	PVC	110	0.633	0.01	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-0.957	0.02	0	0.004
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.13	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-1.087	0.02	0	0.004
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-2.52	0.05	0	0.03
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-3.859	0.08	0	0.061
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-1.171	0.02	0	0.006
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-1.339	0.03	0	0.007
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.168	0.01	0	0.003
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.547	0.03	0	0.009
1395	P-5863	J-33	J-34	95	250	PVC	110	1.077	0.02	0	0.005
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.947	0.02	0	0.004
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.046	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.263	0.01	0	0.002
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.321	0.01	0	0.001
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.321	0.01	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.347	0.01	0	0.002
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.374	0.01	0	0.001
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.386	0.01	0	0.003
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.154	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	1.006	0.03	0	0.012
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	0.63	0.02	0	0.006
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	0.476	0.02	0	0.003

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	2.483	0.08	0.01	0.069
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.096	0.01	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	2.387	0.08	0.01	0.063
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.244	0.01	0	0.004
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	1.617	0.05	0	0.031
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	1.464	0.05	0	0.025
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	1.38	0.04	0	0.023
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-12.772	0.18	0.02	0.231
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-11.56	0.16	0.01	0.192
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.212	0.04	0	0.018
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-2.208	0.07	0	0.055
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-2.101	0.07	0	0.05
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-2.243	0.07	0	0.056
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.472	0.02	0	0.003
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.072	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.32	0.01	0	0.002
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-11.652	0.16	0.02	0.196
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-11.856	0.17	0.01	0.2
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.204	0.01	0	0.003
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-11.856	0.17	0.01	0.168
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-12.036	0.17	0.02	0.174
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.18	0.01	0	0.001
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	1.341	0.04	0	0.022
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.602	0.02	0	0.005
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.602	0.02	0	0.006
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	3.089	0.04	0	0.014
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	2.243	0.03	0	0.008
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.724	0.02	0	0.006
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	5.347	0.08	0	0.038
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.276	0.01	0	0.002
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.18	0.01	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.084	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	5.071	0.07	0	0.035
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	1.822	0.06	0	0.038
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	1.714	0.05	0	0.034
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	0.703	0.01	0	0.001
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	0.645	0.01	0	0.001
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.204	0.01	0	0
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.204	0.01	0	0.004
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-0.685	0.01	0	0.002
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-0.827	0.02	0	0.003
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	1.83	0.06	0	0.04
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	1.078	0.03	0	0.014
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.348	0.01	0	0.002
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	12.699	0.18	0.01	0.163
1511	P-5926	J-79	J-80	321.67	300	PVC	120	12.699	0.18	0.05	0.163
1513	P-5927	J-80	J-81	352.13	300	PVC	120	5.603	0.08	0.01	0.036
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.453	0.01	0	0.004
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.453	0.01	0	0.003
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-7.096	0.23	0.02	0.4
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	5.015	0.07	0	0.025
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	5.603	0.08	0.03	0.036
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	5.015	0.07	0.01	0.029
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-4.575	0.06	0.02	0.025
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-4.575	0.06	0.01	0.025
1564	P-5954	J-17	J-97	84.22	250	PVC	110	-0.239	0	0	0
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-1.08	0.02	0	0.005
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.244	0.01	0	0
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.162	0.01	0	0
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.562	0.02	0	0.004
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	12.35	0.39	0.14	1.117
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	0.782	0.02	0	0.007
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-1.348	0.04	0	0.018
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	0.487	0.02	0	0.003
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-2.346	0.03	0	0.007
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-1.989	0.03	0	0.005
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-2.913	0.04	0	0.011
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-0.437	0.01	0	0.002
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.739	0.02	0	0.006
1621	P-5988	J-119	J-120	88.63	200	PVC	120	0.782	0.02	0	0.007
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-0.295	0.01	0	0.001
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-0.566	0.02	0	0.004
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	2.562	0.04	0	0.009
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	1.269	0.02	0	0.003
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.511	0.02	0	0.003
1630	P-5994	J-114	J-123	33.43	200	PVC	120	0.782	0.02	0	0.007

**Interim Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	0.862	0.03	0	0.01
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	0.64	0.02	0	0.006
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-4.122	0.13	0.02	0.147
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	4.818	0.07	0.01	0.027
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	4.61	0.07	0.01	0.025
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	4.293	0.06	0	0.026
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	4.293	0.06	0	0.026
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-1.493	0.02	0	0.005
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	0.024	0	0	0
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-1.517	0.03	0	0.009
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-2.238	0.05	0	0.022
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-2.334	0.05	0	0.024
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-0.983	0.01	0	0.002
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-1.519	0.02	0	0.004
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	-0.348	0.01	0	0.001
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	-0.441	0.01	0	0.001
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.508	0.01	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	120	-0.949	0.02	0	0.004
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	1.309	0.03	0	0.006
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.36	0.01	0	0
1719	P-6035	J-144	J-145	61.41	250	PVC	120	-0.949	0.02	0	0.002
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-2.258	0.07	0	0.048
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-1.323	0.04	0	0.018
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-2.258	0.07	0	0.048
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-0.935	0.03	0	0.009
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-2.904	0.09	0.01	0.077
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-5.162	0.16	0.03	0.222
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-9.544	0.3	0.06	0.693
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-6.991	0.22	0.04	0.389
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-11.114	0.35	0.07	0.918
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-2.552	0.08	0.01	0.06
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-2.552	0.08	0.01	0.06
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-9.55	0.3	0.1	0.693
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-4.233	0.13	0.02	0.154
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-5.047	0.16	0.04	0.213
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-0.814	0.03	0	0.007
1755	P-6060	J-152	J-155	274.29	200	PVC	120	4.504	0.14	0.05	0.173
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-4.07	0.13	0.02	0.143
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-6.81	0.22	0.03	0.371
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-1.493	0.05	0.01	0.022
1760	P-6064	J-155	J-156	95.53	200	PVC	120	5.318	0.17	0.02	0.234
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-0.683	0.02	0	0.005
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	-1.069	0.03	0	0.012
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	0.275	0.01	0	0.001
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.209	0.01	0	0.001
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	-0.216	0.01	0	0.001
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	0.457	0.01	0	0.003
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.084	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	-0.257	0.01	0	0.001
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	-0.311	0.01	0	0.001
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	-0.018	0	0	0
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	-0.132	0	0	0
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.03	0	0	0
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.383	0.01	0	0.002
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.154	0	0	0
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	0.024	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.06	0	0	0
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.144	0	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.047	0	0	0
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	0.037	0	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	0.121	0	0	0
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	0.289	0.01	0	0.001
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	0.205	0.01	0	0.001
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-0.427	0.01	0	0.003
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-0.427	0.01	0	0.001
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	0.917	0.03	0	0.013
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	5.492	0.18	0.03	0.355
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-0.517	0.02	0	0.003
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.667	0.02	0	0.005
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-3.671	0.05	0	0.016
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-3.917	0.06	0	0.018

Appendix **E**

Ultimate Development Water Distribution System Results

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0.261	538.1	753.28
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.069	526.3	753.28
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.095	526.3	753.28
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.134	526.8	753.28
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.109	526.4	753.28
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.077	522.5	753.28
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.08	523.3	753.27
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.096	520.3	753.26
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.089	526.2	753.27
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.09	532.1	753.27
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.087	530.2	753.27
195	J-S2100E	23,886.25	5,961,252.83	699	0.081	531.2	753.28
196	J-S2080E	23,585.41	5,961,251.56	699	0.081	531.1	753.27
197	J-S2070E	23,468.77	5,961,251.56	699	0.059	531.1	753.27
198	J-S2060E	23,444.47	5,961,408.54	699	0.05	530.9	753.25
199	J-S2040E	23,441.07	5,961,591.28	699	0.068	530.7	753.23
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.054	518	753.23
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.117	520.1	753.24
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.046	520.1	753.45
203	J-S2010E	23,396.57	5,962,474.58	700	0	520.5	753.18
204	J-N4200E	23,397.75	5,962,576.48	701	0	510.6	753.17
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.036	513.5	753.17
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.115	526.3	753.17
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.038	526.3	753.18
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.042	519.4	753.18
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.023	526.3	753.18
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.056	519.5	753.18
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.05	527.3	753.18
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.05	528.4	753.19
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.046	539.2	753.2
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.05	543.2	753.2
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.065	539.8	753.2
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.05	529.4	753.19
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.061	539.4	753.21
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.079	528.9	753.25
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	530.3	753.29
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	532.6	753.32
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.046	534.6	753.32
222	J-N2255E	24,475.27	5,962,571.66	700	0.031	521.8	753.32
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.027	533.7	753.33
224	J-N2260E	24,501.40	5,962,673.31	699	0	531.5	753.3
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.023	534.6	753.23
226	J-N3301E	24,349.68	5,962,783.56	699	0.096	530.7	753.23
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.073	542.3	753.21
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.056	535.4	753.21
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.031	533.4	753.2
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.061	534.5	753.21
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.027	534.6	753.23
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	538.5	753.22
233	J-N3321E	24,349.51	5,962,866.08	700	0.065	520.9	753.22
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.174	535.5	753.21
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.069	538.3	753.2
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.05	534.4	753.2
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.061	536.4	753.21
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.061	538.4	753.21
239	J-N3350E	24,294.46	5,963,152.24	698.6	0.554	534.5	753.21
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.069	538.3	753.2
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.073	543.2	753.21
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.115	547.2	753.21
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.038	542.3	753.21
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.056	549.2	753.21
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.115	549.5	753.23
246	J-N1050E	24,728.87	5,962,855.33	698	0.33	541.4	753.32
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.079	533.8	753.35
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	525.1	753.55
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	523.4	754.78
250	J-S1010E	24,688.47	5,961,838.45	701	0	516.8	753.8
251	J-S1020E	24,215.83	5,961,901.63	700	0	524.2	753.57
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.038	552.3	753.23
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.042	553.4	753.24
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.061	533.7	753.24
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.023	547	753.19
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.073	555.9	753.2
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.056	546.3	753.21
258	J-N1420E	24,855.27	5,963,531.46	698	0	540.3	753.2
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.046	536.9	753.16

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.027	550.6	753.15
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.027	541.6	753.14
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.015	540.6	753.14
263	J-N1311E	24,830.34	5,963,795.82	698	0.05	539.6	753.14
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.027	540.6	753.14
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.061	535.7	753.14
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.046	535.8	753.15
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.031	540.5	753.13
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	538.6	753.13
269	J-N1292E	24,905.57	5,963,948.00	698	0.065	539.5	753.13
270	J-N1245E	24,928.90	5,964,040.14	697	0.031	549.3	753.13
271	J-N1244E	24,955.72	5,964,184.39	697	0.056	549.3	753.12
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.056	554.2	753.12
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.042	538.5	753.12
274	J-N1281E	24,668.79	5,963,904.06	698	0.056	539.5	753.13
275	J-N1282E	24,737.99	5,963,838.74	697	0.061	549.3	753.13
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.05	542.5	753.13
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.038	551.3	753.13
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.019	543.5	753.13
279	J-N1242E	24,655.18	5,964,247.76	698	0.056	539.4	753.12
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.027	546.3	753.12
281	J-N1272E	24,643.90	5,964,097.68	698	0.05	539.4	753.12
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.031	531.6	753.12
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.031	535.5	753.12
284	J-N1240E	24,492.27	5,964,163.87	698	0	539.4	753.11
285	J-N1220E	24,450.28	5,964,244.12	698	0.337	539.2	753.1
286	J-N1210E	24,398.26	5,964,217.60	698	0	539.2	753.1
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.023	541.3	753.1
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.031	542.3	753.11
289	J-N1170E	24,279.97	5,963,894.02	698	0	539.5	753.12
290	J-N1160E	24,301.35	5,963,782.73	698	0	539.5	753.13
291	J-N1150E	24,302.39	5,963,747.88	698	0.161	539.6	753.13
292	J-N1370E	24,390.29	5,963,759.89	698	0.031	539.6	753.13
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.023	544.5	753.13
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.046	546.4	753.13
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.046	535.7	753.13
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.023	554.3	753.13
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.031	542.5	753.13
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.015	552.3	753.13
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.065	550.3	753.13
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.031	554.3	753.13
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.046	541.5	753.13
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	546.5	753.14
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.05	544.7	753.16
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	545.8	753.17
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	541.8	753.16
306	J-N3182E	24,109.98	5,963,355.50	698	0	539.8	753.16
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	536.8	753.15
308	J-N3190E	23,838.79	5,963,334.11	699	0.032	530	753.15
309	J-N3210E	23,839.27	5,963,187.82	699	0.056	530.1	753.16
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.092	534.1	753.17
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.056	537.1	753.18
312	J-N3420E	23,966.13	5,962,983.37	698	0	540.2	753.2
313	J-N3240E	23,840.96	5,962,916.81	698	0.05	540.1	753.19
314	J-N3250E	23,877.98	5,962,777.15	698	0.056	540.2	753.2
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.05	535.4	753.2
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.065	531.1	753.17
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.073	534	753.16
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.038	524.2	753.16
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.05	516.3	753.16
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.056	514.4	753.16
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.061	531.3	753.15
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.088	530.5	753.16
323	J-N2370E	23,750.00	5,963,047.05	699	0.046	530.1	753.16
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.05	525.1	753.16
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.065	532	753.16
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.084	538.8	753.16
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.042	528.1	753.16
328	J-N3200E	23,838.64	5,963,310.50	699	0.031	530	753.15
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.023	530.9	753.15
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.027	536.7	753.14
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.069	532.9	753.15
332	J-N2350E	23,748.75	5,963,237.41	699	0	530	753.15
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.138	535.5	753.12
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.021	537.6	753.13
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.203	534.7	753.13

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	533.7	753.13
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.056	533.7	753.14
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.027	525	753.14
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.067	531.7	753.15
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.018	526	753.15
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.021	526	753.15
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	526	753.15
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.016	526.1	753.15
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.011	521.2	753.15
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	525	753.14
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.047	525	753.14
347	J-N2120E	23,392.51	5,963,312.31	699	0.045	529.8	753.13
348	J-N2121E	23,395.90	5,963,312.31	699	0	529.8	753.13
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.022	530.7	753.13
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.007	533.6	753.12
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	525.8	753.13
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	530.6	753.12
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	530.6	753.12
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.066	530.6	753.12
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.015	530.6	753.12
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.038	520.9	753.12
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	520.9	753.12
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.069	524.8	753.12
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	524.8	753.12
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.073	524.8	753.12
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.031	525.8	753.12
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.056	525	753.15
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.138	523.1	753.15
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.038	521.6	753.15
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.073	521.6	753.15
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.056	519.2	753.15
367	J-N4510E	23,116.00	5,962,864.49	700	0.042	520	753.14
368	J-N4500E	23,107.06	5,962,864.49	700	0.05	520	753.13
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.038	511.2	753.13
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.038	515.1	753.14
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.038	517.1	753.14
372	J-N4490E	23,107.28	5,962,982.98	700	0.061	519.9	753.12
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.046	518.9	753.12
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.057	526.7	753.11
375	J-N4350E	23,104.18	5,963,517.50	699	0.042	529.6	753.11
376	J-N3090E	23,166.53	5,963,519.61	699	0	529.6	753.11
377	J-N2070E	23,171.01	5,963,524.71	699	0	529.6	753.11
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	523.7	753.11
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	531.6	753.11
380	J-N2050E	23,164.50	5,963,745.83	699	0	529.6	753.11
381	J-N2040E	23,164.50	5,963,849.54	699	0	529.6	753.11
382	J-N2020E	23,168.07	5,964,021.69	699	0	529.6	753.11
383	J-N2010E	23,229.47	5,964,021.52	699	0.01	529.6	753.11
384	J-N3010E	23,161.69	5,964,008.03	699	0.454	529.6	753.11
385	J-N3030E	23,160.50	5,963,849.48	699	0.031	529.6	753.11
386	J-N3031E	23,161.50	5,963,836.74	699	0.038	529.6	753.11
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	531.5	753.11
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.056	531.5	753.11
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	523.7	753.11
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.056	523.7	753.11
391	J-N3032E	22,992.17	5,963,835.82	699	0.061	529.6	753.11
392	J-N3051E	22,992.42	5,963,732.81	700	0.061	519.8	753.11
393	J-N3071E	22,992.67	5,963,640.74	700	0.065	519.8	753.11
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	523.7	753.11
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.027	522.7	753.11
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.052	513.9	753.11
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.031	516.8	753.11
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.031	518.8	753.11
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.006	518.6	753.09
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.096	517.7	753.1
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	507.9	753.1
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.026	508	753.1
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.071	507	753.1
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	507	753.1
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.046	515	753.12
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.079	515.7	753.09
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.033	506.9	753.1
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.031	512.7	753.09
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.171	508.9	753.09
410	J-N4410E	22,639.90	5,963,300.90	701	0.04	509.9	753.1
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	514.7	753.09

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	522.5	753.08
413	J-N4010E	22,546.33	5,963,750.87	700	0.117	519.5	753.08
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.129	513.7	753.09
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	511.8	753.1
416	J-N4041E	22,443.94	5,963,514.35	701	0	509.8	753.09
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.056	505	753.09
418	J-N4043E	22,444.72	5,963,305.56	701	0.232	509.9	753.1
419	J-N4070E	22,557.86	5,963,211.47	701	0.55	509.9	753.1
420	J-N4080E	22,553.97	5,963,123.99	701.5	0.698	505	753.1
421	J-N4081E	22,468.80	5,963,123.50	701	0	509.9	753.1
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.073	501.1	753.11
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.073	503.1	753.11
424	J-N4092E	22,681.89	5,962,970.03	702	0.107	500.2	753.11
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.056	499.2	753.11
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.05	505.1	753.11
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.061	503.1	753.11
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.027	499.2	753.11
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.05	495.3	753.11
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.065	493.4	753.11
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.046	501.2	753.11
432	J-N4121E	22,725.05	5,962,737.13	701	0.056	510.1	753.12
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.069	513	753.12
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.019	512.1	753.12
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.008	511.1	753.12
436	J-N4431E	22,871.76	5,963,060.11	701	0.05	510	753.11
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.046	507.1	753.12
438	J-N4131E	22,739.70	5,962,940.69	702	0.134	500.3	753.12
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.092	533.4	753.21
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.031	528.7	753.22
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.019	547.3	753.19
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	545.9	753.18
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.023	535.5	753.12
444	J-N1246E	24,900.57	5,964,065.27	697	0.038	549.3	753.12
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	542.6	753.14
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.056	546.6	753.15
447	J-N1400E	24,827.83	5,963,657.23	698	0.05	539.8	753.16
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.046	554.3	753.24
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.065	553.4	753.24
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.046	515.1	753.13
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.031	511.1	753.12
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.103	514.7	753.09
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.027	517.9	753.12
454	J-N3020E	23,160.99	5,963,967.57	699	0	529.6	753.11
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.031	532.6	753.32
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.065	552.9	753.24
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.084	540.1	753.26
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.061	535.5	753.27
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.211	535.5	753.12
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.02	535.5	753.12
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.184	534.5	753.12
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	532.6	753.12
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.054	534.6	753.12
464	J-N3160E	23,825.34	5,963,511.25	699	0.039	529.7	753.12
465	J-N3170E	23,903.33	5,963,511.58	699	0.084	529.7	753.12
466	J-N3180E	23,907.72	5,963,334.91	699	0	529.9	753.15
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	516.9	753.22
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.055	520.6	753.49
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.027	526	753.15
470	J-N1250E	24,499.78	5,964,149.64	698	0.027	539.4	753.11
471	J-N1251E	24,455.84	5,964,129.52	698	0.046	539.4	753.11
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.027	545.2	753.1
473	J-N1230E	24,475.43	5,964,196.22	698	0	539.3	753.1
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	539.6	753.28
475	J-S2140E	24,039.65	5,960,875.68	698	0.077	541	753.28
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	538.1	753.28
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.061	534.9	753.28
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.056	523.9	753.28
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.046	536.1	753.28
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.056	539.6	753.28
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.038	536.1	753.28
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.042	536.1	753.28
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.042	536.1	753.28
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	536.1	753.28
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.038	536.1	753.28
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.056	535.2	753.28
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.023	536.1	753.28

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.038	534.2	753.28
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.167	536.2	753.28
490	J-S2220E	24,180.05	5,960,467.40	698.65	0.523	534.7	753.28
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	536.2	753.28
492	J-S2240E	24,158.72	5,960,383.61	698.5	0.508	536.2	753.28
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	538.6	753.28
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	526.4	753.28
495	J-S2195E	23,781.62	5,960,412.85	698	0	541	753.28
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	536.1	753.28
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.056	529.2	753.28
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.061	527.7	753.28
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.046	520.9	753.28
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.027	525.3	753.28
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.046	528.3	753.28
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	538.1	753.28
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	526.3	753.28
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	538.1	753.28
505	J-S1110E	24,033.48	5,960,926.97	698	0.054	541	753.28
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.03	541.3	753.11
507	J-N1600E	24,201.37	5,964,131.25	698	0.056	539.3	753.1
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.065	532	753.1
509	J-N1620E	24,074.31	5,964,072.83	699	0.031	529.5	753.11
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.023	524.7	753.11
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.038	524.7	753.11
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.061	527.1	753.11
513	J-N1632E	24,036.37	5,963,917.92	700	0.042	519.8	753.11
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	524.7	753.11
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	532	753.11
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.061	534.4	753.1
517	J-N1060E	24,577.21	5,963,109.12	697	0	550.6	753.26
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.069	543.3	753.26
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.056	548.2	753.27
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.046	495.3	753.11
521	J-N4082E	22,469.20	5,963,082.83	701	0.031	509.9	753.1
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	548.7	753.27
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.065	548.7	753.27
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.09	546.8	753.27
526	J-N1471E	24,945.50	5,963,280.47	699	0.289	531.2	753.27
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	534.1	753.28
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.093	537.2	753.29
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.145	515.9	753.22
530	J-S2050E	23,441.95	5,961,556.46	699	0	530.7	753.23
531	J-S2051E	23,344.97	5,961,508.86	699	0.244	530.7	753.23
532	J-N1065E	24,522.60	5,963,163.07	697	0.855	550.4	753.24
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.157	515.7	753.09
536	J-N3412E	22,763.88	5,963,654.13	700.4	0.63	515.6	753.09
537	J-3550I	23,858.78	5,963,861.50	697.8	0.077	541.3	753.11
538	J-3560I	23,895.14	5,963,776.63	698.8	0.077	531.6	753.12
539	J-3570I	23,930.36	5,963,667.29	699	0.077	529.7	753.12
540	J-3580I	23,794.98	5,963,838.03	698	0.065	539.4	753.11
541	J-3590F	23,690.63	5,963,983.45	697.5	0.061	544.2	753.11
542	J-3600I	23,601.86	5,963,939.64	698.3	0.096	536.4	753.11
543	J-3610I	23,453.97	5,963,928.59	699	0.132	529.6	753.11
544	J-3620F	23,389.20	5,964,002.63	699.6	0	523.7	753.11
545	J-3630F	23,386.73	5,964,534.76	699.3	0	526.2	753.07
548	J-3660F	23,675.98	5,964,023.67	697	0	549.1	753.11
549	J-3670I	23,876.32	5,964,331.38	698.5	0.167	534	753.07
551	J-3690I	22,621.02	5,963,751.20	699.5	0	524.4	753.08
552	J-3700I	24,251.71	5,960,551.59	700	0.833	521.5	753.29
553	J-3710F	24,340.82	5,960,450.73	699.3	0.833	528.4	753.29
554	J-3720F	24,635.10	5,960,417.31	700	1.081	521.6	753.3
555	J-3730F	24,841.29	5,960,613.84	700	1.081	521.7	753.31
556	J-3740I	24,235.46	5,960,911.51	700	0	521.5	753.29
557	J-3750I	24,202.10	5,960,810.43	700	0	521.5	753.29
558	J-3760F	24,126.63	5,962,599.83	698.5	0.515	536.5	753.32
559	J-3770F	24,004.27	5,962,385.31	698.5	0.515	536.5	753.32
560	J-3780F	24,246.39	5,962,223.62	698.8	0.515	533.7	753.33
561	J-3790F	24,549.31	5,962,206.03	699.2	0.281	531.2	753.47
562	J-3800F	24,678.90	5,962,287.47	699.5	0.281	528.6	753.51
563	J-3830F	24,662.04	5,962,661.31	699	0.023	531.6	753.32
564	J-3840F	24,769.05	5,962,856.55	698	0	541.5	753.33
565	J-S2011E	23,398.12	5,962,393.08	701	0.175	510.8	753.19
566	J-3860F	23,130.75	5,962,367.08	699.08	0.391	529.5	753.18
567	J-3870F	23,015.45	5,962,359.04	700	0	520.5	753.18
568	J-3880F	22,846.82	5,962,430.77	700.62	0.391	514.4	753.18
569	J-3890F	22,639.84	5,962,359.14	701.3	0.383	507.8	753.18

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
570	J-3900F	22,622.23	5,962,207.13	700.81	0.383	512.6	753.18
571	J-3910F	22,487.33	5,962,190.14	701.21	0.383	508.6	753.18
572	J-3920F	22,674.53	5,962,101.60	701.18	0.383	509	753.19
573	J-3930F	22,751.35	5,962,203.42	702	0.383	500.9	753.18
574	J-3940F	22,850.61	5,962,219.38	700.12	0.391	519.4	753.19
575	J-3950F	22,898.73	5,962,037.18	700.62	0.391	514.5	753.19
576	J-S2012E	23,398.36	5,962,126.10	701	0.043	510.9	753.2
579	J-3990F	22,432.04	5,962,601.16	701.5	0.383	505.8	753.18
580	J-4000F	22,549.18	5,962,091.02	701.54	0.383	505.4	753.18
581	J-4010F	24,264.46	5,961,085.30	701.5	0	506.8	753.29
582	J-4020F	24,634.53	5,961,745.07	702	2.789	505.8	753.68
583	J-4030F	24,830.67	5,961,610.65	700	2.789	524.5	753.59
584	J-4040F	24,777.43	5,961,073.31	700	0	523.1	753.44
585	J-4050F	24,112.80	5,962,004.38	699	0.376	530.8	753.23
586	J-4060F	24,028.16	5,962,018.57	699.1	0	529.8	753.24
587	J-4070F	23,727.02	5,960,648.81	699	0.231	531.2	753.28
588	J-4080I	23,485.64	5,960,871.34	699	0.104	531.2	753.27
589	J-4090F	24,708.86	5,960,464.59	699.3	1.081	528.5	753.3
590	J-4100F	24,823.61	5,960,719.64	699.3	1.081	528.7	753.32
591	J-4110F	24,732.87	5,960,799.83	699.8	0	523.9	753.33
592	J-4120F	24,777.30	5,961,013.98	700.1	1.081	521.7	753.41
593	J-4130F	24,602.56	5,960,886.16	700	0	521.8	753.31
594	J-4140F	24,447.99	5,960,902.33	701	0.833	511.9	753.3
595	J-4150F	24,447.17	5,960,816.61	702	0.833	502.1	753.3
596	J-4160F	24,443.99	5,960,698.17	700	0.833	521.6	753.3
597	J-4170F	24,566.08	5,960,649.02	700	0.833	521.6	753.3
598	J-4180F	24,721.57	5,960,692.43	699.3	1.081	528.5	753.3
599	J-4190F	24,661.24	5,960,753.91	699.8	1.081	523.7	753.31
600	J-4200F	24,953.35	5,960,370.98	700	1.081	521.7	753.3
601	J-4210I	22,986.05	5,961,831.40	699.7	0.186	523.7	753.21
602	J-4220I	23,168.73	5,961,753.64	699.3	0.18	527.6	753.21
603	J-4230F	24,473.81	5,961,374.92	701	2.789	514.2	753.54
604	J-4240F	23,772.01	5,962,249.34	699.3	0.376	527.6	753.21
605	J-4250F	23,717.61	5,962,073.19	699.3	0.721	527.6	753.21
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	525	753.15
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	525	753.15
609	J-4290I	23,058.22	5,961,598.95	699	0.186	530.5	753.21
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	526.1	753.15
611	J-4310F	22,779.97	5,964,010.72	699.5	0.474	524.3	753.07
612	J-3775F	24,129.33	5,962,308.95	698.5	0.515	536.6	753.32
613	J-3755F	24,211.83	5,962,601.84	698.5	0	536.5	753.32
614	J-3785F	24,389.79	5,962,392.01	698.7	0.031	534.9	753.35
615	J-N1023E	24,962.79	5,962,291.29	699	0	536.3	753.8
616	J-3805F	24,846.93	5,962,284.57	699.5	0.281	529.5	753.6
617	J-3804F	24,683.36	5,962,433.13	699.4	0.281	529.4	753.5
618	J-N1025E	24,955.73	5,962,436.30	699	0.281	534.6	753.62
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	528.1	753.46
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	537.1	753.38
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	537	753.37
622	J-3810F	24,808.50	5,962,854.71	698.5	0	536.7	753.33
623	J-3815F	24,803.86	5,962,773.23	699	0.281	531.9	753.35
624	J-3820F	24,781.43	5,962,653.26	699.5	0.281	528.1	753.46
625	J-3825F	24,683.97	5,962,561.99	701	0.281	512.8	753.4
626	J-4430I	24,354.53	5,960,883.84	700.5	0.178	516.7	753.29
627	J-4440I	24,201.33	5,960,696.57	699.5	0	526.4	753.29
628	J-4450I	24,358.13	5,960,711.56	700	0.833	521.5	753.29
629	J-4460I	23,866.43	5,960,918.16	700.5	0.09	516.6	753.28
630	J-4470I	24,688.40	5,963,006.16	698	0.33	541.1	753.28
632	J-4490F	23,389.95	5,964,203.21	699.2	0	527.6	753.11
633	J-4500F	24,755.74	5,964,815.48	697.4	7.622	544.5	753.03
634	J-4510F	23,181.70	5,964,802.09	697.6	3.837	542.5	753.04
635	J-4520F	22,750.47	5,964,647.71	703.2	2.519	487.8	753.04
636	J-4530F	22,580.85	5,964,317.87	702.5	0	494.8	753.06
637	J-4540F	22,549.98	5,964,282.58	703.5	0	485	753.06
638	J-4550I	24,097.29	5,963,722.12	698.5	0	534.6	753.12
639	J-4560I	24,258.63	5,963,745.67	698	0	539.5	753.13
640	J-4570I	24,058.45	5,963,789.70	699.1	0.726	528.7	753.12
641	J-4580I	24,184.55	5,963,895.50	700	0.726	519.9	753.12
642	J-4590F	23,289.98	5,962,391.46	700.9	0.139	511.7	753.19
643	J-4600F	23,285.48	5,962,126.23	701.38	0.099	507.1	753.2
644	J-4610F	23,155.29	5,962,079.75	700.83	0.01	512.5	753.2
645	J-4620F	22,614.11	5,962,019.18	701	0.383	510.8	753.19
648	J-4650F	22,898.74	5,961,936.72	700.91	0.391	511.7	753.2
1317	J-2	22,730.02	5,963,753.33	700.5	0.023	514.6	753.08
1319	J-3	22,672.82	5,963,751.17	700.5	0	514.6	753.08
1323	J-4	22,621.02	5,963,836.43	700	0.061	519.5	753.08

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1325	J-5	22,727.82	5,963,998.44	700.25	0.042	516.9	753.07
1327	J-6	22,732.18	5,964,070.61	701	0.071	509.6	753.07
1329	J-7	22,731.10	5,964,172.06	700.75	0.061	512	753.07
1331	J-8	22,631.81	5,964,169.90	701.5	0.077	504.7	753.07
1333	J-9	22,551.95	5,964,168.82	701	0.285	509.6	753.07
1337	J-10	23,451.65	5,963,733.50	699	0.102	529.6	753.11
1340	J-11	23,574.41	5,963,732.15	699.25	0.102	527.1	753.11
1342	J-12	23,453.00	5,963,830.63	698.75	0.132	532	753.11
1345	J-13	23,538.85	5,963,831.54	699.25	0.107	527.1	753.11
1347	J-14	23,454.35	5,964,026.24	699.1	0.191	528.6	753.11
1349	J-15	23,467.84	5,964,093.69	699.25	0.185	527.1	753.11
1351	J-16	23,573.06	5,964,030.28	699.25	0.207	527.1	753.11
1353	J-17	23,570.36	5,964,124.71	699	0.148	529.6	753.11
1355	J-18	23,532.59	5,963,931.81	699	0.096	529.6	753.11
1358	J-19	23,754.37	5,963,918.75	698.75	0.061	532	753.11
1361	J-20	23,728.46	5,963,820.53	698.75	0.029	532	753.11
1363	J-21	23,674.50	5,963,815.14	698.75	0.061	532	753.11
1365	J-22	23,673.42	5,963,866.94	699.25	0.036	527.2	753.11
1367	J-23	23,677.74	5,963,733.12	699	0.061	529.6	753.11
1369	J-24	23,746.80	5,963,730.96	699	0.042	529.6	753.11
1371	J-25	23,809.40	5,963,732.04	699	0.077	529.6	753.11
1374	J-26	23,798.19	5,963,731.64	699	0	529.6	753.11
1377	J-27	23,775.20	5,963,641.81	699.25	0	527.2	753.12
1379	J-28	23,710.13	5,963,639.34	699.5	0.065	524.7	753.12
1381	J-29	23,844.51	5,963,643.58	699.25	0.042	527.2	753.12
1383	J-30	23,845.57	5,963,511.32	699	0	529.7	753.12
1387	J-31	23,799.25	5,963,585.59	699.75	0.084	522.3	753.12
1388	J-32	23,845.57	5,963,586.29	699.5	0	524.8	753.12
1392	J-33	23,672.77	5,964,049.27	698.75	0.042	532	753.11
1394	J-34	23,670.18	5,964,144.24	699	0.065	529.6	753.11
1396	J-35	23,671.91	5,964,234.03	698.75	0.042	532	753.11
1398	J-36	23,671.05	5,964,280.65	699	0.023	529.6	753.11
1400	J-37	23,758.25	5,964,281.52	698.75	0.029	532	753.11
1402	J-38	23,813.50	5,964,238.35	698.75	0	532	753.11
1404	J-39	23,860.99	5,964,198.64	698.5	0.013	534.5	753.11
1406	J-40	23,792.78	5,964,135.61	698.5	0.013	534.5	753.11
1408	J-41	23,757.38	5,964,171.87	699.25	0	527.1	753.11
1410	J-42	23,740.12	5,964,098.49	698.5	0.006	534.5	753.11
1414	J-43	23,980.99	5,963,768.68	699.75	0.077	522.3	753.12
1416	J-44	24,000.53	5,963,681.98	700	0.036	519.9	753.12
1419	J-45	24,049.06	5,964,265.48	698.75	0.077	531.8	753.09
1421	J-46	23,957.33	5,964,279.51	698.75	0.071	531.7	753.08
1424	J-47	24,921.74	5,963,097.95	698.75	0	533.7	753.28
1426	J-48	24,960.60	5,963,073.13	699.25	0.048	528.8	753.28
1428	J-49	24,867.78	5,963,034.28	698.75	0.027	533.7	753.28
1430	J-50	24,895.84	5,963,012.69	699	0	531.2	753.28
1432	J-51	24,805.19	5,963,090.39	698.5	0.023	536.1	753.28
1434	J-52	24,739.36	5,963,144.35	698.25	0.042	538.5	753.28
1436	J-53	24,688.64	5,963,093.63	698.25	0.084	538.5	753.28
1438	J-54	24,637.92	5,963,049.38	698.25	0	538.5	753.27
1443	J-55	24,746.03	5,963,032.58	698.5	0.071	536.1	753.28
1446	J-56	24,815.86	5,962,971.87	698.75	0.04	533.7	753.28
1448	J-57	24,793.42	5,962,913.17	699.25	0.036	528.8	753.28
1450	J-58	24,880.62	5,962,917.48	698.75	0.079	533.7	753.28
1452	J-59	24,463.42	5,962,681.55	699.25	0	529	753.3
1455	J-60	24,477.23	5,962,748.02	699	0.102	531.4	753.3
1457	J-61	24,560.98	5,962,657.37	698.5	0	536.4	753.31
1460	J-62	24,574.79	5,962,709.17	698.75	0.09	534	753.31
1464	J-64	23,859.42	5,960,815.72	699.25	0.061	528.8	753.28
1467	J-65	23,919.85	5,960,828.67	698.5	0	536.1	753.28
1469	J-66	23,954.39	5,960,863.21	699.25	0.061	528.8	753.28
1471	J-67	23,951.80	5,960,932.28	698.75	0.061	533.7	753.28
1475	J-68	24,151.23	5,960,824.36	699.5	0	526.4	753.28
1477	J-69	24,160.73	5,960,864.07	700.5	0.048	516.6	753.28
1479	J-70	24,173.68	5,960,913.28	699.75	0.048	523.9	753.28
1481	J-71	24,122.74	5,960,921.05	699.25	0.042	528.8	753.28
1485	J-73	23,863.50	5,960,738.53	699.2	0.054	529.3	753.28
1488	J-74	24,008.12	5,960,795.72	699.25	0.029	528.8	753.28
1491	J-75	23,533.91	5,963,732.98	699.5	0	524.7	753.11
1494	J-76	23,929.23	5,963,577.78	699	0.071	529.7	753.12
1497	J-77	24,049.40	5,963,701.17	699.25	0.376	527.3	753.12
1500	J-78	24,258.00	5,963,633.98	699	0.174	529.7	753.13
1508	J-79	25,046.68	5,962,853.87	700	0	522	753.34
1510	J-80	25,042.43	5,963,175.51	700.5	0	516.8	753.3
1512	J-81	25,046.04	5,963,527.62	699	0	531.4	753.3
1514	J-82	24,960.02	5,964,132.73	698.2	0	537.5	753.12

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1521	J-83	26,363.57	5,963,530.33	700	0	521.3	753.26
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0.22	511.5	753.26
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.294	521.4	753.27
1550	J-92	25,818.46	5,963,541.11	700	0	521.2	753.26
1557	J-94	23,168.88	5,964,201.54	698.35	0.042	535.9	753.11
1563	J-97	23,572.11	5,964,208.92	698.89	0.079	530.6	753.11
1567	J-99	24,962.99	5,962,995.96	699.25	0.122	528.8	753.28
1569	J-100	24,962.35	5,962,910.88	699	0.081	531.2	753.28
1571	J-101	24,843.21	5,962,526.29	698.5	0.281	538.8	753.55
1574	J-102	22,782.84	5,962,121.78	701.5	0.383	505.8	753.18
1576	J-103	22,431.06	5,962,508.05	702.17	0.383	499.2	753.18
1579	J-104	22,514.21	5,962,497.73	702.44	0.383	496.6	753.18
1581	J-105	22,558.04	5,962,294.70	701.5	0.383	505.8	753.18
1583	J-106	22,457.40	5,962,272.04	701.47	0.383	506	753.18
1587	J-107	22,605.96	5,962,570.05	701.35	0.383	507.2	753.18
1590	J-108	22,693.62	5,962,555.22	701.5	0	505.8	753.18
1592	J-109	22,786.44	5,962,537.82	700.8	0.383	512.6	753.18
1594	J-110	22,697.49	5,962,511.39	701	0.383	510.6	753.18
1596	J-111	22,779.24	5,962,426.24	700.81	0.383	512.6	753.18
1599	J-112	22,721.23	5,962,294.75	701	0.383	510.7	753.18
1601	J-113	23,034.88	5,962,417.94	700.25	0.391	518.1	753.18
1603	J-114	23,096.04	5,962,483.59	700.27	0	517.9	753.18
1606	J-115	22,877.49	5,962,538.98	700.76	0.391	513.1	753.18
1609	J-116	22,980.29	5,962,035.89	700.36	0.04	517.1	753.19
1612	J-117	22,981.58	5,962,130.00	700.07	0.04	519.9	753.19
1613	J-118	23,116.29	5,962,177.05	700.4	0.036	516.7	753.19
1614	J-119	23,064.08	5,962,037.98	700.61	0.071	514.6	753.19
1617	J-120	23,062.79	5,961,949.52	700.91	0.391	511.7	753.19
1622	J-121	22,967.10	5,962,525.57	699.88	0.391	521.7	753.18
1625	J-122	22,927.50	5,962,396.04	700.53	0.391	515.3	753.18
1629	J-123	23,125.71	5,962,499.02	700.25	0.391	518.1	753.18
1631	J-124	22,727.41	5,961,943.33	700.5	0.383	515.7	753.19
1635	J-126	22,921.36	5,961,747.94	699.46	0.186	526.1	753.21
1638	J-127	23,004.78	5,961,658.26	699.18	0.186	528.8	753.21
1641	J-128	23,107.26	5,961,523.64	699.75	0.18	523.3	753.22
1644	J-129	22,662.34	5,963,932.49	700.13	0.111	518.1	753.07
1651	J-131	24,486.06	5,962,060.83	699.27	1.37	530.7	753.49
1654	J-132	24,968.91	5,961,951.84	699.38	1.37	529.9	753.52
1657	J-133	24,401.29	5,962,107.21	700.25	0.785	520.3	753.41
1661	J-134	23,876.05	5,964,790.63	697.75	7.519	541	753.03
1662	J-135	23,390.85	5,964,794.52	699.5	0	524	753.04
1678	J-136	23,661.31	5,960,941.42	698.75	0.104	533.7	753.28
1681	J-137	23,388.97	5,962,746.95	700.04	0	519.9	753.16
1684	J-138	22,557.14	5,963,245.10	700.93	0	510.6	753.1
1687	J-139	22,761.26	5,963,186.30	702.75	0	492.8	753.1
1701	J-140	23,586.96	5,963,525.74	698.45	0.048	535.1	753.12
1704	J-141	23,239.49	5,963,413.52	699.38	0.268	525.9	753.12
1711	J-143	23,345.33	5,961,555.68	699	0	530.7	753.23
1714	J-144	23,225.95	5,961,556.04	699	0	530.7	753.22
1716	J-145	23,170.80	5,961,583.05	699.59	0	524.9	753.22
1722	J-146	24,277.82	5,962,502.87	698.64	0	535.2	753.33
1725	J-147	24,223.72	5,962,367.72	698.57	0	535.9	753.33
1729	J-148	24,298.95	5,962,314.98	698.75	0	534.2	753.33
1732	J-149	24,416.81	5,962,303.73	698.9	0	533.4	753.4
1735	J-150	24,475.11	5,962,227.73	699.07	0	532	753.43
1738	J-151	24,314.17	5,962,158.57	699.57	0	526.9	753.41
1742	J-152	24,851.03	5,962,145.44	699.48	0	529.2	753.55
1745	J-153	24,970.64	5,962,052.96	699.41	0	529.6	753.53
1752	J-155	24,616.38	5,962,095.62	699.27	0	531	753.53
1757	J-156	24,560.35	5,962,018.25	699.29	0	530.7	753.51
1786	J-165	23,502.59	5,964,204.60	699.08	0.128	528.7	753.11
1789	J-166	23,315.10	5,964,203.31	698.91	0.042	530.4	753.11
1792	J-167	23,168.27	5,964,090.48	698.75	0.042	532	753.11
1795	J-168	23,313.56	5,964,092.80	698.77	0.042	531.8	753.11
1798	J-169	23,315.88	5,964,279.82	698.79	0.042	531.6	753.11
1800	J-170	23,364.57	5,964,279.82	698.98	0.042	529.7	753.11
1802	J-171	23,243.23	5,964,202.54	698.64	0.042	533.1	753.11
1805	J-172	23,244.78	5,964,090.48	698.87	0.042	530.8	753.11
1809	J-173	23,069.34	5,964,200.99	699.45	0.042	525.1	753.11
1811	J-174	22,976.60	5,964,200.99	699.89	0.042	520.8	753.11
1813	J-175	22,976.60	5,964,112.89	700.15	0.042	518.3	753.11
1815	J-176	23,070.12	5,964,112.12	699.74	0.042	522.3	753.11
1819	J-178	22,974.67	5,964,279.75	700.05	0.042	519.3	753.11
1822	J-179	23,044.05	5,964,278.86	699.77	0.042	522	753.11
1825	J-180	23,130.99	5,964,278.86	699.49	0.042	524.7	753.11
1828	J-181	23,217.93	5,964,279.83	699.24	0.042	527.2	753.11

Ultimate Development Average Day Demand							
ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1832	J-182	23,439.83	5,964,204.12	699.15	0	528.1	753.11
1835	J-183	24,885.31	5,963,455.51	698.5	0	535.7	753.24
1838	J-184	23,025.30	5,962,131.36	700.17	0.075	519	753.19
1841	J-185	23,215.32	5,962,120.15	701.11	0.123	509.8	753.2

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	2.901	0.04	0	0.015
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-0.95	0.02	0	0.004
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-1.045	0.02	0	0.006
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-1.179	0.02	0	0.007
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-1.288	0.03	0	0.008
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	4.136	0.08	0.01	0.069
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	4.056	0.08	0.01	0.067
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	-1.8	0.04	0	0.015
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	-1.889	0.04	0	0.016
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	-1.979	0.04	0	0.018
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-4.353	0.06	0	0.032
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	2.288	0.03	0	0.009
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	2.207	0.03	0	0.009
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	5.786	0.12	0.02	0.13
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	2.06	0.04	0	0.019
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-5.642	0.11	0.02	0.124
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-5.759	0.12	0.02	0.128
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-18.877	0.38	0.16	1.158
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	9.237	0.13	0.01	0.106
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	2.434	0.03	0	0.011
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-4.774	0.07	0	0.037
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-4.889	0.07	0	0.039
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.042	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-4.969	0.07	0	0.04
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.056	0	0	0
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-5.048	0.07	0	0.041
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-6.39	0.09	0.01	0.064
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-0.838	0.05	0.01	0.045
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-0.884	0.05	0	0.051
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-0.934	0.05	0	0.056
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	5.602	0.08	0	0.05
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-6.651	0.09	0.01	0.069
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-10.99	0.16	0.04	0.175
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-14.78	0.21	0.04	0.303
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-5.87	0.19	0.03	0.335
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-2.054	0.07	0.01	0.048
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	3.71	0.12	0.02	0.172
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.096	0.01	0	0.001
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.683	0.04	0.01	0.031
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	1.269	0.07	0.01	0.098
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.642	0.04	0	0.027
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.703	0.04	0	0.033
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	3.591	0.12	0	0.161
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.459	0.08	0.01	0.128
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	2.106	0.07	0	0.06
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.065	0	0	0
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.816	0.05	0.01	0.043
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.541	0.03	0	0.02
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.602	0.03	0	0.025
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.325	0.02	0	0.008
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.467	0.03	0	0.015
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	0.408	0.01	0	0.003
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-1.028	0.03	0	0.016
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-12.124	0.17	0.02	0.209
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-7.349	0.1	0.01	0.083
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	52.448	0.74	0.98	3.162
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	18.978	0.27	0.24	0.481
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	0.077	0	0	0
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-1.473	0.08	0.02	0.129
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.546	0.09	0.01	0.142
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-1.602	0.09	0.02	0.152
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	5.8	0.19	0.04	0.391
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	2.192	0.07	0.01	0.065
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.05	0	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	1.308	0.04	0	0.025
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-2.002	0.06	0.01	0.055
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-2.063	0.07	0.01	0.058
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-2.109	0.07	0	0.06
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	3.283	0.11	0	0.136
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	1.585	0.05	0	0.036
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.065	0	0	0
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	1.52	0.05	0	0.033
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.627	0.02	0	0.006
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	1.667	0.05	0.01	0.039
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-0.945	0.03	0	0.013
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-1.001	0.03	0	0.016

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-1.062	0.03	0	0.017
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-1.112	0.04	0	0.018
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.375	0.04	0	0.027
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	1.339	0.04	0.01	0.026
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	1.283	0.04	0	0.024
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-0.727	0.02	0	0.009
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-0.777	0.02	0	0.009
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.031	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-2.57	0.08	0.01	0.087
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	1.983	0.06	0.01	0.053
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	-5.504	0.08	0	0.048
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	-5.504	0.08	0.01	0.049
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-6.652	0.09	0.01	0.069
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-6.652	0.09	0.01	0.069
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-6.652	0.09	0	0.069
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	-0.586	0.02	0	0.006
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	-0.156	0	0	0
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.046	0	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.225	0.01	0	0.001
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-0.461	0.01	0	0.004
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.572	0.02	0	0.005
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.626	0.02	0	0.006
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.657	0.02	0	0.007
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.718	0.02	0	0.007
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.065	0	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.031	0	0	0
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.046	0	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-9.247	0.13	0.01	0.127
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-9.247	0.13	0.02	0.127
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-9.297	0.13	0.01	0.128
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	3.174	0.06	0	0.043
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	3.174	0.06	0.01	0.042
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	3.174	0.06	0	0.043
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-4.019	0.08	0.01	0.066
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-6.985	0.14	0.01	0.183
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-1.238	0.07	0.01	0.094
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-2.919	0.09	0.01	0.11
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-4.122	0.08	0	0.07
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-4.172	0.08	0.01	0.071
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-4.228	0.09	0.01	0.072
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-4.278	0.09	0.01	0.074
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	1.292	0.07	0.01	0.101
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	1.227	0.07	0.01	0.092
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.627	0.04	0	0.026
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.05	0	0	0.001
783	P-1580	J-N2383E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.539	0.03	0	0.021
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.483	0.03	0	0.016
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-1.212	0.04	0	0.022
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-1.199	0.04	0	0.021
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.629	0.05	0	0.037
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	-0.235	0.01	0	0.004
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	-0.084	0	0	0.001
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.168	0.01	0	0.002
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	0.215	0.01	0	0.004
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-2.931	0.06	0	0.038
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-3.963	0.08	0.01	0.064
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	1.957	0.06	0.01	0.052
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.765	0.04	0.01	0.039
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.834	0.05	0.01	0.045
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-1.814	0.06	0	0.046
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.98	0.03	0	0.014
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-1.222	0.07	0.01	0.092
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.203	0.01	0	0.003
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-1.446	0.05	0	0.02
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-3.421	0.2	0	0.628
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-2.696	0.09	0.01	0.094
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-0.781	0.05	0.01	0.04
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-1.635	0.05	0	0.037
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-0.364	0.02	0	0.02
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-1.231	0.07	0	0.085
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-0.732	0.02	0	0.009
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-0.499	0.03	0	0.018
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	0.417	0.02	0	0.013
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.01	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	5.85	0.08	0.01	0.046
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-1.622	0.02	0	0.022

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-1.974	0.03	0	0.007
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	1.189	0.07	0.01	0.087
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.977	0.06	0.01	0.061
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-0.461	0.03	0	0.015
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.19	0.01	0	0.003
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-7.427	0.11	0.01	0.085
820	P-2010	J-N3110E	J-N3100E	159.04	148.6	Asbestos Cement	100	0.337	0.02	0	0.008
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.383	0.02	0	0.014
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-2.984	0.04	0	0.017
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	3.505	0.07	0	0.044
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-7.067	0.1	0.01	0.077
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	-0.256	0	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.383	0.02	0	0.014
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-0.509	0.03	0	0.018
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	-0.129	0.01	0	0.001
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.55	0.03	0	0.021
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.55	0.03	0	0.021
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.277	0.02	0	0.006
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.031	0	0	0
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	0.699	0.04	0.01	0.033
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-0.548	0.03	0	0.021
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-0.406	0.02	0	0.012
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.28	0.02	0	0.006
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-6.674	0.09	0	0.072
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.056	0	0	0
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-6.803	0.1	0.02	0.072
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	1.191	0.07	0.01	0.087
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	1.849	0.11	0	0.202
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-5.58	0.08	0.01	0.05
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-5.618	0.08	0	0.051
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-6.356	0.09	0.01	0.063
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	1.279	0.07	0.01	0.1
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	0.381	0.02	0	0.01
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	0.792	0.05	0.01	0.041
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-0.628	0.04	0	0.027
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-3.126	0.06	0.01	0.042
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.189	0.01	0	0.003
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-1.064	0.03	0	0.017
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-1.103	0.04	0	0.018
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	2.918	0.04	0	0.015
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	0.388	0.01	0	0
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.039	0	0	0
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	2.53	0.04	0	0.012
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	2.21	0.03	0	0.009
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	2.018	0.03	0	0.007
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.01	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.123	0.01	0	0
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	1.992	0.03	0	0.007
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.027	0	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.336	0.02	0	0.006
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.312	0.02	0	0.007
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.191	0.01	0	0
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	-0.121	0.01	0	0.006
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-0.366	0.02	0	0.009
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.32	0.02	0	0
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	-0.045	0	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-0.427	0.02	0	0.013
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	-0.062	0	0	0
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.123	0.01	0	0.001
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.189	0.01	0	0.003
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	0.005	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.325	0.02	0	0.008
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.266	0.02	0	0.005
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-1.211	0.04	0	0.021
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	1.476	0.09	0	0.131
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-3.26	0.07	0.01	0.045
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.23	0.01	0	0.001
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-0.967	0.06	0.01	0.059
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	-0.036	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	-0.067	0	0	0
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	1.485	0.09	0.01	0.131
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-0.731	0.04	0	0.035
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-0.827	0.05	0	0.044
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-1.531	0.09	0	0.14
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-3.371	0.07	0.01	0.047
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	-0.146	0.01	0	0.002

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-1.583	0.09	0	0.145
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-0.706	0.04	0	0.034
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.046	0	0	0
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	2.21	0.05	0	0.016
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-0.672	0.04	0.01	0.03
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-0.705	0.04	0	0.033
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	-0.283	0.01	0	0.001
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-0.604	0.03	0	0.025
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-0.775	0.04	0	0.039
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-1.959	0.04	0	0.017
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.29	0.01	0	0.001
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	5.073	0.07	0	0.041
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-4.273	0.06	0	0.03
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-4.402	0.06	0	0.032
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-1.144	0.02	0	0.006
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-0.613	0.02	0	0.007
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-0.613	0.04	0	0.025
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-0.669	0.04	0	0.031
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-0.901	0.01	0	0.001
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-3.343	0.05	0	0.019
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.031	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-4.072	0.06	0	0.028
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.073	0	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.107	0	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-4.325	0.06	0	0.03
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	-0.16	0.01	0	0.002
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.21	0.01	0	0.003
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.271	0.02	0	0.006
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.344	0.02	0	0.009
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.394	0.01	0	0.002
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	4.221	0.06	0	0.03
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-4.68	0.07	0	0.036
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.487	0.03	0	0.017
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.543	0.03	0	0.02
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.612	0.04	0	0.026
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-6.016	0.09	0.01	0.057
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.527	0.03	0	0.019
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.877	0.05	0	0.05
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	5.346	0.08	0	0.046
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	4.239	0.06	0	0.03
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.134	0	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.927	0.05	0.01	0.055
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-1.001	0.03	0	0.016
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.681	0.05	0	0.04
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.934	0.05	0.01	0.056
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.026	0.06	0.01	0.067
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-2.01	0.06	0.01	0.055
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-2.041	0.07	0	0.056
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	0.81	0.03	0	0.01
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.663	0.04	0	0.029
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.582	0.03	0	0.023
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.394	0.02	0	0.011
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-11.021	0.16	0.01	0.176
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-11.04	0.16	0.02	0.176
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-12.471	0.18	0.01	0.222
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-12.471	0.18	0.01	0.221
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	1.731	0.06	0	0.042
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	0.806	0.03	0	0.01
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	0.768	0.02	0	0.009
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-2.112	0.07	0	0.06
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-2.112	0.07	0	0.06
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	1.373	0.04	0	0.027
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.056	0	0	0
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	3.561	0.11	0	0.161
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	3.511	0.11	0.02	0.155
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	1.512	0.05	0	0.033
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	1.466	0.05	0	0.03
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-1.694	0.05	0	0.04
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-2.875	0.09	0.01	0.107
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	0.519	0.03	0	0.018
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	0.473	0.03	0	0.017
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-0.699	0.04	0.01	0.033
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.631	0.04	0	0.027
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.662	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	5.176	0.07	0	0.044
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	5.073	0.07	0.01	0.042

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	0.407	0.02	0	0.011
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	0.38	0.02	0	0.011
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.331	0.02	0	0.007
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.331	0.02	0	0.008
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	3.878	0.12	0.02	0.156
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	3.816	0.12	0	0.152
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.031	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-1.564	0.09	0.01	0.145
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-1.629	0.05	0	0.037
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-3.248	0.1	0.01	0.112
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-3.332	0.11	0.02	0.118
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	0.624	0.02	0	0
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	0.413	0.01	0	0.005
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	1.404	0.03	0	0.008
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	1.22	0.04	0	0.018
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-1.113	0.02	0	0.006
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	3.174	0.06	0	0.042
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-2.899	0.06	0	0.036
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-6.074	0.12	0.03	0.142
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	7.648	0.16	0.01	0.218
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	18.978	0.27	0.07	0.481
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	18.923	0.39	0.05	1.162
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-0.808	0.05	0	0.043
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-0.835	0.05	0	0.038
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-1.635	0.05	0	0.037
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-1.708	0.05	0	0.041
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.046	0	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.027	0	0	0.001
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-3.591	0.12	0.01	0.161
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-3.618	0.12	0.01	0.163
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	-0.069	0	0	0
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	-2.395	0.03	0	0.01
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	-2.472	0.03	0	0.011
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	0.503	0.01	0	0.001
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.271	0.01	0	0.002
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.225	0.01	0	0.001
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.912	0.02	0	0.003
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.874	0.02	0	0.005
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	-0.473	0.02	0	0.004
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	-0.515	0.02	0	0.005
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	-0.515	0.02	0	0.003
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	-0.553	0.02	0	0.005
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	1.57	0.02	0	0.005
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	0.804	0.01	0	0
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.176	0	0	0
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.743	0.02	0	0.003
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	-2.179	0.03	0	0.009
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	-2.346	0.03	0	0.01
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	0.508	0.01	0	0
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	0.508	0.01	0	0
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	0.942	0.03	0	0.014
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	-1.305	0.03	0	0.008
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	-1.305	0.03	0	0.009
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	0.401	0.01	0	0.003
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	0.34	0.01	0	0.002
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	0.294	0.01	0	0.001
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	-0.439	0.01	0	0.003
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	-0.485	0.02	0	0.004
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	0.706	0.01	0	0.003
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	0.942	0.03	0	0.013
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-4.434	0.06	0	0.033
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-3.782	0.05	0	0.023
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	-0.652	0.01	0	0.002
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	-0.652	0.01	0	0.002
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	-0.706	0.01	0	0.003
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	-5.527	0.08	0	0.047
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-6.621	0.09	0.01	0.069
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	1.063	0.02	0	0.006
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	0.946	0.02	0	0.004
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	-2.467	0.05	0	0.027
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	-2.498	0.05	0	0.027
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	-1.878	0.04	0	0.016
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	-0.643	0.02	0	0.006
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	-0.704	0.02	0	0.008
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	-0.746	0.02	0	0.009

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	-0.746	0.02	0	0.009
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	1.916	0.04	0	0.017
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.061	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-1.746	0.06	0	0.042
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-1.815	0.06	0	0.046
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.046	0	0	0
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.031	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-1.871	0.06	0	0.04
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-1.871	0.06	0	0.04
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-1.936	0.06	0	0.044
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.014	0	0	0
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.289	0.01	0	0.001
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-2.012	0.06	0	0.046
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-3.696	0.12	0.01	0.142
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	2.113	0.04	0	0.017
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	5.736	0.12	0.02	0.128
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	2.128	0.04	0	0.019
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-12.315	0.17	0.01	0.216
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-13.17	0.19	0.02	0.245
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	3.085	0.06	0	0.034
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	2.928	0.06	0	0.031
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	-2.662	0.05	0	0.026
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-3.003	0.06	0	0.032
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-3.157	0.06	0	0.035
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	0.264	0.01	0	0.001
1096	P-4560F	J-3590I	J-3600I	99.12	300	PVC	110	0.882	0.01	0	0.002
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	1.254	0.03	0	0.007
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	1.094	0.04	0	0.015
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-1.212	0.02	0	0.007
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	3.2	0.1	0.01	0.092
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	-3.378	0.05	0	0.014
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	-4.023	0.06	0	0.019
1111	P-4730F	J-3710F	J-3720F	324	300	PVC	120	-4.856	0.07	0.01	0.028
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	-3.213	0.05	0	0.013
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	-0.521	0.02	0	0.003
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-5.216	0.17	0.04	0.227
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	0.814	0.01	0	0.001
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	12.015	0.17	0.01	0.174
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-9.237	0.13	0.01	0.106
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	2.092	0.03	0	0.006
1124	P-4990F	J-3890F	J-3900F	157.27	300	PVC	120	-2.305	0.03	0	0.007
1125	P-5000F	J-3900F	J-3910F	137.45	200	PVC	120	2.131	0.07	0.01	0.043
1126	P-5010F	J-3900F	J-3920F	120.22	300	PVC	120	-4.338	0.06	0	0.022
1127	P-5030F	J-3930F	J-3940F	100.53	200	PVC	120	-1.247	0.04	0	0.016
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-1.638	0.05	0.01	0.027
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	5.535	0.08	0.02	0.041
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	6.122	0.09	0.01	0.05
1137	P-5140F	J-3910F	J-4000F	117.02	200	PVC	120	0.383	0.01	0	0.002
1139	P-5160F	J-3900F	J-3930F	129.23	200	PVC	120	-0.481	0.02	0	0.002
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	3.093	0.04	0	0.012
1143	P-5210F	J-4020F	J-4030F	237.78	300	PVC	120	19.504	0.28	0.09	0.361
1144	P-5220F	J-4030F	J-4040F	539.98	300	PVC	120	16.715	0.24	0.15	0.271
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	3.093	0.04	0	0.014
1148	P-5270F	J-4050F	J-4060F	85.82	300	PVC	120	-6.092	0.09	0	0.042
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	13.376	0.19	0.05	0.179
1150	P-5300F	J-S2195E	J-4070F	291.2	250	PVC	120	1.305	0.03	0	0.006
1151	P-5310F	J-4070F	J-136	303.2	250	PVC	120	1.074	0.02	0	0.004
1152	P-5330F	J-3720F	J-4090F	88.46	300	PVC	120	-5.937	0.08	0	0.04
1153	P-5340F	J-4090F	J-3730F	205.97	300	PVC	120	-6.509	0.09	0.01	0.047
1154	P-5350F	J-3730F	J-4100F	109.19	300	PVC	120	-9.18	0.13	0.01	0.089
1155	P-5360F	J-4100F	J-4110F	123.24	300	PVC	120	-6.109	0.09	0.01	0.042
1156	P-5380F	J-4110F	J-4120F	224.56	300	PVC	120	-19.871	0.28	0.08	0.374
1157	P-5390F	J-4120F	J-4100F	601.36	200	PVC	120	4.151	0.13	0.09	0.148
1158	P-5400F	J-4110F	J-4130F	162.02	300	PVC	120	8.718	0.12	0.01	0.081
1159	P-5410F	J-4130F	J-4140F	155.87	300	PVC	120	8.718	0.12	0.01	0.081
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	-0.383	0.01	0	0.002
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	0.384	0.01	0	0.002
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	-0.449	0.01	0	0.002
1163	P-5460F	J-4170F	J-4180F	175.7	200	PVC	120	-1.282	0.04	0	0.017
1164	P-5470F	J-4180F	J-4190F	86.82	200	PVC	120	-2.363	0.08	0	0.052
1165	P-5480F	J-4190F	J-4110F	85.09	200	PVC	120	-5.044	0.16	0.02	0.213
1166	P-5490F	J-4150F	J-4190F	299.99	200	PVC	120	-1.6	0.05	0.01	0.025
1167	P-5500F	J-3730F	J-4200F	352.88	200	PVC	120	1.59	0.05	0.01	0.025
1168	P-5510F	J-4200F	J-4090F	297.23	200	PVC	120	0.509	0.02	0	0.003
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	1.968	0.04	0	0.012
1170	P-5530F	J-4210I	J-4220I	259.29	250	PVC	120	-2.349	0.05	0	0.018

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1171	P-5540F	J-4220I	J-127	194.42	250	PVC	120	2.623	0.05	0	0.021
1172	P-5550F	J-4020F	J-4230F	442.56	250	PVC	120	11.177	0.23	0.14	0.313
1173	P-5560F	J-4230F	J-4040F	510.54	250	PVC	120	8.388	0.17	0.09	0.184
1174	P-5570F	J-S2011E	J-4240F	406.72	300	PVC	110	-6.71	0.09	0.02	0.059
1175	P-5580F	J-4240F	J-4050F	439.03	300	PVC	110	-5.716	0.08	0.02	0.044
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	7.284	0.1	0.02	0.069
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	5.193	0.07	0.01	0.037
1178	P-5610F	J-4240F	J-4250F	184.36	250	PVC	120	-1.37	0.03	0	0.006
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-5.887	0.08	0.01	0.046
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-5.887	0.08	0	0.046
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	5.652	0.08	0.01	0.051
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	0.847	0.05	0	0.047
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	0.847	0.05	0.01	0.046
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-0.836	0.05	0.01	0.045
1187	P-5700F	J-S1010E	J-4020F	107.84	300	PVC	110	33.47	0.47	0.12	1.153
1188	P-5710F	J-4040F	J-4120F	59.33	300	PVC	120	25.103	0.36	0.03	0.577
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	5.541	0.08	0	0.042
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	1.631	0.09	0	0.131
1200	P-5850F	J-126	J-4650F	231.91	250	PVC	120	4.228	0.09	0.01	0.052
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	-3.638	0.05	0.01	0.016
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	0.312	0	0	0
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-1.036	0.03	0	0.011
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-1.551	0.05	0	0.024
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	-0.006	0	0	0
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	-0.006	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	3.905	0.13	0.02	0.158
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-46.801	0.66	0.99	2.56
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-8.443	0.27	0.09	0.552
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-15.41	0.49	0.2	1.682
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	2.946	0.09	0.01	0.078
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-23.555	0.33	0.06	0.718
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-31.39	0.44	0.18	1.222
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-7.555	0.24	0.12	0.449
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-23.274	0.33	0.09	0.702
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-22.993	0.33	0.08	0.687
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-18.045	0.26	0.02	0.438
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-18.045	0.26	0.01	0.438
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-12.015	0.17	0.01	0.207
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-4.666	0.15	0.02	0.184
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-4.947	0.16	0.03	0.205
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.281	0.01	0	0.001
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	9.939	0.32	0.08	0.746
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	8.267	0.12	0.01	0.074
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	6.306	0.09	0.01	0.044
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-0.188	0	0	0
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	0.763	0.01	0	0.001
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	1.783	0.06	0.01	0.031
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	0.95	0.03	0	0.01
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-12.499	0.18	0.04	0.222
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	1.254	0.04	0	0.016
1245	P-6170F	J-4490F	J-3630F	331.56	200	PVC	120	3.657	0.12	0.04	0.117
1246	P-6180F	J-134	J-4500F	880.17	300	PVC	120	-1.136	0.02	0	0.002
1247	P-6190F	J-4500F	J-N1220E	780.1	300	PVC	120	-8.758	0.12	0.06	0.082
1249	P-6210F	J-135	J-3630F	259.79	200	PVC	120	-3.657	0.12	0.03	0.117
1250	P-6220F	J-4510F	J-4520F	458.02	300	PVC	120	-3.53	0.05	0.01	0.015
1251	P-6230F	J-4520F	J-4530F	370.9	300	PVC	120	-6.049	0.09	0.02	0.041
1252	P-6240F	J-4530F	J-4540F	46.89	300	PVC	120	-6.049	0.09	0	0.041
1253	P-6250F	J-4540F	J-9	113.77	300	PVC	120	-6.049	0.09	0	0.041
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	0.971	0.03	0	0.012
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	3.02	0.1	0	0.098
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	120	1.531	0.05	0	0.023
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	0.137	0	0	0
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	-0.589	0.02	0	0.004
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-1.315	0.04	0	0.017
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	3.419	0.05	0	0.017
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	3.28	0.05	0	0.014
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-4.563	0.06	0	0.028
1266	P-6380F	J-3920F	J-4620F	102.2	200	PVC	120	-0.962	0.03	0	0.009
1270	P-6410F	J-3930F	J-102	89.75	200	PVC	120	0.383	0.01	0	0.002
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	2.109	0.07	0	0.042
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-2.275	0.07	0	0.057
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.023	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	1.964	0.06	0	0.044
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	0.778	0.02	0	0.008
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	0.707	0.02	0	0.007
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	1.144	0.04	0	0.016

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	1.067	0.03	0	0.014
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-5.267	0.07	0.02	0.038
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-2.298	0.05	0	0.02
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	2.314	0.05	0	0.02
1343	P-5833	J-10	J-12	97.69	250	PVC	110	2.11	0.04	0	0.017
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	1.871	0.04	0	0.014
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.107	0	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	1.175	0.02	0	0.005
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.185	0.01	0	0.003
1352	P-5838	J-14	J-16	118.78	250	PVC	110	0.799	0.02	0	0.003
1354	P-5839	J-16	J-17	94.47	250	PVC	110	0.592	0.01	0	0.002
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	0.786	0.01	0	0.001
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	0.69	0.01	0	0.001
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	2.216	0.05	0	0.018
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	2.155	0.04	0	0.017
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	-0.4	0.01	0	0.003
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	-0.429	0.01	0	0.003
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.036	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.526	0.02	0	0.004
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.587	0.02	0	0.004
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	1.617	0.03	0	0.01
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.629	0.02	0	0.006
1376	P-5852	J-26	J-25	11.22	250	PVC	110	1.694	0.03	0	0.013
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-2.323	0.05	0	0.02
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.065	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-2.388	0.05	0	0.022
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-1.152	0.02	0	0.007
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-3.667	0.07	0	0.056
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-2.43	0.05	0	0.021
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-2.514	0.05	0	0.024
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.084	0	0	0
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	1.212	0.02	0	0.006
1395	P-5863	J-33	J-34	95	250	PVC	110	0.866	0.02	0	0.003
1397	P-5864	J-34	J-35	89.81	250	PVC	110	0.801	0.02	0	0.002
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.023	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.243	0.01	0	0.001
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.272	0.01	0	0.001
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.272	0.01	0	0.001
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.285	0.01	0	0.002
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.298	0.01	0	0.001
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.304	0.01	0	0.001
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.077	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	0.982	0.03	0	0.012
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	3.348	0.11	0.02	0.119
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	3.271	0.1	0.01	0.113
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	1.92	0.06	0	0.042
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.048	0	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	1.872	0.06	0	0.04
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.122	0.01	0	0.002
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	1.487	0.05	0	0.027
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	1.299	0.04	0	0.02
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	1.257	0.04	0	0.02
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-11.424	0.16	0.02	0.188
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-10.251	0.15	0.01	0.153
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.173	0.04	0	0.017
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-2.012	0.06	0	0.046
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-1.847	0.06	0	0.04
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-1.918	0.06	0	0.042
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.236	0.01	0	0.001
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.036	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.16	0.01	0	0
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-8.909	0.13	0.01	0.119
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-9.011	0.13	0	0.12
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.102	0.01	0	0.001
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-9.011	0.13	0.01	0.101
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-9.101	0.13	0.01	0.104
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.09	0.01	0	0
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	-0.676	0.02	0	0.006
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.018	0	0	0
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.018	0	0	0
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-2.186	0.03	0	0.007
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-2.326	0.03	0	0.009
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.079	0	0	0
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	-3.838	0.05	0	0.021
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.138	0	0	0

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1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.09	0	0	0
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.042	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	-3.976	0.06	0	0.023
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	-0.719	0.02	0	0.007
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	-0.773	0.02	0	0.009
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	1.366	0.02	0	0.004
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	1.337	0.02	0	0.003
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.102	0	0	0.001
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.102	0.01	0	0
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-2.252	0.05	0	0.019
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-2.323	0.05	0	0.02
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	1.394	0.04	0	0.023
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	1.018	0.03	0	0.014
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.174	0.01	0	0
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	10.618	0.15	0.01	0.117
1511	P-5926	J-79	J-80	321.67	300	PVC	120	10.618	0.15	0.04	0.117
1513	P-5927	J-80	J-81	352.13	300	PVC	120	4.909	0.07	0.01	0.028
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	0.683	0.02	0	0.007
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	0.683	0.02	0	0.007
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-5.709	0.18	0.02	0.267
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	4.615	0.07	0	0.025
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	4.909	0.07	0.02	0.028
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	4.615	0.07	0.01	0.025
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-4.395	0.06	0.02	0.023
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-4.395	0.06	0.01	0.023
1564	P-5954	J-17	J-97	84.22	250	PVC	110	0.444	0.01	0	0.001
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-0.979	0.02	0	0.004
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.122	0	0	0
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.081	0	0	0.001
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.281	0.01	0	0.001
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	10.22	0.33	0.1	0.787
1575	P-5960	J-3920F	J-3950F	256.24	300	PVC	120	-3.758	0.05	0	0.017
1577	P-5961	J-3990F	J-103	93.17	200	PVC	120	0.167	0.01	0	0
1580	P-5963	J-103	J-104	83.79	200	PVC	120	0.186	0.01	0	0.001
1582	P-5964	J-104	J-105	210.99	200	PVC	120	-0.197	0.01	0	0
1584	P-5965	J-103	J-106	239.12	200	PVC	120	-0.402	0.01	0	0.002
1585	P-5966	J-106	J-3910F	87.2	200	PVC	120	-1.365	0.04	0	0.019
1586	P-5967	J-105	J-106	103.16	200	PVC	120	-0.58	0.02	0	0.004
1588	P-5968	J-3890F	J-107	222.21	200	PVC	120	1.699	0.05	0.01	0.028
1589	P-5969	J-107	J-3990F	176.68	200	PVC	120	0.55	0.02	0	0.003
1591	P-5970	J-107	J-108	88.91	200	PVC	120	0.766	0.02	0	0.006
1593	P-5971	J-108	J-109	94.43	200	PVC	120	0.383	0.01	0	0.002
1595	P-5972	J-108	J-110	44	200	PVC	120	0.383	0.01	0	0.002
1597	P-5973	J-3880F	J-111	68.36	300	PVC	120	0.543	0.01	0	0
1598	P-5974	J-111	J-3890F	157.43	300	PVC	120	-0.223	0	0	0
1600	P-5975	J-111	J-112	192.75	200	PVC	120	0.383	0.01	0	0.002
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	0.391	0.01	0	0.001
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-0.797	0.03	0	0.007
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	0.137	0	0	0
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-3.679	0.05	0	0.016
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-3.008	0.04	0	0.011
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-3.47	0.05	0	0.015
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-0.711	0.02	0	0.006
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-0.862	0.03	0	0.008
1621	P-5988	J-119	J-120	88.63	200	PVC	120	0.391	0.01	0	0.002
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-0.254	0.01	0	0.001
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-0.406	0.01	0	0.002
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	1.701	0.02	0	0.004
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	1.072	0.02	0	0.002
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.238	0.01	0	0.001
1630	P-5994	J-114	J-123	33.43	200	PVC	120	0.391	0.01	0	0.002
1632	P-5995	J-4620F	J-124	139.3	200	PVC	120	-1.345	0.04	0	0.019
1633	P-5996	J-124	J-4650F	173.76	200	PVC	120	-1.728	0.06	0.01	0.029
1637	P-5998	J-126	J-4210I	108.9	250	PVC	120	-2.163	0.04	0	0.015
1639	P-5999	J-4290I	J-127	79.82	250	PVC	120	-0.186	0	0	0
1640	P-6000	J-127	J-126	123.9	250	PVC	120	2.251	0.05	0	0.016
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	1.903	0.06	0	0.041
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	1.792	0.06	0	0.037
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-3.105	0.1	0.01	0.087
1663	P-6010	J-134	J-135	485.21	300	PVC	120	-3.35	0.05	0.01	0.014
1664	P-6011	J-135	J-4510F	209.29	300	PVC	120	0.307	0	0	0
1665	P-6012	J-134	J-3670I	459.26	200	PVC	120	-3.033	0.1	0.04	0.083
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	-3.742	0.05	0	0.017
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	-2.772	0.04	0	0.01
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	7.172	0.1	0.01	0.067
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	7.172	0.1	0.01	0.067

Ultimate Development Average Day Demand											
ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-4.159	0.06	0	0.029
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	-2.793	0.04	0	0.013
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-1.365	0.03	0	0.007
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-1.011	0.02	0	0.006
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-1.059	0.02	0	0.005
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-3.256	0.05	0	0.018
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-3.524	0.05	0	0.021
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	0.497	0.02	0	0.003
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	3.608	0.07	0	0.038
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.244	0	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	120	3.364	0.07	0	0.034
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	-3.184	0.06	0.01	0.031
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.18	0	0	0
1719	P-6035	J-144	J-145	61.41	250	PVC	120	3.364	0.07	0	0.034
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-2.094	0.07	0	0.042
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-1.227	0.04	0	0.015
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-2.094	0.07	0	0.042
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-0.867	0.03	0	0.008
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-2.066	0.07	0	0.041
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-4.16	0.13	0.02	0.149
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-8.096	0.26	0.05	0.511
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-5.776	0.18	0.03	0.273
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-8.881	0.28	0.05	0.606
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-2.32	0.07	0.01	0.05
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-2.32	0.07	0.01	0.051
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-6.686	0.21	0.05	0.358
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-2.746	0.09	0.01	0.069
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-3.498	0.11	0.02	0.108
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-0.752	0.02	0	0.006
1755	P-6060	J-152	J-155	274.29	200	PVC	120	3.188	0.1	0.02	0.091
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-3.946	0.13	0.02	0.135
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-5.316	0.17	0.02	0.235
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-1.376	0.04	0.01	0.019
1760	P-6064	J-155	J-156	95.53	200	PVC	120	3.94	0.13	0.01	0.134
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-1.344	0.04	0	0.018
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	1.187	0.04	0	0.014
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	1.859	0.06	0	0.033
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	0.841	0.03	0	0.008
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	0.513	0.02	0	0.003
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	-0.021	0	0	0
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.042	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	0.358	0.01	0	0.001
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	0.695	0.02	0	0.006
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	0.976	0.03	0	0.011
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	0.555	0.02	0	0.003
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	0.379	0.01	0	0.001
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	0.441	0.01	0	0.002
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.231	0.01	0	0.001
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	-0.084	0	0	0
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.126	0	0	0.001
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.168	0.01	0	0
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.273	0.01	0	0.001
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	-0.231	0.01	0	0
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	-0.189	0.01	0	0.001
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	-0.105	0	0	0.001
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	-0.147	0	0	0
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-1.216	0.04	0	0.015
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-1.216	0.04	0	0.015
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	1.405	0.04	0	0.028
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	5.8	0.19	0.03	0.392
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-0.751	0.02	0	0.005
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-0.826	0.03	0	0.008
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-4.341	0.06	0	0.023
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-4.464	0.06	0	0.024

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0.783	436	742.85
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.207	424.1	742.83
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.285	424.1	742.84
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.402	424.7	742.84
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.327	424.3	742.85
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.231	420.4	742.86
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.24	420.6	742.78
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.288	417	742.71
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.267	423	742.72
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.27	429.1	742.75
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.261	427.4	742.77
195	J-S2100E	23,886.25	5,961,252.83	699	0.243	428.7	742.8
196	J-S2080E	23,585.41	5,961,251.56	699	0.243	428.2	742.76
197	J-S2070E	23,468.77	5,961,251.56	699	0.177	428.2	742.75
198	J-S2060E	23,444.47	5,961,408.54	699	0.15	426.6	742.59
199	J-S2040E	23,441.07	5,961,591.28	699	0.204	425.2	742.44
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.162	412.2	742.42
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.351	415.5	742.55
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.138	428.7	744.11
203	J-S2010E	23,396.57	5,962,474.58	700	0	411.8	742.07
204	J-N4200E	23,397.75	5,962,576.48	701	0	401.2	741.99
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.108	404.1	741.99
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.345	417.1	742.01
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.114	417.3	742.04
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.126	410.4	742.04
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.069	417.6	742.06
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.168	410.7	742.06
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.15	418.8	742.09
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.15	420.4	742.15
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.138	431.5	742.19
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.15	435.7	742.22
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.195	432.6	742.26
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.15	421.6	742.18
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.183	432.7	742.31
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.237	424.5	742.58
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	428.8	742.91
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	432.8	743.13
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.138	435.2	743.17
222	J-N2255E	24,475.27	5,962,571.66	700	0.093	422.2	743.14
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.081	435.1	743.25
224	J-N2260E	24,501.40	5,962,673.31	699	0	430.8	743.02
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.069	429.2	742.45
226	J-N3301E	24,349.68	5,962,783.56	699	0.288	425.3	742.45
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.219	435.9	742.34
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.168	428.6	742.29
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.093	426.3	742.25
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.183	427.8	742.31
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.081	429	742.43
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	432.6	742.4
233	J-N3321E	24,349.51	5,962,866.08	700	0.195	415	742.4
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.522	429	742.33
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.207	430.8	742.22
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.15	427.3	742.26
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.183	429.4	742.28
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.183	431.6	742.3
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.662	427.9	742.32
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.207	431.2	742.26
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.219	436.3	742.28
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.345	440.4	742.29
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.114	435.7	742.32
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.168	442.7	742.33
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.345	444.2	742.46
246	J-N1050E	24,728.87	5,962,855.33	698	0.99	441.8	743.14
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.237	436	743.35
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	440.8	744.94
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	519.1	754.34
250	J-S1010E	24,688.47	5,961,838.45	701	0	448.4	746.82
251	J-S1020E	24,215.83	5,961,901.63	700	0	440.6	745.02
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.114	446.9	742.46
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.126	448.8	742.56
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.183	428.8	742.51
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.069	438.8	742.14
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.219	448.8	742.26
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.168	439.8	742.34
258	J-N1420E	24,855.27	5,963,531.46	698	0	433	742.24
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.138	427.1	741.94

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.081	440.2	741.88
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.081	430.4	741.77
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.045	429.2	741.76
263	J-N1311E	24,830.34	5,963,795.82	698	0.15	428.2	741.76
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.081	429.1	741.74
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.183	424.6	741.78
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.138	425.3	741.86
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.093	428.7	741.7
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	426.5	741.68
269	J-N1292E	24,905.57	5,963,948.00	698	0.195	427.5	741.68
270	J-N1245E	24,928.90	5,964,040.14	697	0.093	437.1	741.66
271	J-N1244E	24,955.72	5,964,184.39	697	0.168	437	741.65
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.168	441.8	741.64
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.126	426.3	741.66
274	J-N1281E	24,668.79	5,963,904.06	698	0.168	427.3	741.66
275	J-N1282E	24,737.99	5,963,838.74	697	0.183	437.3	741.68
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.15	430.6	741.7
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.114	439.5	741.71
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.057	431.8	741.72
279	J-N1242E	24,655.18	5,964,247.76	698	0.168	426.7	741.6
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.081	433.4	741.58
281	J-N1272E	24,643.90	5,964,097.68	698	0.15	426.6	741.59
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.093	418.9	741.6
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.093	422.8	741.6
284	J-N1240E	24,492.27	5,964,163.87	698	0	426.1	741.54
285	J-N1220E	24,450.28	5,964,244.12	698	1.011	425	741.43
286	J-N1210E	24,398.26	5,964,217.60	698	0	425.2	741.45
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.069	427.7	741.5
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.093	429.2	741.56
289	J-N1170E	24,279.97	5,963,894.02	698	0	427	741.63
290	J-N1160E	24,301.35	5,963,782.73	698	0	427.5	741.69
291	J-N1150E	24,302.39	5,963,747.88	698	0.483	427.7	741.7
292	J-N1370E	24,390.29	5,963,759.89	698	0.093	427.8	741.71
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.069	432.7	741.71
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.138	434.6	741.71
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.138	423.9	741.71
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.069	442.5	741.71
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.093	430.8	741.72
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.045	440.6	741.72
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.195	438.6	741.71
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.093	442.5	741.71
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.138	429.9	741.72
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	435.4	741.78
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.15	434.6	741.9
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	436.4	741.99
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	432.1	741.95
306	J-N3182E	24,109.98	5,963,355.50	698	0	429.7	741.91
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	426.4	741.87
308	J-N3190E	23,838.79	5,963,334.11	699	0.096	419.5	741.86
309	J-N3210E	23,839.27	5,963,187.82	699	0.168	420.1	741.93
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.276	424.7	742
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.168	428.6	742.09
312	J-N3420E	23,966.13	5,962,983.37	698	0	432.6	742.2
313	J-N3240E	23,840.96	5,962,916.81	698	0.15	431.8	742.12
314	J-N3250E	23,877.98	5,962,777.15	698	0.168	432.6	742.21
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.15	428.3	742.27
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.195	421.9	742.01
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.219	424.1	741.93
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.114	414.1	741.91
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.15	406.3	741.91
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.168	404.2	741.9
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.183	420.9	741.88
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.264	420.4	741.9
323	J-N2370E	23,750.00	5,963,047.05	699	0.138	420.1	741.92
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.15	414.9	741.89
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.195	421.8	741.9
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.252	428.6	741.9
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.126	417.9	741.9
328	J-N3200E	23,838.64	5,963,310.50	699	0.093	419.5	741.87
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.069	420.4	741.85
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.081	425.5	741.78
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.207	422	741.82
332	J-N2350E	23,748.75	5,963,237.41	699	0	419.5	741.86
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.414	422.9	741.61
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.063	425.8	741.71
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.609	422.8	741.7

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	422	741.72
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.168	422.2	741.74
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.081	414	741.8
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.201	421.2	741.86
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.054	415.4	741.84
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.063	415.4	741.84
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	415.4	741.85
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.048	415.5	741.86
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.033	410.5	741.85
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	413.8	741.78
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.141	413.8	741.78
347	J-N2120E	23,392.51	5,963,312.31	699	0.135	418	741.71
348	J-N2121E	23,395.90	5,963,312.31	699	0	418	741.71
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.066	418.5	741.66
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.021	420.8	741.6
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	413.6	741.66
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	417.8	741.59
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	417.8	741.59
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.199	417.8	741.59
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.045	417.8	741.59
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.114	408.3	741.62
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	408.3	741.61
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.207	412.2	741.62
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	412.3	741.63
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.219	412.2	741.62
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.093	413.2	741.62
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.168	414.1	741.82
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.414	412.3	741.83
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.114	410.9	741.84
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.219	411	741.84
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.168	408.5	741.84
367	J-N4510E	23,116.00	5,962,864.49	700	0.126	408.5	741.74
368	J-N4500E	23,107.06	5,962,864.49	700	0.15	408.3	741.72
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.114	399.3	741.7
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.114	403.7	741.75
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.114	405.9	741.78
372	J-N4490E	23,107.28	5,962,982.98	700	0.183	407.5	741.63
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.138	406.1	741.59
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.171	413.7	741.57
375	J-N4350E	23,104.18	5,963,517.50	699	0.126	416.6	741.57
376	J-N3090E	23,166.53	5,963,519.61	699	0	416.7	741.58
377	J-N2070E	23,171.01	5,963,524.71	699	0	416.7	741.58
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	410.8	741.58
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	418.6	741.57
380	J-N2050E	23,164.50	5,963,745.83	699	0	416.5	741.56
381	J-N2040E	23,164.50	5,963,849.54	699	0	416.5	741.55
382	J-N2020E	23,168.07	5,964,021.69	699	0	416.4	741.54
383	J-N2010E	23,229.47	5,964,021.52	699	0.03	416.4	741.54
384	J-N3010E	23,161.69	5,964,008.03	699	1.362	416.4	741.54
385	J-N3030E	23,160.50	5,963,849.48	699	0.093	416.5	741.55
386	J-N3031E	23,161.50	5,963,836.74	699	0.114	416.5	741.56
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	418.5	741.56
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.168	418.5	741.56
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	410.7	741.57
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.168	410.7	741.57
391	J-N3032E	22,992.17	5,963,835.82	699	0.183	416.5	741.56
392	J-N3051E	22,992.42	5,963,732.81	700	0.183	406.7	741.56
393	J-N3071E	22,992.67	5,963,640.74	700	0.195	406.7	741.56
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	410.6	741.55
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.081	409.4	741.53
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.156	400.6	741.53
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.093	403.5	741.53
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.093	405.4	741.53
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.018	404.3	741.41
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.288	403.6	741.44
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	394.1	741.47
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.078	394.3	741.49
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.214	393.3	741.49
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	393.5	741.5
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.138	402.6	741.63
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.237	401.3	741.4
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.099	392.9	741.45
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.093	398.3	741.4
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.513	394.6	741.42
410	J-N4410E	22,639.90	5,963,300.90	701	0.12	395.9	741.46
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	400.3	741.4

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	407.6	741.34
413	J-N4010E	22,546.33	5,963,750.87	700	0.351	404.4	741.32
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.387	399.5	741.42
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	397.9	741.45
416	J-N4041E	22,443.94	5,963,514.35	701	0	395.5	741.41
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.168	390.8	741.43
418	J-N4043E	22,444.72	5,963,305.56	701	0.696	395.9	741.45
419	J-N4070E	22,557.86	5,963,211.47	701	1.65	396.1	741.47
420	J-N4080E	22,553.97	5,963,123.99	701.5	2.094	391.3	741.48
421	J-N4081E	22,468.80	5,963,123.50	701	0	396.2	741.48
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.219	387.7	741.51
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.219	389.6	741.51
424	J-N4092E	22,681.89	5,962,970.03	702	0.321	386.7	741.51
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.168	385.9	741.53
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.15	391.8	741.53
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.183	389.8	741.53
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.081	385.9	741.54
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.15	382.1	741.54
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.195	380.2	741.54
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.138	388.3	741.57
432	J-N4121E	22,725.05	5,962,737.13	701	0.168	397.2	741.59
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.207	400.3	741.61
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.057	399.5	741.62
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.024	398.6	741.63
436	J-N4431E	22,871.76	5,963,060.11	701	0.15	396.6	741.53
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.138	394.4	741.6
438	J-N4131E	22,739.70	5,962,940.69	702	0.402	387.5	741.6
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.276	426.4	742.27
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.093	422.6	742.38
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.057	439.6	742.19
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	436.9	742.04
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.069	422.6	741.58
444	J-N1246E	24,900.57	5,964,065.27	697	0.114	437	741.66
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	431.2	741.75
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.168	436.3	741.88
447	J-N1400E	24,827.83	5,963,657.23	698	0.15	429.6	741.9
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.138	449.5	742.53
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.195	448.7	742.55
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.138	403.3	741.71
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.093	398.6	741.63
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.309	400.2	741.39
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.081	405	741.58
454	J-N3020E	23,160.99	5,963,967.57	699	0	416.4	741.55
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.093	432.9	743.14
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.195	448	742.53
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.252	436.4	742.66
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.183	432.9	742.8
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.633	422.9	741.61
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.06	422.9	741.61
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.552	421.9	741.6
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	419.7	741.58
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.162	422	741.62
464	J-N3160E	23,825.34	5,963,511.25	699	0.117	417.2	741.62
465	J-N3170E	23,903.33	5,963,511.58	699	0.253	417.4	741.65
466	J-N3180E	23,907.72	5,963,334.91	699	0	419.3	741.84
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	410.6	742.36
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.165	432.4	744.48
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.081	415.2	741.82
470	J-N1250E	24,499.78	5,964,149.64	698	0.081	426.2	741.55
471	J-N1251E	24,455.84	5,964,129.52	698	0.138	426.2	741.55
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.081	431.5	741.49
473	J-N1230E	24,475.43	5,964,196.22	698	0	425.7	741.49
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	437.5	742.85
475	J-S2140E	24,039.65	5,960,875.68	698	0.231	439	742.86
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	436.1	742.86
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.183	432.8	742.86
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.168	421.9	742.86
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.138	434.1	742.85
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.168	437.5	742.85
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.114	434.1	742.85
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.126	434.1	742.85
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.126	434.1	742.85
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	434.1	742.85
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.114	434.1	742.86
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.168	433.2	742.86
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.069	434.1	742.86

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.114	432.1	742.86
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.501	434.2	742.87
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.569	432.8	742.87
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	434.3	742.87
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.524	434.3	742.87
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	436.7	742.87
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	424.3	742.85
495	J-S2195E	23,781.62	5,960,412.85	698	0	438.9	742.84
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	434	742.85
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.168	427.1	742.85
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.183	425.6	742.84
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.138	418.7	742.84
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.081	423.1	742.84
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.138	426.1	742.84
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	435.9	742.84
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	424.1	742.83
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	435.8	742.83
505	J-S1110E	24,033.48	5,960,926.97	698	0.162	438.8	742.84
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.091	427.8	741.51
507	J-N1600E	24,201.37	5,964,131.25	698	0.168	425.8	741.5
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.195	418.4	741.5
509	J-N1620E	24,074.31	5,964,072.83	699	0.093	416.1	741.52
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.069	411.3	741.53
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.114	411.4	741.54
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.183	413.8	741.53
513	J-N1632E	24,036.37	5,963,917.92	700	0.126	406.5	741.54
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	411.5	741.54
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	418.8	741.55
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.183	420.9	741.5
517	J-N1060E	24,577.21	5,963,109.12	697	0	447	742.67
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.207	439.8	742.69
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.168	445.1	742.73
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.138	382	741.54
521	J-N4082E	22,469.20	5,963,082.83	701	0.093	396.2	741.48
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	445.7	742.74
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.195	445.9	742.77
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.27	444.3	742.8
526	J-N1471E	24,945.50	5,963,280.47	699	0.867	428.6	742.79
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	431.7	742.81
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.279	435.5	742.9
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.498	409.6	742.35
530	J-S2050E	23,441.95	5,961,556.46	699	0	425.2	742.45
531	J-S2051E	23,344.97	5,961,508.86	699	0.762	424.9	742.42
532	J-N1065E	24,522.60	5,963,163.07	697	2.565	445.6	742.53
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.471	401.1	741.39
536	J-N3412E	22,763.88	5,963,654.13	700.4	1.89	400.9	741.37
537	J-3550I	23,858.78	5,963,861.50	697.8	0.231	428.3	741.57
538	J-3560I	23,895.14	5,963,776.63	698.8	0.231	418.8	741.59
539	J-3570I	23,930.36	5,963,667.29	699	0.231	417.1	741.62
540	J-3580I	23,794.98	5,963,838.03	698	0.195	426.4	741.57
541	J-3590F	23,690.63	5,963,983.45	697.5	0.183	431	741.54
542	J-3600I	23,601.86	5,963,939.64	698.3	0.288	423.2	741.54
543	J-3610I	23,453.97	5,963,928.59	699	0.396	416.3	741.54
544	J-3620F	23,389.20	5,964,002.63	699.6	0	410.4	741.53
545	J-3630F	23,386.73	5,964,534.76	699.3	0	410.2	741.21
548	J-3660F	23,675.98	5,964,023.67	697	0	435.9	741.54
549	J-3670I	23,876.32	5,964,331.38	698.5	0.501	418.1	741.22
551	J-3690I	22,621.02	5,963,751.20	699.5	0	409.3	741.32
552	J-3700I	24,251.71	5,960,551.59	700	2.499	419.7	742.88
553	J-3710F	24,340.82	5,960,450.73	699.3	2.499	426.7	742.9
554	J-3720F	24,635.10	5,960,417.31	700	3.243	420.6	742.97
555	J-3730F	24,841.29	5,960,613.84	700	3.243	421.6	743.07
556	J-3740I	24,235.46	5,960,911.51	700	0	419.8	742.89
557	J-3750I	24,202.10	5,960,810.43	700	0	419.7	742.88
558	J-3760F	24,126.63	5,962,599.83	698.5	1.545	437.1	743.17
559	J-3770F	24,004.27	5,962,385.31	698.5	1.545	437.2	743.17
560	J-3780F	24,246.39	5,962,223.62	698.8	1.545	434.6	743.21
561	J-3790F	24,549.31	5,962,206.03	699.2	0.843	441.5	744.31
562	J-3800F	24,678.90	5,962,287.47	699.5	0.843	441.3	744.59
563	J-3830F	24,662.04	5,962,661.31	699	0.07	432	743.15
564	J-3840F	24,769.05	5,962,856.55	698	0	442.3	743.2
565	J-S2011E	23,398.12	5,962,393.08	701	0.525	402.6	742.14
566	J-3860F	23,130.75	5,962,367.08	699.08	1.173	421.1	742.11
567	J-3870F	23,015.45	5,962,359.04	700	0	412.1	742.1
568	J-3880F	22,846.82	5,962,430.77	700.62	1.173	406	742.1
569	J-3890F	22,639.84	5,962,359.14	701.3	1.149	399.3	742.1

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
570	J-3900F	22,622.23	5,962,207.13	700.81	1.149	404.2	742.11
571	J-3910F	22,487.33	5,962,190.14	701.21	1.149	399.8	742.06
572	J-3920F	22,674.53	5,962,101.60	701.18	1.149	400.8	742.13
573	J-3930F	22,751.35	5,962,203.42	702	1.149	392.6	742.11
574	J-3940F	22,850.61	5,962,219.38	700.12	1.173	411.1	742.12
575	J-3950F	22,898.73	5,962,037.18	700.62	1.173	406.6	742.16
576	J-S2012E	23,398.36	5,962,126.10	701	0.129	403.6	742.24
579	J-3990F	22,432.04	5,962,601.16	701.5	1.149	396.8	742.05
580	J-4000F	22,549.18	5,962,091.02	701.54	1.149	396.6	742.06
581	J-4010F	24,264.46	5,961,085.30	701.5	0	405	742.88
582	J-4020F	24,634.53	5,961,745.07	702	8.367	429.3	745.87
583	J-4030F	24,830.67	5,961,610.65	700	8.367	442.5	745.21
584	J-4040F	24,777.43	5,961,073.31	700	0	431.5	744.09
585	J-4050F	24,112.80	5,962,004.38	699	1.128	425.4	742.47
586	J-4060F	24,028.16	5,962,018.57	699.1	0	424.7	742.5
587	J-4070F	23,727.02	5,960,648.81	699	0.693	429	742.83
588	J-4080I	23,485.64	5,960,871.34	699	0.312	428.6	742.8
589	J-4090F	24,708.86	5,960,464.59	699.3	3.243	427.7	743
590	J-4100F	24,823.61	5,960,719.64	699.3	3.243	429.1	743.15
591	J-4110F	24,732.87	5,960,799.83	699.8	0	424.6	743.19
592	J-4120F	24,777.30	5,961,013.98	700.1	3.243	428	743.83
593	J-4130F	24,602.56	5,960,886.16	700	0	421.7	743.09
594	J-4140F	24,447.99	5,960,902.33	701	2.499	411	742.99
595	J-4150F	24,447.17	5,960,816.61	702	2.499	401.2	742.99
596	J-4160F	24,443.99	5,960,698.17	700	2.499	420.7	742.99
597	J-4170F	24,566.08	5,960,649.02	700	2.499	420.8	742.99
598	J-4180F	24,721.57	5,960,692.43	699.3	3.243	427.8	743.02
599	J-4190F	24,661.24	5,960,753.91	699.8	3.243	423.3	743.05
600	J-4200F	24,953.35	5,960,370.98	700	3.243	420.9	743.01
601	J-4210I	22,986.05	5,961,831.40	699.7	0.558	416.9	742.3
602	J-4220I	23,168.73	5,961,753.64	699.3	0.54	421.2	742.33
603	J-4230F	24,473.81	5,961,374.92	701	8.367	428.8	744.81
604	J-4240F	23,772.01	5,962,249.34	699.3	1.128	421.1	742.32
605	J-4250F	23,717.61	5,962,073.19	699.3	2.163	421.1	742.33
606	J-N2132E	23,389.33	5,962,987.80	699.5	0	414.2	741.82
607	J-N2133E	23,392.72	5,962,988.28	699.5	0	414.2	741.82
609	J-4290I	23,058.22	5,961,598.95	699	0.558	423.8	742.3
610	J-N2145E	23,389.91	5,962,866.52	699.4	0	415.6	741.86
611	J-4310F	22,779.97	5,964,010.72	699.5	1.422	408.4	741.22
612	J-3775F	24,129.33	5,962,308.95	698.5	1.545	437.3	743.18
613	J-3755F	24,211.83	5,962,601.84	698.5	0	437.1	743.17
614	J-3785F	24,389.79	5,962,392.01	698.7	0.093	437.3	743.39
615	J-N1023E	24,962.79	5,962,291.29	699	0	467.7	746.79
616	J-3805F	24,846.93	5,962,284.57	699.5	0.843	448.2	745.3
617	J-3804F	24,683.36	5,962,433.13	699.4	0.843	441.4	744.5
618	J-N1025E	24,955.73	5,962,436.30	699	0.843	454.5	745.44
619	J-N1033E	24,955.82	5,962,656.81	699.5	0	437.9	744.24
620	J-N1036E	24,954.51	5,962,777.11	698.5	0	441.5	743.61
621	J-N1039E	24,954.52	5,962,806.54	698.5	0	440.5	743.51
622	J-3810F	24,808.50	5,962,854.71	698.5	0	438.1	743.26
623	J-3815F	24,803.86	5,962,773.23	699	0.843	434.3	743.37
624	J-3820F	24,781.43	5,962,653.26	699.5	0.843	437.9	744.24
625	J-3825F	24,683.97	5,962,561.99	701	0.843	418.2	743.73
626	J-4430I	24,354.53	5,960,883.84	700.5	0.534	415.3	742.94
627	J-4440I	24,201.33	5,960,696.57	699.5	0	424.6	742.88
628	J-4450I	24,358.13	5,960,711.56	700	2.499	419.8	742.9
629	J-4460I	23,866.43	5,960,918.16	700.5	0.27	414.4	742.84
630	J-4470I	24,688.40	5,963,006.16	698	0.99	439.2	742.87
632	J-4490F	23,389.95	5,964,203.21	699.2	0	414.1	741.51
633	J-4500F	24,755.74	5,964,815.48	697.4	22.866	426.1	740.94
634	J-4510F	23,181.70	5,964,802.09	697.6	11.511	424.5	740.98
635	J-4520F	22,750.47	5,964,647.71	703.2	7.557	370.2	741.03
636	J-4530F	22,580.85	5,964,317.87	702.5	0	378.2	741.15
637	J-4540F	22,549.98	5,964,282.58	703.5	0	368.6	741.16
638	J-4550I	24,097.29	5,963,722.12	698.5	0	422.2	741.64
639	J-4560I	24,258.63	5,963,745.67	698	0	427.4	741.67
640	J-4570I	24,058.45	5,963,789.70	699.1	2.178	416.4	741.64
641	J-4580I	24,184.55	5,963,895.50	700	2.178	407.6	741.65
642	J-4590F	23,289.98	5,962,391.46	700.9	0.417	403.5	742.13
643	J-4600F	23,285.48	5,962,126.23	701.38	0.297	399.7	742.22
644	J-4610F	23,155.29	5,962,079.75	700.83	0.029	404.8	742.19
645	J-4620F	22,614.11	5,962,019.18	701	1.149	402.6	742.14
648	J-4650F	22,898.74	5,961,936.72	700.91	1.173	404	742.19
1317	J-2	22,730.02	5,963,753.33	700.5	0.069	399.7	741.34
1319	J-3	22,672.82	5,963,751.17	700.5	0	399.7	741.34
1323	J-4	22,621.02	5,963,836.43	700	0.183	404.1	741.29

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1325	J-5	22,727.82	5,963,998.44	700.25	0.126	401.1	741.23
1327	J-6	22,732.18	5,964,070.61	701	0.213	393.7	741.23
1329	J-7	22,731.10	5,964,172.06	700.75	0.183	396.1	741.22
1331	J-8	22,631.81	5,964,169.90	701.5	0.231	388.6	741.21
1333	J-9	22,551.95	5,964,168.82	701	0.855	393.4	741.2
1337	J-10	23,451.65	5,963,733.50	699	0.306	416.6	741.56
1340	J-11	23,574.41	5,963,732.15	699.25	0.306	414.1	741.56
1342	J-12	23,453.00	5,963,830.63	698.75	0.396	418.9	741.55
1345	J-13	23,538.85	5,963,831.54	699.25	0.321	414	741.55
1347	J-14	23,454.35	5,964,026.24	699.1	0.366	415.3	741.54
1349	J-15	23,467.84	5,964,093.69	699.25	0.555	413.8	741.54
1351	J-16	23,573.06	5,964,030.28	699.25	0.621	413.8	741.53
1353	J-17	23,570.36	5,964,124.71	699	0.444	416.3	741.53
1355	J-18	23,532.59	5,963,931.81	699	0.288	416.3	741.54
1358	J-19	23,754.37	5,963,918.75	698.75	0.183	418.9	741.55
1361	J-20	23,728.46	5,963,820.53	698.75	0.087	419.1	741.57
1363	J-21	23,674.50	5,963,815.14	698.75	0.183	419.1	741.57
1365	J-22	23,673.42	5,963,866.94	699.25	0.108	414.2	741.57
1367	J-23	23,677.74	5,963,733.12	699	0.183	416.6	741.57
1369	J-24	23,746.80	5,963,730.96	699	0.126	416.7	741.57
1371	J-25	23,809.40	5,963,732.04	699	0.231	416.7	741.58
1374	J-26	23,798.19	5,963,731.64	699	0	416.7	741.58
1377	J-27	23,775.20	5,963,641.81	699.25	0	414.4	741.59
1379	J-28	23,710.13	5,963,639.34	699.5	0.195	411.9	741.59
1381	J-29	23,844.51	5,963,643.58	699.25	0.126	414.5	741.6
1383	J-30	23,845.57	5,963,511.32	699	0	417.2	741.62
1387	J-31	23,799.25	5,963,585.59	699.75	0.252	409.7	741.61
1388	J-32	23,845.57	5,963,586.29	699.5	0	412.1	741.61
1392	J-33	23,672.77	5,964,049.27	698.75	0.126	418.8	741.54
1394	J-34	23,670.18	5,964,144.24	699	0.195	416.3	741.54
1396	J-35	23,671.91	5,964,234.03	698.75	0.126	418.7	741.54
1398	J-36	23,671.05	5,964,280.65	699	0.069	416.3	741.54
1400	J-37	23,758.25	5,964,281.52	698.75	0.087	418.7	741.54
1402	J-38	23,813.50	5,964,238.35	698.75	0	418.8	741.54
1404	J-39	23,860.99	5,964,198.64	698.5	0.039	421.2	741.54
1406	J-40	23,792.78	5,964,135.61	698.5	0.039	421.2	741.54
1408	J-41	23,757.38	5,964,171.87	699.25	0	413.9	741.54
1410	J-42	23,740.12	5,964,098.49	698.5	0.018	421.2	741.54
1414	J-43	23,980.99	5,963,768.68	699.75	0.231	409.5	741.59
1416	J-44	24,000.53	5,963,681.98	700	0.108	407.4	741.63
1419	J-45	24,049.06	5,964,265.48	698.75	0.231	417.1	741.37
1421	J-46	23,957.33	5,964,279.51	698.75	0.213	416.3	741.29
1424	J-47	24,921.74	5,963,097.95	698.75	0	431.8	742.87
1426	J-48	24,960.60	5,963,073.13	699.25	0.144	426.9	742.87
1428	J-49	24,867.78	5,963,034.28	698.75	0.081	431.5	742.84
1430	J-50	24,895.84	5,963,012.69	699	0	429.1	742.84
1432	J-51	24,805.19	5,963,090.39	698.5	0.069	433.8	742.83
1434	J-52	24,739.36	5,963,144.35	698.25	0.126	436.1	742.81
1436	J-53	24,688.64	5,963,093.63	698.25	0.252	436	742.8
1438	J-54	24,637.92	5,963,049.38	698.25	0	435.9	742.79
1443	J-55	24,746.03	5,963,032.58	698.5	0.213	434.1	742.85
1446	J-56	24,815.86	5,962,971.87	698.75	0.12	431.5	742.84
1448	J-57	24,793.42	5,962,913.17	699.25	0.108	426.6	742.84
1450	J-58	24,880.62	5,962,917.48	698.75	0.237	431.5	742.84
1452	J-59	24,463.42	5,962,681.55	699.25	0	428	742.98
1455	J-60	24,477.23	5,962,748.02	699	0.306	430.4	742.98
1457	J-61	24,560.98	5,962,657.37	698.5	0	436.1	743.06
1460	J-62	24,574.79	5,962,709.17	698.75	0.27	433.7	743.06
1464	J-64	23,859.42	5,960,815.72	699.25	0.183	426.7	742.85
1467	J-65	23,919.85	5,960,828.67	698.5	0	434	742.85
1469	J-66	23,954.39	5,960,863.21	699.25	0.183	426.7	742.85
1471	J-67	23,951.80	5,960,932.28	698.75	0.183	431.6	742.85
1475	J-68	24,151.23	5,960,824.36	699.5	0	424.5	742.87
1477	J-69	24,160.73	5,960,864.07	700.5	0.144	414.7	742.87
1479	J-70	24,173.68	5,960,913.28	699.75	0.144	422.1	742.87
1481	J-71	24,122.74	5,960,921.05	699.25	0.126	426.9	742.87
1485	J-73	23,863.50	5,960,738.53	699.2	0.162	427.2	742.85
1488	J-74	24,008.12	5,960,795.72	699.25	0.087	426.8	742.86
1491	J-75	23,533.91	5,963,732.98	699.5	0	411.7	741.56
1494	J-76	23,929.23	5,963,577.78	699	0.213	417.3	741.63
1497	J-77	24,049.40	5,963,701.17	699.25	1.128	414.8	741.63
1500	J-78	24,258.00	5,963,633.98	699	0.522	417.6	741.67
1508	J-79	25,046.68	5,962,853.87	700	0	423.8	743.3
1510	J-80	25,042.43	5,963,175.51	700.5	0	416.2	743.02
1512	J-81	25,046.04	5,963,527.62	699	0	430.2	742.96
1514	J-82	24,960.02	5,964,132.73	698.2	0	425.3	741.65

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1521	J-83	26,363.57	5,963,530.33	700	0	418.1	742.72
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0.66	408.3	742.72
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0.882	418.6	742.77
1550	J-92	25,818.46	5,963,541.11	700	0	417.7	742.68
1557	J-94	23,168.88	5,964,201.54	698.35	0.126	422.5	741.52
1563	J-97	23,572.11	5,964,208.92	698.89	0.237	417.3	741.53
1567	J-99	24,962.99	5,962,995.96	699.25	0.366	426.6	742.84
1569	J-100	24,962.35	5,962,910.88	699	0.243	429.1	742.84
1571	J-101	24,843.21	5,962,526.29	698.5	0.843	454.5	744.94
1574	J-102	22,782.84	5,962,121.78	701.5	1.149	397.4	742.11
1576	J-103	22,431.06	5,962,508.05	702.17	1.149	390.3	742.05
1579	J-104	22,514.21	5,962,497.73	702.44	1.149	387.6	742.05
1581	J-105	22,558.04	5,962,294.70	701.5	1.149	396.8	742.05
1583	J-106	22,457.40	5,962,272.04	701.47	1.149	397.2	742.05
1587	J-107	22,605.96	5,962,570.05	701.35	1.149	398.3	742.05
1590	J-108	22,693.62	5,962,555.22	701.5	0	396.8	742.05
1592	J-109	22,786.44	5,962,537.82	700.8	1.149	403.7	742.05
1594	J-110	22,697.49	5,962,511.39	701	1.149	401.7	742.05
1596	J-111	22,779.24	5,962,426.24	700.81	1.149	404.1	742.1
1599	J-112	22,721.23	5,962,294.75	701	1.149	402.2	742.1
1601	J-113	23,034.88	5,962,417.94	700.25	1.173	409.6	742.1
1603	J-114	23,096.04	5,962,483.59	700.27	0	409.4	742.1
1606	J-115	22,877.49	5,962,538.98	700.76	1.173	404.6	742.1
1609	J-116	22,980.29	5,962,035.89	700.36	0.12	409.2	742.17
1612	J-117	22,981.58	5,962,130.00	700.07	0.12	412.1	742.18
1613	J-118	23,116.29	5,962,177.05	700.4	0.108	408.9	742.18
1614	J-119	23,064.08	5,962,037.98	700.61	0.213	406.8	742.18
1617	J-120	23,062.79	5,961,949.52	700.91	1.173	403.9	742.18
1622	J-121	22,967.10	5,962,525.57	699.88	1.173	413.2	742.1
1625	J-122	22,927.50	5,962,396.04	700.53	1.173	406.8	742.1
1629	J-123	23,125.71	5,962,499.02	700.25	1.173	409.6	742.1
1631	J-124	22,727.41	5,961,943.33	700.5	1.149	407.7	742.16
1635	J-126	22,921.36	5,961,747.94	699.46	0.558	419.2	742.29
1638	J-127	23,004.78	5,961,658.26	699.18	0.558	422	742.3
1641	J-128	23,107.26	5,961,523.64	699.75	0.54	417.1	742.37
1644	J-129	22,662.34	5,963,932.49	700.13	0.333	402.5	741.26
1651	J-131	24,486.06	5,962,060.83	699.27	4.11	442.5	744.47
1654	J-132	24,968.91	5,961,951.84	699.38	4.11	443.4	744.69
1657	J-133	24,401.29	5,962,107.21	700.25	2.355	426.8	743.86
1661	J-134	23,876.05	5,964,790.63	697.75	22.557	422.6	740.93
1662	J-135	23,390.85	5,964,794.52	699.5	0	405.9	740.98
1678	J-136	23,661.31	5,960,941.42	698.75	0.312	431.3	742.82
1681	J-137	23,388.97	5,962,746.95	700.04	0	410	741.93
1684	J-138	22,557.14	5,963,245.10	700.93	0	396.7	741.47
1687	J-139	22,761.26	5,963,186.30	702.75	0	379.1	741.48
1701	J-140	23,586.96	5,963,525.74	698.45	0.144	422.5	741.61
1704	J-141	23,239.49	5,963,413.52	699.38	0.804	413.2	741.6
1711	J-143	23,345.33	5,961,555.68	699	0	424.9	742.42
1714	J-144	23,225.95	5,961,556.04	699	0	424.6	742.39
1716	J-145	23,170.80	5,961,583.05	699.59	0	418.7	742.37
1722	J-146	24,277.82	5,962,502.87	698.64	0	436.1	743.2
1725	J-147	24,223.72	5,962,367.72	698.57	0	436.9	743.21
1729	J-148	24,298.95	5,962,314.98	698.75	0	435.5	743.24
1732	J-149	24,416.81	5,962,303.73	698.9	0	439	743.75
1735	J-150	24,475.11	5,962,227.73	699.07	0	439.2	743.95
1738	J-151	24,314.17	5,962,158.57	699.57	0	433	743.82
1742	J-152	24,851.03	5,962,145.44	699.48	0	444.7	744.92
1745	J-153	24,970.64	5,962,052.96	699.41	0	443.7	744.74
1752	J-155	24,616.38	5,962,095.62	699.27	0	444.8	744.73
1757	J-156	24,560.35	5,962,018.25	699.29	0	443.7	744.63
1786	J-165	23,502.59	5,964,204.60	699.08	0.384	415.3	741.52
1789	J-166	23,315.10	5,964,203.31	698.91	0.126	417	741.52
1792	J-167	23,168.27	5,964,090.48	698.75	0.126	418.6	741.53
1795	J-168	23,313.56	5,964,092.80	698.77	0.126	418.4	741.52
1798	J-169	23,315.88	5,964,279.82	698.79	0.126	418.2	741.52
1800	J-170	23,364.57	5,964,279.82	698.98	0.126	416.3	741.52
1802	J-171	23,243.23	5,964,202.54	698.64	0.126	419.7	741.52
1805	J-172	23,244.78	5,964,090.48	698.87	0.126	417.4	741.52
1809	J-173	23,069.34	5,964,200.99	699.45	0.126	411.7	741.52
1811	J-174	22,976.60	5,964,200.99	699.89	0.126	407.4	741.52
1813	J-175	22,976.60	5,964,112.89	700.15	0.126	404.9	741.52
1815	J-176	23,070.12	5,964,112.12	699.74	0.126	408.9	741.52
1819	J-178	22,974.67	5,964,279.75	700.05	0.126	405.8	741.52
1822	J-179	23,044.05	5,964,278.86	699.77	0.126	408.6	741.52
1825	J-180	23,130.99	5,964,278.86	699.49	0.126	411.3	741.52
1828	J-181	23,217.93	5,964,279.83	699.24	0.126	413.8	741.52

**Ultimate Development
Peak Hour Demand**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Pressure (kPa)	Hydraulic Grade (m)
1832	J-182	23,439.83	5,964,204.12	699.15	0	414.6	741.51
1835	J-183	24,885.31	5,963,455.51	698.5	0	430.6	742.5
1838	J-184	23,025.30	5,962,131.36	700.17	0.225	411.2	742.18
1841	J-185	23,215.32	5,962,120.15	701.11	0.369	402.2	742.2

Ultimate Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	8.686	0.12	0.02	0.113
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-2.867	0.06	0	0.035
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-3.152	0.06	0	0.042
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-3.554	0.07	0.01	0.053
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-3.881	0.08	0.01	0.062
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	12.41	0.25	0.08	0.532
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	12.17	0.25	0.07	0.514
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	-5.393	0.11	0.02	0.114
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	-5.66	0.12	0.02	0.124
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	-5.93	0.12	0.02	0.136
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-13.056	0.18	0.03	0.241
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	6.865	0.1	0.01	0.073
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	6.622	0.09	0.01	0.069
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	17.353	0.35	0.16	0.991
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	6.163	0.13	0.02	0.145
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-16.923	0.34	0.14	0.946
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-17.274	0.35	0.15	0.982
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-56.609	1.15	1.25	8.851
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	27.571	0.39	0.08	0.806
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	7.211	0.1	0	0.08
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-14.34	0.2	0.03	0.286
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-14.685	0.21	0.02	0.299
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.126	0.01	0	0.001
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-14.925	0.21	0.03	0.308
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-15.162	0.21	0.03	0.318
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-19.179	0.27	0.06	0.491
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-2.517	0.15	0.04	0.35
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-2.655	0.15	0.03	0.386
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-2.805	0.16	0.03	0.427
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	16.813	0.24	0.03	0.385
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-19.962	0.28	0.05	0.529
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-32.962	0.47	0.27	1.337
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-44.318	0.63	0.33	2.315
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-17.597	0.56	0.22	2.564
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-6.155	0.2	0.04	0.366
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	11.119	0.36	0.13	1.307
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.288	0.02	0	0.006
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	2.047	0.12	0.05	0.239
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	3.803	0.22	0.04	0.75
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-1.924	0.11	0.02	0.213
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-2.107	0.12	0.03	0.252
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	10.762	0.34	0.02	1.234
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	4.373	0.25	0.09	0.973
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	6.308	0.2	0.03	0.458
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.195	0.01	0	0.003
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-2.448	0.14	0.04	0.332
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-1.624	0.09	0.02	0.155
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-1.807	0.1	0.02	0.19
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.975	0.06	0.01	0.061
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-1.401	0.08	0.02	0.118
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	1.231	0.04	0	0.022
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-3.09	0.1	0.01	0.122
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-36.344	0.51	0.13	1.603
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-22.037	0.31	0.09	0.635
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	157.296	2.23	7.52	24.171
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	56.912	0.81	1.8	3.678
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	0.228	0.01	0	0.004
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-4.416	0.25	0.12	0.991
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-4.635	0.27	0.08	1.084
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-4.803	0.28	0.12	1.158
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	17.384	0.56	0.31	2.992
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	6.571	0.21	0.05	0.494
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.15	0.01	0	0
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	3.921	0.13	0.02	0.189
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-6.001	0.19	0.04	0.417
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-6.184	0.2	0.08	0.441
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-6.322	0.2	0.02	0.461
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	9.842	0.32	0.04	1.044
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	4.752	0.15	0.02	0.271
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.195	0.01	0	0.002
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	4.557	0.15	0.02	0.25
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	1.879	0.06	0.01	0.049
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	4.997	0.16	0.05	0.297
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-2.834	0.09	0.01	0.104
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-3.002	0.1	0.01	0.116

Ultimate Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-3.185	0.1	0.02	0.129
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-3.335	0.11	0.01	0.141
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-4.119	0.13	0.02	0.208
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	4.014	0.13	0.05	0.198
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	3.846	0.12	0.01	0.183
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-2.18	0.07	0.01	0.064
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-2.33	0.07	0.01	0.073
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.093	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-7.705	0.25	0.06	0.663
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	5.945	0.19	0.04	0.41
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	-16.52	0.23	0.02	0.373
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	-16.52	0.23	0.05	0.372
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-19.937	0.28	0.07	0.527
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-19.937	0.28	0.06	0.528
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-19.937	0.28	0.02	0.527
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	-1.75	0.06	0	0.043
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	-0.463	0.01	0	0.003
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	-0.67	0.02	0	0.007
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	-1.38	0.04	0	0.028
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-1.713	0.05	0	0.041
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-1.875	0.06	0.01	0.048
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-1.968	0.06	0	0.054
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-2.151	0.07	0	0.062
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.195	0.01	0	0.001
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.093	0.01	0	0.003
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-27.71	0.39	0.08	0.97
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-27.71	0.39	0.12	0.97
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-27.86	0.39	0.08	0.979
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	9.516	0.19	0.04	0.325
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	9.516	0.19	0.05	0.326
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	9.516	0.19	0.04	0.326
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-12.035	0.25	0.07	0.503
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-20.933	0.43	0.1	1.402
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-3.71	0.21	0.06	0.717
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-8.752	0.28	0.11	0.84
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-12.349	0.25	0.03	0.527
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-12.499	0.25	0.08	0.54
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-12.667	0.26	0.06	0.553
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-12.817	0.26	0.04	0.566
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	3.867	0.22	0.09	0.774
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	3.672	0.21	0.08	0.704
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	1.879	0.11	0.02	0.204
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.15	0.01	0	0.003
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	1.615	0.09	0.01	0.154
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	1.447	0.08	0.02	0.125
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-3.646	0.12	0.02	0.166
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-3.604	0.12	0.02	0.162
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	4.88	0.16	0.03	0.285
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	-0.695	0.04	0	0.033
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	-0.25	0.01	0	0.005
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.502	0.03	0	0.018
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	0.641	0.04	0	0.028
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-8.76	0.18	0.01	0.279
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-11.867	0.24	0.06	0.49
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	5.869	0.19	0.07	0.401
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-2.294	0.13	0.04	0.294
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-2.501	0.14	0.04	0.346
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-5.425	0.17	0.03	0.346
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-2.924	0.09	0.01	0.11
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-3.649	0.21	0.1	0.696
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.609	0.04	0	0.021
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-4.321	0.14	0.01	0.16
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-10.25	0.59	0.02	4.708
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-8.082	0.26	0.04	0.724
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	-2.337	0.13	0.06	0.305
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-4.91	0.16	0.02	0.288
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-1.099	0.06	0	0.081
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-3.694	0.21	0	0.708
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-2.211	0.07	0.01	0.066
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	-1.484	0.09	0.01	0.131
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	1.254	0.07	0.01	0.096
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.031	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	17.494	0.25	0.07	0.347
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	-4.876	0.07	0	0.044

Ultimate Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	-5.929	0.08	0.01	0.056
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	3.555	0.21	0.05	0.663
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	2.914	0.17	0.07	0.459
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	-1.383	0.08	0.01	0.115
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	0.575	0.03	0	0.023
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	-22.235	0.31	0.05	0.645
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	1.033	0.06	0.01	0.067
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-1.135	0.07	0	0.077
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	-8.933	0.13	0	0.116
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	10.516	0.21	0	0.4
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	-21.162	0.3	0.04	0.588
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	-0.75	0.01	0	0
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-1.135	0.07	0	0.077
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	-1.52	0.09	0.03	0.137
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	-0.379	0.02	0	0.01
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-1.648	0.1	0.01	0.16
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-1.648	0.1	0.03	0.16
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	-0.822	0.05	0.01	0.044
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.093	0.01	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	2.098	0.12	0.04	0.25
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	-1.638	0.09	0.02	0.158
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-1.221	0.07	0.01	0.092
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	-0.83	0.05	0	0.045
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-19.973	0.28	0.01	0.533
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.168	0.01	0	0.003
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-20.36	0.29	0.15	0.548
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	3.568	0.21	0.08	0.667
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	5.534	0.32	0.01	1.499
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-16.709	0.24	0.04	0.381
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-16.823	0.24	0.03	0.384
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-19.029	0.27	0.06	0.483
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	3.824	0.22	0.09	0.759
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	1.134	0.07	0.01	0.08
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	2.368	0.14	0.04	0.312
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-1.884	0.11	0.03	0.204
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-9.375	0.19	0.04	0.317
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	0.556	0.03	0	0.021
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-3.205	0.1	0.01	0.131
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	-3.304	0.11	0.01	0.138
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	8.733	0.12	0.01	0.115
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	1.176	0.02	0	0.008
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	0.099	0.01	0	0.006
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	7.557	0.11	0.01	0.088
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	6.596	0.09	0.01	0.068
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	6.018	0.09	0.01	0.057
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	-0.03	0	0	0
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	0.375	0.02	0	0.01
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	5.931	0.08	0.01	0.056
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-0.087	0.01	0	0
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	-0.992	0.06	0	0.064
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	-0.932	0.05	0	0.055
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-0.578	0.03	0	0.038
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	-0.353	0.02	0	0.013
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	-1.092	0.06	0.01	0.075
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-0.961	0.06	0	0.049
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	-0.131	0.01	0	0
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	-1.275	0.07	0.01	0.099
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	-0.175	0.01	0	0.002
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	-0.358	0.02	0	0.009
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-0.571	0.03	0	0.022
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	0.03	0	0	0
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-0.976	0.06	0.01	0.061
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	0.811	0.05	0.01	0.043
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-3.634	0.12	0.02	0.165
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	4.446	0.26	0.02	1.002
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-9.784	0.2	0.05	0.343
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	-0.681	0.02	0	0.006
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-2.898	0.17	0.06	0.454
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	-0.092	0	0	0
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	-0.185	0.01	0	0.001
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	4.457	0.26	0.11	1.008
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-2.191	0.13	0.03	0.271
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-2.479	0.14	0.03	0.34
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-4.593	0.26	0.01	1.064
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-10.124	0.21	0.04	0.365
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	-0.432	0.02	0	0.013

Ultimate Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-4.746	0.27	0.01	1.134
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-2.124	0.12	0.03	0.255
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	6.63	0.14	0.01	0.119
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-2.015	0.12	0.04	0.231
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-2.114	0.12	0.03	0.253
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	-0.844	0.02	0	0.003
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-1.812	0.1	0.02	0.191
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-2.325	0.13	0.04	0.302
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-5.884	0.12	0.03	0.134
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	0.875	0.02	0	0.004
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	15.211	0.22	0.02	0.32
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-12.808	0.18	0.02	0.233
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-13.195	0.19	0.03	0.245
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-3.439	0.07	0	0.049
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-1.837	0.06	0.01	0.047
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-1.837	0.11	0.02	0.195
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-2.005	0.12	0.02	0.229
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-2.701	0.04	0	0.013
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-10.006	0.14	0.01	0.147
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.093	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-12.193	0.17	0.03	0.212
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.219	0.01	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.321	0.01	0	0.002
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-12.952	0.18	0.02	0.237
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	-0.482	0.03	0	0.016
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.632	0.04	0	0.026
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.815	0.05	0	0.044
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-1.034	0.06	0.01	0.067
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-1.184	0.04	0	0.014
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	12.638	0.18	0.02	0.227
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-14.017	0.2	0.03	0.275
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-1.459	0.08	0.02	0.127
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-1.627	0.09	0.02	0.156
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-1.834	0.11	0.02	0.195
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-18.017	0.25	0.08	0.437
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-1.574	0.09	0.03	0.147
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	2.622	0.15	0.02	0.378
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	16.009	0.23	0.03	0.351
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	12.697	0.18	0.03	0.228
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.402	0.01	0	0.003
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	2.772	0.16	0.07	0.418
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-3.014	0.1	0.01	0.116
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-5.042	0.16	0.02	0.302
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-2.801	0.16	0.05	0.426
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-3.077	0.18	0.06	0.507
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-6.02	0.19	0.05	0.42
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-6.113	0.2	0.02	0.432
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	2.421	0.08	0.01	0.078
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-1.99	0.11	0.02	0.226
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-1.746	0.1	0.03	0.178
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-1.182	0.07	0.01	0.086
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-33.029	0.47	0.05	1.344
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-33.086	0.47	0.14	1.347
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-37.376	0.53	0.05	1.69
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-37.376	0.53	0.1	1.687
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	5.189	0.17	0.02	0.319
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	2.417	0.08	0	0.079
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	2.303	0.07	0.01	0.071
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-6.327	0.2	0.03	0.461
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-6.327	0.2	0.02	0.46
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	4.116	0.13	0.02	0.208
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.168	0.01	0	0.002
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	10.675	0.34	0.03	1.213
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	10.525	0.34	0.13	1.181
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	4.531	0.15	0.03	0.248
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	4.393	0.14	0.02	0.234
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-5.079	0.16	0.01	0.307
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-8.622	0.28	0.07	0.816
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	1.56	0.09	0.01	0.145
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	1.422	0.08	0.01	0.121
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	-2.092	0.12	0.04	0.248
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-1.891	0.11	0	0.204
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-1.984	0.03	0	0.009
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	15.52	0.22	0.01	0.329
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	15.211	0.22	0.05	0.32

Ultimate Development
Peak Hour Demand

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	1.216	0.07	0.01	0.091
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	1.135	0.07	0.01	0.08
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	-0.987	0.06	0	0.062
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	-0.987	0.06	0.01	0.062
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	11.628	0.37	0.12	1.19
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	11.442	0.37	0.01	1.153
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.093	0.01	0	0.001
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-4.689	0.27	0.07	1.107
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-4.884	0.16	0.02	0.285
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-9.736	0.31	0.1	0.857
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-9.988	0.32	0.13	0.899
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	1.851	0.06	0	0.044
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	1.218	0.04	0	0.023
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	4.19	0.09	0.01	0.059
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	3.638	0.12	0.02	0.136
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	-3.338	0.07	0.01	0.047
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	9.516	0.19	0.03	0.325
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-8.664	0.18	0.02	0.273
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-18.18	0.37	0.19	1.08
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	22.924	0.47	0.06	1.661
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	56.912	0.81	0.54	3.678
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	56.747	1.16	0.37	8.892
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	-2.418	0.14	0.02	0.324
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	-2.499	0.14	0.03	0.289
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-4.901	0.16	0	0.286
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-5.12	0.16	0.04	0.311
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.138	0.01	0	0.002
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.081	0	0	0.001
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-10.765	0.34	0.07	1.232
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-10.846	0.35	0.05	1.249
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	-0.199	0	0	0
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	-7.176	0.1	0	0.081
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	-7.407	0.1	0	0.084
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	1.51	0.02	0	0.005
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.813	0.03	0	0.01
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.675	0.02	0	0.007
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	2.736	0.06	0	0.032
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	2.622	0.05	0	0.03
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	-1.418	0.05	0	0.029
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	-1.544	0.05	0	0.033
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	-1.544	0.05	0	0.034
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	-1.658	0.05	0	0.038
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	4.705	0.07	0	0.036
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	2.408	0.03	0	0.013
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.529	0.01	0	0.001
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-2.229	0.05	0	0.023
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	-6.531	0.09	0.01	0.067
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	-7.032	0.1	0.01	0.077
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.524	0.02	0	0.007
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.524	0.02	0	0.003
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	2.823	0.09	0.01	0.102
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	-3.914	0.08	0	0.064
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	-3.914	0.08	0	0.061
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	1.201	0.04	0	0.021
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	1.018	0.03	0	0.015
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	0.88	0.03	0	0.011
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	-1.315	0.04	0	0.025
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	-1.453	0.05	0	0.03
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	2.115	0.04	0	0.021
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	2.823	0.09	0	0.105
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-13.299	0.19	0.03	0.249
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-11.346	0.16	0	0.187
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	-1.953	0.04	0	0.017
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	-1.953	0.04	0	0.018
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	-2.115	0.04	0	0.02
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	-16.589	0.23	0.01	0.373
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-19.844	0.28	0.05	0.523
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	3.163	0.06	0	0.042
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	2.812	0.06	0	0.034
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	-7.428	0.15	0.02	0.206
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	-7.521	0.15	0.01	0.21
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	-5.653	0.12	0.01	0.124
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	-1.936	0.06	0	0.051
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	-2.119	0.07	0.01	0.061
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	-2.245	0.07	0	0.067

**Ultimate Development
Peak Hour Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	-2.245	0.07	0	0.068
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	5.767	0.12	0.01	0.129
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.183	0.01	0	0.001
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-5.233	0.17	0.02	0.323
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-5.44	0.17	0.04	0.348
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.138	0.01	0	0.002
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.093	0.01	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-5.608	0.18	0.02	0.308
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-5.608	0.18	0.02	0.309
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-5.803	0.19	0.03	0.329
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	-0.041	0	0	0
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.867	0.03	0	0.01
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-6.032	0.19	0.02	0.353
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-11.08	0.35	0.11	1.089
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	6.384	0.13	0.01	0.13
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	17.203	0.35	0.14	0.975
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	6.367	0.13	0.01	0.156
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-36.917	0.52	0.07	1.649
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-39.482	0.56	0.14	1.869
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	9.253	0.19	0.01	0.26
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	8.782	0.18	0.02	0.235
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	-8.013	0.16	0.02	0.198
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-8.976	0.18	0.02	0.245
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-9.438	0.19	0.03	0.269
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	0.732	0.01	0	0.002
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	2.586	0.04	0	0.01
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	3.785	0.08	0.01	0.049
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	3.243	0.1	0.02	0.112
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	-3.612	0.07	0	0.045
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	9.601	0.31	0.07	0.701
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	-10.126	0.14	0.01	0.107
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	-12.058	0.17	0.02	0.148
1111	P-4730F	J-3710F	J-3720F	324	300	PVC	120	-14.557	0.21	0.07	0.21
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	-9.635	0.14	0.01	0.097
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	-1.561	0.05	0.01	0.024
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-15.643	0.5	0.28	1.729
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	2.433	0.03	0	0.009
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	36.028	0.51	0.05	1.321
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	-27.571	0.39	0.07	0.806
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	6.305	0.09	0.01	0.044
1124	P-4990F	J-3890F	J-3900F	157.27	300	PVC	120	-6.878	0.1	0.01	0.052
1125	P-5000F	J-3900F	J-3910F	137.45	200	PVC	120	6.391	0.2	0.05	0.329
1126	P-5010F	J-3900F	J-3920F	120.22	300	PVC	120	-12.982	0.18	0.02	0.17
1127	P-5030F	J-3930F	J-3940F	100.53	200	PVC	120	-3.734	0.12	0.01	0.121
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-4.907	0.16	0.04	0.202
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	16.54	0.23	0.12	0.313
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	18.3	0.26	0.1	0.377
1137	P-5140F	J-3910F	J-4000F	117.02	200	PVC	120	1.149	0.04	0	0.014
1139	P-5160F	J-3900F	J-3930F	129.23	200	PVC	120	-1.436	0.05	0	0.021
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	9.27	0.13	0.02	0.091
1143	P-5210F	J-4020F	J-4030F	237.78	300	PVC	120	58.496	0.83	0.66	2.761
1144	P-5220F	J-4030F	J-4040F	539.98	300	PVC	120	50.129	0.71	1.12	2.075
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	9.27	0.13	0.03	0.107
1148	P-5270F	J-4050F	J-4060F	85.82	300	PVC	120	-18.257	0.26	0.03	0.319
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	40.088	0.57	0.36	1.371
1150	P-5300F	J-S2195E	J-4070F	291.2	250	PVC	120	3.914	0.08	0.01	0.045
1151	P-5310F	J-4070F	J-136	303.2	250	PVC	120	3.221	0.07	0.01	0.031
1152	P-5330F	J-3720F	J-4090F	88.46	300	PVC	120	-17.8	0.25	0.03	0.305
1153	P-5340F	J-4090F	J-3730F	205.97	300	PVC	120	-19.518	0.28	0.07	0.362
1154	P-5350F	J-3730F	J-4100F	109.19	300	PVC	120	-27.529	0.39	0.07	0.684
1155	P-5360F	J-4100F	J-4110F	123.24	300	PVC	120	-18.323	0.26	0.04	0.321
1156	P-5380F	J-4110F	J-4120F	224.56	300	PVC	120	-59.59	0.84	0.64	2.857
1157	P-5390F	J-4120F	J-4100F	601.36	200	PVC	120	12.45	0.4	0.68	1.133
1158	P-5400F	J-4110F	J-4130F	162.02	300	PVC	120	26.142	0.37	0.1	0.621
1159	P-5410F	J-4130F	J-4140F	155.87	300	PVC	120	26.142	0.37	0.1	0.621
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	-1.143	0.04	0	0.014
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	1.155	0.04	0	0.014
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	-1.344	0.04	0	0.018
1163	P-5460F	J-4170F	J-4180F	175.7	200	PVC	120	-3.843	0.12	0.02	0.128
1164	P-5470F	J-4180F	J-4190F	86.82	200	PVC	120	-7.086	0.23	0.03	0.399
1165	P-5480F	J-4190F	J-4110F	85.09	200	PVC	120	-15.126	0.48	0.14	1.625
1166	P-5490F	J-4150F	J-4190F	299.99	200	PVC	120	-4.797	0.15	0.06	0.194
1167	P-5500F	J-3730F	J-4200F	352.88	200	PVC	120	4.768	0.15	0.07	0.191
1168	P-5510F	J-4200F	J-4090F	297.23	200	PVC	120	1.525	0.05	0.01	0.023
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	5.886	0.12	0.02	0.096
1170	P-5530F	J-4210I	J-4220I	259.29	250	PVC	120	-7.031	0.14	0.03	0.133

**Ultimate Development
Peak Hour Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1171	P-5540F	J-4220I	J-127	194.42	250	PVC	120	7.85	0.16	0.03	0.163
1172	P-5550F	J-4020F	J-4230F	442.56	250	PVC	120	33.521	0.68	1.06	2.393
1173	P-5560F	J-4230F	J-4040F	510.54	250	PVC	120	25.154	0.51	0.72	1.406
1174	P-5570F	J-S2011E	J-4240F	406.72	300	PVC	110	-20.092	0.28	0.18	0.448
1175	P-5580F	J-4240F	J-4050F	439.03	300	PVC	110	-17.129	0.24	0.15	0.334
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	21.831	0.31	0.16	0.523
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	15.577	0.22	0.09	0.28
1178	P-5610F	J-4240F	J-4250F	184.36	250	PVC	120	-4.091	0.08	0.01	0.049
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	-17.605	0.25	0.05	0.35
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	-17.605	0.25	0.02	0.352
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	16.963	0.24	0.07	0.391
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	2.532	0.15	0.02	0.353
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	2.532	0.15	0.05	0.354
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	-2.501	0.14	0.07	0.346
1187	P-5700F	J-S1010E	J-4020F	107.84	300	PVC	110	100.384	1.42	0.95	8.819
1188	P-5710F	J-4040F	J-4120F	59.33	300	PVC	120	75.283	1.07	0.26	4.405
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	16.559	0.23	0.02	0.314
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	4.884	0.28	0.01	1.005
1200	P-5850F	J-126	J-4650F	231.91	250	PVC	120	12.649	0.26	0.09	0.394
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	-10.908	0.15	0.05	0.123
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	0.934	0.01	0	0.002
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-3.106	0.1	0.01	0.087
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-4.651	0.15	0.03	0.183
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	-0.016	0	0	0
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	-0.016	0	0	0
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	11.709	0.37	0.13	1.206
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-140.335	1.99	7.55	19.567
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-25.318	0.81	0.71	4.219
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-46.21	1.47	1.49	12.858
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	8.831	0.28	0.09	0.6
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-70.627	1	0.5	5.486
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-94.125	1.33	1.35	9.339
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-22.654	0.72	0.94	3.434
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-69.784	0.99	0.7	5.365
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-68.941	0.98	0.63	5.246
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-54.107	0.77	0.16	3.349
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-54.107	0.77	0.1	3.35
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-36.028	0.51	0.06	1.578
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-13.991	0.45	0.11	1.407
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-14.834	0.47	0.24	1.568
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.843	0.03	0	0.008
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	29.8	0.95	0.58	5.705
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	24.786	0.35	0.05	0.562
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	18.905	0.27	0.04	0.341
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-0.566	0.01	0	0
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	2.282	0.03	0	0.006
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	5.347	0.17	0.04	0.237
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	2.848	0.09	0.01	0.074
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-37.471	0.53	0.27	1.696
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	3.785	0.12	0.03	0.125
1245	P-6170F	J-4490F	J-3630F	331.56	200	PVC	120	10.98	0.35	0.3	0.898
1246	P-6180F	J-134	J-4500F	880.17	300	PVC	120	-3.408	0.05	0.01	0.014
1247	P-6190F	J-4500F	J-N1220E	780.1	300	PVC	120	-26.274	0.37	0.49	0.627
1249	P-6210F	J-135	J-3630F	259.79	200	PVC	120	-10.98	0.35	0.23	0.898
1250	P-6220F	J-4510F	J-4520F	458.02	300	PVC	120	-10.58	0.15	0.05	0.116
1251	P-6230F	J-4520F	J-4530F	370.9	300	PVC	120	-18.137	0.26	0.12	0.316
1252	P-6240F	J-4530F	J-4540F	46.89	300	PVC	120	-18.137	0.26	0.01	0.315
1253	P-6250F	J-4540F	J-9	113.77	300	PVC	120	-18.137	0.26	0.04	0.316
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	2.913	0.09	0	0.09
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	9.04	0.29	0.03	0.748
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	120	4.58	0.15	0.03	0.178
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	0.418	0.01	0	0.002
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	-1.76	0.06	0	0.03
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-3.938	0.13	0.02	0.134
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	10.296	0.15	0.01	0.13
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	9.879	0.14	0.02	0.102
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-13.687	0.19	0.02	0.22
1266	P-6380F	J-3920F	J-4620F	102.2	200	PVC	120	-2.875	0.09	0.01	0.075
1270	P-6410F	J-3930F	J-102	89.75	200	PVC	120	1.149	0.04	0	0.014
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	6.303	0.2	0.03	0.322
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-6.823	0.22	0.02	0.444
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.069	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	5.889	0.19	0.03	0.337
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	2.334	0.07	0	0.061
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	2.121	0.07	0.01	0.051
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	3.429	0.11	0.01	0.124

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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	3.198	0.1	0.01	0.108
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-15.794	0.22	0.12	0.287
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-6.892	0.14	0.03	0.15
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	6.881	0.14	0.02	0.15
1343	P-5833	J-10	J-12	97.69	250	PVC	110	6.269	0.13	0.01	0.126
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	5.552	0.11	0.01	0.101
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.321	0.01	0	0.002
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	3.381	0.07	0	0.04
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.555	0.03	0	0.018
1352	P-5838	J-14	J-16	118.78	250	PVC	110	2.46	0.05	0	0.023
1354	P-5839	J-16	J-17	94.47	250	PVC	110	1.839	0.04	0	0.013
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	2.298	0.03	0	0.009
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	2.01	0.03	0	0.007
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	6.564	0.13	0.01	0.137
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	6.381	0.13	0.01	0.13
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	-1.194	0.04	0	0.017
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	-1.281	0.04	0	0.021
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.108	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-1.572	0.05	0	0.029
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-1.755	0.06	0	0.035
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	4.833	0.1	0.01	0.078
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-1.881	0.06	0	0.042
1376	P-5852	J-26	J-25	11.22	250	PVC	110	5.064	0.1	0	0.086
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-6.945	0.14	0.01	0.152
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.195	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-7.14	0.15	0.01	0.16
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	-3.455	0.07	0	0.048
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-10.973	0.22	0.02	0.425
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-7.266	0.15	0.01	0.166
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-7.518	0.15	0.01	0.176
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.252	0.01	0	0.005
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	3.612	0.07	0	0.046
1395	P-5863	J-33	J-34	95	250	PVC	110	2.58	0.05	0	0.024
1397	P-5864	J-34	J-35	89.81	250	PVC	110	2.385	0.05	0	0.021
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.069	0	0	0
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	-0.723	0.02	0	0.007
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	-0.81	0.03	0	0.008
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	-0.81	0.03	0	0.008
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	-0.849	0.03	0	0.009
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	-0.888	0.03	0	0.01
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	-0.906	0.03	0	0.01
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.231	0.01	0	0.001
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	2.926	0.09	0.01	0.092
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	10.045	0.32	0.13	0.908
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	9.814	0.31	0.08	0.87
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	5.758	0.18	0.03	0.324
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.144	0.01	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	5.614	0.18	0.03	0.308
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.366	0.02	0	0.008
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	4.459	0.14	0.02	0.203
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	3.895	0.12	0.01	0.157
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	3.769	0.12	0.01	0.148
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-34.249	0.48	0.12	1.436
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-30.732	0.43	0.08	1.175
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	3.517	0.11	0.01	0.13
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-6.032	0.19	0.02	0.352
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-5.537	0.18	0.02	0.302
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-5.75	0.18	0.02	0.323
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.708	0.02	0	0.007
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.108	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.48	0.02	0	0.003
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-26.721	0.38	0.07	0.906
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-27.027	0.38	0.04	0.927
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.306	0.02	0	0.005
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-27.027	0.38	0.05	0.776
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-27.297	0.39	0.08	0.791
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.27	0.02	0	0.004
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	-2.026	0.06	0	0.047
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.055	0	0	0
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.055	0	0	0
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-6.556	0.09	0	0.057
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-6.977	0.1	0	0.062
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.238	0.01	0	0.001
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	-11.503	0.16	0.02	0.159
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.414	0.01	0	0.002

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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.27	0.01	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.126	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	-11.917	0.17	0.01	0.171
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	-2.153	0.07	0	0.052
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	-2.315	0.07	0.01	0.06
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	4.095	0.06	0	0.029
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	4.008	0.06	0	0.027
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.306	0.01	0	0.002
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.306	0.02	0	0.006
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-6.742	0.14	0.01	0.144
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-6.955	0.14	0.02	0.153
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	4.162	0.13	0.01	0.177
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	3.034	0.1	0.01	0.099
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.522	0.02	0	0.003
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	31.833	0.45	0.05	0.894
1511	P-5926	J-79	J-80	321.67	300	PVC	120	31.833	0.45	0.28	0.895
1513	P-5927	J-80	J-81	352.13	300	PVC	120	14.716	0.21	0.07	0.214
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	2.047	0.07	0.01	0.057
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	2.047	0.07	0	0.057
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-17.117	0.54	0.12	2.043
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	13.834	0.2	0	0.186
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	14.716	0.21	0.19	0.214
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	13.834	0.2	0.05	0.191
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-13.174	0.19	0.18	0.175
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-13.174	0.19	0.04	0.175
1564	P-5954	J-17	J-97	84.22	250	PVC	110	1.395	0.03	0	0.008
1565	P-5955	J-97	J-35	104.88	250	PVC	110	-2.912	0.06	0	0.031
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.366	0.01	0	0.002
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.243	0.01	0	0.001
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.843	0.03	0	0.007
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	30.643	0.98	0.77	6.008
1575	P-5960	J-3920F	J-3950F	256.24	300	PVC	120	-11.256	0.16	0.03	0.13
1577	P-5961	J-3990F	J-103	93.17	200	PVC	120	0.503	0.02	0	0.003
1580	P-5963	J-103	J-104	83.79	200	PVC	120	0.559	0.02	0	0.004
1582	P-5964	J-104	J-105	210.99	200	PVC	120	-0.59	0.02	0	0.004
1584	P-5965	J-103	J-106	239.12	200	PVC	120	-1.205	0.04	0	0.015
1585	P-5966	J-106	J-3910F	87.2	200	PVC	120	-4.093	0.13	0.01	0.145
1586	P-5967	J-105	J-106	103.16	200	PVC	120	-1.739	0.06	0	0.029
1588	P-5968	J-3890F	J-107	222.21	200	PVC	120	5.099	0.16	0.05	0.217
1589	P-5969	J-107	J-3990F	176.68	200	PVC	120	1.652	0.05	0	0.027
1591	P-5970	J-107	J-108	88.91	200	PVC	120	2.298	0.07	0	0.049
1593	P-5971	J-108	J-109	94.43	200	PVC	120	1.149	0.04	0	0.014
1595	P-5972	J-108	J-110	44	200	PVC	120	1.149	0.04	0	0.014
1597	P-5973	J-3880F	J-111	68.36	300	PVC	120	1.668	0.02	0	0.004
1598	P-5974	J-111	J-3890F	157.43	300	PVC	120	-0.63	0.01	0	0.001
1600	P-5975	J-111	J-112	192.75	200	PVC	120	1.149	0.04	0	0.014
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	1.173	0.04	0	0.014
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-2.401	0.08	0.01	0.054
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	0.404	0.01	0	0.002
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-11.033	0.16	0.01	0.126
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-9.021	0.13	0.01	0.087
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-10.407	0.15	0.01	0.113
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-2.131	0.07	0	0.043
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-2.584	0.08	0.01	0.062
1621	P-5988	J-119	J-120	88.63	200	PVC	120	1.173	0.04	0	0.014
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-0.769	0.02	0	0.006
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-1.228	0.04	0	0.016
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	5.132	0.07	0	0.031
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	3.245	0.05	0	0.013
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.714	0.02	0	0.005
1630	P-5994	J-114	J-123	33.43	200	PVC	120	1.173	0.04	0	0.016
1632	P-5995	J-4620F	J-124	139.3	200	PVC	120	-4.024	0.13	0.02	0.14
1633	P-5996	J-124	J-4650F	173.76	200	PVC	120	-5.173	0.16	0.04	0.223
1637	P-5998	J-126	J-4210I	108.9	250	PVC	120	-6.473	0.13	0.01	0.114
1639	P-5999	J-4290I	J-127	79.82	250	PVC	120	-0.558	0.01	0	0.001
1640	P-6000	J-127	J-126	123.9	250	PVC	120	6.734	0.14	0.02	0.122
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	5.706	0.18	0.03	0.319
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	5.373	0.17	0.03	0.285
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-9.312	0.3	0.09	0.661
1663	P-6010	J-134	J-135	485.21	300	PVC	120	-10.049	0.14	0.05	0.106
1664	P-6011	J-135	J-4510F	209.29	300	PVC	120	0.931	0.01	0	0.001
1665	P-6012	J-134	J-3670I	459.26	200	PVC	120	-9.1	0.29	0.29	0.634
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	-11.22	0.16	0.03	0.13
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	-8.312	0.12	0.02	0.074
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	21.444	0.3	0.06	0.506
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	21.444	0.3	0.06	0.506

**Ultimate Development
Peak Hour Demand**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-12.457	0.18	0.01	0.221
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	-8.356	0.12	0	0.104
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-4.101	0.08	0.02	0.057
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	-3.032	0.06	0	0.04
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	-3.176	0.06	0	0.043
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	-9.728	0.14	0.01	0.14
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	-10.532	0.15	0.02	0.162
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	1.491	0.05	0	0.022
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	10.837	0.22	0.03	0.296
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.762	0.02	0	0.002
1715	P-6032	J-143	J-144	119.38	250	PVC	120	10.075	0.21	0.03	0.258
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	-9.535	0.19	0.04	0.233
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.54	0.01	0	0.001
1719	P-6035	J-144	J-145	61.41	250	PVC	120	10.075	0.21	0.02	0.259
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-6.277	0.2	0.03	0.319
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-3.678	0.12	0.02	0.118
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-6.277	0.2	0.03	0.319
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-2.599	0.08	0.02	0.062
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-6.196	0.2	0.03	0.311
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-12.473	0.4	0.14	1.137
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-24.275	0.77	0.37	3.902
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-17.319	0.55	0.2	2.088
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-26.63	0.85	0.36	4.634
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-6.957	0.22	0.07	0.386
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-6.957	0.22	0.04	0.386
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-20.05	0.64	0.38	2.739
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-8.236	0.26	0.05	0.527
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-10.491	0.33	0.17	0.825
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-2.255	0.07	0.02	0.048
1755	P-6060	J-152	J-155	274.29	200	PVC	120	9.559	0.3	0.19	0.695
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-11.83	0.38	0.16	1.031
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-15.94	0.51	0.15	1.792
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-4.126	0.13	0.06	0.146
1760	P-6064	J-155	J-156	95.53	200	PVC	120	11.814	0.38	0.1	1.028
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	-4.07	0.13	0.01	0.143
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	3.509	0.11	0.01	0.108
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	5.525	0.18	0.02	0.252
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	2.5	0.08	0.01	0.058
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	1.521	0.05	0	0.023
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	-0.053	0	0	0
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.126	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	1.061	0.03	0	0.012
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	2.061	0.07	0	0.04
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	2.899	0.09	0.01	0.076
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	1.647	0.05	0	0.027
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	1.126	0.04	0	0.013
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	1.313	0.04	0	0.018
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	0.688	0.02	0	0.005
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	-0.247	0.01	0	0.001
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-0.373	0.01	0	0.002
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-0.499	0.02	0	0.003
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-0.809	0.03	0	0.008
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	-0.683	0.02	0	0.005
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	-0.557	0.02	0	0.003
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	-0.305	0.01	0	0.002
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	-0.431	0.01	0	0.002
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	-3.686	0.12	0.01	0.118
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	-3.686	0.12	0.01	0.12
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	4.21	0.13	0.01	0.217
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	17.384	0.56	0.26	2.991
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-2.251	0.07	0	0.047
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-2.476	0.08	0.01	0.057
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-13.021	0.18	0.01	0.17
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-13.39	0.19	0.01	0.18

Ultimate Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
184	J-S2120E	24,020.39	5,961,106.25	698.3	0	115	TRUE	350	197.6	183.1	J-4010F
185	J-S2110E	24,011.06	5,961,252.83	699.5	0.138	250	TRUE	350	196.4	198.9	J-S1090E
186	J-S1080E	24,027.54	5,961,333.19	699.5	0.19	250	TRUE	341.123	140	166.8	J-S1070E
187	J-S1070E	24,027.86	5,961,400.06	699.45	0.268	250	TRUE	330.312	140	191.7	J-S1080E
188	J-S1060E	24,025.70	5,961,593.23	699.5	0.218	250	TRUE	337.934	140	219.4	J-S1070E
189	J-S1050E	24,034.45	5,961,753.21	699.9	0.154	250	TRUE	350	247.4	264.4	J-S1060E
190	J-S1051E	23,884.31	5,961,752.44	699.8	0.16	250	TRUE	350	141.5	216.4	J-S2032E
191	J-S2032E	23,740.84	5,961,752.44	700.1	0.192	250	TRUE	350	153.6	194.5	J-S2033E
192	J-S2033E	23,742.00	5,961,593.03	699.5	0.178	250	TRUE	318.754	140	228.4	J-S2034E
193	J-S2034E	23,742.78	5,961,410.68	698.9	0.18	250	TRUE	324.874	140	213.1	J-S2033E
194	J-S2090E	23,742.78	5,961,251.66	699.1	0.174	250	TRUE	350	185.5	210.8	J-S2080E
195	J-S2100E	23,886.25	5,961,252.83	699	0.162	250	TRUE	350	179.1	211.8	J-4010F
196	J-S2080E	23,585.41	5,961,251.56	699	0.162	250	TRUE	350	169.3	203.6	J-S2070E
197	J-S2070E	23,468.77	5,961,251.56	699	0.118	250	TRUE	350	180.3	201.4	J-S2080E
198	J-S2060E	23,444.47	5,961,408.54	699	0.1	250	TRUE	342.097	140	238.1	J-S2050E
199	J-S2040E	23,441.07	5,961,591.28	699	0.136	250	TRUE	350	154.3	184.2	J-S2050E
200	J-S2030E	23,442.68	5,961,751.72	700.3	0.108	250	TRUE	350	198	223.2	J-S2020E
201	J-S2031E	23,585.90	5,961,750.69	700.1	0.234	250	TRUE	342.48	140	229.6	J-S2032E
202	J-S1040E	24,175.32	5,961,753.97	700.3	0.092	250	TRUE	350	168.2	192.5	J-S1030E
203	J-S2010E	23,396.57	5,962,474.58	700	0	115	TRUE	350	292.9	281.8	J-104
204	J-N4200E	23,397.75	5,962,576.48	701	0	180	TRUE	350	303.2	309.1	J-104
205	J-N2150E	23,400.66	5,962,631.69	700.7	0.072	250	TRUE	350	305	315.2	J-N4200E
206	J-N2160E	23,491.54	5,962,615.65	699.4	0.23	115	TRUE	350	282.3	285.5	J-N2171E
207	J-N2170E	23,566.38	5,962,598.16	699.4	0.076	115	TRUE	350	263	256.2	J-N2171E
208	J-N2171E	23,563.95	5,962,666.20	700.1	0.084	115	TRUE	124.254	140	439.5	J-4540F
209	J-N2180E	23,648.52	5,962,569.97	699.4	0.046	115	TRUE	350	250	243.2	J-N2181E
210	J-N2181E	23,660.67	5,962,668.14	700.1	0.112	115	FALSE	102.469	140	445.5	J-4540F
211	J-N2190E	23,735.03	5,962,530.60	699.3	0.1	115	TRUE	350	246.2	265.6	J-N2181E
212	J-N2200E	23,834.17	5,962,472.77	699.2	0.1	115	TRUE	350	236.7	253.8	J-N2210E
213	J-N2201E	23,897.35	5,962,578.23	698.1	0.092	115	TRUE	169.631	140.1	298.9	J-N2221E
214	J-N2221E	23,934.77	5,962,642.39	697.7	0.1	115	TRUE	183.521	140	252.5	J-N2201E
215	J-N2220E	24,000.38	5,962,603.50	698.05	0.13	115	TRUE	350	260.4	274.8	J-N2221E
216	J-N2210E	23,903.67	5,962,441.18	699.1	0.1	115	TRUE	350	230.3	254.3	J-N2200E
217	J-N2230E	24,041.21	5,962,692.93	698.1	0.122	115	TRUE	350	281.5	288.9	J-N3260E
218	J-N2240E	24,243.39	5,962,687.60	699.2	0.158	115	TRUE	350	278.3	302	J-N3301E
219	J-N2250E	24,386.62	5,962,687.91	699.1	0	115	TRUE	350	281.8	288.8	J-N2255E
220	J-N2251E	24,387.01	5,962,603.93	698.9	0	115	TRUE	311.281	148.8	140	J-N2255E
221	J-N2254E	24,279.88	5,962,601.91	698.7	0.092	115	TRUE	252.196	140	146.9	J-3755F
222	J-N2255E	24,475.27	5,962,571.66	700	0.062	115	FALSE	111.112	140	445.7	J-4540F
223	J-N2253E	24,380.01	5,962,500.90	698.8	0.054	115	TRUE	265.584	140	241.6	J-N2255E
224	J-N2260E	24,501.40	5,962,673.31	699	0	115	TRUE	350	276.2	284.3	J-59
225	J-N3300E	24,243.15	5,962,783.95	698.6	0.046	115	TRUE	307.456	144	140	J-N3301E
226	J-N3301E	24,349.68	5,962,783.56	699	0.192	115	FALSE	106.129	140	445.2	J-4540F
227	J-N3460E	24,150.62	5,962,800.67	697.8	0.146	115	TRUE	168.645	140.1	188.7	J-N3450E
228	J-N3440E	24,074.80	5,962,929.36	698.5	0.112	115	TRUE	160.818	140	180.5	J-N3450E
229	J-N3430E	24,020.76	5,962,929.36	698.7	0.062	115	TRUE	171.231	140.1	219.7	J-N3440E
230	J-N3450E	24,150.62	5,962,929.75	698.6	0.122	115	TRUE	134.613	140	281.5	J-N3440E
231	J-N3310E	24,242.64	5,962,801.01	698.6	0.054	115	TRUE	303.914	140.1	164.6	J-N3321E
232	J-N3320E	24,242.52	5,962,864.21	698.2	0	115	TRUE	265.167	157.6	140	J-N3321E
233	J-N3321E	24,349.51	5,962,866.08	700	0.13	115	FALSE	102.236	140	446.1	J-4540F
234	J-N3340E	24,241.58	5,963,037.77	698.5	0.348	250	TRUE	271.343	140	232.6	J-N3341E
235	J-N3410E	24,002.39	5,963,037.46	698.2	0.138	115	TRUE	264.178	140.1	246.9	J-N3341E
236	J-N3400E	23,996.79	5,963,152.24	698.6	0.1	115	TRUE	170.087	140.1	192.5	J-N3390E
237	J-N3352E	24,135.52	5,963,171.52	698.4	0.122	115	TRUE	135.538	140	320.3	J-N3351E
238	J-N3351E	24,245.63	5,963,215.07	698.2	0.122	115	TRUE	155.218	140	249.4	J-N3352E
239	J-N3350E	24,294.46	5,963,152.24	698.6	1.108	115	TRUE	281.649	140.1	175.5	J-N3351E
240	J-N3390E	24,001.21	5,963,245.21	698.2	0.138	115	TRUE	126.402	140	249	J-N3380E
241	J-N3380E	24,148.57	5,963,273.31	697.7	0.146	115	FALSE	113.239	140	305.4	J-N3390E
242	J-N3370E	24,293.20	5,963,335.80	697.3	0.23	115	TRUE	125.776	140	251.1	J-N3380E
243	J-N3360E	24,364.74	5,963,201.66	697.8	0.076	115	TRUE	313.755	140.1	176	J-N3370E
244	J-N1080E	24,440.87	5,963,251.97	697.1	0.112	115	TRUE	350	290.6	308.4	J-N3360E
245	J-N1070E	24,493.12	5,963,190.07	697.08	0.23	115	TRUE	350	288.6	298.9	J-N1065E
246	J-N1050E	24,728.87	5,962,855.33	698	0.66	180	TRUE	350	315.3	313.9	J-84 (Sturgeon Office)
247	J-N1040E	24,954.34	5,962,854.05	698.8	0.158	115	TRUE	350	295.9	286.9	J-79
248	J-N1030E	24,957.44	5,962,526.76	699.9	0	115	TRUE	350	286.7	300.4	J-101
249	J-N1020E	24,960.24	5,961,905.28	701.3	0	115	TRUE	350	454.5	430.1	J-4540F
250	J-S1010E	24,688.47	5,961,838.45	701	0	115	TRUE	350	301.7	292.9	J-4020F
251	J-S1020E	24,215.83	5,961,901.63	700	0	250	TRUE	350	168	199.8	J-S1030E
252	J-N1071E	24,582.76	5,963,280.91	696.8	0.076	115	TRUE	234.605	140	237.4	J-N1102E
253	J-N1450E	24,702.81	5,963,403.87	696.7	0.084	115	TRUE	293.973	140.1	158.4	J-N1073E
254	J-N1430E	24,865.79	5,963,414.69	698.7	0.122	115	TRUE	274.3	140.1	234.8	J-N1440E
255	J-N1100E	24,376.21	5,963,380.05	697.3	0.046	115	TRUE	350	281.9	291.6	J-N1090E
256	J-N1101E	24,487.51	5,963,429.63	696.4	0.146	115	TRUE	163.889	140.1	253.2	J-N1102E
257	J-N1102E	24,524.54	5,963,365.96	697.4	0.112	115	TRUE	159.559	140	277.2	J-N1101E
258	J-N1420E	24,855.27	5,963,531.46	698	0	115	TRUE	270.758	140.1	248.2	J-N1410E

Ultimate Development
Maximum Day Demand Plus Fire Flow

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
259	J-N1410E	24,842.97	5,963,633.07	698.3	0.092	115	TRUE	274.287	140.1	165.2	J-N1400E
260	J-N1303E	24,937.84	5,963,685.55	696.9	0.054	115	TRUE	226.545	143.9	140	J-N1304E
261	J-N1320E	24,753.93	5,963,734.93	697.8	0.054	115	TRUE	282.521	140.1	179.4	J-N1330E
262	J-N1310E	24,809.53	5,963,801.81	697.9	0.03	115	TRUE	256.654	141	140	J-N1311E
263	J-N1311E	24,830.34	5,963,795.82	698	0.1	115	TRUE	173.841	140	330	J-N1310E
264	J-N1300E	24,814.59	5,963,882.68	697.9	0.054	115	TRUE	274.192	140.1	161.7	J-N1301E
265	J-N1301E	24,911.79	5,963,869.46	698.4	0.122	115	TRUE	225.118	140	232.1	J-N1302E
266	J-N1302E	24,960.78	5,963,730.27	698.4	0.092	115	TRUE	215.296	140	205.1	J-N1304E
267	J-N1290E	24,806.81	5,963,916.11	697.9	0.062	115	TRUE	273.138	140.1	157.4	J-N1291E
268	J-N1291E	24,876.41	5,963,969.38	698.1	0	115	TRUE	222.817	140	141	J-N1292E
269	J-N1292E	24,905.57	5,963,948.00	698	0.13	115	TRUE	139.861	140	350.9	J-N1291E
270	J-N1245E	24,928.90	5,964,040.14	697	0.062	115	TRUE	207.086	140	141	J-82
271	J-N1244E	24,955.72	5,964,184.39	697	0.112	115	TRUE	184.658	140	159.2	J-82
272	J-N1243E	24,852.69	5,964,198.38	696.5	0.112	115	TRUE	202.896	140	157.5	J-N1244E
273	J-N1280E	24,667.62	5,963,975.60	698.1	0.084	115	TRUE	268.47	140.1	168.1	J-N1281E
274	J-N1281E	24,668.79	5,963,904.06	698	0.112	115	TRUE	235.208	140	214.9	J-N1282E
275	J-N1282E	24,737.99	5,963,838.74	697	0.122	115	TRUE	221.346	140	244.8	J-N1281E
276	J-N1283E	24,630.68	5,963,806.08	697.7	0.1	115	TRUE	232.884	140	226.4	J-N1282E
277	J-N1350E	24,586.36	5,963,729.10	696.8	0.076	115	TRUE	278.526	140.1	164.4	J-N1283E
278	J-N1340E	24,656.35	5,963,700.33	697.6	0.038	115	TRUE	283.24	140.1	155.5	J-N1342E
279	J-N1242E	24,655.18	5,964,247.76	698	0.112	115	TRUE	219.262	140	250.7	J-82
280	J-N1241E	24,584.03	5,964,210.44	697.3	0.054	115	TRUE	258.975	140.1	155.1	J-N1242E
281	J-N1272E	24,643.90	5,964,097.68	698	0.1	115	TRUE	233.547	140	261.3	J-N1270E
282	J-N1270E	24,587.51	5,964,001.45	698.8	0.062	115	TRUE	264.525	140.1	144	J-N1271E
283	J-N1271E	24,573.33	5,963,939.74	698.4	0.062	115	TRUE	193.416	140	299.4	J-N1270E
284	J-N1240E	24,492.27	5,964,163.87	698	0	115	TRUE	292.584	140.1	144.4	J-N1251E
285	J-N1220E	24,450.28	5,964,244.12	698	0	115	TRUE	350	178.1	198.4	J-N1210E
286	J-N1210E	24,398.26	5,964,217.60	698	0	115	TRUE	350	184.3	195.9	J-N1220E
287	J-N1200E	24,302.22	5,964,132.46	697.8	0.046	115	TRUE	350	215.8	227.4	J-N1190E
288	J-N1180E	24,262.57	5,964,017.37	697.7	0.062	115	TRUE	350	216.1	244.7	J-N1190E
289	J-N1170E	24,279.97	5,963,894.02	698	0	180	TRUE	350	220.9	248.9	J-N1180E
290	J-N1160E	24,301.35	5,963,782.73	698	0	180	TRUE	350	246.7	260	J-N1170E
291	J-N1150E	24,302.39	5,963,747.88	698	0.322	115	TRUE	350	259.1	256.4	J-4580I
292	J-N1370E	24,390.29	5,963,759.89	698	0.062	115	TRUE	302.46	140.1	162.4	J-N1371E
293	J-N1360E	24,521.83	5,963,785.18	697.5	0.046	115	TRUE	252.637	140.1	142	J-N1361E
294	J-N1361E	24,533.34	5,963,821.26	697.3	0.092	115	TRUE	146.11	140	377.3	J-N1360E
295	J-N1371E	24,477.98	5,963,683.94	698.4	0.092	115	TRUE	233.102	140	154.7	J-N1372E
296	J-N1344E	24,530.85	5,963,639.61	696.5	0.046	115	TRUE	230.417	140	140	J-N1345E
297	J-N1343E	24,620.28	5,963,607.34	697.7	0.062	115	TRUE	234.901	140	215.1	J-N1342E
298	J-N1341E	24,650.99	5,963,649.33	696.7	0.03	115	TRUE	250.35	150.8	140	J-N1342E
299	J-N1372E	24,426.27	5,963,579.74	696.9	0.13	115	TRUE	153.664	140	334.3	J-N1371E
300	J-N1345E	24,514.52	5,963,617.84	696.5	0.062	115	TRUE	156.338	140.1	334.6	J-N1344E
301	J-N1342E	24,739.64	5,963,585.96	697.8	0.092	115	FALSE	94.607	140	445.6	J-4540F
302	J-N1140E	24,301.95	5,963,665.08	697.3	0	115	TRUE	350	260.1	271.7	J-4580I
303	J-N1130E	24,310.21	5,963,541.63	697.5	0.1	115	TRUE	350	265.7	291.7	J-4580I
304	J-N1120E	24,338.88	5,963,460.96	697.4	0	115	TRUE	350	284.2	291.2	J-N1110E
305	J-N3183E	24,235.85	5,963,412.84	697.8	0	115	TRUE	350	188.7	245	J-N3182E
306	J-N3182E	24,109.98	5,963,355.50	698	0	250	TRUE	350	158.1	242.1	J-N3181E
307	J-N3181E	23,995.76	5,963,335.08	698.3	0	250	TRUE	350	190	238.2	J-N3182E
308	J-N3190E	23,838.79	5,963,334.11	699	0.064	250	TRUE	350	242.5	259.9	J-N3200E
309	J-N3210E	23,839.27	5,963,187.82	699	0.112	115	TRUE	350	192.6	284.8	J-N3200E
310	J-N3220E	23,839.76	5,963,047.86	698.6	0.184	115	TRUE	350	239.1	275.8	J-N3230E
311	J-N3230E	23,840.73	5,962,979.82	698.3	0.112	115	TRUE	350	232	253.1	J-N3240E
312	J-N3420E	23,966.13	5,962,983.37	698	0	115	TRUE	294.981	140.1	178.5	J-N3410E
313	J-N3240E	23,840.96	5,962,916.81	698	0.1	115	TRUE	350	195.7	257.6	J-N3230E
314	J-N3250E	23,877.98	5,962,777.15	698	0.112	115	TRUE	350	173.1	258.1	J-N3260E
315	J-N3260E	23,975.64	5,962,722.40	698.5	0.1	115	TRUE	350	212.5	255.4	J-N3250E
316	J-N2191E	23,752.05	5,962,637.55	698.9	0.13	115	TRUE	167.983	140.1	331.4	J-N2381E
317	J-N2381E	23,750.23	5,962,746.90	698.6	0.146	115	TRUE	180.7	140	198	J-N2383E
318	J-N2382E	23,660.32	5,962,747.51	699.6	0.076	115	TRUE	138.626	147.8	140	J-N2383E
319	J-N2383E	23,659.10	5,962,835.60	700.4	0.1	115	FALSE	85.63	140	355.3	J-N2382E
320	J-N2391E	23,581.34	5,962,747.51	700.6	0.112	115	TRUE	134.439	140	249.2	J-N2383E
321	J-N2390E	23,579.51	5,962,924.30	698.87	0.122	115	TRUE	301.749	140.1	197.3	J-N2391E
322	J-N2380E	23,710.74	5,962,940.09	698.95	0.176	115	TRUE	321.099	140.1	150.7	J-N2363E
323	J-N2370E	23,750.00	5,963,047.05	699	0.092	115	TRUE	350	147.1	218.8	J-N2360E
324	J-N2360E	23,749.06	5,963,147.21	699.5	0.1	115	TRUE	319.752	140.1	229.6	J-N2361E
325	J-N2361E	23,655.75	5,963,147.52	698.8	0.13	115	TRUE	202.521	140	212.3	J-N2362E
326	J-N2362E	23,580.79	5,963,126.37	698.1	0.168	115	TRUE	147.339	140	352.5	J-N2361E
327	J-N2363E	23,657.31	5,963,005.68	699.2	0.084	115	TRUE	257.208	140.1	204.2	J-N2362E
328	J-N3200E	23,838.64	5,963,310.50	699	0.062	115	TRUE	350	245.5	259	J-N3190E
329	J-N2340E	23,748.44	5,963,310.19	698.9	0.046	115	TRUE	350	163.1	226.3	J-N2350E
330	J-N2330E	23,565.24	5,963,309.57	698.3	0.054	115	TRUE	343.786	140.1	222.4	J-N2331E
331	J-N2331E	23,631.18	5,963,237.10	698.7	0.138	115	TRUE	169.801	140.1	425.3	J-4540F
332	J-N2350E	23,748.75	5,963,237.41	699	0	115	TRUE	328.219	140.1	221.3	J-N2331E
333	J-N3120E	23,503.34	5,963,519.52	698.4	0.276	115	TRUE	340.3	140.1	159.5	J-N3130E

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
334	J-N2300E	23,504.28	5,963,382.04	698.2	0.042	250	TRUE	318.635	143	140.1	J-N2301E
335	J-N2301E	23,591.68	5,963,381.73	698.5	0.406	115	TRUE	117.669	140	441.2	J-4540F
336	J-N2310E	23,504.59	5,963,312.99	698.6	0	250	TRUE	350	280.3	287.1	J-N2301E
337	J-N2320E	23,504.31	5,963,308.74	698.6	0.112	115	TRUE	350	234.3	274.4	J-N2330E
338	J-N2321E	23,505.52	5,963,107.39	699.5	0.054	115	TRUE	144.625	140	271.3	J-N2401E
339	J-N2400E	23,494.94	5,962,924.19	698.82	0.134	115	TRUE	323.801	140.1	194.9	J-N2401E
340	J-N2140E	23,393.91	5,962,929.90	699.4	0.036	250	TRUE	350	296.8	302.8	J-N2141E
341	J-N2141E	23,397.69	5,962,929.90	699.4	0.042	250	TRUE	350	258.8	277.6	J-N2133E
342	J-N2142E	23,397.49	5,962,923.93	699.4	0	250	TRUE	350	220.2	280.9	J-N2400E
343	J-N2143E	23,397.69	5,962,866.00	699.4	0.032	250	TRUE	350	224.9	252.3	J-N2144E
344	J-N2144E	23,398.09	5,962,765.67	699.9	0.022	115	TRUE	168.319	140.1	410	J-N4530E
345	J-N2131E	23,396.69	5,963,117.42	699.5	0	250	TRUE	350	194.2	280.3	J-N2133E
346	J-N2130E	23,391.24	5,963,117.83	699.5	0.094	250	TRUE	350	287.3	290.8	J-N2131E
347	J-N2120E	23,392.51	5,963,312.31	699	0.09	250	TRUE	350	315.4	310.7	J-4540F
348	J-N2121E	23,395.90	5,963,312.31	699	0	250	TRUE	350	314.5	310.7	J-4540F
349	J-N2111E	23,387.82	5,963,377.20	698.9	0.044	115	TRUE	263.441	140	378.8	J-4540F
350	J-N3110E	23,391.35	5,963,519.68	698.6	0.014	250	TRUE	332.025	140	286.3	J-N3142E
351	J-N2110E	23,313.12	5,963,312.25	699.4	0	250	TRUE	350	309.1	307.2	J-4540F
352	J-N3100E	23,232.32	5,963,518.47	698.9	0	250	TRUE	350	273.7	305	J-4540F
353	J-N4360E	23,232.63	5,963,507.89	698.9	0	250	TRUE	350	304.6	304.8	J-4540F
354	J-N2080E	23,240.05	5,963,525.14	698.9	0.133	250	TRUE	350	304.6	305.1	J-4540F
355	J-N2090E	23,240.06	5,963,507.68	698.9	0.03	115	TRUE	350	307.6	304.7	J-4540F
356	J-N2100E	23,241.02	5,963,312.17	699.9	0.076	250	TRUE	350	306.6	303	J-4540F
357	J-N4370E	23,234.33	5,963,311.96	699.9	0	250	TRUE	350	300.9	301.9	J-4540F
358	J-N4460E	23,234.96	5,963,119.90	699.5	0.138	115	TRUE	238.385	140	224.2	J-N4470E
359	J-N4470E	23,313.63	5,963,120.54	699.5	0	115	TRUE	168.233	140.1	372.3	J-N4460E
360	J-N4480E	23,236.05	5,962,982.81	699.5	0.146	115	TRUE	150.699	140	141	J-N4481E
361	J-N4481E	23,362.12	5,962,983.74	699.4	0.062	115	FALSE	78.575	140	392.3	J-N4480E
362	J-N4520E	23,236.05	5,962,865.54	699.5	0.112	115	TRUE	231.98	140	352.1	J-N4530E
363	J-N4530E	23,236.67	5,962,765.08	699.7	0.276	115	TRUE	246.786	140	305.2	J-N2144E
364	J-N4180E	23,236.76	5,962,701.90	699.85	0.076	115	TRUE	350	243	244.8	J-N4191E
365	J-N4190E	23,250.09	5,962,701.90	699.85	0.146	115	TRUE	350	243.8	241.4	J-N4191E
366	J-N4191E	23,266.18	5,962,664.16	700.1	0.112	115	TRUE	144.99	140	429.8	J-4540F
367	J-N4510E	23,116.00	5,962,864.49	700	0.084	115	TRUE	260.4	140	181.2	J-N4500E
368	J-N4500E	23,107.06	5,962,864.49	700	0.1	115	TRUE	260.314	140.1	181.3	J-N4510E
369	J-N4150E	23,012.97	5,962,810.45	700.9	0.076	115	TRUE	350	185.2	214.2	J-N4140E
370	J-N4160E	23,039.67	5,962,708.67	700.5	0.076	115	TRUE	350	199.1	217.5	J-N4150E
371	J-N4170E	23,116.51	5,962,701.51	700.3	0.076	115	TRUE	350	217.2	227.6	J-N4160E
372	J-N4490E	23,107.28	5,962,982.98	700	0.122	115	TRUE	201.515	144.9	140	J-N4491E
373	J-N4450E	23,106.57	5,963,119.17	700.1	0.092	115	TRUE	255.335	140	271	J-N4381E
374	J-N4380E	23,105.97	5,963,311.07	699.3	0.114	250	TRUE	350	249.1	269.8	J-N4381E
375	J-N4350E	23,104.18	5,963,517.50	699	0.084	115	TRUE	350	150.2	251.2	J-N4340E
376	J-N3090E	23,166.53	5,963,519.61	699	0	250	TRUE	350	248.7	284.5	J-N4350E
377	J-N2070E	23,171.01	5,963,524.71	699	0	250	TRUE	350	304.7	299.4	J-N3080E
378	J-N3080E	23,164.17	5,963,530.93	699.6	0	115	TRUE	350	294.8	306.1	J-N2070E
379	J-N2060E	23,164.70	5,963,646.70	698.8	0	250	TRUE	350	301.9	299.1	J-N3060E
380	J-N2050E	23,164.50	5,963,745.83	699	0	250	TRUE	350	301.6	307.4	J-N3040E
381	J-N2040E	23,164.50	5,963,849.54	699	0	180	TRUE	350	311.4	314.9	J-N3030E
382	J-N2020E	23,168.07	5,964,021.69	699	0	180	TRUE	350	346.8	328.7	J-4540F
383	J-N2010E	23,229.47	5,964,021.52	699	0.02	250	TRUE	350	351.8	337.9	J-4540F
384	J-N3010E	23,161.69	5,964,008.03	699	0.908	115	TRUE	312.865	140	202.3	J-N3020E
385	J-N3030E	23,160.50	5,963,849.48	699	0.062	115	TRUE	350	254.2	270.8	J-N3031E
386	J-N3031E	23,161.50	5,963,836.74	699	0.076	115	TRUE	335.529	140	248.5	J-N3032E
387	J-N3040E	23,160.50	5,963,745.57	698.8	0	115	TRUE	350	250	267.6	J-N3050E
388	J-N3050E	23,161.30	5,963,733.82	698.8	0.112	115	TRUE	342.528	140	275.6	J-N3051E
389	J-N3060E	23,160.30	5,963,647.21	699.6	0	115	TRUE	350	237.4	248.4	J-N3070E
390	J-N3070E	23,161.89	5,963,641.06	699.6	0.112	115	TRUE	350	159.6	258.8	J-N3060E
391	J-N3032E	22,992.17	5,963,835.82	699	0.122	115	TRUE	162.266	140	370.8	J-N3051E
392	J-N3051E	22,992.42	5,963,732.81	700	0.122	115	TRUE	212.823	140	263	J-N3032E
393	J-N3071E	22,992.67	5,963,640.74	700	0.13	115	TRUE	230.132	140	318.4	J-N3051E
394	J-N4340E	22,992.91	5,963,516.82	699.6	0	250	TRUE	326.92	140	253.2	J-N4330E
395	J-N4330E	22,969.21	5,963,517.07	699.7	0.054	115	TRUE	322.278	140	221.4	J-N4331E
396	J-N4390E	22,970.38	5,963,311.00	700.6	0.104	250	TRUE	350	226.2	248.2	J-N4400E
397	J-N4440E	22,970.77	5,963,118.16	700.3	0.062	115	TRUE	278.862	140.1	319.2	J-N4430E
398	J-N4331E	22,969.21	5,963,421.04	700.1	0.062	250	TRUE	307.482	140.1	255.2	J-N4330E
399	J-N4320E	22,856.46	5,963,516.29	700.1	0.012	250	TRUE	322.433	140	208.9	J-N4321E
400	J-N4321E	22,856.85	5,963,414.81	700.2	0.192	115	TRUE	183.139	140	383.6	J-N4401E
401	J-N4401E	22,857.24	5,963,322.67	701.2	0	250	TRUE	291.321	140.1	197.2	J-N4311E
402	J-N4400E	22,857.24	5,963,309.84	701.2	0.052	250	TRUE	350	179.1	190.1	J-N4401E
403	J-N4420E	22,858.41	5,963,118.55	701.3	0.143	250	TRUE	296.74	140.1	182.4	J-139
404	J-N4430E	22,871.24	5,963,118.16	701.3	0	250	TRUE	277.297	140.1	193.4	J-N4431E
405	J-N4491E	22,995.32	5,962,979.99	700.5	0.092	115	FALSE	87.135	140	419.9	J-N4490E
406	J-N4310E	22,751.87	5,963,515.90	700.4	0.158	115	TRUE	348.469	140	148.3	J-N3411E
407	J-N4311E	22,753.04	5,963,322.28	701.3	0.066	115	TRUE	154.834	140	404.6	J-N4401E
408	J-N4300E	22,638.34	5,963,515.51	700.7	0.062	115	TRUE	349.292	140.1	174.8	J-N4301E

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
409	J-N4301E	22,637.95	5,963,426.48	701.1	0.342	115	TRUE	177.691	140	391.2	J-4540F
410	J-N4410E	22,639.90	5,963,300.90	701	0.08	250	TRUE	350	148.7	192.5	J-N4301E
411	J-N4040E	22,557.86	5,963,515.51	700.5	0	250	TRUE	350	182.4	182.6	J-N4041E
412	J-N4020E	22,545.69	5,963,674.92	699.7	0	250	TRUE	350	152.6	163	J-4540F
413	J-N4010E	22,546.33	5,963,750.87	700	0.234	250	TRUE	350	148.7	147.3	J-4540F
414	J-N4050E	22,557.08	5,963,444.36	700.6	0.258	115	TRUE	350	176.5	195.3	J-N4041E
415	J-N4060E	22,558.64	5,963,303.23	700.8	0	250	TRUE	350	198.1	196.4	J-N4043E
416	J-N4041E	22,443.94	5,963,514.35	701	0	115	TRUE	225.235	140.1	249.8	J-N4042E
417	J-N4042E	22,444.33	5,963,410.15	701.5	0.112	115	TRUE	167.859	140.1	358.7	J-N4041E
418	J-N4043E	22,444.72	5,963,305.56	701	0.464	115	TRUE	331.029	140.1	180.1	J-N4042E
419	J-N4070E	22,557.86	5,963,211.47	701	1.1	115	TRUE	350	179.5	185.9	J-N4080E
420	J-N4080E	22,553.97	5,963,123.99	701.5	1.396	115	TRUE	350	150.4	155.3	J-N4082E
421	J-N4081E	22,468.80	5,963,123.50	701	0	180	TRUE	227.528	140	140	J-N4082E
422	J-N4090E	22,553.97	5,962,986.35	701.9	0.146	115	TRUE	343.187	141	140	J-N4092E
423	J-N4091E	22,428.39	5,962,994.13	701.7	0.146	115	TRUE	168.902	140.1	386.7	J-N4092E
424	J-N4092E	22,681.89	5,962,970.03	702	0.214	115	TRUE	165.621	140.1	390.6	J-N4090E
425	J-N4100E	22,570.30	5,962,925.70	702.1	0.112	115	TRUE	341.167	140	148.4	J-N4104E
426	J-N4101E	22,456.77	5,962,890.32	701.5	0.1	115	TRUE	135.818	140	237.8	J-N4102E
427	J-N4102E	22,457.16	5,962,783.40	701.7	0.122	115	TRUE	126.969	140	248.3	J-N4104E
428	J-N4103E	22,529.87	5,962,763.18	702.1	0.054	115	TRUE	136.004	143.9	140	J-N4104E
429	J-N4111E	22,619.29	5,962,755.41	702.5	0.1	115	TRUE	216.547	140	185.5	J-N4104E
430	J-N4110E	22,624.35	5,962,880.21	702.7	0.13	115	TRUE	338.205	140.1	142.8	J-N4111E
431	J-N4120E	22,725.43	5,962,873.60	701.9	0.092	115	TRUE	346.337	140	153.9	J-N4110E
432	J-N4121E	22,725.05	5,962,737.13	701	0.112	115	TRUE	142.913	140	283.6	J-N4143E
433	J-N4143E	22,825.75	5,962,712.64	700.7	0.138	115	TRUE	148.732	140	261.7	J-N4121E
434	J-N4142E	22,840.52	5,962,786.12	700.8	0.038	115	TRUE	225.658	140	199	J-N4143E
435	J-N4140E	22,840.13	5,962,816.45	700.9	0.016	115	TRUE	350	160.5	160.6	J-N4141E
436	J-N4431E	22,871.76	5,963,060.11	701	0.1	115	TRUE	182.443	140	364.1	J-N4430E
437	J-N4130E	22,832.07	5,962,900.08	701.3	0.092	115	TRUE	350	149.6	142.7	J-N4131E
438	J-N4131E	22,739.70	5,962,940.69	702	0.268	115	TRUE	177.86	140	387	J-N4110E
439	J-N3341E	24,124.19	5,963,037.69	698.7	0.184	115	TRUE	165.982	140.1	407.3	J-N3340E
440	J-N3330E	24,241.82	5,962,911.97	699.2	0.062	115	TRUE	258.298	140	200.2	J-N3321E
441	J-N1090E	24,392.55	5,963,345.51	697.27	0.038	115	TRUE	350	280.7	291.6	J-N1100E
442	J-N1110E	24,351.58	5,963,433.04	697.4	0	115	TRUE	350	281.8	291.8	J-N1120E
443	J-N1260E	24,553.78	5,964,042.12	698.4	0.046	115	TRUE	250.556	140.1	210.4	J-N1270E
444	J-N1246E	24,900.57	5,964,065.27	697	0.076	115	TRUE	195.946	140	177.2	J-82
445	J-N1330E	24,718.91	5,963,711.75	697.7	0	115	TRUE	274.864	140.1	200.3	J-N1320E
446	J-N1304E	24,960.14	5,963,629.59	697.3	0.112	115	TRUE	118.139	140	401	J-N1302E
447	J-N1400E	24,827.83	5,963,657.23	698	0.1	115	TRUE	267.425	140.1	183.7	J-N1410E
448	J-N1440E	24,794.96	5,963,466.03	696.6	0.092	115	TRUE	268.077	140.1	233.7	J-N1430E
449	J-N1073E	24,674.47	5,963,373.92	696.7	0.13	115	TRUE	266.227	140.1	175.9	J-N1072E
450	J-N4151E	23,013.54	5,962,864.48	700.5	0.092	115	TRUE	211.365	140	366.8	J-N4500E
451	J-N4141E	22,840.12	5,962,808.27	700.9	0.062	115	TRUE	350	153	156.4	J-N4142E
452	J-N4030E	22,557.31	5,963,540.75	700.5	0.206	250	TRUE	350	173.4	186.8	J-N4041E
453	J-N4381E	23,105.44	5,963,216.34	700.2	0.054	115	TRUE	187.819	140	382.1	J-N4450E
454	J-N3020E	23,160.99	5,963,967.57	699	0	180	TRUE	228.722	140	371.8	J-N3010E
455	J-N2252E	24,387.36	5,962,595.06	698.9	0.062	115	TRUE	300.213	150.8	140	J-N2255E
456	J-N1072E	24,625.45	5,963,324.71	696.75	0.13	115	TRUE	240.93	140	249.8	J-N1073E
457	J-N1460E	24,795.53	5,963,327.81	698.07	0.168	115	TRUE	279.327	140.1	270.9	J-N1450E
458	J-N1470E	24,906.16	5,963,233.72	698.56	0.122	115	TRUE	350	154.1	149.8	J-N1471E
459	J-N3130E	23,503.09	5,963,526.14	698.4	0.422	115	TRUE	344.883	140.1	147.9	J-N3120E
460	J-N3140E	23,519.52	5,963,525.36	698.4	0.04	250	TRUE	350	160.8	175.6	J-N3130E
461	J-N3141E	23,517.99	5,963,611.85	698.5	0.368	115	TRUE	334.838	140.1	214.8	J-N3140E
462	J-N3142E	23,396.12	5,963,656.75	698.7	0	180	TRUE	350	160.5	207.5	J-75
463	J-N3150E	23,664.22	5,963,510.92	698.5	0.108	250	TRUE	350	141.5	191.5	J-140
464	J-N3160E	23,825.34	5,963,511.25	699	0.078	250	TRUE	350	218.2	245.7	J-30
465	J-N3170E	23,903.33	5,963,511.58	699	0.168	250	TRUE	350	253.5	272.9	J-76
466	J-N3180E	23,907.72	5,963,334.91	699	0	250	TRUE	350	253.8	276.5	J-N3181E
467	J-S2020E	23,405.78	5,961,752.27	700.4	0	250	TRUE	350	206.9	215.4	J-S2021E
468	J-S1030E	24,216.96	5,961,755.30	700.3	0.11	250	TRUE	350	162	192.2	J-S1040E
469	J-N2401E	23,505.90	5,963,036.50	699.4	0.054	115	TRUE	156.76	140	222.9	J-N2321E
470	J-N1250E	24,499.78	5,964,149.64	698	0.054	115	TRUE	277.049	140.1	140.1	J-N1251E
471	J-N1251E	24,455.84	5,964,129.52	698	0.092	115	TRUE	145.789	140	396	J-N1250E
472	J-N1231E	24,407.67	5,964,158.64	697.4	0.054	115	TRUE	124.385	140	433.7	J-4520F
473	J-N1230E	24,475.43	5,964,196.22	698	0	115	TRUE	308.033	140.1	146	J-N1231E
474	J-S2130E	24,020.92	5,960,930.89	698.15	0	115	TRUE	350	194.6	183	J-4460I
475	J-S2140E	24,039.65	5,960,875.68	698	0.154	115	TRUE	350	189.6	187.3	J-4460I
476	J-S2150E	24,056.56	5,960,830.95	698.3	0	115	TRUE	350	192.7	184.5	J-69
477	J-S2160E	23,950.16	5,960,740.85	698.63	0.122	115	TRUE	350	169.9	174.1	J-S2170E
478	J-S2170E	23,943.12	5,960,658.84	699.75	0.112	115	TRUE	350	152.8	173	J-S2171E
479	J-S2171E	23,864.28	5,960,657.55	698.5	0.092	115	TRUE	289.219	140	263.3	J-S2170E
480	J-S2191E	23,864.93	5,960,558.03	698.15	0.112	115	TRUE	344.013	140	149.8	J-S2192E
481	J-S2192E	23,865.58	5,960,511.51	698.5	0.076	115	TRUE	332.325	140	160.3	J-S2193E
482	J-S2193E	23,866.87	5,960,464.98	698.5	0.084	115	TRUE	327.862	140	149.2	J-S2194E
483	J-S2203E	23,930.20	5,960,399.07	698.5	0.084	115	TRUE	268.067	140	174.6	J-S2202E

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
484	J-S2202E	23,961.21	5,960,395.19	698.5	0	115	TRUE	267.252	140	176.8	J-S2203E
485	J-S2201E	23,989.65	5,960,396.48	698.5	0.076	115	TRUE	271.805	140	167	J-S2202E
486	J-S2200E	23,999.32	5,960,485.05	698.6	0.112	115	TRUE	350	152.4	164.3	J-S2201E
487	J-S2190E	23,946.22	5,960,558.68	698.5	0.046	115	TRUE	350	164.6	169.8	J-S2170E
488	J-S2180E	23,945.06	5,960,588.27	698.7	0.076	115	TRUE	350	163	166.3	J-S2170E
489	J-S2210E	24,093.04	5,960,481.14	698.5	0.334	115	TRUE	350	145.9	170	J-S2220E
490	J-S2220E	24,180.05	5,960,467.40	698.65	1.046	115	TRUE	350	151.3	152.8	J-S2240E
491	J-S2230E	24,172.94	5,960,445.93	698.5	0	115	TRUE	345.627	140	140	J-S2240E
492	J-S2240E	24,158.72	5,960,383.61	698.5	1.016	115	TRUE	317.527	140	142.5	J-S2250E
493	J-S2250E	24,153.02	5,960,317.90	698.25	0	115	TRUE	293.365	140	187	J-S2240E
494	J-S1170E	23,996.75	5,960,587.76	699.5	0	115	TRUE	286.975	140	166.4	J-S1160E
495	J-S2195E	23,781.62	5,960,412.85	698	0	115	TRUE	301.353	140	185.3	J-S2194E
496	J-S2194E	23,846.84	5,960,426.21	698.5	0	115	TRUE	312.831	140	162.5	J-S2195E
497	J-S1160E	24,035.10	5,960,595.14	699.21	0.112	115	TRUE	267.712	140	162.6	J-S1150E
498	J-S1150E	24,152.97	5,960,670.20	699.36	0.122	115	TRUE	217.86	140	196.2	J-S1140E
499	J-S1140E	24,146.14	5,960,742.47	700.06	0.092	115	TRUE	223.381	140	185.8	J-S1150E
500	J-S1130E	24,080.04	5,960,747.18	699.61	0.054	115	TRUE	255.44	140	152.9	J-S1140E
501	J-S1131E	24,037.48	5,960,710.53	699.3	0.092	115	TRUE	237.787	140	209.3	J-S1130E
502	J-S1120E	24,065.84	5,960,803.08	698.3	0	115	TRUE	260.782	140	149	J-S1130E
503	J-S1090E	23,998.03	5,961,250.99	699.5	0	250	TRUE	350	194.5	199.4	J-S2110E
504	J-S1100E	24,006.30	5,961,105.95	698.3	0	115	TRUE	301.545	140	178.8	J-S1110E
505	J-S1110E	24,033.48	5,960,926.97	698	0.108	115	TRUE	268.556	140	175.3	J-S1120E
506	J-N1190E	24,291.23	5,964,113.33	697.8	0.061	250	TRUE	350	223.1	225.4	J-N1200E
507	J-N1600E	24,201.37	5,964,131.25	698	0.112	115	TRUE	350	170.2	165.3	J-N1601E
508	J-N1610E	24,110.99	5,964,146.18	698.75	0.13	115	TRUE	350	157.7	181.7	J-45
509	J-N1620E	24,074.31	5,964,072.83	699	0.062	115	TRUE	348.645	140	170.6	J-N1630E
510	J-N1630E	24,039.25	5,964,034.46	699.5	0.046	115	TRUE	347.857	140	161.5	J-N1631E
511	J-N1640E	23,987.84	5,963,984.00	699.5	0.076	115	TRUE	342.111	140	183.4	J-N1630E
512	J-N1631E	24,106.16	5,963,978.92	699.25	0.122	115	TRUE	267.659	140.1	205.6	J-N1632E
513	J-N1632E	24,036.37	5,963,917.92	700	0.084	115	TRUE	255.924	140.1	233.8	J-N1651E
514	J-N1651E	23,991.40	5,963,871.39	699.5	0	115	TRUE	276.299	140.1	176.8	J-N1632E
515	J-N1650E	23,943.57	5,963,919.33	698.75	0	115	TRUE	350	172.5	172.1	J-N1651E
516	J-N1601E	24,162.51	5,964,023.27	698.5	0.122	115	TRUE	183.751	140	408.8	J-4520F
517	J-N1060E	24,577.21	5,963,109.12	697	0	180	TRUE	350	291.4	289.8	J-N1061E
518	J-N1061E	24,617.74	5,963,149.64	697.75	0.138	115	TRUE	319.885	140.1	216.8	J-N1062E
519	J-N1062E	24,691.33	5,963,227.41	697.25	0.112	115	TRUE	277.884	140.1	197.7	J-N1500E
520	J-N4104E	22,531.12	5,962,823.52	702.5	0.092	115	FALSE	93.054	140	309.7	J-N4103E
521	J-N4082E	22,469.20	5,963,082.83	701	0.062	115	TRUE	132.57	140	354.3	J-N4081E
523	J-N1500E	24,729.96	5,963,266.95	697.2	0	115	TRUE	278.726	140.1	194.9	J-N1062E
524	J-N1490E	24,780.81	5,963,225.45	697.2	0.13	115	TRUE	292.53	140.1	190	J-N1500E
525	J-N1480E	24,850.85	5,963,165.94	697.4	0.18	115	TRUE	350	169.4	206.5	J-N1490E
526	J-N1471E	24,945.50	5,963,280.47	699	0.578	180	TRUE	239.708	140.1	338.1	J-N1470E
527	J-N1481E	24,821.92	5,963,130.54	698.7	0	115	TRUE	350	150.8	227.7	J-N1480E
528	J-N1472E	24,981.95	5,963,173.17	698.4	0.186	115	TRUE	350	197.2	224.1	J-48
529	J-S2021E	23,329.66	5,961,753.88	700.5	0.332	250	TRUE	350	155.4	216.8	J-4220I
530	J-S2050E	23,441.95	5,961,556.46	699	0	250	TRUE	350	166.7	181.4	J-S2040E
531	J-S2051E	23,344.97	5,961,508.86	699	0.508	250	TRUE	307.503	140	206.8	J-143
532	J-N1065E	24,522.60	5,963,163.07	697	1.71	115	TRUE	350	287.4	298.5	J-N1070E
535	J-N3411E	22,751.06	5,963,568.11	700.4	0.314	115	TRUE	329.729	140.1	160.1	J-N3412E
536	J-N3412E	22,763.88	5,963,654.13	700.4	1.26	115	TRUE	313.397	140.1	195.5	J-2
537	J-3550I	23,858.78	5,963,861.50	697.8	0.154	115	TRUE	350	250.2	250.6	J-N1632E
538	J-3560I	23,895.14	5,963,776.63	698.8	0.154	115	TRUE	350	203.1	193.8	J-43
539	J-3570I	23,930.36	5,963,667.29	699	0.154	115	TRUE	350	215.1	230.9	J-44
540	J-3580I	23,794.98	5,963,838.03	698	0.13	115	TRUE	350	251.8	243.8	J-22
541	J-3590F	23,690.63	5,963,983.45	697.5	0.122	115	TRUE	350	234.2	229.7	J-41
542	J-3600I	23,601.86	5,963,939.64	698.3	0.192	115	TRUE	350	216.6	225.9	J-18
543	J-3610I	23,453.97	5,963,928.59	699	0.264	115	TRUE	350	223.1	228	J-15
544	J-3620F	23,389.20	5,964,002.63	699.6	0	115	TRUE	336.459	140	266.1	J-3610I
545	J-3630F	23,386.73	5,964,534.76	699.3	0	115	TRUE	251.897	140.1	336.8	J-4520F
548	J-3660F	23,675.98	5,964,023.67	697	0.334	115	TRUE	350	203.1	192.2	J-33
549	J-3670I	23,876.32	5,964,331.38	698.5	0	115	TRUE	217.235	140	206.3	J-46
551	J-3690I	22,621.02	5,963,751.20	699.5	1.666	115	TRUE	347.547	140	142.1	J-4
552	J-3700I	24,251.71	5,960,551.59	700	1.666	115	TRUE	350	158	172.4	J-3710F
553	J-3710F	24,340.82	5,960,450.73	699.3	0	115	TRUE	346.583	140	166.2	J-3720F
554	J-3720F	24,635.10	5,960,417.31	700	0	115	TRUE	334.031	140	165.1	J-4090F
555	J-3730F	24,841.29	5,960,613.84	700	1.03	115	TRUE	344.235	140	147.1	J-4200F
556	J-3740I	24,235.46	5,960,911.51	700	1.03	250	TRUE	350	178.3	174.7	J-4010F
557	J-3750I	24,202.10	5,960,810.43	700	1.03	115	TRUE	350	180	181.2	J-69
558	J-3760F	24,126.63	5,962,599.83	698.5	0.562	115	TRUE	199.857	140	197.4	J-3770F
559	J-3770F	24,004.27	5,962,385.31	698.5	0.562	115	TRUE	182.801	140	205.6	J-3775F
560	J-3780F	24,246.39	5,962,223.62	698.8	0.046	115	TRUE	207.261	140	171.3	J-3775F
561	J-3790F	24,549.31	5,962,206.03	699.2	0	115	TRUE	316.487	140.1	183.1	J-133
562	J-3800F	24,678.90	5,962,287.47	699.5	0.35	115	TRUE	350	145.3	230.2	J-3790F
563	J-3830F	24,662.04	5,962,661.31	699	0.782	250	TRUE	350	293.2	299	J-3825F
564	J-3840F	24,769.05	5,962,856.55	698	0	115	TRUE	350	308.6	311.8	J-3810F

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
565	J-S2011E	23,398.12	5,962,393.08	701	0.782	250	TRUE	350	269.1	258.7	J-104
566	J-3860F	23,130.75	5,962,367.08	699.08	0.782	115	TRUE	350	188.6	182.6	J-114
567	J-3870F	23,015.45	5,962,359.04	700	0.782	115	TRUE	350	158.6	156.1	J-113
568	J-3880F	22,846.82	5,962,430.77	700.62	0.086	115	TRUE	350	147.9	154.9	J-112
569	J-3890F	22,639.84	5,962,359.14	701.3	0	115	TRUE	348.912	140	144	J-108
570	J-3900F	22,622.23	5,962,207.13	700.81	0	115	TRUE	350	152	140.3	J-104
571	J-3910F	22,487.33	5,962,190.14	701.21	0.208	115	TRUE	230.315	143.2	140	J-4000F
572	J-3920F	22,674.53	5,962,101.60	701.18	1.666	115	TRUE	350	151	160.9	J-104
573	J-3930F	22,751.35	5,962,203.42	702	1.666	115	TRUE	258.194	140	144.9	J-102
574	J-3940F	22,850.61	5,962,219.38	700.12	1.666	115	TRUE	258.342	140	198.6	J-3930F
575	J-3950F	22,898.73	5,962,037.18	700.62	1.666	115	TRUE	350	179.2	180.1	J-3930F
576	J-S2012E	23,398.36	5,962,126.10	701	0.36	250	TRUE	350	244.1	243.6	J-4600F
579	J-3990F	22,432.04	5,962,601.16	701.5	1.442	115	TRUE	198.715	140	181.5	J-103
580	J-4000F	22,549.18	5,962,091.02	701.54	0	115	TRUE	162.851	140	296.4	J-3910F
581	J-4010F	24,264.46	5,961,085.30	701.5	0	250	TRUE	347.55	140.1	195.4	J-4150F
582	J-4020F	24,634.53	5,961,745.07	702	0	115	TRUE	350	241.3	256.9	J-4230F
583	J-4030F	24,830.67	5,961,610.65	700	0.948	115	TRUE	350	191.7	251.8	J-4230F
584	J-4040F	24,777.43	5,961,073.31	700	1.03	115	TRUE	350	191.3	198.4	J-4120F
585	J-4050F	24,112.80	5,962,004.38	699	0	250	TRUE	350	220.1	249.6	J-4060F
586	J-4060F	24,028.16	5,962,018.57	699.1	0.062	250	TRUE	350	241.6	247	J-4050F
587	J-4070F	23,727.02	5,960,648.81	699	0	250	TRUE	291.859	140.1	229	J-S2195E
588	J-4080I	23,485.64	5,960,871.34	699	0.562	250	TRUE	349.97	140	183.4	J-136
589	J-4090F	24,708.86	5,960,464.59	699.3	0.562	115	TRUE	338.931	140	146.2	J-3720F
590	J-4100F	24,823.61	5,960,719.64	699.3	0.562	115	TRUE	350	159.4	159.1	J-3730F
591	J-4110F	24,732.87	5,960,799.83	699.8	0	115	TRUE	350	181.3	170	J-4150F
592	J-4120F	24,777.30	5,961,013.98	700.1	0	115	TRUE	350	185.4	199	J-4150F
593	J-4130F	24,602.56	5,960,886.16	700	0	115	TRUE	350	152.1	162.5	J-4150F
594	J-4140F	24,447.99	5,960,902.33	701	0	115	TRUE	350	151	151	J-4150F
595	J-4150F	24,447.17	5,960,816.61	702	0.562	115	TRUE	281.149	140	174.2	J-4160F
596	J-4160F	24,443.99	5,960,698.17	700	0.562	115	TRUE	231.21	140	189.2	J-4170F
597	J-4170F	24,566.08	5,960,649.02	700	0.562	115	TRUE	217.303	140	226.2	J-4160F
598	J-4180F	24,721.57	5,960,692.43	699.3	0.356	115	TRUE	242.406	140	188.6	J-4170F
599	J-4190F	24,661.24	5,960,753.91	699.8	0	115	TRUE	292.425	140	155.8	J-4180F
600	J-4200F	24,953.35	5,960,370.98	700	1.666	115	TRUE	215.382	140	339.6	J-3730F
601	J-4210I	22,986.05	5,961,831.40	699.7	0.18	250	TRUE	323.025	140	202	J-126
602	J-4220I	23,168.73	5,961,753.64	699.3	0.66	250	TRUE	350	165	175.3	J-4210I
603	J-4230F	24,473.81	5,961,374.92	701	0	115	TRUE	294.489	140	313.5	J-4150F
604	J-4240F	23,772.01	5,962,249.34	699.3	0	250	TRUE	350	230.8	263.7	J-104
605	J-4250F	23,717.61	5,962,073.19	699.3	0	250	TRUE	350	236.3	260.8	J-104
606	J-N2132E	23,389.33	5,962,987.80	699.5	1.452	250	TRUE	350	286.1	305.2	J-N2140E
607	J-N2133E	23,392.72	5,962,988.28	699.5	1.452	115	TRUE	209.833	140	410.7	J-4540F
609	J-4290I	23,058.22	5,961,598.95	699	0.278	250	TRUE	278.713	140	233	J-127
610	J-N2145E	23,389.91	5,962,866.52	699.4	0.198	250	TRUE	350	298.8	305.9	J-N2143E
611	J-4310F	22,779.97	5,964,010.72	699.5	0.019	115	TRUE	213.858	140	189.8	J-6
612	J-3775F	24,129.33	5,962,308.95	698.5	0.782	115	TRUE	188.048	140	185.8	J-3770F
613	J-3755F	24,211.83	5,962,601.84	698.5	0.046	115	TRUE	219.973	140	153.3	J-3760F
614	J-3785F	24,389.79	5,962,392.01	698.7	0	115	TRUE	289.016	140	175.6	J-148
615	J-N1023E	24,962.79	5,962,291.29	699	0.122	115	TRUE	350	350.1	354	J-3805F
616	J-3805F	24,846.93	5,962,284.57	699.5	0.084	115	TRUE	350	160.1	184.3	J-152
617	J-3804F	24,683.36	5,962,433.13	699.4	0.142	115	TRUE	350	180.3	257.2	J-3825F
618	J-N1025E	24,955.73	5,962,436.30	699	0.122	115	TRUE	350	318.1	319.1	J-N1030E
619	J-N1033E	24,955.82	5,962,656.81	699.5	0.154	115	TRUE	350	278.5	278.5	J-3820F
620	J-N1036E	24,954.51	5,962,777.11	698.5	0.57	115	TRUE	350	297	302.7	J-79
621	J-N1039E	24,954.52	5,962,806.54	698.5	0.204	115	TRUE	350	295.9	297	J-79
622	J-3810F	24,808.50	5,962,854.71	698.5	0.204	115	TRUE	350	300.1	304.6	J-3815F
623	J-3815F	24,803.86	5,962,773.23	699	0.264	115	TRUE	350	148.6	303.2	J-79
624	J-3820F	24,781.43	5,962,653.26	699.5	0.214	115	TRUE	186.825	140	426.4	J-4540F
625	J-3825F	24,683.97	5,962,561.99	701	0.244	115	TRUE	338.804	140	294.8	J-3804F
626	J-4430I	24,354.53	5,960,883.84	700.5	0.37	250	TRUE	350	162	165.8	J-4150F
627	J-4440I	24,201.33	5,960,696.57	699.5	0.414	115	TRUE	350	170.1	180.8	J-4450I
628	J-4450I	24,358.13	5,960,711.56	700	0.296	115	TRUE	274.132	140	284.6	J-4150F
629	J-4460I	23,866.43	5,960,918.16	700.5	0.192	115	TRUE	350	149.1	180.4	J-64
630	J-4470I	24,688.40	5,963,006.16	698	0.122	180	TRUE	350	291	294.2	J-55
632	J-4490F	23,389.95	5,964,203.21	699.2	0.058	115	TRUE	350	211.9	230.5	J-182
633	J-4500F	24,755.74	5,964,815.48	697.4	0.122	115	TRUE	307.542	140.1	263.3	J-134
634	J-4510F	23,181.70	5,964,802.09	697.6	0.072	115	TRUE	326.998	140.1	146.9	J-4520F
635	J-4520F	22,750.47	5,964,647.71	703.2	0.122	115	TRUE	293.81	140.1	206.7	J-4540F
636	J-4530F	22,580.85	5,964,317.87	702.5	0.084	115	TRUE	306.251	140	140.9	J-4540F
637	J-4540F	22,549.98	5,964,282.58	703.5	0.154	115	TRUE	303.46	140.1	154.5	J-4530F
638	J-4550I	24,097.29	5,963,722.12	698.5	0	115	TRUE	314.228	140.1	153.3	J-4570I
639	J-4560I	24,258.63	5,963,745.67	698	0	115	TRUE	344.711	149.8	140	J-78
640	J-4570I	24,058.45	5,963,789.70	699.1	0.13	115	TRUE	268.098	140.1	207.5	J-4580I
641	J-4580I	24,184.55	5,963,895.50	700	0.084	115	TRUE	249.416	140.1	258.8	J-4570I
642	J-4590F	23,289.98	5,962,391.46	700.9	0	250	TRUE	350	213.8	229.9	J-115
643	J-4600F	23,285.48	5,962,126.23	701.38	0.168	250	TRUE	350	198.6	207.3	J-185

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
644	J-4610F	23,155.29	5,962,079.75	700.83	0	250	TRUE	350	181.5	190.4	J-120
645	J-4620F	22,614.11	5,962,019.18	701	0.084	115	TRUE	271.286	140	215.2	J-124
648	J-4650F	22,898.74	5,961,936.72	700.91	0.13	115	TRUE	336.471	140.1	182.7	J-124
1317	J-2	22,730.02	5,963,753.33	700.5	0.084	115	TRUE	225.839	140	302.4	J-3
1319	J-3	22,672.82	5,963,751.17	700.5	0.046	115	TRUE	310.284	140.1	140.1	J-2
1323	J-4	22,621.02	5,963,836.43	700	0.058	115	TRUE	258	140.1	179.5	J-129
1325	J-5	22,727.82	5,963,998.44	700.25	0	115	TRUE	226.616	140	152.4	J-6
1327	J-6	22,732.18	5,964,070.61	701	0.026	115	TRUE	210.81	140	203.6	J-5
1329	J-7	22,731.10	5,964,172.06	700.75	0.026	115	TRUE	229.298	140	156.5	J-6
1331	J-8	22,631.81	5,964,169.90	701.5	0	115	TRUE	251.621	140.1	185.3	J-7
1333	J-9	22,551.95	5,964,168.82	701	0.012	115	TRUE	315.075	153.8	140	J-4540F
1337	J-10	23,451.65	5,963,733.50	699	0.154	115	TRUE	350	146.8	141.9	J-75
1340	J-11	23,574.41	5,963,732.15	699.25	0.072	115	TRUE	143.129	140	335.6	J-75
1342	J-12	23,453.00	5,963,830.63	698.75	0.154	115	TRUE	350	171.7	166.8	J-13
1345	J-13	23,538.85	5,963,831.54	699.25	0.142	115	TRUE	220.073	140	377.5	J-12
1347	J-14	23,454.35	5,964,026.24	699.1	0	115	TRUE	350	142.6	141.1	J-15
1349	J-15	23,467.84	5,964,093.69	699.25	0.096	115	TRUE	132.398	140	436.1	J-4540F
1351	J-16	23,573.06	5,964,030.28	699.25	0.054	115	TRUE	335.1	140.1	190.9	J-17
1353	J-17	23,570.36	5,964,124.71	699	0	115	TRUE	340.934	140.1	175.1	J-16
1355	J-18	23,532.59	5,963,931.81	699	0.046	115	TRUE	350	211.8	231.9	J-3600I
1358	J-19	23,754.37	5,963,918.75	698.75	0.084	115	TRUE	350	215.1	266.5	J-41
1361	J-20	23,728.46	5,963,820.53	698.75	0.168	115	TRUE	307.73	140.1	169.8	J-22
1363	J-21	23,674.50	5,963,815.14	698.75	0	115	TRUE	285.274	144.9	140	J-22
1365	J-22	23,673.42	5,963,866.94	699.25	0.142	115	TRUE	221.844	140	287	J-21
1367	J-23	23,677.74	5,963,733.12	699	0.08	115	TRUE	285.193	140.1	215.6	J-22
1369	J-24	23,746.80	5,963,730.96	699	0.072	115	TRUE	312.352	140.1	181.5	J-23
1371	J-25	23,809.40	5,963,732.04	699	0.158	115	TRUE	350	194.2	200.7	J-26
1374	J-26	23,798.19	5,963,731.64	699	0	115	TRUE	350	194.4	200.7	J-25
1377	J-27	23,775.20	5,963,641.81	699.25	0.204	115	TRUE	350	166.6	164.1	J-28
1379	J-28	23,710.13	5,963,639.34	699.5	0	115	TRUE	303.051	140.1	248.5	J-27
1381	J-29	23,844.51	5,963,643.58	699.25	0.18	115	TRUE	350	170.1	200.3	J-28
1383	J-30	23,845.57	5,963,511.32	699	0.122	115	TRUE	350	238.2	242.2	J-N3160E
1387	J-31	23,799.25	5,963,585.59	699.75	0	115	TRUE	158.802	140	427.4	J-4540F
1388	J-32	23,845.57	5,963,586.29	699.5	0.122	115	TRUE	350	185.3	182.9	J-31
1392	J-33	23,672.77	5,964,049.27	698.75	0.122	115	TRUE	350	170.5	176.3	J-41
1394	J-34	23,670.18	5,964,144.24	699	0	115	TRUE	343.022	140.1	186.2	J-36
1396	J-35	23,671.91	5,964,234.03	698.75	0.096	115	TRUE	349.699	142.5	140	J-36
1398	J-36	23,671.05	5,964,280.65	699	0.096	115	TRUE	158.197	140	427.5	J-4520F
1400	J-37	23,758.25	5,964,281.52	698.75	0.084	115	TRUE	263.857	140	175	J-38
1402	J-38	23,813.50	5,964,238.35	698.75	0.108	115	TRUE	247.023	140	184.5	J-39
1404	J-39	23,860.99	5,964,198.64	698.5	0.058	115	TRUE	243.279	140	194.9	J-38
1406	J-40	23,792.78	5,964,135.61	698.5	0	115	TRUE	248.211	147.3	140	J-41
1408	J-41	23,757.38	5,964,171.87	699.25	0.142	115	TRUE	137.811	140	387.9	J-40
1410	J-42	23,740.12	5,964,098.49	698.5	0.752	115	TRUE	270.657	140	162.6	J-41
1414	J-43	23,980.99	5,963,768.68	699.75	0.348	115	TRUE	207.402	140	398.2	J-3560I
1416	J-44	24,000.53	5,963,681.98	700	0	115	TRUE	314.585	140.1	194.7	J-77
1419	J-45	24,049.06	5,964,265.48	698.75	0	115	TRUE	242.866	140.2	179.6	J-46
1421	J-46	23,957.33	5,964,279.51	698.75	0	115	TRUE	223.632	140	186.6	J-3670I
1424	J-47	24,921.74	5,963,097.95	698.75	0	115	TRUE	303.309	144.9	140	J-48
1426	J-48	24,960.60	5,963,073.13	699.25	0	115	TRUE	151.537	140	406.1	J-47
1428	J-49	24,867.78	5,963,034.28	698.75	0.44	115	TRUE	307.532	144.9	140	J-57
1430	J-50	24,895.84	5,963,012.69	699	0.588	115	TRUE	168.036	142.5	140.1	J-99
1432	J-51	24,805.19	5,963,090.39	698.5	0	115	TRUE	350	212.7	230.2	J-57
1434	J-52	24,739.36	5,963,144.35	698.25	0.084	115	TRUE	327.753	140.1	236.8	J-53
1436	J-53	24,688.64	5,963,093.63	698.25	0.158	115	TRUE	339.778	140.1	212.5	J-52
1438	J-54	24,637.92	5,963,049.38	698.25	0.244	115	TRUE	350	283.5	290	J-53
1443	J-55	24,746.03	5,963,032.58	698.5	0.162	115	TRUE	350	158.9	272	J-51
1446	J-56	24,815.86	5,962,971.87	698.75	0.562	115	TRUE	204.82	144.9	140	J-57
1448	J-57	24,793.42	5,962,913.17	699.25	0.782	115	TRUE	167.237	140.1	254.5	J-100
1450	J-58	24,880.62	5,962,917.48	698.75	0	115	TRUE	161.71	142.5	140.1	J-100
1452	J-59	24,463.42	5,962,681.55	699.25	0.782	115	TRUE	350	273.8	276.3	J-60
1455	J-60	24,477.23	5,962,748.02	699	0.08	115	TRUE	137.939	140	437.6	J-4540F
1457	J-61	24,560.98	5,962,657.37	698.5	0.08	115	TRUE	350	284.2	281.7	J-62
1460	J-62	24,574.79	5,962,709.17	698.75	0.072	115	TRUE	155.092	140	432.9	J-4540F
1464	J-64	23,859.42	5,960,815.72	699.25	0.142	115	TRUE	320.393	140	181.2	J-65
1467	J-65	23,919.85	5,960,828.67	698.5	0.782	115	TRUE	295.911	140	188.7	J-66
1469	J-66	23,954.39	5,960,863.21	699.25	0.782	115	TRUE	297.541	140	191.1	J-65
1471	J-67	23,951.80	5,960,932.28	698.75	0.782	115	TRUE	350	175	168	J-4460I
1475	J-68	24,151.23	5,960,824.36	699.5	0.782	115	TRUE	350	176.7	166.9	J-69
1477	J-69	24,160.73	5,960,864.07	700.5	0.36	115	TRUE	264.075	140	147.3	J-70
1479	J-70	24,173.68	5,960,913.28	699.75	0.222	115	TRUE	208.816	140	144.9	J-71
1481	J-71	24,122.74	5,960,921.05	699.25	2.74	115	TRUE	177.809	140	228.9	J-70
1485	J-73	23,863.50	5,960,738.53	699.2	2.74	115	TRUE	299.146	140	230	J-64
1488	J-74	24,008.12	5,960,795.72	699.25	1.57	115	TRUE	350	167.1	186.8	J-S2170E
1491	J-75	23,533.91	5,963,732.98	699.5	0.208	115	TRUE	220.354	140	142.5	J-11

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1494	J-76	23,929.23	5,963,577.78	699	0	115	TRUE	350	209.5	252.6	J-3570I
1497	J-77	24,049.40	5,963,701.17	699.25	0	115	TRUE	305.663	140.1	210.3	J-44
1500	J-78	24,258.00	5,963,633.98	699	0	115	TRUE	194.447	140	376.1	J-4580I
1508	J-79	25,046.68	5,962,853.87	700	0.096	115	TRUE	350	267	283.8	J-80
1510	J-80	25,042.43	5,963,175.51	700.5	0.536	115	TRUE	350	218.6	240.5	J-81
1512	J-81	25,046.04	5,963,527.62	699	0	250	TRUE	340.131	140.1	180.3	J-88 (Rec Center)
1514	J-82	24,960.02	5,964,132.73	698.2	0	115	TRUE	182.114	140	178.9	J-N1244E
1521	J-83	26,363.57	5,963,530.33	700	0	250	TRUE	269.778	149.1	140	J-84 (Sturgeon Office)
1523	J-84 (Sturgeon Office)	26,363.58	5,963,542.75	701	0	250	TRUE	269.442	140	150.7	J-83
1537	J-88 (Rec Center)	25,818.39	5,963,528.79	700	0	250	TRUE	278.024	140	154.3	J-84 (Sturgeon Office)
1550	J-92	25,818.46	5,963,541.11	700	0	250	TRUE	271.549	140	162.3	J-84 (Sturgeon Office)
1557	J-94	23,168.88	5,964,201.54	698.35	0	115	TRUE	340.478	140	142.4	J-175
1563	J-97	23,572.11	5,964,208.92	698.89	0	115	TRUE	350	160.6	179.8	J-17
1567	J-99	24,962.99	5,962,995.96	699.25	0	115	TRUE	147.57	140	219.4	J-50
1569	J-100	24,962.35	5,962,910.88	699	0	115	TRUE	140.939	140	224	J-58
1571	J-101	24,843.21	5,962,526.29	698.5	0	115	TRUE	228.627	140	405.4	J-N1030E
1574	J-102	22,782.84	5,962,121.78	701.5	0	115	TRUE	186.084	140	285	J-3930F
1576	J-103	22,431.06	5,962,508.05	702.17	0	115	TRUE	199.263	140	148.7	J-104
1579	J-104	22,514.21	5,962,497.73	702.44	0.256	115	TRUE	183.264	140	200.7	J-103
1581	J-105	22,558.04	5,962,294.70	701.5	0.084	115	TRUE	185.868	140	184.4	J-104
1583	J-106	22,457.40	5,962,272.04	701.47	0.084	115	TRUE	210.54	140	146.7	J-105
1587	J-107	22,605.96	5,962,570.05	701.35	0.084	115	TRUE	211.016	141.5	140	J-108
1590	J-108	22,693.62	5,962,555.22	701.5	0.084	115	TRUE	164.506	140	144.9	J-110
1592	J-109	22,786.44	5,962,537.82	700.8	0.084	115	TRUE	139.494	140	226.1	J-108
1594	J-110	22,697.49	5,962,511.39	701	0.084	115	TRUE	151.674	140.1	185.6	J-108
1596	J-111	22,779.24	5,962,426.24	700.81	0.084	115	TRUE	350	142.2	140.3	J-112
1599	J-112	22,721.23	5,962,294.75	701	0.084	115	TRUE	162.958	140	387.2	J-104
1601	J-113	23,034.88	5,962,417.94	700.25	0.084	115	TRUE	246.2	140	316	J-3870F
1603	J-114	23,096.04	5,962,483.59	700.27	0.084	115	TRUE	280.064	140	140.2	J-123
1606	J-115	22,877.49	5,962,538.98	700.76	0.084	115	TRUE	285.292	140	234.1	J-121
1609	J-116	22,980.29	5,962,035.89	700.36	0.084	115	TRUE	350	179.8	186.3	J-120
1612	J-117	22,981.58	5,962,130.00	700.07	0.084	115	TRUE	287.139	140	165.1	J-184
1613	J-118	23,116.29	5,962,177.05	700.4	0.084	115	TRUE	282.058	140	208.5	J-184
1614	J-119	23,064.08	5,962,037.98	700.61	0.084	115	TRUE	350	172.7	169.7	J-120
1617	J-120	23,062.79	5,961,949.52	700.91	0	115	TRUE	221.484	140	347.6	J-119
1622	J-121	22,967.10	5,962,525.57	699.88	0	115	TRUE	309.295	140	177.2	J-115
1625	J-122	22,927.50	5,962,396.04	700.53	0.15	115	TRUE	350	151	161.2	J-115
1629	J-123	23,125.71	5,962,499.02	700.25	0.246	115	TRUE	237.423	140	227.8	J-114
1631	J-124	22,727.41	5,961,943.33	700.5		115	TRUE	257.854	140	238	J-4620F
1635	J-126	22,921.36	5,961,747.94	699.46		250	TRUE	344.212	140	156.4	J-4210I
1638	J-127	23,004.78	5,961,658.26	699.18		250	TRUE	328.392	140	141.7	J-4290I
1641	J-128	23,107.26	5,961,523.64	699.75		250	TRUE	275.65	140	242.6	J-145
1644	J-129	22,662.34	5,963,932.49	700.13		115	TRUE	230.69	140	195.9	J-5
1651	J-131	24,486.06	5,962,060.83	699.27		115	TRUE	252.837	140	192.9	J-156
1654	J-132	24,968.91	5,961,951.84	699.38		115	TRUE	204.213	140	225.8	J-153
1657	J-133	24,401.29	5,962,107.21	700.25		115	TRUE	227.121	140	193.8	J-151
1661	J-134	23,876.05	5,964,790.63	697.75		115	TRUE	327.845	140.1	211.6	J-135
1662	J-135	23,390.85	5,964,794.52	699.5		115	TRUE	330.63	140.1	176.2	J-4520F
1678	J-136	23,661.31	5,960,941.42	698.75		250	TRUE	350	156.2	176.1	J-4070F
1681	J-137	23,388.97	5,962,746.95	700.04		250	TRUE	350	290.4	318.6	J-N2150E
1684	J-138	22,557.14	5,963,245.10	700.93		115	TRUE	350	191.7	194.5	J-N4070E
1687	J-139	22,761.26	5,963,186.30	702.75		250	TRUE	294.151	140.1	200	J-N4420E
1701	J-140	23,586.96	5,963,525.74	698.45		115	TRUE	350	141.5	190.6	J-N3150E
1704	J-141	23,239.49	5,963,413.52	699.38		115	TRUE	350	293.8	303.4	J-4540F
1711	J-143	23,345.33	5,961,555.68	699		250	TRUE	342.754	140	140	J-S2051E
1714	J-144	23,225.95	5,961,556.04	699		115	TRUE	333.912	140	160	J-128
1716	J-145	23,170.80	5,961,583.05	699.59		115	TRUE	331.701	141.6	140	J-128
1722	J-146	24,277.82	5,962,502.87	698.64		115	TRUE	231.106	140	172.4	J-147
1725	J-147	24,223.72	5,962,367.72	698.57		115	TRUE	231.68	140	170.5	J-146
1729	J-148	24,298.95	5,962,314.98	698.75		115	TRUE	249.796	140	148	J-3780F
1732	J-149	24,416.81	5,962,303.73	698.9		115	TRUE	284.363	140.1	156	J-151
1735	J-150	24,475.11	5,962,227.73	699.07		115	TRUE	289.946	140	140.2	J-133
1738	J-151	24,314.17	5,962,158.57	699.57		115	TRUE	226.363	140	190.5	J-133
1742	J-152	24,851.03	5,962,145.44	699.48		115	TRUE	263.822	140	168.9	J-153
1745	J-153	24,970.64	5,962,052.96	699.41		115	TRUE	225.991	140	158.7	J-132
1752	J-155	24,616.38	5,962,095.62	699.27		115	TRUE	240.278	140	196.5	J-153
1757	J-156	24,560.35	5,962,018.25	699.29		115	TRUE	248.445	140	179	J-155
1786	J-165	23,502.59	5,964,204.60	699.08		115	TRUE	332.165	140	221	J-182
1789	J-166	23,315.10	5,964,203.31	698.91		115	TRUE	350	179.4	183.7	J-170
1792	J-167	23,168.27	5,964,090.48	698.75		115	TRUE	350	213	223.4	J-175
1795	J-168	23,313.56	5,964,092.80	698.77		115	TRUE	318.742	140	238.1	J-172
1798	J-169	23,315.88	5,964,279.82	698.79		115	TRUE	284.251	141.9	140	J-170
1800	J-170	23,364.57	5,964,279.82	698.98		115	TRUE	232.938	140	264.7	J-169
1802	J-171	23,243.23	5,964,202.54	698.64		115	TRUE	350	144.4	182	J-175
1805	J-172	23,244.78	5,964,090.48	698.87		115	TRUE	350	144.5	174.6	J-168

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Easting (m)	Northing (m)	Elevation (m)	Demand (L/s)	Fire Flow (Needed) (L/s)	Satisfies Fire Flow Constraints?	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)	Pressure (Calculated Zone Lower Limit) (kPa)	Junction w/ Minimum Pressure (Zone)
1809	J-173	23,069.34	5,964,200.99	699.45		115	TRUE	264.585	140	142	J-176
1811	J-174	22,976.60	5,964,200.99	699.89		115	TRUE	251.122	140	154.5	J-175
1813	J-175	22,976.60	5,964,112.89	700.15		115	TRUE	229.658	140	191.7	J-176
1815	J-176	23,070.12	5,964,112.12	699.74		115	TRUE	232.275	140.1	179.3	J-175
1819	J-178	22,974.67	5,964,279.75	700.05		115	TRUE	237.676	140.1	179.8	J-179
1822	J-179	23,044.05	5,964,278.86	699.77		115	TRUE	234.219	140.2	189.9	J-178
1825	J-180	23,130.99	5,964,278.86	699.49		115	TRUE	237.078	140	188.3	J-179
1828	J-181	23,217.93	5,964,279.83	699.24		115	TRUE	249.223	140	177	J-180
1832	J-182	23,439.83	5,964,204.12	699.15		115	TRUE	345.262	140	193	J-165
1835	J-183	24,885.31	5,963,455.51	698.5		115	TRUE	299.362	140.1	169.5	J-N1430E
1838	J-184	23,025.30	5,962,131.36	700.17		115	TRUE	276.182	140	192.1	J-117
1841	J-185	23,215.32	5,962,120.15	701.11		115	TRUE	350	187.9	198.8	J-4610F

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
660	P-10	J-S2120E	J-S2110E	150.17	300	Asbestos Cement	100	-0.933	0.01	0	0.002
661	P-20	J-S2110E	J-S1080E	103.15	250	Asbestos Cement	100	-4.623	0.09	0.01	0.085
662	P-30	J-S1080E	J-S1070E	66.87	250	Asbestos Cement	100	-4.813	0.1	0.01	0.093
663	P-40	J-S1070E	J-S1060E	193.17	250	Asbestos Cement	100	-5.081	0.1	0.02	0.102
664	P-50	J-S1060E	J-S1050E	160.23	250	Asbestos Cement	100	-5.299	0.11	0.02	0.11
665	P-60	J-S1050E	J-S1051E	150.15	250	Asbestos Cement	100	7.03	0.14	0.03	0.186
666	P-70	J-S1051E	J-S2032E	143.47	250	Asbestos Cement	100	6.87	0.14	0.03	0.178
667	P-80	J-S2032E	J-S2033E	159.41	250	Asbestos Cement	100	1.088	0.02	0	0.006
668	P-90	J-S2033E	J-S2034E	182.35	250	Asbestos Cement	100	0.91	0.02	0	0.004
669	P-100	J-S2034E	J-S2090E	159.02	250	Asbestos Cement	100	0.73	0.01	0	0.003
670	P-110	J-S2090E	J-S2100E	143.47	300	Asbestos Cement	100	-2.517	0.04	0	0.011
671	P-130	J-S2090E	J-S2080E	157.37	300	Asbestos Cement	100	3.073	0.04	0	0.017
672	P-140	J-S2080E	J-S2070E	116.64	300	Asbestos Cement	100	2.911	0.04	0	0.015
673	P-150	J-S2070E	J-S2060E	158.93	250	Asbestos Cement	100	4.831	0.1	0.01	0.093
674	P-170	J-S2040E	J-S2030E	160.45	250	Asbestos Cement	100	0.646	0.01	0	0.002
675	P-180	J-S2030E	J-S2031E	143.22	250	Asbestos Cement	100	-5.356	0.11	0.02	0.112
676	P-190	J-S2031E	J-S2032E	154.95	250	Asbestos Cement	100	-5.59	0.11	0.02	0.122
677	P-200	J-S1050E	J-S1040E	140.87	250	Asbestos Cement	100	-26.922	0.55	0.31	2.235
678	P-220	J-S2010E	J-N4200E	101.91	300	PVC	110	-6.569	0.09	0.01	0.056
679	P-230	J-N4200E	J-N2150E	55.29	300	Asbestos Cement	100	-11.255	0.16	0.01	0.183
680	P-240	J-N2150E	J-N2160E	92.29	300	Asbestos Cement	100	-7.245	0.1	0.01	0.081
681	P-250	J-N2160E	J-N2170E	76.86	300	Asbestos Cement	100	-7.475	0.11	0.01	0.085
682	P-260	J-N2170E	J-N2171E	68.08	148.6	Asbestos Cement	100	0.084	0	0	0
683	P-270	J-N2170E	J-N2180E	86.84	300	Asbestos Cement	100	-7.635	0.11	0.01	0.089
684	P-280	J-N2180E	J-N2181E	99.98	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
685	P-290	J-N2180E	J-N2190E	95.04	300	Asbestos Cement	100	-7.793	0.11	0.01	0.093
686	P-300	J-N2190E	J-N2200E	114.78	300	Asbestos Cement	100	-8.788	0.12	0.01	0.115
687	P-310	J-N2200E	J-N2201E	122.94	148.6	Asbestos Cement	100	-1.138	0.07	0.01	0.081
688	P-320	J-N2201E	J-N2221E	74.27	148.6	Asbestos Cement	100	-1.23	0.07	0.01	0.093
689	P-330	J-N2221E	J-N2220E	76.27	148.6	Asbestos Cement	100	-1.33	0.08	0.01	0.107
690	P-350	J-N2210E	J-N2200E	78.85	300	Asbestos Cement	100	7.75	0.11	0.01	0.092
691	P-360	J-N2220E	J-N2230E	99.44	300	Asbestos Cement	100	-9.31	0.13	0.01	0.129
692	P-370	J-N2230E	J-N2240E	202.82	300	Asbestos Cement	100	-14.076	0.2	0.06	0.276
693	P-380	J-N2240E	J-N2250E	143.24	300	Asbestos Cement	100	-19.097	0.27	0.07	0.487
694	P-390	J-N2250E	J-N2251E	83.98	199.4	PVC	110	-6.553	0.21	0.03	0.412
695	P-400	J-N2251E	J-N2254E	107.15	199.4	PVC	110	-1.657	0.05	0	0.032
696	P-440	J-N2240E	J-N3300E	96.35	199.4	Asbestos Cement	100	4.863	0.16	0.03	0.283
697	P-450	J-N3300E	J-N3301E	106.53	148.6	PVC	110	0.192	0.01	0	0.002
698	P-470	J-N3460E	J-N3440E	203.74	148.6	Asbestos Cement	100	0.814	0.05	0.01	0.043
699	P-480	J-N3440E	J-N3430E	54.04	148.6	Asbestos Cement	100	1.434	0.08	0.01	0.123
700	P-490	J-N3440E	J-N3450E	75.82	148.6	Asbestos Cement	100	-0.732	0.04	0	0.035
701	P-500	J-N3450E	J-N3460E	129.08	148.6	Asbestos Cement	100	-0.854	0.05	0.01	0.047
702	P-510	J-N3300E	J-N3310E	17.07	199.4	Asbestos Cement	100	4.625	0.15	0	0.257
703	P-520	J-N3310E	J-N3460E	92.02	148.6	Asbestos Cement	100	1.814	0.1	0.02	0.191
704	P-530	J-N3310E	J-N3320E	63.2	199.4	Asbestos Cement	100	2.757	0.09	0.01	0.099
705	P-540	J-N3320E	J-N3321E	107.01	148.6	PVC	110	0.13	0.01	0	0.001
706	P-580	J-N3410E	J-N3400E	116.64	148.6	Asbestos Cement	100	-0.775	0.04	0	0.04
707	P-590	J-N3400E	J-N3352E	140.36	148.6	Asbestos Cement	100	-0.595	0.03	0	0.024
708	P-600	J-N3352E	J-N3351E	118.5	148.6	Asbestos Cement	100	-0.717	0.04	0	0.034
709	P-630	J-N3400E	J-N3390E	94.5	148.6	Asbestos Cement	100	-0.28	0.02	0	0.006
710	P-650	J-N3380E	J-N3370E	158.61	148.6	Asbestos Cement	100	-0.564	0.03	0	0.022
711	P-670	J-N3360E	J-N3350E	86.19	199.4	Asbestos Cement	100	0.913	0.03	0	0.013
712	P-680	J-N3360E	J-N1080E	91.25	199.4	Asbestos Cement	100	-1.783	0.06	0	0.044
713	P-690	J-N1080E	J-N1070E	81.01	300	Asbestos Cement	100	-15.145	0.21	0.03	0.317
714	P-710	J-3810F	J-N1040E	145.89	300	Asbestos Cement	100	-10.593	0.15	0.02	0.164
715	P-740	J-N1020E	J-S1010E	311.27	300	Asbestos Cement	100	79.915	1.13	2.15	6.897
716	P-750	J-S1010E	J-S1020E	490.5	300	Asbestos Cement	100	27.124	0.38	0.46	0.932
717	P-770	J-N1070E	J-N1071E	127.62	148.6	Asbestos Cement	100	0.195	0.01	0	0.003
718	P-810	J-N1100E	J-N1101E	121.84	148.6	Asbestos Cement	100	-1.742	0.1	0.02	0.177
719	P-820	J-N1101E	J-N1102E	75.55	148.6	Asbestos Cement	100	-1.888	0.11	0.02	0.205
720	P-830	J-N1102E	J-N1071E	103.55	148.6	Asbestos Cement	100	-2	0.12	0.02	0.228
722	P-850	J-N1420E	J-N1410E	102.81	199.4	Asbestos Cement	100	7.647	0.24	0.07	0.654
723	P-860	J-N1410E	J-N1303E	109.83	199.4	Asbestos Cement	100	3.039	0.1	0.01	0.118
724	P-900	J-N1310E	J-N1311E	21.66	148.6	Asbestos Cement	100	0.1	0.01	0	0.003
725	P-910	J-N1310E	J-N1300E	81.44	199.4	Asbestos Cement	100	2.285	0.07	0.01	0.07
726	P-920	J-N1300E	J-N1301E	98.2	199.4	Asbestos Cement	100	-2.659	0.09	0.01	0.093
727	P-930	J-N1301E	J-N1302E	173.53	199.4	Asbestos Cement	100	-2.781	0.09	0.02	0.1
728	P-940	J-N1302E	J-N1303E	51.24	199.4	Asbestos Cement	100	-2.873	0.09	0.01	0.108
729	P-950	J-N1300E	J-N1290E	34.53	199.4	Asbestos Cement	100	4.89	0.16	0.01	0.285
730	P-960	J-N1290E	J-N1291E	87.73	199.4	Asbestos Cement	100	2.513	0.08	0.01	0.083
731	P-970	J-N1291E	J-N1292E	36.16	148.6	Asbestos Cement	100	0.13	0.01	0	0.002
732	P-980	J-N1291E	J-N1245E	88.1	199.4	Asbestos Cement	100	2.383	0.08	0.01	0.075
734	P-1000	J-N1244E	J-N1243E	105.82	199.4	Asbestos Cement	100	0.951	0.03	0	0.013
735	P-1020	J-N1290E	J-N1280E	160.91	199.4	Asbestos Cement	100	2.315	0.07	0.01	0.071
736	P-1030	J-N1280E	J-N1281E	73.84	199.4	Asbestos Cement	100	-1.925	0.06	0	0.05
737	P-1040	J-N1281E	J-N1282E	119.73	199.4	Asbestos Cement	100	-2.037	0.07	0.01	0.057

Ultimate Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
738	P-1050	J-N1282E	J-N1283E	139.48	199.4	Asbestos Cement	100	-2.159	0.07	0.01	0.063
739	P-1060	J-N1283E	J-N1350E	92.58	199.4	Asbestos Cement	100	-2.259	0.07	0.01	0.068
740	P-1070	J-N1350E	J-N1340E	76.86	199.4	Asbestos Cement	100	-1.58	0.05	0	0.035
741	P-1090	J-N1243E	J-N1242E	236.43	199.4	Asbestos Cement	100	2.021	0.06	0.01	0.056
742	P-1100	J-N1242E	J-N1241E	80.35	199.4	Asbestos Cement	100	1.909	0.06	0	0.05
743	P-1110	J-N1241E	J-N1272E	127.79	199.4	Asbestos Cement	100	-1.197	0.04	0	0.021
744	P-1120	J-N1272E	J-N1270E	119.73	199.4	Asbestos Cement	100	-1.297	0.04	0	0.024
745	P-1130	J-N1270E	J-N1271E	64.3	199.4	Asbestos Cement	100	0.062	0	0	0
746	P-1140	J-N1270E	J-N1280E	85.6	199.4	Asbestos Cement	100	-4.155	0.13	0.02	0.212
747	P-1170	J-N1241E	J-N1240E	102.9	199.4	Asbestos Cement	100	3.052	0.1	0.01	0.119
748	P-1180	J-N1220E	J-N1210E	58.39	300	Asbestos Cement	100	-11.42	0.16	0.01	0.187
749	P-1190	J-N1210E	J-N1200E	130.28	300	Asbestos Cement	100	-11.42	0.16	0.02	0.188
750	P-1210	J-N1180E	J-N1170E	125.45	300	Asbestos Cement	100	-10.411	0.15	0.02	0.158
751	P-1220	J-N1170E	J-N1160E	113.58	300	Asbestos Cement	100	-10.411	0.15	0.02	0.158
752	P-1230	J-N1160E	J-N1150E	34.86	300	Asbestos Cement	100	-10.411	0.15	0.01	0.158
753	P-1240	J-N1150E	J-N1370E	89.01	199.4	Asbestos Cement	100	1.139	0.04	0	0.019
754	P-1250	J-N1370E	J-N1360E	149.27	199.4	Asbestos Cement	100	0.893	0.03	0	0.012
755	P-1260	J-N1360E	J-N1361E	37.87	148.6	Asbestos Cement	100	0.092	0.01	0	0
756	P-1270	J-N1360E	J-N1350E	85.49	199.4	Asbestos Cement	100	0.755	0.02	0	0.009
757	P-1280	J-N1370E	J-N1371E	116.01	199.4	Asbestos Cement	100	0.185	0.01	0	0.001
758	P-1290	J-N1371E	J-N1344E	69	199.4	Asbestos Cement	100	-0.037	0	0	0.001
759	P-1300	J-N1344E	J-N1343E	105.53	199.4	Asbestos Cement	100	-0.145	0	0	0
760	P-1310	J-N1343E	J-N1341E	52.62	199.4	Asbestos Cement	100	-0.207	0.01	0	0.001
761	P-1320	J-N1341E	J-N1340E	51.63	199.4	Asbestos Cement	100	-0.329	0.01	0	0.001
762	P-1330	J-N1371E	J-N1372E	125.98	199.4	Asbestos Cement	100	0.13	0	0	0
763	P-1340	J-N1344E	J-N1345E	27.22	148.6	Asbestos Cement	100	0.062	0	0	0.003
764	P-1350	J-N1341E	J-N1342E	109.83	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
765	P-1360	J-N1150E	J-N1140E	82.8	300	Asbestos Cement	100	-12.654	0.18	0.02	0.227
766	P-1370	J-N1140E	J-N1130E	124.1	300	Asbestos Cement	100	-12.654	0.18	0.03	0.227
767	P-1380	J-N1130E	J-N1120E	85.74	300	Asbestos Cement	100	-12.754	0.18	0.02	0.23
768	P-1400	J-N1120E	J-N3183E	113.71	250	Asbestos Cement	100	2.154	0.04	0	0.02
769	P-1410	J-N3183E	J-N3182E	138.32	250	Asbestos Cement	100	2.154	0.04	0	0.021
770	P-1420	J-N3182E	J-N3181E	116.68	250	Asbestos Cement	100	2.154	0.04	0	0.021
771	P-1450	J-N3210E	J-N3220E	139.97	250	Asbestos Cement	100	-3.91	0.08	0.01	0.063
772	P-1460	J-N3220E	J-N3230E	68.05	250	Asbestos Cement	100	-7.228	0.15	0.01	0.196
773	P-1480	J-N3420E	J-N3430E	76.82	148.6	Asbestos Cement	100	-1.372	0.08	0.01	0.114
774	P-1490	J-N3230E	J-N3420E	127.62	199.4	Asbestos Cement	100	-3.008	0.1	0.01	0.116
775	P-1500	J-N3230E	J-N3240E	63.01	250	Asbestos Cement	100	-4.332	0.09	0	0.075
776	P-1510	J-N3240E	J-N3250E	149.72	250	Asbestos Cement	100	-4.432	0.09	0.01	0.079
777	P-1520	J-N3250E	J-N3260E	112.25	250	Asbestos Cement	100	-4.544	0.09	0.01	0.083
778	P-1530	J-N3260E	J-N2230E	72.03	250	Asbestos Cement	100	-4.644	0.09	0.01	0.087
779	P-1540	J-N2190E	J-N2191E	109.95	148.6	Asbestos Cement	100	0.896	0.05	0.01	0.052
780	P-1550	J-N2191E	J-N2381E	109.37	148.6	Asbestos Cement	100	0.766	0.04	0	0.038
781	P-1560	J-N2381E	J-N2382E	89.91	148.6	Asbestos Cement	100	0.577	0.03	0	0.023
782	P-1570	J-N2382E	J-N2383E	88.1	148.6	Asbestos Cement	100	0.1	0.01	0	0.001
783	P-1580	J-N2382E	J-N2391E	78.98	148.6	Asbestos Cement	100	0.401	0.02	0	0.011
784	P-1590	J-N2391E	J-N2390E	176.79	148.6	Asbestos Cement	100	0.289	0.02	0	0.006
785	P-1600	J-N2390E	J-N2380E	136.01	199.4	Asbestos Cement	100	-1.447	0.05	0	0.03
786	P-1610	J-N2380E	J-N2370E	124.29	199.4	Asbestos Cement	100	-1.569	0.05	0	0.035
787	P-1620	J-N2370E	J-N2360E	100.16	199.4	Asbestos Cement	100	1.474	0.05	0	0.03
788	P-1630	J-N2360E	J-N2361E	93.31	148.6	Asbestos Cement	100	0.394	0.02	0	0.012
789	P-1640	J-N2361E	J-N2362E	96.43	148.6	Asbestos Cement	100	0.147	0.01	0	0.002
790	P-1650	J-N2362E	J-N2363E	196.9	148.6	Asbestos Cement	100	-0.021	0	0	0
791	P-1660	J-N2363E	J-N2361E	141.84	148.6	Asbestos Cement	100	-0.116	0.01	0	0.001
792	P-1670	J-N3190E	J-N3200E	23.61	250	Asbestos Cement	100	-3.613	0.07	0	0.054
793	P-1680	J-N3200E	J-N3210E	122.68	250	Asbestos Cement	100	-3.798	0.08	0.01	0.06
794	P-1690	J-N2340E	J-N2330E	183.2	199.4	Asbestos Cement	100	0.683	0.02	0	0.007
795	P-1700	J-N2330E	J-N2331E	138.42	148.6	Asbestos Cement	100	-0.235	0.01	0	0.004
796	P-1710	J-N2331E	J-N2350E	117.57	148.6	Asbestos Cement	100	-0.373	0.02	0	0.01
797	P-1720	J-N2350E	J-N2360E	90.2	199.4	Asbestos Cement	100	-0.98	0.03	0	0.015
798	P-1730	J-N2340E	J-N2350E	72.78	199.4	Asbestos Cement	100	-0.606	0.02	0	0.006
799	P-1740	J-N3120E	J-N2300E	137.48	148.6	Asbestos Cement	100	-1.191	0.07	0.01	0.087
800	P-1750	J-N2300E	J-N2301E	87.4	148.6	PVC	110	0.406	0.02	0	0.01
801	P-1760	J-N2300E	J-N2310E	69.05	200	PVC	120	-1.639	0.05	0	0.027
802	P-1770	J-N2310E	J-N2320E	4.26	148.6	Asbestos Cement	100	-0.302	0.02	0	0
803	P-1780	J-N2320E	J-N2330E	60.93	199.4	Asbestos Cement	100	-0.864	0.03	0	0.012
804	P-1790	J-N2320E	J-N2321E	201.35	148.6	Asbestos Cement	100	0.45	0.03	0	0.014
805	P-1810	J-N2400E	J-N2390E	84.57	199.4	Asbestos Cement	100	-1.614	0.05	0	0.037
806	P-1830	J-N2140E	J-N2141E	3.78	148.6	Asbestos Cement	100	-1.301	0.08	0	0.102
807	P-1840	J-N2141E	J-N2142E	5.98	148.6	Asbestos Cement	100	-0.752	0.04	0	0.037
808	P-1850	J-N2142E	J-N2400E	97.46	199.4	Asbestos Cement	100	-1.822	0.06	0	0.046
809	P-1860	J-N2142E	J-N2143E	57.93	148.6	Asbestos Cement	100	1.07	0.06	0	0.072
810	P-1870	J-N2143E	J-N2144E	100.33	148.6	Asbestos Cement	100	1.121	0.06	0.01	0.078
811	P-1890	J-N2131E	J-N2130E	5.47	148.6	Asbestos Cement	100	0.032	0	0	0
812	P-1910	J-N2130E	J-N2120E	194.48	300	PVC	110	-4.366	0.06	0.01	0.026
813	P-1920	J-N2120E	J-N2121E	3.38	300	Asbestos Cement	100	1.874	0.03	0	0

Ultimate Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
814	P-1950	J-N2121E	J-N2310E	108.69	300	Asbestos Cement	100	1.337	0.02	0	0.003
815	P-1960	J-N2121E	J-N2111E	72.57	148.6	Asbestos Cement	100	-0.086	0	0	0.001
816	P-1970	J-N2111E	J-N3110E	142.52	148.6	Asbestos Cement	100	0.603	0.03	0	0.025
817	P-1980	J-N3110E	J-N3120E	111.99	148.6	Asbestos Cement	100	1.254	0.07	0.01	0.096
818	P-1990	J-N2111E	J-N2110E	139.65	148.6	Asbestos Cement	100	-0.733	0.04	0	0.035
819	P-2000	J-N2110E	J-N2120E	79.39	300	Asbestos Cement	100	6.33	0.09	0	0.063
820	P-2010	J-N3100E	J-N3100E	159.04	148.6	Asbestos Cement	100	-2.847	0.16	0.07	0.439
821	P-2020	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.289	0.02	0	0.007
822	P-2030	J-N2080E	J-N2090E	17.46	300	Asbestos Cement	100	17.241	0.24	0.01	0.403
824	P-2050	J-N2100E	J-N4370E	6.7	250	Asbestos Cement	100	5.726	0.12	0	0.122
825	P-2060	J-N2100E	J-N2110E	72.1	300	Asbestos Cement	100	8.056	0.11	0.01	0.099
826	P-2070	J-N4360E	J-N2090E	7.44	300	Asbestos Cement	100	-2.817	0.04	0	0.02
827	P-2080	J-N3100E	J-N4360E	10.58	148.6	Asbestos Cement	100	-0.289	0.02	0	0.007
828	P-2090	J-N4360E	J-N4370E	195.94	148.6	Asbestos Cement	100	2.239	0.13	0.06	0.281
829	P-2100	J-N4370E	J-N4460E	192.06	148.6	Asbestos Cement	100	1.416	0.08	0.02	0.121
830	P-2110	J-N4460E	J-N4470E	78.67	148.6	Asbestos Cement	100	-0.993	0.06	0	0.062
831	P-2120	J-N4470E	J-N2110E	191.71	148.6	Asbestos Cement	100	-0.993	0.06	0.01	0.062
832	P-2130	J-N4460E	J-N4480E	137.1	148.6	Asbestos Cement	100	1.058	0.06	0.01	0.07
833	P-2140	J-N4480E	J-N4481E	126.08	148.6	Asbestos Cement	100	0.062	0	0	0.001
834	P-2150	J-N2143E	J-N4520E	161.64	148.6	Asbestos Cement	100	1.404	0.08	0.02	0.118
835	P-2160	J-N4520E	J-N4530E	100.47	148.6	Asbestos Cement	100	0.339	0.02	0	0.009
836	P-2170	J-N4530E	J-N2144E	161.42	148.6	Asbestos Cement	100	-1.099	0.06	0.01	0.076
837	P-2180	J-N4530E	J-N4180E	63.18	148.6	Asbestos Cement	100	1.162	0.07	0.01	0.084
838	P-2190	J-N4180E	J-N4190E	13.34	300	Asbestos Cement	100	-4.429	0.06	0	0.033
839	P-2200	J-N4190E	J-N4191E	48.62	148.6	Asbestos Cement	100	0.112	0.01	0	0.002
840	P-2210	J-N4190E	J-N4200E	274.77	300	Asbestos Cement	100	-4.687	0.07	0.01	0.036
841	P-2220	J-N4520E	J-N4510E	120.05	148.6	Asbestos Cement	100	0.952	0.05	0.01	0.058
842	P-2230	J-N4510E	J-N4500E	8.94	148.6	Asbestos Cement	100	0.189	0.01	0	0
843	P-2250	J-N4150E	J-N4160E	112	300	Asbestos Cement	100	-6.043	0.09	0.01	0.058
844	P-2260	J-N4160E	J-N4170E	81.56	300	Asbestos Cement	100	-6.119	0.09	0	0.059
845	P-2280	J-N4170E	J-N4180E	120.24	300	Asbestos Cement	100	-5.515	0.08	0.01	0.049
846	P-2290	J-N4500E	J-N4490E	118.49	148.6	Asbestos Cement	100	-1.297	0.07	0.01	0.102
847	P-2300	J-N4490E	J-N4480E	128.77	148.6	Asbestos Cement	100	-0.85	0.05	0.01	0.047
848	P-2310	J-N4490E	J-N4450E	136.19	148.6	Asbestos Cement	100	-0.662	0.04	0	0.029
849	P-2320	J-N4450E	J-N4460E	128.4	148.6	Asbestos Cement	100	-1.214	0.07	0.01	0.09
850	P-2340	J-N4380E	J-N4370E	128.36	250	Asbestos Cement	100	-6.549	0.13	0.02	0.164
851	P-2350	J-N4380E	J-N4350E	206.44	148.6	Asbestos Cement	100	-2.287	0.13	0.06	0.293
852	P-2360	J-N4350E	J-N3090E	62.39	199.4	Asbestos Cement	100	-5.22	0.17	0.02	0.322
853	P-2370	J-N3090E	J-N3100E	65.8	199.4	Asbestos Cement	100	2.269	0.07	0	0.069
854	P-2380	J-N2080E	J-N2070E	69.04	300	Asbestos Cement	100	-17.374	0.25	0.03	0.408
855	P-2390	J-N2070E	J-N3080E	9.24	300	Asbestos Cement	100	4.094	0.06	0	0.033
856	P-2400	J-N3090E	J-N3080E	11.56	148.6	Asbestos Cement	100	-7.49	0.43	0.03	2.634
857	P-2410	J-N2070E	J-N2060E	122.15	300	Asbestos Cement	100	-21.467	0.3	0.07	0.605
858	P-2420	J-N2060E	J-N2050E	99.14	300	Asbestos Cement	100	-22.64	0.32	0.07	0.667
859	P-2430	J-N2050E	J-N2040E	103.71	300	Asbestos Cement	100	-23.989	0.34	0.08	0.742
860	P-2011	J-N2010E	J-N2020E	61.4	300	Asbestos Cement	100	49.606	0.7	0.17	2.852
861	P-3011	J-N2020E	J-N3010E	15.08	148.6	Asbestos Cement	100	4.907	0.28	0.02	1.206
862	P-2470	J-N2040E	J-N2020E	172.37	300	Asbestos Cement	100	-25.911	0.37	0.15	0.857
863	P-2490	J-N3030E	J-N2040E	4	148.6	Asbestos Cement	100	-1.922	0.11	0	0.207
864	P-2500	J-N3030E	J-N3031E	12.78	148.6	Asbestos Cement	100	5.859	0.34	0.02	1.674
865	P-2510	J-N3031E	J-N3040E	91.18	148.6	Asbestos Cement	100	3.384	0.2	0.06	0.605
866	P-2520	J-N3040E	J-N2050E	4.01	148.6	Asbestos Cement	100	-1.349	0.08	0	0.113
867	P-2530	J-N3040E	J-N3050E	11.77	148.6	Asbestos Cement	100	4.733	0.27	0.01	1.127
868	P-2540	J-N3050E	J-N3060E	86.62	148.6	Asbestos Cement	100	3.394	0.2	0.05	0.608
869	P-2550	J-N3060E	J-N2060E	4.43	148.6	Asbestos Cement	100	-1.172	0.07	0	0.081
870	P-2560	J-N3060E	J-N3070E	6.35	148.6	Asbestos Cement	100	4.566	0.26	0.01	1.058
871	P-2570	J-N3070E	J-N3080E	110.15	148.6	Asbestos Cement	100	3.396	0.2	0.07	0.609
872	P-2580	J-N3031E	J-N3032E	169.33	148.6	Asbestos Cement	100	2.399	0.14	0.05	0.32
873	P-2590	J-N3032E	J-N3051E	103.02	148.6	Asbestos Cement	100	2.277	0.13	0.03	0.29
874	P-2600	J-N3051E	J-N3050E	168.88	148.6	Asbestos Cement	100	-1.228	0.07	0.02	0.093
875	P-2610	J-N3051E	J-N3071E	92.07	148.6	Asbestos Cement	100	3.383	0.2	0.06	0.605
876	P-2620	J-N3071E	J-N3070E	169.23	148.6	Asbestos Cement	100	-1.058	0.06	0.01	0.07
877	P-2630	J-N3071E	J-N4340E	123.92	148.6	Asbestos Cement	100	4.31	0.25	0.12	0.947
878	P-2640	J-N4340E	J-N4350E	111.27	199.4	Asbestos Cement	100	-2.849	0.09	0.01	0.105
879	P-2650	J-N4340E	J-N4330E	23.7	148.6	Asbestos Cement	100	7.16	0.41	0.06	2.426
880	P-2670	J-N4390E	J-N4380E	135.59	250	Asbestos Cement	100	-7.622	0.16	0.03	0.216
881	P-2680	J-N4390E	J-N4440E	192.85	199.4	PVC	110	1.109	0.04	0	0.015
882	P-2690	J-N4440E	J-N4450E	135.8	148.6	Asbestos Cement	100	-1.507	0.09	0.02	0.135
883	P-2700	J-N4330E	J-N4331E	96.03	199.4	PVC	110	3.07	0.1	0.01	0.101
884	P-2710	J-N4331E	J-N4390E	110.04	199.4	PVC	110	3.008	0.1	0.01	0.097
885	P-2720	J-N4330E	J-N4320E	112.76	148.6	Asbestos Cement	100	4.036	0.23	0.09	0.838
886	P-2730	J-N4320E	J-N4321E	101.48	148.6	Asbestos Cement	100	-1.549	0.09	0.01	0.142
887	P-2740	J-N4321E	J-N4401E	92.15	148.6	Asbestos Cement	100	-1.741	0.1	0.02	0.176
888	P-2750	J-N4401E	J-N4400E	12.83	148.6	Asbestos Cement	100	-3.28	0.19	0.01	0.575
889	P-2760	J-N4400E	J-N4390E	113.15	250	Asbestos Cement	100	-9.416	0.19	0.04	0.319
890	P-2770	J-N4400E	J-N4420E	191.29	148.6	Asbestos Cement	100	0.812	0.05	0.01	0.043

Ultimate Development
Maximum Day Demand Plus Fire Flow

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
891	P-2780	J-N4420E	J-N4430E	12.84	148.6	Asbestos Cement	100	-2.837	0.16	0.01	0.436
892	P-2790	J-N4430E	J-N4440E	99.53	148.6	Asbestos Cement	100	-2.554	0.15	0.04	0.359
893	P-2800	J-N4490E	J-N4491E	112.96	148.6	Asbestos Cement	100	0.092	0.01	0	0.001
894	P-2810	J-N4320E	J-N4310E	104.59	250	PVC	120	5.573	0.11	0.01	0.087
895	P-2820	J-N4310E	J-N4311E	193.63	148.6	Asbestos Cement	100	-1.473	0.08	0.03	0.13
896	P-2830	J-N4311E	J-N4401E	104.2	148.6	Asbestos Cement	100	-1.539	0.09	0.01	0.141
897	P-2840	J-N4310E	J-N4300E	115.12	250	Asbestos Cement	100	0.618	0.01	0	0.002
898	P-2850	J-N4300E	J-N4301E	89.04	148.6	Asbestos Cement	100	-1.124	0.06	0.01	0.079
899	P-2860	J-N4301E	J-N4410E	125.6	148.6	Asbestos Cement	100	-1.466	0.08	0.02	0.129
900	P-2870	J-N4410E	J-N4400E	221.41	250	Asbestos Cement	100	-5.272	0.11	0.02	0.109
901	P-2880	J-N4300E	J-N4040E	80.48	250	Asbestos Cement	100	1.68	0.03	0	0.013
902	P-2900	J-N4020E	J-N4010E	75.95	300	Asbestos Cement	100	10.158	0.14	0.01	0.151
903	P-2910	J-N4040E	J-N4050E	71.16	300	Asbestos Cement	100	-7.598	0.11	0.01	0.088
904	P-2920	J-N4050E	J-N4060E	141.14	300	Asbestos Cement	100	-7.856	0.11	0.01	0.094
905	P-2930	J-N4060E	J-N4410E	81.29	250	Asbestos Cement	100	-3.726	0.08	0	0.058
906	P-2940	J-N4040E	J-N4041E	113.92	199.4	Asbestos Cement	100	-1.086	0.03	0	0.018
907	P-2950	J-N4041E	J-N4042E	104.2	148.6	Asbestos Cement	100	-1.086	0.06	0.01	0.074
908	P-2960	J-N4042E	J-N4043E	104.59	148.6	Asbestos Cement	100	-1.198	0.07	0.01	0.088
909	P-2970	J-N4043E	J-N4060E	113.94	300	Asbestos Cement	100	-1.662	0.02	0	0.005
911	P-2990	J-N4070E	J-N4080E	92.94	300	Asbestos Cement	100	-3.385	0.05	0	0.019
912	P-3000	J-N4080E	J-N4081E	85.17	200	PVC	120	0.062	0	0	0
913	P-3010	J-N4080E	J-N4090E	137.64	300	Asbestos Cement	100	-4.843	0.07	0.01	0.038
914	P-3020	J-N4090E	J-N4091E	126.25	199.4	Asbestos Cement	100	0.146	0	0	0.001
915	P-3030	J-N4090E	J-N4092E	130.61	199.4	Asbestos Cement	100	0.214	0.01	0	0.001
916	P-3040	J-N4090E	J-N4100E	63.75	300	Asbestos Cement	100	-5.349	0.08	0	0.047
917	P-3050	J-N4100E	J-N4101E	123.82	148.6	Asbestos Cement	100	-0.12	0.01	0	0.001
918	P-3060	J-N4101E	J-N4102E	106.92	148.6	Asbestos Cement	100	-0.22	0.01	0	0.003
919	P-3070	J-N4102E	J-N4103E	78.52	148.6	Asbestos Cement	100	-0.342	0.02	0	0.009
920	P-3080	J-N4103E	J-N4111E	92.94	148.6	Asbestos Cement	100	-0.488	0.03	0	0.017
921	P-3090	J-N4111E	J-N4110E	125.39	200	PVC	120	-0.588	0.02	0	0.004
922	P-3100	J-N4110E	J-N4100E	71.78	300	Asbestos Cement	100	5.341	0.08	0	0.046
923	P-3110	J-N4110E	J-N4120E	101.81	300	Asbestos Cement	100	-6.059	0.09	0.01	0.058
924	P-3120	J-N4120E	J-N4121E	136.47	148.6	Asbestos Cement	100	-0.561	0.03	0	0.021
925	P-3130	J-N4121E	J-N4143E	106.58	148.6	Asbestos Cement	100	-0.673	0.04	0	0.031
926	P-3140	J-N4143E	J-N4142E	87.44	148.6	Asbestos Cement	100	-0.811	0.05	0	0.043
927	P-3190	J-N4140E	J-N4150E	173.98	300	Asbestos Cement	100	-7.261	0.1	0.01	0.081
928	P-1561	J-N2380E	J-N2381E	205.2	148.6	Asbestos Cement	100	-0.042	0	0	0
929	P-3210	J-N4431E	J-N4430E	58.05	148.6	Asbestos Cement	100	0.283	0.02	0	0.006
930	P-3200	J-N4140E	J-N4130E	84.96	300	Asbestos Cement	100	6.334	0.09	0.01	0.063
931	P-3220	J-N4130E	J-N4120E	112.85	300	Asbestos Cement	100	5.591	0.08	0.01	0.049
932	P-3230	J-N4130E	J-N4131E	111.56	199.4	Asbestos Cement	100	0.268	0.01	0	0.001
933	P-3240	J-N4130E	J-N4431E	171.93	148.6	Asbestos Cement	100	0.383	0.02	0	0.01
934	P-1691	J-N2340E	J-N3200E	90.2	199.4	Asbestos Cement	100	-0.123	0	0	0
936	P-1470	J-N3420E	J-N3410E	65.56	199.4	Asbestos Cement	100	-1.636	0.05	0	0.037
937	P-560	J-N3410E	J-N3341E	121.8	148.6	Asbestos Cement	100	-0.999	0.06	0.01	0.063
938	P-561	J-N3341E	J-N3340E	117.39	148.6	Asbestos Cement	100	-1.183	0.07	0.01	0.086
939	P-550	J-N3340E	J-N3330E	125.81	199.4	Asbestos Cement	100	-2.565	0.08	0.01	0.086
940	P-551	J-N3330E	J-N3320E	47.76	199.4	Asbestos Cement	100	-2.627	0.08	0	0.09
941	P-620	J-N3340E	J-N3350E	128.31	199.4	Asbestos Cement	100	1.034	0.03	0	0.016
942	P-610	J-N3351E	J-N3350E	81.67	148.6	Asbestos Cement	100	-0.839	0.05	0	0.046
943	P-660	J-N3370E	J-N3360E	153.44	148.6	Asbestos Cement	100	-0.794	0.05	0.01	0.041
944	P-640	J-N3390E	J-N3380E	150.96	148.6	Asbestos Cement	100	-0.418	0.02	0	0.012
945	P-800	J-N1100E	J-N1090E	38.21	300	Asbestos Cement	100	-13.211	0.19	0.01	0.246
946	P-801	J-N1090E	J-N1080E	105.35	300	Asbestos Cement	100	-13.249	0.19	0.03	0.247
947	P-1390	J-N1120E	J-N1110E	30.67	300	Asbestos Cement	100	-14.907	0.21	0.01	0.309
948	P-1391	J-N1110E	J-N1100E	58.43	300	Asbestos Cement	100	-14.907	0.21	0.02	0.308
949	P-1151	J-N1270E	J-N1260E	53.24	199.4	Asbestos Cement	100	2.734	0.09	0.01	0.096
950	P-1011	J-N1245E	J-N1246E	37.87	199.4	Asbestos Cement	100	1.258	0.04	0	0.024
951	P-1010	J-N1246E	J-N1243E	156.26	199.4	Asbestos Cement	100	1.182	0.04	0	0.02
952	P-1080	J-N1340E	J-N1330E	64.24	199.4	Asbestos Cement	100	-1.948	0.06	0	0.052
953	P-1081	J-N1330E	J-N1320E	42.03	199.4	Asbestos Cement	100	-1.948	0.06	0	0.051
954	P-890	J-N1320E	J-N1310E	88.19	199.4	Asbestos Cement	100	2.415	0.08	0.01	0.077
955	P-870	J-N1303E	J-N1304E	61.59	148.6	Asbestos Cement	100	0.112	0.01	0	0.001
956	P-881	J-N1410E	J-N1400E	28.62	199.4	Asbestos Cement	100	4.517	0.14	0.01	0.247
957	P-880	J-N1400E	J-N1320E	107.23	199.4	Asbestos Cement	100	4.417	0.14	0.03	0.237
958	P-790	J-N1450E	J-N1440E	115.89	199.4	Asbestos Cement	100	2.056	0.07	0.01	0.058
959	P-791	J-N1440E	J-N1430E	88.86	199.4	Asbestos Cement	100	1.964	0.06	0	0.053
960	P-781	J-N1073E	J-N1450E	41.23	199.4	Asbestos Cement	100	-2.141	0.07	0	0.061
961	P-1461	J-N2370E	J-N3220E	89.76	199.4	Asbestos Cement	100	-3.134	0.1	0.01	0.125
962	P-2240	J-N4500E	J-N4151E	93.52	148.6	Asbestos Cement	100	1.386	0.08	0.01	0.116
963	P-2249	J-N4151E	J-N4150E	54.03	148.6	Asbestos Cement	100	1.294	0.07	0.01	0.102
964	P-2270	J-N4510E	J-N4170E	163.82	148.6	Asbestos Cement	100	0.68	0.04	0.01	0.031
965	P-3150	J-N4142E	J-N4141E	22.15	148.6	Asbestos Cement	100	-0.849	0.05	0	0.047
966	P-3160	J-N4141E	J-N4140E	8.18	300	Asbestos Cement	100	-0.911	0.01	0	0
967	P-2890	J-N4040E	J-N4030E	25.24	300	Asbestos Cement	100	10.364	0.15	0	0.156
968	P-2891	J-N4030E	J-N4020E	156.61	300	Asbestos Cement	100	10.158	0.14	0.02	0.152

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
969	P-2330	J-N4450E	J-N4381E	97.18	148.6	Asbestos Cement	100	-1.047	0.06	0.01	0.069
970	P-2331	J-N4381E	J-N4380E	94.73	148.6	Asbestos Cement	100	-1.101	0.06	0.01	0.075
971	P-2481	J-N3010E	J-N3020E	40.46	148.6	Asbestos Cement	100	3.999	0.23	0.03	0.824
972	P-2480	J-N3020E	J-N3030E	118.09	148.6	Asbestos Cement	100	3.999	0.23	0.1	0.824
973	P-411	J-N2253E	J-N2252E	98.16	199.4	PVC	110	5.02	0.16	0.02	0.251
974	P-412	J-N2252E	J-N2251E	8.88	199.4	PVC	110	4.896	0.16	0	0.236
975	P-410	J-N2255E	J-N2252E	93.3	148.6	PVC	110	-0.062	0	0	0
976	P-3350	J-N1071E	J-N1072E	61.16	148.6	Asbestos Cement	100	-1.881	0.11	0.01	0.204
977	P-3360	J-N1072E	J-N1073E	69.46	199.4	Asbestos Cement	100	-2.011	0.06	0	0.056
978	P-3370	J-N1450E	J-N1460E	119.93	199.4	PVC	110	-4.281	0.14	0.02	0.187
979	P-3380	J-N1460E	J-N1470E	145.23	199.4	PVC	110	-4.449	0.14	0.03	0.201
980	P-3390	J-N3120E	J-N3130E	6.62	199.4	Asbestos Cement	100	2.169	0.07	0	0.067
981	P-3400	J-N3130E	J-N3140E	16.44	200	Asbestos Cement	100	1.747	0.06	0	0.041
982	P-3410	J-N3140E	J-N3141E	86.51	250	PVC	110	-1.085	0.02	0	0.004
983	P-3420	J-N3141E	J-N3142E	164.32	200	PVC	110	-1.453	0.05	0	0.025
985	P-3440	J-N3150E	J-N3160E	161.13	250	Asbestos Cement	100	2.588	0.05	0	0.029
987	P-3460	J-N3181E	J-N3180E	88.04	250	Asbestos Cement	100	2.154	0.04	0	0.02
988	P-3470	J-N3180E	J-N3190E	68.94	250	Asbestos Cement	100	-3.549	0.07	0	0.052
989	P-3480	J-N3170E	J-N3180E	176.73	250	Asbestos Cement	100	-5.703	0.12	0.02	0.126
990	P-3490	J-S2030E	J-S2020E	36.91	250	Asbestos Cement	100	5.894	0.12	0	0.135
991	P-3510	J-S1020E	J-S1030E	146.34	300	Asbestos Cement	100	27.124	0.38	0.14	0.932
992	P-3520	J-S1030E	J-S1040E	41.66	250	Asbestos Cement	100	27.014	0.55	0.09	2.249
993	P-3530	J-N2321E	J-N2401E	70.89	148.6	Asbestos Cement	100	0.396	0.02	0	0.012
994	P-3540	J-N2401E	J-N2400E	117.15	148.6	PVC	110	0.342	0.02	0	0.007
995	P-3550	J-N1240E	J-N1250E	16.09	199.4	Asbestos Cement	100	-2.542	0.08	0	0.083
996	P-3560	J-N1250E	J-N1260E	120.32	199.4	Asbestos Cement	100	-2.688	0.09	0.01	0.095
997	P-3570	J-N1250E	J-N1251E	48.32	148.6	PVC	110	0.092	0.01	0	0
998	P-3580	J-N1230E	J-N1231E	77.66	148.6	PVC	110	0.054	0	0	0
999	P-1160	J-N1220E	J-N1230E	54.1	199.4	Asbestos Cement	100	-5.541	0.18	0.02	0.359
1000	P-1165	J-N1230E	J-N1240E	36.47	199.4	Asbestos Cement	100	-5.595	0.18	0.01	0.368
1001	P-3590	J-S2120E	J-S2130E	175.36	300	Asbestos Cement	100	2.061	0.03	0	0.008
1002	P-3600	J-S2130E	J-S2140E	58.3	300	Asbestos Cement	100	-0.344	0	0	0
1003	P-3610	J-S2140E	J-S2150E	47.82	300	Asbestos Cement	100	-0.498	0.01	0	0
1005	P-3630	J-S2160E	J-S2170E	82.32	300	Asbestos Cement	100	1.119	0.02	0	0.003
1006	P-3640	J-S2170E	J-S2171E	78.85	199.4	Asbestos Cement	100	0.345	0.01	0	0.002
1007	P-3650	J-S2171E	J-S2191E	99.52	199.4	Asbestos Cement	100	0.253	0.01	0	0.001
1008	P-3660	J-S2191E	J-S2192E	46.53	250	Asbestos Cement	100	0.758	0.02	0	0.003
1009	P-3670	J-S2192E	J-S2193E	46.54	250	Asbestos Cement	100	0.682	0.01	0	0.002
1010	P-3680	J-S2193E	J-S2203E	94.25	199.4	Asbestos Cement	100	-0.222	0.01	0	0.001
1011	P-3690	J-S2203E	J-S2202E	31.26	199.4	Asbestos Cement	100	-0.306	0.01	0	0.002
1012	P-3700	J-S2202E	J-S2201E	28.46	199.4	Asbestos Cement	100	-0.306	0.01	0	0
1013	P-3710	J-S2201E	J-S2200E	89.09	199.4	Asbestos Cement	100	-0.382	0.01	0	0.003
1014	P-3720	J-S2200E	J-S2190E	95.22	300	Asbestos Cement	100	-0.215	0	0	0.001
1015	P-3730	J-S2190E	J-S2180E	29.62	300	Asbestos Cement	100	-0.879	0.01	0	0
1016	P-3740	J-S2180E	J-S2170E	70.59	300	Asbestos Cement	100	-0.662	0.01	0	0.001
1017	P-3750	J-S2191E	J-S2190E	81.29	250	Asbestos Cement	100	-0.618	0.01	0	0.003
1018	P-3760	J-S2200E	J-S2210E	93.89	300	Asbestos Cement	100	-0.279	0	0	0.001
1019	P-3770	J-S2210E	J-S2220E	89.04	300	Asbestos Cement	100	-0.613	0.01	0	0.001
1020	P-3780	J-S2220E	J-S2230E	22.61	300	Asbestos Cement	100	1.016	0.01	0	0.003
1021	P-3790	J-S2230E	J-S2240E	64.21	300	Asbestos Cement	100	1.016	0.01	0	0.002
1022	P-3800	J-S2240E	J-S2250E	65.96	300	Asbestos Cement	100	0	0	0	0
1023	P-3810	J-S2180E	J-S1170E	51.7	199.4	Asbestos Cement	100	-0.293	0.01	0	0.001
1024	P-3820	J-S2195E	J-S2194E	66.57	250	Asbestos Cement	100	-0.82	0.02	0	0.003
1025	P-3830	J-S2194E	J-S2193E	43.64	250	Asbestos Cement	100	-0.82	0.02	0	0.003
1026	P-3840	J-S1160E	J-S1150E	140.24	199.4	Asbestos Cement	100	-0.135	0	0	0.001
1027	P-3850	J-S1150E	J-S1140E	72.6	199.4	Asbestos Cement	100	-0.257	0.01	0	0.001
1028	P-3860	J-S1140E	J-S1130E	66.28	199.4	Asbestos Cement	100	-0.349	0.01	0	0.002
1029	P-3870	J-S1130E	J-S1131E	56.16	199.4	Asbestos Cement	100	0.361	0.01	0	0.003
1030	P-3880	J-S1131E	J-S1160E	115.42	199.4	Asbestos Cement	100	0.269	0.01	0	0.001
1031	P-3890	J-S1130E	J-S1120E	57.67	250	Asbestos Cement	100	-0.765	0.02	0	0.003
1032	P-3900	J-S1170E	J-S1160E	39.05	199.4	Asbestos Cement	100	-0.293	0.01	0	0.002
1033	P-3920	J-S2100E	J-S1090E	111.79	300	Asbestos Cement	100	-2.679	0.04	0	0.013
1034	P-3930	J-S1090E	J-S2110E	13.15	300	Asbestos Cement	100	-3.552	0.05	0	0.023
1035	P-3940	J-S1090E	J-S1100E	147.14	250	Asbestos Cement	100	0.873	0.02	0	0.004
1036	P-3950	J-S1100E	J-S1110E	190.29	250	Asbestos Cement	100	0.873	0.02	0	0.004
1037	P-3960	J-S1110E	J-S1120E	128.05	250	Asbestos Cement	100	0.765	0.02	0	0.003
1038	P-3970	J-N1200E	J-N1190E	22.06	300	Asbestos Cement	100	-11.466	0.16	0	0.19
1039	P-3980	J-N1190E	J-N1180E	100.83	300	Asbestos Cement	100	-10.349	0.15	0.02	0.156
1040	P-3990	J-N1190E	J-N1600E	91.63	250	Asbestos Cement	100	-1.179	0.02	0	0.006
1041	P-4000	J-N1600E	J-N1610E	91.6	250	Asbestos Cement	100	-1.413	0.03	0	0.01
1042	P-4010	J-N1610E	J-N1620E	82.52	250	Asbestos Cement	100	-7.901	0.16	0.02	0.231
1043	P-4020	J-N1620E	J-N1630E	51.98	250	Asbestos Cement	100	-7.963	0.16	0.01	0.234
1044	P-4030	J-N1630E	J-N1640E	72.03	250	Asbestos Cement	100	-5.918	0.12	0.01	0.136
1045	P-4040	J-N1630E	J-N1631E	86.96	199.4	Asbestos Cement	100	-2.091	0.07	0.01	0.059
1046	P-4050	J-N1631E	J-N1632E	92.69	199.4	Asbestos Cement	100	-2.213	0.07	0.01	0.066
1047	P-4060	J-N1632E	J-N1651E	64.71	199.4	Asbestos Cement	100	-2.297	0.07	0	0.07

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1048	P-4070	J-N1651E	J-N1650E	67.71	199.4	Asbestos Cement	100	-2.297	0.07	0	0.07
1049	P-4080	J-N1650E	J-N1640E	78.37	250	Asbestos Cement	100	5.994	0.12	0.01	0.138
1050	P-4090	J-N1600E	J-N1601E	114.76	199.4	Asbestos Cement	100	0.122	0	0	0
1051	P-4120	J-N1060E	J-N1061E	57.31	199.4	Asbestos Cement	100	-2.168	0.07	0	0.064
1052	P-4130	J-N1061E	J-N1062E	107.07	199.4	Asbestos Cement	100	-2.306	0.07	0.01	0.071
1053	P-4140	J-N4103E	J-N4104E	60.35	148.6	Asbestos Cement	100	0.092	0.01	0	0
1054	P-4150	J-N4081E	J-N4082E	40.68	148.6	Asbestos Cement	100	0.062	0	0	0
1070	P-4320	J-N1062E	J-N1500E	55.28	199.4	PVC	110	-2.418	0.08	0	0.065
1071	P-4330	J-N1500E	J-N1490E	65.64	199.4	PVC	110	-2.418	0.08	0	0.065
1072	P-4340	J-N1490E	J-N1480E	91.91	199.4	PVC	110	-2.548	0.08	0.01	0.072
1073	P-4350	J-N1480E	J-N1470E	87.48	199.4	PVC	110	0.045	0	0	0
1074	P-4360	J-N1470E	J-N1471E	61.1	199.4	PVC	110	0.578	0.02	0	0.005
1075	P-4370	J-N1480E	J-N1481E	45.72	199.4	PVC	110	-2.773	0.09	0	0.083
1076	P-4380	J-N1470E	J-N1472E	97.02	199.4	PVC	110	-5.104	0.16	0.03	0.259
1077	P-4390	J-S2020E	J-S2021E	76.13	250	PVC	110	3.949	0.08	0	0.054
1078	P-4400	J-S2060E	J-S2050E	148.09	250	Asbestos Cement	100	4.731	0.1	0.01	0.089
1079	P-4410	J-S2050E	J-S2040E	34.83	250	Asbestos Cement	100	0.782	0.02	0	0.004
1081	P-4430	J-N1070E	J-N1065E	39.98	300	Asbestos Cement	100	-15.569	0.22	0.01	0.334
1082	P-4440	J-N1065E	J-N1060E	76.76	300	Asbestos Cement	100	-17.279	0.24	0.03	0.405
1087	P-4470	J-N4310E	J-N3411E	52.22	250	PVC	110	6.27	0.13	0.01	0.126
1088	P-4480	J-N3411E	J-N3412E	87.75	250	PVC	110	5.956	0.12	0.01	0.114
1090	P-4500F	J-N1650E	J-3550I	103.53	250	PVC	110	-8.291	0.17	0.02	0.212
1091	P-4510F	J-3550I	J-3560I	92.32	250	PVC	110	-1.382	0.03	0	0.007
1092	P-4520F	J-3560I	J-3570I	114.88	250	PVC	110	-1.69	0.03	0	0.011
1094	P-4540F	J-3550I	J-3580I	67.99	250	PVC	110	-7.063	0.14	0.01	0.157
1096	P-4560F	J-3590F	J-3600I	99.12	300	PVC	110	-3.423	0.05	0	0.017
1098	P-4580F	J-3610I	J-3620F	137.07	250	PVC	110	-3.969	0.08	0.01	0.054
1099	P-4590F	J-N3110E	J-N3142E	137.16	199.4	PVC	110	2.181	0.07	0.01	0.054
1104	P-4650F	J-3660F	J-3590F	42.8	250	PVC	110	2.244	0.05	0	0.019
1105	P-4660F	J-46	J-3670I	99.8	200	PVC	120	6.062	0.19	0.03	0.299
1109	P-4710F	J-S2220E	J-3700I	113.97	300	PVC	120	-2.675	0.04	0	0.009
1110	P-4720F	J-3700I	J-3710F	134.76	300	PVC	120	-2.519	0.04	0	0.008
1111	P-4730F	J-3710F	J-3720F	324	300	PVC	120	-4.185	0.06	0.01	0.021
1112	P-4770F	J-3750I	J-3740I	106.45	300	PVC	120	-3.914	0.06	0	0.018
1114	P-4800F	J-3760F	J-3770F	246.96	200	PVC	120	-0.082	0	0	0
1115	P-4830F	J-3790F	J-3800F	160.8	200	PVC	120	-8.212	0.26	0.08	0.524
1117	P-4880F	J-3830F	J-N1050E	215.65	300	PVC	110	0.639	0.01	0	0.001
1118	P-4890F	J-3840F	J-N1050E	40.19	300	PVC	110	17.136	0.24	0.01	0.333
1120	P-4940	J-S2010E	J-S2011E	81.51	300	PVC	110	6.569	0.09	0	0.057
1121	P-4960F	J-3860F	J-3870F	117.24	300	PVC	120	7.074	0.1	0.01	0.055
1124	P-4990F	J-3890F	J-3900F	157.27	300	PVC	120	-0.951	0.01	0	0.001
1125	P-5000F	J-3900F	J-3910F	137.45	200	PVC	120	4.148	0.13	0.02	0.148
1126	P-5010F	J-3900F	J-3920F	120.22	300	PVC	120	-5.697	0.08	0	0.037
1127	P-5030F	J-3930F	J-3940F	100.53	200	PVC	120	-1.699	0.05	0	0.028
1128	P-5040F	J-3940F	J-3950F	192.76	200	PVC	120	-2.481	0.08	0.01	0.057
1129	P-5050	J-S2020E	J-S2012E	373.91	300	PVC	110	1.945	0.03	0	0.006
1130	P-5060	J-S2012E	J-S2011E	266.98	300	PVC	110	-0.956	0.01	0	0.002
1137	P-5140F	J-3910F	J-4000F	117.02	200	PVC	120	0.766	0.02	0	0.006
1139	P-5160F	J-3900F	J-3930F	129.23	200	PVC	120	-0.167	0.01	0	0.001
1141	P-5190F	J-3740I	J-4010F	177.43	300	PVC	120	1.65	0.02	0	0.004
1143	P-5210F	J-4020F	J-4030F	237.78	300	PVC	120	29.936	0.42	0.19	0.798
1144	P-5220F	J-4030F	J-4040F	539.98	300	PVC	120	24.358	0.34	0.29	0.545
1147	P-5250F	J-4010F	J-S2120E	252.76	300	PVC	110	1.65	0.02	0	0.004
1148	P-5270F	J-4050F	J-4060F	85.82	300	PVC	120	-6.645	0.09	0	0.049
1149	P-5290F	J-S1050E	J-4060F	265.43	300	PVC	120	14.439	0.2	0.05	0.207
1150	P-5300F	J-S2195E	J-4070F	291.2	250	PVC	120	0.82	0.02	0	0.003
1151	P-5310F	J-4070F	J-136	303.2	250	PVC	120	0.358	0.01	0	0
1152	P-5330F	J-3720F	J-4090F	88.46	300	PVC	120	-6.347	0.09	0	0.045
1153	P-5340F	J-4090F	J-3730F	205.97	300	PVC	120	-8.487	0.12	0.02	0.077
1154	P-5350F	J-3730F	J-4100F	109.19	300	PVC	120	-12.833	0.18	0.02	0.166
1155	P-5360F	J-4100F	J-4110F	123.24	300	PVC	120	-9.121	0.13	0.01	0.088
1156	P-5380F	J-4110F	J-4120F	224.56	300	PVC	120	-28.02	0.4	0.16	0.707
1157	P-5390F	J-4120F	J-4100F	601.36	200	PVC	120	5.874	0.19	0.17	0.282
1158	P-5400F	J-4110F	J-4130F	162.02	300	PVC	120	11.461	0.16	0.02	0.135
1159	P-5410F	J-4130F	J-4140F	155.87	300	PVC	120	11.461	0.16	0.02	0.135
1160	P-5430F	J-4140F	J-4150F	85.72	200	PVC	120	1.884	0.06	0	0.035
1161	P-5440F	J-4150F	J-4160F	118.48	200	PVC	120	1.938	0.06	0	0.036
1162	P-5450F	J-4160F	J-4170F	136.72	200	PVC	120	0.272	0.01	0	0.001
1163	P-5460F	J-4170F	J-4180F	175.7	200	PVC	120	-1.394	0.04	0	0.019
1164	P-5470F	J-4180F	J-4190F	86.82	200	PVC	120	-3.556	0.11	0.01	0.111
1165	P-5480F	J-4190F	J-4110F	85.09	200	PVC	120	-7.438	0.24	0.04	0.437
1166	P-5490F	J-4150F	J-4190F	299.99	200	PVC	120	-1.72	0.05	0.01	0.029
1167	P-5500F	J-3730F	J-4200F	352.88	200	PVC	120	2.184	0.07	0.02	0.045
1168	P-5510F	J-4200F	J-4090F	297.23	200	PVC	120	0.022	0	0	0
1169	P-5520F	J-S2021E	J-4220I	161	250	PVC	120	3.617	0.07	0.01	0.039
1170	P-5530F	J-4210I	J-4220I	259.29	250	PVC	120	-2.969	0.06	0.01	0.027

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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1171	P-5540F	J-4220I	J-127	194.42	250	PVC	120	3.369	0.07	0.01	0.034
1172	P-5550F	J-4020F	J-4230F	442.56	250	PVC	120	17.277	0.35	0.31	0.701
1173	P-5560F	J-4230F	J-4040F	510.54	250	PVC	120	11.699	0.24	0.17	0.34
1174	P-5570F	J-S2011E	J-4240F	406.72	300	PVC	110	-5.349	0.08	0.02	0.039
1175	P-5580F	J-4240F	J-4050F	439.03	300	PVC	110	-5.893	0.08	0.02	0.046
1176	P-5590F	J-4060F	J-4250F	315.32	300	PVC	110	7.794	0.11	0.02	0.078
1177	P-5600F	J-4250F	J-S2012E	323.6	300	PVC	110	6.145	0.09	0.02	0.05
1178	P-5610F	J-4240F	J-4250F	184.36	250	PVC	120	-0.208	0	0	0
1181	P-5640	J-N2130E	J-N2132E	130.04	300	PVC	110	4.304	0.06	0	0.026
1182	P-5650	J-N2132E	J-N2140E	58.08	300	PVC	110	4.304	0.06	0	0.026
1183	P-5670	J-N2220E	J-N2210E	188.95	300	Asbestos Cement	100	7.85	0.11	0.02	0.094
1184	P-5660	J-N2141E	J-N2133E	58.59	148.6	Asbestos Cement	100	-0.591	0.03	0	0.024
1185	P-5680	J-N2133E	J-N2131E	129.2	148.6	Asbestos Cement	100	-0.591	0.03	0	0.024
1186	P-5690	J-N2121E	J-N2131E	194.89	148.6	Asbestos Cement	100	0.623	0.04	0.01	0.026
1187	P-5700F	J-S1010E	J-4020F	107.84	300	PVC	110	52.79	0.75	0.29	2.682
1188	P-5710F	J-4040F	J-4120F	59.33	300	PVC	120	36.056	0.51	0.07	1.127
1197	P-5810	J-N2145E	J-N2140E	64.21	300	PVC	110	-5.569	0.08	0	0.042
1198	P-2145	J-N2145E	J-N2143E	7.8	148.6	PVC	110	1.486	0.09	0	0.113
1200	P-5850F	J-126	J-4650F	231.91	250	PVC	120	4.85	0.1	0.02	0.067
1202	P-5870F	J-S2070E	J-4080I	380.6	300	PVC	120	-2.038	0.03	0	0.005
1204	P-5920F	J-3690I	J-N4010E	74.68	300	PVC	110	0.696	0.01	0	0.001
1205	P-4810F	J-3770F	J-3775F	146.53	200	PVC	120	-1.112	0.04	0	0.013
1206	P-4814F	J-3775F	J-3780F	144.86	200	PVC	120	-2.142	0.07	0.01	0.044
1207	P-4790F	J-N2254E	J-3755F	68.05	200	PVC	120	0.948	0.03	0	0.01
1208	P-4795F	J-3755F	J-3760F	85.23	200	PVC	120	0.948	0.03	0	0.01
1211	P-4818F	J-3785F	J-N2253E	109.33	199.4	PVC	110	5.074	0.16	0.03	0.256
1213	P-730	J-N1023E	J-N1020E	386.01	300	Asbestos Cement	100	-68.88	0.97	2.02	5.237
1214	P-4840F	J-3800F	J-3805F	168.24	200	PVC	120	-12.198	0.39	0.18	1.091
1215	P-4845F	J-3805F	J-N1023E	116.05	200	PVC	120	-23.165	0.74	0.42	3.579
1216	P-4835F	J-3800F	J-3804F	146.12	200	PVC	120	3.424	0.11	0.02	0.103
1217	P-722	J-N1030E	J-N1025E	90.47	300	Asbestos Cement	100	-33.838	0.48	0.13	1.404
1218	P-725	J-N1025E	J-N1023E	145.18	300	Asbestos Cement	100	-45.715	0.65	0.36	2.451
1219	P-4850F	J-3804F	J-N1025E	272.39	200	PVC	120	-11.314	0.36	0.26	0.949
1220	P-720	J-N1033E	J-N1030E	130.07	300	Asbestos Cement	100	-33.276	0.47	0.18	1.361
1221	P-718	J-N1036E	J-N1033E	120.31	300	Asbestos Cement	100	-32.714	0.46	0.16	1.32
1222	P-714	J-N1040E	J-N1039E	47.51	300	Asbestos Cement	100	-25.61	0.36	0.04	0.837
1223	P-716	J-N1039E	J-N1036E	29.43	300	Asbestos Cement	100	-25.61	0.36	0.02	0.838
1224	P-4910F	J-3840F	J-3810F	39.5	300	Asbestos Cement	100	-17.136	0.24	0.02	0.398
1225	P-4912F	J-3810F	J-3815F	81.61	200	PVC	120	-6.543	0.21	0.03	0.344
1226	P-4915F	J-3815F	J-N1036E	150.71	200	PVC	120	-7.105	0.23	0.06	0.401
1227	P-4853F	J-N1033E	J-3820F	174.42	200	PVC	120	0.562	0.02	0	0.004
1229	P-4860F	J-3825F	J-3830F	101.71	200	PVC	120	13.615	0.43	0.14	1.337
1230	P-6020F	J-4140F	J-4430I	95.44	300	PVC	120	7.912	0.11	0.01	0.068
1231	P-6030F	J-4430I	J-3740I	125.67	300	PVC	120	5.564	0.08	0	0.036
1232	P-6040F	J-3700I	J-4440I	154.61	300	PVC	120	-1.822	0.03	0	0.004
1233	P-6050F	J-4440I	J-3750I	114.73	300	PVC	120	-1.496	0.02	0	0.003
1234	P-6060F	J-4430I	J-4450I	172.32	200	PVC	120	1.992	0.06	0.01	0.038
1235	P-6070F	J-4450I	J-4440I	157.51	200	PVC	120	0.326	0.01	0	0.001
1240	P-6120F	J-4470I	J-N1050E	159.94	300	Asbestos Cement	100	-17.115	0.24	0.06	0.398
1244	P-6160F	J-3620F	J-4490F	200.59	200	PVC	120	-3.969	0.13	0.03	0.137
1245	P-6170F	J-4490F	J-3630F	331.56	200	PVC	120	8.768	0.28	0.2	0.592
1246	P-6180F	J-134	J-4500F	880.17	300	PVC	120	-1.043	0.01	0	0.002
1247	P-6190F	J-4500F	J-N1220E	780.1	300	PVC	120	-16.287	0.23	0.2	0.259
1249	P-6210F	J-135	J-3630F	259.79	200	PVC	120	-8.768	0.28	0.15	0.592
1250	P-6220F	J-4510F	J-4520F	458.02	300	PVC	120	-7.172	0.1	0.03	0.057
1251	P-6230F	J-4520F	J-4530F	370.9	300	PVC	120	-12.21	0.17	0.06	0.152
1252	P-6240F	J-4530F	J-4540F	46.89	300	PVC	120	-12.21	0.17	0.01	0.151
1253	P-6250F	J-4540F	J-9	113.77	300	PVC	120	-12.21	0.17	0.02	0.152
1254	P-6260F	J-5	J-4310F	53.58	200	PVC	110	1.955	0.06	0	0.043
1256	P-6270F	J-N1150E	J-4560I	43.81	199.4	PVC	110	0.782	0.03	0	0.008
1257	P-6290F	J-4560I	J-4550I	163.65	200	PVC	120	-0.628	0.02	0	0.005
1258	P-6300F	J-4550I	J-4570I	77.95	200	PVC	120	1.843	0.06	0	0.033
1259	P-6310F	J-4570I	J-4580I	164.61	200	PVC	120	0.391	0.01	0	0.002
1260	P-6320F	J-4580I	J-4560I	180.68	200	PVC	120	-1.061	0.03	0	0.012
1261	P-6330F	J-S2011E	J-4590F	108.15	300	PVC	110	10.611	0.15	0.01	0.138
1262	P-6340F	J-4590F	J-3860F	163.56	300	PVC	120	10.333	0.15	0.02	0.111
1263	P-6360F	J-4600F	J-S2012E	112.88	300	PVC	110	-8.96	0.13	0.01	0.1
1266	P-6380F	J-3920F	J-4620F	102.2	200	PVC	120	-0.767	0.02	0	0.006
1270	P-6410F	J-3930F	J-102	89.75	200	PVC	120	0.766	0.02	0	0.007
1271	P-6430F	J-4650F	J-3950F	100.96	200	PVC	120	1.769	0.06	0	0.03
1320	P-5819	J-3690I	J-3	51.8	199.4	PVC	110	-4.65	0.15	0.01	0.218
1321	P-5820	J-3	J-2	57.24	199.4	PVC	110	0.046	0	0	0
1324	P-5822	J-3690I	J-4	85.23	199.4	PVC	110	3.954	0.13	0.01	0.161
1328	P-5824	J-5	J-6	72.69	199.4	PVC	110	1.571	0.05	0	0.03
1330	P-5825	J-6	J-7	101.45	199.4	PVC	110	1.429	0.05	0	0.024
1332	P-5826	J-7	J-8	99.31	199.4	PVC	110	2.314	0.07	0.01	0.06

**Ultimate Development
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1334	P-5827	J-8	J-9	79.87	199.4	PVC	110	2.16	0.07	0	0.053
1335	P-5828	J-9	J-N4010E	417.99	300	PVC	110	-10.62	0.15	0.06	0.138
1336	P-5829	J-3	J-N3412E	168.54	250	PVC	110	-4.696	0.1	0.01	0.074
1338	P-5830	J-N3142E	J-10	128.01	250	PVC	110	0.729	0.01	0	0.002
1343	P-5833	J-10	J-12	97.69	250	PVC	110	0.321	0.01	0	0
1344	P-5834	J-12	J-3610I	97.96	250	PVC	110	-0.157	0	0	0
1346	P-5835	J-12	J-13	85.86	199.4	PVC	110	0.214	0.01	0	0.001
1348	P-5836	J-3610I	J-14	97.65	250	PVC	110	-0.26	0.01	0	0
1350	P-5837	J-14	J-15	68.79	148.6	PVC	110	0.37	0.02	0	0.009
1352	P-5838	J-14	J-16	118.78	250	PVC	110	-0.874	0.02	0	0.003
1354	P-5839	J-16	J-17	94.47	250	PVC	110	-1.288	0.03	0	0.007
1356	P-5840	J-3600I	J-18	69.89	300	PVC	110	-3.615	0.05	0	0.019
1357	P-5841	J-18	J-3610I	78.69	300	PVC	110	-3.807	0.05	0	0.021
1359	P-5842	J-3580I	J-19	90.38	250	PVC	110	-5.423	0.11	0.01	0.096
1360	P-5843	J-19	J-3590F	90.94	250	PVC	110	-5.545	0.11	0.01	0.101
1362	P-5844	J-3580I	J-20	68.78	199.4	PVC	110	-0.242	0.01	0	0.001
1364	P-5845	J-20	J-21	54.23	199.4	PVC	110	-0.3	0.01	0	0.001
1366	P-5846	J-21	J-22	51.81	199.4	PVC	110	0.072	0	0	0
1368	P-5847	J-21	J-23	82.08	199.4	PVC	110	-0.494	0.02	0	0.004
1370	P-5848	J-23	J-24	69.1	199.4	PVC	110	-0.616	0.02	0	0.005
1373	P-5850	J-25	J-3580I	106.97	250	PVC	110	1.528	0.03	0	0.01
1375	P-5851	J-24	J-26	51.39	199.4	PVC	110	-0.7	0.02	0	0.006
1376	P-5852	J-26	J-25	11.22	250	PVC	110	1.682	0.03	0	0.007
1378	P-5853	J-26	J-27	92.98	250	PVC	110	-2.382	0.05	0	0.021
1380	P-5854	J-27	J-28	65.12	250	PVC	110	0.13	0	0	0
1382	P-5855	J-27	J-29	69.33	250	PVC	110	-2.512	0.05	0	0.024
1384	P-5856	J-N3160E	J-30	20.23	250	Asbestos Cement	100	2.51	0.05	0	0.026
1385	P-5857	J-30	J-N3170E	57.76	250	Asbestos Cement	100	-0.254	0.01	0	0
1389	P-5859	J-29	J-32	57.3	250	PVC	110	-2.596	0.05	0	0.025
1390	P-5860	J-32	J-30	74.97	250	PVC	110	-2.764	0.06	0	0.028
1391	P-5861	J-31	J-32	46.33	148.6	PVC	110	-0.168	0.01	0	0.002
1393	P-5862	J-3660F	J-33	25.81	250	PVC	110	-2.244	0.05	0	0.017
1395	P-5863	J-33	J-34	95	250	PVC	110	-1.773	0.04	0	0.013
1397	P-5864	J-34	J-35	89.81	250	PVC	110	-1.903	0.04	0	0.014
1399	P-5865	J-35	J-36	46.63	148.6	PVC	110	0.046	0	0	0.002
1401	P-5866	J-35	J-37	98.53	199.4	PVC	110	0.677	0.02	0	0.007
1403	P-5867	J-37	J-38	70.12	199.4	PVC	110	0.619	0.02	0	0.004
1405	P-5868	J-38	J-39	61.9	199.4	PVC	110	0.619	0.02	0	0.006
1407	P-5869	J-39	J-40	92.87	199.4	PVC	110	0.593	0.02	0	0.005
1409	P-5870	J-40	J-41	50.67	148.6	PVC	110	0	0	0	0
1411	P-5871	J-40	J-42	65.53	199.4	PVC	110	0.567	0.02	0	0.005
1412	P-5872	J-42	J-33	88.43	199.4	PVC	110	0.555	0.02	0	0.004
1415	P-5874	J-3560I	J-43	102.86	199.4	PVC	110	0.154	0	0	0
1418	P-5876	J-44	J-3570I	72.62	199.4	PVC	110	-3.294	0.11	0.01	0.115
1420	P-5877	J-N1610E	J-45	143.44	199.4	PVC	110	6.358	0.2	0.06	0.389
1422	P-5878	J-45	J-46	93.86	199.4	PVC	110	6.204	0.2	0.03	0.372
1425	P-5879	J-N1472E	J-47	96.41	199.4	PVC	110	2.735	0.09	0.01	0.082
1427	P-5880	J-47	J-48	46.1	148.6	PVC	110	0.096	0.01	0	0
1429	P-5881	J-47	J-49	83.46	199.4	PVC	110	2.639	0.08	0.01	0.076
1431	P-5882	J-49	J-50	35.4	148.6	PVC	110	0.244	0.01	0	0.004
1433	P-5883	J-49	J-51	84.07	199.4	PVC	110	1.869	0.06	0	0.041
1435	P-5884	J-51	J-52	85.12	199.4	PVC	110	1.638	0.05	0	0.032
1437	P-5885	J-52	J-53	71.73	199.4	PVC	110	1.554	0.05	0	0.029
1439	P-5886	J-N1060E	J-54	85.17	300	Asbestos Cement	100	-15.111	0.21	0.03	0.315
1440	P-5887	J-54	J-4470I	66.46	300	Asbestos Cement	100	-13.725	0.19	0.02	0.264
1441	P-5888	J-53	J-54	67.31	199.4	PVC	110	1.386	0.04	0	0.023
1442	P-5889	J-N1481E	J-51	43.49	199.4	PVC	110	-2.773	0.09	0	0.084
1444	P-5890	J-51	J-55	82.72	199.4	PVC	110	-2.588	0.08	0.01	0.074
1445	P-5891	J-55	J-4470I	63.4	199.4	PVC	110	-2.73	0.09	0.01	0.081
1447	P-5892	J-49	J-56	81.18	199.4	PVC	110	0.472	0.02	0	0.004
1449	P-5893	J-56	J-57	68.93	199.4	PVC	110	0.072	0	0	0
1451	P-5894	J-56	J-58	84.57	199.4	PVC	110	0.32	0.01	0	0.002
1453	P-5895	J-N2250E	J-59	77.21	300	Asbestos Cement	100	-12.545	0.18	0.02	0.224
1454	P-5896	J-59	J-N2260E	38.87	300	Asbestos Cement	100	-12.749	0.18	0.01	0.231
1456	P-5897	J-59	J-60	67.9	148.6	PVC	110	0.204	0.01	0	0.003
1458	P-5898	J-N2260E	J-61	61.78	300	PVC	110	-12.749	0.18	0.01	0.192
1459	P-5899	J-61	J-3830F	102.56	300	PVC	110	-12.929	0.18	0.02	0.198
1461	P-5900	J-61	J-62	53.61	148.6	PVC	110	0.18	0.01	0	0.001
1465	P-5902	J-4460I	J-64	102.68	199.4	PVC	110	-0.382	0.01	0	0.002
1468	P-5904	J-64	J-65	61.81	199.4	PVC	110	-0.267	0.01	0	0.001
1470	P-5905	J-65	J-66	48.84	199.4	PVC	110	-0.267	0.01	0	0.002
1472	P-5906	J-4460I	J-67	86.52	300	PVC	110	-1.894	0.03	0	0.006
1473	P-5907	J-67	J-S2130E	69.14	300	PVC	110	-2.404	0.03	0	0.009
1474	P-5908	J-66	J-67	69.12	199.4	PVC	110	-0.389	0.01	0	0.002
1476	P-5909	J-S2150E	J-68	94.91	300	PVC	110	-2.142	0.03	0	0.007
1478	P-5910	J-68	J-69	40.83	199.4	PVC	110	0.276	0.01	0	0

**Ultimate Development
Maximum Day Demand Plus Fire Flow**

ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1480	P-5911	J-69	J-70	50.89	199.4	PVC	110	0.18	0.01	0	0.001
1482	P-5912	J-70	J-71	51.53	199.4	PVC	110	0.084	0	0	0
1484	P-5913	J-68	J-3750I	52.74	300	PVC	110	-2.418	0.03	0	0.01
1486	P-5914	J-64	J-73	77.52	199.4	PVC	110	-0.238	0.01	0	0.001
1487	P-5915	J-73	J-S2160E	86.68	199.4	PVC	110	-0.346	0.01	0	0.002
1489	P-5916	J-S2150E	J-74	59.9	300	Asbestos Cement	100	1.645	0.02	0	0.005
1490	P-5917	J-74	J-S2160E	80.28	300	Asbestos Cement	100	1.587	0.02	0	0.005
1492	P-5918	J-10	J-75	82.26	200	PVC	110	0.204	0.01	0	0
1493	P-5919	J-75	J-11	40.51	150	PVC	110	0.204	0.01	0	0.004
1495	P-5920	J-3570I	J-76	89.51	250	PVC	110	-5.138	0.1	0.01	0.087
1496	P-5921	J-76	J-N3170E	98.88	250	PVC	110	-5.28	0.11	0.01	0.092
1498	P-5922	J-4550I	J-77	52.27	199.4	PVC	110	-2.47	0.08	0	0.067
1499	P-5923	J-77	J-44	52.5	199.4	PVC	110	-3.222	0.1	0.01	0.111
1501	P-5924	J-4560I	J-78	111.68	199.4	PVC	110	0.348	0.01	0	0.002
1509	P-5925	J-N1040E	J-79	92.34	300	PVC	120	14.859	0.21	0.01	0.219
1511	P-5926	J-79	J-80	321.67	300	PVC	120	14.859	0.21	0.07	0.218
1513	P-5927	J-80	J-81	352.13	300	PVC	120	6.834	0.1	0.02	0.052
1515	P-5928	J-N1245E	J-82	100	199.4	Asbestos Cement	100	1.063	0.03	0	0.017
1516	P-5929	J-82	J-N1244E	55.82	199.4	Asbestos Cement	100	1.063	0.03	0	0.017
1518	P-5931	J-N1472E	J-80	60.52	200	PVC	120	-8.025	0.26	0.03	0.503
1524	P-5934	J-83	J-84 (Sturgeon Office)	12.43	300	PVC	120	6.246	0.09	0	0.05
1538	P-5942	J-81	J-88 (Rec Center)	772.35	300	PVC	120	6.834	0.1	0.05	0.052
1539	P-5943	J-88 (Rec Center)	J-83	545.18	300	PVC	120	6.246	0.09	0.01	0.044
1541	P-5944	J-183	J-92	1,015.00	300	PVC	120	-5.806	0.08	0.04	0.038
1544	P-5946	J-92	J-84 (Sturgeon Office)	545.14	300	PVC	120	-5.806	0.08	0.01	0.038
1564	P-5954	J-17	J-97	84.22	250	PVC	110	-1.584	0.03	0	0.01
1565	P-5955	J-97	J-35	104.88	250	PVC	110	2.71	0.06	0	0.026
1568	P-5956	J-50	J-99	70.88	200	PVC	120	0.244	0.01	0	0.001
1570	P-5957	J-58	J-100	82.12	200	PVC	120	0.162	0.01	0	0
1572	P-5958	J-N1030E	J-101	114.23	200	PVC	120	0.562	0.02	0	0.004
1573	P-5959	J-3804F	J-3825F	128.94	200	PVC	120	14.177	0.45	0.19	1.442
1575	P-5960	J-3920F	J-3950F	256.24	300	PVC	120	-5.696	0.08	0.01	0.037
1577	P-5961	J-3990F	J-103	93.17	200	PVC	120	0.448	0.01	0	0.002
1580	P-5963	J-103	J-104	83.79	200	PVC	120	0.422	0.01	0	0.002
1582	P-5964	J-104	J-105	210.99	200	PVC	120	-0.344	0.01	0	0.001
1584	P-5965	J-103	J-106	239.12	200	PVC	120	-0.74	0.02	0	0.006
1585	P-5966	J-106	J-3910F	87.2	200	PVC	120	-2.616	0.08	0.01	0.062
1586	P-5967	J-105	J-106	103.16	200	PVC	120	-1.11	0.04	0	0.013
1588	P-5968	J-3890F	J-107	222.21	200	PVC	120	3.512	0.11	0.02	0.109
1589	P-5969	J-107	J-3990F	176.68	200	PVC	120	1.214	0.04	0	0.015
1591	P-5970	J-107	J-108	88.91	200	PVC	120	1.532	0.05	0	0.023
1593	P-5971	J-108	J-109	94.43	200	PVC	120	0.766	0.02	0	0.006
1595	P-5972	J-108	J-110	44	200	PVC	120	0.766	0.02	0	0.007
1597	P-5973	J-3880F	J-111	68.36	300	PVC	120	4.859	0.07	0	0.027
1598	P-5974	J-111	J-3890F	157.43	300	PVC	120	3.327	0.05	0	0.014
1600	P-5975	J-111	J-112	192.75	200	PVC	120	0.766	0.02	0	0.007
1602	P-5976	J-3870F	J-113	62.02	200	PVC	120	0.782	0.02	0	0.006
1605	P-5978	J-114	J-3860F	125.73	200	PVC	120	-2.478	0.08	0.01	0.057
1607	P-5979	J-3880F	J-115	112.63	200	PVC	120	-0.601	0.02	0	0.004
1610	P-5981	J-3950F	J-116	81.57	300	PVC	120	-7.19	0.1	0	0.056
1615	P-5983	J-116	J-119	83.84	300	PVC	120	-5.882	0.08	0	0.039
1616	P-5984	J-119	J-4610F	101.4	300	PVC	120	-6.806	0.1	0.01	0.052
1618	P-5985	J-116	J-117	94.12	200	PVC	120	-1.388	0.04	0	0.02
1620	P-5987	J-118	J-4610F	105.93	200	PVC	120	-1.69	0.05	0	0.028
1621	P-5988	J-119	J-120	88.63	200	PVC	120	0.782	0.02	0	0.007
1623	P-5989	J-115	J-121	91.86	200	PVC	120	-1.383	0.04	0	0.019
1624	P-5990	J-121	J-114	138.51	200	PVC	120	-1.696	0.05	0	0.029
1626	P-5991	J-3870F	J-122	95.69	300	PVC	120	6.292	0.09	0	0.044
1627	P-5992	J-122	J-3880F	87.98	300	PVC	120	5.041	0.07	0	0.03
1628	P-5993	J-121	J-122	136.07	200	PVC	120	-0.469	0.01	0	0.003
1630	P-5994	J-114	J-123	33.43	200	PVC	120	0.782	0.02	0	0.007
1632	P-5995	J-4620F	J-124	139.3	200	PVC	120	-1.533	0.05	0	0.024
1633	P-5996	J-124	J-4650F	173.76	200	PVC	120	-2.299	0.07	0.01	0.05
1637	P-5998	J-126	J-4210I	108.9	250	PVC	120	-2.597	0.05	0	0.021
1639	P-5999	J-4290I	J-127	79.82	250	PVC	120	-0.372	0.01	0	0.001
1640	P-6000	J-127	J-126	123.9	250	PVC	120	2.625	0.05	0	0.022
1645	P-6002	J-4	J-129	106.5	199.4	PVC	110	3.832	0.12	0.02	0.153
1646	P-6003	J-129	J-5	93.88	199.4	PVC	110	3.61	0.12	0.01	0.136
1659	P-6009	J-133	J-150	141.34	200	PVC	120	-4.583	0.15	0.03	0.178
1663	P-6010	J-134	J-135	485.21	300	PVC	120	-8.267	0.12	0.04	0.074
1664	P-6011	J-135	J-4510F	209.29	300	PVC	120	0.502	0.01	0	0
1665	P-6012	J-134	J-3670I	459.26	200	PVC	120	-5.728	0.18	0.12	0.269
1679	P-6013	J-4080I	J-136	193.27	300	PVC	120	-2.246	0.03	0	0.007
1680	P-6014	J-136	J-4460I	271.29	300	PVC	120	-2.096	0.03	0	0.006
1682	P-6015	J-N2150E	J-137	124.93	300	PVC	110	-4.083	0.06	0	0.023
1683	P-6016	J-137	J-N2145E	119.57	300	PVC	110	-4.083	0.06	0	0.024

**Ultimate Development
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ID	Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)	Headloss Gradient (m/km)
1685	P-6017	J-N4060E	J-138	58.15	300	Asbestos Cement	100	-5.792	0.08	0	0.054
1686	P-6018	J-138	J-N4070E	33.63	300	Asbestos Cement	100	-2.285	0.03	0	0.011
1688	P-6019	J-138	J-139	264.28	250	PVC	110	-3.507	0.07	0.01	0.043
1702	P-6025	J-N3140E	J-140	67.44	250	Asbestos Cement	100	2.792	0.06	0	0.034
1703	P-6026	J-140	J-N3150E	81.95	250	Asbestos Cement	100	2.696	0.05	0	0.032
1705	P-6027	J-N2090E	J-141	94.16	300	Asbestos Cement	100	14.394	0.2	0.03	0.288
1706	P-6028	J-141	J-N2100E	101.36	300	Asbestos Cement	100	13.858	0.2	0.03	0.269
1708	P-6029	J-4310F	J-7	212.97	200	PVC	120	1.007	0.03	0	0.011
1712	P-6030	J-S2050E	J-143	97.18	250	PVC	120	3.949	0.08	0	0.046
1713	P-6031	J-143	J-S2051E	46.82	250	PVC	120	0.508	0.01	0	0
1715	P-6032	J-143	J-144	119.38	250	PVC	120	3.441	0.07	0	0.035
1717	P-6033	J-4220I	J-145	170.71	250	PVC	120	-3.081	0.06	0	0.029
1718	P-6034	J-145	J-128	86.99	250	PVC	120	0.36	0.01	0	0
1719	P-6035	J-144	J-145	61.41	250	PVC	120	3.441	0.07	0	0.036
1723	P-6037	J-N2254E	J-146	99.06	200	PVC	120	-2.696	0.09	0.01	0.067
1726	P-6039	J-146	J-147	150.19	200	PVC	120	-1.58	0.05	0	0.025
1727	P-6040	J-147	J-148	91.88	200	PVC	120	-2.696	0.09	0.01	0.067
1728	P-6041	J-146	J-147	285.95	200	PVC	120	-1.116	0.04	0	0.013
1730	P-6042	J-3780F	J-148	107.47	200	PVC	120	-3.172	0.1	0.01	0.09
1731	P-6043	J-148	J-3785F	124.19	200	PVC	120	-5.869	0.19	0.03	0.281
1733	P-6044	J-3785F	J-149	93.51	200	PVC	120	-11.005	0.35	0.08	0.902
1736	P-6046	J-149	J-150	96.38	200	PVC	120	-7.991	0.25	0.05	0.498
1737	P-6047	J-150	J-3790F	77.35	200	PVC	120	-12.575	0.4	0.09	1.154
1739	P-6048	J-149	J-151	177.78	200	PVC	120	-3.013	0.1	0.01	0.082
1740	P-6049	J-151	J-133	101.13	200	PVC	120	-3.013	0.1	0.01	0.082
1744	P-6052	J-152	J-3805F	139.19	200	PVC	120	-10.405	0.33	0.11	0.813
1746	P-6053	J-132	J-153	101.14	200	PVC	120	-4.518	0.14	0.02	0.174
1747	P-6054	J-153	J-152	209.83	200	PVC	120	-5.485	0.17	0.05	0.248
1754	P-6059	J-155	J-153	365.4	200	PVC	120	-0.966	0.03	0	0.01
1755	P-6060	J-152	J-155	274.29	200	PVC	120	4.92	0.16	0.06	0.203
1756	P-6061	J-3790F	J-131	159.78	200	PVC	120	-4.925	0.16	0.03	0.204
1758	P-6062	J-131	J-156	85.63	200	PVC	120	-7.665	0.24	0.04	0.461
1759	P-6063	J-156	J-132	424.77	200	PVC	120	-1.778	0.06	0.01	0.031
1760	P-6064	J-155	J-156	95.53	200	PVC	120	5.887	0.19	0.03	0.283
1788	P-6083(2)	J-165	J-97	69.65	200	PVC	120	4.451	0.14	0.01	0.168
1791	P-6022(2)	J-166	J-4490F	74.84	200	PVC	120	17.445	0.56	0.16	2.117
1793	P-5951(1)	J-N2020E	J-167	68.79	200	PVC	120	18.789	0.6	0.17	2.428
1794	P-5951(2)	J-167	J-94	111.06	200	PVC	120	8.439	0.27	0.06	0.551
1797	P-6085	J-168	J-166	110.53	200	Ductile Iron	120	6.183	0.2	0.03	0.31
1799	P-6086	J-166	J-169	76.51	200	Ductile Iron	120	-2.724	0.09	0.01	0.067
1801	P-6087	J-169	J-170	48.69	200	Ductile Iron	120	0.084	0	0	0
1803	P-6022(1)(1)	J-94	J-171	74.36	200	PVC	120	4.791	0.15	0.01	0.194
1804	P-6022(1)(2)	J-171	J-166	71.88	200	PVC	120	8.622	0.27	0.04	0.573
1806	P-6084(1)	J-167	J-172	76.51	200	Ductile Iron	120	10.266	0.33	0.06	0.793
1807	P-6084(2)	J-172	J-168	68.82	200	Ductile Iron	120	6.267	0.2	0.02	0.318
1808	P-6088	J-172	J-171	112.07	200	Ductile Iron	120	3.915	0.12	0.01	0.133
1810	P-6089	J-94	J-173	99.54	200	Ductile Iron	120	3.564	0.11	0.01	0.112
1812	P-6090	J-173	J-174	92.74	200	Ductile Iron	120	2.177	0.07	0	0.045
1814	P-6091	J-174	J-175	88.1	200	Ductile Iron	120	-1.135	0.04	0	0.014
1816	P-6092	J-175	J-176	93.52	200	Ductile Iron	120	-1.219	0.04	0	0.015
1817	P-6093	J-176	J-173	88.88	200	Ductile Iron	120	-1.303	0.04	0	0.018
1821	P-6095	J-178	J-174	78.78	200	Ductile Iron	120	-3.228	0.1	0.01	0.093
1824	P-6094(2)	J-179	J-178	69.38	200	Ductile Iron	120	-3.144	0.1	0.01	0.089
1827	P-6094(1)(2)	J-180	J-179	86.94	200	Ductile Iron	120	-3.06	0.1	0.01	0.084
1829	P-6094(1)(1)(1)	J-169	J-181	97.94	200	Ductile Iron	120	-2.892	0.09	0.01	0.076
1830	P-6094(1)(1)(2)	J-181	J-180	86.95	200	Ductile Iron	120	-2.976	0.09	0.01	0.081
1833	P-6083(1)(1)	J-4490F	J-182	49.89	200	PVC	120	4.707	0.15	0.01	0.188
1834	P-6083(1)(2)	J-182	J-165	62.76	200	PVC	120	4.707	0.15	0.01	0.187
1836	P-840(1)	J-N1430E	J-183	47.16	199.4	Steel	100	1.842	0.06	0	0.046
1837	P-840(2)	J-183	J-N1420E	86.98	199.4	Steel	100	7.647	0.24	0.06	0.654
1839	P-5986(1)	J-117	J-184	43.75	200	PVC	120	-1.468	0.05	0	0.022
1840	P-5986(2)	J-184	J-118	105.68	200	PVC	120	-1.618	0.05	0	0.026
1842	P-6370F(1)	J-4610F	J-185	72.35	300	PVC	120	-8.516	0.12	0.01	0.077
1843	P-6370F(2)	J-185	J-4600F	70.68	300	PVC	120	-8.762	0.12	0.01	0.082

Appendix **F**

Wastewater Collection System Physical Data

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NE3356-26	701.104	696.416
NW3455-59	697.687	693.505
NW3455-49	698.65	693.37
NW3455-36	699.52	696.05
NW3455-37	698.72	695.58
NW3455-2	699.022	694.548
SW3455-23	699.522	695.057
SW3455-16	698.65	695.33
NE3455-33	699	688.04
NE3455-34	699.45	694.95
NE3455-LS	699.29	684.44
NW2755-4	699.516	696.712
NW2755-5	699.425	696.383
NW2755-6	699.272	695.947
NW2755-7	699.272	695.499
NW2755-LS	698.4	690.04
NW2755-26	698.723	691.682
NW2755-22	699.242	695.663
NW2755-23	699.15	695.209
NW2755-24	699.181	694.045
NW2755-25	699.12	693.143
NW2755-21	698.754	692.063
NW2755-20	698.754	692.429
NW2755-19	698.754	692.713
NW2755-18	698.632	693.45
NW2755-16	698.845	694.725
NW2755-17	698.663	693.791
NW2755-12	698.754	693.004
NW2755-11	699.089	693.344
NW2755-9	698.937	694.106
NW2755-10	699.089	693.643
NW2755-15	698.998	695.081
NW2755-14	699.242	695.462
NW2755-13	698.998	695.858
NW2755-8	699.242	694.587
NW2755-3	699.333	695.005
NW2755-2	699.272	695.493
NW2755-1	699.211	695.925
SE3455-2	699.315	696.21
SE3455-1	699.626	696.292
SE3455-4	698.675	695.645
SE3455-3	698.946	696.062
SE3455-5	698.6	695.535
SE3455-6	698.55	695.38
SE3455-7	698.33	695.09
SE3455-8	698.99	694.66
SW3455-22	698.53	694.2
SW3455-21	698.21	693.86
SW3455-20	697.78	694.08
SW3455-12	698.77	695.37
SW3455-13	698.49	695.16
SW3455-14	698.1	694.79
SW3455-19	697.6	694.34
SW3455-18	697.92	694.75

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
SW3455-17	698.27	695.06
SW3455-15	699.12	695.74
SW3455-11	699.32	695.87
SW3455-8	699.251	695.851
SW3455-9	699.513	696.175
SW3455-7	699.812	696.626
SW3455-5	700.153	697.004
SW3455-6	700.479	697.619
SW3455-4	700.199	697.836
SW3455-3	699.796	697.239
SW3455-2	699.772	697.739
SW3455-1	700.534	698.022
SW0356-6	698.93	691.95
SW0356-1	699.09	695.89
SW0356-2	699.131	695.27
SW0356-3	698.6	695.12
SE0456-9	698.678	694.118
SE0456-8	698.638	693.94
SE0456-7	698.68	694.312
SE0456-19	701.284	695.626
SE0456-18	701.222	695.979
SE0456-17	699.615	696.601
SE0456-16	701.025	696.421
SE0456-15	700.714	696.814
SE0456-10	699.18	696.96
SE0456-11	699.19	696.74
SE0456-12	699.15	695.63
SE0456-13	699.347	695.19
SE0456-14	699.588	694.922
SE0456-6	699.588	694.45
SE0456-5	699.68	694.72
SE0456-4	699.774	695.15
SE0456-LS	700.339	692.69
SE0456-3	700.07	695.78
SE0456-2	700.39	696.17
SE0456-1	700.342	695.542
SW0456-1	699.281	696.703
SW0456-2	699.363	696.38
SW0456-3	700.543	696.096
SW0456-5	700.421	695.834
SW0456-4	700.826	696.45
NW3356-24	701.241	696.834
NW3356-16	700.659	696.23
NW3356-23	701.61	697.169
NW3356-15	700.632	696.544
NW3356-22	700.217	697.013
NW3356-14	700.936	696.91
NW3356-18	701.067	697.66
NW3356-19	704.048	697.435
NW3356-17	701.474	697.941
NW3356-13	701.378	697.267
NW3356-20	701.341	697.249
NW3356-21	701.63	698.693
NW3356-12	701.2	697.593

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NW3356-9	701.55	698.382
NW3356-10	701.9	698.062
NW3356-11	701.7	697.814
NW3356-8	701.98	699.638
NW3356-1	702.015	699.614
NW3356-2	701.722	699.33
NW3356-3	701.39	699.058
NW3356-4	701.772	698.791
NW3356-5	701.619	698.562
NW3356-7	702.473	699.449
NW3356-6	702.107	698.266
SE3356-1	700.278	697.017
SE3356-2	700.187	696.127
SE3356-3	699.882	696.02
SE3356-4	700.156	695.919
SE3356-9	699.973	696.255
SE3356-10	699.79	696.017
SE3356-5	699.699	695.743
SE3356-6	699.668	695.657
SE3356-7	700.004	695.532
SE3356-8	699.973	695.365
SE3356-11	699.546	695.941
NE3356-34	700.118	696.912
NE3356-35	700.121	696.555
NE3356-41	699.405	697.095
NE3356-12	700.156	696.45
NE3356-8	699.973	696.62
NE3356-9	700.29	696.514
NE3356-11	700.248	696.895
NE3356-10	700.156	697.2
NE3356-38	700.522	697.739
NE3356-39	700.065	697.087
NE3356-40	699.466	696.665
NE3356-36	699.771	696.147
NE3356-55	699.45	697.71
NE3356-45	700.173	696.82
NE3356-54	699.916	698.171
NE3356-44	701.369	697.363
NE3356-43	700.796	697.79
NE3356-42	700.796	697.912
NE3356-24	702.1	698.036
NE3356-23	702.4	698.304
NE3356-13	702.473	699.196
NE3356-14	702.381	698.714
NE3356-17	700.644	698.339
NE3356-19	701.2	698.127
NE3356-18	701.5	698.319
NE3356-15	701.62	698.33
NE3356-16	701.049	697.857
NE3356-20	700.796	697.446
NE3356-7	700.217	696.94
NE3356-22	700.552	697.129
NE3356-21	700.735	697.425
NE3356-5	701.589	697.898

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NE3356-1	702.899	699.821
NE3356-2	702.503	697.973
NE3356-3	702.716	697.876
NE3356-4	700.979	697.568
NE3356-6	700.827	697.479
NE3356-25	701.366	697.059
NE3356-27	700.716	697.607
NE3356-31	700.975	697.698
NE3356-33	700.304	696.76
NE3356-28	700.637	697.957
NE3356-32	700.978	697.156
NE3356-62	699.77	697.968
NE3356-59	700.373	697.291
NE3356-58	700.076	697.914
NE3356-57	700.178	698.101
NE3356-50	701.467	697.925
NE3356-51	699.815	697.591
NE3356-52	699.67	697.155
NE3356-56	699.638	697.178
NE3356-53	699.571	696.838
NE3356-48	699.487	696.487
NE3356-63	701.074	697.412
NE3356-64	699.684	697.238
NE3356-60	700.078	696.79
NE3356-61	699.85	696.323
NE3356-49	699.058	695.563
NE3356-37	699.829	695.961
NE3356-46	699.612	696.232
NE3356-47	699.353	697.123
NW3455-27	699.747	691.408
NW3455-25	699.041	691.811
NW3455-26	699.504	691.585
NW3455-71	697.309	693.853
NW3455-70	697.699	694.414
NW3455-69	698.141	695.001
NW3455-73	697.971	694.749
NW3455-72	698.362	695.231
NW3455-68	698.547	695.465
NW3455-67	698.01	694.801
NW3455-66	698.407	695.24
NW3455-65	698.803	695.654
NW3455-60	698.553	695.106
NW3455-54	698.531	695.255
NW3455-55	698.294	694.859
NW3455-56	698.031	694.371
NW3455-57	697.507	693.993
NW3455-58	697.334	693.801
NW3455-61	698.54	693.252
NW3455-62	698.391	694.853
NW3455-63	698.65	692.972
NW3455-64	698.01	692.713
NW3455-24	698.376	691.96
NW3455-53	698.376	692.179
NW3455-52	697.57	692.609

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NW3455-51	698.06	692.96
NW3455-50	698.61	694.93
NW3455-21	698.45	693.76
NW3455-20	698.36	694.92
NW3455-19	698.78	695.45
NW3455-17	699.211	696.291
NW3455-18	699.39	695.873
NW3455-14	699.67	695.64
NW3455-15	699.912	695.57
NW3455-1	698.739	694.853
NW3455-16	699.637	695.19
NW3455-5	699.143	694.957
NW3455-4	699.155	695.537
NW3455-3	699.2	695.587
NW3455-13	699.14	694.389
NW3455-12	698.75	693.93
NW3455-22	698.85	693.51
NW3455-23	698.98	693.429
NW3455-31	699.33	696.06
NW3455-39	699.21	695.75
NW3455-38	698.72	695.3
NW3455-40	699.09	695.97
NW3455-32	699.39	695.8
NW3455-33	698.85	695.43
NW3455-34	698.3	695.06
NW3455-35	698.91	695
NW3455-6	698.649	694.75
NW3455-42	698.85	694.93
NW3455-41	699.36	695.33
NW3455-44	698.78	695.72
NW3455-45	698.45	695.37
NW3455-46	698.24	694.98
NW3455-43	698.48	694.52
NW3455-7	698.677	694.437
NW3455-8	698.3	694.31
NW3455-11	697.67	695.24
NW3455-9	698.45	694
NW3455-10	698.43	693.928
NW3455-47	698.93	691.752
NW3455-48	698.766	691.481
NW3455-28	698.689	690.935
NW3455-29	698.485	690.661
NW3455-30	698.19	690.356
NE3455-1	698.92	695.894
NE3455-2	698.4	694.709
NE3455-3	698.73	695.45
NE3455-4	698.04	695.118
NE3455-6	698.669	695.477
NE3455-7	698.388	695.138
NE3455-8	698.077	694.654
NE3455-9	697.785	693.295
NE3455-22	696.748	690.723
NE3455-23	697.159	690.509
NE3455-25	696.95	690.234

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NE3455-24	697.467	690.354
NE3455-10	697.574	694.158
NE3455-11	697.16	693.914
NE3455-12	697.715	693.465
NE3455-16	697.392	692.082
NE3455-15	697.096	692.706
NE3455-14	696.428	693.178
NE3455-13	696.855	693.322
NE3455-39	697.931	690.091
NE3455-26	697.3	690.079
NE3455-35	697.517	690.291
NE3455-27	697.787	689.707
NE3455-28	697.474	689.558
NE3455-29	697.419	689.412
NE3455-30	697.873	689.265
NE3455-38	696.58	693.31
NE3455-36	697.227	694.069
NE3455-37	697.038	693.889
NE3455-21	696.702	692.706
NE3455-20	697.7	692.868
NE3455-19	697.6	693.322
NE3455-18	697.67	693.75
NE3455-17	697.67	693.91
NE3455-32	698.3	688.49
SE0356-71	698.296	693.711
SE0356-72	697.431	692.066
SE0356-66	697.111	692.2
SE0356-67	696.571	692.343
SE0356-68	696.504	692.215
SE0356-69	696.832	692.062
SE0356-70	697.035	691.698
SE0356-73	697.41	693.613
SE0356-76	697.24	693.24
SE0356-75	698.087	693.435
SE0356-1	698.286	694.315
SE0356-2	697.4	693.425
SE0356-3	697.602	691.022
SE0356-4	697.653	690.994
SE0356-5	697.882	690.874
SE0356-6	698.23	690.759
SE0356-7	698.109	690.546
SE0356-65	697.86	693.704
SE0356-8	697.71	690.412
SE0356-59	697.854	693.062
SE0356-60	697.471	692.711
SE0356-61	698.311	693.08
SE0356-74	697.257	691.293
SE0356-13	697.63	690.008
SE0356-12	698.139	690.039
SE0356-11	698.424	690.095
SE0356-9	698.418	690.283
SE0356-58	698.577	690.244
SE0356-57	698.719	693.976
SE0356-10	698.159	690.174

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
SE0356-56	698.391	690.75
SE0356-55	698.26	692.487
SE0356-54	698.175	692.646
SE0356-53	697.801	692.791
SE0356-52	697.397	692.997
SE0356-46	697.012	693.232
SE0356-47	696.97	692.96
SE0356-48	697.32	692.761
SE0356-49	697.393	692.619
SE0356-50	697.2	692.466
SE0356-51	696.911	692.15
NE3455-31	698.175	688.875
SE0356-23	697.338	693.448
SE0356-24	697.682	693.317
SE0356-22	697.814	692.32
SE0356-21	696.407	692.62
SE0356-20	697.407	692.869
SE0356-25	696.95	692.546
SE0356-14	697.57	689.918
SE0356-26	697.659	693.592
SE0356-15	697.233	689.829
SE0356-16	696.886	689.743
SE0356-33	697.248	690.341
SE0356-17	697.14	689.636
SE0356-18	697.586	689.576
SE0356-19	697.754	689.221
SE0356-44	697.873	694.232
SE0356-45	697.516	693.805
SE0356-39	696.92	692.399
SE0356-40	696.848	693.161
SE0356-41	697.455	692.103
SE0356-42	697.968	691.707
SE0356-43	697.567	691.315
SE0356-32	697.431	690.575
SE0356-31	697.128	691.421
SE0356-30	697.139	691.808
SE0356-29	697.698	693.193
SE0356-28	697.698	692.814
SE0356-27	698.225	693.503
SE0356-77	697.8	693.93
SE0356-78	697.66	693.464
SE0356-79	697.175	693.077
SE0356-34	697.912	693.8
SE0356-35	697.299	692.818
SE0356-38	697.045	693.084
SE0356-37	697.212	693.347
SE0356-36	697.352	693.583
SE0356-80	697.262	692.747
SE0356-81	697.544	692.471
NE3455-40	697.11	690.883
NE3455-44	697.11	690.929
NE3455-42	697.391	692.88
NE3455-41	697.311	692.394
NE3455-48	697.67	694.3

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
NE3455-47	697.7	693.81
NE3455-46	698.13	694.28
NE3455-45	698.73	694.73
NE3356-60b	699.815	697.156
SW0356-8	698.46	694.73
SW2755-1	699.03	695.75
SW2755-2	698.87	695.39
SW2755-18	698.3	691.8
SW2755-17	698.12	692.06
SW2755-16	698.22	692.21
SW2755-15	698.72	692.51
SW2755-14	698.69	693.05
SW2755-13	698.98	693.26
SW2755-12	699.18	693.39
SW2755-26	698.51	694.88
SW2755-27	698.83	695.43
SW2755-11	698.99	693.53
SW2755-10	699.29	693.73
SW2755-25	698.31	694.16
SW2755-9	699.18	693.86
SW2755-8	698.83	694.08
SW2755-7	698.7	694.38
SW2755-6	698.79	694.51
SW2755-5	699.23	694.81
SW2755-4	699.18	694.88
SW2755-3	699	695
SW2755-22	698.49	694.9
SW2755-21	698.6	695.09
SW2755-19	698.51	695.05
SW2755-23	698.21	694.75
SW2755-24	698.17	694.48
SW2755-20	698.72	695.36
SE0356-82	697.95	693.847
NE3356-65	700.746	697.558
SE3356-12	700.552	697.23
SW0356-9	698.6	692.304
301	692.7	688.854
379	691.286	688.409
NE3356-61b	699.76	696.964
NW3455-68a	698.545	695.416
NW3455-68b	698.545	695.453
SW3455-10	699.4	696.943
SW0356-4	698.723	693.675
Lagoon	698.3	685
Cardiff	698.4	688.04
Node435	699.5	697
SW0456-7	699.666	697.279
SW0456-6	699.82	696.978
SE0456-22	699.85	694.966
SE0456-21	700.1	694.828
SE0456-24	699.02	696.501
SE0456-25	699.51	695.565
SE0456-23	699.84	695.236
SE0456-29	699.71	696.702

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
SE0456-28	700.1	696.369
SE0456-27	699.77	696.069
SE0456-26	699.4	695.673
SW0456-8	700.61	698.316
SE0456-33	700.61	697.899
SE0456-32	700.72	697.52
SE0456-31	700.41	697.252
SE0456-30	699.96	697.022
SW0356-10	699.21	695.73
SW0356-11	698.64	695.21
SW0356-12	698.81	695.78
SW0356-13	698.83	695.45
SW0356-14	698.75	695.13
SW0356-16	698.96	694.81
SW0356-15	699.35	695.42
SW0356-17	699.68	693.8
SW0356-18	699.45	693.73
SW0356-39	698.3	692.07
SW0356-42	698.34	691.89
SW0356-43	698.58	691.76
SW0356-46	698.6	691.59
SW0356-47	698.85	691.45
SW0356-44	699.88	696.44
SW0356-45	699.31	695.39
SW0356-40	699.38	695.55
SW0356-41	698.77	695.23
SW0356-34	698.62	695.03
SW0356-36	698.61	693.54
SW0356-37	698.27	692.25
SW0356-35	698.9	694.7
SW0356-31	698.6	695
SW0356-33	698.36	694.56
SW0356-32	698.92	694.81
SW0356-28	698.24	693.15
SW0356-29	698.33	692.54
SW0356-30	698.16	692.4
SW0356-26	698.63	693.06
SW0356-27	698.38	692.89
SW0356-22	698.7	695.43
SW0356-23	698.4	694.8
SW0356-25	698.5	694.34
SW0356-24	698.66	695.36
SW0356-19	698.851	694.797
SW0356-20	698.83	693.221
SW0356-21	699.05	693.43
SW0356-38	699.12	695.41
SW0356-48	699.12	695.31
SW0356-50	699.02	695.08
SW0356-49	699.83	695.66
SW0356-51	698.63	694.75
SW0356-52	699.83	696.45
SW0356-53	699.12	695.83
SW0356-54	698.69	694.73
SW0356-55	698.68	694.27

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
SW0356-58	698.64	691.48
SW0356-60	698.1	691.291
SW0356-59	698.1	691.731
SW0356-56	698.27	692.16
SW0356-57	698.28	691.93
SW0356-62	698.63	695.609
SW0356-63	698.29	694.16
SW0356-61	698.29	695.487
SW0356-65	698.63	695.15
SW0356-66	698.4	694.35
SW0356-68	698.23	693.96
SW0356-69	698.27	693.54
SW0356-67	698.9	695.38
SW0356-64	698.21	693.7
SE0356-83	698.74	695.26
SE0356-84	697.52	693.78
NE3455-50	697.5	691.75
NE3455-52	697.5	691.33
NE3455-53	697.5	691.28
NE3455-55	697.43	691.12
SE3455-23	697.9	692.899
SE3455-24	697.8	692.515
NE3455-49	698.11	691.78
SE3455-11	698.59	694.64
SE3455-12	697.81	693.79
SE3455-13	698	693.381
SE3455-9	698.85	696.23
SE3455-10	698.42	695.06
NE3455-51	698.36	694.61
NE3455-54	697.63	693.75
NE3455-56	698.36	694.08
NE3455-58	698.22	693.82
NE3455-59	697.57	693.15
NE3455-57	698.66	695.23
NE3455-60	698.97	695.01
SW2755-28	699.4	694.929
SW2755-29	699.3	694.686
SW2755-30	699.3	694.54
SW2755-35	699.3	694.072
SW2755-36	699.3	693.935
SW2755-31	699.4	694.926
SW2755-32	699.3	694.627
SW2755-33	699.3	694.444
SW2755-34	699.3	694.218
SW2755-37	698.75	694.576
SW2755-38	699.68	694.086
SW2755-39	699.53	692.796
SW2755-40	698.82	695.22
SW2755-41	698.36	694.5
SW2755-43	698.18	694
SW2755-44	698.18	693.34
SW2755-46	698.31	692.76
SW2755-42	698.82	695.03
SW2755-45	698.82	695.03

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
INTres4.37(Rename to S-90)	699.132	694.15
INTres0.94 (Rename to S-40)	699.038	693.62
INT11.89 (Rename to MH V)	699.25	696.73
NW2755-27	698.998	695.886
SW2755-47	698.25	692.97
Node696	700	692.81
Node697	698.25	694.025
INTMRC	700	695.2
Node716	698.4	688.06
Node717	698.25	693.652
INT22.15 (Rename to SA07)	700.7	694.513
WWPS	701.7	688.47
SA-12	699	694.123
SA-16	700	694.463
SA-19	700	695.006
SA-18	700	694.817
SA-21	698.52	694.786
SA-22	700	695.116
SA-23	698.62	695.28
SA-24	698.69	695.52
SA-40	698.88	692.24
SA-41	699.25	695.01
SA-42	699.83	695.75
SA-39	698.23	691.88
SA-38	699	694.86
S-1	699.53	696.48
S-2	699.31	696.72
S-50	698.547	693.8
S-80	698.5	694.03
MH A	698.39	695.07
MH T	698.58	695.75
MH S	698.77	695.59
MH G	698.79	696.01
MH H	698.98	696.24
MH U	698.87	696.1
MH C	699.02	695.92
MH B	696.81	695.61
MH D	699.45	696.28
MH E	699.89	696.73
MH W	699.74	696.65
MH X	699.45	696.85
MH Y	700.15	697.13
MH Z	700.42	697.34
MH F	698.74	695.9
MH K	699.24	696.39
MH M	699.49	696.72
MH O	699.77	697.04
MH Q	700.05	697.36
MH R	700.26	697.73
MH P	699.98	697.41
MH N	699.7	697.09
MH L	699.45	696.76
MH J	699.14	696.47
MH I	698.85	696.23

Table F.1 Wastewater System Physical Data - Manhole Data

Name	Ground Elevation (m)	Invert Elevation (m)
SA06	700.7	694.242
SA05	701.096	693.906
SA01	701.008	691.122
SA02	700.295	691.444
SA93	701.4	691.555
SA03	700.875	691.791
SA92	701.31	692.214
SA10	700.75	696.286
SA09	700.3	695.284
SA08	699.9	694.722

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LNE3356-26	NE3356-26	SE0456-1	0.2	0.5	56.47	696.416	696.132
LNW3455-59	NW3455-59	NW3455-61	0.2	0.32	73.14	693.505	693.268
LNW3455-49	NW3455-49	NW3455-51	0.25	0.47	87.47	693.37	692.96
LNW345536b	NW3455-36	NW3455-39	0.2	0.41	74.07	696.05	695.75
LNW3455-36	NW3455-36	NW3455-37	0.2	0.49	107.27	696.13	695.6
LNW3455-37	NW3455-37	NW3455-38	0.2	0.4	69.19	695.58	695.3
LNW3455-13	NW3455-2	NW3455-13	0.25	0.28	57	694.548	694.389
LSW3455-23	SW3455-23	NW3455-1	0.3	0.22	93.57	695.057	694.853
LSW3455-16	SW3455-16	SW3455-17	0.2	0.32	74.83	695.33	695.09
LNE3455-33	NE3455-33	NE3455-LS	0.75	0.222	36.01	688.32	688.24
LNE3455-34	NE3455-34	NE3455-33	0.4	1.459	10.28	694.95	694.8
Link730	NE3455-LS	Lagoon	0.75	0.164	1850.001	688.04	685
LNW2755-4	NW2755-4	NW2755-5	0.2	0.38	85.95	696.712	696.383
LNW2755-5	NW2755-5	NW2755-6	0.2	0.41	106.98	696.383	695.947
LNW2755-6	NW2755-6	NW2755-7	0.2	0.4	111.25	695.947	695.499
LNW2755-7	NW2755-7	NW2755-3	0.2	0.41	110.91	695.499	695.048
LNW2755-26	NW2755-26	NW2755-LS	0.375	0.22	10	691.682	691.66
LNW2755-22	NW2755-22	NW2755-23	0.2	0.37	121.62	695.663	695.21
LNW2755-23	NW2755-23	NW2755-24	0.2	0.427	121.92	695.209	694.688
LNW2755-24	NW2755-24	NW2755-25	0.2	0.717	121.62	694.045	693.173
LNW2755-25	NW2755-25	NW2755-21	0.2	1.06	51.01	693.143	692.603
LNW2755-21	NW2755-21	NW2755-26	0.375	0.32	118.72	692.063	691.683
LNW2755-20	NW2755-20	NW2755-21	0.3	0.29	95.23	692.429	692.149
LNW2755-19	NW2755-19	NW2755-20	0.3	0.31	92.2	692.713	692.429
LNW2755-18	NW2755-18	NW2755-12	0.25	0.33	123.83	693.45	693.045
LNW2755-16	NW2755-16	NW2755-17	0.2	0.4	91.13	694.725	694.365
LNW2755-17	NW2755-17	NW2755-18	0.25	0.28	123.75	693.791	693.45
LNW2755-12	NW2755-12	NW2755-19	0.3	0.32	90.98	693.004	692.713
LNW2755-11	NW2755-11	NW2755-12	0.2	0.27	108.81	693.344	693.051
LNW2755-9	NW2755-9	NW2755-10	0.2	0.39	109.12	694.106	693.676
LNW2755-10	NW2755-10	NW2755-11	0.2	0.27	108.81	693.643	693.344
LNW2755-15	NW2755-15	NW2755-16	0.2	0.39	91.58	695.081	694.725
LNW2755-14	NW2755-14	NW2755-15	0.2	0.42	90.22	695.462	695.088
LNW2755-13	NW2755-13	NW2755-14	0.2	0.4	99.06	695.858	695.462
LNW2755-8	NW2755-8	NW2755-9	0.2	0.44	109.12	694.587	694.106
LNW2755-3	NW2755-3	NW2755-8	0.2	0.38	109.03	695.005	694.587
LNW2755-2	NW2755-2	NW2755-3	0.2	0.42	105.16	695.493	695.048
LNW2755-1	NW2755-1	NW2755-2	0.2	0.39	112.17	695.925	695.493
LSE3455-2	SE3455-2	SE3455-4	0.2	0.6	88.95	696.246	695.715
LSE3455-1	SE3455-1	SE3455-4	0.2	0.64	92.51	696.292	695.7
LSE3455-4	SE3455-4	SE3455-5	0.2	0.39	11.54	695.645	695.595
LSE3455-3	SE3455-3	SE3455-5	0.2	0.63	74.62	696.062	695.595
LSE3455-5	SE3455-5	SE3455-7	0.2	0.41	108.09	695.535	695.09
LSE3455-6	SE3455-6	SE3455-7	0.2	0.51	56.39	695.38	695.09
LSE3455-7	SE3455-7	SE3455-8	0.2	0.44	96.72	695.09	694.66
LSE3455-8	SE3455-8	SW3455-22	0.2	0.4	116.08	694.66	694.2
LSW3455-22	SW3455-22	SW3455-21	0.2	0.32	90.44	694.2	693.91
LSW3455-21	SW3455-21	NW3455-49	0.25	0.49	99.03	693.86	693.37
LSW3455-20	SW3455-20	SW3455-21	0.2	0.3	59.59	694.08	693.9
LSW3455-12	SW3455-12	SW3455-13	0.2	0.52	34.91	695.37	695.19
LSW3455-13	SW3455-13	SW3455-14	0.2	0.36	102.26	695.16	694.79
LSW3455-14	SW3455-14	SW3455-19	0.2	0.44	88.43	694.79	694.4
LSW3455-19	SW3455-19	SW3455-20	0.2	0.51	50.89	694.34	694.08

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LSW3455-18	SW3455-18	SW3455-19	0.2	0.43	88.71	694.75	694.37
LSW3455-17	SW3455-17	SW3455-18	0.2	0.71	37.88	695.06	694.79
LSW3455-15	SW3455-15	SW3455-16	0.2	0.51	80.86	695.74	695.33
LSW3455-11	SW3455-11	SW3455-12	0.2	0.5	87.93	695.87	695.43
LSW3455-8b	SW3455-8	NW3455-19	0.2	0.5	76.22	695.851	695.468
LSW3455-8	SW3455-9	SW3455-8	0.2	0.4	80.09	696.175	695.852
LSW3455-9	SW3455-7	SW3455-9	0.2	0.62	72.36	696.626	696.175
LSW3455-5	SW3455-5	SW3455-7	0.2	0.37	96.71	697.004	696.642
LSW3455-6	SW3455-6	SW3455-5	0.2	0.434	112.12	697.619	697.132
LSW3455-4	SW3455-4	SW3455-3	0.2	0.51	80.77	697.836	697.428
LSW3455-3	SW3455-3	SW3455-5	0.2	0.28	83.92	697.239	697.004
LSW3455-2	SW3455-2	SW3455-3	0.2	0.41	95.19	697.739	697.346
LSW3455-1	SW3455-1	SW3455-2	0.2	0.36	79.17	698.022	697.742
LSW0356-6	SW0356-6	NW3455-47	0.45	0.29	42.68	691.95	691.825
LSW0356-1	SW0356-1	SW0356-2	0.2	0.6	95.66	695.89	695.32
LSW0356-2	SW0356-2	SW0356-3	0.2	0.62	16.22	695.27	695.17
LSW0356-3	SW0356-3	SW0356-8	0.2	0.6	59.6	695.12	694.76
LSE0456-9	SE0456-9	SW0356-4	0.2	0.359	109.4	694.118	693.725
LSE0456-8	SE0456-8	SW0356-4	0.25	0.229	115.82	693.94	693.675
LSE0456-7	SE0456-7	SE0456-8	0.25	0.24	154.03	694.312	693.94
LSE0456-19	SE0456-19	SE0456-14	0.2	0.41	90.1	695.626	695.26
LSE0456-18	SE0456-18	SE0456-19	0.2	0.39	90.1	695.979	695.626
LSE0456-17	SE0456-17	SE0456-13	0.2	0.4	89.12	696.601	696.247
LSE0456-16	SE0456-16	SE0456-17	0.2	0.4	91.14	696.967	696.601
LSE045616b	SE0456-16	SE0456-18	0.2	0.37	99.42	696.421	696.052
LSE0456-15	SE0456-15	SE0456-16	0.2	0.37	99.36	696.814	696.449
LSE0456-10	SE0456-10	SE0456-11	0.2	0.33	67.06	696.96	696.74
LSE0456-11	SE0456-11	SE0456-12	0.2	0.99	112.5	696.74	695.63
LSE0456-12	SE0456-12	SE0456-13	0.2	0.3	105.2	695.63	695.317
LSE0456-13	SE0456-13	SE0456-14	0.2	0.25	105.2	695.19	694.922
LSE0456-14	SE0456-14	SE0456-6	0.2	0.32	99.38	694.922	694.602
LSE0456-6	SE0456-6	SE0456-7	0.25	0.2	69.03	694.45	694.312
LSE0456-5	SE0456-5	SE0456-6	0.25	0.28	66.72	694.72	694.53
LSE0456-4	SE0456-4	SE0456-5	0.25	0.38	111.57	695.15	694.73
LSE0456-3	SE0456-3	SE0456-4	0.25	0.48	127.14	695.78	695.17
LSE0456-2	SE0456-2	SE0456-3	0.25	0.33	106.54	696.17	695.82
LSE0456-1	SE0456-1	SE0456-LS	0.25	0.841	107.24	695.542	694.64
LSW0456-1	SW0456-1	SW0456-2	0.25	0.28	114.3	696.703	696.386
LSW0456-2	SW0456-2	SW0456-3	0.25	0.31	91.74	696.38	696.096
LSW0456-3	SW0456-3	SW0456-5	0.25	0.3	88.39	696.096	695.834
LSW0456-5	SW0456-5	SE0456-1	0.25	0.29	85.97	695.834	695.581
LSW0456-4	SW0456-4	SW0456-5	0.2	0.45	108.51	696.45	695.962
LNW3356-24	NW3356-24	SW0456-4	0.2	0.44	86.3	696.834	696.45
LNW3356-16	NW3356-16	SW0456-5	0.25	0.31	99.48	696.23	695.919
LNW3356-23	NW3356-23	NW3356-24	0.2	0.35	91.44	697.169	696.849
LNW3356-15	NW3356-15	NW3356-16	0.25	0.3	103.63	696.544	696.23
LNW3356-22	NW3356-22	NW3356-15	0.2	0.68	26.61	697.013	696.833
LNW3356-14	NW3356-14	NW3356-15	0.25	0.33	102.88	696.91	696.569
LNW3356-18	NW3356-18	NW3356-19	0.2	1.38	16.26	697.66	697.435
LNW3356-19	NW3356-19	NW3356-20	0.2	0.24	78.36	697.435	697.249
LNW3356-17	NW3356-17	NW3356-19	0.2	1.52	19.68	697.941	697.641
LNW3356-13	NW3356-13	NW3356-14	0.25	0.29	114.3	697.267	696.937
LNW3356-20	NW3356-20	NW3356-13	0.2	0.24	20.59	697.249	697.267

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LNW3356-21	NW3356-21	NW3356-20	0.2	0.6	55.3	698.693	698.361
LNW3356-12	NW3356-12	NW3356-13	0.2	0.4	55.77	697.593	697.37
LNW3356-9	NW3356-9	NW3356-10	0.2	0.4	80	698.382	698.062
LNW3356-10	NW3356-10	NW3356-11	0.2	0.39	55.24	698.062	697.844
LNW3356-11	NW3356-11	NW3356-12	0.2	0.4	55.46	697.814	697.593
LNW3356-8	NW3356-8	NE3356-13	0.2	0.6	73.68	699.638	699.196
LNW3356-1	NW3356-1	NW3356-2	0.2	0.64	44.65	699.614	699.33
LNW3356-2	NW3356-2	NW3356-3	0.2	0.41	67.04	699.33	699.058
LNW3356-3	NW3356-3	NW3356-4	0.2	0.33	80.75	699.058	698.791
LNW3356-4	NW3356-4	NW3356-5	0.2	0.3	69.75	698.791	698.58
LNW3356-5	NW3356-5	NW3356-6	0.25	0.28	105.91	698.562	698.266
LNW3356-7	NW3356-7	NW3356-6	0.2	0.38	78.94	699.449	699.15
LNW3356-6	NW3356-6	NE3356-2	0.25	0.32	92	698.266	697.973
LSE3356-1	SE3356-1	NE3356-7	0.25	0.31	25.07	697.017	696.94
LSE3356-2	SE3356-2	SE3356-3	0.3	0.18	58.41	696.127	696.02
LSE3356-3	SE3356-3	SE3356-4	0.3	0.35	23.16	696.02	695.938
LSE3356-4	SE3356-4	SE3356-5	0.3	0.18	97.52	695.919	695.743
LSE3356-9	SE3356-9	SE3356-10	0.2	0.36	66.45	696.255	696.017
LSE3356-10	SE3356-10	SE3356-5	0.2	0.54	50.97	696.017	695.743
LSE3356-5	SE3356-5	SE3356-6	0.3	0.44	19.59	695.743	695.657
LSE3356-6	SE3356-6	SE3356-7	0.3	0.14	89.52	695.657	695.532
LSE3356-7	SE3356-7	SE3356-8	0.3	0.22	62.5	695.532	695.395
LSE3356-8	SE3356-8	SW3455-23	0.3	0.25	120.99	695.365	695.057
LSE3356-11	SE3356-11	SE3356-7	0.2	0.47	98.77	695.941	695.532
LNE3356-34	NE3356-34	NE3356-35	0.2	0.82	43.46	696.912	696.555
LNE3356-35	NE3356-35	NE3356-36	0.2	0.4	102.55	696.555	696.147
LNE3356-41	NE3356-41	NE3356-40	0.2	0.39	102.29	697.095	696.692
LNE335641b	NE3356-41	NE3356-35	0.2	0.39	147.75	697.162	696.586
LNE3356-12	NE3356-12	SE3356-4	0.2	0.44	115.21	696.45	695.938
LNE3356-8	NE3356-8	NE3356-9	0.3	0.19	40.83	696.62	696.544
LNE3356-9	NE3356-9	SE3356-2	0.3	0.4	96.84	696.514	696.127
LNE3356-11	NE3356-11	NE3356-9	0.2	1.37	27.81	696.895	696.514
LNE3356-10	NE3356-10	NE3356-11	0.2	0.48	63.85	697.2	696.895
LNE3356-38	NE3356-38	NE3356-39	0.2	0.59	109.73	697.739	697.087
LNE3356-39	NE3356-39	NE3356-40	0.2	0.32	132.25	697.087	696.665
LNE3356-40	NE3356-40	NE3356-36	0.2	0.31	147.78	696.665	696.205
LNE3356-36	NE3356-36	NE3356-37	0.2	0.37	45.89	696.147	695.979
LNE3356-55	NE3356-55	NE3356-52	0.2	0.35	127.64	697.71	697.257
LNE3356-45	NE3356-45	NE3356-46	0.2	0.4	145.93	696.82	696.235
LNE3356-54	NE3356-54	NE3356-51	0.2	0.47	123.83	698.171	697.591
LNE3356-44	NE3356-44	NE3356-45	0.2	0.41	133.41	697.363	696.82
LNE3356-43	NE3356-43	NE3356-44	0.2	0.38	111.7	697.79	697.363
LNE3356-42	NE3356-42	NE3356-43	0.2	0.43	21.56	697.912	697.82
LNE3356-24	NE3356-24	NW3356-11	0.2	0.4	47.94	698.036	697.844
LNE3356-23	NE3356-23	NE3356-24	0.2	0.4	67.1	698.304	698.036
LNE3356-13	NE3356-13	NE3356-14	0.2	0.67	72.11	699.196	698.714
LNE3356-14	NE3356-14	NE3356-15	0.2	0.4	96.63	698.714	698.33
LNE3356-17	NE3356-17	NE3356-16	0.2	0.63	71.07	698.339	697.888
LNE3356-19	NE3356-19	NE3356-16	0.2	0.52	51.66	698.127	697.857
LNE3356-18	NE3356-18	NE3356-19	0.2	0.4	48	698.319	698.127
LNE3356-15	NE3356-15	NE3356-16	0.2	0.59	74.56	698.33	697.888
LNE3356-16	NE3356-16	NE3356-20	0.2	0.6	67.95	697.857	697.446
LNE3356-20	NE3356-20	NE3356-22	0.2	0.47	66.81	697.446	697.129

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LNE3356-7	NE3356-7	NE3356-8	0.3	0.29	108.53	696.94	696.62
LNE3356-22	NE3356-22	NE3356-7	0.2	0.24	77.63	697.129	696.94
LNE3356-21	NE3356-21	NE3356-22	0.2	0.53	56.08	697.425	697.129
LNE3356-5	NE3356-5	NE3356-4	0.2	0.31	106.65	697.898	697.568
LNE3356-1	NE3356-1	NE3356-3	0.2	0.4	108.19	699.821	699.388
LNE3356-2	NE3356-2	NE3356-3	0.25	0.28	24.87	697.973	697.904
LNE3356-3	NE3356-3	NE3356-4	0.25	0.31	73.14	697.876	697.648
LNE3356-4	NE3356-4	NE3356-6	0.25	0.23	37.49	697.568	697.48
LNE3356-6	NE3356-6	SE3356-12	0.25	0.32	77.98	697.479	697.23
LNE3356-25	NE3356-25	NE3356-26	0.2	0.66	96.92	697.059	696.422
LNE3356-27	NE3356-27	SE0456-2	0.2	0.42	130.5	697.607	697.058
LNE3356-31	NE3356-31	NE3356-32	0.2	0.4	125.94	697.698	697.195
LNE3356-33	NE3356-33	SE0456-3	0.2	0.39	103.33	696.76	696.357
LNE3356-28	NE3356-28	NE3356-65	0.2	0.4	99.99	697.957	697.558
LNE3356-32	NE3356-32	NE3356-33	0.2	0.39	102.7	697.156	696.76
LNE3356-62	NE3356-62	NE3356-59	0.2	0.36	186.8	697.968	697.296
LNE3356-59	NE3356-59	NE3356-60	0.2	0.36	136.87	697.291	696.798
LNE3356-58	NE3356-58	NE3356-59	0.2	0.36	149.85	697.914	697.375
LNE3356-57	NE3356-57	NE3356-58	0.2	0.37	50.55	698.101	697.914
LNE3356-50	NE3356-50	NE3356-51	0.2	0.37	68.14	697.925	697.673
LNE335650b	NE3356-50	NE3356-57	0.2	-0.26	67.06	697.925	698.101
LNE3356-51	NE3356-51	NE3356-52	0.2	0.35	136.07	697.631	697.155
LNE335651b	NE3356-51	NE3356-60b	0.2	0.36	119.22	697.591	697.156
LNE3356-52	NE3356-52	NE3356-53	0.2	0.41	77.74	697.155	696.838
LNE335652b	NE3356-52	NE3356-61b	0.2	0.51	99.04	697.467	696.964
LNE3356-56	NE3356-56	NE3356-53	0.2	0.33	102.74	697.178	696.838
LNE3356-53	NE3356-53	NE3356-48	0.2	0.42	76.53	696.838	696.517
LNE3356-48	NE3356-48	NE3356-49	0.2	0.45	200.04	696.487	695.583
LNE3356-63	NE3356-63	SE0456-5	0.2	0.54	82.01	697.412	696.967
LNE3356-64	NE3356-64	NE3356-60	0.2	0.4	82	697.238	696.91
LNE3356-60	NE3356-60	NE3356-61	0.2	0.33	136.86	696.79	696.332
LNE3356-61	NE3356-61	NE3356-49	0.2	0.45	153.47	696.323	695.638
LNE3356-49	NE3356-49	SE0456-8	0.2	0.24	205.91	695.563	695.078
LNE3356-37	NE3356-37	NW3455-4	0.2	0.32	124.31	695.961	695.565
LNE3356-46	NE3356-46	NE3356-37	0.2	0.41	61.43	696.232	695.979
LNE3356-47	NE3356-47	NE3356-48	0.2	0.46	131.19	697.123	696.517
LNW3455-27	NW3455-27	NW3455-28	0.375	0.29	111.95	691.408	691.088
LNW3455-25	NW3455-25	NW3455-26	0.375	0.19	121.92	691.811	691.585
LNW3455-26	NW3455-26	NW3455-27	0.375	0.15	121.92	691.585	691.408
LNW3455-71	NW3455-71	NE3455-13	0.2	0.44	121.92	693.853	693.322
LNW3455-70	NW3455-70	NW3455-71	0.2	0.61	91.35	694.414	693.855
LNW3455-69	NW3455-69	NW3455-70	0.2	0.63	91.36	695.001	694.426
LNW3455-73	NW3455-73	NE3455-10	0.2	0.63	87.81	694.749	694.194
LNW3455-72	NW3455-72	NW3455-73	0.2	0.6	78.33	695.231	694.761
Link858	NW3455-68	NW3455-68b	0.2	0.4	10	695.493	695.453
Link859	NW3455-68	NW3455-68a	0.2	0.49	10	695.465	695.416
LNW3455-67	NW3455-67	NW3455-64	0.2	0.46	41.41	694.801	694.612
LNW3455-66	NW3455-66	NW3455-67	0.2	0.42	95.5	695.24	694.843
LNW3455-65	NW3455-65	NW3455-66	0.2	0.47	90.53	695.694	695.267
LNW345565b	NW3455-65	NE3455-7	0.2	0.51	91.44	695.654	695.185
LNW3455-60	NW3455-60	NW3455-61	0.2	0.51	84.11	695.106	694.679
LNW3455-54	NW3455-54	NW3455-55	0.2	0.6	66.13	695.255	694.859
LNW345554b	NW3455-54	NW3455-60	0.2	0.36	32.75	695.255	695.136

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LNW3455-55	NW3455-55	NW3455-56	0.2	0.67	71.62	694.859	694.38
LNW3455-56	NW3455-56	NW3455-57	0.2	0.4	84.58	694.371	694.032
LNW3455-57	NW3455-57	NW3455-58	0.2	0.46	32.33	693.993	693.844
LNW3455-58	NW3455-58	NW3455-59	0.2	0.46	64.74	693.801	693.505
LNW3455-61	NW3455-61	NW3455-63	0.2	0.42	59.61	693.252	693.002
LNW3455-62	NW3455-62	NW3455-63	0.2	1.39	21.49	694.853	694.554
LNW3455-63	NW3455-63	NW3455-64	0.2	0.41	55.79	692.972	692.743
LNW3455-64	NW3455-64	NW3455-53	0.2	0.45	98.09	692.713	692.271
LNW3455-24	NW3455-24	NW3455-25	0.375	0.12	121.92	691.96	691.811
LNW3455-53	NW3455-53	NW3455-24	0.25	0.37	46.55	692.179	692.009
LNW3455-52	NW3455-52	NW3455-53	0.25	0.35	123.75	692.609	692.179
LNW3455-51	NW3455-51	NW3455-52	0.25	0.45	78.4	692.96	692.61
LNW3455-50	NW3455-50	NW3455-51	0.2	0.64	70.41	694.93	694.48
LNW3455-21	NW3455-21	NW3455-22	0.3	0.4	62.91	693.76	693.51
LNW3455-20	NW3455-20	NW3455-21	0.2	0.7	73.84	694.92	694.4
LNW3455-19	NW3455-19	NW3455-20	0.2	0.35	128.07	695.45	695
LNW3455-17	NW3455-17	NW3455-18	0.2	0.42	91.44	696.291	695.907
LNW3455-18	NW3455-18	NW3455-19	0.2	0.41	93.25	695.873	695.45
LNW3455-14	NW3455-14	NW3455-15	0.2	0.5	14	695.64	695.57
LNW345514b	NW3455-14	NW3455-18	0.2	0.055	105.46	696.931	695.873
LNW3455-15	NW3455-15	NW3455-16	0.2	0.39	94.15	695.57	695.2
LNW3455-1	NW3455-1	NW3455-2	0.3	0.25	103.54	694.853	694.597
LNW3455-16	NW3455-16	NW3455-13	0.2	0.5	70.7	695.19	694.84
LNW3455-5	NW3455-5	NW3455-6	0.2	0.13	120.31	694.957	694.803
LNW3455-4	NW3455-4	NW3455-5	0.2	0.49	118.87	695.537	694.957
LNW3455-2	NW3455-3	NW3455-2	0.2	0.3	13	695.587	695.548
LNW3455-3	NW3455-3	NW3455-4	0.2	0.39	12.79	695.587	695.537
LNW3455-12	NW3455-13	NW3455-12	0.25	0.28	106.68	694.389	694.091
LNW345512b	NW3455-12	NW3455-21	0.3	0.26	61.82	693.93	693.77
LNW3455-22	NW3455-22	NW3455-23	0.3	0.11	44.37	693.51	693.46
LNW3455-23	NW3455-23	NW3455-24	0.3	0.52	96.49	693.429	692.929
LNW3455-31	NW3455-31	NW3455-23	0.2	0.03	62.18	696.06	696.04
LNW345531b	NW3455-31	NW3455-32	0.2	0.39	58.9	696.06	695.83
LNW3455-39	NW3455-39	NW3455-33	0.2	0.42	74.03	695.75	695.44
LNW3455-38	NW3455-38	NW3455-35	0.2	0.39	66.24	695.3	695.04
LNW3455-40	NW3455-40	NW3455-41	0.2	0.49	86.25	695.97	695.55
LNW3455-32	NW3455-32	NW3455-33	0.2	0.4	93.25	695.8	695.43
LNW345532b	NW3455-32	NW3455-40	0.2	0.47	69.79	696.3	695.97
LNW3455-33	NW3455-33	NW3455-34	0.2	0.41	89.28	695.43	695.06
LNW3455-34	NW3455-34	NW3455-35	0.2	0.31	19.3	695.06	695
LNW3455-35	NW3455-35	NW3455-6	0.2	0.4	62.79	695	694.75
LNW3455-6	NW3455-6	NW3455-7	0.2	0.253	123.53	694.75	694.437
LNW3455-42	NW3455-42	NW3455-43	0.2	0.41	101.08	694.93	694.52
LNW3455-41	NW3455-41	NW3455-42	0.2	0.4	100.66	695.33	694.93
LNW3455-44	NW3455-44	NW3455-45	0.2	0.4	87.17	695.72	695.37
LNW3455-45	NW3455-45	NW3455-46	0.2	0.41	87.78	695.37	695.01
LNW3455-46	NW3455-46	NW3455-43	0.2	0.4	85.94	694.98	694.64
LNW3455-43	NW3455-43	NW3455-8	0.2	0.38	54.86	694.52	694.31
LNW3455-7	NW3455-7	NW3455-8	0.2	0.5	25.4	694.437	694.31
LNW3455-8	NW3455-8	NW3455-9	0.2	0.32	96.52	694.31	694
LNW3455-11	NW3455-11	NW3455-9	0.2	0.8	79.8	695.24	694.6
LNW3455-9	NW3455-9	NW3455-10	0.2	0.3	23.9	694	693.928
LNW3455-10	NW3455-10	SW0356-4	0.2	0	120.95	693.928	693.7

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LNW3455-47	NW3455-47	NW3455-48	0.45	0.3	91.44	691.752	691.481
LNW3455-48	NW3455-48	NW3455-28	0.525	0.31	117.65	691.481	691.118
LNW3455-28	NW3455-28	NW3455-29	0.525	0.22	125.34	690.935	690.661
LNW3455-29	NW3455-29	NW3455-30	0.525	0.21	116.4	690.661	690.417
LNW3455-30	NW3455-30	NE3455-39	0.6	0.22	121.92	690.356	690.091
LNE3455-1	NE3455-1	NE3455-2	0.2	1.45	79.01	695.894	694.75
LNE3455-2	NE3455-2	NW3455-56	0.2	0.36	92.95	694.709	694.371
LNE3455-3	NE3455-3	NE3455-4	0.2	0.418	79.51	695.45	695.118
LNE3455-4	NE3455-4	NE3455-2	0.2	0.48	82.27	695.118	694.721
LNE3455-5	NE3455-6	NE3455-4	0.2	0.485	75.31	695.483	695.118
LNE3455-6	NE3455-6	NE3455-7	0.2	0.38	79.23	695.477	695.173
LNE3455-7	NE3455-7	NE3455-8	0.2	0.646	72.89	695.138	694.667
LNE3455-8	NE3455-8	NE3455-9	0.2	0.66	71.99	694.654	694.176
LNE3455-9	NE3455-9	NE3455-16	0.2	1.414	84.36	693.295	692.102
LNE3455-22	NE3455-22	NE3455-23	0.375	0.277	74.43	690.723	690.517
LNE3455-23	NE3455-23	NE3455-24	0.45	0.21	73.66	690.509	690.354
LNE3455-25	NE3455-25	NE3455-26	0.45	0.14	103.8	690.234	690.088
LNE3455-24	NE3455-24	NE3455-25	0.45	0.12	100.27	690.354	690.234
LNE3455-10	NE3455-10	NE3455-11	0.2	0.38	51.5	694.158	693.962
LNE3455-11	NE3455-11	NE3455-12	0.2	0.62	71.66	693.914	693.469
LNE3455-12	NE3455-12	NE3455-9	0.2	0.39	29.69	693.465	693.35
779.1	NE3455-16	NE3455-23	0.2	1.584	98.66	692.082	690.519
300 twin	NE3455-16	NE3455-23	0.3	1.339	98.65	694.232	692.911
LNE3455-15	NE3455-15	NE3455-16	0.2	0.797	74.54	692.706	692.112
LNE3455-14	NE3455-14	NE3455-15	0.2	0.43	107.12	693.178	692.712
LNE3455-13	NE3455-13	NE3455-14	0.2	0.35	37.04	693.322	693.191
LNE3455-39	NE3455-39	NE3455-27	0.6	0.19	125.27	690.091	689.85
LNE3455-26	NE3455-26	NE3455-27	0.45	0.27	11.17	690.079	690.049
LNE3455-35	NE3455-35	NE3455-27	0.2	0.4	10	690.291	690.251
LNE3455-27	NE3455-27	NE3455-28	0.75	0.12	128.93	689.707	689.558
LNE3455-28	NE3455-28	NE3455-29	0.75	0.11	129.54	689.558	689.419
LNE3455-29	NE3455-29	NE3455-30	0.75	0.11	129.54	689.412	689.273
LNE3455-30	NE3455-30	NE3455-31	0.75	0.11	130.45	689.265	689.116
LNE3455-38	NE3455-38	NE3455-25	0.2	0.4	121.9	693.31	692.82
LNE3455-36	NE3455-36	NE3455-37	0.2	0.37	43.37	694.069	693.91
LNE3455-37	NE3455-37	NE3455-21	0.2	1.12	97.8	693.889	692.789
LNE345537b	NE3455-37	NE3455-38	0.2	0.5	106.03	693.905	693.374
LNE3455-21	NE3455-21	NE3455-22	0.2	0.45	121.94	692.706	692.155
LNE3455-20	NE3455-20	NE3455-21	0.2	0.33	44.1	692.868	692.722
LNE3455-19	NE3455-19	NE3455-20	0.2	0.39	110.39	693.322	692.89
LNE3455-18	NE3455-18	NE3455-19	0.2	0.46	86.6	693.75	693.355
LNE3455-17	NE3455-17	NE3455-18	0.2	0.45	28.9	693.91	693.78
LNE3455-32	NE3455-32	NE3455-33	0.75	0.245	69.46	688.49	688.32
LSE0356-71	SE0356-71	SE0356-72	0.2	0.62	48.47	693.711	693.412
LSE0356-72	SE0356-72	SE0356-70	0.2	0.46	80.78	692.066	691.698
LSE0356-66	SE0356-66	SE0356-67	0.2	0.257	82.23	692.554	692.343
LSE035666b	SE0356-66	SE0356-72	0.2	0.51	26.03	692.2	692.066
LSE0356-67	SE0356-67	SE0356-68	0.2	0.36	35.54	692.343	692.215
LSE0356-68	SE0356-68	SE0356-69	0.2	0.29	53.08	692.215	692.062
LSE0356-69	SE0356-69	SE0356-70	0.2	0.58	53.14	692.062	691.756
LSE0356-70	SE0356-70	SE0356-74	0.2	0.45	91	691.698	691.293
LSE0356-73	SE0356-73	SE0356-70	0.2	0.75	37.97	693.613	693.33
LSE0356-76	SE0356-76	SE0356-74	0.2	0.58	56.27	693.24	692.913

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LSE0356-75	SE0356-75	SE0356-76	0.2	0.54	36.01	693.435	693.24
LSE0356-1	SE0356-1	SE0356-82	0.2	0.75	62.7	694.315	693.847
LSE0356-2	SE0356-2	SE0356-3	0.2	0.7	35.92	693.425	693.174
LSE0356-3	SE0356-3	SE0356-4	0.45	0.1	27.54	691.022	690.994
LSE0356-4	SE0356-4	SE0356-5	0.45	0.19	63.19	690.994	690.874
LSE0356-5	SE0356-5	SE0356-6	0.45	0.19	62.15	690.874	690.759
LSE0356-6	SE0356-6	SE0356-7	0.45	0.24	73.72	690.759	690.585
LSE0356-7	SE0356-7	SE0356-8	0.525	0.15	87.15	690.546	690.412
LSE0356-65	SE0356-65	SE0356-8	0.2	1.11	62.69	693.704	693.077
LSE0356-8	SE0356-8	SE0356-9	0.525	0.11	120.73	690.412	690.283
LSE0356-59	SE0356-59	SE0356-60	0.2	0.33	97.84	693.062	692.74
LSE035660b	SE0356-60	SE0356-8	0.2	0.75	71.05	692.711	692.179
LSE0356-60	SE0356-61	SE0356-60	0.2	0.36	117.77	693.156	692.731
LSE0356-61	SE0356-61	SE0356-58	0.2	0.65	72.75	693.08	692.61
LSE0356-74	SE0356-74	SE0356-13	0.2	0.92	79.36	691.293	690.566
LSE0356-13	SE0356-13	SE0356-14	0.525	0.12	78.22	690.008	689.918
LSE0356-12	SE0356-12	SE0356-13	0.525	0.06	48.95	690.039	690.008
LSE0356-11	SE0356-11	SE0356-12	0.525	0.12	48.38	690.095	690.039
LSE0356-9	SE0356-9	SE0356-58	0.525	0.13	29.39	690.283	690.244
LSE0356-58	SE0356-58	SE0356-10	0.525	0.09	77.74	690.244	690.174
LSE0356-57	SE0356-57	SE0356-58	0.2	0.8	97.03	693.976	693.199
LSE0356-10	SE0356-10	SE0356-11	0.525	0.1	76.33	690.174	690.095
LSE0356-56	SE0356-56	SE0356-10	0.2	0.42	58.06	690.75	690.509
LSE0356-55	SE0356-55	SE0356-56	0.2	0.51	35.07	692.487	692.307
LSE0356-54	SE0356-54	SE0356-55	0.2	0.51	12.99	692.646	692.58
LSE0356-53	SE0356-53	SE0356-54	0.2	0.42	34.56	692.791	692.646
LSE0356-52	SE0356-52	SE0356-53	0.2	0.48	43.32	692.997	692.791
LSE0356-46	SE0356-46	SE0356-47	0.2	0.6	42.92	693.234	692.975
LSE035646b	SE0356-46	SE0356-52	0.2	0.67	35.01	693.232	692.997
LSE0356-47	SE0356-47	SE0356-48	0.2	0.46	43.7	692.96	692.761
LSE0356-48	SE0356-48	SE0356-49	0.2	0.41	34.69	692.761	692.619
LSE0356-49	SE0356-49	SE0356-50	0.2	0.55	15.19	692.619	692.535
LSE0356-50	SE0356-50	SE0356-51	0.2	0.55	57.24	692.466	692.15
LSE0356-51	SE0356-51	SE0356-30	0.2	0.51	48.74	692.15	691.902
LNE3455-31	NE3455-31	NE3455-32	0.75	2.246	17.14	688.875	688.49
LSE0356-23	SE0356-23	SE0356-24	0.2	0.34	38.97	693.448	693.317
LSE0356-24	SE0356-24	SE0356-22	0.2	0.39	65.52	693.317	693.061
LSE0356-22	SE0356-22	SE0356-17	0.2	0.67	72.63	692.32	691.83
LSE0356-21	SE0356-21	SE0356-22	0.2	0.4	75.76	692.62	692.32
LSE0356-20	SE0356-20	SE0356-21	0.2	0.42	59.94	692.869	692.62
LSE035620b	SE0356-20	SE0356-25	0.2	0.44	73.07	692.869	692.546
LSE0356-25	SE0356-25	SE0356-14	0.2	0.65	66.57	692.546	692.112
LSE0356-14	SE0356-14	SE0356-15	0.525	0.11	82.17	689.918	689.829
LSE0356-26	SE0356-26	SE0356-15	0.2	0.76	55.86	693.592	693.169
LSE0356-15	SE0356-15	SE0356-16	0.525	0.1	67.36	689.829	689.763
LSE0356-16	SE0356-16	SE0356-17	0.525	0.1	109.86	689.743	689.636
LSE0356-33	SE0356-33	SE0356-16	0.2	0.42	65.86	690.341	690.066
LSE0356-17	SE0356-17	SE0356-18	0.525	0.09	65.27	689.636	689.576
LSE0356-18	SE0356-18	SE0356-19	0.525	0.72	39.03	689.576	689.296
LSE0356-19	SE0356-19	NE3455-31	0.525	0.27	41.84	689.221	689.11
LSE0356-44	SE0356-44	SE0356-45	0.2	0.63	67.61	694.232	693.805
LSE0356-45	SE0356-45	SE0356-43	0.2	0.62	59.41	693.805	693.436
LSE0356-39	SE0356-39	SE0356-41	0.2	0.54	54.77	692.399	692.103

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LSE0356-40	SE0356-40	SE0356-39	0.2	0.36	41.79	693.161	693.009
LSE0356-41	SE0356-41	SE0356-42	0.2	0.65	60.53	692.103	691.707
LSE0356-42	SE0356-42	SE0356-43	0.2	0.49	80.23	691.707	691.315
LSE0356-43	SE0356-43	SE0356-32	0.2	0.55	27.45	691.315	691.163
LSE0356-32	SE0356-32	SE0356-33	0.2	0.42	54.19	690.575	690.348
LSE0356-31	SE0356-31	SE0356-32	0.2	0.6	59.25	691.421	691.068
LSE0356-30	SE0356-30	SE0356-31	0.2	0.66	58.34	691.808	691.421
LSE0356-29	SE0356-29	SE0356-28	0.2	0.42	80.97	693.193	692.849
LSE0356-28	SE0356-28	SE0356-30	0.2	1	80.25	692.814	692.011
LSE0356-27	SE0356-27	SE0356-28	0.2	1.05	43.6	693.503	693.046
LSE0356-77	SE0356-77	SE0356-78	0.2	0.76	61.32	693.93	693.464
LSE0356-78	SE0356-78	SE0356-79	0.2	0.79	48.77	693.464	693.077
LSE0356-79	SE0356-79	SE0356-80	0.2	0.38	85.92	693.077	692.747
LSE0356-34	SE0356-34	SE0356-35	0.2	0.49	91.54	693.8	693.35
LSE035634b	SE0356-34	SE0356-79	0.2	0.75	64.24	693.8	693.317
LSE0356-35	SE0356-35	SE0356-39	0.2	0.43	98.29	692.818	692.399
LSE0356-38	SE0356-38	SE0356-35	0.2	0.43	50.71	693.084	692.864
LSE0356-37	SE0356-37	SE0356-38	0.2	0.55	48.06	693.347	693.084
LSE0356-36	SE0356-36	SE0356-37	0.2	0.53	44.61	693.583	693.347
LSE0356-80	SE0356-80	SE0356-81	0.2	0.38	73.35	692.747	692.471
LSE0356-81	SE0356-81	NE3455-35	0.2	0.43	67.99	692.471	692.179
L805	NE3455-40	NE3455-22	0.375	0.18	89.72	690.883	690.723
L806	NE3455-44	NE3455-40	0.375	0.15	10.03	690.929	690.914
L807	NE3455-42	NE3455-41	0.25	0.6	79.01	692.88	692.406
L808	NE3455-41	NE3455-40	0.25	0.6	90	692.394	691.854
L809	NE3455-48	NE3455-17	0.2	0.44	89.38	694.3	693.91
L812	NE3455-47	NE3455-19	0.2	0.53	85.58	693.81	693.36
L811	NE3455-46	NE3455-47	0.2	0.52	85	694.28	693.84
L810	NE3455-45	NE3455-46	0.2	0.48	88	694.73	694.31
BNE3356-60	NE3356-60b	NE3356-60	0.2	0.37	80.14	697.156	696.863
LSW0356-8	SW0356-8	SW0356-9	0.2	3.749	63.32	694.73	692.356
LSW2755-1	SW2755-1	SW2755-2	0.2	0.71	51.01	695.75	695.39
LSW2755-2	SW2755-2	SW2755-3	0.2	0.67	51.01	695.39	695.05
LSW2755-18	SW2755-18	NW2755-LS	0.375	0.27	14.83	691.8	691.76
LSW2755-17	SW2755-17	SW2755-18	0.375	0.251	103.69	692.06	691.8
LSW2755-16	SW2755-16	SW2755-17	0.375	0.242	61.93	692.21	692.06
LSW2755-15	SW2755-15	SW2755-16	0.375	0.26	96.44	692.51	692.26
LSW2755-14	SW2755-14	SW2755-15	0.25	0.414	86.95	693.05	692.69
LSW2755-13	SW2755-13	SW2755-14	0.25	0.429	48.9	693.26	693.05
LSW2755-12	SW2755-12	SW2755-13	0.25	0.399	32.61	693.39	693.26
LSW2755-25	SW2755-26	SW2755-25	0.2	0.62	100.8	694.88	694.26
LSW2755-26	SW2755-27	SW2755-26	0.2	0.8	62.33	695.43	694.93
LSW2755-11	SW2755-11	SW2755-12	0.25	0.28	50.29	693.53	693.39
LSW2755-10	SW2755-10	SW2755-11	0.25	0.28	70.44	693.73	693.53
LSW275525b	SW2755-25	SW2755-9	0.25	0.3	84.3	694.16	693.91
LSW2755-9	SW2755-9	SW2755-10	0.25	0.43	30.27	693.86	693.73
LSW2755-8	SW2755-8	SW2755-9	0.25	0.51	33.2	694.08	693.91
LSW2755-7	SW2755-7	SW2755-8	0.25	0.5	60	694.38	694.08
LSW2755-6	SW2755-6	SW2755-7	0.25	0.28	28.94	694.51	694.43
LSW2755-5	SW2755-5	SW2755-6	0.25	0.29	90.88	694.81	694.55
LSW2755-4	SW2755-4	SW2755-5	0.25	0.28	25.32	694.88	694.81
LSW2755-3	SW2755-3	SW2755-4	0.25	0.28	25.32	695	694.93
LSW2755-22	SW2755-22	SW2755-7	0.2	0.45	92.86	694.9	694.48

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
LSW2755-21	SW2755-21	SW2755-22	0.2	0.4	34.68	695.09	694.95
LSW275519b	SW2755-19	SW2755-23	0.2	0.96	31.32	695.05	694.75
LSW2755-23	SW2755-23	SW2755-24	0.25	1.14	14.85	694.75	694.58
LSW2755-24	SW2755-24	SW2755-25	0.25	0.3	91.12	694.48	694.21
LSW2755-19	SW2755-20	SW2755-19	0.2	0.99	31.32	695.36	695.05
LSW2755-20	SW2755-20	SW2755-21	0.2	0.8	27.48	695.36	695.14
LSE0356-82	SE0356-82	SE0356-2	0.2	0.69	61.5	693.847	693.425
LNE3356-65	NE3356-65	NE3356-32	0.2	0.4	99.99	697.558	697.156
LSE3356-12	SE3356-12	SE3356-1	0.25	0.3	71.82	697.23	697.017
LSW0356-9	SW0356-9	SW0356-6	0.45	0.3	96.23	692.304	692.015
L856	301	379	0.9	0.15	297.48	688.854	688.409
LNE335661b	NE3356-61b	NE3356-61	0.2	0.51	99.05	696.964	696.46
LNW3455-68	NW3455-68a	NW3455-67	0.2	0.49	111.92	695.416	694.871
LNW345568b	NW3455-68b	NW3455-69	0.2	0.4	108.05	695.453	695.02
LSW3455-10	SW3455-10	SW3455-7	0.2	0	66.14	696.943	696.642
LSW0356-4	SW0356-4	SW0356-9	0.45	8.392	15.61	693.675	692.365
FM	Node435	NE3455-34	0.25	0.079	2579.91	697	694.95
Link555	SW0456-7	SW0456-6	0.25	0.3	91.04	697.279	697.006
Link556	SW0456-6	SW0456-1	0.25	0.269	91.04	696.978	696.733
Link557	SE0456-22	SE0456-21	0.25	0.251	36.3	694.966	694.875
Link558	SE0456-21	SE0456-LS	0.25	0.281	81.14	694.828	694.6
Link559	SE0456-24	SE0456-25	0.2	1.106	84.34	696.501	695.568
Link560	SE0456-25	SE0456-23	0.25	0.26	112.52	695.565	695.273
Link561	SE0456-23	SE0456-22	0.25	0.276	85.19	695.236	695.001
Link562	SE0456-29	SE0456-28	0.25	0.295	99.47	696.702	696.409
Link563	SE0456-28	SE0456-27	0.25	0.272	81.85	696.369	696.146
Link564	SE0456-27	SE0456-26	0.25	0.257	120	696.069	695.761
Link565	SE0456-26	SE0456-25	0.25	0.282	24.82	695.673	695.603
Link738	SW0456-8	SE0456-33	0.25	0.28	148.99	698.316	697.899
Link569	SE0456-33	SE0456-32	0.25	0.427	80.51	697.899	697.555
Link570	SE0456-32	SE0456-31	0.25	0.285	74.46	697.52	697.308
Link571	SE0456-31	SE0456-30	0.25	0.279	73.18	697.252	697.048
Link572	SE0456-30	SE0456-29	0.25	0.279	89.83	697.022	696.771
Link573	SW0356-10	SW0356-11	0.2	0.763	64.18	695.73	695.24
Link580	SW0356-11	SW0356-17	0.2	0.43	123.56	695.21	694.679
Link575	SW0356-12	SW0356-13	0.2	0.796	37.7	695.78	695.48
Link576	SW0356-13	SW0356-14	0.2	0.483	58.03	695.45	695.17
Link577	SW0356-14	SW0356-16	0.2	0.491	53	695.13	694.87
Link578	SW0356-16	NW3455-28	0.2	0.505	35.61	694.81	694.63
Link579	SW0356-15	SW0356-14	0.2	0.555	43.24	695.42	695.18
Link581	SW0356-17	SW0356-18	0.2	0.389	12.87	693.8	693.75
Link582	SW0356-18	NW3455-48	0.2	0.4	51.4	693.73	693.524
Link583	SW0356-39	SW0356-42	0.525	0.135	89.17	692.07	691.95
Link584	SW0356-42	SW0356-43	0.525	0.16	43.86	691.89	691.82
Link585	SW0356-43	SW0356-46	0.525	0.147	74.99	691.76	691.65
Link586	SW0356-46	SW0356-47	0.525	0.106	75.72	691.59	691.51
Link587	SW0356-47	NW3455-28	0.525	0.15	93.49	691.45	691.31
Link588	SW0356-44	SW0356-45	0.2	1.76	45.46	696.44	695.64
Link589	SW0356-45	SW0356-46	0.2	0.394	78.66	695.39	695.08
Link590	SW0356-40	SW0356-41	0.2	0.647	40.2	695.55	695.29
Link591	SW0356-41	SW0356-42	0.2	0.385	62.4	695.23	694.99
Link592	SW0356-34	SW0356-36	0.2	0.463	114.39	695.03	694.5
Link593	SW0356-36	SW0356-37	0.2	0.831	108.33	693.54	692.64

Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
Link594	SW0356-37	SW0356-39	0.525	0.129	85.01	692.25	692.14
Link595	SW0356-35	SW0356-36	0.2	2.915	34.31	694.7	693.7
Link596	SW0356-31	SW0356-33	0.2	0.461	82.37	695	694.62
Link597	SW0356-33	SW0356-37	0.2	0.404	113.85	694.56	694.1
Link598	SW0356-32	SW0356-33	0.2	0.385	49.32	694.81	694.62
Link599	SW0356-28	SW0356-29	0.2	0.388	74.71	693.15	692.86
Link600	SW0356-29	SW0356-30	0.525	0.09	77.71	692.54	692.47
Link601	SW0356-30	SW0356-37	0.525	0.1	90.19	692.4	692.31
Link603	SW0356-26	SW0356-27	0.45	0.125	120	693.06	692.91
Link604	SW0356-27	SW0356-29	0.45	0.208	134.43	692.89	692.61
Link605	SW0356-22	SW0356-23	0.2	0.478	117.1	695.43	694.87
Link606	SW0356-23	SW0356-25	0.2	0.404	104	694.8	694.38
Link607	SW0356-25	SW0356-26	0.2	0.66	100.05	694.34	693.68
Link608	SW0356-24	SW0356-25	0.2	0.562	112.2	695.36	694.73
Link609	SW0356-19	SW0356-20	0.05	0.405	79.737	694.797	694.474
Link610	SW0356-20	SW0356-26	0.45	0.119	93.36	693.221	693.11
Link611	SW0356-21	SW0356-20	0.45	0.13	114.947	693.43	693.281
Link612	SW0356-38	SW0356-39	0.2	0.404	76.73	695.41	695.1
Link613	SW0356-48	SW0356-50	0.2	1.069	15.9	695.31	695.14
Link615	SW0356-50	SW0356-51	0.2	0.543	57.1	695.08	694.77
Link614	SW0356-49	SW0356-50	0.2	0.678	75.2	695.66	695.15
Link619	SW0356-51	SW0356-55	0.2	0.4	107.4	694.75	694.32
Link616	SW0356-52	SW0356-53	0.2	0.971	58.7	696.45	695.88
Link617	SW0356-53	SW0356-54	0.2	1.398	77.26	695.83	694.75
Link618	SW0356-54	SW0356-55	0.2	0.393	104.29	694.73	694.32
Link620	SW0356-55	SW0356-58	0.2	0.597	112.2	694.27	693.6
Link621	SW0356-58	SW0356-60	0.45	0.18	104.9	691.48	691.291
Link622	SW0356-60	SE0356-3	0.45	0.26	103.6	691.291	691.022
Link623	SW0356-59	SW0356-60	0.2	0.4	109.9	691.731	691.291
Link624	SW0356-56	SW0356-57	0.375	0.205	92.86	692.18	691.99
Link625	SW0356-57	SW0356-58	0.375	0.322	115.02	691.93	691.56
Link626	SW0356-62	SW0356-63	0.2	0.6	98.11	695.609	695.02
Link634	SW0356-63	SW0356-64	0.2	0.383	104.36	694.16	693.76
Link628	SW0356-61	SW0356-63	0.2	1	46.66	695.487	695.02
Link629	SW0356-65	SW0356-66	0.2	0.536	138.15	695.15	694.41
Link630	SW0356-66	SW0356-68	0.2	0.404	81.68	694.35	694.02
Link631	SW0356-68	SW0356-69	0.2	0	90.59	693.96	693.54
Link632	SW0356-69	SW0356-28	0.2	0.42	71.46	693.54	693.24
Link633	SW0356-67	SW0356-68	0.2	0.623	52.96	695.38	695.05
Link635	SW0356-64	SW0356-28	0.2	0.405	79	693.7	693.38
Link636	SE0356-83	SE0356-84	0.2	0.877	163	695.26	693.83
Link637	SE0356-84	SE0356-79	0.2	0.61	68.8	693.78	693.36
Link638	NE3455-50	NE3455-52	0.375	0.523	74.56	691.75	691.36
Link639	NE3455-52	NE3455-53	0.375	0.226	22.11	691.33	691.28
Link640	NE3455-53	NE3455-55	0.375	0.209	62.16	691.28	691.15
Link641	NE3455-55	NE3455-44	0.375	0.248	77.1	691.12	690.929
Link643	SE3455-23	SE3455-24	0.3	0.523	73.34	692.899	692.515
Link644	SE3455-24	NE3455-49	0.3	0.523	65.37	692.515	692.173
Link645	NE3455-49	NE3455-50	0.375	0.523	80.91	692.173	691.75
Link646	SE3455-11	SE3455-12	0.2	1.515	48.85	694.64	693.9
Link647	SE3455-12	SE3455-13	0.2	0.458	89.31	693.79	693.381
Link648	SE3455-13	SE3455-23	0.2	0.523	92.14	693.381	692.899
Link649	SE3455-9	SE3455-10	0.2	1.726	64.31	696.23	695.12

Table F.2 Wastewater System Physical Data - Pipe Data

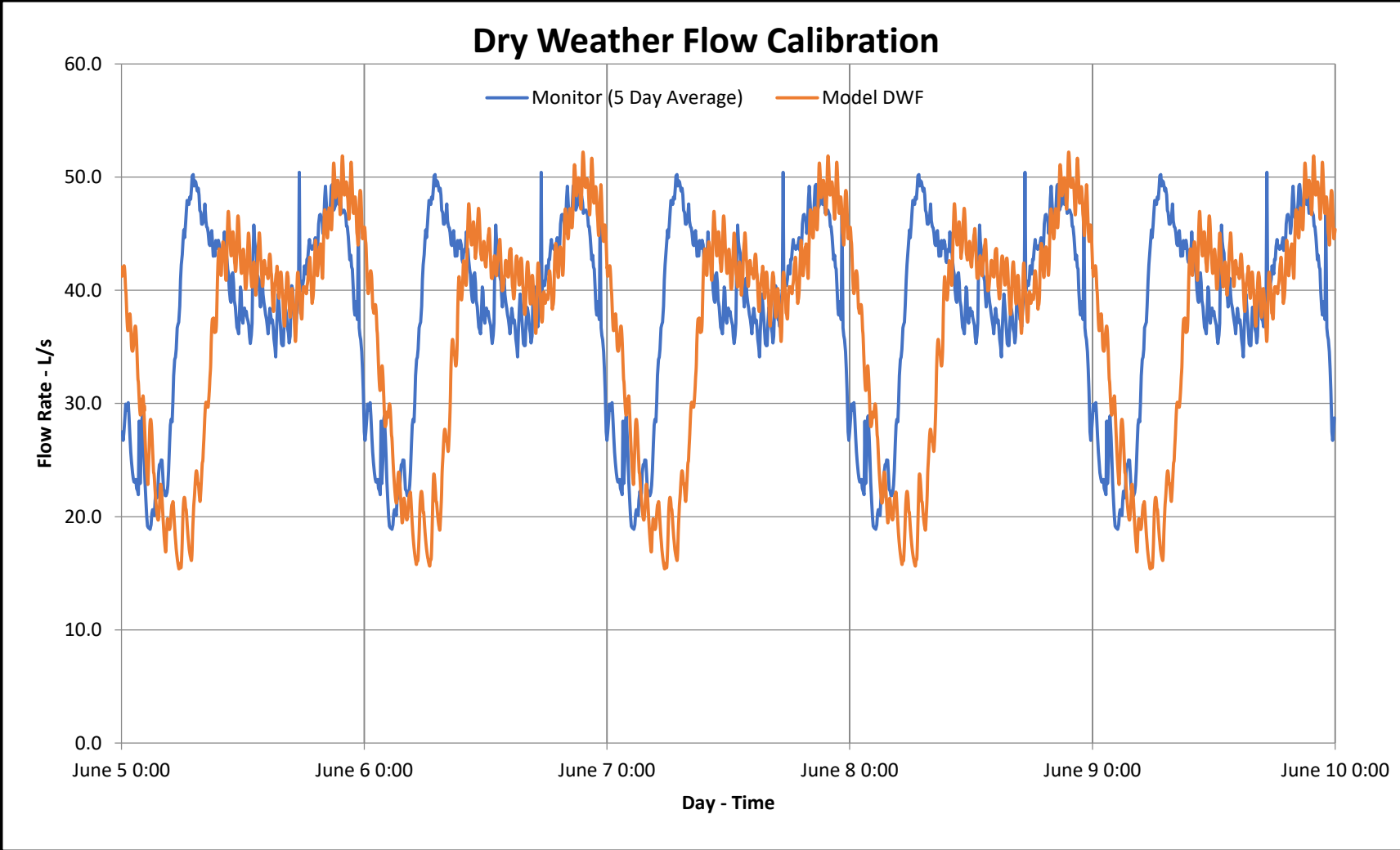
Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
Link669	SE3455-10	SE3455-12	0.2	0.879	101.25	695.06	694.17
Link661	NE3455-51	NE3455-52	0.2	0.619	101.86	694.61	693.98
Link662	NE3455-54	NE3455-55	0.2	0.32	137.562	693.75	693.31
Link663	NE3455-56	NE3455-58	0.2	0.416	50.5	694.08	693.87
Link664	NE3455-58	NE3455-59	0.2	0.356	174.02	693.92	693.2
Link665	NE3455-59	NE3455-42	0.2	0.633	30.03	693.15	692.96
Link667	NE3455-57	NE3455-58	0.2	0.558	73.5	695.23	694.82
Link722	NE3455-60	NE3455-45	0.2	0.429	49	695.01	694.8
Link670	SW2755-28	SW2755-29	0.2	0.4	60.75	694.929	694.686
Link671	SW2755-29	SW2755-30	0.2	0.4	36.38	694.686	694.54
Link672	SW2755-30	SW2755-35	0.2	0.4	116.93	694.54	694.072
Link673	SW2755-35	SW2755-36	0.2	0.4	34.36	694.072	693.935
Link674	SW2755-36	SW2755-10	0.2	0.4	51.25	693.935	693.73
Link675	SW2755-31	SW2755-32	0.2	0.4	74.71	694.926	694.627
Link676	SW2755-32	SW2755-33	0.2	0.4	45.84	694.627	694.444
Link677	SW2755-33	SW2755-34	0.2	0.4	56.38	694.444	694.218
Link678	SW2755-34	SW2755-35	0.2	0.4	36.54	694.218	694.072
Link679	SW2755-37	SW2755-38	0.2	0.664	73.75	694.576	694.086
Link680	SW2755-38	SW2755-39	0.2	1.202	107.34	694.086	692.796
Link681	SW2755-39	SW2755-15	0.375	0.293	97.33	692.796	692.51
Link682	SW2755-40	SW2755-41	0.2	0.994	67.38	695.22	694.55
Link683	SW2755-41	SW2755-43	0.2	0.608	82.17	694.5	694
Link684	SW2755-43	SW2755-44	0.2	0.603	101.2	694	693.39
Link726	SW2755-44	SW2755-47	0.2	2.053	13.15	693.34	693.07
Link686	SW2755-46	SW2755-16	0.25	0.301	76.47	692.76	692.53
Link687	SW2755-42	SW2755-43	0.2	1.064	92.09	695.03	694.05
Link688	SW2755-45	SW2755-46	0.2	3.353	66.213	695.03	692.81
Link742	INTres4.37(Rename to S-90)	S-80	0.45	0.16	57.6	694.15	694.06
Link697	INTres0.94 (Rename to S-40)	SW0356-21	0.45	0.151	89.515	693.62	693.485
Link843	INT11.89 (Rename to MH V)	MH U	0.2	0.75	80.52	696.73	696.71
Link845	INT11.89 (Rename to MH V)	MH C	0.2	0.7	107.37	697.05	696
Link763	NW2755-27	NW2755-13	0.25	0.28	10.001	695.886	695.858
Link727	SW2755-47	SW2755-46	0.25	0.304	69.05	692.97	692.76
Link771	Node696	SW2755-39	0.375	0.15	10.001	692.811	692.796
Link800	Node697	Node717	0.25	0.28	133.38	694.025	693.652
Link778	INTMRC	NE3455-33	0.25	0.4	780	695.2	692.08
Link797	Node716	Cardiff	2	0.2	100.001	688.06	688.04
Link803	Node717	SE3455-13	0.25	0.28	96.72	693.652	693.381
Link807	INT22.15 (Rename to SA07)	SA06	0.3	0.3	84.84	694.513	694.267
Link745.1	SA-12	NE3455-54	0.2	0.4	93.143	694.123	693.75
Link745.2	SA-16	SA-12	0.2	0.4	80.1	694.463	694.14
Link821	SA-19	SA-18	0.2	0.4	42.3	695.006	694.84

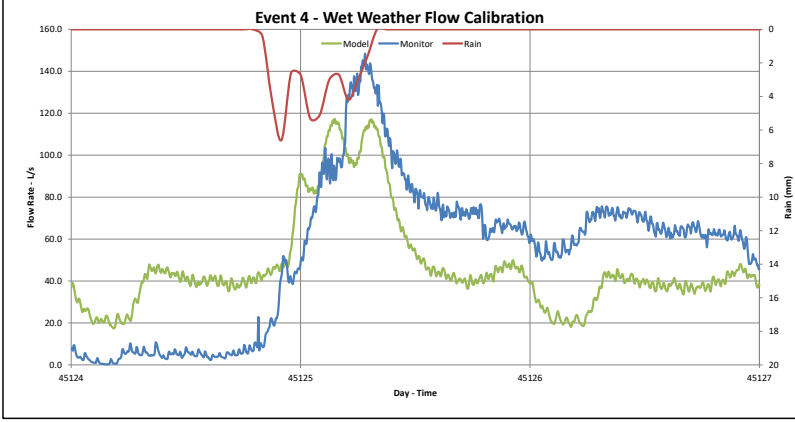
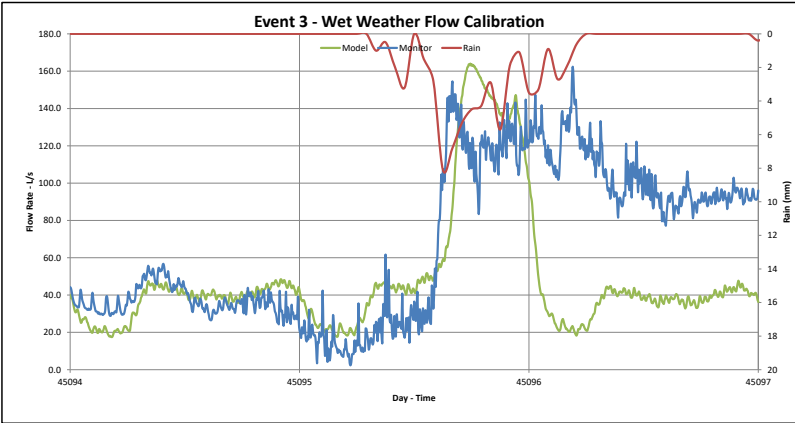
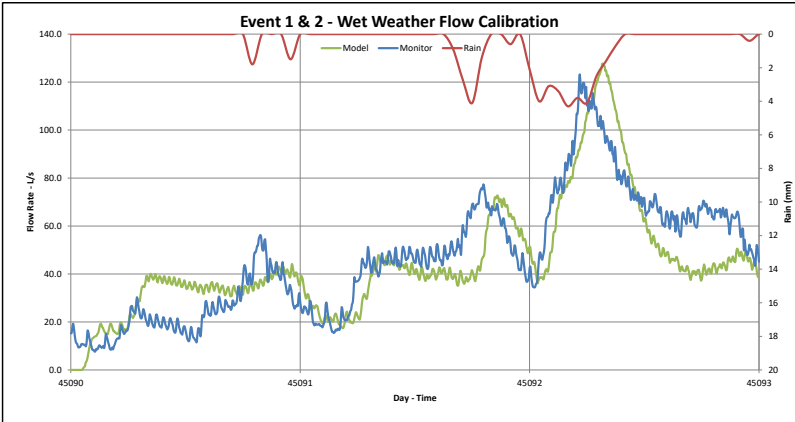
Table F.2 Wastewater System Physical Data - Pipe Data

Name	Upstream Manhole	Downstream Manhole	Diameter (m)	Slope (%)	Length (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)
Link822	SA-18	SA-16	0.2	0.4	83.6	694.817	694.48
Link820	SA-21	SA-16	0.2	0.4	75.8	694.786	694.48
Link823	SA-22	SA-38	0.2	0.4	58.9	695.116	694.88
Link819	SA-23	SA-21	0.2	0.79	55.29	695.28	695.02
Link818	SA-24	SA-23	0.2	0.36	61.63	695.52	695.3
Link816	SA-40	SA-39	0.3	0.31	110.05	692.24	691.9
Link815	SA-41	SA-40	0.2	1.04	61.46	695.01	694.37
Link814	SA-42	SA-41	0.2	1.17	60.71	695.75	695.04
Link817	SA-39	NE3455-49	0.3	0.29	34.62	691.88	691.78
Link824	SA-38	SA-21	0.2	0.4	13.5	694.86	694.81
Link826	S-1	SE3455-2	0.2	0.51	52.81	696.48	696.21
Link825	S-2	S-1	0.2	0.63	34.71	696.72	696.5
Link742.1	S-50	INTres0.94 (Rename to S-40)	0.45	0.17	88.5	693.8	693.649
Link742.2	S-80	S-50	0.45	0.15	112.1	694.03	693.86
Link835	MH A	INTres4.37(Rename to S-90)	0.2	0.98	70.85	695.07	694.37
Link839	MH T	MH S	0.2	0.38	39.81	695.75	695.6
Link840	MH S	MH A	0.2	0.42	107.46	695.59	695.14
Link842	MH G	MH F	0.2	0.43	20.92	696.01	695.92
Link841	MH H	MH G	0.2	0.7	29.92	696.24	696.03
Link844	MH U	MH S	0.2	0.61	76.56	696.1	695.63
Link846	MH U	MH B	0.2	0.47	107.41	696.16	695.66
Link833	MH C	MH B	0.2	0.38	79.91	695.92	695.62
Link834	MH B	MH A	0.2	0.69	76.55	695.61	695.08
Link832	MH D	MH C	0.2	0.4	54.96	696.28	695.94
Link831	MH E	MH D	0.2	0.4	104.31	696.73	696.31
Link837	MH W	MH D	0.2	0.4	77.65	696.65	696.34
Link836	MH X	MH W	0.2	0.61	27.73	696.85	696.68
Link830	MH Y	MH E	0.2	0.51	77.61	697.19	696.79
Link838	MH Y	MH W	0.2	0.4	104.18	697.13	696.71
Link829	MH Z	MH Y	0.2	0.6	30.5	697.34	697.16
Link842.1	MH F	MH A	0.2	1.06	71.62	695.9	695.14
Link851	MH K	MH F	0.2	0.4	62.04	696.39	695.94
Link855	MH M	MH K	0.2	0.4	74.21	696.72	696.42
Link854	MH O	MH M	0.2	0.4	73.62	697.04	696.75
Link853	MH Q	MH O	0.2	0.4	73.62	697.36	697.07
Link856	MH Q	MH E	0.2	0.88	71.62	697.42	696.79
Link852	MH R	MH Q	0.2	0.6	51.29	697.73	697.42
Link857	MH P	MH O	0.2	0.6	51.29	697.41	697.1
Link860	MH N	MH M	0.2	0.6	51.29	697.09	696.78
Link850	MH L	MH K	0.2	0.6	51.29	696.76	696.45
Link848	MH J	MH I	0.2	0.69	30.37	696.47	696.26
Link849	MH I	MH G	0.2	0.51	39.31	696.23	696.03
Link807.1	SA06	SA05	0.3	0.28	99.59	694.242	693.963
Link807.1.1	SA05	SA01	0.3	0.3	24.498	693.906	693.833
Link877	SA05	SA10	0.2	0.51	95.993	696.98	696.493
Link863	SA01	WWPS	0.45	0.15	15	691.122	691.1
Link866	SA02	SA01	0.375	0.36	67.263	691.444	691.204
Link865	SA93	SA02	0.375	0.21	42	691.555	691.467
Link864	SA03	SA93	0.3	0.25	58.37	691.791	691.645
Link867	SA92	SA93	0.3	0.25	107.56	692.214	691.945
Link878	SA10	SA09	0.2	0.41	118.94	696.286	695.797
Link879	SA09	SA08	0.2	0.52	23.621	695.284	695.162
Link880	SA08	INT22.15 (Rename to SA07)	0.2	0.41	94.91	695.109	694.722

Appendix **G**

Wastewater Collection System Model Calibration Hydrograph





Appendix **H**

Wastewater Collection System Cost Estimates

Table H1. Existing Improvement Pipe Cost Estimates

Pipe ID	Upstream Manhole	Downstream Manhole	Upstream Ground Elevation (m)	Downstream Ground Elevation (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)	Slope (%)	Length (m)	Roughness	Diameter (m)	Depth (m)	MH Amount	MH Unit Cost (\$/MH)	MH Tie-in Cost	Replacement Diameter (m)	Unit Price (\$/m)	Cost	Twin Diameter (m)	Unit Price (\$/m)	Cost
LSE0456-8	SE0456-8	SW0356-4	698.64	698.72	693.94	693.68	0.23	116	0.013	0.25	5	6	\$15,000.00	\$90,000.00	0.45	900	\$104,200	0.375	800	\$92,700
LSE0456-7	SE0456-7	SE0456-8	698.68	698.64	694.31	693.94	0.24	154	1.013	0.25	5				0.375	800	\$123,200	0.3	700	\$107,800
LSE0456-6	SE0456-6	SE0456-7	699.59	698.68	694.45	694.31	0.20	69	2.013	0.25	5				0.3	700	\$55,200	0.3	700	\$48,300
LNE3356-49	NE3356-49	SE0456-8	699.06	698.64	695.56	695.08	0.24	206	3.013	0.25	4	5	\$20,000.00	\$100,000.00	0.3	700	\$144,100	0.25	600	\$123,500
LNW3455-27	NW3455-27	NW3455-28	699.15	698.69	691.41	691.09	0.29	112	0.02	0.375	8				0.525	2150	\$240,693	0.375	1750	\$198,913
LNW3455-25	NW3455-25	NW3455-26	699.04	699.50	691.81	691.59	0.19	122	0.02	0.375	8				0.525	2150	\$262,128	0.375	1750	\$213,360
LNW3455-26	NW3455-26	NW3455-27	699.50	699.75	691.59	691.41	0.15	122	0.02	0.375	8				0.525	2150	\$262,128	0.375	1750	\$213,360
LNW3455-24	NW3455-24	NW3455-25	698.38	699.04	691.96	691.81	0.12	122	0.02	0.375	7				0.6	1900	\$231,648	0.375	1750	\$213,360
																Sub-Total	\$1,583,300		Sub-Total	\$1,398,293
																Engineering (10%)	\$158,330		Engineering (10%)	\$139,829
																Contingency (30%)	\$474,990		Contingency (30%)	\$419,488
																Replacement Total	\$2,216,620		Twin Total	\$1,957,610

Table H2. Interim Improvement Pipe Cost Estimates

Pipe ID	Upstream Manhole	Downstream Manhole	Upstream Ground Elevation (m)	Downstream Ground Elevation (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)	Slope (%)	Length (m)	Roughness	Diameter (m)	Depth (m)	MH Amount	MH Unit Cost (\$/MH)	MH Tie-in Cost	Replacement Diameter (m)	Unit Price (\$/m)	Cost	Twin Diameter (m)	Unit Price (\$/m)	Cost			
LNW2755-16	NW2755-16	NW2755-17	698.845	698.653	694.725	694.365	0.4	91	0.015	0.2	4	5	12000	\$60,000	0.3	700	\$63,791	0.25	600	\$64,200			
LNW2755-15	NW2755-15	NW2755-16	698.998	698.945	695.081	694.725	0.39	92	0.015	0.2	4				0.3	700	\$64,106	0.25	600	\$64,900			
LNW2755-14	NW2755-14	NW2755-15	699.242	698.998	695.462	695.088	0.42	90	0.015	0.2	4				0.3	700	\$63,154	0.25	600	\$64,100			
LNW2755-13	NW2755-13	NW2755-14	698.998	699.242	695.858	695.462	0.4	99	0.015	0.2	3				0.3	700	\$69,342	0.25	600	\$69,400			
																Sub-Total	\$308,600		Sub-Total	\$283,100			
																Engineering (10%)	\$30,860		Engineering (10%)	\$28,310			
																Contingency (30%)	\$92,580		Contingency (30%)	\$84,930			
																Replacement Total	\$432,000		Twin Total	\$396,340			

Table H3. Ultimate Improvement Pipe Cost Estimates

Pipe ID	Upstream Manhole	Downstream Manhole	Upstream Ground Elevation (m)	Downstream Ground Elevation (m)	Upstream Invert Elevation (m)	Downstream Invert Elevation (m)	Slope (%)	Length (m)	Roughness	Diameter (m)	Depth (m)	MH Amount	MH Unit Cost (\$/MH)	MH Tie-in Cost	Replacement Diameter (m)	Unit Price (\$/m)	Cost	Twin Diameter (m)	Unit Price (\$/m)	Cost
LNW2755-18	NW2755-18	NW2755-12	698.632	698.754	693.45	693.045	0.33	124	0.015	0.25	5	3	15000	\$ 45,000	0.3	700	\$86,681	0.2	500	\$61,915
LNW2755-17	NW2755-17	NW2755-18	698.663	698.632	693.791	693.45	0.28	124	0.015	0.25	5				0.3	700	\$86,625	0.2	500	\$61,875
																Sub-Total	\$203,400		Sub-Total	\$168,790
																Engineering (10%)	\$20,340		Engineering (10%)	\$16,879
																Contingency (30%)	\$61,020		Contingency (30%)	\$50,637
																Replacement Total	\$284,800		Twin Total	\$236,300

Table H4. Ultimate Improvement Lift Station Cost Estimates

Lift Station	Existing Capacity (L/s)	Improved Capacity (L/s)	Pump Cost	Genset Cost	Generator Building	Electrical Cost	Total Cost	
Business Park Lift Station	37.5	70	\$884,000	\$195,000	\$130,000	\$26,000	\$1,235,000	
							Sub-Total	\$1,235,000
							Engineering (10%)	\$123,500
							Contingency (30%)	\$370,500
							Total	\$1,729,000

Table H5. Ultimate Improvement Lift Station Forcemain Cost Estimates

Forcemain	Length (m)	Depth (m)	Replacement Diameter (mm)	Replacement Unit Cost	Replacement Cost	Twin Diameter (mm)	Twin Unit Cost	Twin Cost	
Business Park Forcemain	1010	4	350		\$787,800	250	705	\$712,100	
Combined Forcemain	2450	4	400	880	\$2,156,000	300	780	\$1,911,000	
Combined Forcemain Railway Crossing	40	4	400	3150	\$126,000	300	3000	\$120,000	
				Sub-Total	\$3,069,800			Sub-Total	\$2,743,100
				Engineering (10%)	\$306,980			Engineering (10%)	\$274,310
				Contingency (30%)	\$920,940			Contingency (30%)	\$822,930
				Replacement Total	\$4,297,700			Twin Total	\$3,840,300

Appendix I

Stormwater Cost Estimates

Table B.1: SWMF 3 Cost Estimate(Servicing Concept Option 1 @ 2.5 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 30,000	\$ 30,000
2.	Topsoil Stripping	m ²	13,000	\$ 5	\$ 65,000
3.	Excavation, Grading and Subgrade Preparation	m ³	35,000	\$ 20	\$ 700,000
4.	Landscaping	m ²	25,000	\$ 30	\$ 750,000
5.	Pump Station	L.S.	1	\$ 425,000	\$ 425,000
6.	200 mm Diameter Forcemain	m	500	\$ 300	\$ 150,000
Subtotal					\$ 2,120,000
Engineering (10%)					\$ 212,000
Contingency (30%)					\$ 636,000
Total					\$ 2,968,000

Table B.2: SWMF 4 Cost Estimate (Individual PS @ 2.5 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 20,000	\$ 20,000
2.	Topsoil Stripping	m ²	9,000	\$ 5	\$ 45,000
3.	Excavation, Grading and Subgrade Preparation	m ³	21,000	\$ 20	\$ 420,000
4.	Landscaping	m ²	22,000	\$ 30	\$ 660,000
5.	Pump Station	L.S.	1	\$ 425,000	\$ 425,000
6.	250 mm Diameter Forcemain	m	100	\$ 400	\$ 40,000
Subtotal					\$ 1,610,000
Engineering (10%)					\$ 161,000
Contingency (30%)					\$ 483,000
Total					\$ 2,254,000

Table B.3: SWMF 5 Cost Estimate (individual PS @ 2.5 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 50,000	\$ 50,000
2.	Topsoil Stripping	m ²	27,000	\$ 5	\$ 135,000
3.	Excavation, Grading and Subgrade Preparation	m ³	88,000	\$ 20	\$ 1,760,000
4.	Landscaping	m ²	33,000	\$ 30	\$ 990,000
5.	Pump Station	L.S.	1	\$ 500,000	\$ 500,000
6.	400 mm Diameter Forcemain	m	500	\$ 600	\$ 300,000
Subtotal					\$ 3,735,000
Engineering (10%)					\$ 373,500
Contingency (30%)					\$ 1,120,500
Total					\$ 5,229,000

Table B.4: SWMF 7 Cost Estimate (Individual Pump Station @ 2.5 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 50,000	\$ 50,000
2.	Topsoil Stripping	m ²	33,000	\$ 5	\$ 165,000
3.	Excavation, Grading and Subgrade Preparation	m ³	85,000	\$ 20	\$ 1,700,000
4.	Landscaping	m ²	103,000	\$ 30	\$ 3,090,000
5.	Pump Station	L.S.	1	\$ 500,000	\$ 500,000
6.	150 mm Diameter Forcemain	m	200	\$ 300	\$ 60,000
				Subtotal	\$ 5,565,000
				Engineering (10%)	\$ 556,500
				Contingency (30%)	\$ 1,669,500
				Total	\$ 7,791,000

Table B.5: SWMF 9B Cost Estimate (Individual Pump Station @ 2.5 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 20,000	\$ 20,000
2.	Topsoil Stripping	m ²	5,000	\$ 5	\$ 25,000
3.	Excavation, Grading and Subgrade Preparation	m ³	8,000	\$ 20	\$ 160,000
4.	Landscaping	m ²	17,000	\$ 30	\$ 510,000
5.	Pump Station	L.S.	1	\$ 425,000	\$ 425,000
6.	200 mm Diameter Forcemain	m	200	\$ 300	\$ 60,000
				Subtotal	\$ 1,200,000
				Engineering (10%)	\$ 120,000
				Contingency (30%)	\$ 360,000
				Total	\$ 1,680,000

Table B.6: SWMF 6 Cost Estimate (1.65 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 30,000	\$ 30,000
2.	Topsoil Stripping	m ²	11,000	\$ 5	\$ 55,000
3.	Excavation, Grading and Subgrade Preparation	m ³	27,000	\$ 20	\$ 540,000
4.	Landscaping	m ²	23,000	\$ 30	\$ 690,000
5.	Control Structure	L.S.	1	\$ 20,000	\$ 20,000
6.	375 mm Diameter Storm Sewer	m	500	\$ 600	\$ 300,000
Subtotal					\$ 1,635,000
Engineering (10%)					\$ 163,500
Contingency (30%)					\$ 490,500
Total					\$ 2,289,000

Table B.7: SWMF D Cost Estimate (1.65 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 30,000	\$ 30,000
2.	Topsoil Stripping	m ²	33,000	\$ 5	\$ 165,000
3.	Excavation, Grading and Subgrade Preparation	m ³	115,000	\$ 20	\$ 2,300,000
4.	Landscaping	m ²	36,000	\$ 30	\$ 1,080,000
5.	Control Structure	L.S.	1	\$ 20,000	\$ 20,000
6.	375 mm Diameter Storm Sewer	m	500	\$ 600	\$ 300,000
Subtotal					\$ 3,895,000
Engineering (10%)					\$ 389,500
Contingency (30%)					\$ 1,168,500
Total					\$ 5,453,000

Table B.8: SWMF Q1 Cost Estimate (1.65 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 30,000	\$ 30,000
2.	Topsoil Stripping	m ²	22,000	\$ 5	\$ 110,000
3.	Excavation, Grading and Subgrade Preparation	m ³	71,000	\$ 20	\$ 1,420,000
4.	Landscaping	m ²	31,000	\$ 30	\$ 930,000
5.	Control Structure	L.S.	1	\$ 20,000	\$ 20,000
6.	375 mm Diameter Storm Sewer	m	500	\$ 600	\$ 300,000
Subtotal					\$ 2,810,000
Engineering (10%)					\$ 281,000
Contingency (30%)					\$ 843,000
Total					\$ 3,934,000

Table B.9: SWMF Q2 Cost Estimate (1.65 L/s/ha)

Item	Description	Unit	Approx. Qty.	Unit Price	Amount
1.	Mobilization and Demobilization	L.S.	1	\$ 30,000	\$ 30,000
2.	Topsoil Stripping	m ²	34,000	\$ 5	\$ 170,000
3.	Excavation, Grading and Subgrade Preparation	m ³	117,000	\$ 20	\$ 2,340,000
4.	Landscaping	m ²	36,000	\$ 30	\$ 1,080,000
5.	Control Structure	L.S.	1	\$ 20,000	\$ 20,000
6.	375 mm Diameter Storm Sewer	m	500	\$ 600	\$ 300,000
Subtotal					\$ 3,940,000
Engineering (10%)					\$ 394,000
Contingency (30%)					\$ 1,182,000
Total					\$ 5,516,000

Appendix **J**

Municipal Design Standards Comparison

Table 2: Water Municipal Design Standards Comparison

Reference	IFCOB	Marquette	Parkland County	Regina	Camrose	Service Grove	Cold Lake	Yellowhead County	Estevan	Strathcona County	Leduc	Fort Saskatchewan	Devon	Camrose	Legal	Jasper	Edmonton	
Residential Design Rates	Design and Construction Standards Volume 4	Marquette Municipal Design Standards 2010 Final	Parkland County Engineering Design Standards, June 2012	Town of Swift Engineering Standards	Town of Camrose Engineering Design and Construction Guidelines, June 2010	City of Service Grove Municipal Engineering Service Standards, 2016	City of Cold Lake Municipal Engineering Service Standards, 2016	Yellowhead County Design Guidelines and Construction Standards, 2007	Estevan General Design Standards	Strathcona County Design and Construction Standards, June 2012	The City of Leduc Engineering Design Standards, May 2011	City of Fort Saskatchewan Engineering and Service Standards, November 2011	Town of Devron Design Standards	City of Camrose Development Standards	Town of Legal Minimum Design Standards, 2016			Schedule 4 of Bylaw 7900 City of Edmonton Design Standards
Domestic Sewerage	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Commercial	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Industrial	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
High Value Properties	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Fire Flow Requirements																		
Single Family Residential	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Multi-Family Residential	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Commercial	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Industrial	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
High Value Properties	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Residual Pressure																		
Domestic Sewerage	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Commercial	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Industrial	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
High Value Properties	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Fire Hydrants																		
Residential	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Commercial	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Industrial	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
High Value Properties	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Fire Requirements																		
Single Family Residential	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Multi-Family Residential	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Commercial	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Industrial	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
High Value Properties	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Velocity																		
Maximum (FPS)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum (FPS)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Comments							Max Day 7 The Flow/Press Hour	Min Day 7 One Flow/Press Hour Flow					Max Day 7 The Flow/Press Hour					20% for pump supply, maximum and flow factor 20% for distribution lines or PWD with 4500000

