SILVER LAKE WATER & SEWER DISTRICT
Comprehensive Water System Plan

Silver Lake Water & Sewer District

G&O #16447
April 2017
Final Revision December 2017

Gray & Osborne, Inc.

SILVER LAKE WATER & SEWER DISTRICT

SNOHOMISH COUNTY **WASHINGTON**

Silver Lake Water & Sewer District

COMPREHENSIVE WATER SYSTEM PLAN

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2/13/2018

G&O #16447
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Gray & Osborne, Inc.
CONSULTING ENGINEERS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

CHAPTER 1 – INTRODUCTION

CHAPTER 2 – BASIC PLANNING DATA

CHAPTER 3 – WATER QUALITY

CHAPTER 4 – SYSTEM ANALYSIS

CHAPTER 5 – HYDRAULIC MODELING

CHAPTER 6 – OPERATION AND MAINTENANCE PROGRAM

CHAPTER 7 – WATER USE EFFICIENCY PROGRAM

CHAPTER 8 – CAPITAL IMPROVEMENT PLAN

CHAPTER 9 – FINANCIAL PROGRAM

LIST OF TABLES

LIST OF FIGURES

APPENDICES

EXECUTIVE SUMMARY

The Silver Lake Water & Sewer District Comprehensive Water System Plan (Plan) provides a long-term planning strategy for the District's water utility over the 6-, 10- and 20-year planning periods. The Plan has been prepared consistent with Department of Health requirements as specified in the Washington Administrative Code (WAC) Chapter 246-290. The Plan represents a commitment by the District to pursue and implement the Plan's recommendations and capital improvements.

PLAN SUMMARY

Chapters 1 and 2 of the Plan provide background data, including a description of existing facilities, service area, service area policies, and projections of population and water use through 2036. Chapter 3 presents existing and future water quality standards, and summarizes the District's water quality testing results. Chapter 4 provides a summary of the District's design standards and provides an analysis of the District's source of supply, storage, and booster stations. Chapter 5 describes the District's hydraulic model and provides an analysis of the distribution system to identify distribution system improvements. Chapter 6 presents a brief summary of the District's operation and maintenance program. Chapter 7 describes the District's water use efficiency program. Chapter 8 presents the planned capital improvements, and Chapter 9 presents financing for the planned improvements. The nine chapters of this report are followed by appendices that contain supplemental documentation.

STUDY AREA

The study area for this plan covers approximately 8,356 acres, of which approximately 7,952 acres are within the current District boundary. The District has identified an area that is currently unclaimed by any water district and outside of any UGA. The District would be the logical service provider for this area if it is incorporated into a UGA at a future date. Population and water demand projections for this area have been included to identify any capital improvements required to serve this area.

POPULATION AND WATER USE PROJECTIONS

The District's water service population for 2016 is approximately 54,194 people served by approximately 17,936 connections. Based on population growth rates established by the Puget Sound Regional Council, the District's water service population is expected to grow to approximately 62,471 people by 2036.

Table E-1 presents the projected population and water use for the District for the 20-year planning period.

TABLE E-1

Population and Water Use Projections

Year	Projected Connections	Projected Population[1]	Demand Projections Average Day[2] (mgd)	Peak Day[3] (mgd)	Peak Hour[4] (gpm)
2016	17,936	54,194	4.88	10.24	11,523
2017	18,208	55,016	4.95	10.40	11,698
2018	18,484	55,850	5.03	10.56	11,875
2019	18,765	56,698	5.10	10.72	12,055
2020	19,049	57,557	5.18	10.88	12,238
2021	19,338	58,430	5.26	11.04	12,424
2022	19,632	59,317	5.34	11.21	12,612
2023	19,929	60,216	5.42	11.38	12,804
2024	20,232	61,130	5.50	11.55	12,998
2025	20,271	61,248	5.51	11.58	13,023
2026	20,310	61,367	5.52	11.60	13,048
2036	20,676	62,471	5.62	11.81	13,283
Buildout[5]	24,011	72,548	6.53	13.71	15,426

(1) Includes Study Area 1.
(2) Based on 90 gallons per capita per day.
(3) Based on a peak day factor of 2.1.
(4) Based on a peak hour factor of 1.62.
(5) Based on District holding capacity from Table 2-5.

SYSTEM ANALYSIS

SOURCE

The District's sources of supply are direct purchase of water from the City of Everett, or indirect purchase of water from Everett through the Clearview Water Supply Agency (CWSA) and Alderwood Water and Wastewater District (AWWD). The City of Everett has sufficient water rights and treatment capacity to meet all of its customers' demands, including wholesale customers like the District, beyond the 20-year planning period. By agreement, the District has supply of up to 9 mgd through the CWSA source and 5 mgd from AWWD.

STORAGE

The District owns and operates three storage reservoirs with a total nominal capacity of 16.4 million gallons (MG). The District's current reservoir capacity is projected to be deficient starting in 2018. Reservoir 3 is located within the City of Everett UGA and transfer of service areas to the City of Everett will not negatively impact the District's storage surplus or deficit.

DISTRIBUTION SYSTEM

The District's distribution and transmission system includes approximately 173 miles of water mains in sizes that range from 4 inches up to 16 inches. In the Plan, the distribution system was analyzed using MWHSoft's H_2ONet hydraulic modeling software. The results from the model indicated transmission and distribution system issues that will need to be addressed. The hydraulic model also identified a number of deficiencies in fire flow availability due to undersized water mains. Projects have been identified in the District's Capital Improvement Plan to resolve these issues.

CAPITAL IMPROVEMENT PLAN

The Plan contains a list of projects for the District's capital improvement plan for the 6-, 10-, and 20-year planning horizons. The District may reprioritize projects in the future to accommodate other agencies and unforeseen events. Table E-2 summarizes the District's annual capital improvement costs for the 10-year planning horizon.

TABLE E-2

Capital Improvement Plan Summary

Year	Annual Capital Improvement Cost
2017	$6,803,500
2018	$2,983,000
2019	$2,373,000
2020	$3,352,000
2021	$6,921,000
2022	$1,331,000
2023	$1,090,000
2024	$1,090,000
2025	$1,090,000
2026	$1,901,000

FINANCIAL

The District plans to regularly evaluate its rates to fund the proposed capital improvement plan, general administration, operation, and maintenance through a combination of rates, system development charges, and loans.

CHAPTER 1

INTRODUCTION

This *Comprehensive Water System Plan* (Plan) for the Silver Lake Water & Sewer District (District) is an update of the *Silver Lake Water & Sewer District Water System Comprehensive Plan* (2010). The Plan is prepared in accordance with the Washington State Department of Health (DOH) WAC 246-290-100.

WATER SYSTEM OWNERSHIP AND MANAGEMENT

The Silver Lake Water & Sewer District is located in southwest Snohomish County. Figure 1-1 provides a regional vicinity map of the District. The District is governed by a three-member Board of Commissioners which is elected to 6-year terms. The current commissioners are Bill Anderson, Anne Backstrom, and Rod Keppler. The General Manager of the District is Patrick Curran. The District's water system identification number is 79250B. A copy of the Water Facilities Inventory form is included in Appendix A. The District office is located at 15205 41st Avenue SE in Bothell, Washington 98012-6114.

PURPOSE

The purpose of this Plan is to update the District's *2010 Water System Comprehensive Plan*. DOH regulations require water system plans be updated every 6 to 10 years, or more frequently if necessary, to reflect the current conditions of the water system. The Plan will meet the provisions of WAC 246-290-100, the *DOH Water System Design Manual* (DOH Design Manual) dated December 2009, and the *DOH Water System Planning Handbook* dated April 1997.

SCOPE

The Plan is organized into the following chapters:

- Chapter 1, **Introduction**, provides background information including system history, adjacent purveyors, inventory of existing facilities, service area agreements, interlocal agreements, and related planning documents.

- Chapter 2, **Basic Planning Data**, includes existing population and future population projections; number of service area connections; and water use data including production, consumption, lost and unaccounted for water, peaking factors, and equivalent residential units. Service area characteristics, service area policies and conditions of service, existing and projected land use, and water demand forecasts are also included.

- Chapter 3, **Water Quality**, includes existing drinking water quality standards, water quality monitoring schedule, and water quality analysis procedures to detect and identify deficiencies in water quality.

- Chapter 4, **System Analysis**, consists of system design standards, general facility standards, and an analysis of the District's source of supply, storage, and pumping capacity. The analysis identifies system deficiencies.

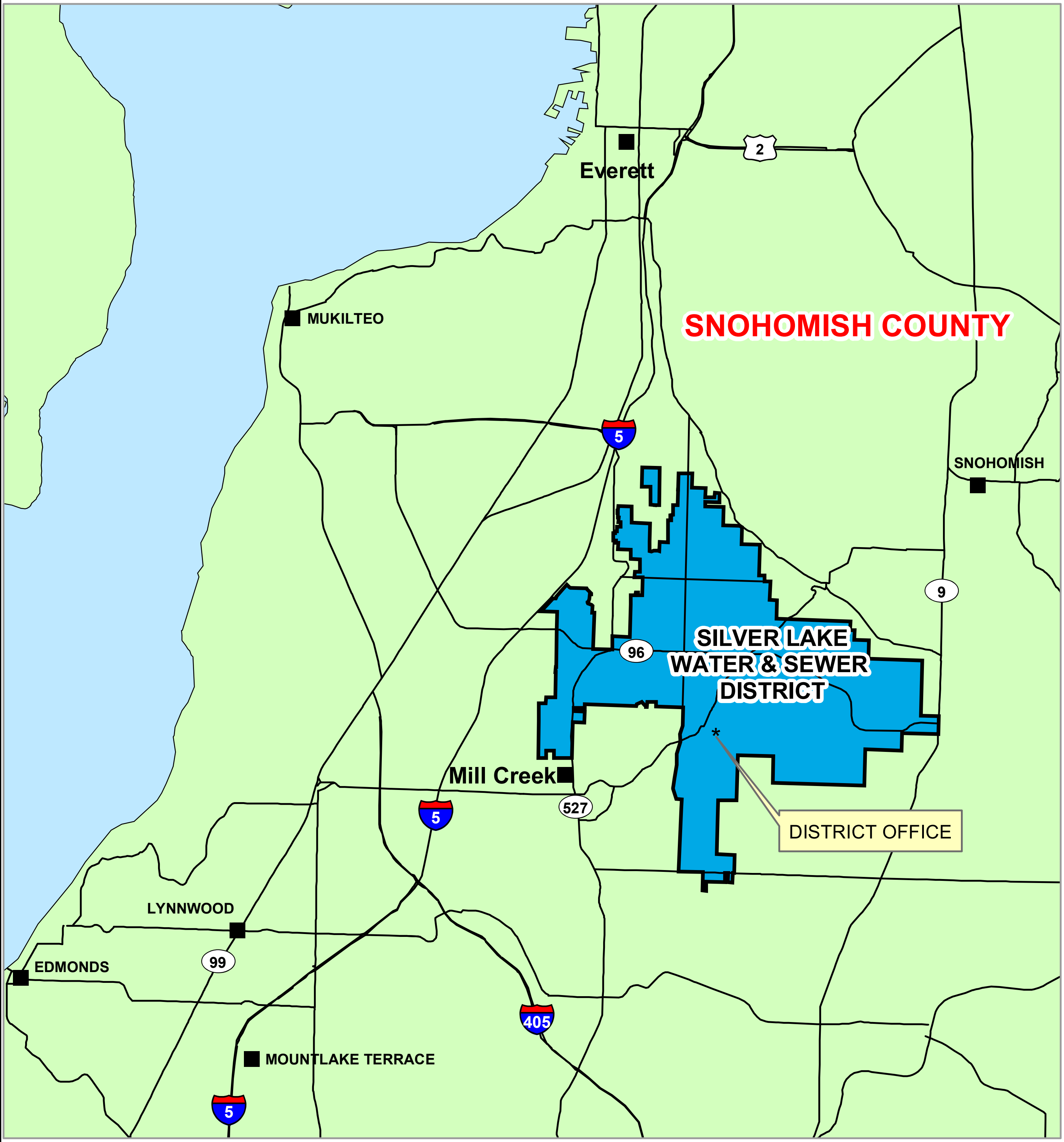
- Chapter 5, **Hydraulic Analysis**, discusses the hydraulic modeling program, model development, system demands, model calibration, and distribution system analyses that include peak hour and available fire flow simulations. Specific hydraulic deficiencies are identified in this chapter.

- Chapter 6, **Operations and Maintenance Program**, reviews the District's water system management, personnel, operator certification, routine operating procedures, preventative maintenance, record keeping, and water quality sampling procedures. It also discusses the District's coliform monitoring plan, emergency response program, safety procedures, cross-connection control program, and service reliability.

- Chapter 7, **Water Use Efficiency Program**, includes water use data collection, program development and implementation, recommended measures and level of implementation, regional conservation programs, reclaimed water opportunities, and the District's water use efficiency program, as well as compliance with the Municipal Water Law.

- Chapter 8, **Capital Improvement Plan (CIP)**, identifies improvements required to correct deficiencies identified in previous chapters and provides an implementation schedule for the 6-, 10-, and 20-year planning periods.

- Chapter 9, **Financial Program**, analyzes past income and expenses, the balanced 1-year operating budget, and revenue and cash flow to fund the CIP. In addition, it assesses the rate structure to consider affordability of rates and water conservation.



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 1-1
LOCATION MAP

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BACKGROUND INFORMATION

HISTORY OF WATER SYSTEM DEVELOPMENT

The District was incorporated in 1935 for the purpose of providing an adequate and safe water supply for the community and for fire protection. The first water system was installed in 1937. Financing for the water system was provided by a combination of general obligation and Local Improvement District bonds based on special assessments. Subsequent system extensions were financed by Utility Local Improvement Districts (ULIDs), with the last two ULIDs in 1964 and 1968. Reservoir 1, a 1.5 million gallon (MG) steel standpipe, was constructed in 1965. In 1981, the Fircrest Sewer District merged into the Silver Lake Water District, as Fircrest had been providing wastewater collection for much of the same area as the District. Reservoirs 2 and 3 have a capacity of 4.2 MG each, and were constructed in 1987 and 1989, respectively.

In 1997, the District joined with the Alderwood Water & Wastewater District and the Cross Valley Water District to form the Clearview Water Supply Agency in order to cooperatively develop regional transmission capacity. The Clearview facilities include a 12 MG reservoir; a 33.5 million gallons per day (mgd) booster station; and 39-inch and 42-inch transmission mains from the City of Everett's Pipeline No. 5 to the reservoir site. These facilities provide the District with up to 9.0 mgd of supply and a 2.4 MG share of water storage capacity in the Clearview Reservoir.

The District completed a new headquarters and maintenance facility in 2006.

In 2008, the District constructed Reservoir 4, replacing Reservoir 1 with a new 8.0 MG steel reservoir increasing the total reservoir capacity in the District to 16.4 MG.

In 2013, the District constructed a new intertie to the Clearview Water Supply Agency through Master Meter 9 at the site of Reservoir 2.

In 2015, the District constructed a new intertie to the Alderwood Water & Wastewater District system through Master Meter 10.

From its establishment, the District has obtained all of its drinking water from the City of Everett supply system. The City of Everett provides the District with a treated drinking water source, while the District owns and maintains the storage, transmission, and distribution system within its service area.

PROJECTS COMPLETED SINCE THE 2010 WATER SYSTEM PLAN

The projects completed or currently underway since the 2010 Plan are listed in Table 1-1.

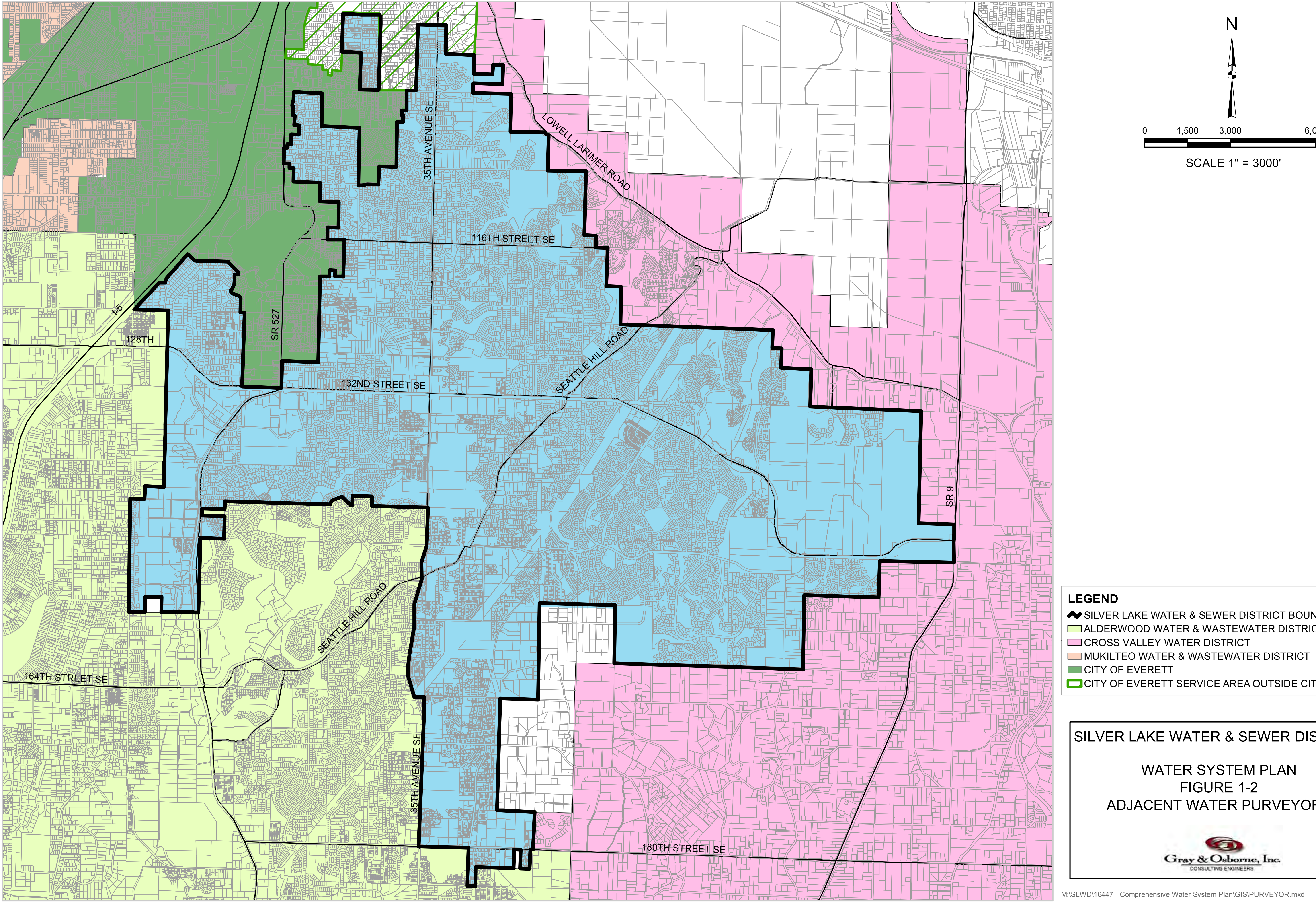
TABLE 1-1

Completed Water System Projects Since 2010

Storage Improvements	Date Completed
Reservoir 3 Exterior Painting	2011
Reservoir 2 Interior and Exterior Painting	2014
Reservoir 2 Access Improvements and Water Quality Analyzer	2014
Transmission Improvements	**Date Completed**
Source and Distribution Improvements	**Date Completed**
Silver Acres Water Main (8-Inch)	2010
Clearview Intertie, Master Meter 9	2013
Silver Acres Water Main – Phase II	2015
AWWD Intertie, Master Meter 10	2015
Seattle Hill Road 12-Inch Water Main	2016
Booster Station Improvements	**Date Completed**
Reservoir 3 Booster Station VFDs	2013
Reservoir 2 Booster Station Improvements (Control Panel, Generator Enclosure, Fuel Tank, Emergency Pump Port)	2013
Operation and Maintenance Improvements	**Date Completed**
Developer Standards Update	2014
Emergency Response Plan	2014
Decant Facility	2014
Developer Standards Update	2014
Operations Manual	2016
General Improvements	**Date Completed**
Reservoir 2 Site Improvements	2013
Water System GIS	Ongoing
Reservoir 3 Water Quality Analyzer	2015

ADJACENT PURVEYORS

The water service area boundary for the District is bordered by the City of Everett (Everett), Cross Valley Water District (CVWD), and Alderwood Water & Wastewater District (AWWD). With the exception of CVWD, which supplements its well sources with water from Everett, the adjacent purveyors are served solely by the Everett water supply system, either directly from Everett's system or indirectly through the Clearview facilities. The service areas of adjacent purveyors are illustrated on Figure 1-2.



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 1-2
ADJACENT WATER PURVEYORS

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WATER SYSTEM RESOLUTIONS

Since the last approved Plan, the District has adopted by resolution the following documents that affect water service and design standards. Copies of District resolutions are included in Appendix B.

INVENTORY OF EXISTING FACILITIES

SOURCE OF SUPPLY

The District historically received all of its water on the west side of the service area from the City of Everett by means of Master Meters 1, 2, and 3. In 2005, the District began receiving supply through the Clearview Water Supply Agency (CWSA) facilities on the southeast side of the District. The District connects to the CWSA facilities through Master Meters 4, 5, 7, and 9. Master Meter 2 is currently not equipped. Since 2015, the District receives water from AWWD through Master Meter 10 and Master Meter 8 is installed and converted to an emergency connection.

The City of Everett's water source is the Sultan River waterworks complex, located approximately 20 miles east of the City. The City of Everett waterworks complex includes the Spada Lake Reservoir, the Chaplain Reservoir, and the Everett Filtration Plant and four major transmission mains (Pipelines 2, 3, 4 and 5). A diagram of the City of Everett regional water supply facilities is provided on Figure 1-3.

The Chaplain Reservoir was formed in 1929 by the construction of an earth-fill dam. The elevation of the dam was raised in 1942. The current storage capacity of the Chaplain Reservoir is 4.5 billion gallons.

The Spada Lake Reservoir is located upstream from the Chaplain Reservoir and was formed by construction of the George Culmback Dam. The Culmback Dam was a joint project between the City of Everett and Snohomish County Public Utility District (PUD) No. 1. The dam was designed to supply both a source of drinking water and hydroelectric power. Construction on the project occurred in several stages, with the first stage beginning in the 1960s and the final stage completed in 1984. The current storage capacity of Spada Lake Reservoir is 50 billion gallons.

Water from Spada Lake Reservoir is supplied to the PUD powerhouse. Water is then transferred to Chaplain Reservoir by a pipeline from the PUD powerhouse. A diversion tunnel (Diversion Tunnel 1) is currently used as a backup supply and to return water to the Sultan River to maintain instream flows. This tunnel was previously used to transfer water to Lake Chaplain directly from the Sultan River.

City of Everett Connections

The District receives all of its Everett water supply via the City's High Service Pressure Zone (715 Zone) and 660 Zone. The 715 Zone operates at a nominal 715-foot hydraulic grade line (HGL) and is supplied by Everett's Casino Road Elevated Tank. The Elevated Tank, which has an overflow elevation of 747 feet (NAVD 88), replaced the Casino Road Standpipe, which previously supplied the High Zone. The Elevated Tank is equipped with a pressure reducing valve (PRV) which maintains the hydraulic grade of 715 feet for the zone. Water from this zone can enter the SLWSD through a PRV that provides nominal 640 HGL water. These facilities, along with the rest of the Everett water supply system, are shown on Figure 1-3.

Supply from Everett to the District's 640 Zone was historically delivered through three master meters. All of the facilities upstream of the District's master meters are owned and operated by the City of Everett. The master meters, located in the northwest portion of the District, are described as follows:

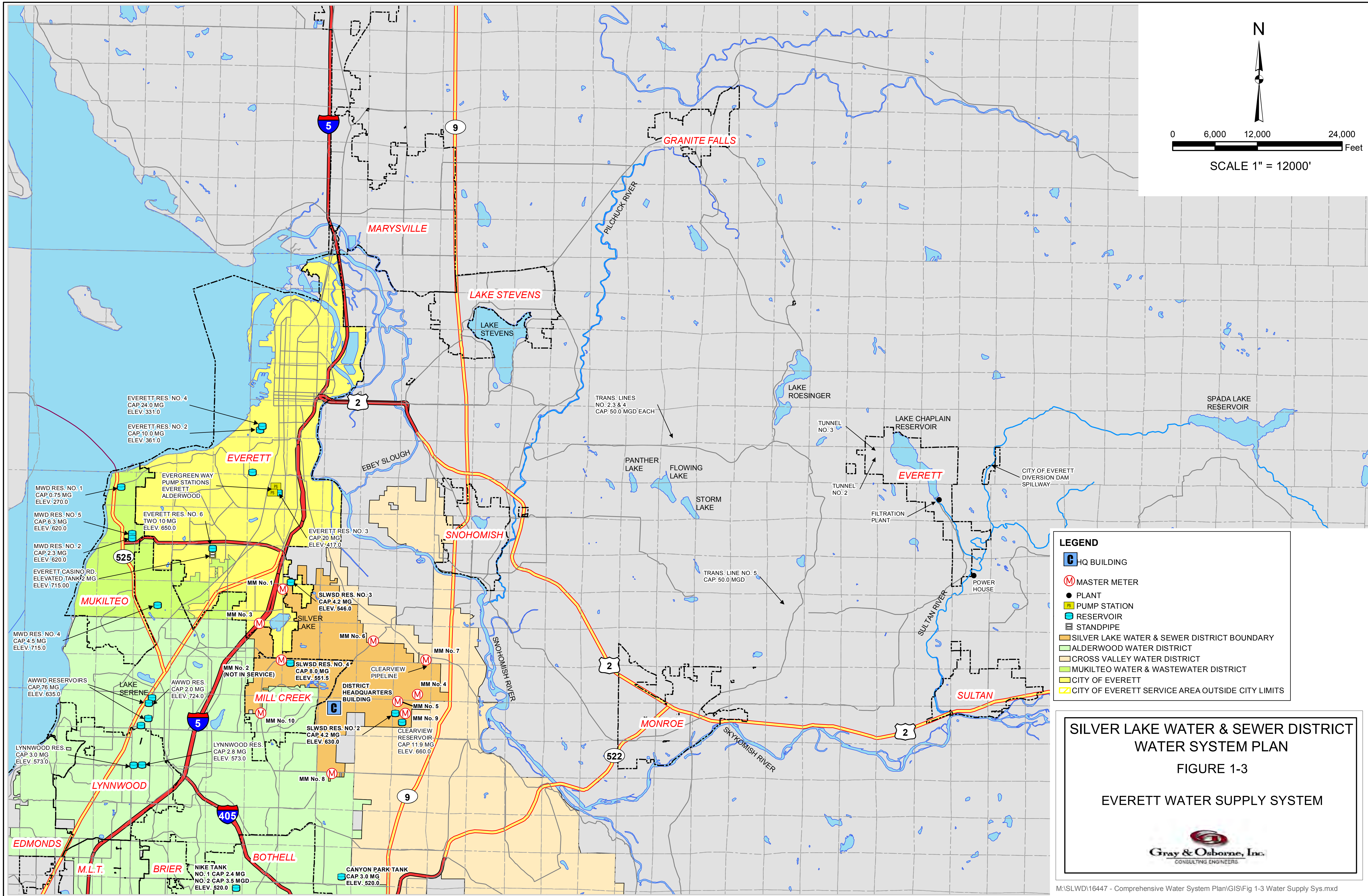
- Master Meter 1 consists of a PRV station, 10-inch magnetic meter, and electronic flow control valve in series. In the event of a PRV station malfunction, a 12-inch bypass line can allow supply from Everett's system. All components of Master Meter 1 are installed in a single vault.

- As a result of Everett annexations that included the Murphy's Corner area, the Master Meter 2 vaults were relocated in 2006. The vaults currently house a pipe spool and two closed valves which will allow for reinstallation of Master Meter 2 when the District desires to use this source of supply.

- Master Meter 3 is equipped with a 6-inch PRV, 6-inch meter, flow control valve, and an 8-inch bypass line. Master Meter 3 is located on the west side of I-5, and provides supply through a 12-inch pipeline under the freeway. The components of Master Meter 3 are installed in two separate vaults. Since January 2006, Master Meter 3 has not been used for billing purposes.

There are approximately 587 City of Everett water service connections served by the District's 640 Zone. Although these connections are served downstream of District master meters, they are billed for water service by the City of Everett. For billing purposes, their water usage is subtracted from Everett's master meter readings.

The City of Everett annexed an area known as Murphy's Corner from the District in 2006. By arrangement, the City and the District have opened or closed several isolation valves between the two systems, on an interim basis, to allow flow from and maintained Master Meter 3 in an open position to improve looping to Murphy's Corner. As a result of this condition, the District has approximately 811 connections on Everett's system. For billing



SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN
FIGURE 1-3

EVERETT WATER SUPPLY SYSTEM

purposes, their water usage is read by SLWSD and the measured consumption is added to Master Meter 1 readings. The District has the facilities in place to isolate the two systems and place the District's 811 connections on the District's side of the master meters.

Clearview Water Supply Agency Connection

The Clearview Water Supply Agency (CWSA) was formed by an interlocal agreement between Alderwood Water & Wastewater District, Cross Valley Water District, and Silver Lake Water & Sewer District. The CWSA constructed a 12 MG reservoir, a 33.5 mgd booster station, and a transmission pipeline (42 inch and 39 inch). The point of delivery to the Clearview pipeline is the City of Everett's supply Pipeline 5.

The District connects to the Clearview transmission pipeline through Master Meters 4, 5, 7, and 9. A description of the master meters follows:

- Master Meter 4 is equipped with a 12-inch magnetic flow meter and electronic control valve to control the flow rate into the District. All components of Master Meter 4 are enclosed in a single vault.

- Master Meter 5 is equipped with a 12-inch magnetic flow meter and electronic control valve to control the flow rate into the District. All components of Master Meter 5 are enclosed in a single vault.

- Master Meter 7 provides redundant supply to the Greenleaf development in the 485 Zone. It consists of an 8-inch meter and PRV.

- Master Meter 9 is at Reservoir 2 and can supply the reservoir or the distribution system through a 12-inch water main connection.

The Clearview Reservoir is located in the southeast section of the District, and consists of a 12 MG welded steel tank (60 feet tall and 184 feet diameter). The Clearview Reservoir is downstream of Master Meters 4 and 5 along the Clearview transmission pipeline and does not provide usable storage for the District's distribution system. As part of the Clearview agreement, the District purchased a 2.4 MG share of the reservoir's storage capacity. This capacity serves as an operational buffer for the District's supply from Clearview. It provides storage if the District's actual daily demands do not match expected demands. This is necessary, as the District must request a specific amount of water from the Clearview supply on a daily basis. The District's share in the reservoir provides storage for supply requested in excess of demands, or storage for AWWD to draw supply from if District demands are larger than requested. Because the reservoir is downstream of Master Meters 4 and 5, the District cannot control how the storage is used and thus cannot count the Clearview storage as usable to the District.

The Clearview Pump Station is located north of the District in the service area of the Cross Valley Water District. The Pump Station is rated at 33.5 mgd, and is expandable to 48.5 mgd. The Pump Station includes two 400-horsepower vertical turbine pumps with variable frequency drives, three 800-horsepower constant speed vertical turbine pumps, and a single 1,500 kW standby generator.

The Clearview transmission pipeline includes approximately 41,800 feet of 42-inch and 4,100 feet of 39-inch welded steel water pipeline from the City of Everett Pipeline 5 at Old Snohomish Road to the Clearview Reservoir. The District's share in ownership in the Clearview facilities is summarized in Table 1-2.

TABLE 1-2

Current District Share of Clearview Facilities

Clearview Facility	Capacity Ownership	Percent Ownership (%)
Pump Station	9.0 mgd	26.87
42-inch Pipeline	9.0 mgd	19.78
39-inch Pipeline	1.2 mgd	4.67
Reservoir	2.4 MG	20.17

The Clearview water supply system was designed with the intent of capacity expansion when participating agencies required additional supply. This includes the installation of an additional pump in the Clearview Pump Station as well as the construction of an additional 12 MG reservoir on the existing Clearview Reservoir site. Table 1-3 provides for District ownership after Phase II of the Clearview Water Supply Agency Interlocal Joint Operating Agreement is initiated.

TABLE 1-3

Future District Share of Clearview Facilities After Improvements

Clearview Facility	Capacity Ownership	Percent Ownership (%)
Pump Station	12.0 mgd	24.74
42-inch Pipeline	12.0 mgd	24.74
39-inch Pipeline	4.2 mgd	10.32
Reservoir	2.4 MG	10.08[1]

(1) The planned CWSA improvements include the construction of an additional 12 MG reservoir which will be used by AWWD and CVWD which explains the reduction of the District's "Percent Ownership" from Table 1-2 to Table 1-3.

Alderwood Water & Wastewater District

The District and AWWD entered into a wholesale water supply agreement in April of 2013 for the supply of a total of 5 mgd to the District. A copy of the wholesale water supply agreement is included in Appendix C. Master Meter 10 supplies water to the District through 12-inch ductile iron water main and two vaults along 156th Street SE between Bothell Everett Highway and Mill Creek Boulevard. The District may construct one additional intertie in the future to deliver the full 5 mgd.

Master Meter 8 is currently closed; however, the Master Meter is equipped with an 8-inch magnetic flow meter and electronic control valve to control the flow rate into the District and limit pressure to match the hydraulic grade line if the Master Meter is in use. All components of Master Meter 8 are enclosed in a single vault.

The District's pressure zones, master meters, and the Clearview facilities are presented schematically on Figure 1-4. Figure 1-5 provides the hydraulic profile of the District water system. The locations of the system facilities are shown on Figure 1-6.

WATER RIGHTS

Surface Water

The District holds no water rights certificates of its own and relies entirely on the City of Everett for supply. Everett has four certificates of water rights that total 246 mgd for the diversion of surface water for consumptive use from the Sultan River. With the inclusion if Chaplain Creek and Ebey Slough, the City's total surface water rights amount to 270 mgd. A summary of Everett's surface water rights is provided in Table 1-4.

TABLE 1-4

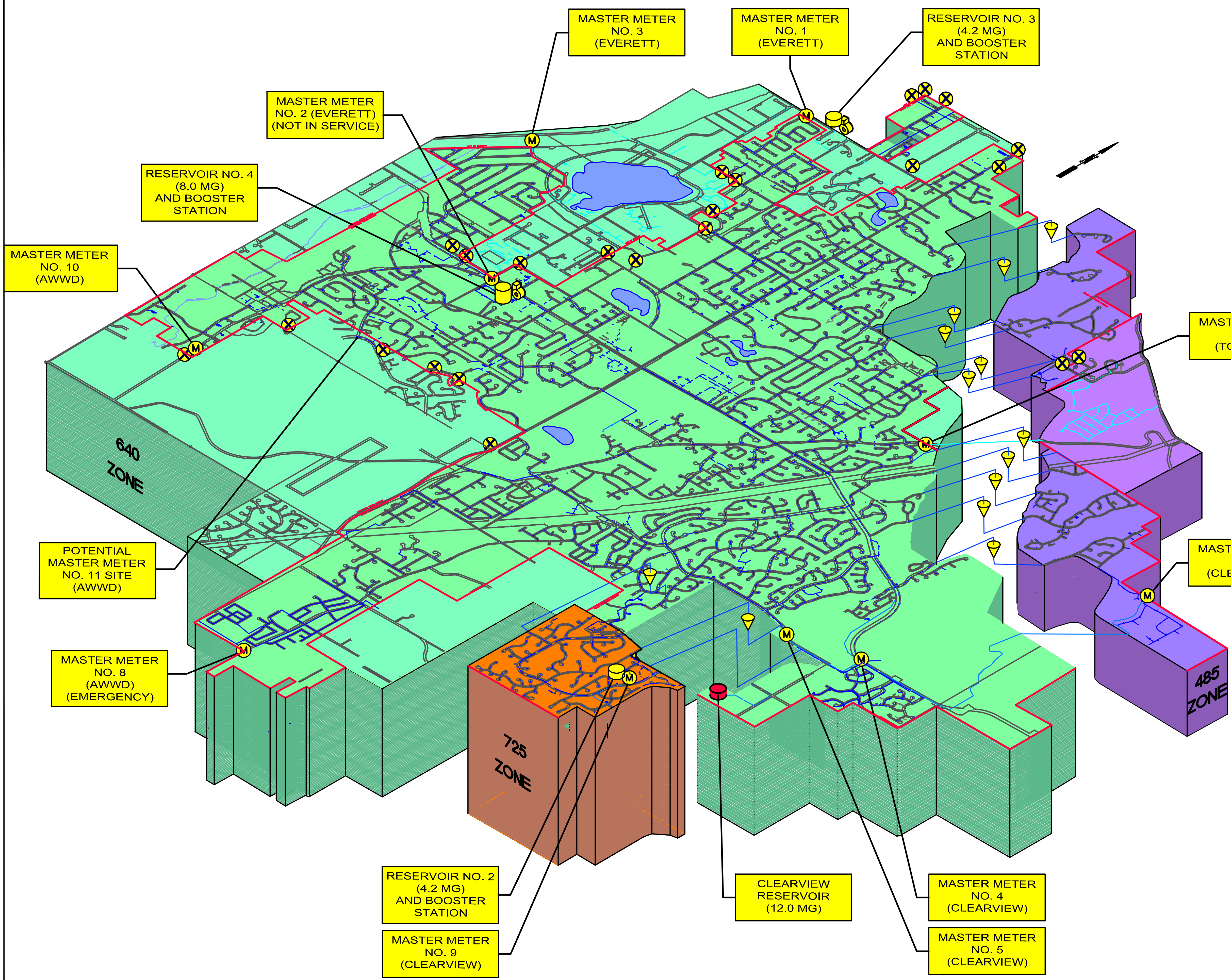
Summary of Everett Surface Water Rights[1]

Water Source	Water Right Certificate Number[2]	Priority Date	Permitted Withdrawals Maximum[3] (mgd)	Annual (ac-ft/yr)	Notes
Sultan River	C-352	9/14/1917	13	14,480	(4)
Sultan River	C-1790	7/13/1924	33	36,200	(4)
Sultan River	C-460	2/14/1929	71	79,640	(4)
Sultan River	S1-00727C	11/29/1929	129	144,000	(5)(6)
		Sultan River Total	**246**	**144,000**	
Chaplain Creek	C-1791	11/20/1940	10	9,360	
Ebey Slough	C-10617	8/20/1951	36	11,062	(7)
		Surface Water Rights Total	**270**	**164,422**	
Sultan River-Chaplain Reservoir	RI-02520	2/14/1929		13,200	(8)
Sultan River	S1-23398C	6/15/1979	969	506,800	(9) (10)
Spada Reservoir	R1-00733	5/3/1946		113,700	(10)(11)
Sultan River	A-13219	12/15/1954	129	144,000	(12)

(1) Data taken from the 2014 City of Everett *Comprehensive Water Plan*.
(2) C at the beginning or end of a water right number indicates a water certificate number.
A at the beginning of a water right number indicates that a water right application has been filed.
R at the beginning of a water right number indicates a reservoir or storage water right.
(3) Maximum instantaneous withdrawal.
(4) Annual quantity allowed is not indicated on the water right certificate.
(5) Annual quantity is supplemental to prior rights.
(6) Certificate amended in 1987 to include annual withdrawal of continuous maximum instantaneous demand.
(7) Jointly held with other members of the Snohomish River Water Authority.
(8) Provides water for storage in Chaplain Reservoir; quantity not included in total.
(9) For "municipal and industrial" purposes and supplemental to existing rights; quantity not included in total.
(10) Right held jointly with PUD.
(11) Joint storage rights for Spada Reservoir.
(12) Application is pending; quantity not included in total.

Groundwater

Everett currently has nine groundwater water right certificates. The permitted maximum instantaneous withdrawal ranges from 200 to 750 gpm. The total flow limit for the nine certificates is 3,510 gpm maximum instantaneous and 3,822 acre-feet/year (2 mgd) annually. A summary of Everett's groundwater rights is provided in Table 1-5.



BOOSTER STATIONS

RESERVOIR NO. 2	
PUMP NO. 1	650 GPM
PUMP NO. 2	650 GPM
PUMP NO. 3	650 GPM
PUMP NO. 4	1,900 GPM
RESERVOIR NO. 3	
PUMP NO. 1	3,500 GPM
PUMP NO. 2	3,500 GPM
RESERVOIR NO. 4	
PUMP NO. 1	1,000 GPM
PUMP NO. 2	3,000 GPM
PUMP NO. 3	3,000 GPM

RESERVOIRS

RESERVOIR NO. 2	4.2 MG
RESERVOIR NO. 3	4.2 MG
RESERVOIR NO. 4	8.0 MG
CLEARVIEW	12.0 MG

LEGEND

- RESERVOIR
- STANDPIPE
- BOOSTER STATION
- PRESSURE REDUCING VALVE
- MASTER METER
- INTERTIE
- SLWSD WATER MAIN
- OTHER AGENCY WATER MAIN
- SLWSD BOUNDARY

SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN

FIGURE 1-4

WATER SYSTEM SCHEMATIC

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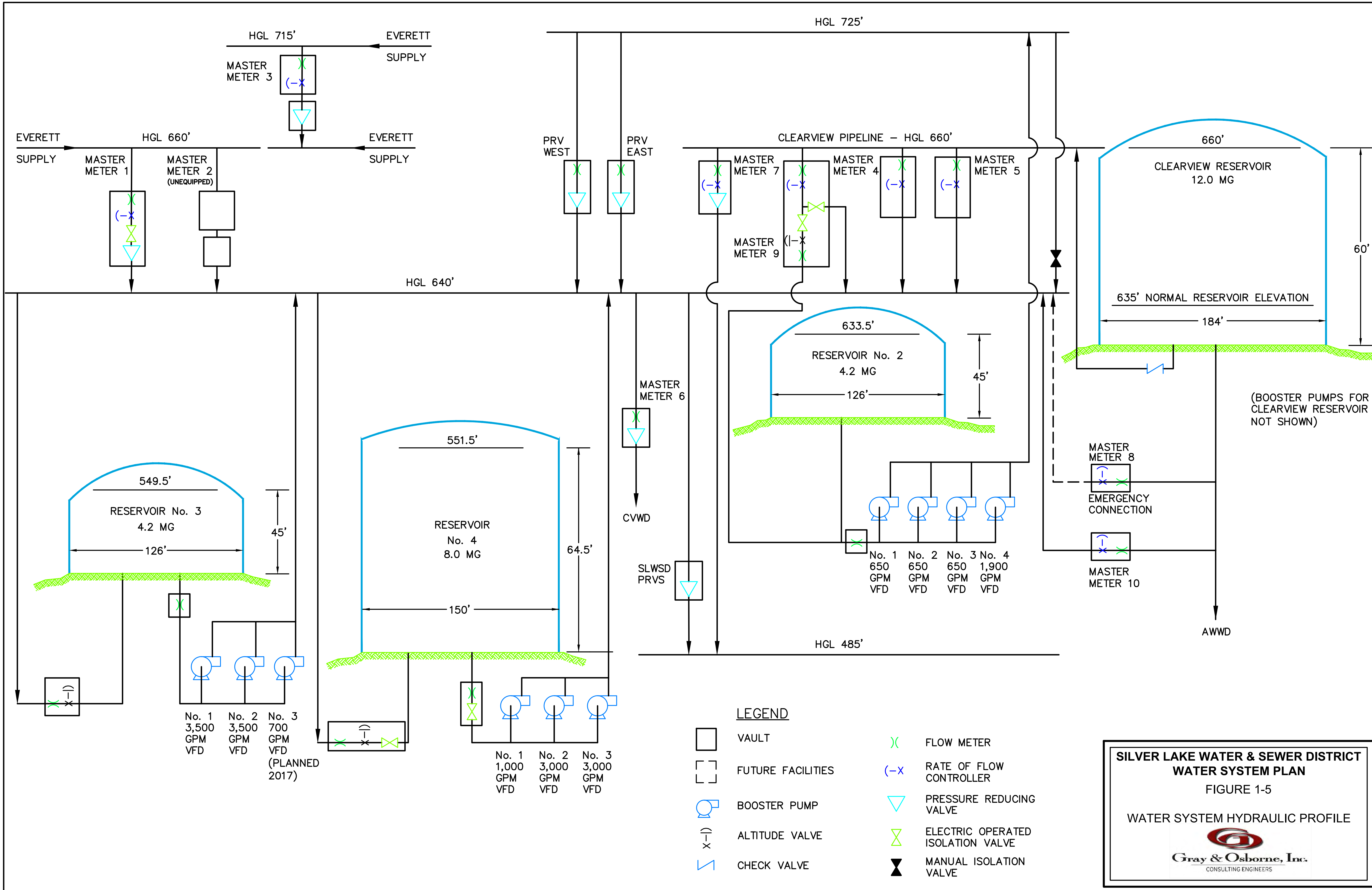
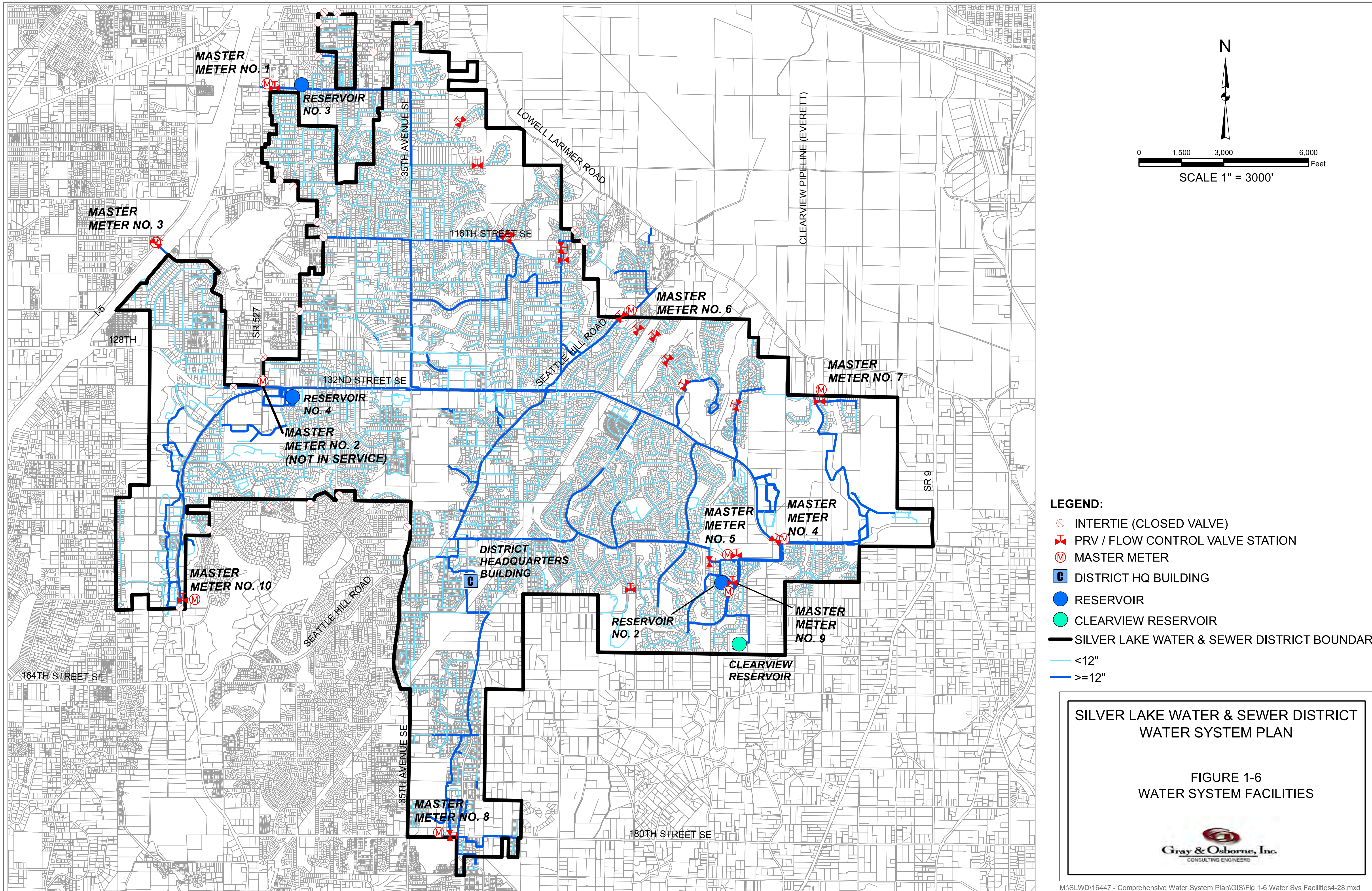


SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN

FIGURE 1-5

WATER SYSTEM HYDRAULIC PROFILE



SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN

FIGURE 1-6
WATER SYSTEM FACILITIES

TABLE 1-5

Summary of Everett Groundwater Rights[1]

Water Right Certificate Number	Priority Date	Permitted Withdrawals Maximum[2] (gpm)	Permitted Withdrawals Annual (acre-ft/yr)
552-D	6/9/1923	200	63
553-D	5/29/1936	300	94
550-D	10/1/1943	300	275
554-D	1/1/1944	300	94
594-A	8/4/1947	250	200
2186-A	12/23/1953	750	800
2579-A	8/16/1955	475	760
2811-A	4/23/1956	585	936
3358-A	9/2/1958	350	600
Total		**3,510**	**3,822**

(1) Data taken from City of Everett 2014 *Comprehensive Water Plan*.
(2) Maximum instantaneous withdrawal.

STORAGE

The District owns and operates three storage reservoirs with a total nominal capacity of 16.4 MG. Additionally, the District has purchased a 2.4 MG share of the Clearview Reservoir, but as mentioned in the Clearview section of this chapter, this storage serves as an operational buffer for the District's supply from the Clearview source and cannot be counted as available storage for the District's distribution system. The characteristics of each of the reservoirs are summarized in Table 1-6. All of the District's reservoirs have overflow elevations below the nominal hydraulic grade line, and so the District must pump from the reservoirs to use the storage. The reservoirs are shown schematically on Figure 1-4, the hydraulic profile of the system is provided on Figure 1-5, and the reservoir locations are shown on Figure 1-6.

TABLE 1-6

District Reservoirs

Reservoir	Capacity (MG)	Year Built	Material	Overflow Elevation (ft)	Overflow Level (ft)	Diameter (ft)
2	4.2	1987	Steel	630	45	126
3	4.2	1989	Steel	546	45	126
4	8.0	2008	Steel	551.5	64.5	150
Clearview(1)	2.4	2002	Steel	660	60	184
Total(2)	**16.4**					

(1) The District's share in the 12 MG CWSA Reservoir is 2.4 MG.
(2) Total storage not including CWSA Reservoir.

BOOSTER STATIONS

The District's water distribution system includes three booster stations, one at each of the three District reservoir sites. The booster stations pump from the reservoirs to supplement diurnal demands and maintain system pressures. Booster stations at Reservoirs 3 and 4 pump to a hydraulic grade line of 640 feet, while the booster station at Reservoir 2 pumps to a hydraulic grade line of 725 feet. In addition, the District purchased a 9.0 mgd share of the Clearview Pump Station's capacity with rights to upgrade and purchase an additional 3 MG of capacity. The characteristics of the booster stations are presented in Table 1-7.

TABLE 1-7

Booster Stations

Location	Booster Pumps	Rate Capacity (gpm)	TDH (ft)	Pump Horsepower	Motor Speed Control(1)	Auxiliary Power Generator (kW)
Reservoir 2	Pump 1	650	145	30	VFD	230
	Pump 2	650	145	30	VFD	
	Pump 3	650	145	30	VFD	
	Pump 4	1,900	125	75	VFD	
Reservoir 3	Pump 1	3,500	130	150	VFD	400
	Pump 2	3,500	130	150	VFD	
	Pump 3(2)	700	140	40	VFD	
Reservoir 4	Pump 1	1,000	180	60	VFD	450
	Pump 2	3,000	180	150	VFD	
	Pump 3	3,000	180	150	VFD	
Clearview	Pump 1	3,900	315	400	VFD	1,500
	Pump 2	3,900	315	400	VFD	
	Pump 3	7,800	315	800	CS	
	Pump 4	7,800	315	800	CS	
	Pump 5	7,800	315	800	CS	
	Pump 6(2)	7,800	315	800	CS	

(1) Variable Frequency Drive, Constant Speed.
(2) Future Pump.

TRANSMISSION AND DISTRIBUTION SYSTEM

Pressure Zones

The District's distribution system is divided into three pressure zones, with nominal hydraulic grade lines of 640, 725, and 485 feet, respectively. The 640 Zone comprises the majority of the District's service area. It is directly supplied by one master meter with Everett, three master meters with CWSA, the Reservoir 3 and Reservoir 4 Booster Stations, and by two PRV stations from the 725 Zone. The hydraulic grade of the 640 Zone is set by the master meters. The 725 Zone is located in the southeast portion of the District and is served by the Reservoir 2 Booster Station. The 485 Zone(s) are located along the northeastern portion of the District and are normally supplied by PRVs from the 640 Zone. There are 11 PRV stations that supply the 485 Zone(s). The Greenleaf development in the 485 Zone can be supplied by Master Meter 7 in the event that normal supply is interrupted. The 485 Zone(s) are divided into several isolated sections by steep ravines and gullies. The District's Master Meter 8 was installed to supply connections at the south end of the District near 180th Street SE. This master meter provided service to developments as they are built northward. There are currently no customers supplied in this manner and Master Meter 8 now serves as an emergency interie. The District's pressure zones are shown schematically on Figure 1-4.

Pipe Inventory

Pipes within the District range in diameter from 4 inches to 16 inches, and consist of cast iron and ductile iron water mains. The approximate length of pipe in the system as of 2016 for pipes 4 inches and larger is presented in Table 1-8. The sizes and types of materials for water mains throughout the District are also shown on the District's water system base map, which is included in the back sleeve of the Plan.

TABLE 1-8

Distribution System Pipe Inventory(1)

Pipe Diameter	Approximate Length of Pipe in System		Percent of Total
	Linear Feet	Miles	
4-inch	21,757	4.1	2.3%
6-inch	140,199	26.6	14.6%
8-inch	546,945	103.6	57.0%
10-inch	12,946	2.5	1.3%
12-inch	142,640	27.0	14.9%
16-inch	48,778	9.2	5.1%
39-inch(2)	4,100	0.8	0.4%
42-inch(2)	41,800	7.9	4.4%
Total	**959,166**	**181.7**	**100.0%**

(1) Updated from the District hydraulic model as of February 2016.
(2) Clearview pipeline.

OPERATIONAL CONTROL AND MONITORING SYSTEM

The existing Supervisory Control and Data Acquisition (SCADA) system monitors and controls the operation of various water system components. The Master Control Panel (MCP), which is the logic center of the SCADA system, is located at the District Headquarters. It consists of an operator interface, a programmable logic controller (PLC), and a communication network. The SCADA system provides a display of several system parameters. The SCADA system also provides remote control over several District facilities. More information about the monitoring and control capabilities of the SCADA system is located in Chapter 6, Operations and Maintenance and in the District's Operations Manual. Each facility site is equipped with an individual PLC and can operate on local control if communication with the MCP is interrupted.

INTERTIES

The District has interties with the City of Everett, AWWD, CVWD, and the CWSA facilities. These interties include both master meter connections and unmetered, normally closed valves. The following sections provide a summary of the intertie information. Master metered interties that the District uses as supply points are discussed in more detail in the source of supply portion of this chapter. Copies of the District's intertie and water service agreements are provided in Appendix C. Intertie locations are shown on Figure 1-6.

City of Everett

The District has historically maintained three master meter connections with Everett, two of which are currently equipped to supply water to the distribution system. Additionally, there are 16 normally closed valves that separate the two systems and could be used as interties. The Silver Acres area contains both District and Everett customers on both sides of Master Meter 1. Meter readings of District customers served by Everett are added to Master Meter 1 readings and meter readings of Everett customers served by the District are deducted from Master Meter 1 readings.

Alderwood Water & Wastewater District

The District has one master meter connection with AWWD, and one metered emergency intertie. The District has an interlocal agreement providing for a future Master Meter 11 installation to take water from AWWD. Additionally, there are six normally closed valves that separate the District's systems and could be used as emergency interties.

Cross Valley Water District

The District has one master meter connection with CVWD that supplies water to CVWD's distribution system. Additionally, there are two normally closed valves that separate the District's systems and could be used as interties as they are on similar pressure zones. There is a third normally closed valve recently installed by the plat of Woodridge Glen that connects the Districts 640 Zone to CVWD. The master meters, normally closed valves, and interconnections follow:

- Master Meter 6 is located at the District boundary along Seattle Hill Road. It is equipped with a 6-inch meter and parallel 8-inch and 4-inch PRVs. Master Meter 6 provides supplemental supply to CVWD during fire flow or other high flow events as their pressure zones are similar.

- There are two normally closed isolation valves between the District and CVWD in the Cascade East development. These valves can serve as emergency interties in the event that water service to that area of the CVWD system is interrupted.

- Parts of the Willow Creek development are inside the CVWD service area but are currently served by the District's distribution system, by interlocal agreement.

DISTRICT HEADQUARTERS FACILITIES

The District headquarters provides services such as customer service and billing, hearings for Commissioner meetings, engineering support, and storage for records, drawings, and District documents. The headquarters facility also houses District maintenance facilities, including vehicles, equipment, spare parts, tools, and the SCADA system, allowing staff convenient access to its monitoring and control system.

RELEVANT PLANNING DOCUMENTS

The following planning documents were prepared either for the District or for adjacent water purveyors.

SILVER LAKE WATER & SEWER DISTRICT DOCUMENTS

- *Silver Lake Water District Vulnerability Assessment,* Gray & Osborne, Inc. 2004
- *Silver Lake Water District Operation and Maintenance Manual*, Gray & Osborne, Inc., 2004
- *Silver Lake Water & Sewer District, Water Use Efficiency Plan,* Gray & Osborne, Inc., 2007
- *Silver Lake Water & Sewer District, Stage 2 DBPR IDSE Report,* Gray & Osborne, Inc., December 2008
- *Silver Lake Water & Sewer District, Water System Comprehensive Plan*, Gray & Osborne, Inc., 2010
- *Silver Lake Water & Sewer District, Emergency Response Plan*, Gray & Osborne, Inc., 2011
- *Silver Lake Water & Sewer District, Reservoir 5 Study*, Gray & Osborne, Inc., 2011

- *Silver Lake Water & Sewer District, District Standards,* Gray & Osborne Inc., 2014

- *Silver Lake Water & Sewer District, Water System Operations Manual,* Gray & Osborne Inc., 2016

CLEARVIEW GROUP DOCUMENTS

- *Clearview Water Supply Project Design Phase – Clearview Pipeline Design Memorandum,* MWH, June 1997

- *Clearview Water Supply Project Design Phase – Clearview Pump Station Design Memorandum,* MWH, June 1997

- *Clearview Water Supply Project Design Phase – Clearview Reservoir Design Memorandum,* MWH, June 1997

- *Clearview Water Supply Agency – Vulnerability Assessment*

GROWTH MANAGEMENT ACT (GMA) COMPREHENSIVE PLANS

- *City of Everett Comprehensive Plan Update*, 2015

- *City of Mill Creek Comprehensive Plan*, 2015

- *Snohomish County GMA Comprehensive Plan General Policy Plan*, 2015

Population projections, zoning and land use, and urban growth areas (UGAs) presented in this Plan are consistent with the information presented in these documents.

WATER SYSTEM PLANS

- *City of Everett 2014 Amendment to the 2007 Comprehensive Water Plan*, HDR Engineering, Inc., April, 2015

- *Cross Valley Water District Comprehensive Plan,* Pace, 2010

- *Alderwood Water & Wastewater District, Water Comprehensive Plan*, HDR, Inc., August 2009

In order to provide consistency between the District's *Wastewater Comprehensive Plan* and the *Comprehensive Water System Plan*, the same information is used for land use, population projections, and system policies.

INTERLOCAL AGREEMENTS

The District has entered into interlocal agreements with several regional jurisdictions including Cross Valley Water District, the City of Everett, Alderwood Water & Wastewater District, and the Clearview Water Supply Agency. Agreements with adjacent purveyors include water supply agreements, intertie and annexation agreements, and agreements for service within the boundaries of other jurisdictions. Copies of the District's current interlocal agreements are provided in Appendix C.

EVERETT TRANSFER OF SERVICE AGREEMENT

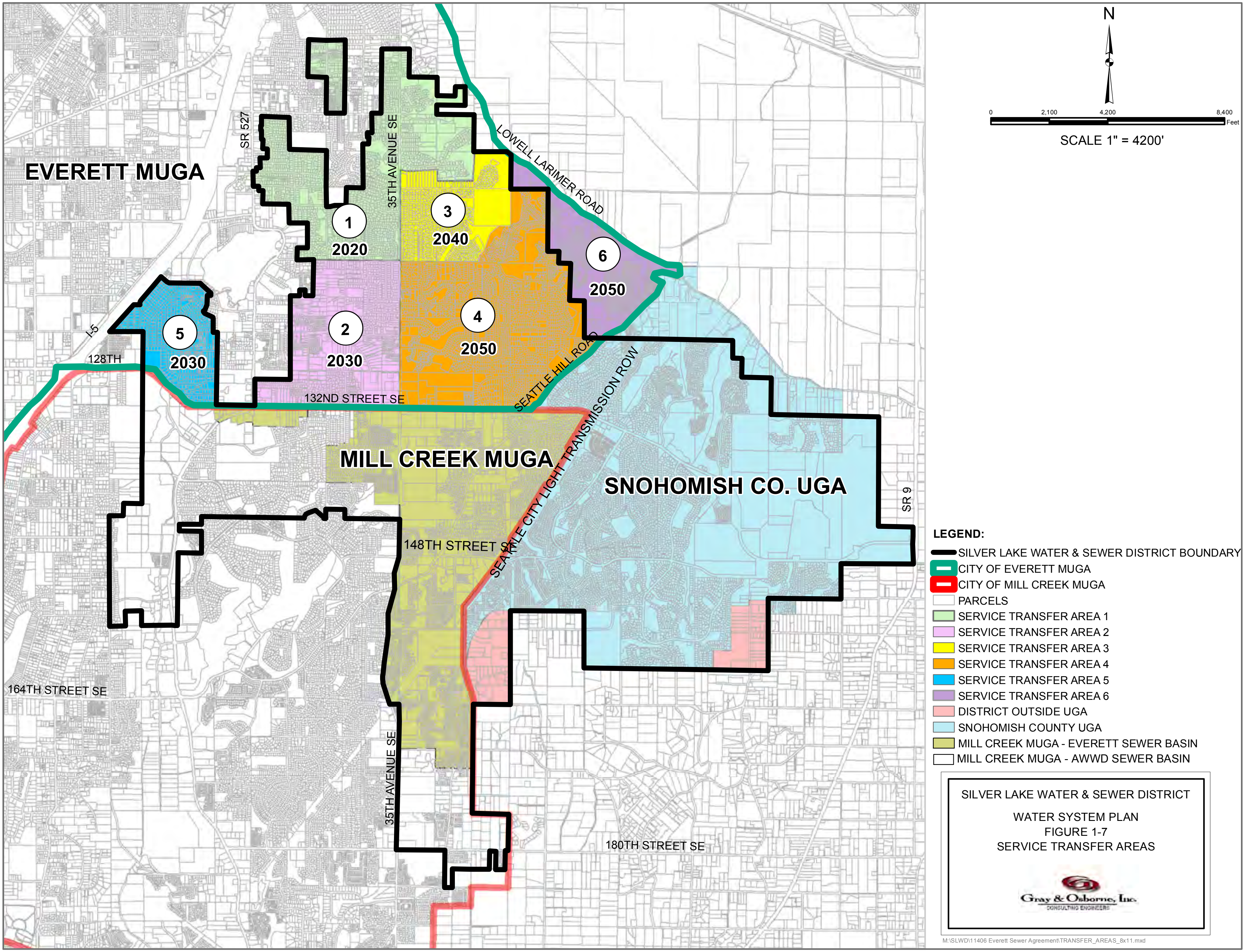
The District has entered into an agreement with the City of Everett for the transfer of District facilities and customers to the City. The agreement details five service transfer areas located within the District boundary and a sixth area not served by the District Water System. The transfer of service is based on the "60-percent date" upon which the City has annexed 60 percent or more of the ultimate water connections within a service transfer area. The City may notify the District in writing of its intent to assume District facilities, capacities, and customers within the area and transfer is effective based on six years from that date, a defined date in the agreement, or the date of notice if it occurs after the defined date. The agreement is included in Appendix C and Figure 1-7 illustrates each service transfer area. Each transfer area can qualify for transfer independently of the remaining transfer areas.

Table 1-9 details the share of capacity of Reservoir 3 held by the District and by the City based on each service transfer area. Upon transfer of each area, the District no longer owns the storage assigned to that service transfer area. Reservoir 3 is physically located within Transfer Area 1, so whichever agency provides service to Transfer Area 1 is responsible for operation and maintenance of the reservoir.

TABLE 1-9

Determination of Capacity Share

Service Transfer Area	Percentage Share (%)	Reservoir 3 Capacity Share (MG)
1	30.44 %	1.28
2	14.54%	0.61
3	9.22%	0.39
4	35.43%	1.49
5	0%	0%
Existing Everett Customers as of Effective Date of Agreement (Estimate)	10.37%	0.43
Total	**100%**	**4.2**


N
0
2,100
4,200
8,400
Feet
SCALE 1" = 4200'
EVERETT MUGA
MILL CREEK MUGA
SNOHOMISH CO. UGA
SR 527
35TH AVENUE SE
LOWELL LARIMER ROAD
I-5
128TH
132ND STREET SE
SEATTLE HILL ROAD
SEATTLE CITY LIGHT TRANSMISSION ROW
148TH STREET SE
164TH STREET SE
180TH STREET SE
SR 9
1
2020
2
2030
3
2040
4
2050
5
2030
6
2050
LEGEND:
SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
CITY OF EVERETT MUGA
CITY OF MILL CREEK MUGA
PARCELS
SERVICE TRANSFER AREA 1
SERVICE TRANSFER AREA 2
SERVICE TRANSFER AREA 3
SERVICE TRANSFER AREA 4
SERVICE TRANSFER AREA 5
SERVICE TRANSFER AREA 6
DISTRICT OUTSIDE UGA
SNOHOMISH COUNTY UGA
MILL CREEK MUGA - EVERETT SEWER BASIN
MILL CREEK MUGA - AWWD SEWER BASIN
SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN
FIGURE 1-7
SERVICE TRANSFER AREAS
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SERVICE AREA POLICIES AND CONDITIONS OF SERVICE

Service area policies are important in guiding the development of a water system. The DOH has established a list of service area policies to be referenced in water system plans. Table 1-10 lists the type of service area policy, the current District policy, and a reference as to where the policy is stated.

The District has set a precedent that boundary adjustments go through the approval process of the Snohomish County Boundary Review Board and conform to procedures outlined in RCW 57.24.010. ULID formation follows the requirements of the State of Washington. The District may adopt resolutions setting forth the conditions that must be met for wheeling of water, obtaining wholesale agreements, surcharges, and satellite management for outside customers should the District determine such policies are in the best interest of the District or its then-existing customers. The District has adopted Resolution 712, setting forth conditions for surcharges.

TABLE 1-10

Service Area Policies

Policy Name	District Policy	Reference
Direct Connection	Design and performance standards are provided outlining the minimum general standards required by the District for developer constructed water main extensions and improvements that are to be acquired by the District.	Silver Lake Water & Sewer District Standards, Section II – Water Systems General Standards, Resolution No. 735
Design and Performance Standards	Design and performance standards are provided which outline the minimum general standards required by the District for District and developer constructed projects.	Silver Lake Water & Sewer District Standards, Section II – Water Systems General Standards, Resolution No. 735
UGA	The level of service provided by the District is in accordance with planning completed for the UGAs of Everett, Mill Creek, and Snohomish County.	*Comprehensive Water System Plan* (2017)
Latecomer Agreements	The District has established a Reimbursement Policy for late comers.	Resolution No. 538 and 684

TABLE 1-10 – (continued)

Service Area Policies

Policy Name	District Policy	Reference
Oversizing	Extensions shall be constructed to meet the requirements of the Plan.	*Comprehensive Water System Plan* (2017)
Cross-Connection Control Program	WAC 248-54-285, Cross-Connection Control, has been adopted by the District. The installation or maintenance of a cross-connection, which will endanger the water quality of the potable water supply of the District is prohibited and shall be abated immediately.	Silver Lake Water & Sewer District Standards, Section V – Cross-Connection Control Manual, Resolution No. 735
Water Use Efficiency Program	The District has developed a water use efficiency program to meet the requirements of the Municipal Water Law. This program adopts Everett's regional water conservation plan as well as District sponsored measures.	*Comprehensive Water System Plan* (2017), Chapter 7, Resolution No. 734
Developer Extension	Design and performance standards are provided that outline the minimum general standards required by the District for developer-constructed water main extensions and improvements that are to be acquired by the District.	Silver Lake Water & Sewer District Standards, Section II – Water Systems General Standards, Resolution No. 735

CHAPTER 2

BASIC PLANNING DATA

INTRODUCTION

This Chapter presents basic planning data that is essential for the assessment of the District's water system. The information presented includes historical population growth, water production, and water consumption data. Population and water demand projections are developed for the District to predict future needs. This information is used to complete the system analysis portion of the Plan.

STUDY AREA

The study area for the Plan includes the District's current retail service area, which covers approximately 7,952 acres, as well as an additional area outside of the current retail service area that could potentially be served in the future. The majority of the study area lies within the urban growth area of the City of Everett, the City of Mill Creek and its urban growth area, and areas inside and outside the Snohomish County urban growth area. In areas annexed by the City of Everett, water service had historically transferred from the District to Everett. Transfers now occur in accordance with interlocal agreement. In areas annexed by the City of Mill Creek, water service has continued to be provided by the District.

GROWTH MANAGEMENT ACT

The 1990 Washington State Growth Management Act (GMA) required counties and cities experiencing or predicting a high rate of growth to prepare comprehensive plans. The plans must contain elements addressing land use, transportation, housing, capital facilities, and utilities. The purpose of the GMA plan is to guide growth for the next 20 years by defining special distribution and levels of population growth. The land use element designates the desired use of land for various activities in the future. It is expected that future zoning will be based on the land use designations in order to ensure consistency.

Under the GMA, municipalities within a county must complete their own planning and coordinate these planning efforts with those of the county. The planning effort of a municipality includes the establishment of an Urban Growth Area (UGA). The District study area includes portions of the UGAs of three jurisdictions. The District provides water and sewer services to the area within its service area boundary, while the remaining basic urban services are provided according to UGA jurisdiction. A portion of the study area resides outside of any urban growth area boundary. The UGA boundaries for the Cities of Everett and Mill Creek and for Snohomish County are shown on Figure 2-1.

PLANNING PERIOD

Due to the District's growth history and the need to provide water services for future growth, the District's water system is in need of continuous evaluation and improvement. A planning period for the District's water system should be long enough to be useful for an extended period of time, but not so long as to be impractical. The District has adopted 6-, 10-, and 20-year planning periods to allow for the implementation of its capital improvement program. The 6-year planning period for the District's Capital Improvement Plan is to 2022, the 10-year period is to 2026, and the 20-year period is to 2036.

WASTEWATER SYSTEM

Most all wastewater collected within the District is transported to the Everett treatment facilities. A portion is transferred to the King County Department of Natural Resources treatment plant via the Alderwood Water & Wastewater District. At full development, the area is less than 20 percent of the District. The District's collection system includes 22 lift stations, approximately 13.2 miles of force main, and approximately 155 miles of gravity lines.

SERVICE AREA

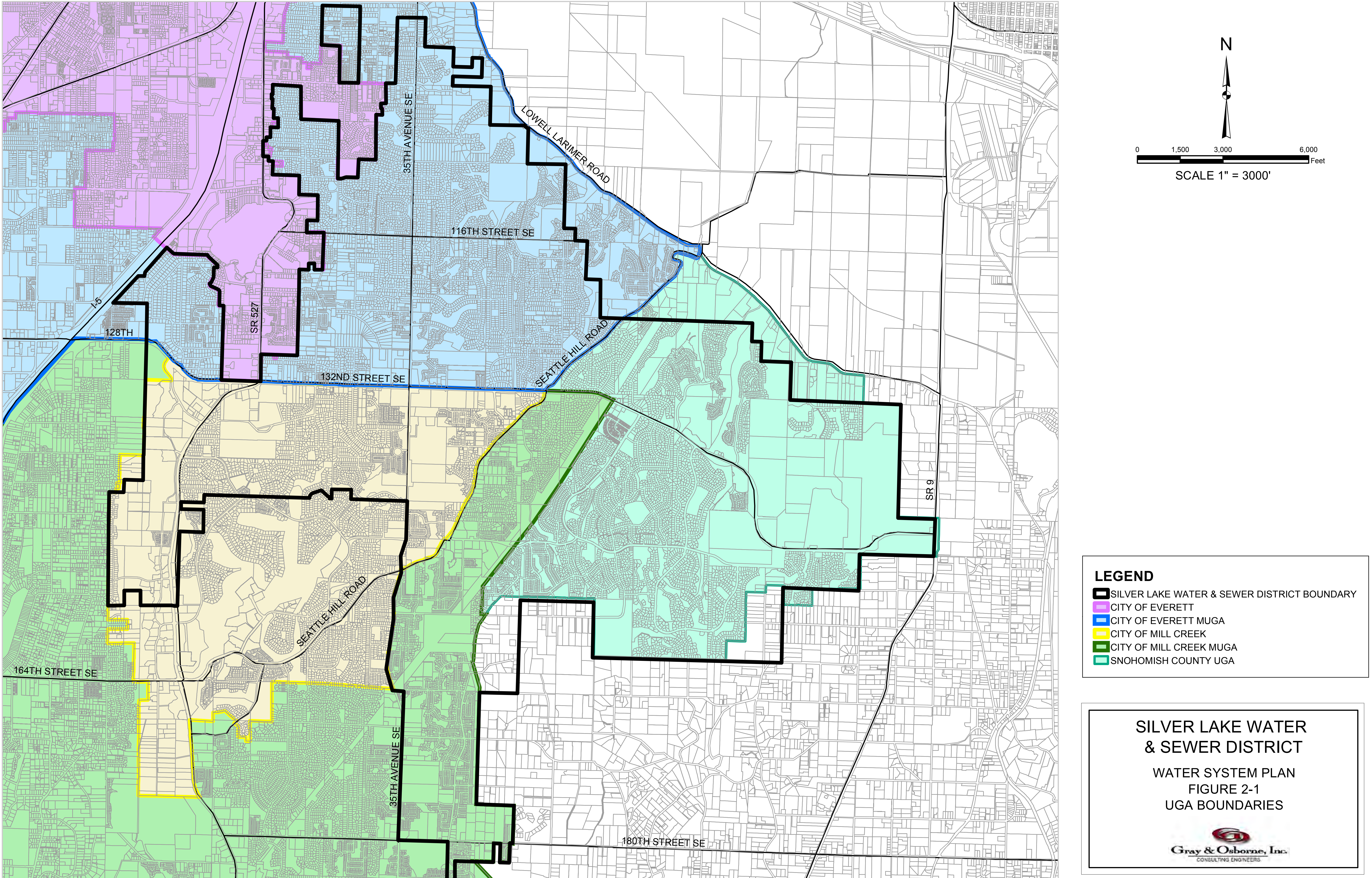
In accordance with the Municipal Water Law (MWL), the District is required to designate a retail service area within which it has a duty to serve all customers, and if appropriate, also designate a future service area and a wholesale service area. At this time, the District provides retail service to customers within the service area established. The District can provide wholesale water to a portion of Cross Valley Water District's system via Master Meter 6, but the District is under no agreement or obligation to provide service to this area.

RETAIL SERVICE AREA

The District acknowledges that it has a duty to serve all new connections within its retail service area. The retail service area is required to include the current service area and areas where new service is proposed. The District defines the extent of its retail service area as the current District boundary.

While the District has a duty to serve new connections, there are five threshold factors the new services must meet. These are:

1. The municipal water supplier has sufficient capacity to serve water in a safe and reliable manner.



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN

FIGURE 2-1

UGA BOUNDARIES

Gray & Osborne, Inc.

CONSULTING ENGINEERS

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2. The service request is consistent with adopted local plans and development regulations.

3. The municipal water supplier has sufficient water rights to provide service.

4. Service can be provided in a timely and reasonable manner.

5. Service can be provided in accordance with District policies, specifications, and standards.

FUTURE SERVICE AREA

Portions of the District's retail service area lie within the UGAs of the Cities of Everett and Mill Creek. Historically, District customers annexed by Mill Creek have continued to be served by the District and those annexed by Everett have transferred to service by Everett. Everett historic annexations reduced the District's retail service area.

The District has entered into an agreement with the City of Everett for the future transfer of District facilities, capacities and customers within defined service transfer areas to the City of Everett. Once the City of Everett annexes sixty percent of the water connections within a service transfer area, the City may provide notice to the District requiring transfer from the district to Everett of the service transfer area. The transfer of the service area becomes effective upon the date of delivery of the notice or a defined date specific to the service transfer area, whichever is later. A copy of the transfer agreement has been included in Appendix D.

An area near the southern end of the District identified as "Potential Future Service Area – Outside UGA" on Figure 2-2 and referred to as Study Area 1 in the Plan has been identified as a potential service area of the District. This area is currently outside of any UGA and unclaimed by any water purveyor. If at a future time the UGA of Snohomish County or the UGA of Mill Creek expands to incorporate this area, the District would be the logical service provider for water and sewer.

WHOLESALE SERVICE AREA BY AGREEMENT

The District had an agreement with Cross Valley Water District to provide supply to CVWD through Master Meter 6. Since that time, CVWD has constructed facilities to supply the area making Master Meter 6 an emergency supply source. No current agreement exists for wheeling supply to CVWD through Master Meter 6.

OTHER AREAS SERVED BY THE DISTRICT

There are approximately 587 City of Everett customers located downstream of District master meters. The District does not have an agreement with Everett or any obligation to provide service to these areas, although under the current system configuration the District does provide storage for these Everett connections.

SATELLITE SYSTEM MANAGEMENT

The District is not prepared at this time to provide and/or contract for satellite system management or ownership services within or adjacent to the District's service area.

LAND USE

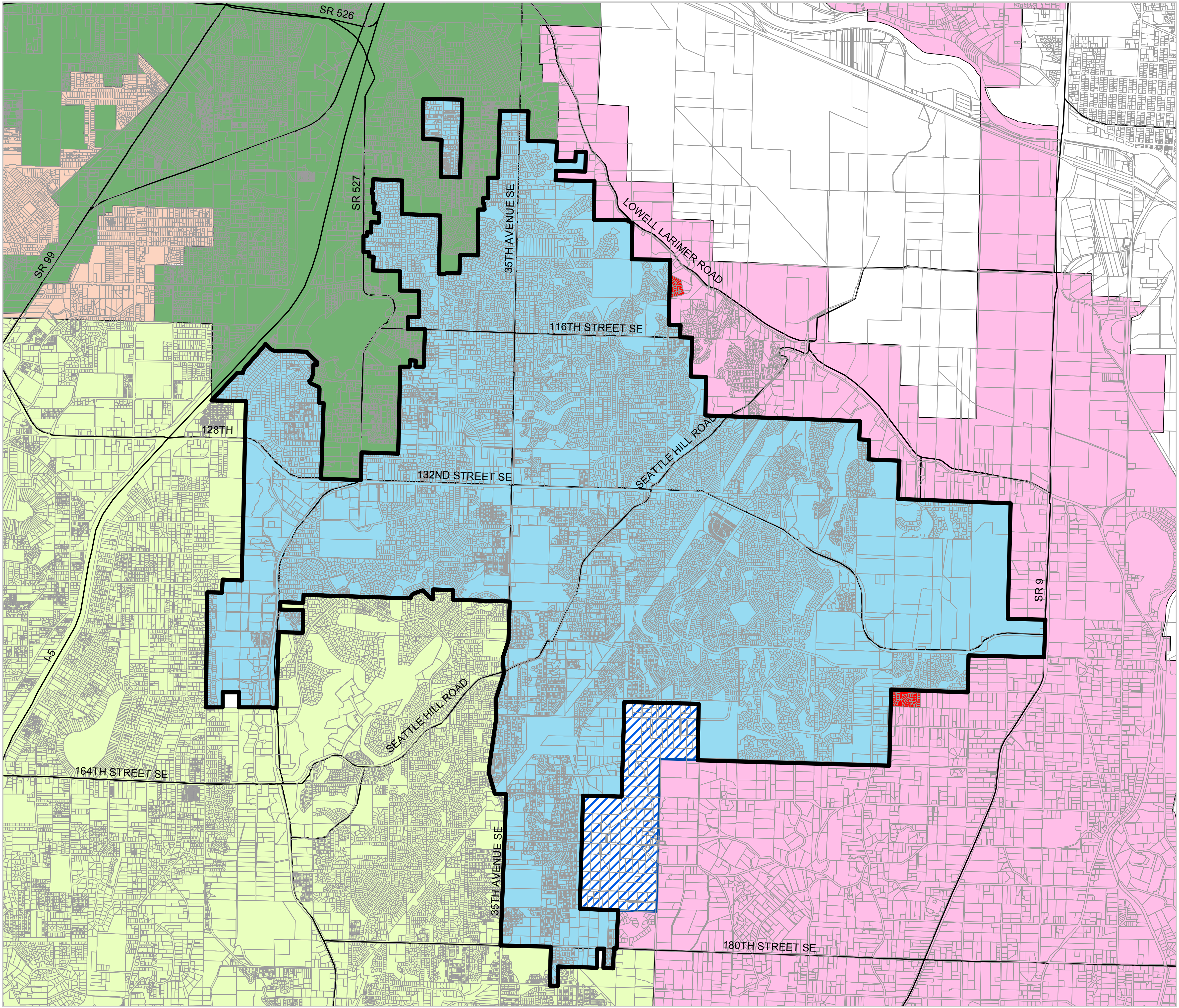
The future land use for the District's service area is established in the planning sections of the GMA Comprehensive Plans of Everett, Mill Creek, and Snohomish County. Though the majority of the service area future land use is residential, the allowable density in terms of dwelling units per acre varies according to UGA jurisdiction. Within the UGAs of Snohomish County, Everett, and Mill Creek, respective future land use has been used. The future land use within the District's service area is presented on Figure 2-3.

To assess the growth potential of the District, undeveloped areas are identified within the study area. Undeveloped areas are defined as areas that have not been platted, or do not have preliminary plats submitted to Snohomish County and are not within identified site-sensitive areas. Though there may be existing housing on some sites, the sites are not developed to the highest potential. The portion of the District's study area within each UGA is categorized as developed, site-sensitive, and undeveloped areas in Table 2-1.

TABLE 2-1

Summary of Existing Urban Growth Areas within District

UGA	Developed Area (acres)	Site-Sensitive Area (acres)	Undeveloped Area (acres)	Roads and Public ROW (acres)	Total Area (acres)
Everett	1,727	376	127	334	2,564
Mill Creek	1,620	430	295	250	2,595
Snohomish County	1,330	702	274	282	2,588
Outside GMA	0	4	180	21	205
District Area Total	**4,677**	**1,512**	**876**	**887**	**7,952**
Study Area 1	0	0	404	0	404
Study Area Total	**4,677**	**1,512**	**1,280**	**887**	**8,356**



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-2
RETAIL SERVICE AREAS

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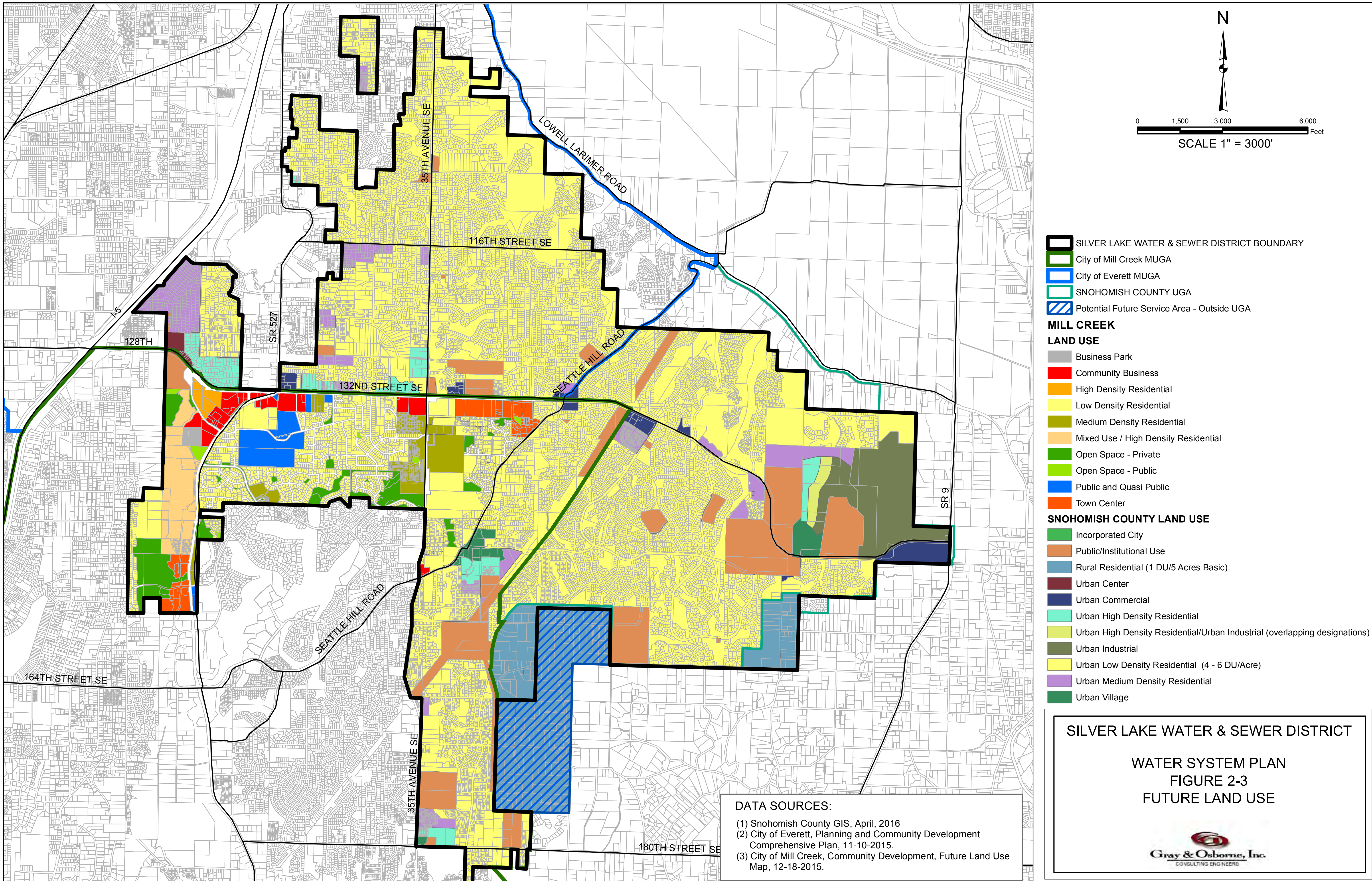


SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-3
FUTURE LAND USE

The holding capacity of the 1,280 acres of undeveloped area within the study area is determined by applying the zoning and land use for each undeveloped area. The acreage of the undeveloped area is combined with the applicable zoning and land use in dwelling units per acre to determine the number of undeveloped dwelling units. The generation of the holding capacity of undeveloped areas within the study area based on zoning and land use is presented in Table 2-2. For zoning and land use that is specified as a range, such as four to six dwelling units per acre, the mean value of five dwelling units per acre is applied.

TABLE 2-2

Zoning and Land Use for Undeveloped Areas

Zoning and Land Use (units/acre)(1)	Undeveloped Areas (acres)					Undeveloped Units(2)				
	Everett	Mill Creek	Snohomish County(3)	Outside UGA(4)	Study Area 1	Everett	Mill Creek	Snohomish County(3)	Outside UGA(4)	Study Area 1
3 to 5	52	145	30		404	208	578	119		1616
4 to 6				180					900	
5 to 10	64					480				
6 to 12			41					366		
10 to 12	11	0.2	49			121	2	539		
15 to 20										
12 to 24			40					718		
24		2					59			
30		25					755			
Public Use/Commercial(5)		122	114							
Total	**127**	**295**	**274**	**180**	**404**	**809**	**1,395**	**1,742**	**900**	**1,616**

(1) Zoning and Land Use taken from the applicable GMA Comprehensive Plan for the UGA Undeveloped Area, as shown on Figure 2-3.
(2) Potential Dwelling Units are calculated by multiplying the Undeveloped Area by the mean zoning and land use for the area.
(3) Assumes former Cathcart property will be developed – consistent with the existing designations and zoning.
(4) Assumes that zoning for the area currently outside the Snohomish County Urban Growth Area (UGA) will ultimately be included in the GMA and will be developed at four to six dwelling units/acre.
(5) Undeveloped land with a commercial/public use zoning that will not support a residential population.

SERVICE AREA CHARACTERISTICS

TOPOGRAPHY

The topography of the District has a significant influence on the water system. The northern and eastern portions of the District slope northeast toward the Snohomish River valley floor. The southern and western portions slope southwest toward the Alderwood Water & Wastewater District service area and the North Creek basin. In the northeast portion of the District, the terrain slopes sharply. The majority of the District's service area, which sits on a plateau above the valley floor, is generally rolling terrain. Figure 2-4 shows the topography within the District's study area.

GEOLOGY

The geology with the District is characterized by moderately well drained soils underlain by compact or cemented glacial till materials. The depth to the hardpan varies from a few inches to 20 feet. Though the surface drainage in many areas is good, internal drainage is retarded by the cemented substratum. The groundwater in the glacial till areas is less likely to be affected during the summer season than the more permeable soils. Groundwater is evidenced along the steep ravines overlooking the Snohomish River valley and a number of low, poorly drained areas are located throughout the District.

SOILS

The classification of soils within the District is provided by the 1983 *Soils Survey for Snohomish County Area*, compiled by the Natural Resource Conservation Service (formerly known as the Soil Conservation Service). The two major classifications of soils within the District are Alderwood gravelly sandy loam and Alderwood urban land complex. The locations of these soils are shown on Figure 2-5. The average slopes are from 2 to 8 percent, except for the steep areas that slope downward toward Lowell-Larimer Road and the Snohomish River valley floor.

Alderwood gravelly sandy loam is moderately well drained and lies over somewhat deep hardpan. Alderwood soils were formed from glacial till, and native vegetation is mainly conifers and hardwoods. The surface layer is very dark grayish brown gravelly sandy loam to about 7 inches. The upper portion of the strata is dark yellowish brown and dark brown very gravelly sandy loam to about 23 inches. The lower level is olive brown very gravelly sandy loam for about 5 inches. Depth to hardpan ranges from 20 to 40 inches. Permeability is somewhat quick above the hardpan but very slow through it. A seasonal perched water table is located at a depth of 18 to 36 inches between January and March. The Alderwood urban land complex is similar in characteristics to the Alderwood series, and consists mostly of Alderwood gravelly sandy loam with 25 percent urban land.

The Natural Resource Conservation Service identified the Alderwood series as having poor soil characteristics for normal septic system design. The main limitations identified include the depth to the weakly cemented hardpan and wetness. On-site disposal absorption fields flow laterally above the hardpan and can seep at the bottom of steep slopes. Where wetlands have the potential to form, ponds may develop due to the soil.

SITE-SENSITIVE AREAS

The site-sensitive areas that are applicable to the District include steep slopes, poorly drained soils, and identified wetlands. The wetlands have been identified on the National Wetland Inventory Maps as palustrine systems as shown on Figure 2-6. Palustrine wetlands include all nontidal wetlands with dominant species of trees, shrubs, persistent emergents, emergent mosses or lichens, including wetlands in tidal areas where salinity is less than 0.5 percent. Palustrine wetlands can be located shoreward of lakes or rivers, on river floodplains, in isolated catchments, or on slopes. These wetlands are supplied by the Silver Lake Creek that flows from Silver Lake through Ruggs Lake. The wetlands discharge to Penny Creek.

The steep slopes in the northeast sector of the District include deep ravines with seasonal groundwater seepage. Building within these areas must meet Snohomish County planning guidelines.

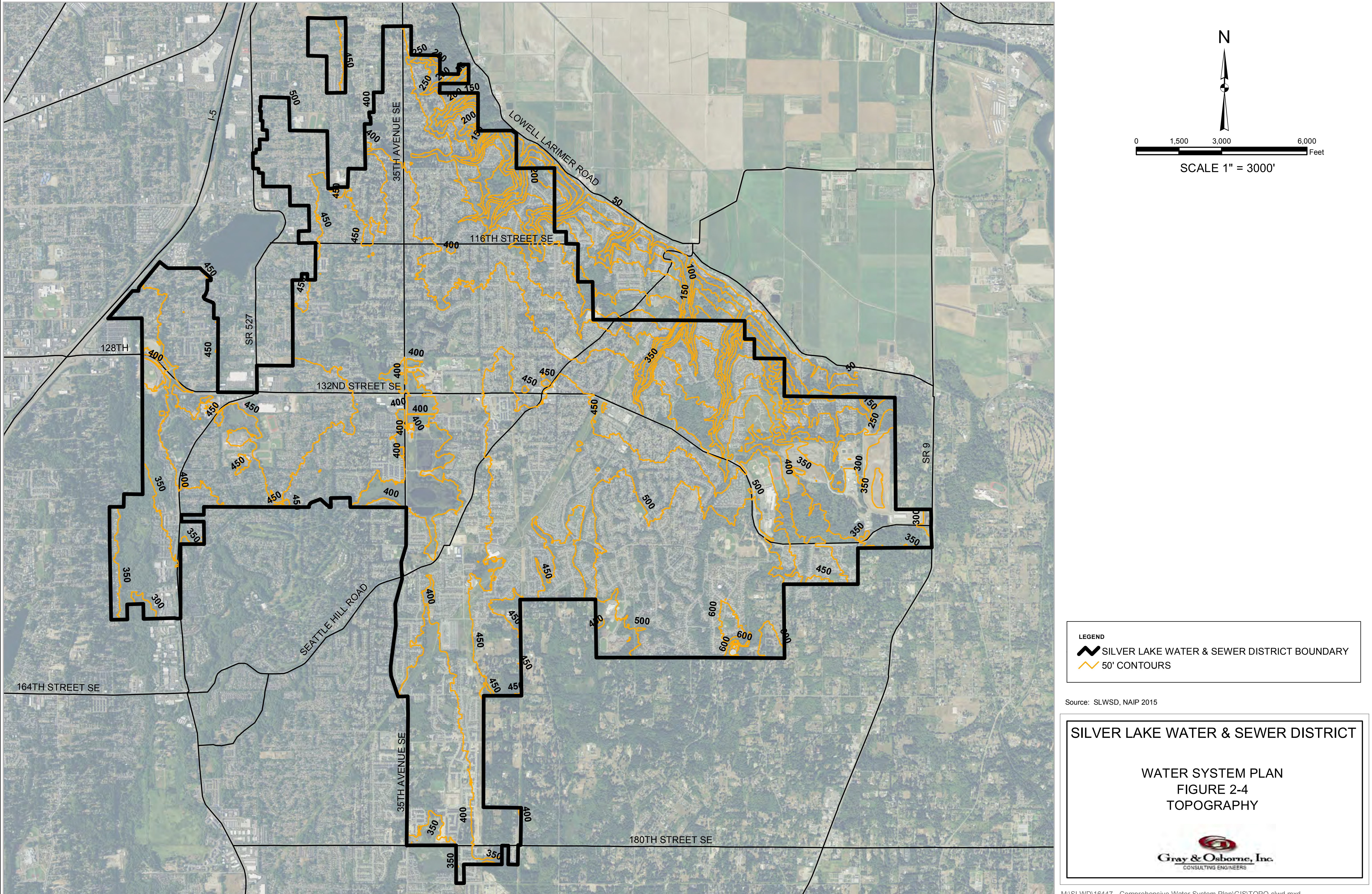
POPULATION

To evaluate the water system's existing facilities and determine requirements for future facilities, the District's existing and projected population is estimated and used to project future water demand.

The District has historically estimated its customer population based on an estimated density of 2.86 persons per connection (ppc). This value was applied in the District's 2010, 2003, and 1998 Water System Plans. Based on population from the 2010 census and service connection records, a customer population density of 3.02 ppc has been calculated and will be used for this Plan.

SERVICE AREA POPULATION PROJECTION

The present and future populations of the District are estimated using data from the Puget Sound Regional Council (PSRC) 2015 Small Area Forecast. The forecast data are presented for regions known as Forecast Analysis Zones (FAZs). The District's service area overlaps three FAZs, as shown on Figure 2-7. The FAZ data provided by PSRC includes forecasts of populations within each zone from 2010 through 2040 in 5- and 15-year increments. These forecasts are used to develop annual growth rates for each FAZ. These growth rates and the average growth rates within the District as a whole are



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-4
TOPOGRAPHY

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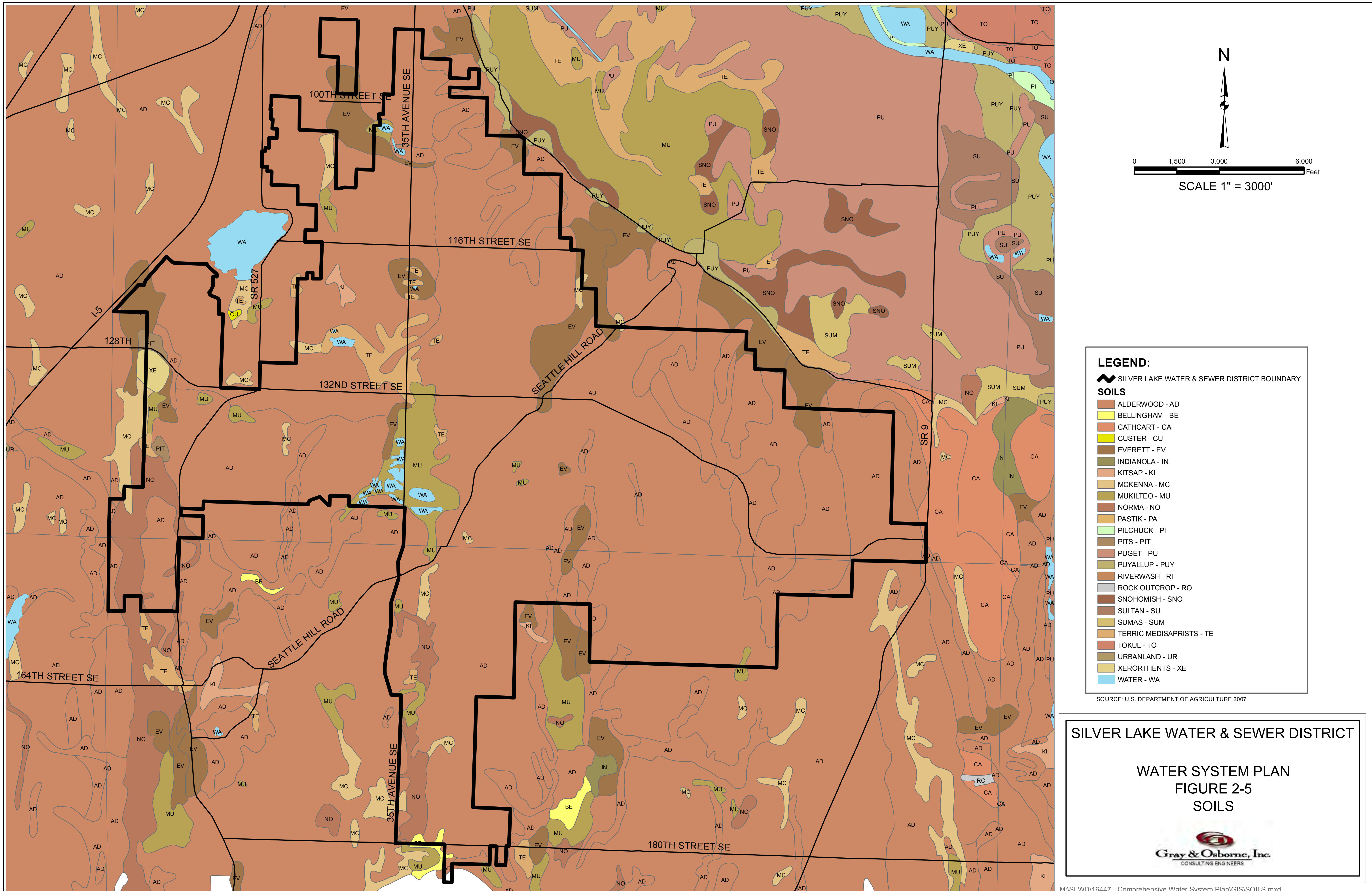

SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-5
SOILS

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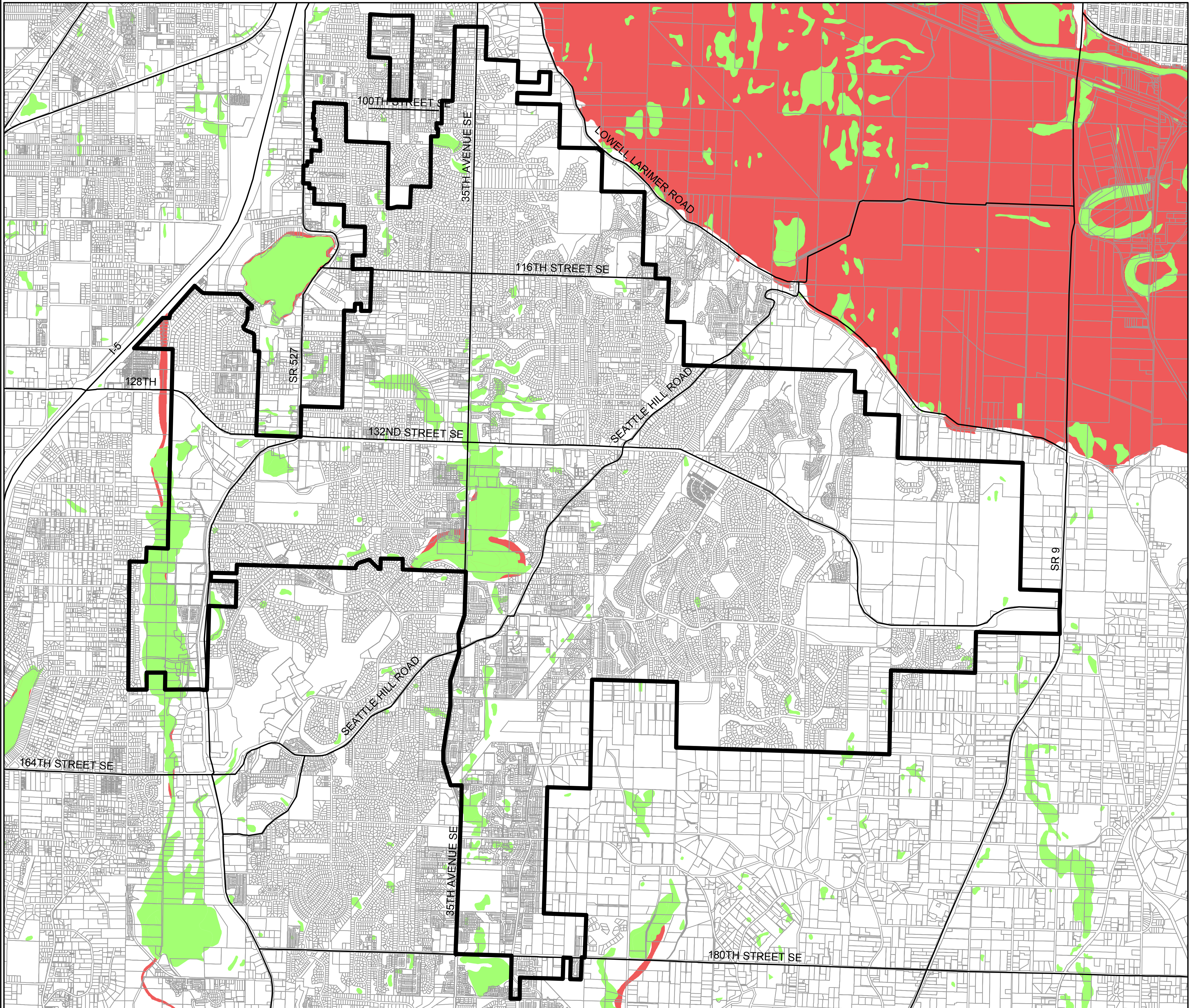

N

0 1,500 3,000 6,000 Feet

SCALE 1" = 3000'

LEGEND:

SILVER LAKE WATER & SEWER DISTRICT BOUNDARY

NATIONAL WETLANDS INVENTORY

WETLANDS

FEMA ZONE

100-YEAR FLOODPLAIN

DATA SOURCES:
FEMA Q3 FLOOD DATA, WASHINGTON, 1998
U.S. DEPT. OF FISH AND WILDLIFE, NWI, 2000

SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-6
SITE SENSITIVE AREAS

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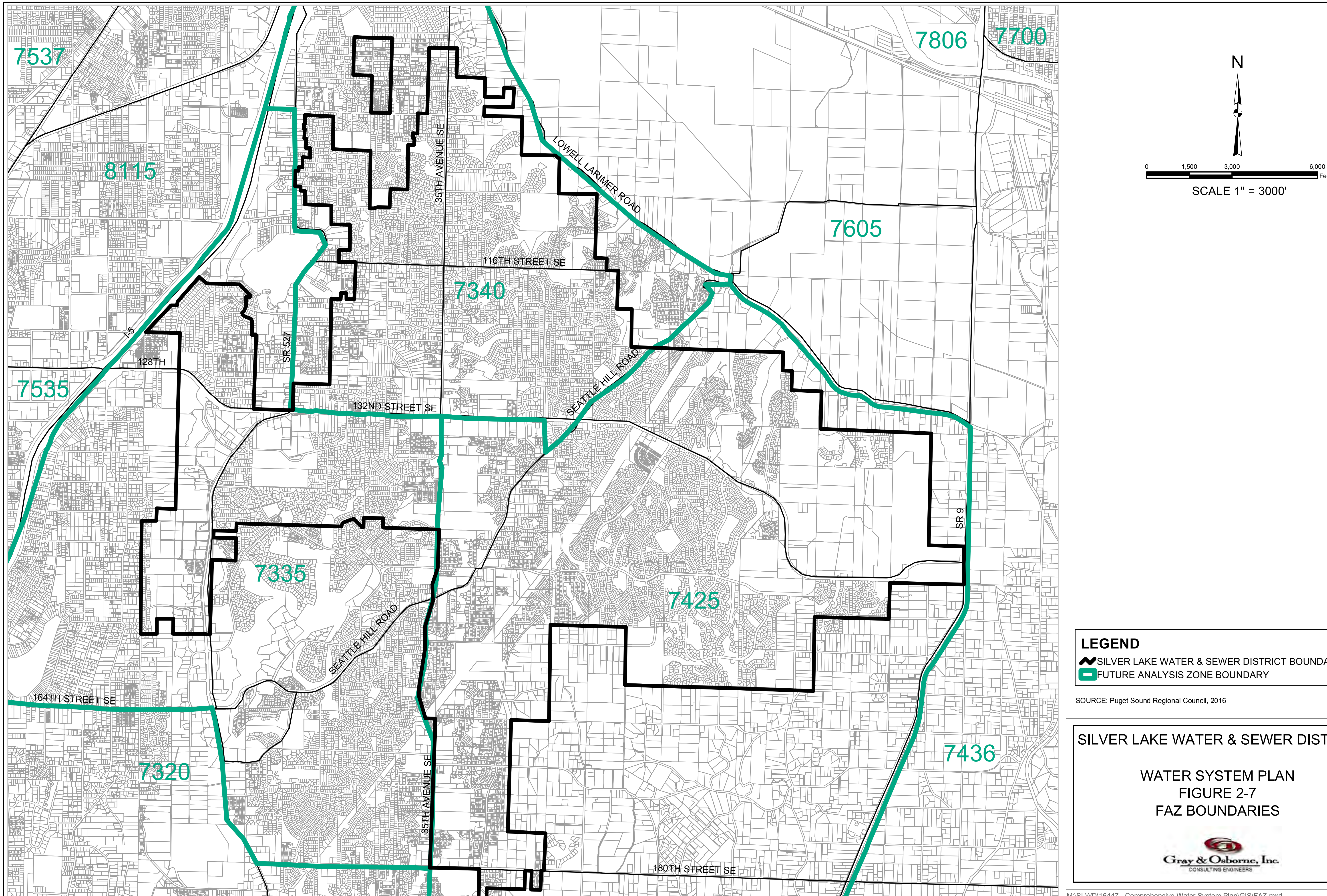

LEGEND

SILVER LAKE WATER & SEWER DISTRICT BOUNDARY

FUTURE ANALYSIS ZONE BOUNDARY

SOURCE: Puget Sound Regional Council, 2016

SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN

FIGURE 2-7

FAZ BOUNDARIES

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CONSULTING ENGINEERS

M:\SLWD\16447 - Comprehensive Water System Plan\GIS\FAZ.mxd presented in Table 2-3. Table 2-4 lists the historical and projected population for the District along with the number of connections.

TABLE 2-3

Forecasted FAZ Area Population Growth Rates(1)

Year Range	7335	7340	7425	District(2)
2010-2025	0.68%	1.04%	2.05%	1.52%
2026-2030	0.21%	-0.05%	0.32%	0.19%
2031-2035	0.18%	-0.31%	0.33%	0.11%
2036-2040	0.38%	-0.32%	0.65%	0.31%

(1) Data from PSRC 2015 Small Area Forecasts.
(2) Weighted average of FAZ area projections based on the current District boundary.

TABLE 2-4

Historical and Projected Populations(1)

Year	Connections(2)	Population(3)	Growth Rate(4)
2009	15,643	47,265	1.09%
2010	15,907	48,063	1.69%
2011	16,110	48,676	1.28%
2012	16,397	49,544	1.78%
2013	16,740	50,580	2.09%
2014	17,180	51,909	2.63%
2015	17,549	53,024	2.15%
2016	17,936	54,194	1.52%
2017	18,208	55,016	1.52%
2018	18,484	55,850	1.52%
2019	18,765	56,698	1.52%
2020	19,049	57,557	1.52%
2021	19,338	58,430	1.52%
2022	19,632	59,317	1.52%
2023	19,929	60,216	1.52%
2024	20,232	61,130	1.52%
2025	20,271	61,248	0.19%
2026	20,310	61,367	0.19%
2027	20,350	61,487	0.19%
2028	20,389	61,606	0.19%
2029	20,429	61,726	0.19%
2030	20,452	61,796	0.11%
2031	20,476	61,867	0.11%

TABLE 2-4 – (continued)

Historical and Projected Populations(1)

Year	Connections(2)	Population(3)	Growth Rate(4)
2032	20,499	61,938	0.11%
2033	20,523	62,009	0.11%
2034	20,546	62,080	0.11%
2035	20,611	62,275	0.31%
2036	20,676	62,471	0.31%
Buildout	24,011	72,548	-

(1) Based on the current District service area and Study Area 1.
(2) Based on District records of total service connections.
(3) Calculated assuming 3.02 ppc.
(4) Based on connections from the previous year.

POPULATION HOLDING CAPACITY

The population holding capacity of the District is presented in Table 2-5. The developed population is added to the undeveloped population to get the holding capacity in the District based on zoning and land use. The population holding capacity of the District, including Study Area 1, is calculated to be 72,548.

TABLE 2-5

Population Holding Capacity

UGA	Developed Population(1)	Undeveloped		Population Holding Capacity(4)
		Units(2)	Population(3)	
Everett	17,172	809	2,444	19,616
Mill Creek	17,146	1,742	5,264	21,360
Snohomish County	17,333	545	1,647	22,597
Snohomish County (Outside GMA)	1,373	900	2,719	4,092
Study Area 1	0	1,616	4,883	4,883
District Total	**53,024**	**4,846**	**19,524**	**72,548**

(1) Developed population in 2015 based on Table 2-4.
(2) Undeveloped units as calculated in Table 2-2.
(3) Undeveloped population based on undeveloped units and population density of 3.02 pph.
(4) Sum of developed population and undeveloped population.

POPULATION PROJECTION EVALUATION

Based on current land use for the Cities of Everett and Mill Creek and the Snohomish County UGA, the expected buildout population of the District's retail service area is 67,665. The expected buildout population of the District's retail service area and Study Area 1 is 72,548. District's 2009 *Water System Comprehensive Plan* projected an ultimate population of 77,013 based on the Snohomish County land use zoning at the time and assumed the former Cathcart property would be developed as presented in *A New Vision for Green Communities,* Snohomish County. This buildout projection does not include any reductions in population that may result from future annexations.

SERVICE CONNECTIONS

HISTORICAL GROWTH IN SERVICE CONNECTIONS

The number of water connections for each year from 2009 through 2016 is presented in Table 2-6. Based on the increase in water connections, the District's average annual growth rate from 2009 to 2016 was 1.87 percent, down from the growth rate identified in the 2009 Plan (3.17 percent).

The year-end total number of service connections served by the District in 2016 was 17,936. Over the past 8 years (2009–2016), total growth in service connections was approximately 15 percent.

TABLE 2-6

Historical Growth Based on Water Service Connections

Year	Connections per Year	Total Connections	Percent Annual Growth(1)
2009	168	15,643	1.09%
2010	264	15,907	1.69%
2011	203	16,110	1.28%
2012	287	16,397	1.78%
2013	343	16,740	2.09%
2014	440	17,180	2.63%
2015	369	17,549	2.15%
2016	387	17,936	2.21%
Average Annual Growth			1.87%

(1) Based on connections from the previous year.

SERVICE CONNECTIONS BY CUSTOMER CLASS

Table 2-7 provides the number of water service connections for each customer class. The majority of the service connections within the District are single-family residential customers.

TABLE 2-7

Water Service Connections by Customer Class

Year	Single-Family Residential	Multi-Family Residential	Commercial	Total
2009	14,656	349	638	15,643
2010	14,875	346	686	15,907
2011	15,076	346	688	16,110
2012	15,339	350	708	16,397
2013	15,645	387	708	16,740
2014	16,018	414	748	17,180
2015	16,351	431	767	17,549
2016	16,720	429	787	17,936

WATER USE

Historical water use for the District is based on two primary sources of information: source production data and individual meter consumption data. The District's sources of supply are master meters that it maintains with the City of Everett and the Clearview Water Supply Agency and AWWD. These sources are metered and this data is compiled as the District's production. The District also meters customer accounts and this provides a record of water consumption.

CONSUMPTION AND PRODUCTION HISTORY

District Consumption

Average daily water consumption based on customer billing information is presented in Table 2-8.

TABLE 2-8

Historical Average Daily Consumption

Year	Single-Family (mgd)	Multi-Family (mgd)	Commercial (mgd)	Other[1] (mgd)	Total (mgd)
2009	2.98	0.25	0.45	0.01	3.69
2010	2.65	0.26	0.38	0.01	3.3
2011	2.54	0.24	0.36	0.01	3.15
2012	2.66	0.25	0.41	0.01	3.33
2013	2.71	0.28	0.42	0.01	3.42
2014	2.78	0.29	0.43	0.01	3.51
2015	2.93	0.33	0.48	0.00	3.74
2016	2.86	0.34	0.47	0.00	3.67

(1) Includes schools, hydrant meters, and supply to Cross Valley Water District.

Everett Customer Consumption

Downstream of Master Meter 1 there are approximately 587 Everett water customers. The locations of these connections are shown on Figure 2-8. Table 2-9 shows the consumption by these Everett customers for the years 2010 through 2016.

TABLE 2-9

Everett Customers Served by District

Year	Customers	Total (gallons)	Average (gpd)
2010	584	40,527,198	111,033
2011	583	38,274,273	104,861
2012	585	40,893,953	112,038
2013	586	41,069,098	112,518
2014	587	40,958,323	112,215
2015	587	34,247,451	93,829
2016	587	40,426,153	110,757

District Customers on Everett's System

A number of District customers are served directly from Everett's system due to a working arrangement between Everett and the District. Since the Murphy's Corner annexation in 2006, the area of the District known as Silver Acres has been isolated from the rest of the District's system and has been served directly on the Everett distribution system. This was done to assist Everett in meeting fire flow requirements in the Murphy's

Corner annexation on a temporary basis until Everett can construct its own improvements. The locations of these connections are shown on Figure 2-8. Table 2-10 shows the number of customers and their consumption.

TABLE 2-10

District Customers Served by Everett

Year	Customers	Total (gallons)	Average (gpd)
2010	619	37,100,657	101,646
2011	696	37,879,076	103,778
2012	747	42,533,873	116,531
2013	754	45,879,579	125,697
2014	778	44,253,880	121,244
2015	807	49,319,593	135,122
2016	811	48,573,358	133,078

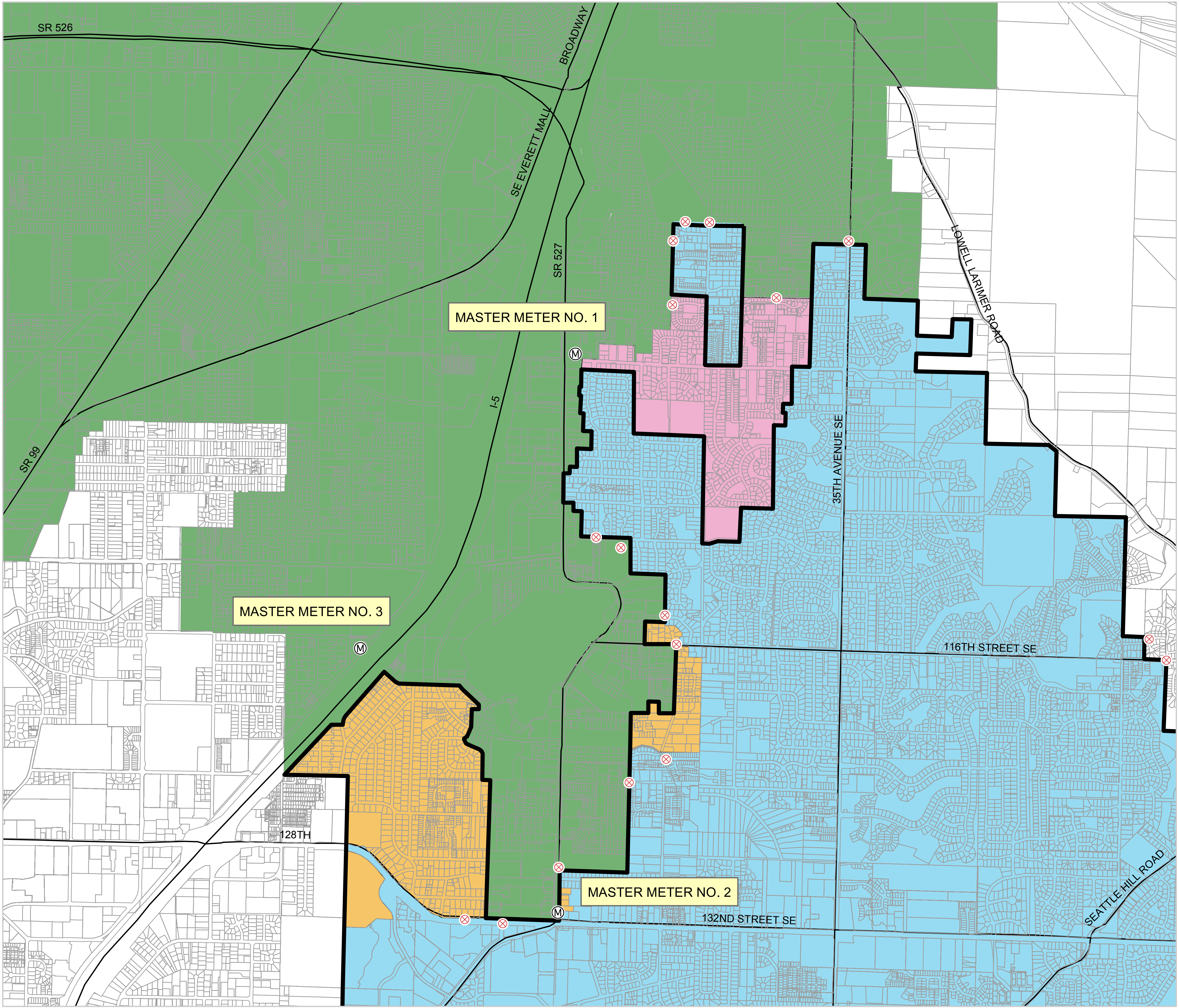
District Production

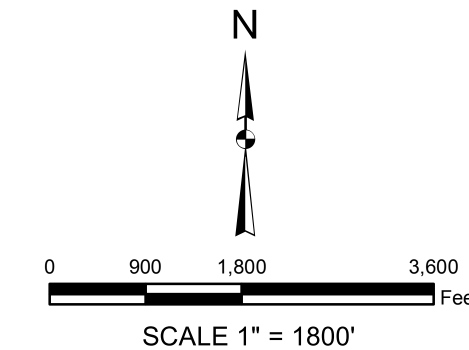
As mentioned in Chapter 1, the District's entire supply of water is produced by the City of Everett Water Filtration Plant. Supply is delivered through master meters with the City of Everett and CWSA. The master meters that provide supply to the District's water system are monitored by the District's SCADA system. Table 2-11 provides a summary of the historical average daily production through the master meters. This data includes the Everett customers downstream of the District master meters, which represents approximately 587 connections as of 2015.

TABLE 2-11

Average Daily Master Meter Production

	Average Daily Production (mgd)(1)								
Month	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Average**
Jan	2.81	2.87	2.80	2.81	2.72	2.82	2.79	2.92	2.82
Feb	2.83	2.60	2.74	2.61	2.84	2.75	2.80	2.79	2.75
Mar	2.81	2.78	2.62	2.92	2.81	2.64	2.83	3.09	2.81
Apr	2.73	2.84	2.90	2.89	2.75	2.83	2.87	2.98	2.85
May	3.79	3.42	2.97	3.42	3.47	3.40	3.90	4.34	3.59
Jun	5.67	3.27	3.29	3.24	4.15	4.65	6.04	6.08	4.55
Jul	6.89	5.77	3.94	4.25	5.90	6.01	6.84	5.07	5.58
Aug	5.61	5.55	5.14	5.53	5.34	5.62	5.56	4.43	5.35
Sep	4.06	3.38	4.46	4.78	3.69	4.17	3.62	4.05	4.03
Oct	3.08	2.87	3.12	3.56	2.84	3.05	2.97	3.18	3.08





LEGEND

- INTERTIE (CLOSED VALVE)
- MASTER METER
- SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
- ADD TO MASTER METER (DISTRICT CONNECTIONS SERVED BY EVERETT)
- DEDUCT FROM MASTER METER (EVERETT CONNECTIONS SERVED BY DISTRICT)
- CITY OF EVERETT SERVICE AREA

SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-8
MASTER METER ADD / DEDUCT

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TABLE 2-11 – (continued)

Average Daily Master Meter Production

Month	Average Daily Production (mgd)(1)								
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Average**
Nov	2.87	2.89	2.94	2.78	2.88	2.89	3.12	3.19	2.94
Dec	2.97	2.91	2.75	2.78	2.80	2.79	2.81	2.90	2.84
Annual	**3.84**	**3.43**	**3.51**	**3.46**	**3.52**	**3.63**	**3.85**	**3.78**	**3.60**

(1) Average daily production includes Everett customers downstream of the master meters.

Table 2-12 provides a summary of the historical per capita water production for the District.

TABLE 2-12

Per Capita Water Production

Year	District Population(1)	Production (mgd)(2)	District Customers in Everett Consumption (mgd)(3)	Everett Customer Consumption (mgd)(4)	Net District Demand (mgd)	Per Capita Production (gpcd)
2009	47,265	3.84	0.11	0.12	3.83	81
2010	48,063	3.57	0.10	0.11	3.56	74
2011	48,676	3.42	0.10	0.1	3.42	70
2012	49,544	3.46	0.12	0.11	3.47	70
2013	50,580	3.64	0.13	0.11	3.66	72
2014	51,909	3.65	0.12	0.11	3.66	71
2015	53,024	3.80	0.14	0.09	3.85	73
2016	54,194	3.78	0.13	0.11	3.80	70
Average						**73**

(1) Based on Table 2-4.
(2) Based on District master meter records.
(3) Based on Table 2-10.
(4) Based on Table 2-11.

For the Plan, a value of 90 gpcd is used for demand projections. This value accounts for the possibility of fluctuations in water use for nonresidential customers, irrigation demands, and lost and unaccounted for water. A per capita production of 100 gpcd was used in the District's 2009 Water System Comprehensive Plan.

PEAK DAY DEMAND

Peak day demand is the maximum amount of water used by the District's system in a 24-hour period. The peaking factor is the peak day demand divided by the average day demand. This factor that can be used to estimate peak day demand based on average day consumption. The records include the peak day demand of Everett customers downstream of the District's master meters but do not include District use on Everett side of the master meter. The historical peak day demands and the peak day to average day peaking factor ratios are presented in Table 2-13.

TABLE 2-13

Peak Day Demand

Year	Peak Date	Peak Day Demand (mgd)(1)	Average Day Demand (mgd)(1)	Peaking Factor(2)
2009	July 29	9.06	3.85	2.35
2010	August 15	7.84	3.47	2.26
2011	September 5	6.37	3.32	1.92
2012	August 5	6.59	3.45	1.91
2013	June 30	6.53	3.64	1.79
2014	July 13	7.45	3.65	2.04
2015	July 4	8.70	3.80	2.29
2016	July 25	6.88	3.74	1.84
Average				**2.12**

(1) Based on District master meter records and net storage gain/loss, includes Everett customers downstream of District's master meters, and does not include District customers on Everett's side of the master meter.

(2) Peaking Factor = Peak Day/Average Day.

Table 2-13 shows an average peaking factor of 2.12 based on the District's master meter and reservoir booster station flow data. The District's 2010 Water System Comprehensive Plan used a peak day factor of 2.1, and a peaking factor of 2.1 is used in the Plan.

PEAK DAY PRODUCTION

Master meter records are used to determine the historical peak day production for the District. Table 2-14 presents the District's peak production. Though peak day production is defined as the peak day of source production, it is important to note that the District relies on its storage to reduce source peaking.

TABLE 2-14

Peak Day Production

Year	Peak Date	Peak Day Production (mgd)(1)	Average Day Production (mgd)(1)	Peaking Factor(2)
2011	September 7	5.53	3.32	1.67
2012	August 7	6.14	3.45	1.78
2013	July 30	6.43	3.64	1.77
2014	July 14	7.21	3.65	1.98
2015	July 4	8.18	3.80	2.15
2016	August 19	6.74	3.56	1.89
Average				**1.87**

(1) Based on District Master Meter records, and includes Everett customers downstream of District's master meters.
(2) Peaking Factor = Peak Day/Average Day.

PEAK HOUR DEMAND

Peak hour demand is the largest amount of water used in a 1-hour period on a peak day. The District's 2003 and 2010 Water System Comprehensive Plans used a factor of 1.62 to establish peak hour production based on the DOH formula. Figure 2-9 shows the District's diurnal curve for August 19, 2016. Based on this curve, the District had a peak hour to peak day peaking factor of 1.55. Since the actual peaking factor and the DOH value of 1.62 are similar, the more conservative value of 1.62 is applied to demand projections in the Plan.

It is generally accepted that peak hour factors range from 1.5 to 2.5. The DOH Water System Design Manual (2001) provides a methodology for calculating peak hour demand (PHD). The generalized equation follows:

$$PHD = \left(\frac{PDD}{1{,}440}\right)\left[(C)(N) + F\right] + 18$$

Where:
- PHD = Peak Hourly Demand, (gpm)
- C = Coefficient Associated with Ranges of ERUs
- N = Number of Service Connections, ERUs
- F = Factor Associated with Ranges of ERUs
- PDD = Peak Day Demand, (gpd/ERU)

The values for C and F of the peak hour demand formula are taken from the DOH Water System Design Manual (2001) Table 5-1. For the District, C is equal to 1.6 and F is equal to 225.

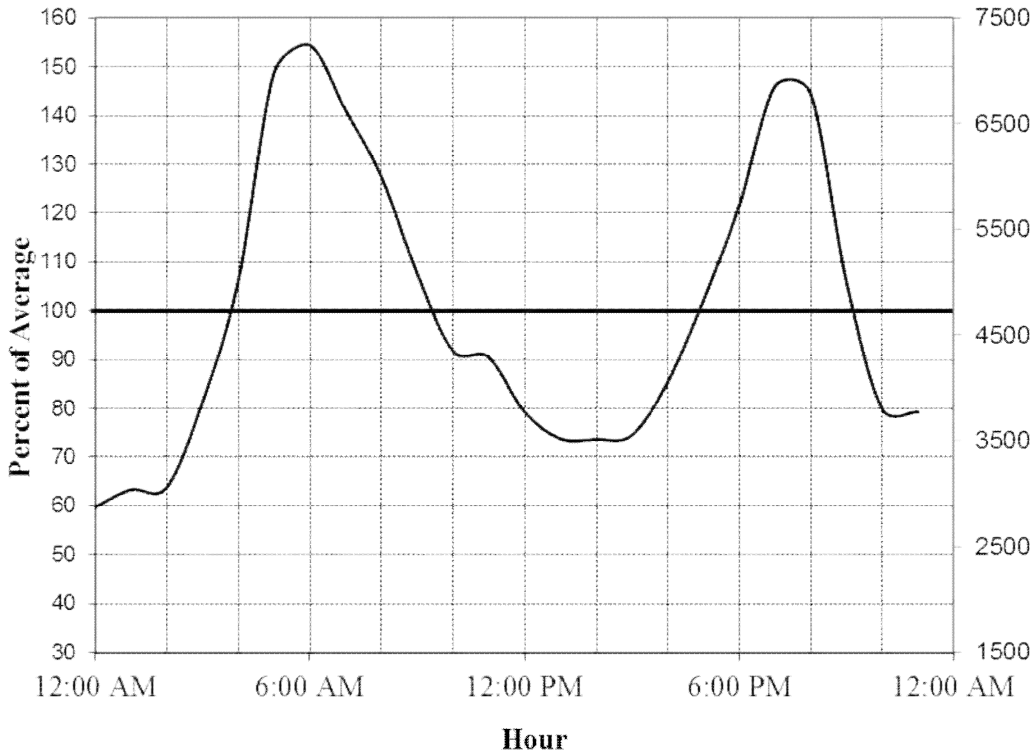


FIGURE 2-9

Peak Day Diurnal Curve (August 19, 2016)

DISTRIBUTION SYSTEM LEAKAGE

Distribution system leakage (DSL) is defined as the difference between metered production of the District's master meters and the District's authorized consumption. Authorized consumption is defined as all water authorized for use by the water system. This includes metered uses such as consumption by customers and unmetered uses such as firefighting, main flushing, maintenance of the water system, and street cleaning.

The District goes to great efforts to account for its water consumption and reduce DSL. The District uses hydrant meters to account for water used during new construction and the hydrant flushing program. Because of the District's effort and diligence in accounting for water use, the District is confident that the majority of the District's DSL is leakage and not unauthorized consumption.

Table 2-15 provides the District's historical distribution system leakage. DSL is calculated with master meter production data by subtracting both the District's consumption and the consumption of Everett customers that are served downstream of the meters plus other metered authorized consumption. The District's water use efficiency program is discussed in more detail in Chapter 7.

TABLE 2-15

Distribution System Leakage for Water 2009 to 2016

Year	Production (mgd)(1)	Consumption (mgd)(2)	Distribution System Leakage Rate (mgd)(3)	Annual (%)	3-Year Rolling Average (%)
2009	3.84	3.69	0.15	4%	5%
2010	3.57	3.40	0.17	5%	5%
2011	3.42	3.26	0.16	5%	5%
2012	3.46	3.43	0.03	1%	4%
2013	3.64	3.53	0.11	3%	3%
2014	3.65	3.63	0.03	1%	2%
2015	3.80	3.73	0.07	2%	2%
2016	3.78	3.74	0.04	1%	1%

(1) Production based on master meters includes District customers on Everett's service side of the master meters.
(2) Consumption of District customers based on billing records, includes Everett connections located downstream of District master meters.
(3) Production less consumption.

EQUIVALENT RESIDENTIAL UNITS

The conversion of total water use to equivalent residential units (ERUs) provides a means to express water use by nonresidential customers as an equivalent number of single-family residential customers. The average volume of water per residential connection is calculated by dividing the total volume of water used in the single-family residential customer class by the total number of single-family residential connections (see formula below as an example). This number defines the average single-family residential water use per connection. The volume of water used by the other customer classes can then be converted to an equivalent number of single-family residential services.

$$ERU = \frac{Single\text{-}Family\ Consumption\ (gpd)}{Number\ of\ \ Single\text{-}Family\ Connections}$$

The District's historical ERU values are presented in Table 2-16. An average value of 177 gallons per day per connection is used in the Plan. Table 2-17 presents the average ERUs per connection for all the District's customer classes. The average ERU/connection value of 1.19 indicates that the District's customer base and water use is primarily single-family residential.

TABLE 2-16

Historical Equivalent Residential Units

Year	Single-Family Consumption (mgd)	Single-Family Connections	ERU Value (gpd/connection)
2009	2.98	14,656	203
2010	2.65	14,875	178
2011	2.54	15,076	168
2012	2.66	15,339	173
2013	2.71	15,645	173
2014	2.78	16,018	174
2015	2.93	16,351	179
2016	2.86	16,720	171
Average			**177**

TABLE 2-17

2016 Equivalent Residential Units

Customer Class	Number of Connections(1)	Average Daily Consumption (mgd)	Equivalent Residential Units (ERUs)(2)	Average ERUs per Connection
Single Family Residential	16,720	2.86	16,720	1
Multi-Family Residential	429	0.34	1,988	4.63
Commercial	787	0.47	2,748	3.49
Total	**17,936**	**3.70**	**21,455**	**1.20**

(1) Does not include Everett customers downstream of District's master meters.

(2) Based on the 2015 average residential water use per connection of approximately 177 gallons per residential connections per day (Table 2-16).

PROJECTED WATER USE

Future water demands on the system were forecasted using the projected District population along with the gallons per capita per day (gpcd) water usage. This provides a projection of the water demands that the system must support as its population increases. The water demand forecasts are used in the system analysis and to develop demand sets for the hydraulic analysis. Water use projected for the study area is presented in Table 2-18. The water use projections are based on the population projections shown in Table 2-4 and a per capita water use of 90 gpcd. Peak day and peak hour demands are calculated based on peaking factors of 2.1 and 1.62, respectively.

TABLE 2-18

Water Demand Projections

Year	Projected Populations[(1)]	Demand Projections			
		Average Day[(2)] (mgd)	Peak Day[(3)] (mgd)	Peak Hour[(4)] (gpm)	ERU
2016	54,194	4.88	10.24	11,523	27,556
2017	55,016	4.95	10.40	11,698	27,974
2018	55,850	5.03	10.56	11,875	28,399
2019	56,698	5.10	10.72	12,055	28,829
2020	57,557	5.18	10.88	12,238	29,267
2021	58,430	5.26	11.04	12,424	29,710
2022	59,317	5.34	11.21	12,612	30,161
2023	60,216	5.42	11.38	12,804	30,619
2024	61,130	5.50	11.55	12,998	31,083
2025	61,248	5.51	11.58	13,023	31,143
2026	61,367	5.52	11.60	13,048	31,204
2027	61,487	5.53	11.62	13,074	31,264
2028	61,606	5.54	11.64	13,099	31,325
2029	61,726	5.56	11.67	13,124	31,386
2030	61,796	5.56	11.68	13,139	31,422
2031	61,867	5.57	11.69	13,154	31,458
2032	61,938	5.57	11.71	13,170	31,494
2033	62,009	5.58	11.72	13,185	31,530
2034	62,080	5.59	11.73	13,200	31,566
2035	62,275	5.60	11.77	13,241	31,665
2036	62,471	5.62	11.81	13,283	31,765
Buildout	**72,548**	**6.53**	**13.71**	**15,426**	**36,889**

(1) Includes Study Area 1.
(2) Based on 90 gallons per capita per day.
(3) Based on a Peak Day to Average Day factor of 2.1.
(4) Based on a Peak Hour to Peak Day factor of 1.62.
(5) Based on District holding capacity from Table 2-5.

CHAPTER 3

WATER QUALITY

INTRODUCTION

This Chapter provides a description of federal and state water quality regulations and provides a discussion of the impacts that these regulations may have on the District. Many federal and state water quality requirements do not directly affect the operations of the District, since it purchases water treated by the City of Everett. The District relies on regulatory compliance by Everett at their filtration plant for many water quality parameters. Although these regulations do not directly affect the District, they affect the quality and cost of water purchased from City of Everett. A copy of the District's water quality report is included in Appendix D.

Table 3-1 lists current drinking water regulations. The table also indicates whether or not the regulation requires the District to take action. Existing state law contains regulations concerning bacteriological contaminants, inorganic chemical and physical parameters (IOCs), volatile organic chemicals (VOCs), synthetic organic compounds (SOCs), radionuclides, and disinfection byproducts. The District is required to conduct distribution system monitoring for bacteriological contaminants, disinfection byproducts, residual disinfectant, and lead and copper.

TABLE 3-1

Current Drinking Water Regulations(1)

Rule	Contaminants Affected(2)	District Action Required?
Coliform Monitoring	Bacteriological	Yes
Stage 2 Disinfectants/Disinfection Byproducts Rule (D/DBPR)	TTHMs, HAA5, Chlorite, Bromate	Yes
Residual Disinfectant	Total Free Chlorine	Yes
Lead and Copper Rule	Lead, Copper	Yes
Consumer Confidence Report	Reporting Only	Yes
Arsenic Rule	Arsenic	No(3)
Filter Backwash Recycling Rule	Bacteriological	No(3)
Ground Water Rule	Bacteriological	No(3)
Inorganic Chemicals, and Physical Parameters	IOCs	No(3)
Interim Enhanced Surface Water Treatment Rule	Bacteriological	No(3)

TABLE 3-1 – (continued)

Current Drinking Water Regulations[1]

Rule	Contaminants Affected[2]	District Action Required?
Long Term 1 Enhanced Surface Water Treatment Rule	Bacteriological	No[3]
Radionuclides Rule	Radionuclides	No[3]
Surface Water Treatment Rule (SWTR)	Microbial Contaminants	No[3]
Unregulated Contaminant Monitoring Rule	IOCs, VOCs, SOCs	No[3]
Volatile and Synthetic Organic Compounds	VOCs, SOCs	No[3]

(1) Drinking water regulations as of Plan publication.
(2) TTHM = Total Trihalomethanes; HAA5 = Five Haloacetic Acids; IOCs = Inorganic Chemical and Physical Characteristics; VOCs = Volatile Organic Chemicals; SOCs = Synthetic Organic Compounds.
(3) Compliance for treatment and source water rules met by City of Everett.

SAFE DRINKING WATER ACT

The 1974 Safe Drinking Water Act (SDWA) and its 1986 and 1996 amendments established specific legislation for regulation of public water systems by federal and state governments. The federal government, specifically the U.S. Environmental Protection Agency (EPA), is authorized to develop national drinking water regulations and oversee the implementation of the act. Once the federal regulations become effective (i.e., promulgated), the states may adopt the federal law and accept the primary responsibility for implementation and enforcement of the law.

In Washington State, State Drinking Water Regulations are published in Washington Administrative Code (WAC) 246-290. These regulations establish monitoring requirements, maximum contaminant levels, and requirements for follow-up actions.

Minimum standards for water quality are often specified in terms of maximum contaminant levels (MCLs). Primary MCLs are based on chronic and/or acute human health effects. Secondary MCLs are based on factors other than health effects, such as the aesthetic quality of water (taste, odor, and color).

Public water suppliers have the responsibility of meeting the requirements of the regulations on a day-to-day basis. Monitoring requirements are often established for regulated contaminants to ensure that water systems demonstrate compliance with MCLs or treatment technique requirements. Public water suppliers are also required to retain certain operational records and submit annual reports to the Washington State Department of Health (DOH).

DISTRICT MONITORED DRINKING WATER REGULATIONS

COLIFORM MONITORING

Many serious diseases are caused by bacteria, which are a classification of single-celled organisms. To test for contamination in drinking water, specific bacteria generally known as indicator organisms are measured. Indicator organisms are used because they are easy to test for and their presence is generally indicative of biological contamination. Total coliform, fecal coliform, and *E. coli* are typical indicator organisms.

WAC 246-290 establishes bacteriological testing requirements for public water systems. Compliance with this rule is based on the presence/absence of total coliforms. The number of routine samples required depends on the system size.

Monitoring requirements and schedules for the District are found in the District's Coliform Monitoring Plan. A copy of the Coliform Monitoring Plan is provided in Appendix E.

Washington State bacteriological standards require a minimum number of 60 samples per month for a population of 50,001 to 59,000. The District's current (2016) population is now estimated to be approximately 54,194. The District had collected 60 samples per month located to cover each pressure zone, reservoir outlet, and source distribution area. By choice the District is expanding with ten additional sample sites for a total of 70 sites. The District is currently installing the 10 additional sampling stations. A map showing all 70 sampling locations is included in Appendix E.

The Revised Total Coliform Monitoring Rule specifies that each total coliform positive routine sample must be tested for the presence of E. coli. and if any total coliform positive sample is also E. coli. positive, then the sample must be reported to the state by the end of the day. If a routine sample is positive for total coliform, repeat samples are required.

Within 24 hours of learning of the total coliform positive sample result, at least three repeat samples must be collected and analyzed for total coliform. One repeat sample must be collected from the same tap as the original sample, one repeat sample must be collected within five service connections upstream, and one repeat sample must be collected within five service connections downstream. If one or more repeat sample is positive for total coliform, the sample must be analyzed for E. coli. If the total coliform positive sample is positive for E. coli, the sample must be reported to the state. Another set of repeat samples must then be collected unless an assessment has been triggered and the state has been notified.

The District is in compliance with monitoring requirements for coliform.

DISINFECTANTS/DISINFECTION BYPRODUCTS RULE

The use of chemical disinfectants has been highly effective at controlling many waterborne diseases caused by pathogenic organisms. It has been found, however, that disinfectants can react with naturally occurring organic materials in source water and form what are known as disinfection byproducts or DBPs. A number of these DBPs have been shown in laboratory animal tests to be carcinogenic or cause adverse reproductive and developmental effects. According to the U.S. EPA, epidemiological studies have shown a weak association between certain cancers, reproductive and developmental effects, and exposure to chlorinated surface water. To deal with this risk the Disinfectants/Disinfection Byproduct Rule requires the monitoring of two groups of disinfection byproducts. These are trihalomethanes and haloacetic acids. Trihalomethanes are measured as the sum of four different compounds (chloroform, bromodichloromethane, dibromochloromethane, and bromoform) known as total trihalomethanes or TTHMs. Haloacetic acids are measured as the sum of five different compounds (mono-, di-, and trichloroacetic acids and mono- and dibromoacetic acids) known as HAA5.

Stage 2 of the D/DBP Rule was published in January 2006 and compliance with the new regulations began in 2012. Under Stage 2 of the D/DBP Rule, the MCLs for TTHM and HAA5 remain 80 µg/L and 60 µg/L, respectively; however, compliance with the MCL is based on the locational running annual average (LRAA) of each individual sample site instead of the running annual average of all sample sites combined. This means that the annual average at each site must be below the MCL. The number of samples taken is dependant on the population served. Systems serving between 500 and 9,999 people must collect two samples per year and systems serving between 10,000 and 99,999 people must collect four samples per quarter. The District’s population falls within the range of 10,000 to 99,999 people so it needs to collect four samples per quarter.

The District’s Stage 2 sampling locations were selected in the 2008 *Initial Distribution System Evaluation* (IDSE) Report. Table 3-2 shows 2016 sample results.

TABLE 3-2

Stage 2 Selected Monitoring Locations

Site Name	Peak TTHM (mg/L)	Peak HAA (mg/L)
551	41	36.8
559	53.7	27.1
5551	27.7	31.4
5558	48.2	35.8

RESIDUAL DISINFECTANT

WAC 246-290-300, -440, and -664 require residual disinfectant concentration monitoring on a daily basis. For filtered systems serving more than 3,300 people each month, WAC 246-290-664 requires continuous monitoring of the residual disinfectant concentration of water entering the distribution system, with the lowest value reported each day. Continuous monitoring occurs at the Everett Filtration Plant and is provided by the City. For distribution systems, residual disinfectant concentration at representative points is required to be measured on a daily basis, or as otherwise approved by the DOH. At a minimum, residual disinfectant concentration within the distribution system must also be measured at the same time and location that routine coliform samples are collected. Water in the distribution system must contain a residual disinfectant concentration throughout the distribution system. The District tests for residual disinfectant at the same time routine coliform samples are taken. Additionally, the District monitors residual disinfectant continuously at the inlet and outlet of Reservoir 4, Master Meter 9, the inlet and outlet of Reservoir 2, and the Reservoir 3 outlet. The District is making a concerted effort to use this information to better manage the turnover of District reservoirs to provide a more consistent chlorine residual level. As mentioned, the District has met all standards for coliform, chlorine residual, and disinfection byproducts, but the District is actively and continually working to improve system water quality through diligent management of storage. The District does practice uni-directional flushing, has a strong distribution system that is well looped, and is investigating opportunities for booster disinfection.

LEAD AND COPPER

The Lead and Copper Rule (LCR) is intended to reduce tap water concentrations of lead and copper. The action levels for lead and copper are 0.015 mg/L and 1.3 mg/L, respectively. If the action levels are exceeded in more than 10 percent of the samples, the water system is required to take additional action to reduce lead and copper concentrations.

The District's compliance with the LCR is met as a part of Everett's Consecutive Systems Monitoring Program. Following a round of testing in 1992 that resulted in lead levels above the action limit, the City of Everett made several changes to their treatment process. Further testing and analysis demonstrated a reduction in lead levels at the tap. DOH has considered the Everett Filtration Plant's corrosion control process to be optimized since 1998. DOH approved reduced lead and copper monitoring for the City of Everett in March 1999. In 2000 and 2003, the total combined number of samples was 125 lead and copper tap samples, and 25 water quality parameter samples for City of Everett and the Consecutive Systems. Sampling parameters include pH, alkalinity, and temperature in the distribution system. The City of Everett also samples for pH every 4 hours at the point of entry. The average daily pH is reported to DOH. In 2006, a reduction in the number of required lead and copper samples from customer taps, from 125 to 100, was approved by DOH. This was done to establish a regional sample total based on the sample quantity requirements of the LCR. Additionally, water system eligibility to participate in the regional program was made Everett's responsibility. The latest round of regional LCR tap sampling was conducted in 2015; however, the results are yet to be made available. Results from 2012 regional LCR testing are included in Table 3-3.

TABLE 3-3

Everett Regional Lead and Copper Testing Results(1)

Parameter	Units	EPA Regulations		Everett Water Results		
		Ideal Level/Goal (MCLG)	Action Level (AL)	90^{th} Percentile Level	Homes Exceeding the AL	Comply?
Copper	ppm	1.3	1.3	0.109	None	Yes
Lead	ppb	0	15	2	0 of 107 (0.0%)	Yes

(1) Source: 2014 Water Quality Report.

CONSUMER CONFIDENCE REPORT

The Consumer Confidence Report Rule requires community water system purveyors to prepare and distribute an annual report of water quality analyses to their customers by the first of July annually. The District issues an updated Consumer Confidence Report to its customers each year prior to July 1. A copy of the District's 2015 report is included in Appendix D.

WATER QUALITY MONITORING SCHEDULE

Table 3-4 lists the District's current water quality monitoring schedule.

TABLE 3-4

Water Quality Monitoring Schedule

Parameter	Monitoring Location	Frequency
Coliform	Distribution System(1)	70 per month(2)
TTHM	Distribution System	4 sample each quarter
HAA5	Distribution System	4 samples each quarter
Chlorine Residual	Collect with Coliform Samples(3)	60 per month
Lead/Copper	Distribution System	As directed by City of Everett staff and as detailed in the most current version of the Everett regional LCR monitoring plan.

(1) See Coliform Monitoring Plan in Appendix E.
(2) 60 monthly samples required, District program includes 70 samples.
(3) Water in distribution system must contain a detectable chlorine residual throughout the distribution system.

CHAPTER 4

SYSTEM ANALYSIS

INTRODUCTION

Water system planning is based on a careful analysis of a water utility's ability to meet level of service standards for existing and future customers. The District has adopted design standards which identify criteria and standards for the water system. These standards can be used to evaluate and analyze the existing water system facilities within the District's system by comparing the existing and projected system demands developed in Chapter 2 to the standards. Based on this comparison, water system deficiencies can be identified and recommendations for improvements to meet standards can be developed.

SYSTEM DESIGN STANDARDS

Performance and design criteria typically address the sizing and reliability requirements for source, storage, distribution, fire flow, and water quality. Construction standards set forth the actual materials and construction methods that contractors, developers, and the District must follow when constructing water system facility improvements.

District Standards, including developer extension guidelines, have been developed for the District and are provided in Appendix F. District Standards may be subject to modification on a time to time basis.

The DOH relies on various publications, agencies, and the utility itself to develop and establish design criteria. WAC 246-290-200, Design Standards, lists the various criteria allowed by the DOH. The following provides a brief description of the two most widely recognized performance and design standards. Table 4-1 provides a summary of the minimum allowable design standards.

GENERAL FACILITY STANDARDS

1. Average and Peak Day Demand
2. Peak Hour Demand
3. Storage Requirements
4. Fire Flow Rate and Duration
5. Minimum System Pressure
6. Minimum Pipe Sizes
7. Backup Power Requirements
8. Valve and Hydrant Spacing
9. Other System Policies

TABLE 4-1

Summary of DOH Design Standards

Standard	DOH Design Manual (2009)
Source Development	The quantity of water at the source must: · Have sufficient capacity and water rights to meet average day demand (ADD) and peak day demand (PDD) on a reliable basis.
Booster Pump Stations	· Booster pumping facilities shall be designed to accommodate at least the next 10 years of system development. · All new closed system booster pumps shall be equipped with standby power facilities to operate the booster pump under PHD at 30 psi, and PHD with a fire flow at 20 psi.
Distribution	· Minimum diameter of all distribution mains shall be 6 inches or greater. Smaller diameter mains must be justified by hydraulic analysis. · New public system or additions shall provide the design quantity at 30 psi minimum under peak hourly demand at all points in the distribution system. · Required fire flow must be provided at a minimum of 20 psi under peak day demand conditions.
Storage	The sum of: · Operational Storage · Equalizing Storage $V_{ES} = (Q_{PH} - Q_S)*150$ · Standby Storage(1) $V_{SB} = 2*(ADD)$ · Fire Suppression Storage $V_{FSS} = NFF*T$ Q_{PH} = Peak hour demand Q_S = Sum of all source capacities except emergency sources NFF = Needed Fire Flow T = Time (Minutes) (1) For systems with one source.

Table 4-2 provides a comparison between the DOH Design Manual and the District standards with regard to general facility requirements. The District's standards meet or exceed all of the DOH standards.

TABLE 4-2

General Facility Requirements

Standard	DOH Design Manual (2009)	District Standard
Average Day and Peak Day Demand	Average day demand (ADD) should be determined from previous actual water use data. Peak day demand (PDD) is estimated at approximately 2.0 times the average day demand. PDD can be adjusted based on historical water use data.	Historical average day and peak day demands are calculated from District records. Projected peak day demand is estimated to be 2.1 times the average day demand.
Peak Hour Demand	Peak hour demand (PHD) is determined using the following equation: PHD = (PDD/1440)[(C)(N) + F] + 18 C = 1.6 N = Number of ERUs F = 225	Peak hour demand is calculated by applying a peaking factor of 1.62, which is consistent with the DOH Design Manual.
Storage	The sum of: · Equalizing Storage $V_{ES} = (Q_{PH} - Q_S)*150$ · Standby Storage $V_{SB} = 2*(ADD)$ · Fire Suppression Storage $V_{FSS} = NFF*T$	The sum of: · Equalizing Storage based on the DOH equation · Standby Storage equal to 2 times ADD · Fire Suppression Storage equal to the maximum required fire flow rate times the required duration · Demand Management Storage equal to 20 percent of total storage.
Fire Flow Rate and Duration	Fire flow rate and duration requirement will be as specified by the local fire authority and/or the Public Water System Coordination Act.	The following fire flow requirements were adopted in the 2010 Comprehensive Water System Plan: · 1 hour at 1,000 gpm for residential · 3 hours at 3,000 gpm for maximum institutional, commercial, industrial and multi-family.

TABLE 4-2 – (continued)

General Facility Requirements

Standard	DOH Design Manual (2009)	District Standard
Minimum System Pressure	The system should be designed to maintain a minimum of 30 psi in the distribution system under peak hour demand and 20 psi under fire flow conditions.	The system is designed to maintain a minimum of 30 psi in the system during peak hour demand and 20 psi during peak day with a fire flow.
Minimum Pipe Sizes	The minimum size distribution system line shall not be less than 6 inches in diameter for systems designed to provide fire flow. Hydraulically justified smaller lines may be used on short line extensions.	The District's Developer Standards allow distribution lines with hydrants to be a minimum of 8 inches.
Backup Power	On-site backup power equipment or gravity standby storage shall be provided unless the power grid meets the minimum reliability criteria.	Standby power is available at each booster pump station, which pumps from the District's reservoirs.
Valve and Hydrant Spacing	Sufficient valving should be placed to keep a minimum of customers out of service when water is turned off for maintenance or repair. Fire hydrants on lateral should be provided with their own auxiliary gate valve.	Valves shall be installed at intervals not to exceed 1,000 feet and at each end of easements. Fire hydrants are required every 600 feet in residential areas and every 300 feet in commercial areas.
Maximum Pipeline Design Velocity	Recommended maximum velocity of 8 feet per second under PHD conditions.	The District's facilities are designed to meet demand needs such that pipe velocity of 8 feet per second is not exceeded in providing for demand.

SYSTEM ANALYSIS

The following sections provide an analysis of the District's facilities based on the ability of the system to meet the existing and projected water system demands.

SOURCE OF SUPPLY

All water supplied to the District is produced by the City of Everett. The direct sources of supply to the District are master meter interties with the City of Everett, AWWD and the

CWSA. The District has purchased a 9.0 mgd share in the CWSA supply and has a wholesale water supply agreement with AWWD for the supply of up to 5 mgd. The District's supply of 14 mgd is sufficient to meet the projected buildout peak day demand of 13.71 mgd.

STORAGE

The District owns and operates three reservoirs with a total nominal volume of 16.4 MG. Each reservoir supplies the distribution system via pump station, therefore the total volume of each reservoir is usable storage and no dead storage needs to be subtracted from the total storage. The District's 2.4 MG share in the Clearview Reservoir is not available for use and will not be included in the analysis.

In order to determine whether or not the existing storage facilities owned by the District are adequate to meet existing and future demands on the system, the required volumes of the following five storage components need to be calculated.

Storage components are as follows:

- Operational Storage (OS)
- Equalizing Storage (ES)
- Standby Storage (SB)
- Fire Suppression Storage (FSS)
- Demand Management Storage (DM)

Formulas for calculating many of these components of the storage requirements are provided in the DOH Design Manual. For all applicable cases, the storage requirements meet or exceed the DOH Design Manual.

Operational Storage (OS)

Operational storage is typically defined as the storage used to control the system. For example, in a gravity system, source pumps are called on and off by the level in the reservoir. Since the District's system is a closed system, this is not the case for the operation of the system. For this reason, operational storage cannot be viewed in this way.

In the past, the District has defined operational storage as the 10 percent volume required to ensure proper water quality. However, depending on the time of year, this volume could vary, depending on the operating levels of Reservoir 4. For example, during winter demands, the District may elect to operate Reservoir 4 at a lower operating level to make it easier to maintain good water quality. Also, in the summer, normal diurnal demands provide the District with the ability to meet water quality requirements with equalizing storage.

Since the District pumps all of its storage into the system, the recommended operational storage is defined as the minimum storage level needed to ensure the pumps can start. For this reason, it is recommended that the bottom 5 feet of each reservoir be reserved for operational storage, which calculates to a total of approximately 1.59 MG.

Equalizing Storage (ES)

Equalizing storage must be provided as part of the total storage for the system to provide water during periods of peak demand that cannot be met by the source production capacity. In the District's case, it's the storage pumped from the District's reservoirs when supply from the District's master meters cannot meet demand. Equalizing storage is used on a daily basis, and is typically represented in the top of the available storage.

According the Washington State DOH Water System Design Manual, required equalizing storage can be calculated with the following equation:

$$ES = (PHD - Qs)\ (150\ minutes)$$

Where: ES = Equalizing storage, in gallons
PHD = Peak hourly demand, in gpm
Qs = Sum of all installed and active sources of supply. Since the District does not have an instantaneous limit, Qs is assumed to be equal to the peak day demand.

Standby Storage (SB)

Standby Storage, or Emergency Storage, provides reliability for the system should all sources fail or unusual conditions create higher than anticipated system demands. The amount of standby storage required for the District is equal to 2.0 times the average day demand (ADD) or:

$$SB = 2*(ADD)$$

Fire Suppression Storage (FSS)

Water systems must be capable of delivering fire flows in accordance with the adopted fire flow requirements. The maximum adopted fire flow requirement for the District is equal to 3,000 gpm for 3 hours. The required fire suppression storage is the product of the fire flow rate and duration or 0.54 MG.

Demand Management Storage (DM)

As a founding member of the CWSA, the District has committed to meeting design standards consistent with the other partnering agencies. AWWD reserves approximately

20 percent of its total storage volume to demand management storage. Demand management storage allows the District to take a consistent supply from its source meters providing space to overshoot or underestimate daily estimates from the Everett Water Filtration Plant. Demand management storage is storage that is available for use on a daily basis, so is represented in the top portion of the reservoir. To be consistent with AWWD, the District has reserved 20 percent, or 3.28 MG, of its total available storage for demand management. Storage analysis has included growth in required demand management storage as total required storage exceeds the total available storage.

STORAGE ANALYSIS

Table 4-3 presents the storage analysis for the District. Total storage does not include the District's share in the Clearview Reservoir as it is not available for use within the distribution system. As seen in Table 4-3, the District's storage capacity is deficient within the 6-year planning period. Table 4-4 presents storage analysis at buildout for the District assuming the transfer of service areas under the existing agreement with Everett. As seen in Table 4-3, the District's storage deficit at buildout is greatest when no service areas are transferred to the City of Everett.

The existing storage reservoirs are critical to the District storage needs. Loss of any reservoir immediately presents a system deficient in storage.

The District is planning for the construction of additional storage to meet increasing demands for the 10-year planning period.

The City of Everett implements a peaking factor to its wholesale water rate. In order to ensure the lowest wholesale rate possible for District customers, the District may construct additional storage in order to address the peaking factor with supply partners AWWD and the Clearview Group from City of Everett supplies.

TABLE 4-3

Storage Analysis

Year	Required Storage						Available Storage MG(7)	Surplus (+) or Deficit (-)
	OS(1) MG	ES(2) MG	SB(3) MG	FS(4) MG	DM(5) MG	Total(6) MG		
2016	1.59	0.66	9.75	0.54	3.19	15.73	15.97	0.23
2017	1.59	0.67	9.90	0.54	3.19	15.89	15.97	0.07
2018	1.59	0.68	10.05	0.54	3.21	16.07	15.97	-0.11
2019	1.59	0.69	10.21	0.54	3.26	16.29	15.97	-0.32
2020	1.59	0.70	10.36	0.54	3.30	16.49	15.97	-0.52
2021	1.59	0.71	10.52	0.54	3.34	16.70	15.97	-0.73
2022	1.59	0.72	10.68	0.54	3.38	16.91	15.97	-0.95
2026	1.59	0.75	11.05	0.54	3.48	17.41	15.97	-1.45
2036	1.59	0.76	11.24	0.54	3.53	17.66	15.97	-1.70
Buildout	1.59	0.89	13.06	0.54	3.85	19.93	15.97	-3.96

(1) Operational Storage.
(2) Equalizing Storage = (PHD - PDD)*150.
(3) Stand-by Storage = 2*ADD.
(4) Fire Suppression Storage = 3,000 gpm * 180 min.
(5) Demand Management Storage = 20 percent of 15.97 MG, or 20 percent of required storage, whichever is greater.
(6) Total storage is the sum of OS, ES, SB, FS, and DM. No storage components have been nested.
(7) Approximately 0.43 MG of Reservoir No. 3 is reserved for Everett customers based on the Everett Transfer of Service Agreement.

TABLE 4-4

Storage Analysis with Transfers to Everett

Buildout Scenario	Transferred Areas	OS(1) (MG)	ES(2) (MG)	SB(3) (MG)	FS(4) (MG)	DM(5) (MG)	Total(6) (MG)	Available Storage(7) (MG)	Surplus (+) or Deficit (-) (MG)
1	1	1.59	0.70	10.32	0.54	3.29	16.44	14.69	-1.75
2	1,5	1.59	0.68	9.96	0.54	3.19	15.96	14.69	-1.27
3	1,2	1.59	0.66	9.71	0.54	3.12	15.62	14.08	-1.55
4	1,2,5	1.59	0.63	9.34	0.54	3.02	15.12	14.08	-1.05
5	1,2,3	1.59	0.63	9.32	0.54	3.02	15.10	13.69	-1.41
6	1,2,3,5	1.12	0.61	8.95	0.54	2.81	14.03	13.69	-0.34
7	1,2,3,4	1.12	0.53	7.82	0.54	2.50	12.52	12.20	-0.32
8	1,2,3,4,5	1.59	0.51	7.45	0.54	2.52	12.61	12.20	-0.41
9	1,3	1.59	0.67	9.93	0.54	3.18	15.91	14.30	-1.61
10	1,3,5	1.59	0.65	9.57	0.54	3.09	15.44	14.30	-1.13
11	1,3,4	1.59	0.57	8.43	0.54	2.78	13.91	12.81	-1.10
12	1,3,4,5	1.59	0.55	8.07	0.54	2.69	13.44	12.81	-0.62
13	2	1.59	0.75	10.99	0.54	3.47	17.34	15.35	-1.99
14	2,5	1.59	0.72	10.63	0.54	3.37	16.85	15.35	-1.50
15	2,4	1.59	0.64	9.49	0.54	3.06	15.32	13.86	-1.46
16	2,4,5	1.59	0.62	9.13	0.54	2.97	14.85	13.86	-0.99
17	2,3,4	1.59	0.62	9.10	0.54	2.96	14.81	13.48	-1.34
18	2,3,4,5	1.59	0.59	8.74	0.54	2.86	14.32	13.48	-0.85
W/O Transfer	-	1.59	0.89	13.06	0.54	4.02	20.10	15.97	-4.13

(1) Operational Storage.
(2) Equalizing Storage = (PHD - PDD)*150.
(3) Stand-by Storage = 2*ADD.
(4) Fire Suppression Storage = 3,000 gpm * 180 min.
(5) Demand Management Storage = 20 percent of 15.97 MG, or 20 percent of required storage, whichever is greater.
(6) Total storage is the sum of OS, ES, SB, FS, and DM. No storage components have been nested.
(7) Approximately 0.43 MG of Reservoir 3 is reserved for Everett customers based on the Everett Transfer of Service Agreement.

PUMPING ANALYSIS

Table 4-5 provides a summary of each of the District's three booster stations. The total rated capacity for all three District booster stations is 17,850 gpm. The Reservoir 3 and Reservoir 4 booster stations directly supply the 640 Zone which in turn supplies the 485 Zone via PRVs. The Reservoir 2 booster station supplies the 725 Zone.

TABLE 4-5

Booster Station Inventory

Location	Zone Served	Booster Pumps	Rate Capacity (gpm)	TDH (ft)	Pump Horsepower	Standby Power Generator (kW)
Reservoir 2	725	Pump 1	650	145	30	230
		Pump 2	650	145	30	
		Pump 3	650	145	30	
		Pump 4	1,900	125	75	
Reservoir 3	640/485	Pump 1	3,500	130	150	400
		Pump 2	3,500	130	150	
Reservoir 4	640/485	Pump 1	1,000	180	60	450
		Pump 2	3,000	180	150	
		Pump 3	3,000	180	150	

The 640 and 485 Zones are supplied directly from the Clearview and AWWD Master Meters and Master Meters 1 and 10. These sources are currently limited to a total of 12.0 mgd or 8,333 gpm. Demand in excess of master meter capacity is supplied by the Reservoir 3 and Reservoir 4 booster stations. The 725 Zone is supplied exclusively by the Reservoir 2 Booster Station. Table 4-6 and Table 4-7 presents the booster station analysis. The analysis indicates that the District has sufficient booster station capacity to provide peak hour demands through the 20-year planning period.

As can be seen in Tables 4-8 and 4-9, the District has enough surplus booster station capacity to provide fire flow during peak day conditions through buildout. The District has source available to it from the City of Everett, which depending on circumstance, the District may or may not purchase.

TABLE 4-6

640/485 Zones Booster Station Analysis, Peak Hour

Year	Peak Day Demand (gpm)	Peak Hour Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	6,722	10,889	8,333	2,556	10,500	7,944
2022	7,357	11,918	8,333	3,585	10,500	6,915
2026	7,611	12,330	8,333	3,997	10,500	6,503
2036	7,748	12,552	8,333	4,219	10,500	6,281
Buildout	8,998	14,578	8,333	6,245	10,500	4,255

(1) Total zone booster pump capacity with largest pump out of service.

TABLE 4-7

725 Zone Booster Station Analysis, Peak Hour

Year	Peak Day Demand (gpm)	Peak Hour Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	391	634	0	634	1,950	1,316
2022	428	694	0	694	1,950	1,256
2026	443	718	0	718	1,950	1,232
2036	451	731	0	731	1,950	1,219
Buildout	524	848	0	848	1,950	1,102

(1) Total zone booster pump capacity with largest pump out of service.

TABLE 4-8

640/485 Zones Booster Station Analysis, Peak Day Fire Flow

Year	Peak Day Demand (gpm)	Fire Flow Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	6,722	3,000	8,333	1,389	10,500	9,111
2022	7,357	3,000	8,333	2,024	10,500	8,476
2026	7,611	3,000	8,333	2,278	10,500	8,222
2036	7,748	3,000	8,333	2,415	10,500	8,085
Buildout	8,998	3,000	8,333	3,665	10,500	6,835

(1) Total zone booster pump capacity with largest pump out of service.

TABLE 4-9

725 Zone Booster Station Analysis, Peak Day Fire Flow

Year	Peak Day Demand (gpm)	Fire Flow Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	391	1,000	0	1,391	1,950	559
2022	428	1,000	0	1,428	1,950	522
2026	443	1,000	0	1,443	1,950	507
2036	451	1,000	0	1,451	1,950	499
Buildout	524	1,000	0	1,524	1,950	426

(1) Total zone booster pump capacity with largest pump out of service.

DISTRIBUTION SYSTEM

A description of the distribution system facilities was provided in Chapter 1. An analysis of the transmission and distribution system is provided in Chapter 5, Hydraulic Analysis. The system deficiencies and proposed improvement projects are introduced in Chapter 5 and presented in detail in Chapter 8, Capital Improvement Plan.

SUMMARY OF DEFICIENCIES

SOURCE

The District's current sources of supply are the Clearview master meters and the option to take supply from the Everett master meters as needed. The District is currently limited to 12 mgd by the Clearview and AWWD agreements and will need to take supply in excess of this from Everett. The District is currently within the 12 mgd limit for peak day demand and no additional source capacity is required.

WATER QUALITY

As discussed in Chapter 3, the District is currently required to collect 60 routine coliform samples per month. WAC 249-290-300 determines the number of required routine samples based on population within the service area. The next range is 59,001 to 70,000 persons, which requires 70 monthly samples. Per Table 2-4, the District's population is expected to exceed 59,000 during year 2023. Per Table 2-4, the District's population in 2036 will be 62,050, which is still within the range of 70 samples per month. The District by choice is expanding routine coliform collection samples to 70 site per month, which will be sufficient for the 6-year and 20-year planning periods.

STORAGE

The District currently owns and operates three storage reservoirs that supply the distribution system. As shown in Table 4-3, the District's current storage facilities are projected to be deficient to provide storage starting in 2018. Reservoir 3 is located within the City of Everett UGA and transfer of service areas to the City of Everett will not negatively impact the District's storage surplus or deficit.

PUMPING

The District currently operates booster stations at each of its three reservoirs. These stations provide supply in excess of the District source capacity during times of high demand. As shown in Tables 4-6 through 4-9 the District has sufficient capacity to meet peak hour and fire flow demands for the 20-year planning period. This analysis does not factor in the purchase of future supply capacity and the ability to buy water from Everett.

CHAPTER 5

HYDRAULIC MODELING

INTRODUCTION

This Chapter presents the hydraulic model of the District's water system and the results of hydraulic analyses, which are conducted to evaluate the existing and future capabilities of the water system.

The operation of a municipal water system involves dynamic interactions between various water system components, including source, storage, transmission, and distribution system facilities. These interactions and their effect on the level of service provided to District customers are dependent on the distribution and magnitude of water demands within the system and the performance characteristics of the water system facilities. In addition to normal diurnal demands, infrequent and unanticipated demand events, such as fires and other emergencies, can significantly stress a municipal water system and its components. Such factors must be considered in analyzing the ability of a water system to provide for future demands, while maintaining an adequate level of water service to customers.

The development of a computer hydraulic model, which can accurately and realistically simulate the response of a water system under a variety of conditions and scenarios, has become an increasingly important element in the planning, design, and analysis of municipal water systems. The Washington State Department of Health's WAC 246-290 requires hydraulic modeling as a component of comprehensive water system plans.

HYDRAULIC MODELING SOFTWARE

The District's water system is analyzed using MWHSoft's InfoWater hydraulic modeling software, which operates within the ESRI ArcMap software platform. The model is updated continuously and is used regularly to evaluate District projects and developer extensions.

The InfoWater model is configured with a graphical user interface. Each water system element, including pipes, valves, pumps, and reservoirs, is assigned a unique graphical representation within the model. Each element is assigned a number of attributes specific to its function in the actual water system. Typical element attributes include spatial coordinates, elevation, water demand, pipe lengths and diameters, and critical water levels for reservoirs. With attributes of each system element as the model input, the InfoWater software produces the model output in the form of flows and pressures throughout the simulated water system.

MODEL ASSUMPTIONS

Lengths, diameters, and connection points of system piping are assigned using an updated base map of the water system. The locations of normally closed valves, check valves, and PRVs are also found on the water system base map, while the critical operational set points are taken from the District's SCADA system settings. The assumptions regarding the modeling of the District's water sources (CWSA, AWWD, and Everett master meters) and system demands are described in the following sections.

SOURCE

The model contains the Clearview source as a fixed-head reservoir, the Clearview pipeline, Clearview and Everett pump stations, Everett Reservoirs 3, 6A, and 6B, the Casino Road Standpipe, and Casino Road Pump Station. Connections with the AWWD system are modeled as fixed-head reservoirs with a HGL of 635 to match the AWWD 635 Zone. The Clearview pipeline provides the majority of the supply to the District from the east side of the service area through Master Meters 4, 5, and 9. Master Meter 7 is not used in normal system operation and is not modeled. Master Meter 10 supplied by AWWD is operational for model scenarios. The Everett master meters are closed for model scenarios, as the District's long-term options include the possibility of supplying demands from the Clearview and AWWD master meters. For the purposes of the hydraulic model this is a worst-case condition.

SYSTEM DEMANDS

A key element in the hydraulic modeling process is the distribution of demands throughout the water system. Total demand on the system is based on the projected demands from Chapter 2.

Demands were distributed from location specific billing records to model demand nodes using the Theissen polygon method. Existing demands were uniformly scaled to meet projected demands. Five demand sets are used in the hydraulic analysis:

- 2016 Existing Demands: These demands were used to verify current conditions.

- 2022 Peak Day Demands: These demands are used to evaluate the system's ability to meet the required fire flows at DOH's requirement of 20 psi within the 6- and 10-year planning period.

- 2022 Peak Hour Demands: These demands are used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system-wide pressure of 30 psi within the 6- and 10-year planning period.

- 2036 Peak Day Demands: These demands are used to evaluate the system's ability to meet the required fire flows at DOH's requirement of 20 psi within the 20-year planning period.

- 2036 Peak Hour Demands: These demands are used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system-wide pressure of 30 psi within the 20-year planning period.

DISTRIBUTION SYSTEM

The District's distribution system is currently interconnected with Everett's system downstream of Master Meter 3 in the Silver Acres area. This is due to an interim arrangement between the District and the City of Everett to provide fire flow in an area annexed by Everett as a temporary measure until Everett resolves its system deficiencies. This area is isolated from the rest of the District by closed valves. Valves and piping are currently in place to serve Silver Acres from the District 640 Zone and to isolate these customers from Everett's system once Everett has resolved its system deficiencies. Modeling for the 6-, 10-, and 20-year planning periods assumes that the District will be isolated from Everett.

PRESSURE REDUCING VALVES

In the District's water system, the delivery of water from the reservoirs to various pressure zones is dependent on several PRV stations within the system. Each PRV has been set based on the real set points. Two PRVs connect the 725 Zone to the 640 Zone and 11 PRVs connect the 640 Zone to the 485 Zone. The PRVs from the 725 Zone to the 640 Zone are closed for all model scenarios.

MODEL CALIBRATION

Model calibration originally occurred during development of the model in 1998, it was updated as a part of the 2003 Water System Comprehensive Plan, and the 2010 Water System Plan. The model has not been greatly altered since the last plan and model results have consistently reflected real-world conditions in the water system.

CALIBRATION TESTING

The hydraulic model of the District's water system is calibrated using data obtained from fire hydrant tests at various locations throughout the water system. Nine fire hydrant tests were conducted with the assistance of District personnel in late February and early March 2010. During these tests, static and residual pressures were recorded as District staff opened hydrants and recorded the flow. Field results were used to calibrate the hydraulic model by verifying pipe type and size, and adjusting roughness coefficients.

The testing locations include multiple points within each pressure zone. A description of each testing location is presented in Table 5-1.

TABLE 5-1

Hydrant Testing Locations

Test	Pressure Zone	Testing Location
1	640	21st Avenue SE and 103rd Street SE
2	485	46th Avenue SE and 110th Street SE
3	640	78th Avenue SE and 152nd Street SE
4	485	67th Avenue SE between 131st Place SE and 133rd Street SE
5	640	144th Street SE and 12th Drive SE
6	640	54th Avenue SE and 147th Street SE
7	640	North Creek Road and 153rd Street SE
8	725	Snohomish Cascade Drive and 65th Avenue SE
9	640	167th Street SE and 41st Avenue SE

The system conditions at the time of each test were recorded using the District's SCADA system. Recorded parameters include outlet flow and pressure for each District reservoir booster station as well as flow from master meters. These parameters were input into the model during the calibration procedure. As the tests were performed on three separate days and system demands can vary, it was necessary to set booster station and master meter flow rates, as well as static demands, specifically for each hydrant test.

CALIBRATION PROCEDURES

Using the system conditions for each hydrant test, the hydraulic model is used to generate static pressure and residual pressure at the measured residual discharge. The total system demand at the time of the hydrant tests was assigned based on SCADA records. Model output is generated at points in the model equivalent to the locations of the hydrant tests.

Model output for static pressure is generated by running the model at average system demands. Model output for residual pressure is generated at each model hydrant test point by placing an added demand equal to the measured residual discharge and recording the resulting pressure.

The system pressures and pipe flow rates determined in the hydraulic analysis are highly dependent on the friction loss characteristics established for each pipe. Adjustments to assumptions of friction loss are made until the hydraulic model replicates the measured field conditions. Hazen-Williams C-factors between 100 and 130 are used throughout the system. These friction factors are typical values for most pipes and are generally conservative. However, the friction factors for the pipe also compensates for system losses through valves and pipe fittings.

CALIBRATION RESULTS

The model output is produced for two data comparisons, static pressure and residual pressure. The values measured in the hydrant flow tests are compared to the model output values in Table 5-2.

TABLE 5-2

Calibration Results

Test	Flow (gpm)	Static Pressure (psi)			Residual Pressure (psi)			DF – DM[1]
		Field	Model	Difference	Field	Model	Difference	
1	1,100	65	66	1	48	53	5	4
2	800	104	104	0	72	66	-6	-6
3	1,400	96	92	-4	87	85	-2	2
4	1,200	62	61	-1	49	49	0	1
5	1,500	105	101	-4	97	90	-7	-3
6	1,200	66	65	-1	55	58	3	4
7	1,150[2]	124	124	0	100	96	-4	-4
8	1,000	73	74	1	74[3]	73	-1	-2
9	1,500	100	100	0	87	90	3	3

(1) DF – DM is equal to the model pressure difference minus the field pressure difference.
(2) Hydrant flow rate calculate based on SCADA records, field measured value was 1,600 gpm by pitot tube.
(3) An increase in pressure is caused by additional pumps being called on at Reservoir 2 Booster Station when the hydrant is opened.

Calibration of the hydraulic model produced results that varied from 0 to 4 psi of actual field test data for static pressure. Modeled residual pressures are within 6 psi of the measured residual pressures in all cases.

MODEL CONDITIONS

Model input assumptions have significant impacts on peak hour and fire flow results. Table 5-3 shows reservoir levels as they were modeled for each scenario. All three District reservoirs operate below the hydraulic grade of the system and have outlet booster stations that maintain the hydraulic grade. The levels in Table 5-3 represent the hydraulic grade of each reservoir upstream of the booster station with the operation, equalizing, and demand management storage removed.

TABLE 5-3

Model Reservoir Levels

Reservoir	Capacity (MG)	2022		2036	
		Peak Hour Level (ft)	Fire Flow Level (ft)	Peak Hour Level (ft)	Fire Flow Level (ft)
2	4.2	30	28	29	28
3	4.2	30	28	29	28
4	8	40	38	40	38
Clearview	12	60(1)	60(1)	60(1)	60(1)

(1) The inlet pipe to the Clearview Reservoir discharges at an elevation of 660 feet, which corresponds to a reservoir level of 60 feet. As the District's master meters are upstream of the Clearview Reservoir, the hydraulic grade of water supplied to the master meters is always at 660 feet or greater.

Master meter settings for each future modeling scenario are shown in Table 5-4. Master Meters 4, 5, and 9 provide supply from the Clearview pipeline. Master Meter 10 provides supply from AWWD. Meters have been set such that no more than the projected peak day demand is supplied from the Clearview pipeline and AWWD.

TABLE 5-4

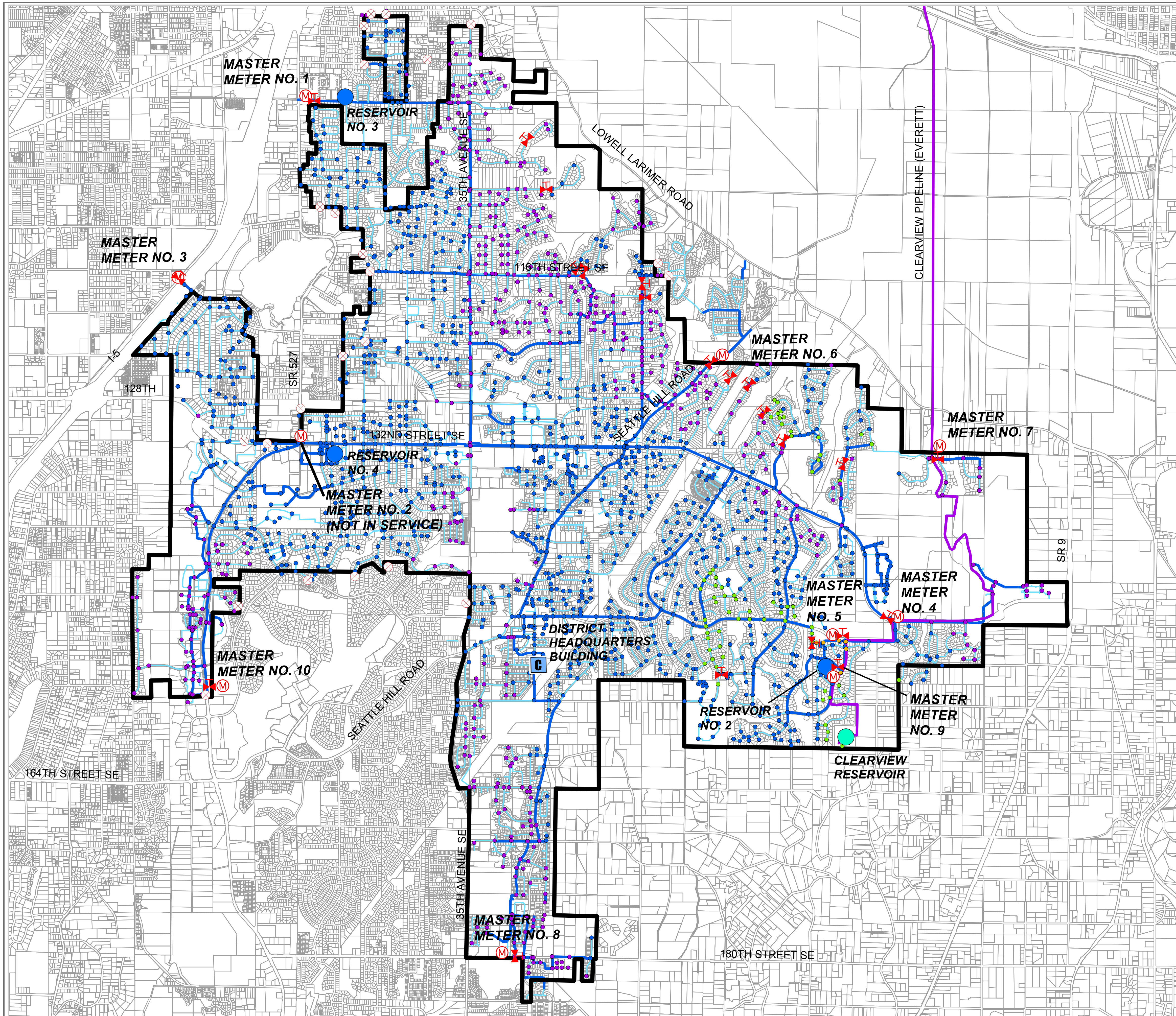
Model Master Meter Settings

Master Meter	2022 Scenarios (gpm)	2036 Scenarios (gpm)
4	1,934	2,036
5	1,934	2,036
9	1,934	2,036
10	1,934	2,036

SYSTEM ANALYSIS

PEAK HOUR ANALYSIS

According to WAC 246-290, a water system must maintain a minimum pressure of 30 psi in the distribution system under peak hour demand conditions. The District's existing distribution system has been modeled under 2016 and 2030 peak hour demand conditions. Results located in Appendix G illustrate the results of peak hour modeling for 2022 and 2036, respectively. Peak hour pressures for 2036 are shown on Figure 5-1. Peak hour analysis for 2022 and 2036 revealed no system deficiencies.



N

0 1,500 3,000 6,000 Feet

SCALE 1" = 3000'

LEGEND:

- INTERTIE (CLOSED VALVE)
- PRV / FLOW CONTROL VALVE STATION
- MASTER METER
- DISTRICT HQ BUILDING
- RESERVOIR
- CLEARVIEW RESERVOIR

PRESSURE

- 0 - 30 (NONE)
- 30 - 40
- 40 - 60
- 60 - 100
- 100+
- SILVER LAKE WATER & SEWER DISTRICT BOUNDARY

SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN

FIGURE 5-1
2036 PEAK HOUR DEMAND PRESSURE

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M:\SLWD\16447 - Comprehensive Water System Plan\GIS\Fig 5-1 Peak Hour.mxd

AVAILABLE FIRE FLOW ANALYSIS

The DOH Design Manual states that a water system should be designed to provide adequate fire flow under peak day demand conditions while maintaining a minimum system pressure of 20 psi. Fire flow availability is presented on Figure 5-2. The results of fire flow modeling are presented in Appendix H.

Table 5-5 shows the identified 2036 available fire flow deficiencies. Individual projects that address fire flow deficiencies are identified as part of the District's Capital Improvement Plan discussed in detail in Chapter 8.

TABLE 5-5

2036 Fire Flow Deficiency Locations

Location	Nodes	Pressure Zone	Available Fire Flow (gpm)	Required Fire Flow (gpm)	Reason for Deficiency	Proposed Improvement
East end of 105th Place SE near 21st Avenue SE	J-1127	640	497	1,000	Undersized dead-end main	Upsize to 8 inches
West end of 105th Place SE near 21st Avenue SE	J-1126	640	616	1,000	Undersized dead-end main	Upsize to 8 inches
East end of 129th Street SE near 14th Drive SE	J-1418	640	667	1,000	Undersized dead-end main	Upsize to 8 inches
94th Place SE and 27th Avenue NE	J-1903	640	709	1,000	Undersized main	Upsize to 8 inches
10th Drive SE between 129th Street SE and 126th Street SE	J-535	640	987	1,000	Undersized main	Upsize to 8 inches

MODELED CAPITAL IMPROVEMENT PROJECTS

The District has investigated constructing a water main along 156th Street SE from Gateway Middle School to 41st Avenue SE to provide looping and improved transmission to the southern portions of the District's service area. Modeling has determined that installation of the water main would provide a benefit to available fire flow and improve the District's ability to convey water. The proposed project is located in Study Area 1 that the District intends to serve in the future and would benefit the District's efforts to do so and the area has been identified by Snohomish County for a transportation project.

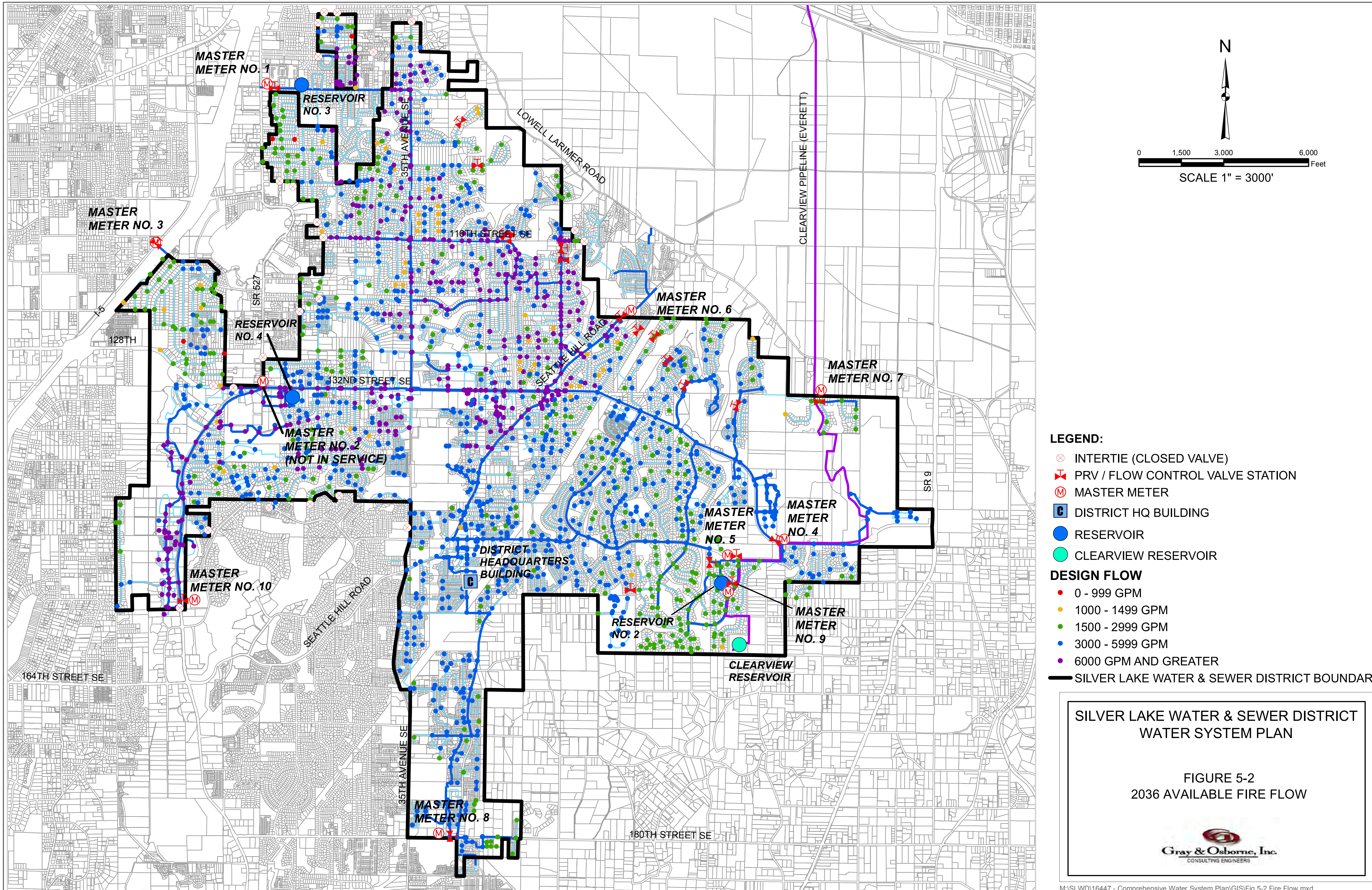
The District would like to improve the flexibility of its HGL in the 640 Zone in order to increase the District's ability to draw more supply from AWWD when needed. The

District has designed an isolated expansion of the 725 Zone to provide for higher pressures at locations limiting the flexibility of the 640 Zone HGL. Modeling of the expansion of the 725 Zone has shown improved system pressure.

The District's agreement with AWWD provides for the installation of a second master meter for the supply of an addition 1.5 mgd for a total of 5.0 mgd at the location of Trillium Boulevard and Mill Creek Boulevard. Modeling of the proposed Master Meter 11 improved both system pressure and available fire flow.

The need for a new reservoir was identified in Chapter 4 of this plan. The construction of Reservoir 5 and Booster Station has been proposed at the site of the District Headquarters building following the Reservoir 5 and Master Meter 9 Predesign Report prepared by Gray & Osborne for the District in 2011. The proposed Reservoir and Booster Station were modeled and found to improve both pressure and available fire flow in the system.

The above-modeled capital improvement projects that showed benefit to pressure and available fire flow will be further discussed in Chapter 8.



SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN

FIGURE 5-2
2036 AVAILABLE FIRE FLOW

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CHAPTER 6

OPERATION AND MAINTENANCE PROGRAM

INTRODUCTION

This Chapter summarizes the operation and maintenance programs maintained by the District to ensure performance and reliability of the potable water supply system. The District maintains and services three reservoirs, three booster stations, nine master meters, approximately 173 miles of water main, 14 PRV stations, a SCADA system, and various water system appurtenances.

WATER SYSTEM ORGANIZATION

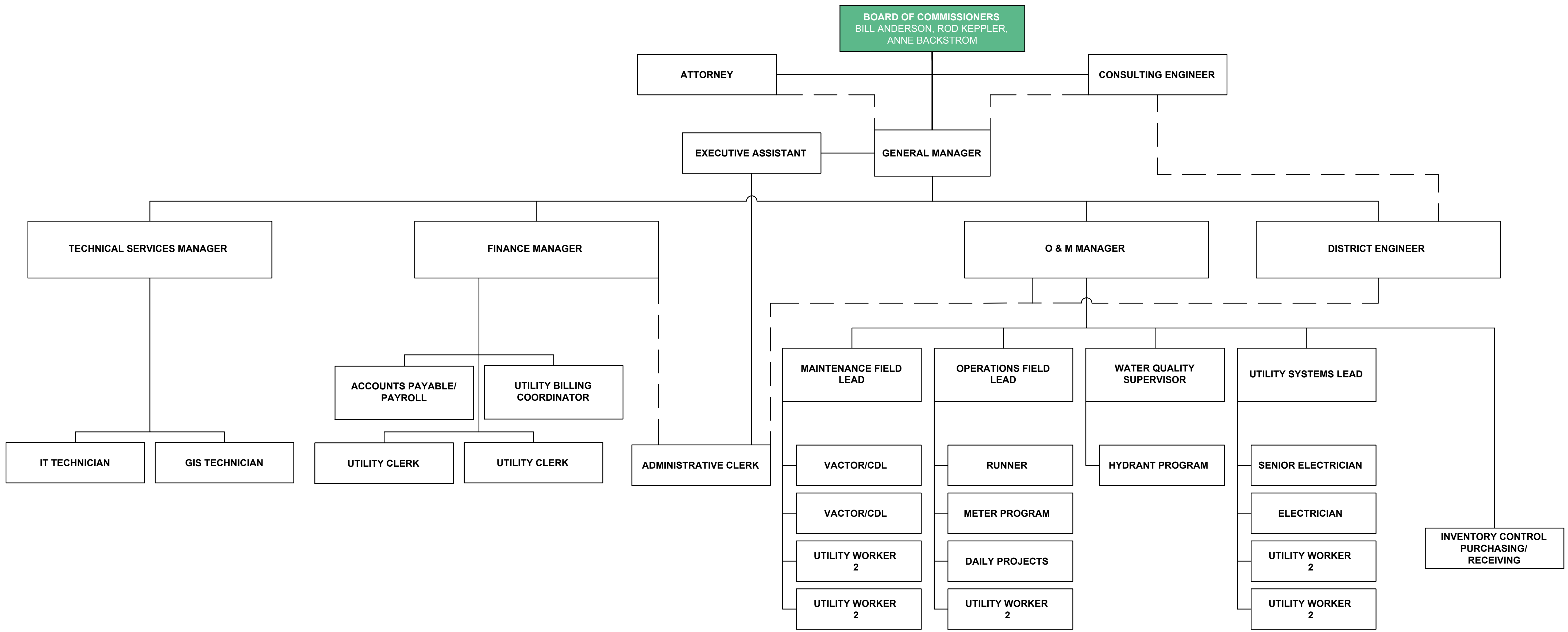
The District is governed by a three-member Board of Commissioners, elected to staggered 6-year terms. Day-to-day operation of the District is overseen by Patrick Curran, the General Manager. Currently, the District employs a field staff of 17 certified waterworks operators, and an office and administrative staff of 11. A complete organizational chart for the District is presented on Figure 6-1. This chart illustrates the specific personnel positions and corresponding responsibility for the District's water system.

The operation and maintenance staff is a collectively pooled work group consisting of staff charged with water and sewer maintenance duties. Routine water utility work and assignments include, at a minimum, the following tasks:

- Water service replacement and repair
- Water main inspections and repair
- Control valve service and repair
- Distribution system valve maintenance and repair
- Booster station maintenance and repair
- Reservoir inspection and maintenance
- Fire hydrant maintenance, testing, and repair
- Cross connection control
- Meter reading
- Water meter testing, repair, replacement, shutoff, and turn on
- Water main flushing
- Water quality sampling and testing
- Plan review and project punch list
- Water System Emergency Response

CERTIFICATION REQUIREMENTS

Waterworks Operator Certification, required under WAC 246-292-060, mandates large Washington State public water systems retain in their employment individuals who are certified, by examination, as competent in water supply operation and management. The DOH determines the required level and number of certified positions based on the population and complexity of the water system. The District is classified as a Group 3 Water System, which requires that at least one employee be certified as a Level 3 Water Distribution Manager (WDM-3). A summary of the minimum education and experience requirements for waterworks operator certification is shown in Table 6-1. The District meets all DOH certification requirements.



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 6-1
DISTRICT ORGANIZATIONAL CHART

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TABLE 6-1

Minimum Education and Experience Requirements for Waterworks Operator Certifications

Waterworks Operator Classification	Certification Level (1)(2)									
	Operator in Training(3)		Level One		Level Two		Level Three		Level Four	
	Education	Experience	Education	Experience	Education	Experience	Education	Experience	Education	Experience
Water Distribution Manager (WDM)	12 years	3 months	12 years	1 year	12 years	3 years	14 years	4 years	16 years	4 years
Water Treatment Plant Operator (WTPO)	12 years	3 months	12 years	1 year	12 years	3 years	14 years	4 years	16 years	4 years
Water Distribution Specialist (WDS)	12 years	3 months	12 years	1 year	12 years	3 years	NA	NA	NA	NA
Cross Connection Control Specialist (CCS)	NA	NA	12 years	6 months	NA	NA	NA	NA	NA	NA
Backflow Assembly Tester (BAT)	NA	NA	NA	Pass BAT Exam	NA	NA	NA	NA	NA	NA
Basic Treatment Operator (BTO)	NA	NA	12 years	6 months	NA	NA	NA	NA	NA	NA

(1) Minimum education shall be the acceptable level of education or experience that may be substituted for education according to the Washington State Department of Health's Waterworks Certification Program Guidelines.

(2) Minimum experience shall be the routine on-site performance of duties in a water purification plant or distribution system which effect plant or system performance or water quality. The board may allow substitutions of a person's relevant experience where the person cannot meet the formal education requirement, or vice versa, in the WDM, WTPO, WDS, and CCS classification as outlined in the Waterworks Certification Program Guideline.

(3) Operator in Training experience may be fulfilled by 3 months operating experience or 30 hours of relevant classroom training with three CEUs or college credits.

Current certification status of District personnel is shown in Table 6-2.

TABLE 6-2

District Personnel Certification

Waterworks Operator	WDM Certification Level[1]	CCS Certification Level[2]	Certification No.
Casey Parks	WDM4	CCS	5841
Ron Berger	WDM4	CCS	6183
Rick Gilmore, P.E.	WDM4	—	11081
Steve Tolpingrud	WDM3	CCS	7274
Kyle Bosman	WDM3	—	11833
Bill Kuhlman	WDM3	CCS	11886
Chris Stecher	WDM4	CCS	7974
Jeff Enns	WDM2	CCS	9904
Thomas Gaffney	WDM4	CCS	11078
Richard Hoffer	WDM1	—	11521
Brady Osborn	WDM3	—	12426
Andrew Piekarski	WDM3	CCS	12456
Katarina Hirai	WDM1	CCS	12625
Greg Schwan	WDS1	—	11916
Payton Flude	WDM 1	—	13716
Ricky Gordon	WDM 1	—	13711
Brian Malen	WDM 1	—	14095

(1) Water Distribution Manager (WDM), Water Distribution Specialist (WDS).
(2) Cross-Connection Control Specialist.

PROFESSIONAL GROWTH REQUIREMENTS

In order to promote and maintain expertise for the various grades of operator certification, the State requires that all certified operators complete no less than three Continuing Education Units (CEUs) within each 3-year period. Programs sponsored by both the Washington Environmental Training Resources Center (WETRC) and the American Waterworks Association (AWWA) Pacific Northwest Subsection are the most common sources of CEUs for certified operators. All District operators have acquired or will acquire the proper number of CEUs for recertification.

Operator training is an important component in maintaining a safe and reliable water system. At a minimum, all personnel performing water system-related duties receive training in the following areas:

- Confined space
- Trenching and shoring

- Competent person
- Traffic flagging
- First aid/CPR/bloodborne pathogens
- Automated External Defibrillators
- Cross connection control
- OSHA safety training

SYSTEM OPERATION AND CONTROL

The locations of the major system components are shown on Figure 1-6. A description of the normal operation of each facility is given in Chapter 1.

OPERATIONAL CONTROL AND MONITORING SYSTEM

The existing Supervisory Control and Data Acquisition (SCADA) system monitors the operation of various water system components. The Master Control Panel (MCP), which is the logic center of the SCADA system, is located at the District Office. It consists of an operator interface, a programmable logic controller (PLC), and a communication network. The SCADA system provides an analog display of the total system supply from the District master meters including alarms for electrical power failure at each site; the status of the booster stations including the discharge pressure, flow rate, pump on indicators, low-pressure alarms, pump fail alarms; as well as water levels and altitude valve operation at the reservoirs.

Examples of the SCADA system's monitoring, control, and alarm capabilities include those described in the following subsections.

Monitoring Capabilities

- Master meter flow, pressure, and totalizer
- Booster station discharge flow and pressure
- Reservoir inlet flow and totalizer
- Reservoir level and altitude valve status
- 725 East PRV pressure, flow, and totalizer
- 725 West PRV pressure, flow, and totalizer
- Pump status, motor speed, and amperage
- Master meter status (throttling or wide-open)
- Clearview Reservoir level
- Clearview Pump Station flow, status, temperature, pump status, surge and bypass valve status, generator status, generator fuel level, and HVAC status
- Mater Meter 1 supply at Reservoir 3, chlorine, temperature, conductivity and pH

- Reservoir 4 chlorine, temperature, pH, and conductivity
- Reservoir 2 chlorine, temperature, and pH
- Reservoir 3 chlorine, temperature, and pH
- Clearview supply to Master Meter 4, 5, 7 and 9
- Clearview chlorine, temperature, pH and conductivity measured at Master Meter 9
- Master Meter 10 chlorine, temperature, pH and conductivity
- Distribution system chlorine, temperature, conductivity and pH, measured at Reservoir 4

Alarms

- High and low booster pump discharge pressure
- Booster pump suction pressure
- Communication failure
- Low discharge flow
- Flood
- Generator fuel low, high amperage and high temperature, and voltage high and low
- Intrusion alarms at critical District facilities
- Reservoir overflow, high level, and low level
- Ventilation failure
- Seismic controller
- Clearview intrusion

Control Capabilities

- Master meter flow rates
- Booster pump start/stop set points
- Booster pump operation points (VFD set points)
- Altitude valve flow rate
- Motor speed

Report Capabilities

- Daily demands
- Master meter production
- Booster station flows
- Reservoir levels

In addition to the facilities completed since the last Plan, shown in Table 1-1, the SCADA system has the capacity to add additional reservoirs, booster stations, and master meters.

DISTRIBUTION SYSTEM

The District maintains approximately 173 miles of water mains, which interconnect the source meters, emergency interties, reservoirs, and customer service connections. There are no special daily tasks associated with the distribution grid, but there are several preventive maintenance activities that are necessary to maintain the reliability and extend the useful life of the system.

PREVENTIVE MAINTENANCE PROGRAM

Planning for present and future maintenance of the water system facilities is an important task, as important as planning water main extensions and other physical improvements. The maintenance effort must be perpetual in order for the District to continue to fulfill its role as a water purveyor in the future.

The role of maintenance in any business is to preserve the value of the physical infrastructure and ensure that the District can continue to provide a safe and reliable water supply. The most cost-effective method for maintaining a water system is to provide a planned preventive maintenance (PM) program. A PM program can provide the optimum level of maintenance activities for the least total maintenance cost.

The District's PM program involves defining the tasks to be performed, scheduling the frequency of each task, and providing necessary staff to perform the task. For large and complex water systems, the administration, scheduling, and recordkeeping generated by the PM program must be monitored to confirm compliance with maintenance goals.

SCADA SYSTEM

The District's system is controlled by a central SCADA system, located at the District's main office, and is serviced on a regular basis.

SOURCE METERS

All source meters are visited a minimum of twice per month. Total flow readings are taken and checked against values obtained through the telemetry system and compared to City of Everett, AWWD, and Clearview Water Supply Agency Master Meter readings and invoice billings to verify proper operation.

STORAGE FACILITIES

Each reservoir is visited at least twice per week. During summer months, the surrounding landscaping is maintained, including mowing the grass. The exterior walls are washed approximately every 2 years and paint is applied as needed. The interior of each reservoir is cleaned and inspected every 3 years.

BOOSTER STATIONS

The District's water facilities include three booster stations, one at each of the three District reservoir sites. The booster stations are visited when the storage facilities are visited. The booster pumps operate on variable frequency drives (VFDs) to meet demands. Pump priority is rotated to distribute pump wear evenly.

MAINTENANCE RECORD SYSTEM

The District performs a number of asset management tasks. Accurate and up-to-date maintenance records are maintained on all major equipment and system components. Record keeping is important for system evaluations and for scheduling of preventive maintenance measures. Maintenance records are used to monitor the frequency of maintenance procedures, the personnel hours expended, and decreases in equipment efficiency. As equipment ages and flow demands increase, these records become increasingly more important.

OPERATION AND MAINTENANCE MANUALS

The District has operation and maintenance manuals for major system equipment. The manuals contain operating and maintenance literature provided by the manufacturer, parts lists, dimensioned drawings, record drawings, and other relevant information.

GIS SYSTEM

The District has a Technical Services Manager and GIS Technician who update District records and maps of the water and wastewater systems. The GIS system is web based and can be used to access information including District base maps and utility record drawings. The District maintain a separate hard copy record of water and sewer as-built drawings and side sewer cards. As the District continues to improve the GIS system accuracy and inventory, the District plans to refocus its efforts on developing a GIS-based facility, maintenance, and water quality data records system to enable mobile, data driven decision making.

SAFETY PROCEDURES

An important consideration of a successful maintenance program is the safety of the employees. The District's safety program is in compliance with the Occupational Safety and Health Administration (OSHA) and the Washington State Department of Labor and Industries (L&I). The safety program addresses the situations that employees may encounter during the performance of operation and maintenance tasks.

To promote safety within the organization, the District holds monthly safety meetings. Office and field personnel are also required to take CPR and First Aid courses every 2 years.

All operation and maintenance employees are required to complete several courses known collectively as OSHA Plus. All courses are offered online including, but not limited to, topics such as confined spaces, electrical safety, hazard communication, personal protective equipment, forklift operation, and employee relations.

Confined Spaces

The principal hazards associated with confined spaces, including valve vaults and interior inspection of reservoirs, are oxygen deficiency, explosions, and toxic gases. The District follows established regulations that govern entrance into confined spaces, as described in WAC 296-62-145. The regulations include the completion of a Confined Space Entry Permit, the establishment of Safe Operating Procedures, and the completion of a Confined Space Pre-Entry Checklist.

Fall Protection

In 2015, the District conducted a review of facilities and has installed ship ladder or fall protection equipment where required. District personnel follow OSHA and Washington State Laboratory Industry guidelines concerning fall protection.

Electrical and Mechanical Equipment

The presence of electrical and mechanical equipment at the booster stations may present hazards to personnel during the performance of operation and maintenance tasks. Precautions are taken whenever working on or near booster station mechanical and electrical equipment.

Rubber mats are placed on the floor in front of electrical control panels and auxiliary generators. When working on any piece of electrical equipment, the operator ensures that all switches are opened, locked, and tagged; all electrical equipment is grounded; and all exposed wire is taped. All portable power tools, extension cords, and lights are of the three-wire grounding type.

Other safety precautions observed by District personnel include avoiding contact with energized circuits or rotating parts, avoiding the bypassing or rendering inoperative any safeguards or protective devices, and avoiding extended exposure in close proximity to machinery with high noise levels. Safety equipment labels, provision of clothing for arc flash protection, and safety training for all field personnel on the purpose of labels and use of Personal Protective Equipment (PPE) are routinely presented. Arc flash labels are observed except when de-energized for trouble shooting. The use of lock out tag out procedures are also practiced.

Fire Hazards

In areas of the District's facilities where debris may accumulate, there is a potential for fire. Precautions are taken to reduce the potential for fire. Oily rags are kept in a tightly sealed metal can and areas are kept free of clutter or debris, especially if flammable in nature. Gasoline, diesel, and other solvents are only to be used in well-ventilated areas, away from sources of ignition. Annual training on fire safety is provided to all employees.

EQUIPMENT AND SUPPLIES

The District maintains an inventory of equipment and supplies necessary for maintenance and/or emergency repair of the water system. The supplies inventory includes items such as valves, meters, water service lines, couplings, fittings, and sections of various sizes of pipe. The District also maintains an inventory of heavy equipment and vehicles.

FACILITY PERFORMANCE EVALUATION

Review of facility performance provides a means for District staff to evaluate and optimize the operation and control of the water system facilities. Evaluating system performance requires summarizing and analyzing operating information that is routinely collected either manually or automatically. The District maintains inspection report forms for reservoirs, valves, hydrants, and water mains.

DISTRIBUTION SYSTEM FACILITIES

The District flushes its water mains to remove accumulated sediment and to ensure all hydrants are functioning properly. The District meters the quantity of water used for flushing.

The District is committed to minimizing the amount of lost water in its distribution system. Water mains that contain leaks are repaired when discovered and may be considered for complete replacement, depending on types and numbers of repairs. The District performs leak detection surveys on the distribution system yearly in order to find small leaks that would not otherwise make themselves apparent. The District's leak detection program is scheduled to survey the entire system approximately every 5 years.

EMERGENCY RESPONSE PROGRAM

Water utilities have the responsibility to provide an adequate quantity and quality of water in a reliable manner at all times. Therefore, utilities must reduce or eliminate the impacts of natural disasters, accidents, and intentional acts on the water supply system.

EMERGENCY PROCEDURES

The District's Emergency Response Program is detailed in the 2014 *Silver Lake Water District Emergency Response Plan*, prepared by Gray & Osborne, Inc.

CONTAMINATION EVENT

In the event of a potential contamination event, the District may be required to take additional samples or provide for chemical introduction in response to the event. This additional sampling will more than likely be directed by DOH or the Snohomish Health District. Depending on the suspected contaminant, special care and safety precautions may be required to sample, flush, add disinfection chemicals or dispose of the contaminated water in order to protect the public, the environment, and the safety of District personnel. The District has the ability to boost chlorine at its reservoir sites through roof access and mixing by pumping in a circle. The District is investigating the ability to provide a booster chlorination system at Reservoir 2 Booster Station. A standard operating procedure for addition of chlorine at reservoir is contained in the District's Emergency Response Plan.

BOIL WATER NOTICE

Public water systems will occasionally detect positive coliform samples, mainly as a result of minor contamination or improper bacteriological sample collection procedures. However, the persistent detection of coliform bacteria in the water supply, particularly *E. coli* or fecal bacteria may require the issuance of a public boil water notice. This is to ensure that the health and safety of the water customers is not compromised. Emergencies such as floods, earthquakes, and other disasters can result in damage to water system infrastructure, thereby warranting a boil water notice as a cautionary measure. Prior to the issuance of a boil water notice, the District should consider experience gained by other communities in the past. The District has not issued a boil water notice to date but if one is issued the District's intent will be to:

1. Once the boil water notice has been issued, an initial press conference should be held to explain the situation to the public.

2. Consolidated press releases will be used to keep the public informed.

3. A District telephone line will be staffed with knowledgeable representatives from the District. In order to maintain the consistency of information released, a question and answer sheet specific to the event will be created and used. The telephone operators will have scripted text available in order to maintain the consistency of information released. All information released should be cleared by the Public Information Officer (PIO). The

telephone line will remain staffed after the boil water notice is lifted as necessary to respond to customer inquiries.

4. A protocol will be developed specific to lifting the boil water notice and precautions to re-establish use of domestic systems.

5. Notices and information will be posted on the District web page, www.slwsd.com.

CROSS-CONNECTION CONTROL PROGRAM

The District's Cross-Connection Control Program (CCCP) is published as a section of the District Standards. The District requires that all service connections meet the backflow prevention requirements as set forth in the District Standards. The District Standards are provided in Appendix F.

The District's Standards provide criteria for the installation and maintenance of cross-connection devices. The District's approach includes tracking the devices and issuing annual notification letters for testing. The standards provide guidance as to the appropriate application of various types of cross-connection control devices.

WAC 246-290 specifically requires water purveyors to address cross connections at residential connections. The District has developed cross-connection guidelines for residential irrigation and fire sprinkler systems. The District also requires dual check valves on all new residential domestic services.

NEW AND EXISTING CROSS-CONNECTION DEVICES

New and existing cross-connection prevention devices are catalogued and monitored by District staff. It is the responsibility of the customer to ensure initial testing of the devices. Backflow prevention devices are required on all new, existing, and potential cross connections. A condition for new service will be an evaluation by the District's certified cross-connection control specialist to determine what type of backflow device is needed.

CROSS-CONNECTION CONTROL PROGRAM RECORD KEEPING

A critical program element is the maintenance of accurate records in support of an aggressive cross-connection control program. Test results for each device are recorded in the respective database file. The database information on each assembly includes:

- Location of each assembly/hazard
- Initial inspection information
- Installation information
- Assembly information

- Testing history

PERSONNEL REQUIREMENTS

The District maintains an inventory of approved cross-connection control devices. A person certified as a cross-connection control specialist will handle the priority list inspections. As of August 2016, the District has nine staff members who are certified as Cross-Connection Control Specialists.

CUSTOMER COMPLAINT RESPONSE

The District maintains a log of public complaints with respect to the water supply system. Depending on the nature of the complaint, a staff member may be contacted by mobile telephone to respond immediately if a public health issue is apparent. If not of immediate urgency, a work order is completed and staff responds as soon as feasible.

CHAPTER 7

WATER USE EFFICIENCY PROGRAM

INTRODUCTION

This Chapter presents the conservation and water use efficiency requirements pertaining to the District, evaluates past conservation efforts, and describes the District's water use efficiency plan.

WATER USE EFFICIENCY RULE BACKGROUND

The Washington Legislature passed the Water Use Efficiency Act of 1989 (43.20.230 RCW), which directs the DOH to develop procedures and guidelines relating to water use efficiency. In response to this mandate, the Department of Ecology (Ecology), the Washington Water Utilities Council, and DOH jointly published a document titled *Conservation Planning Requirements* (1994). In 2003, the Municipal Water Supply – Efficiency Requirements Act (Municipal Water Law) was passed and amended RCW 90.46 to require additional conservation measures. The Municipal Water Law, among other things, directed DOH to develop the Water Use Efficiency (WUE) Rule, which is outlined in the *Water Use Efficiency Guidebook* and became effective January 22, 2007. These documents provide guidelines and requirements regarding the development and implementation of conservation and efficiency programs for public water systems. Conservation and efficiency programs developed in compliance with these documents are required by DOH and by Ecology as part of a public water system water right application. Conservation must be evaluated and implemented as an alternate source of supply before state agencies approve applications for new or expanded water rights. The third and most recent edition of the WUE Guidebook was released in January 2011 and revised in May 2016.

As an extension to the *Conservation Planning Requirements*, the WUE Rule sets more stringent requirements for public water purveyors. The WUE Rule is comprised of four sections:

1. Planning Requirements
2. Distribution System Leakage Standard
3. Customer Goal Setting
4. Annual WUE Reporting

This rule requires additional conservation measures related to data collection and reporting, distribution leakage, metering, goal setting, and performance reporting.

PLANNING REQUIREMENTS

Under the WUE Rule, water systems are required to implement planning methods to forecast future demands and determine necessary measures to reduce usage and demand. Elements of the planning requirements include:

1. Data collection,
2. Demand forecasts, and
3. Selection and evaluation of WUE measures.

WATER USE EFFICIENCY REQUIREMENTS

The *Water Use Efficiency Guidebook* establishes varying implementation and evaluation requirements for municipal water suppliers (MWS). The requirements focus on the importance of measuring water usage and evaluating the effectiveness of the WUE Program. There are three fundamental elements to the WUE Rule, including planning, distribution leakage standards, and goal setting and performance reporting.

Table 7-1 provides a summary of the WUE Rule requirements applicable to the District.

TABLE 7-1

Summary of WUE Requirements

Requirement	Deadline for MWS with 1,000 or More Connections
Meet Distribution Leakage Standard (based on 3-year rolling average)	July 1, 2010, or 3 years after installing all service meters
Complete Installation of All Service Meters	January 22, 2017

WATER METERS

Metering all water production and consumption is critical for determining system-wide and individual water use efficiency. The WUE Rule includes deadlines for meter installation and data collection. The WUE Rule currently requires production meters on all existing and new water sources, and as shown in Table 7-1, requires consumption meters on all customer connections by 2017.

The District meters all existing customer connections and will meter all new connections, and therefore is in full compliance with consumption metering requirements. Additionally, the District has one wholesale customer and measures any wheeled water exported to the Cross Valley Water District through Master Meter 6.

The District's entire water supply is provided by the City of Everett (Everett) directly through master meters from Everett and indirectly through the Clearview Water Supply Agency (CWSA) facilities and AWWD. The District meters all water from Everett, CWSA, and AWWD through master meters. All source meters are monitored continuously by the District's SCADA system and are physically visited a minimum of once per month.

The City of Everett has historically annexed portions of the District's water service area. Often, Everett's annexations do not occur at locations that are convenient for the two water systems with respect to looping for fire flow and water quality. Further, the effort associated with relocating master meters as frequently as would be required is cost prohibitive. As a result, there are approximately 587 Everett service connections located on the downstream side of Master Meter 1. Additionally, the District has approximately 811 service connections served directly from Everett's water system by opening normally closed intertie valves. These connections are located downstream of Master Meter 3, but are isolated from the rest of the District's system by closed system valves. All District connections on Everett's service side are read monthly on the same meter route (Meter Route 7) and their consumption is reported to Everett. This consumption is added to District Master Meter 1 readings for billing purposes but is not counted in District DSL calculations. Everett reads meters located on the District's side of the master meter monthly and provides this information to the District and subtracts this amount from the wholesale water volume supplied to the District.

The District has a total of 24 normally closed emergency interties – fifteen with the City of Everett, seven with AWWD, and two with CVWD. All but one of these are closed valve interties that are unmetered and separate the water systems. As described in WAC 246-290-132(4), emergency interties are exempt from metering requirements.

DATA COLLECTION

The WUE Rule requires regular collection of production and consumption data. Data must be reported in the District's planning documents and annual performance report to DOH. Water use data will be used for the following:

- Calculating leakage
- Forecasting demand for future water needs
- Identifying areas for more efficient water use
- Evaluating the success of the WUE Program
- Describing water supply characteristics
- Aiding in decision-making about water management

The WUE Rule also set requirements for collecting source and service data. Source meters must be read monthly and reported as monthly and annual totals. Service meter totals only have to be reported in annual amounts, although it is recommended to read all service meters every 1 to 2 months. The District reports monthly and annual water produced or purchased, annual water consumed, annual totals for each customer class, and customer class seasonal variations of water use.

The District measures the amount of wheeled water that enters and leaves their system. Water entering the system is calculated as water produced and water leaving as authorized consumed water.

The District has established six customer classes: single-family residential, multifamily residential, duplex, low-income senior citizen, commercial and irrigation, and schools. By separating customers into different categories and monitoring annual consumption variations, the District can track the effects of their WUE Program more effectively.

SOURCE OF SUPPLY ANALYSIS

The District historically received all of its water on the west side of the service area from the City of Everett by means of Master Meters 1, 2, and 3. This changed in 2005 when the District began receiving supply through the CWSA facilities on the southeast side of the District in addition to the Everett master meter flow. The District connects to the CWSA facilities through Master Meters 4, 5, 7, and 9. The Master Meter 2 vault is currently not equipped. Since 2015, the District added the capability to purchase supply from AWWD through Master Meter 10. Master Meter 8 originally served an isolated supply network and has been converted to an emergency connection.

Everett's water source is the Sultan River Waterworks Complex, located approximately 20 miles east of Everett. The waterworks complex includes the Spada Lake Reservoir, the Chaplain Reservoir, and the Water Filtration Plant. Everett's regional water system is discussed in Chapter 1.

The City of Everett currently holds water rights for an instantaneous production rate of 275 mgd and an annual average production rate of 150 mgd. Additional source and water right information, along with future demand projections are available by contacting the City of Everett, and can be found in the City of Everett's *2014 Addendum to the 2007 Comprehensive Water Plan*. Based on projections laid out in Everett's plan, demands are not expected to exceed water rights until after 2100.

DISTRIBUTION SYSTEM LEAKAGE

The WUE Rule requires that water distribution systems have a leakage rate of less than 10 percent of finished water production. Distribution system leakage (DSL) is defined as all unaccounted-for water that entered the distribution system, including reservoirs. Known or credibly estimated losses can be excluded for the leakage calculation and may include uses such as construction, firefighting, and flushing.

Distribution system leakage is defined as the difference between total water produced or purchased and all authorized water consumed. Known or credibly estimated losses can be included as authorized consumption in the leakage calculation and may include uses such as new construction activities, firefighting, water and sewer main flushing, and water main breaks.

DSL for the District equals the difference between the volumes provided by all master meter purchased water and the volume measured at the customers' meters plus known or credibly estimated losses.

Table 7-2 provides annual data of DSL from 2010 to 2016 and Figure 7-1 provides a graphical illustration of the data.

TABLE 7-2

Distribution System Leakage Summary

			Distribution System Leakage		
Year	**Production (mgd)(1)**	**Consumption (mgd)(2)**	**Rate (mgd)(3)**	**Annual (%)**	**3-year Rolling Average (%)**
2010	3.57	3.40	0.17	4.8%	—
2011	3.42	3.26	0.16	4.8%	—
2012	3.46	3.43	0.03	1.0%	3.5%
2013	3.64	3.53	0.11	2.9%	2.9%
2014	3.65	3.63	0.02	0.7%	1.5%
2015	3.80	3.73	0.07	1.8%	1.8%
2016	3.78	3.74	0.04	1.0%	1.2%

(1) Production based on master meters includes District customers on Everett's service side of the mater meters.
(2) Consumption of District customers based on billing records, includes Everett connections located downstream of District master meters.
(3) Production less consumption.

As shown in Table 7-2 and on Figure 7-1, the District has historically been below the 10 percent DSL requirement.

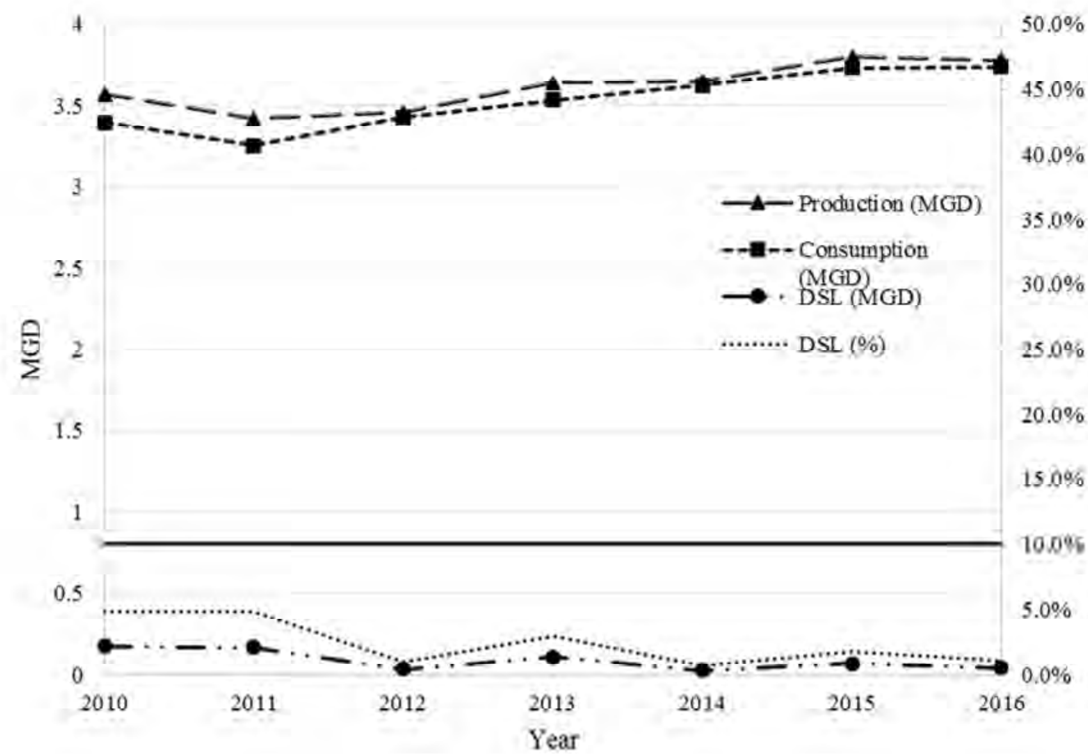


FIGURE 7-1

Distribution System Leakage Summary

The District attributes the historically low leakage rate to a relatively new distribution system compared with most other systems. With a current 3-year rolling average of 1.2 percent, the District meets DOH requirements and does not need to develop a water loss control action plan.

WATER USE EFFICIENCY PROGRAM

The following sections describe the District's water use efficiency goals, a description of the conservation measures, and the resulting water use projections.

REGIONAL PROGRAMS

As a purveyor to over 30 water systems, both large and small, the City of Everett has established the Everett Water Utilities Committee (EWUC) to help advise the Everett City Council regarding the planning, financing, and implementation for future major capital improvements to Everett's water system, which affects water service to regional customers outside Everett, including but not limited to determination of service areas, location, sizing, and other technical input regarding filtration facilities.

EWUC strives to coordinate the interests and efforts of the wholesale customers and Everett. Everett has a regional conservation program (RCP) that invites wholesale customers as participants.

As a member of the EWUC, the District has historically participated in this RCP developed by Everett, and funded by Everett's wholesale and retail water rates, in order to cooperate with regional conservation efforts.

PAST AND PRESENT PROGRAMS

The District chose to adopt EWUC's RCP in the District's *Water System Comprehensive Plan* (2003) and the goals are summarized in Table 7-3.

TABLE 7-3

EWUC Conservation Plan Goals

Goal	Objective
Minimizing the Cost of Water	· Reduce peak day demand · Defer capital costs · Capture low-cost savings
Metering Regulatory Requirements	· Address current regulations · Anticipate future regulations · Demonstrate good management
Reduce Stream Impacts	· Promote efficiency · Increase water for fish · Benefit ESA and other issues
Preserving Water Rights	· Promote efficiency · Benefit the environment · Demonstrate good stewardship

The District utilizes resources provided by Everett to help meet these goals. Several are additional measures that the District implements on its own, and several of the measures implemented by the District are supported by Everett through the EWUC program. The following sections detail these measures.

District Measures

<u>Public Education</u>

The District provides information and tips for efficient water use for customers on its website. The site also shows the current weather forecast. Additionally, there are links to information on repairing leaky faucets, conservation kits, winterizing, and summer watering schedules.

Bills Showing Consumption History

Water utility bills for each customer class include information on consumption history. The customer bills show the historical water usage as well as the increase or decrease in consumption from the same period of the previous year for each household. This allows the customer to track their water use and compare usage to previous billing periods.

Customer Leak Detection

The District monitors customer accounts in an effort to identify leaks. District staff can identify potential leaks when reading meters in several ways. If they observe a high meter read, the District checks if the meter is currently running, which may indicate a leak. If a potential leak is identified, District staff leaves a door hanger notification at the customer's home. Records have not been kept by the District of how many leaks are identified during meter reads.

District Measures Supported by EWUC

Public Education

The District also provides a number of water conservation brochures to customers through bill inserts and displays at the District office. Brochure subjects include summer lawn and watering calendars and guides, home water conservation guides, leaky faucet repair, and landscaping tips.

Conservation Kits

In cooperation with EWUC, the District has made indoor and outdoor water conservation kits available to customers free of charge. Indoor water kits include a toilet tank displacement bag, low-flow showerhead, faucet aerators, and toilet leak detection dye tablets. Outdoor water kits include a water-saving garden hose nozzle, automatic timer, sprinkler rain gauge, and soil moisture meter. Table 7-4 shows the number of conservation kits allocated to the District by EWUC over the past 6 years.

TABLE 7-4

Water Conservation Kits Distributed by the District

Year	Indoor Kits	Outdoor Kits
2010	160	234
2011	134	176
2012	116	162
2013	200	138
2014	46	96
2015	42	76
2016	334	83

Irrigation Management

In conjunction with EWUC, the District distributes to every customer a water calendar for summer months to discourage frequent and overwatering. The calendar allows for outdoor watering every third day. Watering days are assigned based on the last two digits of house numbers. In the event of a water shortage, irrigation management would be mandated.

EWUC Measures Implemented Within the District Service Area

School Programs

Since 2009, the City of Everett's Regional Conservation Plan has conducted over 3,800 conservation workshops in classrooms around Snohomish County, reaching more than 99,000 students, which includes over 350 workshops in schools within the District reaching more than 9,200 students.

Effects of Past Measures

Since the District adopted its current water use efficiency plan in 2009 as a part of the *Water System Comprehensive Plan*, there has been a reduction in customer per capita water use, as shown in Table 7-5.

TABLE 7-5

Water Savings

Year	Population [(1)]	Net District Water Use (mgd)[(2)]	Consumption per Capita (gpcd)
2009	47,265	3.83	81
2010	48,063	3.56	74
2011	48,676	3.42	70
2012	49,544	3.35	68
2013	50,580	3.53	70
2014	51,909	3.54	68
2015	53,024	3.89	73
2016	54,194	3.89	72

(1) Based on Table 2-4.
(2) Based on Table 2-12.

The conservation plan has resulted in a sustained low per capita consumption of approximately 73 gpcd. Since this plan has proven to be quite effective, the District will continue implementing all of these measures as part of its continuing WUE Program.

Another major source of consistent water savings is from the use of Uniform Plumbing Code (UPC) fixtures. Over 50 percent of the District's connections and pipes have been installed since 1992, when the Federal Energy Policy Act requiring more efficient fixtures went into effect. UPC fixtures save an estimated 33.5 gallons per capita per day.[1]

Since over 50 percent of the District was constructed after the adoption of the UPC, many of the measures used by other agencies, such as fixture replacements, are less effective for the District. For this reason, the District plans to maintain its current program and is not pursuing other, less cost-effective options.

WATER USE EFFICIENCY PROGRAM UPDATE

Under the WUE Rule, the District must set water use efficiency goals and measure progress each year toward meeting these goals. Goals must include a measurable outcome, address water supply or demand characteristics, and include an implementation schedule. The District must also evaluate or implement conservation measures to help meet these goals. The resolution adopting the District's current Water Use Efficiency Program is included in Appendix B.

[1] Vickers, Amy. "Water Use Efficiency Standards for Plumbing Fixtures: Benefits of National Legislation," American Water Works Association Journal. Vol. 82 (May 1990):53.

Goals

The District strives to reduce its water use in several ways. First, the District cooperates with the regional plan presented by EWUC to promote conservation by its customers and reduce overall water demand. Second, the District works to reduce its rate of distribution system leakage.

The City of Everett's current goal is to save approximately 0.24 mgd per year through 2019, with a total savings of approximately 1.44 mgd at the end of the 6-year planning period.

To cooperate with the regional conservation effort, the District has a demand-side goal of saving approximately 22 MG per year. This goal will be achieved through the continuation of the District's existing conservation measures.

The District's second goal is to identify and reduce distribution system leakage by 3 MG per year through the District's leak detection program. This is done by performing leak detection surveys in the distribution system and rotating through the full system on a 5-year cycle.

Water Use Efficiency Measures

The WUE Rule states several measures that must be implemented or evaluated and provides a list of measures that count as additional measures in the WUE Program. WAC 246-290-810 identifies the minimum number of water use efficiency measures that must be evaluated based on system size. The District serves over 50,000 service connections and therefore must evaluate or implement 12 supplementary water use efficiency measures in addition to the mandatory measures. The following sections describe both the mandatory and supplementary water use efficiency measures evaluated and indicate which have been or will be implemented by the District.

Mandatory Implementation – Source and Service Metering and Meter Calibration

As stated previously, the District currently meters all customers and has eight master meters that account for water entering the District from Everett, Clearview, and AWWD. The District meters all new customers and sources. All source meter readings are checked against the telemetry system and Everett and AWWD supply master meter readings to verify proper calibration. Service meters are checked for accuracy upon request of the customer.

Mandatory Implementation – Leak Detection and Water Accounting

Although the District has low historical lost and unaccounted-for water, the District is pursuing leak detection and potential repair of its distribution system. Since both new construction and hydrant flushing water uses are measured through the District's hydrant meters or estimated based on flow rate, the District is confident that most of its DSL is due to leakage, and not unaccounted for or unauthorized water usage. To reduce leakage, the District implemented a leak detection program beginning in 2008. The District surveys approximately 30 miles of pipe a year. The District started by focusing on areas that are prone to leakage and will continue methodically throughout the District's distribution system on a 5-year rotating cycle. The District repairs leaks as they are identified.

Mandatory Implementation – Customer Education

As described above, the District provides information and tips for efficient water use for customers on its website. The District will continue to include information on efficient water use on its website. Customer education is also a key measure in Everett's Regional WUE Program as well, so the District will take advantage of resources offered and funded through its EWUC membership.

Mandatory Evaluation – Rates that Encourage Efficiency

The District currently has a uniform rate structure. Customers are charged a monthly base rate, which is based on customer class and meter size. There is also an additional charge for each hundred cubic feet of water used. Table 7-6 summarizes the water rates.

TABLE 7-6

Water Rate Summary(1)

Customer Class	Measure	Monthly Base Rate	Winter Additional Charge per ~100 ft^3	Summer Additional Charge per ~100 ft^3
Low-Income Senior Citizen	Per Dwelling Unit	$3.75	$1.80	$2.25
Single-Family Residential	Per Dwelling Unit	$7.60	$1.80	$2.25
Duplex	Per Dwelling Unit	$7.60	$1.80	$2.25
Multifamily	Per Dwelling Unit	$7.60	$1.80	$2.25
Schools	Per Meter	$7.60	$1.80	$2.25
Commercial and Irrigation	Per 1-inch Meter	$7.60	$1.80	$2.25
Commercial and Irrigation	Per 1.5-inch Meter	$22.30	$1.80	$2.25
Commercial and Irrigation	Per 2-inch Meter	$33.70	$1.80	$2.25
Commercial and Irrigation	Per 3-inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 4-inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 6-inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 8-inch Meter	$307.10	$1.80	$2.25
Wholesale Master Meter	Per 8-inch Meter	$170.60	$2.25	$2.81

(1) Effective as of 2016.

The District periodically reviews and adjusts its rates to ensure the financial stability of the water system. Rate adjustments are often made to offset wholesale water rate increases imposed by the City of Everett. However, every few years, the District completes a rate study to take a comprehensive view of the District's revenues and expenses, including future capital expenditures, to develop a rate structure that can fund the District's operations into the future. Rate studies involve input from the public and the Board of Commissioners before the rates can be adopted.

The District evaluates conservation rate structures with the help of consultants including inclined blocks and seasonal rates. Based on these evaluations, the District's seasonal rates are established to encourage conservation across all rate classes and provide the financial stability to operate and maintain the water system at a high level of service to its customers.

Mandatory Evaluation – Reclaimed Water Opportunities

The District operates a collection system that conveys all of its wastewater either to the City of Everett Water Pollution Control Facility (WPCF) for treatment, or to AWWD, which in turn conveys it to the King County Department of Natural Resources (KCDNR) for treatment. Since the District does not have a treatment facility, the District does not have the means to develop a source of reclaimed water. Further, the District is primarily residential in nature, with approximately 4 percent of the total number of connections qualifying as nonresidential. Large industrial water users would benefit from reclaimed water opportunities more than residential users. Currently, KCDNR's plans for a reclaimed water transmission system do not include portals within the District's service area. The District does not currently have a customer base that makes reclaimed water cost effective.

Supplementary Measures

The District plans to continue implementing all of their current measures as part of their new WUE Program, plus some new measures sponsored through the District and through EWUC. Table 7-7 summarizes these measures.

TABLE 7-7

WUE Program Measures

Implemented Measures	Comment	No. of Applicable Customer Classes	New or Continued Measure
Bills Showing Consumption History	District measure	4	Continued
Conservation Kits	District measure supported by EWUC	2	Continued
Demonstration Garden	District measure	1	Continued
Irrigation Management	District measure supported by EWUC	1	Continued
Leak Detection	District measure	1	Continued
Program Promotion	District measure supported by EWUC	4	Continued
Water Audits	EWUC measure	2	Continued
Total Measures Counted		**15**	

The District began the implementation of the leak detection program in 2008. The District uses the information gathered through the leak detection studies to repair leaks and target aging and failing fixtures and mains for replacement. The District has historically replaced aging and failing mains by participating in state, county, or city road projects, or through coordination with local developer extension projects. The leak detection and any District pipeline replacement projects are funded through the Capital Improvement Project fund, rates, and general facility charges.

Evaluation of Measures

As a member of EWUC, the District's participation in the EWUC Regional Conservation Program is funded by the wholesale water rate paid by the District to Everett. As a result, the District can take advantage of the regional program and resources provided by EWUC at no additional cost. The Primary Evaluation Method of Measures, listed in Table 7-7, will be tracking reductions in water use instead of cost effectiveness, since many of the District's measures are supported by EWUC.

TARGET WATER SAVINGS PROJECTIONS

The District, through participation with its WUE program, has seen significant savings in water use. Table 7-8 shows projected savings from successful continuation of these measures.

TABLE 7-8

Projected Water Use Efficiency Savings

Measure	Expected Savings (MG/yr)					
	2017	**2018**	**2019**	**2020**	**2021**	**2022**
Leak Detection and Pipe Repair (1)	3.0	3.0	3.0	3.0	3.0	3.0
Education (2)(4)	19.6	19.7	19.7	20.0	20.3	20.6
Conservation Kits (3)	2.6	2.6	2.6	2.7	2.7	2.7
Audits (ICI) (4)	5.6	5.6	5.6	5.7	5.7	5.8
Total Savings	**30.8**	**30.9**	**30.9**	**31.3**	**31.7**	**32.2**

(1) District program.
(2) Education includes customer education, program promotion, bills showing consumption history, demonstration garden, school outreach, and irrigation management.
(3) District measure supported by EWUC.
(4) EWUC measure.

DEMAND FORECASTING

The WUE Rule contains criteria to consider when preparing demand forecasts. It is required to project demands both with and without anticipated savings from the Water Use Efficiency Program. This additional forecast can help determine whether capital improvements can be delayed or eliminated, and how many additional connections the District can allow given the current supply and infrastructure. It also provides a basis to measure conservation success versus actual water use data.

Table 7-9 provides water demand forecasts with and without anticipated savings from the WUE Program.

TABLE 7-9

Projected Demands

Year	Projected Population	Without Conservation		With Conservation	
		Average Day Demand (mgd)	**Peak Day Demand (mgd)**	**Average Day Demand (mgd)**	**Peak Day Demand (mgd)**
2017	54,645	5.00	10.51	4.92	10.33
2018	55,473	5.08	10.66	4.99	10.48
2019	56,315	5.15	10.82	5.07	10.64
2020	57,169	5.23	10.99	5.15	10.80
2021	58,036	5.31	11.15	5.22	10.97
2022	58,916	5.39	11.32	5.30	11.14

ANNUAL PERFORMANCE REPORTING

Since 2008, the District has submitted a required performance report to DOH by July 1 each year. The annual report includes:

- Total source production and system wide consumption;
- Distribution system leakage in percentage and volume; and
- Goal description, schedule, and progress toward meeting goals.

DOH has developed a standard report form that must be used. The District tracks monthly production and consumption volumes and calculates DSL volume and percentage.

SUMMARY

To comply with the WUE Rule and to reduce overall water use, the District has set goals to save approximately 60,000 gpd, or 22 MG annually.

The District employs several measures to successfully accomplish these goals, including:

- Customer Bills Showing Consumption History
- Customer Education
- Customer Leak Detection
- Provisions of Conservation Kits
- Demonstration Garden
- Irrigation Management
- Leak Detection Surveys
- Pipe Replacement
- Program Promotion
- Cooperation with the Regional Program established by the City of Everett

CHAPTER 8

CAPITAL IMPROVEMENT PLAN

INTRODUCTION

This chapter presents 6-, 10-, and 20-year Capital Improvement Plans (CIPs) in accordance with the requirements of WAC 246-290. Water system capital improvements have been scheduled and prioritized on the basis of water quality concerns, growth, regulatory requirements, component reliability, system benefit, and financial priority. For the proposed projects identified in this chapter, preliminary project cost estimates are presented in Appendix I. A water system base map illustrating the locations of the proposed improvement projects is included as Figure 8-1 as well as a larger map in the back sleeve of the Plan.

Other capital improvement projects may arise in the future that are not identified as part of the District's CIP presented in this chapter. Such projects may be deemed necessary for ensuring water quality, preserving emergency water supply, accommodating transportation improvements proposed by other agencies, or addressing unforeseen problems with the District's water system. Due to budgetary constraints, the construction of these projects may require that the proposed completion date for projects in the CIP be rescheduled. When new information becomes available, the District retains the flexibility to reschedule proposed projects and to expand or reduce the scope of the projects, as best determined by the District's Commissioners. Additionally, future planning efforts by Snohomish County and the Cities of Everett and Mill Creek may affect land use zoning and demand distributions within the District. Annexation or work performed by these agencies may force the District to construct or relocate water mains. Future development may create streets or provide alignments and locations of facilities that are different than shown in the Plan. Each capital improvement project will be re-evaluated to consider the most recent planning efforts as the proposed completion date for the project approaches.

PROPOSED SOURCE IMPROVEMENTS

SO-1 – MASTER METER 11 (2026)

This project consists of the construction of a new master meter connection with AWWD to allow the District to draw the allowable contractual supply of 5.0 mgd from AWWD. System modeling for the planned master meter has identified a probable Mater Meter 11 location at the intersection of Trillium Boulevard and Mill Creek Boulevard and will require construction of two master meter vaults and associated piping and SCADA facilities.

Estimated Project Cost: $736,000

SO-2 – MASTER METER 2 (2017-2018)

Preparations for telemetry and installation of Master Meter 2 facilities in existing vaults will include coordination with the City of Everett.

Estimated Project Cost: $60,000

PROPOSED SYSTEM STORAGE IMPROVEMENTS

S-1 – RESERVOIR 3 AND BOOSTER STATION IMPROVEMENTS (2017)

This project consists of improvements to Reservoir 3 including complete tank interior recoating and exterior coating touchup, installation of reservoir stairs, gutters and safety catwalk, a Tideflex mixing system on the inlet piping, seismic valve, and replacement of the roof vent. Improvements to the booster station include expansion of the booster station building to provide vehicle access to the equipment, installation of a restroom, bridge crane, a third pump, and site security improvements. By agreement, the City of Everett is required to share the cost of the project. Their participation under the proposed schedule and interlocal agreement will be 10.37 percent of costs.

Estimated Project Cost: $3,557,000

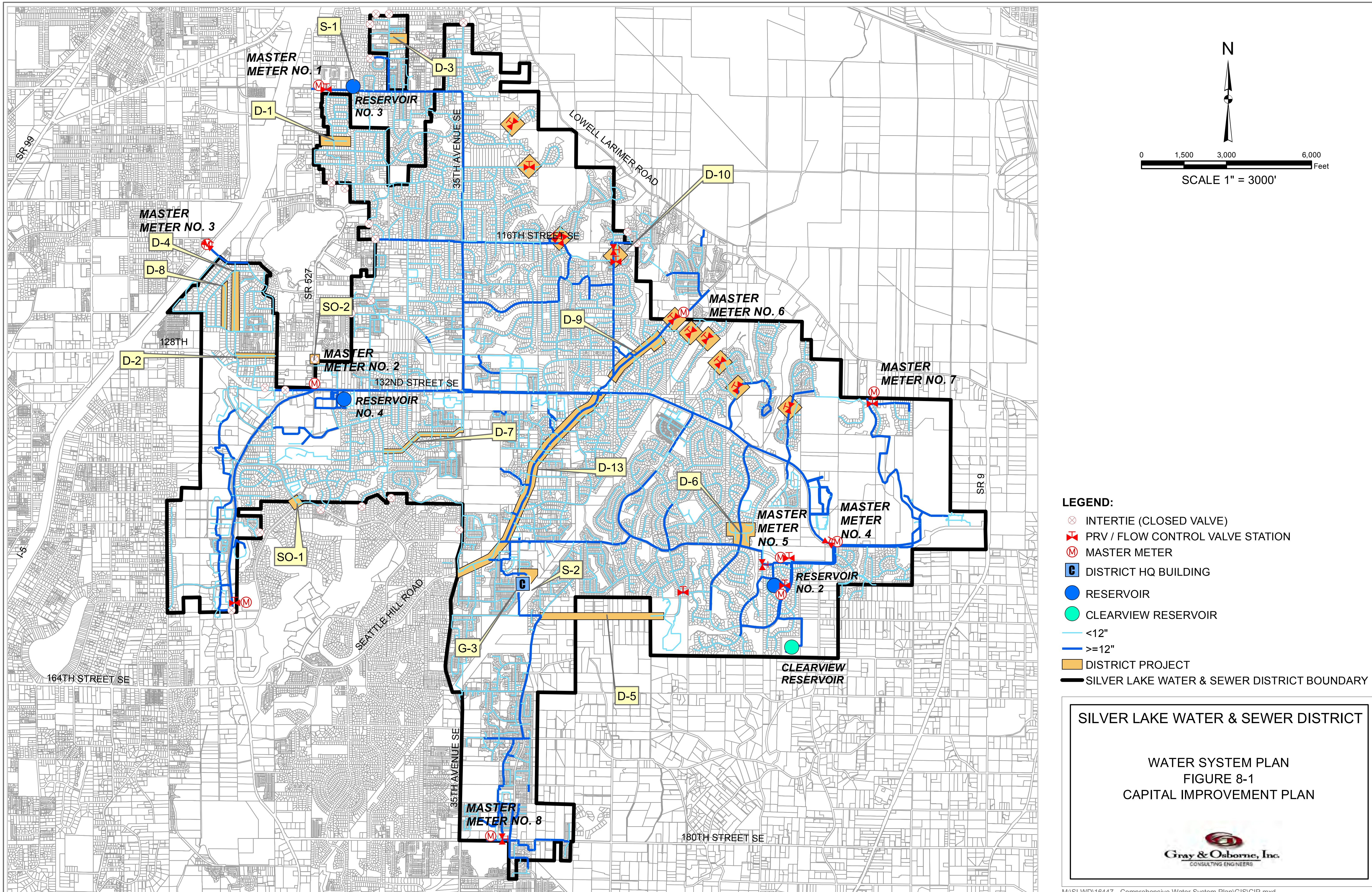
S-2 – RESERVOIR 5 AND BOOSTER STATION (2020 TO 2021)

This project consists of the construction of an additional 6.0-million-gallon reservoir and a booster station at the District Headquarters site. The project will meet the District's projected buildout storage requirements.

Estimated Project Cost: $8,460,000

PROPOSED DISTRIBUTION AND TRANSMISSION SYSTEM IMPROVEMENTS

Distribution and transmission system improvements and priorities are based upon projects identified from the results of the H_2ONet hydraulic analysis (Chapter 5), planned system expansion, level of service, looping projects, and replacement projects based on the age and material of existing lines.



SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 8-1
CAPITAL IMPROVEMENT PLAN

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SLWD\16447 - Comprehensive Water System Plan\GIS\CIP.mxd

D-1 – 105TH PLACE SE WATER MAIN REPLACEMENT (2021)

This project consists of the installation of approximately 900 linear feet of 8-inch ductile iron water main along 105th Place SE at 21st Avenue SE to replace the existing 4-inch cast iron main. This project will strengthen the District water main grid and improve fire flow availability along 105th Place SE. (Resolves two deficiencies identified in Chapter 5.)

Estimated Project Cost: $337,000

D-2 – 129TH STREET SE WATER MAIN REPLACEMENT (2021)

This project consists of the installation of approximately 375 linear feet of 8-inch ductile iron water main along 129th Street SE east of 14th Drive SE to replace the existing 4-inch cast iron main. This project will improve fire flow availability to the hydrant at the east end of 129th Street SE. (Resolves a deficiency identified in Chapter 5.)

Estimated Project Cost: $328,000

D-3 – 94TH PLACE SE WATER MAIN REPLACEMENT (2022)

This project consists of the installation of approximately 1,150 linear feet of 8-inch ductile iron water main along 94th Place SE east of 27th Avenue SE to replace the existing 4-inch cast iron main and loop to 96th Street SE. This project will strengthen the District water main grid and improve fire flow availability to the hydrant at the east end of 94th Place SE. (Resolves a deficiency identified in Chapter 5.)

Estimated Project Cost: $256,000

D-4 – 10TH DRIVE SE WATER MAIN REPLACEMENT (2022)

This project consists of the installation of approximately 850 linear feet of 8-inch ductile iron water main south of 126th Street SE along 10th Drive SE to replace the existing 4-inch cast iron main. This project will strengthen the District water main grid and improve fire flow availability to the hydrant on 10th Drive SE. (Resolves a deficiency identified in Chapter 5.)

Estimated Project Cost: $320,000

D-5 – 156TH STREET SE WATER MAIN (2018)

This project consists of the construction of approximately 5,400 linear feet of 12-inch ductile iron water main along 156th Street SE. This project will improve transmission and water quality in the vicinity of Gateway Middle School, will provide service to an unserved area and will be coordinated to occur prior to a proposed Snohomish County construction project to improve the road.

Estimated Project Cost: $2,049,000

D-6 – 725 ZONE EXTENSION (2017)

This project will improve the system pressure to homes in a lower pressure area of the 640 Zone by transferring their service connections to the 725 Zone. This will provide the District with operational flexibility in the hydraulic grade line of the 640 Zone to allow the District to draw more supply from AWWD Master Meter 10 when needed, while maintaining acceptable service meter pressure throughout the remaining 640 Zone. The project consists of approximately 600 linear feet of 12-inch ductile iron water main, 700 linear feet of 8-inch ductile iron water main, and 400 linear feet of 6-inch ductile iron water main.

Estimated Project Cost: $605,000

D-7 – SILVER CREST DRIVE WATER MAIN REPLACEMENT (2019)

This project consists of the installation of approximately 3,200 linear feet of 8-inch ductile iron water main along Silver Crest Drive from 26th Avenue SE to 35th Avenue NE to replace the existing 8-inch cast iron main.

Estimated Project Cost: $1,309,000

D-8 – 9TH DRIVE SE WATER MAIN REPLACEMENT (2020)

This project consists of the installation of approximately 1,650 linear feet of 8-inch ductile iron water main along 9th Drive SE from 126th Street SE to Andrew Sater Road to replace the existing 6-inch cast iron main that is located under trees. This project strengthens the District water main grid improving fire flow availability, system control flexibility meets current District standards, and reduces pipeline vulnerability.

Estimated Project Cost: $650,000

D-9 – SEATTLE HILL ROAD VALVES AND SILVER CEDARS (2020)

This project consists of the construction of approximately 900 linear feet of 12-inch ductile iron water main and 475 linear feet 8-inch ductile iron water main along 55th Avenue SE and Seattle Hill Road and on 126th Street SE to replace the existing 8-inch and 6-inch cast iron main, and improve distribution system looping and operational flexibility.

Estimated Project Cost: $720,000

D-10 – 485 ZONE SEISMIC IMPROVEMENTS (2017 TO 2021)

This project consists of improvements to 12 PRV stations that supply the 485 Zone, including solenoid-operated valves and SCADA communication to allow the District to detect system damage and isolate supply following a seismic event.

Estimated Annual Project Cost: $324,000
Estimated Total Project Cost: $1,620,000

D-11 – ANNUAL VALVE CASTING GRADE ADJUSTMENTS

The District typically has on-going costs associated with adjusting valve castings to grade after Snohomish County and City of Mill Creek overlay projects. The District estimates it spends an average of approximately $50,000 annually for this work.

Estimated Annual Project Cost: $50,000

D-12 – ANNUAL MAIN REPLACEMENT PROGRAM (2023 TO 2026)

This project consists of establishing a main replacement program to replace existing cast iron pipe that is at or near the end of its life span. The main replacement program is estimated to require replacement of approximately 3,000 feet of water main a year.

Estimated Annual Project Cost: $1,000,000

D-13 – SEATTLE HILL ROAD WATER GRADE ADJUSTMENTS (2017)

The District plans to adjust utility grades along Seattle Hill Road following Snohomish County's modifications to the road beginning in 2017 with additional work in 2018.

Estimated Project Cost: $77,500

CAPITAL IMPROVEMENTS TO THE GENERAL SYSTEM

The District has identified projects to maintain and improve system operation including future planning efforts, operation facilities upgrades, and financial and asset management systems.

G-1 – COMPREHENSIVE WATER SYSTEM PLAN (2023)

The District plans to update its Comprehensive Water System Plan every 6 to 10 years, as directed by DOH.

Estimated Project Cost: $75,000

G-2 – SITE SECURITY UPGRADES

The District identified a number of security upgrades as part of its Vulnerability Assessment.

Estimated Annual Project Cost: $40,000
Estimated Total Project Cost: $400,000

G-3 – DISTRICT HEADQUARTERS UPGRADE AND SITE DEVELOPMENT (2017)

The District plans to construct a new storage building, extend existing shop bays, modify the driveway and parking lot, and construct drainage improvements. The cost of this project will be funded by both the water and sewer system funds.

Estimated Total Project Cost: $4,000,000
Estimated Water System Project Cost: $2,120,000

G-4 – FINANCIAL MANAGEMENT SYSTEM (2018)

The District plans to purchase new billing software to improve utility billing. The funding cost of this software will be split between the District's water and wastewater utilities.

Estimated Water System Project Cost: $125,000

G-5 – ASSET MANAGEMENT SYSTEM (2018)

The District plans to utilize an asset management system and software to better maintain the water system and high level of service. The cost of this project will be funded by both the water and sewer system funds.

Estimated Water System Project Cost: $100,000

G-6 – VACTOR TRUCKS (2018, 2020)

The District plans to purchase two vactor trucks to improve operation and maintenance capabilities.

Estimated Total Project Cost: $1,000,000
Estimated Water System Project Cost: $530,000

DEVELOPER EXTENSION PROJECTS

The District is currently working with developers on proposed projects that they will design, construct, and finance. These facilities when built are transferred to the District upon acceptance. The District typically accepts several thousand feet of pipe per year. The Developer's projects are built and inspected to be in conformance with all District Standards.

CAPITAL IMPROVEMENTS PLAN SCHEDULE

Table 8-1 provides a summary of each capital improvement project and the proposed schedule. Table 8-2 provides a schedule showing the amount each project will be financed each year. Several projects span multiple years. The District retains the right to reschedule its capital improvement projects to accommodate unforeseen projects or events.

TABLE 8-1

Capital Improvement Project Summary

Project	Project Title	Year to be Completed	Total Estimated Cost
SO-1	Master Meter 11	2026	$736,000
SO-2	Master Meter 2	2017-2018	$60,000
S-1	Reservoir 3 and Booster Station Improvements	2017	$3,557,000
S-2	Reservoir No. 5 and Booster Station (6 MG)	2020–2021	$8,460,000
D-1	105th Place SE Water Main Replacement	2022	$337,000
D-2	129th Street SE Water Main Replacement	2022	$328,000
D-3	94th Place SE Water Main Replacement	2022	$256,000
D-4	10th Drive SE Water Main Replacement	2022	$320,000
D-5	156th Street SE Water Main	2018	$2,049,000
D-6	725 Zone Extension	2017	$605,000
D-7	Silver Crest Drive Water Main Replacement	2019	$1,309,000
D-8	9th Drive SE Water Main Replacement	2019	$650,000
D-9	Seattle Hill Road Valves and Silver Cedars	2020	$720,000
D-10	485 Zone Seismic Improvements	2017–2021	$1,620,000
D-11	Annual Valve Casting Grade Adjustments	Annual	$500,000
D-12	Annual Main Replacement Program	2023–2026	$4,000,000
D-13	Seattle Hill Road Water Grade Adjustments	2017	$77,500
G-1	Comprehensive Water System Plan	2026	$75,000
G-2	Site Security Upgrades	Annual	$400,000
G-3	District Headquarters Upgrade and Site Development	2017	$2,120,000
G-4	Financial Management System	2018	$125,000
G-5	Asset Management System	2018	$100,000
G-6	Vactor Trucks	2018, 2020	$530,000
Total			**$28,934,500**

TABLE 8-2

Capital Improvement Project Schedule

Project	Total Project Cost	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
SO-1	$736,000										$736,000
SO-2	$60,000	$30,000	$30,000								
S-1	$3,557,000	$3,557,000									
S-2	$8,460,000				$1,953,000	$6,507,000					
D-1	$337,000						$337,000				
D-2	$328,000						$328,000				
D-3	$256,000						$256,000				
D-4	$320,000						$320,000				
D-5	$2,049,000		$2,049,000								
D-6	$605,000	$605,000									
D-7	$1,309,000			$1,309,000							
D-8	$650,000			$650,000							
D-9	$720,000				$720,000						
D-10	$1,620,000	$324,000	$324,000	$324,000	$324,000	$324,000					
D-11	$500,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
D-12	$4,000,000							$1,000,000	$1,000,000	$1,000,000	$1,000,000
D-13	$77,500	$77,500									
G-1	$75,000										$75,000
G-2	$400,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000
G-3	$2,120,000	$2,120,000									
G-4	$125,000		$125,000								
G-5	$100,000		$100,000								
G-6	$530,000		$265,000		$265,000						
Total	**$28,934,500**	**$6,803,500**	**$2,983,000**	**$2,373,000**	**$3,352,000**	**$6,921,000**	**$1,331,000**	**$1,090,000**	**$1,090,000**	**$1,090,000**	**$1,901,000**

CHAPTER 9

FINANCIAL PROGRAM

INTRODUCTION

This Chapter presents the financial program for the District's water utility. Financial planning is an important aspect of a water system plan since it outlines the District's current financial condition and how the capital projects included in the Plan will be financed. A discussion of funding sources is provided in Appendix J. Through the financial program, the District's customers and Board of Commissioners are assured that the capital improvement schedule can be implemented and how the cost can be allocated to new customers.

Thus, a financial program makes the difference between a "wish list" and the implementation of the CIP. Additionally, the financial program plays a key role in establishing water rates and other charges that reflect the actual costs of providing water to the District. Rate studies are an important tool used to maintain rates at a level needed to fund operation, maintenance, and capital improvement projects.

EXISTING SERVICE RATES AND CHARGES

The District establishes service rates and charges by resolution. The Board of Commissioners reviews financial statements and utility rates at least annually. The resolutions specify meter rate, volume rate, general facilities charge, and service installation charge. The District resolutions are provided in Appendix B.

WATER RATES

Table 9-1 summarizes the monthly base rate in effect as of 2016. Service rates are based on meter size and the volume charge. The District's unit of measure for water consumption is 100 cubic feet. The base monthly water rate does not include any water use. The District has a seasonal rate structure to encourage conservation during summer months.

TABLE 9-1

Water Rate Summary(1)

Customer Class	Measure	Monthly Base Rate	Additional Winter Charge per ~100 ft^3	Additional Summer Charge per ~100 ft^3
Low-Income Senior Citizen	Per Dwelling Unit	$3.75	$1.80	$2.25
Single-Family Residential	Per Dwelling Unit	$7.60	$1.80	$2.25
Duplex	Per Dwelling Unit	$7.60	$1.80	$2.25
Multi-Family	Per Dwelling Unit	$7.60	$1.80	$2.25
Schools	Per Meter	$7.60	$1.80	$2.25
Commercial and Irrigation	Per 1-Inch Meter	$7.60	$1.80	$2.25
Commercial and Irrigation	Per 1.5-Inch Meter	$22.30	$1.80	$2.25
Commercial and Irrigation	Per 2-Inch Meter	$33.70	$1.80	$2.25
Commercial and Irrigation	Per 3-Inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 4-Inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 6-Inch Meter	$69.70	$1.80	$2.25
Commercial and Irrigation	Per 8-Inch Meter	$307.10	$1.80	$2.25
Wholesale Master Meter	Per 8-Inch Meter	$170.60	$2.25	$2.81

(1) Effective as of 2016.

GENERAL FACILITIES CHARGE

General facilities charges were revised by District Resolution No. 674. The charge amount is based upon the use at the property and the meter size, according to the schedule in Table 9-2. The charge is imposed on all new customers or existing customers that are requesting a larger meter water service.

METER INSTALLATION CHARGE

The existing water service installation charges were revised by District Resolution No. 674. The charge amounts are presented in Table 9-2.

TABLE 9-2

General Facilities Charge

Meter Size/ Customer Class	Factor Ratio	General Facility Charge	Install Permit	Total
Meter Size Connections				
5/8" * 3/4"	1.00	$3,540	$265	$3,805
1"	2.50	$8,850	$315	$9,165
1.5"	5.00	$17,700	T&M	Varies
2"	8.00	$28,320	T&M	Varies
3"	15.00	$53,100	Dev. Installed(1)	$53,100
4"	25.00	$88,500	Dev. Installed(1)	$88,500
6"	50.00	$177,000	Dev. Installed(1)	$177,000
8"	80.00	$283,200	Dev. Installed(1)	$283,200
10"	115.00	$407,100	Dev. Installed(1)	$407,100
12"	168.75	$597,375	Dev. Installed(1)	$597,375
Multiple Dwelling Unit Connections				
Duplex/ADU, per unit	0.85	$3,010	$265	$6,550
Multi-Family, per unit	0.70	$2,480	$265	Varies
Fire Connections				
Fire Meter <1"	0.05	$185	$265	$450
Fire Meter =1"	0.05	$185	$315	$500
Fire Meter =1.5"	0.05	$185	T&M	Varies
Fire Meter =2"	0.05	$185	T&M	Varies
Fire Meter >2"	0.05	$185	Dev. Installed(1)	$185
Duplex total costs are based on two dwelling units connected to two meters. Additional time and material charges will apply for water main tapping and installation.				

(1) Developer installed to District Standards at Developer cost.

FINANCIAL STATUS OF EXISTING WATER UTILITY

REVENUES AND EXPENSES

The District's major revenues are water service rates, general service fees, investment income, and developer contributions. District expenditures include operations, maintenance, administration, depreciation, and debt service. The water utility revenues and expenses for 2010 through 2015 are summarized in Tables 9-3, 9-4, and 9-5.

TABLE 9-3

Operating Revenues and Expenses (2010–2015)

Operating Incomes	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Service Charges	4,097,595	4,389,653	4,756,754	5,005,475	5,130,104	5,531,208
Permits	82,170	59,365	78,590	93,100	101,565	97,670
Miscellaneous	256,766	267,880	319,893	361,043	593,429	331,506
Total Operating Incomes	**$4,436,531**	**$4,716,898**	**$5,155,237**	**$5,459,618**	**$5,825,098**	**$5,960,384**
Operating Expenses						
Operation Expenses	1,651,139	1,916,952	2,197,734	2,078,355	1,976,909	2,227,732
Maintenance Expenses	373,565	434,816	395,738	378,663	479,399	445,320
General and Administrative Expenses	1,694,942	1,846,551	1,850,778	1,804,521	1,957,561	2,253,873
Depreciation Expenses	1,080,740	1,087,817	1,110,848	1,152,920	1,216,434	1,295,089
Total Operating Expenses	**$4,800,386**	**$5,286,136**	**$5,555,098**	**$5,414,459**	**$5,630,303**	**$6,222,014**
Net Operating Income (Loss)	**($363,855)**	**($569,238)**	**($399,861)**	**$45,159**	**$194,795**	**($261,630)**

TABLE 9-4

Non-Operating Revenues and Expenses (2010-2015)

	2010	**2011**	**2012**	**2013**	**2014**	**2015**
Non-Operating Revenue						
Investment and Assessment Income	36,369	28,917	37,125	30,499	17,394	34,147
Gain on Disposal of Assets	0	0	20,468	6,321	4,789	0
Total Non-Operating Revenues	**$36,369**	**$28,917**	**$57,593**	**$36,820**	**$22,183**	**$34,147**
Non-Operating Expenses						
Interest on Long-term Debt - Net of amount Capitalized	71,132	68,625	60,122	40,233	16,655	22,657
Amortization of Debt Discount and Issue Costs	1,453	532	(671)	(5,378)	(4,544)	(3,685)
Restatement- Change in Accounting Principles	0	0	20,094	0	823,982	0
Loss on Disposal of Assets	(23,583)	0	0	0	0	(193,528)
Total Non-Operating Expense	**$96,168**	**$69,157**	**$79,545**	**$34,855**	**$836,093**	**$212,500**
Income Before Capital Contributions	**($423,654)**	**($609,478)**	**($421,813)**	**$47,124**	**($619,115)**	**($439,983)**
Capital Contributions	982,280	1,105,251	1,850,335	3,750,700	4,010,858	2,263,893
Change in Net Position	**$558,626**	**$495,773**	**$1,428,522**	**$3,797,824**	**$3,391,743**	**$1,823,910**

TABLE 9-5

Historical Revenue and Expense Summary (2010-2015)

	2010	2011	2012	2013	2014	2015
Operating Revenue	4,436,531	4,716,898	5,155,237	5,459,618	5,825,098	5,960,384
Operating Expense	(4,800,386)	(5,286,136)	(5,555,098)	(5,414,459)	(5,630,303)	(6,222,014)
Other Revenue	(36,369)	(28,917)	(57,593)	(36,820)	(22,183)	(34,147)
Other Expense	96,168	69,157	79,545	34,855	836,093	212,500
Income Before Capital Contributions	(304,056)	(528,998)	(377,909)	43,194	1,008,705	(83,277)
Capital Contributions	982,280	1,105,251	1,850,335	3,750,700	4,010,858	2,263,893
Net Income	**$678,224**	**$576,253**	**$1,472,426**	**$3,793,894**	**$5,019,563**	**$2,180,616**

FINANCIAL ANALYSIS

Historically, the District has experienced a positive net income. The District reviews water service rates on an annual basis. In addition, the District's practice is to retain the services of an outside consultant to perform a rate and general facility charge study every 5 to 10 years. Rates are adjusted as necessary to adequately maintain the system's facilities and fund system replacement.

The District's Capital Improvement Program presented in Chapter 8 includes improvements of approximately $23,733,500 during the 6-year planning period and $28,934,500 during the 10-year planning period. These improvements will be funded through the capital improvement fund and the construction fund. The District has sufficient reserves to accommodate the currently identified CIP.

PROJECTED OPERATING BUDGET

A pro forma operating budget for the 10-year planning period is provided in Table 9-6. As shown in the table the District expects to maintain a positive net income for the next 10 years.

TABLE 9-6

District Projected Water Operating Forecast

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Operating Income										
Water Sales(1)	5,486,645	5,596,378	5,708,305	5,822,472	5,938,921	6,057,699	6,178,853	6,302,430	6,428,479	6,557,049
Other Incomes(1)	512,000	522,240	532,685	543,338	554,205	565,289	576,595	588,127	599,890	611,887
New Connection Revenues(1)	2,598,425	2,650,394	2,703,401	2,757,469	2,812,619	2,868,871	2,926,249	2,984,774	3,044,469	3,105,358
Interest Income	112,500	115,875	119,351	122,932	126,620	130,418	134,331	138,361	142,512	146,787
Total Operating Income	**$8,709,570**	**$8,884,886**	**$9,063,743**	**$9,246,211**	**$9,432,365**	**$9,622,278**	**$9,816,028**	**$10,013,692**	**$10,215,349**	**$10,421,081**
Expenses										
Labor Expenses(2)	2,085,059	2,147,611	2,212,039	2,278,400	2,346,752	2,417,155	2,489,669	2,564,360	2,641,290	2,720,529
Water Treatment Expenses(3)	1,944,040	2,021,802	2,102,674	2,186,781	2,274,252	2,365,222	2,459,831	2,558,224	2,660,553	2,766,975
Reservoirs and Lift Stations(2)	364,500	375,435	386,698	398,299	410,248	422,555	435,232	448,289	461,738	475,590
Vehicles, Equipment, Facilities(2)	198,000	203,940	210,058	216,360	222,851	229,536	236,422	243,515	250,820	258,345
Maintenance and Operations(2)	74,250	76,478	78,772	81,135	83,569	86,076	88,658	91,318	94,058	96,879
Administration(4)	750,000	787,500	826,875	868,219	911,630	957,211	1,005,072	1,055,325	1,108,092	1,163,496
Total Expenses	**$5,415,849**	**$5,612,765**	**$5,817,116**	**$6,029,194**	**$6,249,302**	**$6,477,756**	**$6,714,885**	**$6,961,031**	**$7,216,551**	**$7,481,815**
Net Income Before Depreciation	**$3,293,721**	**$3,272,122**	**$3,246,627**	**$3,217,018**	**$3,183,063**	**$3,144,523**	**$3,101,143**	**$3,052,661**	**$2,998,799**	**$2,939,267**
Total Depreciation	1,320,089	1,333,290	1,346,623	1,360,089	1,373,690	1,387,427	1,401,301	1,415,314	1,429,467	1,443,762
Net Income After Depreciation	**$1,973,632**	**$1,938,832**	**$1,900,004**	**$1,856,929**	**$1,809,373**	**$1,757,096**	**$1,699,842**	**$1,637,347**	**$1,569,331**	**$1,495,505**
Planned Capital Improvements	6,033,905	2,718,000	2,373,000	3,087,000	6,921,000	1,331,000	1,090,000	1,090,000	1,090,000	1,901,000
Running Balance	**($4,060,273)**	**($4,839,442)**	**($5,312,437)**	**($6,542,509)**	**($11,654,135)**	**($11,228,039)**	**($10,618,197)**	**($10,070,851)**	**($9,591,519)**	**($9,997,014)**

(1) Income projected based on the projected growth in ERUs in Chapter 2.
(2) Expenses projected to increase 3 percent annually.
(3) Expenses projected to increase 4 percent annually.
(4) Expenses projected to increase 5 percent annually.

TABLE OF CONTENTS

APPENDICES

APPENDIX A

DOH WATER FACILITIES INVENTORY FORM AND DOH WSP CHECKLIST

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 05/31/2017
Printed: 12/11/2017
WFI Printed For: On-Demand
Submission Reason: Owner Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
79250 B	SILVER LAKE WATER & SEWER DISTRICT	SNOHOMISH	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

RONALD "RON" A. BERGER [FIELD SUPERVISOR]
PO BOX 13888
MILL CREEK, WA 98082

7. OWNER NAME & MAILING ADDRESS

8. OWNER NUMBER: 005381

SILVER LAKE WATER & SEWER DISTRICT
CURTIS M. BREES GENERAL MANAGER
15205 41ST AVE SE
BOTHELL, WA 98012

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION

Primary Contact Daytime Phone: (425) 337-3647
Primary Contact Mobile/Cell Phone: (425) 750-0935
Primary Contact Evening Phone:
Fax: (425) 337-4399 E-mail: xxxxxxxxxxxxxxxxxxxx

10. OWNER CONTACT INFORMATION

Owner Daytime Phone: (425) 239-9843
Owner Mobile/Cell Phone: (425) 239-1755
Owner Evening Phone:
Fax: (425) 337-4399 E-mail: xxxxxxxxxxxxxxxxxxxx

WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: ____________________ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

- [ ] Agricultural
- [x] Commercial / Business
- [x] Day Care
- [x] Food Service/Food Permit
- [ ] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [ ] Industrial
- [x] Licensed Residential Facility
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [x] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): ____________________

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [ ] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [x] Special District
- [ ] State

14. STORAGE CAPACITY (gallons)

16,400,000

15	16 SOURCE NAME	17 INTERTIE	18 SOURCE CATEGORY										19 USE			20	21 TREATMENT						22 DEPTH	23	24 SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	24050L/Everett (1)	24050 L											X			Y	X							1000			00N	00E
S02	01300E/Alderwood (1)	01300 E											X			Y	X							2000			00N	00E
S03	24050L/Everett/CWSA (3)	24050 L											X			Y	X							4299			00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
79250 B	SILVER LAKE WATER & SEWER DISTRICT	SNOHOMISH	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		19330	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	16359		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	373		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	2971		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	706	706	
28. TOTAL SERVICE CONNECTIONS		20036	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 51175

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
* Requirement is exception from WAC 246-290	60	60	60	60	60	60	60	60	60	60	60	60

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ **Update - Change** ☐ **Update - No Change** ☐ **Inactivate** ☐ **Re-Activate** ☐ **Name Change** ☐ **New System** ☐ **Other** ____________

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: ____________________ **DATE:** ____________________

PRINT NAME: ____________________ **TITLE:** ____________________

WS ID	WS Name
79250	SILVER LAKE WATER & SEWER DISTRICT

Total WFI Printed: 1

Washington State Department Of Health
Project Approval Application

Comprehensive Water System Plan (project name)	Snohomish (county)
	DOH Project #
Silver Lake Water & Sewer District (water system name)	Eric B. Delfel, P.E. (design engineer)
Patrick Curran (system owner)	Gray & Osborne, Inc. (engineering firm)
15205 41st Avenue SE (street)	701 Dexter Avenue North (street)
Bothell (city) Washington (state) 98012-6114 (zip code)	Seattle (city) WA (st) 98109 (zip code)
(425) 337-3647 (phone number)	(206) 284-0860 (phone number)

(project contact if different than above) (daytime phone number) (evening phone number)

SYSTEM CLASS: ☒ Group A Community ☐ Group A NTNC ☐ Group A TNC ☐ Group B

 # SERVICE CONNECTIONS *(for Group A systems only - # services after project completion):*
☐ less than 100 ☐ 100 - 500 ☐ 501 - 999 ☐ 1,000 - 9,999 ☒ 10,000 or more

PROJECT DESCRIPTION: The Silver Lake Water & Sewer District has updated its Comprehensive Water System Plan.

AREA SERVED *(for distribution projects only-name of subdivision, site address, parcel numbers, etc.)*:

TYPE OF PROJECT *(check all that apply)*:

☒ water system plan:
- ☒ non-complete new or updated plan
- ☐ non-minor alteration

☐ satellite management (SMA)
☐ ownership plan
☐ amendment
☐ operation plan

☐ project report: (Is water system plan required: ☐Y ☐N If required, is it current and approved: ☐Y ☐N)
(Is project identified as part of capital improvement plan: ☐Y ☐N)
- ☐ filtration or other complex treatment
- ☐ chemical addition only (ion exchange, hypochlorination, corrosion control or fluoridation)
- ☐ complete new water system
- ☐ major system modification

☐ special reports or plans:
- ☐ corrosion control report
- ☐ corrosion control study
- ☐ plan to cover uncovered reservoir
- ☐ predesign study
- ☐ uncovered reservoir plan of operation
- ☐ tracer study plan
- ☐ surface water or GWI treatment facility operation plan

- ☐ filtration pilot study

☐ construction documents:

- ☐ filtration or other complex treatment
- ☐ chemical addition only
- ☐ complete new water system
- ☐ new source only
- ☐ system modification
- ☐ system modification; design standards used; PE prepared

☐ existing system approval

- ☐ non-expanding; not detailed evaluation
- ☐ non-expanding, detailed evaluation
- ☐ expanding, not detailed evaluation
- ☐ expanding, detailed evaluation

☐ waivers:

- ☐ inorganic chemical (initial)
- ☐ organic chemical (initial)
- ☐ use

- ☐ inorganic chemical (renewal)
- ☐ organic chemical (renewal)
- ☐ use (renewal)
- ☐ coliform (w/departmental inspection)
- ☐ coliform (w/ third-party inspection)

☐ other

- ☐ well-site evaluation and approval
- ☐ regulatory monitoring plan
- ☐ unfiltered system annual report
- ☐ water system compliance report (loan letter)
- ☐ water right self-assessment (if applicable)

other projects (describe)____

For department use only below this line:

Log-in #__________; Initial fee _______________; Invoice mailed ___________;

Invoice #________; Fee received ___________; # review letters__________

Approval Date:______________ Date construction report received:_______________ #approved connections________

Area served:____

____

Provisions:____

Water System Plan Submittal Form

This form is required to be submitted along with the Water System Plan (WSP). It will serve to expedite review and approval of your WSP. WSPs will not be reviewed until the submittal form and checklist are completed.

1) System Name	2) SYSTEM ID #	3) SYSTEM OWNER	
Silver Lake Water & Sewer District	**79250B**	**Patrick Curran**	
4) CONTACT NAME FOR UTILITY	PHONE NUMBER	TITLE	
Patrick Curran	**(425) 337-3647**	**General Manager**	
ADDRESS	CITY	STATE	ZIP
15205 41st Avenue SE	**Bothell**	**Washington**	**98012-6114**
5) PROJECT ENGINEER	PHONE NUMBER	TITLE	
Eric Delfel, P.E.	**(206) 284-0860**	**Project Manager**	
ADDRESS	CITY	STATE	ZIP
701 Dexter Avenue North, Suite 200	**Seattle**	**WA**	**98109**

6.	How many services are presently connected to the system?	**17,815 in 2016**
7.	Is the system expanding? (seeking to extend service area or increase number of approved connections)	**Yes**
8.	If number of services is expected to increase, how many new connections are proposed in the next six years?	**1,651 additional by 2022**
9.	If the system is private-for-profit, is it regulated by the State Utilities and Transportation Commission?	**No**
10.	Is the system located in a Critical Water Supply Service Area?	**No**
11.	Is the system a customer of a wholesale water purveyor?	**Yes**
12.	Will the system be pursuing additional water rights from the Sate Department of Ecology in the next 10 years?	**No**
13.	Is the system proposing a new intertie?	**Yes**
14.	Do you have projects(s) currently under review by Department of Health?	**No**
15.	Are you requesting distribution main project report and construction document submittal exception, and if so, does the WSP contain standard construction specifications for distribution mains?	**Yes**
16.	Are you requesting distribution related project report and construction document submittal exception, and if so, does the WSP contain distribution facilities design and construction standards, including internal engineering review procedures?	**No**
17.	Have you sent copies of the draft WSP to adjacent purveyors and the County for their review and comment?	**Yes**

If yes, list adjacent utilities/entities that have received a copy of the draft WSP

- **City of Everett, Public Works**
- **City of Everett, Clerk**
- **City of Mill Creek, Public Works**
- **Snohomish County Health District**
- **Snohomish County, Public Works**
- **Snohomish County, Planning**
- **Cross Valley Water District**
- **Alderwood Water and Wastewater District**

18. Is this plan an: **Initial Submittal**

Please enclose the following number of copies of the WSP:

- 2 copies for Department of Health Review
- 1 additional copy if you answered "YES" to question 9
- 1 additional copy if you answered "Yes" to question 12 and/or13 — __**3**__ Total Copies Attached

DOH 331-040 (rev 3/99)

WSP Checklist

	Content Description	*Must Be Submitted (√)	(Page #) in WSP
Chapter 1	**Description of Water System**		
	• Ownership and Management	(√)	1-1
	• System History and Background	(√)	1-3
	• Inventory of Existing Facilities	(√)	1-5
	• Related Plans (e.g., CWSP, local land use plans)	(√)	1-16
	• Service Area and Characteristics	(√)	2-2
	• Agreement (signed in accordance with CWSP)	( )	
	• Map	(√)	Figure 2-2
	• Service Area Policies (Including SMA policy and conditions of service)	(√)	1-19
Chapter 2	**Basic Planning Data**		
	• Current Population, Number of Service Connections, and ERUs	(√)	2-9, 2-21
	• Current Water Use and Data Reporting	(√)	2-13
	• Current and Future Land Use	(√)	2-4
	• Future Population and Number of Service Connections and ERUs (6 and 20 years)	(√)	Table 2-18
	• Future Water Use (Demand forecast for 6 and 20 years)	(√)	Table 2-18
Chapter 3	**System Analysis**		
	• System Design Standards	(√)	Table 4-1
	• Water Quality Analysis	(√)	Chapter 3
	• System Inventory, Description and Analysis	(√)	4-4
	• Source	(√)	4-4
	• Treatment	( )	
	• Storage	(√)	4-5
	• Distribution System/Hydraulics	(√)	Chapter 5
	• Summary of System Deficiencies	(√)	4-7, 4-13, 5-7
	• Analysis of Possible Improvement Projects	(√)	Chapter 8
Chapter 4	**Conservation Program and Source of Supply Analysis**		
	• Conservation Program	(√)	Chapter 7
	• Water Right Assessment	( )	
	• Source of Supply Analysis and evaluation of supply alternatives	( )	
	• Water Supply Reliability Analysis With Water Shortage Response Plan	( )	
	• Interties	( )	
Chapter 5	**Source Water Protection** (Check One or Both)		
	• Wellhead Protection Program	( )	
	• Watershed Control Program	( )	
Chapter 6	**Operation and Maintenance Program**		
	• Water System Management and Personnel	(√)	6-1
	• Operator Certification	(√)	6-4
	• Routine Operating Procedures, Preventive Maintenance and Record Keeping	(√)	6-5
	• Water Quality Sampling Procedures (Comprehensive Monitoring Plan)	(√)	3-3
	• Coliform Monitoring Plan	(√)	Appendix E
	• Emergency Response Program	(√)	6-10
	• Safety Procedures	(√)	6-8
	• Cross-Connection Control Program	(√)	6-11
	• Service Reliability in accordance with WAC 246-290-420	( )	
Chapter 7	**Distribution Facilities Design and Construction Standards**		
	• Standard Construction Specification for Distribution Mains	( )	Appendix F
	• Design and Construction Standards for distribution Related Projects	( )	Appendix F
Chapter 8	**Improvement Program**		
	• Capital Improvement Schedule (6 and 20 years)	(√)	8-9
Chapter 9	**Financial Program**		
	• Summary of past income and expenses	(√)	9-4
	• Balanced Operating Budget (1 year if >1,000 connections / 6 year if < 1,000 connections)	(√)	9-6
	• Demonstration of revenue and cash flow stability to fund CIP and emergency improvements	(√)	9-6
	• Rate Structure that considers affordability of rates and water conservation	(√)	9-2
	• Systems < 1,000 connections may do DOH Financial Viability Test to complete above reqs.	( )	
	• UTC Financial Viability and Feasibility Test (for UTC regulated systems)	( )	
Chapter 10	**Miscellaneous Documents**		
	• For Community Systems, Meeting of the Consumers (date and description)	( )	
	• County/Adjacent Utility Correspondence	(√)	Appendix L
	• Documentation of State Environmental Policy Act (SEPA) Compliance	( )	
	• Agreements	( )	
	• Satellite Management Program	( )	

* Requirement will be determined at the pre-plan conference.

APPENDIX B

DISTRICT RESOLUTIONS

SILVER LAKE WATER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 538

A RESOLUTION of the Board of Commissioners of Silver Lake Water District, Snohomish County, Washington, adopting a standard Reimbursement Agreement for property owners and providing for a reimbursement assessment process and repealing Resolution 445.

WHEREAS, RCW 35.91, and 57.22 authorize Reimbursement Agreements for monies advanced in the construction of water or sewer facilities by property owners; and

WHEREAS, numerous reimbursement agreements with property owners have been processed by the District, and

WHEREAS, based on such experience the Board of Commissioners find that it is in the best interest of the public and the District to update and clarify the procedures for determining Reimbursement Agreements and Reimbursement Connection Charges with property owners;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF SILVER LAKE WATER DISTRICT, SNOHOMISH COUNTY, WASHINGTON AS FOLLOWS:

Section 1.. A property owner seeking to connect to the District water or sewer system by means of a Developer Extension Agreement shall indicate whether a Reimbursement Agreement is requested. If a Reimbursement Agreement is requested, the property owner shall submit project plan, map or diagram of the benefited area prepared by a licensed professional engineer, ownership reports on properties within the benefited areas, actual costs of the project and such other information as the District may require. Actual costs shall include design, engineering, installation and restoration costs of the project.

Section 2. Property owners requesting a Reimbursement Agreement shall submit a non-refundable payment in the amount of $3,000.00 and $300.00 per parcel in the benefited area to be applied to the District's legal, engineering and administrative costs associated with preparing the Reimbursement Agreement, which costs shall be included as reimbursable costs in the Reimbursement Agreement; provided that whenever District engineering, legal and administrative costs exceed the payment required herein, the District shall not submit the Reimbursement Agreement to the Commissioners until such costs have been paid in full.

Section 3. Upon receipt of the completed Reimbursement Agreement, the information requested therein and the required payment, the District shall direct its Engineer to review the project and to designate by legal description the area of real property benefited by the project.

Section 4. The District's Engineer shall ascertain the legal description of individual parcels within the benefited area and confirm the names of the owners of record of such parcels and he shall determine the eligible reimbursable costs of the project and the individual parcels' estimated "fair pro rata share" of cost of the project. The District shall use that method of allocation of costs that, in the judgment of the District, most fairly allocates such costs among the affected properties.

Section 5. Upon determination of the fair allocation of costs based on the actual project costs, the benefit area and the properties included therein the completed Reimbursement Agreement signed by the property owner shall be considered for approval by the District Commissioners. Upon approval and signing of the Reimbursement Agreement, the District shall notify the record owners of properties within the benefit area, by certified mail, of the assessment area, the assessment share and the owner's right to request a hearing in writing within twenty days of the mailing of the notice of reimbursement connection charges. Upon receipt of a timely request in writing for hearing from a property owner within the assessment area, the District shall schedule a hearing on the designated reimbursement area and the estimated fair pro rata share of costs. The property owner requesting the Reimbursement Agreement shall be in attendance at the hearing. Failure of the property owner to attend shall result in rejection of the request for Reimbursement Agreement. At the hearing, the Commissioners shall establish the reimbursement area and the reimbursement connection charge for properties within the assessment area; provided that the Commissioners may only increase the reimbursement area upon new notice to the owners of the affected property. The Commissioners may accept, modify or reject the proposed Reimbursement Agreement and the benefit area and reimbursement connection charges. Should a hearing occur, the District and the property owner shall reconfirm the Reimbursement Agreement.

Section 6. Upon final approval of the Reimbursement Agreement, such agreement and the resolution approving it shall be recorded, at the expense of the property owner, with the Snohomish County Auditor's Office Snohomish County Washington. The District's obligation to collect pursuant to the reimbursement agreement shall not arise until the District has been served with proof of recording.

Section 7. The District will use its best effort to collect and distribute the funds pursuant to the process set forth herein. The District, its officials, employees, or agents shall not be held liable or responsible for failure to implement any of the collection provisions of a reimbursement agreement, unless such failure was willful or intentional. The District is acting in the capacity of a collection agent and is not obligated to make any payment except those amounts actually collected pursuant to a reimbursement agreement. The reimbursement connection charge will be collected whenever the owner of a benefited property seeks to connect to the system identified in a Reimbursement Agreement. Reimbursement connection charge funds shall be deposited into the District's maintenance and operations fund and, after the District's deduction for administration costs of not more than 10%, the balance of said funds shall be distributed within 60 days from the receipt of the funds to the designee(s) identified in the Reimbursement Agreement. Funds undeliverable two years after receipt shall inure to the District's Capital Improvement Fund. The District makes no guarantee that any reimbursement will be collected or paid during the term of its agreement. The District takes no responsibility to defend legal challenge to a Reimbursement Agreement with Developer or to the process provided for establishing or collecting such reimbursement charges. Any challenge to District's authority or process for a reimbursement agreement will not be defended by District. District may tender defense of the reimbursement agreement or process establishing or collecting such reimbursement charges to Developer.

Section 8. As an alternative to financing projects solely by owners of real estate in accordance with this resolution and Ch. 57.22 RCW, the District may join in financing of improvement projects and may be reimbursed in the same manner as the owners of real estate who participate in the projects, if the District has specified the conditions of its participation in a resolution.

Section 9 Resolution 445 of the Silver Lake Water District is hereby repealed in its entirety.

ADOPTED BY THE BOARD OF COMMISSIONERS OF SILVER LAKE WATER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, AT A REGULAR MEETING THEREOF HELD THIS 20th DAY OF December 2001.

Rod Koppler
President and Commissioner

Roger Summy
Secretary and Commissioner

Bill Anderson
Commissioner

CERTIFICATION

I, the undersigned, Secretary of the Board of Water Commissioners of Silver Lake Water District, Snohomish County, Washington (the "District"), hereby certify as follows:

1. The attached copy of Resolution No. 538 (the "Resolution") is a full, true and correct copy of the Resolution duly adopted at a regular meeting of the Board of Water Commissioners of the District held at the regular meeting place thereof on December 20, 2001, as that Resolution appears on the minute book of the District; and the Resolution will be in full force and effect immediately following its adoption; and

2. A quorum of the members of the Board of Water Commissioners was present throughout the meeting and a majority of those members present voted in the proper manner for the adoption of the Resolution.

IN WITNESS WHEREOF, I have hereunto set my hand this 20th day of December 2001.

SILVER LAKE WATER DISTRICT,
SNOHOMISH COUNTY, WASHINGTON

Roger Summy
ROGER SUMMY, Secretary

SILVER LAKE WATER & SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 674

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ESTABLISHING GENERAL FACILITY CHARGES FOR NEW WATER AND SEWER CONNECTIONS AND REPEALING RESOLUTION NO. 651.

WHEREAS, RCW 57.08.005 (11) authorizes the Silver Lake Water & Sewer District Board of Commissioners ("District") to fix rates and charges for water and sewer supplied, and to charge property owners seeking to connect to the District's systems, as a condition to granting the right to so connect, in addition to the cost of the connection, such reasonable connection charge as the Board of Commissioners shall determine to be proper in order that those property owners shall bear their equitable share of the cost of the system; and

WHEREAS, the Board of Commissioners of the Silver Lake Water & Sewer District contracted with Financial Consulting Services Group (FCSG) to prepare the 2010 Utility Rate Study, which included a section on water and sewer General Facility Charges and fees; and

WHEREAS, the Board of Commissioners set a hearing date of May 13, 2010 to consider the FCSG 2010 Utility Rate Study, and notice of such hearing was published April 22, 2010 in the Everett Herald; and

WHEREAS, the Board of Commissioners received the 2010 Utility Rate Study from FCS Group and discussed the various service rates and General Facility Charge issues presented in the report; at the Hearing of May 13, 2010; and

WHEREAS, the 2010 Utility Rate Study's section on water and sewer General Facility Charges include a financial analysis of the District's existing cost basis, under the plant in service methodology for the fiscal period ended December 31, 2008, and the future cost basis using future project cost estimates based on the District's draft Water and Sewer Comprehensive Plans; and

WHEREAS, the portion of the water and sewer general facility charges calculated using the existing cost basis, under the plant in service methodology, resulted in a significantly higher water and sewer general facility charge than currently adopted and based on 1999 and 2001 financial statements and adopted capital projects; and

WHEREAS, the under valuation of the District's current water and sewer General Facility Charge means that new customers are not fully paying for their equitable portion of the District's existing water and sewer system; and thereafter as can be heard, on Thursday, November 10, 2011, for the purpose of considering changes to the District General Facility Charges was published in the Everett Herald on October 28, 2011; and

WHEREAS, such notice was posted on the District web page www.slwsd.com; and

WHEREAS, the Board of Commissioners held a Public Hearing in the Administration Building of the Silver Lake Water & Sewer District 15205 41st Ave. SE, Bothell, WA, at 5:30 p.m., or as soon thereafter as could be heard, on Thursday November 10, 2011 for the purpose of considering changes to the District General Facility Charges and to receive public testimony on the adjustment of and possible increase to District General Facility Charges; and

WHEREAS, the water and sewer General Facility Charges and service fees set forth in this resolution in Exhibits A and B, attached hereto and made a part of this resolution, shall be considered the General Facility Charge for the District's sewer and water utilities; and it is found and declared that the classifications, charges, and fees set forth in Exhibits A and B attached to this resolution are fair and equitable; and

WHEREAS, the water and sewer General Facility Charges set forth in exhibits A and B have been rounded to the nearest $5.00 for administrative efficiency; now

BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

1. **FINDINGS:** The Board of Commissioners adopt as findings, the preceding recitals to this Resolution.

2. **DEFINITIONS:** For the purpose of determining rate classification for water and sewer General Facility Charges for new water and sewer connection charges and upsizing of existing water and sewer connections, the following definitions shall apply, unless otherwise provided for:

Accessory Dwelling Unit (ADU) or Dwelling Unit means any building or portion of a building which contains complete housekeeping facilities for one family, including provisions for sleeping, eating, cooking and sanitation, physically separated from any other dwelling unit which may be in the same building.

Alderwood Water and Wastewater (AWWD) Drainage Basin means an area identified by the District where the sewer flows are delivered to the Alderwood Water and Wastewater Drainage Basin for sewer collection and then sent to King County Metro Sewer for sewer treatment per interlocal agreements.

Commercial means all customers receiving water and sewer service or discharging domestic flows to the District's sewer system without one or more dwelling units.

Schools, churches, public agencies, and parks are examples of commercial class customers.

Condominium means a multifamily dwelling structure consisting of attached dwelling units owned individually and not in common by one owner.

Credit for Existing Water and Sewer Connection (Upsizing) means a credit a customer can apply for when they are requesting or are required to increase their existing meter size to meet an increased water or sewer service demand.

Duplex or Two-Family Dwelling means a detached structure containing two dwelling units.

ERU means Equivalent Residential Unit.

Everett Drainage Basin means an area identified by the District where sewer flows are delivered to the City of Everett for sewer treatment per interlocal agreement.

Factor Ratio means the percentage increase used to calculate a larger meter size's water and sewer General Facility Charge from the base meter size.

Fire Meter means a water meter, regardless of size, that is dedicated and plumbed solely to provide water to a fire suppression or fire sprinkler system. Fire meters can be installed in any structure(s).

Irrigation Meter means a water meter that is dedicated and plumbed solely to provide water to an irrigation system or sprinkler system.

Meter Size means the size of the water meter requested or required to meet water and sewer demands.

Mobile Home Park means a residential use in which a tract of land is rented for the use of more than one (1) mobile or modular home occupied as a dwelling unit.

Multifamily Structure means a structure or portion of a structure containing three (3) or more dwelling units, including mobile home parks with more than one dwelling unit.

Side Sewer Inspection – New Connection means when a new side sewer connection is made to the main sewer line or when the location of an existing side sewer is changed requiring a new as-built drawing to be created. Customers shall not be charged the side sewer inspection fee when the repairs to their side sewer lines do not require either a new connection to the main sewer line or a revised as-built drawing being created.

Single-family Dwelling (SFD) Unit means a detached structure containing one (1) dwelling unit and having a permanent foundation or attached dwelling units with separate ownership of each dwelling unit including the fee simple interest of the respective underlying real property for such dwelling unit. Each single-family dwelling unit shall have its own water meter.

Water Meter Installation Charge means when a customer requests a new meter be installed to serve their property or that an existing meter be relocated to a new location. The short side of the street means the shorter distance from the water line to the property. The long side of the street means the longer distance from the water line to the property.

3. **ADOPTION OF RATES:**
   The water and sewer General Facility Charges set forth on Exhibits A and B, attached hereto and incorporated by this reference are hereby adopted effective November 11, 2011.

4. **OTHER CHARGES, ASSESSMENTS, AND FEES:**
   The General Facility Charges set forth in Exhibits A and B are not in lieu of any U.L.I.D. assessments, latecomers fees, other agency general capital facility or capacity charges, or other District fees and charges for services. Examples of other District fees may include, but are not limited to, water meter installation and permit fees, side sewer inspections, water main tapping, latecomer agreement fees, returned check, and flow tests.

5. **APPLICATION FOR NEW OR UPSIZED WATER AND/OR SEWER CONNECTION:**
   Customers requesting or required to connect a new or upsized water and/or sewer connection to the District's water and sewer systems must make application to the District. The General Manager or designee may require the applicant to submit additional plans or engineering reports to substantiate the size of their required water meter and/or sewer connection.

   The District must receive payment in full of all water and/or sewer General Facility Charges and other fees prior to issuing a water and/or sewer permit and prior to the customer physically connecting to the District's water and sewer system.

6. **CREDIT FOR EXISTING WATER AND SEWER CONNECTION (UPSIZING):**
   Customers requesting or required to upsize existing water and/or sewer connection may request a credit for their existing water and/or sewer connection. The credit amount shall be the initial general facility paid for the existing water and/ or sewer connection. If the amount paid for the existing water and sewer connection cannot be determined, then a base credit of $100.00 for a water connection and $1,000.00 for a sewer connection shall be provided to the customer. The following examples of the credit calculation are provided:

Example of 2" Meter Upsized from 1" Meter (Everett Basin)

	Water	Sewer
Cost of Upsized 2" Meter	28,320.00	35,720.00
Initital GFC Paid for 1" Meter	(4,968.15)	(5,819.15)
2" GFC Charge Due	**$ 23,351.85**	**$ 29,900.85**

Example of 1" Meter Upsized from 5/8" Meter (value unknown - Everett Basin)

	Water	Sewer
Cost of Upsized 1" Meter	8,850.00	11,165.00
Initital GFC Paid for 5/8" Meter	(100.00)	(1,000.00)
1" GFC Charge Due	**$ 8,750.00**	**$ 10,165.00**

7. **REQUIRED WATER METER AND SIDE SEWER INSPECTION:**
All new or upsized water and/or side sewer connections must be inspected by the District prior to acceptance. The District may schedule the inspection of the water connection. The customer or their contractor must call the District to schedule an inspection of the side sewer. The physical side sewer connection must be visible to the District at the time of the inspection. The District may require customers, at their own expense, who have back filled the sewer trench, to re-open the sewer trench so a side sewer inspection can be conducted.

8. **CHARGES AND FEES BY INTERLOCAL AGREEMENT AGENCIES:**
In addition to the fees and charges assessed by the District for each new or upsized water and/or sewer connection, customers may be required to pay directly to the District or directly to another agency their respective General Facility Charges, capacity fees, or other fees adopted by the respective agency. Customers requesting a new or upsized water and/or sewer connection within the Alderwood Drainage Basin must complete and submit a King County Metro Sewer Use Certification form to the District.

9. **NON TRANSFERABLE:**
Existing water and sewer connections and issued water and/or sewer permits are provided to a specific property and are not transferable to another property or parcel. Existing water and/or sewer connections on a subject property that is being subdivided can transfer the existing water and/or connections to one of the newly created parcels by submitting a written request to the District. The property or parcel from which such connection(s) are transferred, forfeits any and all rights of connection to the District utility systems.

10. **GENERAL FACILITY CHARGES – WATER AND SEWER SERVICE OUTSIDE THE DISTRICT BOUNDARIES:**
Properties outside the District's corporate boundaries connecting to, using or benefiting from the use of the District's water and sewer general facilities shall be required to pay the District's General Facility Charge(s) as a condition of water and/or sewer service.

11. **EFFECTIVE DATE:**
The effective date of this Resolution shall be November 11, 2011. Any applicant for a new or upsized water and/or sewer connection shall pay the appropriate General Facility Charge for the subject property, provided however, any applicant for a new or upsized water and/or sewer connection who presents to the District a building permit issued prior to December 30, 2011, for the construction of buildings on the subject property to be connected to the District system(s) shall be assessed the District's General Facility Charge(s) adopted in Resolution No. 651.

12. **SEVERABILITY:**
Should any part or provision of this Resolution be declared by a court of competent jurisdiction to be invalid, the same shall not affect the validity of the Resolution as a whole, or any part thereof, other than the part declared to be invalid.

13. **REPEALER:**
District Resolution No. 651 providing for water and sewer General Facility Charges, customer classification, or information services definitions is hereby repealed, subject to the proviso set forth in Section 11 above.

ADOPTED by the Board of Commissioners, at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 10th day of November, 2011.

[signature]
President and Commissioner

Rod Keppler
Secretary and Commissioner

Bill Anderson
Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No. 674 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District, this 10th day of November, 2011, as said Resolution appears in the records of the Silver Lake Water & Sewer District.

Rod Keppler
Secretary of the Silver Lake Water & Sewer District Board of Commissioners

Exhibit A		
General Facility Charge - Water		
Meter Size / Customer Class	**Factor Ratio**	**General Facility Charge**
5/8 * 3/4"	1.00	3,540
1"	2.50	8,850
1.5"	5.00	17,700
2"	8.00	28,320
3"	15.00	53,100
4"	25.00	88,500
6"	50.00	177,000
8"	80.00	283,200
10"	115.00	407,100
12"	168.75	597,375
Duplex/ADU per unit	0.85	3,010
MultiFamily, per unit	0.70	2,480
Fire Meter	0.05	185
In addition to General Facility Charges, the District may charge a water meter installation and permit fee.		

Exhibit B		
General Facility Charge - Sewer (Everett Basin)		
Meter Size / Customer Class	**Factor Ratio**	**General Facility Charge**
5/8 * 3/4"	1	4,595
1"	2.50	11,490
1.5"	5.00	22,975
2"	8.00	36,760
3"	15.00	68,925
4"	25.00	114,875
6"	50.00	229,755
8"	80.00	367,605
10"	115.00	528,430
12"	168.75	775,415
Duplex/ADU per unit	0.85	3,905
MultiFamily, per unit	0.70	3,215
In addition to General Facility Charges, the District may charge a sewer inspection fee.		

Exhibit B		
General Facility Charge - Sewer (AWWD Basin)		
Meter Size / Customer Class	**Factor Ratio**	**General Facility Charge**
5/8 * 3/4"	1	2,190
1"	2.50	5,475
1.5"	5.00	10,950
2"	8.00	17,520
3"	15.00	32,850
4"	25.00	54,750
6"	50.00	109,500
8"	80.00	175,200
10"	115.00	251,850
12"	168.75	369,565
Duplex/ADU per unit	0.85	1,860
MultiFamily, per unit	0.70	1,535
In addition to General Facility Charges, the District may charge a sewer inspection fee.		
In addition to the District's fees and charges, customers connecting in the AWWD Drainage Basin have to pay a connection charge assessed by Alderwood Water and Wastewater District and King County Metro prior to connecting to the District's system.		

SILVER LAKE WATER AND SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON

RESOLUTION NO. 684

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF SILVER LAKE WATER AND SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, RATIFYING AND CONFIRMING DISTRICT POLICY REGARDING THE COLLECTION OF DISTRICT LATECOMER/REIMBURSEMENT CHARGES ON EXPIRED REIMBURSEMENT CONTRACTS.

WHEREAS, Chapter 57.22 RCW provides that property owners who connect to or use water or sewer extension facilities who did not contribute to the original cost of such facilities shall pay reimbursement charges to developers installing such facilities which are subject to a reimbursement contract; and

WHEREAS, RCW 57.08.005(11) authorizes the Silver Lake Water & Sewer District ("District") to charge property owners seeking connection to the District's water and sewer systems, as a condition to granting the right to so connect, in addition to the cost of the connection, such reasonable connection charges as the District's Board of Commissioners shall determine to be proper in order that such property owners shall bear their equitable share of the cost of the systems; and

WHEREAS, District policy requires that property owners who connect to or use water or sewer extension facilities subject to a reimbursement contract which has expired shall pay such reimbursement charge to the District, in addition to all other applicable District rates and connection charges, because such property owners did not contribute to the original cost of such facilities and the District incurs the expense to own, operate, maintain and replace such facilities; and

WHEREAS, the District Board of Commissioners now desires to ratify and confirm such policy regarding the collection of latecomer/reimbursement charges on expired reimbursement contracts which the District entered into pursuant to the provisions of Chapter 57.22 RCW; now, therefore,

BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District as follows:

1. Pursuant to Chapter 57.22 RCW or as such statute may be amended or revised, the owners of property which is connected to or uses water or sewer extension facilities for which the property owner has not paid an equitable share of the cost of such system shall pay a reimbursement charge to developers installing such facilities which are subject to a reimbursement contract; provided, however, if property subject to a reimbursement contract is connected to or uses water or sewer extension facilities after the reimbursement contract has expired, in addition to all other applicable District rates and connection charges, the owner of

such property shall pay the reimbursement charge identified in the reimbursement contract to the District as a condition of connecting their property to or using such system.

2. Existing District policy regarding the collection of latecomer/reimbursement charges on expired reimbursements agreements as set forth above is hereby ratified and confirmed and all District resolutions, policies and procedures are hereby modified, amended and superseded to be in accordance with the provisions of this resolution.

ADOPTED by the Board of Commissioners at a special meeting of the Silver Lake Water and Sewer District, Snohomish County, Washington held this 26th day of June, 2012.

Bill Anderson

President and Commissioner

Secretary and Commissioner

Rod Keppler

Commissioner

CERTIFICATION

I, the undersigned, Secretary of the Board of Commissioners of Silver Lake Water and Sewer District, Snohomish County, Washington (the "District"), hereby certify as follows:

1. The attached copy of Resolution (the "Resolution") is a full, true and correct copy of the Resolution 684 duly adopted at a special meeting of the Board of Commissioners of the District held at the regular meeting place thereof on 26th Day of June, 2012, as that Resolution appears on the Resolution Book of the District; and the Resolution will be in full force and effect immediately following its adoption; and

2. A quorum of the members of the Board of Commissioners was present throughout the meeting and a majority of those members present voted in the proper manner for the adoption of the Resolution.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of June, 2012.

SILVER LAKE WATER and SEWER DISTRICT,
SNOHOMISH COUNTY, WASHINGTON

Secretary

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 700

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE UPDATED DISTRICT STANDARDS FOR WATER AND SEWER SYSTEMS AND INFRASTRUCTURE

BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

WHEREAS, State law authorizes the District to update its Standard for Water and Sewer Systems and Infrastructure (Standards) on a periodic basis; and

WHEREAS, at the direction of the Commissioners, District staff and Gray & Osborne, engineers for the District, have reviewed, changed and updated the 2014 Standards; and

WHEREAS, District staff and engineers from Gray & Osborne recommend adoption of the Silver Lake Water & Sewer District Standards for Water and Sewer Systems and Infrastructure; and

WHEREAS, these updated Standards have been presented to the Commissioners and the Commissioners have reviewed these Standards.

NOW THEREFORE, BE IT RESOLVED THAT:

1. The Commissioners of the Silver Lake Water & Sewer District hereby adopt the newly updated Silver Lake Water & Sewer District Standards for Construction of: Water Systems, Sanitary Sewer Systems and Sewage Lift Stations dated March, 2014. (2014 District Standards) These 2014 District Standards are effective as of the date of adoption of this resolution.

2. The Commissioners hereby direct staff to use and follow these 2014 District Standards for any and all development of, improvements or additions to and extensions to the District Water and Sewer Systems as well as for operational practices as such apply to the District systems.

ADOPTED by the Board of Commissioners at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 13th day of, March 2014.

President and Commissioner

Secretary and Commissioner

Commissioner

I **CERTIFY** the above to be a true and correct copy of Resolution No. 700 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 13th day of, March 2014 as said Resolution appears in the records of the Silver Lake Water & Sewer District.

Secretary of the Silver Lake Water & Sewer District

SILVER LAKE WATER & SEWER DISTRICT
15205 41st Avenue S.E.
Bothell, WA. 98012
Ph. 425 337-3647•Fax 337-4399

DATE: **April 27, 2017**

TO: **Board of Commissioners**

FROM: **Rick Gilmore**

RE: **Adoption of 2017 Update of Water Use Efficiency Program and Goals**

Background –

The Board last adopted an update of the District's Water Use Efficiency Program and Goals in July of 2010. District staff along with Gray and Osborne performed a review and are requesting an update of our Water Use Efficiency Program. The intent of the program is proposed to remain unchanged and that the District continue efforts to improve the system operations to meet the program goals of maintaining an efficient system and to reduce the loss of water from our system. District goals are still applicable to the program and the District has since our last program update added measures that allow the District to document and enhance efforts to meet the program goals. Significant measures used by the District are listed on the attached Water Use Efficiency Program Goals.

New measures since the last update include the implementation of seasonal rate structure to promote conservation during peak summer demand period, successfully encouraging participation of our higher use customers in the City of Everett's Water Audit Program, and full cooperation with the Drought Operations Program procedures established by Everett and the EWUC. The Water Use Efficiency Program Goals and implementation measures to accomplish these goals are attached to this report.

Staff is requesting the Board adopt the 2017 updated Water Use Efficiency Plan and Goals by resolution.

Board Action –

The Board review the staff generated revisions to the Water Use Efficiency Plan and Goals and if in agreement, accept the changes by adoption of Resolution No. 734, updating the Water Use Efficiency Program.

Attachments -

- Revised Water Use Efficiency Goals and implementation measures.
- Draft of Resolution No.734 Adoption of 2017 Water Use Efficiency Program

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 734

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, UPDATING THE WATER USE EFFICIENCY PROGRAM (DATED JULY 2010) AND WATER USE EFFICIENCY GOALS INCLUDED IN SUCH PROGRAM.

WHEREAS, State law requires the District to adopt a Water Use Efficiency Program and water use efficiency goals; and

WHEREAS, after due notice the Commissioners held a public hearing on January 10, 2008 and took testimony on the Water Use Efficiency Program dated December 2007 and the water use efficiency goals set forth therein; and last updated in 2010 and

WHEREAS, District staff in conjunction with District consultants from Gray & Osborne reviewed and developed updates to the 2010 Water Use Efficiency Program adopted by Resolution No. 653; and

WHEREAS, such updates and improvements were presented to the Commissioners and the Commissioners have reviewed these updates and have determined to implement these new provisions and updates to the District Water Use Efficiency Program.

NOW THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

1. The Water Use Efficiency Program of the Silver Lake Water & Sewer District as included in the draft Comprehensive Water System Plan update March 2017 and the water use efficiency goals set forth therein and attached to this resolution are hereby approved and adopted. Such Program shall be set forth in the 2017 Final District Comprehensive Water System Plan.

2. District staff are hereby authorized and directed to implement the Water Use Efficiency Program and water use efficiency goals as adopted.

ADOPTED by the Board of Commissioners at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

____

President and Commissioner

____

Secretary and Commissioner

____

Commissioner

I **CERTIFY** the above to be a true and correct copy of Resolution No.734 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this _____ day of _________, 2017 as said Resolution appears in the records of the Silver Lake Water-Sewer District.

____

Secretary of the Silver Lake Water-Sewer District

The District Water Use Efficiency Program Goals:

- Cooperate with the regional plan presented by EWUC to promote conservation by its customers and reduce overall water demand and to save approximately 0.24 mgd per year through 2019, with a total savings of approximately 1.44 mgd at the end of the 6-year planning period.

- Save approximately 22 MG per year within the District as part of the EWUC and City of Everett programs. This goal will be achieved through the continuation of the District's existing conservation measures.

- Identify and reduce distribution system leakage by 3 MG per year through the District's leak detection program. This is done by performing leak detection surveys in the distribution system and rotating through the full system on a 5-year cycle.

The District employs multiple measures to successfully accomplish these goals, including:

- Customer Bills Showing Consumption History
- Customer Education, newsletters and billing inserts
- Customer Leak Detection
- Provisions of Conservation Kits
- Peak Season Rate Structure to Encourage Conservation
- Demonstration Garden
- Irrigation Management
- Leak Detection Surveys
- Pipe Replacement
- Program Promotion
- Cooperation with the Regional Program established by the City of Everett
- Participate in City of Everett "high water use customer" water audit program.

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON

RESOLUTION NO. 736

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE 2017 COMPREHENSIVE WATER SYSTEM PLAN AND APPROVING THE PLAN FOR PUBLIC DISTRIBUTION IN ACCORDANCE WITH WAC 246-290-100.

WHEREAS, Silver Lake Water & Sewer District ("District") is a municipal corporation providing water and sewer utility services pursuant to Title 57 RCW; and

WHEREAS, RCW 57.16.010(1) authorizes the District to adopt a general comprehensive water system plan and the District has previously done so by the adoption of the 2010 Comprehensive Water System Plan on the 12th day of August 2010, by Resolution No. 655 (the "2010 Plan"); and the 2010 Plan was approved by all public agencies with jurisdiction, including the Washington State Department of Health, Snohomish County and by the cities which are included, all or part, within the District's corporate or service area boundaries; and

WHEREAS, state law and administrative regulation, including WAC 246-290-100, require that the District's comprehensive water plan be updated periodically and the District Board of Commissioners now deems it desirable and appropriate to adopt an updated and revised comprehensive water system plan entitled "2017 Comprehensive Water System Plan" dated March 2017(the "2017 Plan") which was prepared by Gray & Osborne, Inc., the District's consulting engineers and designated as G&O #16447; and

WHEREAS, the 2017 Plan makes no changes in the District boundaries or service areas set forth in the 2010 Plan; and

WHEREAS, all District facilities; storage, pumps, pipes and other improvements to the District Water System contemplated to be added or replaced by the 2017 Plan will be sized to serve the District customer base and to meet the maximum daily water demand at buildout; and

WHEREAS, the level of service provided by the District as set forth in the 2017 Plan is in accordance with planning completed for the Urban Growth Area Plans of Everett, Mill Creek and Snohomish County; and

WHEREAS, the 2017 Plan is incorporated herein in full by this reference; and

WHEREAS, based on a SEPA checklist prepared regarding the proposed adoption of the 2017 Plan as a non-project action, a SEPA Determination of Non-Significance ("DNS") was issued by Patrick M. Curran, District General Manager and the District's Responsible SEPA Official ("District Responsible SEPA Official"), on March 31, 2017, and public notice of such action and the opportunity to comment on the SEPA checklist and DNS was published in accordance with state law; and

WHEREAS, notice of a public hearing at the Administration Building of the Silver Lake Water & Sewer District at 15205 41st Ave. SE Bothell, Washington 98012 at 5:30 p.m. or as soon thereafter as can be heard, on Thursday April 27, 2017 for the purpose of accepting public testimony on the adoption of the District 2017 Plan was published in the Herald newspaper on April 14, 2017; and

WHEREAS, the District held a public hearing on the 2017 Plan on April 27, 2017 at 5:30 pm at the District administrative office at 15205 41st Ave. SE, Bothell WA, and the District Board of Commissioners considered public input and testimony from the public on the 2017 Plan;

NOW THEREFORE, BE IT RESOLVED, by the Board of Commissioners of Silver Lake Water & Sewer District, Snohomish County, Washington, as follows:

1. The Commissioners adopt as findings the preceding recitals to this Resolution.

2. The 2017 Plan is hereby approved and adopted as the District's comprehensive water system plan effective the date set forth below, and is further approved for public distribution in accordance with WAC 246-290-100.

3. Pursuant to RCW 57.16.010(7), the 2017 Plan shall be submitted to all required jurisdictions and agencies, including the legislative authority of Snohomish County, the legislative authority of all cities which are included, all or in part, within the District's corporate or service area boundaries, and to all state agencies with jurisdiction, including the Washington State Department of Health, for approval by those jurisdictions and agencies as provided and required by law.

4. The District's Water Use Efficiency Plan (WUE) has been updated and adopted by the Board in Resolution No.734. This updated WUE Plan is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies. The District's Developer Standards for water and sewer systems has been updated and adopted by the Board of Commissioners in Resolution No.735. This updated District Developer Standards for water and sewer systems is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies.

ADOPTED by the Board of Commissioners at a regular open public meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

____
President and Commissioner

____
Secretary and Commissioner

____
Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No. 736 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27 day of April 2017 as said Resolution appears in the records of the Silver Lake Water & Sewer District.

____
Secretary of the Silver Lake Water & Sewer District

SILVER LAKE WATER & SEWER DISTRICT
15205 41st Avenue S.E.
Bothell, WA. 98012
Ph. 425 337-3647•Fax 337-4399

DATE: **April 27, 2017**

TO: **Board of Commissioners**

FROM: **Rick Gilmore**

RE: **Adoption of 2017 District Standards Revisions**

Background –

The Board last adopted revised District Standards in March of 2014. District staff along with Gray and Osborne has performed a review and proposed update of our District Standards. The major modifications desired are identified in the attachment to this report. The most significant change is our standardization on a ship's ladder for access to any vault exceeding 4-foot in depth. This change was selected to bring all new construction in to compliance with recent occupational safety rules for fall protection. The use of a ship's ladder allows entry without full fall protection harness and reduces the required manpower and equipment requirements for entering the vaults.

Staff is requesting the Board adopt the revised District Standards with modifications proposed for 2017 and forward.

Board Action –

The Board review the staff generated revisions to the District Standards and if in agreement, adopt the 2017 Developer Standards by the adoption of Resolution No. 735.

Attachments -

- Summary of proposed modifications included in the 2017 District Standards.
- Draft of Resolution No.735 Adoption of 2017 District Standards.

SILVER LAKE WATER & SEWER DISTRICT
DISTRICT STANDARDS
2017

Major Modifications to 2014 Standards Include:

WATER SYSTEMS

- District standard vaults have been modified to allow for ship ladder access.
- Standard meter box has been modified.
- District disinfection procedures have been modified.

SEWER SYSTEMS

- District standard manhole frame and cover has been changed.
- District standard sewer air and vacuum relief assembly has changed.

LIFT STATIONS

- Lift station SCADA standards were updated.

Additional modifications have been made throughout the 2017 District Standards. Please review the entire document for conformance to these Standards.

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 734

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, UPDATING THE WATER USE EFFICIENCY PROGRAM (DATED JULY 2010) AND WATER USE EFFICIENCY GOALS INCLUDED IN SUCH PROGRAM.

WHEREAS, State law requires the District to adopt a Water Use Efficiency Program and water use efficiency goals; and

WHEREAS, after due notice the Commissioners held a public hearing on January 10, 2008 and took testimony on the Water Use Efficiency Program dated December 2007 and the water use efficiency goals set forth therein; and last updated in 2010 and

WHEREAS, District staff in conjunction with District consultants from Gray & Osborne reviewed and developed updates to the 2010 Water Use Efficiency Program adopted by Resolution No. 653; and

WHEREAS, such updates and improvements were presented to the Commissioners and the Commissioners have reviewed these updates and have determined to implement these new provisions and updates to the District Water Use Efficiency Program.

NOW THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

1. The Water Use Efficiency Program of the Silver Lake Water & Sewer District as included in the draft Comprehensive Water System Plan update March 2017 and the water use efficiency goals set forth therein and attached to this resolution are hereby approved and adopted. Such Program shall be set forth in the 2017 Final District Comprehensive Water System Plan.

2. District staff are hereby authorized and directed to implement the Water Use Efficiency Program and water use efficiency goals as adopted.

ADOPTED by the Board of Commissioners at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

President and Commissioner

Secretary and Commissioner

Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No.734 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27th day of April, 2017 as said Resolution appears in the records of the Silver Lake Water-Sewer District.

Secretary of the Silver Lake Water-Sewer District

The District Water Use Efficiency Program Goals:

- Cooperate with the regional plan presented by EWUC to promote conservation by its customers and reduce overall water demand and to save approximately 0.24 mgd per year through 2019, with a total savings of approximately 1.44 mgd at the end of the 6-year planning period.

- Save approximately 22 MG per year within the District as part of the EWUC and City of Everett programs. This goal will be achieved through the continuation of the District's existing conservation measures.

- Identify and reduce distribution system leakage by 3 MG per year through the District's leak detection program. This is done by performing leak detection surveys in the distribution system and rotating through the full system on a 5-year cycle.

The District employs multiple measures to successfully accomplish these goals, including:

- Customer Bills Showing Consumption History
- Customer Education, newsletters and billing inserts
- Customer Leak Detection
- Provisions of Conservation Kits
- Peak Season Rate Structure to Encourage Conservation
- Demonstration Garden
- Irrigation Management
- Leak Detection Surveys
- Pipe Replacement
- Program Promotion
- Cooperation with the Regional Program established by the City of Everett
- Participate in City of Everett "high water use customer" water audit program.

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO.735

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE UPDATED DISTRICT STANDARDS FOR WATER AND SEWER SYSTEMS AND INFRASTRUCTURE

BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

WHEREAS, State law authorizes the District to update its Standard for Water and Sewer Systems and Infrastructure (Standards) on a periodic basis; and

WHEREAS, at the direction of the Commissioners, District staff and Gray & Osborne, engineers for the District, have reviewed, changed and updated the 2014 Standards; and

WHEREAS, District staff and engineers from Gray & Osborne recommend adoption of the Silver Lake Water & Sewer District Standards for Water and Sewer Systems and Infrastructure; and

WHEREAS, these updated Standards have been presented to the Commissioners and the Commissioners have reviewed these Standards.

NOW THEREFORE, BE IT RESOLVED THAT:

1. The Commissioners of the Silver Lake Water & Sewer District hereby adopt the newly updated Silver Lake Water & Sewer District Standards for Construction of: Water Systems, Sanitary Sewer Systems and Sewage Lift Stations dated April, 2017. (2017 District Standards) These 2017 District Standards are effective as of the date of adoption of this resolution.

2. The Commissioners hereby direct staff to use and follow these 2017 District Standards for any and all development of, improvements or additions to and extensions to the District Water and Sewer Systems as well as for operational practices as such apply to the District systems.

ADOPTED by the Board of Commissioners at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of, April 2017.

President and Commissioner

Rod Keppler

Secretary and Commissioner

Bill Anderson

Commissioner

I **CERTIFY** the above to be a true and correct copy of Resolution No. 735 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27th day of, April 2017 as said Resolution appears in the records of the Silver Lake Water & Sewer District.

Rod Keppler

Secretary of the Silver Lake Water & Sewer District

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON

RESOLUTION NO. 736

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE 2017 COMPREHENSIVE WATER SYSTEM PLAN AND APPROVING THE PLAN FOR PUBLIC DISTRIBUTION IN ACCORDANCE WITH WAC 246-290-100.

WHEREAS, Silver Lake Water & Sewer District ("District") is a municipal corporation providing water and sewer utility services pursuant to Title 57 RCW; and

WHEREAS, RCW 57.16.010(1) authorizes the District to adopt a general comprehensive water system plan and the District has previously done so by the adoption of the 2010 Comprehensive Water System Plan on the 12th day of August 2010, by Resolution No. 655 (the "2010 Plan"); and the 2010 Plan was approved by all public agencies with jurisdiction, including the Washington State Department of Health, Snohomish County and by the cities which are included, all or part, within the District's corporate or service area boundaries; and

WHEREAS, state law and administrative regulation, including WAC 246-290-100, require that the District's comprehensive water plan be updated periodically and the District Board of Commissioners now deems it desirable and appropriate to adopt an updated and revised comprehensive water system plan entitled "2017 Comprehensive Water System Plan" dated March 2017(the "2017 Plan") which was prepared by Gray & Osborne, Inc., the District's consulting engineers and designated as G&O #16447; and

WHEREAS, the 2017 Plan makes no changes in the District boundaries or service areas set forth in the 2010 Plan; and

WHEREAS, all District facilities; storage, pumps, pipes and other improvements to the District Water System contemplated to be added or replaced by the 2017 Plan will be sized to serve the District customer base and to meet the maximum daily water demand at buildout; and

WHEREAS, the level of service provided by the District as set forth in the 2017 Plan is in accordance with planning completed for the Urban Growth Area Plans of Everett, Mill Creek and Snohomish County; and

WHEREAS, the 2017 Plan is incorporated herein in full by this reference; and

WHEREAS, based on a SEPA checklist prepared regarding the proposed adoption of the 2017 Plan as a non-project action, a SEPA Determination of Non-Significance ("DNS") was issued by Patrick M. Curran, District General Manager and the District's Responsible SEPA Official ("District Responsible SEPA Official"), on March 31, 2017, and public notice of such action and the opportunity to comment on the SEPA checklist and DNS was published in accordance with state law; and

WHEREAS, notice of a public hearing at the Administration Building of the Silver Lake Water & Sewer District at 15205 41st Ave. SE Bothell, Washington 98012 at 5:30 p.m. or as soon thereafter as can be heard, on Thursday April 27, 2017 for the purpose of accepting public testimony on the adoption of the District 2017 Plan was published in the Herald newspaper on April 14, 2017; and

WHEREAS, the District held a public hearing on the 2017 Plan on April 27, 2017 at 5:30 pm at the District administrative office at 15205 41st Ave. SE, Bothell WA, and the District Board of Commissioners considered public input and testimony from the public on the 2017 Plan;

NOW THEREFORE, BE IT RESOLVED, by the Board of Commissioners of Silver Lake Water & Sewer District, Snohomish County, Washington, as follows:

1. The Commissioners adopt as findings the preceding recitals to this Resolution.

2. The 2017 Plan is hereby approved and adopted as the District's comprehensive water system plan effective the date set forth below, and is further approved for public distribution in accordance with WAC 246-290-100.

3. Pursuant to RCW 57.16.010(7), the 2017 Plan shall be submitted to all required jurisdictions and agencies, including the legislative authority of Snohomish County, the legislative authority of all cities which are included, all or in part, within the District's corporate or service area boundaries, and to all state agencies with jurisdiction, including the Washington State Department of Health, for approval by those jurisdictions and agencies as provided and required by law.

4. The District's Water Use Efficiency Plan (WUE) has been updated and adopted by the Board in Resolution No.734. This updated WUE Plan is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies. The District's Developer Standards for water and sewer systems has been updated and adopted by the Board of Commissioners in Resolution No.735. This updated District Developer Standards for water and sewer systems is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies.

ADOPTED by the Board of Commissioners at a regular open public meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

President and Commissioner

Rod Keppler
Secretary and Commissioner

Bill Anderson
Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No. 736 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27 day of April 2017 as said Resolution appears in the records of the Silver Lake Water & Sewer District.

Rod Keppler
Secretary of the Silver Lake Water & Sewer District

Silver Lake Water and Sewer District
15205-41st Avenue SE
Bothell, WA 98012
Phone: 425 337-3647/Fax: 425 337-4399

April 11, 2017

The Herald
Legal Dept.

NOTICE OF HEARING

To Whom It May Concern:

SILVER LAKE WATER AND SEWER DISTRICT
NOTICE OF HEARING

NOTICE IS HEREBY GIVEN that the Board of Commissioners of the Silver Lake Water and Sewer District will hold a Public Hearing in the Administration Building of the Silver Lake Water and Sewer District, 15205-41st Avenue SE, Bothell, WA, at 5:30 p.m., or as soon thereafter as can be heard, on Thursday April 27, 2017 for the purpose of accepting public testimony on the adoption of:

2017 COMPREHENSIVE WATER SYSTEM PLAN

Rod Keppler, Secretary
Board of Commissioners

SILVER LAKE WATER AND SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON

RESOLUTION NO. 753

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER AND SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE 2017 COMPREHENSIVE WATER SYSTEM PLAN WITH FINAL REVISIONS AS APPROVED BY ALL REQUIRED JURISDICTIONS AND AGENCIES IN ACCORDANCE WITH RCW 57.16.010 (7).

WHEREAS, Silver Lake Water and Sewer District ("District") is a municipal corporation providing water and sewer utility services pursuant to Title 57 RCW; and

WHEREAS, RCW 57.16.010(1) authorizes the District to adopt a general comprehensive water system plan; and

WHEREAS, state law and administrative regulation, including WAC 246-290-100, require that the District's Comprehensive Water Plan be updated periodically; and

WHEREAS, the District's Board of Commissioners, by Resolution No. 736, did adopt an updated and revised Comprehensive Water System Plan entitled "Comprehensive Water System Plan" dated April, 2017 (2017 Plan) which was prepared by Gray & Osborne, Inc., the District's consulting engineers and designated as G&O #16447; and

WHEREAS, in accordance with Resolution No. 736 the 2017 Plan was circulated to, and approved by, all required jurisdictions and agencies, including the legislative authority of Snohomish County, the legislative authority of all cities which are included, all or in part, within the District's corporate or service area boundaries, and to all state agencies with jurisdiction, including the Washington State Department of Health, for approval by those jurisdictions and agencies as provided and required by law; and

WHEREAS, the District's Board of Commissioners now deems it desirable and appropriate to adopt an updated and revised comprehensive water system plan entitled "2017 Comprehensive Water System Plan" dated April 2017 with final revisions dated December 2017 which was prepared by Gray & Osborne, Inc., the District's consulting engineers and designated as G&O No. 16447; and

WHEREAS, the April 2017 Comprehensive Water System Plan with Final Revisions dated December 2017, and designated as G&O No. 16447 is incorporated herein in full by this reference; and

NOW THEREFORE, BE IT RESOLVED, by the Board of Commissioners of Silver Lake Water and Sewer District, Snohomish County, Washington, as follows:

1. **FINDINGS:** The Commissioners adopt as findings the preceding recitals to this Resolution.

2. **ADOPTION:** The April 2017 Comprehensive Water System Plan with Final Revisions dated December 2017 and designated as G&O No. 16447 is hereby approved and adopted as the District's Comprehensive Water System Plan effective the date set forth below.

ADOPTED by the Board of Commissioners at a regular open public meeting of the Silver Lake Water and Sewer District, Snohomish County, Washington this 14th day of December 2017.

President and Commissioner

Rod Keppler

Secretary and Commissioner

Bill Anderson

Commissioner

CERTIFICATION

I, **the undersigned, Secretary of the Board of Water Commissioners of Silver Lake Water & Sewer District, Snohomish County, Washington (the "District"), hereby certify as follows:**

1. The attached copy of Resolution No. 753 (the "Resolution") is a full, true and correct copy of the Resolution duly adopted at a regular meeting of the Board of Commissioners of the District held at the regular meeting place thereof on December 14, 2017, as that Resolution appears on the Minute book of the District; and the Resolution will be in full force and effect immediately following its adoption; and

2. A quorum of the members of the Board of Commissioners was present throughout the meeting and a majority of those members present voted in the proper manner for the adoption of the Resolution.

IN WITNESS WHEREOF, I have hereunto set my hand this 14th day of December, 2017.

SILVER LAKE WATER-SEWER DISTRICT,
SNOHOMISH COUNTY, WASHINGTON

Rod Keppler

Rod Keppler, Secretary

APPENDIX C

INTERLOCAL AGREEMENTS

MEMORANDUM OF AGREEMENT

THIS MEMORANDUM OF AGREEMENT is entered into by and between the Silver Lake Water District, a utility district organized under the laws of the State of Washington (the "District") and the City of Everett, a first-class charter city organized under the laws of the State of Washington (the "City"), for the purposes of identifying certain agreement by and between the District and the City regarding the design of certain water distribution facilities to be replaced along SR 527 (and vicinity), between 112th Street and 132nd Street.

RECITALS

A. The City and the Washington State Department of Transportation (WSDOT) have planned arterial improvements along SR 527, between 112th Street and 132nd Street.

B. The District has potable water facilities and appurtenances along or in the vicinity of SR 527, between 122nd Street and 132nd Street.

C. The City and the District have determined that a portion of the District's water line within SR527 street-widening project limits must be replaced, due to the roadway reconstruction. Specifically, the District's existing twelve-inch-diameter cast iron water line from the vicinity of 132nd Street SE to the vicinity of 122nd Street SE will not have adequate cover during the duration of construction activities. Consequently, a total of approximately 3,000 feet of the District's water main must be replaced with ductile iron pipe.

D. In order to accommodate the future relocation of Master Meter No. 3, it has also been determined that certain vault and plumbing improvements need to be made as part of the SR 527 street improvement project.

E. The City and the District have determined that it will be most convenient and cost-effective to replace the water lines and the master meter vault ("the Project") as part of the SR527 street-widening project, rather than as a separate project.

F. The District and the City desire, in this Memorandum of Agreement, to identify their respective responsibilities relating to the design the Project.

AGREEMENT

For good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the parties agree to the following terms of this Memorandum of Agreement.

1. Project Description. The District and the City, pursuant to the responsibilities as described and allocated in this Memorandum intend to cooperate and undertake the design of the following project:

Replacement of the District's existing twelve-inch-diameter cast iron water line with ductile iron pipe, from the vicinity of 132nd Street SE to the vicinity of 122nd Street SE (approximately 3,000 feet in total).

Installation of certain vault and plumbing improvements near the intersection of SR 527 and 132nd Street SE, which will accommodate the future relocation of Master Meter No. 3.

The overall objective is to prepare construction documents including plans, quantity estimates, opinions of cost and specifications for the replacement of the described water line. It is assumed that the water line replacement will be designed concurrently with the SR527 Widening Project and that all meetings will be held concurrently with the SR527 Widening Project. The plans and specifications will be produced in metric units to provide consistency with the SR527 roadway-widening project. The plans and specifications will meet or exceed the Silver Lake Water District as well as the City Of Everett standards. The plans will also follow a style similar to the WSDOT format for utility improvements and shall be attached as a tied bid item for the final documents.

The Washington State Department of Transportation (WSDOT) will manage the construction of the Project, in conjunction with the larger improvement of SR 527 between 112th Street and 132nd Street. The District will, therefore, separately contract with WSDOT for the construction of the Project.

2. Project Funding. Funding for the design of the Project shall be provided by the District. The estimated cost of the design is Thirty one thousand Dollars ($31,000.00). The design work will be performed by Perteet Engineering under contract with the City. The City will invoice the District for the whole and actual cost of the Project design; provided that the charges invoiced to the District directly relate to the improvements under the District's jurisdiction. Payments made by the District to the City shall not exceed $31,000.00 without prior written approval by the District.

3. Project Design. The City shall prepare the final, detailed design engineering for the Project, in accordance with City standards and specifications and in the WSDOT format. The District shall have final design review approval.

4. Financial Administration. During preparation of the final, detailed design engineering and specifications, the City will invoice the District for the design costs. The District will make payments to the City within thirty (30) days of receipt of the invoice(s) described above. The

City shall not charge the District for any engineering design or administrative support services provided by City employees or other staff.

5. Audits And Inspections. The records and documents with respect to all matters covered by this Memorandum of Agreement shall be subject to inspection, review or audit by the City or the District during the term of this Memorandum of Agreement and for three (3) years after its termination.

6. No Third Party Rights. Nothing contained herein is intended to, nor shall be construed to, create any rights in any party not a signatory to this Memorandum of Agreement, or to form the basis for any liability on the part of the City or the District, or their officials, employees, agents or representatives, to any party not a signatory to this Memorandum of Agreement.

7. Notices. All notices pursuant to this Memorandum of Agreement shall be given in writing and delivered by U.S. mail or delivered in person to the following:

Silver Lake Water District
Attn: General Manager
Silver Lake Water District
2210 132nd Street
Mill Creek, WA 98012-5615

City of Everett
Attn: Dave Davis, P.E.
City Engineer
3200 Cedar Street
Everett, WA 98201

WHEREFORE, the Silver Lake Water District and the City of Everett have executed this Agreement on the dates set forth below.

CITY OF EVERETT

Frank E. Anderson

By: Frank E. Anderson
Its: Mayor
Dated:

Attest: Sharon Marks
City Clerk

SILVER LAKE WATER DISTRICT

By:
Its: General Manager
Dated: 12-27-02

Approved As To Form:

City Attorney
MARK T. SOINE

Approved As To Form:

District Attorney

BNC\3221\81\352904.V01 (7K@W01!.DOC)

Appendix 2
System participation agreement (with Everett)

RECEIVED
MAY 15 2009
OPERATIONS & MAINTENANCE

PARTICIPATION AGREEMENT
EVERETT REGIONAL CONSECUTIVE SYSTEMS LEAD AND COPPER RULE
MONITORING PROGRAM

THIS AGREEMENT dated ____________ between the City of Everett, a municipal corporation of the State of Washington ("City") and
Silver Lake Water & Sewer District________________________________,
("Participant") witnesses:

1. City and Participant acknowledge their respective responsibilities as drinking water purveyors under the USEPA's Lead and Copper Rule (40 CFR Part 141) to monitor drinking water at customer taps for possible lead and copper contamination. Accordingly, Participant agrees:

a. To conduct monitoring, as directed by City staff and as detailed in the most current version of the Everett regional LCR monitoring plan. Participant will collect and deliver samples to City in accordance with protocols and schedules established by City, DOH, Participant, and other participants;

b. To conduct follow up monitoring and investigation on any LCR sampling location where the initial routine monitoring results exceed the action limits for lead or copper and report the results to City and DOH according to the Everett regional LCR monitoring plan, the DOH, or federal regulations;

c. To select monitoring locations meeting the requirements of the LCR and 40CFR141.86(a);

d. To assist City with water quality parameters monitoring if assigned by the plan;

e. To conduct public notification if required by the plan or DOH as part of LCR compliance.

2. City agrees to establish and administrate the Everett regional consecutive systems lead and copper monitoring program. City will be responsible for regional coordination and reporting of data timely submitted to the City by all participants.

3. City will pay all costs of sample analysis, data coordination and analysis, and reporting. Participants will pay all costs of sample collection and monitoring, staff coordination and participation, and public notification materials and mailing. (City's retail water distribution system shall perform monitoring and pay its collection and monitoring costs as a participant.)

4. This agreement is directed toward monitoring for regulatory agency compliance and reporting only. The City and each participant remain responsible for LCR compliance within their respective local distribution systems.

5. This agreement may be terminated by either party by giving 90 days notice to the other.

City of Everett	Participant System:
	Silver Lake Water & Sewer District
Mayor: Ray Stephanson	System Representative Signature: [signature] G.M.
	Mailing address:
Approved as to form	P.O. Box 13888
City Attorney:	Mill Creek, WA. 98082-1888
James D. Iles	DOH System ID#: 79250B
Attest Sharon Marks	Population served: 44,000
City Clerk	

FINAL

EVERETT AND ALDERWOOD WATER AND WASTEWATER DISTRICT WATER SUPPLY CONTRACT

THIS CONTRACT is made and entered into by and between the City of Everett, a municipal corporation of the State of Washington, hereinafter referred to as "the City," and the Alderwood Water and Wastewater District, a municipal corporation of the State of Washington, hereinafter referred to as "District."

WHEREAS, the City owns and operates a water supply system located in the Sultan Basin of Snohomish County, Washington. Said system has regional supply capability for domestic, commercial and industrial water consumption; and

WHEREAS, pursuant to RCW Chap. 35.92 and RCW Chap. 39.94, the City is authorized to enter into contracts with other municipalities and districts to supply such other municipalities and districts with water. Pursuant to WAC 246-290-100 (2001), the City prepared a Water System Plan, which identifies the District as being within the City's water supply area; and

WHEREAS, the City has been the sole water supplier to the District for many years; and

WHEREAS, the District and the City desire to execute a water supply agreement designating the City as the source of supply for the District;

NOW, THEREFORE, for the mutual benefits to be derived, the parties agree as follows:

1. **Delivery of Water**. The City hereby agrees to provide and sell to the District, and the District agrees to purchase from the City, a maximum of one hundred six million gallons of water per day (106 MGD). A maximum of fifty-five million gallons per day (55 MGD) shall be allowed at any single specific connection point. The City shall be the District's primary source of water. The District may utilize existing ground-water rights and re-use water. The District may use other sources of water with the prior written consent of the City.

2. **Point of Delivery**. The City shall deliver water to the District at agreed connection sites. The agreed connection sites are the District's Clearview pump station and the District's Evergreen Way pump stations. Other connection points will be established by mutual written agreement, which agreement shall not be unreasonably withheld by the City. The District shall install, at its cost, a master meter system at

agreed connection points. The master meter installation(s) shall meet the specifications and approval of the City and shall become the property of the City after installation. The actual point of delivery at each connection point shall be the downstream flange of the valve downstream of each master meter. If the master meter is not connected directly to the City's pipeline, the actual point of delivery shall be the downstream flange of the valve nearest the City's pipeline.

3. **Quantity of Water.** The City and the District agree that each have made, and will continue to make, significant capital investments in water supply facilities that are interdependent and that coordinated planning will be required throughout the term of this contract to maximize public benefits and minimize costs. The parties acknowledge that peak day demands of the District will not exceed one hundred six (106) million gallons per day. Estimated average daily demands and peak day demands of the District and its major wholesale customers for the near future are shown on Attachment A attached hereto. The quantity of water delivered shall be measured by the master meters referred to in paragraph 2 above.

4. **Quality of Water.** The City agrees that all water delivered to the District at the connection point(s) shall be of the same standard and quality as normally delivered to the City's other customers. The City shall be responsible for meeting state and federal standards for drinking water at the connection points. All water supplied by the City for use or sale by the District shall be upon the express condition that after water passes the connection points, it becomes the property of the District, and the City shall not be liable for any degradation of water quality and resulting damages that may occur beyond said point. The City shall not be responsible for acts of sabotage that might degrade the quality of water delivered to the District.

5. **Rates and Charges.**

A. **Rates for Water** – The District shall be billed and pay to the City for each million gallons of water delivered as determined in the following manner:

1. Demand charge of $30.65 per million gallons shall be set and remain in effect until December 31, 2011. After that date, the City reserves the option of reasonably modifying the demand charge by using industry accepted rate-making methodology.
2. A commodity charge of $184.35 per million gallons shall be set and remain in effect until at least March 1, 2005. Future commodity charges will be based on cost of service studies

using modern cost of service principles. Commodity charges will be reviewed no less frequently than every two years and adjusted, as needed, effective with the mid-March master meter reading of year of adjustment. The commodity charge shall include a rate multiplier (based on the sum of both demand and commodity charges) of 1.20. There shall be no rate multiplier for filtration. At any time during the term of this agreement the District may change from a rate multiplier charge to a connection fee charge based on the mutual agreement and execution by both the District and the City.

3. Any increase in or additional excise, utility or other taxes imposed by the federal, state, or other governmental agency, including such taxes which may be imposed upon the water and filtration utility by the Everett City Council, shall be borne by all classes of users of the City's water, including the District to whom such tax may be applicable, in proportion to the total revenues received from such users.

B. Rates for Filtration

1. In addition to water rates discussed above, the District agrees to pay for **cost of filtering water** in accordance with the following formula:

$$R = \frac{P}{X} \left(\frac{M + C + DS + FDS + O}{Q} \right)$$

R = Additional cost for filtered water – (to be added to current water rate) computed to nearest ten-thousandth of a Dollar per 100 cubic feet.

M = Maintenance & Operation cost for Lake Chaplain Filtration plant for preceding year less any credit from the sinking fund.

C = Additional Capital Outlay costs attributable to Filtration plant for preceding year, less funds collected and used from the sinking fund. (See Section 2).

DS = Annual debt service, exclusive of reserve interest income, if reserve funded from bond proceeds, attributable to total project costs for initial construction of Lake Chaplain Filtration plant, including coverage.

FDS = Annual debt service, exclusive of reserve interest income, if reserve funded from bond proceeds, attributable to total project costs for future construction of Lake Chaplain Filtration plant, including coverage, with total project cost reduced by the amount of funds in sinking fund at the time of issuing bonds.

O = Annual overhead attributable to Filtration plant to be determined from previous years expense as follows:

2% of Filter plant material and supply costs excluding power and 14% of labor costs at filter plant including fringe benefits.

P = District Maximum Daily Demand (day of highest use in preceding year) divided by the District Average Daily Demand (for preceding year)

Q = Quantity of water produced in previous year expressed in 100 cubic feet. (Filter Plant Meter Reading)

X = System Maximum Daily Demand (day of highest use IN preceding year) divided by the System Average Daily Demand for preceding year)

2. The City agrees to establish a Sinking Fund made up of the bond coverage funds required for the Annual Debt Service (DS) for initial construction cost and Annual Debt Service (FDS) for future construction costs of the Lake Chaplain filtration plant facilities. Bond coverage funds collected from all wholesale and retail customers under the Rate Formula (R) in Paragraph 5(B)(1) above shall be placed in this Sinking Fund and the principal and interest from investments from the Sinking fund shall be used for Additional Capital Outlay Costs (C) attributable to the Lake Chaplain filtration plant before other City funds are used thereby reducing the (C) value in the Rate Formula (R) by the amount used; or if revenue bonds are required for future construction (FDS) the amount of bonds required shall be reduced by the amount collected or remaining in the Sinking Fund including interest on investments at the time of issue of the bonds for future construction.

In the event the Sinking Fund balance exceeds $2 million during the term of the bond issue(s), funds in excess of $2 million shall be used to defray O&M costs. At the expiration of the term of the bond issue(s) any balance remaining in the Sinking Fund shall be credited to O & M until fully utilized.

The filtration rate shall be adjusted annually and be effective with the April 1st meter read for that year.

6. **Payment.** On a monthly basis, the City shall bill the District for water delivered through pipeline master meters. Said bills shall be payable within thirty (30) days after issuance of the invoice. Bills delinquent for any period greater than sixty (60) days after issuance of the invoice shall be assessed interest in the amount equal to one percent a month or such greater amount as allowed by City ordinance. The City shall also bill the District for Reservoir 3 land lease charges on a monthly basis. In case of billing errors, or errors caused by misadjusted meters, the City may collect back to date of last meter calibration to a maximum of twelve months.

7. **Resale or Distribution of Water**. After water has passed the points of delivery and has entered the District's system, said water becomes the property of the District and under its exclusive authority, subject only to the following express limitations:

    a. The District agrees not to allow any new customer connections to its water system larger than twenty (20) inches, or supply a new customer more than five million gallons per day at peak, unless the District first provides written notification to the City for said connection.

    b. The District will distribute water received from the City in a manner consistent with the City Water System Plan, and the District's Water System Plan, as approved by the Washington State Department of Health if appropriate.

    c. The District shall not serve water received from the City, pursuant to the terms of this Agreement, in areas outside the City's approved service area shown in Attachment B attached hereto, without prior written approval of the City.

    d. In the event of annexations of the District's service area, by Everett, the City reserves the right to assume service to those customers who have been annexed into the City in accordance with State law.

8. **Lease of Property.** The City agrees to lease to the District, and District agrees to make lease payments to the City for, all sites leased to the District as described in this section and shown in Attachments C & D. The amount due shall be made in monthly payments hereby established as $5,150.00 per month. The Rent shall be adjusted annually to an amount equal to the percentage increase or decrease of the Seattle-Tacoma-Bremerton Consumer Price Index (CPI) for All

Urban Consumers. All items (1982-1984=100) published by the United States Department of Labor, Bureau of Labor Statistics (the "Bureau"). If the Bureau discontinues publishing the CPI the parties mutually shall agree on a substitute index of comparable statistics on the cost of living for Snohomish County by an agency to the United States or by a responsible financial periodical of recognized authority. The annual Rent adjustment shall take effect on January 1 of each year.

Property Legal Descriptions

Pump station #1 site (See Attachment C)

Beginning at the E¼ corner of Section 6, Township 28N, Range 5E, WM, thence westerly along the south line of the NE¼ of said Section 6, a distance of 2,466.68' to a point which is the NW corner of the 13.98 acre parcel owned by the City of Everett and comprising a portion of the tract known as City of Everett Reservoir No. 3 Site, (recorded June 7, 1923 in Box 129 of Deed, page 511) and which point lies on the easterly boundary of Washington Primary State Highway No. 1, thence southerly along the easterly boundary of said Washington Primary State Highway

1991 CONTRACT BETWEEN THE CITY OF EVERETT AND THE SILVER LAKE WATER DISTRICT CONCERNING THE ANNEXATION OF A PORTION OF THE DISTRICT BY THE CITY

THIS CONTRACT is made by and between the City of Everett, Washington, hereinafter called "City," and the Silver Lake Water District, hereinafter called the "District".

WHEREAS, the City and the District previously entered agreements concerning annexations of portions of the District by the City; and

WHEREAS, the City has thereafter annexed additional land which at the time of such annexation was and is now located within the District and which land is receiving water service from the District; and

WHEREAS, the City desires to assume full management and control of the local water facilities and service within the territories so annexed; and

WHEREAS, the District has caused to be issued its "Water Revenue Bonds, 1984" dated June 20, 1984, of which a principal amount of $1,270,000 is now outstanding and its "Water Revenue Refunding Bonds, 1989", of which a principal amount of $1,170,000 is now outstanding which constitute liens upon the gross revenue of the District's water system, including that portion of the system now within the City; and

WHEREAS, certain water facilities located within and adjacent to the boundaries of the City are such that those facilities are essential to the operation of the remaining facilities of the District and must be retained by the District in order to provide adequate water service for customers of the District; and

WHEREAS, it is the desire of the parties to define, by means of this contract, the rights and responsibilities of the parties with respect to ownership management and control of the water facilities within the territories annexed to the City and to set forth the manner in which the debts and obligations of the District as they relate to the annexed territories shall be disposed of, and to establish certain other points of agreement relating to the mutual interest of both the City and the District;

NOW, THEREFORE, pursuant to the authority contained in RCW 35.13A.250 and 56.08.060, it is hereby agreed as follows:

I. It is acknowledged that by prior agreements and understandings, the City provides water service to all areas west of I-5 and to all areas north of 100th Street S.E. and west of 35th Avenue S.E., except portions of the E 1/2 of the S.E. 1/4 of Section 17 and portions of the S.W. 1/4 of Section 19 and portions of the N.W. 1/4 of Section 30 T28N, R 5 EWM and portions of Section 24, T28N, R 4 EWM. The "Annexed Area" described in Exhibit A attached hereto and by this reference made a part hereof shows areas of the District in Section 24, T28N, R 4 EWM which have been annexed to the City.

As of June 1, 1991, all water facilities within the "Annexed Area" described in Exhibit A and hereinafter referred to as the "City of Everett Mains," plus water service lines appurtenant thereto servicing customers within said annexed area shall have been deemed to have been transferred to, and all ownership, management, operation, and maintenance thereof shall hereafter vest fully in and under, the control of the City, and shall be billed by the City for water service. The City assumes full responsibility for furnishing domestic water service to all present and future water customers in the annexed area, provided ownership and control of the SLWD mains detailed on Exhibit A shall be retained by the District. All water service lines or City of Everett Mains directly connecting properties within the City to SLWD Mains shall be transferred to the City, and all ownership, management, operation and maintenance thereof shall hereafter be fully in and under the control of the City, and all water customers of the District served by such service lines or City of Everett Mains shall become the water customers of the City and shall be billed by the City for water service.

II. It is acknowledged by the City and District that prior annexations have so altered the City and District service area boundaries as to make the current location of District master meters inappropriate to efficient administration of billings. To provide an easy transition in the event of subsequent City annexations of District areas in Sections 24, T28N, R 4 EWM and 30, T28N, R 5 EWM and to provide for an equitable cost sharing for master meter and appurtenances relocation, the City and District agree as follows:

A. The City and District have met to establish mutually acceptable locations to which District master meters can be moved.

B. All costs of master meter relocation, including relocation of the District's rate-of-flow controller on 7th Avenue S.E., will be borne by the City for not more than two master meter installations/relocations, including pressure reducing value installation/relocation.

C. As the District's share of the cost of master meter relocation the District agrees that the City may assume, at no cost to the City, any District customers annexed in Sections 24, T28N, R 4 EWM and 30, T28N R 5 EWM West of I-5 outside the "Annexed Area" shown in Exhibit A.

D. The City agrees to pay the current outstanding bonded indebtedness of the District for customers in the "Annexed Area" shown in Exhibit A as provided in paragraph IV hereof.

III. The following subsections provide for general operational rules and procedures which have been observed by the City and the District in connection with providing water service to the annexed and immediately adjacent areas. It is the intent of both parties to set forth these general rules and procedures and be guided by them in the continued future operation of both the City's and the District's water system. It is not the intent of the parties hereto that the following outline should cover every eventuality but rather that such rules and procedures shall be adhered to when applicable and that instances not included below be administered in a manner generally in keeping with the policies of both parties and settled in a manner which is fair and reasonable.

A. Commencing with the effective date of this agreement, following annexation into the City of former District customers, all contacts and matters concerning water supply and service to such customers shall become the sole responsibility of the City. The balance of all District customers not annexed to the City shall remain the customers of the District and all contacts and matters concerning water supply and service to such customers shall remain the sole responsibility of the District.

B. The City will bill the District and the District will pay the City for water consumed by customers of the District which will be measured in the following manner:

1. The City will periodically read the District master meters at such locations as mutually agreed upon in the future to determine the total amount of water passing into the District.

2. The City will periodically read the individual customer meters of its customers within the master-metered area of the District. Such individual customer readings will be provided to the District by the City.

3. Based on the City's meter reading the total amount of water measured by such individual meter readings shall be deducted from the total amount of water measured by the master readings. Any readings for District customers outside the master-metered areas will be added to the master meter readings.

4. From the amount thus determined, there shall be deducted an amount equal to ten percent of the total amount of water measured by the individual meter readings within the annexed area of the District to reflect loss of water due to leakage, and a similar ten percent amount added for District customer readings outside the master-metered area.

5. City shall be obligated to enforce water liens of the District for unpaid District charges prior to March 1, 1991.

C. Responsibility for new water service installation shall be borne by the party to this agreement in whose area the customer desiring service is located. The City shall install a water meter for each new service connection inside the District's master-metered area. All customer relations and contacts, including the application for service, turn-ons, shut-offs, and subsequent billings for water service shall be done by the party in whose area the customer is located.

D. Fire hydrants located on SLWD Mains may be used for firefighting purposes only by both the City and the fire protection agency serving customers of the District without charge to either party for water so used. Water from fire hydrants used for any other purpose than that set forth above shall be measured through a meter with the express consent of the party in whose area said fire hydrant is located.

E. In the event certain operational or other problems of mutual concern concur which can not be remedied by reference to this agreement, then the parties hereto agree to resolve such problems in a matter which will be neither detrimental or harmful to either party from an operational or financial viewpoint.

IV. In satisfaction of the City's proportionate share of the indebtedness of the District, the City shall pay to the District on or before May 1, 1991 one lump sum payment of principal in the amount of $16,112.26 and thereafter no further payments shall be required. All money paid by the City to the District pursuant to this paragraph shall be used by the District to retire or pay principal and interest on the District's "Water Revenue Bonds, 1984" and "Water Revenue Refunding Bonds, 1989", and shall be used for no other purpose.

V. This contract shall in no way affect or change the rights or powers of the City or District to make and enforce collection of reasonable charges for water supplied by each to the other.

IN WITNESS WHEREOF, the parties have hereunto set their hand and seals this ____ day of ________________, 1991, and each warrant that they have authorized the execution of this contract and the undersigned parties warrant their authority on behalf of the parties to this agreement to execute the same for and on behalf of the respective parties.

CITY OF EVERETT

Edward M. Morrow

~~PETE KINCH~~, Mayor ~~of~~ pro tem

ATTEST:

Donna L. Peden

CITY CLERK

APPROVED AS TO FORM:

Bruce Jones

CITY ATTORNEY

SILVER LAKE WATER DISTRICT

Rod Keppler

PRESIDENT, Board of Water Commissioners

Willis A. Anderson

SECRETARY, Board of Water Commissioners

EXHIBIT A

3/91
Annexed Area
SILVER LAKE WATER DISTRICT AREAS
N
I-5
WOODSIDE A (Condo) (7062)
WOODSIDE B (Condo) (7189)
BERG'S ADD (3915)
HEMLOCK ACRES
LARSEN RD.
109th ST S.E.
109th PL S.E.
110th PL S.E.
116th ST S.E.
116th PLACE S.E.
117th ST S.E.
119th STREET S.E.
119th ST S.E.
120th STREET S.E.
120th ST S.E.
120th PL S.E.
121st PL S.E.
MERIDIAN
2nd AVE
7th AVE S.E.

PUBLIC WORKS

October 15, 2001

Casey Parks
Silver Lake Water District
2210 132nd St. S.E.
Mill Creek, WA 98012

Subject: Surrogate point-of-entry monitoring agreement for Silver Lake Water District.

Dear Casey,

Please find enclosed for your records, a copy of the completed Everett SWTR regional chlorine monitoring agreement for Silver Lake Water District. Per our previous discussions, I forwarded the original to Karen Heneghan of the DOH NW office.

Regards,

Mark Weeks

Mark Weeks
Water Quality Analyst

cc: City of Everett, Public Works Dept

SURFACE WATER TREATMENT RULE (SWTR) REGIONAL MONITORING AGREEMENT FOR MONITORING OF CHLORINE RESIDUAL IN THE DISTRIBUTION SYSTEM

RECEIVED

OCT 10 2001

OPERATIONS & MAINTENANCE

THE WHOLESALING WATER SYSTEM (City of Everett - DOH ID# 24050L - Snohomish County)

The wholesaling water system agrees to:

-conduct all source monitoring required under the surface water treatment rule, Chapter 246-290 part 6 WAC;
-sell completely treated water to the purchasing system per WAC 246-290-610; and
-monitor the chlorine residual at least once per day at the Everett Smith Island wastewater treatment plant.
-notify the purchasing system within fourteen (14) days if a detectable residual is not found in 95 percent of the samples collected in any calendar month.

The wholesaling water system expects that:

-the above sampling location represents the approximate maximum residence time conditions for the distribution system and should be as great or greater than the maximum residence time in the purchasing system.

THE PURCHASING WATER SYSTEM (SILVER LAKE WATER DISTRICT - DOH ID# 79250B)

(Snohomish County)

The purchasing water system certifies that:

-the location of the system is accurately shown on the enclosed map (exhibit 1);
-the water does not enter an uncovered reservoir after the master meter;
-the purchasing system obtains all of its water directly from the above system;
-the purchasing system does not provide any additional treatment to the water after the master meter; and
-the undersigned person is authorized to act on behalf of the purchasing system.

The purchasing water system agrees to:

-maintain its distribution system to prevent contamination of the water supply;
-monitor the chlorine residual at each time and location that a coliform sample is collected; and
-report the results once per quarter on the enclosed form (exhibit 2).

EXECUTION

wholesaling water system	purchasing water system
[signature]	[signature]
signature of system representative	*signature of system representative*
ROBERT WADDLE	PATRICK CURRAN
typed or printed name	*typed or printed name*
Operations Superintendent	GENERAL MANAGER
title	*title*
10/15/01	10-09-01
date	*date*
3200 Cedar St., Everett 98201	2210-132ND STREET SE/MILL CREEK/98012
address	*address*
425-257-8800	(425) 337-3647
phone number	*phone number*

for DOH use only: ☐ acceptable ☐ not acceptable

reviewing engineer: ____________________ date reviewed: ____________

rev. 10/25/93 filename: c:\wp\files\rwrlcl2agree.frm

WASHINGTON STATE DEPARTMENT OF HEALTH
SWTR DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL
FOR PURCHASING SYSTEMS WITH REDUCED MONITORING

System Name SILVER LAKE WATER DISTRICT DOH ID# 79250 B

County Snohomish

Reporting Period (circle one) Jan-Mar Apr-Jun Jul-Sep Oct-Dec Year ______

Month	# coliform samples collected (both routine and repeat samples)	# chlorine residual samples tested	# samples where no chlorine was detected
Totals			

Reported by ______ Date ______

Title ______ Operator Certification # ______

Signature ______ Phone # (425) 337-3647

Notes:

1. This form is for use only by systems which purchase all of their water from another utility and have been approved in writing by the department to reduce their chlorine residual monitoring in the distribution system.

2. The chlorine residual may be measured as either free or total chlorine.

3. Systems have the option of measuring heterotropic plate counts (HPC) in lieu of chlorine residual. Please contact your DOH engineer for further information.

4. Return completed report to DOH Engineer within 10 days of the end of the reporting period (i.e. for Jan-Mar by April 10).

Northwest Drinking Water Operations
Department of Health
20435 72ND AVE. S.
STE. 200
KENT, WA. 98032

c:\wpfiles\swtr\distcl2.frm

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
PILLING PROPERTY INTERLOCAL AGREEMENT

This Agreement entered into this 22nd day of December ____, 1998 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.045; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by using water lines and sewer lines owned and operated by Silver Lake; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide temporary water and sewer service by Silver Lake to the Pilling Property area as shown on Exhibit "A" attached hereto (hereinafter Area "A") using water and sewer systems owned and operated by Silver Lake. All deliveries of water and sewer service by Silver Lake within Area "A", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Silver Lake shall have the right and permission of Cross Valley to extend temporary water and sewer service to new customers and properties within Area "A". Nothing herein shall require Silver Lake to provide service to properties within Area "A". As a condition of any such new temporary service extension, Silver Lake shall require from property owners within Area "A" as a condition of water service to such property owner, a Letter of Approval of Connection to Silver Lake Facilities by Cross Valley. Cross Valley may collect any and all of its connection charges and fees prior to issuing Letter of Approval. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations for services provided in Area "A". Nothing herein shall preclude Silver Lake from entering into a water and sewer service extension agreement with individual property owners within Area "A".

All new water and sewer facilities shall be constructed in accordance with the more stringent standards and specifications of the two Districts and shall be constructed to facilitate future connection to the Cross Valley Water District water and sewer system, if feasible. Cross Valley Water District shall review and comment on plans and specifications prior to construction.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water and sewer systems shall be the sole responsibility of Silver Lake, until take over by Cross Valley.

Section 4. Transfer of Customers Area "A".

At such time Cross Valley has facilities and infrastructure to serve both water and sewer to all property within area "A" it may request assumption of service to such property. Upon request from Cross Valley, Silver Lake, shall transfer to Cross Valley customers within Area "A" 180 days from notice of such transfer. Silver Lake shall provide to Cross Valley a current list of the names and addresses of all customers within the Agreement area; provided Silver Lake shall send notice of take over to all customers being served advising them that Cross Valley will be their new water and sewer purveyor and that billing and payment of future service bills shall be handled by Cross Valley.

Section 5. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 6. Service Responsibility

Nothing herein requires Silver Lake to extend service to any property owners within Area "A". Extension of utility service outside its boundaries and into Area "A" is left to the sole discretion of Silver Lake.

Section 7. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the respective District's business office.

Section 7. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 8. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. This agreement may be terminated by mutual agreement of the Districts.

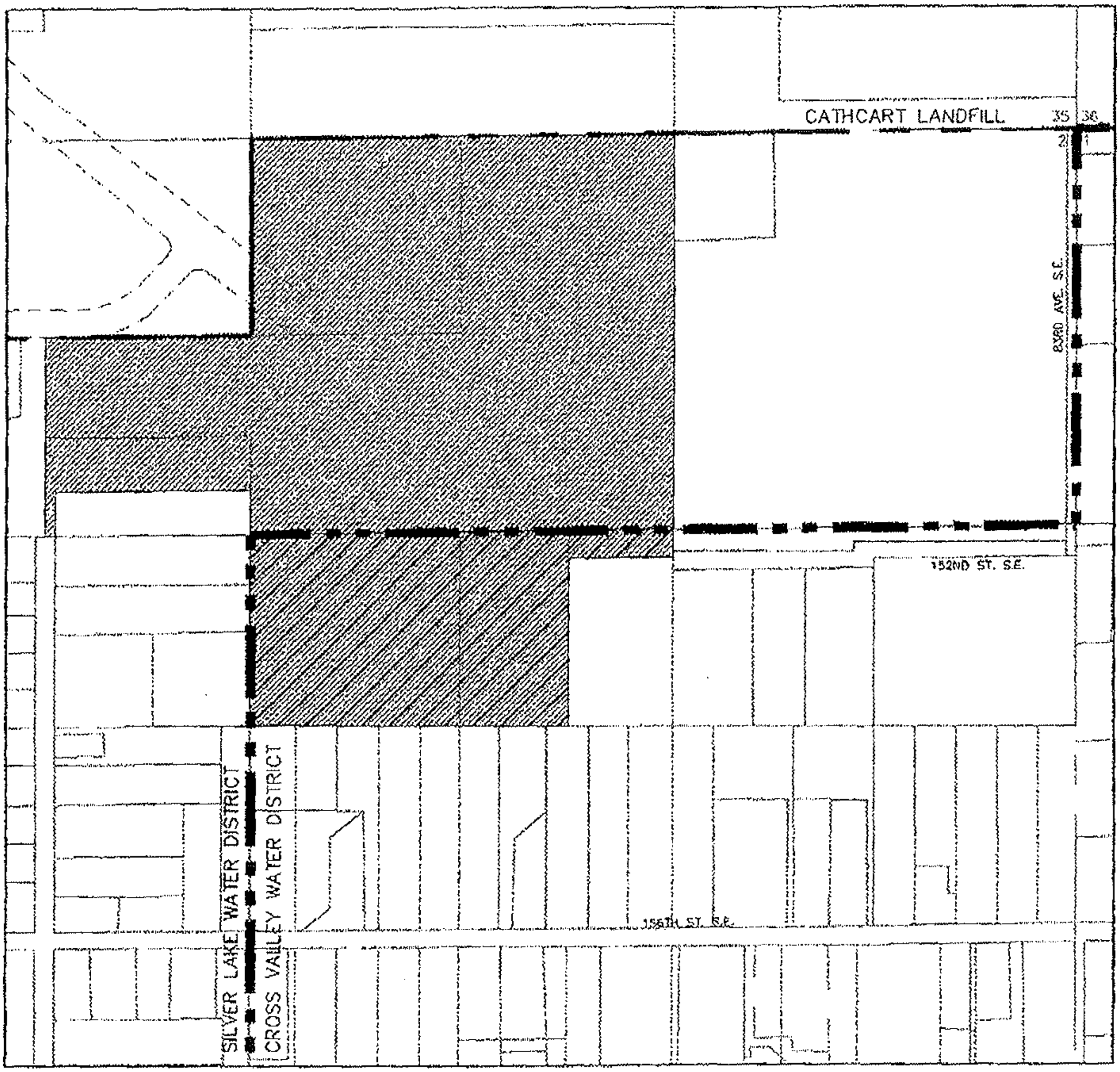
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this __________ day of ____________, 1998.

SILVER LAKE WATER DISTRICT:	CROSS VALLEY WATER DISTRICT
______________________ President	______________________ President
______________________ Commissioner	______________________ Commissioner
______________________ Commissioner	______________________ Commissioner
ATTESTED TO:	ATTESTED TO:
______________________ Secretary-Commissioner	______________________ Secretary-Commissioner

PILLING PROPERTY
LEGAL DESCRIPTION OF INTERLOCAL AGREEMENT AREA

BEGINNING AT THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 2, TOWNSHIP 27N, RANGE 5E, W.M.; THENCE SOUTH ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE NORTH ALONG THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE EAST ALONG THE SOUTH LINE OF THE NORTH 92.5 FEET OF THE EAST HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER; THENCE NORTH ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION; THENCE WEST ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION TO THE TRUE POINT OF BEGINNING.

SEE EXHIBIT A FOR VICINITY MAP



VICINITY MAP
SCALE: 1" = 500'

LEGEND

PILLING PROPERTY

INTERLOCAL AGREEMENT AREA

SILVER LAKE WATER DISTRICT SERVICE AREA BOUNDARY

SILVER LAKE WATER DISTRICT
PILLING PROPERTY
INTERLOCAL AGREEMENT AREA
EXHIBIT A

Gray & Osborne, Inc.
CONSULTING ENGINEERS

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
INTERLOCAL AGREEMENT

This Agreement entered into this 16 day of OCTOBER 2001 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHERAS, the District's entered into this agreement in 1994, and;

WHEREAS, the Districts have determined to re-execute this agreement to clarify the legal authority to provide water and sewer service in each others district; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, Cross Valley has provided service to certain properties within the City Farms area of the Silver Lake as a private and public water purveyor; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide delivery of water service to properties within the City Farms area as shown on Exhibit "A" attached hereto (hereinafter Area "A") of Silver Lake Water using water systems owned and operated by Cross Valley. It is the further purpose of this agreement to provide future wholesale of water by Silver Lake to Cross Valley for water service to properties within an area of Cross Valley as shown on Exhibit "B" attached hereto (hereinafter Area "B") and to provide for future sewer service by Silver Lake to properties within Area "B". All deliveries of water by Cross Valley from existing facilities owned and operated by Cross Valley within Area "A", shall be allowed by Silver Lake pursuant to the terms, conditions, and limitations of this Agreement. All deliveries of sewer by Silver Lake within Area "B", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Cross Valley shall have the right and permission of Silver Lake to provide service to existing customers and to extend service to new customers and properties within Area "A". As a condition of any such new service extension, Cross Valley shall collect from property owners within Area "A" as a condition of water service to such property owner by Cross Valley all then existing Silver Lake water connection charges, capital improvement charges and other fees, except meter installation charges which will be retained by Cross Valley, which would be collected by Silver Lake for water service in accordance with its Resolutions and regulations. Such Silver Lake charges collected by Cross Valley are to be paid to Silver Lake within thirty days of the date collected by Cross Valley.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water system shall be the sole responsibility of Cross Valley. Any and all construction, repair, reconstruction, replacement or other work on the existing system shall be done by Cross Valley. All new service line installation shall be constructed in accordance with Silver Lake standards and specifications. Any extension of the water system within Area "A" caused by a subdivision of property or new development within Area "A" shall be constructed in accordance with Silver Lake standards and specification. Any construction or improvement of the water facilities within Area "A" for existing general system improvements by Cross Valley may be constructed to Cross Valley standards and specification. The existing water system lines set forth on Exhibit "A", which is incorporated herein as a part of this agreement, are integral to the integrity of operation of Cross Valley's system and shall be retained by Cross Valley.

For those projects requiring construction in accordance with Silver Lake standards and specifications, Cross Valley shall submit engineering plans to Silver Lake for approval at least 60 days prior to construction, and shall notify Silver Lake at least seven days prior to beginning actual construction work.

Section 4. Transfer of Customers Area "A".

At its sole discretion and election, Silver Lake may give notice to Cross Valley that Silver Lake intends to take over the customers within Area "A" 60 days from such notice. Cross Valley shall provide to Silver Lake a current list of the names and addresses of all Cross Valley water customers within the Agreement area. Silver Lake shall send notice of take over to all customers being served by Cross Valley advising them of their new water purveyor and that billing and payment of future water bills shall be handled by Silver Lake.

At such time of notice Cross Valley shall wholesale to Silver Lake sufficient water to serve all properties within Area "A" whether then being served or not should Silver Lake decide to purchase water from Cross Valley. Nothing herein shall require Silver Lake to purchase water from Cross Valley.

At the time of take over of the water system, Silver Lake shall be responsible for maintenance and operation of the water system within Area "A", except for those lines set forth on Exhibit "A".

Section 5. Area "B" New Sewer Customers.

Silver Lake shall have the right and permission of Cross Valley to extend sewer service to customers and properties within Area "B". Any and all construction of sewer facilities within Area "B", shall be constructed in accordance with Silver Lake standards and specifications. Silver Lake shall maintain and operate such sewer system. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations. Nothing herein shall preclude Silver Lake from entering into a sewer service extension agreement with individual property owners within Area "B".

Section 6. Silver Lake Wholesale of Water to Cross Valley - Area "B".

Subject to the provisions of Section 8, Silver Lake agrees to wholesale water to Cross Valley sufficient to serve all customers and properties within Area "B". Any and all costs of construction, maintenance and repair of facilities required to wholesale water to Cross Valley, such as master meter(s), shall be paid solely by Cross Valley. Such facilities shall be constructed in accordance with Silver lake standards and specification. Nothing herein shall require Cross Valley to purchase water from Silver Lake. Provided, however, that both water and sewer shall be provided by Silver Lake for that area delineated by the number 1 within Area "B" set forth on Exhibit "C" incorporated herein, which comprises approximately 20 lots of Waldenwood Subdivision, Phase II.

Section 7. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 8. Delinquent Account Collection. In order to ensure that each District can protect revenue sources and protect bond covenants as well as the operational integrity of its system, every customer of both water and sewer service in Area "B" shall be treated as though that customer was receiving both water and sewer service from Silver Lake. Any and all remedies for non-payment of utility bills, including but not limited to cut off of service as authorized by RCW 57.08.090, shall pertain to Silver Lake. At all times that Silver Lake is providing sewer service to a customer within Area "B" that is being provided water service by Cross Valley, Cross Valley shall apply any water bill payment first to any Silver Lake sewer bill for the same customer that is 30 days past due. Such Cross Valley payment shall be forwarded to Silver Lake within 30 days. Should delinquency by any such customer continue, Cross Valley shall turn off that customer's water service as provided by state law.

Section 9. Water Service to Cathcart Landfill. Both Districts understand that in order to provide water to the Snohomish County Cathcart Landfill, Cross Valley has purveyed water to Cathcart even though it is in Silver Lake. Both Districts agree and understand that at such time that Silver Lake can serve water to Cathcart, Silver Lake may give notice to Cross Valley that Silver Lake will take over service of water to Cathcart and Cross Valley will cease water delivery to Cathcart.

Section 10. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the District's business office.

Section 11. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 12. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. As to Area "A", this Agreement shall terminate at such time as Silver Lake's system is able to serve the properties within Area "A" receiving water from Cross Valley and Silver Lake has accomplished take over of water service in Area "A". This agreement maybe terminated at an earlier date by mutual agreement of the Districts.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this

16th day of OCTOBER, 2001.

SILVER LAKE WATER DISTRICT:

Rod Kippler
President

Bill Anderson
Commissioner

Roger Sumney
Commissioner

ATTESTED TO:

Roger Sumney
Secretary-Commissioner

CROSS VALLEY WATER DISTRICT

President

Dale D. Deierling
Commissioner

Gregor Perry
Commissioner

ATTESTED TO:

Dale D. Deierling
Secretary-Commissioner

N:share\crossvalley\executeagreement1001

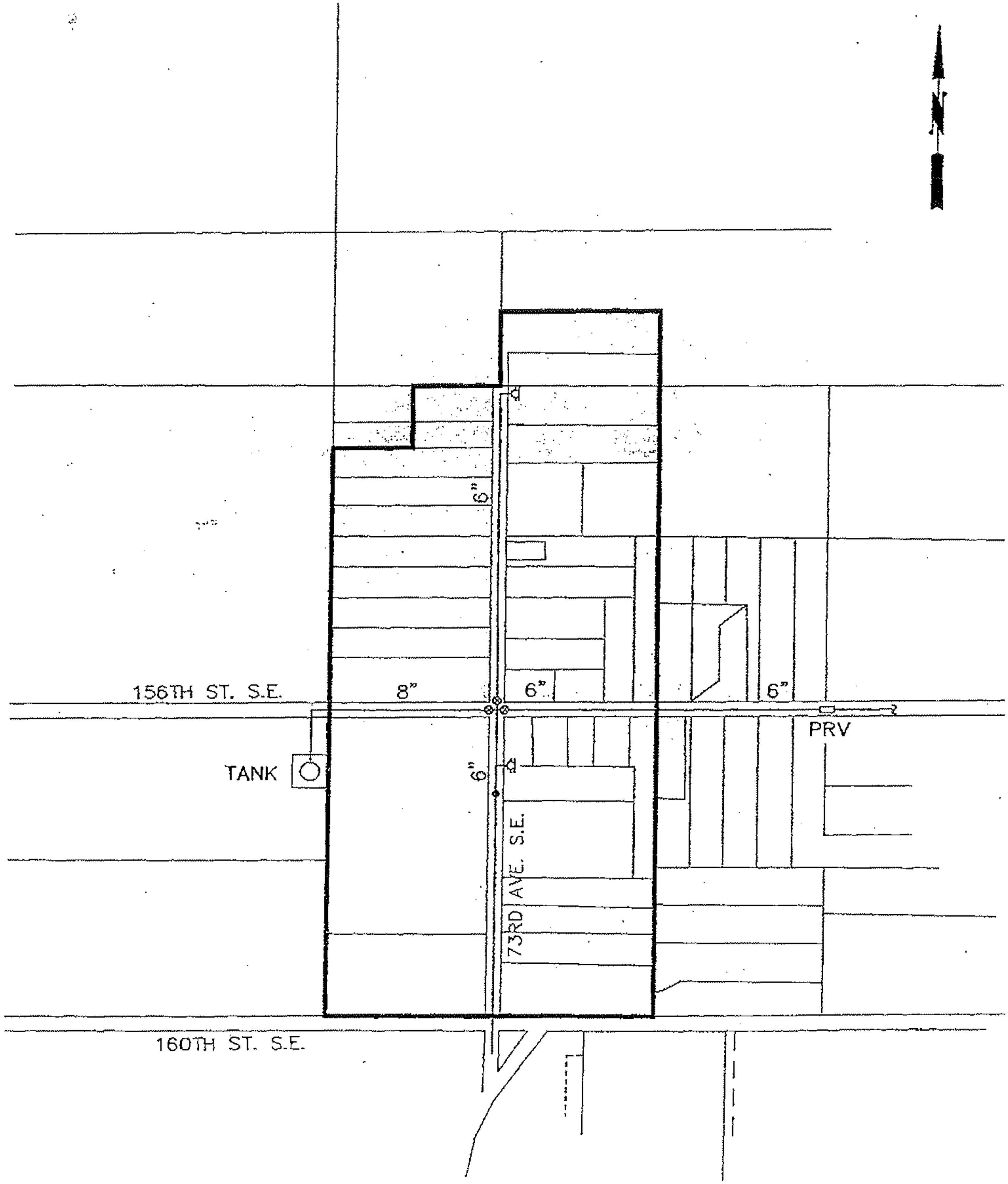


EXHIBIT A

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT A

That portion of the West 1/2, Section 2, Township 27, Range 5 East described as follows:

Beginning at the SW corner of Lot 57 of the Plat of City Farms, thence Northerly along the West line of said Plat to the SW corner of Lot 49 of said Plat, thence Easterly along the South line of said Lot 49 to the SE corner of the West 1/2 of said Lot 49 thence Northerly along the East line of the West 1/2 of said Lot 49 and Lot 48 to the South line of Lot 47 of said Plat, thence Easterly along the South line of said Lot 47 to the SW corner of Lot 46 of said Plat, thence Northerly along the West line of said Lot 46 to the NW corner of said Lot 46, thence Easterly along the North line of said Lot 46 to the NE corner of said Lot 46 and the North-South centerline of said Section 2, thence Southerly along said North-South centerline to the North margin of 160th Street S.E., thence Westerly along said North margin to the West line of the NE 1/4 of the SW 1/4 of said Section 2, thence Northerly along said West line to the SW corner of said Lot 57 and the true point of beginning.

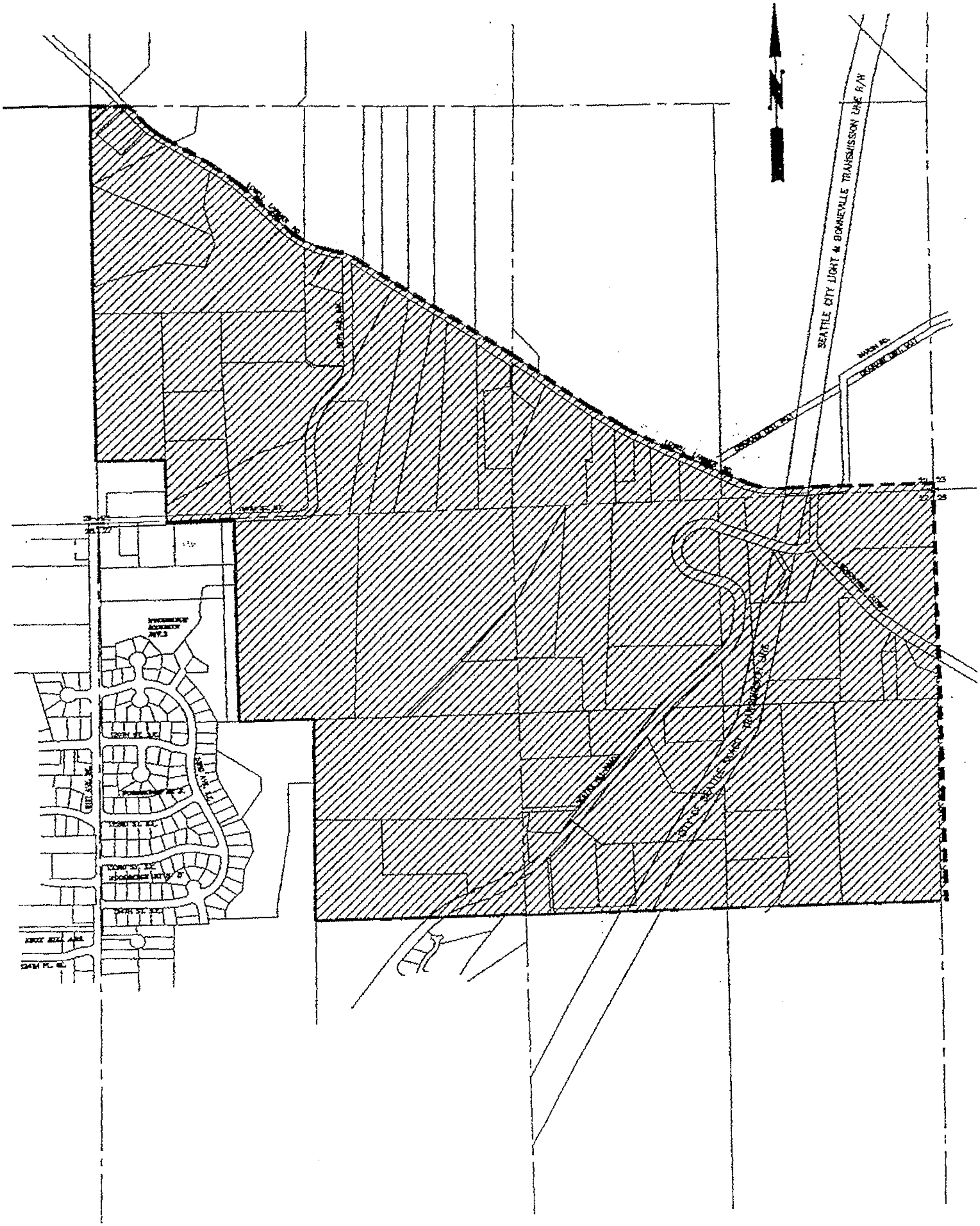


EXHIBIT B

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT B

Beginning at the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 being the true point of beginning; thence northerly along the east line of said Plat to the northeast corner of Tract 999 of said Plat; thence westerly along the north line of said Tract 999 to a point lying 800.25 feet east of the west line of Section 27, Township 28 N, Range 5 E, W.M.; thence northerly to a point on the southerly margin of 116th Street S.E. said point lying 825 feet east and 30 feet south of the northwest corner of said Section 27; thence westerly along the southerly margin of 116th Street S.E. a distance of 420 feet; thence northerly across 116th Street S.E. a distance of 60 feet to a point on the northerly margin of 116th Street S.E. said point lying 405 feet east of the west line of Section 22, Township 28 N, Range 5 E, W.M.; thence continuing northerly a distance of 400 feet to a point lying 405 feet east of the west line of said Section 22; thence westerly a distance of 405 feet to a point on the west line of said Section 22 said point lying 430 feet north of the southwest corner of said Section 22; thence northerly along the west line of said Section 22 to the northeasterly margin of Lowell-Larimer Road; thence southeasterly along said northeasterly margin of Lowell-larimer Road to the intersection of the easterly margin of Marsh Road and East Lowell-Larimer Road: thence continuing easterly to the east line of said Section 22; thence southerly along the east line of said Sections 22 and 27 to the southeast corner of said Section 27; thence westerly along the south line of said Section 27 to the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 and the true point of beginning.

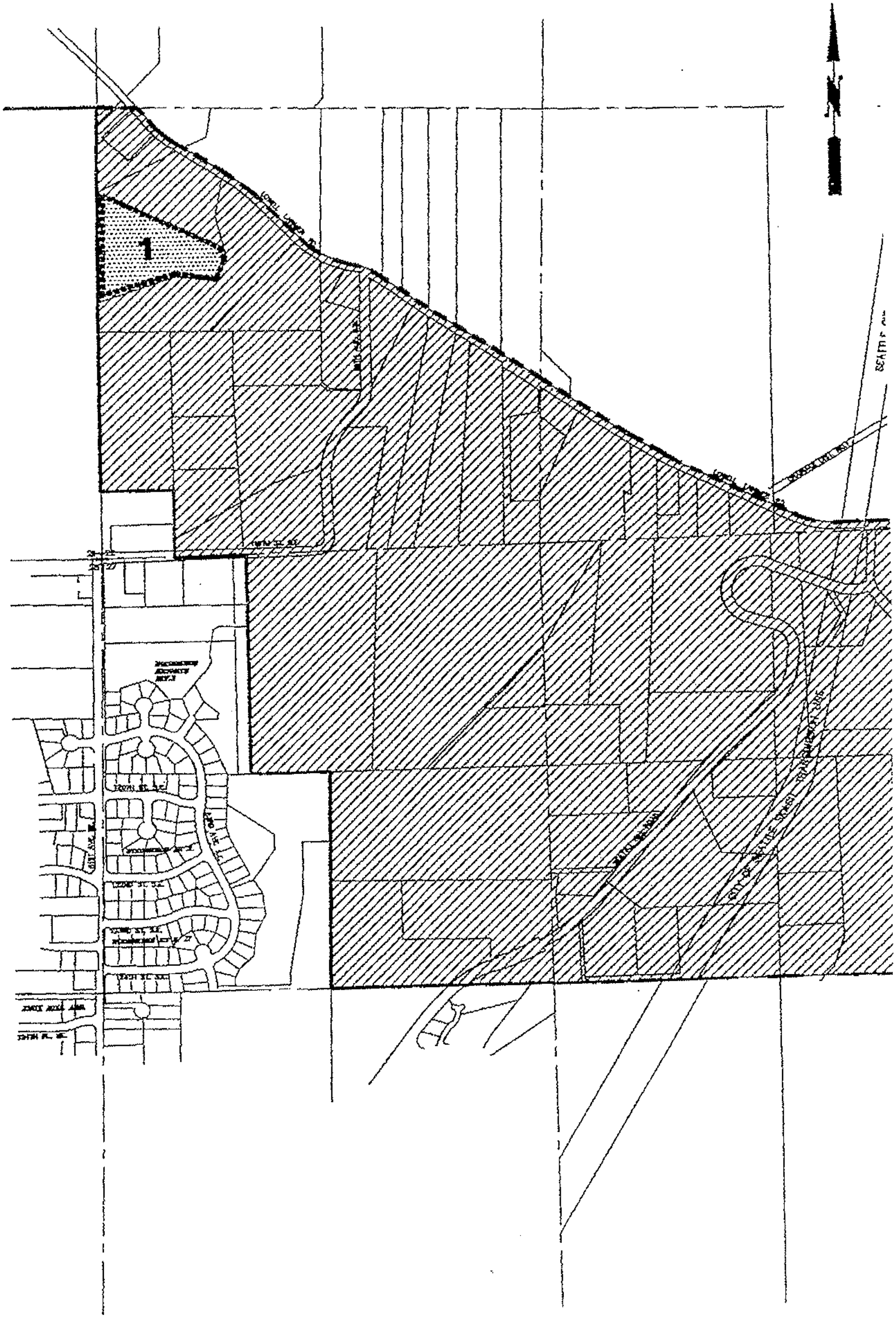


EXHIBIT C

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

PARCEL 1, EXHIBIT C

That portion of Section 22, Township 28 N, Range 5 E, W.M. described as follows:

BEGINNING AT A POINT 504.38 FEET SOUTH OF THE NORTHWEST CORNER OF THE N.W. 1/4 S.W 1/4; THENCE S 65° 57' 15" E A DISTANCE OF 827.05 FEET; THENCE S 14° 27' 30" E A DISTANCE OF 55.97 FEET; THENCE S 22° 24' 00" W A DISTANCE OF 160.80 FEET; THENCE N 82° 59' 00" W A DISTANCE OF 243.70 FEET; THENCE S 72° 06' 00" W A DISTANCE OF 232.90 FEET; THENCE S 76° 00' 00" W A DISTANCE OF 269.40 FEET TO THE WEST LINE OF SECTION 22; THENCE NORTH TO THE POINT OF BEGINNING.

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
AGREEMENT AS TO SERVICE LOTS BY DISTRICT
FOR THE PLAT OF THE VILLAGE AT OUTCROP CREEK

This agreement entered into this 22 day of August, 2002 between Cross Valley Water District and the Silver Lake Water District to finalize which lots will be ultimately served by Cross Valley Water District. The road alignment of the Plat of The Village at Outcrop Creek was laid out with existing topography and does not closely follow the District Boundary between Silver Lake Water District and Cross Valley Water District. Cross Valley Water District lies southèrly of the north line of the southwest one-quarter of the northeast one-quarter of Section 2, Township 27 North, Range 5 East of the Willamette Meridian which splits approximately ten lots in the Plat of The Village at Outcrop Creek. The lots to be served by Cross Valley Water District, <u>at such time Cross Valley is able to and does serve lots within this plat in accordance with the terms of that certain interlocal agreement between the parties dated December 22, 1998</u>, will be per attached 'Exhibit A' and described as follows: Lot 18 of Division 1 of the Plat of Outcrop Creek, Lots 1 through 34 of Division 2 of the Plat of Outcrop Creek and Lots 7 through 29 of Division 3 of the Plat of Outcrop Creek. One lot in Division 1, 34 lots in Division 2 and 23 lots in Division 3 for a total of fifty-eight (58) lots.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this 22nd day of August, 2002.

SILVER LAKE WATER DISTRICT	CROSS VALLEY WATER DISTRICT
By: [signature]	By: [signature]

Its: General Manager Its: PRESIDENT AND COMMISSIONER

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF Snohomish)

I certify that I know or have satisfactory evidence that, Patrick Curran is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the General Manager of Silver Lake Water Dist to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: August 22, 02

MARY-ANN EASTMAN COMMISSION EXPIRES NOTARY PUBLIC 7-28-2003 STATE OF WASHINGTON

(Seal or stamp)

Mary Ann Eastman
(Signature)

Mary Ann Eastman
(print name)

NOTARY PUBLIC in and for Washington State, residing at Everett, WA

My appointment expires 7-28-03

REPRESENTATIVE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss.
COUNTY OF SNOHOMISH)

I certify that I know or have satisfactory evidence that, DALE DEIERLING is/are the person(s) who appeared before me, and said person(s) acknowledged that (he/she/they) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the PRESIDENT of CROSS VALLEY WATER DISTRICT to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: AUGUST 20, 2002

CAROLE A. GABRIO COMMISSION EXPIRES NOTARY PUBLIC 3-23-2003 STATE OF WASHINGTON

(Seal or Stamp)

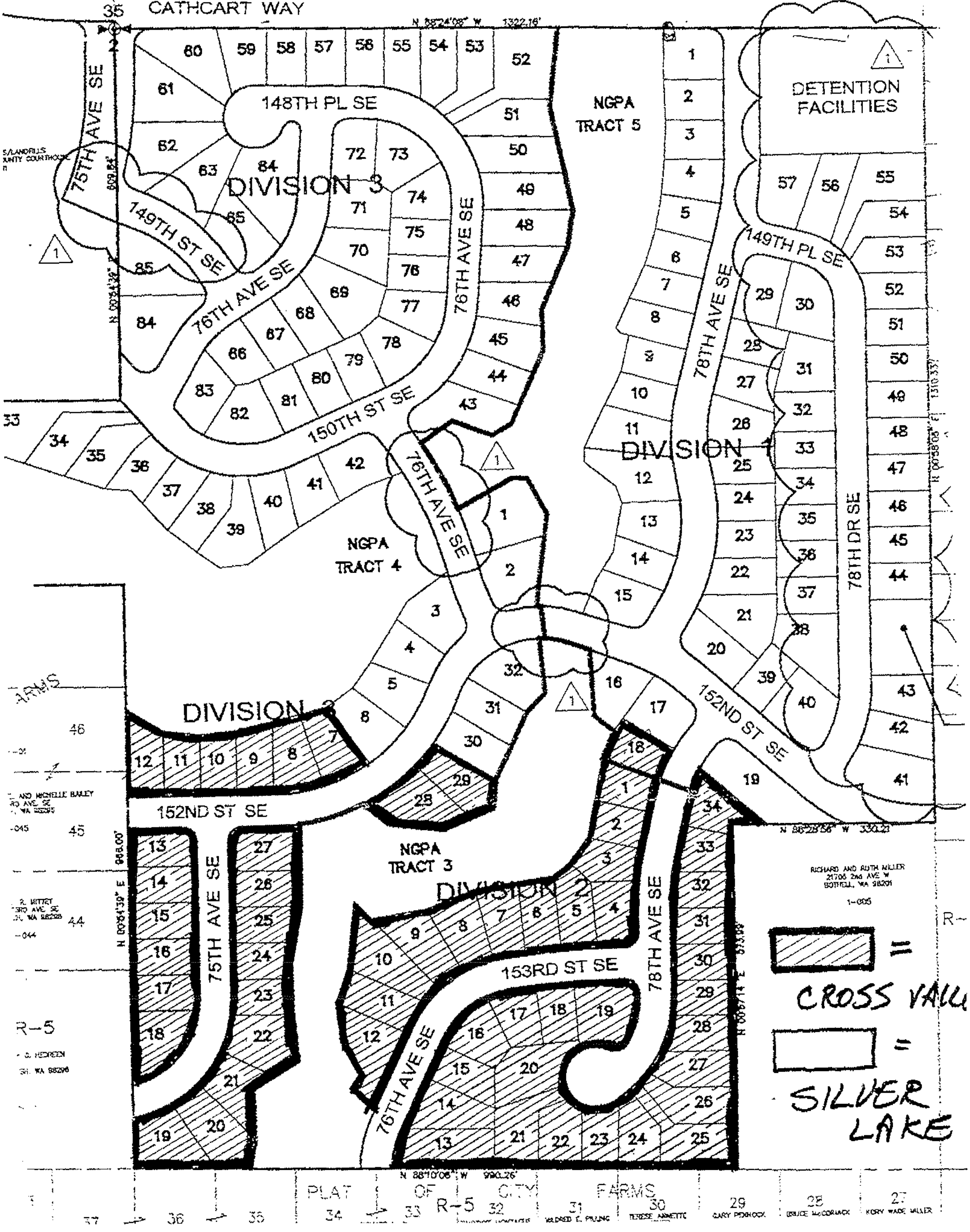
Carole A. Gabrio
(Signature)

CAROLE A. GABRIO
(print name)

NOTARY PUBLIC in and for Washington State, residing at SNOHOMISH

My appointment expires 3-23-2003

EXHIBIT A



CATHCART WAY
N 88°24'08" W 1322.16'
148TH PL SE
149TH ST SE
150TH ST SE
75TH AVE SE
76TH AVE SE
78TH AVE SE
149TH PL SE
78TH DR SE
152ND ST SE
153RD ST SE
DIVISION 3
DIVISION 1
DIVISION 2
NGPA TRACT 5
NGPA TRACT 4
NGPA TRACT 3
DETENTION FACILITIES
N 88°28'56" W 330.21
N 88°10'06" W 990.26'
RICHARD AND RUTH MILLER
21706 2nd AVE W
BOTHELL, WA 98201
R-5
PLAT OF CITY FARMS
= CROSS VALL
= SILVER LAKE

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
AMENDMENT TO INTERLOCAL AGREEMENT FOR LOWELL LARIMER SERVICE AREA

This Agreement is an amendment to an Agreement between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

RECITALS

1.1 The Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington.

1.2 In 1994 the Districts entered into an Interlocal Agreement pursuant to Chapter 39.34 of the Revised Code of Washington and RCW 57.08.044 to provide for joint sewer and water service in an area within Cross Valley. The agreement was re-executed in 2001.

1.3 Silver Lake now provides water and sewer service to single family residences within the area depicted by the number 1 on Exhibit C to the 2001 agreement.

1.4 No additional infrastructure other than side sewers need to be constructed in the area depicted by the number 1 on Exhibit C to the 2001 agreement to serve approximately an additional 10 lots in the Waldenwood subdivisions.

1.5 It appears no other properties in this general area can be served by gravity lines connecting to the existing sewer infrastructure currently operated by Silver Lake.

NOW, THEREFORE, for and in consideration of the mutual benefits and covenants set forth below, the Districts do hereby agree as follows:

<u>Section 1.</u> <u>Purpose</u>. The purpose of this Amendment to the 2001 Agreement is to amend and replace and redefine the legal description of the area delineated by the number 1 within the Area B set forth on Exhibit C

of the 2001 Agreement between Cross Valley Water District and Silver Lake Water District entered into on October 16, 2001.

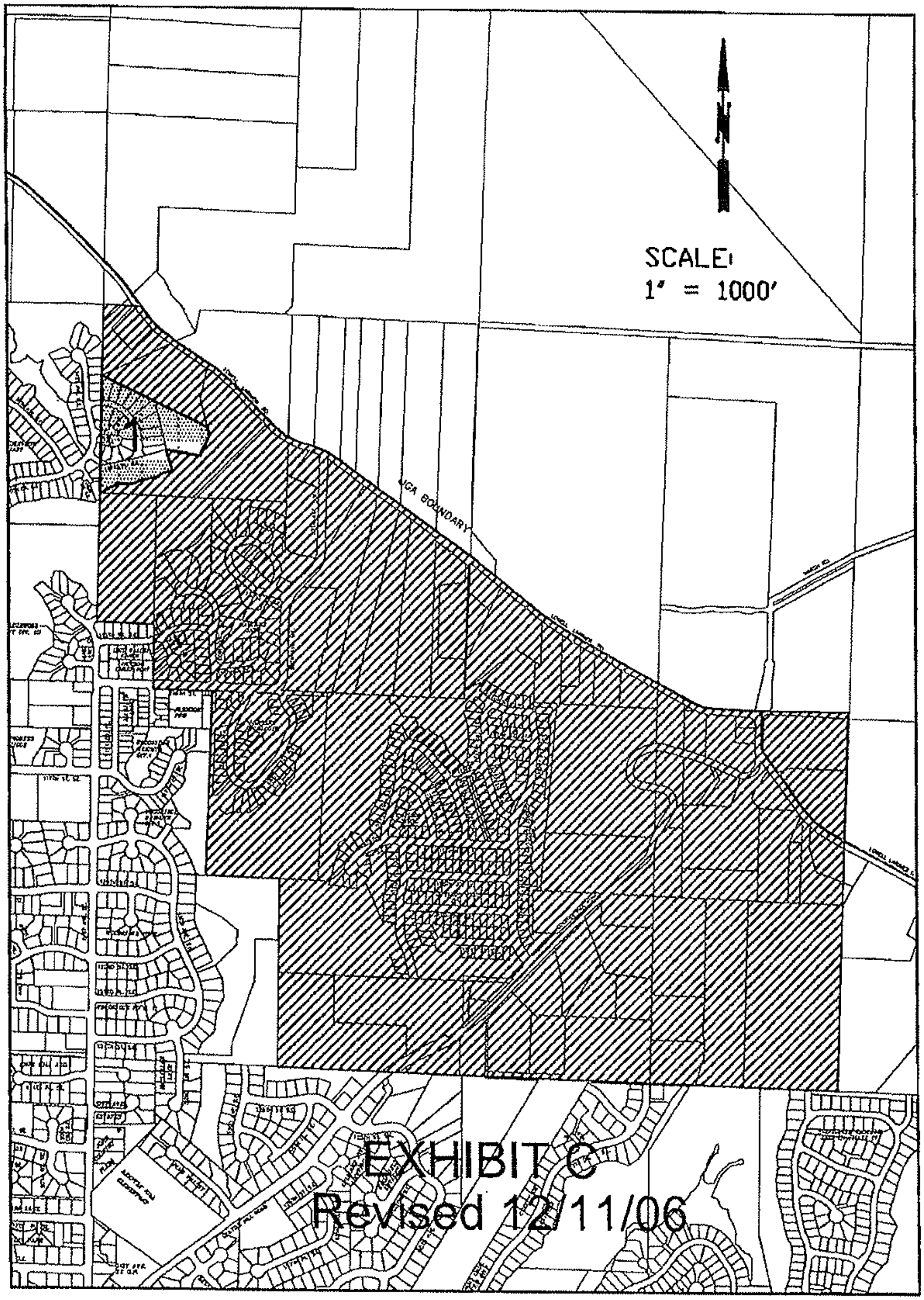
Section 2. Amended Area Section 6 of the 2001 Agreement is amended to reference Exhibit C as attached to this Amendment and incorporated herein.

Section 3. No Other Amendments All other terms and conditions of the aforesaid Interlocal Agreement between Cross Valley and Silver Lake dated October 16, 2001 shall remain the same.

Section 4. Counterparts. This Agreement may be signed in counterparts, and, if so signed, shall be deemed one intergrated Agreement.

IN WITNESS WHEREOF, This Agreement has been executed by the undersigned Party on the date set forth.

SILVER LAKE WATER DISTRICT:	CROSS VALLEY WATER DISTRICT
Bill Anderson	Granger Dery
President	President
Commissioner	Commissioner
Secretary - Commissioner	Secretary - Commissioner
Date: 12-14-06	Date: 02-20-07


N
SCALE:
1" = 1000'
UGA BOUNDARY
EXHIBIT C
Revised 12/11/06

Legal Description - Exhibit C:

THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., IN SNOHOMISH COUNTY, WASHINGTON, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 22; THENCE SOUTH 00° 01'54" EAST ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER A DISTANCE OF 504.38 FEET TO THE TRUE POINT OF BEGINNING; THENCE SOUTH 65° 27'39" EAST 827.05 FEET; THENCE SOUTH 13° 57'54" EAST 55.97 FEET; THENCE SOUTH 22° 53'36" WEST 160.80 FEET; THENCE NORTH 82° 29'24" WEST 243.70 FEET; THENCE SOUTH 72° 35'36" WEST 232.90 FEET; THENCE SOUTH 76° 29'36" WEST 245.90 FEET TO A POINT ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 22; THENCE NORTH 00° 01'54" WEST ALONG SAID WEST LINE A DISTANCE OF 641.19 FEET TO THE TRUE POINT OF BEGINNING.

TOGETHER WITH THAT PORTION OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., IN SNOHOMISH COUNTY, WASHINGTON; MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 22; THENCE SOUTH 00° 01'54" EAST ALONG THE WEST LINE THEREOF A DISTANCE OF 1145.57 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 76° 29'36" EAST 245.90 FEET; THENCE NORTH 72° 35'36" EAST 232.90 FEET; THENCE SOUTH 82° 29'24" EAST 7.09 FEET; THENCE SOUTH 18° 38'33" EAST 156.21 FEET; THENCE SOUTH 86° 08'12" WEST 31.43 FEET; THENCE SOUTH 67° 44'48" WEST 53.97 FEET; THENCE SOUTH 49° 40'39" WEST 30.64 FEET; THENCE SOUTH 76° 50'25" WEST 85.42 FEET; THENCE SOUTH 74° 05'19" WEST 42.12 FEET; THENCE SOUTH 64° 36'55" WEST 43.25 FEET; THENCE SOUTH 80° 51'33" WEST 38.09 FEET; THENCE NORTH 88° 31'20" WEST 38.80 FEET; THENCE SOUTH 88° 45'40" WEST 45.48 FEET; THENCE SOUTH 53° 14'31" WEST 46.12 FEET; THENCE SOUTH 65° 44'14" WEST 41.96 FEET; THENCE SOUTH 43° 24'56" WEST 17.49 FEET; THENCE SOUTH 65° 01'53" WEST 31.13 FEET; THENCE NORTH 89° 17'20" WEST 13.45 FEET TO A POINT ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 22; THENCE NORTH 00° 01'54" WEST ALONG SAID WEST LINE A DISTANCE OF 190.31 FEET TO THE TRUE POINT OF BEGINNING.

WRITTEN BY: ______________

CHECKED BY: ______________

MAP CHECKED BY: __________

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2009 AMENDMENT TO INTERLOCAL AGREEMENT

This Amendment entered into this 18th day of March, 2010 between the Cross Valley Water District (hereinafter referred to as "Cross Valley") and the Silver Lake Water-Sewer District (hereinafter referred to as "Silver Lake") (Cross Valley and Silver Lake are herein referred to singularly as "District" and collectively as "Districts") amends the Interlocal Agreement between the Districts dated October 16, 2001 as amended by Agreement signed by the Districts on December 14, 2006 and February 20, 2007, respectively, (hereinafter referred to as 2007 Amendment) redefining and replacing Exhibit C of the Interlocal Agreement dated October 16, 2001.

WITNESSETH:

WHEREAS, the Districts entered into an Interlocal Agreement dated October 16, 2001 regarding the provision of water and sewer service in each other's District (herein referred to as "Interlocal"). A copy of the Interlocal is attached to this Amendment as Exhibit A-1; and

WHEREAS, the Districts amended this Interlocal to redefine and replace Exhibit C of the Interlocal by the 2007 Amendment; and

WHEREAS, the Districts wish to amend the Interlocal to expand the sewer service area for Silver Lake within Cross Valley's boundaries (Area B); and

WHEREAS, certain property within this expanded service area in Cross Valley designated as Valley Investments-Farm Worker Housing site depicted and described on Exhibit B-1 (Valley Investments) is outside the Urban Growth Area as defined by Snohomish County and has a Zoning Designation of Riverway Commercial Farmland; and

WHEREAS, Valley Investments has requested sewer service from Cross Vally and Silver Lake; and

WHEREAS, Snohomish County Planning and Development Serivices have determined that the Valley Investment property is allowed sewer service since the property meets SCC 30.29.110 (1) an exception to SCC prohibition of sewer service outside of a UGA; and

WHEREAS, Valley Investments has received approval of the Washington State Department of Health (DOH) for construction of Farm Worker Housing on its site provided such housing is connected to public sewer; and

WHEREAS, DOH has issued to Valley Investments a Construction Permit for Migrant Farm Worker Housing for its site in Cross Valley; and

WHEREAS, Silver Lake is the only viable sewer provider for the Valley Investments Migrant Farm Worker Housing; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Amendment pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts' common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement, the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Amendment is to add lands to Area "B" as described in the Interlocal so as to allow additional land area to be subject to the terms of the Interlocal to provide for future sewer service by Silver Lake to properties within Area "B."

Section 2. Expanded Area B.

Area "B" of the Interlocal is amended to add the lands as described and depicted on Exhibit B-1 attached hereto. For ease of future administration of the Interlocal, the Districts agree that Exhibit B-1 may be inserted as the substitute exhibit for Exhibit B in the Interlocal and Exhibit C-1 of the 2007 Amendment may be inserted as the substitute for Exhibit C in the Interlocal.

Section 3. A new paragraph is added to Section 5 of the Interlocal to read as follows:

The sewer rate applied by Silver Lake to sewer customers within Area B shall be calculated at 117%, or as otherwise set by written mutual agreement of the Districts' Boards of Commissioners, of the then current rate as now or hereafter amended for Silver Lake sewer customers residing within its Everett sewer basin; that is, Silver Lake customers within its own jurisdiction whose sewer flows through piping and sewer facilities to the Everett Water Pollution Control Facility.

Section 4. A new sub-paragraph (f) is added to Section 10 of the Interlocal to read as follows:

Cross Valley shall indemnify, defend and hold the District and its elected and appointed officials, officers, employees, agents and volunteers (collectively the "District") harmless from and against all damages, losses, expenses and all claims, demands, payments, suits, actions, liabilities, including regulatory enforcement actions, recoveries, and judgments of every nature and description including attorneys' fees and costs (collectively "Claims" or "Damages") incurred by or brought or recovered against the District relating to or arising out of, directly or indirectly, the District providing sewer service to the property located along the 5300 block of Lowell-Larimer Road, Everett, Washington 98296 having Tax Parcel No. 280522-003-015-00 and legally described on Exhibit D attached hereto and incorporated herein by this reference (the "Property"), provided, however, Cross Valley's obligation to indemnify, defend and hold the District harmless under this provision shall not apply to any Claims or Damages arising out of or related to, directly or indirectly, the District's operation of its sewer system to serve the Property .

District and Cross Valley agree that all third party claims for Damages against District for providing sewer service to Tax Parcel No. 280522-003-015-00 not related to, directly or indirectly, the District's operation of its sewer system for which Cross Valley's insurance carrier does not accept defense of District may be tendered by District to the Cross Valley who shall, if so tendered by District, accept and undertake to defend or settle with the Claimant. District retains the right to approve claims investigation and legal counsel assigned to said claim or actions acting reasonably and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to the District.

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Section 4. Incorporation and Ratification.

All other terms of the October 16, 2001 Interlocal are hereby ratified and remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of this ______ day of ____________________, 2009.

SILVER LAKE WATER DISTRICT:

Bill Anderson

President

Karl Keppler

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

CROSS VALLEY WATER DISTRICT:

President

Commissioner

Commissioner

ATTESTED TO:

Secretary-Commissioner

SILVER LAKE WATER-SEWER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT
EXHIBIT A-1 - OCTOBER 16, 2001 INTERLOCAL AGREEMENT

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
INTERLOCAL AGREEMENT

EX. A-1

This Agreement entered into this 16 day of October 2001 between the Cross Valley Water District (hereinafter referred to as "Cross Valley" and the Silver Lake Water District (hereinafter referred to as "Silver Lake"),

W I T N E S S E T H:

WHERAS, the District's entered into this agreement in 1994, and;

WHEREAS, the Districts have determined to re-execute this agreement to clarify the legal authority to provide water and sewer service in each others district; and

WHEREAS, the Districts are special purpose municipal corporations in Snohomish County, Washington, organized under the laws of the State of Washington; and

WHEREAS, the Districts desire to enter into this Agreement pursuant to the authority granted in Chapter 39.34 of the Revised Code of Washington and RCW 57.08.007; and

WHEREAS, each District has the authority to construct, condemn and purchase, acquire, add to, alter, maintain and operate waterworks, and sewer systems, within or without their corporate limits, for the purpose of furnishing its inhabitants or any other persons with an ample supply of water and for the purpose of disposing of wastewater; and

WHEREAS, the Districts wish to protect and promote their interests and the interests of their rate payers and to provide water service and sewer service to certain customers located within their respective Districts by both using water lines and sewer lines owned and operated by the other District and by providing for the wholesale of water between the Districts; and

WHEREAS, Cross Valley has provided service to certain properties within the City Farms area of the Silver Lake as a private and public water purveyor; and

WHEREAS, state law does not allow a special purpose water and sewer district to extend service to customers located within the boundaries of a different water and sewer district without such district's consent and approval; and

WHEREAS, both Districts desire to cooperate in providing water and sewer service to certain properties near or adjacent to the Districts common boundary lines; and

WHEREAS, both Districts recognize that the other District has the sole lawful authority to provide water and sewer service to properties within its jurisdiction; and

WHEREAS, in accordance with RCW 57.08.007, and by interlocal agreement the Districts may provide for water and sewer service by one District in the other District's area.

NOW, THEREFORE, the Districts do hereby agree as follows:

Section 1. Purpose.

The purpose of this Agreement is to provide delivery of water service to properties within the City Farms area as shown on Exhibit "A" attached hereto (hereinafter Area "A") of Silver Lake Water using water systems owned and operated by Cross Valley. It is the further purpose of this agreement to provide future wholesale of water by Silver Lake to Cross Valley for water service to properties within an area of Cross Valley as shown on Exhibit "B" attached hereto (hereinafter Area "B") and to provide for future sewer service by Silver Lake to properties within Area "B". All deliveries of water by Cross Valley from existing facilities owned and operated by Cross Valley within Area "A", shall be allowed by Silver Lake pursuant to the terms, conditions, and limitations of this Agreement. All deliveries of sewer by Silver Lake within Area "B", shall be allowed by Cross Valley pursuant to the terms, conditions, and limitations of this Agreement.

Section 2. Area "A" New Customers - Interim Service.

Cross Valley shall have the right and permission of Silver Lake to provide service to existing customers and to extend service to new customers and properties within Area "A". As a condition of any such new service extension, Cross Valley shall collect from property owners within Area "A" as a condition of water service to such property owner by Cross Valley all then existing Silver Lake water connection charges, capital improvement charges and other fees, except meter installation charges which will be retained by Cross Valley, which would be collected by Silver Lake for water service in accordance with its Resolutions and regulations. Such Silver Lake charges collected by Cross Valley are to be paid to Silver Lake within thirty days of the date collected by Cross Valley.

Section 3. Area "A" Maintenance and Repair.

All maintenance, operation, and repair costs and expenses of the water system shall be the sole responsibility of Cross Valley. Any and all construction, repair, reconstruction, replacement or other work on the existing system shall be done by Cross Valley. All new service line installation shall be constructed in accordance with Silver Lake standards and specifications. Any extension of the water system within Area "A" caused by a subdivision of property or new development within Area "A" shall be constructed in accordance with Silver Lake standards and specification. Any construction or improvement of the water facilities within Area "A" for existing general system improvements by Cross Valley may be constructed to Cross Valley standards and specification. The existing water system lines set forth on Exhibit "A", which is incorporated herein as a part of this agreement, are integral to the integrity of operation of Cross Valley's system and shall be retained by Cross Valley.

For those projects requiring construction in accordance with Silver Lake standards and specifications, Cross Valley shall submit engineering plans to Silver Lake for approval at least 60 days prior to construction, and shall notify Silver Lake at least seven days prior to beginning actual construction work.

Section 4. Transfer of Customers Area "A".

At its sole discretion and election, Silver Lake may give notice to Cross Valley that Silver Lake intends to take over the customers within Area "A" 60 days from such notice. Cross Valley shall provide to Silver Lake a current list of the names and addresses of all Cross Valley water customers within the Agreement area. Silver Lake shall send notice of take over to all customers being served by Cross Valley advising them of their new water purveyor and that billing and payment of future water bills shall be handled by Silver Lake.

At such time of notice Cross Valley shall wholesale to Silver Lake sufficient water to serve all properties within Area "A" whether then being served or not should Silver Lake decide to purchase water from Cross Valley. Nothing herein shall require Silver Lake to purchase water from Cross Valley.

At the time of take over of the water system, Silver Lake shall be responsible for maintenance and operation of the water system within Area "A", except for those lines set forth on Exhibit "A".

Section 5. Area "B" New Sewer Customers.

Silver Lake shall have the right and permission of Cross Valley to extend sewer service to customers and properties within Area "B". Any and all construction of sewer facilities within Area "B", shall be constructed in accordance with Silver Lake standards and specifications. Silver Lake shall maintain and operate such sewer system. Silver Lake may collect any and all connection charges, capital improvement charges, monthly rates and charges and other fees which would be collected by Silver Lake in accordance with its Resolutions and regulations. Nothing herein shall preclude Silver Lake from entering into a sewer service extension agreement with individual property owners within Area "B".

Section 6. Silver Lake Wholesale of Water to Cross Valley - Area "B".

Subject to the provisions of Section 8, Silver Lake agrees to wholesale water to Cross Valley sufficient to serve all customers and properties within Area "B". Any and all costs of construction, maintenance and repair of facilities required to wholesale water to Cross Valley, such as master meter(s), shall be paid solely by Cross Valley. Such facilities shall be constructed in accordance with Silver lake standards and specification. Nothing herein shall require Cross Valley to purchase water from Silver Lake. Provided, however, that both water and sewer shall be provided by Silver Lake for that area delineated by the number 1 within Area "B" set forth on Exhibit "C" incorporated herein, which comprises approximately 20 lots of Waldenwood Subdivision, Phase II.

Section 7. Water Quality.

Each District warrants that it will purvey water meeting the state water quality standards and requirements to the other District and to all residents within the other District. Each District agrees to protect, hold harmless, indemnify and defend the other for any claim, demand or suit arising out of purveying water to customers within the other District or the wholesaling of water to the other District.

Section 8. Delinquent Account Collection. In order to ensure that each District can protect revenue sources and protect bond covenants as well as the operational integrity of its system, every customer of both water and sewer service in Area "B" shall be treated as though that customer was receiving both water and sewer service from Silver Lake. Any and all remedies for non-payment of utility bills, including but not limited to cut off of service as authorized by RCW 57.08.090, shall pertain to Silver Lake. At all times that Silver Lake is providing sewer service to a customer within Area "B" that is being provided water service by Cross Valley, Cross Valley shall apply any water bill payment first to any Silver Lake sewer bill for the same customer that is 30 days past due. Such Cross Valley payment shall be forwarded to Silver Lake within 30 days. Should delinquency by any such customer continue, Cross Valley shall turn off that customer's water service as provided by state law.

Section 9. Water Service to Cathcart Landfill. Both Districts understand that in order to provide water to the Snohomish County Cathcart Landfill, Cross Valley has purveyed water to Cathcart even though it is in Silver Lake. Both Districts agree and understand that at such time that Silver Lake can serve water to Cathcart, Silver Lake may give notice to Cross Valley that Silver Lake will take over service of water to Cathcart and Cross Valley will cease water delivery to Cathcart.

Section 10. Miscellaneous.

a. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and assigns.

b. This document constitutes the entire agreement of the parties with respect to the subject matter hereof and may be modified only by an agreement in writing signed by all the parties hereto.

c. Waiver by any party of any term or condition of this Agreement shall not be deemed or construed as a waiver of any other term or condition, nor shall a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

d. If any provision of this Agreement is held invalid or unenforceable, the remainder of the Agreement shall not be affected and shall remain in full-force and effect.

e. Any notices required or permitted under this Agreement shall be delivered to the District's business office.

Section 11. Arbitration.

Any controversy or claim arising out of or related to this contract or the breach thereof shall be settled by a Board of three arbitrators one of whom shall be selected by Cross Valley and one by Silver Lake and the third selected jointly by the first two, and the parties hereto agree that any decision of the arbitrators shall be binding upon both parties hereto and judgment upon the award rendered may be entered in any court having jurisdiction thereof, all in accordance with Chapter 7.04 RCW. Any costs, expenses, and legal fees incurred in arbitration or other legal action shall be awarded to the prevailing party.

Section 12. Effective Date, Duration, and Termination.

This Agreement shall become effective on the date on which this Agreement has been duly authorized and executed by the Districts. As to Area "A", this Agreement shall terminate at such time as Silver Lake's system is able to serve the properties within Area "A" receiving water from Cross Valley and Silver Lake has accomplished take over of water service in Area "A". This agreement maybe terminated at an earlier date by mutual agreement of the Districts.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of this

16th day of OCTOBER, 2001.

SILVER LAKE WATER DISTRICT:

Rod Keppler
President

Bill Anderson
Commissioner

Roger Sumney
Commissioner

ATTESTED TO:

Roger Sumney
Secretary-Commissioner

CROSS VALLEY WATER DISTRICT

President

Dale Deierling
Commissioner

Gregory Perry
Commissioner

ATTESTED TO:

Dale Deierling
Secretary-Commissioner

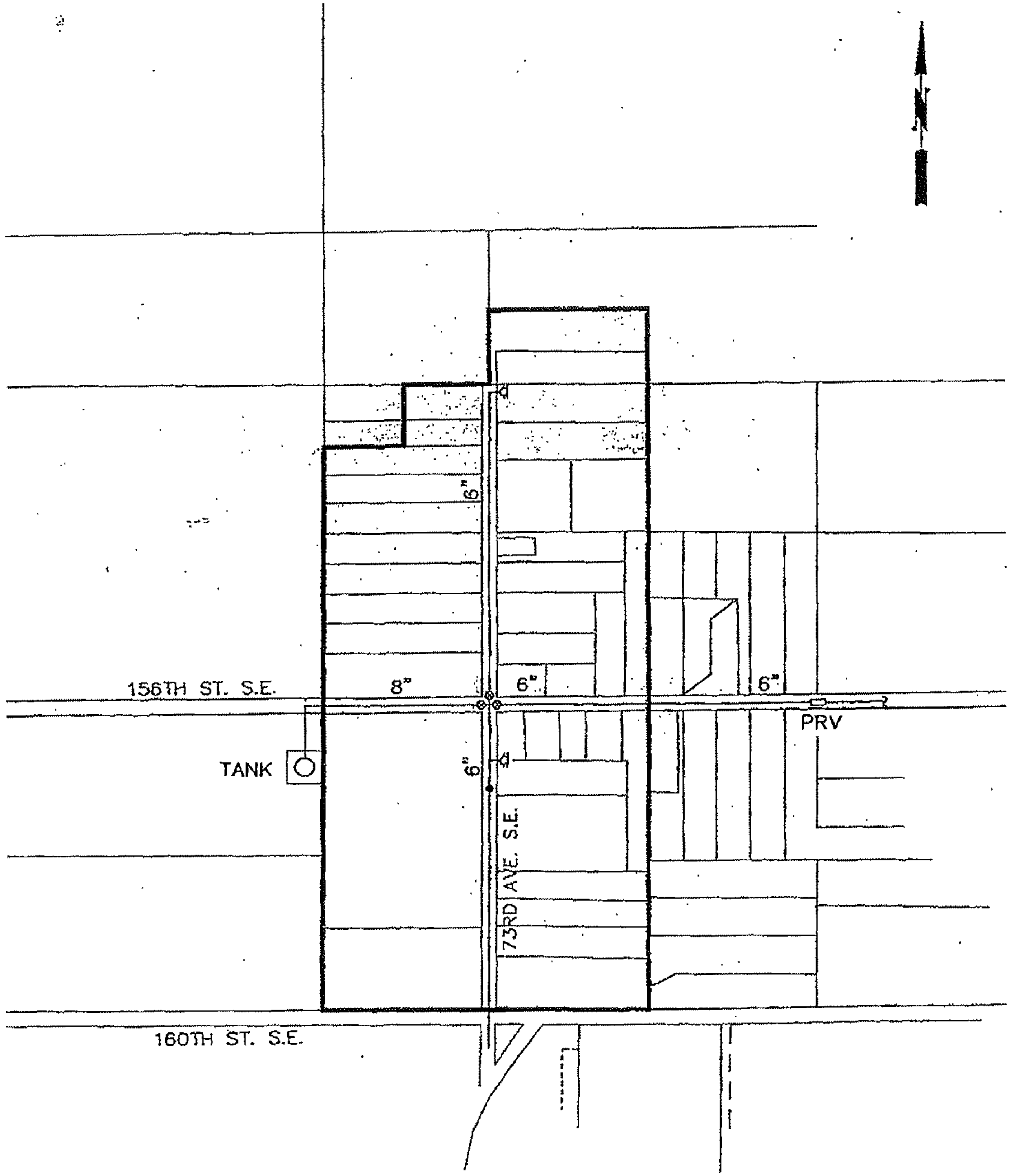


EXHIBIT A

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT A

That portion of the West 1/2, Section 2, Township 27, Range 5 East described as follows:

Beginning at the SW corner of Lot 57 of the Plat of City Farms, thence Northerly along the West line of said Plat to the SW corner of Lot 49 of said Plat, thence Easterly along the South line of said Lot 49 to the SE corner of the West 1/2 of said Lot 49 thence Northerly along the East line of the West 1/2 of said Lot 49 and Lot 48 to the South line of Lot 47 of said Plat, thence Easterly along the South line of said Lot 47 to the SW corner of Lot 46 of said Plat, thence Northerly along the West line of said Lot 46 to the NW corner of said Lot 46, thence Easterly along the North line of said Lot 46 to the NE corner of said Lot 46 and the North-South centerline of said Section 2, thence Southerly along said North-South centerline to the North margin of 160th Street S.E., thence Westerly along said North margin to the West line of the NE 1/4 of the SW 1/4 of said Section 2, thence Northerly along said West line to the SW corner of said Lot 57 and the true point of beginning.

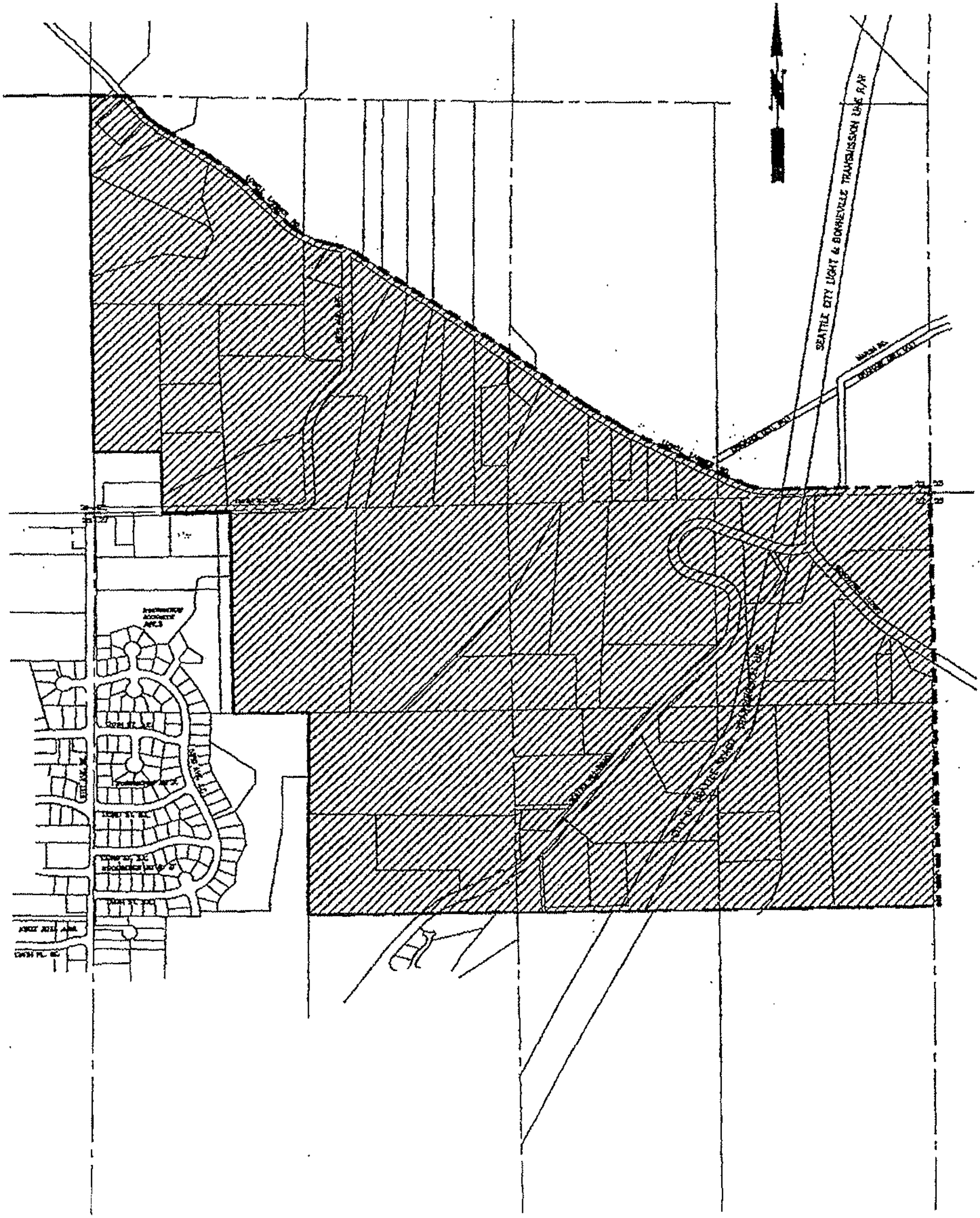


EXHIBIT B

SILVER LAKE WATER DISTRICT

LEGAL DESCRIPTION

EXHIBIT B

Beginning at the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 being the true point of beginning; thence northerly along the east line of said Plat to the northeast corner of Tract 999 of said Plat; thence westerly along the north line of said Tract 999 to a point lying 800.25 feet east of the west line of Section 27, Township 28 N, Range 5 E, W.M.; thence northerly to a point on the southerly margin of 116th Street S.E. said point lying 825 feet east and 30 feet south of the northwest corner of said Section 27; thence westerly along the southerly margin of 116th Street S.E. a distance of 420 feet; thence northerly across 116th Street S.E. a distance of 60 feet to a point on the northerly margin of 116th Street S.E. said point lying 405 feet east of the west line of Section 22, Township 28 N, Range 5 E, W.M.; thence continuing northerly a distance of 400 feet to a point lying 405 feet east of the west line of said Section 22; thence westerly a distance of 405 feet to a point on the west line of said Section 22 said point lying 430 feet north of the southwest corner of said Section 22; thence northerly along the west line of said Section 22 to the northeasterly margin of Lowell-Larimer Road; thence southeasterly along said northeasterly margin of Lowell-larimer Road to the intersection of the easterly margin of Marsh Road and East Lowell-Larimer Road: thence continuing easterly to the east line of said Section 22; thence southerly along the east line of said Sections 22 and 27 to the southeast corner of said Section 27; thence westerly along the south line of said Section 27 to the southeast corner of Lot 9 Plat of Woodridge Heights Division 1 and the true point of beginning.

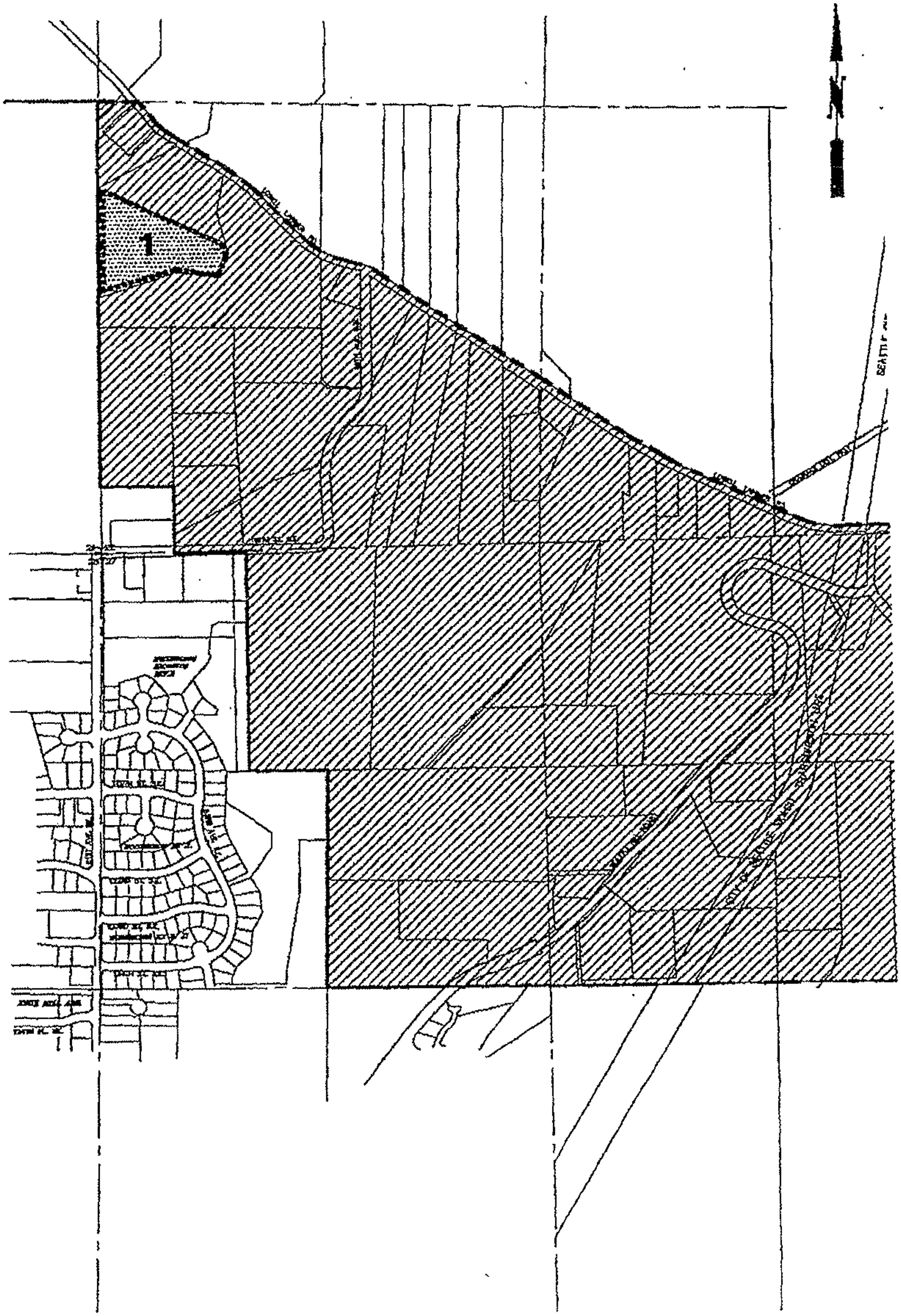


EXHIBIT C

SILVER LAKE WATER DISTRICT

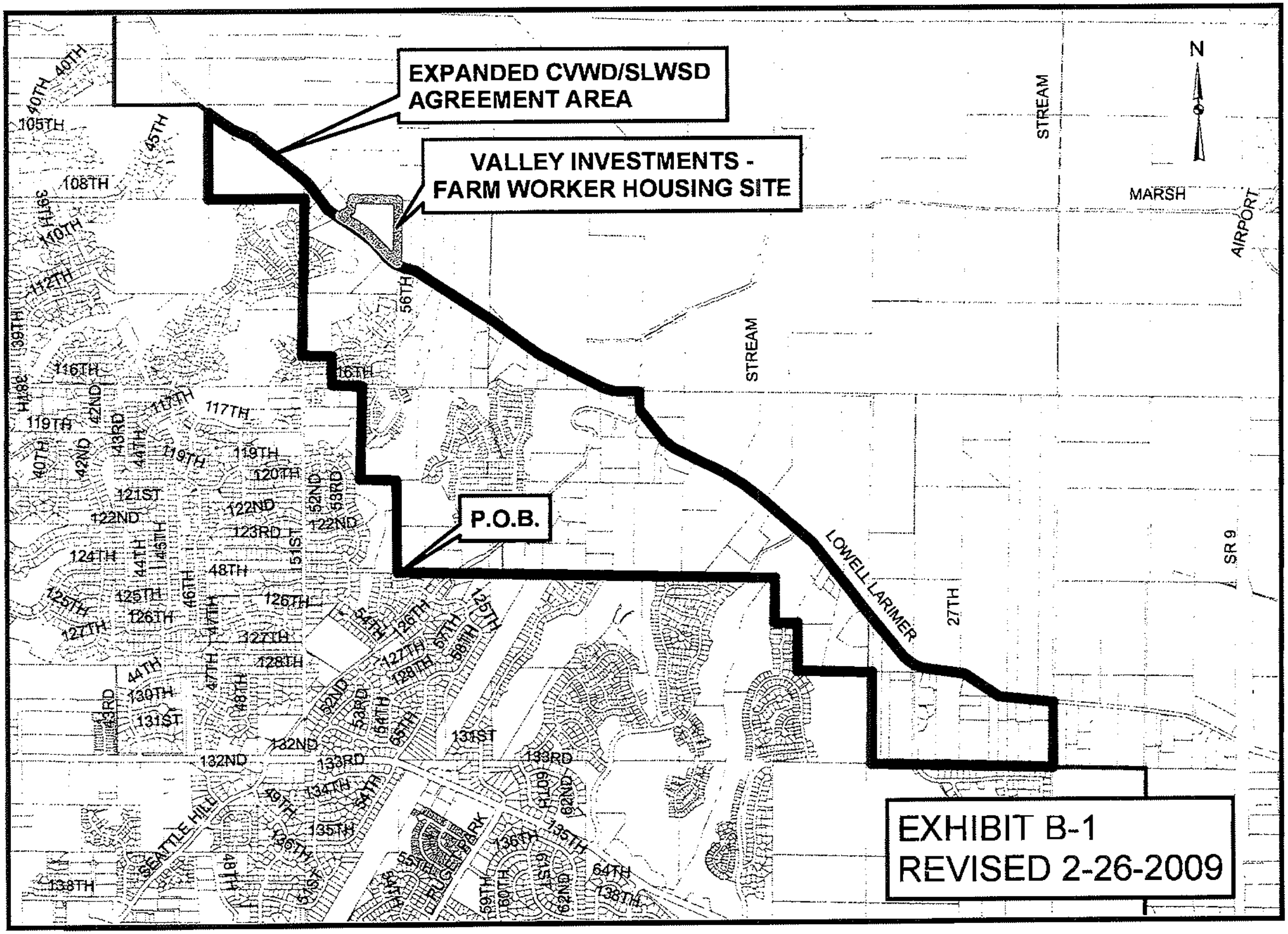
LEGAL DESCRIPTION

PARCEL 1, EXHIBIT C

That portion of Section 22, Township 28 N, Range 5 E, W.M. described as follows:

BEGINNING AT A POINT 504.38 FEET SOUTH OF THE NORTHWEST CORNER OF THE N.W. 1/4 S.W 1/4; THENCE S 65° 57' 15" E A DISTANCE OF 827.05 FEET; THENCE S 14° 27' 30" E A DISTANCE OF 55.97 FEET; THENCE S 22° 24' 00" W A DISTANCE OF 160.80 FEET; THENCE N 82° 59' 00" W A DISTANCE OF 243.70 FEET; THENCE S 72° 06' 00" W A DISTANCE OF 232.90 FEET; THENCE S 76° 00' 00" W A DISTANCE OF 269.40 FEET TO THE WEST LINE OF SECTION 22; THENCE NORTH TO THE POINT OF BEGINNING.

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT
EXHIBIT B-1 - LEGAL DESCRIPTION & MAP FOR AREA B


EXPANDED CVWD/SLWSD
AGREEMENT AREA
VALLEY INVESTMENTS -
FARM WORKER HOUSING SITE
P.O.B.
N
STREAM
MARSH
AIRPORT
STREAM
LOWELL LARIMER
27TH
SR 9
56TH
SEATTLE HILL
132ND
133RD
EXHIBIT B-1
REVISED 2-26-2009

2009 AMENDMENT
EXHIBIT B-1
LEGAL DESCRIPTION

BEGINNING at the Southwest corner, of the Southeast quarter, of the Northwest quarter, of Section 27, Township 28 North, Range 5 East, of the W.M.; THENCE Northerly to the Northwest corner, of said subdivision; THENCE Westerly, along the North line, of the Southwester quarter, of the Northwest quarter, of said Section 27, to a point lying 800.25 feet East, of the West line, of said Section 27; THENCE Northerly, to a point on the Southerly margin of 116th Street S.E., said point lying 825 feet East and 30 feet South of the Northwest corner, of said Section 27; THENCE Westerly, along the Southerly margin of 116th Street S.E. 420 feet; THENCE Northerly. 60 feet to a point on the Northerly margin of 116th Street S.E., said point lying 405 feet East, of the West line of Section 22, Township 28 North, Range 5 East, of the W.M.; THENCE continuing Northerly 400 feet, to a point lying 405 feet East, of the West line, of said Section 22; THENCE Westerly 405 feet, to a point on the West line of said Section 22, said point lying 430 feet North, of the Southwest corner of said Section 22; THENCE Northerly, to the Northwest corner, of the Southwest quarter, of said Section 22; THENCE Westerly, to the Southwest corner, of the Southeast quarter, of the Northeast quarter, of Section 21, Township 28 North, Range 5 East, of the W.M.; THENCE Northerly, along the West line of said subdivision, to the Northeasterly margin of Lowell-Larimer Road; THENCE Southeasterly, along the Northeasterly margin of said Lowell-Larimer Road, to the following described line; BEGINNING at the Northeast corner, of the Northwest quarter, of the Southwest quarter, of said Section 22; THENCE North 87°29'48" West 500.00 feet, along the North, of said subdivision; THENCE South 01°54'04" West 200.00 feet; THENCE South 44°22'49" West 207.86 feet, to the Northeasterly margin of Lowell-Larimer Road and the TERMINUS of this line description; THENCE North 44°22'49" East 207.86 feet; THENCE North 01°54'04" East 200.00 feet, to the North line, of the Northwest quarter, of the Southwest quarter, of said Section 22; THENCE South 87°29'48" East 500.00 feet, to the Northeast corner of said subdivision; THENCE continuing Easterly 50.00 feet, along the North line, of the Northeast quarter, of the Southwest quarter, of said Section 22; THENCE Southerly, parallel with and 50.00 feet Easterly of the West line of said subdivision, to the Northeasterly margin of Lowell-Larimer Road; Thence continuing Southeasterly, along the Northeasterly margin of Lowell-Larimer Road to its intersection with the Easterly margin of Marsh Road; THENCE continuing Southerly and Southeasterly, along the Easterly and Northeasterly margin of Lowell-Larimer Road, to the East line, of the Southeast quarter, of Section 26, Township 28 North, Range 5 East, of the W.M.; THENCE Southerly, to the Southeast corner of said Section 26; THENCE Westerly, to the Southwest corner, of said Southeast quarter; THENCE Northerly, to the Northwest corner, of the South half, of said Southeast quarter; THENCE Westerly, along the Southerly line, of the North half, of the Southwest quarter, of said Section 26, to the East line, of Tract 902, Snohomish Cascade Sector 8, Division 2, as recorded under Auditor's Fee Number 200203135008, records of Snohomish County, Washington; THENCE Northerly, to the Northeast corner of said

EXHIBIT B-1

Plat; THENCE Westerly, along the North line of said Plat, to the West line, of the Northeast quarter, of the Southwest quarter, of said Section 26; Thence Northerly, to the Northwest corner, of the Northeast quarter, of the Southwest quarter, of said Section 26; THENCE Westerly, to the Southwest corner, of the Northwest quarter, of Section 26; THENCE Westerly, to the Southwest corner, of the Northeast quarter, of said Section 27; THENCE Westerly to the Southwest corner, of the Southeast quarter, of the Northwest quarter, of said Section 27 and the POINT OF BEGINNING.

SCOTT L. THOMAS
STATE OF WASHINGTON
16930
REGISTERED
PROFESSIONAL LAND SURVEYOR

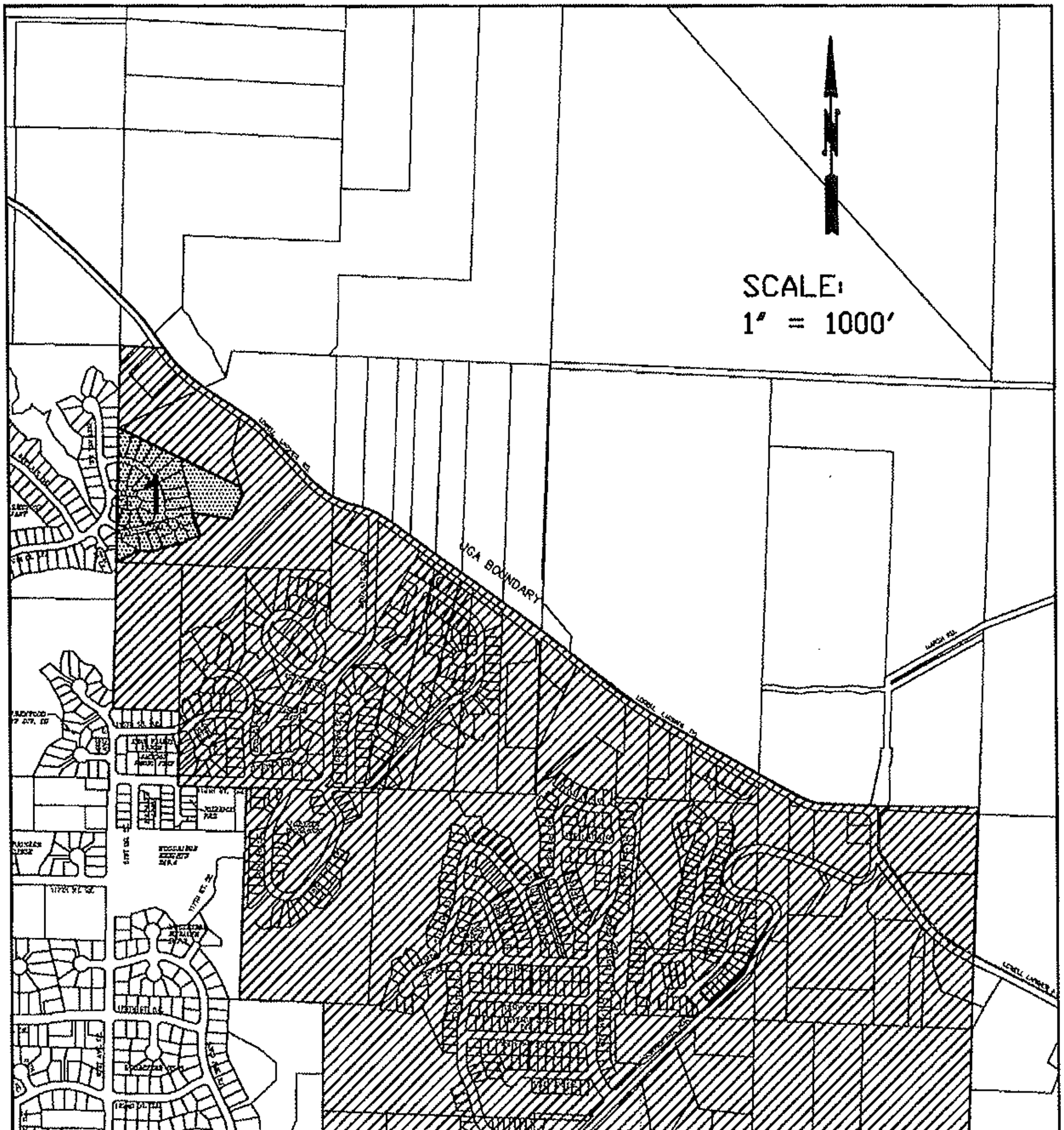
9-29-2009

EXHIBIT B-1
VALLEY INVESTMENTS
FARM WORKER HOUSING SITE

That portion of the Northwest quarter, of the Southwest, of Section 22, Township 28 North, Range 5 East, of the W.M., lying Northeasterly of Lowell-Larimer Road and Easterly of the following described line:
COMMENCING at the Northeast corner, of said Northwest quarter, of the Southwest quarter; THENCE North 87°29'48" West, along the North line thereof 500.00 feet to the TRUE POINT OF BEGINNING; THENCE South 01°54'04" West 200.00 feet; THENCE South 44°22'49" West 207.86 feet, to the Northeasterly right-of-way of said Lowell-Larimer Road and TERMINUS of said Line;
TOGETHER WITH the West 50.00 feet, of that portion of the Northeast quarter, of the Southwest quarter, of said Section 22, lying Northeasterly of Lowell-Larimer Road.

9-29-2009

SILVER LAKE WATER DISTRICT
CROSS VALLEY WATER DISTRICT
2008 AMENDMENT TO INTERLOCAL AGREEMENT
EXHIBIT C-1 - REPLACES 2001 EXHIBIT C



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INTERLOCAL PHASE II AGREEMENT FOR THE CLEARVIEW WATER PROJECT

WHEREAS, the undersigned municipal corporations (the "Parties" or the "Municipalities") provide water service to residents in Southwest Snohomish County; and

WHEREAS, comprehensive planning by the Parties indicates population growth in Southwest Snohomish County that will require construction of water transmission, storage and pumping facilities from the Everett regional water system's Pipeline No. 5 to the Clearview area of Snohomish County to convey water from the City of Everett's water supply system; ("the Clearview Project"); and

WHEREAS, the Parties will benefit from construction of these facilities; and

WHEREAS, the purpose of this Interlocal Agreement is to provide joint management, administration and funding for the planning, design, engineering, financing and construction of the Clearview Project; and

WHEREAS, this Agreement is entered into by the undersigned Parties, municipal corporations organized under the laws of the State of Washington, pursuant to the Interlocal Cooperation Act, Chapter 39.34 RCW, and after authorization by the legislative bodies of each of the Parties;

NOW THEREFORE, IT IS HEREBY AGREED BY THE PARTIES AS FOLLOWS:

1. JOINT POWERS. Pursuant to Chapter 39.34 RCW, this Agreement shall be a joint powers agreement to create and confer powers, privileges, and authority upon the CLEARVIEW GROUP as provided in this Agreement. The duration of this agreement shall be completion of construction or three (3) years, whichever is longer.

2. PURPOSE. The purpose of this Agreement is to bring together interested Parties which are benefited by the proposed Clearview Project to provide a mechanism for the accumulation of financial resources to retain professional assistance to accomplish the planning, design, engineering and construction thereof and to develop mechanisms to finance those facilities and to operate and maintain them after they are placed in operation. It is the intent that this Agreement will take the Project through Final-design, and Construction.

3. ORGANIZATION. This Agreement does not establish a separate legal entity but rather creates an administrative entity to be known as the CLEARVIEW GROUP, which shall act at the direction of a board

comprised of representatives from each of the Parties to this Agreement. The CLEARVIEW GROUP shall perform purely administrative functions and, except as otherwise noted herein, no power or authority to act on behalf of, or in the stead of, the undersigned Parties is delegated to the CLEARVIEW GROUP. The members listed hereafter in Section 4 shall constitute the CLEARVIEW GROUP subject to reasonable and equitable latecomer provisions as established by agreement of all members. Additional Parties may be added by unanimous amendment of this Agreement which will be based, at a minimum, on financial participation in the Clearview Project.

4. GOVERNANCE. Governance of the CLEARVIEW GROUP shall be initially vested in a Board of Directors consisting of one (1) member representing each Party designated in writing, as follows:

A. Alderwood Water District (AWD) - any person designated by the Board.

B. Silver Lake Water and Sewer District (SLWD) - any person designated by the Board.

C. Cross Valley Water District (CVWD) - any person designated by the Board.

By execution of this Agreement, each Party fully authorizes its designated Board Member to act on its behalf regarding all matters decided by the Board relating to the Clearview Project. Each Party or designated Board member may designate an alternate representative in writing; provided that, alternates shall be designated in writing prior to any Board meeting at which said alternate attends and acts on behalf of a Party.

The representative of AWD shall serve as Executive Secretary of the CLEARVIEW GROUP and shall be authorized to execute all Board actions, including execution of all contracts, imminent domain, authorized by the Board of Directors. AWD shall serve as the lead agency for SEPA and other permits, and administer the construction project.

5. BOARD MEETINGS. The Board of Directors shall meet at least quarterly; provided that any Party through its designated Board Member hereof may call a Board meeting by 48 hour prior written notice of the time and place thereof to all other Board members or to the Party. Board members shall be responsible for notice of meetings to other Parties interested in Clearview Project matters. AWD agrees to provide services for notice of meetings and meeting facilities unless otherwise authorized by the Board. Subject to Section 7, a quorum shall constitute a majority of the members.

6. TECHNICAL COMMITTEES. A Technical Committee or Technical Committees are authorized to be established by the Board of Directors for day-to-day management of the Clearview Project on such terms as the Board shall direct.

7. VOTING. Except as otherwise provided in this Agreement, all actions of the Board of Directors authorizing contracts, expenditure of funds, and/or major decisions affecting the Clearview Project shall be by weighted vote of the Parties. Actions or decisions shall require a super majority vote of not less than 90% of the total weighted vote of the Parties. Each weighted vote shall be calculated based on each Parties' percentage of the budget listed in Section 8 for pipeline "A".

8. BUDGET AND FINANCIAL COMMITMENT. By execution of this Agreement each Party agrees to an initial budget for the Clearview Project as outlined in attached Schedule A. Said budget may be increased or decreased by action of the Board. Each Party commits to funding said budget in shares (based on consumptive use of Clearview Project facilities estimated in million gallons per day (MGD) as shown in components in Exhibit "A").

9. PAYMENT. Each Party upon execution of this Agreement shall forward to AWD a check or warrant payable to AWD - CLEARVIEW PROJECT FUND for the purpose of establishing the CLEARVIEW PROJECT FUND, as provided in Section 10 hereof. It is agreed that said FUND shall be initiated by payment of the following shares upon signing of this Agreement:

AWD	$ 165,660
SLWD	$ 80,610
CVWD	$ 53,730
Total	$ 300,000

Payment by each Party shall be based upon their respective capacity share as a percentage of the whole for each of the following project components as shown in Exhibit "A" attached.

Pump Station. The project pump station shall be Option C outlined in the Montgomery Watson Americas' Clearview Water Supply Project Pump Room Layout Options.

River Crossing. Subject to Section 8, the river crossing shall be constructed to the proposed 2040 capacity of 48.5 MGD.

Pipeline "A". The section of the proposed transmission line extending from Everett's pipeline No. 5 to the point of takeout by the Silver Lake Water District at approximately the 148th Street SE Extension; excepting the river crossing.

Pipeline "B". The section of the proposed transmission line from the takeout point of Silver Lake Water District to the Clearview Reservoir.

Reservoir. Facilities on the proposed Reservoir site including both 12 MG reservoirs.

The costs for the disinfection facilities study and design, if required, will be paid by those benefited based upon their actual proportional use.

Upon authorization of contracts for services, materials and expenses by the Board, each Party agrees to pay its share of the CLEARVIEW PROJECT FUND as agreed in Section 8 hereof. Except as specifically authorized by the Board, each Party shall bear its own technical and management staff costs. AWD agrees to manage the CLEARVIEW PROJECT FUND as provided in Section 10 hereof. Project administration costs incurred by Alderwood Water District shall be reimbursed based upon component cost shares. It is understood that AWD will advance funds toward initial costs of the Clearview Project. Members hereby agree that AWD shall be reimbursed from the CLEARVIEW PROJECT FUND for said initial costs.

Bills shall be payable to AWD - CLEARVIEW PROJECT FUND within thirty days of receipt. Parties agree to pay interest on late payments at the rate of 0.03% per day.

10. CLEARVIEW PROJECT FUND. Upon receipt of a fully executed agreement from all Parties and payment to AWD of their allocated shares, as provided in Sections 8 and 9, AWD shall, with its contribution as provided in Section 9. execute this Agreement and shall establish the PROJECT FUND which shall be maintained separately from all other AWD funds. Interest on the balance of funds on hand shall accrue to the benefit of the FUND. AWD shall maintain all accounting records related to the FUND and may charge the FUND for the reasonable costs of accounting services. AWD will provide all Parties with a monthly accounting of all FUND income and expenses and the balance on hand. The Board may authorize assessments if it deems it necessary to increase the balance on hand in the FUND provided that the Party shall not be assessed, and shall not be required to pay any amount in excess of its total commitment provided in Exhibit A hereof unless all Parties agree to increase the initial budget or adjust the shares.

11. OWNERSHIP. Each party will have an ownership interest commensurate with their share of Project costs. Provided, any Party may convey it's unused capacity to other Parties to this agreement or any municipal purveyor. In the event excess capacity is obtained, that being capacity greater than show in Exhibit "A" table 1 for initial capacity, table 2 for final capacity actually activated, the percentages shown in Exhibit "A", shall apply to total capacity available.

One Party's excess capacity may be conveyed to another Party without all Parties approval. Excess capacity may be conveyed to a municipal purveyor with simple majority approval of the Parties, not withstanding Section 7.

12. LIFE OF THE PROJECT. For purposes of establishing funding and depreciation, the project life of the five components is listed as follows:

A.	Pump Station	50 Years
B.	River Crossing	75 Years
C.	Pipeline "A"	75 Years
D.	Pipeline "B"	75 Years
E.	Reservoir	50 Years

13. OPERATION. Within 120 days from execution of the engineering consultant's contract, the Clearview Group shall select the system operator.

14. GRANTS. If the Clearview Project receives any grant funding, the grant funds shall be distributed equally over components of the Project, and each Party's cost share shall be reduced proportionally according to their percentage cost share for each respective component.

15. PROJECT COST SHARING FOR PURCHASE OF CLEARVIEW PROJECT INTEREST IN THE PUMP STATION SITE AND RESERVOIR SITE RESPECTIVELY OWNED BY THE CROSS VALLEY WATER DISTRICT AND ALDERWOOD WATER DISTRICT. The title shall remain vested in the current respective ownership. The CLEARVIEW GROUP shall acquire a long-term lease from the respective owners, in accordance with state law, for an initial fee based upon an appraisal of the site plus annual lease payments of one dollar.

The initial fee shall be determined by an appraised value of the land. The cost share of each agency being based upon their respective component percentage.

The lease amount to be paid to CVWD shall be based upon their retention of a 100-foot diameter parcel for a future reservoir. This amounts to 18% of the site. Thus, AWD and SLWD shall pay a fee based upon 82% of the mid range appraised value, being $70,000, at their respective pump station capacity percentages of 55.22% and 26.87%. The amounts are:

Alderwood Water District	$33,006.00
Silver Lake Water District	$16,061.00

The lease amount to be paid to AWD for the reservoir site shall be based upon the full site, less the portion in the northeast corner currently leased for communication facilities, at the mid range appraisal value, being $255,000, with the respective percentage values for Phase I being the initial reservoir shown in Exhibit "A". AWD agrees that additional construction cost included within Phase I construction to facilitate Phase II, being the second reservoir, shall be paid by AWD. Any future participating parties to Phase II construction shall reimburse AWD for their share of these costs.

Silver Lake Water District	$49,290.00
Cross Valley Water District	$41,079.00

16. INCREMENTAL UPSIZING OF PROJECT COMPONENTS.

A. General. Any member of the Clearview Group may be granted authorization by the Clearview Group to pay for incremental increase in the capacity of any component of the project. The initial incremental costs shall be paid in full by the requesting party, such that the remaining parties shall not incur any additional project cost due to the additional costs of the incremental increase in component size. When the Clearview Group member who has purchased incremental upsizing of any component requests activation of the additional component capacity, the requesting party shall pay the additional capacity costs based upon the reallocation of member percentage cost shares. The revised percentage cost share of each member shall be determined by each member's percentage capacity of the total component capacity. Table 2 of Exhibit "A" sets forth each Parties respective total capacity and shares for each Project component after such additional component capacity has been activated. When the additional capacity of any incrementally upsized component is requested, the total additional capacity of that component shall be added. Except as otherwise provided herein, at the time the additional capacity to the component is activated, and the percentage cost shares are reallocated, the member who paid the incremental upsizing costs shall receive credit for the incremental upsizing costs.

B. Incremental Upsizing of Project Component Parts Component parts shall be upsized in accordance with Table 2 of Ex. "A". The additional pipeline incremental costs shall be 12.93 percent of the pipeline "A" and "B" total construction costs. The allocation of the additional costs shall be Cross Valley Water District 80 percent and Silver Lake Water District 20 percent. This is based upon the additional capacity of 12 MGD for Cross Valley Water District and 3 MGD for Silver Lake Water District upon activation of the capacity provided by the incremental upsizing of the pipeline. The additional pump station incremental costs shall be 02.5 percent of the table 1 construction costs. Allocation of the additional pump station costs shall be Cross Valley Water District 80 percent and Silver Lake Water District 20 percent. It is anticipated that Alderwood Water District shall construct a second reservoir at the reservoir site. When such construction is completed reallocation shall occur in accordance with the percentages set forth in Ex. "A": For reallocation and reimbursement, all costs shall be indexed using the Engineering News Record index, with dates of April 30, 1998 for phase 1 costs and the date of use and operation of the project for phase 2 costs.

17. At no time shall any party exceed its capacity of any Project component as set forth in Ex. "A" without the express written agreement of all other parties.

18. DISPUTE RESOLUTION. A majority of the Board members may authorize employment of the services of a mediator through WAMS or JAMS to conduct alternative dispute resolution procedures.

19. TERMINATION AND WITHDRAWAL. This Agreement may be terminated at any time by action of the Board. Upon termination, all obligations shall be paid pursuant to the percentage of shares provided in Section 8.

Any Party may withdraw from this Agreement by giving at least 90 days written notice to the Board of Directors. Upon withdrawal, a Party shall be responsible for payment of its percentage share of Clearview Project expenses as of the effective date of withdrawal. Any balance on hand in the FUND on the effective date of withdrawal that has been contributed by the withdrawing Party, less any expenses associated with the withdrawal, shall be returned to the Party. If a Party withdraws, the ownership shall be adjusted proportionally to each Party's share of the total project cost.

Withdrawal of a Party shall constitute termination unless the remaining Parties amend this agreement to re-allocate shares.

20. LEGAL COMPLIANCE All parties are bound by existing federal, state, and local law.

21. SEVERABILITY. Should any part or provision of this agreement be declared by a court of competent jurisdiction to be invalid, the same shall not affect the validity of the agreement as a whole, or any part thereof other than the part declared to be invalid.

22. LEGAL RELATIONSHIP. Officers and employees of each Party shall be deemed to act only on behalf of the Party it represents or for which it is employed.

23. FILING. This Agreement shall be effective upon filing with the Snohomish County Auditor, the Secretary of State, and the clerk of each member hereto.

24. COUNTERPARTS. This Agreement may be signed in counterparts and, if so signed, shall be deemed one integrated Agreement.

IN WITNESS WHEREOF, this Agreement has been executed by the undersigned Party on the date set forth.

ALDERWOOD WATER DISTRICT	SILVER LAKE WATER DISTRICT
Donna J. Cross	Rod Keppler
Jeff Nelson	Don A. Fisher
	Bill Anderson
Date: December 21, 1998	Date: 12-22-98

CROSS VALLEY WATER DISTRICT

Date: 1/19/98

EXHIBIT "A"
Clearview Phase II

Table I
Initial Construction Capacities

		Pump Station			River Crossing			Pipeline A
		$5,870,000			$3,460,000			$15,378,470
Agency	Capacity	% Share	Cost	Capacity	% Share	Cost	Capacity	% Share
Alderwood	18.5	55.22%	$3,241,642	18.5	40.66%	$1,406,813	18.5	55.22%
Silver Lake	9	26.87%	$1,577,015	9	19.78%	$ 684,396	9	26.87%
Cross Valley	6	17.91%	$1,051,343	18	39.56%	$1,368,791	6	17.91%
total	33.5	100.00%	$5,870,000	45.5	100.00%	$3,460,000	33.5	100.00%

Table II
Future Capacities

		Pump Station			River Crossing			Pipeline A	
Agency	Capacity	% Share	incremental capacity	Capacity	% Share	incremental capacity	Capacity	% Share	in
Alderwood	18.5	38.14%	0	18.5	38.14%	0	18.5	38.14%	
Silver Lake	12	24.74%	3	12	24.74%	3	12	24.74%	
Cross Valley	18	37.11%	12	18	37.11%	0	18	37.11%	
total	48.5	100.00%	15	48.5	100.00%	3	48.5	100.00%	

phase 2 shares modified.xls

CLEARVIEW WATER SUPPLY AGENCY
INTERLOCAL JOINT OPERATING AGREEMENT

This Interlocal Joint Operating Agreement (the "Agreement") is made and entered into by and between the following parties:

Alderwood Water and Wastewater District, a Washington municipal corporation (hereinafter referred to as "AWWD");

Cross Valley Water District, a Washington municipal corporation (hereinafter referred to as "CVWD"); and

Silver Lake Water District, a Washington municipal corporation (hereinafter referred to as "SLWD").

All the parties to this Agreement may be referred to individually as "District" and collectively referred to as "Districts."

RECITALS

A. WHEREAS, the Districts provide water service to residents in Southwest Snohomish County; and

B. WHEREAS, the Districts entered into an interlocal agreement to construct a project known as the "Clearview Project", which includes a water pump station, approximately eight miles of water transmission line, a river crossing, and a reservoir (the "Clearview Project Facilities"); and

C. WHEREAS, the Districts will jointly operate the Clearview Project Facilities into the future to provide water to the residents of each respective District; and

D. WHEREAS, each District will benefit from the joint operation of the Clearview Project Facilities; and

E. WHEREAS, the purpose of this Agreement is to provide for joint management, administration, and funding of the Clearview Project Facilities; and

F. WHEREAS, this Agreement is entered into by the undersigned Districts, municipal corporations organized under the laws of the State of Washington, pursuant to the Interlocal Cooperation Act, Chapter 39.34 RCW, and after authorization by the legislative bodies of each of the Districts.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the Districts hereby agree as follows:

I.
CREATION AND ORGANIZATION

1. Creation of Organization. The Districts hereby agree to create an administrative entity under the provisions of Chapter 39.34 RCW to be known as Clearview Water Supply Agency.

1.1. Initial Formation Expenses. All expenses incurred by AWWD in the formation of Clearview Water Supply Agency shall be submitted to Clearview Water Supply Agency for reimbursement, and such expenses shall be borne equally by all the Districts.

1.2. Initial Board of Directors. Clearview Water Supply Agency shall be governed by a Board of Directors. The initial Board of Directors of Clearview Water Supply Agency shall consist of one representative appointed by each District, who must be an elected official for that District.

1.3. Adoption of Bylaws. The Board of Directors may adopt bylaws for the efficient operation of Clearview Water Supply Agency.

2. Membership in Clearview Water Supply Agency. Membership in Clearview Water Supply Agency shall be limited to water districts organized pursuant to Chapter 57 RCW or other government agencies that provide water services.

2.1. Initial Members. The undersigned Districts shall constitute the three initial members of Clearview Water Supply Agency.

2.2. New Members. Additional members may be added to this Agreement by the unanimous agreement of each District. Additional members shall be required to reasonably participate in the funding and financing of Clearview Project Facilities and the Clearview Water Supply Agency upon terms and conditions recommended by the Board of Directors and approved by all Districts.

2.3. Annual Meeting of the Members. Each year, the Boards of Commissioners of each District shall hold a joint meeting to receive a report from the Board of Directors of Clearview Water Supply Agency concerning the status of Clearview Water Supply Agency and the Clearview Project Facilities. The annual meeting shall be held at a place directed by the Board of Directors and shall be held on the third Wednesday of June of each and every year, at 7:00 p.m., or such other date and time as the Districts may agree.

3. Governance of Clearview Water Supply Agency. Clearview Water Supply Agency shall be governed by a Board of Directors consisting of one representative from each District (the "Board of Directors"). By execution of this Agreement, each District fully authorizes its appointed Director to act on its behalf regarding all matters within the authority of the Board of Directors relating to Clearview Water Supply Agency and the Clearview Project Facilities.

3.1. Appointment of Director and Alternate. The Board of Commissioners of each District shall appoint its representative to serve on the Board of Directors. The Board of Commissioners may also designate an Alternate Director; provided that alternates shall be designated in writing prior to any meeting of the Board of Directors at which the alternate attends and acts on behalf of a District. These Directors and Alternate Directors shall serve under the terms and conditions of this Agreement until such time as they resign or are replaced. Individuals eligible to serve as Directors and Alternate Directors must be elected officials of each District. Directors and Alternate Directors shall not receive any compensation from the Clearview Water Supply Agency, but rather may be paid by their Districts.

3.2. Lead Agency. By execution of this Agreement, the Districts agree that AWWD shall be the initial lead agency of Clearview Water Supply Agency (the "Lead Agency"). The Lead Agency shall be authorized and required to execute all actions, including execution of all contracts, properly authorized by the Board of Directors. The Board of Directors may select a new District to serve as the Lead Agency upon a majority vote of the Board of Directors. Clearview Water Supply Agency shall reimburse the District for administrative staff time directly associated with the operation and maintenance of the Clearview Project Facilities, with the exception that no reimbursement to AWWD's designee shall be made for attendance at meetings of the Technical Committee or Board of Directors.

3.3. Board of Directors – President. The Director representing AWWD shall serve as initial President of Clearview Water Supply Agency. Thereafter, and annually, the Board of Directors shall elect one of the Directors as President. The President shall preside over meetings of the Board of Directors. The President shall be the official public spokesperson for Clearview Water Supply Agency.

3.4. Board of Directors – Secretary. The Board of Directors shall annually elect one of the Directors as Secretary.

3.5. Meetings of the Board of Directors. The Board of Directors shall hold regular meetings on a monthly basis or upon a schedule determined by the Board of Directors. In addition, any District, through its Director, may call a special Board meeting by providing two (2) business days prior written notice of the time and place of the meeting to all other Directors. The Board of Directors shall be responsible for providing any required legal notice of meetings to other parties interested in Clearview Water Supply Agency or Clearview Project Facilities matters. The Lead Agency shall provide services for notice of meetings and meeting facilities, as legally required, unless otherwise authorized by the Board of Directors.

3.6. Vacancy on Board of Directors. The District shall appoint a new Director within sixty (60) days should a vacancy occur.

3.7. Quorum. A quorum is required to conduct a valid meeting of the Board of Directors. A quorum is defined as the physical presence of the majority of the Directors. Any other director may attend by electronic communication.

3.8. Decisions of the Board of Directors. Except as otherwise provided in this Agreement, all actions of the Board of Directors authorizing contracts or budgets shall be unanimous. All emergency decisions and other decisions affecting Clearview Water Supply Agency or the Clearview Project Facilities shall be by majority vote of the Directors. The Board of Directors shall take no action at a regular or special Board meeting unless a quorum is present. The Board of Directors shall act in good faith to ensure that all Directors are properly notified of all regular and special Board meetings.

3.9. Compliance with Laws. The Board of Directors, and each Director and alternate, shall comply with all applicable laws and regulations.

4. Purpose of Agreement. The purpose of this Agreement and of the establishment of Clearview Water Supply Agency is to provide for the administration and funding for the operation and maintenance of the Clearview Project Facilities which are held in common by the Districts.

II.
FINANCES AND OPERATIONS

5. Powers of Clearview Water Supply Agency. Pursuant to Chapter 39.34 RCW and this Agreement, Clearview Water Supply Agency shall have the powers, privileges, and authority as provided by law and as delegated by the Districts pursuant to this Agreement, including, but not limited to the power to:

a. acquire, construct, receive, own, manage, purchase, sell, and lease real, personal, and intangible property;

b. operate and maintain facilities;

c. enter into contracts;

d. hire and fire personnel;

e. sue and be sued;

f. exercise the power of eminent domain (through its member Districts at their individual discretion unless and until Clearview Water Supply Agency has that power under applicable law);

g. purchase and sell water and services;

h. provide services or facilities to any District, other governmental water utilities, or governmental service providers;

i. invest its funds;

j. establish policies, guidelines, or regulations to carry out its powers and responsibilities;

k. purchase insurance, including participation in pooled insurance and self-insurance programs, and indemnify its member Districts, officers, and employees in accordance with law;

l. exercise all other powers within the authority of, and that may be exercised individually by all of its member Districts with respect to water supply, conservation, reuse, treatment, and transmission; and

m. exercise all other powers that Clearview Water Supply Agency may exercise under the law relating to its formation and that are not inconsistent with this Agreement or with Chapter 39.34 RCW or other applicable law.

In carrying out its duties under this Agreement, Clearview Water Supply Agency shall utilize, operate, and maintain real and personal property that is owned by one or more of the member Districts. This property includes the pump station site owned by CVWD, the reservoir site owned by AWWD, and Clearview Project Facilities owned in common by the Districts. Except as provided in this Agreement, none of the Clearview Project Facilities or other assets of the Clearview Water Supply Agency may be sold without a unanimous affirmative vote of the Board of Directors and the written authorization of the District that holds title to the asset proposed to be sold. Any party may convey its unused capacity to other parties to this Agreement or any municipal purveyor. Capacity Conveyances to another municipal purveyor shall not include membership in the Clearview Water Supply Agency, except in compliance with Section 2.2 hereof. No water supply capacity in the Clearview Facilities may be sold to non-members of the Clearview Water Supply Agency without unanimous affirmative vote of the Board of Directors. Except as provided by this Agreement or as otherwise unanimously agreed to by the Districts in writing, Clearview Water Supply Agency shall have no power or authority to act on behalf of, or in the stead of, the undersigned Districts.

6. Ownership of Clearview Water Supply Agency. Each District's initial ownership interest in Clearview Water Supply Agency is based on and in proportion to each District's percentage share of the total capacity as shown on Exhibit "A" of this Agreement. The Board of Directors may amend the respective ownership interests of the member Districts only by unanimous consent. The Board of Directors is authorized to admit new members into Clearview Water Supply Agency and to sell ownership interests, by unanimous consent, to any authorized entity that is approved for admission by the Boards of Commissioners of the Districts pursuant to Section 2.2 of this Agreement.

7. Technical Committee. The Board of Directors shall establish a technical committee (the "Technical Committee") consisting of one designee provided by each respective member of Clearview Water Supply Agency. The Technical Committee shall be responsible for day-to-day management of the Clearview Project Facilities operations. Any disputes or disagreements amongst the members of the Technical Committee shall be presented to and resolved by a majority vote of the Board of Directors at a properly held meeting of the Board of Directors. The members of the Technical Committee will not be compensated by the Clearview Water Supply Agency, but rather will be reimbursed by their respective Districts for attendance at Technical Committee meetings or Clearview Water Supply Agency meetings.

8. Operations. The Technical Committee shall develop, and update from time to time, an "Operations and Maintenance Manual" which shall be submitted for final review and approval to the Board of Directors. The Operations and Maintenance Manual shall detail the necessary functions required by each District to provide safe and efficient operation and maintenance of the Clearview Project Facilities.

9. Excess Capacity. Each District's allocated share of total water supply capacity for each of the Clearview Project Facilities is attached to this Agreement as Exhibit "A". Nothing in this Agreement shall be construed to prevent a member District from selling or transferring water supply capacity allocated to that District to another member District. An agreement between two member Districts to reallocate water supply capacity amongst those two Districts shall not require the approval or consent of the Board of Directors.

10. Operating Fund. Upon execution of this Agreement by all Districts, the Lead Agency shall establish an operational fund (the "Fund"). Each District shall provide AWWD with the initial amount listed below for the purpose of establishing the Fund. The initial payment shall be based upon the Clearview Water Supply Agency Budget and in proportion to each District's respective share of the Budget. It is agreed that the Fund shall be initiated by payment of the initial three months of the annual budget. The Fund shall be maintained separately from all other Lead Agency funds and accounts. All interest shall accrue to the benefit of the Fund. The Lead Agency shall maintain all accounting records related to the Fund and may charge the Fund for the reasonable costs of accounting services. The Lead Agency shall provide all Districts with a monthly accounting of the Fund income and expenses and the balance of funds on hand. The Lead Agency shall provide for the annual state audit of the Fund and may charge the Fund for the reasonable costs of the audit.

III.
ADMINISTRATIVE SERVICES

11. Administrative Services. The Lead Agency, selected per Section 3.2, shall perform and be responsible for all general administrative tasks necessary to carry out the functions and operations of Clearview Water Supply Agency and the Clearview Project Facilities. Such administrative tasks include, but shall not be limited to, clerical and secretarial tasks, word processing and document creation, scheduling, file organization and retention, payment of expenses and other financial services, providing of notices and facilities for meetings, and recordkeeping.

12. Budget. Prior to the beginning of each year, the Lead Agency shall, in conjunction with the Technical Committee, prepare a proposed budget for the estimated costs of performing the necessary administrative and operations services for Clearview in the upcoming year. This budget shall be presented to the Clearview Board of Directors for final approval not later than the November meeting of the Board of Directors, and may be increased or decreased thereafter by the Board of Directors. The Lead Agency shall prepare financial reports on a periodic basis and submit them to the Board of Directors.

13. Reimbursement.

13.1 The Lead Agency's personnel who perform administrative tasks related to Clearview Water Supply Agency or the Clearview Project Facilities shall track and record the amount of time and expenses that is spent working on such matters. On a monthly basis, the Lead Agency shall calculate the amount of personnel time and expenses allocated to Clearview administrative tasks and shall bill Clearview Water Supply Agency the reasonable costs of performance of those tasks. Clearview Water Supply Agency shall reimburse the Lead Agency the reasonable costs of all personnel time and expenses properly allocated to Clearview Water Supply Agency administrative tasks; however no reimbursement shall be had for attendance at meetings of the Technical Committee or Board of Directors. Bills shall be payable to the Lead Agency within thirty days of receipt. Clearview agrees to pay interest at the rate of one percent (1%) per month for any delinquency greater than sixty (60) days after the billing date.

13.2 In Addition to Lead Agency administrative services, from time to time personnel and equipment of the Districts may be used on Clearview Water Supply Agency administrative matters and operations and maintenance of Clearview Project Facilities. Districts incurring such expenses shall on a monthly basis calculate the amount of personnel time and expenses and shall bill the Clearview Water Supply Agency for the reasonable costs of the performance of such tasks. The Clearview Water Supply Agency shall reimburse the Districts for the reasonable costs of all personnel time and expenses and equipment use so allocated to Clearview Water Supply Agency administration and operations and maintenance tasks. No reimbursement shall be had for attendance at meetings of the Technical Committee or Board of Directors. Bills shall be payable to the District within thirty (30) days of receipt by the Lead Agency. Clearview agrees to pay interest at the rate of one percent (1%) per month on any delinquency greater than sixty (60) days after billing date.

14. Responsibility for Employees. The Lead Agency shall retain full control over its personnel and shall remain responsible for payment of the wages, salaries, and benefits, as applicable, of its personnel. Nothing in this Agreement shall be construed to make Clearview Water Supply Agency the employer of any personnel of the Lead Agency or any other District.

15. Insurance. The Lead Agency shall assist the Clearview Water Supply Agency in obtaining quotes for a contract for comprehensive personal liability and property damage insurance covering the Clearview Project facilities. Such insurance (i) shall include coverage for any accident resulting in bodily injury to or death of any person and consequential damages arising therefrom; (ii) shall include comprehensive property damage insurance; (iii) shall be in an amount of not less than $1 million per occurrence; and (iv) shall be issued by a financially responsible insurance company or companies. The Clearview Water Supply Agency shall name its members as additional insureds on such insurance. 16. Allocation of Liability. The Lead Agency and Clearview Water Supply Agency shall be legally responsible for their own conduct in the

performance of their respective obligations arising under this Agreement. Neither the Lead Agency nor Clearview Water Supply Agency assumes any responsibility or liability for actions or omissions taken by or under the control of the other party.

IV.
MISCELLANEOUS TERMS

17. Term of Agreement. The initial term of this Agreement shall commence upon execution by all the Districts, and shall continue in effect through December 31, 2054. Unless the Board of Directors unanimously agrees otherwise by ten (10) years before the end of a term, this Agreement shall automatically renew for additional twenty-year terms. A District may withdraw from this Agreement only by providing ten (10) years prior notice to the other Districts of its intent to withdraw.

18. Dissolution. Clearview Water Supply Agency may be dissolved prior to the expiration of a term only upon the unanimous consent of the member Districts. Upon dissolution, all valid outstanding expenses, liabilities, and obligations of Clearview Water Supply Agency on the effective date of dissolution shall be paid in accordance with this Agreement. Any remaining balance on hand in the Fund on the effective date of dissolution shall be distributed to the Districts in proportion to their respective ownership interests on the effective date of dissolution. Any other assets of Clearview Water Supply Agency on the effective date of dissolution shall be liquidated, with the proceeds distributed to the Districts in proportion to their ownership interest on the effective date of dissolution. Assets of Clearview Water Supply Agency that are unable to be liquidated prior to the effective date of dissolution shall be held in common by the Districts in proportion to their ownership interest on the effective date of dissolution until such liquidation occurs.

19. Dispute Resolution. If a dispute cannot be resolved by mediation, any District may petition for arbitration.

A petition for arbitration shall be in writing directed to each District having membership in the Clearview Water Supply Agency and shall state: (1) the nature of the dispute, (2) the relief requested, (3) the name and address of the Co-Arbitrator appointed by the Petitioning District, and (4) a list of three or more Arbitrators (with background information) nominated by the Petitioning District to be the Chief Arbitrator on the arbitration panel.

Within thirty (30) days of mailing of the Petition for Arbitration, each of the other Districts having membership in the Clearview Water Supply Agency shall submit to all other parties a Response Petition, stating: (1) the nature of the dispute, (2) the relief requested, (3) the name and address of the Co-Arbitrator appointed by the

Responding District, and (4) a list of three or more arbitrators (with background information) nominated by the Responding District to be the Chief Arbitrator on the arbitration panel.

Within sixty (60) days of mailing of the Petition for Arbitration, the Co-Arbitrators shall confer on and select, by unanimous agreement, the Chief Arbitrator.

The Co-Arbitrators appointed by the Districts and the Chief Arbitrator shall constitute the arbitration panel to hear and decide the dispute. The Co-Arbitrators may participate in the hearing and all deliberations of the panel. Co-Arbitrators shall submit a recommended decision to the Chief Arbitrator. The Chief Arbitrator alone shall make a Final Decision that will be binding on all parties.

A District may participate without a Response; provided that, if a District fails to submit a timely Response naming its Co-Arbitrator and nomination for the Chief Arbitrator(s), then the remaining District(s) submitting timely Responses and the Petitioning District may agree on the Chief Arbitrator.

Should the Petitioner and District(s) submitting timely Responses fail to agree unanimously in the selection of Chief Arbitrator, then any party may petition the Superior Court of the State of Washington for Snohomish County for an Arbitration Order. The Court shall select the Chief Arbitrator only from persons nominated by the parties in the Petition and Responses.

20. Governing Law. This Agreement, and the rights of the parties hereto, shall be governed by and construed in accordance with the laws of the State of Washington, and the Districts agree that any litigation that arises out of this Agreement shall take place in Snohomish County, Washington.

21. Severability. In case one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

22. Counterparts. This Agreement may be executed in any number of counterparts, and each such counterpart hereof shall be deemed to be an original instrument, but all such counterparts shall together constitute one integrated agreement.

23. Amendments. No modification, termination, or amendment of this Agreement may be made except by unanimous vote of the Board of Directors.

24. Neutral Authorship. Each provision of this Agreement has been reviewed and negotiated, and represents the combined work product of all Districts hereto. No presumption or other rules of construction that would interpret the provisions of this Agreement in favor of or against the District preparing the same shall be applicable in connection with the construction or interpretation of any of the provisions of this Agreement.

25. Entire Agreement. The entire agreement between the Districts hereto is contained in this Agreement, and this Agreement supersedes all of their previous understandings and agreements, written and oral, with respect to the subject matter of this Agreement. This Agreement may be amended only by written instrument executed by the Districts subsequent to the date hereof.

ADOPTED in open public meetings of the Boards of Commissioners of the undersigned Districts on the dates indicated below.

ALDERWOOD WATER AND WASTEWATER DISTRICT

Phillip B. Fay
President
Donna J. Cross
Secretary

FEBRUARY 22, 2005
Date

SILVER LAKE WATER DISTRICT

Roger Summey
President
Rod Reppler
Secretary

02-10-05
Date

CROSS VALLEY WATER DISTRICT

Milo D. Deerling
President
Secretary

FEB 15 2005
Date

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EXHIBIT "A"
Clearview Phase II

Table I
Initial Construction Capacities

Agency	Pump Station $5,870,000 Capacity	% Share	Cost	River Crossing $3,460,000 Capacity	% Share	Cost	Pipeline A $15,376,470 Capacity	% Share	Cost	Pipeline B $1,366,780 Capacity	% Share	Cost	Reservoir $6,080,000 Capacity	% Share	Cost
Alderwood	18.5	55.22%	$3,241,642	18.5	40.66%	$1,406,813	18.5	55.22%	$8,492,568	18.5	71.98%	$983,869	7.5	63.03%	$3,831,933
Silver Lake	9	26.87%	$1,577,016	9	19.78%	$ 684,396	9	26.87%	$4,131,529	1.2	4.67%	$63,819	2.4	20.17%	$1,226,218
Cross Valley	6	17.91%	$1,051,343	18	39.56%	$1,368,791	6	17.91%	$2,754,353	6	23.35%	$319,093	2	16.81%	$1,021,849
total	33.5	100.00%	$5,870,000	45.5	100.00%	$3,460,000	33.5	100.00%	$15,376,470	25.7	100.00%	$1,366,780	11.9	100.00%	$6,080,000

Table II
Future Capacities

Agency	Pump Station Capacity	% Share	Incremental capacity	River Crossing Capacity	% Share	Incremental capacity	Pipeline A Capacity	% Share	Incremental capacity	Pipeline B Capacity	% Share	Incremental capacity	Reservoir Capacity	% Share	Incremental capacity
Alderwood	18.5	38.14%	0	18.5	38.14%	0	18.5	38.14%	0	18.5	45.45%	0	13.9	58.40%	6.4
Silver Lake	12	24.74%	3	12	24.74%	3	12	24.74%	3	4.2	10.32%	3	2.4	10.08%	0
Cross Valley	18	37.11%	12	18	37.11%	0	18	37.11%	12	18	44.23%	12	7.5	31.51%	5.5
total	48.5	100.00%	15	48.5	100.00%	3	48.5	100.00%	15	40.7	100.00%	15	23.8	100.00%	11.9

ALDERWOOD-CLEARVIEW WATER SUPPLY CONTRACT

This Water Supply Contract (the "Contract") is made and entered into by and between Alderwood Water and Wastewater District, a municipal corporation of the State of Washington ("Alderwood"), and the Clearview Water Supply Agency, an administrative entity created pursuant to Chapter 39.34 RCW ("Clearview"), all of whom taken together shall be referred to as "the Parties."

RECITALS

A. WHEREAS, Alderwood, Silver Lake Water District ("Silver Lake"), and Cross Valley Water District ("Cross Valley") formed an interlocal organization known as the Clearview Group to construct facilities and infrastructure for the purpose of providing water to the residents in the respective districts (the "Clearview Project"); and

B. WHEREAS, after the new facilities for the Clearview Project were constructed, Alderwood, Silver Lake, and Cross Valley formed a new administrative interlocal organization known as the Clearview Water Supply Agency; and

C. WHEREAS, Clearview is responsible for overseeing management and operation of the Clearview Project, which consists of a water pump station, approximately eight miles of water transmission line, a river crossing, and a reservoir; and

D. WHEREAS, Alderwood has entered into a water supply contract with the City of Everett in which it has agreed to purchase water for its own use and for the use of Clearview and its members; and

E. WHEREAS, Alderwood desires to supply water to Clearview pursuant to the terms described below; and

AGREEMENT

NOW, THEREFORE, for the mutual benefits to be derived, the parties agree as follows:

1. <u>WATER SUPPLY</u>

1.1 <u>Sale of Water to Clearview</u>. Alderwood agrees to provide and sell to Clearview, for use by Cross Valley, a maximum of 18 million gallons of water per day ("MGD"). Alderwood agrees to provide and sell to Clearview, for use by Silver Lake, a maximum of 12 MGD. Alderwood agrees to provide and sell to Clearview, for use by Alderwood, a maximum of 18.5 MGD.

1.2 Point of Delivery. Alderwood shall deliver water to Clearview at agreed connection points. The present agreed connection point is the connection of the Clearview pipeline with the City of Everett's pipeline number 5.

1.3 Quantity of Water. Alderwood shall provide to Clearview water in an amount not to exceed 48.5 MGD, as noted in section 1.1. All water shall be metered at the master meter provided by Clearview and now owned and maintained by the City of Everett located at the Clearview pump station site.

1.4 Quality of Water. Alderwood agrees that all water delivered to Clearview shall be of the same standard and quality as normally delivered to Alderwood's wholesale customers. Alderwood shall be responsible for meeting state and federal standards for drinking water at the connection points. All water supplied by Alderwood to Clearview shall become the property of Clearview. Alderwood shall have no liability for degradation of water quality and resulting damages that occur beyond that point.

1.5 Rates and Charges. Clearview shall pay to Alderwood the same rates and charges for water delivered that Alderwood pays to the City of Everett pursuant to paragraph 5 of the Alderwood/City of Everett water supply contract, attached as Exhibit A.

1.6 Payment. On a monthly basis, Alderwood shall bill Clearview for water delivered through the pipeline master meters. The bills shall be payable within thirty (30) days after the issuance date of the invoice. Delinquent bills shall accrue interest at the rate of twelve percent (12%) per annum for any delinquency greater than sixty (60) days after the issuance date of the invoice.

1.7 Resale or Distribution of Water. After water has passed the point of delivery and has entered the Clearview system, said water becomes the property of Clearview and under its exclusive authority, subject only to the following express limitations.

A. Clearview shall distribute water received from Alderwood in a manner consistent with Alderwood's water contract with the City of Everett.

B. Clearview shall not serve water received from Alderwood, pursuant to the terms of this Agreement, in areas outside the areas limited by the terms of Alderwood's agreement with the City of Everett.

1.8 Continuity of Service.

A. To the extent feasible, Alderwood shall continuously maintain service to Clearview. In the event of a general emergency or water shortage affecting Alderwood's water supply system requiring restrictions on the delivery of water, general restrictions may be placed upon deliveries to Alderwood's water customers, including

Clearview. In the event of localized emergency problems, temporary service interruptions may result. In the event of restrictions, water supplied through the Clearview master meter shall be proportionally reduced on a pro-rata basis using the three prior monthly average flows metered at all three master meters that Alderwood has with the city of Everett. In the event that restrictions are placed on deliveries made by Alderwood pursuant to this section, Clearview may obtain water from alternative sources for the duration of the restriction period.

B. Alderwood shall provide oral notice to all members of the Clearview technical committee, and may temporarily interrupt or reduce deliveries of water, if Alderwood determines that such interruption or reduction is necessary or reasonable in case of system emergencies. Except in cases of emergency, and in order that Clearview's operations will not be unreasonably interfered with, Alderwood shall give five (5) days notice of any other interruption or reduction in services, the reason therefore, and the probable duration thereof.

1.9 Water Management. Clearview shall prepare a water management and conservation plan, which shall be approved by Alderwood. Approval by Alderwood shall not be unreasonably withheld. The plan shall address efficient management of the water supplied to Clearview by Alderwood and shall include at a minimum the average and peak day flows for Clearview and for the water supplied by Clearview to each of its member districts. Clearview shall provide annually a report to Alderwood providing prior years water efficiency and conservation results. The report shall be submitted to Alderwood by the end of January of each year.

2. MISCELLANEOUS

2.1 Term of Contract. The term of this Contract shall be from the date of its mutual acceptance by the parties through December 31, 2054. The parties may renew this Contract by mutual written agreement upon such terms and conditions as the parties may later agree.

2.2 Force Majeure and Changes in Law. None of the Parties shall be considered to be in default in respect to any obligations in this Contract if they are prevented from fulfilling such obligations due to conditions beyond their reasonable control, or due to changes in state or federal law. If a party is unable to perform in whole or in part because of such condition or change in the law, the party shall diligently and promptly take reasonable steps to allow it to perform.

2.3 Indemnification. Each party shall defend, hold harmless, and indemnify the others from any and all claims, demands, suits, and judgments arising out of its conduct. If, and to the extent, two or more parties are liable to a third party claimant, each party shall be responsible to the extent of its fault, and shall defend, hold harmless, and indemnify the others for its fault.

2.4 Consequential Damages. Notwithstanding any other provision of this Contract, no party shall be liable to the other for indirect, incidental, special, exemplary, or consequential damages, including but not limited to damages for lost revenues or benefits, even if a party has been advised of the possibility or existence of such damages.

2.5 Waivers. Any waiver at any time by a party of its right with respect to a default under this Contract, or with respect to any other matter arising in connection therewith, shall not be deemed a waiver with respect to any subsequent default or matter. Any party may waive any notice or agree to accept a shorter notice than specified in this Contract. Such waiver of notice or acceptance of shorter notice by a party at any time regarding a notice shall not be considered a waiver with respect to any subsequent notice required under this Contract.

2.6 Interpretation and Invalid Provision. The headings used herein are for convenience of reference only and shall not affect the meaning or interpretation of this Contract. The invalidity or unenforceability of any provision of this Contract shall not affect the other provisions hereof; and this Contract shall be construed in all respects as if such invalid or unenforceable provisions were omitted.

2.7 Assignment and Subcontracts; Binding Agreement. No party may assign this Contract, or assign or subcontract all or any part of such party's rights or obligations under this Contract, without the prior written consent of the other parties, which consent shall not be unreasonably withheld. Without in any way limiting the foregoing, this Contract shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and permitted assigns.

2.8 Dispute Resolution. Any dispute under or in connection with this Contract may, upon the mutual agreement of the parties, be submitted for resolution by mediation. Disputes not resolved in such manner shall be resolved in Superior Court for Snohomish County, Washington.

2.9 Construction. No provision of this Contract shall be construed in favor of or against any of the parties by reason of the extent to which any such party or its counsel participated in the drafting or by reason of the extent to which such provision or any other provision or provisions of this Contract is or are inconsistent with any prior draft.

2.10 Entire Agreement. This Contract, together with all attachments, sets forth the entire agreement of the Parties. No change, amendment, or modification of any provision of this Contract shall be valid unless set forth in a written amendment to this Contract signed by all parties.

2.11 Notice. Formal notice and official communications between the parties regarding this Contract shall be sent by first class mail as follows:

To Alderwood:
General Manager

Alderwood Water and
Wastewater District
3626 156th Street SW
Lynnwood, WA 98037

To Clearview:

Technical Committee
c/o Alderwood Water and
Wastewater District
3626 156th SW
Lynnwood, WA 98037

ADOPTED in open public meeting of the Board of Commissioners of the undersigned on the dates indicated below.

ALDERWOOD WATER AND WASTEWATER DISTRICT

Phillip B. Fay
President

Date

Donna J. Cross
Secretary

CLEARVIEW WATER SUPPLY AGENCY

Donna J. Cross
President

March 9, 2005
Date

Secretary

AFTER RECORDING RETURN TO:

Alderwood Water District
Attn: Arden Blackledge
3626 156[th] St. S.W.
Lynnwood, WA 98037

CONFORMED COPY

200104020110
04/02/2001 10:37 AM Snohomish
P.0007 RECORDED County

**INTERLOCAL AGREEMENT
BETWEEN
SNOHOMISH COUNTY AND THE CLEARVIEW GROUP
FOR
CATHCART, BEAR CREEK AND LITTLE BEAR CREEK BASIN
HABITAT CONSERVATION MEASURES**

WHEREAS, the Snohomish County Parks Department and Snohomish County Surface Water Management have documented the need to protect and where possible, improve fish habitat conditions in the Cathcart, Bear Creek, and Little Bear Creek Basins;

WHEREAS, the Snohomish County Executive and Snohomish County Council have determined that it is consistent with the Snohomish County Comprehensive Land Use Plan, Snohomish County Parks and Recreation Plan, ESA Salmon Conservation Early Action Program and in the best public interests of its residents to take appropriate measures to improve and/or protect the habitat of salmonids listed or proposed for listing under the Endangered Species Act ("ESA");

WHEREAS, the Snohomish County Parks Department has documented the need to secure an additional $50,000 of funding to augment the Snohomish River Confluence Reach Restoration Project located in the Cathcart Basin (Snohomish River Watershed), and to secure additional funding to complete a planned acquisition of 340 acres of timber rights within a previously acquired 664-acre parcel of land located in the Bear Creek Basin headwaters (Lake Washington Watershed). Both of the proposed projects and/or acquisitions cited above are located within Snohomish County;

WHEREAS, Snohomish County Surface Water Management has identified the need for a Drainage Inventory and Culvert Prioritization Study of the Little Bear Creek Basin (Lake Washington Watershed) for the purpose of managing stormwater flows resulting from new development and maintaining adequate flow and habitat conditions for salmonids in the Basin; and

WHEREAS, the Clearview Group, a consortium of water purveyors located in Southwest Snohomish County (Alderwood Water District, Silver Lake Water District, Cross Valley Water District) seeking to construct a water supply pipeline and reservoir project, have agreed pursuant to ESA Section 7 consultations with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), to contribute to Snohomish County for habitat conservation purposes: $50,000 for the Snohomish River Confluence Reach Restoration Project in the Cathcart Basin; $200,000 for timber right acquisition in the Bear Creek Basin headwaters; and $50,000 to advance development of a Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study;

NOW, THEREFORE, the parties agree as follows:

I. GENERAL CONDITIONS

1.1 Parties. This Agreement is made by and between the Clearview Group, a joint administrative entity formed by interlocal agreement pursuant to chapter 39.34 RCW, hereinafter referred to as CLEARVIEW, and Snohomish County, a political subdivision of the State of Washington, hereinafter referred to as COUNTY, under authority of the Interlocal Cooperation Act, chapter 39.34 RCW.

1.2 Purpose. The purpose of this Agreement is to define responsibilities and obligations of the parties relating to funding and implementation of the Snohomish River Confluence Reach Restoration, the Bear Creek Basin timber rights/property acquisition program, and the Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study.

1.3 Term. This Agreement shall commence upon execution of the parties and recording with the Snohomish County Auditor and shall remain in effect until terminated as provided herein.

1.4 Termination.

1.4.1 Termination upon Completion. This Agreement shall be terminated upon the mutual and complete performance by the Parties of the Duties described in Sections II and III of this Agreement.

1.4.2 Termination by CLEARVIEW. CLEARVIEW may immediately terminate this Agreement by providing written notice to the COUNTY in the event of failure of funding for its duties described in Section III of this Agreement.

1.4.3 Termination by the COUNTY. The COUNTY may immediately terminate this Agreement by providing written notice to CLEARVIEW that the COUNTY cannot or will not perform the duties described in Section II of this Agreement in the event no comparable project is substituted as described further in Section 1.5 below.

1.5 Change of Project; Treatment of Assets. In the event the COUNTY determines it is unable to perform any or all of the projects described in Section II below, whether due to funding, regulatory and permitting issues, or prioritization of projects in the best interest of the public, the COUNTY will work with CLEARVIEW to substitute a comparable project benefiting the same drainage basin and species for the project which the COUNTY does not undertake. In the event the parties are unable to find a comparable substitute project, the amount designated under this Agreement for the project which will not be undertaken will be refunded to CLEARVIEW with interest as may be required by state or local law.

1.6 Amendments. This Agreement may be amended only upon written agreement of the parties, executed in the same manner as provided by law for the execution of this Agreement. This Agreement shall constitute the full and complete agreement between the parties.

II. DUTIES OF THE COUNTY.

2.1 Snohomish River Confluence Reach Restoration Project - Cathcart Basin.

2.1.1 The COUNTY, upon receiving $50,000 from CLEARVIEW dedicated to implement the Snohomish River Confluence Reach Restoration Project (Project) in the Cathcart Basin, shall deposit said monies in the Surface Water Management Rivers and Habitat CIP fund, and proceed in a timely manner to complete the feasibility study and design work, to acquire the necessary permits and to engage in all appropriate state/federal agency consultation processes required to effect the restoration Project.

2.1.2 The COUNTY shall inform CLEARVIEW in writing within ten (10) business days after the date it has completed all appropriate state/federal consultations, secured all appropriate state/federal permits, and completed the Project.

2.1.3 The COUNTY shall note CLEARVIEW's contribution to the restoration project in any press release it prepares that relates to the Project.

2.2 Timber Rights Acquisition - Bear Creek Basin.

2.2.1 The COUNTY, upon receiving $200,000 from CLEARVIEW dedicated for timber rights acquisition in the Bear Creek Basin headwaters, shall deposit said monies in the Parks 309 Capital Facilities fund, and proceed in a timely manner with its planned acquisition of 340 acres of timber rights, more or less, within the 664-acre parcel of land within the Bear Creek Basin previously acquired by the County in fee simple.

2.2.2 The COUNTY shall inform CLEARVIEW in writing within ten (10) business days after the date the Bear Creek Basin timber rights acquisition has occurred, and provide information confirming the number of acres purchased, and the general habitat characteristics/value of the timber rights acquired.

2.2.3 The COUNTY shall note CLEARVIEW's contribution to the COUNTY's timber rights acquisition in any press release it prepares that relates to said acquisition.

2.3 Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study.

2.3.1 The COUNTY, upon receiving $50,000 from CLEARVIEW dedicated to advance the preparation of a Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study ("Study"), shall deposit said monies in the Surface Water Management 113 NPDES fund, and make good faith efforts to solicit and/or secure additional monies to undertake such a Study, and once secured, shall prepare the Study in a timely manner.

2.3.2 The COUNTY shall inform CLEARVIEW in writing within ten (10) business days after the date it has completed preparation of the Study and provide three (3) hard copies of the same to CLEARVIEW.

2.3.3 The COUNTY shall note CLEARVIEW's contribution to the Study in any press release it prepares that relates to the Study.

2.4 **Miscellaneous.** The COUNTY shall provide upon request, and prior to the termination of this Agreement, audit information prepared by the COUNTY for the Washington State Auditor's office (Auditor) that relates to the receipt and expenditure of CLEARVIEW and other COUNTY funds dedicated to the Snohomish River Confluence Reach Restoration Project, Bear Creek Basin timber rights acquisition program, and preparation of a Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study. In the event said audit information is not prepared by the COUNTY at the direction of the Auditor, the COUNTY agrees to cooperate with CLEARVIEW in the development of such information prior to the termination of this Agreement.

III. DUTIES OF CLEARVIEW

3.1 Within (10) business days after the sixty (60) day appeal period pertaining to the Army Corps of Engineers' issuance to CLEARVIEW of a Clean Water Act Section 404 permit and Rivers and Harbor Act Section 10 permit has expired without appeal, CLEARVIEW shall issue to the COUNTY, with individual transmittal letters: (1) a check in the amount of $50,000 for the purpose of funding and undertaking the Snohomish River

Confluence Reach Restoration Project; (2) a check in the amount of $200,000 for the purpose of funding and completing the Bear Creek Basin timber right acquisition program; and (3) a check for $50,000 for the purpose of preparing a Little Bear Creek Basin Drainage Inventory and Culvert Prioritization Study.

IV. ADDITIONAL REQUIREMENTS

4.1 **Compliance with Laws.** The COUNTY and CLEARVIEW shall comply with all applicable federal, state and local laws, rules and regulations in performing this Agreement, including, but not limited to, laws against discrimination.

4.2 **Hold Harmless and Indemnification.**

4.2.1 CLEARVIEW shall hold harmless, indemnify, and defend, at its own expense, the COUNTY, its elected and appointed officials, officers, employees and agents, from any loss or claim for damages of any nature whatsoever, arising out of CLEARVIEW's performance or failure to perform under this Agreement, including but not limited to claims by CLEARVIEW's employees or third parties, except for those damages solely caused by the negligence or willful misconduct of the COUNTY, its elected and appointed officials, officers, employees or agents.

4.2.2 The COUNTY shall hold harmless, indemnify, and defend, at its own expense, CLEARVIEW, its elected and appointed officials, officers, employees and agents from any loss or claim for damages of any nature whatsoever, arising out of the COUNTY's performance or failure to perform under this Agreement, including but not limited to claims by the COUNTY's employees or third parties, except for those damages solely caused by the negligence or willful misconduct of CLEARVIEW, its elected and appointed officials, officers, employees or agents.

4.2.3 In the event of liability for damages of any nature whatsoever arising out of the performance of CLEARVIEW and the COUNTY under this Agreement, caused by or resulting from the concurrent negligence of CLEARVIEW and the COUNTY, their respective officers, elected and appointed officials, employees and volunteers, each party's liability hereunder shall only be to the extent of that party's negligence.

4.3 **Governing Law and Stipulation of Venue.** This Agreement shall be governed by the laws of the State of Washington and the parties stipulate that any lawsuit regarding this Agreement must be brought in Snohomish County, Washington.

EXECUTED this 21st day of March, 2001.

SNOHOMISH COUNTY

Gary Weikel

Robert J. Drewel
Snohomish County Executive

for

GARY WEIKEL
Deputy Executive

CLEARVIEW GROUP

Donna Cross

Donna Cross
Commissioner – Alderwood Water and Wastewater District

Warren "Skip" Schott

Warren "Skip" Schott
Commissioner - Cross Valley Water District

Bill Anderson

Bill Anderson
Commissioner – Silver Lake Water District

APPROVED AS TO FORM:

Angela S. Belbeck

Angela S. Belbeck
Deputy Prosecuting Attorney

REVIEWED BY RISK MANAGEMENT:
(X) Approved ( ) Other

Wanda Johnson

INTERLOCAL AGREEMENT FOR THE CLEARVIEW WATER PROJECT

WHEREAS, the undersigned municipal corporations (the "Parties" or the "Municipalities") provide water service to residents in Southwest Snohomish County; and

WHEREAS, comprehensive planning by the Parties indicates population growth in Southwest Snohomish County that will require construction of water transmission, storage and pumping facilities from the Everett regional water system's Pipeline No. 5 to the Clearview area of Snohomish County to convey water from the City of Everett's water supply system; ("the Clearview Project"); and

WHEREAS, the Parties will benefit from construction of these facilities; and

WHEREAS, the purpose of this Interlocal Agreement is to provide joint management, and preliminary funding for the planning, design, engineering, financing and administration related to construction of the Clearview Project; and

WHEREAS, this Agreement is entered into by the undersigned Parties, municipal corporations organized under the laws of the State of Washington, pursuant to the Interlocal Cooperation Act, Chapter 39.34 RCW, and after authorization by the legislative bodies of each of the Parties;

NOW THEREFORE, IT IS HEREBY AGREED BY THE PARTIES AS FOLLOWS:

1. JOINT POWERS. Pursuant to Chapter 39.34 RCW, this Agreement shall be a joint powers agreement to create and confer powers, privileges, and authority upon the CLEARVIEW GROUP as provided in this Agreement.

2. PURPOSE. The purpose of this Agreement is to bring together interested Parties which are benefited by the proposed Clearview Project to provide a mechanism for the accumulation of financial resources to retain professional assistance to accomplish the planning, design, and engineering thereof and to develop mechanisms to finance those facilities and to operate and maintain them after they are placed in operation. It is the intent that this Agreement will take the Project through Planning, Pre-design, and Permitting.

3. ORGANIZATION. This Agreement does not establish a separate legal entity but rather creates an administrative entity to be known as the CLEARVIEW GROUP, which shall act at the direction of a board comprised of representatives from each of the Parties to this Agreement. The CLEARVIEW GROUP shall perform purely administrative functions and, except as otherwise noted herein, no power or authority to act on behalf of, or in the stead of, the undersigned Parties is delegated to the CLEARVIEW GROUP. The members listed hereafter in Section 4 shall constitute the CLEARVIEW GROUP subject to reasonable and equitable latecomer provisions as established by agreement of all members. Additional Parties may be added by unanimous amendment of this Agreement which will be based, at a minimum, on financial participation in the Clearview Project.

4. GOVERNANCE. Governance of the CLEARVIEW GROUP shall be initially vested in a Board of Directors consisting of one (1) member representing each Party designated in writing, as follows:

A. Alderwood Water District (AWD) - any person designated by the Board.
B. Silver Lake Water and Sewer District (SLWD) - any person designated by the Board.
C. Cross Valley Water District (CVWD) - any person designated by the Board.
D. Mukilteo Water District (MWD) - any person designated by the Board.
E. City of Everett (Everett) - any person designated by the Everett Mayor.
F. City of Lynnwood (Lynnwood) - any person designated by the Lynnwood Mayor.
G. City of Edmonds (Edmonds) - any person designated by the Edmonds Mayor.
H. City of Mountlake Terrace (Mountlake Terrace) - any person designated by the Mountlake Terrace Mayor.

By execution of this Agreement, each Party fully authorizes its designated Board Member to act on its behalf regarding all matters decided by the Board relating to the Clearview Project. Each Party or designated Board member may designate an alternate representative in writing; provided that, alternates shall be designated in writing prior to any Board meeting at which said alternate attends and acts on behalf of a Party.

The representative of AWD shall serve as Executive Secretary of the CLEARVIEW GROUP and shall be authorized to execute all Board actions, including execution of all contracts authorized by the Board of Directors. AWD shall serve as the lead agency for SEPA and other permits.

5. BOARD MEETINGS. The Board of Directors shall meet at least quarterly; provided that any Party through its designated Board Member hereof may call a Board meeting by 48 hour prior written notice of the time and place thereof to all other Board members or to the Party. Board members shall be responsible for notice of meetings to other Parties interested in Clearview Project matters. AWD agrees to provide services for notice of meetings and meeting facilities unless otherwise authorized by the Board. Subject to Section 7, a quorum shall constitute a majority of the members.

6. TECHNICAL COMMITTEES. A Technical Committee or Technical Committees are authorized to be established by the Board of Directors for day-to-day management of the Clearview Project on such terms as the Board shall direct.

7. VOTING. 7. Except as otherwise provided in this Agreement, all actions of the Board of Directors authorizing contracts, expenditure of funds, and/or major decisions affecting the Clearview Project shall be by weighted vote of the Parties. Actions or decisions shall require a super majority vote of not less than 90% of the total weighted vote of the

Parties. Each weighted vote shall be calculated based on each Party's's percentage of the budget listed in Section 8.

8. BUDGET AND FINANCIAL COMMITMENT. By execution of this Agreement each Party agrees to an initial budget of Two Million Dollars ($2,000,000) for the Clearview Project as outlined below. Said budget may be increased or decreased by action of the Board. Each Party commits to funding said budget in the following shares (based on consumptive use of Clearview Project facilities estimated in million gallons per day (MGD):

Party	MGD*	%	Total Initial Commitment	2040 MGD**
AWD	17.0	33.8***	$ 676,000	17.0
SLWD	9.0	25.4	$ 508,000	11.0
CVWD	8.0	22.6	$ 452,000	22.5
MWD	0.0	7.0***	$ 140,000	0.0
EVERETT	0.0	7.0***	$ 140,000	0.0
LYNNWOOD	0.5	1.4	$ 28,000	0.5
EDMONDS	0.5	1.4	$ 28,000	0.5
MTLK TERRACE	0.5	1.4	$ 28,000	0.5
TOTAL	35.5	100.0	$ 2,000,000	52.0

* Based on Projected Clearview usage in 2020.

** Based on Projected Clearview usage in 2040.

*** Assumes 5 MGD of AWD's share is split equally between Everett and MWD in trade for 10 MGD capacity in AWD system in South Everett. This assumption is subject to further negotiations.

9. PAYMENT. Each Party upon execution of this Agreement shall forward to AWD a check or warrant payable to AWD - CLEARVIEW PROJECT FUND for the purpose of establishing the CLEARVIEW PROJECT FUND, as provided in Section 10 hereof. It is agreed that said FUND shall be initiated by payment of the following shares upon signing of this Agreement:

AWD	$ 33,800
SLWD	$ 25,400
CVWD	$ 22,600
MWD	$ 7,000
Everett	$ 7,000
Lynnwood	$ 1,400
Edmonds	$ 1,400
Mountlake Terrace	$ 1,400
Total	$ 100,000

Upon authorization of contracts for services, materials and expenses by the Board, each Party agrees to pay its share of the CLEARVIEW PROJECT FUND as agreed in Section 8 hereof. Except as specifically authorized by the Board, each Party shall bear its own technical and management staff costs. AWD agrees to manage the CLEARVIEW PROJECT FUND as provided in Section 10 hereof. It is understood that AWD will advance funds toward initial costs of the Clearview Project. Members hereby agree that AWD shall be reimbursed from the CLEARVIEW PROJECT FUND for said initial costs.

Bills shall be payable to AWD - CLEARVIEW PROJECT FUND within thirty days of receipt. Parties agree to pay interest on late payments at the rate of 0.03% per day.

10. CLEARVIEW PROJECT FUND. Upon receipt of a fully executed agreement from all Parties and payment to AWD of their allocated shares, as provided in Sections 8 and 9, AWD shall, with its contribution as provided in Section 9. execute this Agreement and shall establish the PROJECT FUND which shall be maintained separately from all other AWD funds. Interest on the balance of funds on hand shall accrue to the benefit of the FUND. AWD shall maintain all accounting records related to the FUND and may charge the FUND for the reasonable costs of accounting services. AWD will provide all Parties with a monthly accounting of all FUND income and expenses and the balance on hand. The Board may authorize assessments if it deems it necessary to increase the balance on hand in the FUND provided that the Party shall not be assessed, and shall not be required to pay any amount in excess of its total commitment provided in Section 8 hereof unless all Parties agree to increase the initial budget or adjust the shares.

11. SEPARATE AGREEMENTS. No Party herein is obligated to the final design financing or constructing the Clearview Project or as to the percentages set forth in Section 8 for the final design and construction. The Clearview Project shall be designed, financed and constructed pursuant to separate agreements, provided that if a Party's share changes, up or down, prior payments of Parties under this Agreement may be credited or debited to participating Parties. Those who participate in the financing of the Project construction would have an ownership interest commensurate with their share of Project costs.

12. DISPUTE RESOLUTION A majority of the Board members may authorize employment of the services of a mediator through WAMS or JAMS to conduct alternative dispute resolution procedures.

13. TERMINATION AND WITHDRAWAL. This Agreement may be terminated at any time by action of the Board. Upon termination, all obligations shall be paid pursuant to the percentage of shares provided in Section 8.

Any Party may withdraw from this Agreement by giving at least 90 days written notice to the Board of Directors. Upon withdrawal, a Party shall be responsible for payment of its percentage share of Clearview Project expenses as of the effective date of withdrawal. Any balance on hand in the FUND on the effective date of withdrawal that has been contributed by the withdrawing Party, less any expenses associated with the withdrawal, shall be returned to the Party.

Withdrawal of a Party shall constitute termination unless the remaining Parties amend this agreement to re-allocate shares.

14. LEGAL RELATIONSHIP. Officers and employees of each Party shall be deemed to act only on behalf of the Party it represents or for which it is employed.

15. FILING. This Agreement shall be effective upon filing with the Snohomish County Auditor, the Secretary of State, and the clerk of each member hereto.

16. COUNTERPARTS. This Agreement may be signed in counterparts and, if so signed, shall be deemed one integrated Agreement.

IN WITNESS WHEREOF, this Agreement has been executed by the undersigned Party on the date set forth.

CROSS VALLEY WATER DISTRICT:

Arthur Sigurdson

President, Board of Commissioners
(Title)

Date: November 22, 1996

CITY OF LYNNWOOD:

Terri Roberts

WSV MAYOR
(Title)

Date: JAN. 15, 1997

SILVER LAKE WATER DISTRICT:

____

Board President
(Title)

Date: 12-26-96

ALDERWOOD WATER DISTRICT:

Donna J. Cross

President

(Title)

Date: 1-21-97

MUKILTEO WATER DISTRICT:

William A. Allison

Commissioner
(Title)

Date: Jan 2, 1997

CITY OF EVERETT:

Edward D. Hansen

Mayor

(Title)

Date: 1/15/97

ATTEST:

Sharon L. Marks

City Clerk Deputy

APPROVED AS TO FORM:

City Attorney

APPENDIX D

CONSUMER CONFIDENCE REPORT

Drinking Water quality Report 2015

Silver Lake Water & Sewer District

Taste, Quality & Value

Water is a life-essential resource. Yet, at less than a penny a gallon, it costs very little compared to its value.

Your water rates pay for everything it takes to operate our water system, from storage and treatment, to delivering the water to your tap. Your water rates also help pay for water system improvements that ensure that we will provide high-quality drinking water for generations to come.

As this year's Drinking Water Quality Report shows, this is an exceptional value for the clean, safe, great-tasting drinking water you receive.

Clean, Safe Drinking Water Delivered to Your Tap

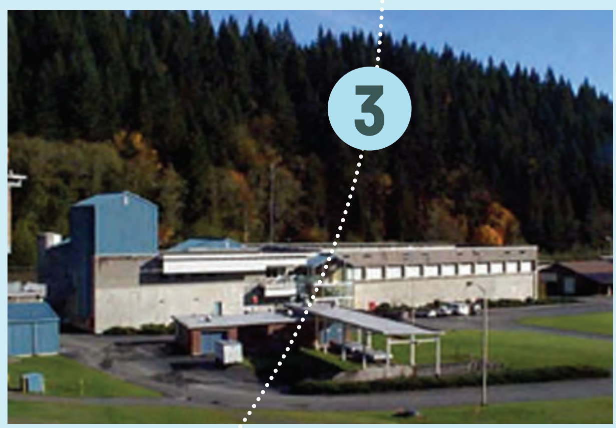
Your drinking water comes from Spada Lake Reservoir, located about 30 miles east of Everett at the headwaters of the Sultan River. This 50-billion-gallon storage facility serves as a collection point for rain and snowmelt from the Cascade Mountains. It was created in 1964 through a partnership between the City of Everett and the Snohomish County PUD as part of the Jackson Hydroelectric Project.

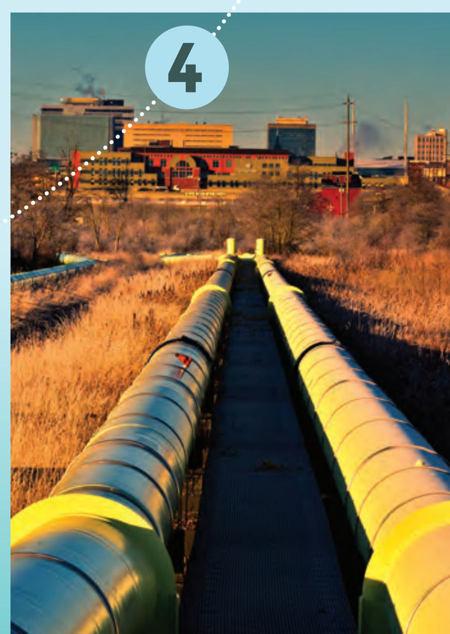
Spada Lake Reservoir is located in the Upper Sultan River Watershed, an area encompassing more than 80 square miles. This is one of the wettest watersheds in the continental United States. The average annual rainfall is about 165 inches—five times the rainfall in Everett.

Water quality in the Sultan Basin is carefully monitored. To protect the naturally pristine water in Spada Lake Reservoir, the watershed is patrolled and human activities are limited to minimize the impact on water quality. We continue to evaluate and adjust our security measures on an ongoing basis.

From Spada to YOU

1. **Precipitation and snowmelt from the Cascade Mountains are collected in Spada Lake Reservoir.**
2. **From Spada, water travels to Chaplain Reservoir, where the City's water treatment plant is located.**
3. **The Everett Drinking Water Treatment Plant treats the water using coagulation, flocculation, filtration and disinfection.**
4. **Water transmission pipelines carry drinking water to Everett.**
5. **Treated water is delivered to about 570,000 people or 80 percent of the businesses and households in Snohomish County.**





The following statements are required by the US Environmental Protection Agency (EPA).

Your Drinking Water Facts & Figures

All water sources (both tap water and bottled water) contain impurities. As water flows over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban surface water, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban surface water and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, US Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and US Center for Disease Control (CDC) guidelines on appropriate means to lessen risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

Lead & Drinking Water

Silver Lake Water & Sewer District's source water contains virtually no lead. However, lead can enter drinking water through household plumbing materials.

In 1991, EPA published a regulation to control lead and copper in drinking water. This regulation, known as the Lead and Copper Rule, requires water systems to monitor the presence of lead in drinking water at customer taps. If lead concentrations exceed an action level of 0.015 mg/l in more than 10% of customer taps sampled, the system must undertake a number of actions.

Silver Lake conducted its latest round of monitoring in 2015. The highest level found in the homes tested was 0.0020 mg/l. This indicates that lead found at household taps is most likely due to the corrosion of home plumbing systems with lead-containing pipes, fixtures or solder.

There are simple steps you can take to reduce the risk of lead in your drinking water. If you live in housing built before the mid-1940s, run your tap for at least 2 minutes if water has sat motionless in your pipes for more than 6 hours. If you live in newer housing, run your tap until the water is noticeably cooler. Use only cold water for drinking, cooking and making baby formula, as hot water carries more lead. You can also have your water tested by a certified lab.

For more information on lead in drinking water, steps you can take to minimize exposure, or to find a certified lab, go to www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/Lead.

Silver Lake Water & Sewer District

2015 Water Quality Analysis Results

Detected Regulated Contaminants

Parameter	Major Source	Units	EPA Regulations		SLWSD Water Results		
			Ideal Level/ Goal (MCLG)	Maximum Allowable (MCL)	Range or Other	Average Value or Highest Result	Comply?
Total Coliform Bacteria	Naturally present in the environment	% Positive	0	5% Positive per Month	None	0%	Yes
Total coliform bacteria monitoring is used to track microbial quality in the water distribution system. SLWSD collects 60 samples per month. Not more than 5 percent of the monthly total can be positive for total coliforms. No total coliforms were detected in 2015.							
Fluoride	Dental health additive	ppm	2	4	0.6–0.9	0.8	Yes
Fluoride is added in carefully controlled levels for dental health. In January 2011, the US Department of Health and Human Services (HHS) released a proposal to reduce the recommended drinking water fluoride concentration target to a single national standard of 0.7 ppm based on recent research on changed fluoride and water consumption patterns in the U.S. This recommendation has not been made final in Washington State, but in 2011 Everett and other water systems in Washington reduced the target fluoride residual in their drinking water from 1.0 ppm to 0.8 ppm. 0.8 ppm is the lowest level allowed under current State regulations. The Washington State Board of Health is expected to adopt 0.7 ppm as the new standard. At that time, the Washington State Department will change the requirements and water systems will begin adjusting fluoride levels to the new recommended level.							
Residual Disinfectant Level (free chlorine)	Added as a drinking water disinfectant	ppm	4.0 (MRDLG)	4.0 (MRDL)	0.03-1.10	0.74	Yes
Haloacetic Acids (5) (HAA5)	By-product of drinking water chlorination	ppb	N/A	60	22.9–42.3*	30.3**	Yes
Total Trihalomethanes (TTHM)	By-product of drinking water chlorination	ppb	N/A	80	23.3–82.1*	48.4**	Yes
Haloacetic acids and trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. The TTHM and HAA5 results are from the eight locations in Everett which are monitored to determine compliance with current regulations. * = range of results taken from all eight locations. ** = highest locational running annual average of the eight sites that were monitored.							
Turbidity	Soil erosion	NTU	N/A	TT	100%	0.06	Yes
Turbidity is a measure of the amount of particulates in water in Nephelometric Turbidity Units (NTU). Particulates in water can include bacteria, viruses and protozoans that can cause disease. Turbidity measurements are used to determine the effectiveness of the treatment processes used to remove these particulates. The values reported are the lowest monthly percentage of samples that met the EPA turbidity limit and the highest single filtered water turbidity measurement obtained during the year. In 2015, no filtered water turbidity results were above the EPA 0.3 NTU limit so the lowest percentage was 100%. The plant targets production of filter water turbidities of 0.10 NTU or less.							

Detected Unregulated Contaminants

Parameter	Units	Ideal Level/ Goal (MCLG)	SLWSD Water Results	
			Range Detected	Average Value
Bromodichloromethane	ppb	0	2.3–3.3	2.3
Chloroform (trichloromethane)	ppb	70	52.1–79.0	44.3
Dichloroacetic Acid	ppb	0	4.7–16.8	11.3
Trichloroacetic Acid	ppb	20	13.8–29.0	19.5
These substances are individual disinfection by-products for which no MCL standard has been set, but which must be monitored to determine compliance with the USEPA Stage 2 Disinfection By-products Rule MCL's for Total Trihalomethanes and Haloacetic Acids (5).				

IMPORTANT TERMS:

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available water treatment technology.

Maximum Residual Disinfectant Level (MRDL) – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.

Action Level (AL) – The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.

Parts per Million (ppm)/ Parts per Billion (ppb) – A part per million means that one part of a particular contaminant is present for every million parts of water. Similarly, parts per billion indicate the amount of a contaminant per billion parts of water.

Not Applicable (N/A) – Means EPA has not established MCLGs for these substances.

Lead, Copper and pH

Parameter	Major Source	Units	EPA Regulations		Everett Water Results		
			Ideal Level/Goal (MCLG)	Action Level (AL)	90th % Level	Homes Exceeding the AL	Comply?
Lead	Plumbing, erosion of natural deposits	ppb	0	15	2	0 of 108 (0.0%)	Yes
Copper	Plumbing, erosion of natural deposits	ppm	1.3	1.3	0.122	0 of 108 (0.0%)	Yes
USEPA and state regulations require water systems to monitor for the presence of lead and copper at household taps every three years. Everett and many of the systems it supplies conduct lead and copper monitoring in their combined service area as a regional group. The above data was collected in 2015. The 90th% level is the highest result obtained in 90 percent of the samples collected when the results are ranked in order from lowest to highest. In the past, the results for water tested before it enters household plumbing were even lower than the tap results. This indicates that there is virtually no lead or copper in the water, but household plumbing may contribute to the presence of lead and copper at the tap. The Silver Lake Water & Sewer District is one of the regular participants in the Everett monitoring group.							
pH	Soda ash is added to reduce water corrosivity by increasing pH and alkalinity	s.u.	Daily Avg 7.6	Min Daily Avg 7.4	Average 7.6	Minimum 7.4	Yes
The Washington State Dept of Health requires Everett to operate the corrosion control treatment program at or above a minimum daily average pH of 7.4. The pH is measured six times per day and the average daily pH cannot be below 7.4 for more than nine days every six months. In 2015, the average daily pH never dropped below 7.4.							

USEPA required lead statement. The USEPA drinking water regulations require this statement be included with the lead and copper sampling results regardless of the levels observed: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Silver Lake Water & Sewer District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

ENSURING AN

Adequate Supply

FUTURE GENERATIONS DEPEND ON US TODAY.

Water is a precious resource. Conservation helps fill the needs of people, industries, businesses and farms, while also keeping fish and other aquatic life alive and well.

Since Everett provides water to the majority of water systems in Snohomish County, we operate a regional water conservation program. This program is planned and developed with the water systems we serve and funded from water system revenues.

More than $7 million has been invested in regional water conservation activities since 2001. This includes such things as school education, indoor and outdoor water conservation kits, rebates for water efficient clothes washers and toilets, leak detection, business water audits and school irrigation audits. Through these efforts, we have saved more than 3.7 million gallons per day (MGD) through 2015—enough water to fill more than 88,000 bathtubs a day.

Previous regional conservation programs were planned and implemented in six-year cycles, as part of Everett's comprehensive water plan. The first plan covered the period from 2001 through 2006; the second from 2007 through 2012. Everett's latest comprehensive water plan covers the period through 2020. The water conservation program will continue to include school education and conservation kits, and will also include new activities to assist large water users.

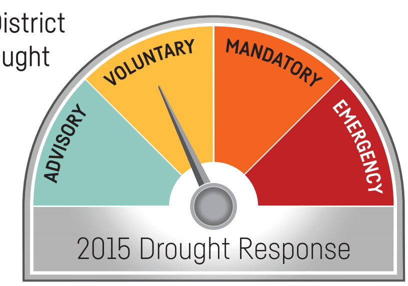
In 2015, 620 water conservation workshops were conducted in classrooms throughout Snohomish County, reaching more than 15,600 students. Participating water systems also distributed more than 2,400 indoor conservation kits and 2,800 outdoor conservation kits. These activities are estimated to have saved about 0.64 million gallons per day (MGD) regionally.

CONSERVATION tips:

- Install water-efficient showerheads and take shorter showers.
- Fix leaky faucets and toilets. Leaks waste a lot of water.
- Install low-flow toilets. This can reduce indoor water use by as much as 20 percent.
- Only run full loads in your dishwasher and clothes washer.
- Use a soaker hose on steep slopes to prevent wasteful runoff.
- Water small areas by hand to avoid watering the sidewalk and driveway.
- Replace grass in seldom-used areas of your yard with groundcovers and plants that use less water.
- Adjust your mower to a higher setting. A taller lawn retains moisture and requires less water.
- Put a layer of mulch around plants and trees. Mulch holds moisture and discourages weed growth.

For more information about our water conservation programs, go to www.slwsd.com/conservation or www.everettwa.gov/conservation.

Drought Prompts Advisory



In July 2015, Silver Lake Water & Sewer District and the City of Everett activated their Drought Response Plan—the first time since the plan was created in 2001. The drought plan is activated when the water level in Spada Lake or snowpack drops below normal levels and there is a reasonable probability that conditions will not return to normal. At the time, the level of Spada Lake was 68 percent of normal which triggered the first "advisory" stage of the plan. The advisory stage asks consumers to use water wisely and advises them that further actions may be required if conditions don't improve.

In August, as water supply conditions continued to worsen, Silver Lake Water & Sewer District and the City of Everett moved to the second "voluntary" stage of the plan. The voluntary stage asks consumers to reduce discretionary water use and advises them that water-use restriction may be required if conditions don't improve. The goal was to reduce water use by 10 percent. Through the efforts of local homes and businesses this goal was surpassed and, with the return of fall rains, the drought response plan was deactivated in November.

We thank our customers who played a huge role in helping us to stretch our water supplies during the drought. The response showed a real commitment to the environment and the natural resources we all depend on. With the current water supply, the challenge has passed and outlook is good. However, we will keep a close eye on the situation as we head into 2016.

Silver Lake Water & Sewer District
15205-41st Avenue SE · Bothell, WA 98012

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PAID
PERMIT NO. 71
EVERETT, WA

INSIDE:

- Clean, Safe Drinking Water Delivered to Your Tap
- Your Drinking Water Quality Report: Water Analysis Results; Facts & Figures
- Conservation Tips

In 2015, your water was tested for more than 100 possible contaminants. What does all the information in this report mean? Simply put, the data confirms that your drinking water meets or exceeds all government standards and is

safe to drink.

YOUR OPINION MATTERS

Let us know how we're doing and what you think about your water. Call 425-337-3647 or email us at service@slwsd.com.

WHAT YOU CAN DO:

CONSERVE • BE INFORMED • GET INVOLVED

Silver Lake Water & Sewer District
Phone: 425-337-3647
Website: www.slwsd.com

City of Everett Water Quality Office
Phone: 425-257-8800
Website: www.everettwa.gov/water

State Department of Health (DOH)
Phone: 1-800-521-0323
Website: www.doh.wa.gov/ehp/dw/

US Environmental Protection Agency (EPA)
Phone: 1-800-426-4791
Website: www.epa.gov/safewater

To get involved in decisions affecting your drinking water, attend and comment at District Commissioner Meetings, scheduled the 2nd and 4th Thursday of each month, held at the District Administrative Office, 15205-41st Avenue SE, Bothell, WA 98012.

Meetings begin at 5:30 p.m. Agendas are available on the District's website at www.slwsd.com/current events.

Silver Lake Water & Sewer District Elected Officials
BOARD OF COMMISSIONERS:
Rod Keppler, Bill Anderson, and Anne Backstrom

Learn more about your water at www.slwsd.com or www.everettwa.gov/water

APPENDIX E

COLIFORM MONITORING PLAN

SILVER LAKE WATER & SEWER DISTRICT

COLIFORM MONITORING PLAN

INTRODUCTION:

The total coliform rule requires each public water system to collect coliform bacteria samples at sites which are representative of water throughout the distribution system. The locations where the samples are taken must be on a written sample site plan in accordance with WAC 246-290-300 3 (b) (I).

System Identification

Silver Lake Water & Sewer District
PWS ID # 79250B

Source

City of Everett Processed Water (Sultan River Watershed Facilities)

Reservoir Storage

The District's water active water storage consists of three reservoirs with booster stations that draw from the reservoirs and charge to our distribution network. The reservoirs total 16.4 Million Gallons of storage capacity.

Reservoir #2 – 4,2 Million Gallon capacity

Reservoir #3 - 4.2 Million Gallon capacity

Reservoir #4 – 8.0 Million Gallon capacity

TREATMENT:

100% of water is from City of Everett Treatment Facilities located at their Spada Lake Reservoir site. This water is filtered and chlorinated prior to our purchase. Treated water is delivered by wholesale providers through District Master Meters

Provider	District Master Meter(s)
City of Everett	MM No. 1
Clearview Water Supply Agency	MM Nos. 4, 5, 7 and 9
Alderwood Water and Wastewater District	MM No. 10

PRESSURE ZONES:

The District operates our system directly from the master meter flows to our nominal 640 hydraulic grade line (HGL) zone and from this zone, delivers flow to our customers by boosting to those in a higher 725 (HGL) zone or by using pressure reducing valves to lower the pressure of the water delivered to customers in our 485 (HGL). The 485 zone consists of isolated neighborhoods that developed on the sloping banks leading down to the Snohomish River Valley floor. The pressure reduction to 485 HGL keeps the static pressure in an acceptable range for normal plumbing accessories.

Reservoir No. 2 water can only be returned to the 640 zone by first pumping to the 725 zone and then through two remotely operated flow controllable pressure reducing valves that discharge pumped flows in excess of the 725 zone customer demands to the lower 640 zone.

COLIFORM MONITORING STATIONS:

The coliform sampling requirements of the Department Of Health are based on total population served; and a direction to have the sample stations placed to be representative of the system distribution water quality. Based on the 2017 Water Comprehensive Plan, the 2017 population estimate and service connections for the District are:

Population served	54,645
Customer Connections	18,085

Routine Sample Sites required by Regulation: 60 (sampled monthly)

The District has by choice been collecting 60 routine samples each month from site staged to adequately cover each pressure zone, reservoir, and source distribution influence zone. This was 10 more sites than was required as our estimated population at the time was under 50,000. The current estimated population identifies that 60 sites are now required. The District’s current monitoring program meets this required number of sample sites; but, by choice the District has identified 10 additional sample station sites distributed throughout our system for a total of seventy (70) sample stations. These stations will be constructed and fully operational by the end of 2017.

The locations are listed on Exhibit “A” attached and are graphically shown on Figure 1. This exhibit includes all 70 sampling stations, the current 60 sample site locations that will continue to be monitored with the ten new sites on a monthly basis.

Silver Lake Water & Sewer District

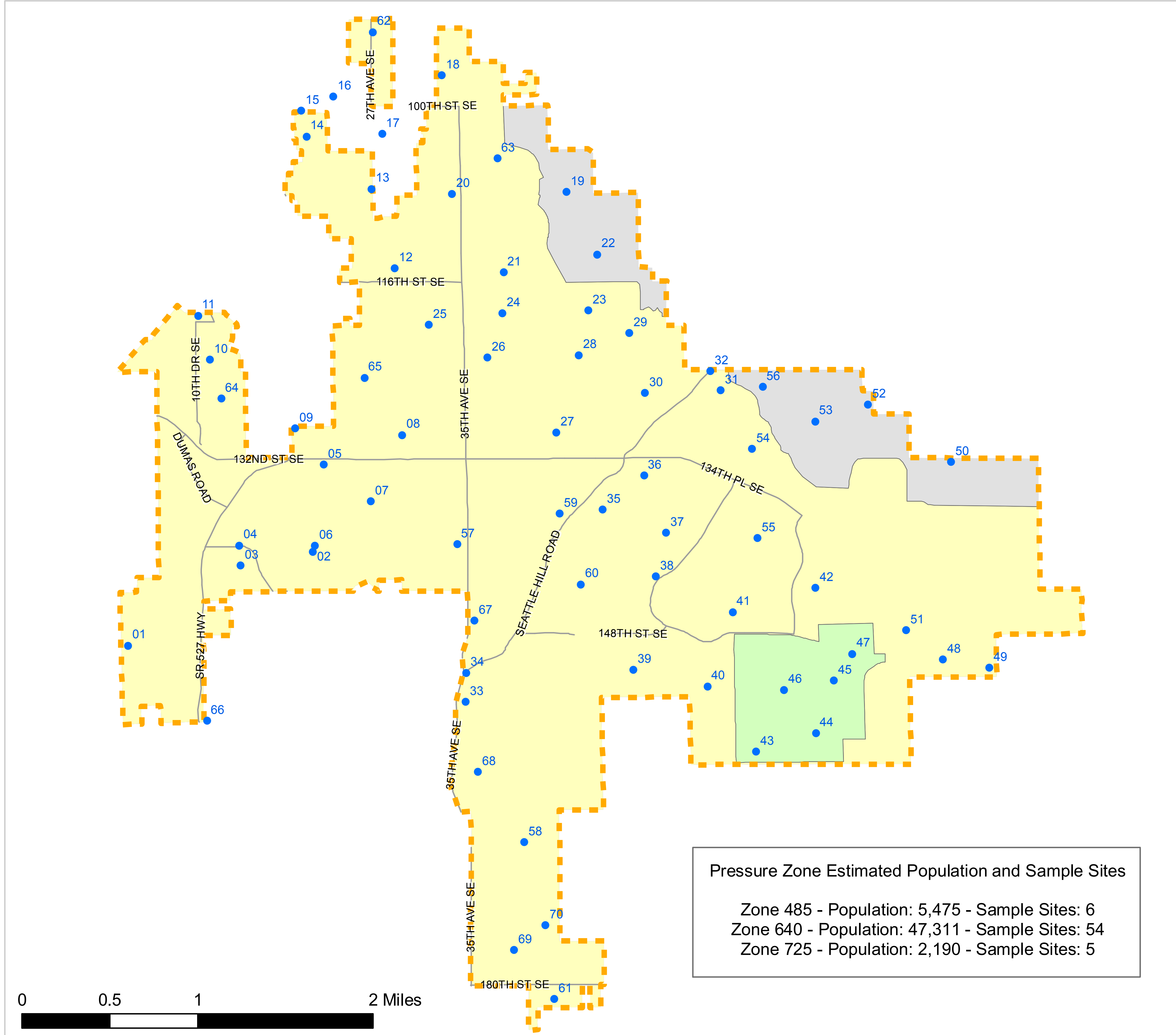
N

Legend

- Water Sampling Stations

Water Pressure Zones

- 485
- 640
- 725
- Silver Lake Boundary Mask
- District Boundary



Pressure Zone Estimated Population and Sample Sites

Zone 485 - Population: 5,475 - Sample Sites: 6
Zone 640 - Population: 47,311 - Sample Sites: 54
Zone 725 - Population: 2,190 - Sample Sites: 5

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Y:\MapDocuments\Water\Water Quality\Sample Stations Comp Plan.mxd

SILVER LAKE WATER & SEWER DISTRICT

Fig. 1 - Coliform Water Quality Stations

DATE PRINTED: 3/28/2017

Repeat sample sites are identified upstream and downstream of each sample station site. If for some reason a routine sampling site is unable to be used the standard approach will be to move to either the upstream or downstream repeat site and report that an alternative site was used as an exception that month for the routine site. In addition, the District has facilities in place to allow:

Water storage tanks to be sampled as necessary.

All source master meters to be sampled as necessary.

COLIFORM PROCEDURE WHEN DETECTED

Repeat samples will be taken to confirm the original sample results and to determine the cause of the Coliform presence. One set of repeat samples shall be collected and submitted for analysis for every sample in which the presence of Coliform is detected. A set of repeat Coliform samples consist of:

- Site of previous sample with a coliform presence.
- The upstream repeat site. (Within 5 active services upstream of site of sample with a Coliform presence).
- The downstream repeat site. (Within 5 active services downstream of site of sample with a Coliform presence).

All samples in a set of repeat samples shall be collected on the same day and submitted for analysis within twenty four hours after notification by the laboratory of a Coliform presence.

Since April 1st of 2016 the Revised Total Coliform Rule (RTCR) requires the District, in addition to the above, to perform a Water System Assessment Report (level 1 or 2) to DOH for any (routine) total coliform present sample result (Exhibits “B” and “C”).

All samples for monthly routine samples or for Coliform detected repeat samples are to be collected in full compliance with the following procedure for bacterial sample collection.

Silver Lake Water & Sewer District's procedure for taking bacterial samples

Step 1: Locations as listed for sample stations accordance with SLWSD Monitoring Plan.

Step 2: Samples collected monthly, as early in the month as is practical.

Step 3: Inspect sample bottles for cracks, missing seal, etc.

Step 4: Prior to sampling, fill out all paper work for samples. Attach bar code stickers for bottles, sample sheets and CL2 recording sheet.

Step 5: Prior to sampling, prepare squirt bottle with disinfectant solution for sanitizing station sample access points.

Step 6: Once at sample site, inspect for damage, vandalism, etc. If necessary repair prior to sampling

Step 7: Disinfect sample station at point of sample draw.

Step 8: Run water through sample station at full flow for at least 3 minutes. (Use small bucket to collect wasted water from probe for Temperature, pH, and Electrical Conductivity (EC) measurements, and to minimize property damage)

Step 9: turn flow down to a thin stream (about the width of a pencil) then let the water run for about a minute. Make sure your hands are clean. Remove seal from bottle, remove cap using your finger tips and turning bottle instead of cap. Do not rinse sample bottle before filling. There is a powder in the sample bottle to neutralize any chlorine that may be present. Fill bottle to desired level and replace cap using same technique. DO NOT set the cap down, touch any part of the cap that touches the bottle, or let anything touch the rim of the bottle or inside of the cap!

Step 10: Inspect sample for discoloration or sediment. If sample is not satisfactory, throw bottle away and use new one.

Step 11: Fill out all required paper work for that sample, record - Time, Temp, CL2, pH, and EC on the water sample worksheet (Exhibit D).

Step 12: Once all samples are collected, take samples and all completed paper work including chain of custody documentation to the Snohomish Health District @ 3020 Rucker Ave, Everett, WA before the end of the day. Electronically transmit completed water sample worksheet to the "Samples Mailing List" via email.

“Samples Mailing List” (SML) consists of:

Agency		Email Address
Snohomish Health District –		
	Crystal Dudley	cdudley@shd.snohomish.wa.gov
	Debbie Pennell	dpennell@snohd.org
	Josie Guzmangreen	jguzmangreen@snohd.org
	Shanon Mausch	smauch@snohd.org
	and	
Edge Analytical –		
		micro@edgeanalytical.com

Repeat sample sets if required will be taken to:

Edge Analytical
805 W. Orchard Dr Ste 4.
Bellingham, WA 98225
(800) 755-9295

Or

Everett Environmental Lab (EEL)
WPCF Smith Island
4027 4th St. SE
Everett, WA 98205
(425)257-8230

Include with repeat sample, the test number of original sample.

2017 PLAN PREPARATION INFORMATION

PREPARED BY CASEY PARKS, WATER QUALITY SUPERVISOR, SILVER LAKE WATER & SEWER DISTRICT.

UPDATED FROM A PREVIOUSLY EXISTING PLAN IN 2010 AND 2002 PLAN UPDATE ALL PREPARED BY CASEY PARKS

EXHIBIT A

SILVER LAKE WATER DISTRICT
REPEAT UPSTREAM/DOWNSTREAM SAMPLE SITES

SS#	ROUTINE SITE	REPEAT UPSTREAM	REPEAT DOWNSTREAM
1	**2210 132ND ST SE**	13122 21ST DR SE	2304 132ND ST SE
2	**14827 3RD DR SE**	14902 3RD DR SE	14828 3RD DR SE
3	**1411 142ND PL SE**	14113 14TH DR SE	1419 142ND PL SE
4	**2103 140TH ST SE**	2029 140TH PL SE	2108 140TH PL SE
5	**13924 14TH DR SE**	13921 14TH DR SE	13927 14TH DR SE
6	**2110 139TH PL SE**	2116 139TH PL SE	2105 139TH PL SE
7	**13615 26TH AV SE**	13609 26TH AV SE	13620 26TH AV SE
8	**1917 129TH PL SE**	1923 129TH PL SE	1916 129TH PL SE
9	**12231 11TH DR SE**	12314 11TH DR SE	12308 11TH DR SE
10	**11901 10TH DR SE**	11902 10th DR SE	11911 10th DR SE
11	**11425 28TH DR SE**	11433 28th DR SE	11426 28TH DR SE
12	**10715 26TH DR SE**	10705 26TH DR SE	10724 26TH DR SE
13	**10226 22ND AV SE**	2131 103RD ST SE	10218 22ND AV SE
14	**10223 27TH AV SE**	10224 27TH AV SE	10229 27TH AV SE
15	**4426 108TH ST SE**	4422 108TH ST SE	4430 108TH ST SE
16	**3405 108TH ST SE**	3318 108TH ST SE	3415 108TH ST SE
17	**11431 38TH DR SE**	11423 38TH DR SE	11507 38TH DR SE
18	**4702 113TH PL SE**	11313 47TH AV SE	11308 47TH AV SE
19	**11825 46TH DR SE**	11826 46TH DR SE	4619 118TH PL SE
20	**3817 119TH PL SE**	3815 119TH PL SE	3824 119TH PL SE
21	**11927 31ST DR SE**	11926 31ST DR SE	12005 31ST DR SE
22	**3317 97TH PL SE**	3313 97TH PL SE	3325 97TH PL SE
23	**BOOSTER III**	2225 100TH ST SE	2324 100TH ST SE
24	**3704 122ND PL SE**	3711 122ND PL SE	3714 122ND PL SE
25	**12920 44TH AV SE**	12928 44TH AV SE	12912 44TH AV SE
26	**12231 45TH AV SE**	12303 45TH AV SE	12302 45TH AV SE
27	**5004 120TH PL SE**	4926 120TH PL SE	5010 120TH PL SE
28	**12603 51ST AV SE**	12610 51ST AV SE	12615 51ST AV SE
29	**5731 125TH ST SE**	5726 125TH ST SE	5807 125TH ST SE
30	**MM# 6**	12432 57TH AV SE	1ST HYDRANT DWNST MM#6
SS#	**ROUTINE SITE**	**REPEAT UPSTREAM**	**REPEAT DOWNSTREAM**

31	**3501 154th PL SE**	15404 35th DR SE	15401 35th DR SE
32	**3500 SEA HILL RD "A"**	15011 35TH AV SE	3500 SEA HILL RD "B"
33	**13617 48TH DR SE**	13630 48TH DR SE	13631 48TH DR SE
34	**13318 51ST DR SE**	13315 51ST DR SE	13326 51ST DR SE
35	**13902 54TH AV SE**	13830 54TH AV SE	13906 54TH AV SE
36	**14207 51ST AV SE**	14212 51ST AV SE	14215 51ST AV SE
37	**15114 50TH AV SE**	15113 50TH AV SE	15118 50TH AV SE
38	**5528 152ND ST SE**	5530 152ND ST SE	5526 152ND ST SE
39	**5832 146TH PL SE**	5821 146TH PL SE	5920 146TH PL SE
40	**6101 159TH ST SE**	6109 159TH ST SE	15833 60TH DR SE
41	**6610 SNO CASC DR SE**	15620 67TH DR SE	15610 65TH AV SE
42	**BOOSTER II**	6723 152ND ST SE	6810 152ND ST SE
43	**14327 CASCADE DR SE**	14321 CASCADE DR SE	14324 CASCADE DR SE
44	**8111 151ST PL SE**	8112 150TH PL SE	15016 81ST AV SE
45	**12711 71ST DR SE**	**12718 71ST DR SE**	12716 71ST DR SE
46	**12825 67TH AV SE**	6719 129TH ST SE	12832 67TH AV SE
47	**6111 130TH PL SE**	6031 130TH PL SE	6112 130TH PL SE
48	**6113 140TH ST SE**	6105 140TH PL SE	5920 120TH PL SE
49	**3931 167TH St SE**	4003 167TH ST SE	3919 167TH ST SE
50	**7905 132ND Pl SE**	7901 132ND PL SE	7906 132ND PL SE
51	**MM#1**	1920 100TH ST SE	2101 101ST ST SE
52	**MM #4**	8114 64TH ST SE	AWWD SS PUGET PARK DR
53	**MM #5**	MM #4	6427 146TH PL SE
54	**6205 152NDPL SE**	6206 152ND PL SE	6204 152ND PL SE
55	**15031 78TH AVE SE**	15023 78TH AVE SE	15115 78TH AVE SE
56	**12501 58TH DR SE**	12507 58TH DR SE	12429 58TH DR SE
57	**13926 AVE "G"**	LOT 163 MILL CREEK EAST	13930 AVE "G"
58	**12929 29TH AVE SE**	2905 130TH PL SE	2913 130TH PL SE
59	**4303 137TH PL SE**	13709 43RD AVE SE	13716 43RD AVE SE
60	**4519 144TH ST SE**	4520 144TH ST SE	4523 144TH ST SE
SS#	**ROUTINE SITE**	**REPEAT UPSTREAM**	**REPEAT DOWNSTREAM**
61	**4232 181st ST SE**	4228 181st ST SE	4312 181st ST SE
62	**2707 93rd PL SE**	9220 92nd PL SE	2710 93rd PL SE

SILVER LAKE WATER DISTRICT
REPEAT UPSTREAM/DOWNSTREAM SAMPLE SITES

63	**3813 104th PL SE**	3805 104th PL SE	3819 104th PL SE
64	**1229 126th PL SE**	1223 126th PL SE	1233 126th PL SE
65	**12426 26th Ave SE**	2529 124th PL SE	12430 26th Ave SE
66	**MM#10 15431 Bothell Eve Hwy.**	MM#10 15431 Bothell Eve Hwy. (AWWD Side)	15429 Bothell Eve Hwy.
67	**14633 35th DR SE**	14702 35th Dr SE	14631 35th Dr SE
68	**16021 36th Ave SE**	16012 36th Ave SE	16030 36th Ave SE
69	**17628 39th Ave SE**	17706 39th Ave SE	3828 176th Pl SE
70	**4125 174th PL SE**	17413 42nd Ave SE	17425 40th Dr SE

EXHIBIT B

RTCR Level 1 Assessment Guidance Template

331-569, March 2016

Send your assessment to:

Eastern Region	16201 East Indiana Avenue, Suite 1500 Spokane Valley, WA 99216	Phone: 509.329.2100 Fax: 509.329.2104 Email: mark.steward@doh.wa.gov
Northwest Region	20425 72nd Ave. South, Suite 310 Kent, WA 98032-2358	Phone: 253.395.6750 Fax: 253.395.6760 Email: dw.nwro@doh.wa.gov
Southwest Region	PO Box 47823 Olympia, WA 98504-7823	Phone: 360-236-3030 Fax: 360-664-8058 Email: swro.coli@doh.wa.gov

Water System Name:	County:	Water System ID #:
Operator in Responsible Charge (ORC):	ORC Phone:	Water System Mailing Address:
ORC Address, City, State:		
Assessor Name:		
Assessor Address, City, State, Zip:		
Date(s) Assessment Completed:		

Your water system exceeded a treatment technique trigger for the Revised Total Coliform Rule. Assess the water system's condition and operation using this *Level 1 Assessment Template* as a guide.

Part A: Respond to each item below. Identify corrective actions taken to address the issue(s) found.
Part B: Summarize your findings and include an action plan with timetable for corrective actions not yet taken.

For parts A and B, include additional information (photos or other documentation) as needed to depict assessment findings and corrective actions that have been completed. All assessment elements listed in this template must be addressed in your assessment. Systems with multiple facilities such as wells or storage tanks may need to provide additional pages.

Within 30 days of learning of the treatment technique trigger, submit completed assessment documentation to your regional office and keep a copy in your water system files.

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
1. Site and Sampling Protocol 1a. Do you have a written coliform monitoring plan & sampling procedure that ensures samples are representative of the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1b. Have there been any changes in sampling conditions or procedures that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
1c. Inspect the sampling sites: - Are the sampling locations free of potential sources of contamination? - Are the sampling taps in good condition? - Other: (describe) ______	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
2. Distribution			
2a. Do you have procedures in place to ensure proper maintenance of the distribution system, including:			
- Appropriate pipe replacement and repair procedures	☐ Yes ☐ No	☐ Yes ☐ No	
- Replacement and repair of other distribution system components	☐ Yes ☐ No	☐ Yes ☐ No	
- Regular flushing program	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Routine vault inspections	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Fully implemented cross connection control program	☐ Yes ☐ No	☐ Yes ☐ No	
- Maintain positive pressure in all parts of the distribution system	☐ Yes ☐ No	☐ Yes ☐ No	
2b. Has there been any recently reported low pressure (<20 PSI) or complete loss of pressure in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2c. Have there been any changes in distribution conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
2d. Inspect the distribution system:			
- Are there any visible line breaks or leaks?	☐ Yes ☐ No	☐ Yes ☐ No	
- Are there any observed unprotected cross connections?	☐ Yes ☐ No	☐ Yes ☐ No	
- Is there any evidence of vandalism or other security breaches?	☐ Yes ☐ No	☐ Yes ☐ No	
- Other: (describe) ____________	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
3. Storage Facilities			
3a. Does your water system have a water storage tank? *If no, skip to Section 4.*	☐ Yes ☐ No		
3b. Do you have procedures in place for periodic inspection and maintenance of the exterior and interior of each storage facility?	☐ Yes ☐ No	☐ Yes ☐ No	
3c. Have there been any changes in storage conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
3d. Inspect the storage facilities:			
- Does the tank have any cracks or other openings?	☐ Yes ☐ No	☐ Yes ☐ No	
- Is the reservoir roof free of any unprotected openings?	☐ Yes ☐ No	☐ Yes ☐ No	
- Is the access hatch constructed and sealed to keep contaminants out?	☐ Yes ☐ No	☐ Yes ☐ No	
- If there is an air vent on the storage tank, is it constructed to prevent the entry of contaminants?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Is the overflow line constructed to prevent contaminants from entering the tank?	☐ Yes ☐ No	☐ Yes ☐ No	
- If the overflow line discharges into a storm drain, to surface water, or directly into a sanitary sewer, is it protected by a proper air gap?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Is there any evidence of vandalism or other security breaches?	☐ Yes ☐ No	☐ Yes ☐ No	
- Other: (describe) ____________	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
4. Source--Groundwater 4a. Does your water system have a well or spring? If no, skip to Section 6.	☐ Yes ☐ No		
4b. Do you comply with Sanitary Control Area requirements (WAC 246-290-135(2)?	☐ Yes ☐ No	☐ Yes ☐ No	
4c. Have there been any changes in source conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
4d. Inspect the source facilities: - Is the sanitary control area free of all potential sources of contamination? - Is the wellhead or spring box above grade with no potential for flooding? - Is the pressure tank water logged? - Is the well cap sealed and watertight, and the well casing free of unprotected openings? - (For springs) Is the spring box (structure, hatch, and overflow) free of any unprotected openings? - Other: (describe) ____________	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
5. Treatment--Groundwater 5a. Is any source continuously treated with a disinfectant? If no, skip to Section 6.	☐ Yes ☐ No		
5b. Do you have procedures in place for proper operation and maintenance of disinfection treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
5c. Have there been any changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
5d. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ____________	 ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
6. Source—Surface Water Supply (watershed) 6a. Does your water system have a surface water supply? If no, skip to Section 8.	☐ Yes ☐ No		
6b. Do you comply with Watershed Control Program requirements (WAC 246-290-135(4)?	☐ Yes ☐ No	☐ Yes ☐ No	
6c. Have there been any changes within the watershed or in raw water conditions that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
6d. Inspect the surface water intake/headworks: - Is there evidence of problems at the intake? - Is there evidence of vandalism or other security breaches at the intake? - Other: (describe) ______	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
7. Treatment—Surface Water 7a. Do you have procedures in place for proper operation and maintenance of surface water treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
7b. Have there been any changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
7c. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ______	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
8. Other assessment activities (describe):			

Part B. Assessment Summary and Action Plan with Timetable for corrective actions not yet taken

☐ ASSESSOR: CHECK HERE if you did not identify any issues that may have directly or indirectly caused or contributed to entry of coliform bacteria into the system.

Corrective Actions <u>Completed</u>: ASSESSOR: Summarize the issues found and the corrective actions that have been completed and date completed

Describe issue found	Describe corrective action taken and date completed

Corrective Actions <u>Not</u> Completed: ASSESSOR: Describe the issues for which corrective actions have <u>not</u> yet been completed. **Provide an action plan with timetable for completion.**

Describe issue found	Describe planned corrective action and timetable for completion.

Print Name of Assessor: ____________________ Signature of Assessor: ____________________ Date: ____________

OFFICE OF DRINKING WATER USE ONLY

Regional Office Reviewer: ____________________ Date of Review: ____________________

Assessment sufficient? ☐ Yes ☐ No Likely cause determined? ☐ Yes ☐ No Sanitary defect(s) identified? ☐ Yes ☐ No

Corrective actions completed? ☐ Yes ☐ No Corrective action plan included? ☐ Yes ☐ No Corrective action plan approved? ☐ Yes ☐ No

Comments:

EXHIBIT C

RTCR Level 2 Assessment Guidance Template

331-570, March 2016

Send your assessment to:

Eastern Region	16201 East Indiana Avenue, Suite 1500 Spokane Valley, WA 99216	Phone: 509.329.2100 Fax: 509.329.2104 Email: mark.steward@doh.wa.gov
Northwest Region	20425 72nd Ave. South, Suite 310 Kent, WA 98032-2358	Phone: 253.395.6750 Fax: 253.395.6760 Email: dw.nwro@doh.wa.gov
Southwest Region	PO Box 47823 Olympia, WA 98504-7823	Phone: 360-236-3030 Fax: 360-664-8058 Email: swro.coli@doh.wa.gov

Water System Name:	County:	Water System ID #:
Operator in Responsible Charge (ORC):	ORC Phone:	Water System Mailing Address:
ORC Address, City, State:		
Assessor Name:	Assessor is: ☐ WDM-2, 3, or 4 ☐ Engineer ☐ LHJ	
Assessor Address, City, State, Zip:		
Date(s) Assessment Completed:		

Your water system exceeded a treatment technique trigger for the Revised Total Coliform Rule. Assess the water system's condition and operation using this *Level 2 Assessment Template* as a guide.

Part A: Respond to each item below. Identify corrective actions taken to address the issue(s) found.
Part B: Summarize your findings and include an action plan with timetable for corrective actions not yet taken.

For parts A and B, include additional information (photos or other documentation) as needed to depict assessment findings and corrective actions that have been completed. All assessment elements listed in this template must be addressed in your assessment. Systems with multiple facilities such as wells or storage tanks may need to provide additional pages.

Within 30 days of learning of the treatment technique trigger, submit completed assessment documentation to your regional office and keep a copy in your water system files.

Part A: Assessment		**Corrective action needed?**	**Corrective action(s) taken & date taken**
1. Site and Sampling Protocol 1a. Do you have a written coliform monitoring plan & sampling procedure that ensures samples are representative of the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1b. Do you have a program in place that ensures that all sample collectors are trained before being allowed to collect compliance samples?	☐ Yes ☐ No	☐ Yes ☐ No	
1c. Do you regularly monitor the condition of each routine and repeat sample site to ensure that no site will contaminate the sample?	☐ Yes ☐ No	☐ Yes ☐ No	
1d. Was the sample collected by a trained, qualified person?	☐ Yes ☐ No	☐ Yes ☐ No	
1e. Did the sampler follow your monitoring plan and sampling procedure?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
1f. Was the sample collected representative of the water in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
1g. Have there been any changes in sampling conditions or procedures that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
1h. Inspect the sampling sites: - Are the sampling locations free of potential sources of contamination? - Are the sampling taps in good condition? - Other: (describe) ______	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
2. Distribution 2a. Do you have procedures in place to ensure proper maintenance of the distribution system, including: - Appropriate pipe replacement and repair procedures - Replacement and repair of other distribution system components - Regular flushing program - Routine vault inspections - Fully implemented cross connection control program - Maintain positive pressure in all parts of the distribution system	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
2b. Following work done on the water system and following any pressure loss event, do you collect investigative coliform samples?	☐ Yes ☐ No	☐ Yes ☐ No	
2b. Has there been any recently reported low pressure (<20 PSI) or complete loss of pressure in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2c. Have there been any recent repairs or new construction in the distribution system?	☐ Yes ☐ No	☐ Yes ☐ No	
2d. Are there any known pipe leaks that have not yet been repaired?	☐ Yes ☐ No	☐ Yes ☐ No	
2e. Has there been any recent use of fire hydrants such as hydrant maintenance or utility/FD flushing?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
2f. If there are there any air-vacuum relief valve vaults in the distribution system, are any flooded?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
2g. Has there been any recent report of a cross connection incident?	☐ Yes ☐ No	☐ Yes ☐ No	
2h. Have there been any off-normal events, such as discolored water, odd taste, or smell?	☐ Yes ☐ No	☐ Yes ☐ No	
2i. Have there been any other changes in distribution conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
2j. Inspect the distribution system: - Are there any visible line breaks or leaks? - Are there any observed unprotected cross connections? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ______	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
3. Storage Facilities 3a. Does your water system have a water storage tank? If no, skip to Section 4.	☐ Yes ☐ No		
3b. Do you have procedures in place for periodic inspection and cleaning of the interior of each storage facility including vent, roof hatch, and overflow?	☐ Yes ☐ No	☐ Yes ☐ No	
3c. Has there been any recent work done on a storage facility?	☐ Yes ☐ No	☐ Yes ☐ No	
3d. Are all storage facilities secured from unauthorized entry and vandalism?	☐ Yes ☐ No	☐ Yes ☐ No	
3e. Have there been any other changes in storage conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
3f. Inspect the storage facilities: - Does the tank have any cracks or other openings? - Is the reservoir roof free of any unprotected openings? - Is the access hatch constructed and sealed to keep contaminants out? - If there is an air vent on the storage tank, is it constructed to prevent the entry of contaminants? - Is the overflow line constructed to prevent contaminants from entering the tank? - If the overflow line discharges into a storm drain, to surface water, or directly into a sanitary sewer, is it protected by a proper air gap? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ______	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
4. Source--Groundwater 4a. Does your water system have a well or spring? If no, skip to Section 6.	☐ Yes ☐ No		
4b. Do you comply with Sanitary Control Area requirements (WAC 246-290-135(2)?	☐ Yes ☐ No	☐ Yes ☐ No	
4c. Are all sources protected from fecal contamination by appropriate placement and construction?	☐ Yes ☐ No	☐ Yes ☐ No	
4d. Have any unapproved sources recently been used?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		**Corrective action needed?**	**Corrective action(s) taken & date taken**
4e. Have there been any recent land use changes observed within a source sanitary control area, such as construction, farming, or dumping in the last month?	☐ Yes ☐ No	☐ Yes ☐ No	
4f. Has there been any standing water, heavy precipitation, or flooding around a source in the last month?	☐ Yes ☐ No	☐ Yes ☐ No	
4g. Has there been any recent work done on a well or spring box?	☐ Yes ☐ No	☐ Yes ☐ No	
4h. Has there been any recent failure of a source pump?	☐ Yes ☐ No	☐ Yes ☐ No	
4i. Has there been any recent maintenance performed on a source pump or other source component?	☐ Yes ☐ No	☐ Yes ☐ No	
4j. Are the source facilities secured from unauthorized entry and vandalism?	☐ Yes ☐ No	☐ Yes ☐ No	
4k. Have there been any other changes in source conditions or operations that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
4l. Inspect the source facilities:			
- Is the sanitary control area free of all potential sources of contamination?	☐ Yes ☐ No	☐ Yes ☐ No	
- Is the wellhead or spring box above grade with no potential for flooding?	☐ Yes ☐ No	☐ Yes ☐ No	
- Is the <u>pressure tank</u> water logged?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Is the <u>well cap</u> sealed and watertight, and the well casing free of unprotected openings?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- (For springs) Is the spring box (structure, hatch, and overflow) free of any unprotected openings?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Is there any evidence of vandalism or other security breaches?	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
- Other: (describe) ________________	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	
5. Treatment--Groundwater 5a. Is any source <u>continuously treated with a disinfectant</u>? If no, skip to Section 6.	☐ Yes ☐ No		
5b. Do you have procedures in place for proper operation and maintenance of disinfection treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
5c. If a disinfection residual should be continuously maintained throughout the distribution system, was the measured free chlorine residual at the time of coliform sample collection below 0.2 mg/L?	☐ Yes ☐ No	☐ Yes ☐ No	
5d. Have there been any recent interruptions in any treatment process?	☐ Yes ☐ No	☐ Yes ☐ No	
5e. Has there been any recent maintenance performed on any treatment component?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
5f. Have there been any other changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
5g. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
6. Source—Surface Water Supply (watershed) 6a. Does your water system have a surface water supply? If no, skip to Section 8.	☐ Yes ☐ No		
6b. Do you comply with Watershed Control Program requirements (WAC 246-290-135(4)?	☐ Yes ☐ No	☐ Yes ☐ No	
6c. Has there been any recent spikes in raw water turbidity?	☐ Yes ☐ No	☐ Yes ☐ No	
6d. Have there been any land use changes within the watershed, such as logging, construction, or different farming practices in the past month?	☐ Yes ☐ No	☐ Yes ☐ No	
6e. Have there been any other changes within the watershed or in raw water conditions that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
6f. Inspect the surface water intake/headworks: - Is there evidence of problems at the intake? - Is there evidence of vandalism or other security breaches at the intake? - Other: (describe) ____	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
7. Treatment—Surface Water 7a. Do you have procedures in place for proper operation and maintenance of surface water treatment facilities?	☐ Yes ☐ No	☐ Yes ☐ No	
7b. Have there been any recent interruptions in any part of the filtration or disinfection treatment process?	☐ Yes ☐ No	☐ Yes ☐ No	
7c. Are filtration and disinfection treatment facilities properly operated and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
7d. Has there been any maintenance performed on any treatment component in the past month?	☐ Yes ☐ No	☐ Yes ☐ No	
7e. Have there been any problems with a treatment process in the past month, such as high finished water turbidity, disinfection inactivation ratio <1, or changes in coagulation practices or filtration rate?	☐ Yes ☐ No	☐ Yes ☐ No	

Part A: Assessment		Corrective action needed?	Corrective action(s) taken & date taken
7f. Have there been any other changes in treatment equipment or process that may have contributed to the treatment technique trigger? Describe:	☐ Yes ☐ No	☐ Yes ☐ No	
7g. Inspect the treatment facilities: - Is the treatment system operating properly? - Is there any evidence of vandalism or other security breaches? - Other: (describe) ____	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ N/A	 ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	
8. Other assessment activities (describe):			

Part B. Assessment Summary and Action Plan with Timetable for corrective actions not yet taken

☐ ASSESSOR: CHECK HERE if you did not identify any issues that may have directly or indirectly caused or contributed to entry of coliform bacteria into the system.

Corrective Actions <u>Completed</u>: ASSESSOR: Summarize the issues found and the corrective actions that have been completed and date completed

Describe issue found	Describe corrective action taken and date completed

Corrective Actions <u>Not</u> Completed: ASSESSOR: Describe the issues for which corrective actions have <u>not</u> yet been completed. **Provide an action plan with timetable for completion.**

Describe issue found	Describe planned corrective action and timetable for completion.

Print Name of Assessor: ______________________ Signature of Assessor: ______________________ Date: ______________

OFFICE OF DRINKING WATER USE ONLY

Regional Office Reviewer: ______________________ Date of Review: ______________________

Assessment sufficient? ☐ Yes ☐ No Likely cause determined? ☐ Yes ☐ No Sanitary defect(s) identified? ☐ Yes ☐ No

Corrective actions completed? ☐ Yes ☐ No Corrective action plan included? ☐ Yes ☐ No Corrective action plan approved? ☐ Yes ☐ No

Comments:

SNOHOMISH HEALTH DISTRICT

ENVIRONMENTAL HEALTH DIVISION
Water & Wastewater Section
3020 Rucker Avenue, Suite 104
Everett, WA 98201-3900
425.339.5250

Healthy Lifestyles, Healthy Communities

PUBLIC WATER SYSTEMS THAT ARE BILLED

NAME OF WATER SYSTEM: SILVER LAKE WATER & SEWER DISTRICT

SYSTEM I. D. NUMBER: 79250B

DATE SUBMITTED:__________ BY:____________________
(NAME)

NUMBER OF BOTTLES SUBMITTED FOR DRINKING WATER ANALYSIS (Test parameter total & fecal coliform):__________

OTHER:

SNOHOMISH HEALTH DISTRICT USE ONLY

SHD Control Numbers __________ through __________

rev071100j

CITY OF EVERETT
ENVIRONMENTAL LABORATORY
3200 CEDAR STREET; EVERETT WA 98201
Phone: (425)257-8230 Fax: (425)257-8228

PROJECT #

ANALYSIS REQUEST
CHAIN OF CUSTODY

Date: ____________________________

Client: Silver Lake Water & Sewer District
Address: 15205 41st Ave. SE, Bothell, WA 98012-6114
Program:
Sample Site:
Phone: (425) 337-3647
Collected By: C. Parks
Requested By: C.Parks

Requested sample report date (If less than 30 days):_______________

Purpose:
___ **In Lab Contract** ___ **Outside Lab Contract**

Sample Description:	LIMS ID # (Lab Use Only)	Sample Date	Sample Time	Comp Grab	Sample Matrix	Analyses Requested: 18hr P/A									

Cooler? Y / N | Cooler Temp: °C | **--INDICATE: LAB PERFORMING ANALYSIS / # OF CONTAINERS--**

CHAIN OF CUSTODY

*Relinquished:	Received:	Date:	Time:
*Relinquished:	Received:	Date:	Time:
*Relinquished:	Received:	Date:	Time:
*Relinquished:	Received:	Date:	Time:

COMMENTS:

****Because the City of Everett Environmental Laboratory is a public agency, data, test results, reports and other documents are public records and therefore subject to disclosure to third parties upon their request pursuant to RCW Chap. 42.17.***

APPENDIX F

DISTRICT STANDARDS

Silver Lake Water & Sewer District

DISTRICT STANDARDS

FOR THE CONSTRUCTION OF:

- WATER SYSTEMS
- SANITARY SEWER SYSTEMS
- SEWAGE LIFT STATIONS

2017

Gray & Osborne, Inc.
CONSULTING ENGINEERS

SILVER LAKE WATER & SEWER DISTRICT

Address: 15205 41st Avenue SE
Bothell, Washington 98012
Phone No.: (425) 337-3647
Fax No.: (425) 337-4399

DISTRICT STANDARDS

2017

Commissioners

Bill Anderson **Anne Backstrom** **Rod Keppler**

District Manager
Curt Brees

District Engineer
Richard Gilmore, P.E.

District Consulting Engineer
Gray & Osborne, Inc.

G&O #16401

(4/2017)

The standards within are presented to inform the Developer/Contractor/Customer of the general minimum requirements necessary in the construction and acceptance of water and sewage facilities within the Silver Lake Water & Sewer District service area.

Silver Lake Water & Sewer District does not assume responsibility for keeping this material current. The District should be consulted in case of doubt on the applicability of any item(s) within. Some of the information contained within is based on governmental codes and ordinances, and industry standards and are subject to change in the event that such governing codes and ordinances are changed.

SILVER LAKE WATER & SEWER DISTRICT
DISTRICT STANDARDS
2017

Major Modifications to 2014 Standards Include:

WATER SYSTEMS

- District standard vaults have been modified to allow for ship ladder access.
- Standard meter box has been modified.
- District disinfection procedures have been modified.

SEWER SYSTEMS

- District standard manhole frame and cover has been changed.
- District standard sewer air and vacuum relief assembly has changed.

LIFT STATIONS

- Lift station SCADA standards were updated.

Additional modifications have been made throughout the 2017 District Standards. Please review the entire document for conformance to these Standards.

SILVER LAKE WATER & SEWER DISTRICT

DISTRICT STANDARDS

INDEX

DEVELOPER EXTENSION CHECK LIST
SILVER LAKE WATER & SEWER DISTRICT

NAME OF DEVELOPMENT ____________________________ EXT # ___________

DEVELOPER ________________________________ PHONE __________________

ADDRESS ____

CONTRACTOR ______________________________ PHONE __________________

ENGINEER ________________________________ PHONE __________________

DISTRICT PROJECT NO. ______________________ G&O PROJECT NO.________

Date **Pre Construction**

__________ Sign Developer Extension Agreement
__________ Pre Design Meeting
__________ Preliminary Plan Review by District Engineer (Provide 5 Sets of Prints)
__________ Approval of Water/Sewer Plans by District
__________ Site Plan Construction Approval/Snohomish County
__________ Snohomish County/City/State Right of Way Use Permit
__________ Other Permits, Specify ___________________________
__________ Pre-Construction Meeting
__________ Certificate of Insurance (Provided by Contractor)
__________ Performance Bond
__________ Proposed Construction Schedule
__________ Received all Required Recorded Offsite Easements
__________ Provide 5 Full-Size Sets of Approved Drawings Prior to Pre-Construction

Construction

Water

__________ Approval of Materials to be Used
__________ System Pressure Tested
__________ Purification Tested
__________ Water Turned On
__________ Meter check valves and gaskets received (1")
__________ Radio units received (greater than 2")

Sewer

__________ Approval of Materials to be Used
__________ System Pressure Tested
__________ Flushed
__________ T.V.'d, Mandrel Pulled, Line Plugs Pulled

Post Construction

__________ As-Built Survey Completed
__________ As-Builts Reviewed & Red-Line Sent to Engineer
__________ Red Lines Returned to District and 1 Set Blue Lines
__________ Five Sets of prints and electronic file of Plans in District Office
__________ Itemized List of Costs Water/Sewer
__________ Bill of Sale Water/Sewer
__________ Copy of Recorded Plat Received
__________ All Developer Fees Paid
__________ Final Punch List
__________ 2 Year Maintenance Bond Received
__________ Compaction Reports

__________ Backflow Prevention Assembly Test Report Received
__________ Confirmation that on-site wells have been decommissioned
__________ Written Easements and Exhibits for water and sewer systems
__________ Written easement for access to backflow assemblies
__________ Project Accepted as Complete by District

GENERAL DRAFTING REQUIREMENTS

Plans for all water and sewer system improvements shall be accurate, legible and properly detailed, and afford the maximum degree of understandability.

CONSTRUCTION PLANS

Construction Plans for the water and sewer system improvements shall meet the following minimum requirements:

PAPER PLANS:

(1) The Plans shall be separate from those plans for plat improvements, storm drainage improvements, road and street improvements and drawings and plans for any other utility. Plans for water system improvements shall be separate from those for sanitary sewer system improvements. Line weights and screening are to be selected to show new work clearly with existing utilities in background.

(2) **The size of each Plan sheet shall be 22" x 34".**

(3) The Plans shall include a suitable title block/plate, which states the names and addresses of the property owner/Developer, Engineer, general notes, the scale, the date and the stamp and signature of the Design Engineer. This information should be located on the right side or lower right hand corner of the Plan.

(4) The Plans shall provide a legend of symbols used, to ensure clarity.

(5) The first sheet in the Plan Set shall include a table of contents for all sheets in the set.

(6) The Plans shall have a legal description of the developing property and a location/vicinity or index map that clearly shows the project and its boundaries in relationship to the nearest street intersections.

(7) To the maximum extent possible, the north arrow shall be oriented to the top or to the left of each Plan.

(8) The horizontal scale of the Plans shall be 1-inch = 50 feet. In circumstances where the clarity of the Plans would otherwise be unacceptable due to the complexity of the work, or the number of other simultaneous construction elements within the same Project (such as for a major street/road improvement) are extensive, the District will consider a horizontal scale of 1-inch = 20 feet upon written request with justification provided. **The vertical datum plane for the Plans shall be NAVD 88.** An elevation benchmark shall be clearly identified. Note: Some District elevation records for existing structures are NGVD 29. When this occurs, elevations should be converted to NAVD 88 wherever shown

on the Plans with a parenthetic note stating "(Existing elevation converted from NGVD 29 to NAVD 88)".

(9) Profile views are required for all sewer system construction Plans**.** **Profile view shall be oriented directly above or below the respective Plan view.**

(10) The Plans shall be prepared and stamped by a civil engineer with current registration in the State of Washington.

(11) The Plans shall indicate and identify all property and lot lines, street rights-of-way that have been vacated shall be shown as such on the Plans. The area included in the Plan shall be enough to locate the property from an existing street intersection unless waived by the District. The Plans shall indicate and identify all existing buildings; structures; underground power, electrical, telephone, natural gas, cable television, storm drainage, and appurtenances; street, alley and driveway pavement; stream crossings; trees to be saved, new trees, landscaping, green belt; and other known physical features within the project area which will affect the execution of the system improvement construction. This information should not obscure any water or sewer improvement information.

(12) Where proposed easements are incorporated in the Plans, and they are defined as a constant width on each side of the pipeline/structure, a segment of said easement shall be shown and labeled as "Typical" and shown as Silver Lake Water & Sewer District sewer and/or water easement.

(13) Provide the following additional information when required for clarity:

a. Site grading plan
b. Plan for other utilities
c. Plan of future phases of same project
d. Contour maps or street profiles

(14) Upon approval of the construction concept, the original Plans shall be submitted to the District for signature as "approved for construction." The originals will be returned to the Design Engineer and a minimum of four (4) prints of the signed "approved" Plans shall be provided to the District prior to scheduling a pre-construction conference with the District. Additional copies will be required if right-of-way utility use permit application is necessary for construction of the water or sewer facilities.

(15) The Plans shall have a revision block located in the border frame that will be blank on the initial "approved for construction drawings" when signed by the District and will be used to document significant modifications made and approved by the District during the course of construction.

AS-BUILT DRAWINGS:

(1) Upon completion of construction and prior to acceptance, paper drawings corrected to reflect "As-Built" conditions shall be returned to the District. All constructed facilities and easements shall be placed to scale on these drawings. Each drawing shall include a project number provided by the District.

(2) Prior to project acceptance, the Developer shall be responsible for an "As-Built Survey." This survey may be performed by a licensed surveyor of the Developer's choosing. If the Developer is unable to perform the survey, the District shall perform the survey at cost to the Developer. The "As-Built Survey" shall be limited to surface water and sewer features and elevation of all sewer manhole rims and inverts, shall be performed in the appropriate datum, shall be incorporated into the record drawings, and shall be submitted to the District as a separate AutoCAD layer as detailed in the CAD Submittal standards below.

(3) All dimensions shall be corrected to concur with field location. No scratch out of dimensions and notes will be accepted. Remove erroneous and "not applicable" notes and correctly include the new location information and dimensions.

(4) For system features whose locations changed during construction (compared with the as-designed locations) the drawing geometry shall be updated to reflect the survey points that are gathered during the as-built survey. Simply changing the textual length and location references on the drawings is not acceptable.

(5) If reprinted, the drawings shall include a reference block to the prior approved construction drawings that provides the name and date of signature of the design engineer, the name of the District approving personnel and date of approval.

(6) The Developer shall be responsible for any required changes to the record drawings or electronic AutoCAD files, which are not representative of as-built conditions.

(7) Final record drawings shall incorporate all changes from the original approved plans and shall reflect as-built conditions. If the property has existing water and sewer infrastructure which are not on the District's G.I.S., the Developer/Owner shall also include the existing facilities where directed by District.

CAD SUBMITTAL STANDARDS

(1) Prior to receiving District acceptance, Developers/Owners of commercial properties, industrial properties and residential/multi-family properties shall submit to the District along with the paper As-Built drawings a CD or DVD that contains:

a. One AutoCAD DWG file compatible with AutoCAD 2016 or earlier version. The drawing file should contain the following information in one file (no External References or XREFs):

i. Water Infrastructure
ii. Sewer Infrastructure
iii. Parcels
iv. Street Centerlines
v. As-Built Survey Points

b. One PDF rendering of the As-Built drawings that is identical to the printed As-Built drawings that are delivered. PDFs should be approximately 300 DPI in resolution.

c. A table of contents describing briefly each layer name, and what information it contains.

(2) The AutoCAD DWG file and all layers in that drawing shall be set and moved to the following coordinate system:

a. NAD 1983 State Plane Washington North FIPS 4601 feet (ESRI:102748). An alternate name for the coordinate system is: EPSG Projection 2285 - NAD83/Washington North (Feet US).

b. There are multiple ways to set geographic location. Instructions on one way in AutoCAD can be found at the link below: https://knowledge.autodesk.com/support/autocad/learn-explore/caas/CloudHelp/cloudhelp/2016/ENU/AutoCAD-Core/files/GUID-104722CD-FA08-4A8B-A2E6-DA4670D0F3FD-htm.html

GENERAL NOTES

1. LOCATIONS SHOWN OF EXISTING UTILITIES AND IMPROVEMENTS ARE APPROXIMATE ONLY, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT LOCATIONS OF ALL UTILITIES AND IMPROVEMENTS TO AVOID DAMAGE OR DISTURBANCE.

2. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH THE LATEST REVISION, INCLUDING ADDENDA AND UPDATES, OF THE SILVER LAKE WATER & SEWER DISTRICT STANDARDS. CONTRACTOR TO HAVE THESE STANDARDS ON JOBSITE.

3. ROAD RESTORATION SHALL BE PER APPLICABLE CITY OF EVERETT/CITY OF MILL CREEK/SNOHOMISH COUNTY/WSDOT STANDARDS.

4. CONTRACTOR SHALL CALL “DIAL DIG” (1-800-424-5555), 2 FULL WORKING DAYS PRIOR TO CONSTRUCTION, FOR AID IN LOCATING ANY EXISTING UNDERGROUND UTILITIES.

5. THE CONTRACTOR SHALL KEEP TWO SETS OF PLANS ONSITE AT ALL TIMES FOR RECORDING “AS BUILT” INFORMATION. ONE SET SHALL BE SUBMITTED TO SILVER LAKE WATER & SEWER DISTRICT AT COMPLETION OF CONSTRUCTION.

6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE SILVER LAKE WATER & SEWER DISTRICT FOR A PRECONSTRUCTION MEETING.

7. THE CONTRACTOR SHALL COORDINATE WITH THE DISTRICT FOR A FIELD MEETING PRIOR TO INSTALLATION OF ANY REDUCED PRESSURE BACKFLOW ASSEMBLY OR REDUCED PRESSURE DETECTOR ASSEMBLY.

8. EACH WATER AND SEWER CONSTRUCTION DRAWING SHEET SHALL HAVE THE FOLLOWING DISTRICT SIGNATURE BLOCK.

SILVER LAKE WATER & SEWER DISTRICT
APPROVED FOR CONSTRUCTION

BY:________________________ DATE:_______
DISTRICT OFFICIAL

DISTRICT PROJECT NUMBER: ______________________________

"THESE PLANS ARE APPROVED FOR CONSTRUCTION FOR THE PERIOD NOTED ON THE DEVELOPER EXTENSION AGREEMENT. THE DISTRICT RESERVES THE RIGHT TO MAKE REVISIONS, MODIFICATIONS, AND CHANGES SHOULD CONSTRUCTION BE DELAYED BEYOND THIS TIME LIMIT."

RECORD DRAWING DOCUMENTATION OF
SILVER LAKE WATER & SEWER DISTRICT APPROVAL FOR CONSTRUCTION
Original approval signatures not replicated

Design Engineer: Signed On:

SLWSD Approved for Construction by: Richard Gilmore

the: District Engineer Signed On:

PLANS AND CONSTRUCTION CHECK LIST
SILVER LAKE WATER & SEWER DISTRICT

YES	*NO*	
_____	_____	District Assigned Project No.
_____	_____	Current version of District Standards used in design: January 2017.
_____	_____	Construction Plans signed and dated by a Washington State licensed engineer.
_____	_____	Construction plans expire 1 year from date of District approval.
_____	_____	Cover sheet showing entire property and location of improvements has been included.
_____	_____	Plans showing Erosion Control, Grading, Street Improvements, Storm Drainage, and Landscaping have been included.
_____	_____	Engineering scale and north arrow are shown for each plan view.
_____	_____	Plans sheets are 22" x 34".
_____	_____	Horizontal scale: 1-inch = 50 feet, Vertical Scale: 1 inch = 5 feet (or as otherwise approved by the District).
_____	_____	Vertical datum is NAVD 88 with conversion factor noted to NGVD 29.
_____	_____	District General Notes are included on first water plan sheet and sewer plan sheet.
_____	_____	District Approval Block is included on each water and sewer plan sheet.
_____	_____	Location of streets, right-of-ways, easements, existing utilities and water system facilities have been located and/or called out.
_____	_____	All flood plains, wetlands, steep slope, and/or sensitive areas are clearly identified.
_____	_____	Existing and proposed grades have been shown and labeled.
_____	_____	Stationing has been provided for the site area and on all structures to be constructed.
_____	_____	Match lines and title blocks are shown correctly.
_____	_____	All existing/proposed utilities are shown on Plans.
_____	_____	District system standard details have been referenced.
_____	_____	Road restoration has been performed per County, City, and/or State standards.

YES	NO	
_____	_____	All public rights-of-way, front lot corners and a property line stakes are clearly identified.
_____	_____	Fenced easement areas provided with access gates of matching construction.

WATER

_____	_____	Property lines, water meters, water valves, hydrants, and paving locations are shown.
_____	_____	Mains are located 10 feet northerly or easterly of street centerline (or District approved location).
_____	_____	Water main easements are minimum of 15-feet wide.
_____	_____	A minimum of 3'-6" cover over all 8-inch or less sized water mains except 4'-0" cover in easements. A minimum 4'-0" cover on all water mains 12-inches and larger.
_____	_____	Fire hydrant spacing does not exceed 600 feet and/or located no more than 350 feet from the back of any proposed lot.
_____	_____	Each hydrant shall be marked 1 foot offset from the center line of the street with a Type III blue reflector.
_____	_____	Pipes connecting hydrants to mains are at least 6 inches in diameter and not longer than 50 feet.
_____	_____	Only one fire hydrant is installed on any dead-end 8-inch run.
_____	_____	Valve spacing has not been exceeded (1,000 feet maximum spacing).
_____	_____	Valves are installed on each leg of all tees and crosses, except fire hydrant tees unless required by the District.
_____	_____	Valves are installed at each end of easements.
_____	_____	All valves 14 inches and larger are ductile iron butterfly valves.
_____	_____	All valves 12 inches and smaller are ductile iron resilient seated gate valves.
_____	_____	Approved backflow assemblies is provided for all connections other than single family residential.
_____	_____	All backflow assemblies are located immediately behind and on the property side of the water service box unless internal location in a building receives prior District approval.

YES	*NO*	
_____	_____	District approved air and vacuum assemblies are located at all isolated high point(s) in system.
_____	_____	Blow-off assemblies are located at all isolated low point(s) and dead ends in system. Fire hydrants may be required in lieu of blowoff assemblies at the discretion of the District.
_____	_____	All dead end mains are closed with dead end MJ caps, plugs, thrust blocks, and blowoff assemblies or hydrants.
_____	_____	All pipeline deflections are designed and constructed in accordance with pipe manufacturer's recommendations.
_____	_____	Thrust blocks, anchor blocks or restrained joint pipe have been provided for all fittings and bends.
_____	_____	Minimum size service lines between water main and a single water meter is 1-inch for single-family and 2-inch for commercial and multi-family. Pipes and fittings have been inspected for defects before installation, and are clearly labeled and identified by manufacturer in regards to Class.
_____	_____	Valves have been set with vertical stems.
_____	_____	Operating nut of all valves is within 3'-6" of finished grade, 2-inch standard nut, and 5-inch soil pipe will be used in assembly. Stem extension required if greater in depth than 3'-6".
_____	_____	Valves located in easements or outside of paved areas are set to grade and have concrete collars.
_____	_____	Valve markers have been placed at edge of right-of-way opposite the valve and painted and stenciled appropriately.
_____	_____	Guard posts have been installed and painted for each hydrant, if required by District.
_____	_____	All water services are located within public road rights-of-way or District approved easements.
_____	_____	Meter service, radio unit, and meter boxes have been set to final finished grade elevations and adjusted prior to final pressure test (unless otherwise approved by the District).
_____	_____	Water meters larger than 1-inch have been furnished and installed by the Contractor.
_____	_____	All pipes have been tested and disinfected to District and AWWA standards prior to acceptance.
_____	_____	Service gaskets and dual check valves have been provided to the District.

YES *NO*

_____ _____ Backflow assemblies have been tested and installed on all services other than single family residential connections, certified and written test results have been provided to the District.

SEWER

_____ _____ Property lines, sewer main, manholes, side sewer, and paving locations are shown.

_____ _____ Mains are located 5 feet south or west of centerline (or District approved location). Sewer main easements are minimum of 15 feet wide.

_____ _____ All-weather access is provided to manholes in easements suitable for vactor trucks.

_____ _____ All pipelines shall have a minimum cover of 3 feet. (Side sewer laterals in public rights-of-way shall have a minimum of 5-feet cover at right-of-way line).

_____ _____ All sewer main crossings and parallel sewer mains have 10-foot horizontal spacing and 18 inches of vertical separation from the nearest water main.

_____ _____ Pipes between manholes are straight in alignment.

_____ _____ Pipes are designed for no less than the following minimum grade:

8 inch gravity main - 0.5%
6 inch side sewer - 2.0%
8 inch gravity dead end - 1.0%.

_____ _____ Steeper slopes may be required depending on topography and tributary flows (at the discretion of the District). Other diameter pipe lines must conform to DOE design standards.

_____ _____ Side sewer laterals are located at downstream sewer locations (10 feet from the side lot line and 15 feet (typical) past the street right-of-way line).

_____ _____ Backwater valves provided for all side sewers where potential exists for sewer main to back up into the served facility.

_____ _____ Sewers on 18% slope or greater are anchored securely with concrete anchors or equal:

18 to 35% - 36 feet center to center
35 to 50% - 24 feet center to center
50% and over - 16 feet center to center.

_____ _____ Manhole spacing has not exceeded 400 feet (unless approved by District).

_____ _____ Manholes are a minimum of 8 feet from rim to invert (unless approved by District).

YES	*NO*	
_____	_____	Manholes are located at all changes in grade, pipe alignment, pipe intersections, and termination points. Clean-outs are not acceptable as a substitute except as approved by the District.
_____	_____	Manholes are not located in low points of vertical curves or curb flow lines (gutter sections).
_____	_____	Manholes are located at the terminus of all sewer mains (unless approved by the District).
_____	_____	Drop connections must be approved by District.
_____	_____	Manholes and cleanouts have locking lids.
_____	_____	Manholes and cleanouts located in easement areas or outside of paved areas have concrete collars and green carsonite markers.
_____	_____	Manholes have a 0.10 foot drop across the channel.
_____	_____	Match crowns of the pipes where a smaller sewer joins a larger one.
_____	_____	Invert and rim elevations are shown on plan and profile for all manholes.
_____	_____	Correct invert elevation at point of connection (field verified) is shown on the plans.
_____	_____	Manhole steps and ladders are polypropylene.
_____	_____	Individual tee connections have been used for side sewer lines (or District approved alternative).
_____	_____	All pipe bedding has been field inspected prior to backfill.
_____	_____	Side sewer stubs have been provided for each lot that requires service (no double side sewer connections).
_____	_____	Inspection of side sewer has been completed prior to backfill of line.
_____	_____	Markers have been provided at the termination of all side sewer stubs and stenciled appropriately.
_____	_____	Side sewer cleanouts have been placed at no more than 100-foot spacing.
_____	_____	Commercial, Industrial, and School food establishments have grease interceptor(s) installed outside of the building (interceptor installed as close as possible to source of grease/fat).
_____	_____	All pipes have been tested prior to acceptance.

ADDITIONAL REQUIREMENTS MAY BE MANDATED BY THE DISTRICT, ON A CASE BY CASE BASIS, DUE TO SITE SPECIFIC CONDITIONS.

SILVER LAKE WATER & SEWER DISTRICT
PRE-CONSTRUCTION MEETING CHECK LIST

CONSTRUCTION UNDER 2017 SLWSD DEVELOPER STANDARDS

Date:________________

PROJECT NAME:__________________________ G&O NO.:______________

Developer:________________________________ Phone:_________________

Contractor:_______________________________ Phone:_________________

Superintendent/Foreman:_____________________ Phone:_________________

Designer:_________________________________ Staking By:______________

Suppliers/Materials:____

GENERAL Start Date:______________

______ Performance Bond required. ______Yes ______ No
______ Certificate of Insurance.
______ Submit material list for approval of all items prior to ordering and start of construction (Sewer & Water).
______ Use construction plans approved and signed by the District.
______ Contractor to maintain a separate set of as-built drawings on site.
______ Control layout staked including lot corners (Sewer & Water).
______ Schedule other agency Inspectors as necessary.
______ Trench safety.
______ Trenches to be compacted per County/City/State Specs.
______ Soils Lab:____.
Provide compaction reports (modified Proctor).
______ Schedule inspections.
______ All field communication to go through the Inspector.
______ Overtime inspection to be requested (4 hours min.) in writing by the previous Wednesday & will be based on availability of Inspectors.
______ All D.I. pipe liner to be checked before installed.
______ **Contractor to meet "Offsite County Use Permit Conditions and Requirements of Endangered Species Act" and the "County's Best Management Practice" (BMP) requirements or work will be halted by County.**

SEWER

______ Lots to be graded to final grades prior to side sewer installation.
______ Inspection required on pipe, bedding, MHs, and existing utilities.

______ Provide cut sheets prior to start of pipe laying.
______ Air testing and televised record (narrated DVD) required after utilities installed. Re-TV'ing may be required if discrepancies discovered (to confirm correction).
______ Deep construction required ______ D.I. (401 Protecto Lined) pipe _______ or C900 PVC _______.
______ First MH to be plugged on downstream side.
______ 12-foot 2x4s (wired) to be used for side sewers at 6 feet and 8 feet deep unless lot grade dictates otherwise.
______ Extend side sewers past utility trench (typical) into each lot.
______ Verify if standing side sewers are needed in easements.

WATER

______ Pipe shall be delivered to the site with ends wrapped or with pipe plugs and shall remain in place until the pipe is installed in the trench.
______ Inspection required on all bends, valves, F.H.s, B.O.s, thrust blocks and existing utilities.
______ Subgrade to be complete prior to laying water main or provide cut stakes.
______ Provide minimum 3'-6" cover over 8-inch mains (4 feet in easements) and 4'-0" cover over 12-inch mains.
______ Use restrained joint pipe and fittings in fills and critical areas or if trenches are behind bends. Use thrust block or restrained joint table.
______ Group water meter boxes. Meter boxes to have coated wire placed between boxes with equal distance of coiled wire in each box (District will provide the wire). Raven meter boxes or District approved equal. H-20 load rated where required.
______ All valves and fittings to be ductile iron.
______ F.H.s required to have short bodied 4-inch Storz adapters.
______ May need a temporary air vent where water feed is higher than the new mains.
______ Flush water to be metered. Hydrant meters shall be rented from the District. Flush to on-site erosion control ponds where possible. Dechlorination methods must be approved by the District.
______ Meters larger than 2 inches to be provided by developer and to be Sensus or Omni model meter with Sensus radio unit, read in CCF.
______ Backflow assemblies are required for all services other than single family residential meters.
______ Backflow assembly has been approved by the District.
______ Only SLWSD or their representative to operate valves connected to existing mains.
______ New system will be isolated from existing using protected connection until final connection is allowed by District.
______ Provide fire hydrant depths.

SECTION I

GENERAL CONDITIONS

GENERAL CONDITIONS

TABLE OF CONTENTS

Page

I. GENERAL CONDITIONS:

1. **DEFINITIONS:** To make clear the meaning and intent of the words: District, District's Engineers, Developer, Contractor, and Contract Documents, as used in these standards, the following definitions are given:

District:	Silver Lake Water & Sewer District, Snohomish County, Washington, a Water – Sewer District existing under and by virtue of the laws of the State of Washington.
District's Engineers:	The District Engineer or the engineering firm and that firm's representatives retained and assigned by the District to act as the Engineer for the work to be performed on the project.
Developer:	The person, persons, firm, owner, or corporation entering into agreement with Silver Lake Water & Sewer District for the installation and/or extension of a water or sewage facility. The term also includes the Developer's agents and employees and Contractor.
Contractor:	The person, persons, firm, or corporation employed by the Developer to perform the work required by project plans and specifications to construct the water or sewage facility within the District's service area. The term also includes the Contractor's agents and employees.
Developer/ Contractor:	Use of either word "Developer" or "Contractor" in this document shall be understood to be interchangeable, one for the other, wherein both are responsible for compliance, and the developer assumes full and final responsibility unless a division of responsibility through the use of a contract, performance bond, insurance, etc., is established.
Contract Documents:	These shall consist of the following and in case of conflicting provisions, the text material shall have precedence:

a) Developer Agreement for Water or Sewer Facility Extensions
b) Plans
c) Standard Details
d) Specifications-Conditions and Standards of the Contract to include system testing
e) Addenda
f) Change Orders

g) General Conditions
h) "As-Built" Documents

These documents shall form the Contract.

2. **ENGINEER'S STATUS:** The District's Engineer shall serve as an agent of the District and in conjunction with the District, have the authority to accept or reject the work performed by the Developer for facilities within the District's service area.

3. **INSPECTION OF WORK:** The Developer shall give the District timely notice that the work, or any part thereof, which has been constructed within the District's service area, is ready for inspection. In no event shall the work, or any portion thereof, be covered up or placed into operation until the District has completed the inspection.

If any work should be covered up without prior inspection by the District, it shall be uncovered for examination at the Developer's expense.

The District and its representatives shall at all times, have access to the work whenever it is in preparation or progress and the Developer shall provide proper facilities for such access and for such inspection.

The Developer shall perform tests of the work, at the Developer's expense.

If the specifications, laws, ordinances, or any public authority shall require any work to be specially tested or approved, the Developer shall give the District timely notice of its readiness for inspection and, if the inspection is by other authority than the District, the date fixed for such inspection.

All inspections by the District will be made with all reasonable promptness but, in no event, shall the lack of prompt inspections be construed to allow the Developer to cover up the work or any portion of it without inspection.

The District's review of the Contractor's work plan, safety plan, construction sequence, schedule or performance does not and is not intended to include review or approval of the adequacy of the Contractor's safety measures in, on or near the construction site. The District does not purport to be a safety expert, is not engaged in that capacity, and has neither the authority nor the responsibility to enforce construction safety laws, rules, regulations, or procedures, or to order the stoppage of work for claimed violations thereof.

4. **FINAL INSPECTION & ACCEPTANCE:** All materials and completed work shall, before acceptance by the District, be subject to final inspection by the District. The District shall have the right to subject all machinery, equipment and

work to all tests necessary to assist in determining whether the contract has been faithfully performed.

5. **MATERIALS & FACILITIES:** Unless otherwise stipulated, all materials utilized for water or sewage system construction within the District's service area shall be new and both workmanship and materials shall be of good quality. The Developer shall furnish evidence as to the kind and quality of materials.

   The Developer shall at all times enforce strict discipline and good order among their employees and shall not employ on the work any person not skilled in the work assigned to them.

6. **ROYALTIES & PATENTS:** The Developer shall pay all royalties and license fees. He shall defend all suits and claims for infringement of any patent rights and shall save the District harmless from loss on account thereof.

7. **SURVEYS, PERMITS & REGULATIONS:** The Developer shall furnish and pay for all surveys, licenses, permits, easements, and rights-of-way.

   The Developer shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work.

   The Developer shall carefully preserve bench marks, reference points and stakes, and in case of destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their absence or disturbance.

8. **PROTECTION OF WORK & PROPERTY:** The Developer shall continuously maintain protection of all his work from damage and shall protect the property of others from injury or loss arising in connection with his work. He shall make good any such damage, injuries, or loss. He shall protect the adjacent property as provided by law and the Contract Documents. He shall provide and maintain all passage ways, guard fences, traffic control, detours, road closures, barricades, signs, flaggers, lights, and other facilities for protection required by public authority or local conditions. The Developer shall bear the risk of loss or damage for all finished or partially finished work until the entire project is completed and accepted by the District.

9. **EXISTING UTILITIES:** The Developer shall investigate and locate all buried utilities or obstructions in the construction area prior to construction of new water or sewage facilities. The Developer shall coordinate with the District, power, telephone, cable television, gas companies, and all other affected utilities for field location of the respective existing facilities.

The Developer shall call for utility locates (1-800-424-5555) two full working days prior to construction for aid in locating any existing underground utilities as applicable.

10. **REPLACING IMPROVEMENTS:** Whenever it is necessary in the course of construction to remove or disturb culverts, driveways, roadways, pipelines or other existing improvements, they shall be replaced to a condition equal or superior to that existing before they were so removed or disturbed. If it is necessary to trench through lawns, the sod shall be removed before trenching and replaced with new sod after backfilling.

11. **ACCESS:** Bridging shall be provided across private driveways and roadways, during the period that trenches are open, in such a manner as not to constitute a hazard to the people who use them. All construction operations shall be conducted in such a manner as to interfere as little as possible with the normal procedure of traffic.

12. **DEFECTS & THEIR REMEDIES:** If the work or any part thereof performed by the Developer, shall be deemed by the District as not in conformity with the District's Standards, the Developer shall forthwith rebuild or otherwise remedy such defects prior to being accepted by the District.

    The Developer shall be responsible for correcting all defects in workmanship and material appearing within two years after completion and acceptance of his project. The Developer shall start work to remedy such defects within 7 days of notice of discovery thereof by the District and shall complete such work within a reasonable time. In emergencies, where damage may result from delaying or where loss of service may result, such corrections may be made by the District in which case all costs shall be borne by the Developer. In the event the Developer does not accomplish corrections at the time specified, the work shall be otherwise accomplished and the cost of same shall be paid by the Developer.

13. **USE OF COMPLETED PORTIONS:** The District shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time may not have expired for completing the entire work or such portions, which will not interfere with the Developer performing the remaining work. Such taking possession and use shall not be deemed an acceptance of any work not completed and inspected in accordance with the Contract Documents or District Standards.

14. **INSURANCE REQUIREMENTS, SUMMARY OF COVERAGE & INDEMNITY:** The Developer shall carry liability and property damage insurance covering all work during Project construction, including that done by the Developer's Contractor and the Contractor's subcontractors. This insurance shall also protect the District from any contingent liability prior to Project acceptance.

The Developer shall obtain from an insurance company, with have an A.M. Best rating of "AVII" or better approved by the Insurance Commissioner of the State of Washington pursuant to Title 48 RCW, commercial general liability and automobile liability insurance against claims to the Developer, the District and its elected and appointed officials, officers, employees, agents and volunteers for injury to person or property which may arise from any act or omission by anyone directly or indirectly employed by the Developer from or relating to the performance, supervision, or inspection of the work. The insurance policy(s) shall specifically name and include the District and its elected and appointed officials, officers, employees, agents and volunteers as additional insureds under such policy(s) with regards to damages and defense of claims arising from: (a) activities performed by or on behalf of the Developer; (b) products and completed operations of the Developer, or (c) premises owned, leased or used by the Developer for the work proposed under this Developer Extension Agreement. Proof of the existence of such insurance shall be provided to the District in a form acceptable to the District prior to the Pre-Construction Meeting.

The Developer shall not begin work under the agreement or under any special condition until all required insurance has been obtained and until such insurance has been reviewed and accepted by the District. The Developer shall file with the District either a certified copy of all insurance policies or a certificate of insurance with the endorsements in the form included herein as are necessary to comply with these specifications.

The minimum limits of coverage shall be as follows:

General Aggregate	$2,000,000
Products - Comp/OPS Aggregate	$2,000,000
Personal Injury	$2,000,000
Each Occurrence	$2,000,000
Automobile Liability	$2,000,000

Policies shall be kept in force until the project is accepted by the District. The District shall be given at least forty-five (45) days written notice of cancellation, non-renewal, material reduction, or modification of coverage. The District may increase these limits if the scope of the proposed work warrants additional coverage.

Failure of the Developer to fully comply with the requirements regarding insurance will be considered a material breach of contract and shall be cause for immediate termination of the developer extension agreement and any and all District obligations, regarding same.

The coverage provided by the insurance policies shall be primary to any insurance maintained by the District, except with respect to losses attributable to the sole negligence of the District. Any insurance that might cover this Agreement which is maintained by the District shall be in excess of the Developer's/Contractor's insurance and shall not contribute with it.

The insurance policy shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured with respect to any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured.

The general aggregate provisions of the insurance policy shall be amended to show that the general aggregate limit of the policies apply separately to this project.

The insurance policy shall not contain a deductible or self-insured retention in excess of $10,000 unless approved by the District.

Providing coverage in the stated amounts shall not be construed to relieve the Developer from liability in excess of such limits.

The Developer shall indemnify, defend and hold the District and its elected and appointed officials, officers, employees, agents and volunteers harmless from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against the District by reason of any act or omission of the Developer, the Developer's agents or employees, in connection with the work performed under this contract, or caused or occasioned in whole or in part by reason of the presence of the Developer, the Developer's Contractor or Sub-contractors, or their property, employees or agents, upon or proximity to any property upon which work is being performed under this contract.

For the purpose of applying RCW 4.24.115 to the Developer's project, the Developer and the District agree that the term "damages" applies only to the finding in a judicial proceeding and is exclusive of third party claims for damages preliminary thereto.

The Developer agrees to indemnify, defend and hold harmless the District, and its elected and appointed officials, officers, employees, agents and volunteers from all claims for damages by third parties, including costs and reasonable attorney's fees in the defense of such claims for damages, arising from performance of the work under this contract. Developer waives any right of contribution against the District.

It is agreed and mutually negotiated that in any and all claims against Silver Lake Water & Sewer District or any of its agents or employees by any employee of the Developer, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation hereunder constitutes Developer's and its Contractor's and Sub-Contractor's waiver of immunity under Title 51 RCW, solely for the purposes of this indemnity.

District and Developer agree that all third party claims for damage against District for which Developer's insurance carrier does not accept defense of District may be tendered by District to the Developer who shall, if so tendered by District, accept and undertake to defend or settle with the Claimant. District retains the right to approve claims investigation and legal counsel assigned to said claim and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to Silver Lake Water & Sewer District. In the event that District agrees or a court finds that the claim arises from the sole negligence of District, this indemnification shall be void and District shall be responsible for all damages payable to the third party claimant. In the event that District and Developer agree or a court finds that the claim arises from or includes negligence of both the Developer and District, the Developer shall be responsible for all damages payable by the Developer to the third party claimant under the court finding, and, in addition thereto, the Developer shall hereunder indemnify District for all damages paid or payable by District under the court finding an amount not to exceed the percentage of total fault attributable to the Developer. For example, where the Developer is 25 percent negligent, the Developer shall not be required to indemnify District for any amount in excess of 25 percent of the claimant's total damages.

Nothing contained in these insurance requirements is to be construed as limiting the extent of the Developer's and its contractor's responsibility for payment of damages resulting from operations under this agreement.

15. **RIGHTS OF VARIOUS INTERESTS:** Wherever work being done by the District's employees or agents or by other developers is contiguous to work performed by the Developer, the respective rights of the various interests involved shall be established by those involved to secure the completion of the various portions of the work in general harmony.

16. **SANITATION:** Necessary sanitation conveniences for the use of workmen on the job, secluded from public observation, shall be provided and maintained by the Developer.

17. **CLEAN-UP:** The Developer shall keep the construction site reasonably clear during the progress of the work.

    The Developer shall backfill the trenches, clean out ditches that may have been filled during the work, replace damaged surfacing, remove surplus materials and trash, dispose of brush, repair all damages, and otherwise leave the job in a neat, orderly and workmanlike condition.

18. **CONSTRUCTION CONFORMANCE:** In addition to meeting the standards and conditions of the Silver Lake Water & Sewer District, all construction shall be in conformance with the requirements of the Cities of Everett and Mill Creek, Departments of Health and Ecology, Snohomish County, Washington State Department of Transportation, American Public Works Association, and American Water Works Association.

    The Developer shall plan, design, and construct the sewer and/or water extension between the point of connection to the existing utility, to and through the proposed development to provide sewer and/or water service to the Developer's property and to existing adjacent properties that can be served. This extension include mainlines to the far side of the property where future extension may occur. It also includes installing side sewers, water service, and fire hydrants in areas where water and sewer main improvements from the existing utility to the development are needed, as determined by the District, to serve existing properties along the alignment of the extension.

    Additional District requirements may be mandated, on a case-by-case basis, due to site specific conditions.

19. **PREDESIGN MEETING:** A predesign meeting shall be held at the District offices prior to preliminary design of the proposed improvements. As a minimum, the Developer and the Developer's Engineer shall attend the meeting. This meeting should be used to clarify District Standards, resolve conflicts and to facilitate expeditious review of plan submittals.

20. **PRECONSTRUCTION MEETING:** A preconstruction meeting shall be held at the District offices prior to any construction work being performed as part of the Developer Extension. As a minimum, the Developer and/or the Developer's Representative responsible for completion of the work, and the Developer's Contractor and Project Foreman shall attend the meeting. The Developer shall coordinate a meeting time which is convenient with the District's schedule and shall be scheduled a minimum of 5 working days prior to construction.

21. **EASEMENTS:** The Developer shall obtain all necessary easements without cost to the District, using the District's standard easement form. Wherever a water or sewer main is to be laid other than in a public right-of-way, a permanent easement of not less than 7-1/2 feet on each side of the centerline of the main shall be provided. In addition, the Developer shall provide a temporary construction easement not less than 25 feet in width adjacent to the permanent easement. The Developer shall supply the District with the supporting data necessary to verify the location of the easement. If legal services are required by the District in connection with the easement, the cost of such services shall be reimbursed by the Developer to the District on demand and before acceptance of the extension.

The District shall be named as a beneficiary, with respect to both water and sewer facilities, in all general utility easements created in connection with the project.

Permanent easements shall also be provided for all water meters, fire hydrants, and backflow assemblies required to protect the public potable water system located outside the public right-of-way.

No permanent structures shall be allowed to be constructed within the permanent easement.

Landscaping and plantings shall be restricted to non-root intrusive low growing shrubs, grass, and surface coverings.

Vehicle access, as approved by the District, shall be provided to all manholes and facilities. Access to any fenced easement shall be provided via a duplex gate (12-foot opening width) of matching construction, to be approved by the District.

All offsite easements shall be obtained by the Developer and reviewed by the District prior to approval of the construction Plans. All other easements shall be provided and reviewed by the District prior to acceptance of the work performed under the Contract. When the form of required easements are approved by District, the Developer shall record the easement with the County Auditor and provide a record easement document to the District as a condition of acceptance.

An easement shall be provided to the District for access to all backflow assemblies required to protect the public potable water supply from possible contamination.

22. **POLLUTION AND EROSION CONTROL:** The Contractor shall exercise all necessary precautions throughout the life of the project to prevent pollution, erosion, siltation, and damage to property.

Erosion and sediment control throughout the project including abutting and downstream properties shall be the responsibility of the Developer.

The Developer shall determine the appropriate temporary erosion and sediment control necessary for the construction time of the year and shall furnish and install the necessary controls as the first order of work. Such erosion control shall be fully maintained during the course of construction, modifying the control when necessary.

Temporary erosion and sediment control shall consist of and be installed in accordance with the more stringent conditions of Offsite County Use Permit Conditions, Requirements of Endangered Species Act, City of Mill Creek or Snohomish County Best Management Practice or Department of Ecology's Storm Management for the Puget Sound Basin Technical Manual for water quality.

The Developer shall bear sole responsibility for damage to completed portions of the project and to property located off the project caused by erosion, siltation, run-off, or other related items during construction of the project. The Developer shall also bear sole responsibility for any pollution of rivers, streams, groundwater, or other waters, which may occur as a result of construction operations.

Upon failure of the Developer to provide immediately such erosion control, the District shall be at liberty, without further notice to the Developer to provide and/or remove the necessary erosion control. The Developer shall reimburse the District for any costs incurred on account thereof.

23. **ENCASEMENT/CARRIER PIPES:** All state highway stream crossings, and other locations determined by the Developer and/or the District shall be encased with steel casing. Steel casing shall be of sufficient diameter, size, and strength to enclose the carrier pipe and to withstand maximum highway loading. Sizing and wall thickness of casing is subject to approval by the District. The carrier pipe shall be ductile iron, Class 52, restrained joint pipes unless otherwise approved by the District. Casing spacers shall be installed at each ten feet of the pipeline. The spacers shall be stainless steel casing insulator, Model-M12-SS by Calpico, Inc., Typ. or approved equal. Sand backfill between the casing and the carrier pipe shall be required. In order to prevent the sand from being washed from the casing, the ends of the casing shall use end seal Model C by Calpico, Inc., backfill and testing of the pipe are completed.

24. **FINISHING AND CLEANUP:** After all other work on the project is completed and before final acceptance, the entire roadway, including the roadbed, planting, sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades and cross sections of a new roadway consistent with the original section, and as hereinafter specified.

On construction where all or portions of the construction is in undeveloped areas, the entire area which has been disturbed by the construction shall be shaped so that upon completion the area will present a uniform appearance, blending into the contour of the adjacent properties and hydroseeded. All other requirements outlined previously shall be met.

Slopes, sidewalk areas, planting areas and roadway shall be smoothed and finished to the required cross section and grade by means of a grading machine insofar as it is possible to do so without damaging existing improvements, trees, and shrubs. Machine dressing shall be supplemented by handwork to meet requirements outlined herein, to the satisfaction of the District.

Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. All graded areas shall be true to line and grade. Where the existing surface is below sidewalk and curb, the area shall be filled and dressed out to the walk. Wherever fill material is required in the planting area, the finished grade shall be elevated to allow for final settlement, but nevertheless, the raised surface shall present a uniform appearance.

All rocks in excess of 1 inch diameter shall be removed from the entire construction area and shall be disposed of the same as required for other waste material. In no instance shall the rock be thrown onto private property. Overhang on slopes shall be removed and slopes dressed neatly so as to present a uniform, natural, well-sloped surface.

All excavated material at the outer lateral limits of the project shall be removed entirely. Trash of all kinds resulting from clearing and grubbing or grading operations shall be removed and not placed in areas adjacent to the project. Where machine operations have broken down brush and trees beyond the lateral limits of the project, the Developer shall remove and dispose of same and restore said disturbed areas at his own expense.

Drainage facilities such as inlets, catch basins, culverts, and open ditches shall be cleaned of all debris that results from the Developer's operations.

All pavements and oil mat surfaces, whether new or old, shall be thoroughly cleaned. Existing improvements such as Portland cement concrete curbs, curb and gutters, walls, sidewalks, and other facilities, which have been sprayed by the asphalt cement, shall be cleaned to the satisfaction of the District.

Castings for monuments, water valves, vaults and other similar installations, which have been covered with the asphalt material, shall be cleaned to the satisfaction of the District.

25. **RECORD DRAWINGS:** Upon completion of construction and prior to acceptance, the approved construction drawings shall be corrected to reflect "As-Built" conditions, in accordance with the District's General Drafting Standards, and shall be returned to the District. The record drawing submittal when approved shall include an electronic file on disk of the scanned "As-Built" drawings, and the required signatures. For drawings created in electronic form, the submittal shall also include an AutoCAD file (Release 2010, Civil 3D or earlier version) "As-Built" drawing information in accord with the District GIS provisions on disk, and all related "As-Built Survey" files.

26. **GENERAL GUARANTEE AND WARRANTY:** The Developer shall be required, upon completion of the work and prior to acceptance by the District, to furnish the District a construction guarantee covering all material and workmanship for a period of 2 years after the date of final acceptance and shall

make all necessary repairs during that period at his own expense, if such repairs are necessitated as the result of furnishing poor materials and/or workmanship. The Developer shall obtain warranties from the contractors, subcontractors, and suppliers of material or equipment where such warranties are required, and shall deliver copies to the District upon completion of the work.

The form of this guarantee shall be mutually agreeable to the District and the Developer. The guarantee shall be an amount not less than 15 percent of the cost of the facility constructed as listed on approved bill of sales documentation and shall be for a duration not less than 2 years from the dated of acceptance of the constructed facilities by the District.

A separate warranty to allow for final adjustment of surface features to accommodate final pavement will be allowed. Amount to be based on estimated construction cost to adjust.

In no case shall a bond for construction warranty be less than $5,000.

27. **CROSS CONNECTION PROTECTION:** Backflow assembly tests, certification and verification of locations, if applicable, shall be completed and reviewed by the District prior to project acceptance.

All on-site wells or auxiliary water system shall be disconnected and decommissioned prior to connecting to the District's water or sewer systems. Confirmation that the on-site wells have been decommissioned in accordance with WAC 173-160-381 shall be provided to the District prior to the District selling a water or sewer connection permit.

28. **ADDRESSING FACILITIES IN EXISTENCE PRIOR TO DEVELOPMENT:**

PRIVATE WELLS:

Prior to project acceptance any developing property served by private well shall decommission the well per WAC 173-160-381; further requirements are identified in Section V, Cross Connection Control of these District Standards.

ON-SITE SEPTIC SYSTEMS:

Prior to project acceptance property served by on-site septic systems shall abandon the septic tank to Snohomish Health District Standards and WAC 246-272A-0300; further requirements are identified in Section III, Sanitary Sewer Systems General Standards of these District Standards.

CREDIT FOR EXISTING WATER AND/OR SEWER CONNECTION:

Reuse in Kind

Developers requesting reuse of existing service in kind must make an application for this use to the District. Reuse in place or relocation of point of service within the developing project is allowed with full credit for prior capital facilities charges provided:

- Application is made to the District.
- Payment of administrative fees identified in District Fees and Charges is received. And
- Existing service connection(s) if not used in-place are abandoned at the main by District Staff for water services with time and material cost paid by the Developer; and abandoned by the Developer at Developer's cost where directed by District Staff for sewer service line(s).

Upsizing with Credit for Existing Water and/or Sewer Connection Capital Facility Charges

Developers if seeking credit for prior connections towards the connection fees for upsized services will receive consideration if:

- Request is made to District for credit for existing services. And
- Existing service connection(s) if not used in-place are abandoned at the main by District Staff for water services with time and material cost paid by the Developer; and abandoned by the Developer at Developer's cost where directed by District Staff for sewer service line(s).

The credit amount shall be the general capital facilities fee paid at the time of the existing service connection. If the amount paid for the existing connection cannot be determined; then a base credit of $100.00 for water connection and $1,000.00 for sewer connection shall be used in calculation of credit towards the upsized connection fee in place at the time of service request.

SECTION II

WATER SYSTEMS

WATER SYSTEMS

TABLE OF CONTENTS

Page

II. <u>WATER SYSTEMS - GENERAL STANDARDS:</u>

1. OBJECTIVE:

Section II is intended to present information and provide an outline of the minimum general standards required by Silver Lake Water & Sewer District for Developer constructed water main extensions and improvements which are to be acquired and operated by the District.

2. GENERAL:

Detailed plans shall be submitted for the District's review which provide the locations, size, and type of the proposed water system and points of connection. These plans shall be separate from Sewer Plans and shall conform to the District Drafting Standards.

Project plans shall have a horizontal scale of 1 inch = 50 feet, unless approved by the District. Plans shall show:

- Locations of streets, right-of-ways, existing utilities, and water system facilities.
- Ground surface, dimensions, pipe type and size, water valves, fittings, hydrants and appurtenances.
- All known existing structures, both above and below ground that might interfere with the proposed construction, particularly sewer lines, gas mains, storm drains, overhead and underground power lines, telephone lines, and television cables.
- All utility easements.
- District Approval Block.

Computations and other data used for design of the water system shall be submitted to the District for approval.

The water system facilities shall be constructed in conformance with the current WSDOT <u>Standard Specifications for Road, Bridge, & Municipal Construction</u> and amendments thereto, revised as to form to make reference to Local Governments and as modified by the District's requirements and standards.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WEF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints.

Except as otherwise noted herein, all work shall be accomplished as recommended in applicable American Water Works Association (AWWA) Standards, and according to the recommendations of the manufacturer of the material or equipment concerned.

All piping and plumbing installed to provide water for human consumption that is connected to the District's water system shall be lead free.

The location of the water mains, valves, hydrants, and principal fittings including modifications shall be staked by the Developer. No deviation shall be made from the required line or grade. The Developer shall verify and protect all underground and surface utilities encountered during the progress of this work.

All pipelines shall be tested and disinfected to District and AWWA Standards prior to acceptance.

Before acceptance of the water system by the District, all pipes, assemblies, and other appurtenances shall be cleaned of all debris and foreign material. After all other work is completed and before final acceptance, the entire roadway, including the roadbed, planting, sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades, and cross sections for a new roadway consistent with the original section.

3. GENERAL REQUIREMENTS:

1. Work shall be performed only by contractors experienced in installing public water mains.

2. Prior to any work being performed, the Developer shall contact the District's Engineer to set forth his proposed work schedule.

3. All materials shall be new and undamaged.

4. Developer shall obtain approval of materials to be used from the District prior to ordering of materials.

5. Water mains shall be delivered to the site with wrapping to cover the ends of the pipe or with plastic pipe plugs such that pipe is water tight. Either method used shall remain in unbroken condition until the pipe is installed.

6. Water mains shall be laid only in dedicated rights-of-way or in easements that have been granted to the District. Water mains may be laid within a plat or property identified in the developer extension agreement, subject to dedication of appropriate rights-of-way and recording of appropriate easements at the time the plat and/or warranty bill of sale is filed with the County Auditor.

7. Dead end lines are not permitted except where the District is satisfied that it would be impractical to extend the line at a future date. Water mains shall extend to the plat line of developable neighboring property for a convenient future connection, and a 2-inch blowoff assembly shall be provided on mains 8 inches and smaller. A fire hydrant shall be installed on larger size mains to accommodate flushing velocities.

8. If a service line to a lot is over 200 feet (not including panhandle), the Developer shall install a 6-inch water main to within 200 feet of the structure being served with a 2-inch blowoff at the end in an easement granted to the District. If multiple lot services are required, the 200-foot distance will include the panhandle distance.

9. All 8-inch and smaller water mains shall have minimum 3'-6" cover from finished grade except 4'-0" cover in easements. All 12-inch and larger water mains shall have a minimum of 4'-0" cover from finished grade. The maximum shall be 7'-0" cover unless approved by the District. Mains shall generally be located parallel to and ten feet northerly or easterly of street centerline.

10. Valves shall be installed at intervals not to exceed 1,000 feet. Valves shall be installed on each leg of all tees and crosses, except fire hydrant tees unless required by the District, and at each end of easements.

11. Valve markers shall be installed and marked with the distance to valve being referenced for all valves in unpaved areas.

12. Fire hydrants are required approximately every 600 feet in residential areas and/or located no more than 350 feet from the back of any proposed lot. Fire hydrants are required every 300 feet in commercial areas, or as required by the Fire Marshal. Distances required herein shall be measured linearly along street or road.

13. Only one fire hydrant shall be installed on any dead-end 8-inch run.

14. Pipes connecting hydrants to mains shall be at least 6 inches in diameter, restrained and not longer than 50 feet.

15. Provide bends in field to suit construction and in accordance with pipe manufacturer's recommendations so as not to exceed allowable deflection at pipe joints.

16. Provide thrust blocking or restrained joints at all fittings and bends in accordance with the District standards and conditions. Restrained joint systems required in areas of fill or if installed in previously disturbed soil and where indicated on District Standard Details.

17. Provide anchor blocking at all up-thrust vertical bends in accordance with District standards.

18. Water services shall be Type "K" continuous copper tubing from water main to meter (no joints) for 1-inch and 2-inch services. Larger service lines shall be the type and style shown in the Standard Details.

19. Minimum size service lines between the water main and the water meter shall be 1 inch for single-family use and 2 inch for commercial and multi-family use. All meters and private service lines shall be the minimum size by the County Plumbing Code in accordance with fixture units, unless otherwise specified.

20. Meter services and meter boxes shall be set to final grade and all adjustments shall be made prior to final pressure testing of the system, except as approved by the District. Developer shall furnish two (2) neoprene gaskets and one (1) dual check valve for each service installed. Service inlet shall be centered at inlet end of box and faced toward outlet end of box parallel with long sides.

21. All water services shall end within road right-of-way or easements.

22. All 3/4" x 5/8" and 1-inch meters will be installed by the District, and the property owner shall pay the current meter installation charge. Meters greater than 1 inch and up to 2 inches in size shall be installed by the District and paid by the developer on a time and material basis. For scheduling installation, Developers may preorder 1-1/2- to 2-inch meters for consideration of lead time on District purchase. The Developer shall furnish all meters larger than 2 inches in size installed by the Developer and locked off by the District until approved for service. District personnel will inspect meter prior to installation to ensure the proper meter and register.

23. All services other than single-family residential and duplex shall be equipped with a Washington State-approved reduced pressure backflow assembly (RPBA) which shall be located immediately behind and on the property side of the water service box, or at an alternate location as approved by the District. Residential single-family fire meters shall require a minimum of a DCVA at the service connection or at an alternate location as approved by the District. All other connections shall be equipped with an RPBA at the service connection. Commercial fire sprinkler systems, if unmetered shall require an RPDA at the service connection or at an alternate location as approved by the District. If chemicals of any kind are connected to, or planned for installation on any of the above services (i.e., aspirators, carbonators), the water service shall be isolated from the District's system by either an AG or RPBA at the

service connection or at an alternate location as approved by the District (see Section V).

24. Dedicated irrigation services shall require a minimum of a DCVA at the service connection. Services connected to water features, decorative ponds, pools, spas and fountains which require make-up water shall be protected from backflow into the public water supply by an approved air-gap to be located at the fill point of the pond or water feature. The air-gap shall be inspected by the District prior to use and shall be subject to annual inspection by a Washington State Backflow Assembly Tester (BAT). In all instances, the water supply used for filling purposes shall also be protected by a DCVA or RPBA installed behind the meter at the District's discretion. All irrigation using chemical feed shall have an RPBA installed immediately behind the meter, no exceptions (see Section V).

25. Developer shall notify the District and obtain approval prior to any water shut-off or turn-on, affecting the water system, a minimum of 48 hours in advance.

26. Cut in connections and wet taps shall <u>not</u> be made on Fridays, the day before a holiday, holidays, or weekends (unless approved by the District). Monday connections may be allowed at District sole discretion.

27. Developer shall use only District approved hot tap vendors to perform work in the District.

28. All tapping sleeves and tapping valves shall be pressure tested prior to making connection to existing mains.

29. Road restoration shall be per Snohomish County, City and/or State design and construction standards. Developer shall become familiar with all County, City, and State conditions of required permits, and shall adhere to all conditions and requirements.

4. **MATERIALS:**

WATER MAINS & FITTINGS:

Water mains to be installed shall be ductile iron pipe for all sizes, unless specifically noted otherwise. All ductile iron water pipe shall be delivered to the site with wrapping to cover the ends of the pipe or with pipe plugs. Either method used shall remain in unbroken condition until the pipe is installed.

The ductile iron pipe shall conform to AWWA C151 and shall be Class 52. Grade of iron shall be a minimum of 60-42-10. The pipe shall be cement lined to a minimum thickness of 1/16 inch meeting NSF standards for potable water and the exterior shall be coated with an asphaltic coating.

Each length shall be plainly marked with the manufacturer's identification, year cast, thickness, class of pipe and weight. The pipe shall be furnished with mechanical joint or push-on type joint, except where plans call for flanged ends. Joints shall conform to AWWA C111.

Restrained joint pipe shall be push-on joint pipe with FIELD LOK® or TR FLEX® gaskets as furnished by U.S. Pipe, or approved equal.

Restrained joint shall be used in fill areas, critical areas or as required by District.

All pipe shall be joined by the manufacturer's standard coupling, be all of one manufacturer, and be carefully installed in complete compliance with the manufacturer's recommendations.

Joints shall be "made up" in accordance with the manufacturer's recommendations. Standard joint materials, including rubber ring gaskets, shall be furnished with the pipe. Material shall be suitable for the specified pipe size and pressures.

All fittings shall be short-bodied, ductile iron complying with AWWA C110 or C153 for 350 psi pressure rated mechanical joint fittings and 250 psi pressure rated flanged fittings. All fittings shall be cement mortar lined per the ductile iron pipe specifications and either mechanical joint or flanged.

Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, or approved equal.

All couplings shall be ductile iron mechanical joint sleeves.

The pipe and fittings shall be inspected for defects before installation. All lumps, blisters and excess coal tar coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire-brushed and wiped clean and dry, and free from oil and grease before the pipe is laid.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and pipe forced home and brought to correct line and grade. The pipe shall be secured in place with select backfill tamped under it. Precaution shall be taken to prevent dirt from entering the joint space. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a water-tight plug. If water is in the trench when work resumes, the seal shall remain in place until the trench is pumped completely dry. No pipe shall be laid in water or when trench conditions are unsuitable.

The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe or cement lining, and so as to leave a smooth end at right angles to the axis of the pipe. When a pipe length is cut, the outer edge of the cut shall be beveled to prevent damage to the gasket during jointing of the pipes.

Pipe shall be laid with bell ends facing in the direction of the laying, unless approved otherwise by the District. Wherever it is necessary to deflect pipe from a straight line, the amount of deflection allowed shall not exceed pipe manufacturer's recommendations.

For connection of mechanical joints, the socket, plain end of each pipe and gasket shall be cleaned of dirt before jointing, and shall be jointed according to manufacturer's directions. Bolts shall be tightened alternately at top, bottom, and sides, so pressure on gasket is even.

For connection of push-on type joints, the jointing shall be done according to manufacturer's recommendations, with special care used in cleaning gasket seat to prevent any dirt or sand from getting between the gasket and pipe. Lubricant to be used on the gasket shall be non-toxic and free from contamination.

Valves, fittings, plugs, and caps shall be set and jointed to pipe in the manner as required. All dead ends on new mains shall be closed with dead end M.J. caps.

Fittings shall be "blocked" with poured-in-place 3,000 psi strength concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. Thrust blocks shall be poured as soon as possible after setting the fittings in place to allow the concrete to "set" before applying the pressure test. The concrete thrust blocks shall be in place before beginning the pressure test. Anchor blocks shall be allowed to set sufficiently to develop the necessary bond strength between the reinforcing rods and the concrete anchor before beginning the pressure test. A visqueen barrier shall be provided to protect glands, bolts and other miscellaneous materials required for this type of connection from the connector.

Fittings and adjacent pipe lengths that cannot be blocked against an undisturbed earth wall shall be restrained. Concrete blocking is required and shall be installed as if blocked against undisturbed earth.

All of the new piping, valves and blocking shall have been installed, disinfected, and tested up to the point of cutting into existing lines before the crossover is made. The crossover to the existing system shall be in full readiness, including the cut and sized specials. Forty-eight (48) hour notice shall be given the District in advance of the planned "cut-ins." All sleeves shall be ductile iron.

All backfill in roadway sections shall be placed and compacted in accordance with Snohomish County, City and/or State requirements and copies of the compaction results shall be provided to the District. All backfill in easements shall be placed and compacted to a minimum of 90 percent of modified Proctor dry maximum density per ASTM D1557. Copies of compaction results for all water system trenches shall be provided to the District. Recycled concrete is not allowed for use in District trench sections, no exceptions.

VALVES:

All valves 14 inches and larger shall be butterfly valves. All valves 12 inches and smaller shall be resilient seat gate valves.

Resilient-Seated Gate Valves

The gate valves shall be ductile iron body valves, iron disk completely encapsulated with polyurethane rubber and bronze, non-rising stem with "O" ring seals conforming to AWWA C509 or C515. The valves shall open counterclockwise and be furnished with 2-inch square operating nuts except valves in vaults shall be furnished with handwheels. All surfaces, interior and exterior shall be fusion bonded epoxy coated, acceptable for potable water.

For applications with working pressure above 175 psi, a valve rated as 250 psi or higher shall be used.

Valves shall be Clow, M&H, Kennedy, U.S. Pipe, Mueller, American Flow Control, or approved equal.

Butterfly Valves

Butterfly valves shall be ductile iron body of the tight closing rubber seat type with rubber seat either bonded to the body or mechanically retained in the body with no fasteners or retaining hardware in the flowstream. The valves shall meet the full requirements of AWWA C504, Class 150B except the valves shall be able to withstand 150 psi differential pressure without leakage. The valves may have rubber seats mechanically affixed to the valve vane. Where threaded fasteners are used, the fasteners shall be retained with a locking wire or equivalent provision to prevent loosening. Rubber seats attached to the valve vane shall be equipped with stainless steel seat ring integral with the body, and the body internal surfaces shall be epoxy coated to prevent tuberculations buildup, which might damage the disc-mounted rubber seat. Use of butterfly valves are a special case and shall only be allowed with District approval.

No metal-to-metal sealing surfaces shall be permitted. The valves shall be bubble-tight at rated pressures with flow in either direction, and shall be satisfactory for applications involving valve operations after long periods of inactivity. Valve discs shall rotate 90 degrees from the full open position to the tight shut position.

Valves shall be Henry Pratt Company *"Groundhog,"* Dresser *"450"* or Mueller *"Lineseal III."*

Tapping Sleeves & Tapping Valves

The tapping sleeves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two sections for ease of installation and shall be assembled around the main without interrupting service.

Mechanical joint style sleeves shall be ductile iron or fabricated steel style sleeves. Ductile iron mechanical joint style sleeves are required for all size-on-size connections. Mechanical joint sleeves shall be cast by Clow, Dresser, Mueller, Tyler, U.S. Pipe or approved equal.

Fabricated steel style sleeves shall be fusion bonded epoxy-coated, acceptable for potable water. Fabricated steel style sleeves will not be allowed for size-on-size connections.

Tapping valves shall be provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings to permit entry of the tapping machine cutters. In all other respects, the tapping valves shall conform to the resilient seat gate valves herein specified with regards to operation and materials.

The tapping sleeve and valve shall be tested to 100 psi (air) prior to tapping the main.

The installation contractor for the tapping sleeves and valves shall be approved by the District.

All Valves

The valves shall be set with stems vertical. The axis of the valve box shall be common with the axis projected off the valve stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

All valves with operating nuts located more than 4'-0" below finished grade shall be equipped with extension stems to bring the operating nut to within 18 inches of the finished grade.

At the top of the extension stem, there shall be a 2-inch standard operating nut, complete with a centering flange that closely fits the 5-inch pipe encasement of the extension stem. The valve box shall be set in a telescoping fashion around the 5-inch pipe cut to the correct length to allow future adjustment up or down. Cast iron soil pipe shall be used to extend the top valve box section to grade in deep areas.

Each valve shall be provided with an adjustable two-piece cast iron valve box of 5 inches minimum inside diameter. Valve boxes shall have a top section with an 18-inch minimum length. The valve boxes and covers shall be Olympic Foundry No. 940 or equal. The District may require locking valve covers in high traffic areas, or as directed by District. Locking covers shall be Olympic Foundry No. 045 DT or equal.

Valves located in easements or outside of paved areas shall have concrete collars with a minimum size of 2'-0" diameter by 4-inches thick.

Valve Markers

Provide a blue Carsonite valve marker post for each valve outside of asphalt.

Markers shall be placed at the edge of the right-of-way opposite the valve and set so as to leave 2'-0" of the post exposed above grade. The distance in feet and inches to the valve shall be clearly stenciled on the side facing the valve in black numerals 2 inches in height.

FIRE HYDRANTS:

All fire hydrants shall be approved by the National Board of Fire Underwriters and conform to AWWA C502, break-away type, in which the valve will remain closed if the barrel is broken. The hydrant barrel shall have a diameter of not less than 7 inches, and the valve diameter shall be not less than 5-1/4 inches. Each hydrant shall be equipped with two 2-1/2-inch hose ports (National Standard Thread), and one 4-1/2-inch pumper connection (National Standard Thread). A permanent anodized short profile style Storz hydrant adapter and anodized Storz blind flange shall be installed on the pumper port. The size of the adapter shall be 4 inches. Each hydrant shall be equipped with a suitable positive acting drain valve and 1-1/4-inch pentagonal operating nut (counter-clockwise opening).

Fire hydrants shall be Mueller Centurion, Clow Medallion, M&H Style 929, Waterous Pacer, or East Jordan Watermaster 5CD250.

The holding spools between the gate valve and fire hydrant shall be made from 6-inch Class 52 ductile iron pipe. The hydrant and gate valve shall be anchored in place using holding spools and mechanical joint restraint device. Holding spools shall be one piece unless the length is in excess of 17 feet or if approved by the District. The joints shall be supplied with a mechanical joint sleeve and mechanical joint restraint device, or with Field Lok gaskets.

The fire hydrants shall be painted with two coats of Sherwin Williams 8084-31084 cat yellow enamel paint. Distance to the hydrant valve shall be clearly stenciled in black numerals 2 inches in height on the fire hydrant below the pumper port. Align the stenciled distance on the hydrant to face the hydrant valve. Top of fire hydrant shall be painted as per service level (see Detail V-W2).

Between the time that the fire hydrant is installed and the completed facility is placed in operation, the fire hydrant shall at all times be wrapped in burlap, or covered in some other suitable manner to clearly indicate that the fire hydrant is not in service.

BLOW-OFFS & AIR RELIEF ASSEMBLIES:

A 2-inch blowoff assembly shall be installed at the terminus of all dead-end water mains 8-inch diameter and smaller. Water mains greater than 8-inch diameter shall have a fire hydrant assembly installed at the terminus of dead-end mains. Field location to be in paved surface.

A 1-inch or 2-inch air and vacuum release valve (as approved by the District) shall be installed at principal high points in the system.

The installation of these items shall include connection piping, gate valve, valve box, and all accessories.

SERVICE CONNECTIONS:

Individual services to each property shall be installed and connected to the new water mains by Developer prior to acceptance.

New meters 2 inches and smaller will be installed by the District at the Developer's expense. New services from existing mains will be installed by the District. The Developer shall be responsible for permitting, traffic control, excavation to expose main, shoring to protect District employees, backfilling trench, and completion of all restoration.

Upon completion of the installation of the water main (before testing and disinfection) services shall be installed by connecting to the water main and extending the service line to the property line as shown on the Standard Details or approved equal. Service lines for residential property up to 1-inch meter installation shall be Type "K" 1-inch (minimum size) continuous copper service lines meeting the ASTM Specifications B-88-47. Services up to 2-inch meter installation shall be 2-inch-diameter Type "K" copper. Larger service lines shall be of the type and style as designated in the Standard Details and shown on the Plans.

Projects that require meters larger than 2 inch shall be installed per the District Standards and as shown on the Standard Details.

All services other than single-family residential *and duplexes* shall be provided with appropriate Washington State-approved backflow protection located immediately behind and on the property side of the water service box. Irrigation services, including residential irrigation if using chemical injection shall be fitted with an RPBA at the service connection (meter). All water features, including decorative ponds, pools and fountains requiring make-up water shall be protected from backflow into the public water supply by a minimum of an approved air-gap (AG) to be located at the fill point of the pond or water feature. The AG shall be inspected by the District *CCS* prior to filling *and shall be inspected annual by a Washington State Certified Backflow Assembly Tester (BAT), with test results submitted to the District.* In all instances, the water supply used for filling purposes shall be protected by *a minimum of* a double check valve assembly (DCVA) installed behind the meter.

Corporation stops and the single meter shut-off valves shall be Mueller, Ford, or A.Y. McDonald with the type and style noted on the Standard Details or approved equal. Included as a part of the service connection shall be the furnishing and installation of the meter box complete with lid, set flush with the proposed finished grade of the lot in the designated location near the property line, all as shown on the Standard Details. The angle type of shut-off valve and angle type dual check valve shall be set inside the meter box in a proper position for installation of a future meter by the District.

Service lines between the main and the property line shall be placed at a trench depth sufficient to maintain a 3'-0" cover over the top of the service line for its full length, taking into consideration the final finished grade of the proposed street and the final finished grade of any storm ditches.

Upon completion of each service line as indicated herein, the Developer shall flush the service line to remove the debris that may interfere with the future meter installation, and further verify that the service line has full pressure and flow to the meter box.

METERS GREATER THAN 2 INCH:

If extensions require water meters greater than 2 inches, then such entire meter installation, including valves, piping, vaults or meter boxes, drain lines and meters shall be furnished and installed by the Developer conforming to District standards. Activation of meter is subject to conformance with District requirements and payment of connection fees.

PRESSURE REDUCING VALVES:

If extensions require main line pressure reducing valves as determined by the District, then such entire installation, including strainers, valves, piping, vaults, and drain lines shall be installed by the Developer conforming to District Standards.

The pressure reducing installation shall be a prefabricated and plumbed vault and shall include two Cla-Val globe type pressure reducing valves, sized for the area to be served downstream of the installation.

5. **WATER PIPE TESTING & DISINFECTING:**

All pipelines shall be tested and disinfected prior to acceptance of work. A water hydrant meter shall be required and procured from the District for all water utilized for flushing pipelines. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the Developer. The Developer shall provide an oil-filled pressure gauge with a range of 0 to 300 psi.

In all instances, the Contractor shall utilize a Washington State approved double check valve type backflow prevention device to protect the potable water supply while filling, flushing, and disinfecting the particular water main. The double check valve assembly shall have been tested within the last 30 days by a Washington State certified B.A.T. whenever used to connect to the water system, both prior to and during the project. The Contractor shall provide a test certificate to the District.

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.

As soon as pipe is secured against movement under pressure, it may be filled with water. Satisfactory performance of air valves shall be checked while the line is filling. A temporary air vent will be required if the fill point is higher than the line being filled.

The Developer shall preflush all water mains after water has remained in the main for 24 hours and before pressure testing the main.

After the pipe is filled with water and all air expelled, it shall be charged by a pump to a hydrostatic test pressure of 250 psi, measured at the high point on the pipeline and this pressure shall be maintained for a period of not less than 30 minutes to ensure the integrity of the thrust and anchor blocks. All tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. Hydrostatic tests shall be performed on every complete section of water main between two valves, and each valve shall withstand the same test pressure as the pipe with no pressure active in the section of pipe beyond the closed valve.

Feed for the pump shall be from a clean container wherein the actual amount of "makeup" water, so that it can be measured periodically during the test period.

A separate 200 psi pressure test for 60 minutes will be required after all water services are cut to grade with angle stops or setters installed in the meter boxes.

In addition to the hydrostatic pressure test, a leakage test shall be conducted on the pipeline. The leakage test shall be conducted at 200 psi for a period of not less than 1 hour. The allowable leakage rate per thousand feet of each size pipeline is as follows:

Pipe Size	Allowable Leakage Gal. per Hour per 1,000 Ft. @ 200 psi
6"	0.32
8"	0.42
10"	0.53
12"	0.63
16"	0.85

Defective materials or workmanship discovered as a result of the tests, shall be replaced by the Developer at their expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be re-run at the Developer's expense until a satisfactory test is obtained.

Before pipelines are placed in service, the water mains and appurtenances shall be disinfected in accordance with AWWA C651 and in conformance with the requirements of the State of Washington Department of Health Services.

In the process of chlorinating newly laid water pipe, all valves, fire hydrants and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

Chlorine shall be applied in one of the following manners, listed in order of preference, to secure a concentration in the pipe of at least 50 ppm is maintained for a period of 24 hours.

1) Injection of chlorine-water mixture from chlorinating apparatus through corporation cock at beginning of section after pipe has been filled, and with water exhausting at end of section at a rate controlled to produce the desired chlorine concentration;

2) Injection similarly of a hypochlorite solution;

3) The use of dry chlorinated lime for achieving disinfection is not allowed.

4) The District shall provide sodium hypochlorite at cost. No other source of disinfection shall be allowed.

The Developer shall be responsible for flushing all water mains prior to water samples being acquired under direction and supervision of the District. The water mains shall be flushed at a rate to provide a minimum 2.5 feet per second velocity in the main. Water mains shall be flushed until system achieves $\leq$1 ppm chlorine residual level.

In all disinfection processes, the Developer shall take particular care in flushing and discharging the chlorinated water from the mains to ensure that the flushed and chlorinated water does no physical or environmental damage to property, streams, storm sewers or any waterways. Flushing water must be disposed of in accordance with Washington State Department of Ecology Standards. Flushing water shall require dechlorination to prevent damage to the affected environment, particularly aquatic and fish life of receiving streams. Discharge of chlorinated flush water to the sanitary sewer system is prohibited, except with District approval.

After the pipeline has been flushed and the system residual chlorine concentration has been obtained throughout the section of line, the water in the line shall again be left standing for a period of 24 hours. Following this, a water sample will be collected and tested. The line shall not be placed in service until a satisfactory bacteriological report has been received.

If disinfection of mains by the above methods proves unsatisfactory and the lab report indicates any type of bacteria count, then the Developer shall rechlorinate using other methods in accordance with AWWA C651, approved by the District.

Only District representatives will be allowed to operate existing and new tie-in valves. The Developer's personnel are expressly forbidden to operate any valve on any section of line, which has been accepted by the District.

SECTION III

SANITARY SEWER SYSTEMS

SANITARY SEWER SYSTEMS

TABLE OF CONTENTS

Page

III. SANITARY SEWER SYSTEMS - GENERAL STANDARDS

1. OBJECTIVE:

Section III is intended to present information and provide an outline of the minimum general standards required by Silver Lake Water & Sewer District for Developer constructed sanitary sewerline facilities and improvements which are to be acquired and operated by the District.

2. GENERAL:

Detailed plans shall be submitted for the District's review, which provide the location, size, type and direction of flow of the proposed sewers and the connection with existing sewers. These plans shall be separate from Water Plans and shall conform to District Drafting Standards.

All sewer system design submittals with drainage basins serving to Alderwood Water and Wastewater District for conveyance to King County facilities requires King County design review and acceptance prior to acceptance by Silver Lake Water & Sewer District.

Project plans should have a horizontal scale of 1 inch = 50 feet and a vertical scale of 1 inch = 5 feet. Plan and profile views for any give section of gravity sewer or force main shall be drawn on the same sheet. Plans and profiles shall show:

- Locations of streets, right-of-ways, existing utilities, and sewers.

- Ground surface, pipe type, class and size, manhole stationing, invert and surface elevation at each manhole, and grade of sewer between adjacent manholes. Elevations shall be based on the NAVD 88 datum, with a conversion factor to the NGVD 29 datum noted on the plans, as further described in the General Drafting Standards. All manholes shall be numbered on the plans and correspondingly numbered on the profile. Where there is any question of the sewer being sufficiently deep to serve any residence, the elevation and location of the basement floor, if basements are served, shall be plotted on the profile of the sewer that is to serve the house in question. The Developer shall state that all sewers are sufficiently deep to serve adjacent basements, except where otherwise noted on the plans.

- All known existing structures, both above and below ground, which might interfere with the proposed construction, particularly water mains, gas mains, storm drains, overhead and underground power lines, telephones lines, and television cables.

- All utility easements.

- District Approval Block

- Details in scale drawings, which clearly show special sewer joints and cross-sections, and sewer appurtenances such as manholes and related items.

Construction of new sewer systems or extensions of existing systems will be allowed only if the existing receiving system is capable of supporting the added hydraulic load.

Collection and interceptor sewers shall be designed for the ultimate development of the tributary areas.

Sewer systems shall be designed and constructed to achieve total containment of sanitary wastes and maximum exclusion of infiltration and inflow.

Computations and other data used for design of the sewer system shall be submitted to the District for approval.

The sewage facilities shall be constructed in conformance with the current WSDOT Standard Specifications for Road, Bridge, & Municipal Construction, and current amendments thereto, revised as to form to make reference to Local Governments, and as modified by the District's requirements and standards.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WEF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressure or deformation of the pipe, nor seriously impair flow capacity.

All sewers shall be designed to prevent damage from superimposed loads. Proper allowance for loads on the sewer because of the width and depth of trench should be made. When standard-strength sewer pipe is not sufficient, extra-strength pipe shall be used.

After all other work is completed and before final acceptance, the entire roadway, including the roadbed, planting, sidewalk areas, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades and cross sections for a new roadway consistent with the original section.

3. GENERAL REQUIREMENTS:

1. Prior to construction, the sewer plans shall be reviewed and approved by the Department of Ecology with an affidavit stating such on file at the District's office, unless the review and approval is waived by Ecology.

2. Work shall be performed only by contractors experienced in laying public sewer mains.

3. Prior to any work being performed, the Developer shall contact the District's Engineer to set forth his proposed schedule.

4. All materials shall be new and undamaged.

5. Developer shall obtain approval of materials to be used from the District prior to ordering of materials.

6. Sewer mains shall be laid only in dedicated streets or in easements that have been granted to the District. A street is normally not considered until the plat, which created it, has been filed with the County Auditor.

7. All service connections to the District sewer system shall be a gravity connection. If service lines to structures or lots to be served are over 200 feet (not including panhandle), the Developer shall install an 8-inch sewer main within 100 feet of the farthest lot with a manhole at the end in an easement granted to the District. Parallel side sewers shall be separated by a minimum of 5 feet horizontally from each sewer service and 10 feet from parallel water services.

8. The sewer mains shall run parallel to and 5 feet southerly or westerly of street centerline where possible. The sewer main shall maintain a minimum 10-foot horizontal separation from proposed or existing water mains.

9. The minimum slope for 8-inch gravity mains shall be 0.5 percent (except the minimum slope for dead end runs shall be 1.0 percent for 8-inch gravity mains). The minimum slope for 6-inch side sewer laterals shall be 2.0 percent and the maximum shall be 100 percent (45°).

10. The maximum distance between manholes shall be 400 feet unless approved by the District.

11. Manholes shall be a minimum of 8-feet deep unless approved by the District.

12. Manholes greater than 20-feet deep shall be a minimum of 54-inches inside diameter.

13. Manholes greater than 25-feet deep should not be submitted for review without prior approval of deep design concept by the District. Deep designs will not be approved if alternative service can be provided with shallower gravity service, even if the property developing will have to delay development.

14. Manholes shall be provided with a 0.10-foot drop across the channel.

15. Terminating manholes, where sewer extension may occur, shall be channeled accordingly.

16. Locking lids shall be provided for all manholes and all manhole lids shall have the word "sewer" cast integrally onto its surface.

17. All manholes shall be accessible to maintenance vehicles.

18. Manholes in easements shall be provided with a green fiberglass locator marker post with the footage to the manhole stenciled on with 2-inch letters.

19. All side sewer laterals shall be of the same material as the main line unless approved by the District.

20. Front lot corners and a property line stake shall be staked prior to construction for side sewer tee location.

21. Side sewers are normally extended to the lowest property corner and located a minimum of 10 feet from the side lot line and are extended past dry utilities unless prior approval from District for alternate location.

22. Side sewer connections allowed directly into manholes shall be constructed to match the sewer main crown and the manhole channeled accordingly.

23. All commercial, industrial or school food establishments shall be equipped with an approved grease interceptor located outside the building, as required by the District, prior to discharging to the sewer main. Sizing to be confirmed by a Professional Engineer licensed in the State of Washington.

24. Provide the District a copy of the cut sheets prior to construction.

25. Pipe trenches shall not be backfilled until pipe and bedding installation has been inspected by the District.

26. Final air testing shall not be accepted until all underground utilities have been installed, compaction is completed, and the lines have been flushed, cleaned, deflection tested and television inspected.

27. Road restoration shall be per Snohomish County, City and/or State design and construction standards. The Developer shall become familiar with all County, City and State conditions of required permits, and shall adhere to all conditions and requirements.

28. Manhole rim, sewer location, and invert elevations shall be field verified after construction by the Developer's engineer(s) and the "as constructed" drawings individually stamped by a Professional Engineer licensed in the State of Washington which shall attest to the fact that the information is correct.

4. MATERIALS:

SEWER MAINS AND LATERALS

(See sewage lift station Section IV for force mains.)

Sewer mains to be installed shall be of material noted below:

Purpose	Material	Cover	Max. Slope
Gravity Sewer & Laterals	PVC	5'-18'	18%
	Ductile Iron	3' - 5'	--
	Ductile Iron	≥ 18'	--
	PVC AWWA C900 Class 200	≥18'	18%
Force Mains	Ductile Iron	≥4'	--

PVC pipe shall be a minimum Class S.D.R. 35 and be manufactured in accordance with ASTM D3034. The pipe and fittings shall be furnished with bells and spigots, which are integral with the pipe wall. Pipe and fittings shall be of the same material. Pipe joints shall use flexible elastomeric gaskets conforming to ASTM D3212. Nominal laying lengths shall be 20 feet and 13 feet. PVC C900 pipe shall conform to AWWA C900 and will be allowed in deep trench construction at the discretion of the District.

The ductile iron pipe shall conform to AWWA C151 and shall be Class 52. Pipe and fittings shall be of the same material. Grade of iron shall be a minimum of 60-42-10. The pipe shall be polyethylene or epoxy lined to a nominal thickness of 40 mils. Minimum lining thickness shall be 30 mils. Products meeting the standard are US Pipe “Polylined,” “Protecto 401,” and American Pipe “Polyband,” or equal. The exterior shall be coated with an asphaltic coating.

Each length shall be plainly marked with the manufacturer’s identification, year cast, thickness, class of pipe and weight. The pipe shall be furnished with mechanical joint or push-on type joint, except where plans call for flanged ends. Joints shall conform to AWWA C111.

Restrained joint pipe shall be push-on joint pipe with FIELD LOK® or TR FLEX® gaskets as furnished by U.S. Pipe.

All pipe shall be jointed by the manufacturer’s standard coupling, be all of one manufacturer, be carefully installed in complete compliance with the manufacturer’s recommendations.

All fittings shall be short-bodied, ductile iron complying with AWWA C110 or C153 for 350 psi pressure rated mechanical joint fittings and 250 psi pressure rated flanged fittings. All fittings shall be polyethylene or epoxy lined per the ductile iron pipe specifications and either mechanical joint or flanged, as indicated on the Plans.

Fittings in areas requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, or approved equal.

All couplings shall be ductile iron mechanical joint sleeves.

The sewer pipe, unless otherwise approved by the District shall be laid upgrade from point of connection on the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade. When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug. Wherever movable shoring (steel box) is used in the ditch, pipe shall be restrained by use of a winch mounted in the downstream manhole and a line of sufficient strength threaded through the pipe and set tight before each move. Any indication that joints are not being held shall be sufficient reason for the District to require restraints, whether or not movable shoring is being used.

All gravity pipe shall be laid in straight lines and at uniform rate of grade between manholes. Variance from established line and grade shall not be greater than 1/2 inch, provided that such variation does not result in a level or reverse sloping invert; provided, also, that variation in the invert elevation between adjoining ends of pipe, due to non-concentricity of joining surface and pipe interior surfaces, does not exceed 1/64 of an inch per inch of pipe diameter, or 1/2-inch maximum. Any corrections required in line and grade shall be reviewed with the District and shall be made at the expense of the Developer.

All extensions, additions and revisions to the sewer system, unless otherwise indicated, shall be made with sewer pipe jointed by means of a flexible gasket, which shall be fabricated and installed in accordance with the manufacturer's specifications.

All joints shall be made up in strict compliance with the manufacturer's recommendations and all sewer pipe manufacture and handling shall meet or exceed the ASTM recommended specifications.

Pipe handling after the gasket has been affixed shall be carefully controlled to avoid disturbing the gasket and knocking it out of position, or loading it with dirt or other foreign material. Any gaskets so disturbed shall be removed, cleaned, relubricated if required, and replaced before the rejoining is attempted.

Care shall be taken to properly align the pipe before joints are entirely forced home. During insertion of the tongue or spigot, the pipe shall be partially supported by hand, sling or crane to minimize unequal lateral pressure on the gasket and to maintain concentricity until the gasket is properly positioned. Since most flexible gasketed joints tend to creep apart when the end pipe is deflected and straightened, such movement shall be held to a minimum once the joint is home.

Sufficient pressure shall be applied in making the joint to assure that it is home, as described in the installation instructions provided by the pipe manufacturer. Sufficient restraint shall be applied to the line to assure that joints once home are held so, until fill material under and alongside the pipe has been sufficiently compacted. At the end of the work day, the last pipe laid shall be blocked in an effective way to prevent creep during "down time."

For the joining of dissimilar pipes suitable adapter couplings shall be used which have been approved by the District.

All gravity sewer pipe shall be bedded with pea gravel. The PVC pipe shall be bedded from a depth of 4-inches below the pipe to 12 inches above the pipe and ductile iron gravity sewer pipe shall be bedded from a depth of 4 inches below the pipe to the springline of the pipe. The bedding material shall extend across the full width of the trench and shall be compacted under the haunches of the pipe.

Special concrete bedding shall consist of a pipe cradle constructed of Portland cement concrete containing not less than four sacks of cement per cubic yard. Sand, gravel and water proportions are subject to approval by the District. Maximum aggregate size shall be 1-1/2 inches. Maximum slump shall be 4 inches. The bottom of the trench shall be fully compacted before the placement of pipe cradle. The Developer shall protect pipe against flotation and disturbing the horizontal alignment of the pipe during the pouring of the concrete.

Clay or Bentonite dams shall be installed across the trench and to the full depth of the granular material in all areas of steep slopes, stream crossings and wetland to prevent migration of water along the pipeline.

All backfill in roadway sections shall be placed and compacted in accordance with Snohomish County, City and/or State requirements and copies of the compaction results shall be provided to the District. All backfill in easements shall be placed and compacted to a minimum of 90 percent of the Modified Proctor dry maximum density per ASTM D1557. Copies of compaction results for all sewer system trenches shall be provided to the District. Recycled concrete is not allowed for use in District trench sections, no exceptions.

MANHOLES:

Manholes shall be of the offset type and shall be precast concrete sections with either a cast in place base, or a precast base made from a 3,000 psi structural concrete. Joints between precast wall sections shall be confined O-ring or as otherwise specified.

The minimum diameter for manholes shall be 48 inches to a depth of 20 feet, and 54 inches for depths of 20 feet and greater. The District may require the diameter to be increased beyond the minimum based on future needs.

For connections to existing systems, a concrete coring machine, suitable for this type of work, shall be utilized in making the connection. The existing manhole shall be rechanneled as required. The new pipe connection shall be plugged (water tight) until the new pipe system has been installed and approved. The Developer shall be responsible for any existing defects in the existing manhole unless these defects are witnessed by a representative of the District prior to any work being performed to make the connection. The Contractor shall be required to remove any and all deleterious material in the existing manhole and downstream reaches as a result of this work.

Manholes located in easements or outside of paved areas shall have concrete collars with a minimum size of 48 inches diameter by 12 inches thick and marked with a green carsonite marker.

Manhole Sections

Manhole sections shall be placed and aligned so as to provide vertical sides and vertical alignment of the ladder steps. The completed manhole shall be rigid, true to dimension, and be water tight. Rough, uneven surfaces will not be permitted.

Manhole Steps and Ladders

Manhole steps shall be polypropylene, Lane International Corp. No. P13938 or equal.

Ladders shall be polypropylene Lane International Corp. or equal, and shall be compatible with steps.

Grade Adjustment

The manhole shall be set to provide not less than 14-inches or more than 26 inches of adjustment between the top of the cone or slab and the top of the manhole frame.

Masonry units (manhole adjusting rings) shall conform to the ASTM C2, Grade MA. The outside and inside of manhole adjusting rings and the joints of precast concrete sections shall be plastered and troweled smooth with 1/2 inch (minimum) of mortar in order to attain a watertight surface. No wood shall be used for adjustment.

Channels

Channels shall be made to conform accurately to the sewer grade and shall be brought together smoothly with well rounded junctions, satisfactory to the District. The channels shall be field poured with concrete, no other fillers are permitted, after the inlet and outlet pipes have been laid and firmly grouted into place at the proper elevation. Allowances shall be made for a 0.1-foot drop in elevation across the manhole in the direction of flow. Channel sides shall be carried up vertically from the invert to three-quarters of the diameter of the various pipes. The concrete shelf shall be warped evenly and sloped 3/8 inch per foot to drain. Rough, uneven surfaces will not be permitted. Channels shall be constructed to allow the installation and use of a mechanical plug or flow meter of the appropriate size.

Drop Manholes

Drop manholes on new construction require District approval and shall be constructed with outside drop(s). Approval will be limited to future extensions from deep sewers. Where extension from deep sewers is concurrent with deep sewer construction, drop manholes will not be allowed. Drop manholes shall, in all respects, be constructed as a standard manhole with the exception of the drop connection. Connection to existing District sewers may be allowed to use inside drop with prior District approval.

Lift Holes and Steel Loops

All lift holes shall be completely filled with expanding mortar, smoothed both inside and outside, to insure water tightness. All steel loops shall be removed, flush with the manhole wall. The stubs shall be covered with mortar and smoothed. Rough, uneven surfaces will not be permitted.

Frames and Covers

Frames shall be cast iron and covers shall be ductile iron. Castings shall be free of porosity, shrink cavities, cold shuts or cracks, or any surface defects, which would impair serviceability. Repair of defects by welding, or by the use of "smooth-on" or similar material, will not be permitted. Frames and covers shall be machine finished or ground on seating surfaces so as to assure non-rocking fit in any position and interchangeability of covers. Frames and covers shall be provided with three bolt locking lids. Rings and covers shall be positioned so one of the three locking bolts is located over the manhole steps and shall be adjusted to conform to the final finished surface grade of the street or easement to the satisfaction of the District. Manhole frames and covers shall be as manufactured by East Jordan Iron Works Model 00371564, or equal. Must meet the (AASHTO) M306 specification and have replaceable lock down nuts.

Manhole Marker Posts

A fiberglass manhole marker post shall be located adjacent to all manholes located in easement areas. The marker post shall be green in color, 3.75 inches wide (flat), 60-inches long and furnished with a 3-inch by 3-inch high intensity white reflector (250 Candle Power) and a flexible anchor barb. Each post shall include the following decal: "Caution Sewer Manhole. Before digging, Call 1-800-424-5555, Utility Underground Location Center." Manhole markers shall be Carsonite Utility Marker CUM 375.

The marker posts shall be set so as to leave 36 inches of the post exposed above grade.

Distance from the marker to the manhole shall be stenciled on the marker with 2-inch letters.

5. SIDE SEWER LATERAL:

A side sewer lateral is considered to be that portion of a sewer line that will be constructed between a main sewer line and a property line or easement limit line.

All applicable specifications given herein for sewer construction shall be held to apply to side sewer laterals.

Side sewers shall be for a single connection only and be a minimum 6-inch-diameter pipe. Side sewers shall be connected to the tee, provided in the sewer main where such is available, utilizing approved fittings or adapters. The side sewer shall rise at a maximum of 45 degrees and a minimum of 2 percent, from the sewer main.

Where there are no basements, the minimum side sewer depth shall be 6 feet below existing curb line and 5 feet below ground at the property line, except where existing improvements, proposed improvements or topography may dictate additional depth. The elevations of the side sewer connections shall be of sufficient depth to serve all existing and potential future basements.

Each 6-inch side sewer service shall be provided with a 12-foot-long 2 x 4 wooden post, which extends from the invert of the end of the 6 inch pipe to above the existing ground. The exposed area of this post shall be painted white and shall have stenciled thereon in 2 inch letters (black paint) “SEWER” and shall also indicate the total length of the 2 x 4. A 12-gauge (minimum) wire shall be wrapped around and stapled the full length of the 2 x 4.

Where no tee or wye is provided or available, connection shall be made by machine-made tap and saddle. Inserta Tee, Fowler Manufacturing Company or approved equal may be utilized on concrete pipe only. Romac Style “CB” Sewer Saddle shall be utilized on PVC pipe.

The maximum bend permissible at any one fitting shall not exceed 45 degrees. The maximum bend of any combination of two adjacent fittings shall not exceed 45 degrees (one-eighth bend) unless straight pipe of not less than 3 feet in length is installed between such adjacent fittings, or unless one of the fittings is a wye branch with a cleanout provided on the straight leg.

Standing side sewers shall be constructed only with pre-approval of the District. Standing side sewers may be required, or allowed, at the sole discretion of the District. When allowed, standing side sewer tees will be constructed of the same material as the main line sewer.

6. TESTING GRAVITY SEWERS FOR ACCEPTANCE:

The Developer shall furnish all facilities and personnel for conducting tests. Methods other than Low Pressure Air Test shall be subject to the approval of the District. Pressure gauge to be oil filled to 0 to 30 psi read range.

Preparation for Testing for Leakage

The Developer shall be required, prior to testing, to clean and flush all gravity sewer lines. The completed gravity sewer, including side sewer stubs, after completion of backfill and cleaning shall be televised. This will be permitted prior to paving. The sewer shall then be tested by the low pressure air test method and/or an infiltration test. Except, however, that in certain conditions an exfiltration test may be required by the District.

The first section of pipe not less than 300 feet in length installed by each crew shall be tested, in order to qualify the crew and/or the material. A successful installation of this first section shall be a prerequisite to further pipe installation by the crew. At the Developer's option, crew and/or material qualification testing may be performed at any time during the construction process after at least 2 feet of backfill has been placed over the pipe.

Low Pressure Air Test

The sewer pipe shall be tested for leaks through the use of air (unless exfiltration test is approved) in the following manner:

Following the pipe cleaning, utility installation, and paving, the pipe installation shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. 0.4 pounds per square inch to be added per 1 foot of water table over the pipe to a max. of 6 psi. At least 2 minutes shall be allowed for temperature stabilization before proceeding further.

The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 pounds per square inch while maintaining the stipulated pressure greater than the pipe section's average adjacent groundwater back pressure.

The pipeline shall be considered acceptable if the total rate of air loss from any section tested in its entirety between manholes, cleanouts or pipe ends does not exceed the following table:

Length of 6" Pipe (ft)

Length of 8" Pipe	0	50	100	150	200	250	300	350	400
100	5:00	5:00	5:00	5:00	5:00	5:38	6:14	6:12	6:08
150	5:00	5:00	5:00	5:30	6:10	6:30	6:26	6:22	6:18
200	5:00	5:22	6:00	6:40	6:44	6:38	6:34	6:30	6:26
250	5:52	6:32	6:48	6:58	6:50	6:44	6:40	6:36	6:32
300	7:02	7:20	7:10	7:02	6:56	6:50	6:44	6:40	6:36
350	7:34	7:22	7:14	7:06	7:00	6:54	6:50	6:44	6:42
400	7:34	7:24	7:16	7:08	7:02	6:58	6:52	6:48	6:44

Test time in minutes and seconds. Minimum test periods is 5 minute duration

Test times will be provided by the Engineer for combinations other than 8-inch mains and 6-inch laterals.

If the pipe installation fails to meet these requirements, the Developer shall determine at his own expense the source or sources of leakage, and shall repair (if the extent and type of repairs proposed by the Developer appear reasonable to the District) or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of this low pressure air test or the alternative water exfiltration test before being considered for acceptance.

Plugs used to close the sewer pipe for the air test shall be securely braced to prevent the unintentional release of a plug. Gauges, air piping manifolds and valves shall be located at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Air testing apparatus shall be equipped with a pressure release device such as a rupture disk or a pressure relief valve designed to relieve pressure on the pipe under test at 6 psi.

Deflection Test

Deflection tests shall be performed on all ASTM D3034 PVC gravity sewer mains by pulling a mandrel through the pipe. The allowable deflection test limit shall be 5.0 percent of the base inside diameter in accordance with APWA test procedures and the nominal mandrel size shown in the following table.

Nominal Pipe Size (in.)	Base Inside Diameter (in.)	Mandrel Size, Diameter (in.)
6	5.74	5.45
8	7.67	7.28
10	9.56	9.08
12	11.36	10.79

Deflection testing is not required for AWWA C900 PVC or ductile iron pipe. Deflection testing is also not required for pipe diameters 15 inch and greater.

The sewer lines shall be thoroughly cleaned prior to the deflection test.

7. TELEVISED INSPECTION:

After the gravity sewer lines have been cleaned, flushed and manhole channeled, the Developer shall provide a complete televised inspection.

The Developer shall perform a complete televised inspection of the sewer pipe and appurtenances and shall provide to the District, a narrated DVD color audio-visual recording of the inspections together with a written log of the television inspection. The camera shall be a pan and tilt type equipped with adequate light and focusing to allow inspection of sewer main, side sewers and full circumference inspection of main line joints and fittings. The District shall determine if the quality of the televising is acceptable.

Immediately prior to the televised inspection, the Developer shall run water through each sewer line for 5- to 10-minutes to provide water for detection of any adverse grade sections visible by the presence of ponded water. The camera shall be stopped periodically at the ponded areas and the depth of water shall be measured with a ball of known diameter on the pull line. During the inspection, all tees and other fittings shall be logged as to exact location within 1 percent maximum error in measurement, wherein accuracy is checked with various fittings and the terminating manhole.

The District shall be notified 48 hours prior to any television inspection and this work shall be performed on a schedule to allow the District to witness the inspection.

Any defects in material or installation identified by the television inspection shall be repaired as required by the District at the Developer's expense.

Sewer Video Requirements

1. Start videoing from the downstream manhole to upstream manhole.

2. The center of the downstream manhole will start at zero and the uphill manhole footage will be finished at the center of the upstream manhole. Verbalize the side sewer with a station such at 1+64 along with writing on the screen to make it permanent on the video log.

3. Control the lighting power to best visualize the system including side sewers.

4. Stop and video all fittings including the side sewer connections. Visualize any joints that appear to not be normal such as wide gaps require video around the connection point to see if any gasket is showing. Verbalize and document on the video the fittings or any abnormalities.

5. Document ponding verbally as well as typing onto the screen which will then be on the video log. Document the start of the pond to the end of the pond along with depth of the pond.

6. Video train to include 1-inch visible ball with graduated 1/8-inch indicator rings.

7. Make sure the selected camera is appropriate to the pipe material and diameter to create the best video record. The camera needs to be stabilized. The lack of traction from the camera creating a jumping video is not acceptable.

8. When videoing the inside of a manhole focus on the joints along with the risers for the ring and cover. Turn the camera lights up when looking inside the manhole.

9. When looking up side sewers use the zoom and focus on any apparent defects.

10. The video along with the manhole logs assist with verification of side sewers for our as-builts.

11. Camera tractor speed needs to be kept at a consistent pace and not too fast.

12. When documenting on the video and video log, use stations for the tees from the downstream manhole.

13. When documenting a tee for a side sewer use "tee left" or "tee right" along with the stationing from the downstream manhole.

14. Verbalize on the recording anything documented on the log.

8. ADJUSTMENT OF NEW AND EXISTING UTILITY STRUCTURES TO GRADE:

This work consists of constructing and/or adjusting all new and existing utility structures encountered on the project to finished grade.

<u>Asphalt Concrete Paving</u>

On asphalt concrete paving projects, the manholes shall not be adjusted until the final pavement is completed, at which time the center of each manhole lid shall be relocated from references previously established by the Developer. The pavement shall be cut as further described and base material removed to permit removal of the cover. The manhole shall then be brought to proper grade.

Prior to commencing adjustment, a plywood and visqueen cover as approved by the District shall be placed over the manhole base and channel to protect them from debris.

The asphalt concrete pavement shall be cut and removed to a neat circle, the diameter of which shall not exceed 48 inches or 14 inches from the outside diameter of the ductile iron frame, whichever is smaller. The ductile iron frame shall be brought up to desired grade, which shall conform to surrounding road surface.

Adjustment to desired grade shall be made with the use of concrete adjustment rings or bricks. No cast or ductile iron adjustment rings will be allowed. An approved class of mortar (one part cement to two parts of plaster sand) shall be placed between adjustment rings or bricks and ductile iron frame to completely fill all voids and to provide a watertight seal. No rough or uneven surfaces will be permitted inside or out. Adjustment rings or brick shall be placed and aligned so as to provide vertical sides and vertical alignment of manhole steps and ladder. Adjustments in excess of 26 inches of depth of the 24-inch manhole neck shall require manhole section rings to raise the eccentric cone to within the adjustment ring tolerances.

Check manhole specifications for minimum and maximum manhole adjustment and step requirements. Special care shall be exercised in all operations in order not to damage the manhole, frames and lids or other existing facilities.

The annular spaces of the manhole frames shall be filled with 5/8-inch minus crushed gravel and compacted with hand tamper to within 2 inches of the top of the frame. Asphalt concrete patching shall not be carried out during wet ground conditions or when air temperature is below 50 degrees F. Asphalt concrete mix shall be at required temperature when placed. Before making the asphalt concrete repair, the edges of the existing asphalt concrete pavement and the outer edge of the casting shall be tack coated with hot asphalt cement. The remaining 2 inches shall then be filled with HMA and compacted with hand tampers and a patching roller.

The completed patch shall match the existing paved surface for texture, density and uniformity of grade. The joint between the patch and the existing pavement shall then be carefully painted with hot asphalt cement or asphalt emulsion and shall be immediately covered with dry paving sand before asphalt cement solidifies. All debris such as asphalt pavement, cement bags, etc., shall be removed and disposed of by Developer.

Prior to acceptance of a project, manholes shall be cleaned of all debris and foreign material. All manhole steps and ladders shall be cleaned free of grout. Any damage occurring to the existing facilities due to the Developer’s operations shall be repaired at his own expense.

Adjustment of Manholes in Easements

Manholes in easement areas shall be adjusted to ensure drainage away from the manhole frame and cover. Pour a 4'-0" diameter by 12-inch-thick broom finished concrete collar around the manhole frame and cover, and marked with a green carsonite marker.

Adjustment of Valve Box Castings

Adjustment of valve box castings shall be made in the same manner as for manholes.

9. FINAL ACCEPTANCE:

Prior to final inspection, all pipelines shall be flushed and cleaned and all debris removed.

At the District's discretion, gravity sewer lines shall be inspected for line and grade by checking each section between manholes for alignment. A full circle of light shall be seen by looking through the pipe at a light held in the manhole at the opposite end of the section of sewer line being inspected. Any corrections required in line and grade shall be made at the expense of the Developer. Visual confirmation will require confined space entry compliance and will normally be considered where settlement is suspected.

10. PRIVATE SIDE SEWERS:

Private side sewers are the extension of side sewer laterals located outside of the public rights-of-way or easements granted to the Silver Lake Water & Sewer District.

1. All sewer service connections to District facilities shall be gravity service.

2. The sewer pipe in the street right-of-way and District easements shall be 6-inch diameter, and shall have a 2 percent minimum grade. Construction in street rights-of-way shall be performed by a licensed side sewer contractor and requires a right-of-way use permit.

3. Private side sewer pipe for residential property shall be 4 inches or larger. Side sewer pipe for duplexes, multi-family, industrial, commercial, etc., shall be 6 inches or larger. Pipe material shall be ductile iron or PVC ASTM D3034, and shall be installed at 2 percent minimum grade (1/4-inch fall per foot). Construction on private property may be performed by owner, but requires a permit.

4. Pipe shall be bedded with pea gravel or clean free draining sand.

5. Side sewer shall be inspected by the District prior to backfilling. Side sewer shall be plugged and tested in the presence of the District Inspector by filling with water. Leakage rate shall not exceed 0.31 gal./hr. for 4-inch pipe and 0.47 gal./hr. for 6-inch pipe, per 100 feet of pipe. Existing homes served by septic systems converting to District sewer service are to demonstrate proper abandonment of septic tank to Snohomish County Health Department Standards and WAC 246-272A-0300. The Contractor shall provide a copy of documentation regarding sewage pumping to the District.

6. On private property, minimum cover shall be 18 inches over top of pipe from a point 30 inches out from house and continuing to the connection with the District sewer system.

7. Parallel water and sewer lines shall be 10-feet apart horizontally wherever possible and have a vertical separation of 18 inches if a vertical crossing is necessary.

8. No more than 100 feet is allowed between cleanouts. Cleanouts are required for bends equal to or greater than 90 degrees. Cleanout shall be a plugged tee or plugged wye lateral.

9. All pipe joints shall be rubber gasket type.

10. When required, "grease interceptor" to be outside the building and be of a size and type certified by a professional engineer licensed in the State of Washington and reviewed by the District.

11. Backwater valves are required on all side sewers where potential occurs for flow to back into the private service. These valves shall be installed in a riser pipe, meter box, vault or manhole as necessary to allow access for maintenance.

12. Dwelling units defined by food preparation, bedroom and bathroom areas contained in a structure are primary connections. Secondary connections require preapproval by the District before sewer service can be offered.

    a. Auxiliary dwelling units constructed on an existing served property within an existing structure may be allowed subject to payment of connection charges.

    b. Auxiliary dwelling units constructed on an existing served property in separate structures require separate side sewer connections to District mainline facilities.

c. Recreational vehicle dumps are not allowed.

d. Small utility sink and toilet facilities in out buildings may be allowed to connect to existing side sewers.

13. Side sewer installs to existing District mainline facilities in right-of-way are subject to special requirements:

a. Right-of-way permit required. Owner to pay all costs of obtaining the permit and for any costs associated with full compliance with all permit obligations.

b. Owner to pay all costs of installation of side sewer.

c. The Owner shall enter into a Developer Extension Agreement (DEA) with the District, and will be required to meet the following conditions:

i. All District or District incurred inspection fees are to be paid prior to and as a condition of connection.

ii. Comply with all District Standards, Conditions, Specifications, and requirements are applicable.

iii. Comply with all state, local and federal requirements apply.

iv. Preconstruction meeting with owner, owner contractor, and District is to be scheduled with the District prior to initiation of construction.

v. No connection to District facilities can be made without District or District Representative onsite.

SECTION IV

SEWAGE LIFT STATIONS

SEWAGE LIFT STATIONS

TABLE OF CONTENTS

IV. SEWAGE LIFT STATIONS - GENERAL STANDARDS

1. OBJECTIVE:

Section IV is intended to present information and provide an outline of the minimum general standards to be accomplished in planning a sewage lift station installation within the Silver Lake Water & Sewer District service area.

The Developer shall submit to the District for review and approval, complete sewage lift station plans and design which provide for the lift station, electrical service, SCADA controls, and auxiliary generator/transfer switch together with all accessories for a complete, automatically operating installation.

Design material and drawings shall provide all civil, mechanical and electrical details and align with all applicable codes and regulations, and good engineering practice.

2. DESIGN CALCULATIONS:

The Developer shall perform a study and make the determination to assure that the lift station installation is sized to serve the overall sewage flows generated within the potential service area. The flow study shall include the Developer's plat boundary area as well as adjacent and future service areas. The service areas shall be the areas within that which could be served by the installation of the lift station(s).

The station's design flow capacity shall be based on an average daily per capita flow with related peaking factors and inflow/infiltration allowances.

Documentation of present and future service area flow rates for lift station size and capacity determination shall be provided to the District.

The effects of the minimum flow conditions shall be estimated to be sure that retention of the sewage in the wet well will not create a nuisance and that pumping equipment will not operate too infrequently. The wet well shall be sized to limit pump cycles to a maximum of four cycles per hour per pump, with two pumps alternating at pump design capacity.

Lift station capacity shall meet the maximum rate of flow expected. At least two (2) pumping units shall be provided at each lift station installation. The pump shall have sufficient capacity and capability to efficiently handle the peak design flow with one (1) pump out of service and to ensure a minimum velocity of 3 feet per second velocity in the force main.

The force main shall be sized for a minimum velocity of 3 feet per second and a maximum of 8 feet per second. The minimum diameter of the force main shall be 6 inches.

The capacity of the receiving sewer shall exceed the flow expected.

Three (3) copies of the Design Report shall be submitted to the District for review. As a minimum, the report shall include.

1. Project description
2. Projected flows
3. Connection point with downstream capacity
4. Wet well sizing
5. Run time calculation and cycle time
6. Pump station head calculation
7. Pump selection
8. Force main size, length and material
9. Electrical load study
10. Generator sizing
11. Odor potential calculations
12. Wet well buoyancy calculations
13. Force main surge calculations

The Design Report shall be approved by the District prior to starting the design of the lift station.

3. LOCATION:

The Developer shall furnish a site layout for the lift station installation.

The lift station shall be located as far as practicable from present or proposed built-up residential areas, and an asphalt concrete access road shall be provided. Sites for sewage lift stations shall be of sufficient size for future expansion or addition, if applicable.

The easement for the lift station site shall be submitted to the District for review prior to construction of the lift station. Lift station sites not located within the plat boundary shall be deeded to the Silver Lake Water & Sewer District.

The Developer shall coordinate electrical power required to the site with the electrical utility.

As a minimum, the site shall provide for the following:

1. Lift station
2. Auxiliary power, including automatic transfer switch
3. Electrical
4. Telemetry

5. 1-inch water service with reduced pressure backflow preventor and hose bib installed in an above ground hot box enclosure on concrete. Furnish 50 feet of 3/4-inch heavy-duty rubber hose.
6. Odor control, as applicable for location and capacity.
7. Cuts and fills to provide level site for maintenance.
8. Asphalt concrete pavement for access and maintenance areas.
9. Safety system mount. See Detail V-LS7.
10. Single entry to wet well from recessed entry manhole (rock catcher). See Detail V-LS8.
11. 6-foot-high black powder coated frame and posts together with black vinyl chain link fence with vertical vinyl slats in-laid for screening and three strands of barbed wire on top of the fence, enclosing the site with 3-foot-wide access main gate and separate vehicle access gate 12-foot-wide minimum opening. Fence to be located in the asphalt, 6 inches from the edge. A gate button will be used for the center gate post.

4. LIFT STATION:

GENERAL

The sewage lift station shall be Smith & Loveless, custom series buried, dry-well-type or wet-well mounted as approved by the District. Construction shall be in compliance with OSHA, UL, ASTM, NEC, WAC, and other applicable codes and regulations. The station shall be designed, constructed and anchored to comply with current IBC standards.

The lift station shall have, as a minimum, two sewage pumps. The pumps shall have sufficient capacity and capability to efficiently handle the peak design flow with one pump and to ensure a minimum velocity of 3 feet per second in the force main. Design calculations and pump curves indicating the same shall be provided with the submittal information.

The rotor (motor) assembly shall be dynamically balanced. Add the impeller to the rotor assembly and dynamically rebalance the assembly, all to NEMA specifications for the operating RPM condition and submit documentation to the District. Pump and motor assembly shall meet the vibration tolerances established by the Hydraulic Institute, and shall be certified by the factory prior to shipment. Field vibration testing will be conducted to confirm conformance with vibration standards after installation. Failure to meet vibration standards in the field can be cause for station rejection.

The sewage lift station supplier shall check the station during installation to determine if the installation is correct. Written confirmation of each visit and recommendations shall be provided to the District.

The sewage lift station supplier shall provide a minimum of 4 hours of training for District personnel at the station site during startup.

The sewage lift station supplier shall provide four (4) complete copies of maintenance and operation material to the District.

CUSTOM SERIES BURIED STATION (WET WELL/DRY WELL)

The station shall be a Smith & Loveless Custom Series station complying with the latest edition of Smith & Loveless standard specifications and with the District Standards.

The station shall be a minimum of 8-feet in diameter and the pump motor assembly and piping shall be District standard dark green in color.

The above-ground entrance hatch shall be 44-inches minimum inside diameter with a steel cover, lockable to District standards. In all areas, lighting and ventilation shall be provided to meet the requirements for a confined space entry.

The station shall be provided with a minimum of four magnesium anodes. The test box for cathodic protection shall be mounted on the electrical rack. See Detail V-LS3.

Each motor starter shall have its own independent phase loss relay wired directly to the starter's "enable" circuit and to the RTU for alarming.

As a minimum, the station shall include the following:

1. Vertical close-coupled, motor driven, non-clog pumps.
2. Resilient seat gate valves.
3. Internal piping.
4. Central control panel with circuit breakers and intrinsically safe circuits.
5. Motor starters.
6. Shelf mounted air compressor (2) 9L25 bubbler system for automatic pumping level controls.
7. Lighting.
8. Sump pump with dedicated simplex, gray, 20A, non-GFCI receptacle in cast aluminum weatherproof box with full in-service cover.
9. Ventilating blower.
10. Blower timer.
11. Dehumidifier.
12. All internal wiring.
13. Protection against corrosion.
14. Station flooding alarm.
15. Operator in trouble emergency button.
16. Extended warranty – 24 months from startup or 30 months from time of shipment which ever is first.

17. Document certifying the lift station is in compliance with the NEC.
18. Convenience receptacles, white, duplex, 20A, GFCI, in cast aluminum weatherproof boxes with full in-service covers.
19. Spare parts each pump:
    - Replacement pump shaft seal – one each for each pump
    - Filter element for the seal filters – one each for each pump
    - Volute gaskets – two each for each pump
20. Touch up paint kit.
21. Ductile iron piping between wet well and station.
22. Common reinforced concrete base slab for station and wet well.
23. 316 stainless steel sump pump piping from the sump pump to the wet well with check valve and unions. Piping to go up dry well entry and discharge through the connection opening in the entry tube.
24. Air bubbler line to go up dry well entry, above ground level, back down and discharge through connection openings in entry tube. Air bubbler line shall be 316 stainless steel tubing in the station and 3/4-inch-diameter 316 stainless steel pipe from the entry tube to a wet well mounted tee with 3/8-inch stainless steel pipe extended down from the wet well mounted tee to 6 inches above the inlet of the suction pipes.
25. The wet well shall be a minimum of 8 feet in diameter. The wet well shall provide for the volume of the pumps to be fully submerged.
26. The wet well shall be of precast concrete construction with flat slab cover and 4 x 6 (two door) hatch for access. The flat slab concrete cover shall be provided with a 4-inch vent, which is "hooked and screened."

WET WELL MOUNTED STATION

The station shall be Smith & Loveless wet well mounted vacuum primed station complying with the latest edition of Smith & Loveless standard specifications and with the District Standards.

Each motor starter shall have its own independent phase loss relay wired directly to the starter's "enable" circuit and to the RTU for alarming.

As a minimum, the station shall include the following:

1. Vertical, close-coupled, motor driven, vacuum-primed, non-clog pumps.
2. Resilient seat gate valves.
3. Internal piping.
4. Central control panel with circuit breakers and intrinsically safe circuits.
5. Motor starters.
6. Shelf mounted air compressor (2) bubbler system automatic pump level controls. Shelf to be mounted at the same level or higher as the top of the station side wall.
7. Heater.
8. Ventilating blower.

9. Priming pumps and appurtenances.
10. All internal wiring.
11. Discharge pipe welded to the base plate and to be flanged below.
12. Bubbler piping above the base plate, plastic tubing, and below the base plate to be 3/8-inch-diameter 304 SS pipe extended down to 6 inches above the inlet of the suction pipes.
13. Lid to be 2 piece design with hydraulic hood assist.
14. Paint station with dark green epoxy.
15. Shelf mounted vacuum pumps located at the same level or higher as the top of the station side wall.
16. Extended warranty – 24 months from startup or 30 months from time of shipment whichever is first.
17. Document certifying the lift station is in compliance with the NEC.
18. Convenience receptacles, white, duplex, 20A, GFCI, in cast aluminum weatherproof boxes with full in-service covers.
19. 3/4-inch conduit connection in electric panel for connection to the telemetry sub panel.
20. Spare parts each pump:
    - Replacement pump shaft seal – one for each pump
    - Volute gaskets – two for each pump
21. Touch up paint kit.
22. AWWA C900 PVC suction pipes.
23. Flexible restrained coupling (Romac Adaptor RFCA) to connect station to suction pipes.
24. The wet well shall be a minimum of 8 feet in diameter.

MOTORS

The pump and motor shafts shall be the maximum diameter available for these units.

Pump motors shall be 3-phase, 60-cycle, 480-voltage inverter rated, TEFC. Motors 40 hp and larger shall be furnished with soft start or variable frequency drives (VFDs). VFDs shall comply with the latest ANSI, IEEE, and NEC codes. VFD load circuits from starter to motor shall be shielded power cables in RGS conduits. All VFDs shall be Allen Bradley.

The motors shall have 1.15 service factor and be non-overloading for the full range of the curve unless otherwise approved by the District.

WET WELL:

<u>General</u>

The wet well shall be precast concrete manhole sections. Joints between precast wall sections shall be confined O-ring or as otherwise approved. The poured in place slab top shall be designed with the wet well to exceed buoyant forces and shall have a cast in place flush mount safety system sleeve per District Standard Detail.

The wet well shall be provided with polypropylene manhole steps as specified for manholes.

The wet well shall be checked to ensure all joints are watertight to prevent infiltration and exfiltration of the wet well.

The wet well floor, walls and underside of the top shall be coated to comply with the following:

Surface Preparation:

Allow a minimum of 28 days cure time for concrete. Sweep blast to provide a surface profile. Surface shall be clean, dry and free of contaminants.

Exterior Surfaces:

The exterior surface of the wet well shall be coated with 30 mils minimum of coal tar epoxy.

Interior Surfaces:

- **Filler and Surfacer:** Tnemec Series 218 Filler and Surfacer. Applied as needed. After the application of the prime coat, the bugholes and surface voids shall be filled to ensure that the finish coat is monolithic and pinhole free.

- **Finish:** Tnemec Series 435 Perma-Glaze Applied in two coats at 15 mils dry film thickness each. Color light gray.

- **Total System:** 30 mils dry film thickness.

Comply with all conditions of the manufacturer's specifications for preparation and application.

CONTROLS:

The control panel shall include:

1. Main disconnect.
2. Panel mounted running light for each pump.
3. Panel mounted ammeter for each pump to read percentage of load.
4. Panel mounted running time meter for each pump.
5. Panel mounted Cutler Hammer HOA switches for each pump.

6. Mounting bracket for telemetry sub panel in station (size: 13-1/2" L x 10" W x 6-1/2" Deep).
7. Local/Remote contact for the following alarms:
    a) Low Level
    b) High Level
    c) Power/Phase Failure (single & 3-phase)
    d) Pump Failure
    e) High Water (dry well)
    f) Pump On
    g) Intrusion
8. Panel mounted wet well gauge. Minimum 2.5-inch dial and read for depth of wet well in inches (Model Marsh Bellofram No. G 22 687).
9. Phase monitor to protect the pump motors from single-phase reversal and low voltage.
10. Discharge check valve limit switches (each).
11. Pump alternator, each cycle.
12. High water float pump control.

ELECTRICAL SERVICE/CONTROLS & TELEMETRY SYSTEM:

General

Codes and regulations exist at the federal, state, and local level dictating minimum acceptable requirements for electrical systems. The following standards shall be used as a basis for design and review.

1. National Electric Code (NEC)
2. Occupational Safety & Health Act (OSHA)
3. State & Local Building Codes
4. National Electrical Code (NESC)
5. National Electrical Manufacturers Association (NEMA)
6. Underwriters' Laboratory (UL)
7. Insulated Power Conductor Engineering Association (IPCEA)
8. American National Standards Institute (ANSI)
9. Institute of Electrical & Electronic Engineers (IEEE)

Electrical Service

The local electric utility will be the primary source of electrical power. The Developer shall ascertain proper coordination between the nominal secondary delivery voltage supplied by Snohomish County PUD No. 1 and the connection to the lift station equipment. The electrical service shall be 480/277V 4-wire, 3-phase, 60 hertz, with a solid neutral terminal at the disconnect or as may otherwise be required by Snohomish County PUD No. 1. This shall be confirmed with the Snohomish County PUD No. 1 and confirmed by the suppliers.

All installation shall be approved by Snohomish County PUD No. 1 and shall be in conformance with the NEC (current issue) UL, OSHA and County and State electrical codes.

The District shall be furnished with a certificate of final inspection by the inspecting agency.

All wire shall be stranded copper.

All conduit shall be rigid galvanized (RGS). All underground RGS conduits, elbows, and fittings shall be coated with 20 mils (minimum) of PVC coating or a half-lapped wrap of Scotchwrap No. 51. See Detail V-LS4.

All underground conduits shall be covered with a strip of yellow polyethylene tape placed 6-inches below finished grade and directly above the conduit.

All conduit shall have a minimum of 2'-0" of cover.

Instrumentation conduits, elbows and fittings shall be RGS over their entire length.

Heating strips shall be provided for outside electrical enclosures.

A service entrance shall be provided with a pedestal on which shall be mounted, as a minimum, the following equipment:

1. Meter and meter can (as required by the PUD)

2. Meter C.T.S. (as required by the PUD)

3. Main disconnect SUSE-rated circuit breaker in a NEMA 3R, enclosure, with padlock to District standards.

4. Service voltage shall be 480/277 volts, 3 phase, 4-wire, except as required by Snohomish County PUD #1.

5. Single phase services shall be 240/120 volt, 3 wire. Panels shall conform with NEMA 3R.

6. A 120-volt duplex in NEMA 3R enclosure with padlock to District standards on the electrical rack.

7. Ground rod and connector wire in conduit to NEC standards.

8. Mount equipment per Detail V-LS3

9. Provide a complete electrical plan set including the following minimum documents:

   a) Electrical plan view showing equipment and interconnecting conduits
   b) A cable and conduit schedule
   c) A one-line diagram
   d) Motor starter control schematics
   e) Panelboard schedule
   f) Main control panel schematics
   g) PLC I/O tables
   h) Associated electrical details

10. The District shall be provided with a complete reproducible set of as-constructed plans and details showing final location of all equipment, conduit and wire.

Controls

Control and instrument system plans shall thoroughly and completely depict system design. The plans, in conjunction with the specifications, shall define the type of control system, the type of components in the system, set points and the interface between the instrumentation and control system and the lift station system. To accomplish this, the control and instrument plan(s) shall include, as a minimum, the following:

1. Control and instrumentation system legend and general notes

2. Control, instrumentation and distribution diagram

3. Plans showing location of all control, instrument, and distribution system equipment and components, both electrical and pneumatic

4. All equipment and installation details

The power, control and instrumentation systems shall be designed with both operational reliability and maintainability. Use standard products wherever possible.

Electrical equipment and devices shall be connected using separate power, control, and instrumentation conduits. Electrical gutters or fabricated raceways shall not be used.

All components within the lift station system, including both internally and face-mounted instruments and devices, shall be clearly identified with phenolic nameplates of black background with white letters reverse engraved from the backside (smooth front surface).

Intrinsically safe electrical circuits shall be installed in the main control panel in compliance with NEC, not in the motor starters.

All wiring between cabinet, equipment and components shall be labeled and color coded where applicable.

All pump motors shall have an independent lockable circuit breaker located within the lift station and the lift station shall have a lockable main circuit breaker located outside the lift station.

Lead and lag pump functionality shall alternate between pumps on each cycle change.

The pump controls shall be air bubbler type with two compressors alternating on timer control, and shall provide for both pumps to operate at high water conditions. The control elevations shall be indicated on the plans, i.e., on-off, first pump on, second pump on, and high water alarm. The air compressors shall not be located in electrical cabinets or enclosures.

The wet well shall be equipped with a high water redundant float to override the bubbler pump control and start the pumps and send high wet well level alarm.

A complete set of spare fuses shall be provided for all fused equipment.

<u>Telemetry</u>

The District's telemetry system utilizes Allen Bradley Compact Logics for SCADA functions related to the wastewater collection systems. The PLCs report to a master unit at the District Headquarters. The master unit communicates with a personal computer running Inductive Automation Ignition software to allow Supervisory Control and Data Acquisition functions to take place.

The PLCs shall be provided in enclosures with auxiliary equipment to facilitate connection of external signals to the PLCs, and to monitor voltage, intrusion, and similar status signals. Communication with the District Headquarters shall be via Ethernet IP.

For each new lift station, the Developer shall provide an Allen Bradley Compact Logics PLC (with Modbus option, accumulator/pulse counter access and battery backup) along with an enclosure, power supply, relays, surge protection devices for power and Ethernet connections, and other auxiliary devices as required for proper operation of the system. Typical discrete inputs for a station include:

1. Utility Power Fail
2. Three Phase Power Fail (phase reversal, phase imbalance, phase loss, undervoltage, and overvoltage)

3. Generator Run
4. Generator Fail
5. ATS in Standby
6. Intrusion Alarm
7. Wet Well High Level
8. Wet Well Low Level
9. Pump No. 1 Run
10. Pump No. 2 Run
11. Pump No. 1 Fail
12. Pump No. 2 Fail
    (Note: Additional pump run and fail signals are required for each pump when the station has more than two pumps.)
13. Station Flood (Buried Station)
14. Ventilation Fail (Buried Station)
15. Operator in Trouble (Buried Station)
16. Flow Meter Totalizer
17. All exterior transfer switches will be NEMA 3 enclosure with keyed switch for access to controls.

Typical discrete outputs include:

1. Start Generator (with an interposing relay driven by the PLC in the telemetry subpanel)

Typical analog inputs include:

1. Pump No. 1 Amperes
2. Pump No. 2 Amperes
3. Wet Well Level
4. Flow Rate

Provisions shall also be made for additional I/O signals by providing terminals from each I/O point on the PLC to terminals within the telemetry panel.

The telemetry panel and all items contained therein shall be provided by Systems Interface, Inc., (425) 481-1225.

Programming of the PLC and HMI shall be performed by Infinium Engineering and Consulting, Inc. of Yakima, WA.

The Developer shall also be responsible for correct set-up of the PLC with respect to the existing system configuration. This includes coordinating configuration parameters such as:

1. PLC addressing
2. Master unit configuration
3. PLC configuration,

4. I/O point configuration (enable/disable format)
5. Debounce time
6. NO/NC inputs
7. Percent change reporting
8. High/low alarm limits
9. Accumulator sampling rates
10. Momentary/latched outputs
11. Signal adjustments (receive gain, transmit gain).
12. Rebalancing of the District's Verizon dedicated telemetry circuit.

The Developer shall coordinate with the telephone utility and the District for obtaining proper telephone service to the site. The Developer shall be responsible for obtaining, installing, and starting up the PLC for the new lift station. The Developer shall coordinate obtaining, installing and starting up the PLC with the District to ensure that the station is properly configured and functions correctly in conjunction with the existing system.

All major components, including relays, timers, and power supplies shall be identified using phenolic or vilam engraved labels.

A line (surge) protector unit shall be provided for the telemetry equipment. The unit shall protect the equipment from transient and electrical surges on the telephone line. Protection shall include line fuses and clamps for voltages over 25 volts, gas tubes shall be provided as an integral part of the lighting protection unit.

STANDBY POWER SYSTEM:

General

Standby power generation equipment shall be provided at the lift station site, which will operate the lift station in the event of a commercial power outage.

The standby system shall be designed with capacity and rating to safely start and operate the entire connected lift station load, including all pumps and ancillary loads unless otherwise approved by the District. All applicable codes shall be followed, including NEC and UPC.

The generator set shall be complete in every respect and shall include, but not be limited to the following:

1. Generator, control panel & circuit breaker.
2. Engine, radiator & exhaust system.
3. Fuel tank, diesel only. (Capacity for 7 days at 25 percent load.)
4. Alum-Tek generator set enclosure providing noise attenuation in compliance with Washington State Administrative Code, Chapter 173-60, and lockable to District Standards.

5. Automatic transfer switch – single electric motor style.
6. Block heater.
7. Battery & rack.
8. Battery charger.
9. Conduit, wire and piping.

The generator set and transfer switch shall be Cummins/Onan complying with the latest edition of Onan Corporation standard specifications and District Standards or a District approved equal generator set and transfer switch.

The generator set shall be spark-ignited, liquid propane; 60 Hertz, 1,800 rpm, 3-phase, 480/277 volt standby power or diesel if approved by the District. Diesel required for generator sets greater than 150 kW.

The generator set shall include the following:

Engine
1. Single phase, 1,500 watt block heater (115 Vac)

Generator Set
1. Mainline circuit breaker
2. 5-year basic power warranty

Accessories
1. Batteries
2. Battery Charger, 2 amp, 12 VDC, 120 Vac Input
3. Vibration Isolators, Pad Type

Control Panel
1. Annunciator relays (12)
2. Run relay package (3)
3. Low coolant level shutdown
4. Anti-condensation space heater, 120 Vac
5. Oil temperature gauge
6. Wattmeter
7. Emergency stop switch

Fuel Systems
1. Diesel unless approved by the District. All piping shall be black iron, except for flexible vibration isolation connections at pipe ends with shut off ball valves.

Alternator
1. Anti-condensation heater, 120 Vac

Control Features

1. Run-stop-remote switch
2. Remote starting, 12-volt, 2 wire
3. Coolant temperature gauge
4. Field circuit breaker
5. DC voltmeter
6. Running time meter
7. Lamp test switch
8. Oil pressure gauge
9. Fault reset switch
10. Cycle cranking
11. 12-light engine monitor with individual 1/2 amp relay signals and a common alarm contact for each of the following conditions:
    - Run (Green Light)
    - Pre-Warning for Low Oil Pressure (Yellow Light)
    - Pre-Warning for High Coolant Temp (Yellow Light)
    - Low Oil Pressure Shutdown (Red Light)
    - High Coolant Temperature Shutdown (Red Light)
    - Overcrank Shutdown (Red Light)
    - Overspeed Shutdown (Red Light)
    - Switch Off (Flashing Red Light- Indicates Generator Set Not In Automatic Start Mode)
    - Low Coolant Temperature (Yellow Light)
    - Low Fuel (Yellow Light)
    - Two Customer Selected Faults (Red Light)

AC Meter Package

Order with NFPA 110 monitor to meet code requirements.

1. AC voltmeter (dual range)
2. AC ammeter (dual range)
3. Voltmeter/ammeter phase selector switch with an off position
4. Dual scale frequency meter/tachometer
5. AC Rheostat (panel mounted) for + 5% voltage adjust

The transfer switch shall include the following:

1. Sized for full station and auxiliary equipment load plus 25%.

Pole Configuration

1. Poles - 3 (Solid Neutral)

Frequency

1. 60 Hertz

Application

1. Appl - Utility to Genset

System Options

1. Three phase, 3-wire or 4-wire

Enclosure

1. Alum-Tek or equal generator will be installed in a 12-gauge galvanized welded steel, insulated, sound attenuated, NEMA 3R weather-protective, walk-in drop over acoustical enclosure. The enclosure will meet the requirements of ASTM A-653 and the current IBC. The sound pressure level will average not more than 45 dBA at 110 feet in a free-field condition, or 53 dBA at 23 feet, or will meet more stringent sound requirements as specified by the District.

Listing

1. Listing - UL 1008

Programmed Transition

1. Program Transition, 1-60 sec.

Applications Modules

1. Monitor - Phase Sequence/Balance

Suitable guards shall be provided on all electrical parts to minimize the personal shock hazard.

Generator shall be broken-in sufficiently to permit application of full load immediately upon installation.

Generator supplier shall provide all tools for the generator set as recommended and required by the manufacturer.

Generator installation shall be checked by the supplier after installation to determine that the installation is correct. Written confirmation shall be provided to the District. Generator supplier shall perform a full load test for 2 hours after installation is complete. Provide resistive load bank for this test.

Generator supplier shall provide a minimum of 4 hours of training for District personnel at the station site during startup.

Generator manufacturer shall provide 4 copies of the maintenance and operation manual. These manuals shall be complete and shall include all information necessary to allow District personnel to maintain the generator.

Generator mounting pad shall be reinforced concrete to carry the weight of the unit and shall extend a minimum of 3 inches beyond generator housing. All formed edges to be 1/2 round or 3/4-inch chamfer.

Diesel tanks shall be Convault AST, or approved equal, equipped with external fuel shutoff valve.

5. FORCE MAIN:

The force main shall be a minimum 6-inch-diameter ductile iron Class 52 polyethylene or epoxy lined or high-density polyethylene (HDPE) if approved by the District and provided with a continual positive slope. Ductile iron force main shall be restrained. HDPE shall include tracer wire. There shall be no intermediate high point between the lift station and the force main discharge point, unless properly protected with sewage air and vacuum release assembly. Minimum cover over the force main shall be 4'-0". All pipes (gravity and pressure) entering and leaving the wet pit or dry pit shall have flexible couplings within 18 inches of the structure. Install force main location boxes as required, shown on Detail V-S4.

Discharge of the force main to the gravity sewers shall be made at a manhole with the force main penetration core drilled and the force main aligned to discharge towards the downstream pipe. The invert of the force main shall be 0.1-foot above the invert of the downstream pipe. Channel the manhole as required.

A bypass pump connection equipped with a Cam Lock fitting and cap shall be located near the wet well in a location specified by the District. See Detail V-LS2.

A surge valve shall be installed on the force main to discharge into a manhole or the wet well if high head conditions will occur as determined by the District.

TESTING FORCE MAIN:

Cleaning

All force mains shall be cleaned prior to connection of force main to pumping facilities. Contractor to provide cleaning plan for District review and approval.

Test Specifications

All force mains shall be tested prior to acceptance of work. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished, installed and operated by the Developer. Feed for the pump shall be from a barrel or other container within the actual amount of “makeup” water, so that it can be measured periodically during the test period.

The pipeline shall be backfilled sufficiently to prevent movement of the pipe under pressure. All thrust blocks shall be in place and time allowed for the concrete to cure before testing. Where permanent blocking is not required, the Developer shall furnish and install temporary blocking.

The pipeline shall be subjected to a pressure and leakage test of a minimum of 200 pounds per square inch for a period of not less than 1 hour. The test pressure shall be applied at the low end of the section tested.

Prior to calling for the District to witness the pressure test, the Developer shall first perform a satisfactory pressure test. The allowable leakage rate per thousand feet of each size pipeline is as follows:

Pipe Size	Allowable Leakage Gal. per Hour per 1,000 Ft. @ 200 psi
6"	0.64
8"	0.85
10"	1.06
12"	1.28

Defective materials or workmanship, discovered as a result of the tests, shall be replaced by the Developer at the Developer's expense. Whenever it is necessary to replace defective material or correct the workmanship, the tests shall be re-run at the Developer's expense until a satisfactory test is obtained.

Preliminary Tests

Developer shall conduct preliminary tests and assure himself that the section to be tested is in an acceptable condition before requesting the District to witness the test.

Thrust Blocks & Anchor Blocks

Fittings shall be "blocked" with poured-in-place concrete, with a firm minimum bearing against an undisturbed earth wall. Timber blocking will not be permitted. Thrust blocks shall be poured as soon as possible after setting the fittings in place to allow the concrete to "set" before applying the pressure test. The concrete thrust blocks shall be in place before beginning the pressure test. Anchor blocks shall be allowed to set sufficiently to develop the necessary bond strength between the reinforcing rods and the concrete anchor before beginning the pressure test. A visqueen barrier shall be provided to protect glands, bolts and other miscellaneous materials required for this type of connection from the concrete. Fittings that must be blocked against an undisturbed earth wall shall be restrained with restrained joint pipe and fittings.

6. LIFT STATION TEST PROGRAM:

The Developer shall perform, as a minimum, the following tests and provide the District written documentation of the date performed and results obtained. Pump tests shall meet or exceed specified capacity. The District shall be informed of the testing schedule 48 hours prior to the test and shall be present during testing.

1. Pump capacity by drawdown test
2. Control panel operation
3. Generator load test
4. Automatic transfer reconciled to auxiliary power and back to utility power
5. Telemetry control to terminal strip
6. Telemetry control to SCADA system
7. Pump vibration analysis

Fill water for testing shall be obtained in accordance with District cross-connection practices.

SECTION V

CROSS-CONNECTION CONTROL

CROSS-CONNECTION CONTROL

TABLE OF CONTENTS

V. CROSS CONNECTION CONTROL:

1. DEFINITIONS:

A. Unless a different meaning plainly is required, the definitions found in WAC 246-290-010 now in effect or as subsequently amended or reenacted are hereby adopted by reference as if set forth in full herein.

B. CCS is defined as the Cross Connection Control Specialist of the Silver Lake Water & Sewer District or delegated representative.

C. Owner is defined as any person or entity with interest in the title to the property and/or a customer of the District.

D. Acronyms for Backflow Assemblies:

AG: Air Gap
AVB: Atmospheric Vacuum Breaker
DCVA: Double Check Valve Assembly
RPBA: Reduced Pressure Backflow Assembly
RPDA: Reduced Pressure Detector Assembly (fire systems)
SVBA: Spill Resistant Vacuum Breaker Assembly
PVBA: Pressure Vacuum Breaker Assembly

E. Other definitions:

(the) District: The Silver Lake Water & Sewer District
BAT: Backflow Assembly Tester
RCW: Revised Code of Washington
WAC: Washington Administrative Code
WSDOH: Washington State Department of Health
USC/FCCCHR: University of Southern California Foundation for Cross Connection Control and Hydraulic Research
AHJ: Authority Having Jurisdiction
UPC: Uniform Plumbing Code
TI: Tenant Improvement

2. PURPOSE AND SCOPE:

A. This Section establishes minimum standards for the District to protect the public potable water supply from possible contamination or pollution due to backflow or backsiphonage from an owner's private internal system into the public potable water system.

B. This Section establishes minimum cross-connection control operating policies and requirements for installation, testing, and maintenance of approved backflow assemblies and describes (other) annual inspection requirements for existing and new backflow assemblies.

C. The purpose of this Section is not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this Section. This Section is applicable to all connections to the Silver Lake Water & Sewer District water system.

3. AUTHORITY:

A. This Section is authorized by The Federal Safe Drinking Water Act of 1974 (and Amendments of 1996), the statutes of the State of Washington Title 43 RCW and WAC 246-290-490.

4. RESPONSIBILITY:

A. The District CCS will be responsible for administering the provisions of this Section.

B. Proper installation of required backflow assemblies shall be a condition of water service from the District's water supply system to any premises upon which the potential for backflow into the District system exists. Water service may be discontinued or refused until corrective action is taken in accordance with this Section.

C. Upon installation of an approved backflow assembly, the owner shall contact the District requesting inspection of said assembly or assemblies.

D. Upon approval of the installation by the District, the owner shall have the assembly or assemblies tested by a State of Washington certified BAT and shall submit a copy of the test report to the District in accordance with this Section.

E. The owner shall be subject to all applicable inspection and permitting fees. All tests and reporting by a certified BAT shall be at owner's expense.

5. FAILURE TO COMPLY – VIOLATIONS – PENALTIES:

A. Any person, firm, or corporation who willfully violates any provisions or requirements of this Section shall be subject to discontinuance of supply of District water to the service connection to the site where the violation exists and discontinuance of service shall remain in effect until corrective action has been completed in accordance with District standards.

6. REQUIREMENTS:

GENERAL

A. Compliance with the provisions of this Section shall be a condition of receiving or to continue receiving the District's water supply. It is unlawful for any person to allow any contaminants or pollutants to backflow from their facility and/or property into the District distribution system.

B. All domestic connections, except for single-family and duplex connections shall require the installation of an approved RPBA at the service connection or alternate location as approved by the District. The RPBA shall be installed, inspected and tested in accordance with the provisions of this Section.

C. All multi-family (other than duplexes) connections shall require at a minimum, the installation of a RPBA at the service connection or alternate location as approved by the District. The RPBA shall be installed, inspected, and tested in accordance with the provisions of this Section.

D. All fire service connections shall be a dedicated and metered connection to the water main. All fire service connections, except for single-family residences and duplexes shall require the installation of an RPDA or RPBA at the service connection or alternate location as approved by the District. Fire services for single-family residential or duplexes shall have, at a minimum, a DCVA at the service connection or an alternate location as approved by the District. Commercial fire service connections shall be equipped with either an RPBA or RPDA depending upon service size (see II-4 (23) General Standards). In cases where an appropriately size RPDA is unavailable, an RPBA shall be installed upstream of the fire system components. Fire protection systems which serve both residential and commercial buildings from the same service connection shall require an RPDA or RPBA. All backflow and detector-check assemblies shall be installed, inspected, and tested in accordance with the provisions of this Section.

E. All irrigation services, other than single family (private) systems shall be a dedicated and metered connection to the water main. A minimum of a DCVA shall be installed at the service connection. Any irrigation system, including single family, that uses chemical injection of any kind shall be isolated from the District's water system by an approved RPBA at the service connection (no exceptions). All backflow installations shall be installed, inspected, and tested in accordance with the provisions of this Section.

F. Single Family residences having hard plumbed irrigation systems shall apply one of the following means of backflow protection to protect the District's water supply: DCVA, AVB, PVBA, or SVBA, as appropriate to system design. Protection shall be installed, inspected, and tested in accordance with the provisions of this Section.

G. The District requires that the public water supply be protected from contamination from cross connections. The owner shall be responsible for water quality beyond the District service meter. This responsibility includes proper installation, annual testing and maintenance of required backflow assemblies as provided in this Section. Fixture isolation assemblies shall be installed in accordance with the UPC and/or AHJ as a condition of service.

TENANT IMPROVEMENTS

H. All TIs that require any modification of the potable water or sewer internal plumbing shall require upgrade of the water and sewer systems to current District standards at the service connection, or alternate location as approved by the District that shall be installed, inspected, and tested in accordance with the provisions of this Section.

SILVER LAKE WATER AND SEWER DISTRICT

I. For premises existing prior to the start of this program, the District will perform evaluations and inspections of plans and/or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction and the time allowed for the correction to be made. A maximum of 60 days will be allowed; however, this time period may be adjusted by the District CCS depending upon all reasonable factors including but not limited to the performance history of the backflow assembly and the degree of hazard involved.

J. Premises are subject to inspection on or after the expiration date of required action to correct a cross-connection. Water service to premises that fail to comply with the District's request shall receive written notice, via registered mail and regular mail, postage prepaid, that water service to the premise will be terminated within a period not to exceed 30 calendar days. In the event the owner informs the District of extenuating circumstances as to why the correction has not been completed, the District may grant a time extension up to but not exceeding an additional 30 days.

K. If the District determines at any time that a serious threat to the public health exists; the water service may be terminated immediately, provided, however, that notice will be posted on the premises affected at the time said service is terminated and the proper AHJ is notified of the action.

L. Inspection may be done during the initial installation and during on-site reviews of existing installations.

OWNER

M. An easement shall be provided to the District for access to all backflow assemblies required to protect the public potable water supply from possible contamination.

N. When a test identifies a backflow assembly is not properly functioning, the owner shall correct the malfunction and have the assembly inspected and re-tested or replaced until proper backflow protection is restored.

O. The owner shall be responsible for the elimination or protection, of all cross-connection on their premises.

P. The owner after notification by the District shall, at their expense, install any and all required backflow assemblies.

Q. The owner shall, at their expense, be responsible for having all backflow assemblies tested:

1. At the time of installation;

2. Annually after installation or more frequently in cases of repeated failure to meet test criteria;

3. After an assembly is repaired, reinstalled or relocated; or

4. An air gap is re-plumbed or replaced by a District approved assembly. The test shall be performed by a Washington State certified BAT. The results of the tests shall be reported within 30 days to the District CCS on a form provided by or approved by the District.

R. The owner shall immediately notify the District CCS of any malfunction of the approved backflow assembly that is revealed by periodic testing. The required repair or replacement of said assembly(ies) shall be completed within 30 days.

S. The owner shall inform the District of any proposed modifications to their plumbing that creates a possible cross-connection and also any existing cross-connections of which the owner has actual knowledge but has not been found by the District.

T. The owner shall install only backflow prevention assemblies from the current list of Washington State approved assemblies (WSDOH Publication # 331-137) as it exists now or as hereinafter changed, modified, amended, reenacted or recodified.

U. Any owner having a private well or other private water source desiring to connect to the Districts' water supply shall de-commission the well per WAC 173-160-381 as it exists now or as hereinafter changed, modified, amended, reenacted or recodified.

V. The owner shall provide District personnel access to premises for cross connection inspection at the District's request. Failure to provide access to inspect facilities shall be grounds for termination of water service and/or installation of appropriate backflow assembly behind the meter by District crews at the owners' expense.

7. INSTALLATION AND TESTING - MINIMUM REQUIREMENTS:

A. Minimum requirements for the testing of all backflow assemblies shall be in accordance with the USC/FCCCHR Manual of Cross-Connection Control, tenth edition, published October 2009, including subsequent revisions, adopted by reference herein.

B. Backflow assemblies shall be installed in meter boxes, vaults, or "hot boxes" if greater than 2-inch diameter unless otherwise approved by the District. Vaults shall have adequate clearances and depths to allow for inspection and testing. Assemblies that cannot be easily and readily inspected shall be relocated and re-plumbed as directed by the District. The owner shall contact the District for applicable installation requirements and standards.

C. All bypass lines parallel to a line on which an approved backflow assembly is installed shall have an approved backflow assembly installed that offers the same level of protection as the assembly required by the District on the main line.

8. BACKFLOW ASSEMBLIES:

A. Classifications of backflow assemblies include but are not limited to: RPBA, RPDA, DCVA, SVBA, or PVBA of make, model, and size included on the current approved backflow assemblies list approved by WSDOH (Publication # 331-137) as it exists now or as hereinafter changed, modified, amended, reenacted or recodified. Washington State has adopted the USC/FCCCHR list of approved backflow assemblies. CD copies of the approved assemblies are available at the discretion of WSDOH. Call or check WSDOH website for availability. All major backflow assembly manufacturers display their USC approvals on their respective websites and product literature. Consult manufacturer's data before purchasing any backflow assemblies.

B. Any existing backflow assembly in use, but not currently listed by the WSDOH can continue to be used providing all the following conditions are met:

1. The assemblies were included on the WSDOH list of approved backflow assemblies at the time of installation;

2. The assemblies have been properly maintained;

3. The assemblies are functioning properly based on inspection by the District and testing by a certified BAT;

4. The degree of protection of the District's water system is commensurate with the degree of hazard as determined by the District CCS and the provisions of this Section.

C. When an unlisted assembly does not meet the above conditions, is moved, or cannot be repaired using spare parts from the original manufacturer, the assembly shall be replaced by an assembly currently listed as approved by the WSDOH.

9. APPLICABILITY:

A. The provisions of this Section are applicable to all connections to the District water supply.

10. ADMINISTRATIVE PROCEDURES:

A. In order to carry out the provisions of the District Cross Connection Control policies, rules and procedures set forth in this Section, the District has an ongoing compliance program based upon but not limited to the following criteria: proper management of system connections; effective customer education; accurate recordkeeping and notification; Development plan review and inspections of new connections; and periodic inspection of existing connections.

B. Minimum Requirements

1. These District requirements are provided for clarification and any disagreement between the requirements listed below and requirements listed elsewhere in this Section, the more restrictive shall govern.

2. All non-residential domestic water services shall be isolated from the public water system by an approved RPBA at the domestic service connection or at an alternate location acceptable to the District.

3. Fire services shall be isolated from the Public water system by an approved RPBA or RPDA at the service connection or at an alternate location acceptable to the District.
4. Premises having an auxiliary water supply (such as an active well(s)) shall be de-commission per WAC 173-160-381 prior to connecting to the District water system.

5. All Multi-family services (other than duplexes) shall have a RPBA installed at the service connection.

6. Non-residential irrigation services shall be separately metered and shall have an approved DCVA installed at the service connection. Irrigation systems that use chemical injection shall be isolated from the District's water system by an approved RPBA at the service connection.

7. Residential irrigation systems where compressed air is introduced shall have a minimum of an approved DCVA installed at the connection to the irrigation system (AVB systems are not adequate for protection of the public system where compressed air is introduced into the water system).

8. Residential Irrigation systems, which do not fall into the prior category, may have an approved PVBA installed on the system, or properly installed AVB for each zone. AVB installations are subject to periodic inspection by the District CCS.

9. Premises with water features, ponds, pools, or fountains connected in any way to the District's system shall install a District approved AG at the fill point to the water feature, regardless of any upstream backflow protection. AG's will be annually inspected by a Washington State Certified Backflow Assembly Tester (BAT).

C. Compliance Inspection of Existing Buildings, Structures, and Grounds

1. An ongoing inspection program has been established by the District to locate and address cross connection potential to the District's system with priority given on the basis of risk to public health and is conducted as outlined below. The District CCS may perform additional inspections as needed.

2. The District CCS periodically surveys residential meter routes, looking for irrigation systems, or signs thereof, responds to tips from customers, monitors locate requests, and uses other means with the goal that all connections to the District's water system be in compliance with State and District regulations. The District relies on plan review and premise isolation procedures established in this Section to properly protect the Public potable water system from other hazards posed by commercial, fire, and multi-family connections. Systems without required cross connection protection when identified, shall be brought into compliance by the owner.

3. The District relies on annual test reports to ensure existing irrigation installations are in compliance. The District will endeavor to send notices of the deadline of required annual backflow assembly tests. It is the responsibility of the property owner to submit the annual Backflow Assembly Test Report in a timely manner (within 30 days) with or without notice from the District. Property owners who fail to provide annual test results certifying backflow assembly is in compliance with State and District regulations are identified and tracked until satisfactory compliance is achieved or water service is terminated.

4. The District shall respond to customer taste and odor complaints in a prompt and professional manner, understanding that these complaints may be indicative of possible contamination due to a temporary or continuing cross connection event with the Public water system. Should a cross connection be identified, it will be tracked until satisfactory compliance is achieved or water service is terminated.

D. Residential Education and Awareness

1. The District periodically sends educational pamphlets and/or bill stuffers to all of the water system customers. These include, but are not limited to, the following subjects:

    a) Home Irrigation Safety;

b) Residential Fire Sprinkler Systems;

c) Health hazards associated with hose connections (chemical sprayers, radiator flush kits, etc.), utility sinks and other household dangers.

2. The District also endeavors to provide informational handouts and presentations on cross connections at community events, school programs and with information at District Headquarters.

E. Registering of Certified Backflow Assembly Testers

1. The District maintains a list of Washington certified BATs to provide to customers. Persons or organizations wishing to be added to this list are required to provide the District with copies of the following:

a) Proof of current certification by the State of Washington as a BAT for each person authorized to perform tests.

b) Proof of current annual calibration for all testing equipment.

c) Proof of current liability insurance in an amount not less than one million dollars.

d) Any person providing backflow assembly testing service in the District service area must possess a current BAT certification, current test instrument calibration and all other licenses, permits or certifications required by law.

F. Record keeping and tracking of assemblies

1. The District meets the record keeping requirements of the State to allow effective monitoring and tracking of customer compliance with the annual backflow assembly testing requirements. The general content of the District's records include the following information on each backflow assembly includes but is not limited to:

- Service address
- Business name (if applicable)
- Specific location of each assembly
- Initial inspection information for each location
- Initial installation date
- Water line size

- Water pressure
- Test results for all check valves
- Assembly information (type of assembly, manufacturer, size, serial #, model, and date of test)
- Complete testing history (initial and final test results for each year with: pass/fail, test type, date, tester's name and certification #)
- Hazard protected (downstream process)
- Repair history
- Test kit information
- Testers contact and certification information

SECTION VI

STANDARD DETAILS

(These details are available electronically for Developer use by contacting the District)

INDEX OF DETAILS

PAGE NO. DESCRIPTION

GENERAL

WATER SYSTEMS

SANITARY SEWER SYSTEMS

INDEX OF DETAILS (CONT.)

PAGE NO. DESCRIPTION

SANITARY SEWER SYSTEMS (CONT.)

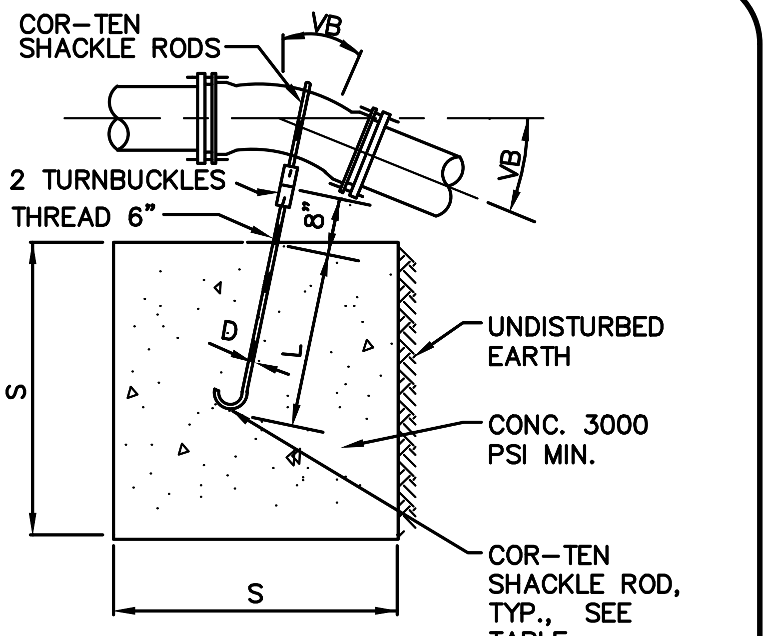
SEWAGE LIFT STATIONS

CROSS-CONNECTION CONTROL

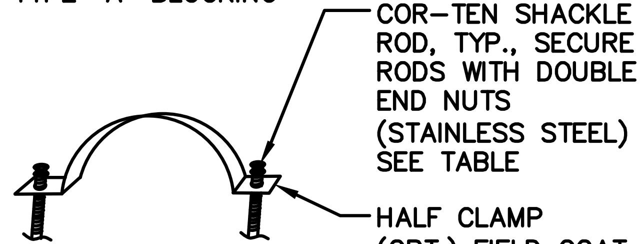
GENERAL

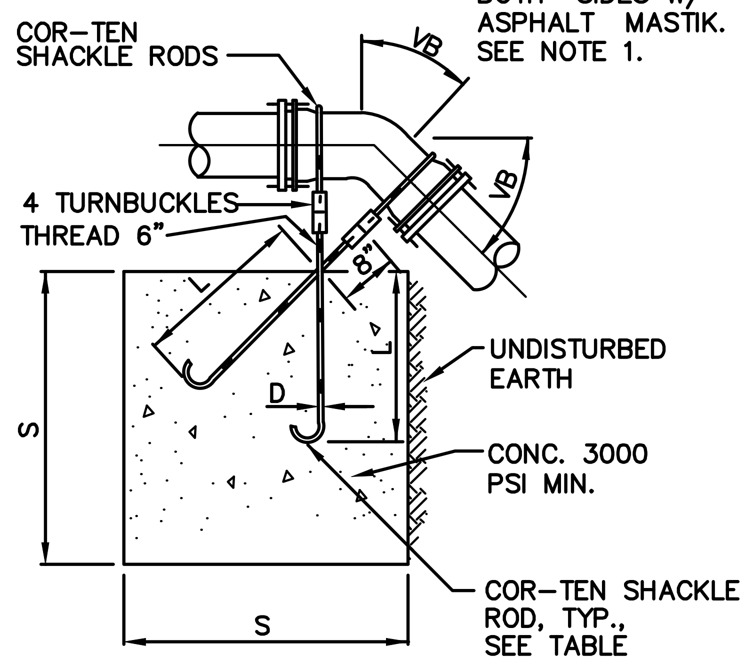
TYPE "A" BLOCKING FOR 11 1/4°–22 1/2°–30° VERTICAL BENDS						
		VB		S	D	L
PIPE SIZE NOMINAL DIAMETER– INCHES	TEST PRESSURE PSI	VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	SIDE OF CUBE LIN. FT.	DIAM. OF SHACKLE RODS (2) INCHES	DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5

TYPE "B" BLOCKING FOR – 45° VERTICAL BENDS						
		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



TYPE "A" BLOCKING





TYPE "B" BLOCKING

NOTES:

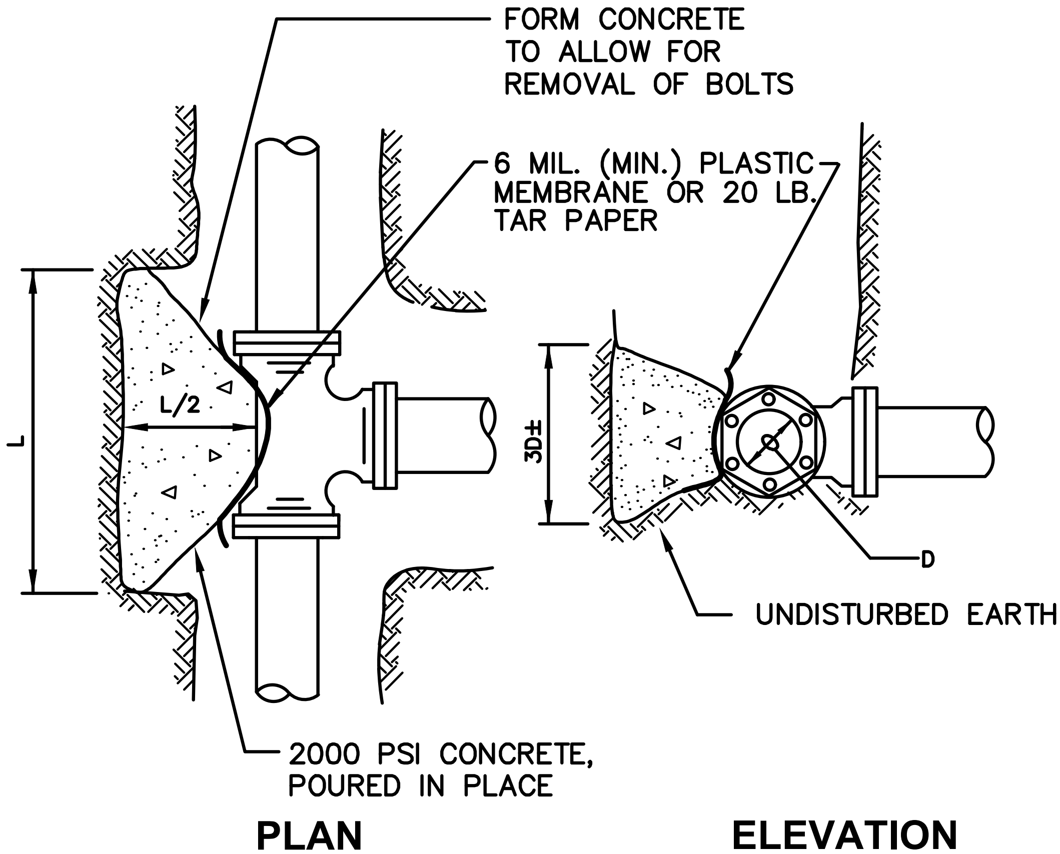
1. HALF CLAMP, WASHERS AND NUTS MAY BE SUBSTITUTED FOR TURNBUCKLE ASSEMBLY. ALL OTHER SPECIFICATIONS THE SAME.

VERTICAL ANCHOR BLOCK

Silver Lake Water and Sewer District

STANDARD DETAILS

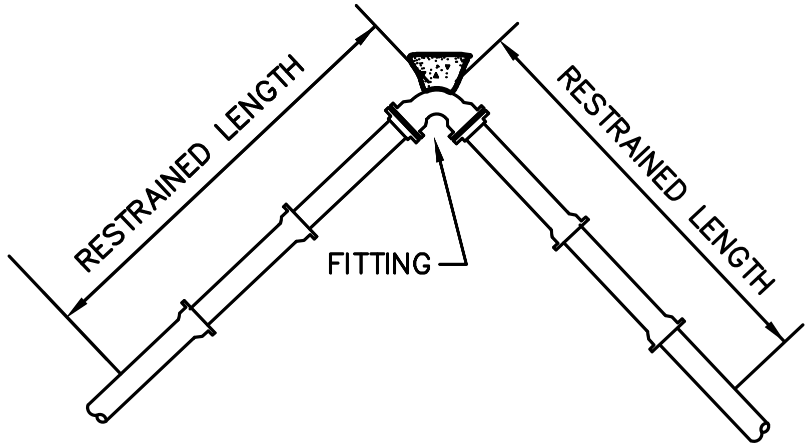
MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.



NOTES:

1. BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 2000 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.
2. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS

THRUST BLOCKS



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
	RESTRAINED LENGTH IN FEET				
4"	40	17	8	4	30
6"	55	23	11	6	39
8"	73	31	15	8	53
10"	88	37	18	9	67
12"	103	43	21	10	82
16"	133	55	27	13	110
18"	145	60	29	15	124

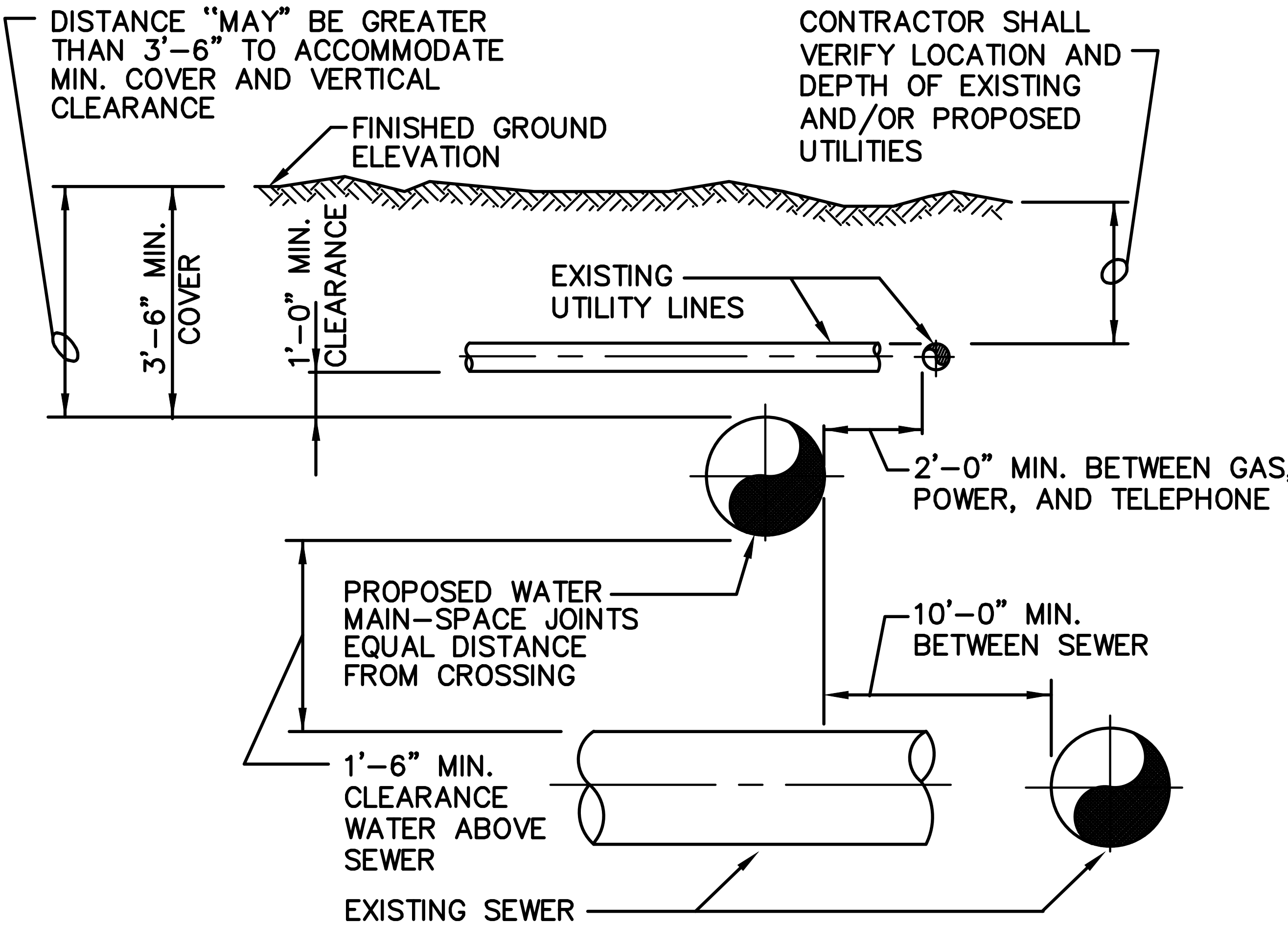
NOTES:

1. RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED. BLOCKING ALSO REQUIRED.
2. FOOTAGES ARE BASED ON 250 PSI PRESSURE AND 42 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED.
3. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE RESTRAINED LENGTHS.

THRUST RESTRAINT FOR DUCTILE IRON PIPE

Silver Lake Water and Sewer District
STANDARD DETAILS

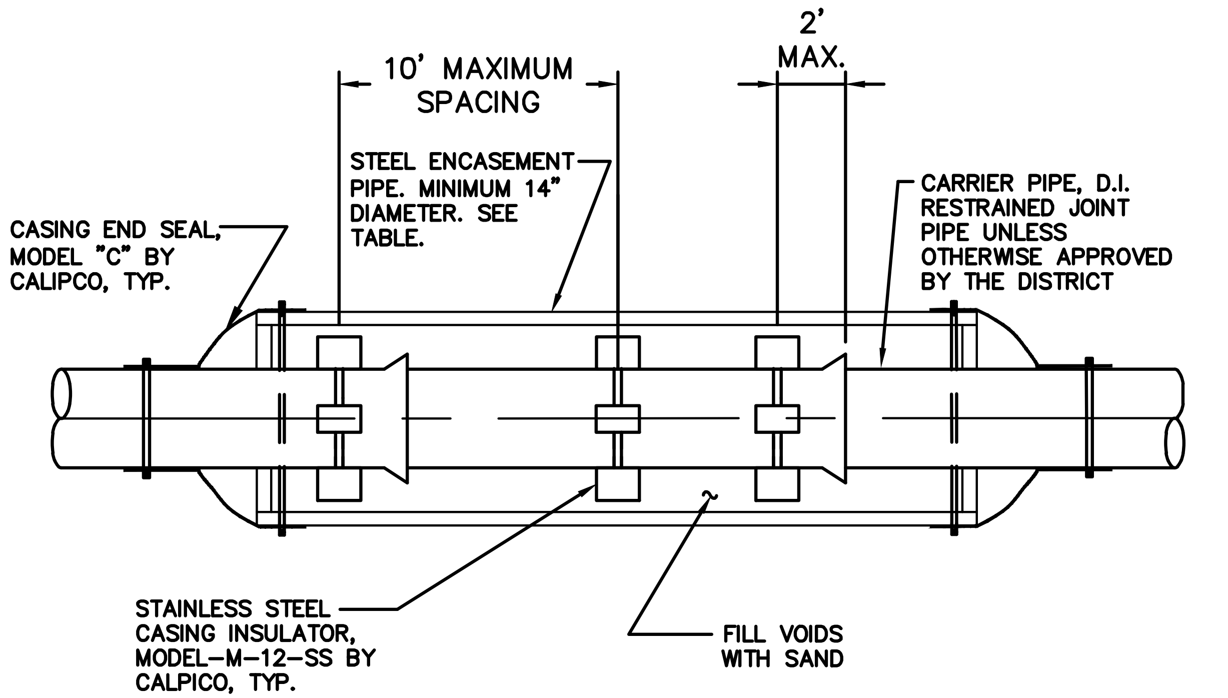
12/16



NOTES:

1. REGULATORY AGENCY REQUIREMENTS SHALL SUPERSEDE DISTRICT STANDARDS IF MORE STRINGENT.

TYPICAL UTILITY CROSSING



MINIMUM ENCASEMENT DIAMETER	
CARRIER DIA.(IN.)	ENCASEMENT DIA.(IN.)
6	14
8	18
10	21.5
12	23
16	30

NOTES:

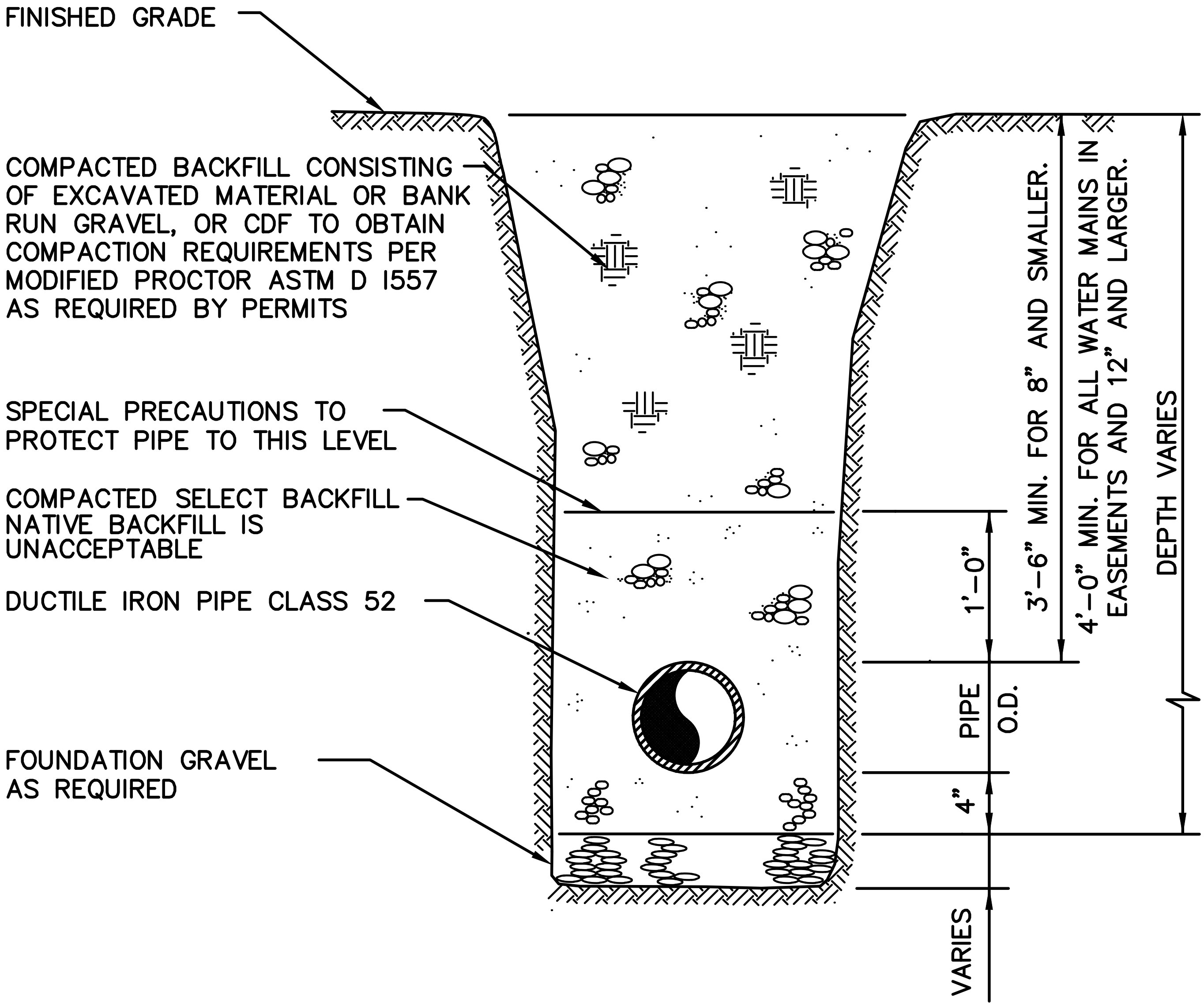
1. CONTRACTOR TO VERIFY LINE AND GRADE PRIOR TO FILLING VOIDS WITH SAND.
2. CARRIER PIPE WITHIN THE LENGTH OF THE ENCASEMENT PIPE SHALL HAVE RESTRAINED JOINTS.
3. REGULATORY AGENCY REQUIREMENTS SHALL SUPERSEDE DISTRICT STANDARDS IF MORE STRINGENT.
4. CASING PIPE SHALL BE SCHEDULE 40 STEEL PIPE, WELDED JOINT, AND MINIMUM YIELD STRENGTH (F_y) OF 35 KSI.

ENCASEMENT/CARRIER PIPES

Silver Lake Water and Sewer District
STANDARD DETAILS

12/16

WATER



NOTE:

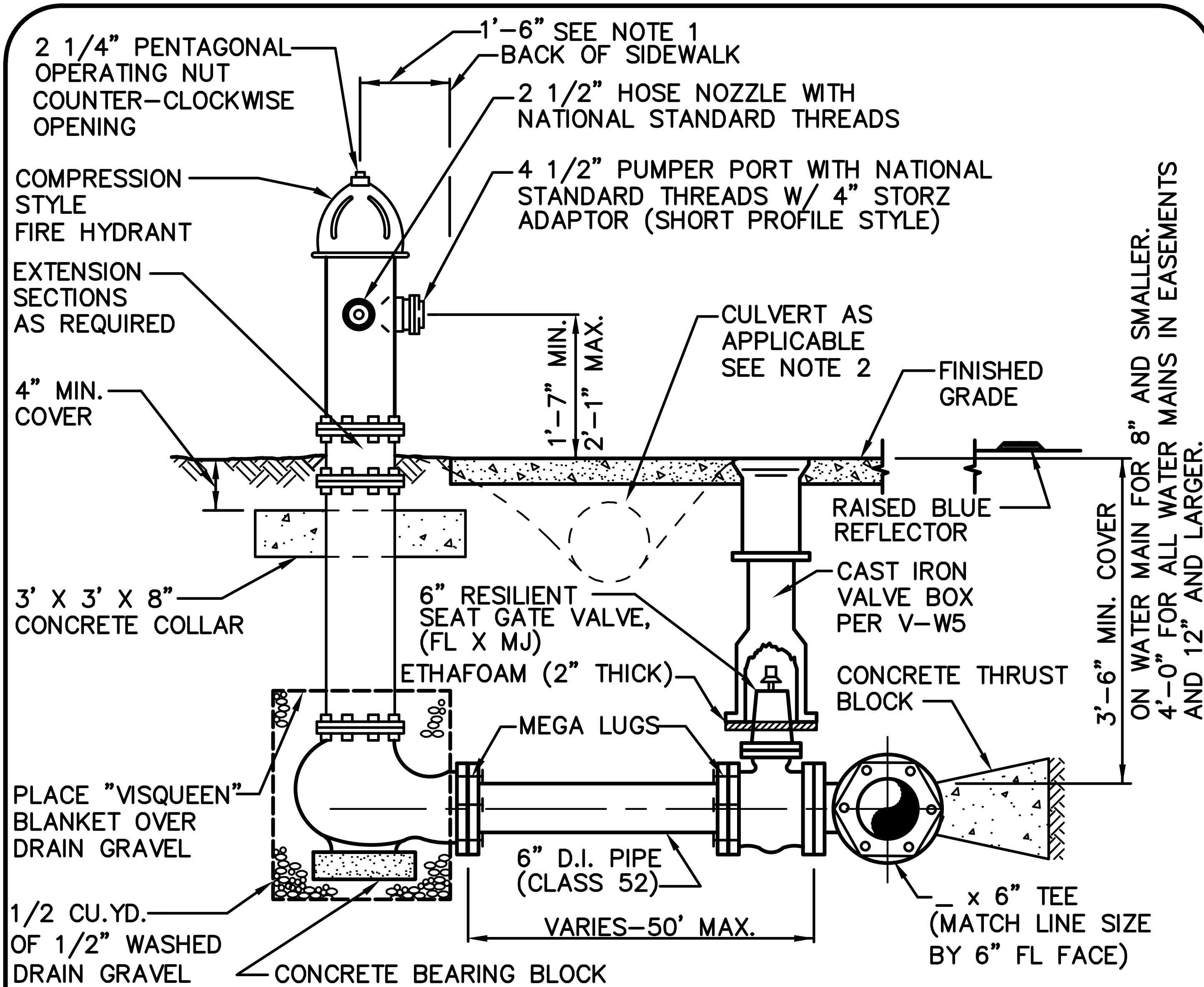
1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH SILVER LAKE WATER AND SEWER DISTRICT STANDARDS AND/OR COUNTY, CITY, STATE PERMIT REQUIREMENTS.
2. DEPTH OF COVER IN EXCESS OF 7–FEET REQUIRES DISTRICT APPROVAL.
3. PIPES SHALL BE RESTRAINED IN FILL OR PREVIOUSLY DISTURBED MATERIAL.
4. CLAY OR BENTONITE DAMS SHALL BE INSTALLED ACROSS THE TRENCH AND TO THE FULL DEPTH OF THE GRANULAR MATERIAL IN ALL AREAS OF STEEP SLOPES, STREAM CROSSINGS AND WETLAND TO PREVENT MIGRATION OF WATER ALONG THE PIPELINE.
5. RECYCLED CONCRETE MATERIAL PROHIBITED IN TRENCH SECTION.

WATER MAIN
TRENCH SECTION

Silver Lake Water and Sewer District
STANDARD DETAILS

12/16

VI-W1



NOTES:

1. OR 3' FROM BACK OF CURB
2. PROVIDE 8' OF CULVERT AND COVER, 12" MIN. DIA. OR EQUAL IN SIZE TO ADJACENT DITCH CROSSINGS. PIPE TO COUNTY, STATE OR CITY STANDARDS AS APPLICABLE.
3. PROVIDE MIN. 3'–0" CLEARANCE AND LEVEL AREA AROUND HYDRANT
4. PAINT FIRE HYDRANT WITH TWO COATS SHERWIN WILLIAMS CAT YELLOW 8084–31084 AND TOP OF HYDRANT COLOR DETERMINED BY SERVICE LEVEL GPM.
   # 4086 SAFETY BLUE–SERVICE LEVEL 1500 GPM OR GREATER
   # 4085 SAFETY GREEN–SERVICE LEVEL 1000 TO 1499 GPM
   # B54R38 SAFETY RED–SERVICE LEVEL 999 GPM OR LESSER
5. STENCIL FOOTAGE TO VALVE ON HYDRANT UNDER PORT FACING GV
6. REMOVE ALL CHAINS FOR FIRE HYDRANT CAPS
7. ACCEPTABLE HYDRANTS: CLOW MEDALLION, M&H STYLE 929, MUELLER CENTURION, WATEROUS PACER, EAST JORDAN WATERMASTER 5CD250
8. INSTALL BLUE FIRE HYDRANT REFLECTOR. OFFSET 1 FOOT FROM ROAD CENTERLINE

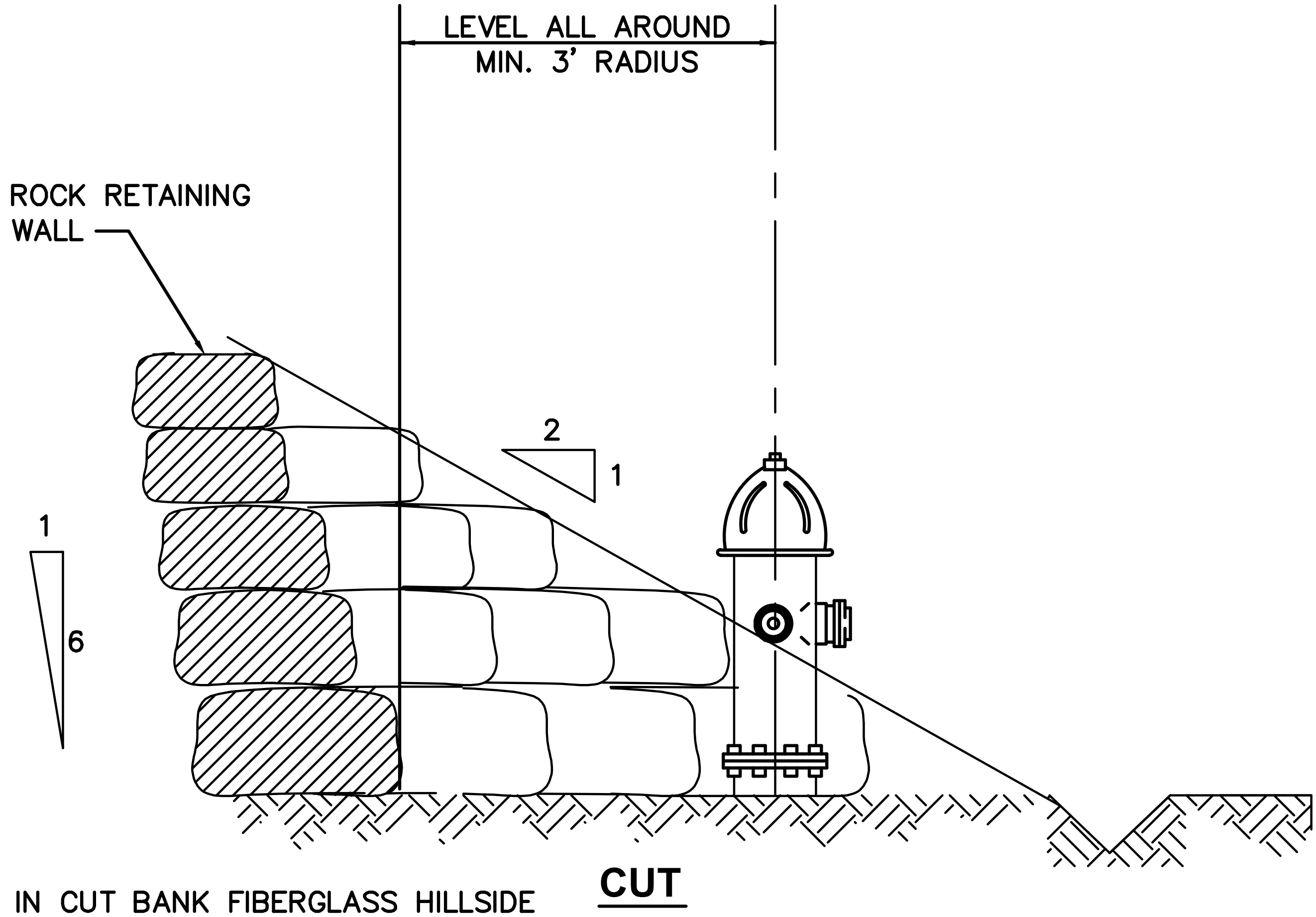
12/16

VI-W2

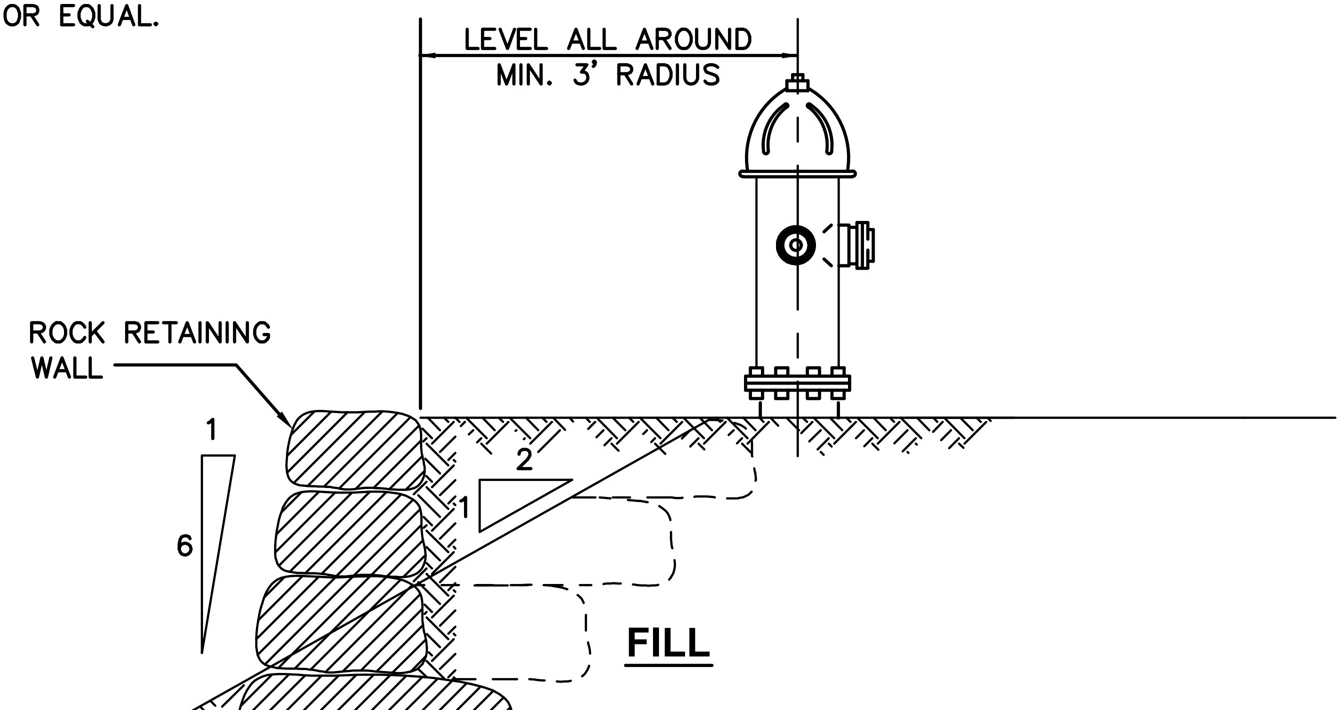
FIRE HYDRANT ASSEMBLY

Silver Lake Water and Sewer District

STANDARD DETAILS



NOTE: IN CUT BANK FIBERGLASS HILLSIDE BARRIERS CAN BE CONSIDERED. PROGLASS, INC. OR EQUAL.



FIRE HYDRANT LOCATION IN CUT OR FILL

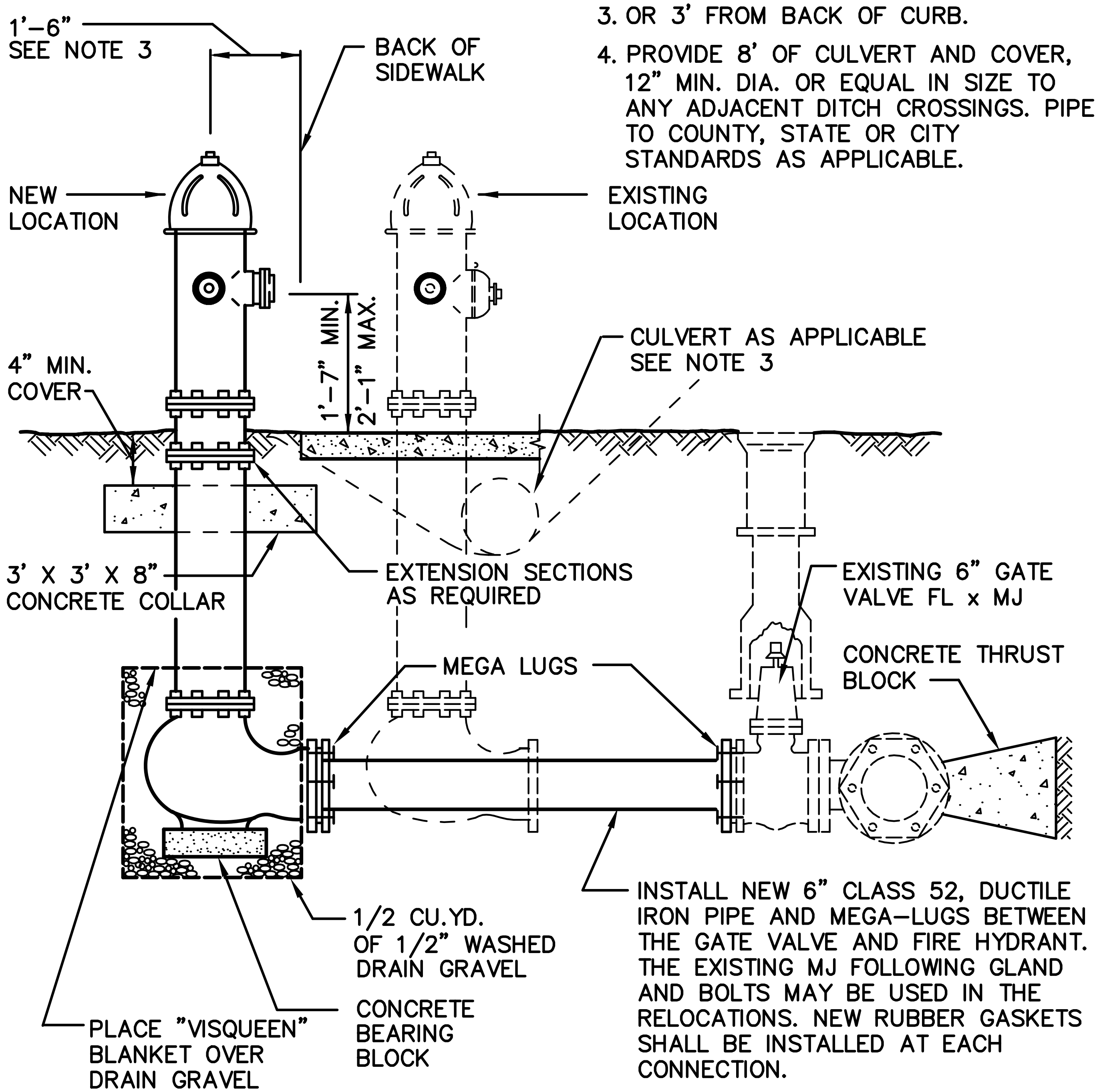
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-W3

NOTES:

1. DISTRICT PRIOR APPROVAL REQUIRED.
2. FIRE HYDRANT MUST MEET SILVER LAKE WATER AND SEWER DISTRICT REQUIREMENTS. FOR NEW HYDRANTS (SEE V-W2). REPLACE WITH NEW FIRE HYDRANT IF REQUIRED.
3. OR 3' FROM BACK OF CURB.
4. PROVIDE 8' OF CULVERT AND COVER, 12" MIN. DIA. OR EQUAL IN SIZE TO ANY ADJACENT DITCH CROSSINGS. PIPE TO COUNTY, STATE OR CITY STANDARDS AS APPLICABLE.



RELOCATE

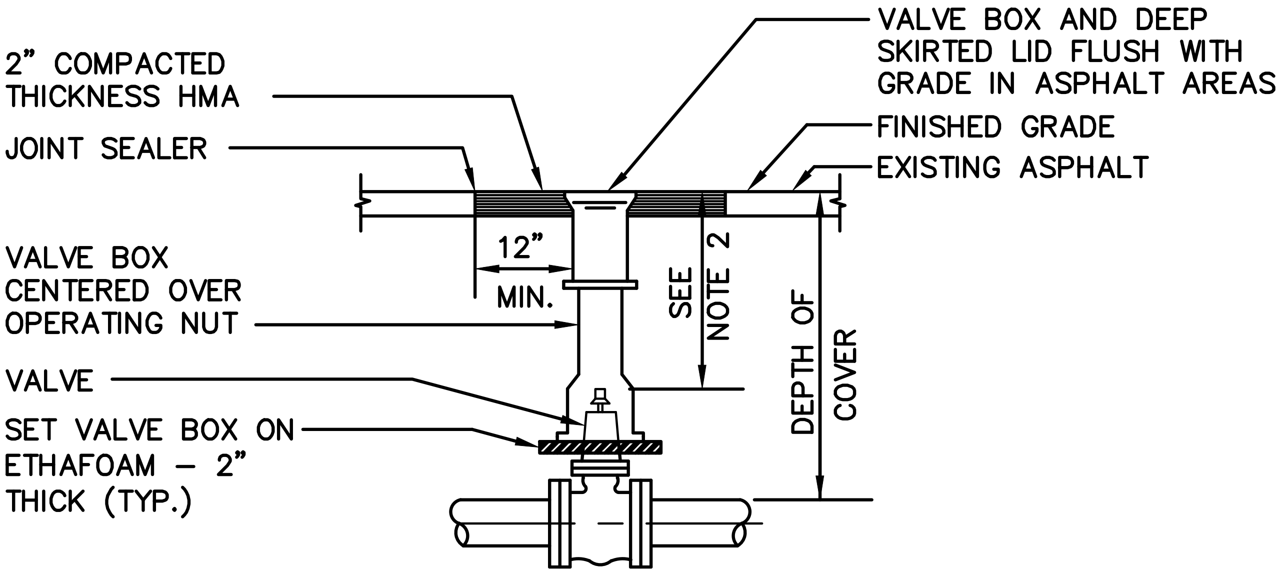
FIRE HYDRANT ASSEMBLY

Silver Lake Water and Sewer District

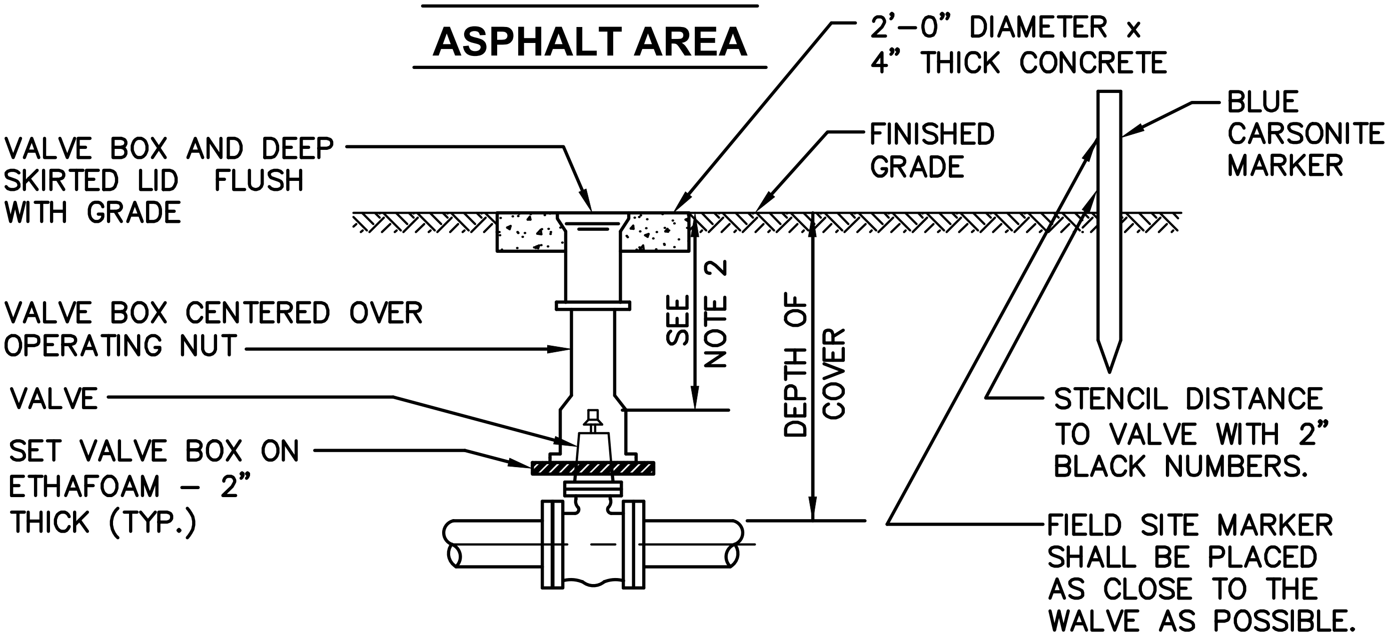
STANDARD DETAILS

3/14

VI-W4



VALVE BOX IN ASPHALT AREA



VALVE BOX IN UNIMPROVED AREA (VALVE MARKER REQUIRED)

NOTES:

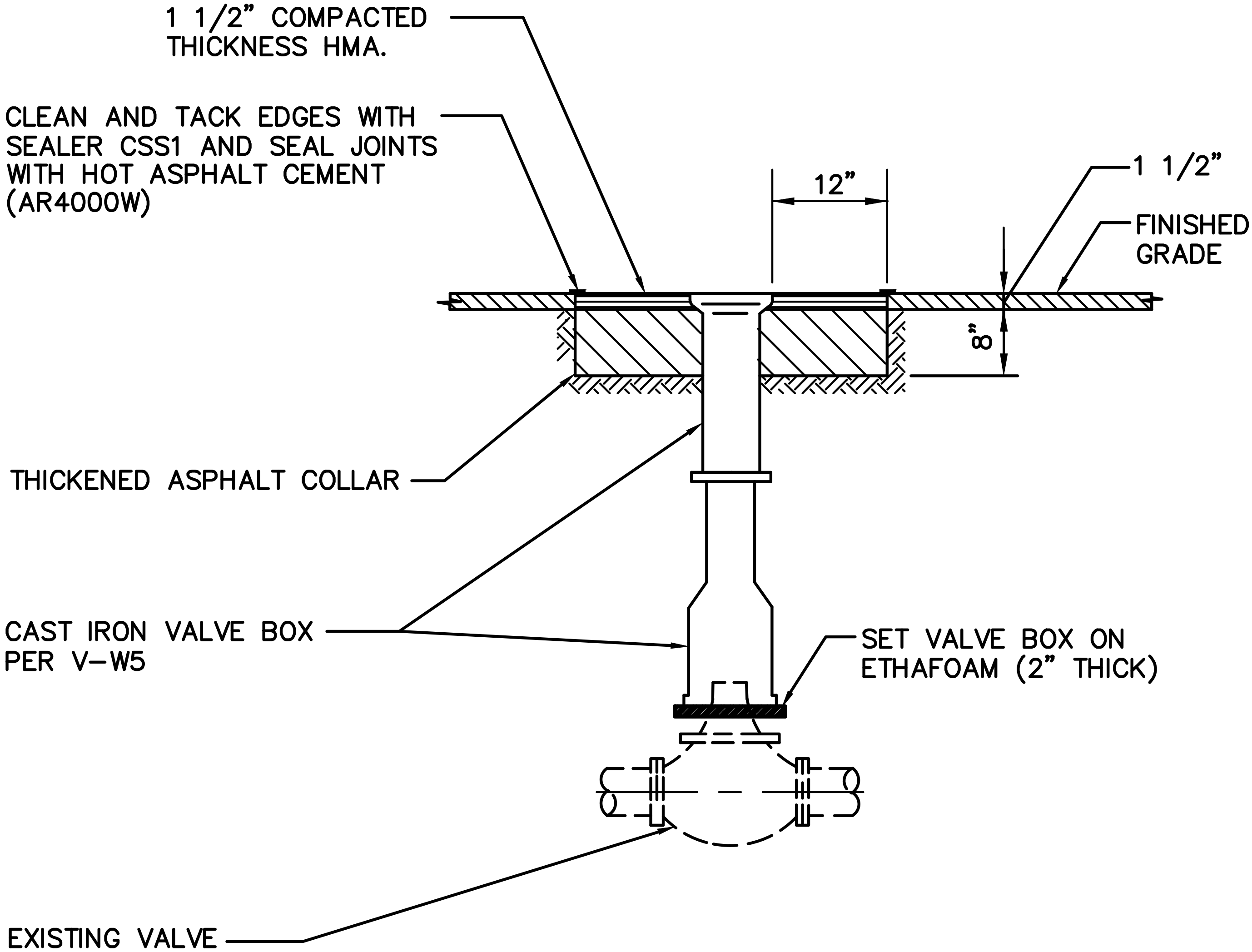
1. EACH VALVE SHALL BE PROVIDED WITH AN ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE OLYMPIC FOUNDARY No. 940, EAST JORDON, OR EQUAL.
2. 18" MINIMUM, 24" MAXIMUM FOR OPERATOR NUT IF EXTENSION IS REQUIRED.
3. VALVE BOX EARS SHALL BE PLACED IN LINE WITH THE PIPE IT SERVES.
4. DISTRICT MAY REQUIRE LOCKING VALVE BOX IN HIGH TRAFFIC AREAS. OLYMPIC FOUNDRY NO. 940–DT OR EQUAL.

12/16

VI-W5

VALVE BOX

Silver Lake Water and Sewer District
STANDARD DETAILS



NOTES:

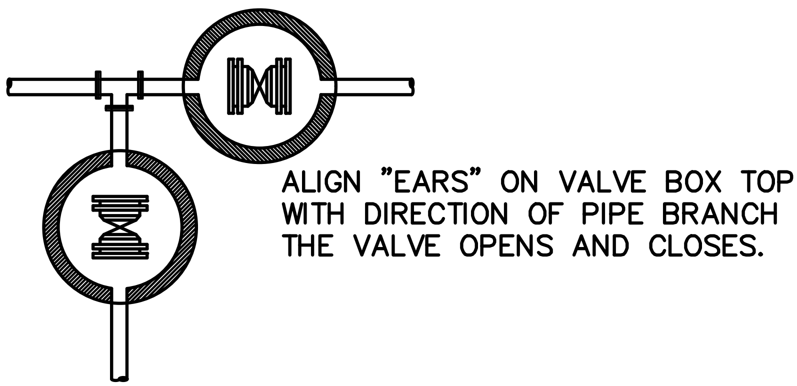
1. ALL EXISTING CONCRETE VALVE BOXES SHALL BE REPLACED WITH CAST IRON BOXES AND ADJUSTED WITH SOIL PIPE TO GRADE AS NEEDED.
2. ALL EXISTING CAST IRON VALVE BOXES SHALL BE ADJUSTED TO GRADE OR NEW CAST IRON BOXES INSTALLED.
3. ALIGNMENT OF THE VALVE BOX SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND CARE SHALL BE TAKEN TO ENSURE THAT THE VALVE IS OPERABLE.
4. VALVE BOX EARS SHALL BE PLACED IN LINE WITH THE PIPE IT SERVES.

VALVE BOX ADJUSTMENT

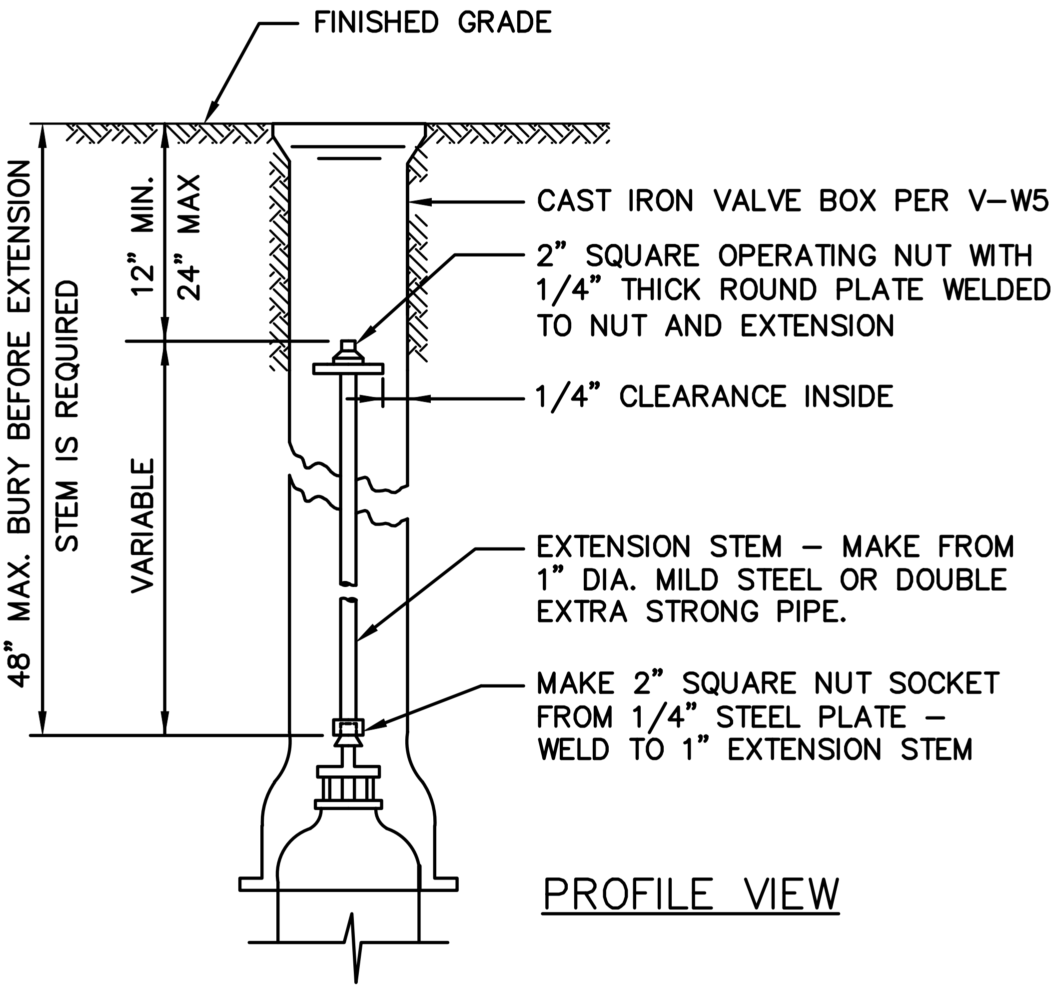
Silver Lake Water and Sewer District
STANDARD DETAILS

12/16

VI-W6



PLAN VIEW

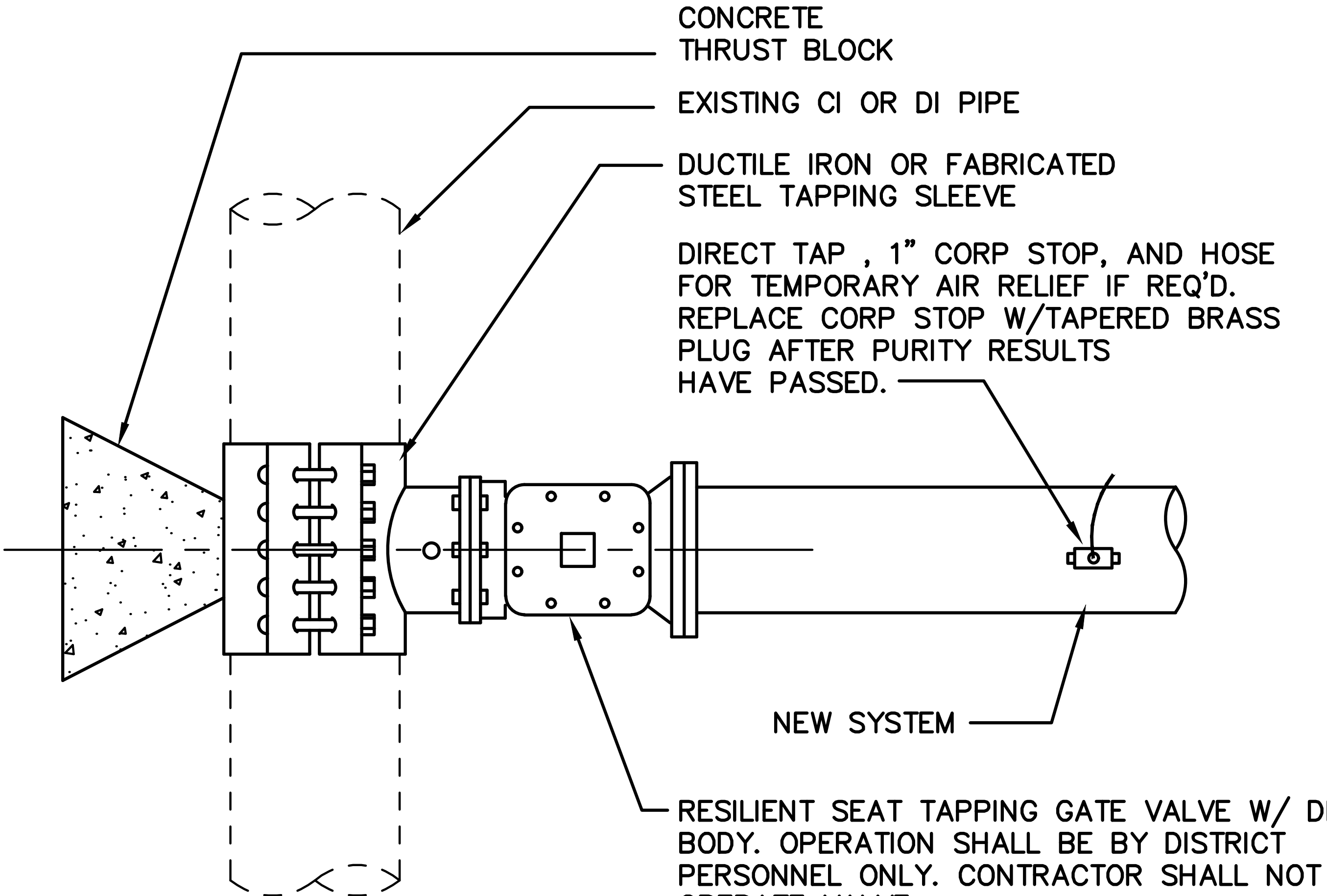


PROFILE VIEW

VALVE EXTENSION STEM

Silver Lake Water and Sewer District
STANDARD DETAILS

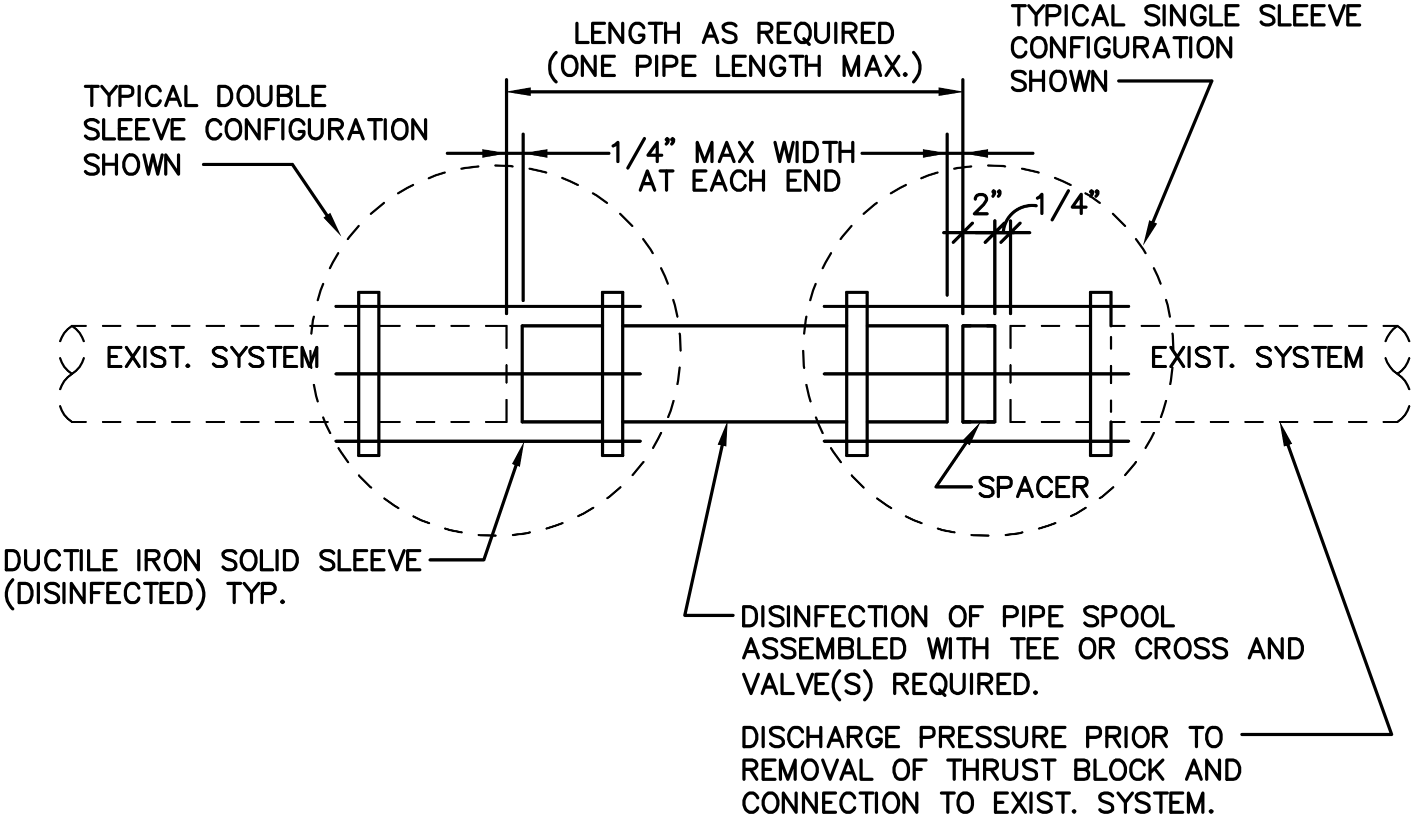
7/12



NOTES:

1. TAP TO BE INSTALLED AT DEVELOPERS EXPENSE UNDER DISTRICT OBSERVATION.
2. SIZE-ON-SIZE TAPPING TEES SHALL BE DUCTILE IRON MECHANICAL SLEEVE.
3. STEEL TAPPING TEES SHALL BE AT LEAST 2" SMALLER IN DIAMETER THAN THE EXISTING WATER MAIN AND SHALL BE EPOXY COATED.
4. TAPPING TEES SHALL BE AIR PRESSURE TESTED TO 100 PSI PRIOR TO TAPPING MAIN.
5. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, DAY BEFORE HOLIDAYS, OR WEEKENDS.

WET TAP CONNECTION

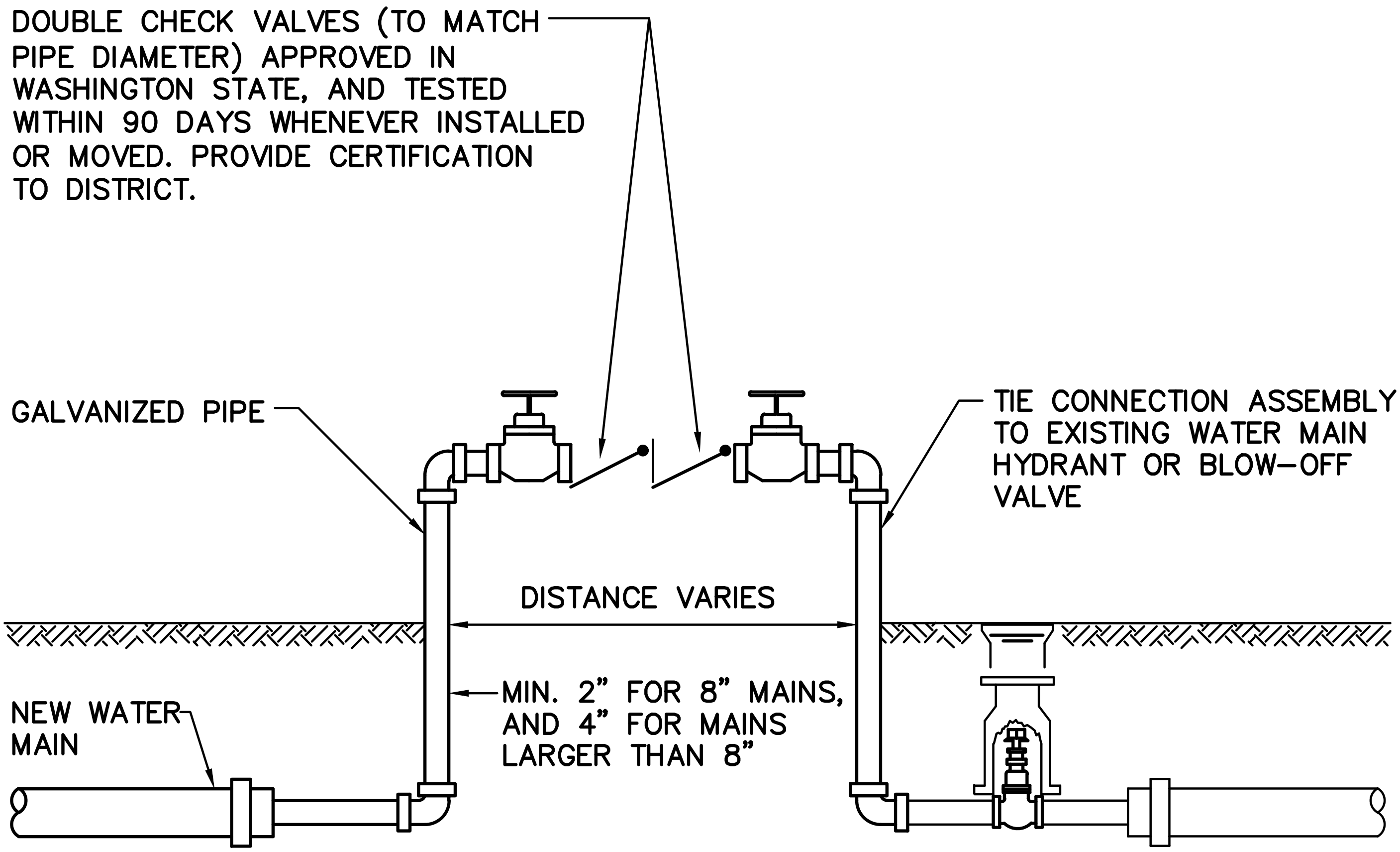


NOTES:

1. IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED BY THE DISTRICT AT NEW INTERTIE LOCATIONS. VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY.
2. MAXIMUM SPACES BETWEEN PIPES SHALL BE 1/4-INCH. IF A SINGLE SLEEVE IS USED, THE MAXIMUM SPACER WIDTH IS 2-INCHES.
3. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, DAY BEFORE HOLIDAYS, OR WEEKENDS.

CUT IN CONNECTION

Silver Lake Water and Sewer District
STANDARD DETAILS

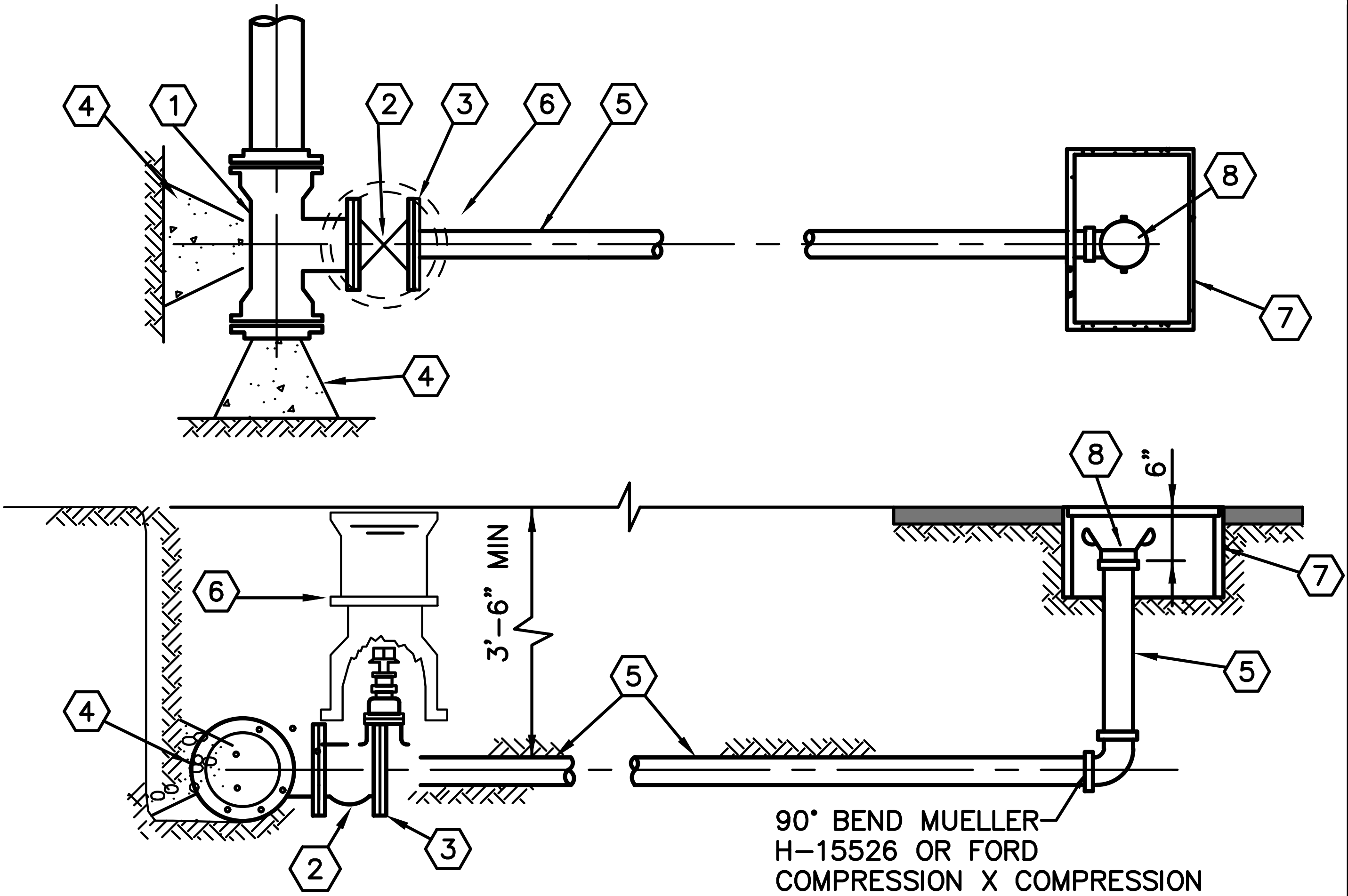


NOTES:

1. PROTECT INSTALLATION FROM DAMAGE AND FREEZING.
2. ALL WATER USED FOR FILLING AND FLUSHING SHALL BE METERED BY DISTRICT. PROVIDE SPACE FOR INSTALLATION OF METER, OR INSTALL ON POINT OF DISCHARGE.
3. ALL NEW MAINS SHALL BE KEPT SEPARATE FROM THE DISTRICT'S EXISTING SYSTEM UNTIL THE NEW MAINS ARE TESTED AND ACCEPTED. FINAL CONNECTION REQUIRES 100% INSPECTION BY THE DISTRICT.

TESTING CONNECTION DETAIL

Silver Lake Water and Sewer District
STANDARD DETAILS



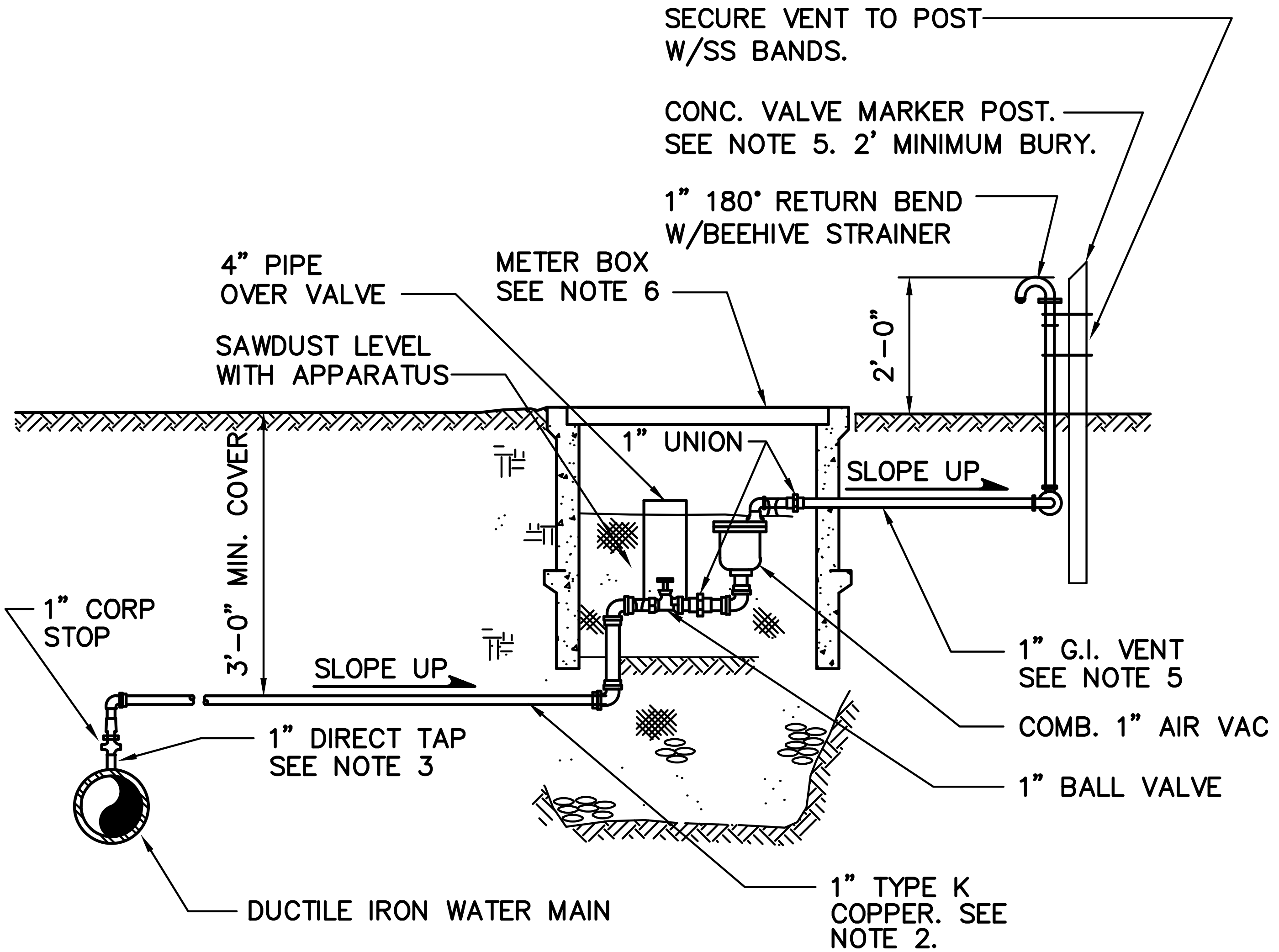
1. MJ X MJ X 4" FL D.I. TEE.
2. 4" AWWA RESILIENT SEAT GATE VALVE, FL X FL, WITH OPERATING NUT.
3. 4" BLIND FLANGE, TAPPED FOR 2" FOR 6" AND 8" MAINS. MAINS LARGER THAN 8" SHALL END IN A FIRE HYDRANT.
4. CONCRETE THRUST BLOCK.
5. 2" TYPE K COPPER PIPE.
6. CAST IRON VALVE BOX PER V-W5
7. METER BOX. BERG VAULT CO. OF WASH NO. 2 CONCRETE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED. (FIELD LOCATION TO BE IN PAVED SURFACE UNLESS DISTRICT APPROVES ALTERNATE LOCATION.)
8. ALUMINUM CAM-LOCK AND CAP. DRILL 1/8" HOLE IN CAP. (PLASTIC CAM LOCK FITTING NOT ALLOWED)

NOTES

1. INSTALL DIELECTRIC COMPOUNDS FOR SEPARATION AT DISSIMILAR METALS.

BLOW OFF ASSEMBLY

Silver Lake Water and Sewer District
STANDARD DETAILS



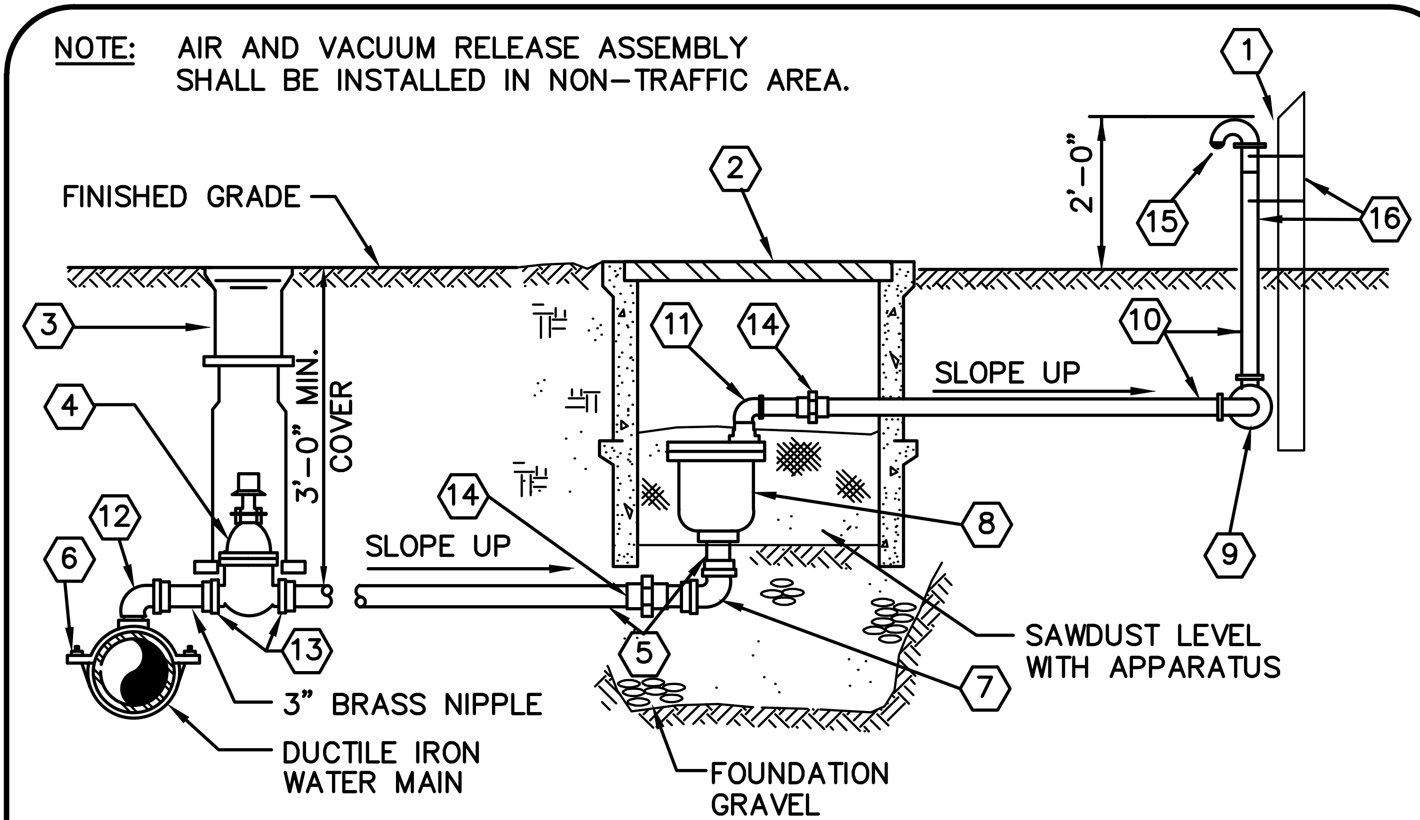
NOTES:

1. USE OF 1" AIR VAC REQUIRES DISTRICT APPROVAL, 2" AIR VAC STANDARD.
2. ALL PIPING AND FITTINGS BETWEEN CORP AND INLET SIDE OF COMBINATION AIR AND VACUUM ASSEMBLY SHALL BE COPPER OR BRASS.
3. TAP WATER MAIN AT HIGH POINT AT LOCATION DESIGNATED BY THE DISTRICT.
4. AIR VAC ASSEMBLY TO BE CONNECTED USING HORIZONTALLY PLACED UNIONS AT EACH END OF AIR VAC ASSEMBLY (MATCH PIPE MATERIAL).
5. PAINT EXPOSED PORTION OF VENT PIPE AND MARKER POST WITH 2 COATS SHERWIN WILLIAMS CAT YELLOW 8084-31084. 2' MINIMUM BURY REQUIRED ON MARKER POST.
6. METER BOX. BERG VAULT CO. OF WASH NO. 2 CONCRETE OR MID STATES PLASTICS MSBCF 1730-12 COMPOSITE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
7. FIELD LOCATION TO BE CONFIRMED WITH DISTRICT.

1" AIR AND VACUUM RELEASE ASSEMBLY

Silver Lake Water and Sewer District
STANDARD DETAILS

NOTE: AIR AND VACUUM RELEASE ASSEMBLY SHALL BE INSTALLED IN NON-TRAFFIC AREA.



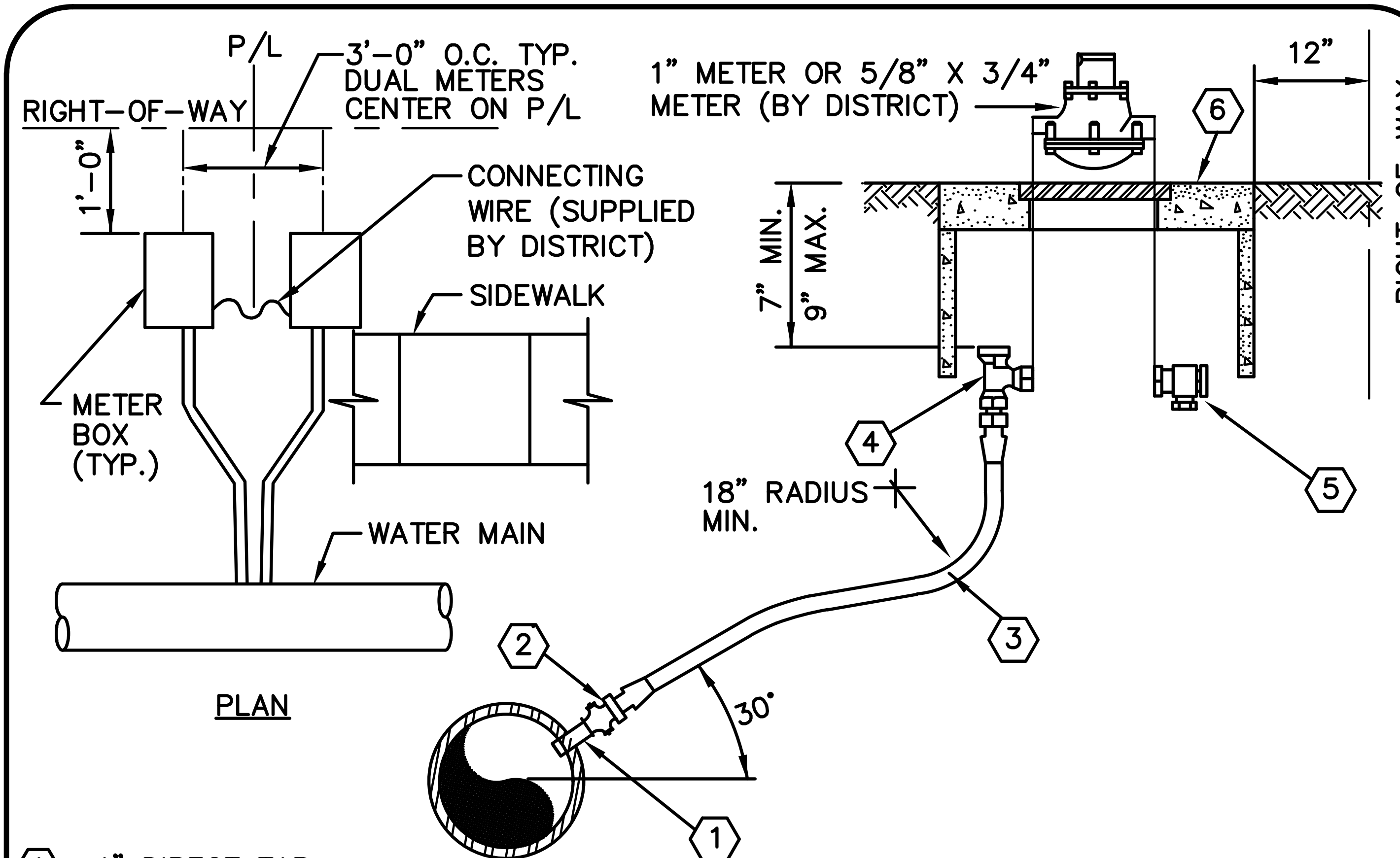
1. CONC. VALVE MARKER POST
2. METER BOX. BERG VAULT CO. OF WASH NO.2 CONCRETE OR MID STATES PLASTICS MSBCF 1730-12 COMPOSITE. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
3. CAST IRON VALVE BOX PER V-W5
4. 2" AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT
5. 2" TYPE "K" COPPER TUBING
6. DOUBLE STRAP SERVICE CLAMP
7. 90° BEND MUELLER No. H-15526 COMPRESSION X COMPRESSION
8. 2" COMBINATION AIR & VACUUM RELEASE ASSEMBLY; A. APCO MODEL 145C.
   B. CRISPIN MODEL UL 20 SERIES.
   C. VALMATIC
9. 2, 2"X90° ELL, GALV.
10. 2" GALV. IRON PIPE (FIELD LOCATE NEXT TO EXISTING PROPERTY LINE).
11. 2"X90° ELL, GALV.
12. 90° BEND MUELLER No. H-10096 FEMALE X M.I.P.
13. STRAIGHT COUPLING, MUELLER No. H-15428 COMPRESSION TO M.I.P.
14. UNIONS
15. 2" OPEN PATTERN RETURN BEND WITH 2" BEEHIVE STRAINER
16. PAINT EXPOSED PORTION OF VENT PIPE AND MARKER POST WITH TWO COATS OF KELLY MOORE 6100-516 YELLOW. SECURE VENT TO POST WITH SS BANDS. 2' MINIMUM BURY REQUIRED ON MARKER POST.

NOTES:

1. ALL PIPING AND FITTINGS BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR AND VACUUM ASSEMBLY SHALL BE COPPER OR BRASS.
2. TAP WATER MAIN AT HIGH POINT AT LOCATION TO BE DETERMINED BY THE DISTRICT.
3. AIR VAC ASSEMBLY TO BE CONNECTED USING HORIZONTALLY PLACED UNIONS AT EACH END OF AIR VAC ASSEMBLY (MATCH PIPE MATERIAL)

2" AIR AND VACUUM RELEASE ASSEMBLY

Silver Lake Water and Sewer District
STANDARD DETAILS



1. 1" DIRECT TAP
2. 1" BALL TYPE CORPORATION STOP MUELLER B–25008–N, FORD FB1000–Q4–NL, A.Y. McDONALD 74701BQ
3. 1" TYPE K COPPER SERVICE TUBING – LENGTH AS REQUIRED
4. 1"x3/4" FOR 5/8"x3/4" METERS, 1" ANGLE METER BALL VALVE, MUELLER B–24258–N, FORD BA43–342–NL W2, A.Y. McDONALD 74642BQ
5. 1" ANGLE DUAL CHECK VALVE, MUELLER H–14244–N, FORD HHA31–323–NL, A.Y. McDONALD 712–3HE43
6. MID STATES PLASTICS MSBCF 1324–12 W/1324–RL COMPOSITE BOX MAY BE USED FOR 5/8"x3/4" OR 1" METERS. BOX SHALL BE H–20 LOAD RATED WITH 2" MANUFACTURED DRILLED HOLE FOR AMR UNIT.

NOTES:

1. NO SPLICES IN 1" COPPER TUBING ALLOWED.
2. SERVICE FROM METER BOX TO HOUSE BY PROPERTY OWNER.
3. INDIVIDUAL SERVICE REQUIRED FOR EACH STRUCTURE OR LOT.
4. METER TO BE INSTALLED BY THE DISTRICT AT OWNER'S EXPENSE.
5. ESMT PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE R/W.
6. ALL SERVICES EXCEPT SINGLE FAMILY RESIDENTIAL TO HAVE STATE APPROVED BACKFLOW PREVENTION DEVICE CONFIRM INSTALLATION WITH DISTRICT. INITIAL AND ANNUAL TESTING REQUIRED AND SUBMITTAL OF TEST RESULTS TO SLWSD FOR CONFIRMATION

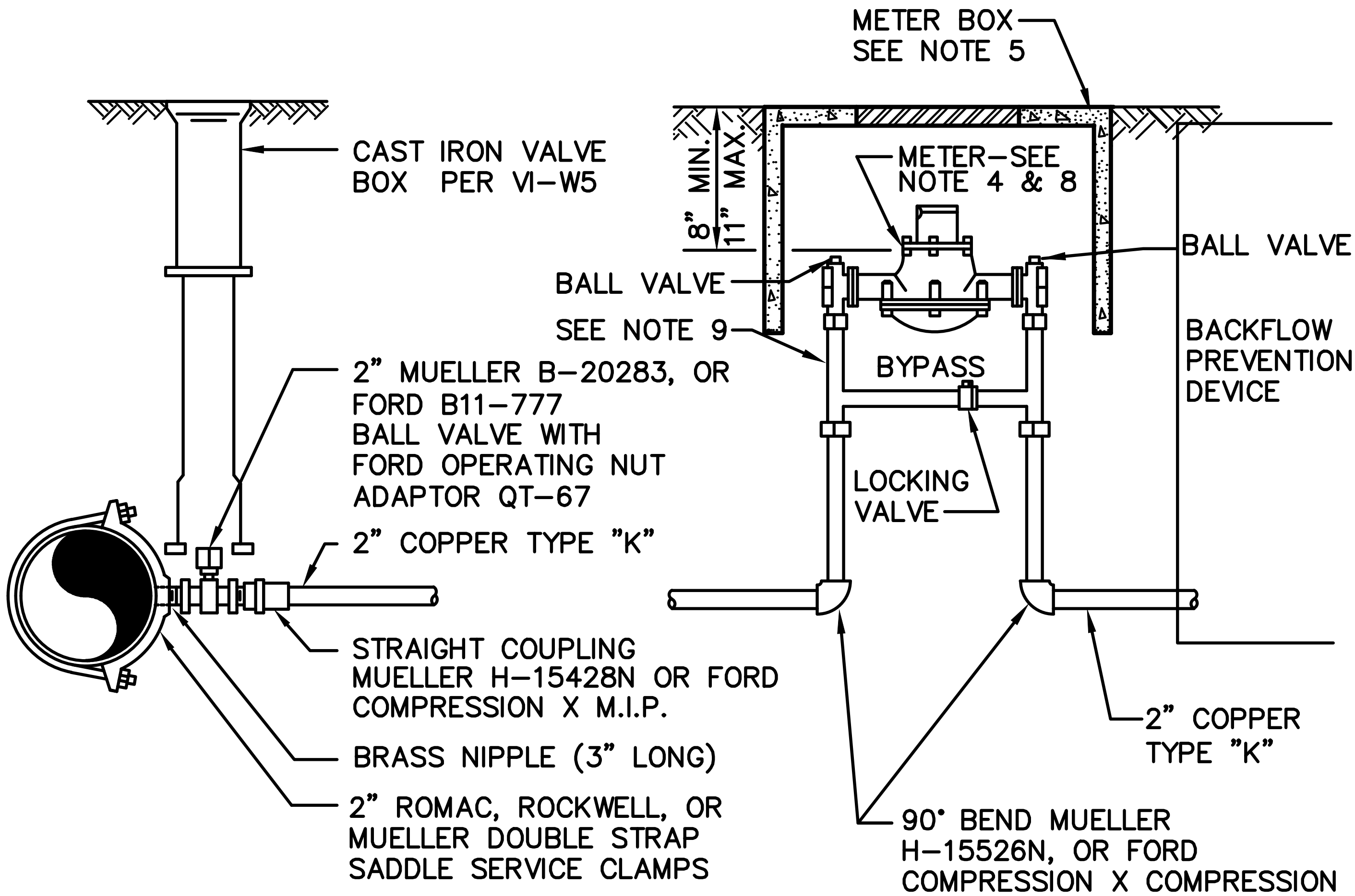
12/16

VI-W14

1" WATER SERVICE

Silver Lake Water and Sewer District

STANDARD DETAILS



NOTES:

1. NO SPLICES IN 2" COPPER PIPE ALLOWED.
2. SERVICE FROM METER BOX TO STRUCTURE BY PROPERTY OWNER.
3. INDIVIDUAL SERVICES REQUIRED FOR EACH STRUCTURE.
4. 2-INCH METER SETTER (WITH ADAPTERS IF 1 1/2-INCH METER USED). SETTER – A.Y. McDONALD 730B7-WWFF 775 OR MUELLER B-2427N. DRILL 2" DIAMETER HOLE IN LID FOR AMR DEVICE.
5. BERG VAULT CO. OF WASH NO. 2 CONCRETE METER BOX OR MID STATES PLASTICS MSBCF 1730-18 OR 1730-24 COMPOSITE METER BOX. BOX SHALL BE H-20 LOAD RATED WHERE REQUIRED.
6. ESMT PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE R/W.
7. ALL SERVICES SHALL HAVE WASHINGTON STATE APPROVED RPBA FOR BACKFLOW PREVENTION LOCATED IMMEDIATELY BEHIND METER. CONFIRM LOCATION OF ASSEMBLY WITH DISTRICT. INITIAL AND ANNUAL TESTING REQUIRED AND SUBMITTAL OF TEST RESULTS TO SLWSD FOR CONFIRMATION.
8. METER TO BE INSTALLED BY THE DISTRICT AT OWNER'S EXPENSE. BYPASS TO BE LOCKED AND VISIBLE UNTIL ACCEPTED.
9. ALL SETTERS SHALL BE SET AT THE REQUIRED METER SPACING USING ALL THREAD OR OTHER MEANS.

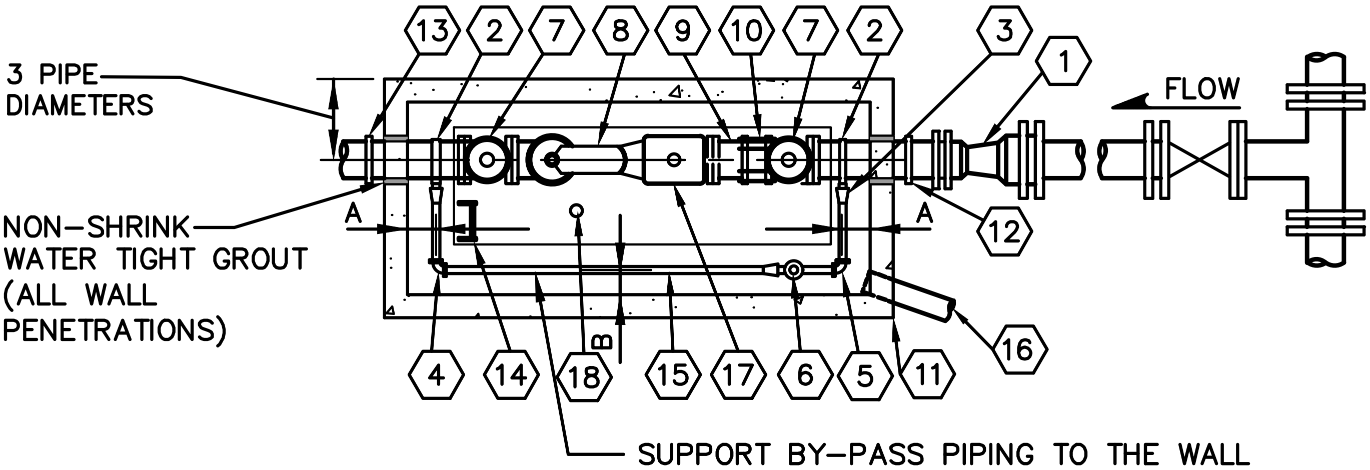
12/16

VI-W15

2" WATER SERVICE

Silver Lake Water and Sewer District

STANDARD DETAILS



PLAN

1. 4"x3" REDUCER, M.J. FOR 3" METER
2. SINGLE STRAP SERVICE CLAMP, ROMAC 101 WITH IPS TAP, OR EQUAL (1 1/2" OR 2" BYPASS, 4-INCH BYPASS REQUIRES D.I. TEE).
3. FITTINGS AS REQUIRED.
4. BEND CPLG COPPER TO COPPER MUELLER H-15525.
5. BEND CPLG, COPPER TO OUTSIDE I.P. THREAD MUELLER H-15530, OR EQUAL.
6. BALL VALVE WITH PADLOCK WING OR LOCK CAP, FORD B21-444W OR B21-666 WITH LOCK CAP OR B21-777 WITH LOCK CAP. SIZED TO LINE.
7. RESILIENT SEAT GATE VALVE, FL X FL SIZED TO METER.
8. METER AND RADIO UNIT AS SPECIFICED BY DISTRICT SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.
9. D.I. PIPE SPOOL FL X PE LENGTH TO FIT.
10. FL CPLG. ADAPT.
11. PRECAST CONCRETE VAULT, UTILITY VAULT OR EQUAL, SEE DETAIL V-W16B FOR SIZING AND REQUIREMENTS.
12. MEGA-LUG FOLLOWER INSTALLED ON INFLOW SIDE OF VAULT WITH CONCRETE THRUST BLOCK OR SHACKLE TO THRUST BLOCK TO PREVENT MOVEMENT IF METER IS REMOVED. (BLOCK NOT SHOWN)
13. DIELECTRIC CPLG. TO BUILDING SERVICE. SIZE AS REQUIRED.
14. GALV. STEEL OR ALUMINUM LADDER. SECURE TO VAULT LID AND FLOOR. COORDINATE LOCATION FOR ACCESS.
15. BY-PASS (SIZE BY TABLE BELOW).
16. 6" PVC TO CATCH BASIN OR DAYLIGHT. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP, ELECTRICAL SERVICE AND PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-53, WITH CHECK VALVE ON DISCHARGE LINE.
17. WATER METER STRAINER (FL) SENSUS OR EQUAL.
18. 2" DIAM. HOLE DRILLED IN LID, STREET SIDE FOR XMTR HOLE.

METER SIZE	MAIN-LINE	BYPASS	A	B
3"	4" DI.	1 1/2" COPPER	9"	4"
4"	4" DI.	1 1/2" COPPER	9"	4"
6"	6" DI.	2" COPPER	9"	4"
8"	8" DI.	4" DI.	14"	6"
10"	10" DI.	4" DI.	16"	6"

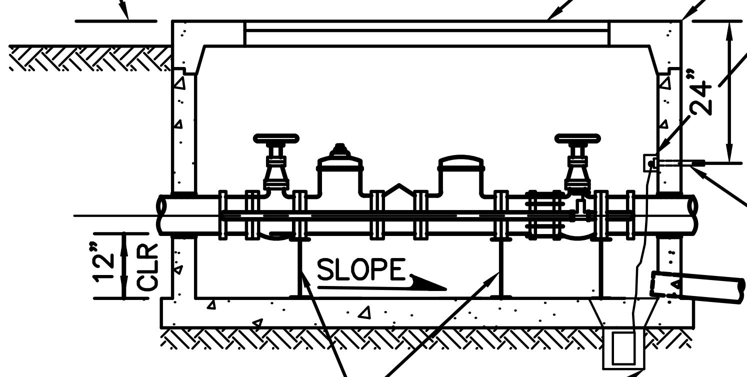
NOTES:

1. SEE V-W16B FOR ELEVATION AND NOTES.

METER VAULT ASSEMBLY 3" THROUGH 10"

Silver Lake Water and Sewer District
STANDARD DETAILS

4/17 **VI-W16A**



ELEVATION

SEE DETAIL VI-W16A FOR CALLOUTS

METER SIZE	MAIN-LINE	MINIMUM I/S VAULT DIM. L x	W x	H	UTILITY VAULT CO APPROVED MODEL	MIN. HATCH OPENING
3"	4" DI.	8'-4"	4'-4"	3'-4"	4484-LA	3' x 6'
4"	4" DI.	8'-4"	4'-4"	3'-4"	4484-LA	3' x 6'
6"	6" DI.	10'-6"	5'-0"	6'-2"	5106-LA	3' x 6'
8"	8" DI.	12'-0"	6'-0"	6'-6"	612-LA	3' x 6'
10"	10" DI.	14'-0"	8'-0"	6'-6"	814-LA	3' x 6'

NOTES:

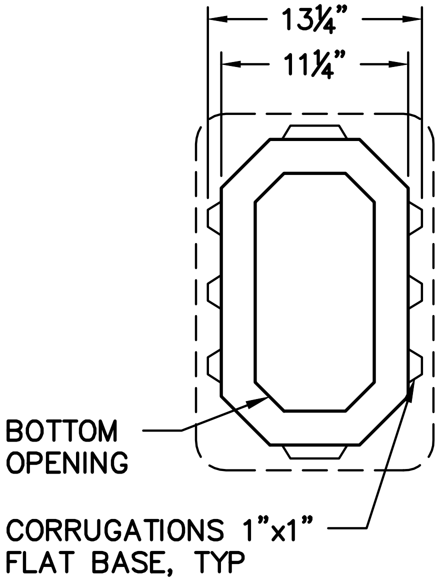
1. METER SHALL BE INSTALLED SUCH THAT IT CAN BE READ WITHOUT ENTERING VAULT WITH ACCESS HATCH OPEN.
2. COORDINATE ORIENTATION OF HATCH(ES) TO PROVIDE CLEAR VERTICAL ACCESS TO METER ASSEMBLY, AND INSTALLATION OF SHIP LADDER IF DEPTH EXCEEDS 4'. VERIFY WITH DISTRICT.
3. DRAIN DRAIN HATCH(ES) TO VAULT FLOOR WITH PVC PIPE AND FITTINGS.
4. 3/4" (MINIMUM) PVC SCH-40 CONDUIT. WIRING SHALL BE COMPLETELY SEALED 120V, UNDER GROUND. CONTRACTOR TO SEAL CONDUIT PENETRATION WITH NON-SHRINK GROUT. (NOT REQUIRED IF GRAVITY VAULT DRAIN PROVIDED).
5. ESMT TO BE PROVIDED TO SLWSD AROUND METERS LOCATED OUTSIDE R/W.
6. SEE VI-W16A FOR PLAN AND NOTES.
7. ALL METERS SHALL BE INSPECTED BY DISTRICT PERSONNEL PRIOR TO INSTALLATION.
8. SHIP LADDER SHALL BE USED FOR VAULTS DEEPER THAN 4 FEET. SEE DETAIL VI-W23.

METER VAULT ASSEMBLY
3" THROUGH 10"

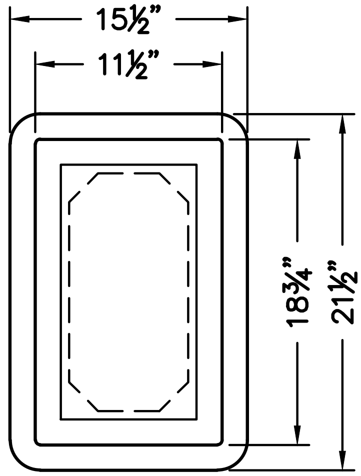
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

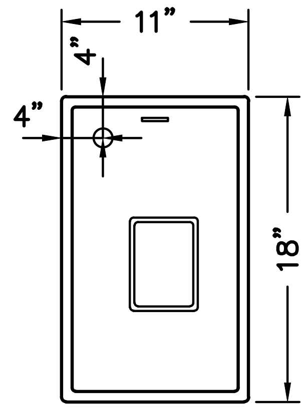
VI-W16B



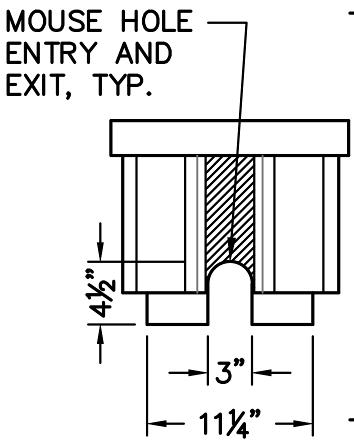
BOTTOM VIEW



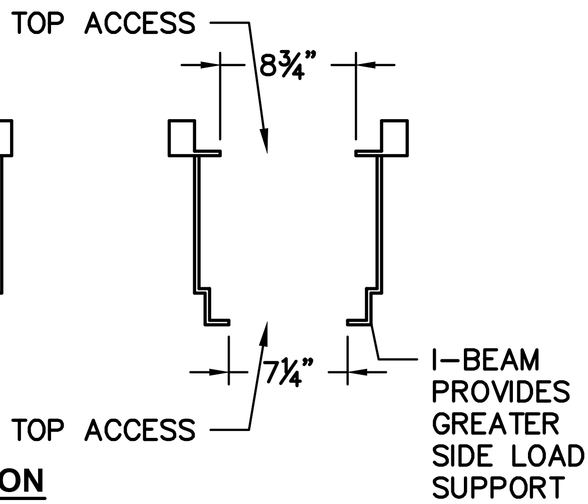
TOP VIEW



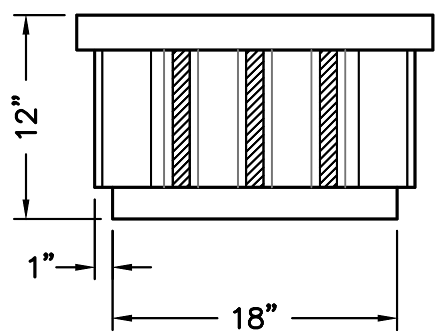
LID DETAIL



FRONT ELEVATION



SECTION A



SIDE ELEVATION

NOTES:

1. I–BEAM AT METER BOX BASE, BELOW CORRUGATION, PROVIDE GREATER SIDE LOAD SUPPORT.
2. MOUSE HOLE EACH END, PIPE ENTRY AND EXIT. 4½" HIGH X 3" ACROSS.
3. FLAT BASE, FLANGE UNDER LID AREA, UNDER EACH CORRUGATION.
4. METER BOX HAS 3 CORRUGATIONS, EACH SIDE, FOR GREATER SIDE LOAD SUPPORT.
5. HALF INCH WALL THICKNESS, EVEN AT BOTTOM OF BOX.

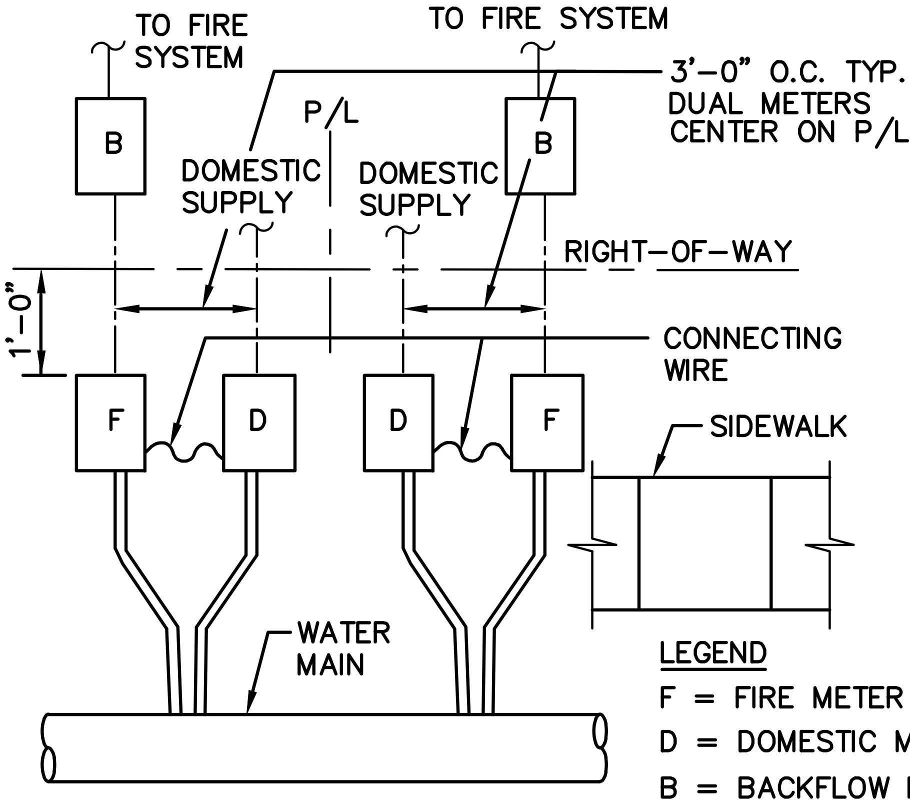
PRODUCT NO. RMB–11–18

WATER METER BOX

Silver Lake Water and Sewer District
STANDARD DETAILS

04/17

VI-W16C



LEGEND

F = FIRE METER IN BOX

D = DOMESTIC METER IN BOX

B = BACKFLOW PREVENTION IN BOX

NEW CONSTRUCTION

CONSTRUCTION NOTES:

1. ALL TAPS CONFORM TO WATER SERVICE DETAIL FOR PIPE SIZE OF LATERAL.
2. BACKFLOW PREVENTION REQUIRED IMMEDIATELY FOLLOWING METER BOX OR AS PRACTICALLY CLOSE AS POSSIBLE. CONFIRM WITH DISTRICT FOR LOCATION. INITIAL AND ANNUAL CERTIFICATION TESTING REQUIRED. SUBMIT TEST RESULTS TO DISTRICT FOR CONFIRMATION.
3. ALL FIRE METERS SHALL BE INSTALLED IN A METER BOX PER 1" OR 2" WATER SERVICE STANDARD DETAIL AS APPROPRIATE. ANGLE STOP TO BE PAINTED RED IN FIELD (COMMERCIAL SAFETY RED).

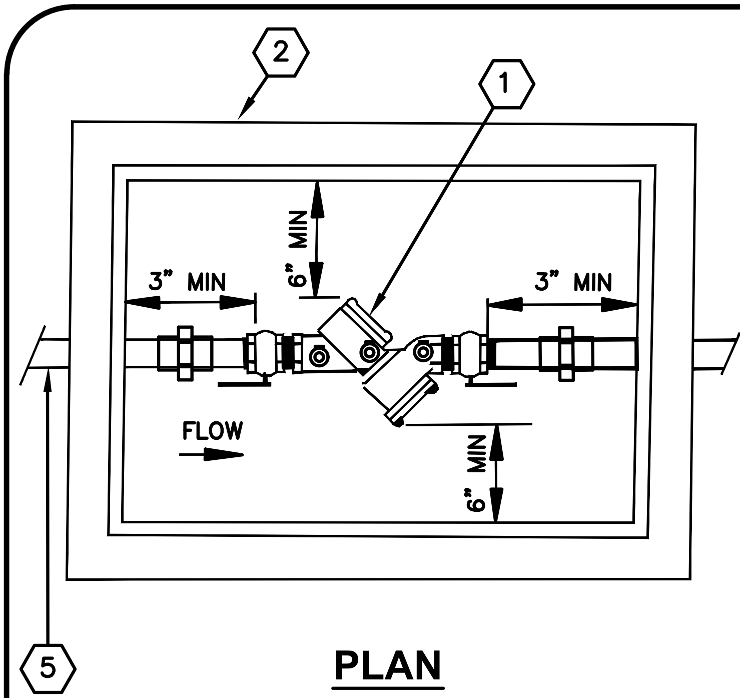
PROBABLE USE CONDITIONS:

1. WHERE BUILDING CODE REQUIRES.
2. IN RESIDENTIAL LOCATIONS WHERE:
   a. ACCESS ROADS EXCEEDS 150 FT AND DOES NOT END IN CUL–DE–SAC 40 FOOT RADIUS MINIMUM.
   b. ACCESS ROAD IS LESS THAN 20 FEET WIDE.
   c. WATER SUPPLY ISSUES EXIST.

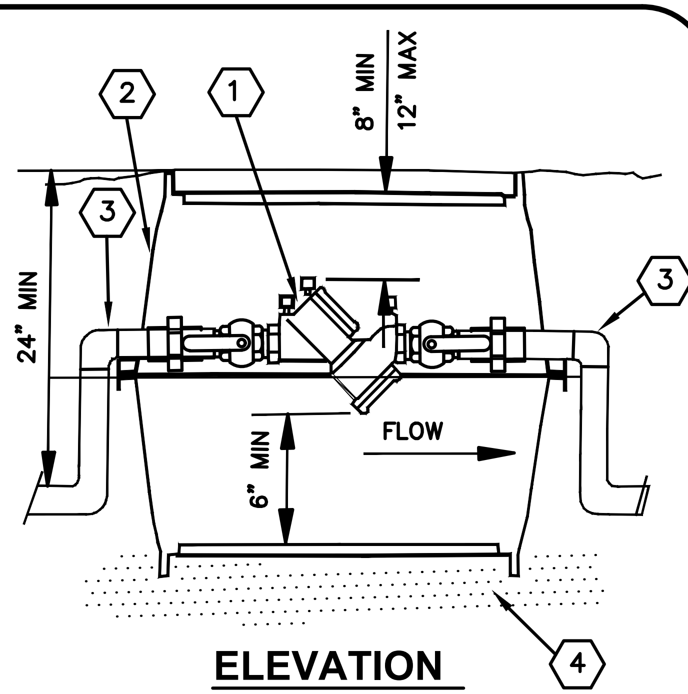
1" OR 2" DOMESTIC FIRE SERVICE CONNECTION

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12



PLAN



ELEVATION

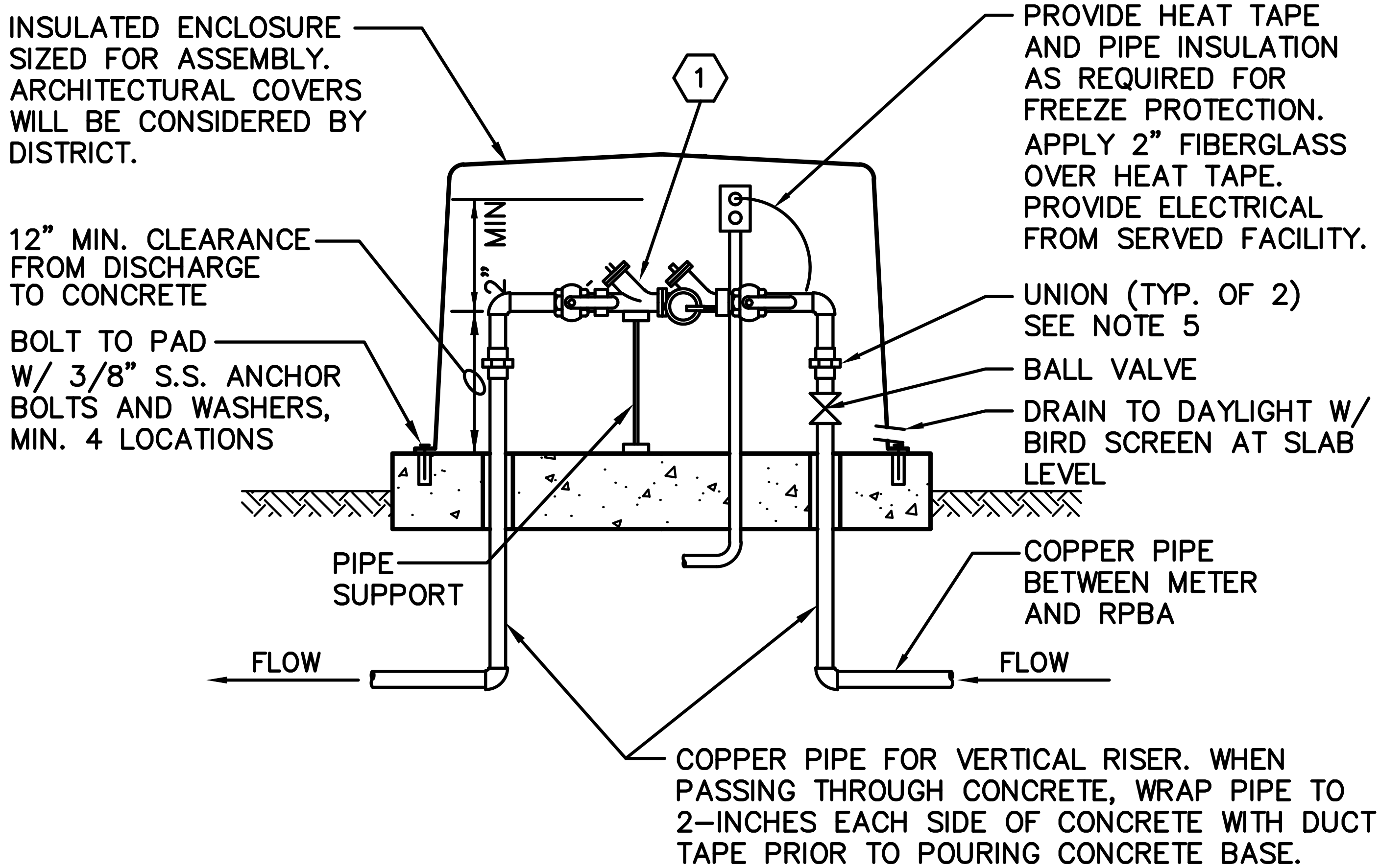
1. WASHINGTON STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA)
2. METER BOX. BERG VAULT CO. OF WASH NO. 2 CONCRETE, OR MID STATES PLASTICS MSBCF 1730–12 COMPOSITE. BOX SHALL BE H–20 LOAD RATED WHERE REQUIRED.
3. BENDS MAY BE LOCATED INSIDE OR OUTSIDE OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATION AND DCVA REPAIR OR MAINTENANCE.
4. PROVIDE FREE DRAINING BACKFILL BELOW BOX. (12" WASHED GRAVEL).

NOTES:

1. ALL TEST COCKS SHALL POINT UPWARDS AND HAVE BRASS PLUGS.
2. DCVA SHALL BE CENTERED IN BOX (PLAN).
3. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
4. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCVA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
5. DCVA IS CONSIDERED PART OF A PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
6. INSTALL DCVA USING UNIONS ON EACH END OF ASSEMBLY. UNIONS TO BE EXPOSED INSIDE OF BOX.
7. BOTTOM OF BOX TO BE OPEN TO DRAIN.
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND DCVA.

DOUBLE CHECK VALVE ASSEMBLY 2" & SMALLER

Silver Lake Water and Sewer District
STANDARD DETAILS



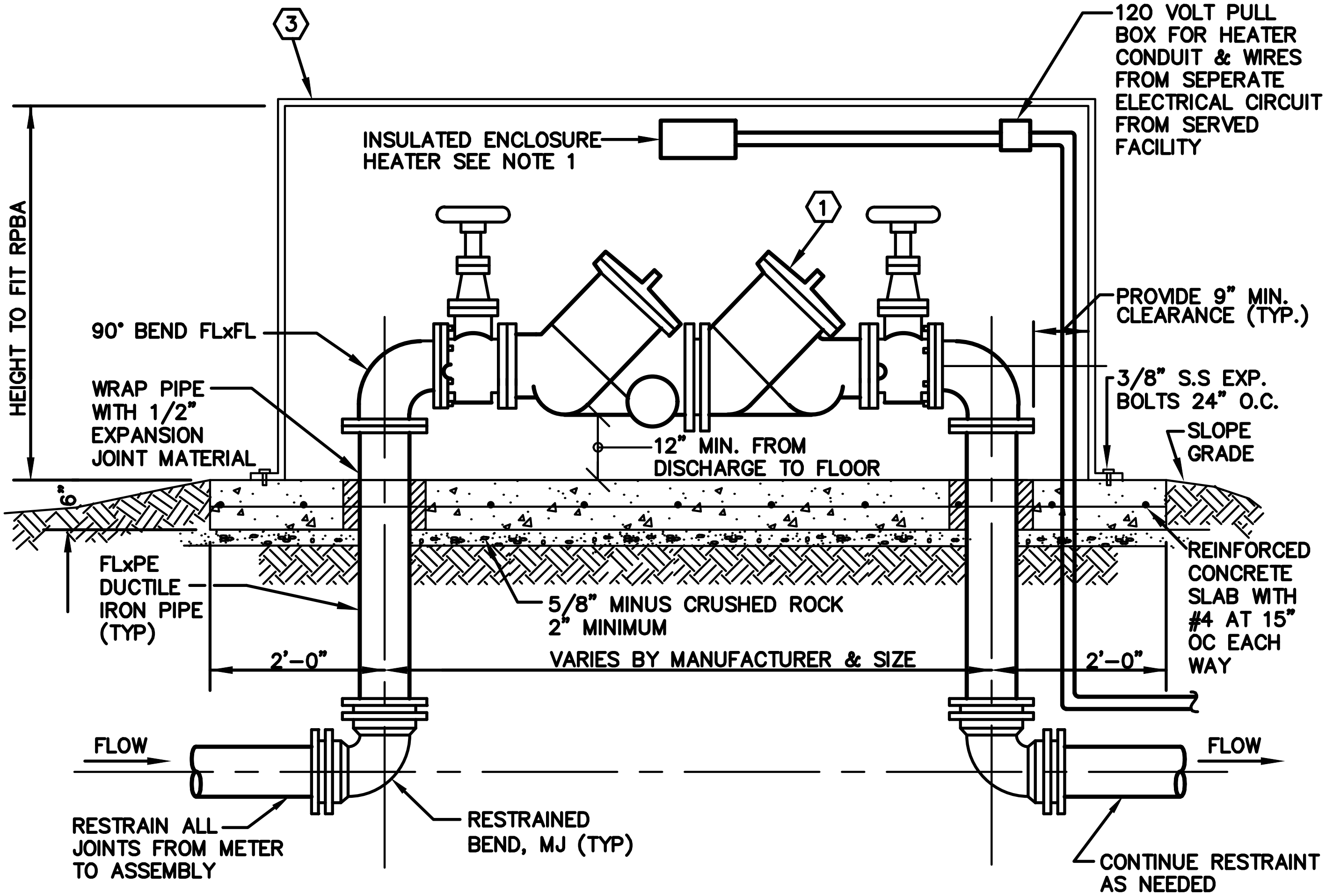
(1) WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

NOTES:

1. CONCRETE TO BE 2500 PSI (MINIMUM) MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
4. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
5. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
6. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
7. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, MAY HAVE ADDITIONAL REQUIREMENTS

REDUCED PRESSURE BACKFLOW ASSEMBLY-3/4" TO 2"

Silver Lake Water and Sewer District
STANDARD DETAILS



(1) WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH RESILIENT SEAT GATE VALVE EACH END

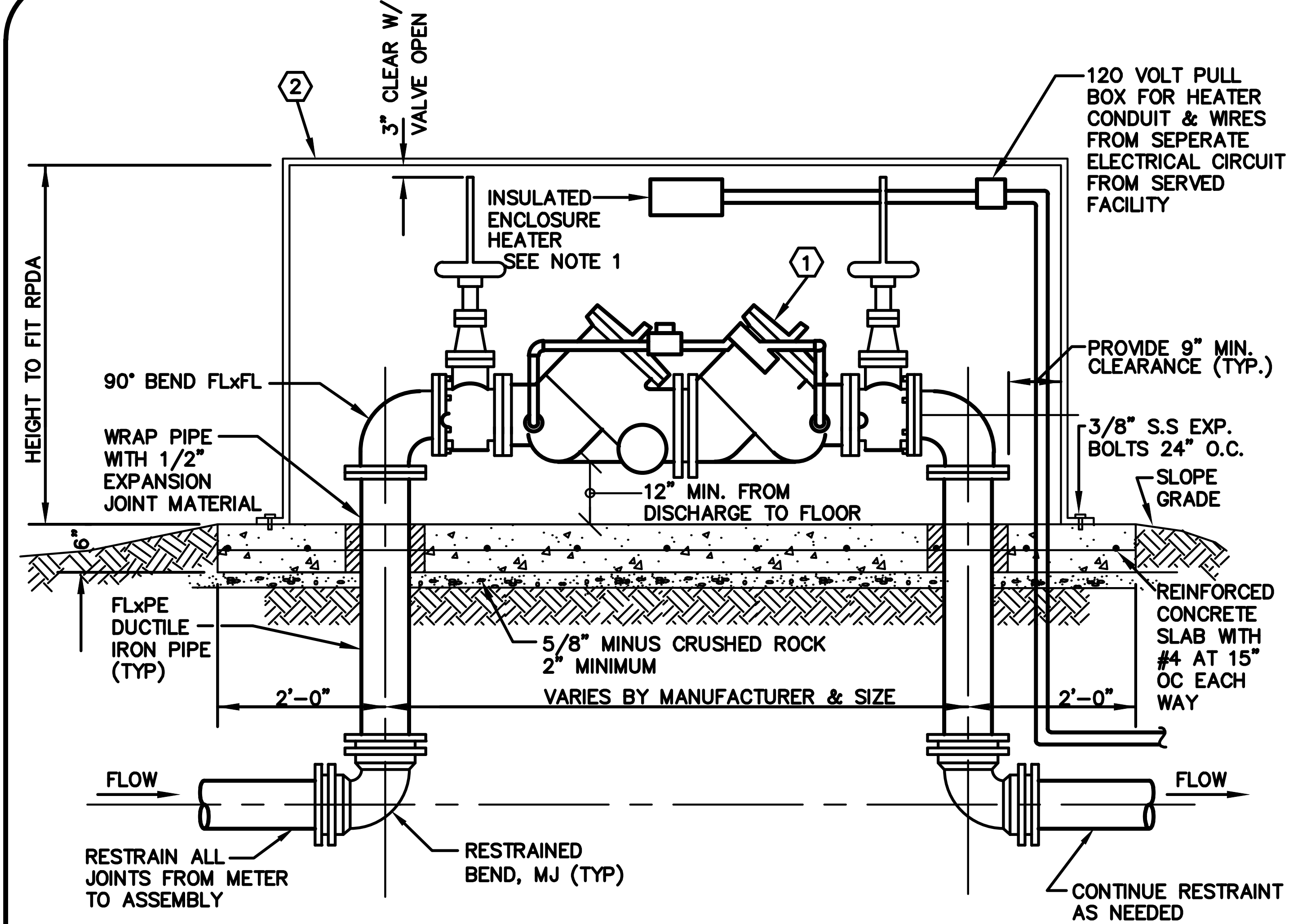
(2) NOT USED

(3) ALUMINUM INSULATED ENCLOSURE MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT EXTEND OUTSIDE OF BOX.

NOTES:

1. INSULATED ENCLOSURE TO BE LOCATED OUTDOORS AND ACCESSIBLE TO DISTRICT. ALTERNATE LOCATION REQUIRES DISTRICT APPROVAL.
2. HEATERS AND WIRING SHALL BE RATED AT 2,000 WATT FOR 8" AND UNDER: 3,000 WATT FOR 10".
3. CONCRETE TO BE 2500 PSI (MINIMUM) MIX WITH AIR ENTRAINMENT.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
5. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
6. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
7. DRAIN TO DAYLIGHT WITH BIRD SCREEN LOCATED AT SLAB LEVEL (SIZED PER MANUFACTUERS RECOMMENDATION).
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
9. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, MAY HAVE ADDITIONAL REQUIREMENTS.

REDUCED PRESSURE BACKFLOW ASSEMBLY-3" AND LARGER



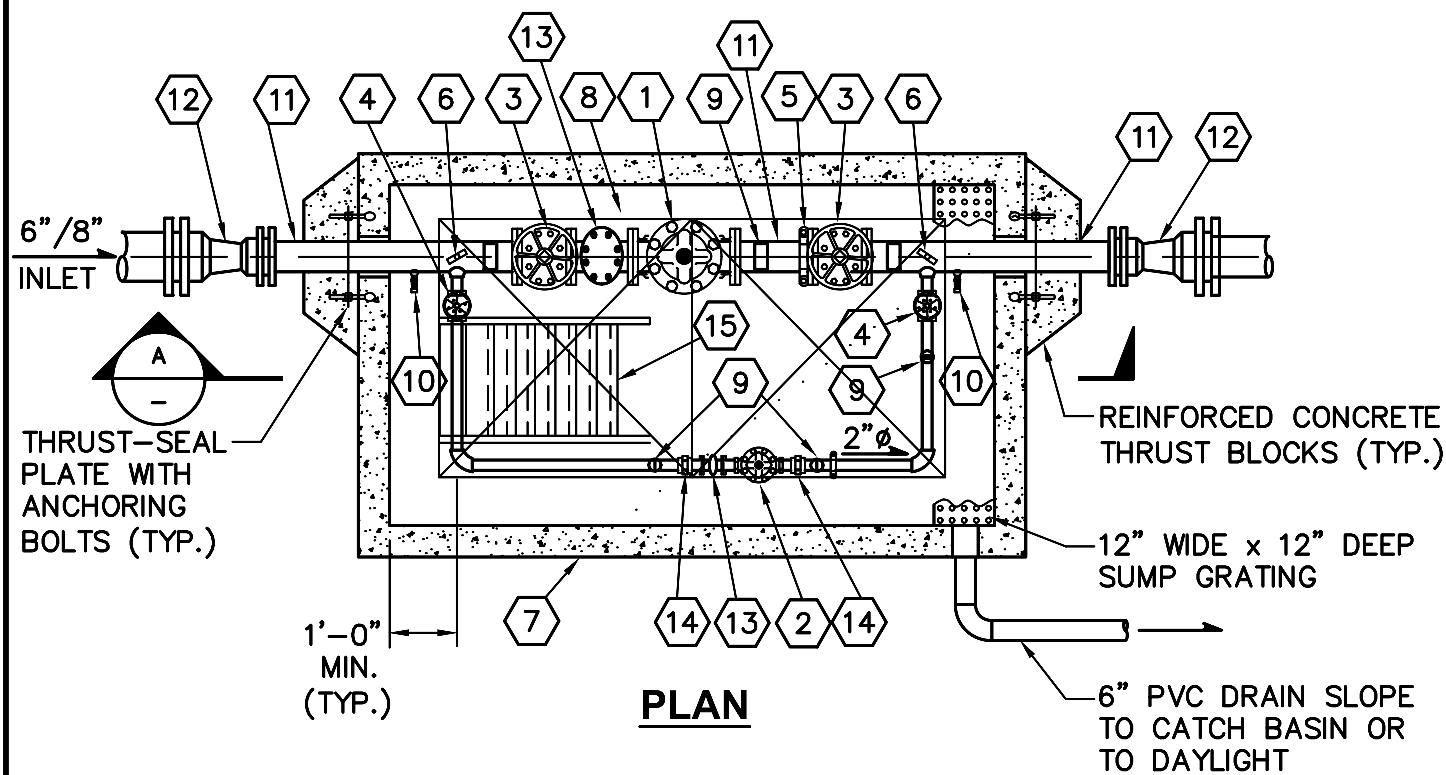
(1) WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH OS&Y RESILIENT SEAT GATE VALVE EACH END AND LOW FLOW METER ASSEMBLY.

(2) ALUMINUM INSULATED ENCLOSURE MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT EXTEND OUTSIDE OF BOX.

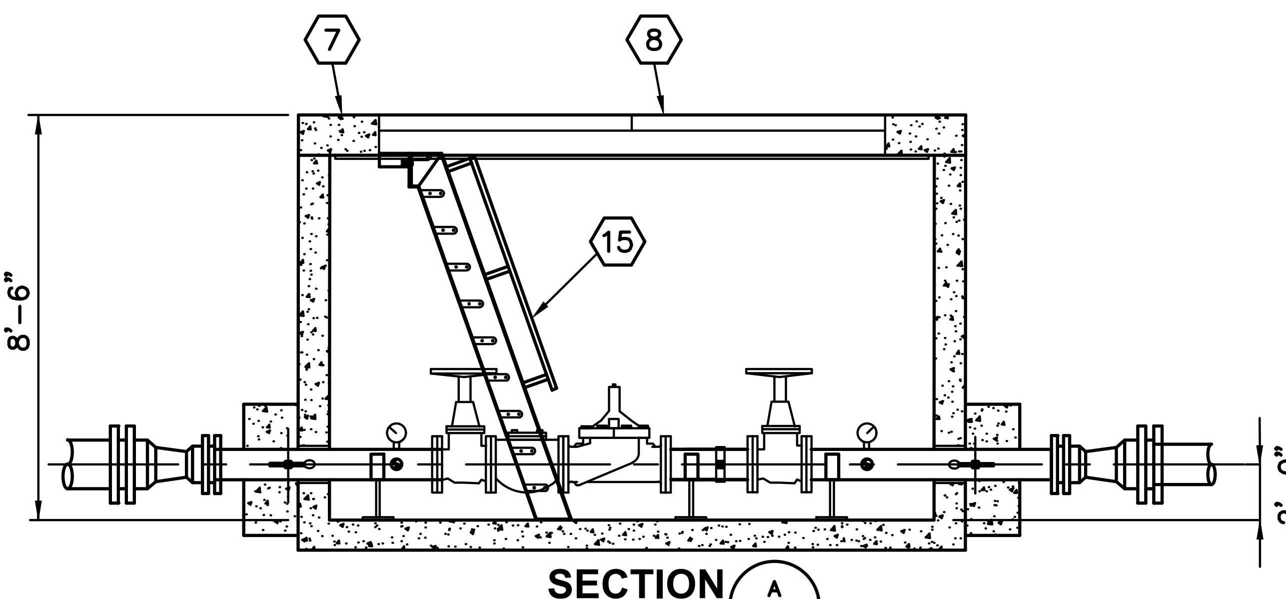
NOTES:

1. INSULATED ENCLOSURE TO BE LOCATED OUTDOORS AND ACCESSIBLE TO DISTRICT. ALTERNATE LOCATION REQUIRES DISTRICT APPROVAL.
2. HEATERS AND WIRING SHALL BE RATED AT 2,000 WATT FOR 8" AND UNDER: 3,000 WATT FOR 10".
3. CONCRETE TO BE 2500 PSI (MINIMUM) MIX WITH AIR ENTRAINMENT.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
5. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
6. RPDA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
7. DRAIN TO DAYLIGHT WITH BIRD SCREEN LOCATED AT SLAB LEVEL (SIZED PER MANUFACTUERS RECOMMENDATION).
8. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.

REDUCED PRESSURE DETECTOR ASSEMBLY-3" AND LARGER



PLAN



SECTION A/–

NOTE:

ALTERNATE TO FIELD ASSEMBLED PRV AND VAULT IS SYSTEM AS MANUFACTURED BY GC SYSTEMS.

(X) SEE V-W22B FOR CALLOUTS AND NOTES

PRESSURE REDUCING VALVE AND VAULT

Silver Lake Water and Sewer District
STANDARD DETAILS

3/17

VI-W22A

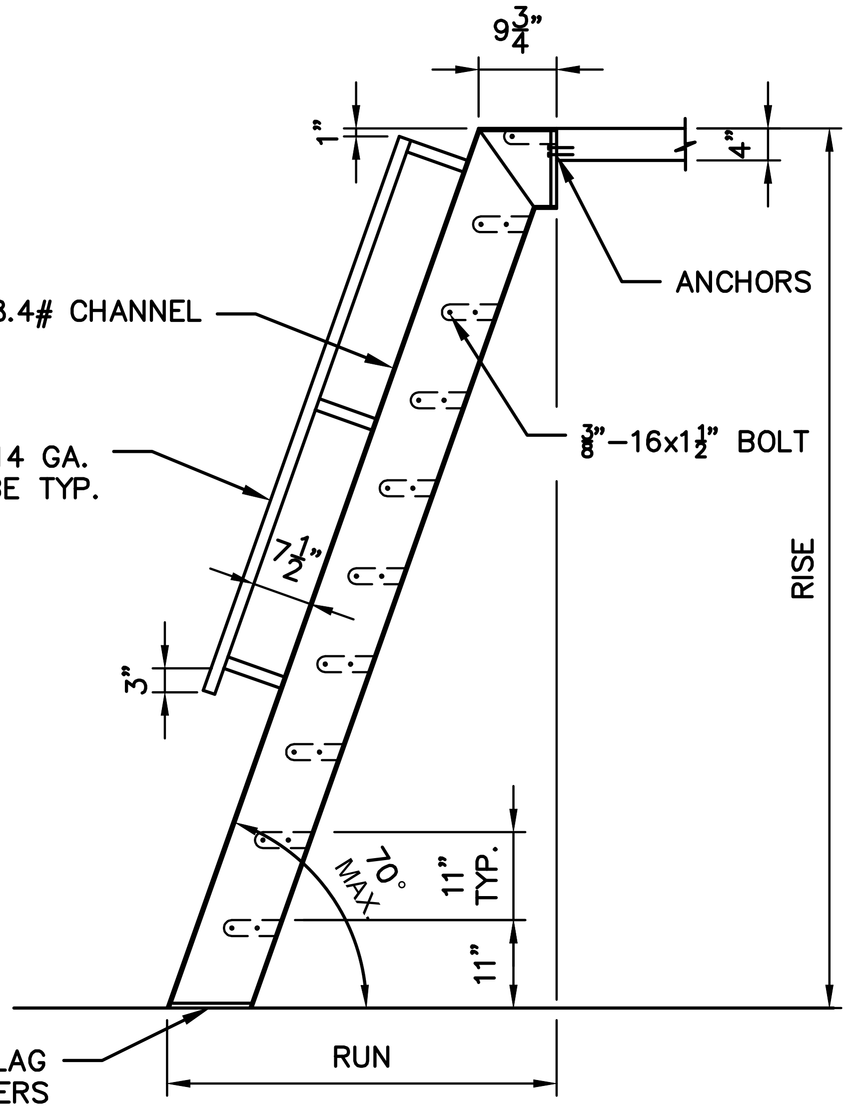
LEGEND - SEE V-W22A FOR PLAN AND SECTION

1. 6" CLA-VAL 92G-01BCSY PRESSURE REDUCING/SUSTAINING VALVE WITH X101 POSITION INDICATOR DI BODY, S.S. TRIM, #150 FL.
2. 2" CLA-VAL 90G-01BC PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, BRONZE TRIM – THREADED.
3. 6" D.I. RW NRS GATE VALVE WITH HANDWHEEL, #150 FL.
4. 2" MUELLER A2360-6W41 W55 RW NRS GATE VALVE WITH HANDWHEEL, THD.
5. UNIFLANGE (TYP.).
6. 4" 0-300 PSI PRESSURE GAUGE WITH SNUBBER AND GAUGE COCK; TOP OF PIPE.
7. PRECAST CONCRETE VAULT 12'L x 7'W x 7'-7"H INSIDE, SOLID WALL WITH WHITE INTERIOR & BLACK EXTERIOR SEALANT
8. 60" X 120" DOUBLE DOOR ALUMINUM HATCH, LW PRODUCTS OR EQUAL. H-20 RATED. DRAIN HATCH TO VAULT FLOOR.
9. ADJUSTABLE PIPE SUPPORTS, AS REQUIRED.
10. 3/4" HOSE BIB ASSEMBLY.
11. PIPE SPOOL (FLxPE) LENGTH AS REQUIRED.
12. REDUCER (AS REQUIRED), MJ WITH MEGA-LUGS.
13. WATER METER STRAINER, SENSUS OR EQUAL, FL.
14. UNIONS.
15. OSHA-COMPLIANT SHIP LADDER, SEE SHEET VI-W23.

NOTES:

1. 6" x 2" PRV ASSEMBLY SHOWN. SIZES TO BE DETERMINED BY THE DISTRICT BASED ON DOWNSTREAM DEMANDS.
2. ALL 3" AND LARGER PIPE INSIDE WETTED SURFACES TO BE SANDBLASTED, EPOXY LINED AND COATED TO AWWA C210 AND NSF-61 SPECIFICATION. EXTERIOR COATING SHALL BE BLUE ENAMEL.
3. ALL PIPE 2" AND SMALLER TO BE BRASS.

PRESSURE REDUCING VALVE AND VAULT



1. REQUIRED FOR ACCESS TO FACILITIES PLACED IN VAULTS WHERE DEPTH FROM SURFACE TO FLOOR EXCEEDS 4 FEET.

2. VAULT SELECTION SIZED TO ALLOW CLEARANCE FOR PLACEMENT OF "SHIP LADDER"

3. SHIP LADDER TO BE GALVANIZED STEEL.

4. SHOP DRAWING APPROVAL OF SLWSD REQUIRED PRIOR TO INSTALLATION.

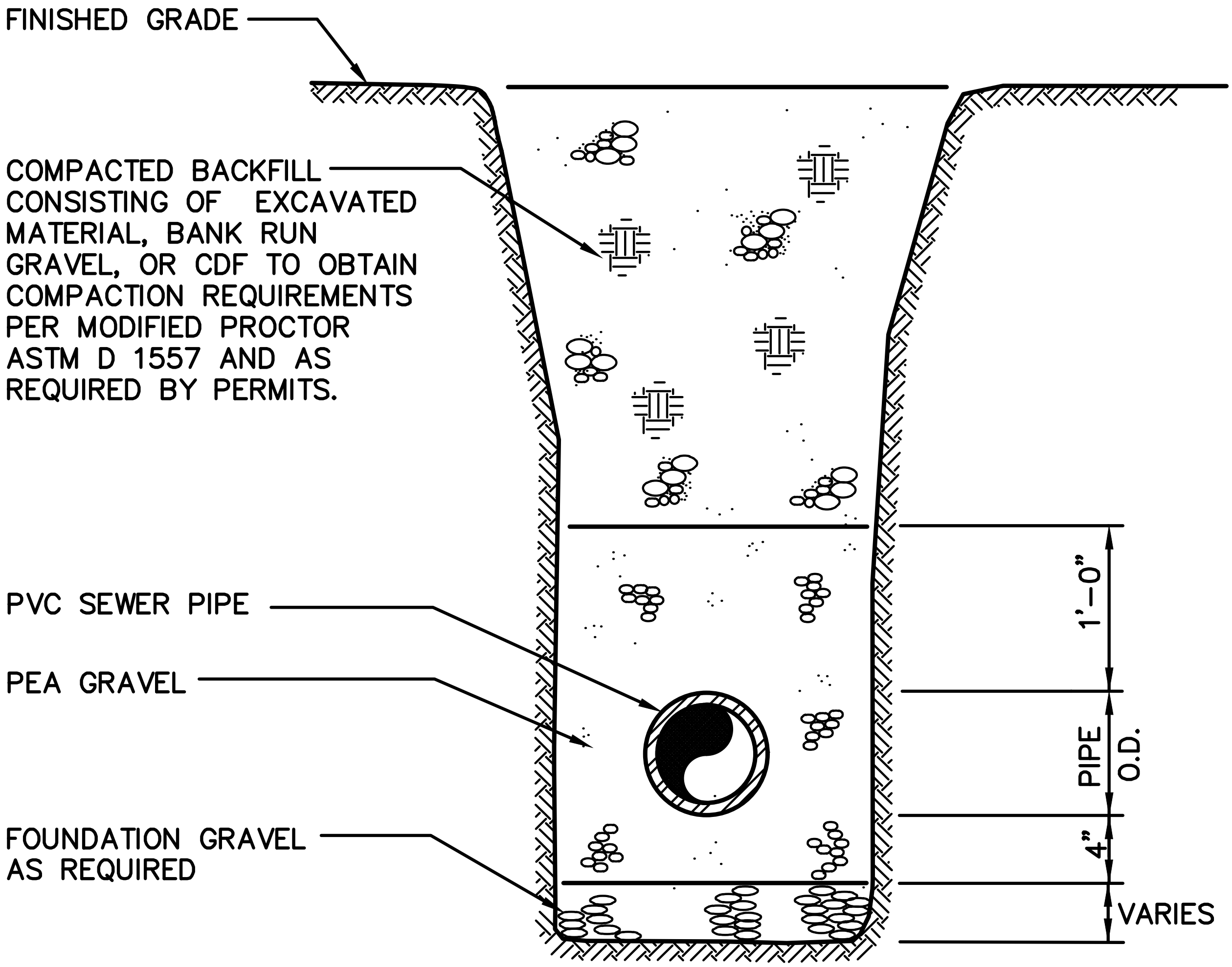
5. SHIPS LADDER MUST, AT A MINIMUM, ABIDE BY OSHA STANDARDS.

6. TREAD WIDTH SHALL BE MIN. 24"AND MIN. DEPTH OF 6".

SHIPS LADDER

Silver Lake Water and Sewer District
STANDARD DETAILS

SEWER



NOTE:

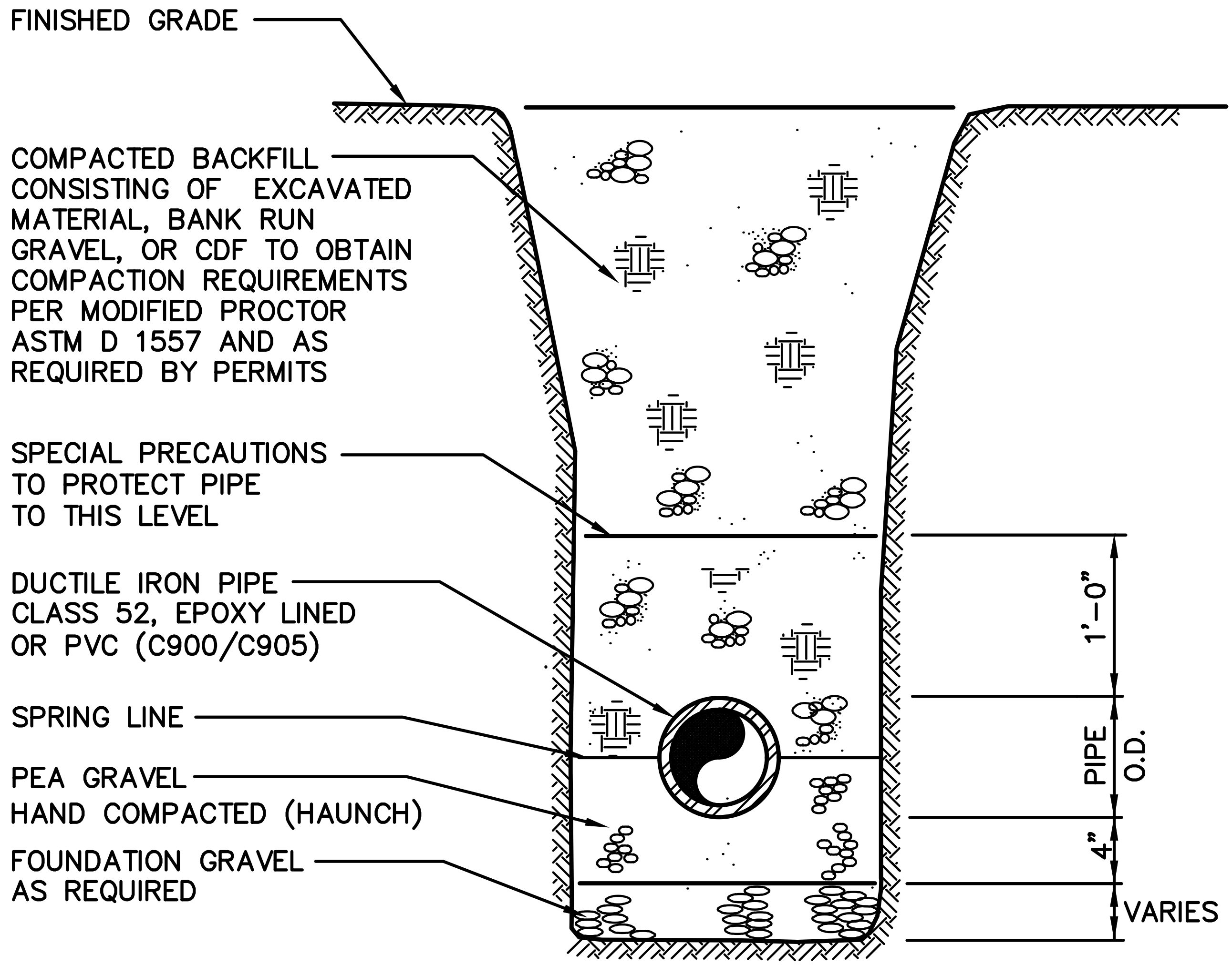
1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH SILVER LAKE WATER AND SEWER DISTRICT STANDARDS AND/OR COUNTY, CITY, STATE PERMIT REQUIREMENTS.
2. PIPES SHALL BE RESTRAINED IN FILL OR PREVIOUSLY DISTURBED MATERIAL.
3. CLAY OR BENTONITE DAMS SHALL BE INSTALLED ACROSS THE TRENCH AND TO THE FULL DEPTH OF THE GRANULAR MATERIAL IN ALL AREAS OF STEEP SLOPES, STREAM CROSSINGS AND WETLAND TO PREVENT MIGRATION OF WATER ALONG THE PIPELINE.

SANITARY SEWER TRENCH SECTION (PVC/GRAVITY)

Silver Lake Water and Sewer District
STANDARD DETAILS

12/16

VI-S1



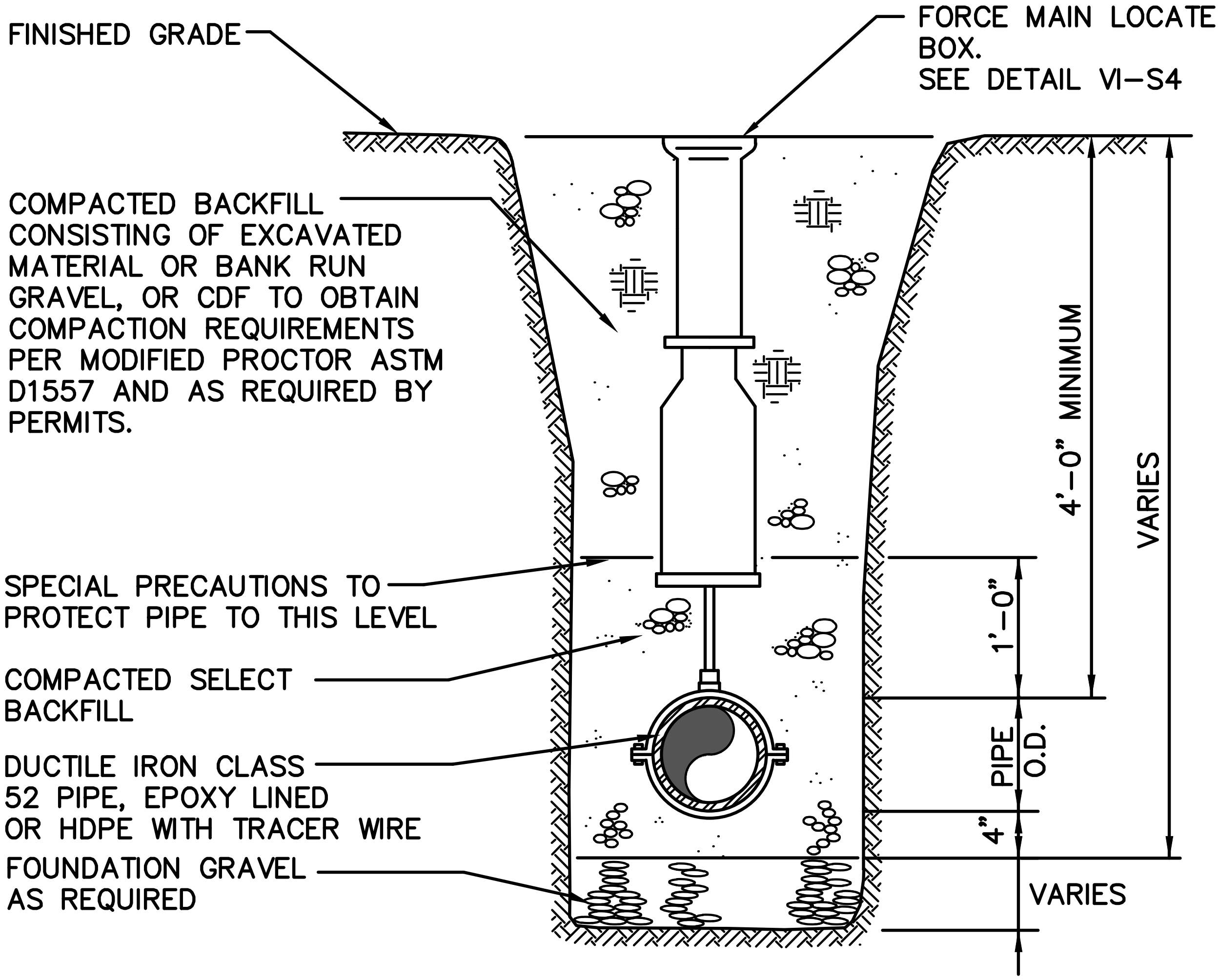
NOTE:

1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH SILVER LAKE WATER AND SEWER DISTRICT STANDARDS AND/OR COUNTY, CITY, STATE PERMIT REQUIREMENTS.
2. PIPES SHALL BE RESTRAINED IN FILL OR PREVIOUSLY DISTURBED MATERIAL.
3. CLAY OR BENTONITE DAMS SHALL BE INSTALLED ACROSS THE TRENCH AND TO THE FULL DEPTH OF THE GRANULAR MATERIAL IN ALL AREAS OF STEEP SLOPES, STREAM CROSSINGS AND WETLAND TO PREVENT MIGRATION OF WATER ALONG THE PIPELINE.

SANITARY SEWER TRENCH SECTION (D.I./GRAVITY)

Silver Lake Water and Sewer District
STANDARD DETAILS

12/16



NOTE:

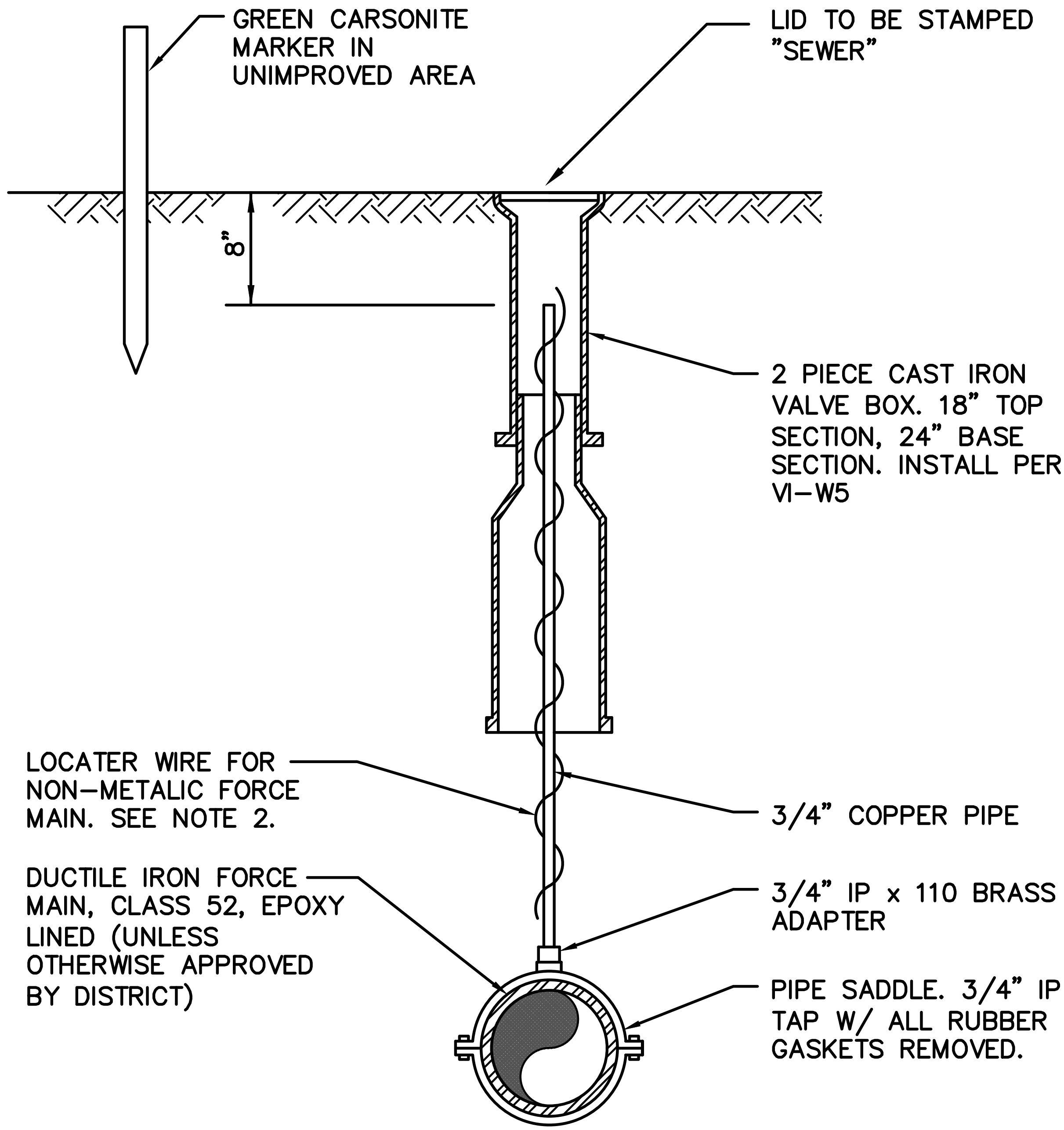
BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH SILVER LAKE WATER AND SEWER DISTRICT STANDARDS AND/OR THE SNOHOMISH COUNTY, CITY AND STATE PERMIT REQUIREMENTS. ONLY DUCTILE IRON PIPE SHALL BE USED UNLESS APPROVED BY THE DISTRICT.

FORCE MAIN TRENCH SECTION

Silver Lake Water and Sewer District
STANDARD DETAILS

12/16

VI-S3

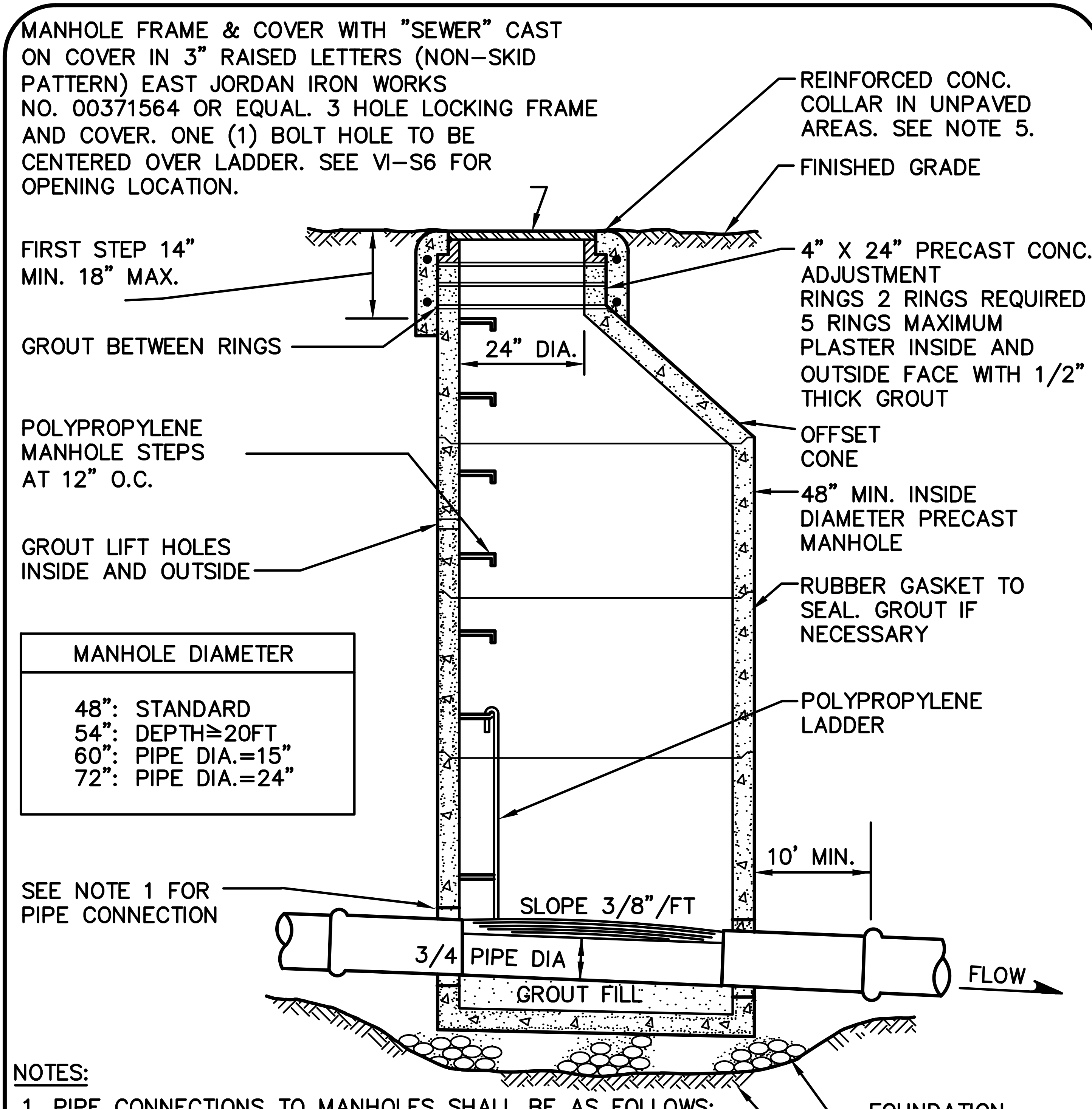


NOTES:

1. LOCATE AT ENDS OF FORCE MAINS, ALL HORIZONTAL BENDS AND AT 300 FT. MAX SPACING, OR AS REQUIRED BY DISTRICT
2. ON NON–METALIC FORCE MAINS, PROVIDE 12 GAUGE COATED COPPER WIRE BETWEEN LOCATION BOXES. WRAP ALONG FORCE MAIN PIPE AND UP COPPER PIPE AT EACH END.

FORCE MAIN LOCATION BOX

Silver Lake Water and Sewer District
STANDARD DETAILS



NOTES:

1. PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS:
   PVC PIPE: CAST OR GROUT A SAND COLLAR INTO WALL.
   D.I. OR PVC PIPE: CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR-N-SEAL BOOT OR EQUAL.
2. DROP OF GRADE THRU MANHOLE SHALL BE 0.10', UNLESS OTHERWISE NOTED.
3. MINIMUM DEPTH OF MANHOLE SHALL BE 8' UNLESS APPROVED BY THE DISTRICT.
4. INSTALL GREEN CARSONITE FIBERGLASS MANHOLE MARKERS IN EASEMENTS.
5. POUR 4'-0" DIAMETER BY 12" THICK CONCRETE COLLAR AROUND ALL MANHOLE COLLARS IN UNPAVED AREAS.

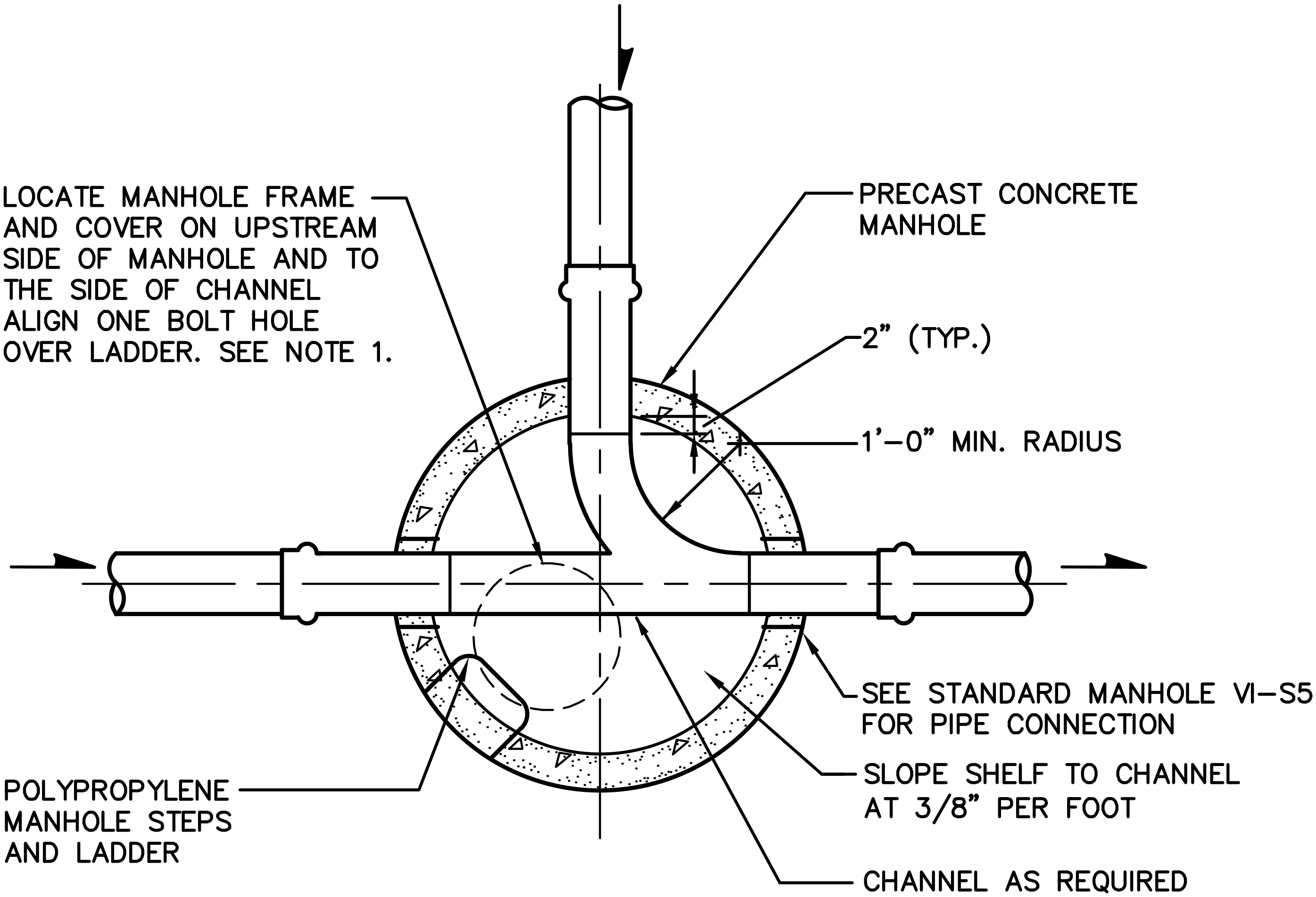
7/12

VI-S5

SANITARY SEWER MANHOLE SECTION

Silver Lake Water and Sewer District

STANDARD DETAILS

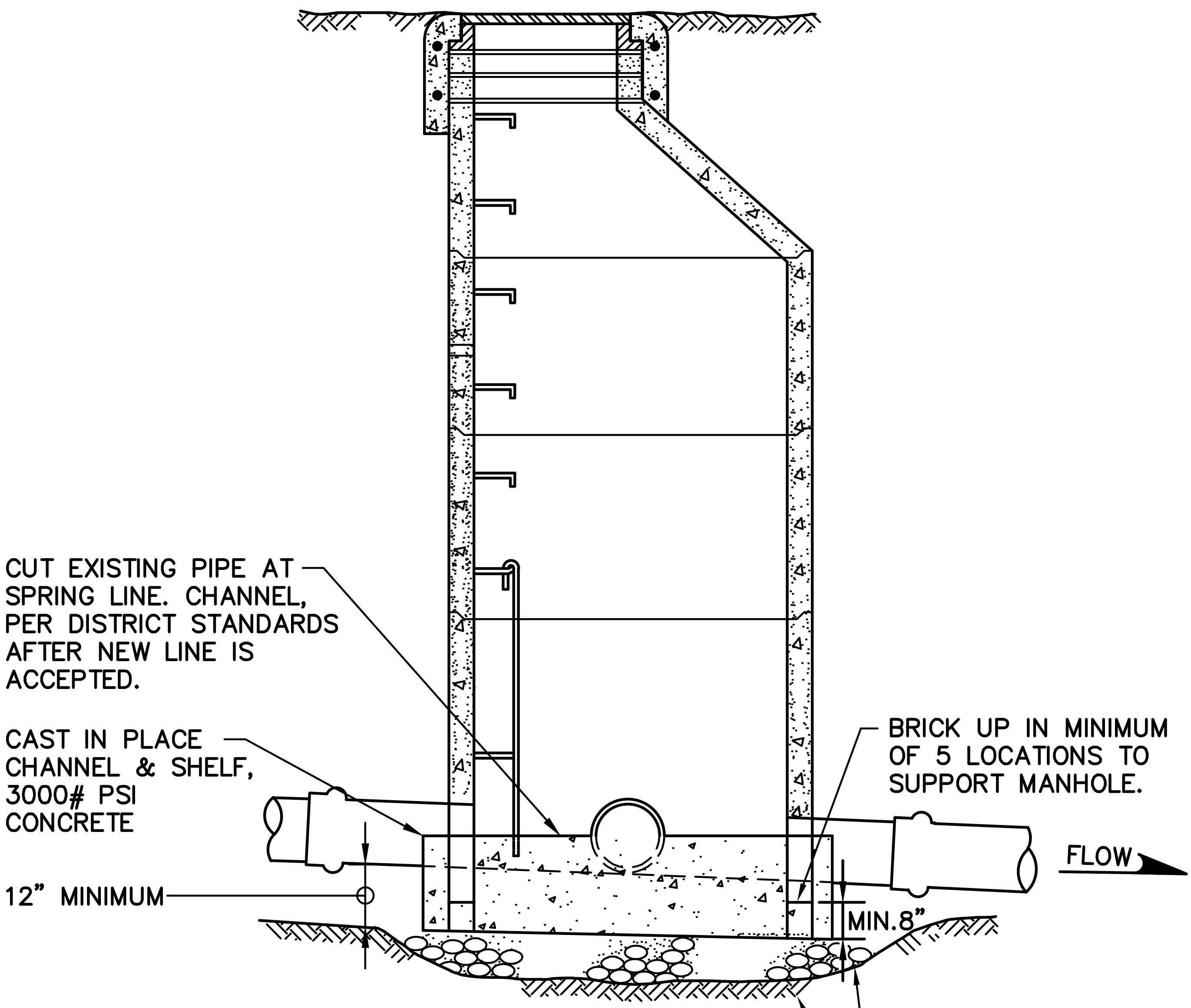


NOTES:

1. CONFIRM FRAME AND COVER LOCATION WITH DISTRICT.

SANITARY SEWER MANHOLE PLAN

Silver Lake Water and Sewer District
STANDARD DETAILS



NOTES:

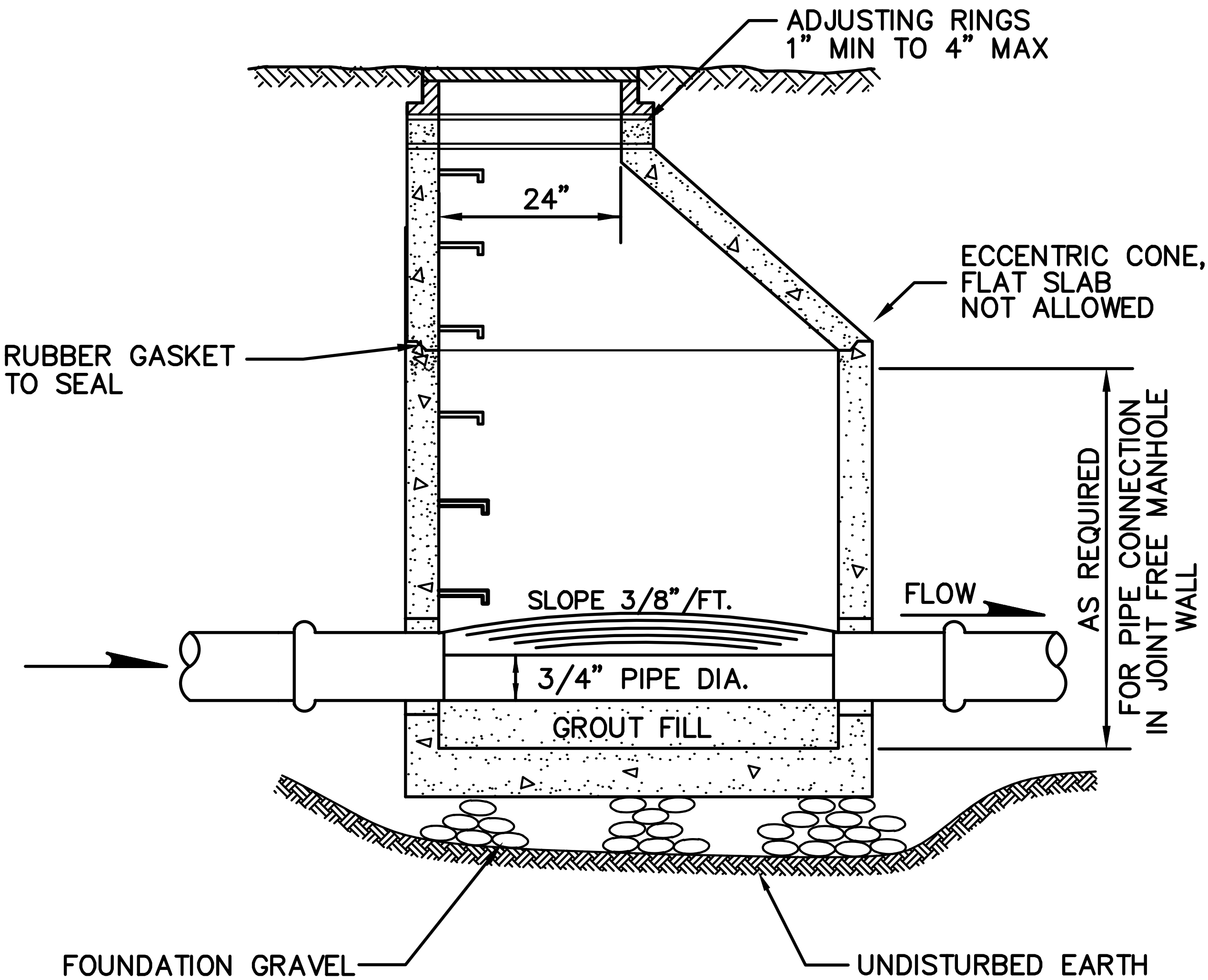
1. SEE STANDARD MANHOLE FOR ADDITIONAL CALLOUTS ON VI–S5

SANITARY SEWER SADDLE MANHOLE

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-S7



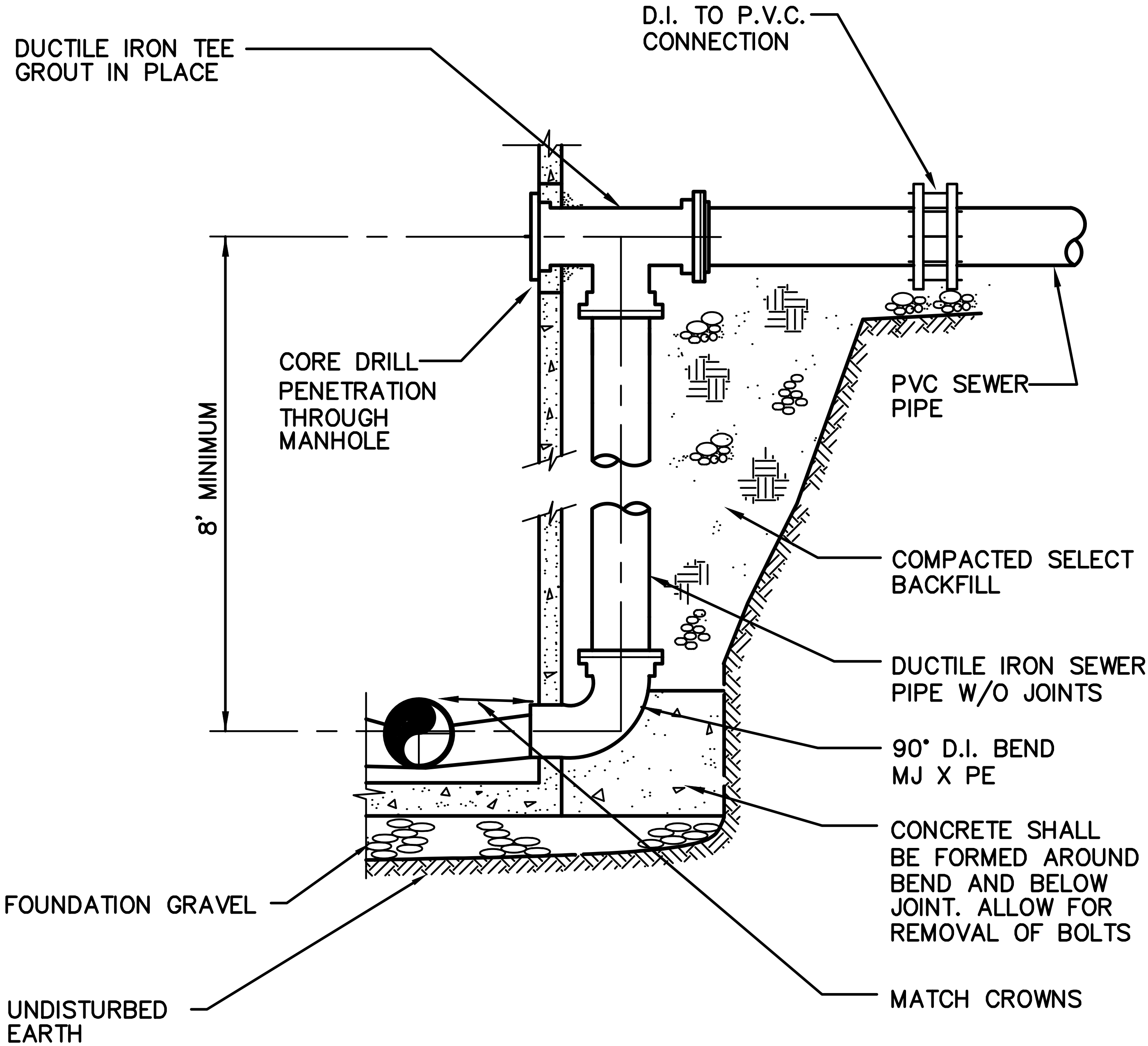
NOTES:

1. SEE STANDARD MANHOLE CALLOUTS ON VI–S5.
2. FRAME AND COVER SHALL MEET REQUIREMENTS FOR 24" MANHOLE.
3. USE OF SHALLOW MANHOLE REQUIRES DISTRICT APPROVAL.

SANITARY SEWER SHALLOW MANHOLE

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12



NOTES:

1. USE OF DROP MANHOLE REQUIRES DISTRICT APPROVAL.
2. DROP HEIGHT MUST BE GREATER THAN 8 FEET FOR CONSIDERATION.
3. DROP CONNECTIONS WILL ONLY BE CONSIDERED AT JUNCTIONS WITH AN EXISTING DEEP MAIN FOR LATERAL SEWERS TO BE BUILT IN THE FUTURE.

OUTSIDE DROP MANHOLE

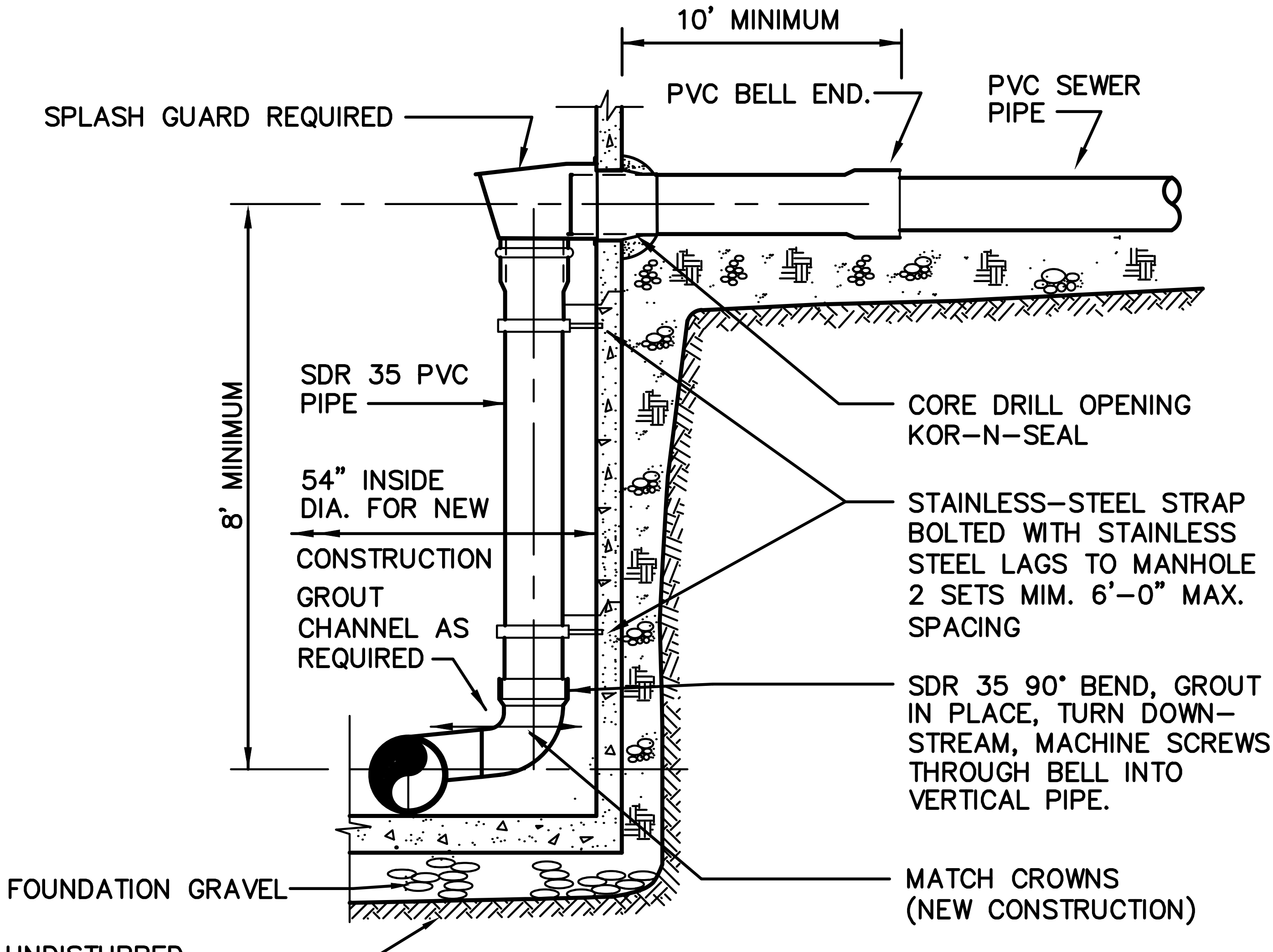
(IF APPROVED BY DISTRICT)

Silver Lake Water and Sewer District

STANDARD DETAILS

7/12

VI-S9



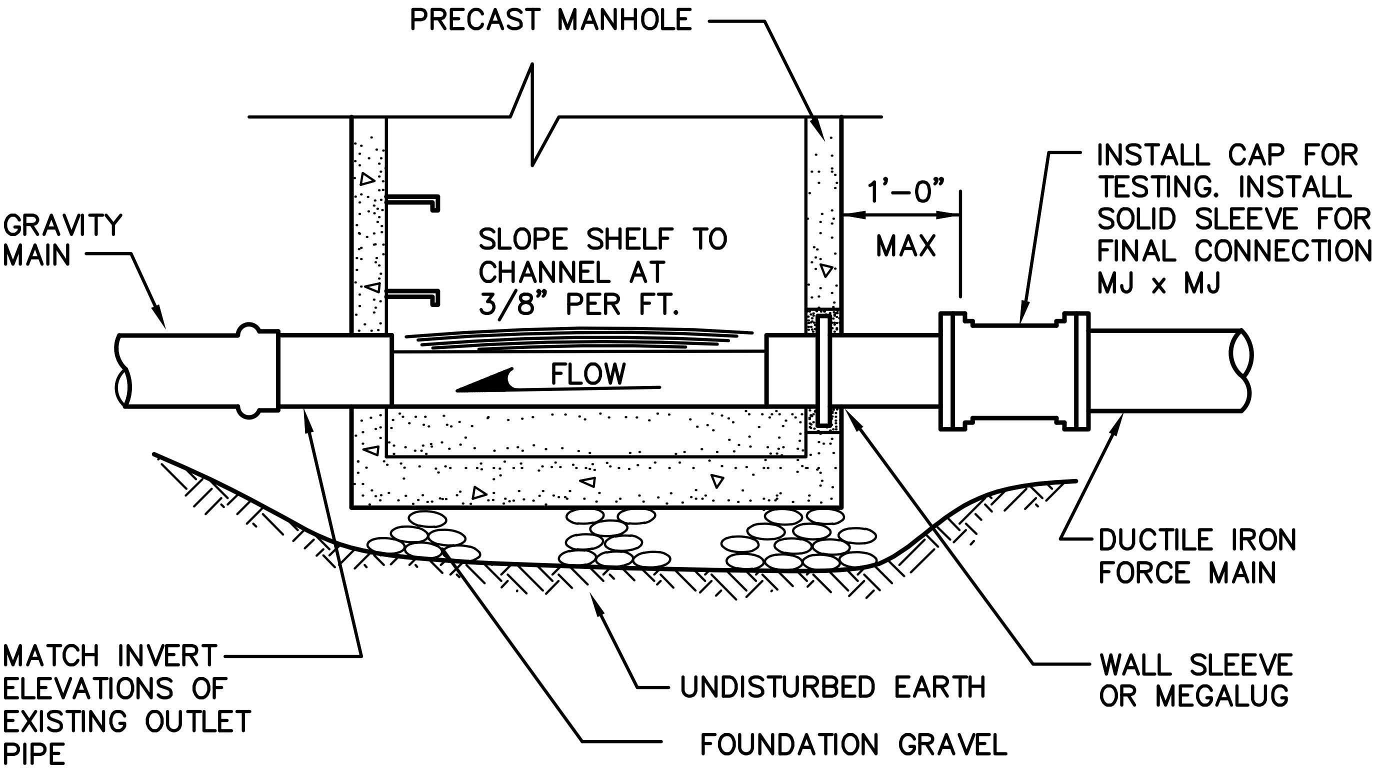
ELEVATION

NOTES:

1. USE OF DROP MANHOLE REQUIRES DISTRICT APPROVAL.
2. DROP HEIGHT MUST BE GREATER THAN 8 FEET FOR CONSIDERATION.
3. ALL JOINTS SHALL BE GLUED.
4. BEND SHALL SWEEP INTO FLOW DIRECTION.
5. DURAN INC./ RELINER BRAND – HD SUPPLY/MARYSVILLE (SUPPLIER)

INSIDE DROP MANHOLE

(IF APPROVED BY DISTRICT)



NOTES:

1. PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS: PVC PIPE: CAST OR GROUT A SAND COLLAR INTO WALL. D.I. OR PVC PIPE: CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR–N–SEALBOOT OR EQUAL, EXCEPT FOR FORCE MAIN CONNECTION.

2. DROP OF GRADE THROUGH MANHOLE SHALL BE 0.10', UNLESS OTHERWISE NOTED.

3. ALIGN FORCE MAIN DISCHARGE AXIS WITH OUTLET PIPE.

4. RESTRAIN FORCE MAIN JOINTS AND FITTINGS IN ACCORDANCE WITH V–G3.

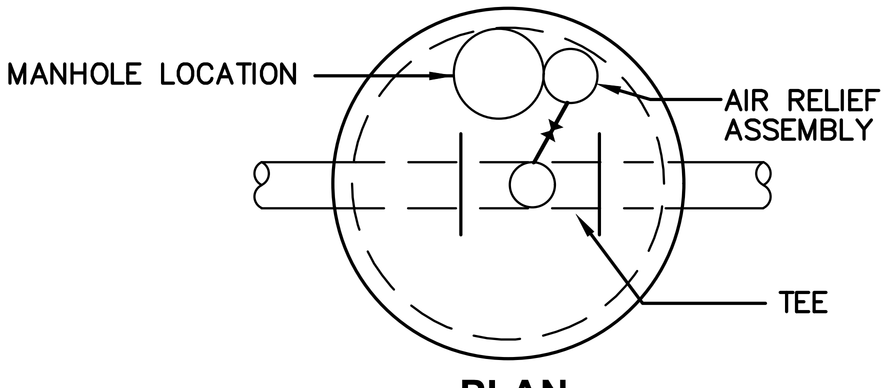
5. SEE STANDARD MANHOLE CALLOUTS ON V–S5 AND V–S6.

FORCE MAIN DISCHARGE MANHOLE

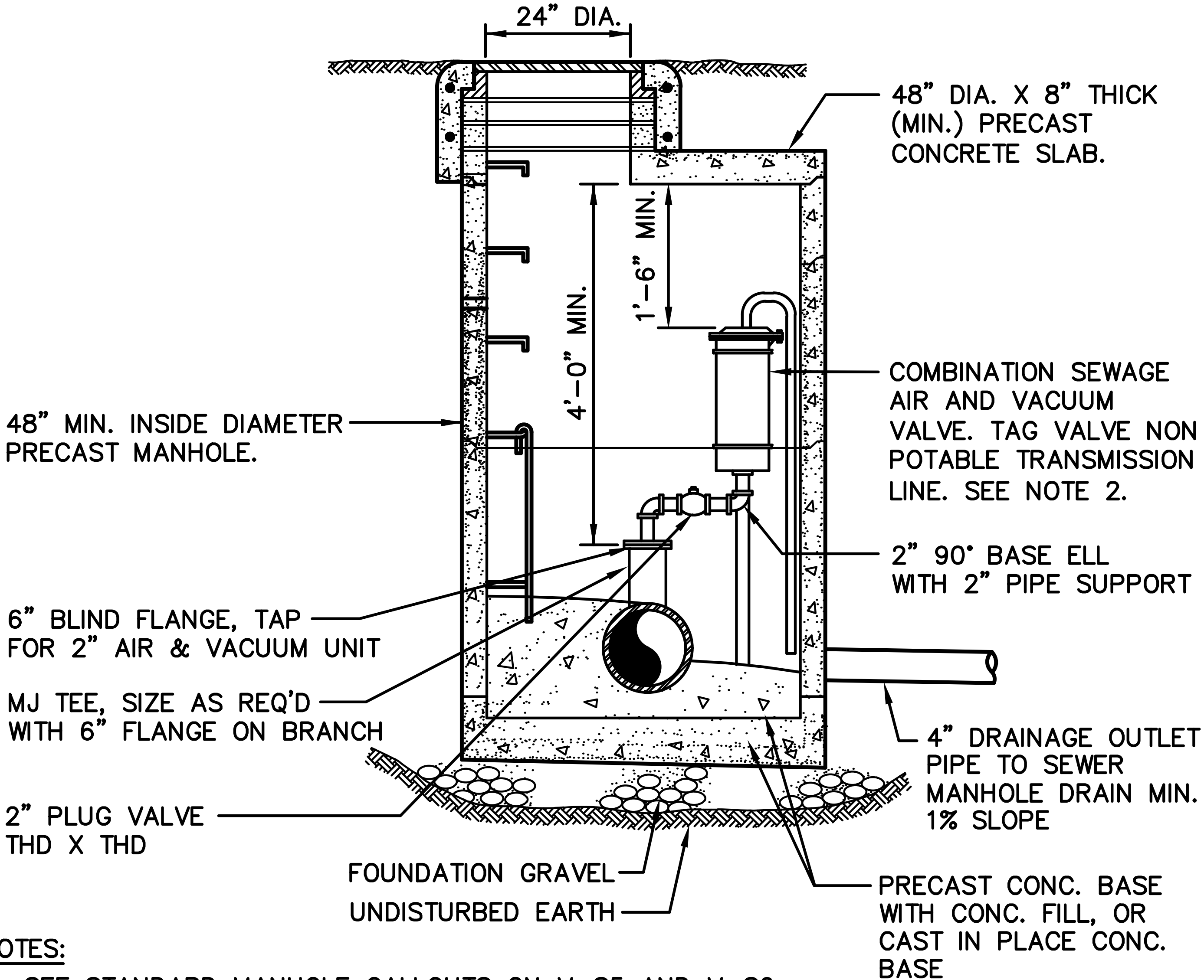
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-S11



PLAN



NOTES:

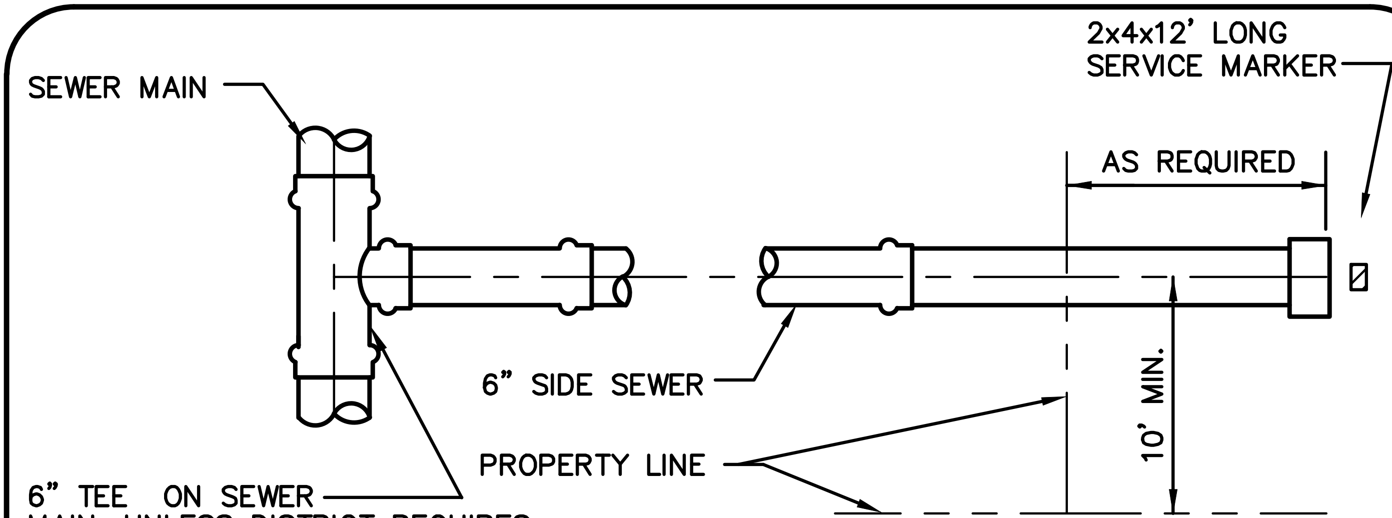
1. SEE STANDARD MANHOLE CALLOUTS ON V-S5 AND V-S6.
2. A.R.I. DISTRICT APPROVED EQUAL HEAVY-DUTY COMBINATION AIR MODEL II D-025 OR APPROVED EQUAL AND VACUUM VALVE (SHORT VERSION) COMPOSITE BODY INTERNALS. SEATS SHALL BE SUPPLIED FOR THE FOLLOWING WORKING PRESSURES: 20 PSI, 20-150 PSI.
3. 2" PIPING AND FITTINGS SHALL BE BRASS.

SANITARY SEWER AIR AND VACUUM RELEASE ASSEMBLY

Silver Lake Water and Sewer District
STANDARD DETAILS

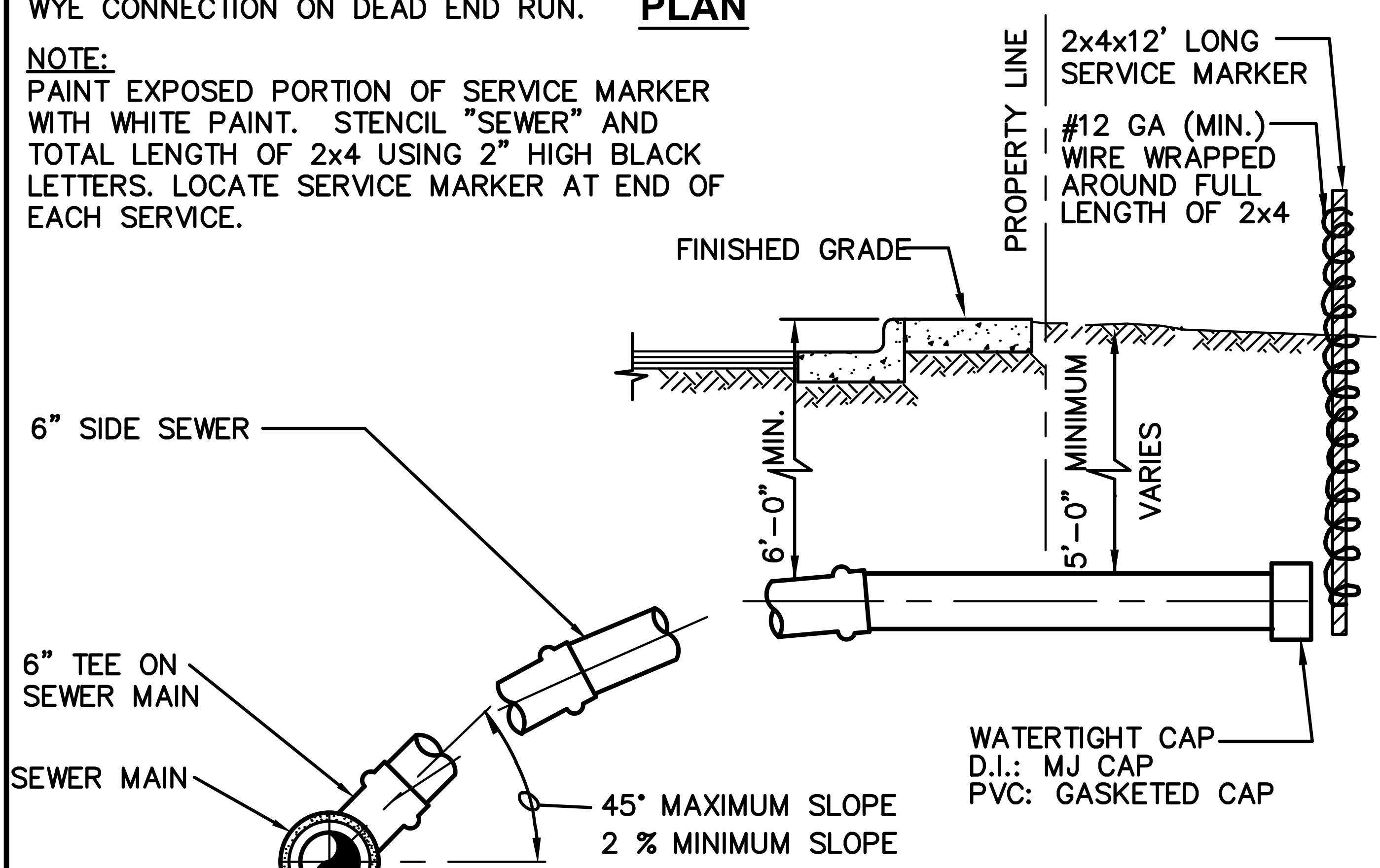
4/17

VI-S12



PLAN

NOTE:
PAINT EXPOSED PORTION OF SERVICE MARKER WITH WHITE PAINT. STENCIL "SEWER" AND TOTAL LENGTH OF 2x4 USING 2" HIGH BLACK LETTERS. LOCATE SERVICE MARKER AT END OF EACH SERVICE.



ELEVATION

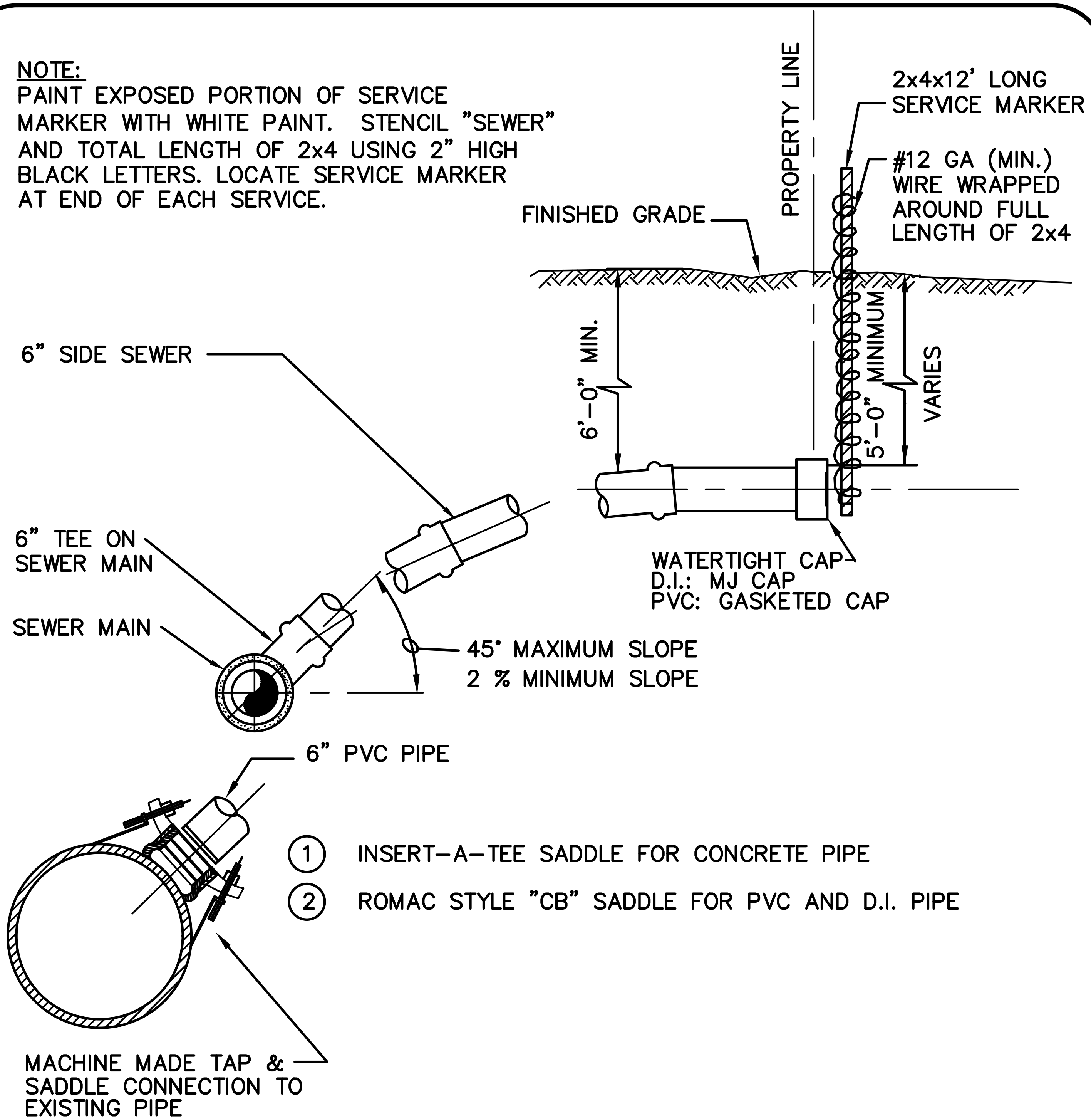
NOTES:

1. MAXIMUM DEFLECTION NOT TO EXCEED PIPE MANUFACTURER RECOMMENDATIONS.
2. SIDE SEWER LATERAL SHALL BE THE SAME MATERIAL AS THE MAIN LINE SEWER AND BEDDED THE SAME
3. SEPARATE LATERAL REQUIRED FOR EACH LOT.

STANDARD SIDE SEWER

Silver Lake Water and Sewer District
STANDARD DETAILS

NOTE:
PAINT EXPOSED PORTION OF SERVICE MARKER WITH WHITE PAINT. STENCIL "SEWER" AND TOTAL LENGTH OF 2x4 USING 2" HIGH BLACK LETTERS. LOCATE SERVICE MARKER AT END OF EACH SERVICE.



NOTES:

1. SEE STANDARD SIDE SEWER DETAIL V-S12 FOR NEW CONSTRUCTION.
2. DEVELOPER TO PROVIDE ALL MATERIALS, TRAFFIC CONTROL, PERMITS, SHORING AND MISC. WORK AS REQUIRED TO TAP THE MAIN AND INSTALL THE SIDE SEWER.
3. CUT-IN TEES ARE PERMITTED WITH DISTRICT APPROVAL.

SIDE SEWER DETAIL

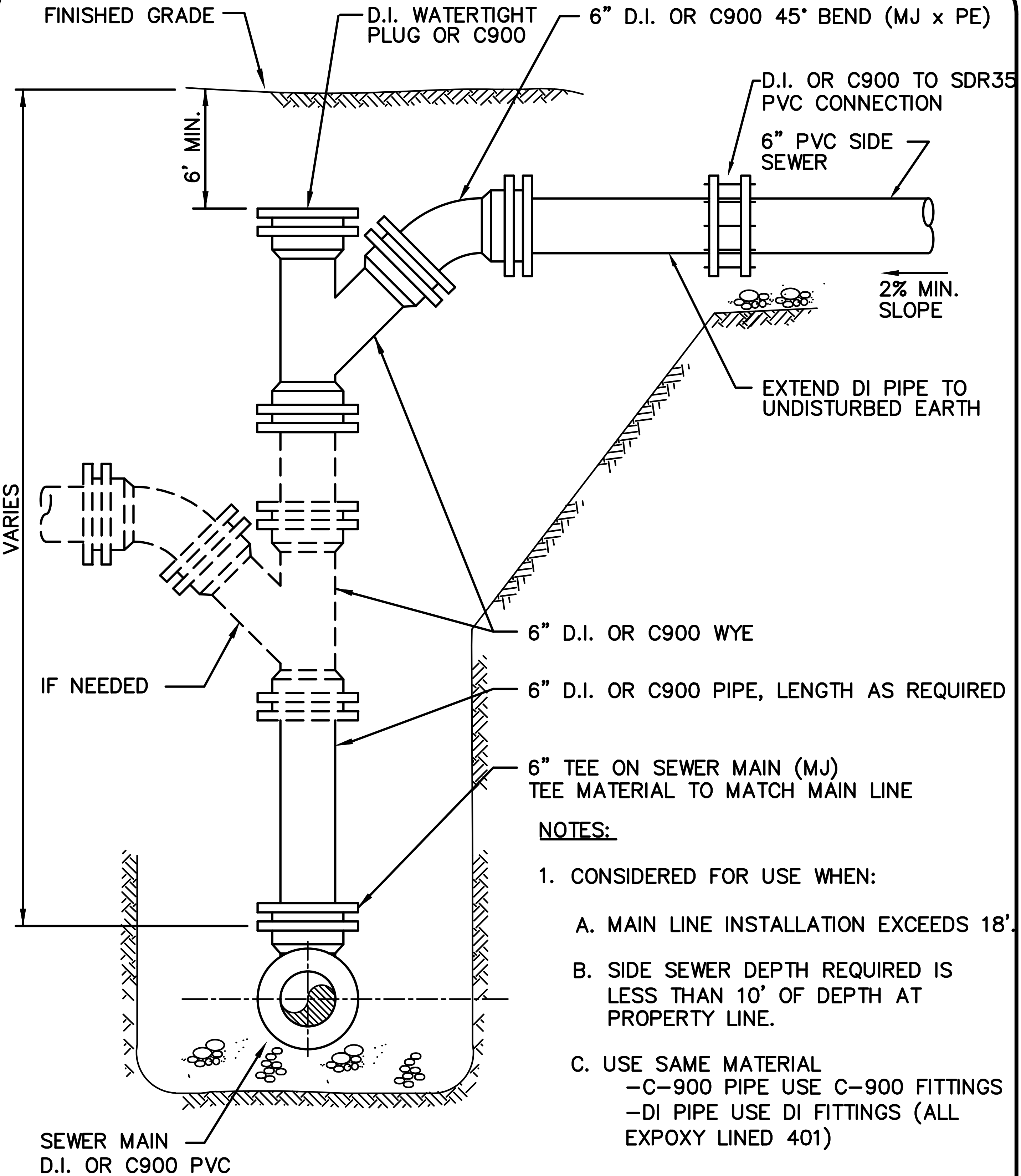
(CONNECTION TO EXISTING MAIN)

Silver Lake Water and Sewer District

STANDARD DETAILS

7/12

VI-S14



NOTES:

1. CONSIDERED FOR USE WHEN:

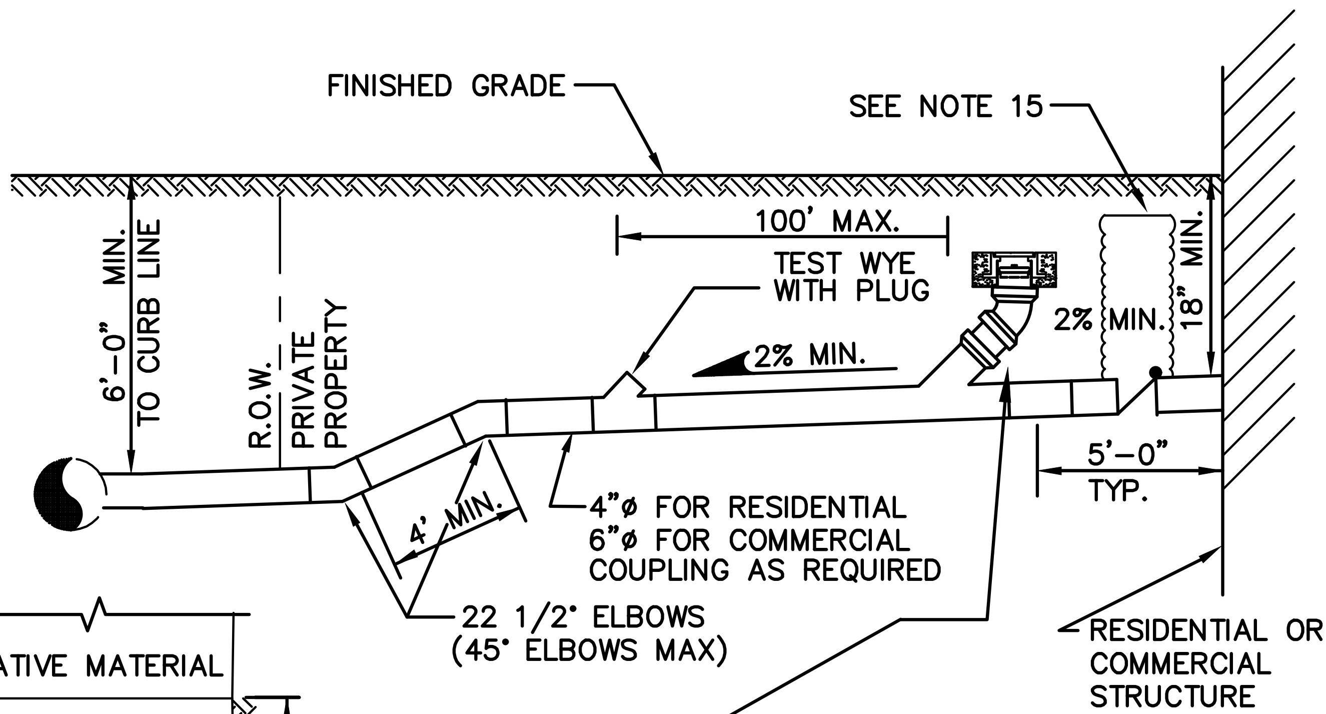
   A. MAIN LINE INSTALLATION EXCEEDS 18'.

   B. SIDE SEWER DEPTH REQUIRED IS LESS THAN 10' OF DEPTH AT PROPERTY LINE.

   C. USE SAME MATERIAL
      –C–900 PIPE USE C–900 FITTINGS
      –DI PIPE USE DI FITTINGS (ALL EXPOXY LINED 401)

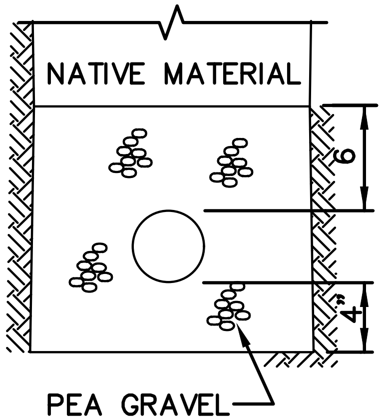
STANDING SIDE SEWER
(IF APPROVED BY DISTRICT)

Silver Lake Water and Sewer District
STANDARD DETAILS



CLEANOUT TO BE PLACED IN LANDSCAPE WHEN POSSIBLE.
IF CLEANOUT IS IN CONCRETE OR ASPHALT SURFACE, BRING TO GRADE AND PROVIDE:
CLEANOUT RING & COVER WITH 2 5/8" STAINLESS STEEL CAP SCREWS EAST JORDAN IRON WORKS 366102 OR OLYMPIC FOUNDRY MH5D/T
SEE DETAIL VI-S18

ELEVATION

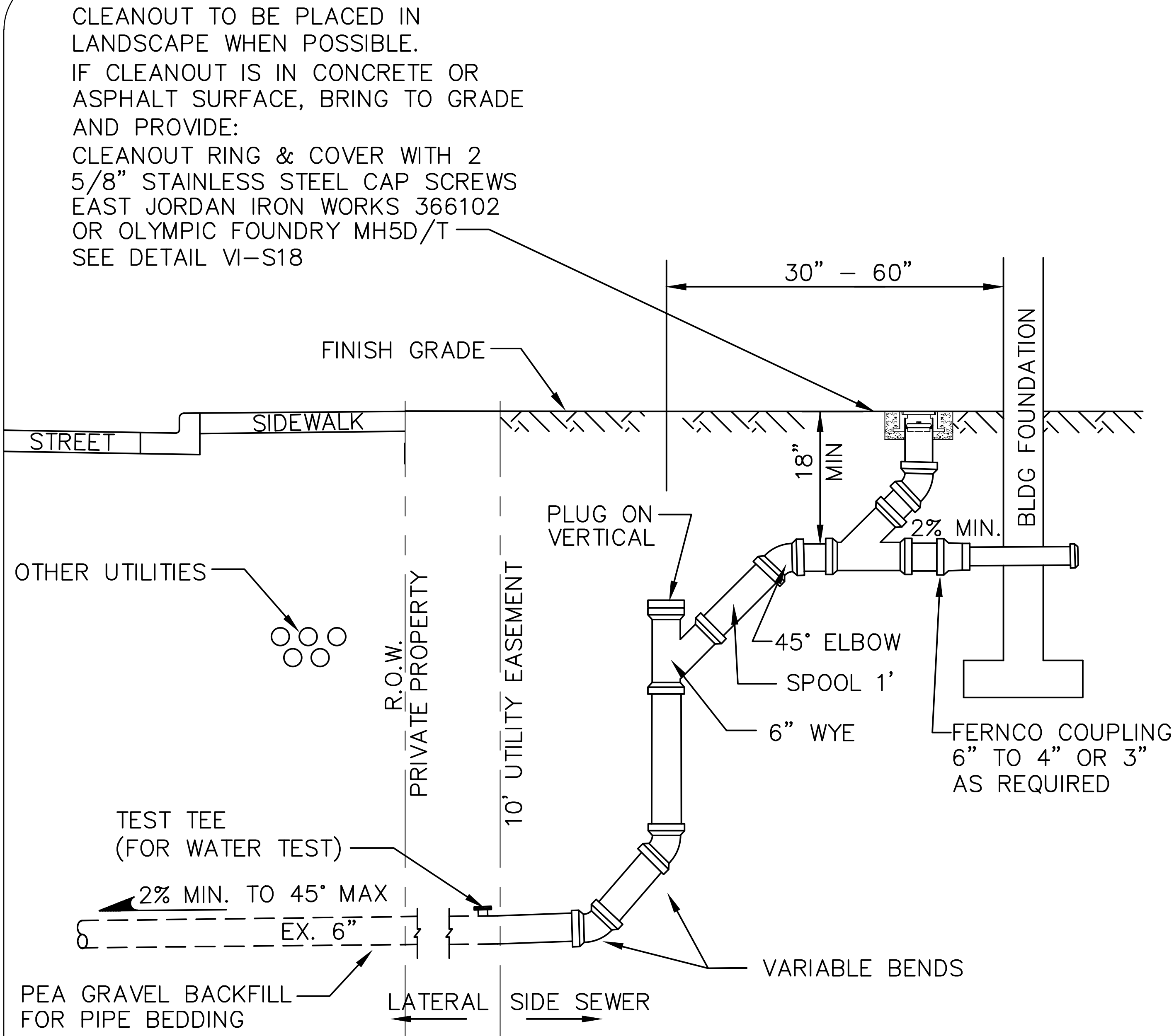


TRENCH SECTION

NOTES:

1. ELBOWS SHALL NOT BE GREATER THAN 45°. MINIMUM DISTANCE BETWEEN BENDS SHALL BE 4'.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100'
3. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" LIFTS
4. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
5. 18" MINIMUM COVERAGE OVER PRIVATE SIDE SEWER.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE SHALL BE ELBOW AND WYE.
7. 4" SEWER PIPE MINIMUM SIZE ON PRIVATE RESIDENTIAL PROPERTY. 6" SEWER PIPE MIN. SIZE ON COMMERCIAL PROPERTIES. 2% MINIMUM GRADE, 100% MAXIMUM (45°).
8. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE, COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
9. AS-BUILT DRAWING SHOWING LOCATION OF SIDE SEWER IN RELATION TO THE HOUSE IS REQUIRED AFTER INSTALLATION.
10. SEE V-S13 AND V-S14 FOR SIDE SEWER LATERAL REQUIREMENTS.
11. CONSTRUCTION IN RIGHT-OF-WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
12. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION.
13. PRE-TREATMENT SYSTEMS REQUIRE DESIGN SUBMITTAL STAMPED BY LICENSED ENGINEER.
14. PIPE TO BE BEDDED WITH PEA GRAVEL TO LIMITS SHOWN.
15. INSTALL SURFACE ACCESSIBLE BACKWATER VALVE ON ALL SIDE SEWERS WHERE POTENTIAL OCCURS FOR FLOW TO BACK INTO THE PRIVATE SERVICE. SEE V-S17 FOR DETAILS.

PRIVATE SIDE SEWER INSTALLATION



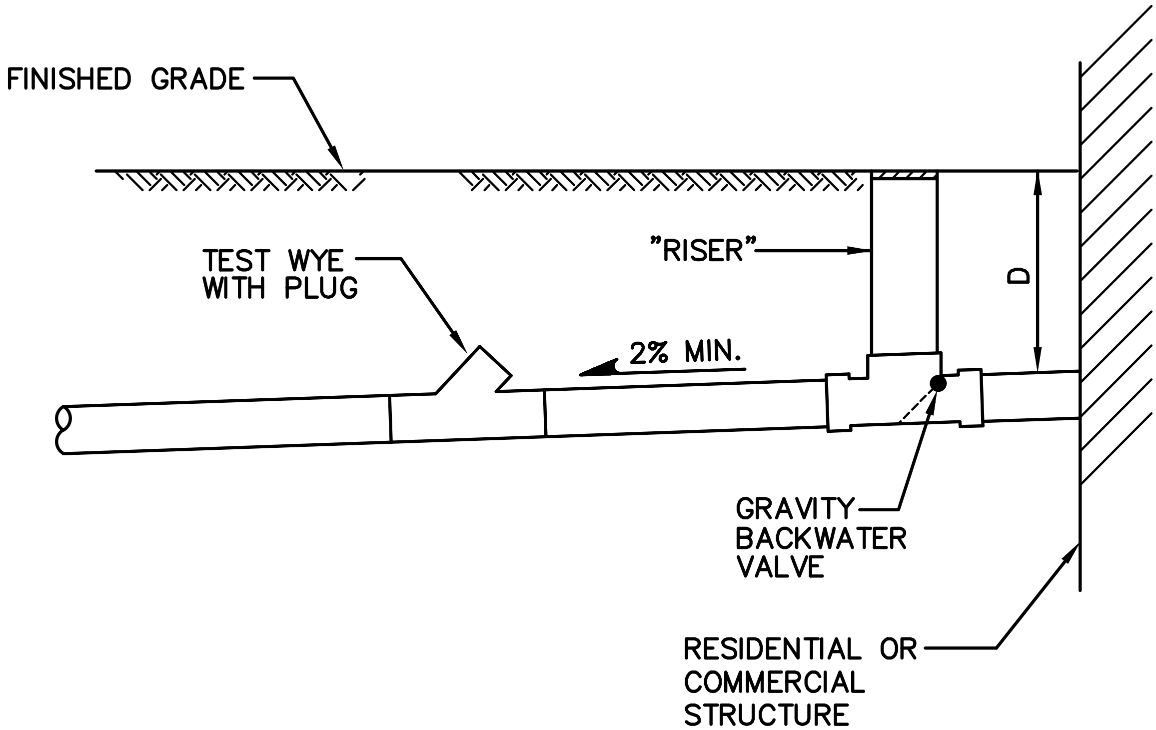
NOTES:

1. THIS METHOD MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE DISTRICT AND ONLY WHEN STANDARD SIDE SEWER INSTALLATION PER DWG V1–S16 IS NOT POSSIBLE BY EITHER:
   A. CUTTING THE SIDE SEWER STUB BACK, ENABLING THE PIPE TO BE INSTALLED AT 100%, (45°, 1:1), OR LESS SLOPE (2% MIN) TO THE BUILDING CONNECTION LOCATED 30" FROM FOUNDATION AT MINIMUM OF 18" DEEP, OR
   B. ROUTING THE SIDE SEWER PIPE TO EXTEND ALONG THE SIDE OF THE BUILDING TO DECREASE SLOPE.
2. CONTRACTOR OR BUILDER MUST CONTACT THE DISTRICT WHEN THE CLEANOUT AND CONCRETE COLLAR ARE FINISHED. THE SIDE SEWER WILL BE ACCEPTED AFTER THIS INSPECTION.

VERTICAL RISER PRIVATE SIDE SEWER INSTALLATION

Silver Lake Water and Sewer District

STANDARD DETAILS

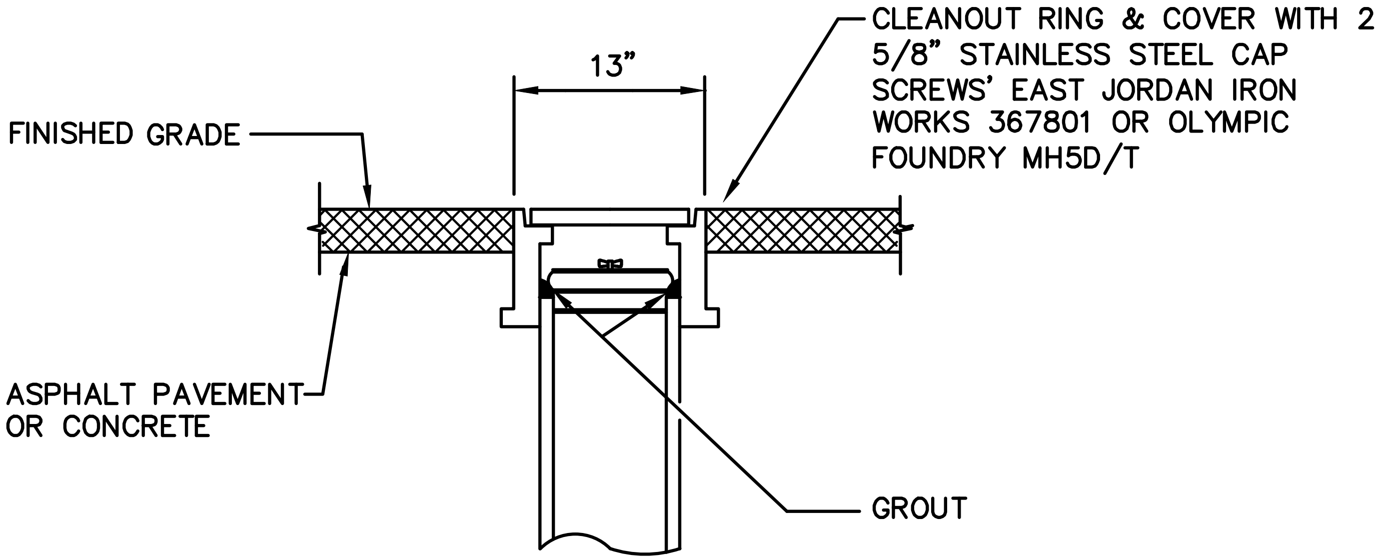


ELEVATION

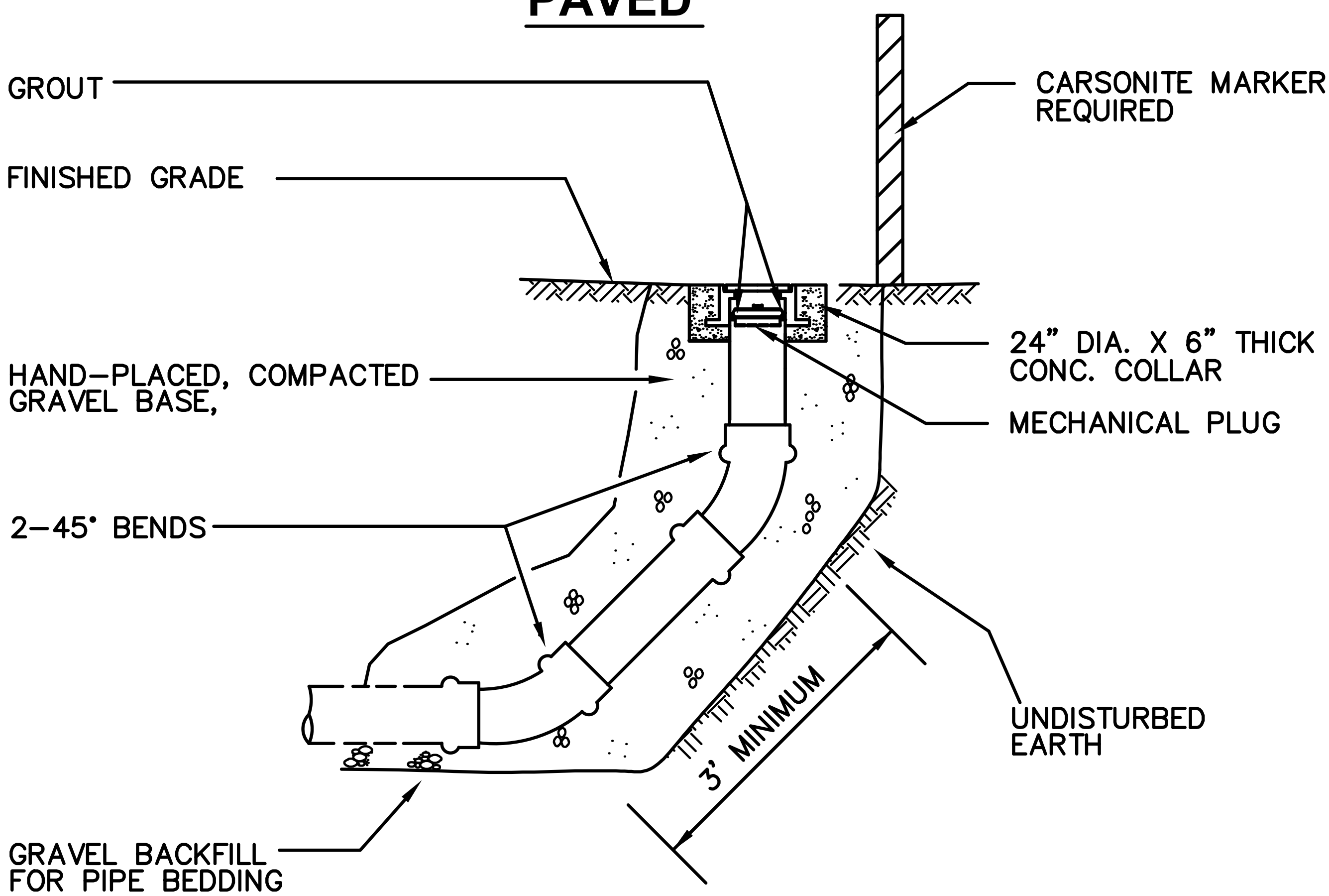
NOTES:

1. LOCATION TO BE APPROVED BY SILVER LAKE WATER AND SEWER DISTRICT, PRIOR TO INSTALLATION.
2. NDS, OR EQUAL, GRAVITY BACKWATER VALVE. AVAILABLE IN 4" AND 6" SIZES IN ABS OR PVC MATERIAL.
3. POINT ARROWS ON TOP IN DIRECTION OF FLOW.
4. INSTALL "RISER" WITH COVER TO GROUND SURFACE FOR EASY ACCESS TO VALVE. ACCESS BY:
   A. RISER PIPE IF DEPTH LESS THAN 18"
   B. METER BOX TYPE 2 IF DEPTH LESS THAN 3.5 FEET
   C. VAULT OR MANHOLE IF DEPTH GREATER THAN 3.5 FEET

PRIVATE BACKWATER VALVE



PAVED



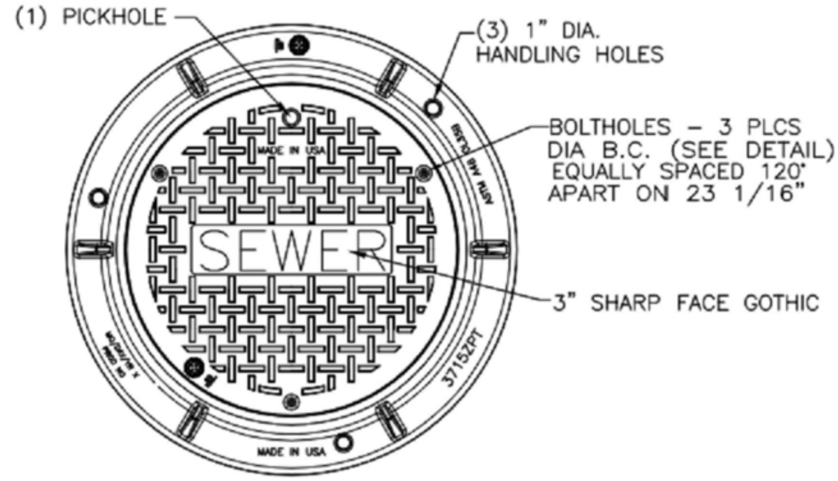
NON-PAVED

NOTE:

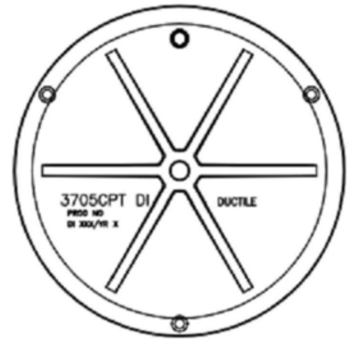
TO BE USED ON CLEANOUT ACCESS AT STRUCTURE

SIDE SEWER CLEANOUT

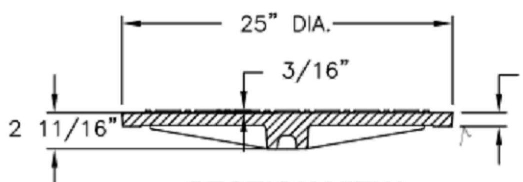
Silver Lake Water and Sewer District
STANDARD DETAILS



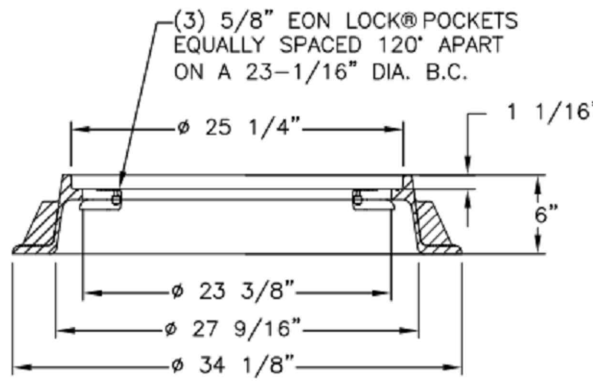
PLAN VIEW



BOTTOM VIEW



SECTION VIEW



SECTION VIEW

GENERAL NOTES:
MANHOLE RING AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL 00371564 OR EQUAL.

COVER NOTES:

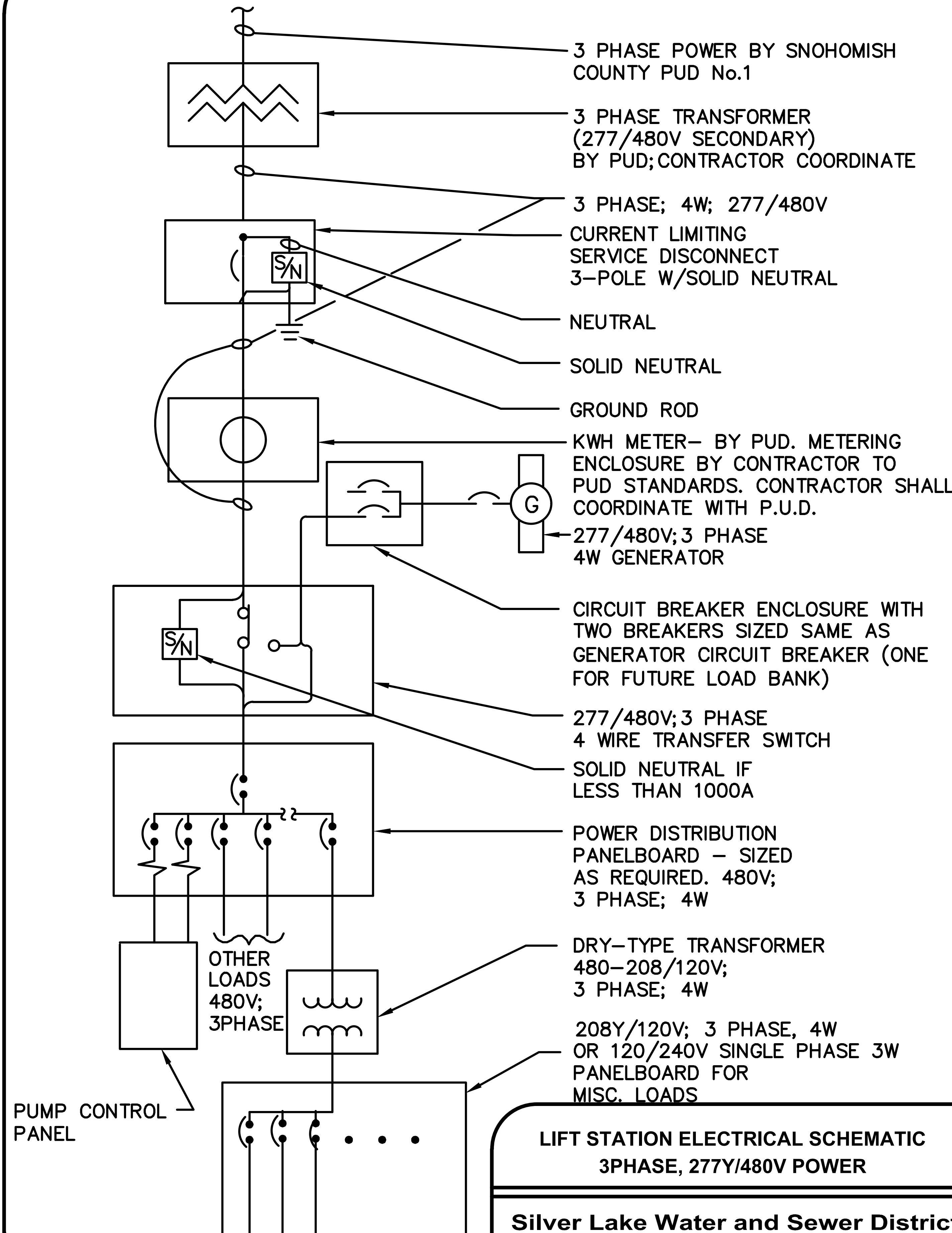
1. USE WITH THREE LOCKING BOLTS 5/8"–11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 3" LONG. DRILL HOLES SPACED 120°,TO MATCH HOLES IN RING.
2. COVER MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80–55–06.
3. SHALL CONFORM TO SEC. 9–05.15 OF THE STANDARD PECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF COVER IS 150 LBS.
5. RATING – H30.
6. MUST MEET (AASHTO) M306 SPECIFICATIONS AND HAVE REPLACEABLE LOCK DOWN NUTS.

RING NOTES:

1. DRILL AND TAP THREE 5/8"–11 NC HOLES THROUGH RING AT 120°.
2. RING MATERIAL IS GREY IRON, ASTM A–48 CLASS 30.
3. SHALL CONFORM TO SEC. 9–05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF RING IS 215 LBS.
5. RATING – H30.

STANDARD MANHOLE FRAME AND COVER

LIFT STATIONS

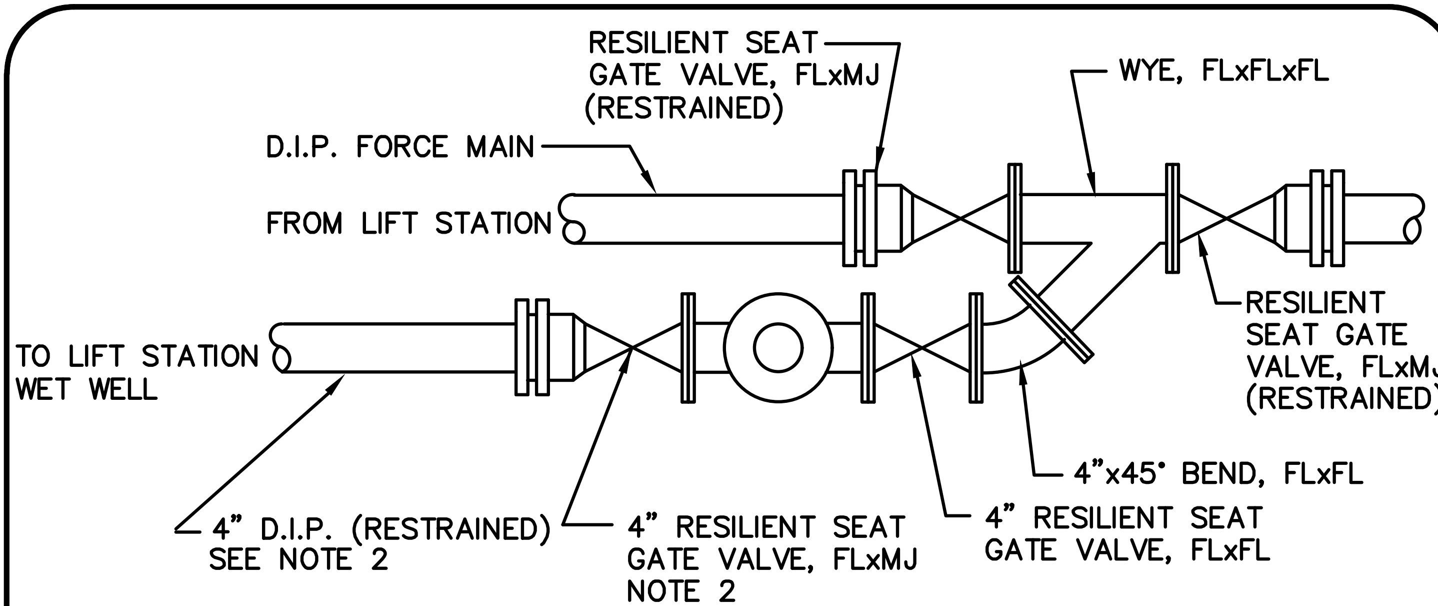


LIFT STATION ELECTRICAL SCHEMATIC
3PHASE, 277Y/480V POWER

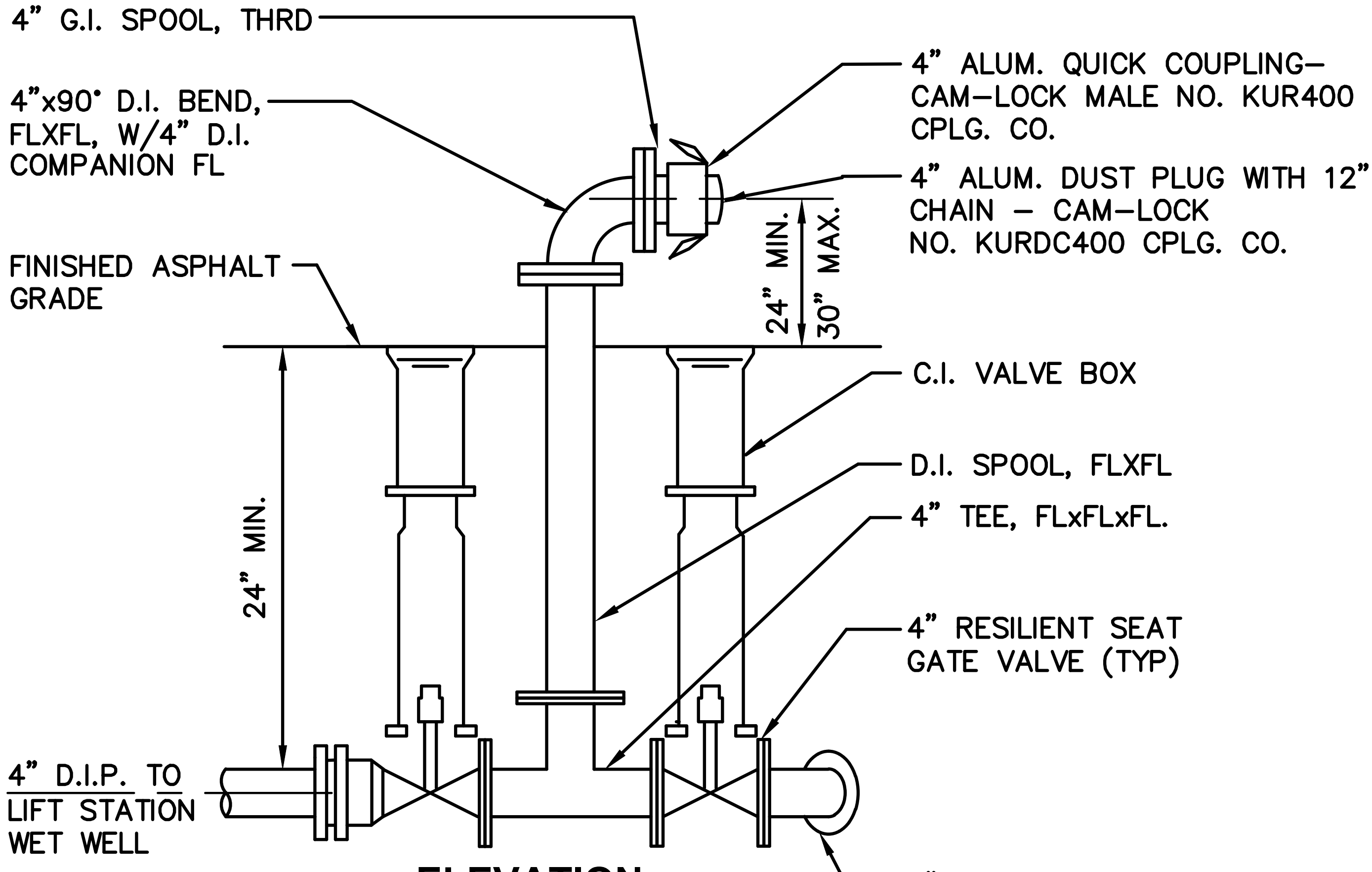
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-LS1



PLAN



ELEVATION

NOTES:

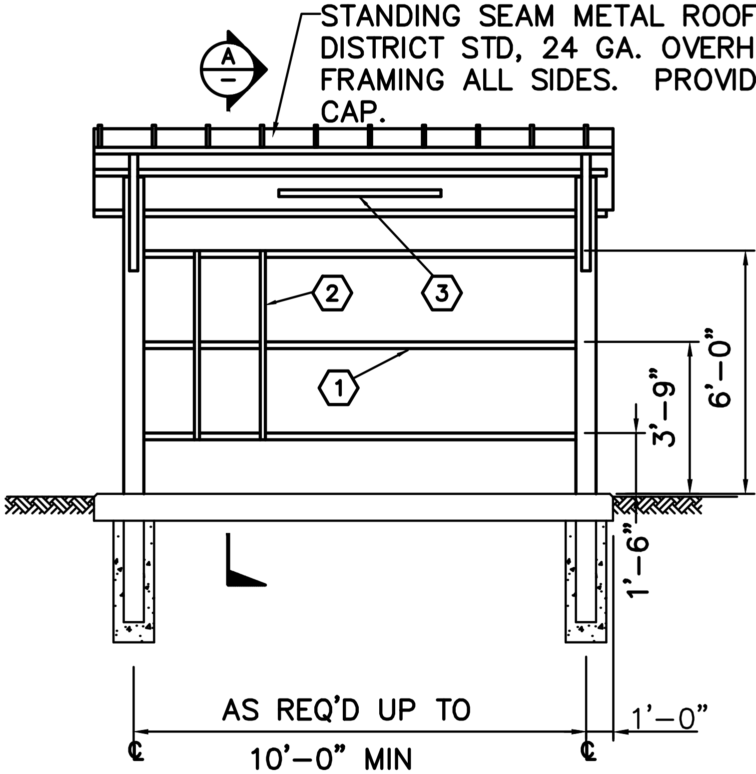
1. LOCATE AND ORIENT PUMP CONNECTION AS DIRECTED BY SLWSD.
2. PIPE AND FITTINGS TO BE ADJUSTED BASED ON DISTANCE TO WET WELL (FLxPE, OR FLxMJ RESTRAINED)
3. 4" SIZE SHOWN, LARGER SIZE MAY BE REQUIRED TO MEET STATION CAPACITIES.

BYPASS PUMP CONNECTION

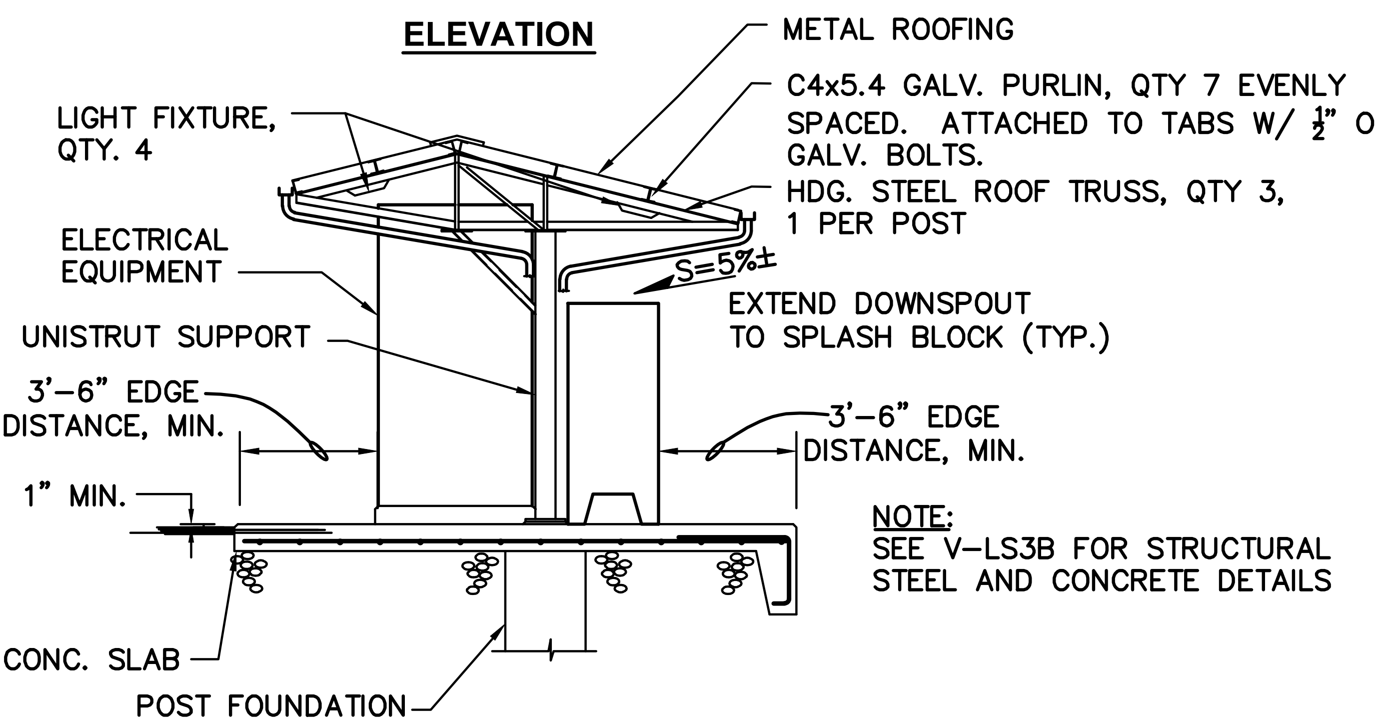
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-LS2



ELEVATION



NOTE:
SEE V-LS3B FOR STRUCTURAL STEEL AND CONCRETE DETAILS

SECTION A

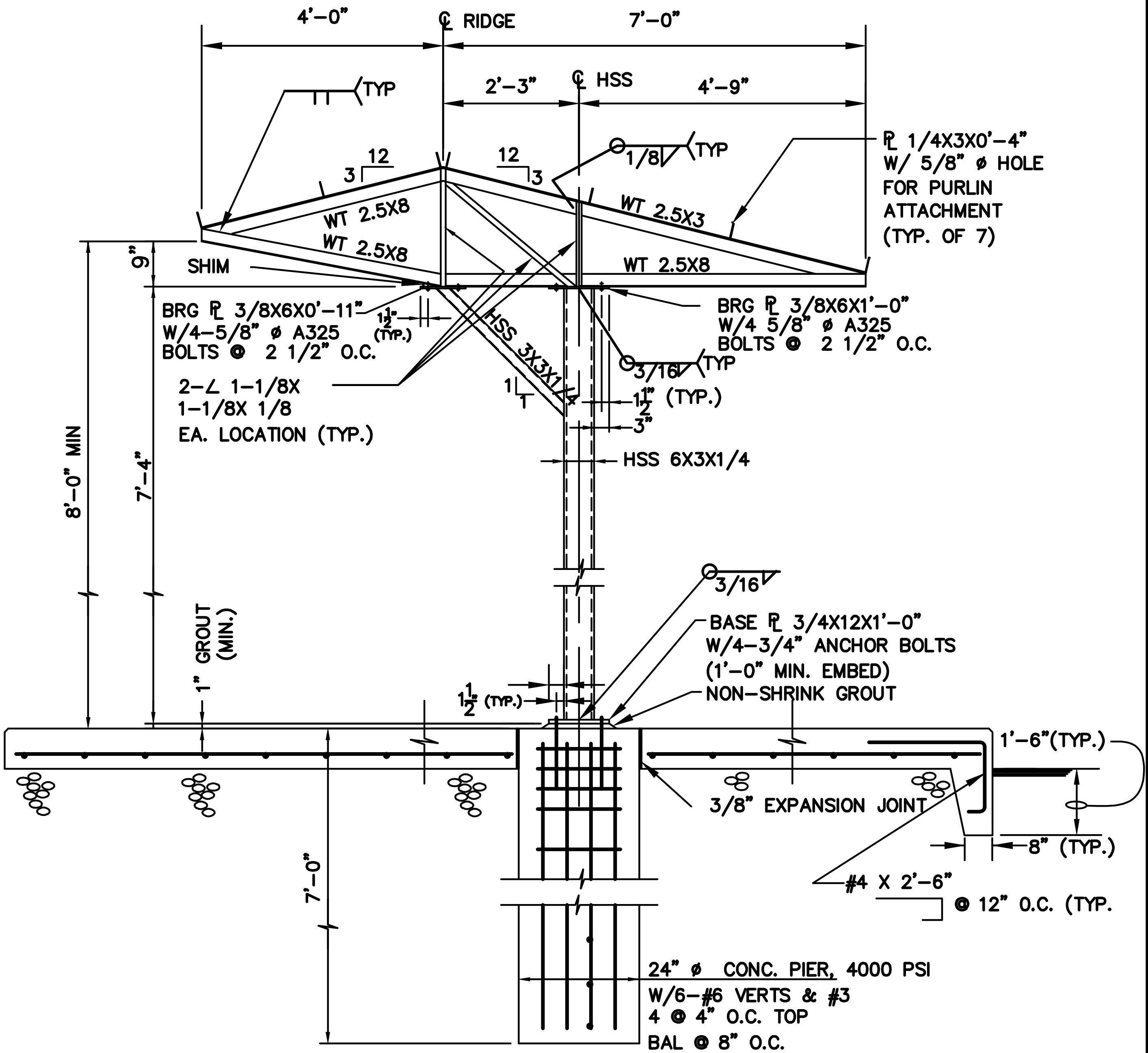
1. C6x8.2 GALV. CHANNEL RAILS, QTY. 3 (TYP.). ATTACH TO L3x3 CLIP ANGLES W/ 1/2"ø GALV. BOLTS.
2. 16 GAUGE GALV. UNISTRUT SUPPORT (TYP.), AS REQUIRED.
3. LIGHT FIXTURE, QTY. 2 BETWEEN EA. PAIR OF COLUMNS (1 EA. FRONT & BACK)

ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-LS3A



NOTE : HOT DIP GALVANIZE TRUSS AND POST ASSEMBLIES AFTER FABRICATION.

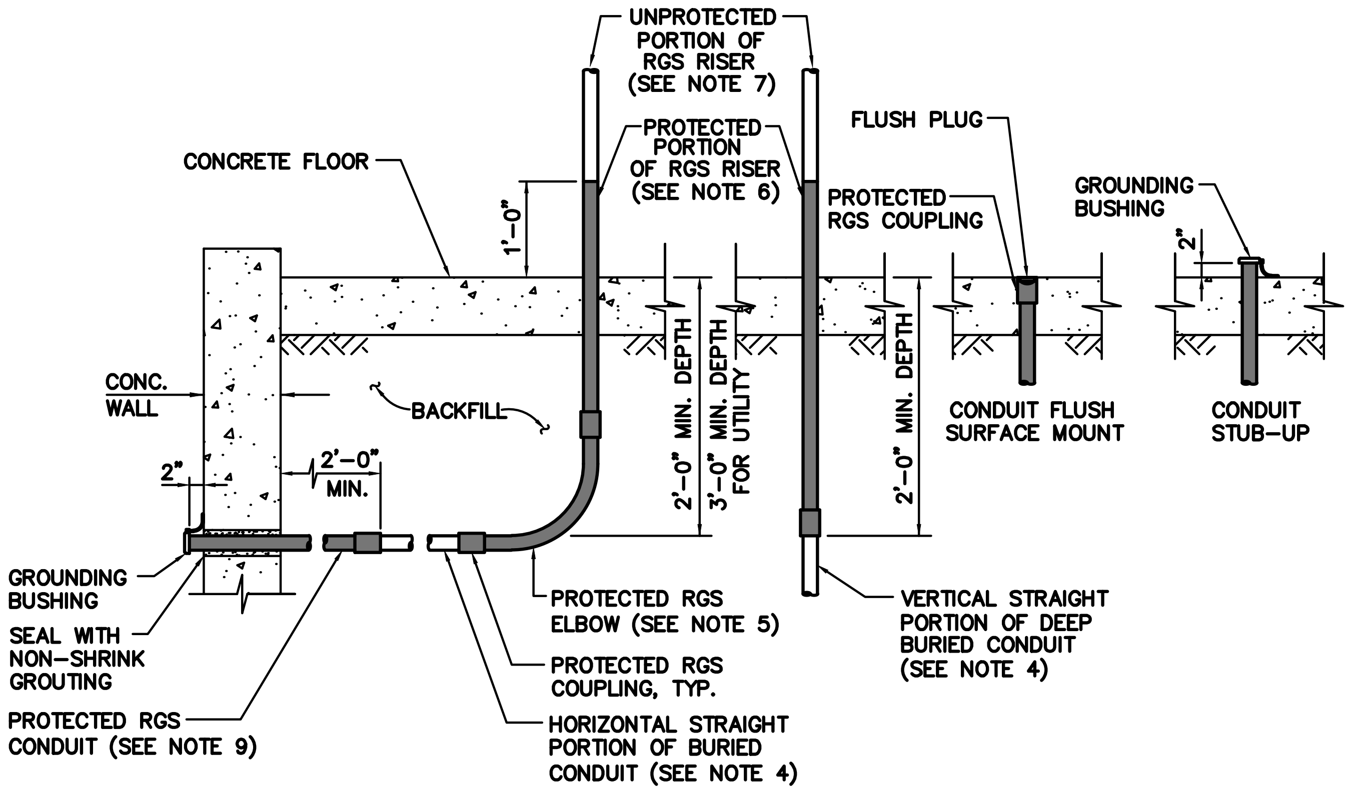
SECTION A

ROOF STRUCTURE FOR ELECTRICAL ENCLOSURE

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

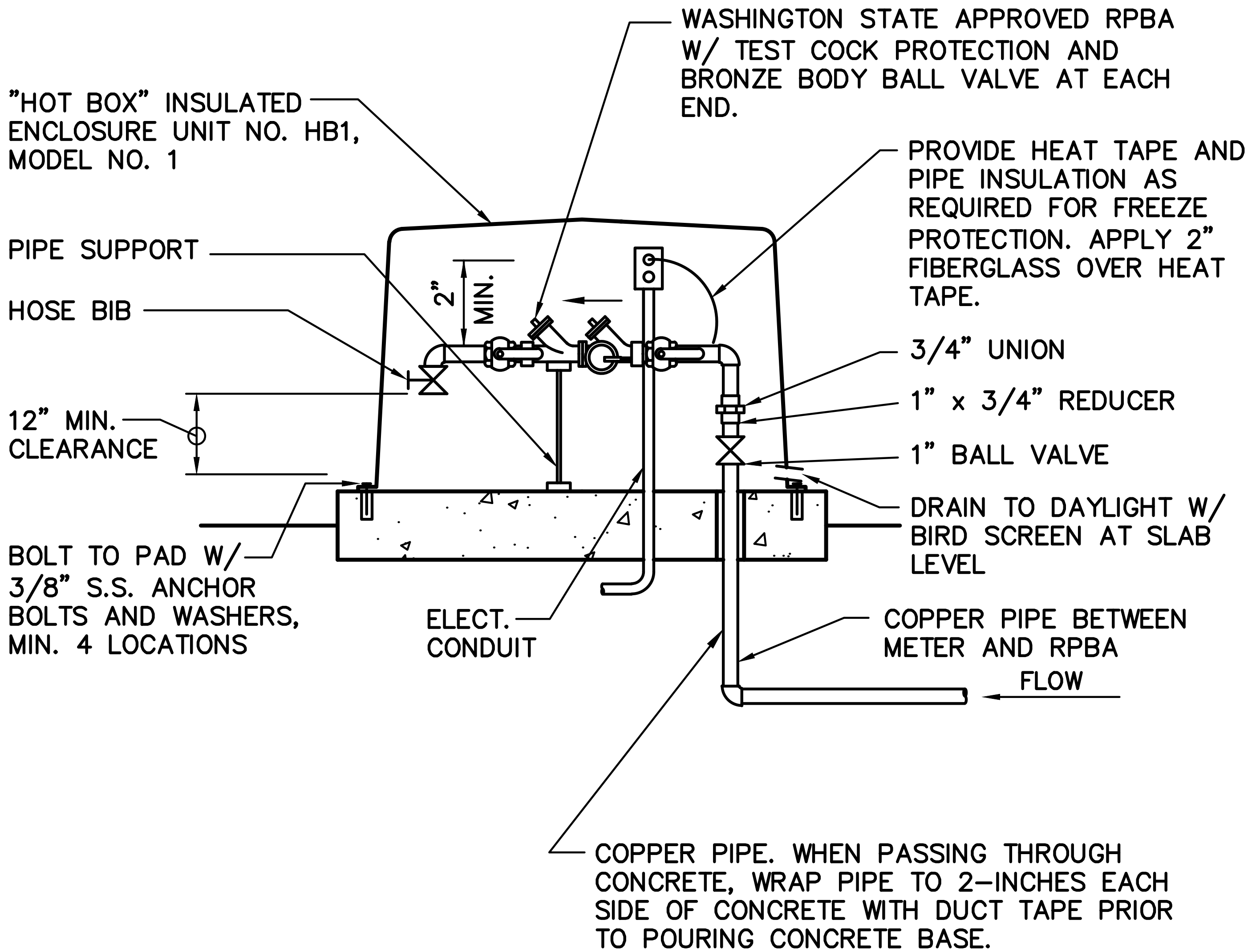
VI-LS3B



NOTES:

1. IN ALL CASES, CONDUIT INSTALLATIONS SHALL FOLLOW SPECIFICATION SECTION 16130.
2. ALL SHADED COMPONENTS IN THIS DETAIL ARE PROTECTED RGS CONDUITS, FITTINGS, OR COUPLINGS.
3. ALL RGS COUPLINGS, FITTINGS, AND PORTIONS OF RGS CONDUIT UNDERGROUND, IN CONCRETE, AND WITHIN 12-INCHES OF EXISTING GRADE SHALL BE PROTECTED WITH 20 MILS (MINIMUM) OF PVC COATING.
4. BURIED STRAIGHT LENGTHS OF CONDUIT MAY BE RGS OR RNC AS DEFINED BY THE CABLE AND CONDUIT SCHEDULE.
5. ALL ELBOWS OR BENDS SHALL BE RGS, WHETHER UNDERGROUND, IN CONCRETE, OR ABOVE GROUND.
6. ALL RISERS THAT EXIT GRADE SHALL BE RGS.
7. ALL EXPOSED CONDUITS SHALL BE RGS.
8. UNDERGROUND PORTIONS OF DEEP RNC RISERS SHALL CONVERT TO PROTECTED RGS CONDUIT WITH 24-INCHES OF DEPTH TO GRADE.
9. CONDUITS PENETRATING VERTICAL WALLS OF BURIED VAULTS OR BELOW-GROUND STRUCTURES SHALL BE RGS THROUGH THE WALL AND A MINIMUM OF 24-INCHES BEHIND THE WALL UNDERGROUND. IF THE CONDUIT IS TO STUB-OUT INSIDE THE WALL, THE STUB-OUT LENGTH SHALL BE 2-INCHES.
10. ALL UNDERGROUND CONDUIT SHALL BE INSTALLED WATERTIGHT OVER THEIR ENTIRE LENGTH. WHERE THESE CONDUITS TERMINATE INSIDE THEIR ASSOCIATED JUNCTION BOXES, PLUG THE ENDS OF THE CONDUITS TO ELIMINATE THE POSSIBILITY OF WATER ENTERING THE JUNCTION BOXES FROM GROUND WATER. ALL CONDUIT PENETRATIONS SHALL BE MADE WITH NON-SHRINK GROUT.

UNDERGROUND CONDUIT DETAIL



NOTES:

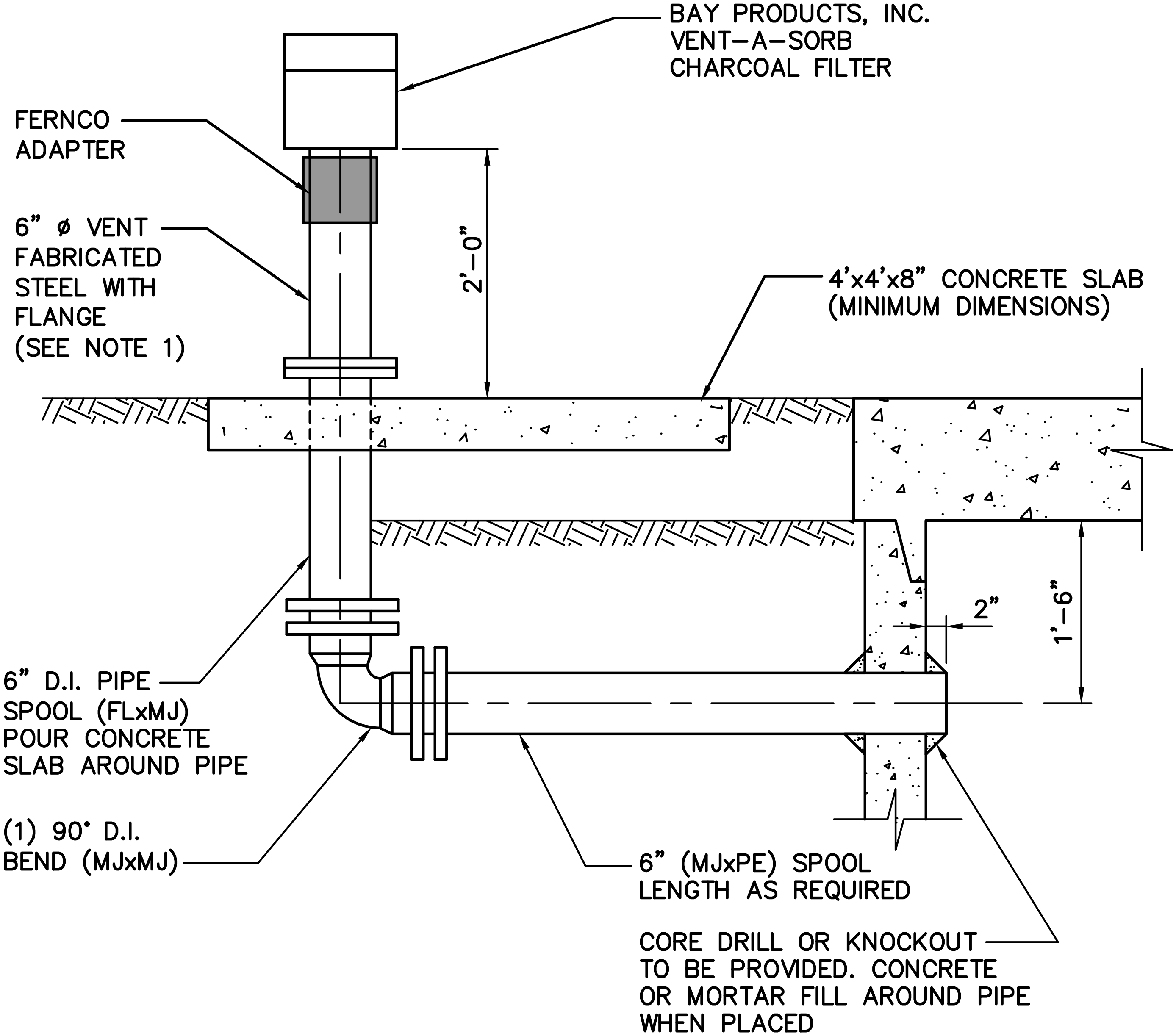
1. CONCRETE TO BE 2500 PSI (MINIMUM) MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
4. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
5. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
6. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.

3/4" RPBA BACKFLOW ASSEMBLY

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-LS5



NOTES:

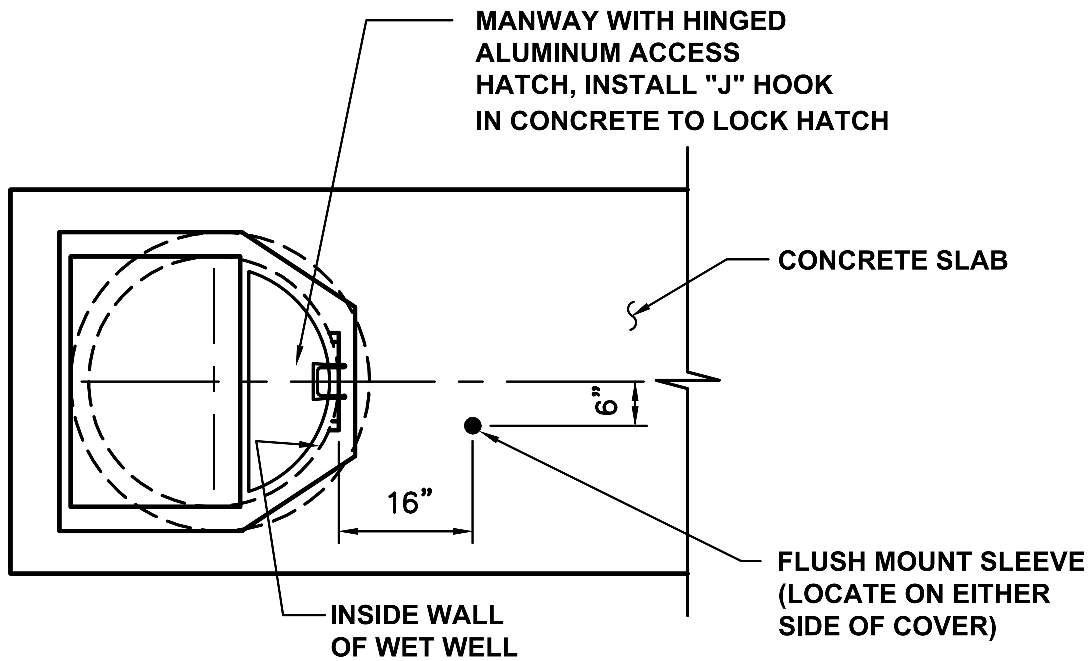
1. HOT DIP GALVANIZE VENT "CANE" AND FLANGE AFTER FABRICATION. AFTER GALVANIZING VENT, PAINT WITH TWO COATS OF KELLY MOORE 6100–855, MACHINE GREEN, OR AS DIRECTED BY THE DISTRICT.

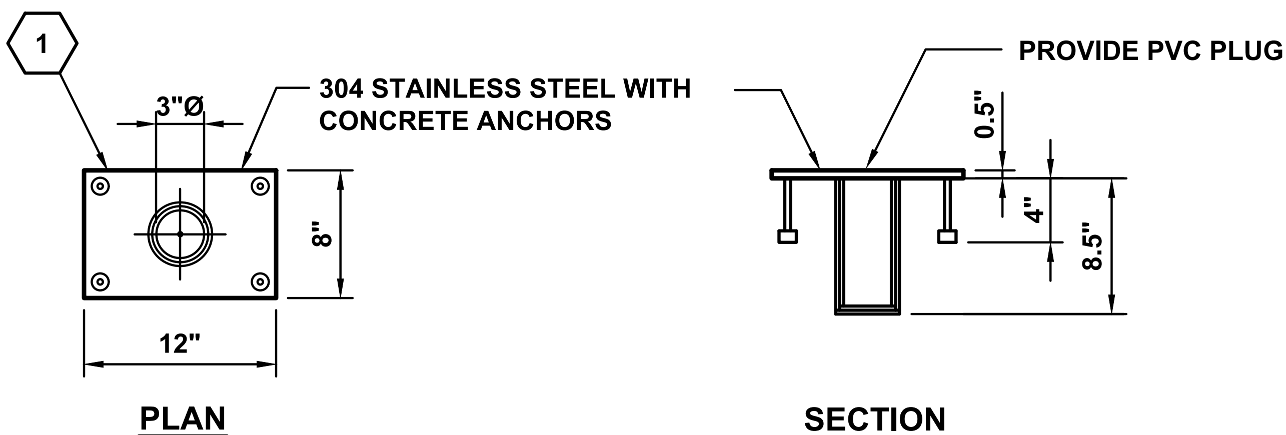
VENT DETAIL

Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

VI-LS6





FLUSH MOUNT SLEEVE

NOT TO SCALE

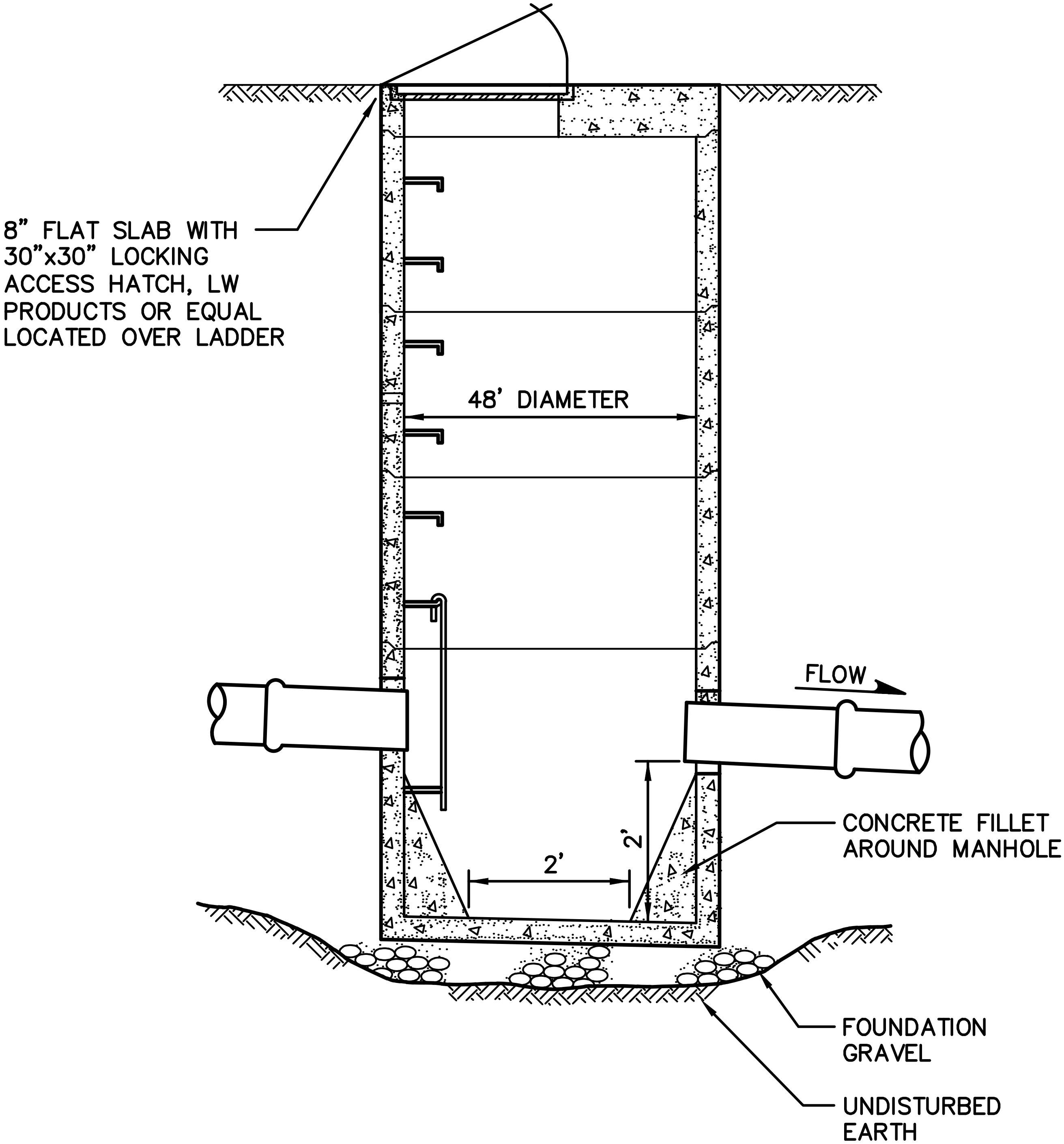
1 FLUSH MOUNT SLEEVE MODEL 85-12828 WITH PLUG MODEL 8510827
BY UNIQUE CONCEPTS LTD.

FLUSH MOUNT SLEEVE

Silver Lake Water and Sewer District
STANDARD DETAILS

5/14

VI-LS7



NOTES:

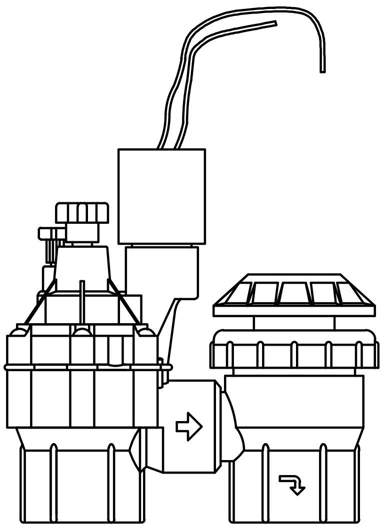
1. SEE STANDARD MANHOLE FOR ADDITIONAL CALLOUTS ON VI–S5.
2. ACCESS HATCH AND MANHOLE STEPS LOCATED AT 45° TO THROUGH FLOW

ROCK CATCH MANHOLE

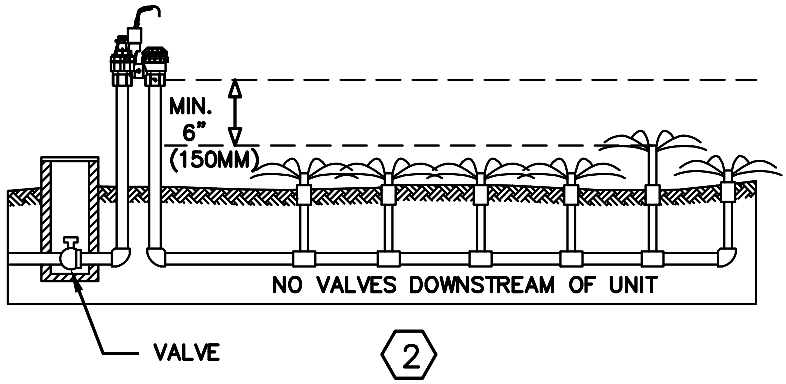
Silver Lake Water and Sewer District
STANDARD DETAILS

7/12

CROSS-CONNECTION CONTROL



1



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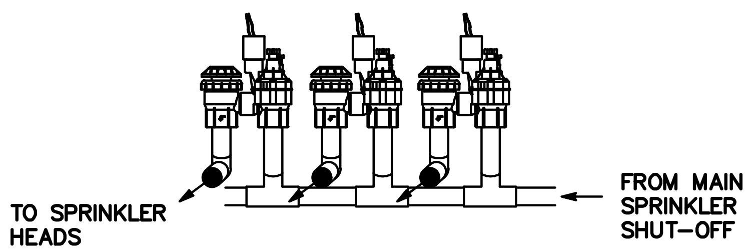


3

(1) AUTOMATIC ANTI-SIPHON CONTROL VALVE

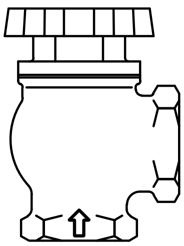
(2) SHOWN IN SINGLE ZONE CONFIGURATION

(3) SHOWN IN MANIFOLD CONFIGURATION

NOTES:

1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. NO DOWNSTREAM VALVES ALLOWED.
3. USE 1 AUTOMATIC ANTI-SIPHON CONTROL VALVE PER ZONE.
4. INSTALL AT LEAST 6" (150MM) ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
5. NEVER INSTALL BELOW GRADE.
6. MUST BE PROTECTED FROM FREEZING.
7. SHALL NOT BE MODIFIED IN ANY WAY.
8. SHALL NOT BE SUBJECT TO BACKPRESSURE.
9. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
10. MAY NOT BE SUBJECT TO MORE THAN 12 HOURS OF CONTINUOUS PRESSSURE.

AUTOMATIC ANTI-SIPHON CONTROL VALVE



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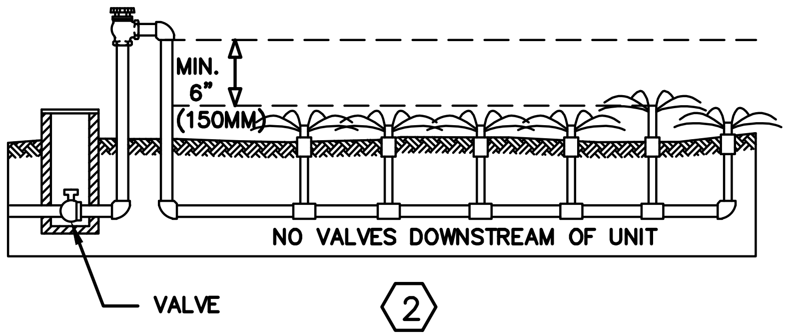


2

1 ATMOSPHERIC VACUUM BREAKER

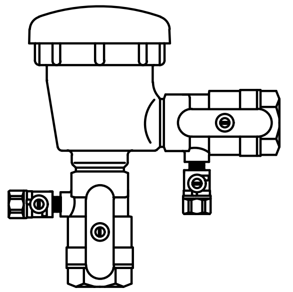
2 SHOWN IN SINGLE ZONE CONFIGURATION

3 CAN BE USED IN MANIFOLD CONFIGURATION (SEE CC–W1)

NOTES:

1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. NO DOWNSTREAM VALVES ALLOWED.
3. USE 1 ATMOSPHERIC VACUUM BREAKER PER ZONE.
4. INSTALL AT LEAST 6" (150MM) ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
5. NEVER INSTALL BELOW GRADE.
6. MUST BE PROTECTED FROM FREEZING.
7. SHALL NOT BE MODIFIED IN ANY WAY.
8. SHALL NOT BE SUBJECT TO BACKPRESSURE.
9. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
10. MAY NOT BE SUBJECT TO MORE THAN 12 HOURS OF CONTINUOUS PRESSSURE.

ATMOSPHERIC VACUUM BREAKER



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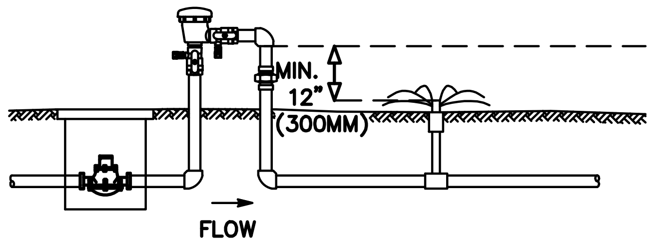

2

1 PRESSURE VACUUM BREAKER

2 MAY BE USED WITH DOWNSTREAM VALVES & MULTIPLE ZONES

NOTES:

1. SHALL BE INSPECTED BY SLWSD UPON INSTALLATION.
2. SHALL BE TESTED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER
3. INSTALL AT LEAST 12" (300MM) ABOVE HIGHEST SPRINKLER IN RESPECTIVE ZONE.
4. NEVER INSTALL BELOW GRADE.
5. MUST BE PROTECTED FROM FREEZING.
6. SHALL NOT BE MODIFIED IN ANY WAY.
7. MAY NOT BE INSTALLED ON SYSTEMS UTILIZING COMPRESSED AIR WINTERIZATION FITTING.
8. ASSEMBLY MUST BE FROM THE MOST RECENT EDITION OF "BACKFLOW PREVENTION ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE" (D.O.H. PUB. 331-137) OR APPROVAL BY THE FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA.

PRESSURE VACUUM BREAKER

APPENDIX

DEVELOPER EXTENSION AGREEMENT

SILVER LAKE WATER DISTRICT
APPLICATION AND AGREEMENT TO CONSTRUCT
EXTENSION TO DISTRICT SYSTEM

Project: ______________________________

Developer: ______________________________

The undersigned, "Developer" (also referred to as "Owner") herein, hereby makes application to the Commissioners of Silver Lake Water District, "District" herein, for permission to construct and connect a private "Extension" to the District's existing system as herein provided. The term "Extension" shall apply herein whether Developer is extending the District water system or the District sewer system or both systems. If this application is accepted, the undersigned, in consideration of the mutual promises and covenants herein contained, agrees to the terms and conditions of this Developer Extension Agreement as follows:

1. Location of Extension.

Owners and Developers of property acknowledge and agree connection to District utility systems may be contingent on construction and extension of utility systems by other private parties or by the District. District does not warrant infrastructure will be available to this project in a timely manner. Owners and Developers undertaking construction of onsite or off site utility facilities prior to District system being extended to allow connection do so at their own risk.

Developer knows and understands connection of Developer's extension to District water and sewer systems is likely to be subject to payment for reimbursement of fair pro rata share of costs of construction of "system area facilities" constructed by others that benefit Developer's project. Such "reimbursement payments" will be determined in the sole discretion of the District Board of Commissioners. Such "reimbursement payments" are due and payable to the District at the time Developer's extension is accepted by the District. On receipt of said payments, the District will make payments to others who have constructed said "system area facilities."

A. Water

The proposed water system extension shall be installed in streets and other approved rights-of-way and/or easements and shall be for the use and benefit of the property hereinafter described, which property is owned by Developer and/or other owners for whom Developer is acting as agent. Any such owners have joined in this application and are designated on the signature page hereof.

B. Sewer

The proposed sewer system extension shall be installed in streets and other approved rights-of-way and/or easements and shall be for the use and benefit of the property hereafter described, which property is owned by Developer and/or other owners for whom Developer is acting as agent. Any such owners have joined this application and are designated on the signature page hereof.

C. Owner's Property

The legal description of the owner's real property upon is attached hereto as Exhibit A. Sewer and water facilities contemplated under this agreement will be constructed on said property or on easements or other property to be approved and accepted by the District. The Developer shall provide to the District a Vicinity Map with Project location along with the legal description.

2. Warranty of Authority.

Developer and any additional owners warrant that they are the owners of the property described in this Agreement. Developer shall upon request of District provide a title report to District establishing that the parties executing this Agreement are the owners of all the real property described herein.

3. Description of Extension.

A. Water

The Extension shall consist of approximately ________ lineal feet of water pipe and appurtenances and shall be installed in accordance with this Agreement and with the Plans, General Conditions and Specifications provided by District at the cost of Developer as hereinafter provided or in accordance with such Plans as Developer's Engineer may prepare in conformity with District General Conditions, Specifications, and Standard Details, and approved by District.

B. Sewer

The Extension shall consist of ______________________________________ and __________ lineal feet of sewer pipe and appurtenances and shall be installed in accordance with this Agreement and with the Plans, General Conditions, and Specifications provided by District at the cost of Developer as hereinafter provided or in accordance with such Plans as Developer's Engineer may prepare in conformity with District General Conditions, Specifications, and Standard Details, and approved by District.

4. Preparation of Plans by Developer's Engineer.

Developer shall have the option of retaining its own engineer to prepare the Plans for the extension according to District Specifications or to have the District Engineer prepare the Plans and reimburse District for the cost thereof according to this agreement. If Developer elects to retain its own engineer for preparation of the Plans, then the following requirements apply:

(a) Developer shall obtain District approval of Developer's Engineer.

(b) Prior to preparation of the Plans, Developer shall:

(1) Obtain official preliminary plat approval for Developer's project using a minimum scale of one (1) inch equals fifty (50) feet;

(2) File with the District the road and storm sewer plans and profiles for the project; and

(3) File with the District a contour map of the project with contour intervals of five (5) feet or less and using a scale of one (1) inch equals fifty (50) feet. All data to be based on USCGS data.

(4) Should a Re-Imbursement Agreement be requested, file with the District a plan that shows all the properties and area that can be served by utility extensions to the District's system and the documentation necessary for the District to determine the viability of any reimbursement agreement.

(c) Upon completion of (b) above, at the election of the District, a pre-design meeting shall be held with District and with Developer and Developer's Engineer in attendance. It is expected that this meeting will occur approximately ten (10) working days after completion of (b) above. It is the obligation of Developer to arrange for the conference and the attendance of concerned parties.

(d) At the pre-design meeting, the Developer's Engineer shall submit to District a conceptual plan for the utility development of the project.

(e) Upon preliminary review of the conceptual plan, Developer's Engineer shall prepare and submit to the District a preliminary design and Plan for review and approval by the District. Water and sewer plans shall be on separate sheets. Plans shall include a general vicinity map depicting the project location. The District shall have the right to require changes in the preliminary design and Plan as may be deemed necessary. All designs and plans prepared by Developer's Engineer shall be prepared in accordance with the District's Standard Details for Design.

(f) Upon approval of the preliminary design and Plan by the District, Developer's Engineer shall prepare a proposed final Plan and submit three (3) copies of the proposed final Plan, together with an electronic file of the Plans on AutoCAD Release 13 or 14, or as updated to be compatible with the District's system, to the District for review. Upon receipt of the proposed final Plan, District shall have the right to require such changes to the proposed final Plan as may be deemed necessary.

(g) Upon completion of all required changes to the final Plan, the District will consider the final Plan for approval. The District shall have the right to approve, reject, or require changes to the final Plan as may be deemed necessary.

(h) Upon approval of the final Plan by the District, the District Manager, or designee, will indicate his approval of the Plan on the original Mylar Drawings.

(i) Upon approval of the original Mylar Plan Drawings, the Developer's Engineer shall submit copies of the approved Plan so that the District can procure the Snohomish County right-of-way construction permits for the Plan as may be necessary. The Developer's Engineer shall notify the District of any permits required. The Developer shall be responsible for procuring all other necessary and applicable permits. Should changes to the Plan be required in order to receive said permits and approvals, Developer's Engineer shall make all changes as required.

5. Warranties of Developer -- Water and Sewer

(a) Before the commencement of work, Developer shall agree to District approved plans and specifications and a schedule of work. Developer shall reimburse District for all costs of plan review, inspection, and other work on this project done by District staff or consultants.

(b) All public and private property which is disturbed by the construction of the above described improvements shall be restored to as good a condition as it was prior to the commencement of the construction.

(c) All design and all work shall be in conformance with requirements of the District, the State of Washington Department of Ecology, any and all Endangered Species Act Regulations and regulations or controls or conditions of any other governmental agency charged with the responsibility of permitting, inspecting, accepting or approving design and construction of these improvements.

(d) **INSURANCE REQUIREMENTS, SUMMARY OF COVERAGE & INDEMNITY:** The Developer shall carry liability and property damage insurance covering all work during Project construction, including that done by the Developer's Contractor and the Contractor's subcontractors. This insurance shall also protect the District from any contingent liability prior to Project acceptance.

The Developer shall obtain from an insurance company, with have an A.M. Best rating of "AVII" or better approved by the Insurance Commissioner of the State of Washington pursuant to Title 48 RCW, commercial general liability and automobile liability insurance against claims to the Developer, the District and its elected and appointed officials, officers, employees, agents and volunteers for injury to person or property which may arise from any act or omission by anyone directly or indirectly employed by the Developer from or relating to the performance, supervision, or inspection of the work. The insurance policy(s) shall specifically name and include the District and its elected and appointed officials, officers, employees, agents and volunteers as additional insured's under such policy(s) with regards to damages and defense of claims arising from: (a) activities performed by or on behalf of the Developer; (b) products and completed operations of the Developer, or (c) premises owned, leased or used by the Developer for the work proposed under this Developer Extension Agreement. Proof of the existence of such insurance shall be provided to the District in a form acceptable to the District prior to the Pre-Construction Meeting.

The Developer shall not begin work under the agreement or under any special condition until all required insurance has been obtained and until such insurance has been reviewed and accepted by the District. The Developer shall file with the District either a certified copy of all insurance policies or a certificate of insurance with the endorsements in the form included herein as are necessary to comply with these specifications.

The minimum limits of coverage shall be as follows:

General Aggregate	$2,000,000.00
Products-Comp/OPS Aggregate	$2,000,000.00
Personal Injury	$2,000,000.00
Each Occurrence	$2,000,000.00
Automobile	$2,000,000.00

Policies shall be kept in force until the project is accepted by the District. The District shall be given at least forty-five (45) days written notice of cancellation, non-renewal, material reduction, or modification of coverage. The District may increase these limits if the scope of the proposed work warrants additional coverage.

Failure of the Developer to fully comply with the requirements regarding insurance will be considered a material breach of contract and shall be cause for immediate termination of the developer extension agreement and any and all District obligations, regarding same.

The coverage provided by the insurance policies shall be primary to any insurance maintained by the District, except with respect to losses attributable to the sole negligence of the District. Any insurance that might cover this Agreement which is maintained by the District shall be in excess of the Developer's/Contractor's insurance and shall not contribute with it.

The insurance policy shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured with respect to any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured.

The general aggregate provisions of the insurance policy shall be amended to show that the general aggregate limit of the policies apply separately to this project.

The insurance policy shall not contain a deductible or self-insured retention in excess of $10,000 unless approved by the District.

Providing coverage in the stated amounts shall not be construed to relieve the Developer from liability in excess of such limits.

The Developer shall indemnify, defend and hold the District and its elected and appointed officials, officers, employees, agents and volunteers harmless from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against the District by reason of any act or omission of the Developer, the Developer's agents or employees, in connection with the work performed under this contract, or caused or occasioned in whole or in part by reason of the presence of the Developer, the Developer's Contractor or Sub-contractors, or their property, employees or agents, upon or proximity to any property upon which work is being performed under this contract.

For the purpose of applying RCW 4.24.115 to the Developer's project, the Developer and the District agree that the term "damages" applies only to the finding in a judicial proceeding and is exclusive of third party claims for damages preliminary thereto.

The Developer agrees to indemnify, defend and hold harmless the District, and its elected and appointed officials, officers, employees, agents and volunteers from all claims for damages by third parties, including costs and reasonable attorney's fees in the defense of such claims for damages, arising from performance of the work under this contract. Developer waives any right of contribution against the District.

It is agreed and mutually negotiated that in any and all claims against Silver Lake Water District or any of its agents or employees by any employee of the Developer, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation hereunder constitutes Developer's and its Contractor's and Sub-Contractor's waiver of immunity under Title 51 RCW, solely for the purposes of this indemnity.

District and Developer agree that all third party claims for damage against District for which Developer's insurance carrier does not accept defense of District may be tendered by District to the Developer who shall, if so tendered by District, accept and undertake to defend or settle with the Claimant. District retains the right to approve claims investigation and legal counsel assigned to said claim and all investigation and legal work product regarding said claim shall be performed under a fiduciary relationship to Silver Lake Water District. In the event that District agrees or a court finds that the claim arises from the sole negligence of District, this indemnification shall be void and District shall be responsible for all damages payable to the third party claimant. In the event that District and Developer agree or a court finds that the claim arises from or includes negligence of both the Developer and District, the Developer shall be responsible for all damages payable by the Developer to the third party claimant under the court finding, and, in addition thereto, the Developer shall hereunder indemnify District for all damages paid or payable by District under the court finding an amount not to exceed the percentage of total fault attributable to the Developer. For example, where the Developer is 25 percent negligent, the Developer shall not be required to indemnify District for any amount in excess of 25 percent of the claimant's total damages.

Nothing contained in these insurance requirements is to be construed as limiting the extent of the Developer's and its contractor's responsibility for payment of damages resulting from operations under this agreement.

(e) Upon completion of the construction, and after acceptance of the facilities by the District, the Developer shall convey the facilities to the District by means of a bill of sale. The bill of sale to be provided by Developer to District shall contain the following warranties with District as beneficiary:

(1) Developer is the owner of the extension, the same is free and clear of all encumbrances and Developer has good right and authority to transfer title thereto to District and shall defend the title of District against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon; and

(2) That all bills and taxes relating to the construction and installation of the Extension have been paid in full and that there are no lawsuits pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned shall undertake to defend the lawsuit and shall accept responsibility and pay for all costs of litigation, including the District's costs, and reasonable attorneys fees and shall hold District harmless on any judgment rendered against District in accordance with provisions set forth in more detail in the District General Conditions; and

(3) That all laws and ordinances respecting construction of this project have been complied with, and that the system Extension is in proper working condition, order and repair, and is fit for its intended purpose and that it has been constructed in accordance with the conditions and standards of District; and

(4) For a period of two (2) years from the date of final acceptance of the Extension by District, the Extension and all parts thereof shall remain in proper working condition, order and repair; and Developer shall repair or replace, at the Developer's expense, any work or material which may prove to be defective during the period of the warranty.

(f) Developer shall notify the District of the date work on the construction of the facilities described in this Agreement will commence. In the event of interruption of work for any reason for more than seven (7) consecutive calendar days, Developer shall give the District notice of not less than twenty-four hours before resuming work.

(g) After the work is commenced or recommenced, Developer shall vigorously and consistently continue the work in a first class manner until completion.

(h) Upon completion of construction, Developer shall deliver to the District all Mylar originals of as-built drawings, together with an electronic file of the Plans on AutoCAD Release 13 or 14 or as updated to be compatible with the District's system, and such other engineering records and data as may be required by the District.

In addition, Developer shall obtain warranties and guaranties from its subcontractors and/or suppliers where such warranties or guaranties are specifically required in this Agreement. When corrections of defects occurring within the warranty period are made, Developer shall further warrant corrected work for two (2) years after acceptance of the correct work by District.

6. Correction of Defects Occurring Within Warranty Period.

When defects in the Extension are discovered within the warranty period, Developer shall start work to remedy any such defects within seven (7) calendar days of notice by District and shall complete such work within a reasonable time. In emergencies, where damages may result from delay or where loss of service may result, corrections may be made by District upon discovery, in which case the cost thereof shall be borne by Developer. In the event Developer does not commence and/or accomplish corrections within the time specified, the work may be accomplished by District at its option, and the cost thereof shall be paid by Developer.

Developer shall be responsible for any expenses incurred by District resulting from defects in Developer's work, including actual damages, costs of materials and labor expended by District in making repairs and the cost of engineering, inspection and supervision by District or the District Consultants.

7. Performance Guarantee.

Developer shall furnish to District prior to the pre-construction conference a performance guarantee of a type and in a form as determined by District, in its sole discretion, in an amount equal to the Developer's Engineer's estimated cost of the Extension or contractor bid price. The performance guarantee shall require completion of all work in accordance with the Agreement, the Plans and Specifications and other requirements of District within a period of twelve (12) months from the date of acceptance of the Plans by the District. District in its sole discretion may also require a payment bond of a type and in a form as determined by District requiring the payment by Developer of all persons furnishing labor and materials in connection with the work performed under the Agreement, and shall hold District harmless from any claims there from. Any payment bond required by District shall be provided to District prior to the pre-construction conference as a condition of District granting final acceptance of the work referenced herein. No third person or party shall have any rights under any performance guarantee District may require from Developer and such performance guarantee is provided entirely for the benefit of District and Developer and their successors in interest.

8. Maintenance Bond.

Acceptance by District shall not relieve Developer of the obligation to correct defects in labor and/or materials as herein provided and/or the obligations set forth in applicable paragraphs hereof. Prior to acceptance of the Extension by District and the transfer of title to such extension(s) as set forth herein, Developer shall furnish to District a maintenance bond (cash or bond) which shall continue in force from the date of acceptance of said Extension for a period of two (2) years. The bond shall be in a form as prescribed by District and shall require Developer and the bonding company to correct the defects in labor and materials which arise in said system for a period of two (2) years from the date of acceptance of the system and transfer of title. The maintenance bond shall be in an amount equal to fifteen (15) percent of the cost of said Extension, but not less than five thousand dollars ($5,000.00). The District shall review the submitted construction costs and determine the amount of the maintenance bond.

9. Limitation of Period of Acceptance.

The Extension shall be completed and accepted within twelve (12) months of the date of acceptance of the Plans by the District.

If the Extension is not completed and accepted within the twelve (12) month period, then this Agreement and all of Developer's rights herein shall terminate and cease. No extension of the time for completion of the Agreement shall be allowed. In the event the Agreement terminates, Developer shall be required to make a new pre-application and new application for extension agreement to District. Any such new agreement entered into between District and Developer pursuant to a new application shall be subject to any new or amended Resolutions, construction policies, standards and specifications which have taken effect since the execution of the terminated agreement. Nothing herein shall be construed to convey any rights or privileges to Developer except as explicitly set forth in this agreement.

If Developer abandons the Extension project during twelve (12) months or shall fail to complete the Extension within that period, Developer may be deemed, at District's sole option and election to have transferred and conveyed to District any portion of the Extension which has been completed.

10. Final Acceptance - Conditions Precedent.

Compliance with all terms and conditions of this Agreement, the Plans, General Conditions, and Specifications prepared hereunder and other District requirements shall be a condition precedent to District's obligation to allow connection to the District's system, to accept the Bill of Sale to the Extension, and to District's agreement to maintain and operate the Extension and to provide service to the real property that is described in this Agreement.

District will not be required to allow any connection to District's system any portion of the real property described in this Agreement if there are any fees or costs unpaid to District under this Agreement or there are other fees arising under other District requirements which are unpaid.

District will not be obligated to provide service to the property described in this Agreement if construction by third parties of facilities to be deeded to District has not been completed and title accepted by District if such third-party facilities are necessary to provide service to the property described in this Agreement.

District will not be obligated to allow service connections to its system until all General Facilities (water) and Connection (sewer) charges in effect on the date of application for service have been paid. Developer understands and specifically agrees that General Facilities and Connection charges required by District to connect to District's system will be determined by District at time of connection. Developer understands and agrees that any and all fees and charges of the District may be adjusted by District prior to the time of connection to District system and Developer waives actual notice of any hearing by Board of Commissioners to consider adjustment of any such fees and charges.

District will accept title to the extension at such time as all work which may, in any way, affect the lines constituting the Extension has been completed, and any damage to said Extension which may exist has been repaired, and District has made final inspection and given its approval to the Extension as having been completed in accordance with the Agreement, the Plans, General Conditions, and Specifications and other requirements of District.

11. Procedure for Acceptance.

Acceptance of title to the Extension will be made by the District. Prior to such acceptance, an executed bill of sale in a form approved by District and containing the warranties required by this Agreement shall be executed by Developer and any additional owners and delivered to District. There will be no conditional acceptance or acceptance for use and operation.

12. Effect of Acceptance.

Acceptance by District shall cause the Extension to be a public system subject to the control, use and operation of District and all regulations, conditions of service, and service charges as District determines to be reasonable and proper, and subject to the laws of the State of Washington.

13. Rates and Charges.

The property described in this Agreement shall be subject to all rates and charges established by District, as now exist or hereinafter amended or adjusted.

14. Subcontracting.

Developer shall be fully responsible for the acts and omissions of subcontractors and persons employed, directly or indirectly, by subcontractors, as well as the acts and commissions of persons directly employed by Developer.

15. No Assignment without District Approval.

Developer's rights and responsibilities arising out of this Agreement shall not be assignable unless District's prior consent is obtained. Written documents as required by District of any District approved assignment shall be filed with District by the Developer herein at the time of any assignment.

16. General Provisions, Standard Details, and Specifications.

The Silver Lake Water District Developer Standards, Sections I, II, III, IV and V, as currently adopted or hereafter amended, are incorporated herein by this reference.

17. Remedies Available to District.

In the event Developer fails to pay any of the extension fees and charges and fines referenced herein when due as determined by District, the charge or fine shall then be delinquent and shall accrue interest at the highest legal rate per annum until paid. In addition to any other remedies available to District, District shall be entitled to file a lien against the Real Property referenced herein in the event of nonpayment and to foreclose such lien pursuant to RCW 57.08.080-090, as revised or amended.

18. Reimbursement Agreement

The District may, in its sole discretion, agree to a Developer Reimbursement Agreement with Developer for offsite sewer or water improvements.

A Developer seeking reimbursement for costs of constructing sewer or water system offsite of the proposed development by adjacent properties directly benefiting from connecting to the new system shall enter into a Reimbursement Agreement with the District.

The District will not accept the Bill of Sale for the improvements or accept the development as complete until all property owners within the benefited area have been notified of the latecomer's charges as described in the Reimbursement Agreement. The District takes no responsibility to defend legal challenge to a Reimbursement Agreement with Developer. Any challenge to District's authority or process for a Reimbursement Agreement will not be defended by District. District may tender defense of the reimbursement agreement to Developer.

The Developer shall make his request for such agreement at the time of submitting the application for the Developer Extension Agreement by signing the following declaration:

Yes, I request a Reimbursement Agreement ______

No, I do not request a Reimbursement Agreement ______

Developer agrees that Developer's costs for the sewer/water improvements to be constructed by Developer hereunder have been factored into the feasibility of Developer's Project and that Developer's decision to proceed with Developer's Project is not contingent or in any way dependent on receipt of latecomer payments or payments from other property owners or developers that may connect to sewer/water facilities constructed by Developer under this agreement. Further, Developer agrees that the District shall not collect payments on behalf of Developer from other property owners or developers that receive no benefit at the time of connection to the District system from water/sewer facilities constructed hereunder. Developer agrees and acknowledges that District reserves the right to direct water/sewer flows and to contract for the construction of other sewer/water facilities, regardless of whether future flows and future facilities constructed under other contracts affect anticipated receipt of latecomer payments hereunder.

19. Notice.

Any notice required by this Agreement to be given by District to Developer shall be given as follows:

Name: ____________________________ Phone: _______________________________

Address: ____

____

20. Complete Agreement.

This Agreement, and the plans approved by District constitutes the entire agreement between Developer and District with respect to the rights and responsibilities of both parties in regard to project referred to herein. For purpose of identification, this Agreement shall be assigned a number by the District, which number shall be endorsed on the first page of the Agreement. This Agreement may be changed in writing only upon mutual agreement of the Commissioners of District and Developer.

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ACCEPTANCE OF THIS APPLICATION BY THE DISTRICT CONSTITUTES A CONTRACT WITH THE APPLICANT, THE TERMS OF WHICH ARE EACH PARAGRAPH OF THIS AGREEMENT, THE DISTRICT GENERAL CONDITIONS, MATERIALS, CONSTRUCTION AND STANDARD DETAILS, SPECIFICATIONS SHEETS AND THE EXTENSION DESIGN DRAWINGS APPROVED BY DISTRICT.

DATED this _______ day of ________________________, 20____.

BY ______________________________ ____________________________________
Developer

Its_______________________________

FOR INDIVIDUAL OWNER/DEVELOPER

STATE OF WASHINGTON)
) ss
COUNTY OF)

I certify that I know or have satisfactory evidence that ___________________ signed this instrument and acknowledged it to be _______ free and voluntary act for the uses and purposes mentioned in the instrument.

Dated: ___________________________

____
NOTARY PUBLIC in and for the
State of Washington

My Commission Expires: _______________

FOR CORPORATION OR PARTNERSHIP

STATE OF WASHINGTON)
: ss.
County of Snohomish)

I certify that I know or have satisfactory evidence that ____________________ signed this instrument, on oath stated that ______ was authorized to execute the instrument and acknowledged it as the ________________________ of ______________________, to be the free and voluntary act of such corporation for the uses and purposes mentioned in this instrument.

Dated this ___ day of _____________, 20___

____
NOTARY PUBLIC for the State of Washington
Printed Name: _____________________
Residing at: ______________________
My Commission Expires: _____________

THE FOREGOING APPLICATION OF ________________________ accepted this _____ day of ____________________, 20______.

SILVER LAKE WATER DISTRICT

BY ______________________________
President, Board of Commissioners

STATE OF WASHINGTON)
) ss
COUNTY OF SNOHOMISH))

I certify that I know or have satisfactory evidence that ___________________ is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute said instrument and acknowledged it as the President, Board of Commissioners of SILVER LAKE WATER DISTRICT, a municipal corporation, to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated: ___________________________

____
NOTARY PUBLIC in and for the
State of Washington

My Commission Expires: _______________

NOTE:

The following insurance forms completed by the Developer's Insurance provider are to be presented to the District prior to scheduling a pre-construction meeting.

FORMS:

1) **Accord 25 (2001/08) Example**
2) **Accord 25 (2001/08) Blank**
3) **CG 20-10-11-85 Additional Insured (2-Pages)**
4) **CG 20-10-10-01**
5) **CG 20-37-10-01**

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 08/26/03

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
Contractors Insurance Services P.O. Box 1000 Anytown, WA License No. 123456	**INSURERS AFFORDING COVERAGE**	**NAIC #**
INSURED	INSURER A: Travelers Insurance Co.	
ABC Construction Co. 123 Main Street Hometown, WA	INSURER B: Hartford	
	INSURER C: Fireman's Fund	
	INSURER D: DPIC	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY	GL1234	10/01/02	10/01/03	EACH OCCURRENCE	$ 1,000,000
		☒ COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 50,000
		☐ CLAIMS MADE ☒ OCCUR				MED EXP (Any one person)	$ 10,000
		☒ Stop Gap $1,000,000				PERSONAL & ADV INJURY	$ 1,000,000
		☐				GENERAL AGGREGATE	$ 2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$ 1,000,000
		☒ POLICY ☐ PROJECT ☐ LOC					
B		AUTOMOBILE LIABILITY ☒ ANY AUTO	AL1234	10/01/02	10/01/03	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
		☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS				BODILY INJURY (Per person)	$
		☐ HIRED AUTOS ☐ NON-OWNED AUTOS				BODLY INJURY (Per accident)	$
		☐ ☐				PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		☐ ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
		☐				AGG	$
C		EXCESS/UMBRELLA LIABILITY	XS2345	10/01/02	10/01/03	EACH OCCURRENCE	$ 2,000,000
		☒ OCCUR ☐ CLAIMS MADE				AGGREGATE	$
							$
		☐ DEDUCTIBLE					$
		☐ RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				☐ WC STATUTORY LIMITS ☐ OTHER	
		Washington Labor & Industries #_______				E.L. EACH ACCIDENT	$
						E.L. DISEASE - EA EMPLOYEE	$
						E.L. DISEASE - POLICY LIMIT	$
D		OTHER Professional Liability	PL3456	10/01/02	10/01/03	1,000,000 per Claim 1,000,000 Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

(Member) District is an Additional Insured on General and Auto Liability Policies with respect to Pumphouse Construction Project for (Member) District at 456 Main Street Site.

CERTIFICATE HOLDER	CANCELLATION
(Member) District 456 Main Street Hometown, WA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~ENDEAVOR TO~~ MAIL 45 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
	AUTHORIZED REPRESENTATIVE Contractor's Agent/Broker

ACORD 25 (2001/08)

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A:	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

INSURED

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
		GENERAL LIABILITY				EACH OCCURRENCE	$
		☐ COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurence)	$
		☐ CLAIMS MADE ☐ OCCUR				MED EXP (Any one person)	$
		☐ ________				PERSONAL & ADV INJURY	$
		☐ ________				GENERAL AGGREGATE	$
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
		☐ POLICY ☐ PRO-JECT ☐ LOC					
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
		☐ ANY AUTO					
		☐ ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		☐ SCHEDULED AUTOS					
		☐ HIRED AUTOS				BODILY INJURY (Per accident)	$
		☐ NON-OWNED AUTOS					
		☐ ________				PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		☐ ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
		☐				AGG	$
		EXCESS/UMBRELLA LIABILITY				EACH OCCURRENCE	$
		☐ OCCUR ☐ CLAIMS MADE				AGGREGATE	$
							$
		☐ DEDUCTIBLE					$
		RETENTION $					$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				WC STATU-TORY LIMITS / OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$
						E.L. DISEASE - EA EMPLOYEE	$
		If yes, describe under SPECIAL PROVISIONS below				E.L. DISEASE - POLICY LIMIT	$
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL ______ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

ISO | Commercial General Liability Forms | 11/01/85

POLICY NUMBER: COMMERCIAL GENERAL LIABILITY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED -- OWNERS, LESSEES OR CONTRACTORS (FORM B)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART.

SCHEDULE

Name of Person or Organization:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" for that insured by or for you.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

(1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or

(2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:
Location And Description of Completed Operations:
Additional Premium:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" at the location designated and described in the schedule of this endorsement performed for that insured and included in the "products-completed operations hazard".

LATECOMERS AGREEMENT

Latecomers Agreement

This agreement entered into this ______ day of ______________ 20(___) by and between Silver Lake Water District ("District"), a political subdivision of the State of Washington and ___(Insert Name of Developer)______ (Developer).

Recitals

WHEREAS; Developer has completed construction of (Insert name of Plat/Project) in the Silver Lake Water District (hereinafter "Development") and

WHEREAS; Developer has constructed a (Describe Improvements Generically) for the purpose of serving its Development, (the type and location of said facilities are described in Exhibit A, attached hereto), and

WHEREAS; Developer and the District entered into an Extension Agreement for the aforementioned facilities, and

WHEREAS; the installation of the aforementioned facilities benefits the property as described and set forth in Exhibit B, and

WHEREAS; Developer is entitled to reimbursement from the property owners of the aforementioned properties seeking connection to such facilities, for the cost of such facilities, in excess of Developer's fair pro rata share thereof, and

WHEREAS; the District acknowledges that the installation of such facilities will be beneficial to the aforementioned properties and improve the District's (Describe water and/or sewer services to that general area, and

WHEREAS; the District is willing to collect Latecomers charges from the owners of the aforementioned properties for the specific purpose of reimbursing Developer the cost of the installation of the aforementioned facilities in excess of Developer's fair pro rata share; and

WHEREAS; Developer has indicated certain owners of properties benefited by installation of said facilities have participated in and contributed to construction of said facilities and Developer will waive latecomers' amount for these properties.

NOW THEREFORE, the parties agree as follows:

I. AUTHORITY

1.1 This agreement is executed pursuant to the provisions of Chapter 57.22 RCW, Contracts for Water System Extension.

1.2 The improvements and betterments constructed by Developer are consistent with the comprehensive plan(s) of the Silver Lake Water District and were a prerequisite of further development in the area.

II. PURPOSE OF THIS AGREEMENT

2.1 The purpose of this agreement is to provide a means whereby Developer will be reimbursed for a portion of the costs it incurred for the installation of the facilities described on Exhibit "A." (Describe project generically) extension). Such reimbursement shall be by means of a Latecomers reimbursement assessment against the property benefiting by the installation of said facilities, as set forth in Exhibit C.

2.2 The parties agree the construction of these facilities provide adequate (Describe, water and/or sewer) to properties listed in Exhibit C so as to meet requirements of state and local government.

III. DESCRIPTION OF WORK

3.1 The improvements and facilities as generally described in Exhibit A have been constructed by Developer pursuant to approved plans and consistent with the then existing standards and existing Comprehensive Plan(s)of the District

IV. DUTIES OF DEVELOPER

4.1 Developer shall comply with each and every provision of District Resolution 538.

V. DUTIES OF THE DISTRICT

5.1 The District shall process this application in accordance with Resolution 538.

5.2 The District will use its best effort to collect and distribute the funds pursuant to the process set forth in this agreement. However, the District, its officials, employees, or agents shall not be held liable or responsible for failure to implement any of the collection provisions of this agreement, unless such failure is willful or intentional. The District is acting in the capacity of a collection agent and is not obligated by this agreement to make any payment except those amounts actually collected pursuant to this agreement. This agreement does not constitute a guarantee on the part of the District that any reimbursement will be collected or paid during the term of this agreement. The District takes no responsibility to defend legal challenge to a reimbursement agreement with Developer. Any challenge to District's authority or process for a reimbursement agreement will not be defended by District. District may tender defense of the reimbursement agreement to Developer.

VI. LATECOMERS/REIMBURSEMENT

6.1 In order to assure conformance with the terms and conditions of this Agreement, the District agrees that for a period of ten (10) years commencing from the date of adoption of a Reimbursement Resolution, the District will make effort to collect on behalf of Developer a Latecomer's fee in an amount as set forth in Exhibit C from any property benefited, at the time of the adoption of the reimbursement resolution, by the aforementioned facilities at such time the property connects to the District system. The District shall forward said Latecomer's fee to Developer at Developer's address provided herein, or to Developer's agent, as authorized by Developer. As a condition of receiving such reimbursement funds, Developer or Developer's agent shall execute a receipt to the District for such reimbursement amount so paid, upon a receipt form provided by District. Such form shall include the legal description and name of the owner of the connecting property making payment of such amount.

6.2 District and Developer understand and acknowledge that the properties within the Latecomers – Reimbursement area set forth on Exhibits "B" and "C" have a right to notice of such reimbursement charge and the amount thereof. Such property owners have a right to request a hearing on such reimbursement charge before the Commissioners of the Silver Lake Water District. If requested the Commissioners shall conduct such hearing. The parties understand and acknowledge that such hearing may result in denial of latecomers' reimbursement charges, changes to the reimbursement area and the reimbursement charges placed on benefiting properties that have not contributed to the original cost of the additional facilities. Should such hearing occur, Exhibits "B" and "C" may be adjusted to reflect the determination of the Commissioners after deliberation of evidence provided at such hearing. Such adjustment shall be set forth on Exhibits "B" and "C" and the parties agree the adjusted Exhibits "B" and "C" shall control operation of this agreement. Should Developer not be present at such hearing, the latecomer's reimbursement request will be denied.

6.3 District shall receive an administrative fee in an amount equal to Ten percent (10%) of the reimbursement connection charge. Said fee shall be deducted from the Latecomers fee upon collection and prior to forwarding said fee to Developer.

VII. RECORDATION

7.1 This contract and the Reimbursement Resolution shall be recorded in the office of the Snohomish County Auditor, Snohomish County, Washington, immediately upon execution by the District and Developer. Such contract shall constitute a lien and servitude upon the properties described in Exhibits "B" and "C", having not contributed to the original cost of the aforementioned facilities installed by Developer under the provisions hereof, and shall be binding upon the parties and all successors in interest to those respective parties in accordance with Chapter 57.22 RCW.

Developer shall be responsible for recording this contract and the Reimbursement Resolution. The District's obligation to collect pursuant to the contract shall not arise until the District has been served with proof of recording.

VIII. ENFORCEMENT

8.1 This agreement shall be enforceable only by the parties. The agreement is for the benefit of the parties, or their assigns, and not for the benefit of any third party.

8.2 Should any legal action be brought by either party for breach of this agreement or to enforce any provision herein, the prevailing party of such action shall be entitled to reasonable attorney's fees, court costs and such other costs as may be fixed by court.

IX. MISCELANEOUS PROVISIONS

9.1 Developer shall not assign this contract without written consent of the District. Such consent shall not be unreasonably withheld.

9.2 It is understood that the contractual relationship between the District and Developer is such that Developer is an independent contractor and not an agent of the District.

9.3 This Agreement shall inure to the benefit of and be binding upon the parties, their heirs, successors and assigns.

9.4 If any part or provision of this agreement is held to be invalid, unenforceable, or unconstitutional, the remainder of the agreement is not affected.

9.5 Nothing herein releases Developer, or its successors, from the payment of water meter or side sewer installation charges and any and all other connection charges, rates and assessments against the property in existence at the time of connection of such property to the system.

9.6 All notices required or provided under this agreement shall be in writing and delivered in person or sent by certified mail, postage prepaid. Notices required to the District shall be addressed as follows:

Silver Lake Water District
Attention: General Manager
2210 132nd ST SE
Mill Creek, WA 98012-5615

Notices to be given to Developer shall be addressed as follows:

(Insert Developer's Address)

____

____

____

9.7 This writing constitutes the full and only agreement between the parties, as to these matters, there being no promises, agreements or understandings, written or oral, except as herein set forth.

9.8 The effective date of this agreement shall be ______________, 20(__).

Developer

____

by:

Silver Lake Water District

____

by: President

____

STATE OF WASHINGTON)
:ss
County of)

I certify that I know or have satisfactory evidence that ______________________________ signed this instrument, on oath stated that __________ was authorized to execute the instrument and acknowledged to as the ____________________________ of ___________________________, to be the free and voluntary act of such corporation for the uses and purposes mentioned in this instrument.

Dated this__________ day of ____________________, 20_____.

NOTARY PUBLIC for the State of Washington
Printed Name:____________________________
Residing at:______________________________
My Commission Expires:__________________

(STATE OF WASHINGTON)
:ss
(County of)

I certify that I know or have satisfactory evidence that _______________________ signed this instrument, and acknowledged it to be free and voluntary act and deed for the uses and purposes therein mentioned.

Dated this____________ day of _____________________, of 20_____.

NOTARY PUBLIC for the State of Washington
Printed Name: ____________________________
Residing at:_______________________________
My Commission Expires:_____________

SAMPLE EASEMENT DOCUMENTS

RECORDED AT THE REQUEST OF:
SILVER LAKE WATER DISTRICT
2210 132ND ST. SE
MILL CREEK, WA 98012-5615

PERMANENT SEWER EASEMENT

THE UNDERSIGNED GRANTOR____
for and in consideration of good and valuable consideration in hand paid, the receipt of which is hereby acknowledged, does hereby grant, convey and transfer unto the SILVER LAKE WATER DISTRICT, a Municipal Corporation, its heirs or assigns, a permanent easement, including the perpetual right to enter upon the real estate hereinafter described, at any time that it may deem reasonably necessary to construct, maintain, repair and operate a sanitary sewer line over, across, through and under the lands hereinafter described, together with the right to excavate and refill ditches and trenches for the location of pipelines and mains, and the further right to remove trees, bushes, undergrowth and other obstructions interfering with the location, construction and maintenance of said pipelines and mains.

The easement and right-of-way hereby granted is located in the County of Snohomish, State of Washington, and is more particularly described as follows:

The District agrees to restore to substantially the original condition such improvements as are disturbed during the construction, maintenance or repair of District sewer system improvements within said right of way; provided, the Grantor, its heirs or assigns shall not construct any permanent structure over, upon or within the permanent easement.

IN WITNESS WHEREOF, these presents are hereby signed this__________ day of ________________, 20_____.

____________________________________	____________________________________
GRANTOR	SILVER LAKE WATER DISTRICT
BY:_________________________________	BY:__________________________
ITS:	ITS: General Manager

STATE OF WASHINGTON)
: ss
County of)

I certify that I know or have satisfactory evidence that ______________________________ signed this instrument, on oath stated that __________ was authorized to execute the instrument and acknowledged to as the ___________________________ of __________________________, to be the free and voluntary act of such corporation for the uses and purposes mentioned in this instrument.

Dated this__________ day of ____________________, 20_____.

____
NOTARY PUBLIC for the State of Washington
Printed Name:___________________________
Residing at:_____________________________
My Commission Expires:__________________

STATE OF WASHINGTON)
: ss
County of)

I certify that I know or have satisfactory evidence that ______________________________ signed this instrument, and acknowledged it to be free and voluntary act and deed for the uses and purposes therein mentioned.

Dated this____________ day of ______________________, of 20_____.

____
NOTARY PUBLIC for the State of Washington
Printed Name: ______________________________
Residing at:_________________________________
My Commission Expires:_____________________

RECORDED AT THE REQUEST OF:
SILVER LAKE WATER DISTRICT
2210 132ND ST. SE
MILL CREEK, WA 98012-5615

PERMANENT WATER EASEMENT

THE UNDERSIGNED GRANTOR______________________________________ for and in consideration of good and valuable consideration in hand paid, the receipt of which is hereby acknowledged, does hereby grant, convey and transfer unto the SILVER LAKE WATER DISTRICT, a Municipal Corporation, its heirs or assigns, a permanent easement, including the perpetual right to enter upon the real estate hereinafter described, at any time that it may deem reasonably necessary to construct, maintain, repair and operate a water line over, across, through and under the lands hereinafter described, together with the right to excavate and refill ditches and trenches for the location of pipelines and mains, and the further right to remove trees, bushes, undergrowth and other obstructions interfering with the location, construction and maintenance of said pipelines and mains.

The easement and right-of-way hereby granted is located in the County of Snohomish, State of Washington, and is more particularly described as follows:

The District agrees to restore to substantially the original condition such improvements as are disturbed during the construction, maintenance or repair of District water system improvements within said right of way; provided, the Grantor, its heirs or assigns shall not construct any permanent structure over, upon or within the permanent easement.

IN WITNESS WHEREOF, these presents are hereby signed this__________ day of ________________, 20_____.

________________________________	________________________________
GRANTOR	SILVER LAKE WATER DISTRICT
BY:______________________________	________________________________
ITS:	General Manager

STATE OF WASHINGTON)
: ss
County of)

I certify that I know or have satisfactory evidence that ____________________________ signed this instrument, on oath stated that __________ was authorized to execute the instrument and acknowledged to as the __________________________ of _________________________, to be the free and voluntary act of such corporation for the uses and purposes mentioned in this instrument.

Dated this__________ day of ____________________, 20_____.

NOTARY PUBLIC for the State of Washington
Printed Name:____________________________
Residing at:______________________________
My Commission Expires:__________________

STATE OF WASHINGTON)
: ss
County of)

I certify that I know or have satisfactory evidence that ____________________________ signed this instrument, and acknowledged it to be free and voluntary act and deed for the uses and purposes therein mentioned.

Dated this____________ day of ______________________, of 20_____.

NOTARY PUBLIC for the State of Washington
Printed Name: _____________________________
Residing at:________________________________
My Commission Expires:_____________________

SAMPLES OF BILL OF SALE

SILVER LAKE WATER DISTRICT

BILL OF SALE - SEWER

Project: ______________________________

Developer: ______________________________

THE UNDERSIGNED hereby conveys and transfers to the SILVER LAKE WATER DISTRICT (the "District") the following described personal property:

This conveyance is made in consideration of the District's agreement to provide routine maintenance of said property and to provide sewer services pursuant to the District's resolutions and regulations, which may be amended from time to time.

The undersigned, and its successors and assigns, covenants and agrees to and with the District, its successors and assigns, that the undersigned is the owner of said property and has the right and authority to sell the same, that the property is free of all liens or encumbrances, and that the undersigned will, and does, hereby warrant and agree to defend the title of the District, its successors and assigns, against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon.

The undersigned warrants that all bills and taxes relating to the construction and installation of the sewer main and appurtenances have been paid in full and that there are no lawsuits pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned will undertake to defend the lawsuit and will accept responsibility for all costs of litigation, including costs on appeal, and will hold the District harmless on any judgment rendered against the District.

The undersigned further warrants that all laws and ordinances respecting construction of this project have been complied with, and that the property is in proper working condition, order and repair and fit for purposes intended; i.e., for use as a sewer collection system adequate for the service intended and has been constructed in accordance with the conditions and standards of the District.

The undersigned covenants and agrees with the District to replace, repair and correct any defect in work or materials in respect to the personal property subject to this Bill of Sale arising during a period of two (2) years from date hereof, without cost to the District. The undersigned shall further warrant the corrected work for two years after acceptance of the corrected work by the District.

DEVELOPER: ______________________________

By: ______________________________

Its: ______________________________

<u>INDIVIDUAL</u>

STATE OF WASHINGTON)
) ss.
County of ____________)

On this _______ day of ______________________, before me, the undersigned Notary Public, duly commissioned and sworn, personally appeared __________________________________ to me known to be the individual(s) named herein, and who executed the within and foregoing in instrument, and acknowledged execution of the said instrument to be the free and voluntary act and deed of said individual(s), for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

____

NOTARY PUBLIC in and for
Washington State, residing at __________________

My Commission Expires: _____________________

<u>CORPORATE</u>

STATE OF WASHINGTON)
) ss.
County of ____________)

On this ________ day of _________________, 20____, before me, the undersigned Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared ____
____
to me known to be the ____
of ____
the corporation named herein, and acknowledged execution of the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned; and on oath stated that he is authorized to execute said instrument and that the seal affixed (if any) is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

____

NOTARY PUBLIC in and for
Washington State, residing at __________________

My Commission Expires: _____________________

SILVER LAKE WATER DISTRICT
ITEMIZED COST OF
SANITARY SEWER SYSTEM

Project: ______________________________

Developer: ______________________________

Date______________________

DESCRIPTION	QUANTITY	UNIT COST	ITEM TOTAL
8" Dia. PVC Pipe			
8" Dia. Ductile Iron Pipe			
6" Dia. PVC Side Sewer			
6" Dia. Ductile Iron Side Sewer			
Manholes			

SUBTOTAL_______________

SALES TAX_______________

TOTAL COST_______________

Note:

1. Include in each pipe price (Total Cost & Unit Cost) the cost of fittings, pavement repairs, and any other items not otherwise listed above.

2. Blank spaces reserved for major cost items such as force mains, vaults, sewage lift stations, etc. Contact District regarding listing of such items.

SILVER LAKE WATER DISTRICT

BILL OF SALE - WATER

Project: ______________________________

Developer: ______________________________

THE UNDERSIGNED hereby conveys and transfers to the SILVER LAKE WATER DISTRICT (the "District") the following described personal property:

This conveyance is made in consideration of the District's agreement to provide routine maintenance of said property and to provide water services pursuant to the District's resolutions and regulations, which may be amended from time to time.

The undersigned, and its successors and assigns, covenants and agrees to and with the District, its successors and assigns, that the undersigned is the owner of said property and has the right and authority to sell the same, that the property is free of all liens or encumbrances, and that the undersigned will, and does, hereby warrant and agree to defend the title of the District, its successors and assigns, against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon.

The undersigned warrants that all bills and taxes relating to the construction and installation of the water main and appurtenances have been paid in full and that there are no lawsuits pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned will undertake to defend the lawsuit and will accept responsibility for all costs of litigation, including costs on appeal, and will hold the District harmless on any judgment rendered against the District.

The undersigned further warrants that all laws and ordinances respecting construction of this project have been complied with, and that the property is in proper working condition, order and repair and fit for purposes intended; i.e., for use as a water distribution system including distribution and supply lines adequate for the service intended and has been constructed in accordance with the conditions and standards of the District.

The undersigned covenants and agrees with the District to replace, repair and correct any defect in work or materials in respect to the personal property subject to this Bill of Sale arising during a period of two (2) years from date hereof, without cost to the District. The undersigned shall further warrant the corrected work for two years after acceptance of the corrected work by the District.

DEVELOPER: ____

By: ____

Its: ____

INDIVIDUAL

STATE OF WASHINGTON)
) ss.
County of _____________)

On this ________ day of ________________________, 20___, before me, the undersigned Notary Public, duly commissioned and sworn, personally appeared _____________________________________ to me known to be the individual(s) named herein, and who executed the within and foregoing in instrument, and acknowledged execution of the said instrument to be the free and voluntary act and deed of said individual(s), for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

____

NOTARY PUBLIC in and for
Washington State, residing at ____________________

My Commission Expires: _______________________

CORPORATE

STATE OF WASHINGTON)
) ss.
County of _____________)

On this _________ day of __________________, 20___, before me, the undersigned Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared
____
____
to me known to be the ____
of ____
the corporation named herein, and acknowledged execution of the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned; and on oath stated that he is authorized to execute said instrument and that the seal affixed (if any) is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

____

NOTARY PUBLIC in and for
Washington State, residing at ____________________

My Commission Expires: _______________________

SILVER LAKE WATER DISTRICT
ITEMIZED COST OF
WATER SYSTEM

Project: ______________________________

Developer: ______________________________

Date________________________

DESCRIPTION	QUANTITY	UNIT COST	ITEM TOTAL
6" Dia. Ductile Iron Pipe			
8" Dia. Ductile Iron Pipe			
12" Dia. Ductile Iron Pipe			
Fire Hydrant Assemblies			
3/4" Water Services			
1" Water Services			
1 1/2" Water Services			
2" Water Services			
Meter Vault & Larger Services			
Air-Vac Assemblies			
Blow-off Assemblies			
Detector Check Assembly			

SUBTOTAL________________

SALES TAX________________

TOTAL COST________________

Note:

1. Include in each pipe price (Total Cost & Unit Cost) the cost of gate valves, fittings, pavement repairs, and any other items not otherwise listed above.

2. Include in each fire hydrant price the main line tee, hydrant valve, valve boxes, shackle rods, thrust blocks, hydrant posts and other related items for a complete hydrant installation.

3. Blank spaces reserved for major cost items such as pressure reducing vaults, pressure relief vaults, pump stations, etc. Contact District regarding listing of such items.

PERFORMANCE, PAYMENT AND GUARANTY BOND

PERFORMANCE, PAYMENT AND GUARANTY BOND

Project: ______________________________

Developer: ______________________________

STATE OF WASHINGTON)
: ss Bond No. _________
COUNTY OF SNOHOMISH)

____, as Principal, and ____ ____________________________________, as surety, a corporation duly licensed and authorized to do business in the State of Washington, are held and firmly bound unto the **SILVER LAKE WATER DISTRICT**, hereinafter called "District", in the sum of _____ ________________________Dollars ($_______________), for payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal agreed with District to perform the work as specified or indicated by _______________________________________caused by the contractors operation, and restore such areas to conditions existing prior to construction. Such measures shall include, but not be limited to grading and seeding.

NOW, THEREFORE, if Principal shall perform all of this work; and

If Principal shall pay for all materials, equipment, or other supplies, or for rental of same used in connection with the performance of work to be done, and for all amounts due under applicable State law for any work or labor thereon; and

If Principal shall pay the sales, use and any other applicable taxes of the State of Washington or any political subdivision of said State relating to the work performed, and pay amounts due the State pursuant to Titles 50 and 51 of the Revised Code of Washington; and

If Principal shall indemnify and hold the District harmless from any defects in the workmanship of materials incorporated into the work for a period of two years after the final acceptance of the work;

Then, the obligation of Principal and Surety under this Bond shall be void, but otherwise it shall remain in full force and effect.

This Bond shall inure to the benefit of any person, companies or corporations entitled to file claims under applicable State law.

If suit (including any dispute resolution process) is brought upon this bond, a reasonable attorney's fee and litigation costs shall be awarded to the prevailing party.

Any alterations in the work to be done or the materials to be furnished, or changes in the time of completion, shall not in any way release Principal or Surety thereunder, nor shall any extensions of time granted release either Principal or Surety, and notice of such alterations or extension is hereby waived by Surety.

IT IS FURTHER AGREED that nothing of any kind or nature that will not discharge the Principal shall operate as a discharge or release of the Surety, regardless of law, rule of equity or usage relating to the liability of sureties to the contrary notwithstanding.

SIGNED AND SEALED, this _____, day of ________________, 20___.

(Seal)	(Seal)
______________________ Principal	______________________ Surety
______________________ Address	______________________ Address
______________________ City, State & Zip	______________________ City, State & Zip
Phone No. ______________	Phone No. ______________
Fax No. ______________	Fax No. ______________
______________________ Signature of Principal	______________________ Signature of Surety Official
______________________ Print Name and Title	______________________ Print Name and Title

Accepted by the Silver Lake Water District this _____ day of ______________, 20___.

____
General Manager Silver Lake Water District

MAINTENANCE BOND

MAINTENANCE BOND

Project: ______________________________

Developer: ______________________________

STATE OF WASHINGTON)
: ss
COUNTY OF SNOHOMISH)

Bond No. _________

We, _______________________________, as principal, and _______________________, a corporation organized under the laws of the State of _______________, and duly authorized to transact business in the State of Washington, as surety, are held and firmly bound unto the Silver Lake Water District, Snohomish County, Washington, in the amount of $___________, for the payment of which sum we bind ourselves, and each of our executors, administrators, successors, and assigns, jointly and severally.

Now, therefore, the conditions of these obligations are such that if the principal shall replace or correct any part or parts of principal's Extension to the District system(s) built by principal or principal's Contractor as required by Developer Extension agreement signed by principal dated the ____________ day of ______________, 20____ discovered by the Silver Lake Water District to be defective in material or inefficient or otherwise unsatisfactory in operations, through faulty construction, materials or workmanship, or through any fault of design or detail arising with Contractor or manufacturer within two years of the acceptance of the work and transfer of title, then the obligation of Principal and Surety under this Bond shall be void, but otherwise it shall remain in full force and effect.

Such parts shall be replaced with parts constructed in accordance with designs and of material satisfactory to the District.

Upon the failure of the principal to perform the terms of this Bond, the Surety shall either perform the terms of the Bond itself or shall, upon demand by the Manager of the District, release up to the full bonded amount to the Silver Lake Water District. The amount demanded by the Manager or designer will be a good faith estimate of the actual cost of repairs.

We further agree that up to the full bonded amount shall be released to Silver Lake Water District upon written demand by the Manager of the District. The amount demanded by the Manager or designee will be a good faith estimate of the actual cost of the repairs.

We further agree that if it is necessary for the Silver Lake Water District to take any legal action against any signatory to this agreement to assure compliance with its terms, the District shall be entitled to its reasonable costs and attorney's fees.

We further agree that nothing of any kind or nature that will not discharge the principal shall operate as a discharge or release of the Surety, regardless of law, rule of equity or usage relating to the liability of sureties to the contrary notwithstanding.

It shall be the responsibility of both the principal and the surety to inform the Silver Lake Water District, in writing, of any change of mailing address. The District will mail only to the last known address of principal and surety.

SIGNED this ____________ day of _______________, 20____.

____________________	____________________
Principal	Surety
____________________	____________________
Address	Address
____________________	____________________
City, State & Zip	City, State & Zip
Phone No. ________________	Phone No. _________________
Fax No. ________________	Fax No. ____________________
____________________	____________________
Signature of Principal	Signature of Surety Official
____________________	____________________
Print Name and Title	Print Name and Title

Accepted by the Silver Lake Water District this ______ day of ______________, 20___.

____
General Manager Silver Lake Water District

ASSIGNMENT OF FUNDS
IN LIEU OF MAINTENANCE BOND

SILVER LAKE WATER DISTRICT
ASSIGNMENT OF FUNDS
IN LIEU OF MAINTENANCE BOND

Project: ______________________________

Developer: ______________________________

STATE OF WASHINGTON)
: ss.
COUNTY OF SNOHOMISH)

We hereby agree that the sum of $_________________ will be held in savings account number ____________________ in _________________ in the name of __________________ to assure maintenance requirements hereunder.

Now, therefore, the conditions of these obligations are such, that the principal shall replace or correct any part or parts of the _________________ Extension to the system(s) discovered by the Silver Lake Water District to be defective in material or inefficient or otherwise unsatisfactory in operations, through faulty construction, materials or workmanship, or through any fault of design or detail arising with Contractor or manufacturer within two years of the acceptance of the work and transfer of title. Such parts shall be replaced with parts constructed in accordance with designs and of material satisfactory to the District.

We further agree that up to the full amount of the funds in the above referenced account shall be released to the Silver Lake Water District upon written demand by the Manager of the District. The amount demanded by the Manager or designee will be a good faith estimate of the actual cost of the repairs.

We further agree that if it is necessary for the Silver Lake Water District to take any legal action against any signatory to this agreement to assure compliance with its terms, the District shall be entitled to its reasonable costs and attorney's fees.

It shall be the responsibility of both the principal and the financial institution to inform the Silver Lake Water District, in writing, of any change of mailing address. The District will mail only to the last known address of principal and financial institution.

Signed this ________ day of _________, 20___.

Principal	Name of Financial Institution
Address	Address
City, State, Zip	City, State, Zip
Phone No. ____________________	Phone No. ____________________

Fax No. ____________________________ Fax No. ____________________________

____________________________________ ____________________________________
Signature of Principal Signature of Bank Official

____________________________________ ____________________________________
Print Name and Title Print Name and Title

Accepted by the Silver Lake Water District this ________ day of _________, 20___.

____
General Manager Silver Lake Water District

EASEMENT RESTORATION RELEASE

SILVER LAKE WATER DISTRICT

Easement Restoration Release

Easement No. ____________________
Date ____________________
Project No. ____________________

Project ___________________________ Contract No. ____________________

Owner ____

Contractor ____

Property Owner(s) ____

Property Address/Description ____

____

Property Owner's Approval

The undersigned owner(s) of the above property do hereby accept the restoration work completed by the Contractor on (our) property. I (We) release the Silver Lake Water District and the Contractor from further restoration work, except as follows:

____

____

____

____

____

____

Signature Date Phone No.

____

Signature Date Phone No.

APPENDIX G

PEAK HOUR MODELING

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
10	8.59	407	647.91	104.38
6000	11.21	415	643.49	99
6001	15.49	415	643.48	99
6002	20.51	415	643.49	99.01
6003	3.61	415	643.64	99.07
6004	18.87	415	644.53	99.46
6005	13.61	415	643.55	99.03
6006	9.21	415	644.53	99.46
6007	7.48	420	645.91	97.89
6009	3.3	452	647.56	84.74
6010	5.27	452	647.59	84.75
6011	5.96	450	647.56	85.6
6012	3.84	448	647.56	86.47
6013	8.82	448	647.57	86.47
6014	3.73	444	647.56	88.2
6015	4.02	444	647.56	88.2
6017	3.44	444	647.56	88.2
J-1	1.23	450	653.25	88.07
J-100	3.16	405	657.35	109.34
J-1000	1.65	390	644.86	110.43
J-10000	6.21	400	643.55	105.53
J-1001	11.41	400	644.84	106.09
J-1002	11.56	393	644.72	109.07
J-1003	1.32	410	644.87	101.77
J-1004	0.9	407	644.87	103.07
J-1005	0.32	405	644.95	103.97
J-1006	1.63	386	644.92	112.19
J-1007	0.95	390	644.93	110.46
J-1008	1.63	394	644.94	108.73
J-1009	2.14	390	644.94	110.47
J-101	8.19	444	657.23	92.39
J-1010	4.99	398	644.93	107
J-1011	5.43	385	644.92	112.62
J-1012	1.89	375	645.29	117.12
J-1013	3.28	385	645.29	112.78
J-1014	1.79	350	645.38	127.99
J-1015	13.36	350	645.34	127.97
J-1016	8.63	331	645.37	136.22
J-1017	3.04	356	645.56	125.47
J-1018	3.23	374	645.83	117.79
J-1020	3.3	330	645.83	136.85
J-1021	3.32	307	645.82	146.81
J-1022	2.55	340	645.83	132.52
J-1023	3.39	338	647.11	133.94
J-1024	1.2	339	648.82	134.24
J-1025	6.78	355	646.42	126.27

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1026	5.97	360	646.12	123.98
J-1027	1.79	358	646	124.79
J-1028	7.7	416	646.12	99.71
J-1029	2.06	398	645.12	107.08
J-103	0.99	490	657.45	72.56
J-1030	3.86	403	645.12	104.91
J-1031	12.63	410	644.68	101.69
J-1032	5.82	400	644.51	105.94
J-1033	12.85	417	644.4	98.53
J-1034	3.29	420	644.4	97.23
J-1035	7.64	403	644.38	104.59
J-1036	5.26	412	644.38	100.69
J-1037	5.82	395	644.33	108.04
J-1038	14.53	413	644.34	100.24
J-1039	9.83	407	644.34	102.84
J-104	6.97	510	657.21	63.79
J-1040	8.81	406	644.5	103.34
J-1041	13.18	405	644.38	103.72
J-1042	7.8	403	644.38	104.59
J-1043	5.3	389	644.33	110.64
J-1044	3.06	408	644.12	102.31
J-1045	1.78	405	644.16	103.63
J-1046	2.27	407	644.21	102.78
J-1047	12.3	420	644.19	97.14
J-1048	8.61	406	644.14	103.18
J-1049	3.08	412	643.73	100.41
J-105	1.22	425	643.74	94.78
J-1050	3.23	413	643.73	99.97
J-1051	3.31	422	643.63	96.03
J-1052	2.58	425.5	643.63	94.51
J-1053	9.61	429.5	643.64	92.79
J-1054	11.25	433.3	643.61	91.13
J-1055	4.43	422.6	643.58	95.75
J-1056	5.27	419.3	643.58	97.18
J-1057	7.07	445	644.11	86.28
J-1058	13.4	436	644.04	90.14
J-1059	5.79	445.5	644.45	86.2
J-106	51.55	420	643.71	96.93
J-1060	9.21	429	644.41	93.34
J-1061	1.61	446.7	645.57	86.17
J-1062	6.34	446.5	644.9	85.97
J-1063	4.7	435.2	644.91	90.87
J-1064	3.62	436.4	644.91	90.35
J-1065	9.19	422.5	643.03	95.55
J-1066	14.3	430.5	643.01	92.08
J-1067	2.35	434	641.46	89.89

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1068	4.66	439.5	641.36	87.47
J-107	0.77	376	647.13	117.48
J-1078	11.64	455	649.97	84.48
J-1079	20.03	436.5	644.95	90.32
J-108	1.97	376	647.3	117.56
J-1080	1.42	450	645.26	84.61
J-1081	7.8	460.5	645.51	80.17
J-1082	3.82	450	645.26	84.61
J-1083	2.21	435.7	644.97	90.68
J-1084	2.48	437.6	645.04	89.88
J-1085	0.93	439.1	645.05	89.24
J-1086	3.02	436.3	645.19	90.51
J-1087	1.11	440.3	645.19	88.78
J-1088	1.06	439.2	645.19	89.26
J-1089	1.66	445.7	645.19	86.44
J-109	3.22	430	649.36	95.05
J-1090	2.59	452	645.19	83.71
J-1091	1.56	440.6	645.19	88.65
J-1092	3.63	444.8	645.49	86.96
J-1093	3.43	441.9	645.49	88.22
J-1094	0.23	449.8	645.73	84.9
J-1095	0.23	449	645.64	85.21
J-1096	0.83	452.2	645.64	83.82
J-1097	0.33	448.6	645.56	85.34
J-1098	1.63	449.5	645.56	84.95
J-1099	0.68	452.7	645.53	83.55
J-1100	1.4	457.3	645.53	81.56
J-1101	1.2	460.3	645.49	80.24
J-1102	0.45	455.8	645.49	82.19
J-1103	0.93	459.3	645.46	80.66
J-1104	1.4	466.4	645.46	77.58
J-1105	3.32	467.7	645.53	77.05
J-1106	2.58	469.7	645.57	76.2
J-1107	3.14	473	645.68	74.82
J-1109	5.54	383	647.46	114.59
J-1110	1.74	451.5	647.22	84.81
J-1111	3.44	461	647.22	80.69
J-1112	1.35	480.5	647.35	72.3
J-1113	1.82	479.5	647.35	72.73
J-1114	2.86	460.5	648.34	81.39
J-1115	1.62	456.5	648.34	83.12
J-112	6.04	430	648.65	94.74
J-1125	1.2	467	648.94	78.83
J-1126	2.98	464.5	647.99	79.51
J-1127	10.79	469	647.91	77.52
J-1128	1.37	458.5	647.16	81.75

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1129	7.53	457.8	646.77	81.88
J-113	16.11	455	653.21	85.88
J-1130	2.13	461.4	646.48	80.2
J-1131	2.79	454.4	646.48	83.23
J-1132	1	465	646.45	78.62
J-1133	4.83	467	646.3	77.69
J-1134	10.03	468.5	646.3	77.04
J-1135	7.99	412	643.88	100.47
J-1136	6.91	409	643.88	101.77
J-1137	8.3	415	643.88	99.17
J-1138	11.83	416	643.88	98.74
J-1139	12.05	418	643.88	97.87
J-114	15.95	465	653.21	81.55
J-1140	11.72	420	643.91	97.02
J-1141	15.45	420	644.08	97.1
J-1142	7.44	422	644.09	96.23
J-1143	8.26	433.5	644.05	91.23
J-1144	2.72	435	644.05	90.58
J-1145	8.29	425	644.05	94.91
J-1146	13.51	445	645.1	86.7
J-1147	12.67	448	645.1	85.4
J-1148	8.02	440	645.1	88.87
J-1149	1.34	430	645.4	93.33
J-115	10.47	440	646.3	89.39
J-1150	1.15	420	645.85	97.86
J-1151	2.6	430	645.85	93.53
J-1152	4.41	418	645.85	98.73
J-1153	4.94	390	646.64	111.2
J-1154	1.17	400	646.65	106.87
J-1155	3.27	415	646.65	100.37
J-1156	4.39	450	646.52	85.15
J-1157	1.57	435	646.52	91.65
J-1158	1.8	430	645.99	93.59
J-1159	2.6	432	645.93	92.69
J-116	18.85	455	653.21	85.88
J-1160	0.2	430	645.93	93.56
J-1161	2.57	432	645.93	92.69
J-1162	2.89	439	645.71	89.57
J-1163	1.02	445	645.71	86.97
J-1164	2.53	435	645.88	91.37
J-1165	1.55	445	645.73	86.98
J-1166	2.09	442	645.73	88.28
J-1167	2.49	447	645.06	85.82
J-1168	4.82	453.5	645.06	83
J-1169	3.79	461	644.99	79.72
J-117	9.51	455	653.22	85.89

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1170	1.67	451	644.99	84.06
J-1171	2.28	450	644.99	84.49
J-1172	3.3	435	647.01	91.86
J-1173	1.16	433	647.01	92.73
J-118	20.24	470	653.21	79.38
J-1189	8.68	445	641.23	85.03
J-119	14.39	460	653.21	83.72
J-12	3.94	250	517.78	116.03
J-121	2.51	355	634.38	121.06
J-122	11.68	356	634.36	120.61
J-123	13.1	357	634.36	120.18
J-124	7.88	356	634.36	120.61
J-125	2.39	355	634.36	121.04
J-126	2.46	440	634.59	84.32
J-127	1.18	388	644.76	111.26
J-1271	1.56	493	650.82	68.38
J-128	11.57	354	644.77	125.99
J-129	9.38	380	644.77	114.72
J-130	1.6	394	644.75	108.65
J-1306	1.84	453	649.33	85.07
J-131	4.98	363	644.74	122.08
J-132	6.52	356	644.74	125.11
J-133	9.62	384	644.74	112.98
J-1338	10.39	482	646.12	71.11
J-134	15.05	380	644.76	114.72
J-1342	23.57	484.5	646.05	70
J-135	3.4	380	644.79	114.73
J-136	6.1	380	644.79	114.73
J-137	2.88	345	644.83	129.92
J-138	4.15	335	644.83	134.25
J-139	11.02	450	634.6	79.99
J-1393	3.24	473	635.1	70.24
J-1396	5.83	466	636.11	73.71
J-1397	5.15	456	636.15	78.06
J-1398	7.74	448	636.23	81.56
J-14	3.94	240	517.78	120.36
J-1400	5.04	442.5	637.24	84.38
J-1401	7.91	454	637.23	79.39
J-1402	5.83	440.5	637.47	85.35
J-1403	4.46	445	637.47	83.4
J-1404	2.25	435.5	637.49	87.52
J-1405	5.33	441	637.49	85.14
J-1406	2.93	425.5	637.48	91.85
J-1407	6.05	438.1	637.47	86.39
J-1408	7.81	425	637.47	92.06
J-1409	4.81	440	637.47	85.56

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1416	13.1	450.5	646.89	85.09
J-1417	10.18	458	645.92	81.42
J-1418	10.49	453.5	645.87	83.35
J-1422	8.87	410	638.9	99.18
J-1427	12.65	412	643.04	100.11
J-143	4.12	465	648.93	79.7
J-1434	0.97	430	646.11	93.64
J-1435	3.48	427	646.11	94.94
J-1436	1.43	407	646.36	103.72
J-1437	5.66	415	646.36	100.25
J-1438	7.03	405	644.68	103.85
J-1439	2.2	402	644.87	105.23
J-144	3.47	450	648.6	86.05
J-1447	2.29	392	645.17	109.7
J-1448	2.69	381	644.75	114.28
J-1449	5.76	384	644.73	112.98
J-145	14.41	450	648.56	86.04
J-1450	3.18	388	644.72	111.24
J-1451	3.86	407	644.45	102.89
J-1454	8.98	450	645.9	84.88
J-1456	3.73	435	638.47	88.17
J-1458	5.2	472	646.28	75.51
J-1459	12.96	480	646.21	72.02
J-146	8.59	435	648.53	92.52
J-1469	4.54	386	647.13	113.15
J-1473	0.93	393	647.17	110.13
J-1474	0.95	359	646.82	124.71
J-1475	2.57	190	488.86	129.49
J-1476	2.6	375	644.74	116.88
J-1477	18.37	464.7	646.44	78.75
J-1478	15.64	465	645.98	78.42
J-1479	27.05	470	646.03	76.27
J-1485	1.2	460.3	645.41	80.21
J-1488	3.19	394	644.55	108.56
J-149	3.55	420	648.53	99.02
J-1490	7.1	385	644.58	112.48
J-1491	4.99	391	644.58	109.88
J-1494	3.95	395	645.83	108.69
J-1495	4.91	353	646	126.96
J-1496	2.71	344	646	130.86
J-1499	2.43	409	637.48	99
J-150	15.24	420	648.53	99.02
J-1500	5.17	398	645.9	107.42
J-1505	14.34	480.5	645.92	71.68
J-1506	2.28	307	463.24	67.7
J-1508	2.63	457.9	645.41	81.25

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1509	1.56	373	644.75	117.75
J-151	2.58	435	648.55	92.53
J-1512	10.78	397	644.25	107.13
J-152	1.32	430	648.55	94.7
J-154	2.25	420	648.53	99.02
J-155	2.45	370	651.48	121.96
J-156	0.19	395	647.53	109.42
J-157	2.44	390	648.33	111.93
J-158	2.81	315	645.79	143.33
J-159	5.2	322	645.75	140.28
J-1599	8.67	408	644.17	102.33
J-160	9.23	380	644.74	114.71
J-1601	0.78	444	644.08	86.69
J-1602	4.99	438	643.95	89.24
J-161	11.84	401	636.18	101.9
J-162	13.43	405	635.85	100.03
J-163	30.29	393	635.77	105.19
J-164	20.6	401	636.01	101.83
J-165	5.55	399	635.79	102.6
J-166	19.61	394	635.77	104.76
J-1666	12.09	430	643.86	92.66
J-1667	6.05	430	643.87	92.67
J-1669	7.85	411	643.89	100.91
J-167	39.24	398	635.77	103.03
J-168	13.5	403	635.85	100.89
J-169	3.11	368	644.74	119.91
J-17	12.39	312	645.66	144.57
J-170	36.78	399	635.79	102.6
J-171	5.27	408	635.82	98.72
J-172	7.63	390	634.44	105.92
J-173	23.42	380	634.45	110.25
J-174	11.95	380	634.46	110.26
J-176	10.16	312	485.16	75.03
J-177	2.2	292	485.18	83.7
J-178	1.22	432	647.55	93.4
J-179	9.84	422	648.01	97.93
J-18	2.52	338	645.33	133.17
J-180	26.57	400	646.51	106.81
J-182	6.5	372	644.74	118.18
J-183	6.59	405	648.86	105.67
J-185	1.27	354	652.78	129.46
J-19	0.15	392	644.92	109.59
J-1900	9.64	476	648.99	74.96
J-1901	3.22	430	648.99	94.89
J-1902	6.08	472	649.43	76.88
J-1903	3.35	431	649.42	94.64

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1904	2.97	470	649.61	77.82
J-1905	6.04	463	649.61	80.86
J-1906	1.47	469	649.61	78.26
J-1907	5.37	478	649.61	74.36
J-1930	1.04	450	647.01	85.37
J-1942	1.2	470	649.61	77.83
J-1943	6.44	470	650.24	78.1
J-1944	3.55	470	650.57	78.24
J-2	6.15	448	653.24	88.93
J-20	19.59	320	470.69	65.3
J-21	5.97	585	723.07	59.83
J-23	12.23	305	470.66	71.78
J-2300	2.31	364	646.56	122.43
J-2301	9.09	420	646.54	98.16
J-24	8.88	295	470.64	76.1
J-2400	3.85	345	658.39	135.79
J-2401	4.1	350	659.55	134.13
J-2402	2.15	345	658.74	135.95
J-2403	0.68	342	658.74	137.25
J-25	10.08	290	470.64	78.27
J-27	11.69	290	470.64	78.27
J-28	11.36	295	470.64	76.1
J-3	9.84	466	653.22	81.12
J-30	13.43	305	470.66	71.78
J-3002	3.94	250	517.8	116.04
J-3003	3.94	219	517.82	129.48
J-3004	3.94	290	516.24	98.03
J-3006	0.71	440	646.46	89.46
J-3007	0.59	440	646.46	89.46
J-3008	0.8	440	646.46	89.46
J-3009	1.24	440	646.46	89.46
J-3011	9.21	465	646.63	78.7
J-3012	5.45	450	645.61	84.76
J-3013	7.69	460	646.66	80.88
J-3015	2.59	470	646.51	76.48
J-3016	12.88	440	646.21	89.35
J-3019	4.1	560	653.59	40.55
J-3020	3.77	550	722.61	74.79
J-3021	1.5	560	722.69	70.49
J-3028	3.91	415	645.95	100.07
J-3029	10.14	425	645.76	95.65
J-3030	27.01	408	645.98	103.12
J-3031	19.36	435	646.07	91.46
J-3032	3.94	280	519.21	103.65
J-3034	5.81	405	645.99	104.42
J-3035	13.8	407	646.01	103.56

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3036	4.78	406	646	103.99
J-3037	43.97	415	646.02	100.1
J-3038	21.5	420	646.03	97.94
J-3039	15.14	423	646.03	96.64
J-3040	3.76	416	646.04	99.68
J-3042	3.18	427	646.04	94.91
J-3043	14.62	390	647.78	111.7
J-3044	13.57	415	647.79	100.87
J-3046	15.9	428	646.04	94.48
J-3048	2.53	350	634.38	123.22
J-3049	3.71	340	634.31	127.52
J-3050	3.8	318	634.29	137.05
J-3051	2.52	330	634.29	131.85
J-3052	2.5	315	634.29	138.35
J-3053	1.25	320	634.29	136.18
J-3060	0.72	480	635.25	67.27
J-3065	4	478	635.29	68.15
J-3066	1.44	481	635.25	66.84
J-3067	8.23	380	634.48	110.26
J-3068	6.14	440	634.56	84.3
J-3069	20.87	460	634.52	75.62
J-3070	9.81	477	634.56	68.27
J-3071	6.41	437	637.5	86.88
J-3072	24.94	407	636.65	99.51
J-3073	27.05	408	636.56	99.04
J-3074	22.24	405	636.65	100.37
J-3075	30.29	405	636.65	100.37
J-3076	2.79	415	636.49	95.97
J-3077	7.71	440	645.38	88.99
J-3082	0.6	447	645.23	85.9
J-3083	6.31	437	645.28	90.25
J-3084	20.68	425	645.19	95.41
J-3085	13.74	425	645.19	95.41
J-3086	30.86	425	645.19	95.41
J-3087	9.43	425	645.21	95.42
J-3088	9.37	425	645.21	95.42
J-3089	18.29	435	645.45	91.19
J-3090	2.54	445	645.26	86.77
J-3091	4.02	460	645.76	80.49
J-3096	10.24	420	645.19	97.57
J-32	8.53	394	644.31	108.46
J-320	4.86	470	646.75	76.59
J-325	2.31	416	645.06	99.25
J-326	3.8	470	646.75	76.58
J-3262	9.68	440	649.51	90.78
J-3263	1.93	401	645.69	106.02

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3264	16.99	466	646.48	78.2
J-3265	10.27	478	646.38	72.96
J-3266	5.16	475	646.51	74.32
J-3267	6.43	477	646.7	73.53
J-3268	5.23	451	646.07	84.52
J-327	5.58	455	646.51	82.98
J-328	3.74	460	645	80.16
J-3282	11.02	440	657.23	94.13
J-3283	22.05	426	657.26	100.21
J-3284	3.41	446	657.22	91.52
J-3285	4.03	446	657.22	91.52
J-3286	2.8	464	657.22	83.72
J-3287	12.45	460	657.21	85.45
J-3288	9.48	470	657.21	81.12
J-3289	6.45	470	657.22	81.12
J-329	2.67	445	644.96	86.64
J-3290	5.97	470	657.22	81.12
J-3291	5.66	520	657.22	59.46
J-3292	13.38	432	657.22	97.59
J-3293	10.26	470	657.25	81.14
J-3294	21.61	378	657.22	120.98
J-3295	11.8	388	657.19	116.64
J-3296	13.79	430	646.04	93.61
J-3297	5.56	427	646.04	94.91
J-3298	59.42	435	646.04	91.44
J-3299	16.96	404	645.81	104.78
J-33	5.67	395	644.31	108.02
J-330	2.54	426	644.98	94.89
J-3300	14.9	396	645.82	108.24
J-3301	18.21	399	645.81	106.94
J-3302	17.17	391	645.81	110.41
J-3303	26.66	392	645.81	109.98
J-3304	30.18	391	645.82	110.41
J-3305	27.05	400	645.81	106.51
J-3306	9.52	429	645.81	93.94
J-3307	10.85	388	645.81	111.71
J-3308	9.05	395	645.81	108.68
J-3309	9.72	384	645.86	113.46
J-331	4.37	430	644.95	93.14
J-3310	11.11	402	645.81	105.64
J-3311	8.15	400	645.81	106.51
J-3312	20.51	389	647.73	112.11
J-3313	11.37	392	647.74	110.81
J-3314	12.77	431	647.79	93.93
J-3315	7.3	428	647.79	95.23
J-3316	14.49	377	647.64	117.27

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3317	15.65	375	647.29	117.98
J-3318	19.05	375	647.29	117.98
J-3319	24.93	373	647.28	118.84
J-332	4.05	452	644.92	83.59
J-3320	19.8	372	648.11	119.64
J-3321	24	372	648.18	119.67
J-3322	21.96	370	648.65	120.74
J-3323	10.9	400	648.26	107.57
J-3324	5.4	398	648.45	108.52
J-3325	29.45	396	648.14	109.25
J-3326	13.66	408	648.68	104.29
J-3327	7.65	442	647.55	89.07
J-3328	7.13	456	647.55	83
J-3329	5.32	448	647.55	86.47
J-3330	4.12	448	647.55	86.47
J-3331	1.05	336	634.3	129.25
J-3332	26.93	333	634.3	130.55
J-3333	18.05	330	634.29	131.85
J-3334	12.99	335	634.29	129.68
J-3335	10.76	340	634.29	127.52
J-3336	11.61	339	634.29	127.95
J-3337	10.52	342	634.29	126.65
J-3338	1.08	332	634.29	130.98
J-3340	2.55	325	634.29	134.02
J-3341	2.51	311	634.3	140.08
J-3342	2.49	315	634.3	138.35
J-3343	18.21	342	620.49	120.67
J-3344	30.43	336	620.47	123.26
J-3345	6.29	312	634.32	139.66
J-3346	7.54	309	634.32	140.96
J-3347	2.52	304	634.41	143.17
J-3348	1.25	304	634.44	143.18
J-3349	2.5	302	634.43	144.04
J-3350	3.8	306	634.18	142.2
J-3351	2.48	309	634.57	141.07
J-3352	5.01	311	634.43	140.14
J-3354	14.77	398	635.79	103.03
J-3355	10.32	421	635.78	93.07
J-3356	36.87	409	635.77	98.26
J-3357	29.71	394	635.77	104.76
J-3358	1.24	475	635.26	69.44
J-3360	1.26	455	635.26	78.11
J-3361	3.71	489	635.25	63.37
J-3364	19.02	480	635.55	67.4
J-3365	1.82	420	645.51	97.71
J-3366	8.48	133	483.61	151.92

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3367	17.85	165	483.6	138.05
J-3368	18.04	211	483.58	118.11
J-3369	16.34	217	483.59	115.51
J-3370	13.83	250	483.59	101.21
J-3372	2.86	144	483.61	147.15
J-3373	15.3	235	483.58	107.71
J-3374	13.94	202	483.59	122.01
J-3375	13.14	360	652.78	126.86
J-3376	14.68	370	652.78	122.53
J-3378	3.94	219	517.83	129.48
J-3379	3.94	220	517.82	129.05
J-3380	3.94	224	517.86	127.33
J-3381	3.94	233	517.51	123.28
J-3382	3.94	241	517.25	119.7
J-3383	3.94	256	517.1	113.13
J-3384	3.94	250	516.75	115.58
J-3385	3.94	240	517.12	120.08
J-3386	3.94	229	517.49	125
J-3387	3.94	219	517.86	129.49
J-3388	3.94	224	517.87	127.33
J-3389	3.94	205	519.29	136.18
J-3390	3.94	195	518.55	140.2
J-3391	3.94	190	519.64	142.83
J-3392	3.94	154	521.62	159.29
J-3393	3.94	170	521.33	152.23
J-3394	3.94	200	517.95	137.77
J-3395	3.94	134	523.78	168.89
J-3396	3.94	156	522.52	158.81
J-3398	18.86	278	485.16	89.76
J-3399	9.88	315	645.67	143.28
J-34	1.81	395	644.31	108.02
J-3401	3.74	427	643.71	93.9
J-3406	9.12	485	645.93	69.73
J-3407	15.38	464	635.57	74.34
J-3408	10.83	467	635.67	73.08
J-3409	13.16	470	635.75	71.82
J-3410	6.08	476	635.75	69.22
J-3411	3.1	468	635.86	72.73
J-3412	4.34	405	644.05	103.58
J-3413	8.63	407	643.98	102.69
J-3414	9.84	409	643.86	101.76
J-3415	16.79	402	643.98	104.85
J-3416	2.29	403	644.8	104.77
J-3418	8.36	437	644.94	90.1
J-3419	0.21	401	645.65	106.01
J-3420	22.39	456	649	83.63

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3421	1.1	382	647.3	114.96
J-3429	23.28	425	643.85	94.83
J-3461	3.8	479	655.08	76.29
J-3487	2.52	462	654.9	83.58
J-3493	1.25	480	651.02	74.1
J-3495	2.5	480	651.09	74.13
J-35	5.3	395	644.31	108.02
J-36	5.94	351	646.82	128.18
J-3600	7.57	361	515.26	66.84
J-3601	11.29	340	515.21	75.92
J-3602	7.47	298	515.15	94.09
J-3603	4.65	295	515.14	95.39
J-3604	2.51	360	515.3	67.29
J-3605	11.87	352	515.25	70.74
J-3606	8.74	320	515.16	84.56
J-3607	19.12	264	515.04	108.77
J-3608	15.78	253	515.01	113.53
J-3609	14.04	238	515.02	120.03
J-3610	4.26	196	515.02	138.23
J-3611	13.8	200	515	136.49
J-3612	3.94	200	515	136.49
J-3613	7.91	176	515	146.89
J-3614	4.64	251	515	114.39
J-3615	3.94	260	515	110.49
J-3616	13.17	350	515.25	71.6
J-3617	3.75	370	644.75	119.05
J-3618	6.61	290	515.15	97.56
J-3619	7.9	330	515.21	80.25
J-37	13.81	350	652.93	131.26
J-38	1.45	370	646.69	119.89
J-39	3.48	370	646.69	119.89
J-3902	2.48	447	638.91	83.15
J-3908	6.47	350	647.12	128.74
J-3909	9.02	354	644.76	125.99
J-3910	9.91	356	644.74	125.11
J-3915	2.9	388	644.76	111.26
J-3924	2.32	450	647.01	85.37
J-40	12.78	330	470.8	61.01
J-4002	2.54	496	651.22	67.26
J-4010	1.8	502	650.82	64.48
J-4012	4.42	520	654.77	58.4
J-4013	3.85	510	653.15	62.03
J-4014	5.04	515	653.15	59.86
J-4015	2.73	510	651.44	61.29
J-4016	4.04	506	650.93	62.8
J-4017	8.11	503	650.08	63.73

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4018	5.3	470	649.77	77.9
J-4019	4.19	492	650.47	68.67
J-4020	6.49	502	650.47	64.33
J-4021	2.61	481	650.47	73.43
J-4022	6.73	510	650.92	61.06
J-4023	5.04	514	650.82	59.28
J-4024	6.45	516	650.68	58.36
J-4025	3.03	510	650.59	60.92
J-4026	4.38	510	650.69	60.96
J-4028	6.89	452	649.72	85.67
J-4029	4.13	418	648.92	100.06
J-4030	3.37	416	648.92	100.92
J-4031	3.08	416	648.92	100.92
J-4032	3.52	422	648.9	98.32
J-4033	5.42	422	648.9	98.31
J-4034	6.05	430	648.88	94.84
J-4035	3.7	450	649.6	86.49
J-4036	1.4	432	648.88	93.97
J-4037	0.88	450	649.56	86.47
J-4038	0.89	492	650.03	68.48
J-4040	1.5	444	648.67	88.68
J-4043	2.25	446	648.72	87.84
J-4044	3.27	466	648.72	79.17
J-4045	5.56	458	648.84	82.69
J-4046	15.68	464	648.91	80.12
J-4047	9.44	464	648.9	80.12
J-4048	10.35	468	649.1	78.47
J-4049	0.79	460	649.24	82
J-4050	0.86	437	649.24	91.97
J-4051	2.29	340	659.65	138.5
J-4052	4.32	436	649.25	92.4
J-4053	4.53	440	649.25	90.67
J-4054	3.77	444	649.26	88.94
J-4055	3.2	442	649.26	89.8
J-4056	2.42	450	649.26	86.34
J-4057	4.66	474	649.26	75.94
J-4058	4.27	466	649.26	79.41
J-4059	0.52	473	649.28	76.38
J-4060	2.01	359	659.65	130.27
J-4061	2.89	470	649.28	77.68
J-4062	2.88	467	649.28	78.98
J-4063	5.41	473	649.28	76.38
J-4064	2.33	355	661.13	132.65
J-4065	3.36	474	649.56	76.07
J-4066	3.33	482	649.56	72.6
J-4067	3.57	496	649.56	66.54

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4068	5.94	507	650.24	62.06
J-4069	4.26	500	650.24	65.1
J-4070	4.3	495	650.24	67.26
J-4071	5.84	506	650.1	62.44
J-4072	2.55	515	650.09	58.54
J-4073	6.85	517	650.09	57.67
J-4074	3.44	518	650.09	57.24
J-4075	5.63	520	650.09	56.37
J-4076	0.52	510	650.09	60.7
J-4077	2.74	510	650.09	60.7
J-4078	2.42	493	650.12	68.08
J-4079	5.31	505	650.12	62.88
J-4080	1.42	378	657.66	121.18
J-4082	0.51	510	650.03	60.67
J-4083	1.25	496	650.05	66.75
J-4084	1.11	510	649.99	60.66
J-4085	1.83	508	649.97	61.52
J-4086	2.24	508	650.03	61.54
J-4087	4.17	506	650	62.4
J-4088	4.32	497	650	66.3
J-4089	2.87	497	649.88	66.24
J-4090	3.76	499	649.73	65.31
J-4091	2.98	363	657.66	127.68
J-4092	4.4	500	649.94	64.97
J-4093	6.2	490	649.95	69.31
J-4094	2.11	470	650.03	78.01
J-4095	2.01	469	650.03	78.44
J-4096	4.67	453	650.03	85.38
J-4097	8.9	360	656.4	128.43
J-4098	9.1	461	650.03	81.91
J-4099	1.63	515	651	58.93
J-41	20.5	334	470.81	59.28
J-4100	7.53	510	651	61.09
J-4101	5.33	424	648.89	97.44
J-4102	5.08	510	651.54	61.33
J-4103	13.4	476	650.17	75.47
J-4104	5.74	443	650.05	89.72
J-4105	6.99	435	650.05	93.18
J-4106	6.4	446	650.03	88.41
J-4107	5.14	486	649.73	70.94
J-4108	1.75	477	649.67	74.82
J-4109	4.07	475	649.67	75.68
J-4110	0.49	380	657.66	120.31
J-4111	6.93	453	649.61	85.19
J-4112	1.74	470	649.63	77.83
J-4113	1.89	385	657.66	118.14

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4114	2.67	460	649.53	82.12
J-4115	2.54	468	649.53	78.66
J-4116	3.59	510	650	60.66
J-4117	4.87	508	650	61.53
J-4118	0.8	508	649.98	61.52
J-4119	5.84	504	650	63.26
J-4120	3.63	390	657.66	115.98
J-4121	1.29	378	656.4	120.63
J-4122	1.65	370	656.4	124.1
J-4123	2.74	388	656.4	116.3
J-4124	3.66	398	650.62	109.46
J-4125	7.23	403	649.46	106.79
J-4126	8.34	393	657.65	114.67
J-4127	0.94	388	648.39	112.82
J-4128	1.01	502	649.8	64.04
J-4129	3.81	501	649.8	64.47
J-4130	5.93	503	649.79	63.61
J-4131	2.74	487	649.51	70.42
J-4132	3.5	480	649.51	73.45
J-4134	3.89	473	649.28	76.38
J-4135	1.62	380	654.51	118.94
J-4136	4.69	391	648.39	111.53
J-4137	2.68	385	649.93	114.79
J-4138	2.21	410	649.94	103.97
J-4139	7.12	429	649.77	95.66
J-4140	4.52	415	649.77	101.73
J-4141	11.13	402	649.47	107.23
J-4142	13.36	409	649.39	104.16
J-4143	11.18	380	648.02	116.13
J-4144	4.42	380	648.02	116.13
J-4145	2.62	382	647.85	115.19
J-4146	8.82	350	471.63	52.7
J-4147	7.22	338	471.57	57.88
J-4148	2.9	335	471.57	59.18
J-4149	4.55	360	471.82	48.45
J-4150	15.21	332	471.57	60.47
J-4151	8.56	337	471.55	58.3
J-4152	16.77	338	471.53	57.86
J-4153	3.73	342	471.55	56.13
J-4154	7.12	330	471.37	61.26
J-4155	8.53	340	470.87	56.71
J-4157	1.4	330	470.87	61.04
J-4160	10.55	380	649.71	116.86
J-4161	3.72	410	649.02	103.57
J-4162	5.01	409	649.01	104
J-4163	2.21	411	648.47	102.9

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4164	3.51	410	648.48	103.33
J-4165	2.12	441	648.11	89.74
J-4166	2.55	441	648.1	89.74
J-4168	3.48	440	647.97	90.11
J-4169	0.69	450	647.92	85.76
J-4170	4.39	455	647.7	83.5
J-4171	2.41	440	647.86	90.07
J-4172	1.98	462	647.86	80.53
J-4173	4.2	460	647.59	81.28
J-4174	2.36	462	647.17	80.23
J-4175	2.39	470	647.17	76.77
J-4176	4.69	408	649.56	104.67
J-4177	3.9	406	649.58	105.54
J-4178	1.42	364	650.39	124.09
J-4179	0.57	390	648.75	112.12
J-4180	1.2	440	647.01	89.7
J-4181	1.75	440	647.17	89.77
J-4182	0.77	480	646.82	72.28
J-4183	1.52	468	647.02	77.57
J-4184	1.42	470	647.02	76.7
J-4185	1.76	468	646.87	77.5
J-4186	3.22	457	645.71	81.77
J-4187	2.61	478	646.65	73.08
J-4188	2.83	478	646.65	73.08
J-4189	2.37	472	647.16	75.9
J-4190	4.99	473	647.33	75.54
J-4191	4.15	463	647.34	79.88
J-4192	6.32	481	646.52	71.72
J-4193	2.8	480	646.52	72.15
J-4194	3.86	455	645.71	82.63
J-4195	12.79	430	649.36	95.05
J-4196	1.68	419	649.37	99.82
J-4198	3.51	401	649.58	107.71
J-42	6.9	414	637.47	96.83
J-420	2.7	411	643.89	100.91
J-4200	0.9	460	645.78	80.5
J-4201	1.32	447	645.79	86.14
J-4202	0.21	450	645.78	84.83
J-4203	0.46	453	645.71	83.5
J-4204	0.45	455	645.71	82.63
J-4205	5.56	465.5	645.71	78.08
J-4206	4.62	470	645.65	76.11
J-4207	3.97	480	646.39	72.1
J-4208	1.79	473	645.65	74.81
J-4209	4.75	474	645.64	74.37
J-4210	0.44	476	645.64	73.5

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4211	0.67	475.5	645.63	73.72
J-4212	4.74	472	645.65	75.24
J-4213	2.01	480	646.22	72.02
J-4214	5.85	485	646.12	69.81
J-4215	1.6	483	646.12	70.68
J-4216	2.68	460	649.31	82.03
J-4217	8.75	455	649.31	84.19
J-4218	17.64	440	649.37	90.72
J-4219	15.73	430	649.36	95.05
J-4220	8.53	430	649.37	95.05
J-4221	5.22	435	649.37	92.89
J-4222	3.77	440	649.37	90.72
J-4223	5.37	433	649.45	93.79
J-4224	2.43	423	649.62	98.19
J-4225	4.68	422	649.62	98.63
J-4226	3.33	421	649.66	99.08
J-4227	0.85	420	649.72	99.54
J-4228	2.59	412	649.63	102.96
J-4229	3.7	413	649.63	102.53
J-4230	2.27	416	649.66	101.25
J-4231	1.54	410	649.62	103.83
J-4232	1.31	408	649.62	104.69
J-4234	0.92	400	652.17	109.27
J-4235	4.44	440	649.61	90.82
J-4236	3.28	430	649.61	95.16
J-4237	0.92	407	652.17	106.23
J-4238	1.91	400	652.17	109.27
J-4239	8.73	410	652.18	104.94
J-4240	2.93	393	652.17	112.3
J-4241	2.75	411	652.18	104.5
J-4242	3.62	418	652.17	101.47
J-4243	5.22	422	649.61	98.62
J-4244	4.26	427	649.61	96.46
J-4245	7.51	440	649.61	90.82
J-4246	5.17	435	649.61	92.99
J-4247	2.11	458	649.45	82.95
J-4248	3.59	465	649.44	79.92
J-4249	0.97	460	649.37	82.05
J-4250	2.16	460	649.33	82.04
J-4251	3.11	462	649.31	81.16
J-4252	1.61	478	649.3	74.22
J-4253	4.66	478	649.3	74.22
J-4254	5.09	477	649.29	74.65
J-4255	5.9	477	649.29	74.65
J-4256	3.33	478	645.9	72.75
J-4257	1.63	480	646.03	71.94

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4258	2.28	477	645.76	73.12
J-4259	6.77	477	645.76	73.12
J-4260	10.04	465	645.6	78.25
J-4261	1.86	470	645.62	76.1
J-4262	2.73	470	645.64	76.1
J-4263	5.56	473	649.28	76.38
J-4264	4.74	470	649.28	77.68
J-4265	2.73	467	649.31	79
J-4266	0.71	455	649.37	84.22
J-4267	3.07	430	652.17	96.27
J-4268	4.06	425	652.17	98.43
J-4269	2.76	410	652.17	104.93
J-4270	2.91	411	652.17	104.5
J-4271	4.3	390	652.17	113.6
J-4272	1.91	390	652.17	113.6
J-4273	1.45	370	652.17	122.26
J-4275	3.69	405	652.17	107.1
J-4276	4.07	430	652.17	96.27
J-4277	1.23	435	652.17	94.1
J-4278	4.06	439	652.17	92.37
J-4279	3.22	443	652.17	90.63
J-4280	2.35	450	652.16	87.6
J-4281	3.1	452	652.16	86.73
J-4282	4.38	452	652.16	86.73
J-4283	1.1	447	652.17	88.9
J-4284	2.53	399	652.17	109.7
J-4285	5.98	400	652.17	109.27
J-4286	2.02	430	652.17	96.27
J-4287	0.27	475	652.17	76.77
J-4288	1.05	455	652.16	85.43
J-4289	4.8	455	652.16	85.43
J-4290	3.5	480	652.16	74.6
J-4291	1.09	485	652.16	72.43
J-4292	0.54	495	652.17	68.1
J-4293	1.26	475	652.17	76.77
J-4294	2.93	475	652.17	76.77
J-4295	3.03	480	652.17	74.6
J-4296	2.51	488	652.17	71.13
J-4297	3.31	480	652.17	74.6
J-4298	4.41	495	652.17	68.1
J-4299	1.41	500	652.17	65.93
J-43	4.79	450	637.54	81.26
J-4300	1.13	515	652.17	59.44
J-4301	2.01	540	652.17	48.6
J-4302	3.58	508	652.17	62.47
J-4303	3.07	520	652.17	57.27

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4304	2.02	550	652.17	44.27
J-4305	0.04	533	652.17	51.64
J-4306	11.3	427	645.21	94.55
J-4307	1.49	439.3	645.28	89.25
J-4308	4.22	462	645.52	79.52
J-4309	3.37	462	645.59	79.55
J-4310	4.56	470	645.6	76.09
J-4311	31.52	468	645.44	76.89
J-4312	23.73	442	645.44	88.15
J-4313	7.78	433	645.34	92.01
J-4314	5.81	417	645.34	98.94
J-4315	2.74	406	645.32	103.7
J-4316	2.36	430	645.49	93.37
J-4317	3.98	430	646.33	93.73
J-4318	1.26	414.7	645.95	100.2
J-4324	4.23	401	636.86	102.2
J-4330	3.14	413	643.22	99.75
J-4331	13.5	432	643.87	91.8
J-4332	5.09	450	645.68	84.79
J-4333	0.89	445	645.61	86.92
J-4334	3.93	429	645.68	93.89
J-4335	4.62	463	645.68	79.16
J-4336	2.85	456	645.61	82.16
J-4337	9.13	470	645.6	76.09
J-4338	15.6	470	645.6	76.09
J-4340	11.39	480	652.16	74.6
J-4341	2.99	486	652.16	72
J-4342	2.98	448	652.17	88.47
J-4343	0.29	554	653.02	42.9
J-4344	5.93	420	648.42	98.98
J-4345	5.93	440	648.42	90.31
J-4346	8.96	420	648.19	98.88
J-4347	7.41	451	648.12	85.41
J-4348	3.87	458	648.12	82.38
J-4349	8.01	463	648.09	80.2
J-4350	9.55	440	647.88	90.07
J-4351	11.03	450	647.82	85.72
J-4352	3.25	446	647.75	87.42
J-4353	2.58	450	647.67	85.65
J-4354	5.5	456	647.81	83.11
J-4355	1.92	446	647.86	87.47
J-4356	2.39	480	650.87	74.04
J-4357	3.73	456	647.9	83.15
J-4358	5.31	456	647.9	83.15
J-4359	5.35	456	647.99	83.19
J-4360	2.38	460	648.14	81.52

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4361	4.39	455	647.99	83.62
J-4362	1.04	444	648.27	88.51
J-4363	1.16	456	647.91	83.15
J-4364	3.59	460	648.09	81.5
J-4365	6.82	460	648.08	81.5
J-4366	5.24	464	648.08	79.76
J-4367	4.36	462	647.91	80.55
J-4387	6.96	458	645.46	81.22
J-4388	5.52	473	645.63	74.8
J-4391	12.38	470	645.63	76.1
J-4392	8.13	476	645.63	73.5
J-4395	1.89	285	524.14	103.62
J-4396	2.43	370	649.92	121.29
J-4397	3.43	353	524.14	74.16
J-4398	2.73	297	524.14	98.42
J-4399	5.2	289	524.14	101.89
J-44	24.84	340	470.8	56.68
J-4400	21.73	465	645.59	78.25
J-4410	3.83	430	645.52	93.39
J-4411	5.67	430	645.51	93.38
J-4412	6.83	430	645.5	93.38
J-4414	4.27	430	645.51	93.38
J-4415	5.93	430	645.51	93.38
J-4417	5.66	425	645.51	95.55
J-4418	5.97	430	645.51	93.38
J-4455	15.77	458	645.45	81.22
J-45	17.83	354	470.8	50.61
J-4501	16.86	441.1	649.36	90.24
J-4502	3.79	440.5	649.36	90.5
J-4503	4.98	439.2	649.36	91.06
J-4505	5.69	439.2	649.36	91.06
J-4508	0.95	437	649.37	92.02
J-4526	8.1	148	483.67	145.45
J-4527	17.12	300	483.65	79.58
J-4528	11.1	406	649.58	105.54
J-4530	5.05	432	645.86	92.67
J-4532	6.33	449	646.46	85.56
J-4533	3.75	376	646.94	117.4
J-4535	7.22	362	647.1	123.53
J-4536	12.96	489	649.51	69.55
J-4537	14.73	466	649.5	79.51
J-4538	4.57	463	641.53	77.36
J-4539	16.62	482	641.53	69.12
J-4540	20.91	456	641.58	80.41
J-4541	4.68	456	641.59	80.41
J-4542	9.42	456	641.59	80.41

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4543	16.31	456	641.59	80.42
J-4544	3	440	642.28	87.65
J-4545	10.59	440	642.28	87.65
J-4546	12.87	430	641.47	91.63
J-4547	8.79	440	641.29	87.22
J-4548	16.4	423	641.36	94.62
J-4549	9.51	435	641.33	89.4
J-4550	6.55	480	645.97	71.91
J-4551	17.28	470	645.93	76.23
J-4552	14.62	480	645.94	71.9
J-4553	19.98	475	645.93	74.06
J-4554	9.05	414	645.52	100.32
J-4555	8.98	409	645.51	102.48
J-4556	11.24	410	645.51	102.05
J-4557	2.95	433	645.75	92.19
J-4558	5.7	426	645.75	95.22
J-4559	7.33	424	645.75	96.09
J-4560	3.69	407	645.79	103.47
J-4561	3.49	406	645.79	103.9
J-4562	6.87	406	645.79	103.9
J-4563	6.87	416	645.79	99.57
J-4564	12	414	645.78	100.43
J-4565	2.29	430	645.86	93.53
J-4567	10.87	430	645.88	93.54
J-4568	0.28	430	645.88	93.54
J-4569	7.5	437	645.96	90.54
J-4570	8.13	430	645.93	93.56
J-4571	12.35	430	645.91	93.55
J-4572	4.06	430	645.93	93.56
J-4573	1.24	430	645.88	93.54
J-4574	4.96	455	645.92	82.73
J-4575	5.8	448	645.93	85.76
J-4576	6.36	449	645.93	85.33
J-4577	14.08	466	645.92	77.96
J-4578	4.14	440	645.92	89.23
J-4579	6.17	453	645.92	83.59
J-4580	3.38	454	646.5	83.41
J-4581	7.99	458	646.33	81.6
J-4582	5.57	459	646.33	81.17
J-4583	3.34	460	646.33	80.74
J-4584	9.04	461	646.13	80.22
J-4585	10.91	462	646.13	79.78
J-4586	3.96	459	645.92	80.99
J-4587	4.99	465	645.78	78.33
J-4588	4.51	459	646.03	81.04
J-4589	6.86	460	646.02	80.6

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4590	24.72	387	646.61	112.49
J-4591	5.79	377	646.61	116.82
J-4592	5.79	453	647.16	84.13
J-4593	10.49	466	647.15	78.49
J-4594	13.86	453	647.15	84.12
J-4595	5.84	432	647.55	93.4
J-4596	5.93	457	647.55	82.57
J-4597	3.54	448	647.55	86.47
J-46	4.91	586	722.26	59.04
J-4600	2.27	427	647.86	95.7
J-4601	30.55	432	647.85	93.53
J-4602	2.09	478	635.88	68.41
J-4603	4.7	472	636.01	71.07
J-4604	22.67	472	635.93	71.03
J-4605	19.87	476	635.91	69.29
J-4606	2.28	470	649.61	77.82
J-4607	6.64	470	649.61	77.82
J-4608	3.77	470	649.61	77.82
J-4610	5.93	460	648.82	81.81
J-4611	3.59	463	648.84	80.52
J-4612	13.79	472	648.98	76.69
J-4613	5.51	436	648.21	91.95
J-4614	24.82	453	648.21	84.58
J-4615	22.38	449	648.2	86.31
J-4616	1.56	366	647.12	121.81
J-4617	1.18	336	647.12	134.81
J-4618	5.66	469	646.75	77.02
J-4619	4.11	446	644.97	86.21
J-4620	3.04	450	644.97	84.48
J-4621	1.53	415	645.03	99.67
J-4622	4.9	441	645.03	88.4
J-4623	3	293	485.18	83.27
J-4624	9.48	293	485.18	83.27
J-4625	7.48	285	485.17	86.74
J-4626	6.19	412	642.97	100.08
J-4627	13.69	424	642.97	94.88
J-4628	20.77	413	643.86	100.03
J-4629	16.89	417	643.73	98.24
J-4630	7.42	300	470.64	73.94
J-4631	17.62	297	470.64	75.24
J-4632	1.33	273	470.64	85.64
J-4633	4.46	231	470.64	103.83
J-4634	14.87	310	484.57	75.64
J-4635	13.7	320	484.57	71.31
J-4636	10.02	345	484.55	60.47
J-4637	19.56	360	484.55	53.97

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4638	4.98	412	651.22	103.65
J-4639	1.38	428	649.37	95.92
J-4640	1.72	426	649.37	96.79
J-4641	19.08	392	648.45	111.12
J-4642	28.43	429	648.67	95.18
J-4643	12.16	407	647.99	104.42
J-4644	5.53	407	647.94	104.4
J-4645	4.97	391	647.74	111.24
J-4646	9.58	388	647.74	112.54
J-4647	14.01	402	645.81	105.64
J-4648	8.93	408	645.76	103.02
J-4649	4.1	409	643.85	101.76
J-4650	36.96	363	620.49	111.57
J-4651	9.28	426	634.48	90.33
J-4652	9.91	426	634.48	90.33
J-4653	4.36	420	634.54	92.96
J-4654	9.74	418	634.53	93.82
J-4655	8.04	400	645.32	106.3
J-4656	2.16	437	645.25	90.24
J-4657	9.83	448	645.29	85.48
J-4658	12.04	437	645.29	90.25
J-4661	14.58	460	645.93	80.56
J-4662	31.34	460	645.93	80.56
J-4663	6.53	450	645.92	84.89
J-4664	6.37	440	645.92	89.22
J-4665	6.58	445	645.92	87.06
J-4666	14.54	450	646.01	84.93
J-4667	21.11	450	645.94	84.9
J-4668	14.46	447	645.93	86.19
J-4669	31.68	445	645.93	87.06
J-467	1.65	398	647.06	107.92
J-4670	13.25	445	645.93	87.06
J-4671	9.14	482	645.94	71.03
J-4673	1.22	445	634.7	82.2
J-4674	2.84	442	644.5	87.74
J-4675	9.82	442	644.5	87.74
J-4676	6.5	442	644.5	87.74
J-4677	3.94	200	517.77	137.69
J-4678	3.94	210	517.78	133.36
J-4679	9.88	435	637.76	87.85
J-468	4.37	423	647.01	97.06
J-4700	4.02	330	470.84	61.02
J-4701	1.67	330	470.81	61.01
J-4702	2.71	472	648.85	76.63
J-4709	7.81	478	646.48	73

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4716	4.79	469	648.93	77.96
J-4717	13.21	465	648.86	79.67
J-472	3.13	450	645.23	84.59
J-4720	1.31	402	644.82	105.21
J-4726	7.71	438	646.13	90.18
J-473	4.2	434	645.98	91.85
J-4731	3.94	215	522.93	133.43
J-4732	2.75	400	645.32	106.3
J-4734	6.28	435	643.91	90.52
J-474	1.57	434	645.88	91.81
J-4742	3.33	407	647.94	104.4
J-4743	0.95	476.4	650.14	75.28
J-4744	5.13	397	634.39	102.86
J-4747	7.72	430	646.02	93.6
J-4748	1.35	512	651.24	60.33
J-4749	2.31	354	652.78	129.46
J-475	2.93	420	646	97.92
J-4750	2.3	371	652.75	122.08
J-4752	5.75	377	652.72	119.47
J-4753	17.59	400	652.72	109.5
J-4754	8.1	356	652.68	128.55
J-4755	68.71	362	652.65	125.94
J-4756	21.83	468	645.59	76.95
J-4758	14.37	468	645.59	76.95
J-476	2.32	417	646.2	99.31
J-4763	1.14	446	645.86	86.6
J-4764	15.78	468	645.59	76.95
J-4766	14.16	468	645.59	76.95
J-4767	1.35	450	645.94	84.9
J-4768	5.67	432	645.8	92.64
J-4769	0.46	452	646.07	84.09
J-477	3.07	409	646.38	102.85
J-4771	13.45	464	645.73	78.74
J-4772	8.9	457	646.18	81.97
J-4776	5.03	416	646.05	99.68
J-4777	6.3	454	645.98	83.19
J-4778	5.97	468	645.6	76.95
J-4779	20.39	468	645.73	77.01
J-478	6.4	398	646.36	107.61
J-4781	1.26	420	646.06	97.95
J-4782	7.6	435	646.05	91.45
J-4784	0.3	445	646.05	87.12
J-4785	4.88	430	645.75	93.48
J-4786	11.79	444	646.05	87.55
J-479	1.36	385	646.81	113.44

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4792	18.22	439	645.73	89.57
J-4793	21.44	442	645.74	88.28
J-4796	2.84	436	645.75	90.88
J-4797	12.89	457	645.78	81.8
J-4798	21.71	468	645.59	76.95
J-48	23.76	590	721.95	57.17
J-480	3.37	366	646.59	121.58
J-4801	2.51	448	645.26	85.47
J-4804	2.6	450	645.29	84.62
J-4805	8.45	450	645.31	84.63
J-4806	2.52	443	645.26	87.64
J-4807	15.71	455	645.26	82.44
J-4808	10.21	455	645.25	82.44
J-481	4.46	363	646.53	122.85
J-4810	9.06	455	645.32	82.47
J-4811	7.89	450	645.28	84.62
J-4812	2.52	444	645.27	87.21
J-4814	1.36	450	645.26	84.61
J-4815	1.36	450	645.26	84.61
J-4816	17	414	652.71	103.43
J-482	6.56	347	646.16	129.63
J-4824	9.66	413	652.71	103.87
J-4825	2.54	413	652.71	103.87
J-483	5.24	340	646.02	132.6
J-4834	2.52	476	635.64	69.17
J-4837	2.08	477	635.55	68.7
J-4838	0.84	480	635.55	67.4
J-4839	5.76	481	635.54	66.96
J-484	5.77	328	645.79	137.7
J-4841	5.44	472	635.62	70.89
J-4848	5.63	432	644.43	92.05
J-4851	3.55	434	644.43	91.18
J-4854	14.65	390.11	647.74	111.63
J-4855	18.16	386.25	647.69	113.28
J-4856	18.94	400	648.63	107.73
J-4857	16.4	422	648.87	98.3
J-4858	22.42	423	648.87	97.87
J-4859	12.8	388	648.93	113.06
J-486	3.85	320	646.07	141.29
J-4860	7.18	376	648.79	118.2
J-4861	0.75	370	648.79	120.8
J-4862	5.48	371	648.79	120.37
J-4863	14.83	372	648.79	119.93
J-4864	26.36	372	648.79	119.93
J-4865	20.36	381	649.46	116.33
J-4866	25.36	385	649.44	114.58

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4868	37.56	406	649.44	105.48
J-4869	10.82	377	649.8	118.21
J-487	1.62	315	645.88	143.37
J-4870	3.58	376	649.8	118.64
J-4871	22.38	376	650.14	118.79
J-4872	36.04	371	650.57	121.14
J-4873	28.49	370	650.63	121.6
J-4874	23.6	376	649.81	118.64
J-4875	23.3	403	649.83	106.95
J-4876	13.87	410	650.74	104.31
J-4877	25.34	404	650.86	106.97
J-4878	7.25	430	645.83	93.52
J-4879	11.07	406	650.86	106.1
J-488	2.96	402	645.09	105.33
J-4880	14.17	380	651.37	117.58
J-4881	9.42	410	651.37	104.59
J-4882	12.24	360	651.61	126.35
J-4883	34.33	373	651.67	120.75
J-4884	19.74	372	651.76	121.22
J-4885	1.84	430	645.81	93.51
J-4886	10.46	385	651.51	115.48
J-4887	9.37	407	651.51	105.95
J-4888	15.19	355	651.7	128.56
J-4889	21.72	353	651.83	129.49
J-489	4.18	425	645.4	95.5
J-4890	18.95	353	652.21	129.65
J-4891	10.51	366	652.3	124.05
J-4892	45.15	352	652.53	130.22
J-4893	5.94	350	651.74	130.74
J-4894	10.72	350	651.71	130.73
J-4895	25.51	351	651.7	130.29
J-4896	37.52	350	651.7	130.73
J-4897	17.37	350	651.7	130.73
J-4898	21.19	411	652.68	104.72
J-4899	16.53	416	652.69	102.56
J-49	14.35	590	721.94	57.17
J-490	20.6	440	645.07	88.86
J-4900	7.87	432	647.57	93.4
J-4901	9.45	416	652.69	102.56
J-4903	4.92	399	645.83	106.95
J-4904	3.05	428	644.98	94.02
J-4905	35.79	388	649.41	113.27
J-4906	14.03	356.19	651.71	128.05
J-4907	18.85	350	651.7	130.73
J-491	23.21	430	644.77	93.06
J-492	7.75	409	644.65	102.11

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4923	4.84	416	648.92	100.92
J-4926	3.27	432	645.81	92.65
J-4929	9.27	415	643.38	98.96
J-493	15.41	423	644.76	96.09
J-4931	17.28	428	645.38	94.19
J-4932	13.71	406	645.32	103.7
J-494	12.92	413	644.71	100.4
J-495	8.12	416	644.82	99.15
J-496	13.28	407	644.52	102.92
J-497	16.36	418	644.16	98
J-498	7.48	428	644.05	93.62
J-4982	0.81	425	645.58	95.58
J-4983	13.01	420	645.63	97.77
J-4984	12.09	403.5	645.66	104.93
J-499	12.65	413	644.03	100.1
J-50	16.59	580	722.52	61.75
J-500	1.25	405	643.87	103.5
J-5000	3.34	568	722.75	67.05
J-5001	2.42	570	721.21	65.52
J-5002	4.9	562	721.21	68.98
J-5003	5.51	568	720.49	66.07
J-5004	6.14	554	715.07	69.79
J-5005	1.91	538	707.63	73.5
J-5006	2.12	540	707.54	72.6
J-5007	1.58	526	705.91	77.96
J-5008	4.57	515	701.46	80.79
J-5010	6.92	514	705.63	83.03
J-5011	4.82	506	708.46	87.73
J-5012	1.06	532	708.17	76.34
J-5013	1.02	525	712.41	81.21
J-5014	2.73	530	712.41	79.04
J-5015	0.69	562	718	67.6
J-5016	3.02	560	718	68.46
J-5017	3.21	570	720.48	65.2
J-5018	3.29	570	721.58	65.68
J-5019	7.69	584	721.78	59.7
J-5020	3.92	595	721.78	54.93
J-5021	4.9	595	721.97	55.01
J-5022	3.2	580	721.4	61.27
J-5023	2.67	578	721.4	62.13
J-5024	9.28	584	722	59.8
J-5025	4.89	595	722	55.03
J-5026	13.58	588	722.3	58.19
J-5027	3.28	582	721.6	60.49
J-5028	17.34	595	721.63	54.87
J-5029	6.9	595	721.63	54.87

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-5030	5.76	594	721.63	55.3
J-5031	6.06	582	721.6	60.49
J-5032	5.76	582	721.6	60.49
J-5033	1.23	570	720.47	65.2
J-5034	1.43	566	720.47	66.93
J-5035	2.73	562	720.47	68.67
J-5036	2.73	560	720.46	69.53
J-5037	3.79	538	720.46	79.06
J-5038	1.62	546	720.46	75.59
J-5039	1.9	547	720.46	75.16
J-5040	1.71	562	720.46	68.66
J-5041	1.56	572	720.47	64.33
J-5042	2.33	572	720.47	64.33
J-5043	1.57	574	720.47	63.47
J-5044	3.86	576	720.47	62.6
J-5045	0.89	574	720.47	63.47
J-5046	3	515	720.45	89.02
J-5047	1.69	515	720.45	89.02
J-5048	2.77	522	720.45	85.99
J-5049	1.39	506	720.45	92.92
J-5050	1.36	506	720.45	92.92
J-5051	1.02	510	720.45	91.19
J-5052	4.07	504	720.45	93.79
J-5053	1.55	502	720.45	94.65
J-5054	3.12	500	720.45	95.52
J-5055	2.22	528	707.57	77.81
J-5056	4.67	530	707.03	76.71
J-5057	1.76	535	707.03	74.54
J-5058	5.14	530	706.34	76.41
J-5059	2.87	532	706.34	75.54
J-5060	1.25	554	707.57	66.54
J-5061	4.47	528	707.57	77.81
J-5062	11.08	554	707.57	66.54
J-5063	10.6	546	707.56	70.01
J-5064	6.75	560	707.56	63.94
J-5065	6	570	707.56	59.61
J-5099	2.83	406	644.17	103.2
J-51	8.51	575	722.52	63.92
J-5100	1.99	529	705.91	76.66
J-5101	5.19	532	708.17	76.34
J-5102	3.05	560	707.56	63.94
J-5103	2.76	570	707.56	59.61
J-5104	4.44	554	715.07	69.79
J-512	32.51	440	645.67	89.11
J-52	2.97	570	722.52	66.09
J-53	13.98	580	722.33	61.67

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-535	19.62	472	645.77	75.29
J-537	7.69	461	635.68	75.69
J-538	7.33	468.5	636.11	72.63
J-54	0.8	580	722.33	61.67
J-55	6.68	570	722.63	66.13
J-554	3.47	417.3	637.48	95.4
J-556	6.78	450.5	636.24	80.48
J-56	10.77	575	722.62	63.97
J-563	13.04	466	646.26	78.11
J-565	3.92	475.5	646.3	74.01
J-567	6.49	472	646.12	75.45
J-568	14.33	465.5	646.66	78.5
J-57	8.27	573	722.86	64.93
J-573	15.55	464.5	646.4	78.82
J-574	33.56	455	645.99	82.76
J-575	24.57	442	645.77	88.29
J-576	18.1	430.5	646.1	93.42
J-577	10.36	431.5	646.08	92.98
J-578	6.53	415	646.02	100.1
J-579	7.81	419.5	646	98.14
J-58	4.97	565	722.72	68.34
J-580	14.29	422	645.92	97.03
J-581	14.41	439	645.9	89.65
J-582	9.16	480	645.92	71.89
J-583	6.52	485.5	645.93	69.52
J-584	23.89	483.3	645.94	70.47
J-585	13.02	469.5	645.91	76.44
J-586	13.05	458	645.91	81.42
J-587	10.51	460.5	645.92	80.34
J-588	18.28	466.5	645.94	77.75
J-589	22.18	470.5	646.08	76.08
J-59	21.33	442	645.32	88.1
J-592	4.63	406.9	643.28	102.43
J-593	8.46	415	642.63	98.63
J-594	6.38	411	643.26	100.64
J-595	5.02	426.5	642.66	93.66
J-596	13.89	428.5	643.26	93.06
J-597	2.61	414.5	642.91	98.97
J-598	2.42	418	643.63	97.76
J-599	9.14	419.5	644.15	97.34
J-6	3.99	555	722.72	72.68
J-60	3.11	434	645.27	91.54
J-601	8.06	402	643.84	104.79
J-6018	3.06	446	647.59	87.35
J-6019	2.49	444	647.56	88.2
J-602	4.2	410	644.14	101.45

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-6020	4.16	444	647.56	88.2
J-6021	6.7	444	647.56	88.2
J-6022	12.23	401.5	645.78	105.85
J-6023	2.84	430	645.37	93.32
J-6024	29.55	408	645.76	103.02
J-6025	0.31	403	645.93	105.26
J-6026	19.2	405	645.97	104.41
J-6027	14.42	405	645.91	104.39
J-6028	25.37	433	646.02	92.3
J-6029	24.85	415	645.91	100.05
J-6030	22.85	431	645.94	93.13
J-6031	1.37	435	646.13	91.48
J-6032	13.25	403	645.91	105.25
J-6033	22.17	409	645.91	102.65
J-6034	10.21	411	643.43	100.71
J-6035	7.42	409	643.07	101.42
J-6036	6.65	413	643.07	99.69
J-6037	6.86	287	485.18	85.87
J-6038	4.93	283	485.18	87.6
J-6039	3.94	260	517.77	111.69
J-604	12.6	429	643.87	93.1
J-6040	3.94	230	517.77	124.69
J-6041	3.94	260	517.77	111.69
J-6042	3.94	210	517.77	133.36
J-6043	3.94	240	517.77	120.36
J-6044	3.94	180	517.77	146.36
J-6045	3.94	200	517.77	137.69
J-6046	3.94	200	517.77	137.69
J-6047	3.94	190	517.77	142.02
J-6048	3.54	426	649.61	96.89
J-6049	2.83	535	707.03	74.54
J-605	6.33	431	644.81	92.64
J-6052	12.6	450	653.56	88.2
J-6054	2.51	340	470.8	56.68
J-6056	19.57	391	644.35	109.78
J-6057	4.41	400	638.85	103.49
J-6058	17	335	621.09	123.96
J-606	2.14	453	644.87	83.14
J-6060	5.04	320	634.37	136.22
J-6061	30.75	369	620.69	109.06
J-6062	8.99	335	615.88	121.7
J-6063	4.02	310	623.74	135.94
J-6064	1.24	340	634.31	127.52
J-6065	3.02	430	635.06	88.85
J-6066	6.22	430	635.64	89.1
J-607	2.4	434.5	644.92	91.17

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-6070	4.1	570	653.8	36.31
J-6076	3.01	480	657.35	76.84
J-6077	14.32	470	657.25	81.14
J-6078	13.19	470	657.26	81.14
J-6079	8.75	470	657.27	81.14
J-608	22.26	429.5	643.25	92.62
J-6081	1.27	445	646.72	87.41
J-6082	5.01	445	646.72	87.41
J-6083	2.5	445	646.72	87.41
J-609	21.51	440	649.52	90.79
J-61	9.68	432	645.25	92.4
J-610	14.62	450	650.01	86.66
J-615	2.93	438.4	645.19	89.6
J-616	3.05	449.5	645.19	84.79
J-617	2.24	445	645.41	86.84
J-618	1.07	463.2	645.41	78.95
J-619	2.72	407.7	645.2	102.91
J-620	3.82	402	645.18	105.37
J-622	1.43	387	645.14	111.85
J-623	2.15	395	645.22	108.42
J-624	0.1	401	645.69	106.02
J-625	3.78	443.1	645.62	87.75
J-627	5.21	382.4	645.86	114.16
J-628	2.91	377	645.07	116.16
J-629	9.29	356	646.82	126.01
J-630	5.33	360	646.81	124.28
J-631	5.56	250	463.24	92.4
J-632	3.46	258	463.24	88.93
J-633	2.26	210	488.86	120.83
J-634	3.92	390	646.83	111.29
J-635	0.87	385.4	646.84	113.28
J-636	4.07	381.8	647.07	114.94
J-637	3.21	368.9	647.16	120.57
J-639	2.43	386	647.42	113.27
J-640	0.78	372	647.13	119.21
J-641	1.55	375.9	647.13	117.53
J-642	6.17	387	647.29	112.79
J-643	3.47	370.8	647.14	119.74
J-644	6.25	340	647.13	133.08
J-645	1.69	400	644.72	106.04
J-65	36.08	444	640.56	85.17
J-6501	12.51	326	484.6	68.72
J-6502	12.69	340	484.64	62.67
J-6505	15.49	372	484.56	48.77
J-6506	18.42	300	484.55	79.97
J-6508	25.82	409	652.94	105.7

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-66	14.59	434	640.82	89.61
J-67	2.02	424	640.82	93.95
J-68	5.05	340	647.12	133.07
J-69	2.83	330	647.12	137.41
J-7	8.61	450	653.23	88.06
J-70	3.78	340	647.12	133.07
J-702	3.2	445.5	645.97	86.86
J-709	3.11	468	646.45	77.32
J-71	1.59	368	657.25	125.33
J-710	2.35	474.6	646.82	74.62
J-711	1.57	457	646.95	82.31
J-712	2.42	458.5	647.43	81.86
J-713	2.26	460.5	648	81.24
J-714	2.62	480	647.38	72.52
J-715	2.65	475	647.35	74.68
J-716	2.34	458.5	647.33	81.82
J-717	2.22	459	647.89	81.85
J-719	1.51	470	648.74	77.45
J-72	4.96	376	657.22	121.85
J-720	3.02	463.4	648.68	80.28
J-721	2.49	465.9	648.96	79.32
J-722	0.62	468.7	649.58	78.38
J-723	6.63	472.8	649.66	76.63
J-724	9.44	473.7	649.71	76.27
J-725	7.68	476.4	650.64	75.5
J-73	16.73	430	657.22	98.45
J-74	8.36	382	657.21	119.25
J-75	8.6	391	657.21	115.35
J-76	7	411	657.19	106.68
J-77	7.47	390	634.43	105.91
J-78	1.23	374	634.4	112.83
J-79	18.81	358	634.35	119.74
J-80	9.96	350	634.33	123.2
J-8013	14.63	470	646.59	76.52
J-802	4.89	395	644.3	108.02
J-803	6.39	391	644.36	109.78
J-804	7.06	393	644.36	108.91
J-805	2.86	407	644.76	103.02
J-807	3.97	403	643.93	104.4
J-808	1.17	402	644.8	105.21
J-809	2.42	405.5	645.37	103.93
J-81	8.78	305	484.54	77.8
J-810	2.17	380.7	647.05	115.41
J-811	1.31	408	644.72	102.57
J-82	4.95	340	634.3	127.52
J-83	3.52	338	634.31	128.39

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-84	7.05	343	634.3	126.22
J-85	1.48	343	634.38	126.25
J-86	7.44	555	653.23	42.56
J-88	4.94	345	634.32	125.36
J-89	0.22	343	634.32	126.23
J-9	3.94	210	517.78	133.36
J-90	8.75	347	634.31	124.49
J-900	2.71	459.8	647.03	81.13
J-9000	3.67	451	634.56	79.54
J-9001	14.7	451	634.62	79.56
J-9002	2.59	447.9	646.07	85.87
J-9003	8.56	448	634.63	80.87
J-9004	12.23	438	634.61	85.19
J-9006	6.2	429	634.67	89.12
J-9007	3.66	447	634.8	81.37
J-9008	0.73	446	634.75	81.79
J-9009	2.19	445	634.8	82.24
J-9010	0.78	437	634.81	85.71
J-9011	5.62	437	634.79	85.7
J-9013	4.99	440	634.91	84.46
J-9015	3.75	424.5	634.49	90.99
J-9016	8.16	422	634.49	92.07
J-9017	9.46	424	634.78	91.33
J-9018	1.99	420	634.57	92.97
J-9019	5.29	405	634.48	99.43
J-902	7.39	433.5	644.93	91.61
J-9020	5.85	410	634.49	97.27
J-9022	2.61	407	634.49	98.57
J-9023	14.41	404	634.49	99.87
J-9024	5.76	415	634.49	95.1
J-9025	10.83	400.5	634.42	101.36
J-9026	4.58	400	634.42	101.57
J-9027	5.24	393	634.42	104.61
J-9028	7.72	394	634.42	104.17
J-9029	11.93	397	634.38	102.86
J-903	1.5	385	645.12	112.71
J-9030	1.27	375	634.4	112.4
J-9031	2.58	369	634.39	115
J-9032	4.24	363	634.38	117.59
J-9033	4.19	364	634.38	117.15
J-9034	12.23	400	634.37	101.55
J-9035	7.51	395	634.44	103.75
J-9036	3.88	406	634.44	98.98
J-9037	7.19	398	634.43	102.44
J-9038	3.74	405	634.42	99.41
J-9039	1.54	411	634.42	96.81

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-904	1.17	407.6	645.05	102.89
J-9040	6.23	413	634.41	95.94
J-9041	1.76	413.5	634.49	95.76
J-9042	0.75	417	634.5	94.24
J-9043	6.01	416	634.49	94.67
J-9047	2.51	450	634.68	80.02
J-9050	8.13	440	634.47	84.26
J-9051	4.55	425	634.47	90.76
J-9052	5.52	421	634.47	92.5
J-9053	0.89	415.5	634.47	94.88
J-9054	3.67	416	634.48	94.67
J-9056	3.7	429	634.48	89.03
J-9058	7.93	434.5	634.48	86.65
J-9059	2.47	433	634.48	87.3
J-9060	7.01	432	634.49	87.74
J-9061	9.04	436	634.51	86.01
J-9062	8.26	425	634.5	90.78
J-9063	2.9	426	634.5	90.34
J-9064	0.8	437	634.54	85.59
J-9065	6.45	450	634.55	79.97
J-9066	7.22	457	634.58	76.94
J-9067	7.51	460	634.62	75.66
J-9068	4.17	450	634.62	80
J-9069	3.12	435.5	635.62	86.71
J-9070	9.37	435	635.62	86.93
J-9071	8.76	464	634.53	73.89
J-9072	9.79	443	634.55	83
J-9073	8.11	440	634.54	84.29
J-9074	6.22	453	634.58	78.68
J-9075	4.82	460.5	634.55	75.42
J-9076	8.01	457	634.54	76.93
J-9077	6.59	456	634.65	77.41
J-9078	4.16	455.5	634.65	77.63
J-9079	8.36	450	634.51	79.95
J-908	0.73	472	635.1	70.67
J-9080	7.47	445.5	634.89	82.06
J-9081	7.43	437	634.89	85.75
J-9082	7.42	433	634.81	87.44
J-9083	8.82	425.5	634.81	90.69
J-9084	9.08	435.5	635.62	86.71
J-9085	4.44	422	635.62	92.56
J-9086	11.13	420	636.06	93.62
J-9087	9.64	425	636.06	91.45
J-9088	12.72	430	635.8	89.17
J-9089	7.85	435	635.63	86.93
J-9090	4.95	425.5	635.1	90.82

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-9091	10.22	425	634.97	90.98
J-9092	7.55	441	635.23	84.16
J-9093	10.87	432	635.23	88.06
J-9094	4.52	444	635.04	82.78
J-9095	5.37	462	634.94	74.93
J-9096	2.52	467	634.96	72.78
J-9097	3.81	472	634.98	70.62
J-9098	3.09	453	635.04	78.88
J-9099	4.3	450	635.07	80.19
J-91	0.29	440	646.53	89.49
J-910	3.79	471.5	636.06	71.3
J-9100	4.93	465	635.07	73.69
J-9101	5.89	475	635.01	69.33
J-9102	5.86	476	635.01	68.9
J-9103	4.19	477.5	635.05	68.27
J-9104	6.52	478	635.05	68.05
J-9105	7.57	477	635.23	68.56
J-9106	10.26	470	635.01	71.5
J-9107	6.45	438	635.37	85.52
J-9108	9.2	429	635.37	89.42
J-9109	10.74	428.5	635.53	89.71
J-9110	11.42	413	635.75	96.52
J-9111	14.26	429	635.73	89.58
J-9112	12.22	437	635.99	86.22
J-9113	7.44	444	636.01	83.2
J-9114	10.05	426.3	636	90.86
J-9115	6.62	424.5	635.76	91.54
J-9116	5.12	415	635.83	95.69
J-9117	13.12	410	636.21	98.02
J-9118	8.64	410	636.22	98.02
J-9119	11.42	400	636.4	102.43
J-912	0.46	398	647.11	107.94
J-9120	16.73	454.5	635.53	78.44
J-9121	12.48	473	635.36	70.35
J-9122	5.03	478	635.24	68.13
J-9123	12.79	475	635.23	69.43
J-9124	4.29	479	635.2	67.68
J-9125	2.54	480	635.21	67.25
J-9126	8.63	480	635.22	67.26
J-9127	8.41	482	635.22	66.39
J-9128	4.21	475	635.21	69.42
J-9129	5.89	477	635.11	68.51
J-9130	14.54	465	634.86	73.6
J-9131	7.51	469.5	634.98	71.7
J-9133	6.12	480	635.53	67.39
J-9134	1.25	450.7	634.87	79.8

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-9138	3.71	445	634.89	82.28
J-9139	3.72	448	634.92	80.99
J-9140	3.72	450	634.93	80.13
J-9142	2.47	453	635.03	78.87
J-9145	7.23	482	635.1	66.34
J-9146	8.89	486	635.36	64.72
J-9147	0.85	477	635.37	68.62
J-9148	2.71	482	635.8	66.64
J-9149	12.79	472	635.54	70.86
J-9150	6.4	463	635.57	74.77
J-9151	4.53	461.8	636.42	75.66
J-9152	2.81	462.3	636.49	75.48
J-9153	7.92	451.4	637.04	80.44
J-9154	8.42	455	635.73	78.31
J-9155	6.71	453	636.08	79.33
J-9156	7.48	454	636.07	78.89
J-9157	4.6	446	636.07	82.36
J-9158	6.3	429	636.09	89.73
J-9159	4.12	452	634.77	79.19
J-9160	4.44	448	634.74	80.91
J-9161	2.63	425	638.02	92.3
J-9162	4.24	415	637.77	96.53
J-9163	9.41	415	636.7	96.06
J-9164	8.57	415	636.51	95.98
J-9165	9.08	415	636.51	95.98
J-9166	7.33	409	636.51	98.58
J-9167	5.88	407	636.25	99.33
J-9168	6.55	401	636.18	101.9
J-9169	7.63	402	636.06	101.42
J-917	7.98	461.5	645.91	79.91
J-9170	11.46	398	636.1	103.17
J-9171	8.8	402	636.06	101.42
J-9172	8.33	425	636.08	91.46
J-9173	8	413	635.74	96.51
J-9174	11.21	410	635.82	97.85
J-9175	4.58	400	640.22	104.09
J-9176	6.23	407	639.68	100.82
J-9177	2.55	407	639.68	100.82
J-9178	2.6	411	639.58	99.04
J-9179	2.51	412	639.2	98.45
J-9180	0.71	447	638.91	83.16
J-9182	1.35	310	634.54	140.62
J-9183	3.77	481.5	635.38	66.67
J-9188	1.71	480	635.53	67.39
J-9189	2.94	480	635.53	67.39
J-92	3.8	444	646.38	87.69

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-920	3.44	350	647.12	128.74
J-921	2.51	367	647.13	121.38
J-922	2.88	346	647.13	130.48
J-923	3.19	321	647.13	141.31
J-9232	9.8	480	635.53	67.39
J-924	3.99	340	647.13	133.08
J-925	3.22	299	647.13	150.85
J-926	3.68	285	647.13	156.91
J-927	3.65	375.4	647.13	117.74
J-928	2.51	368	647.13	120.95
J-929	3.45	378.2	647.13	116.53
J-93	1.18	450	646.88	85.31
J-930	2.67	379.8	647.37	115.94
J-9300	6.86	415	637.15	96.26
J-9301	5.47	415	637.15	96.26
J-931	2.06	384.2	647.37	114.03
J-932	0.52	390	644.72	110.37
J-933	0.99	386	647.5	113.31
J-934	5.86	380	647.5	115.91
J-935	4.25	315	647.12	143.91
J-936	5.57	370	647.07	120.06
J-937	3.13	385.5	646.94	113.28
J-938	6.75	382	646.94	114.8
J-939	1.3	372.7	647.1	118.9
J-94	9.78	355	471.66	50.55
J-940	1.93	381.7	647.1	115
J-941	1.06	385.7	646.95	113.2
J-942	1.89	385.3	646.95	113.37
J-943	4.63	380	647.18	115.77
J-944	0.84	398.7	647.17	107.66
J-945	8.7	390	646.83	111.28
J-946	1.11	345	646.82	130.78
J-947	5.78	312	646.81	145.07
J-948	3.23	431.9	645.72	92.65
J-949	0.39	436.7	645.72	90.57
J-95	9.88	354	471.66	50.98
J-950	2.81	458.5	645.68	81.1
J-951	1.68	454.7	645.57	82.7
J-952	2.19	455.9	645.53	82.17
J-953	1.84	463.8	645.41	78.69
J-954	3.37	431.8	645.32	92.52
J-955	0.99	409.2	645.32	102.31
J-956	4.62	442.7	645.32	87.79
J-957	0.74	391	645.22	110.15
J-958	2.25	390	645.17	110.56
J-959	2.41	386	645.08	112.26

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-96	5.48	430	645.49	93.37
J-960	2.16	377	645.08	116.16
J-961	2.16	380	645.11	114.87
J-962	1.4	393	645.14	109.25
J-963	3.92	397	645.13	107.52
J-964	3.29	395	645.14	108.38
J-965	1.74	373	645	117.86
J-966	3.93	371	645	118.72
J-967	5.17	325	644.99	138.65
J-969	0.63	307	463.24	67.7
J-970	0.63	330	644.99	136.49
J-971	1.98	374	645	117.42
J-972	1.17	366	644.86	120.83
J-973	2.07	344	644.86	130.36
J-974	1.17	363	644.85	122.12
J-975	3.73	376	644.86	116.5
J-976	0.64	382	645.1	114
J-977	3.49	385	644.74	112.55
J-978	1.09	386	644.73	112.11
J-979	2.03	388	644.72	111.24
J-98	3.7	428	645.81	94.38
J-980	2.84	395	644.72	108.2
J-981	2.97	390	644.73	110.37
J-982	2.85	384	644.74	112.98
J-983	2.14	387	645.1	111.83
J-984	1.57	394	644.94	108.73
J-985	0.53	397	644.89	107.41
J-986	2.94	404	644.88	104.37
J-987	2.56	405	644.83	103.92
J-988	0.68	390	644.83	110.42
J-989	1.15	396	644.79	107.8
J-990	3.36	399	644.79	106.5
J-9900	6.24	405	639.71	101.7
J-9903	4.9	451	634.6	79.55
J-991	2.43	410	644.75	101.72
J-992	5.89	407	644.75	103.02
J-993	2.78	408	644.7	102.56
J-994	12.38	395	644.45	108.09
J-995	1.78	378	644.75	115.58
J-996	0.42	375	644.87	116.94
J-997	1.14	383	644.87	113.47
J-998	1.04	375	644.87	116.93
J-999	3.52	382	644.86	113.9
PRV-3-IN	11.54	370	652.79	122.53
PRV-3-OUT	20.2	370	484.88	49.78
PRV-3617-OUT	9.08	370	515.37	62.99

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
PRV-4-IN	19.38	290	485.18	84.57
PRV-4-OUT	3.94	280	517.77	103.03
PRV-4145-IN	0.69	382	647.71	115.13
PRV-4145-OUT	2.74	382	472	39
PRV-4396-IN	4.02	370	649.91	121.29
PRV-4396-OUT	3.73	370	524.14	66.79
PRV-6-IN	8.01	300	645.64	149.77
PRV-6-OUT	1.95	291	485.18	84.14

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
10	9.04	407	646.69	103.86
6000	11.8	415	642.16	98.43
6001	16.31	415	642.14	98.42
6002	21.6	415	642.16	98.43
6003	3.8	415	642.3	98.49
6004	19.87	415	643.19	98.87
6005	14.33	415	642.21	98.45
6006	9.7	415	643.19	98.87
6007	7.88	420	644.56	97.3
6008	0	454	646.28	83.32
6009	3.48	452	646.31	84.19
6010	5.55	452	646.34	84.21
6011	6.28	450	646.31	85.06
6012	4.04	448	646.31	85.93
6013	9.28	448	646.32	85.93
6014	3.93	444	646.31	87.66
6015	4.23	444	646.31	87.66
6017	3.62	444	646.3	87.66
CMF-1	9.32	368	656.78	125.13
CMF-2	0	368	656.78	125.13
CMF-3	0	368	656.78	125.13
CMF-4	0	368	656.78	125.13
CMF-5	0	368	656.78	125.13
CMF-6	0	368	656.78	125.13
CMF-7	0.03	368	656.78	125.13
CMF-8	0	368	656.78	125.13
CMF-9	0	368	656.78	125.13
J-1	1.29	450	652.57	87.77
J-100	3.33	405	656.88	109.14
J-1000	1.74	390	643.48	109.83
J-10000	6.54	400	642.2	104.95
J-1001	12.01	400	643.46	105.49
J-1002	12.18	393	643.36	108.48
J-1003	1.39	410	643.49	101.17
J-1004	0.95	407	643.5	102.48
J-1005	0.34	405	643.57	103.37
J-1006	1.72	386	643.55	111.6
J-1007	1	390	643.56	109.87
J-1008	1.72	394	643.57	108.14
J-1009	2.25	390	643.57	109.87
J-101	8.63	444	656.76	92.19
J-1010	5.26	398	643.56	106.4
J-1011	5.72	385	643.55	112.03
J-1012	1.99	375	643.91	116.52
J-1013	3.45	385	643.91	112.19
J-1014	1.88	350	643.99	127.39

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1015	14.07	350	643.96	127.37
J-1016	9.08	331	643.99	135.62
J-1017	3.2	356	644.18	124.87
J-1018	3.41	374	644.45	117.18
J-1020	3.48	330	644.44	136.25
J-1021	3.49	307	644.43	146.21
J-1022	2.69	340	644.44	131.91
J-1023	3.57	338	645.73	133.34
J-1024	1.27	339	647.45	133.65
J-1025	7.14	355	645.04	125.68
J-1026	6.28	360	644.74	123.38
J-1027	1.89	358	644.61	124.19
J-1028	8.11	416	644.74	99.11
J-1029	2.17	398	643.75	106.48
J-103	1.05	490	656.99	72.36
J-1030	4.06	403	643.75	104.32
J-1031	13.3	410	643.3	101.09
J-1032	6.13	400	643.14	105.35
J-1033	13.54	417	643.04	97.94
J-1034	3.47	420	643.04	96.64
J-1035	8.04	403	643.03	104
J-1036	5.54	412	643.02	100.1
J-1037	6.13	395	642.96	107.44
J-1038	15.3	413	642.99	99.66
J-1039	10.35	407	642.99	102.25
J-104	7.34	510	656.73	63.58
J-1040	9.28	406	643.13	102.75
J-1041	13.88	405	643	103.13
J-1042	8.22	403	643.01	103.99
J-1043	5.58	389	642.96	110.04
J-1044	3.23	408	642.75	101.72
J-1045	1.88	405	642.79	103.03
J-1046	2.39	407	642.85	102.19
J-1047	12.95	420	642.82	96.55
J-1048	9.07	406	642.77	102.59
J-1049	3.24	412	642.35	99.81
J-105	1.29	425	642.41	94.2
J-1050	3.4	413	642.35	99.38
J-1051	3.48	422	642.25	95.43
J-1052	2.72	425.5	642.25	93.92
J-1053	10.12	429.5	642.26	92.19
J-1054	11.85	433.3	642.22	90.53
J-1055	4.67	422.6	642.2	95.15
J-1056	5.55	419.3	642.2	96.58
J-1057	7.44	445	642.75	85.68
J-1058	14.11	436	642.67	89.55

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1059	6.1	445.5	643.1	85.62
J-106	54.29	420	642.38	96.36
J-1060	9.7	429	643.06	92.75
J-1061	1.7	446.7	644.3	85.62
J-1062	6.67	446.5	643.58	85.39
J-1063	4.95	435.2	643.59	90.29
J-1064	3.81	436.4	643.59	89.77
J-1065	9.68	422.5	641.64	94.95
J-1066	15.06	430.5	641.62	91.48
J-1067	2.47	434	640.08	89.29
J-1068	4.91	439.5	639.99	86.87
J-107	0.81	376	646	116.99
J-1078	12.26	455	649.06	84.09
J-1079	21.1	436.5	643.63	89.75
J-108	2.08	376	646.19	117.07
J-1080	1.5	450	643.96	84.04
J-1081	8.21	460.5	644.24	79.61
J-1082	4.02	450	643.96	84.04
J-1083	2.32	435.7	643.65	90.11
J-1084	2.61	437.6	643.72	89.31
J-1085	0.98	439.1	643.74	88.67
J-1086	3.18	436.3	643.89	89.95
J-1087	1.17	440.3	643.89	88.22
J-1088	1.12	439.2	643.89	88.69
J-1089	1.75	445.7	643.89	85.88
J-109	3.39	430	648.25	94.57
J-1090	2.73	452	643.89	83.15
J-1091	1.64	440.6	643.89	88.09
J-1092	3.83	444.8	644.21	86.41
J-1093	3.61	441.9	644.22	87.67
J-1094	0.24	449.8	644.48	84.35
J-1095	0.24	449	644.38	84.66
J-1096	0.88	452.2	644.38	83.27
J-1097	0.35	448.6	644.29	84.79
J-1098	1.72	449.5	644.29	84.4
J-1099	0.72	452.7	644.26	83
J-1100	1.48	457.3	644.26	81.01
J-1101	1.27	460.3	644.21	79.69
J-1102	0.47	455.8	644.21	81.64
J-1103	0.98	459.3	644.18	80.11
J-1104	1.47	466.4	644.18	77.03
J-1105	3.5	467.7	644.25	76.5
J-1106	2.71	469.7	644.3	75.65
J-1107	3.31	473	644.42	74.28
J-1109	5.84	383	646.36	114.11
J-1110	1.83	451.5	646.09	84.32

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1111	3.62	461	646.09	80.2
J-1112	1.42	480.5	646.24	71.81
J-1113	1.92	479.5	646.24	72.25
J-1114	3.01	460.5	647.31	80.94
J-1115	1.7	456.5	647.31	82.68
J-112	6.36	430	647.47	94.23
J-1125	1.26	467	647.96	78.41
J-1126	3.14	464.5	646.93	79.05
J-1127	11.36	469	646.84	77.06
J-1128	1.44	458.5	646.03	81.26
J-1129	7.93	457.8	645.6	81.37
J-113	16.97	455	652.52	85.59
J-1130	2.24	461.4	645.29	79.68
J-1131	2.94	454.4	645.29	82.71
J-1132	1.05	465	645.26	78.11
J-1133	5.09	467	645.09	77.17
J-1134	10.57	468.5	645.09	76.52
J-1135	8.42	412	642.52	99.88
J-1136	7.28	409	642.52	101.19
J-1137	8.74	415	642.52	98.58
J-1138	12.46	416	642.52	98.15
J-1139	12.69	418	642.52	97.28
J-114	16.79	465	652.52	81.25
J-1140	12.34	420	642.55	96.43
J-1141	16.27	420	642.71	96.5
J-1142	7.84	422	642.72	95.64
J-1143	8.7	433.5	642.68	90.64
J-1144	2.86	435	642.68	89.99
J-1145	8.73	425	642.67	94.32
J-1146	14.23	445	643.72	86.11
J-1147	13.34	448	643.72	84.81
J-1148	8.44	440	643.72	88.27
J-1149	1.41	430	644.02	92.73
J-115	11.03	440	645.02	88.84
J-1150	1.21	420	644.48	97.27
J-1151	2.73	430	644.48	92.93
J-1152	4.64	418	644.48	98.13
J-1153	5.2	390	645.27	110.61
J-1154	1.23	400	645.28	106.28
J-1155	3.44	415	645.28	99.78
J-1156	4.62	450	645.16	84.56
J-1157	1.65	435	645.16	91.06
J-1158	1.89	430	644.63	93
J-1159	2.74	432	644.56	92.1
J-116	19.85	455	652.52	85.59
J-1160	0.21	430	644.56	92.97

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1161	2.71	432	644.56	92.1
J-1162	3.04	439	644.35	88.98
J-1163	1.07	445	644.35	86.38
J-1164	2.67	435	644.51	90.78
J-1165	1.64	445	644.36	86.38
J-1166	2.2	442	644.36	87.68
J-1167	2.62	447	643.7	85.23
J-1168	5.07	453.5	643.7	82.41
J-1169	3.99	461	643.63	79.13
J-117	10.01	455	652.53	85.59
J-1170	1.75	451	643.63	83.47
J-1171	2.4	450	643.63	83.9
J-1172	3.48	435	645.65	91.28
J-1173	1.22	433	645.65	92.14
J-118	21.32	470	652.52	79.09
J-1189	9.14	445	639.86	84.43
J-119	15.16	460	652.52	83.42
J-121	2.64	355	633.96	120.87
J-122	12.3	356	633.94	120.43
J-123	13.8	357	633.94	120
J-124	8.3	356	633.94	120.43
J-125	2.51	355	633.94	120.86
J-126	2.59	440	634.04	84.08
J-127	1.24	388	643.41	110.67
J-1271	1.64	493	649.67	67.89
J-128	12.18	354	643.42	125.4
J-129	9.88	380	643.42	114.14
J-130	1.68	394	643.4	108.06
J-1306	1.94	453	648.22	84.59
J-131	5.24	363	643.38	121.49
J-132	6.87	356	643.38	124.52
J-133	10.13	384	643.39	112.39
J-1338	10.94	482	644.82	70.55
J-134	15.85	380	643.41	114.14
J-1342	24.82	484.5	644.74	69.43
J-135	3.58	380	643.44	114.15
J-136	6.42	380	643.44	114.15
J-137	3.04	345	643.48	129.33
J-138	4.37	335	643.48	133.67
J-139	11.61	450	634.05	79.75
J-1393	3.41	473	634.38	69.93
J-1396	6.14	466	635.24	73.33
J-1397	5.42	456	635.28	77.68
J-1398	8.16	448	635.35	81.18
J-1400	5.31	442.5	636.26	83.96
J-1401	8.33	454	636.25	78.97

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1402	6.14	440.5	636.47	84.91
J-1403	4.7	445	636.46	82.96
J-1404	2.37	435.5	636.48	87.09
J-1405	5.61	441	636.47	84.7
J-1406	3.08	425.5	636.47	91.41
J-1407	6.37	438.1	636.46	85.95
J-1408	8.22	425	636.45	91.62
J-1409	5.07	440	636.45	85.12
J-1416	13.8	450.5	645.66	84.56
J-1417	10.72	458	644.6	80.85
J-1418	11.05	453.5	644.55	82.78
J-1422	9.35	410	637.82	98.71
J-1427	13.32	412	641.67	99.52
J-143	4.33	465	647.96	79.27
J-1434	1.02	430	644.74	93.05
J-1435	3.67	427	644.74	94.35
J-1436	1.51	407	644.99	103.12
J-1437	5.96	415	644.99	99.66
J-1438	7.4	405	643.3	103.26
J-1439	2.32	402	643.49	104.64
J-144	3.65	450	647.6	85.62
J-1447	2.41	392	643.86	109.13
J-1448	2.83	381	643.39	113.69
J-1449	6.06	384	643.37	112.39
J-145	15.18	450	647.55	85.6
J-1450	3.35	388	643.36	110.65
J-1451	4.07	407	643.09	102.3
J-1454	9.46	450	644.57	84.31
J-1456	3.93	435	637.41	87.71
J-1458	5.48	472	644.99	74.96
J-1459	13.65	480	644.92	71.46
J-146	9.05	435	647.52	92.09
J-1469	4.78	386	646	112.66
J-1473	0.98	393	646.05	109.64
J-1474	1	359	645.66	124.21
J-1475	2.71	190	488.85	129.49
J-1476	2.73	375	643.38	116.29
J-1477	19.34	464.7	645.17	78.2
J-1478	16.47	465	644.67	77.85
J-1479	28.49	470	644.72	75.71
J-1485	1.26	460.3	644.13	79.65
J-1488	3.36	394	643.18	107.97
J-149	3.74	420	647.52	98.59
J-1490	7.47	385	643.21	111.88
J-1491	5.25	391	643.21	109.28
J-1494	4.16	395	644.45	108.09

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-1495	5.17	353	644.62	126.36
J-1496	2.85	344	644.62	130.26
J-1499	2.55	409	636.46	98.56
J-150	16.05	420	647.53	98.59
J-1500	5.44	398	644.58	106.84
J-1505	15.1	480.5	644.6	71.1
J-1506	2.4	307	463.24	67.7
J-1508	2.77	457.9	644.13	80.69
J-1509	1.64	373	643.38	117.16
J-151	2.71	435	647.54	92.1
J-1512	11.35	397	642.87	106.54
J-152	1.39	430	647.54	94.26
J-154	2.37	420	647.52	98.58
J-155	2.58	370	650.12	121.37
J-156	0.2	395	646.17	108.83
J-157	2.57	390	646.98	111.35
J-158	2.96	315	644.4	142.73
J-159	5.47	322	644.36	139.68
J-1599	9.14	408	642.8	101.74
J-160	9.72	380	643.38	114.12
J-1601	0.82	444	642.74	86.11
J-1602	5.26	438	642.61	88.66
J-161	12.47	401	635.19	101.48
J-1615	0	420	642.37	96.35
J-162	14.14	405	634.87	99.6
J-163	31.91	393	634.8	104.77
J-164	21.7	401	635.03	101.41
J-165	5.84	399	634.82	102.18
J-166	20.66	394	634.8	104.34
J-1666	12.73	430	642.52	92.09
J-1667	6.37	430	642.53	92.09
J-1669	8.27	411	642.55	100.33
J-167	41.33	398	634.8	102.61
J-1677	0	440	642.6	87.79
J-1678	0	430	642.57	92.11
J-168	14.22	403	634.87	100.47
J-169	3.28	368	643.38	119.32
J-17	13.05	312	644.27	143.97
J-170	38.74	399	634.82	102.18
J-171	5.55	408	634.88	98.31
J-172	8.04	390	633.97	105.71
J-173	24.67	380	633.97	110.04
J-174	12.58	380	633.98	110.05
J-176	10.7	312	485.16	75.03
J-177	2.32	292	485.18	83.7
J-178	1.28	432	646.29	92.85

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-179	10.36	422	646.81	97.41
J-18	2.65	338	643.95	132.57
J-180	27.99	400	645.18	106.24
J-182	6.84	372	643.38	117.59
J-183	6.94	405	647.74	105.18
J-185	1.34	354	652.06	129.15
J-19	0.16	392	643.54	108.99
J-1900	10.15	476	648.02	74.54
J-1901	3.39	430	648.02	94.47
J-1902	6.4	472	648.5	76.48
J-1903	3.53	431	648.5	94.24
J-1904	3.13	470	648.7	77.43
J-1905	6.36	463	648.7	80.46
J-1906	1.55	469	648.7	77.86
J-1907	5.66	478	648.7	73.96
J-1930	1.1	450	645.87	84.87
J-1942	1.27	470	648.7	77.43
J-1943	6.78	470	649.38	77.73
J-1944	3.74	470	649.74	77.88
J-2	6.48	448	652.55	88.63
J-20	20.63	320	470.56	65.24
J-21	6.29	585	722.62	59.63
J-23	12.88	305	470.52	71.72
J-2300	2.44	364	645.18	121.83
J-2301	9.58	420	645.16	97.56
J-24	9.35	295	470.5	76.04
J-2400	4.05	345	657.06	135.22
J-2401	4.32	350	658.23	133.55
J-2402	2.26	345	657.42	135.37
J-2403	0.72	342	657.42	136.67
J-25	10.62	290	470.5	78.21
J-27	12.31	290	470.5	78.21
J-28	11.96	295	470.5	76.04
J-3	10.36	466	652.54	80.83
J-30	14.14	305	470.52	71.72
J-3006	0.75	440	645.14	88.89
J-3007	0.62	440	645.14	88.89
J-3008	0.85	440	645.14	88.89
J-3009	1.3	440	645.14	88.89
J-3011	9.7	465	645.38	78.16
J-3012	5.74	450	644.35	84.21
J-3013	8.1	460	645.48	80.37
J-3015	2.73	470	645.25	75.94
J-3016	13.57	440	644.92	88.79
J-3020	3.97	550	722.16	74.6
J-3021	1.58	560	722.24	70.3

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3028	4.12	415	644.6	99.49
J-3029	10.68	425	644.39	95.06
J-3030	28.44	408	644.63	102.53
J-3031	20.39	435	644.72	90.87
J-3033	0	430	644.69	93.03
J-3034	6.12	405	644.64	103.83
J-3035	14.54	407	644.66	102.98
J-3036	5.03	406	644.65	103.41
J-3037	46.31	415	644.67	99.52
J-3038	22.64	420	644.68	97.35
J-3039	15.95	423	644.68	96.05
J-3040	3.96	416	644.69	99.09
J-3041	0	419	644.7	97.8
J-3042	3.35	427	644.69	94.33
J-3043	15.4	390	646.55	111.16
J-3044	14.29	415	646.56	100.34
J-3045	0	437	646.57	90.81
J-3046	16.75	428	644.69	93.89
J-3047	0	350	633.98	123.05
J-3048	2.66	350	633.98	123.05
J-3049	3.91	340	633.92	127.36
J-3050	4	318	633.93	136.89
J-3051	2.65	330	633.93	131.69
J-3052	2.63	315	633.93	138.19
J-3053	1.32	320	633.93	136.03
J-3054	0	550	722.18	74.61
J-3055	0	550	722.13	74.58
J-3060	0.75	480	634.52	66.95
J-3065	4.22	478	634.55	67.83
J-3066	1.52	481	634.52	66.52
J-3067	8.66	380	633.98	110.05
J-3068	6.46	440	634.02	84.07
J-3069	21.98	460	634	75.4
J-3070	10.34	477	634.02	68.04
J-3071	6.75	437	636.49	86.44
J-3072	26.27	407	635.63	99.06
J-3073	28.49	408	635.55	98.6
J-3074	23.42	405	635.63	99.93
J-3075	31.9	405	635.63	99.93
J-3076	2.94	415	635.48	95.54
J-3077	8.12	440	644	88.39
J-3078	0	394	640.92	106.99
J-3079	0	430	644.56	92.97
J-3080	0	430	644.56	92.97
J-3081	0	430	644.52	92.95
J-3082	0.64	447	643.86	85.3

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3083	6.64	437	643.89	89.65
J-3084	21.78	425	643.8	94.81
J-3085	14.47	425	643.8	94.81
J-3086	32.5	425	643.8	94.8
J-3087	9.93	425	643.82	94.81
J-3088	9.87	425	643.81	94.81
J-3089	19.26	435	644.06	90.59
J-3090	2.68	445	643.88	86.17
J-3091	4.23	460	644.39	79.9
J-3092	0	430	643.09	92.33
J-3096	10.79	420	643.8	96.97
J-32	8.98	394	642.93	107.86
J-320	5.12	470	645.58	76.08
J-325	2.43	416	643.75	98.68
J-326	4.01	470	645.58	76.08
J-3262	10.2	440	648.55	90.37
J-3263	2.03	401	644.43	105.48
J-3264	17.9	466	645.22	77.66
J-3265	10.81	478	645.11	72.41
J-3266	5.44	475	645.25	73.77
J-3267	6.77	477	645.46	72.99
J-3268	5.51	451	644.76	83.96
J-327	5.87	455	645.32	82.47
J-328	3.93	460	643.68	79.59
J-3282	11.6	440	656.76	93.92
J-3283	23.22	426	656.79	100
J-3284	3.59	446	656.75	91.32
J-3285	4.24	446	656.75	91.32
J-3286	2.95	464	656.75	83.52
J-3287	13.11	460	656.74	85.25
J-3288	9.98	470	656.73	80.91
J-3289	6.79	470	656.75	80.92
J-329	2.82	445	643.65	86.07
J-3290	6.28	470	656.75	80.92
J-3291	5.97	520	656.75	59.25
J-3292	14.09	432	656.75	97.38
J-3293	10.8	470	656.78	80.93
J-3294	22.76	378	656.74	120.78
J-3295	12.43	388	656.71	116.43
J-3296	14.52	430	644.69	93.03
J-3297	5.85	427	644.69	94.33
J-3298	62.58	435	644.69	90.86
J-3299	17.86	404	644.44	104.18
J-33	5.98	395	642.93	107.43
J-330	2.68	426	643.67	94.31
J-3300	15.69	396	644.44	107.65

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3301	19.18	399	644.43	106.35
J-3302	18.08	391	644.43	109.81
J-3303	28.07	392	644.43	109.38
J-3304	31.78	391	644.44	109.82
J-3305	28.49	400	644.43	105.91
J-3306	10.03	429	644.44	93.35
J-3307	11.42	388	644.43	111.11
J-3308	9.54	395	644.43	108.08
J-3309	10.24	384	644.48	112.87
J-331	4.6	430	643.63	92.57
J-3310	11.7	402	644.43	105.05
J-3311	8.59	400	644.43	105.91
J-3312	21.6	389	646.5	111.58
J-3313	11.97	392	646.51	110.28
J-3314	13.45	431	646.56	93.4
J-3315	7.69	428	646.56	94.7
J-3316	15.26	377	646.4	116.73
J-3317	16.49	375	646.02	117.43
J-3318	20.06	375	646.02	117.43
J-3319	26.26	373	646.01	118.3
J-332	4.27	452	643.59	83.02
J-3320	20.86	372	646.92	119.12
J-3321	25.27	372	647	119.16
J-3322	23.13	370	647.51	120.24
J-3323	11.48	400	647.08	107.06
J-3324	5.69	398	647.29	108.02
J-3325	31.01	396	646.95	108.74
J-3326	14.38	408	647.54	103.79
J-3327	8.05	442	646.3	88.52
J-3328	7.51	456	646.29	82.45
J-3329	5.61	448	646.29	85.92
J-3330	4.34	448	646.3	85.92
J-3331	1.1	336	633.92	129.09
J-3332	28.36	333	633.92	130.39
J-3333	19.01	330	633.92	131.69
J-3334	13.68	335	633.92	129.52
J-3335	11.33	340	633.92	127.36
J-3336	12.23	339	633.92	127.79
J-3337	11.08	342	633.92	126.49
J-3338	1.14	332	633.92	130.82
J-3339	0	330	633.93	131.69
J-3340	2.69	325	633.93	133.86
J-3341	2.64	311	633.94	139.93
J-3342	2.63	315	633.94	138.2
J-3343	19.18	342	620.22	120.55
J-3344	32.05	336	620.2	123.14

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3345	6.63	312	633.99	139.52
J-3346	7.94	309	634.01	140.83
J-3347	2.65	304	634.14	143.05
J-3348	1.32	304	634.18	143.07
J-3349	2.63	302	634.16	143.93
J-3350	4	306	633.88	142.07
J-3351	2.61	309	634.36	140.98
J-3352	5.27	311	634.15	140.02
J-3353	0	310	633.19	140.04
J-3354	15.55	398	634.82	102.61
J-3355	10.87	421	634.84	92.66
J-3356	38.84	409	634.8	97.84
J-3357	31.29	394	634.8	104.34
J-3358	1.31	475	634.53	69.13
J-3359	0	474	634.53	69.56
J-3360	1.33	455	634.53	77.79
J-3361	3.91	489	634.52	63.05
J-3362	0	478	634.54	67.83
J-3363	0	481	634.77	66.63
J-3364	20.04	480	634.77	67.06
J-3365	1.91	420	644.13	97.11
J-3366	8.93	133	483.48	151.86
J-3367	18.8	165	483.47	137.99
J-3368	19	211	483.45	118.05
J-3369	17.2	217	483.46	115.46
J-3370	14.57	250	483.46	101.16
J-3372	3.01	144	483.48	147.1
J-3373	16.11	235	483.45	107.65
J-3374	14.68	202	483.46	121.96
J-3375	13.84	360	652.05	126.54
J-3376	15.46	370	652.05	122.21
J-3377	0	480	645.55	71.73
J-3398	19.86	278	485.15	89.76
J-3399	10.4	315	644.27	142.67
J-34	1.91	395	642.93	107.43
J-3400	0	435	642.57	89.94
J-3401	3.94	427	642.38	93.33
J-3406	9.61	485	644.61	69.16
J-3407	16.2	464	634.78	74
J-3408	11.4	467	634.86	72.73
J-3409	13.86	470	634.93	71.47
J-3410	6.4	476	634.93	68.87
J-3411	3.26	468	635.02	72.37
J-3412	4.57	405	642.71	103
J-3413	9.09	407	642.64	102.1
J-3414	10.37	409	642.5	101.18

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3415	17.68	402	642.64	104.27
J-3416	2.41	403	643.47	104.19
J-3417	0	372	643.38	117.59
J-3418	8.81	437	643.62	89.53
J-3419	0.22	401	644.39	105.46
J-3420	23.58	456	647.99	83.19
J-3421	1.16	382	646.19	114.47
J-3429	24.51	425	642.51	94.25
J-3460	0	479.5	654.49	75.82
J-3461	4	479	654.49	76.04
J-3462	0	479	654.5	76.04
J-3463	0	480	654.55	75.63
J-3464	0	486	654.62	73.06
J-3465	0	486	654.68	73.09
J-3466	0	474	654.53	78.22
J-3467	0	469	654.58	80.41
J-3468	0	468	654.63	80.87
J-3469	0	480	654.66	75.68
J-3470	0	480	654.67	75.68
J-3471	0	480	654.67	75.68
J-3472	0	480	654.68	75.69
J-3473	0	483	654.68	74.39
J-3474	0	462	654.69	83.49
J-3475	0	468	654.72	80.9
J-3476	0	481	654.74	75.28
J-3479	0	500	654.76	67.06
J-3480	0	499	654.78	67.5
J-3481	0	496	654.76	68.79
J-3484	0	480	654.68	75.69
J-3485	0	488	654.21	72.02
J-3486	0	510	654.95	62.8
J-3487	2.66	462	654.3	83.32
J-3488	0	485	649.81	71.41
J-3489	0	485	649.81	71.41
J-3491	0	485	649.83	71.42
J-3492	0	485	649.85	71.43
J-3493	1.31	480	649.85	73.6
J-3494	0	480	649.87	73.6
J-3495	2.63	480	649.91	73.62
J-3496	0	470	654.3	79.86
J-3497	0	475	654.07	77.59
J-35	5.58	395	642.93	107.43
J-36	6.26	351	645.44	127.58
J-3600	7.97	361	515.25	66.84
J-3601	11.89	340	515.19	75.91
J-3602	7.87	298	515.13	94.08

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-3603	4.9	295	515.12	95.38
J-3604	2.64	360	515.29	67.29
J-3605	12.51	352	515.24	70.73
J-3606	9.2	320	515.13	84.55
J-3607	20.13	264	515	108.76
J-3608	16.61	253	514.97	113.51
J-3609	14.79	238	514.98	120.02
J-3610	4.48	196	514.98	138.21
J-3611	14.53	200	514.96	136.47
J-3613	8.33	176	514.96	146.87
J-3614	4.89	251	514.97	114.38
J-3616	13.87	350	515.24	71.6
J-3617	3.95	370	643.38	118.46
J-3618	6.96	290	515.13	97.55
J-3619	8.32	330	515.19	80.24
J-37	14.55	350	652.21	130.95
J-38	1.52	370	645.32	119.29
J-39	3.67	370	645.32	119.29
J-3902	2.61	447	637.82	82.68
J-3908	6.81	350	645.99	128.25
J-3909	9.5	354	643.41	125.4
J-3910	10.44	356	643.37	124.52
J-3915	3.05	388	643.41	110.67
J-3924	2.44	450	645.87	84.87
J-40	13.46	330	470.68	60.96
J-4000	0	490	650.01	69.33
J-4001	0	490	650.02	69.34
J-4002	2.67	496	650.03	66.74
J-4003	0	492	650.04	68.48
J-4004	0	450	649.96	86.64
J-4005	0	488	649.99	70.19
J-4006	0	485	650	71.5
J-4007	0	480	650.05	73.68
J-4008	0	442	649.97	90.11
J-4009	0	452	649.97	85.78
J-4010	1.89	502	649.67	63.99
J-4011	0	508	651.36	62.12
J-4012	4.65	520	653.52	57.85
J-4013	4.05	510	651.95	61.51
J-4014	5.31	515	651.95	59.34
J-4015	2.88	510	650.31	60.8
J-4016	4.25	506	649.79	62.3
J-4017	8.54	503	649.01	63.26
J-4018	5.58	470	648.66	77.41
J-4019	4.42	492	649.34	68.17
J-4020	6.83	502	649.33	63.84

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4021	2.75	481	649.34	72.94
J-4022	7.09	510	649.84	60.59
J-4023	5.31	514	649.74	58.82
J-4024	6.8	516	649.62	57.9
J-4025	3.19	510	649.53	60.46
J-4026	4.61	510	649.62	60.5
J-4028	7.25	452	648.61	85.19
J-4029	4.35	418	647.76	99.56
J-4030	3.55	416	647.76	100.42
J-4031	3.25	416	647.76	100.42
J-4032	3.7	422	647.74	97.81
J-4033	5.71	422	647.74	97.81
J-4034	6.37	430	647.73	94.34
J-4035	3.9	450	648.5	86.01
J-4036	1.48	432	647.72	93.47
J-4037	0.92	450	648.46	85.99
J-4038	0.94	492	648.98	68.02
J-4039	0	508	649.27	61.21
J-4040	1.58	444	647.5	88.18
J-4041	0	446	647.36	87.25
J-4043	2.37	446	647.56	87.34
J-4044	3.45	466	647.56	78.67
J-4045	5.85	458	647.69	82.19
J-4046	16.52	464	647.76	79.62
J-4047	9.94	464	647.75	79.62
J-4048	10.9	468	647.97	77.98
J-4049	0.83	460	648.12	81.51
J-4050	0.9	437	648.12	91.48
J-4051	2.42	340	658.35	137.94
J-4052	4.55	436	648.12	91.91
J-4053	4.77	440	648.12	90.18
J-4054	3.97	444	648.14	88.45
J-4055	3.37	442	648.14	89.32
J-4056	2.55	450	648.14	85.85
J-4057	4.91	474	648.15	75.46
J-4058	4.5	466	648.15	78.92
J-4059	0.55	473	648.16	75.9
J-4060	2.12	359	658.35	129.71
J-4061	3.04	470	648.16	77.2
J-4062	3.03	467	648.16	78.5
J-4063	5.7	473	648.16	75.9
J-4064	2.46	355	659.82	132.08
J-4065	3.54	474	648.46	75.59
J-4066	3.51	482	648.46	72.13
J-4067	3.76	496	648.46	66.06
J-4068	6.26	507	649.21	61.62

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4069	4.48	500	649.21	64.65
J-4070	4.53	495	649.21	66.82
J-4071	6.15	506	649.07	61.99
J-4072	2.68	515	649.06	58.09
J-4073	7.22	517	649.06	57.22
J-4074	3.62	518	649.06	56.79
J-4075	5.93	520	649.06	55.92
J-4076	0.55	510	649.06	60.26
J-4077	2.89	510	649.06	60.26
J-4078	2.55	493	649.1	67.64
J-4079	5.59	505	649.09	62.44
J-4080	1.5	378	656.34	120.6
J-4081	0	502	649.02	63.7
J-4082	0.54	510	648.99	60.23
J-4083	1.31	496	649.02	66.3
J-4084	1.17	510	648.95	60.21
J-4085	1.93	508	648.93	61.06
J-4086	2.36	508	648.99	61.09
J-4087	4.39	506	648.96	61.94
J-4088	4.55	497	648.96	65.84
J-4089	3.03	497	648.82	65.78
J-4090	3.96	499	648.66	64.85
J-4091	3.14	363	656.33	127.1
J-4092	4.63	500	648.89	64.51
J-4093	6.53	490	648.9	68.85
J-4094	2.22	470	649	77.56
J-4095	2.11	469	649	77.99
J-4096	4.91	453	649	84.93
J-4097	9.37	360	655.12	127.88
J-4098	9.59	461	649	81.46
J-4099	1.72	515	650.1	58.54
J-41	21.59	334	470.68	59.23
J-4100	7.93	510	650.1	60.7
J-4101	5.61	424	647.74	96.94
J-4102	5.35	510	650.73	60.98
J-4103	14.12	476	649.15	75.03
J-4104	6.05	443	649.03	89.27
J-4105	7.36	435	649.02	92.74
J-4106	6.74	446	649	87.96
J-4107	5.41	486	648.67	70.48
J-4108	1.85	477	648.6	74.35
J-4109	4.29	475	648.6	75.22
J-4110	0.52	380	656.33	119.74
J-4111	7.3	453	648.53	84.73
J-4112	1.83	470	648.56	77.37
J-4113	1.99	385	656.33	117.57

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4114	2.81	460	648.44	81.65
J-4115	2.68	468	648.44	78.19
J-4116	3.78	510	648.96	60.21
J-4117	5.13	508	648.96	61.08
J-4118	0.84	508	648.93	61.07
J-4119	6.15	504	648.96	62.81
J-4120	3.82	390	656.33	115.4
J-4121	1.35	378	655.12	120.07
J-4122	1.74	370	655.12	123.54
J-4123	2.89	388	655.12	115.74
J-4124	3.86	398	649.4	108.93
J-4125	7.61	403	648.21	106.25
J-4126	8.78	393	656.33	114.1
J-4127	0.99	388	647.06	112.25
J-4128	1.07	502	648.74	63.58
J-4129	4.02	501	648.74	64.01
J-4130	6.25	503	648.73	63.15
J-4131	2.88	487	648.42	69.94
J-4132	3.69	480	648.42	72.98
J-4133	0	485	648.26	70.74
J-4134	4.1	473	648.16	75.9
J-4135	1.71	380	653.16	118.36
J-4136	4.94	391	647.06	110.95
J-4137	2.82	385	648.75	114.28
J-4138	2.33	410	648.77	103.46
J-4139	7.5	429	648.62	95.16
J-4140	4.76	415	648.62	101.23
J-4141	11.72	402	648.41	106.77
J-4142	14.07	409	648.32	103.7
J-4143	11.78	380	646.81	115.61
J-4144	4.65	380	646.82	115.61
J-4145	2.76	382	646.63	114.66
J-4146	9.29	350	471.59	52.68
J-4147	7.61	338	471.53	57.86
J-4148	3.06	335	471.52	59.16
J-4149	4.79	360	471.8	48.44
J-4150	16.02	332	471.52	60.45
J-4151	9.01	337	471.5	58.28
J-4152	17.66	338	471.48	57.84
J-4153	3.93	342	471.5	56.11
J-4154	7.49	330	471.31	61.23
J-4155	8.98	340	470.76	56.66
J-4156	0	340	470.76	56.66
J-4157	1.47	330	470.76	60.99
J-4158	0	380	470.76	39.33
J-4159	0	356	649.44	127.15

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4160	11.11	380	648.68	116.42
J-4161	3.91	410	647.77	103.03
J-4162	5.28	409	647.76	103.46
J-4163	2.33	411	647.21	102.35
J-4164	3.69	410	647.21	102.78
J-4165	2.23	441	646.84	89.19
J-4166	2.68	441	646.83	89.19
J-4168	3.66	440	646.69	89.56
J-4169	0.73	450	646.66	85.21
J-4170	4.62	455	646.44	82.95
J-4171	2.53	440	646.57	89.51
J-4172	2.09	462	646.57	79.97
J-4173	4.42	460	646.28	80.72
J-4174	2.48	462	645.86	79.67
J-4175	2.52	470	645.87	76.2
J-4176	4.94	408	648.5	104.21
J-4177	4.1	406	648.52	105.08
J-4178	1.49	364	649.44	123.68
J-4179	0.6	390	647.4	111.53
J-4180	1.26	440	645.65	89.11
J-4181	1.84	440	645.86	89.2
J-4182	0.81	480	645.5	71.71
J-4183	1.6	468	645.71	77
J-4184	1.49	470	645.71	76.14
J-4185	1.86	468	645.55	76.93
J-4186	3.39	457	644.34	81.17
J-4187	2.75	478	645.32	72.5
J-4188	2.98	478	645.32	72.5
J-4189	2.49	472	645.86	75.34
J-4190	5.25	473	646.04	74.98
J-4191	4.37	463	646.05	79.32
J-4192	6.66	481	645.18	71.14
J-4193	2.95	480	645.19	71.57
J-4194	4.07	455	644.34	82.04
J-4195	13.47	430	648.25	94.57
J-4196	1.77	419	648.26	99.34
J-4198	3.69	401	648.52	107.25
J-4199	0	430	644.53	92.96
J-42	7.26	414	636.46	96.39
J-420	2.84	411	642.55	100.33
J-4200	0.95	460	644.42	79.91
J-4201	1.39	447	644.43	85.55
J-4202	0.22	450	644.42	84.24
J-4203	0.48	453	644.34	82.91
J-4204	0.48	455	644.34	82.04
J-4205	5.85	465.5	644.34	77.49

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4206	4.86	470	644.27	75.51
J-4207	4.19	480	645.05	71.51
J-4208	1.88	473	644.28	74.21
J-4209	5	474	644.26	73.77
J-4210	0.46	476	644.26	72.91
J-4211	0.7	475.5	644.25	73.12
J-4212	4.99	472	644.27	74.65
J-4213	2.11	480	644.87	71.44
J-4214	6.16	485	644.76	69.22
J-4215	1.68	483	644.76	70.09
J-4216	2.82	460	648.2	81.55
J-4217	9.21	455	648.2	83.71
J-4218	18.57	440	648.26	90.24
J-4219	16.56	430	648.25	94.57
J-4220	8.99	430	648.26	94.57
J-4221	5.5	435	648.27	92.41
J-4222	3.97	440	648.27	90.24
J-4223	5.66	433	648.35	93.31
J-4224	2.56	423	648.55	97.73
J-4225	4.92	422	648.55	98.17
J-4226	3.51	421	648.59	98.62
J-4227	0.9	420	648.67	99.08
J-4228	2.73	412	648.56	102.5
J-4229	3.9	413	648.56	102.07
J-4230	2.39	416	648.61	100.79
J-4231	1.62	410	648.55	103.36
J-4232	1.38	408	648.55	104.23
J-4233	0	424	649.78	97.83
J-4234	0.97	400	651.46	108.96
J-4235	4.68	440	648.53	90.36
J-4236	3.45	430	648.54	94.69
J-4237	0.97	407	651.46	105.93
J-4238	2.01	400	651.46	108.96
J-4239	9.2	410	651.47	104.63
J-4240	3.09	393	651.47	111.99
J-4241	2.9	411	651.47	104.2
J-4242	3.81	418	651.46	101.16
J-4243	5.49	422	648.54	98.16
J-4244	4.48	427	648.54	95.99
J-4245	7.91	440	648.54	90.36
J-4246	5.45	435	648.54	92.53
J-4247	2.22	458	648.35	82.48
J-4248	3.78	465	648.35	79.44
J-4249	1.02	460	648.26	81.57
J-4250	2.27	460	648.22	81.56
J-4251	3.27	462	648.2	80.68

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4252	1.69	478	648.18	73.74
J-4253	4.91	478	648.18	73.74
J-4254	5.36	477	648.17	74.17
J-4255	6.21	477	648.17	74.17
J-4256	3.51	478	644.53	72.16
J-4257	1.72	480	644.67	71.35
J-4258	2.4	477	644.38	72.53
J-4259	7.13	477	644.38	72.53
J-4260	10.58	465	644.22	77.65
J-4261	1.96	470	644.24	75.5
J-4262	2.87	470	644.26	75.51
J-4263	5.85	473	648.16	75.9
J-4264	4.99	470	648.16	77.2
J-4265	2.88	467	648.2	78.51
J-4266	0.75	455	648.27	83.74
J-4267	3.24	430	651.46	95.96
J-4268	4.28	425	651.46	98.13
J-4269	2.91	410	651.47	104.63
J-4270	3.07	411	651.46	104.19
J-4271	4.52	390	651.46	113.29
J-4272	2.01	390	651.46	113.29
J-4273	1.53	370	651.46	121.96
J-4275	3.89	405	651.46	106.79
J-4276	4.29	430	651.47	95.96
J-4277	1.3	435	651.46	93.79
J-4278	4.28	439	651.46	92.06
J-4279	3.39	443	651.46	90.33
J-4280	2.48	450	651.46	87.29
J-4281	3.27	452	651.46	86.43
J-4282	4.61	452	651.46	86.43
J-4283	1.16	447	651.47	88.6
J-4284	2.67	399	651.46	109.39
J-4285	6.3	400	651.47	108.96
J-4286	2.13	430	651.46	95.96
J-4287	0.28	475	651.47	76.46
J-4288	1.11	455	651.46	85.13
J-4289	5.06	455	651.46	85.13
J-4290	3.68	480	651.46	74.29
J-4291	1.14	485	651.46	72.13
J-4292	0.57	495	651.47	67.8
J-4293	1.33	475	651.47	76.46
J-4294	3.09	475	651.47	76.46
J-4295	3.19	480	651.47	74.3
J-4296	2.65	488	651.47	70.83
J-4297	3.48	480	651.47	74.3
J-4298	4.64	495	651.47	67.8

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4299	1.48	500	651.47	65.63
J-43	5.04	450	636.52	80.82
J-4300	1.19	515	651.47	59.13
J-4301	2.12	540	651.47	48.3
J-4302	3.77	508	651.47	62.16
J-4303	3.23	520	651.47	56.97
J-4304	2.13	550	651.47	43.97
J-4305	0.04	533	651.47	51.33
J-4306	11.9	427	643.82	93.95
J-4307	1.57	439.3	643.9	88.65
J-4308	4.45	462	644.14	78.92
J-4309	3.55	462	644.21	78.95
J-4310	4.81	470	644.22	75.49
J-4311	33.2	468	644.06	76.29
J-4312	24.99	442	644.06	87.55
J-4313	8.2	433	643.96	91.41
J-4314	6.12	417	643.95	98.34
J-4315	2.88	406	643.93	103.1
J-4316	2.48	430	644.11	92.77
J-4317	4.2	430	645	93.16
J-4318	1.33	414.7	644.6	99.62
J-4319	0	432	645	92.29
J-4321	0	394	640.92	106.99
J-4322	0	400	638.84	103.49
J-4323	0	405	638.73	101.27
J-4324	4.46	401	635.84	101.76
J-4325	0	430	642.92	92.26
J-4326	0	440	643.06	87.98
J-4327	0	444.5	643.25	86.12
J-4328	0	450	643.59	83.88
J-4329	0	390	640.65	108.61
J-4330	3.31	413	641.9	99.18
J-4331	14.22	432	642.52	91.22
J-4332	5.36	450	644.31	84.19
J-4333	0.94	445	644.25	86.33
J-4334	4.14	429	644.31	93.29
J-4335	4.86	463	644.31	78.56
J-4336	3	456	644.24	81.56
J-4337	9.62	470	644.23	75.49
J-4338	16.43	470	644.23	75.49
J-4340	12	480	651.46	74.29
J-4341	3.15	486	651.46	71.69
J-4342	3.14	448	651.46	88.16
J-4343	0.31	554	652.54	42.7
J-4344	6.24	420	647.23	98.46
J-4345	6.25	440	647.23	89.79

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4346	9.44	420	646.99	98.35
J-4347	7.8	451	646.91	84.89
J-4348	4.07	458	646.91	81.85
J-4349	8.44	463	646.88	79.68
J-4350	10.05	440	646.65	89.54
J-4351	11.62	450	646.59	85.18
J-4352	3.42	446	646.51	86.88
J-4353	2.72	450	646.42	85.11
J-4354	5.8	456	646.58	82.58
J-4355	2.03	446	646.63	86.93
J-4356	2.51	480	649.72	73.54
J-4357	3.92	456	646.67	82.62
J-4358	5.59	456	646.67	82.62
J-4359	5.64	456	646.77	82.66
J-4360	2.51	460	646.93	81
J-4361	4.63	455	646.77	83.09
J-4362	1.09	444	647.07	87.99
J-4363	1.22	456	646.68	82.62
J-4364	3.78	460	646.87	80.97
J-4365	7.18	460	646.87	80.97
J-4366	5.52	464	646.87	79.24
J-4367	4.6	462	646.68	80.02
J-4387	7.33	458	644.07	80.63
J-4388	5.82	473	644.25	74.2
J-4391	13.04	470	644.25	75.5
J-4392	8.57	476	644.25	72.9
J-4395	2	285	524.14	103.62
J-4396	2.55	370	648.74	120.78
J-4397	3.61	353	524.14	74.16
J-4398	2.87	297	524.14	98.42
J-4399	5.48	289	524.14	101.89
J-44	26.16	340	470.68	56.62
J-4400	22.88	465	644.21	77.65
J-4410	4.03	430	644.14	92.79
J-4411	5.97	430	644.13	92.78
J-4412	7.2	430	644.12	92.78
J-4414	4.5	430	644.13	92.78
J-4415	6.25	430	644.13	92.78
J-4417	5.96	425	644.13	94.95
J-4418	6.29	430	644.13	92.78
J-4455	16.61	458	644.07	80.62
J-45	18.78	354	470.68	50.56
J-4500	0	440	648.25	90.24
J-4501	17.76	441.1	648.25	89.76
J-4502	3.99	440.5	648.25	90.02
J-4503	5.25	439.2	648.25	90.58

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4504	0	439.2	648.25	90.58
J-4505	5.99	439.2	648.25	90.58
J-4508	1	437	648.26	91.54
J-4526	8.53	148	483.55	145.39
J-4527	18.03	300	483.53	79.52
J-4528	11.69	406	648.52	105.08
J-4529	0	430	644.67	93.02
J-4530	5.32	432	644.5	92.08
J-4531	0	455	645.02	82.33
J-4532	6.67	449	645.11	84.97
J-4533	3.95	376	645.79	116.9
J-4535	7.61	362	645.97	123.04
J-4536	13.65	489	648.55	69.13
J-4537	15.51	466	648.54	79.1
J-4538	4.82	463	640.15	76.76
J-4539	17.5	482	640.15	68.52
J-4540	22.02	456	640.19	79.81
J-4541	4.93	456	640.2	79.81
J-4542	9.93	456	640.2	79.81
J-4543	17.18	456	640.2	79.82
J-4544	3.16	440	640.89	87.05
J-4545	11.15	440	640.89	87.05
J-4546	13.55	430	640.09	91.03
J-4547	9.26	440	639.91	86.62
J-4548	17.27	423	639.99	94.02
J-4549	10.02	435	639.95	88.81
J-4550	6.89	480	644.65	71.34
J-4551	18.19	470	644.61	75.66
J-4552	15.4	480	644.62	71.33
J-4553	21.04	475	644.61	73.49
J-4554	9.53	414	644.14	99.72
J-4555	9.46	409	644.13	101.88
J-4556	11.84	410	644.13	101.45
J-4557	3.11	433	644.38	91.59
J-4558	6.01	426	644.38	94.63
J-4559	7.72	424	644.38	95.49
J-4560	3.89	407	644.43	102.88
J-4561	3.67	406	644.42	103.31
J-4562	7.23	406	644.42	103.31
J-4563	7.23	416	644.42	98.97
J-4564	12.63	414	644.42	99.84
J-4565	2.41	430	644.5	92.94
J-4566	0	430	644.52	92.95
J-4567	11.45	430	644.52	92.95
J-4568	0.3	430	644.52	92.95
J-4569	7.9	437	644.6	89.95

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4570	8.56	430	644.57	92.97
J-4571	13.01	430	644.55	92.97
J-4572	4.28	430	644.57	92.97
J-4573	1.3	430	644.52	92.95
J-4574	5.22	455	644.56	82.14
J-4575	6.1	448	644.58	85.18
J-4576	6.69	449	644.57	84.74
J-4577	14.83	466	644.56	77.37
J-4578	4.36	440	644.56	88.64
J-4579	6.5	453	644.56	83
J-4580	3.56	454	645.18	82.84
J-4581	8.42	458	645	81.03
J-4582	5.86	459	645	80.59
J-4583	3.52	460	645	80.16
J-4584	9.52	461	644.78	79.63
J-4585	11.49	462	644.78	79.2
J-4586	4.17	459	644.56	80.4
J-4587	5.25	465	644.41	77.74
J-4588	4.75	459	644.67	80.45
J-4589	7.23	460	644.67	80.02
J-4590	26.04	387	645.29	111.92
J-4591	6.09	377	645.29	116.25
J-4592	6.1	453	645.87	83.57
J-4593	11.05	466	645.87	77.94
J-4594	14.6	453	645.86	83.57
J-4595	6.15	432	646.29	92.85
J-4596	6.24	457	646.29	82.02
J-4597	3.73	448	646.29	85.92
J-4598	0	318	656.78	146.79
J-4599	0	315	656.78	148.09
J-46	5.18	586	721.8	58.84
J-4600	2.39	427	646.64	95.17
J-4601	32.17	432	646.63	93
J-4602	2.2	478	635.04	68.05
J-4603	4.95	472	635.17	70.7
J-4604	23.88	472	635.09	70.67
J-4605	20.93	476	635.07	68.92
J-4606	2.4	470	648.7	77.43
J-4607	6.99	470	648.7	77.43
J-4608	3.97	470	648.69	77.43
J-4610	6.24	460	647.83	81.39
J-4611	3.79	463	647.85	80.1
J-4612	14.52	472	648.02	76.27
J-4613	5.81	436	647.03	91.44
J-4614	26.14	453	647.02	84.07
J-4615	23.57	449	647.02	85.8

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4616	1.65	366	645.99	121.32
J-4617	1.24	336	645.99	134.32
J-4618	5.96	469	645.58	76.51
J-4619	4.33	446	643.65	85.64
J-4620	3.2	450	643.65	83.91
J-4621	1.61	415	643.71	99.1
J-4622	5.16	441	643.71	87.84
J-4623	3.16	293	485.18	83.27
J-4624	9.98	293	485.18	83.27
J-4625	7.88	285	485.17	86.74
J-4626	6.52	412	641.58	99.48
J-4627	14.42	424	641.58	94.28
J-4628	21.88	413	642.5	99.44
J-4629	17.79	417	642.36	97.65
J-4630	7.81	300	470.5	73.88
J-4631	18.56	297	470.5	75.18
J-4632	1.4	273	470.5	85.58
J-4633	4.7	231	470.5	103.77
J-4634	15.66	310	484.54	75.63
J-4635	14.43	320	484.53	71.29
J-4636	10.55	345	484.52	60.45
J-4637	20.6	360	484.51	53.95
J-4638	5.24	412	650.38	103.29
J-4639	1.46	428	648.26	95.44
J-4640	1.81	426	648.26	96.31
J-4641	20.09	392	647.29	110.62
J-4642	29.94	429	647.53	94.69
J-4643	12.81	407	646.78	103.9
J-4644	5.82	407	646.73	103.87
J-4645	5.24	391	646.51	110.71
J-4646	10.09	388	646.5	112.01
J-4647	14.76	402	644.43	105.05
J-4648	9.4	408	644.39	102.43
J-4649	4.32	409	642.51	101.18
J-4650	38.92	363	620.21	111.45
J-4651	9.77	426	633.94	90.1
J-4652	10.43	426	633.94	90.1
J-4653	4.59	420	634.01	92.73
J-4654	10.26	418	634	93.59
J-4655	8.46	400	643.93	105.69
J-4656	2.27	437	643.87	89.64
J-4657	10.35	448	643.91	84.89
J-4658	12.68	437	643.9	89.65
J-4661	15.35	460	644.61	79.99
J-4662	33	460	644.61	79.99
J-4663	6.88	450	644.6	84.32

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4664	6.71	440	644.6	88.65
J-4665	6.93	445	644.6	86.49
J-4666	15.31	450	644.7	84.37
J-4667	22.24	450	644.63	84.33
J-4668	15.23	447	644.61	85.62
J-4669	33.36	445	644.61	86.49
J-467	1.74	398	645.7	107.33
J-4670	13.95	445	644.61	86.49
J-4671	9.63	482	644.62	70.46
J-4673	1.28	445	634.12	81.94
J-4674	2.99	442	643.16	87.16
J-4675	10.34	442	643.15	87.16
J-4676	6.84	442	643.15	87.16
J-4679	10.41	435	636.73	87.41
J-468	4.6	423	645.65	96.48
J-4700	4.23	330	470.72	60.97
J-4701	1.75	330	470.69	60.96
J-4702	2.86	472	647.87	76.2
J-4709	8.23	478	645.22	72.46
J-4716	5.04	469	647.96	77.54
J-4717	13.91	465	647.89	79.24
J-472	3.3	450	643.86	84
J-4720	1.38	402	643.49	104.64
J-4726	8.12	438	644.83	89.62
J-4728	0	419	648.26	99.34
J-473	4.43	434	644.62	91.26
J-4732	2.9	400	643.93	105.69
J-4734	6.62	435	642.57	89.94
J-474	1.65	434	644.51	91.21
J-4742	3.51	407	646.73	103.87
J-4743	1	476.4	649.27	74.91
J-4744	5.4	397	633.95	102.67
J-4747	8.13	430	644.71	93.04
J-4748	1.42	512	650.38	59.96
J-4749	2.43	354	652.06	129.15
J-475	3.09	420	644.63	97.33
J-4750	2.42	371	652.02	121.77
J-4751	0	377	652.02	119.16
J-4752	6.06	377	652	119.16
J-4753	18.52	400	651.99	109.19
J-4754	8.53	356	651.95	128.23
J-4755	72.36	362	651.92	125.62
J-4756	22.99	468	644.21	76.35
J-4758	15.13	468	644.2	76.35
J-476	2.44	417	644.83	98.72
J-4763	1.2	446	644.5	86.01

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4764	16.62	468	644.2	76.35
J-4765	0	430	644.4	92.9
J-4766	14.92	468	644.21	76.35
J-4767	1.42	450	644.59	84.32
J-4768	5.97	432	644.43	92.05
J-4769	0.48	452	644.72	83.51
J-477	3.23	409	645.01	102.26
J-4770	0	453	644.72	83.07
J-4771	14.16	464	644.36	78.15
J-4772	9.38	457	644.83	81.39
J-4773	0	460	645	80.16
J-4774	0	462	645.1	79.34
J-4775	0	428	644.73	93.91
J-4776	5.3	416	644.7	99.09
J-4777	6.63	454	644.63	82.6
J-4778	6.29	468	644.22	76.36
J-4779	21.47	468	644.35	76.41
J-478	6.74	398	644.99	107.02
J-4780	0	420	644.71	97.37
J-4781	1.32	420	644.72	97.37
J-4782	8	435	644.7	90.86
J-4783	0	435	644.71	90.87
J-4784	0.31	445	644.71	86.53
J-4785	5.14	430	644.38	92.89
J-4786	12.42	444	644.7	86.96
J-4789	0	432	643	91.43
J-479	1.43	385	645.44	112.85
J-4790	0	430	643.09	92.33
J-4791	0	428	643.09	93.2
J-4792	19.18	439	644.35	88.98
J-4793	22.58	442	644.36	87.68
J-4794	0	428	643.09	93.2
J-4796	2.99	436	644.38	90.29
J-4797	13.57	457	644.42	81.21
J-4798	22.86	468	644.21	76.35
J-48	25.02	590	721.49	56.97
J-480	3.54	366	645.22	120.99
J-4800	0	411	642.89	100.48
J-4801	2.64	448	643.88	84.87
J-4802	0.03	445	643.9	86.18
J-4803	0	450	643.9	84.02
J-4804	2.74	450	643.91	84.02
J-4805	8.9	450	643.92	84.03
J-4806	2.65	443	643.89	87.04
J-4807	16.54	455	643.89	81.84
J-4808	10.75	455	643.88	81.84

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4809	0	450	643.87	84.01
J-481	4.7	363	645.15	122.25
J-4810	9.54	455	643.94	81.87
J-4811	8.31	450	643.9	84.02
J-4812	2.66	444	643.89	86.61
J-4813	0	447	643.9	85.32
J-4814	1.43	450	643.89	84.01
J-4815	1.43	450	643.89	84.01
J-4816	17.9	414	651.98	103.12
J-4817	0	412	651.98	103.98
J-4818	0	415	651.98	102.68
J-4819	0	410	651.98	104.85
J-482	6.91	347	644.78	129.03
J-4820	0	412	651.98	103.98
J-4821	0	412	651.98	103.98
J-4822	0	412	651.98	103.98
J-4823	0	412	651.98	103.98
J-4824	10.18	413	651.99	103.55
J-4825	2.67	413	651.99	103.55
J-483	5.52	340	644.64	132
J-4834	2.65	476	634.84	68.83
J-4835	0	476	634.81	68.81
J-4836	0	474	634.77	69.66
J-4837	2.19	477	634.77	68.36
J-4838	0.88	480	634.76	67.06
J-4839	6.06	481	634.76	66.62
J-484	6.07	328	644.4	137.09
J-4840	0	472	634.77	70.53
J-4841	5.73	472	634.82	70.55
J-4842	0	480	634.76	67.06
J-4843	0	473	634.74	70.08
J-4844	0	430	643.09	92.33
J-4845	0	430	643.11	92.34
J-4847	0	432	643.09	91.47
J-4848	5.93	432	643.09	91.47
J-4849	0	435	643.09	90.17
J-485	0	318	645.02	141.7
J-4850	0	435	643.09	90.17
J-4851	3.74	434	643.09	90.6
J-4854	15.43	390.11	646.51	111.1
J-4855	19.13	386.25	646.46	112.75
J-4856	19.94	400	647.49	107.24
J-4857	17.27	422	647.75	97.82
J-4858	23.61	423	647.76	97.39
J-4859	13.49	388	647.82	112.58
J-486	4.05	320	644.69	140.69

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4860	7.56	376	647.67	117.71
J-4861	0.79	370	647.67	120.31
J-4862	5.77	371	647.66	119.88
J-4863	15.61	372	647.66	119.45
J-4864	27.76	372	647.67	119.45
J-4865	21.44	381	648.41	115.87
J-4866	26.71	385	648.38	114.12
J-4868	39.56	406	648.38	105.03
J-4869	11.39	377	648.78	117.76
J-487	1.71	315	644.49	142.77
J-4870	3.77	376	648.78	118.2
J-4871	23.57	376	649.15	118.36
J-4872	37.95	371	649.63	120.73
J-4873	30	370	649.69	121.19
J-4874	24.85	376	648.79	118.2
J-4875	24.54	403	648.81	106.51
J-4876	14.61	410	649.81	103.91
J-4877	26.69	404	649.95	106.57
J-4878	7.63	430	644.47	92.93
J-4879	11.65	406	649.95	105.7
J-488	3.12	402	643.72	104.74
J-4880	14.93	380	650.51	117.21
J-4881	9.92	410	650.51	104.21
J-4882	12.89	360	650.77	125.99
J-4883	36.16	373	650.84	120.39
J-4884	20.79	372	650.94	120.86
J-4885	1.94	430	644.45	92.92
J-4886	11.02	385	650.66	115.11
J-4887	9.87	407	650.66	105.58
J-4888	15.99	355	650.87	128.2
J-4889	22.87	353	651.02	129.13
J-489	4.4	425	644.02	94.9
J-4890	19.95	353	651.43	129.31
J-4891	11.07	366	651.53	123.72
J-4892	47.55	352	651.79	129.9
J-4893	6.25	350	650.91	130.38
J-4894	11.29	350	650.88	130.37
J-4895	26.87	351	650.87	129.93
J-4896	39.52	350	650.87	130.37
J-4897	18.3	350	650.87	130.37
J-4898	22.31	411	651.95	104.4
J-4899	17.41	416	651.97	102.24
J-49	15.11	590	721.49	56.97
J-490	21.69	440	643.69	88.26
J-4900	8.29	432	646.31	92.86
J-4901	9.95	416	651.96	102.24

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-4902	0	432	645.37	92.45
J-4903	5.18	399	644.46	106.36
J-4904	3.21	428	643.63	93.43
J-4905	37.7	388	648.34	112.81
J-4906	14.78	356.19	650.88	127.69
J-4907	19.86	350	650.87	130.37
J-491	24.44	430	643.39	92.46
J-492	8.17	409	643.27	101.51
J-4923	5.1	416	647.76	100.42
J-4926	3.44	432	644.44	92.05
J-4929	9.76	415	642.06	98.38
J-493	16.23	423	643.39	95.49
J-4931	18.19	428	644	93.59
J-4932	14.44	406	643.93	103.1
J-494	13.61	413	643.34	99.8
J-495	8.55	416	643.44	98.55
J-496	13.98	407	643.15	102.32
J-497	17.23	418	642.79	97.4
J-498	7.88	428	642.68	93.02
J-4982	0.85	425	644.22	94.99
J-4983	13.7	420	644.26	97.17
J-4984	12.73	403.5	644.3	104.34
J-499	13.33	413	642.66	99.51
J-50	17.47	580	722.06	61.56
J-500	1.31	405	642.52	102.92
J-5000	3.51	568	722.3	66.86
J-5001	2.55	570	720.77	65.33
J-5002	5.16	562	720.77	68.79
J-5003	5.8	568	720.06	65.89
J-5004	6.46	554	714.72	69.64
J-5005	2.01	538	707.42	73.41
J-5006	2.23	540	707.34	72.51
J-5007	1.67	526	705.75	77.89
J-5008	4.81	515	701.42	80.78
J-5010	7.29	514	705.48	82.97
J-5011	5.07	506	708.25	87.63
J-5012	1.12	532	707.96	76.24
J-5013	1.08	525	712.12	81.08
J-5014	2.88	530	712.12	78.91
J-5015	0.72	562	717.61	67.43
J-5016	3.18	560	717.61	68.29
J-5017	3.38	570	720.04	65.01
J-5018	3.46	570	721.13	65.48
J-5019	8.1	584	721.33	59.5
J-5020	4.12	595	721.32	54.74
J-5021	5.17	595	721.51	54.82

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-5022	3.37	580	720.96	61.08
J-5023	2.81	578	720.96	61.94
J-5024	9.77	584	721.55	59.6
J-5025	5.15	595	721.55	54.83
J-5026	14.3	588	721.85	58
J-5027	3.46	582	721.15	60.29
J-5028	18.26	595	721.18	54.67
J-5029	7.27	595	721.17	54.67
J-5030	6.06	594	721.17	55.1
J-5031	6.38	582	721.15	60.29
J-5032	6.06	582	721.15	60.29
J-5033	1.29	570	720.04	65.01
J-5034	1.51	566	720.04	66.74
J-5035	2.87	562	720.04	68.48
J-5036	2.88	560	720.03	69.34
J-5037	3.99	538	720.03	78.87
J-5038	1.7	546	720.02	75.4
J-5039	2	547	720.02	74.97
J-5040	1.8	562	720.02	68.47
J-5041	1.65	572	720.04	64.15
J-5042	2.45	572	720.04	64.14
J-5043	1.65	574	720.04	63.28
J-5044	4.06	576	720.04	62.41
J-5045	0.94	574	720.04	63.28
J-5046	3.16	515	720.01	88.83
J-5047	1.78	515	720.01	88.83
J-5048	2.92	522	720.01	85.8
J-5049	1.47	506	720.01	92.73
J-5050	1.43	506	720.01	92.73
J-5051	1.07	510	720.01	91
J-5052	4.28	504	720.01	93.6
J-5053	1.63	502	720.01	94.46
J-5054	3.29	500	720.01	95.33
J-5055	2.34	528	707.37	77.72
J-5056	4.92	530	706.83	76.62
J-5057	1.85	535	706.83	74.45
J-5058	5.41	530	706.16	76.33
J-5059	3.02	532	706.16	75.47
J-5060	1.31	554	707.36	66.45
J-5061	4.71	528	707.36	77.72
J-5062	11.67	554	707.36	66.45
J-5063	11.16	546	707.36	69.92
J-5064	7.11	560	707.35	63.85
J-5065	6.32	570	707.35	59.52
J-5099	2.98	406	642.8	102.61
J-51	8.97	575	722.07	63.72

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-5100	2.1	529	705.75	76.59
J-5101	5.47	532	707.96	76.24
J-5102	3.22	560	707.35	63.85
J-5103	2.91	570	707.35	59.52
J-5104	4.67	554	714.72	69.64
J-512	34.24	440	644.32	88.53
J-52	3.13	570	722.07	65.89
J-53	14.73	580	721.88	61.48
J-535	20.66	472	644.43	74.72
J-537	8.1	461	634.87	75.34
J-538	7.72	468.5	635.25	72.25
J-539	0	470	634.79	71.4
J-54	0.84	580	721.88	61.48
J-55	7.03	570	722.17	65.94
J-554	3.65	417.3	636.47	94.97
J-556	7.14	450.5	635.35	80.1
J-56	11.35	575	722.17	63.77
J-563	13.73	466	644.97	77.55
J-565	4.13	475.5	645.02	73.45
J-567	6.84	472	644.82	74.88
J-568	15.09	465.5	645.42	77.96
J-57	8.71	573	722.4	64.74
J-573	16.38	464.5	645.13	78.27
J-574	35.35	455	644.68	82.19
J-575	25.87	442	644.43	87.71
J-576	19.06	430.5	644.8	92.86
J-577	10.91	431.5	644.77	92.41
J-578	6.87	415	644.71	99.53
J-579	8.22	419.5	644.69	97.58
J-58	5.24	565	722.27	68.15
J-580	15.05	422	644.61	96.45
J-581	15.18	439	644.58	89.08
J-582	9.65	480	644.6	71.32
J-583	6.87	485.5	644.61	68.94
J-584	25.16	483.3	644.62	69.9
J-585	13.71	469.5	644.59	75.87
J-586	13.75	458	644.59	80.85
J-587	11.07	460.5	644.6	79.77
J-588	19.25	466.5	644.63	77.18
J-589	23.36	470.5	644.77	75.51
J-59	22.46	442	643.94	87.5
J-592	4.87	406.9	641.92	101.83
J-593	8.91	415	641.24	98.03
J-594	6.72	411	641.88	100.04
J-595	5.29	426.5	641.28	93.06
J-596	14.62	428.5	641.88	92.46

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-597	2.75	414.5	641.53	98.37
J-598	2.55	418	642.25	97.17
J-599	9.62	419.5	642.78	96.75
J-6	4.2	555	722.27	72.48
J-60	3.27	434	643.89	90.94
J-601	8.49	402	642.48	104.2
J-6018	3.22	446	646.34	86.81
J-6019	2.62	444	646.3	87.66
J-602	4.43	410	642.77	100.86
J-6020	4.39	444	646.3	87.66
J-6021	7.06	444	646.3	87.66
J-6022	12.88	401.5	644.41	105.25
J-6023	2.99	430	644.01	92.73
J-6024	31.12	408	644.39	102.43
J-6025	0.33	403	644.57	104.67
J-6026	20.22	405	644.61	103.82
J-6027	15.19	405	644.55	103.8
J-6028	26.71	433	644.67	91.72
J-6029	26.17	415	644.55	99.47
J-603	0	403	643.47	104.19
J-6030	24.07	431	644.58	92.55
J-6031	1.44	435	644.79	90.9
J-6032	13.95	403	644.55	104.66
J-6033	23.35	409	644.55	102.06
J-6034	10.75	411	642.05	100.11
J-6035	7.82	409	641.68	100.82
J-6036	7	413	641.68	99.09
J-6037	7.22	287	485.17	85.87
J-6038	5.19	283	485.17	87.6
J-604	13.27	429	642.5	92.51
J-6048	3.73	426	648.54	96.43
J-6049	2.98	535	706.83	74.45
J-605	6.66	431	643.48	92.07
J-6052	13.28	450	652.9	87.92
J-6054	2.65	340	470.68	56.62
J-6055	0	570	720.78	65.33
J-6056	20.61	391	642.98	109.18
J-6057	4.65	400	637.75	103.02
J-6058	17.91	335	620.88	123.87
J-6059	0	315	633.95	138.2
J-606	2.25	453	643.54	82.56
J-6060	5.31	320	634.01	136.06
J-6061	32.39	369	620.44	108.95
J-6062	9.47	335	615.85	121.69
J-6063	4.23	310	623.51	135.84
J-6064	1.3	340	633.92	127.36

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-6065	3.18	430	634.31	88.53
J-6066	6.55	430	634.74	88.72
J-607	2.53	434.5	643.59	90.6
J-6076	3.17	480	656.9	76.65
J-6077	15.09	470	656.78	80.93
J-6078	13.9	470	656.79	80.94
J-6079	9.21	470	656.8	80.94
J-608	23.44	429.5	641.87	92.02
J-6080	0	445	645.42	86.84
J-6081	1.34	445	645.42	86.84
J-6082	5.28	445	645.42	86.84
J-6083	2.63	445	645.42	86.84
J-609	22.66	440	648.57	90.37
J-61	10.19	432	643.87	91.8
J-610	15.39	450	649.1	86.27
J-615	3.09	438.4	643.89	89.04
J-616	3.21	449.5	643.89	84.23
J-617	2.35	445	644.13	86.28
J-618	1.13	463.2	644.13	78.4
J-619	2.87	407.7	643.9	102.34
J-620	4.03	402	643.88	104.81
J-622	1.5	387	643.83	111.28
J-623	2.27	395	643.92	107.86
J-624	0.11	401	644.43	105.48
J-625	3.98	443.1	644.36	87.2
J-627	5.48	382.4	644.62	113.62
J-628	3.07	377	643.76	115.59
J-629	9.79	356	645.66	125.51
J-630	5.62	360	645.65	123.77
J-631	5.86	250	463.24	92.4
J-632	3.65	258	463.24	88.93
J-633	2.38	210	488.85	120.83
J-634	4.13	390	645.67	110.78
J-635	0.91	385.4	645.69	112.78
J-636	4.29	381.8	645.94	114.45
J-637	3.38	368.9	646.03	120.08
J-639	2.56	386	646.31	112.79
J-640	0.82	372	646	118.72
J-641	1.63	375.9	646	117.03
J-642	6.5	387	646.18	112.3
J-643	3.65	370.8	646.01	119.25
J-644	6.58	340	646	132.59
J-645	1.78	400	643.37	105.45
J-65	38	444	639.23	84.6
J-6500	0	404	652.6	107.72
J-6501	13.18	326	484.58	68.71

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-6502	13.37	340	484.62	62.66
J-6505	16.31	372	484.53	48.76
J-6506	19.4	300	484.52	79.95
J-6508	27.19	409	652.22	105.39
J-66	15.37	434	639.47	89.03
J-67	2.13	424	639.47	93.36
J-68	5.32	340	645.98	132.58
J-69	2.98	330	645.98	136.91
J-7	9.07	450	652.54	87.76
J-70	3.98	340	645.98	132.58
J-702	3.37	445.5	644.73	86.33
J-709	3.28	468	645.26	76.81
J-71	1.67	368	656.78	125.13
J-710	2.47	474.6	645.66	74.12
J-711	1.65	457	645.8	81.81
J-712	2.54	458.5	646.32	81.38
J-713	2.38	460.5	646.94	80.79
J-714	2.76	480	646.26	72.04
J-715	2.79	475	646.24	74.2
J-716	2.46	458.5	646.22	81.34
J-717	2.34	459	646.82	81.38
J-719	1.59	470	647.75	77.02
J-72	5.22	376	656.74	121.65
J-720	3.18	463.4	647.68	79.85
J-721	2.62	465.9	647.99	78.9
J-722	0.65	468.7	648.66	77.98
J-723	6.99	472.8	648.75	76.24
J-724	9.95	473.7	648.81	75.87
J-725	8.09	476.4	649.82	75.14
J-73	17.61	430	656.74	98.25
J-74	8.8	382	656.73	119.04
J-75	9.06	391	656.73	115.14
J-76	7.37	411	656.71	106.47
J-77	7.87	390	633.97	105.71
J-78	1.3	374	633.96	112.64
J-79	19.81	358	633.94	119.56
J-8	0	292	485.18	83.71
J-80	10.49	350	633.93	123.03
J-8013	15.4	470	645.34	75.97
J-802	5.15	395	642.93	107.43
J-803	6.73	391	642.98	109.18
J-804	7.44	393	642.99	108.32
J-805	3.02	407	643.41	102.44
J-807	4.18	403	642.57	103.8
J-808	1.23	402	643.47	104.63
J-809	2.54	405.5	644.08	103.38

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-81	9.25	305	484.51	77.78
J-810	2.28	380.7	645.91	114.92
J-811	1.38	408	643.37	101.99
J-82	5.21	340	633.92	127.36
J-83	3.71	338	633.92	128.22
J-84	7.43	343	633.92	126.06
J-85	1.56	343	633.98	126.08
J-86	7.83	555	652.8	42.38
J-88	5.21	345	633.93	125.19
J-89	0.23	343	633.93	126.06
J-90	9.22	347	633.92	124.32
J-900	2.86	459.8	645.89	80.63
J-9000	3.87	451	634.02	79.3
J-9001	15.48	451	634.06	79.32
J-9002	2.73	447.9	644.77	85.3
J-9003	9.02	448	634.07	80.62
J-9004	12.88	438	634.05	84.95
J-9005	0	441	634.03	83.64
J-9006	6.53	429	634.1	88.87
J-9007	3.86	447	634.18	81.1
J-9008	0.76	446	634.16	81.53
J-9009	2.3	445	634.18	81.97
J-9010	0.82	437	634.19	85.44
J-9011	5.92	437	634.17	85.43
J-9012	0	440	634.21	84.15
J-9013	5.25	440	634.25	84.17
J-9014	0	442	634.3	83.33
J-9015	3.95	424.5	633.97	90.76
J-9016	8.6	422	633.97	91.85
J-9017	9.96	424	634.17	91.07
J-9018	2.09	420	634.04	92.74
J-9019	5.57	405	633.98	99.22
J-902	7.78	433.5	643.61	91.04
J-9020	6.16	410	633.97	97.05
J-9021	0	412	633.99	96.19
J-9022	2.75	407	633.99	98.35
J-9023	15.18	404	633.97	99.65
J-9024	6.06	415	633.97	94.88
J-9025	11.41	400.5	633.94	101.15
J-9026	4.83	400	633.94	101.37
J-9027	5.52	393	633.94	104.4
J-9028	8.13	394	633.96	103.97
J-9029	12.56	397	633.94	102.66
J-903	1.58	385	643.8	112.14
J-9030	1.33	375	633.96	112.21
J-9031	2.72	369	633.96	114.81

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-9032	4.46	363	633.93	117.4
J-9033	4.42	364	633.93	116.96
J-9034	12.88	400	633.93	101.36
J-9035	7.91	395	633.94	103.53
J-9036	4.08	406	633.94	98.77
J-9037	7.57	398	633.94	102.23
J-9038	3.94	405	633.93	99.19
J-9039	1.62	411	633.93	96.6
J-904	1.23	407.6	643.74	102.32
J-9040	6.56	413	633.92	95.72
J-9041	1.86	413.5	633.97	95.53
J-9042	0.8	417	633.97	94.01
J-9043	6.33	416	633.97	94.45
J-9044	0	430	634.01	88.4
J-9045	0	440	634.01	84.06
J-9046	0	445	634.08	81.93
J-9047	2.64	450	634.08	79.76
J-9048	0	442	634.3	83.33
J-9049	0	445	634.3	82.03
J-9050	8.56	440	633.94	84.03
J-9051	4.79	425	633.94	90.53
J-9052	5.82	421	633.94	92.27
J-9053	0.94	415.5	633.94	94.65
J-9054	3.86	416	633.94	94.43
J-9055	0	427	633.94	89.67
J-9056	3.9	429	633.94	88.8
J-9057	0	426	633.94	90.1
J-9058	8.35	434.5	633.94	86.42
J-9059	2.6	433	633.94	87.07
J-9060	7.38	432	633.94	87.5
J-9061	9.52	436	633.95	85.77
J-9062	8.7	425	633.94	90.54
J-9063	3.05	426	633.95	90.1
J-9064	0.84	437	633.96	85.34
J-9065	6.79	450	633.96	79.71
J-9066	7.6	457	633.98	76.69
J-9067	7.91	460	634.01	75.4
J-9068	4.39	450	634.01	79.73
J-9069	3.29	435.5	634.72	86.32
J-9070	9.87	435	634.72	86.54
J-9071	9.23	464	633.93	73.63
J-9072	10.31	443	633.96	82.74
J-9073	8.54	440	633.96	84.04
J-9074	6.55	453	633.98	78.42
J-9075	5.07	460.5	633.95	75.16
J-9076	8.44	457	633.94	76.67

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-9077	6.94	456	634.03	77.14
J-9078	4.38	455.5	634.03	77.36
J-9079	8.8	450	633.95	79.71
J-908	0.77	472	634.38	70.36
J-9080	7.87	445.5	634.2	81.76
J-9081	7.83	437	634.2	85.45
J-9082	7.82	433	634.14	87.15
J-9083	9.29	425.5	634.13	90.4
J-9084	9.56	435.5	634.72	86.32
J-9085	4.68	422	634.72	92.17
J-9086	11.72	420	635.11	93.21
J-9087	10.15	425	635.11	91.04
J-9088	13.4	430	634.87	88.77
J-9089	8.27	435	634.73	86.54
J-9090	5.21	425.5	634.34	90.49
J-9091	10.77	425	634.25	90.67
J-9092	7.95	441	634.44	83.82
J-9093	11.45	432	634.45	87.72
J-9094	4.76	444	634.3	82.46
J-9095	5.65	462	634.23	74.63
J-9096	2.65	467	634.25	72.47
J-9097	4.01	472	634.27	70.31
J-9098	3.25	453	634.3	78.56
J-9099	4.53	450	634.33	79.87
J-91	0.31	440	645.22	88.92
J-910	3.99	471.5	635.2	70.93
J-9100	5.19	465	634.33	73.37
J-9101	6.2	475	634.29	69.02
J-9102	6.17	476	634.29	68.59
J-9103	4.41	477.5	634.33	67.95
J-9104	6.87	478	634.33	67.74
J-9105	7.97	477	634.45	68.22
J-9106	10.81	470	634.29	71.19
J-9107	6.8	438	634.55	85.16
J-9108	9.69	429	634.55	89.06
J-9109	11.31	428.5	634.66	89.33
J-9110	12.03	413	634.83	96.12
J-9111	15.02	429	634.81	89.18
J-9112	12.87	437	635.04	85.81
J-9113	7.84	444	635.07	82.79
J-9114	10.59	426.3	635.05	90.45
J-9115	6.97	424.5	634.83	91.14
J-9116	5.39	415	634.89	95.28
J-9117	13.82	410	635.24	97.6
J-9118	9.1	410	635.25	97.6
J-9119	12.03	400	635.43	102.01

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-912	0.48	398	645.74	107.35
J-9120	17.62	454.5	634.69	78.07
J-9121	13.14	473	634.55	70
J-9122	5.29	478	634.46	67.8
J-9123	13.47	475	634.45	69.09
J-9124	4.51	479	634.44	67.35
J-9125	2.67	480	634.44	66.92
J-9126	9.09	480	634.45	66.92
J-9127	8.85	482	634.45	66.06
J-9128	4.43	475	634.44	69.09
J-9129	6.2	477	634.38	68.19
J-9130	15.31	465	634.18	73.31
J-9131	7.91	469.5	634.26	71.39
J-9132	0	465	634.35	73.38
J-9133	6.45	480	634.72	67.04
J-9134	1.32	450.7	634.24	79.53
J-9135	0	447	634.26	81.14
J-9136	0	447	634.26	81.14
J-9137	0	450	634.27	79.85
J-9138	3.91	445	634.26	82
J-9139	3.92	448	634.27	80.71
J-9140	3.92	450	634.28	79.85
J-9141	0	453	634.32	78.56
J-9142	2.6	453	634.36	78.58
J-9143	0	481.5	634.53	66.31
J-9144	0	482.5	634.56	65.89
J-9145	7.62	482	634.38	66.03
J-9146	9.36	486	634.56	64.37
J-9147	0.9	477	634.57	68.27
J-9148	2.85	482	634.98	66.29
J-9149	13.47	472	634.7	70.5
J-9150	6.74	463	634.72	74.41
J-9151	4.77	461.8	635.53	75.28
J-9152	2.96	462.3	635.59	75.09
J-9153	8.35	451.4	636.08	80.02
J-9154	8.87	455	634.86	77.93
J-9155	7.07	453	635.16	78.93
J-9156	7.87	454	635.14	78.49
J-9157	4.85	446	635.14	81.95
J-9158	6.63	429	635.12	89.31
J-9159	4.33	452	634.17	78.93
J-9160	4.68	448	634.14	80.66
J-9161	2.77	425	636.99	91.85
J-9162	4.47	415	636.74	96.08
J-9163	9.91	415	635.68	95.62
J-9164	9.03	415	635.5	95.54

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-9165	9.56	415	635.5	95.54
J-9166	7.72	409	635.5	98.14
J-9167	6.19	407	635.26	98.91
J-9168	6.9	401	635.19	101.48
J-9169	8.04	402	635.09	101
J-917	8.4	461.5	644.59	79.33
J-9170	12.07	398	635.13	102.75
J-9171	9.27	402	635.09	101
J-9172	8.77	425	635.11	91.04
J-9173	8.43	413	634.81	96.11
J-9174	11.8	410	634.88	97.44
J-9175	4.83	400	639.04	103.58
J-9176	6.56	407	638.55	100.33
J-9177	2.68	407	638.55	100.33
J-9178	2.74	411	638.46	98.56
J-9179	2.64	412	638.1	97.97
J-9180	0.75	447	637.83	82.69
J-9182	1.42	310	634.31	140.52
J-9183	3.97	481.5	634.63	66.35
J-9188	1.8	480	634.72	67.04
J-9189	3.1	480	634.72	67.04
J-92	4	444	645.05	87.12
J-920	3.62	350	645.99	128.25
J-921	2.64	367	646	120.89
J-922	3.03	346	646	129.99
J-923	3.36	321	646	140.82
J-9232	10.32	480	634.72	67.04
J-924	4.21	340	646	132.59
J-925	3.4	299	646	150.35
J-926	3.87	285	646	156.42
J-927	3.85	375.4	646	117.25
J-928	2.64	368	646	120.46
J-929	3.63	378.2	646	116.04
J-9299	0	425	638.07	92.32
J-93	1.24	450	645.59	84.75
J-930	2.81	379.8	646.25	115.45
J-9300	7.22	415	636.13	95.81
J-9301	5.76	415	636.13	95.81
J-931	2.17	384.2	646.25	113.55
J-932	0.55	390	643.37	109.79
J-933	1.04	386	646.4	112.83
J-934	6.17	380	646.4	115.43
J-935	4.47	315	645.99	143.42
J-936	5.86	370	645.94	119.56
J-937	3.3	385.5	645.79	112.78
J-938	7.11	382	645.79	114.3

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-939	1.37	372.7	645.97	118.41
J-94	10.3	355	471.63	50.54
J-940	2.03	381.7	645.97	114.51
J-941	1.12	385.7	645.8	112.7
J-942	2	385.3	645.8	112.87
J-943	4.87	380	646.05	115.28
J-944	0.89	398.7	646.05	107.17
J-945	9.16	390	645.67	110.78
J-946	1.16	345	645.66	130.27
J-947	6.09	312	645.65	144.57
J-948	3.4	431.9	644.46	92.1
J-949	0.41	436.7	644.46	90.02
J-95	10.41	354	471.63	50.97
J-950	2.96	458.5	644.42	80.56
J-951	1.77	454.7	644.3	82.15
J-952	2.31	455.9	644.25	81.61
J-953	1.94	463.8	644.13	78.14
J-954	3.55	431.8	644.02	91.96
J-955	1.04	409.2	644.02	101.75
J-956	4.87	442.7	644.02	87.23
J-957	0.78	391	643.92	109.59
J-958	2.37	390	643.86	110
J-959	2.54	386	643.76	111.69
J-96	5.77	430	644.11	92.77
J-960	2.28	377	643.77	115.59
J-961	2.27	380	643.8	114.31
J-962	1.48	393	643.83	108.68
J-963	4.12	397	643.82	106.95
J-964	3.46	395	643.83	107.82
J-965	1.84	373	643.68	117.29
J-966	4.14	371	643.67	118.15
J-967	5.45	325	643.67	138.08
J-969	0.67	307	463.24	67.7
J-97	0	435	643.02	90.13
J-970	0.66	330	643.67	135.91
J-971	2.09	374	643.67	116.85
J-972	1.23	366	643.52	120.25
J-973	2.18	344	643.52	129.78
J-974	1.24	363	643.51	121.54
J-975	3.93	376	643.52	115.92
J-976	0.67	382	643.79	113.43
J-977	3.67	385	643.39	111.96
J-978	1.15	386	643.38	111.52
J-979	2.13	388	643.37	110.65
J-98	3.9	428	644.43	93.78
J-980	2.99	395	643.37	107.62

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J-981	3.13	390	643.38	109.79
J-982	3	384	643.39	112.39
J-983	2.26	387	643.78	111.26
J-984	1.65	394	643.62	108.16
J-985	0.56	397	643.56	106.83
J-986	3.1	404	643.55	103.8
J-987	2.69	405	643.5	103.34
J-988	0.72	390	643.5	109.84
J-989	1.21	396	643.45	107.22
J-990	3.54	399	643.45	105.92
J-9900	6.57	405	638.58	101.21
J-9903	5.16	451	634.05	79.31
J-9907	0	465	634.35	73.38
J-9908	0	445	634.3	82.03
J-991	2.56	410	643.42	101.14
J-992	6.2	407	643.42	102.44
J-993	2.93	408	643.35	101.98
J-994	13.04	395	643.08	107.49
J-995	1.87	378	643.39	114.99
J-996	0.44	375	643.5	116.34
J-997	1.2	383	643.49	112.87
J-998	1.09	375	643.49	116.34
J-999	3.7	382	643.48	113.3
PRV-3617-OUT	9.56	370	515.37	62.99
PRV-3-IN	12.15	370	652.05	122.21
PRV-3-OUT	21.28	370	484.88	49.78
PRV-4145-IN	0.72	382	646.48	114.6
PRV-4145-OUT	2.89	382	472	39
PRV-4396-IN	4.24	370	648.73	120.77
PRV-4396-OUT	3.93	370	524.14	66.79
PRV-4-IN	20.41	290	485.18	84.57
PRV-6-IN	8.44	300	644.25	149.16
PRV-6-OUT	2.05	291	485.18	84.14

APPENDIX H

FIRE FLOW MODELING

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
10	1,505.30	4,718.48	J-4614	5.85	466.51	4,073.78
6000	1,506.92	5,059.32	6000	20	461.16	5,059.32
6001	1,509.56	4,867.13	6001	20	461.16	4,867.12
6002	1,512.66	4,918.19	6002	20	461.16	4,918.19
6003	1,502.23	5,191.92	6003	20	461.16	5,191.92
6004	1,511.65	5,522.59	6006	20	461.16	5,522.59
6005	1,508.40	4,959.34	6005	20	461.16	4,959.33
6006	1,505.69	3,640.94	6006	20	461.16	3,640.93
6007	1,504.62	9,435.68	J-5029	7.28	611.8	7,265.43
6008	1,500.00	9,625.28	J-5029	3.66	603.44	6,930.75
6009	1,502.04	7,029.59	J-5029	19.46	639.91	6,918.08
6010	1,503.25	5,491.18	6010	20	498.16	5,491.18
6011	1,503.68	6,438.57	6011	20	496.16	6,438.54
6012	1,502.37	6,112.62	6012	20	494.16	6,112.62
6013	1,505.44	6,284.42	6013	20	494.16	6,284.39
6014	1,502.30	5,559.60	6014	20	490.16	5,559.36
6015	1,502.48	5,390.95	6015	20	490.16	5,390.91
6017	1,502.12	5,696.04	6017	20	490.16	5,695.67
CMF-1	1,505.46	4,811.80	CMF-7	20	414.16	4,811.60
CMF-2	1,500.00	4,674.44	CMF-9	20	414.16	4,674.45
CMF-3	1,500.00	4,249.12	CMF-7	20	414.16	4,249.12
CMF-6	1,500.00	3,995.36	CMF-6	20	414.16	3,995.33
CMF-7	1,500.02	3,809.05	CMF-9	20	414.16	3,809.05
CMF-8	1,500.00	3,681.17	CMF-8	20	414.16	3,681.17
CMF-9	1,500.00	3,427.28	CMF-9	20	414.16	3,427.28
J-1	1,500.76	7,490.06	J-5029	7.62	612.58	5,197.42
J-100	1,501.95	8,268.48	J-5029	2.06	599.75	5,038.69
J-1000	1,501.02	7,318.85	J-1000	20	436.16	7,318.86
J-10000	1,503.83	5,966.45	J-10000	20	446.16	5,966.44
J-1001	1,507.04	9,345.63	J-1001	20	446.16	9,345.43
J-1002	1,507.14	8,739.70	J-1002	20	439.16	8,739.71
J-1003	1,500.81	10,394.19	J-5029	16.51	633.11	9,837.33
J-1004	1,500.56	11,689.08	J-5029	6.4	609.76	9,819.26
J-1005	1,500.20	11,781.16	J-5029	5.48	607.65	9,805.11
J-1006	1,501.01	11,624.78	J-5029	7.16	611.53	9,842.34
J-1007	1,500.59	11,559.08	J-5029	7.57	612.47	9,829.21
J-1008	1,501.01	11,756.86	J-5029	5.78	608.34	9,814.53
J-1009	1,501.32	3,634.14	J-1009	20	436.16	3,634.67
J-101	1,505.06	5,957.80	J-3291	-6.21	505.67	4,468.40
J-1010	1,503.08	3,803.63	J-1010	20	444.16	3,804.37
J-1011	1,503.35	3,908.30	J-1011	20	431.16	3,909.06
J-1012	1,501.17	11,648.00	J-5029	5.85	608.5	9,726.46

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-1013	1,502.02	4,046.38	J-1013	20	431.16	4,046.38
J-1014	1,501.10	12,172.82	J-5029	0.32	595.73	9,707.40
J-1015	1,508.25	9,552.88	J-1015	20	396.16	9,552.90
J-1016	1,505.32	3,234.47	J-1016	20	377.16	3,234.60
J-1017	1,501.88	11,847.93	J-5029	3.65	603.42	9,681.37
J-1018	1,502.00	8,075.16	J-1494	10.9	420.16	7,625.04
J-1020	1,502.04	9,433.67	J-1022	15.67	376.16	9,254.58
J-1021	1,502.05	8,856.47	J-1021	20	353.16	8,856.48
J-1022	1,501.58	3,772.65	J-1022	20	386.16	3,773.10
J-1023	1,502.09	9,550.04	J-5029	19.74	640.56	9,509.55
J-1024	1,500.74	7,193.92	J-1024	20	385.16	7,193.88
J-1025	1,504.19	11,989.42	J-5029	0.64	596.47	9,556.25
J-1026	1,503.68	8,141.73	J-1028	-4.26	406.16	6,950.47
J-1027	1,501.11	9,248.75	J-1028	12.31	444.4	8,788.39
J-1028	1,504.75	4,110.51	J-1028	20	462.16	4,110.51
J-1029	1,501.27	7,827.45	J-1030	17.83	444.16	7,710.56
J-103	1,500.61	8,412.41	J-5029	0.95	597.2	5,042.57
J-1030	1,502.38	4,066.24	J-1030	20	449.16	4,066.24
J-1031	1,507.80	4,762.38	J-1031	20	456.16	4,762.36
J-1032	1,503.60	8,089.73	J-1032	20	446.16	8,089.75
J-1033	1,507.93	10,322.44	J-5029	18.12	636.81	10,011.58
J-1034	1,502.03	3,526.69	J-1034	20	466.16	3,527.28
J-1035	1,504.71	10,782.80	J-5029	15.08	629.8	10,029.45
J-1036	1,503.25	2,803.24	J-1036	20	458.16	2,803.36
J-1037	1,503.60	4,359.84	J-1037	20	441.16	4,359.84
J-1038	1,508.97	11,265.01	J-5029	11.87	622.39	10,082.14
J-1039	1,506.07	4,005.58	J-1039	20	453.16	4,005.55
J-104	1,504.30	2,088.30	J-104	20	556.16	2,088.61
J-1040	1,505.44	8,158.20	J-1040	20	452.16	8,158.24
J-1041	1,508.13	4,387.03	J-1041	20	451.16	4,387.03
J-1042	1,504.82	6,695.99	J-1041	19.13	449.16	6,654.46
J-1043	1,503.27	6,496.76	J-1037	17.4	435.16	6,384.40
J-1044	1,501.89	8,158.80	J-1044	20	454.16	8,158.84
J-1045	1,501.10	6,288.08	J-1048	19.56	451.15	6,268.29
J-1046	1,501.40	5,325.41	J-1047	14.36	453.15	5,104.29
J-1047	1,507.59	1,335.80	J-1047	20	466.16	1,335.79
J-1048	1,505.31	1,111.43	J-1048	20	452.16	1,111.43
J-1049	1,501.90	4,460.25	J-1050	19.57	458.16	4,445.79
J-105	1,500.75	7,845.19	J-105	20	471.16	7,845.16
J-1050	1,501.99	1,124.89	J-1050	20	459.16	1,124.89
J-1051	1,502.04	3,766.03	J-1052	18.48	468.16	3,720.61
J-1052	1,501.59	1,049.34	J-1052	20	471.66	1,049.34

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-1053	1,505.93	2,956.64	J-1054	18.35	475.64	2,916.50
J-1055	1,502.74	4,117.68	J-1055	20	468.76	4,117.68
J-1056	1,503.25	3,117.15	J-1056	20	465.46	3,117.67
J-1057	1,504.36	3,675.86	J-1057	20	491.16	3,675.86
J-1059	1,503.57	4,021.90	J-1059	20	491.66	4,021.90
J-106	1,531.82	6,578.67	J-106	20	466.16	6,578.67
J-1061	1,501.00	1,363.70	J-1061	20	492.86	1,363.70
J-1062	1,503.91	9,825.91	J-1062	20	492.66	9,825.93
J-1063	1,502.90	9,556.06	J-1064	19.48	481.36	9,533.17
J-1064	1,502.24	1,881.08	J-1064	20	482.56	1,881.09
J-1065	1,505.68	4,340.04	J-1066	16.53	468.65	4,218.56
J-1066	1,508.82	1,659.71	J-1066	20	476.66	1,659.71
J-1067	1,501.45	4,326.23	J-4539	4.44	492.24	3,641.64
J-1068	1,502.88	3,999.52	J-4539	13.78	513.79	3,708.90
J-107	1,500.47	14,349.12	J-5029	2.05	599.74	11,708.36
J-1078	1,507.18	1,116.08	J-1078	20	501.16	1,116.08
J-1079	1,512.37	7,440.60	J-1079	20	482.66	7,440.62
J-108	1,501.22	6,316.76	J-108	20	422.16	6,316.77
J-1080	1,500.88	3,041.52	J-1082	20	496.16	3,042.18
J-1081	1,504.81	2,928.96	J-1081	20	506.66	2,929.54
J-1082	1,502.36	1,773.98	J-1082	20	496.16	1,773.98
J-1083	1,501.36	5,128.37	J-1083	20	481.86	5,128.37
J-1084	1,501.53	5,746.39	J-1084	20	483.76	5,746.38
J-1085	1,500.57	6,694.63	J-1085	20	485.26	6,694.64
J-1086	1,501.86	2,716.63	J-1086	20	482.46	2,716.85
J-1087	1,500.69	6,306.97	J-1087	20	486.46	6,306.97
J-1088	1,500.66	6,494.54	J-1091	19.39	485.36	6,459.45
J-1089	1,501.03	6,093.62	J-1090	17.27	491.86	5,937.23
J-109	1,501.99	7,648.90	J-5029	14.55	628.58	6,708.52
J-1090	1,501.60	2,315.88	J-1090	20	498.16	2,315.97
J-1091	1,500.96	2,526.76	J-1091	20	486.76	2,526.91
J-1093	1,502.12	5,881.48	J-1092	18.74	488.06	5,814.43
J-1094	1,500.14	7,262.56	J-1094	20	495.96	7,263.28
J-1095	1,500.14	5,876.78	J-1096	18.61	495.16	5,798.87
J-1097	1,500.20	5,592.86	J-1098	19.61	494.76	5,572.17
J-1098	1,501.01	3,073.33	J-1098	20	495.66	3,073.92
J-1099	1,500.42	5,508.02	J-1100	18.01	498.86	5,399.84
J-1100	1,500.86	1,820.02	J-1100	20	503.46	1,820.03
J-1101	1,500.74	1,926.73	J-1101	20	506.46	1,926.75
J-1102	1,500.28	5,578.89	J-1101	18.05	501.96	5,468.97
J-1103	1,500.58	5,711.89	J-1104	16.92	505.46	5,528.11
J-1104	1,500.86	1,784.07	J-1104	20	512.56	1,784.07

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-1105	1,502.05	1,728.80	J-1105	20	513.86	1,728.80
J-1106	1,501.59	1,654.90	J-1106	20	515.86	1,654.89
J-1107	1,501.94	2,112.25	J-1107	20	519.16	2,112.30
J-1109	1,503.42	7,790.06	J-1109	20	429.16	7,790.33
J-1110	1,501.07	5,522.10	J-1111	15.88	497.66	5,299.80
J-1111	1,502.12	1,497.16	J-1111	20	507.16	1,497.17
J-1114	1,501.77	1,414.96	J-1114	20	506.66	1,417.13
J-1115	1,501.00	3,625.73	J-1114	18.27	502.66	3,564.46
J-112	1,503.73	10,255.13	J-5029	0.95	597.2	7,386.28
J-1125	1,500.74	11,513.96	J-1125	20	513.16	11,513.99
J-1126	1,501.84	596.13	J-1126	20	510.66	596.15
J-1127	1,506.66	480.33	J-1127	20	515.16	480.34
J-1128	1,500.85	2,401.48	J-1128	20	504.66	2,401.78
J-1129	1,504.65	2,354.00	J-1129	20	503.96	2,354.24
J-113	1,509.95	5,285.38	J-5029	19.67	640.39	5,206.62
J-1130	1,501.31	2,373.61	J-1130	20	507.56	2,373.87
J-1131	1,501.72	3,055.59	J-1130	16.97	500.56	2,963.94
J-1132	1,500.61	2,241.92	J-1132	20	511.16	2,242.09
J-1133	1,502.98	2,245.07	J-1133	20	513.16	2,245.23
J-1134	1,506.19	3,241.63	J-1134	20	514.66	3,241.63
J-1135	1,504.93	2,488.28	J-1135	20	458.16	2,488.36
J-1136	1,504.27	5,980.16	J-1135	18.7	455.16	5,922.62
J-1137	1,505.12	2,480.34	J-1137	20	461.16	2,480.43
J-1138	1,507.30	4,529.35	J-1139	19.13	462.16	4,499.28
J-1139	1,507.44	2,688.21	J-1139	20	464.16	2,688.38
J-114	1,509.84	4,787.73	J-114	20	511.16	4,787.56
J-1140	1,507.23	5,361.84	J-1140	20	466.16	5,361.84
J-1141	1,509.54	2,373.39	J-1141	20	466.16	2,373.45
J-1142	1,504.59	4,747.53	J-1142	20	468.16	4,747.53
J-1143	1,505.10	3,366.55	J-1144	19.35	479.66	3,347.91
J-1144	1,501.68	2,369.45	J-1144	20	481.16	2,369.56
J-1145	1,505.12	1,873.89	J-1145	20	471.16	1,873.89
J-1146	1,508.34	3,344.10	J-1146	20	491.16	3,344.65
J-1147	1,507.82	6,886.59	J-1147	20	494.16	6,886.62
J-1148	1,504.95	3,368.41	J-1148	20	486.16	3,368.96
J-1149	1,500.82	5,556.46	J-1149	20	476.16	5,556.45
J-115	1,506.46	1,992.17	J-584	3.01	496.94	1,564.48
J-1150	1,500.71	7,381.82	J-1151	15.67	466.16	7,125.64
J-1151	1,501.60	1,225.52	J-1151	20	476.16	1,225.52
J-1152	1,502.72	2,704.45	J-1152	20	464.16	2,704.55
J-1153	1,503.05	1,372.63	J-1153	20	436.16	1,372.63
J-1154	1,500.72	8,298.54	J-1155	13.5	446.16	7,954.11

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-1155	1,502.02	2,558.73	J-1155	20	461.16	2,558.80
J-1156	1,502.71	6,474.09	J-1156	20	496.16	6,474.10
J-1157	1,500.97	2,290.02	J-1157	20	481.16	2,290.07
J-1159	1,501.61	1,702.74	J-1159	20	478.16	1,701.41
J-116	1,511.63	5,238.50	J-5029	19.87	640.85	5,208.31
J-1160	1,500.12	3,946.41	J-1161	19.13	476.16	3,918.15
J-1161	1,501.59	1,414.37	J-1161	20	478.16	1,414.37
J-1162	1,501.78	1,660.79	J-1162	20	485.16	1,660.79
J-1163	1,500.63	7,253.18	J-1163	20	491.16	7,253.21
J-1164	1,501.56	1,307.74	J-1164	20	481.16	1,307.74
J-1165	1,500.96	1,176.66	J-1165	20	491.16	1,176.66
J-1166	1,501.29	6,889.67	J-1165	18.7	488.16	6,807.60
J-1167	1,501.54	5,675.93	J-1168	17.18	493.16	5,524.34
J-1168	1,502.97	3,224.08	J-1168	20	499.66	3,224.58
J-1169	1,502.34	3,225.58	J-1169	20	507.16	3,226.16
J-117	1,505.87	5,441.45	J-5029	18.99	638.82	5,202.54
J-1170	1,501.03	6,657.41	J-1169	15.67	497.16	6,371.58
J-1171	1,501.41	5,424.66	J-1171	20	496.16	5,424.65
J-1172	1,502.04	3,434.24	J-1172	20	481.16	3,434.94
J-1173	1,500.72	11,015.41	J-5029	6.79	610.68	9,178.78
J-118	1,512.49	4,107.81	J-118	20	516.16	4,107.82
J-1189	1,505.36	3,111.67	J-1189	20	491.16	3,111.67
J-119	1,508.88	4,611.64	J-119	20	506.16	4,611.61
J-121	1,501.55	9,425.17	J-584	0.02	490.06	7,911.25
J-122	1,507.21	4,582.93	J-123	19.57	402.16	4,572.25
J-123	1,508.09	4,105.57	J-123	20	403.16	4,105.61
J-124	1,504.86	4,230.48	J-124	20	402.16	4,230.69
J-125	1,501.47	3,629.98	J-125	20	401.16	3,630.01
J-126	1,501.52	7,582.68	J-584	11.65	516.9	6,966.15
J-127	1,500.73	11,570.89	J-5029	10.73	619.77	10,208.92
J-1271	1,500.96	1,944.81	J-1271	20	539.16	1,944.98
J-128	1,507.14	4,086.00	J-3909	20	400.16	4,086.00
J-129	1,505.79	4,575.33	J-129	20	426.16	4,575.33
J-130	1,500.99	11,281.08	J-5029	12.3	623.38	10,131.52
J-1306	1,501.14	2,063.05	J-1306	20	499.16	2,063.16
J-131	1,503.07	7,587.49	J-131	20	409.16	7,587.50
J-132	1,504.02	5,217.74	J-3910	20	402.16	5,217.73
J-133	1,505.94	7,827.54	J-133	20	430.16	7,827.56
J-1338	1,506.41	1,247.00	J-1342	19.55	528.13	1,238.86
J-134	1,509.29	5,415.10	J-134	20	426.16	5,415.09
J-135	1,502.10	4,444.83	J-136	20	426.16	4,444.83
J-136	1,503.76	3,773.19	J-136	20	426.16	3,773.18

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-137	1,501.78	4,750.47	J-975	19.25	420.42	4,728.68
J-138	1,502.56	3,778.55	J-138	20	381.16	3,779.46
J-139	1,506.81	5,746.51	J-139	20	496.16	5,746.55
J-1393	1,502.00	8,093.61	J-9145	16.1	519.16	7,741.31
J-1396	1,503.60	2,989.60	J-1396	20	512.16	2,989.70
J-1397	1,503.18	2,871.84	J-1397	20	502.16	2,871.92
J-1398	1,504.78	2,015.64	J-1398	20	494.16	2,015.64
J-1400	1,503.11	6,445.82	J-1401	15.01	488.65	6,151.80
J-1402	1,503.60	5,647.81	J-1403	18.05	486.66	5,551.28
J-1404	1,501.39	4,458.63	J-1405	17.62	481.65	4,366.21
J-1406	1,501.81	3,545.88	J-1409	13.71	471.65	3,363.59
J-1408	1,504.82	1,679.19	J-1409	13.5	471.16	1,590.52
J-1409	1,502.97	1,530.44	J-1409	20	486.16	1,530.65
J-1416	1,508.09	1,336.31	J-1416	20	496.66	1,336.31
J-1417	1,506.28	1,794.63	J-1417	20	504.16	1,794.86
J-1418	1,506.48	670.61	J-1418	20	499.66	670.79
J-1422	1,505.48	4,586.34	J-1422	20	456.16	4,586.34
J-1427	1,507.81	4,804.05	J-1427	20	458.16	4,804.04
J-143	1,502.54	9,411.17	J-1900	16.5	514.07	9,109.61
J-1434	1,500.60	3,957.22	J-1434	20	476.16	3,957.23
J-1435	1,502.15	1,314.29	J-1435	20	473.16	1,314.29
J-1436	1,500.88	8,288.10	J-1437	16.53	453.16	8,099.58
J-1437	1,503.49	2,952.72	J-1437	20	461.16	2,952.91
J-1438	1,504.34	7,577.87	J-1031	17.83	451.16	7,458.32
J-1439	1,501.36	4,735.67	J-1439	20	448.16	4,735.65
J-144	1,502.14	7,977.53	J-144	20	496.16	7,977.53
J-1447	1,501.41	4,743.17	J-1447	20	438.16	4,743.17
J-1448	1,501.66	4,681.52	J-1448	20	427.16	4,681.52
J-1449	1,503.55	1,976.96	J-1449	20	430.16	1,976.97
J-145	1,508.89	7,555.84	J-145	20	496.16	7,555.84
J-1450	1,501.97	2,122.49	J-1450	20	434.16	2,122.51
J-1451	1,502.38	6,117.06	J-1451	20	453.16	6,117.07
J-1454	1,505.54	1,141.93	J-1454	20	496.16	1,142.05
J-1456	1,502.30	6,060.58	J-1456	20	481.16	6,060.60
J-1458	1,503.21	1,403.71	J-1459	16.52	518.13	1,334.47
J-146	1,505.30	8,630.36	J-146	20	481.16	8,630.36
J-1469	1,502.80	3,094.65	J-1469	20	432.16	3,095.04
J-1473	1,500.57	2,551.54	J-944	17.53	439.16	2,509.70
J-1474	1,500.58	3,407.00	J-630	19.57	405.16	3,399.33
J-1475	1,501.59	1,506.90	J-633	17.22	249.75	1,493.16
J-1476	1,501.60	8,072.76	J-1449	16.1	421.16	7,876.44
J-1477	1,511.34	1,475.01	J-4709	17.18	517.65	1,415.46

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-1479	1,516.70	1,430.54	J-1479	20	516.16	1,430.56
J-1485	1,500.74	2,542.56	J-1485	20	506.46	2,542.74
J-1488	1,501.97	7,340.53	J-1488	20	440.16	7,340.55
J-149	1,502.19	7,364.81	J-154	20	466.16	7,364.80
J-1490	1,504.38	3,180.27	J-1490	20	431.16	3,180.52
J-1491	1,503.08	7,215.10	J-1491	20	437.16	7,215.11
J-1494	1,502.44	3,829.95	J-1494	20	441.16	3,829.95
J-1495	1,503.03	3,973.19	J-1495	20	399.16	3,973.88
J-1496	1,501.67	9,124.17	J-1495	16.1	390.16	8,945.97
J-1499	1,501.50	2,237.49	J-42	17.83	455.16	2,202.23
J-150	1,509.41	6,574.76	J-150	20	466.16	6,575.07
J-1500	1,503.19	2,260.53	J-4671	2.25	495.18	1,760.27
J-1505	1,508.85	1,600.43	J-4671	19.34	534.63	1,582.17
J-1506	1,501.40	2,391.82	J-969	20	353.16	2,391.84
J-1508	1,501.62	1,647.73	J-1508	20	504.06	1,647.72
J-1509	1,500.96	12,180.94	J-5029	3.92	604.04	10,025.62
J-151	1,501.59	6,768.93	J-151	20	481.16	6,768.93
J-1512	1,506.65	6,849.24	J-1512	20	443.16	6,849.25
J-152	1,500.81	6,468.69	J-152	20	476.16	6,468.87
J-154	1,501.39	1,350.80	J-154	20	466.16	1,350.80
J-155	1,501.51	5,670.13	J-155	20	416.16	5,670.13
J-156	1,500.12	11,917.56	J-5029	-1.5	591.54	9,242.70
J-157	1,501.51	11,900.39	J-5029	-1.92	590.56	9,157.04
J-158	1,501.74	9,149.32	J-158	20	361.16	9,149.32
J-159	1,503.21	11,773.65	J-5029	4.01	604.24	9,646.99
J-1599	1,505.35	4,228.19	J-1599	20	454.16	4,228.19
J-160	1,505.70	3,074.45	J-160	20	426.16	3,074.65
J-1601	1,500.48	6,367.47	J-1601	20	490.16	6,367.48
J-1602	1,503.08	5,112.41	J-1602	20	484.16	5,112.41
J-161	1,507.31	7,793.51	J-161	20	447.16	7,793.61
J-1615	1,500.01	11,415.00	J-5029	7.13	611.46	9,704.05
J-162	1,508.29	6,250.34	J-162	20	451.16	6,250.34
J-163	1,518.70	5,432.14	J-163	20	439.16	5,432.15
J-164	1,512.72	6,983.10	J-164	20	447.16	6,983.15
J-165	1,503.43	6,252.57	J-165	20	445.16	6,252.57
J-166	1,512.11	5,868.43	J-166	20	440.16	5,868.42
J-1666	1,507.46	7,032.61	J-1666	20	476.16	7,032.64
J-1667	1,503.73	6,523.81	J-1667	20	476.16	6,523.82
J-1669	1,504.84	12,898.22	J-5029	-6.27	580.52	9,934.26
J-167	1,524.22	6,099.66	J-167	20	444.16	6,099.62
J-1677	1,500.01	5,903.87	J-1677	20	486.16	5,903.88
J-1678	1,500.00	6,328.08	J-1678	20	476.16	6,328.09

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-168	1,508.33	6,241.22	J-168	20	449.16	6,241.23
J-169	1,501.92	8,631.01	J-182	18.27	414.16	8,542.04
J-17	1,507.65	10,897.05	J-5029	11.43	621.38	9,664.32
J-170	1,522.70	6,064.71	J-170	20	445.16	6,064.67
J-171	1,503.25	2,795.05	J-171	20	454.16	2,795.26
J-172	1,504.71	9,108.89	J-584	1.38	493.19	7,706.12
J-173	1,514.46	9,324.72	J-584	-1.98	485.44	7,691.97
J-174	1,507.38	9,485.77	J-584	-5.38	477.58	7,633.26
J-177	1,501.36	6,993.05	J-177	20	338.16	6,993.05
J-178	1,500.75	6,636.01	J-4593	10.87	491.1	6,068.80
J-179	1,506.07	4,586.84	J-4614	6.62	468.28	3,990.43
J-18	1,501.55	10,288.06	J-5029	16.54	633.17	9,737.90
J-180	1,516.40	3,991.67	J-180	20	446.16	3,991.70
J-182	1,504.01	3,418.13	J-182	20	418.16	3,418.51
J-183	1,504.07	4,425.44	J-4614	8.02	471.51	3,899.89
J-185	1,500.78	4,464.43	J-4901	-6.88	400.12	3,645.32
J-19	1,500.09	11,612.63	J-5029	7.36	611.98	9,851.67
J-1900	1,505.95	7,582.94	J-1900	20	522.16	7,583.15
J-1901	1,501.99	1,834.56	J-1901	20	476.16	1,834.57
J-1902	1,503.75	4,921.78	J-1902	20	518.16	4,921.13
J-1903	1,502.07	687.25	J-1903	20	477.16	687.29
J-1904	1,501.84	4,092.66	J-1907	16.53	516.16	3,943.52
J-1905	1,503.73	3,603.74	J-1905	20	509.16	3,604.01
J-1906	1,500.91	3,061.68	J-1907	16.1	515.16	2,936.19
J-1907	1,503.32	2,235.16	J-1907	20	524.16	2,235.20
J-1930	1,500.64	6,745.45	J-3924	20	496.16	6,745.50
J-1942	1,500.74	4,608.47	J-1907	16.53	516.16	4,440.91
J-1943	1,503.98	4,120.62	J-1943	20	516.16	4,123.55
J-1944	1,502.19	4,010.13	J-1944	20	516.16	4,010.10
J-2	1,503.80	6,286.30	J-5029	14.75	629.05	5,200.47
J-20	1,512.09	3,476.75	J-20	20	366.16	3,476.83
J-21	1,503.69	1,849.08	J-5025	15.73	631.3	1,456.93
J-23	1,507.55	3,372.65	J-23	20	351.16	3,372.69
J-2300	1,501.43	12,042.93	J-5029	-0.41	594.05	9,518.83
J-2301	1,505.61	1,277.69	J-2301	20	466.16	1,277.69
J-24	1,505.48	3,005.75	J-24	20	341.16	3,005.76
J-2400	1,502.37	6,736.26	J-2400	20	391.16	6,736.26
J-2401	1,502.53	7,487.98	J-2401	20	396.16	7,488.25
J-2402	1,501.33	6,443.32	J-2402	20	391.16	6,443.32
J-2403	1,500.42	5,272.66	J-2403	20	388.16	5,272.66
J-25	1,506.22	2,898.25	J-25	20	336.16	2,898.26
J-27	1,507.22	2,855.54	J-27	20	336.16	2,855.54

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-28	1,507.01	3,017.40	J-28	20	341.16	3,017.41
J-3	1,506.07	5,370.74	J-5029	19.29	639.52	5,202.74
J-30	1,508.29	3,237.84	J-30	20	351.16	3,237.87
J-3006	1,500.44	9,693.86	J-5029	4.84	606.17	7,146.91
J-3007	1,500.36	9,229.57	J-5029	7.72	612.81	7,146.82
J-3008	1,500.50	7,863.93	J-5029	15.87	631.63	7,146.97
J-3009	1,500.76	5,802.59	J-3009	20	486.16	5,802.59
J-3011	1,505.69	1,471.91	J-3267	16.24	514.47	1,394.83
J-3012	1,503.36	3,223.62	J-3012	20	496.16	3,224.53
J-3013	1,504.75	2,726.39	J-3013	20	506.16	2,727.08
J-3015	1,501.60	1,409.25	J-3015	20	516.16	1,409.28
J-3016	1,507.95	1,388.57	J-3265	14.25	510.88	1,282.12
J-3020	1,502.33	2,033.16	J-5029	13.09	625.2	1,449.39
J-3021	1,500.93	1,981.27	J-5029	13.94	627.18	1,454.23
J-3028	1,502.42	8,802.16	J-5029	10.71	619.72	7,219.27
J-3029	1,506.26	2,399.41	J-3029	20	471.16	2,399.95
J-3030	1,516.67	7,310.71	J-5029	19.38	639.72	7,199.05
J-3031	1,511.95	7,969.62	J-5029	15.46	630.69	7,185.28
J-3033	1,500.01	8,252.56	J-5029	13.77	626.78	7,183.75
J-3034	1,503.59	9,443.06	J-5029	6.92	610.97	7,213.55
J-3035	1,508.52	9,575.15	J-5029	6.14	609.17	7,214.92
J-3036	1,502.95	9,540.57	J-5029	6.33	609.61	7,211.10
J-3037	1,527.14	8,927.78	J-5029	10	618.08	7,226.21
J-3038	1,513.27	8,395.99	J-5029	13.11	625.27	7,217.06
J-3039	1,509.35	9,183.66	J-5029	8.43	614.45	7,216.15
J-3040	1,502.32	9,672.36	J-5029	5.48	607.65	7,211.21
J-3041	1,500.01	10,082.87	J-5029	2.62	601.05	7,220.84
J-3042	1,501.97	8,163.17	J-5029	14.41	628.27	7,203.57
J-3043	1,509.03	4,788.25	J-4614	5.23	465.06	4,110.80
J-3044	1,508.38	4,412.71	J-4614	15.68	489.18	4,202.74
J-3045	1,500.00	4,666.31	J-4614	13.05	483.12	4,325.71
J-3046	1,509.82	7,453.02	J-5029	18.59	637.91	7,206.53
J-3047	1,500.00	8,980.13	J-584	6.18	504.27	7,908.50
J-3048	1,501.56	8,003.31	J-584	18.86	533.53	7,910.06
J-3049	1,502.29	9,325.28	J-584	1.39	493.21	7,907.91
J-3050	1,502.35	9,722.86	J-584	-4.79	478.94	7,909.70
J-3051	1,501.55	9,480.85	J-584	-0.88	487.97	7,908.32
J-3052	1,501.54	8,348.58	J-584	14.52	523.52	7,908.69
J-3053	1,500.77	7,513.69	J-3053	20	366.16	7,513.70
J-3054	1,500.00	2,033.80	J-5029	13.07	625.16	1,448.92
J-3055	1,500.01	1,795.79	J-5029	16.24	632.47	1,444.21
J-3060	1,500.44	8,847.35	J-3361	19.86	534.83	8,834.30

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-3065	1,502.47	9,200.83	J-584	17.54	530.49	8,958.40
J-3066	1,500.89	8,918.94	J-3361	17.46	529.29	8,686.80
J-3067	1,505.08	9,710.62	J-584	-10	466.93	7,588.50
J-3068	1,503.79	7,952.43	J-584	8.43	509.46	7,102.72
J-3069	1,512.88	7,506.94	J-584	16.9	529.01	7,266.61
J-3070	1,506.06	4,792.00	J-3070	20	523.16	4,791.87
J-3071	1,503.96	5,044.51	J-1405	18.26	483.15	4,967.59
J-3072	1,515.40	7,023.89	J-3072	20	453.16	7,023.92
J-3073	1,516.70	7,027.64	J-3073	20	454.16	7,027.67
J-3074	1,513.73	6,782.21	J-3074	20	451.16	6,782.22
J-3075	1,518.70	6,480.44	J-3075	20	451.16	6,480.38
J-3076	1,501.72	7,380.94	J-3076	20	461.16	7,381.06
J-3077	1,504.76	8,550.05	J-5029	18.33	637.3	8,252.40
J-3078	1,500.00	12,919.77	J-5029	-7.74	577.14	10,081.42
J-3079	1,500.00	12,218.58	J-5029	-7.29	578.19	8,973.29
J-3080	1,500.00	12,212.16	J-5029	-7.21	578.36	8,975.05
J-3081	1,500.00	12,216.61	J-5029	-7.12	578.58	8,995.48
J-3082	1,500.37	11,023.04	J-5029	6.98	611.1	9,179.54
J-3083	1,503.89	4,783.46	J-3083	20	483.16	4,783.45
J-3084	1,512.77	4,624.44	J-3084	20	471.16	4,624.43
J-3085	1,508.48	4,574.26	J-3085	20	471.16	4,574.25
J-3086	1,519.05	4,249.12	J-3086	20	471.16	4,249.12
J-3087	1,505.82	5,213.56	J-3087	20	471.16	5,213.56
J-3088	1,505.79	4,984.13	J-3088	20	471.16	4,984.13
J-3089	1,511.29	9,496.12	J-5029	11.78	622.19	8,075.56
J-3090	1,501.57	5,372.31	J-3090	20	491.16	5,372.31
J-3091	1,502.48	6,722.32	J-3091	20	506.16	6,722.35
J-3092	1,500.00	12,079.87	J-5029	-1.01	592.67	9,603.59
J-3096	1,506.32	3,848.42	J-3096	20	466.16	3,848.42
J-32	1,505.26	6,650.07	J-35	19.57	440.16	6,630.47
J-320	1,503.00	2,485.55	J-320	20	516.16	2,486.00
J-325	1,501.43	9,500.61	J-328	11.81	487.26	8,928.05
J-326	1,502.35	2,675.33	J-326	20	516.16	2,676.10
J-3262	1,505.98	3,122.29	J-4537	8.73	486.15	2,854.79
J-3263	1,501.19	12,951.05	J-5029	7.02	611.2	10,983.95
J-3264	1,510.49	1,359.93	J-4709	19.12	522.14	1,342.49
J-3265	1,506.34	1,212.99	J-3265	20	524.16	1,212.80
J-3266	1,503.19	1,386.49	J-4709	19.01	521.88	1,366.25
J-3267	1,503.97	1,366.12	J-3267	20	523.16	1,366.22
J-3268	1,503.23	3,670.91	J-3268	20	497.16	3,670.91
J-327	1,503.44	2,947.35	J-327	20	501.16	2,948.36
J-328	1,502.31	4,764.32	J-328	20	506.16	4,764.32

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-3282	1,506.80	5,954.00	J-3291	-10.45	495.89	4,308.44
J-3283	1,513.61	6,547.65	J-5029	13.11	625.26	5,049.82
J-3284	1,502.10	5,809.56	J-3291	-4.87	508.76	4,399.74
J-3285	1,502.49	5,666.84	J-104	-7.73	492.15	4,286.20
J-3286	1,501.73	3,415.25	J-3286	20	510.16	3,415.22
J-3287	1,507.68	3,534.98	J-104	-1.67	506.16	2,858.87
J-3288	1,505.85	2,911.64	J-104	18.36	552.36	2,856.78
J-3289	1,503.98	4,216.80	J-3291	-1.67	516.16	3,314.09
J-329	1,501.65	6,587.72	J-329	20	491.16	6,587.73
J-3290	1,503.68	4,230.03	J-3291	-1.05	517.57	3,341.23
J-3291	1,503.50	2,343.29	J-3291	20	566.16	2,346.07
J-3292	1,508.26	5,918.23	J-3291	3.41	527.87	4,864.47
J-3293	1,506.33	3,351.34	J-3293	20	516.16	3,351.34
J-3294	1,513.34	5,180.41	J-5029	19.53	640.08	5,049.80
J-3295	1,507.29	2,594.30	J-76	10.03	434.16	2,453.31
J-3296	1,508.51	8,294.34	J-5029	13.57	626.32	7,192.15
J-3297	1,503.43	7,730.19	J-5029	16.95	634.13	7,202.88
J-3298	1,536.68	7,579.51	J-5029	17.95	636.42	7,218.82
J-3299	1,510.47	5,097.45	J-3306	16.97	468.16	4,963.06
J-33	1,503.50	4,702.14	J-35	20	441.16	4,702.14
J-330	1,501.57	7,138.50	J-330	20	472.16	7,138.51
J-3300	1,509.19	5,423.33	J-4926	12.69	461.29	5,087.94
J-3301	1,511.24	5,024.11	J-3306	19.22	473.35	4,989.06
J-3302	1,510.60	4,805.62	J-3302	20	437.16	4,805.68
J-3303	1,516.45	4,501.77	J-3305	19.15	444.19	4,473.35
J-3304	1,518.63	4,538.36	J-3305	17.61	440.64	4,459.30
J-3305	1,516.70	3,837.92	J-3305	20	446.16	3,837.93
J-3306	1,505.88	4,456.68	J-3306	20	475.16	4,456.74
J-3307	1,506.70	4,878.72	J-4647	13.93	434.16	4,667.57
J-3308	1,505.59	4,721.68	J-3308	20	441.16	4,721.75
J-3309	1,506.00	4,747.65	J-3305	17.32	439.97	4,654.41
J-331	1,502.70	5,453.65	J-331	20	476.16	5,453.64
J-3310	1,506.86	4,400.00	J-3310	20	448.16	4,400.04
J-3311	1,505.03	4,455.67	J-3311	20	446.16	4,455.71
J-3312	1,512.66	3,210.71	J-3312	20	435.16	3,210.72
J-3313	1,507.02	4,365.96	J-4614	15.5	488.78	4,150.40
J-3314	1,507.88	3,571.64	J-3314	20	477.16	3,571.69
J-3315	1,504.51	4,245.10	J-3314	18.7	474.16	4,193.04
J-3316	1,508.94	4,999.81	J-4614	2.75	459.35	4,193.54
J-3317	1,509.66	4,716.12	J-4614	12.63	482.15	4,345.21
J-3318	1,511.76	4,250.20	J-3318	20	421.16	4,250.27
J-3319	1,515.39	3,532.76	J-3319	20	419.16	3,532.77

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-332	1,502.50	7,856.82	J-332	20	498.16	7,856.87
J-3320	1,512.22	4,648.17	J-4614	5.69	466.13	4,006.76
J-3321	1,514.81	4,358.54	J-4614	11.86	480.38	3,988.63
J-3322	1,513.56	4,340.42	J-4614	11.01	478.41	3,938.58
J-3323	1,506.73	4,394.84	J-4614	10.24	476.63	3,956.80
J-3324	1,503.33	4,432.86	J-4614	8.64	472.95	3,928.94
J-3325	1,518.18	4,261.05	J-4614	14.22	485.82	3,996.07
J-3326	1,508.43	4,447.16	J-4614	7.49	470.29	3,899.93
J-3327	1,504.72	5,929.54	J-3327	20	488.16	5,929.52
J-3328	1,504.40	4,749.75	J-4596	19.57	502.16	4,728.06
J-3329	1,503.29	4,949.11	J-4597	20	494.16	4,949.18
J-3330	1,502.55	5,794.04	J-3330	20	494.16	5,793.64
J-3331	1,500.65	9,391.39	J-584	0.44	491.03	7,906.99
J-3332	1,516.62	9,410.97	J-584	0.4	490.91	7,923.13
J-3333	1,511.14	9,452.06	J-584	-0.26	489.39	7,917.66
J-3334	1,508.02	8,707.35	J-584	9.93	512.92	7,914.52
J-3335	1,506.64	8,241.83	J-584	15.93	526.77	7,913.46
J-3336	1,507.17	8,655.03	J-584	10.61	514.49	7,913.75
J-3337	1,506.49	8,205.70	J-584	16.39	527.82	7,913.23
J-3338	1,500.67	9,449.64	J-584	-0.39	489.09	7,907.29
J-3339	1,500.00	9,483.77	J-584	-0.95	487.81	7,906.74
J-3340	1,501.58	9,527.24	J-584	-1.62	486.26	7,908.52
J-3341	1,501.55	3,666.39	J-3341	20	357.16	3,666.40
J-3342	1,501.54	9,855.69	J-584	-7	473.85	7,909.07
J-3343	1,511.24	2,205.40	J-4650	10.9	388.15	2,109.05
J-3344	1,518.79	2,039.63	J-3344	20	382.16	2,039.90
J-3345	1,503.88	9,818.35	J-584	-6.34	475.38	7,911.56
J-3346	1,504.66	9,765.66	J-584	-5.45	477.42	7,912.35
J-3347	1,501.56	9,765.86	J-584	-5.51	477.29	7,909.26
J-3348	1,500.77	9,763.87	J-584	-5.49	477.34	7,908.47
J-3349	1,501.54	8,428.49	J-584	13.51	521.17	7,909.24
J-3350	1,502.34	9,170.56	J-584	3.59	498.28	7,910.02
J-3351	1,501.53	9,773.78	J-584	-5.64	476.99	7,909.24
J-3352	1,503.09	8,085.00	J-584	17.86	531.23	7,910.79
J-3353	1,500.00	8,830.13	J-584	8.2	508.93	7,907.67
J-3354	1,509.12	6,161.08	J-3354	20	444.16	6,161.02
J-3355	1,506.37	7,435.09	J-3355	20	467.16	7,435.24
J-3356	1,522.76	5,993.41	J-3356	20	455.16	5,993.39
J-3357	1,518.34	5,927.97	J-3357	20	440.16	5,927.95
J-3358	1,500.77	9,206.28	J-584	17.41	530.17	8,950.78
J-3359	1,500.00	9,113.55	J-584	17.96	531.46	8,912.81
J-3360	1,500.78	8,943.92	J-3360	20	501.16	8,943.95

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-3361	1,502.29	8,232.96	J-3361	20	535.16	8,232.30
J-3362	1,500.00	9,174.21	J-584	17.81	531.1	8,957.57
J-3363	1,500.00	8,776.18	J-3363	20	527.16	8,776.36
J-3364	1,511.74	3,556.31	J-3364	20	526.16	3,556.45
J-3365	1,501.12	6,526.44	J-3365	20	466.16	6,526.11
J-3366	1,505.24	2,684.06	J-4527	-41.41	204.43	1,809.10
J-3367	1,511.02	2,476.37	J-4527	-24.62	243.18	1,814.88
J-3368	1,511.13	1,983.03	J-4527	9.74	322.48	1,814.99
J-3369	1,510.08	2,134.62	J-4527	-0.22	299.5	1,813.94
J-3370	1,508.54	1,811.56	J-3370	20	296.16	1,811.57
J-3372	1,501.77	2,637.05	J-4527	-37.89	212.55	1,805.63
J-3373	1,509.44	1,752.24	J-3373	20	281.16	1,752.24
J-3374	1,508.60	2,250.01	J-4527	-8.25	280.96	1,812.46
J-3375	1,508.11	5,285.39	J-3376	15.67	406.16	5,167.14
J-3376	1,509.06	4,634.68	J-3376	20	416.16	4,634.62
J-3377	1,500.00	9,846.93	J-5029	12.35	623.5	8,516.41
J-3398	1,511.64	3,866.06	J-3398	20	324.16	3,866.30
J-3399	1,506.10	10,910.06	J-5029	11.31	621.1	9,661.80
J-34	1,501.12	3,239.76	J-34	20	441.16	3,240.20
J-3400	1,500.00	5,770.25	J-3400	20	481.16	5,770.25
J-3401	1,502.31	8,725.87	J-3401	20	473.16	8,725.88
J-3406	1,505.63	1,582.20	J-4671	19.25	534.42	1,561.72
J-3407	1,509.49	2,947.37	J-3407	20	510.16	2,947.42
J-3408	1,506.68	5,104.34	J-3408	20	513.16	5,104.35
J-3409	1,508.12	5,133.30	J-3410	17.4	516.16	4,987.86
J-3410	1,503.75	3,394.08	J-3410	20	522.16	3,394.29
J-3411	1,501.91	5,916.96	J-3411	20	514.16	5,916.94
J-3412	1,502.68	12,980.87	J-5029	-5.82	581.57	10,030.26
J-3413	1,505.33	12,915.37	J-5029	-5.62	582.03	9,994.34
J-3414	1,506.08	5,251.31	J-3414	20	455.16	5,251.31
J-3415	1,510.36	5,467.84	J-3415	20	448.16	5,467.84
J-3416	1,501.41	12,900.55	J-5029	1.28	597.95	10,457.53
J-3417	1,500.00	11,441.97	J-5029	10.38	618.95	10,046.91
J-3418	1,505.16	7,954.72	J-3418	20	483.16	7,957.45
J-3419	1,500.13	12,029.05	J-1107	4.02	482.29	10,718.55
J-3420	1,513.82	2,471.68	J-3420	20	502.16	2,471.73
J-3421	1,500.68	14,227.65	J-5029	4.07	604.39	11,782.20
J-3429	1,514.37	3,084.78	J-3429	20	471.16	3,084.77
J-3460	1,500.01	7,992.22	J-5029	4.07	604.39	5,138.60
J-3461	1,502.35	8,055.00	J-5029	3.63	603.38	5,141.24
J-3462	1,500.00	7,974.41	J-5029	4.2	604.69	5,138.38
J-3463	1,500.00	7,768.42	J-5029	5.64	608.01	5,137.12

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-3464	1,500.00	7,593.84	J-5029	6.9	610.92	5,136.25
J-3465	1,500.00	7,927.96	J-5029	4.5	605.38	5,135.03
J-3466	1,500.00	7,852.61	J-5029	5.07	606.69	5,137.29
J-3467	1,500.00	7,867.07	J-5029	4.97	606.46	5,136.42
J-3468	1,500.00	7,996.25	J-5029	4.04	604.32	5,136.07
J-3469	1,500.00	7,846.49	J-5029	5.08	606.73	5,135.65
J-3470	1,500.00	7,759.99	J-5029	5.7	608.15	5,135.50
J-3471	1,500.00	7,907.54	J-5029	4.65	605.72	5,135.50
J-3472	1,500.00	6,536.34	J-5029	13.26	625.61	5,134.90
J-3473	1,500.00	5,153.98	J-5029	19.93	640.99	5,134.90
J-3474	1,500.00	6,303.22	J-5029	14.54	628.55	5,134.61
J-3475	1,500.00	5,668.62	J-5029	17.74	635.93	5,134.28
J-3476	1,500.00	5,395.65	J-5029	18.96	638.75	5,134.10
J-3479	1,500.01	5,525.58	J-5029	18.38	637.41	5,133.99
J-3480	1,500.00	7,673.02	J-5029	6.34	609.64	5,133.74
J-3481	1,500.00	7,716.17	J-5029	6.01	608.86	5,133.97
J-3484	1,500.00	7,979.29	J-5029	4.16	604.61	5,135.32
J-3485	1,500.00	8,452.86	J-5029	0.65	596.51	5,151.84
J-3486	1,500.00	7,739.37	J-5029	5.84	608.47	5,129.64
J-3487	1,501.56	7,946.08	J-5029	4.38	605.11	5,145.77
J-3488	1,500.00	4,169.05	J-3488	20	531.16	4,169.05
J-3489	1,500.00	4,708.99	J-4012	16.01	556.96	4,433.22
J-3491	1,500.00	4,616.45	J-4012	16.3	557.62	4,351.75
J-3492	1,500.00	4,544.99	J-4012	16.46	557.99	4,284.54
J-3493	1,500.77	4,041.30	J-3493	20	526.16	4,041.30
J-3494	1,500.00	4,605.46	J-4012	14.87	554.32	4,239.37
J-3495	1,501.54	4,493.16	J-4011	13.81	539.88	4,111.41
J-3496	1,500.00	8,439.65	J-5029	0.75	596.74	5,144.20
J-3497	1,500.00	8,912.31	J-5029	-2.95	588.18	5,156.65
J-35	1,503.27	3,577.47	J-35	20	441.16	3,578.25
J-36	1,503.67	9,114.83	J-36	20	397.16	9,114.84
J-3600	1,504.67	6,518.19	J-3600	20	407.16	6,518.22
J-3601	1,506.97	4,582.58	J-3601	20	386.16	4,582.12
J-3602	1,504.61	4,530.06	J-3602	20	344.16	4,530.47
J-3603	1,502.87	4,533.85	J-3606	17.13	359.53	4,385.98
J-3604	1,501.55	6,756.98	J-3604	20	406.16	6,756.98
J-3605	1,507.33	4,869.29	J-3605	20	398.16	4,868.66
J-3606	1,505.39	4,053.20	J-3606	20	366.16	4,053.10
J-3607	1,511.80	3,539.62	J-3607	20	310.16	3,540.22
J-3608	1,509.74	3,196.66	J-3615	16.96	299.15	3,139.71
J-3609	1,508.67	3,347.29	J-3609	20	284.16	3,347.71
J-3610	1,502.63	3,108.09	J-3610	20	242.16	3,108.33

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-3611	1,508.52	3,147.73	J-3615	3.76	268.69	2,875.71
J-3612	1,503.94	3,132.71	J-3615	1.94	264.47	2,835.15
J-3613	1,504.89	2,960.67	J-3615	14.84	294.24	2,872.12
J-3614	1,502.86	2,961.36	J-3615	16.1	297.16	2,893.80
J-3615	1,503.94	2,805.82	J-3615	20	306.16	2,806.06
J-3616	1,508.13	3,771.47	J-3616	20	396.16	3,771.46
J-3617	1,502.32	11,893.51	J-5029	6.14	609.16	9,972.43
J-3618	1,504.08	3,877.62	J-3618	20	336.16	3,877.42
J-3619	1,504.87	3,649.54	J-3619	20	376.16	3,649.58
J-37	1,508.53	3,189.86	J-37	20	396.16	3,189.86
J-38	1,500.89	12,074.41	J-5029	-1.46	591.63	9,462.70
J-39	1,502.15	6,209.36	J-39	20	416.16	6,209.35
J-3902	1,501.53	7,344.30	J-3902	20	493.16	7,344.31
J-3908	1,503.99	3,251.15	J-3908	20	396.16	3,251.55
J-3909	1,505.57	3,255.27	J-3909	20	400.16	3,255.71
J-3910	1,506.12	4,295.48	J-3910	20	402.16	4,295.48
J-3915	1,501.79	6,341.23	J-3915	20	434.16	6,341.22
J-3924	1,501.43	3,043.35	J-3924	20	496.16	3,043.94
J-40	1,507.89	4,986.68	J-40	20	376.16	4,987.65
J-4000	1,500.01	3,377.96	J-4000	20	536.16	3,377.95
J-4001	1,500.00	3,439.05	J-4001	20	536.16	3,439.04
J-4002	1,501.57	3,438.18	J-4002	20	542.16	3,438.17
J-4003	1,500.00	3,813.43	J-4002	19.06	539.98	3,765.20
J-4004	1,500.00	4,972.07	J-4011	1.02	510.36	3,963.50
J-4005	1,500.00	3,509.08	J-4005	20	534.16	3,509.08
J-4006	1,500.00	3,484.73	J-4006	20	531.16	3,484.71
J-4007	1,500.00	4,363.46	J-4011	12.24	536.24	3,907.18
J-4008	1,500.00	5,092.42	J-4011	-2.55	502.12	3,927.29
J-4009	1,500.00	3,073.30	J-4009	20	498.16	3,073.29
J-4010	1,501.11	4,777.64	J-4010	20	548.16	4,777.64
J-4011	1,500.01	3,608.17	J-4011	20	554.16	3,608.17
J-4012	1,502.73	3,353.56	J-4012	20	566.16	3,353.55
J-4013	1,502.38	3,885.82	J-4014	17.83	556.16	3,748.15
J-4014	1,503.11	1,391.18	J-4014	20	561.16	1,391.39
J-4015	1,501.69	4,783.44	J-4012	18.51	562.71	4,673.68
J-4016	1,502.49	4,939.39	J-4016	20	552.16	4,939.39
J-4017	1,505.00	5,642.85	J-4017	20	549.16	5,642.89
J-4018	1,503.27	7,021.73	J-5029	16.91	634.03	6,404.56
J-4019	1,502.59	4,850.33	J-4020	15.67	538.16	4,596.55
J-4020	1,504.00	1,705.54	J-4020	20	548.16	1,705.58
J-4021	1,501.61	1,826.51	J-4021	20	527.16	1,826.57
J-4022	1,504.15	4,853.64	J-4022	20	556.16	4,853.60

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4023	1,503.11	3,868.16	J-4023	20	560.16	3,868.17
J-4024	1,503.98	3,837.81	J-4024	20	562.16	3,837.82
J-4025	1,501.87	5,467.89	J-4024	18.77	559.31	5,367.51
J-4026	1,502.70	4,746.54	J-4026	20	556.16	4,746.51
J-4028	1,504.25	6,115.49	J-4028	20	498.16	6,115.50
J-4029	1,502.55	7,751.00	J-5029	13.31	625.71	6,530.58
J-4030	1,502.08	4,845.48	J-4923	20	462.16	4,845.40
J-4031	1,501.90	4,149.18	J-4923	20	462.16	4,149.17
J-4032	1,502.17	6,510.72	J-4033	20	468.16	6,510.73
J-4033	1,503.35	4,206.99	J-4033	20	468.16	4,206.98
J-4034	1,503.73	7,586.57	J-5029	14.9	629.38	6,613.50
J-4035	1,502.29	6,518.96	J-5029	19.7	640.46	6,456.53
J-4036	1,500.87	10,633.73	J-5029	-8.7	574.92	6,626.90
J-4037	1,500.54	10,231.59	J-5029	-6.09	580.95	6,467.12
J-4038	1,500.55	8,811.56	J-5029	4.39	605.14	6,344.85
J-4039	1,500.01	8,276.49	J-5029	7.6	612.54	6,238.65
J-4040	1,500.93	10,262.59	J-5029	-4.19	585.33	6,675.50
J-4041	1,500.00	10,166.51	J-5029	-2.89	588.34	6,704.28
J-4043	1,501.39	7,538.36	J-5029	15.25	630.2	6,631.90
J-4044	1,502.02	3,797.46	J-4044	20	512.16	3,797.44
J-4045	1,503.43	6,120.00	J-4045	20	504.16	6,120.02
J-4046	1,509.68	5,134.60	J-4046	20	510.16	5,134.57
J-4047	1,505.83	5,584.32	J-4047	20	510.16	5,584.24
J-4048	1,506.39	6,502.38	J-4048	20	514.16	6,502.37
J-4049	1,500.49	8,686.08	J-5029	6.58	610.19	6,559.65
J-4050	1,500.53	10,597.85	J-5029	-9.43	573.24	6,538.57
J-4051	1,501.42	3,137.86	J-4051	20	386.16	3,137.96
J-4052	1,502.67	6,223.32	J-4053	18.27	482.16	6,139.51
J-4053	1,502.80	4,085.06	J-4053	20	486.16	4,085.05
J-4054	1,502.32	5,366.89	J-4056	17.4	490.16	5,251.95
J-4055	1,501.97	4,123.65	J-4056	16.53	488.16	3,998.11
J-4056	1,501.49	3,152.54	J-4056	20	496.16	3,152.54
J-4057	1,502.88	5,365.40	J-4057	20	520.16	5,365.39
J-4058	1,502.64	3,723.89	J-4058	20	512.16	3,723.89
J-4059	1,500.32	8,412.17	J-5029	8.4	614.38	6,560.26
J-4060	1,501.24	7,792.50	J-4060	20	405.16	7,792.42
J-4061	1,501.78	5,938.73	J-4134	18.7	516.16	5,863.02
J-4062	1,501.78	2,956.77	J-4062	20	513.16	2,956.77
J-4063	1,503.34	3,602.75	J-4134	20	519.16	3,602.74
J-4064	1,501.44	10,038.86	J-5029	13.4	625.93	8,929.80
J-4065	1,502.07	4,311.19	J-4067	10.47	520.16	3,829.76
J-4066	1,502.06	2,957.54	J-4067	13.93	528.16	2,738.06

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4067	1,502.21	1,653.67	J-4067	20	542.16	1,653.68
J-4068	1,503.67	7,824.88	J-5029	10.99	620.36	6,264.01
J-4069	1,502.63	3,865.07	J-4069	20	546.16	3,865.07
J-4070	1,502.66	2,203.63	J-4070	20	541.16	2,204.10
J-4071	1,503.60	7,243.06	J-5029	14.81	629.17	6,261.61
J-4072	1,501.57	4,411.54	J-4073	19.13	561.16	4,357.82
J-4073	1,504.23	2,136.62	J-4073	20	563.16	2,137.27
J-4074	1,502.12	4,186.33	J-4075	19.13	564.16	4,121.72
J-4075	1,503.48	2,196.62	J-4075	20	566.16	2,197.54
J-4076	1,500.32	4,836.20	J-4077	20	556.16	4,836.18
J-4077	1,501.69	3,775.25	J-4077	20	556.16	3,775.24
J-4078	1,501.50	4,945.22	J-4079	14.8	539.16	4,636.39
J-4079	1,503.28	2,807.87	J-4079	20	551.16	2,807.86
J-4080	1,500.88	9,977.21	J-5029	14.08	627.49	8,969.75
J-4081	1,500.01	4,395.16	J-4081	20	548.16	4,394.99
J-4082	1,500.32	4,175.23	J-4082	20	556.16	4,175.24
J-4083	1,500.77	3,652.55	J-4083	20	542.16	3,652.55
J-4084	1,500.69	4,668.91	J-4084	20	556.16	4,668.87
J-4085	1,501.13	6,241.60	J-4085	20	554.16	6,241.62
J-4086	1,501.38	6,843.37	J-5029	17.02	634.27	6,261.08
J-4087	1,502.57	4,938.91	J-4087	20	552.16	4,938.85
J-4088	1,502.67	2,580.70	J-4088	20	543.16	2,580.70
J-4089	1,501.77	3,424.86	J-4089	20	543.16	3,424.84
J-4090	1,502.32	6,030.71	J-4090	20	545.16	6,030.71
J-4091	1,501.84	3,925.92	J-4091	20	409.16	3,926.52
J-4092	1,502.71	6,218.55	J-4092	20	546.16	6,218.62
J-4093	1,503.83	5,401.41	J-4093	20	536.16	5,401.51
J-4094	1,501.30	5,464.60	J-4094	20	516.16	5,464.44
J-4095	1,501.24	2,897.96	J-4095	20	515.16	2,897.95
J-4096	1,502.88	4,869.88	J-4098	16.53	499.15	4,724.24
J-4097	1,505.49	6,468.56	J-4123	7.87	406.16	6,012.45
J-4098	1,505.62	1,707.87	J-4098	20	507.16	1,707.88
J-4099	1,501.01	8,009.08	J-5029	7.44	612.17	5,859.25
J-41	1,512.66	5,436.80	J-45	11.33	380.16	5,060.56
J-4100	1,504.65	2,885.76	J-4100	20	556.16	2,885.77
J-4101	1,503.29	6,506.61	J-4101	20	470.16	6,506.62
J-4102	1,503.14	8,450.58	J-5029	2.48	600.72	5,488.42
J-4103	1,508.27	5,887.94	J-4079	19.62	550.27	5,858.79
J-4104	1,503.55	4,589.60	J-4104	20	489.16	4,589.58
J-4105	1,504.31	1,674.07	J-4105	20	481.16	1,674.08
J-4106	1,503.95	1,923.67	J-4106	20	492.16	1,923.72
J-4107	1,503.17	6,215.36	J-4107	20	532.16	6,215.36

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4108	1,501.08	6,836.69	J-5029	17.68	635.81	6,396.99
J-4109	1,502.51	2,749.93	J-4109	20	521.16	2,749.93
J-4110	1,500.30	7,561.95	J-4126	14.37	426.16	7,306.02
J-4111	1,504.28	5,954.23	J-4111	20	499.16	5,954.24
J-4112	1,501.07	7,078.53	J-5029	16.45	632.96	6,418.90
J-4113	1,501.17	5,438.84	J-4126	16.53	431.16	5,317.53
J-4114	1,501.65	6,393.07	J-4115	16.53	506.16	6,197.52
J-4115	1,501.57	2,734.91	J-4115	20	514.16	2,734.91
J-4116	1,502.22	3,035.65	J-4116	20	556.16	3,035.65
J-4117	1,503.01	6,668.46	J-5029	17.96	636.45	6,265.57
J-4118	1,500.49	6,620.21	J-5029	18.22	637.04	6,268.16
J-4119	1,503.61	3,485.68	J-4119	20	550.16	3,485.67
J-4120	1,502.24	2,729.05	J-4120	20	436.16	2,729.13
J-4121	1,500.79	1,394.12	J-4121	20	424.16	1,394.12
J-4122	1,501.02	2,722.75	J-4123	12.2	416.16	2,596.40
J-4123	1,501.69	2,119.29	J-4123	20	434.16	2,119.29
J-4124	1,502.26	7,022.51	J-4124	20	444.16	7,022.51
J-4125	1,504.46	6,824.01	J-4125	20	449.16	6,824.01
J-4126	1,505.15	2,885.94	J-4126	20	439.16	2,886.05
J-4127	1,500.58	1,440.37	J-4127	20	434.16	1,441.41
J-4128	1,500.63	5,204.91	J-4130	19.57	548.16	5,175.38
J-4129	1,502.35	2,896.28	J-4129	20	547.16	2,896.28
J-4130	1,503.66	1,847.94	J-4130	20	549.16	1,848.03
J-4131	1,501.69	6,215.28	J-4131	20	533.16	6,215.15
J-4132	1,502.16	2,486.71	J-4132	20	526.16	2,487.45
J-4133	1,500.00	7,865.62	J-5029	12.11	622.96	6,545.09
J-4134	1,502.40	2,063.72	J-4134	20	519.16	2,063.88
J-4135	1,501.00	5,341.85	J-4135	20	426.16	5,341.84
J-4136	1,502.90	6,749.47	J-4136	20	437.16	6,749.47
J-4137	1,501.66	3,382.45	J-4137	20	431.16	3,382.44
J-4138	1,501.36	5,291.04	J-4138	20	456.16	5,291.04
J-4139	1,504.40	2,550.14	J-4139	20	475.16	2,550.48
J-4140	1,502.79	5,369.02	J-4139	13.93	461.16	5,124.26
J-4141	1,506.87	5,675.94	J-4141	20	448.16	5,675.94
J-4142	1,508.25	5,830.21	J-4142	20	455.16	5,830.28
J-4143	1,506.90	2,571.96	J-4143	20	426.16	2,571.96
J-4144	1,502.73	3,833.46	PRV-4145-IN	19.13	426.16	3,813.46
J-4145	1,501.61	3,649.15	PRV-4145-IN	20	428.16	3,649.15
J-4146	1,505.45	4,445.56	J-4146	20	396.16	4,445.60
J-4147	1,504.46	4,261.18	J-4147	20	384.16	4,261.19
J-4148	1,501.79	3,712.07	J-4148	20	381.16	3,709.36
J-4149	1,502.81	4,655.09	PRV-4145-OUT	15.19	417.06	4,375.10

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4150	1,509.39	2,764.90	J-4150	20	378.16	2,767.19
J-4151	1,505.28	2,509.49	J-4151	20	383.16	2,511.33
J-4152	1,510.35	4,626.25	J-4152	20	384.16	4,626.32
J-4153	1,502.30	4,196.98	J-4153	20	388.16	4,198.97
J-4154	1,504.39	5,561.93	PRV-4145-OUT	15.97	418.86	5,331.04
J-4155	1,505.26	2,661.56	J-4155	20	386.16	2,661.57
J-4156	1,500.00	5,927.46	J-4158	5.91	393.63	5,439.22
J-4157	1,500.86	5,987.46	J-4158	5.57	392.85	5,560.66
J-4158	1,500.00	5,327.09	J-4158	20	426.16	5,327.59
J-4159	1,500.00	6,681.75	J-5029	16.39	632.82	6,024.23
J-4160	1,506.51	6,627.77	J-5029	17.06	634.37	6,081.08
J-4161	1,502.29	6,340.08	J-4161	20	456.16	6,340.09
J-4162	1,503.09	1,160.89	J-4162	20	455.16	1,160.89
J-4163	1,501.37	1,438.37	J-4163	20	457.16	1,439.51
J-4164	1,502.16	3,876.47	J-4163	19.57	456.16	3,864.37
J-4165	1,501.31	8,689.10	J-5029	16.8	633.78	8,143.77
J-4166	1,501.57	7,646.07	J-4166	20	487.16	7,646.00
J-4168	1,502.15	6,982.79	J-4172	18.32	504.28	6,876.69
J-4169	1,500.43	10,302.99	J-5029	4.4	605.17	7,974.45
J-4170	1,502.71	6,535.43	J-4170	20	501.16	6,535.44
J-4171	1,501.49	6,640.06	J-4172	10.47	486.16	6,058.56
J-4172	1,501.22	1,170.54	J-4172	20	508.16	1,170.54
J-4173	1,502.59	6,581.85	J-4173	20	506.16	6,581.86
J-4174	1,501.46	1,076.04	J-4174	20	508.16	1,076.04
J-4175	1,501.47	3,085.21	J-4189	19.13	516.16	3,055.67
J-4176	1,502.90	6,137.94	J-4176	20	454.16	6,137.94
J-4177	1,502.41	3,768.37	J-4528	20	452.16	3,768.37
J-4178	1,500.87	8,783.51	J-5029	1.69	598.89	6,025.09
J-4179	1,500.35	12,023.15	J-5029	-3.73	586.39	9,111.29
J-4180	1,500.74	11,229.74	J-5029	4.56	605.53	9,126.86
J-4181	1,501.08	7,701.93	J-4174	10.47	486.16	7,110.87
J-4182	1,500.48	9,949.68	J-5029	11.83	622.31	8,553.40
J-4183	1,500.94	1,334.43	J-4183	20	514.16	1,334.43
J-4184	1,500.87	3,437.16	J-4184	20	516.16	3,437.16
J-4185	1,501.09	6,018.55	J-4185	20	514.16	6,018.56
J-4186	1,501.99	2,129.55	J-4186	20	503.16	2,129.55
J-4187	1,501.61	3,076.72	J-4188	20	524.16	3,076.70
J-4191	1,502.56	2,934.72	J-4190	15.67	509.15	2,799.94
J-4192	1,503.90	1,928.34	J-4192	20	527.16	1,928.37
J-4193	1,501.73	2,920.68	J-4192	19.57	526.16	2,905.27
J-4194	1,502.39	2,664.99	J-4194	20	501.16	2,665.21
J-4195	1,507.89	6,475.49	J-4195	20	476.16	6,475.45

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4196	1,501.04	11,181.62	J-5029	-13.88	562.98	6,842.09
J-4198	1,502.16	1,962.53	J-4198	20	447.16	1,962.58
J-4199	1,500.00	12,172.66	J-5029	-6.85	579.18	8,965.20
J-42	1,504.26	1,792.10	J-42	20	460.16	1,792.10
J-420	1,501.67	11,984.67	J-5029	3.77	603.69	9,924.83
J-4200	1,500.55	4,733.82	J-4200	20	506.16	4,733.80
J-4201	1,500.82	10,737.22	J-5029	6.42	609.81	8,744.64
J-4202	1,500.13	8,365.62	J-4200	15.67	496.16	8,062.88
J-4203	1,500.28	4,263.11	J-4186	18.27	499.16	4,190.62
J-4204	1,500.28	5,473.17	J-4205	15.45	501.16	5,219.84
J-4205	1,503.43	2,850.17	J-4205	20	511.66	2,850.57
J-4206	1,502.85	2,490.81	J-4206	20	516.16	2,491.00
J-4207	1,502.45	3,520.53	J-4207	20	526.16	3,520.52
J-4208	1,501.10	4,932.00	J-4208	20	519.16	4,931.99
J-4209	1,502.93	2,815.87	J-4209	20	520.16	2,816.36
J-4210	1,500.27	5,309.60	J-4210	20	522.16	5,309.60
J-4211	1,500.41	5,603.35	J-4211	20	521.66	5,603.37
J-4212	1,502.92	2,259.99	J-4212	20	518.16	2,260.08
J-4213	1,501.24	3,475.71	J-4213	20	526.16	3,475.70
J-4214	1,503.61	1,775.54	J-4214	20	531.16	1,775.55
J-4215	1,500.99	3,444.32	J-4214	19.13	529.16	3,406.49
J-4216	1,501.65	1,963.09	J-4216	20	506.16	1,963.16
J-4217	1,505.40	3,332.82	J-4216	17.83	501.16	3,264.18
J-4218	1,510.89	7,852.88	J-5029	13.16	625.36	6,705.01
J-4219	1,509.71	8,197.13	J-5029	10.81	619.96	6,712.86
J-4220	1,505.27	10,142.69	J-5029	-4.14	585.44	6,716.45
J-4221	1,503.22	9,957.51	J-5029	-2.61	588.98	6,686.72
J-4222	1,502.33	9,788.26	J-5029	-1.42	591.73	6,671.99
J-4223	1,503.32	6,544.65	J-4223	20	479.16	6,544.65
J-4224	1,501.50	5,708.57	J-4246	14.8	469.16	5,498.99
J-4225	1,502.89	6,830.85	J-5029	18.34	637.33	6,521.55
J-4226	1,502.06	7,835.59	J-5029	11.94	622.55	6,493.76
J-4227	1,500.53	10,708.35	J-5029	-13.1	564.76	6,393.46
J-4228	1,501.60	1,984.21	J-4228	20	458.16	1,984.27
J-4229	1,502.29	3,982.80	J-4229	20	459.16	3,982.81
J-4230	1,501.40	7,691.19	J-5029	11.46	621.44	6,263.39
J-4231	1,500.95	3,848.60	J-4231	20	456.16	3,848.60
J-4232	1,500.81	1,644.60	J-4232	20	454.16	1,644.61
J-4233	1,500.00	10,405.48	J-5029	-13.44	563.99	5,932.39
J-4234	1,500.57	2,341.94	J-4234	20	446.16	2,342.02
J-4236	1,502.02	3,763.43	J-4235	15.67	476.15	3,630.57
J-4237	1,500.57	2,585.21	J-4237	20	453.16	2,585.41

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4238	1,501.18	2,048.09	J-4238	20	446.16	2,048.11
J-4239	1,505.39	11,383.45	J-5029	-28.41	529.44	5,263.84
J-4240	1,501.81	8,144.99	J-5029	2.25	600.2	5,066.46
J-4241	1,501.70	11,322.00	J-5029	-28.67	528.83	5,140.49
J-4242	1,502.23	6,338.61	J-5029	13.75	626.73	5,004.73
J-4243	1,503.22	4,729.73	J-4243	20	468.16	4,731.82
J-4244	1,502.63	4,984.62	J-4245	14.37	473.16	4,775.73
J-4245	1,504.63	2,618.39	J-4245	20	486.16	2,619.21
J-4246	1,503.19	1,853.78	J-4246	20	481.16	1,853.81
J-4247	1,501.30	6,765.45	J-5029	18.8	638.38	6,535.75
J-4248	1,502.22	2,245.14	J-4248	20	511.16	2,245.40
J-4249	1,500.60	8,267.09	J-5029	9.37	616.63	6,569.66
J-4250	1,501.33	5,238.55	J-4250	20	506.16	5,238.53
J-4251	1,501.92	4,676.33	J-4265	17.83	508.16	4,572.81
J-4252	1,500.99	2,111.92	J-4252	20	524.16	2,112.14
J-4253	1,502.88	4,029.32	J-4252	20	524.16	4,029.32
J-4254	1,503.14	1,760.47	J-4254	20	523.16	1,760.49
J-4255	1,503.64	3,996.02	J-4254	20	523.16	3,996.01
J-4256	1,502.06	3,821.68	J-4256	20	524.16	3,821.68
J-4257	1,501.01	3,569.29	J-4257	20	526.16	3,569.22
J-4258	1,501.41	4,344.76	J-4259	20	523.16	4,344.75
J-4259	1,504.18	3,505.41	J-4259	20	523.16	3,505.41
J-4260	1,506.20	4,973.56	J-4260	20	511.16	4,973.57
J-4261	1,501.15	5,744.67	J-4261	20	516.16	5,744.69
J-4262	1,501.68	5,848.03	J-4262	20	516.16	5,848.06
J-4263	1,503.43	1,835.96	J-4263	20	519.16	1,836.00
J-4264	1,502.92	4,779.54	J-4263	18.7	516.16	4,719.12
J-4265	1,501.69	1,837.56	J-4265	20	513.16	1,837.60
J-4266	1,500.44	9,205.20	J-5029	2.61	601.02	6,618.03
J-4267	1,501.90	5,573.91	J-5029	17.49	635.36	4,952.31
J-4268	1,502.51	2,463.90	J-4268	20	471.16	2,464.06
J-4269	1,501.70	4,329.67	J-4269	20	456.16	4,329.63
J-4270	1,501.80	2,576.00	J-4270	20	457.16	2,576.19
J-4271	1,502.65	6,289.24	J-5029	13.96	627.22	4,992.24
J-4272	1,501.18	6,127.52	J-5029	14.76	629.06	4,969.53
J-4273	1,500.90	4,362.93	J-4273	20	416.16	4,362.94
J-4275	1,502.28	3,154.16	J-4275	20	451.16	3,154.16
J-4276	1,502.51	10,834.83	J-5029	-23.54	540.67	4,979.32
J-4277	1,500.76	5,768.62	J-5029	16.43	632.92	4,921.48
J-4278	1,502.51	2,360.85	J-4278	20	485.16	2,360.98
J-4279	1,501.99	3,179.52	J-4279	20	489.16	3,179.53
J-4280	1,501.45	5,626.92	J-5029	15.96	631.84	4,673.02

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4281	1,501.92	5,162.25	J-5029	17.76	635.98	4,605.83
J-4282	1,502.70	3,629.28	J-4282	20	498.16	3,629.28
J-4283	1,500.68	10,434.04	J-5029	-18.95	551.26	4,909.02
J-4284	1,501.56	3,209.56	J-4284	20	445.16	3,209.57
J-4285	1,503.69	7,920.88	J-5029	3.1	602.17	4,862.33
J-4286	1,501.25	5,498.03	J-5029	17.81	636.11	4,949.48
J-4287	1,500.16	9,588.79	J-5029	-10.9	569.85	4,843.83
J-4288	1,500.65	4,746.59	J-5029	19.03	638.91	4,507.35
J-4289	1,502.96	3,157.97	J-4289	20	501.16	3,157.97
J-4290	1,502.16	4,283.52	J-4291	17.83	526.16	4,189.51
J-4291	1,500.67	3,055.22	J-4291	20	531.16	3,055.19
J-4292	1,500.33	8,908.61	J-5029	-5.17	583.06	4,798.10
J-4293	1,500.78	7,597.11	J-5029	4.82	606.11	4,724.87
J-4294	1,501.81	7,122.47	J-5029	7.13	611.45	4,601.40
J-4295	1,501.87	5,899.14	J-5029	13.21	625.49	4,369.30
J-4296	1,501.55	5,978.67	J-5029	11.91	622.48	4,311.15
J-4297	1,502.04	2,016.05	J-4297	20	526.16	2,016.06
J-4298	1,502.72	3,414.80	J-4298	20	541.16	3,414.80
J-4299	1,500.87	3,989.32	J-5029	19.43	639.84	3,890.22
J-43	1,502.96	2,904.92	J-43	20	496.16	2,905.18
J-4300	1,500.69	8,366.80	J-5029	-0.81	593.13	4,752.94
J-4301	1,501.24	3,134.00	J-4301	20	586.16	3,132.72
J-4302	1,502.21	6,386.68	J-5029	8.56	614.76	4,263.21
J-4303	1,501.89	6,124.03	J-5029	11.43	621.38	4,325.31
J-4304	1,501.25	3,389.96	J-4304	20	596.16	3,390.00
J-4305	1,500.03	7,657.23	J-5029	6.25	609.42	4,933.12
J-4306	1,506.98	4,545.15	J-4306	20	473.16	4,545.14
J-4307	1,500.92	4,366.24	J-4307	20	485.46	4,366.24
J-4308	1,502.61	9,463.52	J-5029	14.09	627.53	8,404.47
J-4309	1,502.08	6,148.95	J-4309	20	508.16	6,148.97
J-4310	1,502.82	5,472.31	J-4310	20	516.16	5,472.32
J-4311	1,519.46	4,172.92	J-4311	20	514.16	4,172.87
J-4312	1,514.65	9,658.49	J-5029	11.75	622.12	8,209.87
J-4313	1,504.81	7,079.70	J-4313	20	479.16	7,079.70
J-4314	1,503.59	7,162.77	J-4314	20	463.16	7,162.76
J-4315	1,501.69	6,508.76	J-4932	20	452.16	6,508.75
J-4316	1,501.46	9,414.53	J-5029	11.2	620.86	7,917.32
J-4317	1,502.46	9,905.62	J-5029	3.63	603.39	7,175.28
J-4318	1,500.78	10,136.52	J-5029	2.33	600.39	7,244.90
J-4319	1,500.00	7,455.86	J-4593	9.07	486.93	6,726.08
J-4321	1,500.00	12,884.50	J-5029	-7.37	577.99	10,077.09
J-4322	1,500.00	9,553.90	J-4322	20	446.16	9,553.90

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4323	1,500.01	8,518.71	J-4323	20	451.16	8,526.31
J-4324	1,502.61	7,642.04	J-4324	20	447.16	7,642.14
J-4325	1,500.01	11,479.44	J-5029	5.67	608.08	9,593.07
J-4326	1,500.00	11,167.79	J-5029	8.02	613.51	9,533.33
J-4327	1,500.00	11,000.59	J-5029	8.82	615.35	9,430.62
J-4328	1,500.01	10,861.61	J-5029	9.34	616.55	9,320.46
J-4329	1,500.00	5,101.84	J-4329	20	436.16	5,101.85
J-4330	1,501.94	5,473.62	J-4330	20	459.16	5,473.63
J-4331	1,508.33	4,109.37	J-4331	20	478.16	4,109.36
J-4332	1,503.14	3,597.26	J-4332	20	496.16	3,597.26
J-4333	1,500.55	10,888.92	J-5029	7.6	612.54	9,111.13
J-4334	1,502.42	1,973.92	J-4334	20	475.16	1,973.92
J-4335	1,502.85	9,360.63	J-5029	15.88	631.64	8,596.17
J-4336	1,501.76	9,416.94	J-5029	15.11	629.86	8,523.50
J-4337	1,505.64	4,778.33	J-4338	20	516.16	4,778.29
J-4338	1,509.63	4,014.63	J-4338	20	516.16	4,014.63
J-4340	1,507.03	4,629.98	J-5029	18.94	638.71	4,365.38
J-4341	1,501.85	2,633.32	J-4341	20	532.16	2,633.83
J-4342	1,501.84	7,538.24	J-5029	5.79	608.35	4,841.74
J-4343	1,500.18	6,268.39	J-5029	14.2	627.78	4,933.27
J-4344	1,503.66	6,868.01	J-4345	11.33	466.16	6,436.45
J-4345	1,503.66	3,548.55	J-4345	20	486.16	3,548.54
J-4346	1,505.53	7,361.94	J-5029	16.7	633.55	6,693.86
J-4347	1,504.57	6,517.40	J-4347	20	497.16	6,517.59
J-4348	1,502.39	7,053.85	J-5029	18.64	638.02	6,776.93
J-4349	1,504.95	6,685.55	J-4349	20	509.16	6,685.29
J-4350	1,505.89	6,637.96	J-4350	20	486.16	6,638.29
J-4351	1,506.81	6,250.96	J-4351	20	496.16	6,250.85
J-4352	1,502.00	6,785.95	J-4352	20	492.16	6,785.79
J-4353	1,501.59	6,815.79	J-4353	20	496.16	6,815.76
J-4354	1,503.40	6,320.62	J-4354	20	502.16	6,320.54
J-4355	1,501.19	6,484.25	J-4355	20	492.16	6,484.31
J-4356	1,501.47	5,400.39	J-4012	11.45	546.42	4,785.44
J-4357	1,502.30	5,620.58	J-4358	20	502.16	5,620.57
J-4358	1,503.28	2,981.70	J-4358	20	502.16	2,981.63
J-4359	1,503.30	7,278.17	J-5029	17.61	635.63	6,792.85
J-4360	1,501.47	7,850.32	J-5029	14.22	627.82	6,777.10
J-4361	1,502.71	7,952.82	J-5029	13.72	626.68	6,803.21
J-4362	1,500.64	10,158.30	J-5029	-2.17	589.99	6,762.36
J-4363	1,500.72	9,656.00	J-5029	2.71	601.24	6,845.19
J-4364	1,502.21	9,544.85	J-5029	3.12	602.2	6,806.80
J-4365	1,504.21	5,853.10	J-4366	18.27	506.16	5,760.34

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4366	1,503.24	3,263.00	J-4366	20	510.16	3,263.00
J-4367	1,502.69	2,414.64	J-4367	20	508.16	2,415.06
J-4387	1,504.29	9,607.81	J-5029	12.98	624.95	8,354.91
J-4388	1,503.41	5,497.49	J-4392	18.7	519.16	5,413.18
J-4391	1,507.64	3,294.49	J-4391	20	516.16	3,294.48
J-4392	1,505.02	3,604.54	J-4392	20	522.16	3,604.53
J-4395	1,501.17	2,243.86	J-4397	17.84	394.18	2,218.83
J-4396	1,501.50	2,942.10	PRV-4396-OUT	20	416.15	1,501.50
J-4397	1,502.12	2,219.52	J-4397	20	399.16	2,219.78
J-4398	1,501.68	2,315.89	J-4397	11.63	379.84	2,219.34
J-4399	1,503.21	2,192.05	J-4399	20	335.16	2,192.13
J-44	1,515.33	4,484.14	J-45	13.93	386.16	4,002.12
J-4400	1,513.41	5,148.57	J-4400	20	511.16	5,148.57
J-4410	1,502.36	9,318.70	J-5029	11.2	620.84	7,830.42
J-4411	1,503.50	8,075.52	J-5029	18.76	638.29	7,860.81
J-4412	1,504.22	7,281.08	J-4412	20	476.16	7,281.06
J-4414	1,502.64	7,395.13	J-4415	20	476.16	7,395.09
J-4415	1,503.66	3,440.71	J-4415	20	476.16	3,440.71
J-4417	1,503.50	7,073.92	J-4418	17.83	471.16	6,960.86
J-4418	1,503.69	3,752.85	J-4418	20	476.16	3,752.82
J-4455	1,509.74	4,364.35	J-4455	20	504.16	4,364.35
J-45	1,511.01	3,830.78	J-45	20	400.16	3,830.80
J-4500	1,500.00	7,302.18	J-5029	16.73	633.61	6,707.67
J-4501	1,510.41	5,633.80	J-4501	20	487.26	5,633.79
J-4502	1,502.34	5,123.88	J-4502	20	486.66	5,123.78
J-4503	1,503.08	5,446.24	J-4503	20	485.36	5,446.23
J-4504	1,500.00	6,298.65	J-4504	20	485.36	6,298.66
J-4505	1,503.51	7,226.24	J-5029	17.19	634.68	6,712.90
J-4508	1,500.59	10,042.83	J-5029	-2.98	588.13	6,730.30
J-4526	1,505.00	2,738.16	J-4527	-45.86	194.15	1,808.86
J-4527	1,510.57	1,378.63	J-4527	20	346.16	1,382.39
J-4528	1,506.85	3,452.29	J-4528	20	452.16	3,452.29
J-4529	1,500.01	11,957.64	J-5029	-4.14	585.45	8,974.99
J-4530	1,503.12	11,700.53	J-5029	-0.89	592.94	8,999.72
J-4531	1,500.00	11,174.68	J-5029	2.81	601.49	8,803.04
J-4532	1,503.91	11,177.17	J-5029	4.35	605.05	9,019.13
J-4533	1,502.32	14,197.10	J-5029	2.48	600.72	11,620.65
J-4535	1,504.46	4,636.29	J-4535	20	408.16	4,636.29
J-4536	1,508.00	2,687.52	J-4537	10.9	491.16	2,497.45
J-4537	1,509.09	2,075.99	J-4537	20	512.16	2,076.01
J-4538	1,502.82	3,655.33	J-4539	11.77	509.16	3,316.63
J-4539	1,510.26	2,497.53	J-4539	20	528.16	2,498.04

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4540	1,512.91	2,589.91	J-4540	20	502.16	2,590.34
J-4541	1,502.89	3,044.30	J-4541	20	502.16	3,044.27
J-4542	1,505.82	3,341.86	J-4540	20	502.15	3,341.82
J-4543	1,510.07	3,735.25	J-4539	13.02	512.05	3,436.22
J-4544	1,501.85	3,735.76	J-4544	20	486.16	3,735.76
J-4545	1,506.54	4,415.18	J-4539	18.49	524.66	4,330.36
J-4546	1,507.94	4,421.61	J-4539	5.52	494.75	3,761.11
J-4547	1,505.43	3,909.31	J-4539	17.29	521.9	3,778.23
J-4548	1,510.12	4,220.33	J-4539	10.27	505.7	3,766.74
J-4549	1,505.87	3,991.75	J-4539	15.35	517.43	3,769.55
J-4550	1,504.04	1,654.62	J-584	16.38	527.81	1,557.66
J-4551	1,510.66	1,599.85	J-584	18.64	533.02	1,563.01
J-4552	1,509.03	1,597.69	J-584	18.66	533.07	1,561.49
J-4553	1,512.33	1,595.55	J-584	18.86	533.53	1,564.68
J-4554	1,505.59	9,232.07	J-5029	11.81	622.27	7,847.43
J-4555	1,505.54	3,462.34	J-4555	20	455.16	3,462.34
J-4556	1,506.94	5,561.54	J-4556	20	456.16	5,561.54
J-4557	1,501.82	7,262.26	J-4557	20	479.16	7,262.27
J-4558	1,503.52	5,267.56	J-4558	20	472.16	5,267.56
J-4559	1,504.52	3,670.33	J-4559	20	470.16	3,670.33
J-4560	1,502.28	10,271.10	J-5029	1.9	599.38	7,408.59
J-4561	1,502.15	9,356.71	J-5029	8.35	614.27	7,408.46
J-4562	1,504.24	2,945.23	J-4562	20	452.16	2,945.47
J-4563	1,504.24	4,658.33	J-4563	20	462.16	4,658.32
J-4564	1,507.40	3,611.87	J-4564	20	460.16	3,611.86
J-4565	1,501.41	9,644.71	J-5029	6.21	609.32	7,331.38
J-4566	1,500.00	6,078.42	J-4567	20	476.16	6,078.42
J-4567	1,506.71	5,275.94	J-4567	20	476.16	5,275.93
J-4568	1,500.17	1,282.95	J-4568	20	476.16	1,282.95
J-4569	1,504.63	8,538.08	J-5029	12.5	623.86	7,277.15
J-4570	1,505.02	7,766.71	J-5029	17.24	634.79	7,293.23
J-4571	1,507.62	7,512.26	J-5029	18.79	638.35	7,303.92
J-4572	1,502.51	5,961.09	J-4572	20	476.16	5,961.09
J-4573	1,500.76	7,667.80	J-5029	17.94	636.41	7,316.44
J-4574	1,503.06	6,585.79	J-4586	18.27	501.16	6,483.52
J-4575	1,503.58	5,974.32	J-4576	19.57	494.16	5,952.33
J-4576	1,503.92	2,926.63	J-4576	20	495.16	2,927.05
J-4577	1,508.69	5,377.43	J-4577	20	512.16	5,377.43
J-4578	1,502.55	2,544.55	J-4578	20	486.16	2,544.71
J-4579	1,503.81	4,220.90	J-4579	20	499.16	4,220.89
J-4580	1,502.09	7,631.20	J-5029	17.32	634.98	7,159.99
J-4581	1,504.93	6,253.93	J-4583	19.13	504.16	6,204.48

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4582	1,503.44	5,334.23	J-4583	19.57	505.16	5,310.22
J-4583	1,502.06	3,286.00	J-4583	20	506.16	3,286.00
J-4584	1,505.58	5,740.43	J-4585	19.57	507.16	5,721.44
J-4585	1,506.73	4,224.50	J-4585	20	508.16	4,224.50
J-4586	1,502.44	2,380.09	J-4586	20	505.16	2,380.22
J-4587	1,503.08	2,670.36	J-4587	20	511.16	2,670.67
J-4588	1,502.78	5,875.85	J-4589	19.57	505.16	5,852.15
J-4589	1,504.24	3,003.30	J-4589	20	506.16	3,003.97
J-4590	1,515.26	4,176.06	J-180	18.13	441.85	4,117.85
J-4591	1,503.57	2,883.01	J-4591	20	423.16	2,882.95
J-4592	1,503.58	6,261.79	J-4593	14.37	499.16	5,916.69
J-4593	1,506.48	2,430.30	J-4593	20	512.16	2,430.29
J-4594	1,508.55	2,322.62	J-4594	20	499.16	2,323.17
J-4595	1,503.61	6,289.69	J-4596	15.91	493.72	6,057.14
J-4596	1,503.66	3,478.99	J-4596	20	503.16	3,478.99
J-4597	1,502.18	2,880.83	J-4597	20	494.16	2,880.83
J-4598	1,500.00	5,113.75	CMF-7	-1.66	364.16	4,607.66
J-4599	1,500.00	4,693.76	CMF-7	16.45	405.97	4,607.66
J-46	1,503.03	1,756.48	J-5021	16.3	632.61	1,409.41
J-4600	1,501.40	4,679.37	J-4614	9.32	474.52	4,176.74
J-4601	1,518.86	3,276.65	J-4601	20	478.16	3,276.67
J-4602	1,501.29	6,315.83	J-4602	20	524.16	6,315.85
J-4603	1,502.90	9,051.44	J-4603	20	518.16	9,051.59
J-4604	1,513.99	6,791.18	J-4604	20	518.16	6,791.19
J-4605	1,512.27	6,382.27	J-4605	20	522.16	6,382.29
J-4606	1,501.41	3,814.54	J-1907	16.53	516.16	3,675.34
J-4607	1,504.10	2,880.98	J-4608	20	516.16	2,881.11
J-4608	1,502.33	2,141.54	J-4608	20	516.16	2,141.57
J-4610	1,503.66	9,657.89	J-4610	20	506.16	9,657.90
J-4611	1,502.22	8,838.26	J-4611	20	509.16	8,838.27
J-4612	1,508.51	2,809.38	J-4612	20	518.16	2,809.52
J-4613	1,503.40	4,147.21	J-4614	12.63	482.15	3,825.24
J-4614	1,515.32	3,371.58	J-4614	20	499.16	3,371.65
J-4615	1,513.82	2,914.44	J-4615	20	495.16	2,914.46
J-4616	1,500.96	3,904.36	J-4616	20	412.16	3,904.36
J-4617	1,500.73	3,538.62	J-4617	20	382.16	3,539.25
J-4618	1,503.50	2,169.11	J-4618	20	515.16	2,169.26
J-4619	1,502.54	5,891.78	J-4620	18.27	492.16	5,795.95
J-4620	1,501.87	3,526.15	J-4620	20	496.16	3,526.14
J-4621	1,500.94	7,721.71	J-4622	8.73	461.16	7,032.95
J-4622	1,503.02	3,869.90	J-4622	20	487.16	3,869.90
J-4623	1,501.85	6,105.48	J-4624	20	339.16	6,102.18

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4624	1,505.85	4,652.15	J-4624	20	339.16	4,653.63
J-4625	1,504.62	3,752.27	J-4625	20	331.16	3,752.54
J-4626	1,503.82	5,879.52	J-4627	14.8	458.16	5,644.93
J-4627	1,508.45	3,724.97	J-4627	20	470.16	3,724.97
J-4628	1,512.82	7,970.50	J-4628	20	459.16	7,970.51
J-4629	1,510.43	8,521.72	J-4629	20	463.16	8,521.74
J-4630	1,504.58	3,015.40	J-4630	20	346.16	3,015.41
J-4631	1,510.88	2,656.51	J-4631	20	343.16	2,656.52
J-4632	1,500.82	2,836.44	J-4632	20	319.16	2,836.45
J-4633	1,502.76	3,072.53	J-27	12.16	318.06	2,851.08
J-4634	1,509.18	3,942.99	J-4635	15.67	356.16	3,870.30
J-4635	1,508.46	2,710.03	J-4635	20	366.16	2,710.11
J-4636	1,506.19	3,627.15	J-4637	13.5	391.16	3,293.45
J-4637	1,512.08	2,457.76	J-4637	20	406.16	2,457.86
J-4638	1,503.07	10,805.71	J-5029	-19.23	550.63	5,741.50
J-4639	1,500.85	10,304.45	J-5029	-5.55	582.19	6,741.02
J-4640	1,501.06	4,539.41	J-4640	20	472.16	4,539.42
J-4641	1,511.78	3,676.43	J-4641	20	438.16	3,676.47
J-4642	1,517.55	3,082.11	J-4642	20	475.16	3,082.13
J-4643	1,507.51	4,167.46	J-4614	17.07	492.4	4,030.41
J-4644	1,503.41	4,034.03	J-4644	20	453.16	4,034.15
J-4645	1,503.07	4,407.51	J-4614	14.26	485.91	4,134.25
J-4646	1,505.91	3,690.76	J-4646	20	434.16	3,690.79
J-4647	1,508.65	3,688.85	J-4647	20	448.16	3,688.85
J-4648	1,505.51	3,964.55	J-4648	20	454.16	3,964.55
J-4649	1,502.53	2,910.98	J-4649	20	455.16	2,911.62
J-4650	1,522.81	2,070.46	J-4650	20	409.16	2,070.91
J-4651	1,505.73	3,937.22	J-4651	20	472.16	3,937.25
J-4652	1,506.12	4,110.11	J-4651	20	472.16	4,110.12
J-4653	1,502.69	4,643.62	J-4653	20	466.16	4,643.94
J-4654	1,506.01	3,785.33	J-4654	20	464.16	3,785.60
J-4655	1,504.96	3,581.72	J-4732	20	446.16	3,581.72
J-4656	1,501.33	5,394.36	J-4656	20	483.16	5,394.36
J-4657	1,506.07	7,776.70	J-4657	20	494.16	7,776.71
J-4658	1,507.43	7,922.10	J-4658	20	483.16	7,922.11
J-4661	1,509.00	1,777.14	J-584	11.73	517.06	1,561.05
J-4662	1,519.34	1,775.96	J-584	12.17	518.1	1,571.14
J-4663	1,504.03	2,101.80	J-584	4.49	500.37	1,679.98
J-4664	1,503.93	2,145.90	J-584	1.56	493.61	1,658.15
J-4665	1,504.06	2,142.78	J-584	1.31	493.03	1,650.94
J-4666	1,508.98	1,972.48	J-584	3.96	499.14	1,566.96
J-4667	1,513.03	1,995.59	J-584	4.24	499.78	1,591.70

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4668	1,508.93	2,024.15	J-584	3	496.93	1,590.00
J-4669	1,519.55	2,005.06	J-4671	3.74	498.63	1,590.66
J-467	1,501.02	12,077.37	J-5029	-3.08	587.89	9,283.87
J-4670	1,508.18	2,085.32	J-584	1.22	492.82	1,604.74
J-4671	1,505.64	1,551.56	J-4671	20	536.16	1,551.61
J-4673	1,500.75	5,231.87	J-584	-1.1	487.47	4,052.38
J-4674	1,501.75	11,020.56	J-5029	8.94	615.64	9,480.31
J-4675	1,506.06	4,456.93	J-4676	20	488.16	4,456.92
J-4676	1,504.01	2,571.84	J-4676	20	488.16	2,571.93
J-4679	1,506.10	5,572.82	J-4679	20	481.16	5,572.84
J-468	1,502.70	11,305.39	J-5029	4.55	605.49	9,227.84
J-4700	1,502.48	5,767.89	J-45	9.59	376.14	5,449.95
J-4701	1,501.03	5,632.15	J-45	9.6	376.15	5,233.22
J-4702	1,501.67	4,637.73	J-4702	20	518.16	4,637.52
J-4709	1,504.82	1,324.83	J-4709	20	524.16	1,325.00
J-4716	1,502.96	11,308.30	J-4716	20	515.16	11,308.32
J-4717	1,508.15	9,551.22	J-4717	20	511.16	9,551.24
J-472	1,501.93	7,118.69	J-472	20	496.16	7,118.67
J-4720	1,500.81	13,523.77	J-5029	-5.99	581.17	10,416.36
J-4726	1,504.76	1,491.08	J-3265	13.25	508.58	1,356.94
J-4728	1,500.00	11,137.33	J-5029	-13.38	564.12	6,841.06
J-473	1,502.59	8,772.33	J-473	20	480.16	8,772.33
J-4732	1,501.70	3,384.54	J-4732	20	446.16	3,384.54
J-4734	1,503.88	5,957.97	J-4734	20	481.16	5,957.97
J-474	1,500.97	7,090.51	J-1164	19.57	480.16	7,063.95
J-4742	1,502.06	4,386.07	J-4614	12.69	482.29	4,047.07
J-4743	1,500.58	1,902.08	J-4743	20	522.56	1,902.12
J-4744	1,503.16	6,132.36	J-9034	18.7	443.15	6,081.66
J-4747	1,504.77	913.08	J-4747	20	476.16	913.06
J-4748	1,500.83	8,207.59	J-5029	5.28	607.18	5,712.08
J-4749	1,501.43	4,458.34	J-4901	-6.88	400.12	3,640.60
J-475	1,501.81	3,636.71	J-1158	15.67	466.16	3,513.37
J-4750	1,501.42	4,116.28	J-4901	0.49	417.13	3,531.89
J-4751	1,500.00	4,010.47	J-4901	3.09	423.14	3,504.70
J-4752	1,503.55	3,941.63	J-4901	3.1	423.14	3,445.92
J-4753	1,510.86	3,581.45	J-4901	13.06	446.15	3,377.56
J-4754	1,505.00	3,530.16	J-4901	17.29	455.89	3,447.37
J-4755	1,542.41	3,185.59	J-4755	20	408.16	3,185.60
J-4756	1,513.48	4,790.09	J-4756	20	514.16	4,790.07
J-4758	1,508.87	4,041.57	J-4758	20	514.16	4,041.57
J-476	1,501.43	7,620.62	J-476	20	463.16	7,620.64
J-4763	1,500.70	11,157.33	J-5029	3.23	602.45	8,833.85

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4764	1,509.74	4,118.47	J-4764	20	514.16	4,118.47
J-4765	1,500.00	8,016.63	J-5029	16.34	632.71	7,395.80
J-4766	1,508.74	5,009.02	J-4766	20	514.16	5,009.02
J-4767	1,500.83	8,568.76	J-4767	20	496.16	8,568.76
J-4768	1,503.50	7,509.28	J-5029	19.22	639.35	7,376.19
J-4769	1,500.28	7,515.41	J-4770	19.57	498.16	7,488.46
J-477	1,501.89	8,797.07	J-477	20	455.16	8,797.07
J-4770	1,500.00	6,141.55	J-4770	20	499.16	6,141.56
J-4771	1,508.30	6,114.70	J-4771	20	510.16	6,110.43
J-4772	1,505.50	7,341.78	J-4772	20	503.16	7,348.61
J-4773	1,500.00	8,277.19	J-4773	20	506.16	8,277.19
J-4774	1,500.00	10,861.50	J-5029	5.23	607.08	8,740.70
J-4775	1,500.01	8,823.43	J-5029	10.44	619.1	7,201.15
J-4776	1,503.11	9,760.84	J-5029	4.92	606.34	7,212.68
J-4777	1,503.89	6,153.63	J-4777	20	500.16	6,153.64
J-4778	1,503.69	4,657.49	J-4778	20	514.16	4,657.49
J-4779	1,512.58	4,239.37	J-4779	20	514.16	4,239.37
J-478	1,503.95	9,880.23	J-5029	17.55	635.5	9,488.14
J-4780	1,500.00	8,273.17	J-5029	13.75	626.74	7,205.99
J-4781	1,500.77	8,334.52	J-5029	13.4	625.92	7,205.33
J-4782	1,504.69	7,760.10	J-5029	16.8	633.77	7,206.86
J-4783	1,500.00	8,003.55	J-5029	15.33	630.38	7,202.00
J-4784	1,500.18	6,204.83	J-4784	20	491.16	6,204.83
J-4785	1,503.01	9,641.00	J-5029	7	611.15	7,469.51
J-4786	1,507.28	6,282.03	J-4786	20	490.16	6,282.03
J-4789	1,500.00	11,526.09	J-5029	5.01	606.55	9,571.60
J-479	1,500.84	12,031.84	J-5029	-1.56	591.41	9,414.63
J-4790	1,500.00	11,619.91	J-5029	4.05	604.36	9,585.66
J-4791	1,500.00	10,653.43	J-5029	12.55	623.95	9,586.49
J-4792	1,511.24	4,766.97	J-4792	20	485.16	4,766.97
J-4793	1,513.23	6,407.61	J-4793	20	488.16	6,407.61
J-4794	1,500.00	10,666.34	J-5029	12.44	623.72	9,586.62
J-4796	1,501.75	7,023.19	J-4779	18.56	510.84	6,925.89
J-4797	1,507.96	6,447.11	J-4587	16.53	503.16	6,242.55
J-4798	1,513.40	4,014.05	J-4798	20	514.16	4,014.05
J-48	1,514.67	1,416.90	J-5029	19.33	639.61	1,346.11
J-480	1,502.08	12,118.55	J-5029	-1.55	591.43	9,497.40
J-4800	1,500.00	12,491.43	J-5029	-4.86	583.79	9,701.75
J-4801	1,501.55	7,597.18	J-4801	20	494.16	7,597.18
J-4802	1,500.01	8,930.67	J-5029	18.07	636.71	8,576.69
J-4803	1,500.00	9,032.45	J-5029	17.31	634.94	8,535.31
J-4804	1,501.61	9,080.71	J-5029	16.96	634.13	8,520.35

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4805	1,505.22	9,027.44	J-5029	17.05	634.34	8,487.34
J-4806	1,501.55	8,042.08	J-4806	20	489.16	8,042.08
J-4807	1,509.70	7,222.73	J-4807	20	501.16	7,232.90
J-4808	1,506.30	7,932.75	J-4808	20	501.16	7,932.76
J-4809	1,500.00	9,489.28	J-5029	16.92	634.05	8,878.92
J-481	1,502.76	12,008.33	J-5029	0.19	595.44	9,536.35
J-4810	1,505.59	8,932.42	J-5029	17.39	635.14	8,457.53
J-4811	1,504.87	8,550.26	J-4811	20	496.16	8,550.23
J-4812	1,501.56	7,932.35	J-4812	20	490.16	7,932.36
J-4813	1,500.00	8,976.88	J-5029	17.71	635.86	8,550.47
J-4814	1,500.84	7,547.35	J-4815	20	496.16	7,547.36
J-4815	1,500.84	5,891.35	J-4815	20	496.16	5,891.36
J-4816	1,510.49	3,247.45	J-4901	19.13	460.15	3,222.80
J-4817	1,500.00	3,189.69	J-4901	18.45	458.58	3,146.78
J-4818	1,500.00	3,076.15	J-4818	20	461.16	3,076.17
J-4819	1,500.00	3,066.90	J-4823	19.13	456.16	3,044.41
J-482	1,504.05	11,825.77	J-5029	2.98	601.88	9,599.02
J-4820	1,500.00	3,018.05	J-4820	20	458.16	3,018.07
J-4821	1,500.00	2,881.15	J-4821	20	458.16	2,881.17
J-4822	1,500.00	3,124.40	J-4901	18.26	458.15	3,077.61
J-4823	1,500.00	2,807.61	J-4823	20	458.16	2,807.62
J-4824	1,505.96	3,257.83	J-4825	20	459.16	3,257.88
J-4825	1,501.57	3,154.31	J-4825	20	459.16	3,154.34
J-483	1,503.24	12,036.54	J-5029	0.76	596.75	9,612.22
J-4834	1,501.55	4,994.74	J-4834	20	522.16	4,994.75
J-4835	1,500.00	5,441.34	J-4835	20	522.16	5,441.35
J-4836	1,500.00	6,785.15	J-4836	20	520.16	6,785.26
J-4837	1,501.28	5,516.68	J-4837	20	523.16	5,516.69
J-4838	1,500.52	5,917.73	J-4838	20	526.16	5,917.71
J-4839	1,503.55	8,815.66	J-4839	20	527.16	8,815.89
J-484	1,503.56	12,292.00	J-5029	-1.82	590.8	9,640.93
J-4840	1,500.01	6,952.22	J-4840	20	518.16	6,952.26
J-4841	1,503.36	5,180.33	J-4841	20	518.16	5,180.33
J-4842	1,500.00	7,344.50	J-4842	20	526.16	7,344.48
J-4843	1,500.00	6,782.92	J-4843	20	519.16	6,782.98
J-4844	1,500.00	11,710.73	J-5029	3.05	602.03	9,586.96
J-4845	1,500.00	12,089.62	J-5029	-1.19	592.24	9,593.40
J-4847	1,500.00	10,522.87	J-5029	13.57	626.32	9,586.55
J-4848	1,503.48	5,254.99	J-4848	20	478.16	5,254.99
J-4849	1,500.00	10,524.47	J-5029	13.56	626.29	9,586.42
J-485	1,500.00	10,254.77	J-5029	15.51	630.8	9,563.46
J-4850	1,500.00	10,544.23	J-5029	13.4	625.94	9,586.40

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4851	1,502.19	4,063.11	J-4851	20	480.16	4,063.11
J-4854	1,509.04	4,494.27	J-4614	12.41	481.64	4,135.77
J-4855	1,511.21	4,835.38	J-4614	5.42	465.51	4,157.20
J-4856	1,511.69	2,412.23	J-4856	20	446.16	2,412.22
J-4857	1,510.12	3,298.56	J-4857	20	468.16	3,298.60
J-4858	1,513.84	3,980.94	J-4614	18.43	495.54	3,909.81
J-4859	1,507.90	4,543.47	J-4614	5.52	465.75	3,912.05
J-486	1,502.38	9,702.32	J-5029	19.37	639.7	9,598.16
J-4860	1,504.43	4,487.50	J-4614	7.06	469.29	3,918.53
J-4861	1,500.46	2,541.67	J-4861	20	416.16	2,541.66
J-4862	1,503.38	2,857.63	J-4862	20	417.16	2,857.63
J-4863	1,509.15	3,749.01	J-4863	20	418.16	3,749.05
J-4864	1,516.27	4,260.94	J-4614	12.62	482.13	3,930.34
J-4865	1,512.56	4,424.67	J-4614	8.39	472.36	3,913.76
J-4866	1,515.66	3,833.29	J-4905	18.69	431.14	3,796.62
J-4868	1,523.19	3,646.60	J-4868	20	452.16	3,646.68
J-4869	1,506.68	3,462.95	J-4869	20	423.16	3,462.98
J-487	1,501.00	10,088.17	J-5029	17.06	634.38	9,616.82
J-4870	1,502.21	4,383.53	J-4614	9.1	474	3,902.82
J-4871	1,513.81	4,333.48	J-4901	6.77	431.63	3,886.42
J-4872	1,522.25	4,105.99	J-4901	12.07	443.86	3,838.60
J-4873	1,517.59	4,352.62	J-4901	4.21	425.72	3,831.36
J-4874	1,514.57	2,507.43	J-4874	20	422.16	2,507.42
J-4875	1,514.38	3,460.87	J-4875	20	449.16	3,460.92
J-4876	1,508.56	3,614.49	J-4876	20	456.16	3,614.59
J-4877	1,515.64	3,692.94	J-4876	18.95	453.74	3,660.26
J-4878	1,504.47	8,061.82	J-5029	15.83	631.53	7,351.44
J-4879	1,506.83	2,627.77	J-4879	20	452.16	2,627.77
J-488	1,501.83	11,479.62	J-5029	7.72	612.81	9,777.86
J-4880	1,508.75	4,035.75	J-4881	7	426.16	3,643.38
J-4881	1,505.82	2,801.73	J-4881	20	456.16	2,801.73
J-4882	1,507.55	4,408.55	J-4901	-1.33	412.93	3,732.50
J-4883	1,521.19	4,189.16	J-4901	5.82	429.43	3,733.11
J-4884	1,512.18	4,242.91	J-4901	3.77	424.7	3,723.87
J-4885	1,501.14	9,670.31	J-5029	6.33	609.6	7,383.56
J-4886	1,506.46	3,998.78	J-4881	9.9	432.84	3,686.92
J-4887	1,505.78	2,794.31	J-4887	20	453.16	2,794.31
J-4888	1,509.37	3,313.94	J-4888	20	401.16	3,313.95
J-4889	1,513.40	4,439.06	J-4901	-2.93	409.25	3,719.55
J-489	1,502.58	7,797.15	J-1149	17.83	471.16	7,660.54
J-4890	1,511.69	4,425.02	J-4901	-3.04	408.99	3,705.11
J-4891	1,506.49	4,306.63	J-4901	0.45	417.04	3,691.79

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-4892	1,527.87	4,469.79	J-4901	-4.39	405.88	3,712.43
J-4893	1,503.67	3,667.27	J-4895	19.56	396.14	3,657.43
J-4894	1,506.62	3,437.90	J-4894	20	396.16	3,437.93
J-4895	1,515.75	3,335.57	J-4895	20	397.16	3,335.59
J-4896	1,523.16	3,409.12	J-4896	20	396.16	3,409.14
J-4897	1,510.72	3,387.29	J-4907	20	396.16	3,387.31
J-4898	1,513.08	2,094.25	J-4898	20	457.16	2,094.25
J-4899	1,510.20	2,861.68	J-4901	20	462.16	2,861.68
J-49	1,508.86	1,048.74	J-49	20	636.16	1,048.58
J-490	1,512.71	8,594.66	J-490	20	486.16	8,594.67
J-4900	1,504.86	6,435.53	J-4900	20	478.16	6,435.52
J-4901	1,505.83	2,012.99	J-4901	20	462.16	2,012.97
J-4902	1,500.00	7,106.88	J-4593	7.01	482.19	6,285.50
J-4903	1,503.04	5,841.61	J-4926	6.52	447.04	5,251.29
J-4904	1,501.88	4,572.40	J-4904	20	474.16	4,572.41
J-4905	1,522.10	2,611.66	J-4905	20	434.16	2,611.66
J-4906	1,508.66	4,421.99	J-4901	-2.15	411.04	3,723.62
J-4907	1,511.64	3,091.18	J-4907	20	396.16	3,091.19
J-491	1,514.33	7,044.79	J-491	20	476.16	7,044.81
J-492	1,504.79	11,515.13	J-5029	8.11	613.71	9,850.43
J-4923	1,502.99	3,445.07	J-4923	20	462.16	3,445.05
J-4926	1,502.02	4,268.90	J-4926	20	478.16	4,268.94
J-4929	1,505.72	5,271.98	J-4929	20	461.16	5,271.99
J-493	1,509.51	10,821.10	J-5029	13.36	625.83	9,827.63
J-4931	1,510.66	6,388.30	J-4931	20	474.16	6,388.31
J-4932	1,508.46	5,264.40	J-4932	20	452.16	5,264.39
J-494	1,507.97	11,175.99	J-5029	10.7	619.69	9,834.53
J-4946	1,253.00	2,750.15	J-4946	20	394.16	2,750.16
J-495	1,505.01	11,215.83	J-5029	10.3	618.76	9,825.55
J-496	1,508.20	11,621.73	J-5029	7.61	612.56	9,899.94
J-497	1,510.10	5,970.91	J-1144	18.08	476.72	5,873.13
J-498	1,504.62	4,377.41	J-1144	16.97	474.16	4,266.89
J-4982	1,500.50	6,134.20	J-4982	20	471.16	6,134.20
J-4983	1,508.03	5,353.18	J-4983	20	466.16	5,353.22
J-4984	1,507.46	5,578.53	J-4984	20	449.66	5,578.58
J-499	1,507.81	5,477.09	J-499	20	459.16	5,477.10
J-50	1,510.24	1,962.56	J-5021	13.86	626.99	1,432.09
J-500	1,500.77	8,158.12	J-500	20	451.16	8,158.14
J-5000	1,502.06	2,313.81	J-5029	8.91	615.55	1,461.75
J-5001	1,501.49	2,239.00	J-5029	10.44	619.1	1,482.50
J-5002	1,503.02	1,782.51	J-5029	16.85	633.88	1,484.03
J-5003	1,503.40	2,336.41	J-5029	9.14	616.1	1,500.26

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-5004	1,503.79	2,413.47	J-5029	12.37	623.54	1,664.24
J-5005	1,501.18	3,521.80	J-5029	1.81	599.19	2,086.86
J-5006	1,501.31	3,415.49	J-5029	2.93	601.77	2,068.35
J-5007	1,500.98	3,370.16	J-5029	3.77	603.7	2,047.15
J-5008	1,502.82	3,096.55	J-5029	7.41	612.09	2,022.05
J-5010	1,504.27	2,957.37	J-5029	7.81	613.03	1,933.76
J-5011	1,502.97	3,492.82	J-5029	-2.28	589.73	1,842.87
J-5012	1,500.66	2,976.57	J-5029	7.15	611.51	1,909.72
J-5013	1,500.63	2,979.36	J-5029	4.88	606.26	1,696.50
J-5014	1,501.69	1,778.18	J-5029	19.25	639.44	1,696.89
J-5015	1,500.42	2,324.02	J-5029	11.28	621.03	1,588.83
J-5016	1,501.86	1,422.32	J-5016	20	606.16	1,422.29
J-5017	1,501.98	2,280.18	J-5029	9.77	617.55	1,485.12
J-5018	1,502.03	2,219.55	J-5029	9.28	616.42	1,401.72
J-5019	1,504.75	1,578.91	J-5020	15.23	630.16	1,167.07
J-5021	1,503.03	1,397.79	J-5021	20	641.16	1,387.96
J-5022	1,501.97	1,958.52	J-5029	14.54	628.56	1,479.56
J-5023	1,501.65	1,238.30	J-5023	20	624.16	1,239.73
J-5024	1,505.73	1,557.38	J-5025	15.23	630.16	1,145.35
J-5026	1,508.38	1,591.19	J-5025	17.5	635.38	1,348.37
J-5027	1,502.03	1,587.61	J-5029	14.86	629.28	1,147.64
J-5028	1,510.70	1,036.50	J-5029	20	641.16	1,044.07
J-5031	1,503.74	1,454.50	J-5029	16.73	633.61	1,149.35
J-5033	1,500.76	2,160.35	J-5029	11.64	621.86	1,483.90
J-5034	1,500.88	2,179.64	J-5029	11.37	621.23	1,484.02
J-5035	1,501.68	1,288.51	J-5035	20	608.16	1,288.88
J-5036	1,501.69	1,842.51	J-5029	16.1	632.16	1,484.83
J-5037	1,502.34	1,304.55	J-5037	20	584.16	1,304.67
J-5038	1,501.00	1,893.12	J-5029	15.44	630.63	1,484.14
J-5039	1,501.17	1,757.65	J-5029	17.15	634.57	1,484.31
J-5040	1,501.05	1,108.10	J-5040	20	608.16	1,108.14
J-5041	1,500.97	1,707.76	J-5029	17.71	635.87	1,484.11
J-5042	1,501.44	1,260.54	J-5042	20	618.16	1,261.35
J-5043	1,500.97	1,362.84	J-5044	19.13	620.16	1,318.35
J-5044	1,502.38	1,167.69	J-5044	20	622.16	1,162.52
J-5045	1,500.55	1,270.57	J-5045	20	620.16	1,271.43
J-5046	1,501.85	1,826.04	J-5029	16.31	632.63	1,484.99
J-5047	1,501.04	1,443.26	J-5047	20	561.16	1,442.87
J-5048	1,501.71	1,388.44	J-5048	20	568.16	1,388.48
J-5049	1,500.86	1,772.65	J-5029	16.95	634.12	1,484.00
J-5050	1,500.84	1,560.91	J-5029	19.27	639.47	1,483.98
J-5051	1,500.63	1,663.29	J-5029	18.2	637.01	1,483.77

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-5052	1,502.51	1,634.64	J-5029	18.53	637.77	1,485.65
J-5053	1,500.95	1,660.12	J-5029	18.24	637.1	1,484.09
J-5054	1,501.93	1,399.27	J-5054	20	546.16	1,399.28
J-5055	1,501.37	3,810.71	J-5029	-1.89	590.64	2,133.48
J-5056	1,502.89	2,932.29	J-5029	11.11	620.64	2,099.08
J-5057	1,501.09	1,960.93	J-5057	20	581.16	1,961.16
J-5058	1,503.17	2,871.27	J-5029	11.52	621.58	2,077.09
J-5059	1,501.77	1,778.50	J-5059	20	578.16	1,778.58
J-5060	1,500.77	3,321.20	J-5029	9.08	615.96	2,305.23
J-5061	1,502.76	3,432.98	J-5029	8.6	614.84	2,363.81
J-5062	1,506.84	3,420.41	J-5029	9.49	616.89	2,415.28
J-5063	1,506.54	3,114.39	J-5029	12.43	623.69	2,347.23
J-5064	1,504.17	2,515.82	J-5103	16.72	608.59	2,286.62
J-5065	1,503.70	2,025.38	J-5103	20	616.16	2,026.38
J-5099	1,501.75	5,916.09	J-1599	19.13	452.16	5,878.97
J-51	1,505.26	2,042.10	J-5021	12.7	624.32	1,431.95
J-5100	1,501.23	1,710.97	J-5100	20	575.16	1,711.01
J-5101	1,503.21	1,836.91	J-5101	20	578.16	1,837.01
J-5102	1,501.88	1,601.85	J-5102	20	606.16	1,600.37
J-5103	1,501.70	1,363.57	J-5103	20	616.16	1,363.64
J-5104	1,502.74	1,640.96	J-5104	20	600.16	1,640.77
J-52	1,501.84	2,134.85	J-5021	11.25	620.97	1,429.71
J-53	1,508.63	1,559.55	J-5029	18.56	637.84	1,409.43
J-535	1,512.11	993.22	J-535	20	518.16	993.35
J-537	1,504.75	4,890.89	J-537	20	507.16	4,890.90
J-538	1,504.52	4,570.79	J-538	20	514.66	4,570.78
J-539	1,500.00	5,940.38	J-539	20	516.16	5,940.35
J-54	1,500.49	1,282.70	J-54	20	626.16	1,283.86
J-55	1,504.12	2,003.92	J-5021	13.35	625.81	1,438.36
J-554	1,502.14	3,313.09	J-1409	10.16	463.45	3,056.65
J-556	1,504.19	2,955.47	J-556	20	496.66	2,955.54
J-56	1,506.65	1,415.21	J-56	20	621.16	1,414.48
J-563	1,508.05	1,594.84	J-1342	14.3	516.01	1,465.02
J-565	1,502.42	1,425.97	J-1459	19.45	524.89	1,414.13
J-567	1,504.01	1,450.34	J-1342	18.45	525.59	1,415.68
J-568	1,508.84	1,482.36	J-3267	15.63	513.08	1,393.48
J-57	1,505.11	2,179.89	J-5021	10.92	620.2	1,445.80
J-573	1,509.60	1,509.20	J-4709	15.83	514.53	1,421.08
J-574	1,520.72	1,471.25	J-574	20	501.16	1,471.21
J-575	1,515.17	1,142.62	J-575	20	488.16	1,142.91
J-576	1,511.17	1,540.88	J-3265	10.19	501.51	1,350.58
J-577	1,506.39	1,458.12	J-3265	15.44	513.63	1,366.05

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-578	1,504.03	1,547.30	J-3265	11.31	504.11	1,373.48
J-579	1,504.82	1,645.24	J-3265	7.25	494.73	1,390.83
J-58	1,503.07	2,140.49	J-5021	11.31	621.1	1,439.70
J-580	1,508.82	1,656.04	J-3265	10.1	501.31	1,447.30
J-581	1,508.90	1,692.34	J-3265	14.32	511.04	1,559.70
J-582	1,505.65	1,595.46	J-4671	19.5	535	1,581.58
J-583	1,504.03	1,579.28	J-4671	19.35	534.66	1,561.55
J-584	1,514.75	1,559.68	J-584	20	536.16	1,559.70
J-585	1,508.04	1,929.11	J-4671	12.06	517.83	1,703.30
J-586	1,508.06	2,110.47	J-4671	8.05	508.58	1,765.12
J-587	1,506.49	2,042.55	J-584	11.08	515.56	1,777.58
J-588	1,511.28	4,169.76	J-584	8.13	508.76	3,575.25
J-589	1,513.69	2,787.47	J-589	20	516.66	2,787.46
J-59	1,513.16	8,029.31	J-59	20	488.16	8,029.32
J-592	1,502.86	5,028.21	J-592	20	453.06	5,028.20
J-593	1,505.22	6,118.40	J-4539	4.44	492.25	5,142.22
J-594	1,503.94	7,082.75	J-594	20	457.16	7,082.78
J-595	1,503.10	6,314.29	J-4539	0.88	484.04	5,133.53
J-596	1,508.57	5,418.49	J-596	20	474.66	5,418.49
J-597	1,501.61	5,548.20	J-597	20	460.66	5,548.20
J-598	1,501.50	4,429.82	J-1052	19.86	471.33	4,424.74
J-599	1,505.64	4,315.33	J-599	20	465.66	4,315.33
J-6	1,502.46	2,094.73	J-5021	12	622.7	1,439.09
J-60	1,501.92	7,414.74	J-60	20	480.16	7,414.73
J-601	1,504.98	8,849.14	J-601	20	448.16	8,848.88
J-6018	1,501.89	6,723.46	J-6018	20	492.16	6,723.50
J-6019	1,501.54	5,860.88	J-6019	20	490.16	5,860.86
J-602	1,502.59	7,367.69	J-602	20	456.16	7,367.71
J-6020	1,502.57	5,435.89	J-6021	20	490.16	5,435.86
J-6021	1,504.14	3,347.04	J-6021	20	490.16	3,347.02
J-6022	1,507.55	6,511.20	J-3029	9.81	447.65	6,047.54
J-6023	1,501.75	5,249.07	J-6023	20	476.16	5,249.09
J-6024	1,518.24	4,608.79	J-3029	12.63	454.16	4,345.63
J-6025	1,500.19	7,542.64	J-5029	18.26	637.14	7,240.51
J-6026	1,511.85	7,274.61	J-5029	19.51	640.03	7,186.14
J-6027	1,508.90	7,039.38	J-6030	18.13	472.84	6,935.73
J-6028	1,515.66	7,002.24	J-6028	20	479.16	7,002.07
J-6029	1,515.34	6,371.22	J-6029	20	461.16	6,371.21
J-603	1,500.00	13,016.55	J-5029	-0.08	594.81	10,447.71
J-6030	1,514.11	6,135.81	J-6030	20	477.16	6,135.78
J-6031	1,500.84	7,761.62	J-4593	9.9	488.84	7,071.79
J-6032	1,508.18	6,062.63	J-6032	20	449.16	6,062.63

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-6033	1,513.68	6,221.89	J-6033	20	455.16	6,221.87
J-6034	1,506.30	7,132.57	J-6034	20	457.16	7,132.60
J-6035	1,504.58	6,155.23	J-6036	18.27	455.16	6,075.65
J-6036	1,504.10	4,043.97	J-6036	20	459.16	4,043.97
J-6037	1,504.23	5,064.46	J-6037	20	333.16	5,063.88
J-6038	1,503.04	4,373.74	J-4625	19.13	329.16	4,341.82
J-604	1,507.78	4,758.51	J-604	20	475.16	4,758.51
J-6048	1,502.18	5,155.47	J-6048	20	472.16	5,155.47
J-6049	1,501.75	2,294.34	J-5029	18.17	636.92	2,097.94
J-605	1,503.90	11,255.72	J-5029	15.54	630.87	10,535.19
J-6052	1,507.78	9,778.46	J-5029	-10.15	571.58	5,196.62
J-6054	1,501.55	4,713.37	J-45	13.93	386.16	4,205.33
J-6055	1,500.00	2,223.56	J-5029	9.61	617.18	1,425.49
J-6056	1,512.08	5,224.28	J-6056	20	437.16	5,224.28
J-6057	1,502.72	4,758.11	J-6057	20	446.16	4,758.11
J-6058	1,510.50	3,969.14	J-6061	5.2	380.99	3,726.42
J-6059	1,500.00	9,915.73	J-584	-8.02	471.48	7,907.65
J-606	1,501.32	10,231.16	J-606	20	499.16	10,231.07
J-6060	1,503.11	9,826.54	J-584	-6.48	475.04	7,910.88
J-6061	1,518.98	2,561.89	J-6061	20	415.16	2,561.92
J-6062	1,505.55	3,299.18	J-6062	20	381.16	3,299.32
J-6063	1,502.48	4,521.53	J-6061	-4.76	358.02	4,092.04
J-6064	1,500.76	9,325.37	J-584	1.37	493.17	7,906.50
J-6065	1,501.86	6,273.91	J-6065	20	476.16	6,273.95
J-6066	1,503.84	5,596.36	J-9069	17.61	476.15	5,485.61
J-607	1,501.48	9,308.34	J-607	20	480.66	9,308.36
J-6076	1,501.86	8,515.69	J-5029	0.12	595.28	5,009.18
J-6077	1,508.84	5,528.10	J-5029	18.12	636.82	5,036.06
J-6078	1,508.14	4,745.40	J-6078	20	516.16	4,745.36
J-6079	1,505.40	5,751.64	J-5029	17.1	634.46	5,030.40
J-608	1,513.74	3,908.95	J-608	20	475.66	3,908.95
J-6080	1,500.00	8,246.15	J-5029	13.34	625.78	7,095.04
J-6081	1,500.78	5,537.43	J-6082	20	491.16	5,541.62
J-6082	1,503.09	4,348.83	J-6082	20	491.16	4,348.83
J-6083	1,501.54	9,673.99	J-5029	4.59	605.6	7,096.61
J-609	1,513.28	3,575.50	J-4537	8.73	486.15	3,269.66
J-61	1,505.97	6,917.95	J-61	20	478.16	6,917.98
J-610	1,509.02	5,029.82	J-1078	17.83	496.14	4,950.06
J-615	1,501.81	7,030.20	J-615	20	484.56	7,030.21
J-616	1,501.88	6,503.14	J-616	20	495.66	6,503.15
J-617	1,501.38	7,096.21	J-1508	14.41	491.16	6,719.50
J-618	1,500.66	6,196.23	J-618	20	509.36	6,196.23

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-619	1,501.68	9,396.14	J-619	20	453.86	9,401.84
J-620	1,502.36	7,618.95	J-620	20	448.16	7,618.96
J-622	1,500.88	5,530.13	J-622	20	433.16	5,530.13
J-623	1,501.33	5,659.87	J-623	20	441.16	5,659.87
J-624	1,500.06	13,627.49	J-5029	0.6	596.38	10,993.50
J-625	1,502.33	7,394.96	J-1106	15.52	505.51	7,043.05
J-627	1,503.21	9,682.65	J-1107	16.8	511.78	9,397.15
J-628	1,501.80	5,600.94	J-628	20	423.16	5,600.94
J-629	1,505.74	4,419.61	J-630	18.27	402.15	4,376.92
J-630	1,503.29	2,787.60	J-630	20	406.16	2,787.79
J-631	1,503.43	2,476.63	J-969	12.03	334.76	2,393.87
J-632	1,502.14	2,113.55	J-632	20	304.16	2,113.55
J-633	1,501.39	1,492.96	J-633	20	256.16	1,492.96
J-634	1,502.42	5,474.38	J-945	20	436.16	5,474.36
J-635	1,500.54	8,795.45	J-945	18	431.55	8,693.14
J-636	1,502.51	9,004.68	J-636	20	427.96	9,004.69
J-637	1,501.98	9,026.18	J-637	20	415.06	9,026.51
J-639	1,501.50	14,195.17	J-5029	4.95	606.43	11,832.27
J-640	1,500.48	14,337.35	J-5029	2.19	600.04	11,710.05
J-641	1,500.96	7,146.29	J-929	19	422.06	7,107.03
J-642	1,503.81	7,027.91	J-642	20	433.16	7,028.00
J-643	1,502.14	7,344.35	J-1469	13.41	416.95	7,079.22
J-644	1,503.86	6,400.02	J-644	20	386.16	6,400.03
J-645	1,501.04	6,922.24	J-645	20	446.16	6,922.25
J-65	1,522.27	3,380.11	J-65	20	490.16	3,380.11
J-6500	1,500.00	10,929.65	J-5029	-22.96	542.02	5,196.67
J-6501	1,507.72	4,048.69	J-6505	18.26	414.14	4,011.51
J-6502	1,507.84	4,324.41	J-6505	6.12	386.12	4,033.28
J-6505	1,509.56	3,851.52	J-6505	20	418.16	3,851.51
J-6506	1,511.37	3,871.37	J-4637	15.31	395.32	3,782.16
J-6508	1,515.94	7,649.15	J-5029	6.63	610.3	5,212.62
J-66	1,509.01	2,720.70	J-66	20	480.16	2,721.14
J-67	1,501.25	1,962.73	J-67	20	470.16	1,962.76
J-68	1,503.12	2,487.95	J-70	20	386.16	2,488.02
J-69	1,501.75	1,811.20	J-69	20	376.16	1,811.21
J-7	1,505.31	5,270.73	J-5029	19.72	640.5	5,201.98
J-70	1,502.33	1,743.53	J-70	20	386.16	1,743.53
J-702	1,501.98	7,490.46	J-702	20	491.66	7,490.73
J-709	1,501.92	3,094.53	J-709	20	514.16	3,094.53
J-71	1,500.98	5,841.15	J-5029	16.7	633.54	5,037.56
J-710	1,501.45	2,557.92	J-710	20	520.76	2,558.44
J-711	1,500.97	1,756.20	J-711	20	503.16	1,756.21

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-712	1,501.49	2,640.97	J-712	20	504.66	2,641.54
J-713	1,501.39	2,122.98	J-1127	16.3	506.62	2,040.07
J-714	1,501.62	3,065.74	J-714	20	526.16	3,067.37
J-715	1,501.63	2,380.91	J-1112	17.62	521.16	2,313.71
J-716	1,501.44	5,322.71	J-716	20	504.66	5,322.71
J-717	1,501.37	6,206.14	J-717	20	505.16	6,206.14
J-719	1,500.93	4,578.21	J-719	20	516.16	4,578.21
J-72	1,503.06	5,663.75	J-5029	17.53	635.45	5,039.57
J-720	1,501.87	2,003.41	J-720	20	509.56	2,003.48
J-721	1,501.54	1,991.41	J-721	20	512.06	1,991.48
J-722	1,500.38	2,085.01	J-722	20	514.86	2,085.13
J-723	1,504.09	1,714.06	J-723	20	518.96	1,714.07
J-724	1,505.83	1,629.84	J-724	20	519.86	1,629.84
J-725	1,504.74	2,673.34	J-725	20	522.56	2,673.97
J-73	1,510.32	5,058.17	J-5029	19.97	641.08	5,046.72
J-74	1,505.16	5,146.21	J-76	7.43	428.15	4,769.44
J-75	1,505.31	4,085.80	J-76	11.33	437.15	3,875.50
J-76	1,504.32	2,263.58	J-76	20	457.16	2,263.78
J-77	1,504.61	9,462.09	J-584	-2.45	484.35	7,785.58
J-78	1,500.76	10,094.73	J-584	-11.16	464.23	7,901.04
J-79	1,511.61	9,487.36	J-584	-0.87	487.98	7,914.81
J-8	1,500.00	7,037.91	J-4624	19.57	338.16	7,025.02
J-80	1,506.15	9,405.93	J-584	0.29	490.67	7,910.45
J-8013	1,509.03	1,402.09	J-8013	20	516.16	1,402.13
J-802	1,503.02	7,342.10	J-802	20	441.16	7,342.12
J-803	1,503.95	6,998.48	J-803	20	437.16	6,998.49
J-804	1,504.36	7,028.62	J-804	20	439.16	7,028.63
J-805	1,501.77	8,112.06	J-805	20	453.16	8,112.07
J-807	1,502.45	7,821.16	J-807	20	449.16	7,821.19
J-808	1,500.72	13,560.03	J-5029	-6.67	579.61	10,396.47
J-809	1,501.49	8,454.86	J-809	20	451.66	8,454.91
J-81	1,505.42	1,455.32	J-81	20	351.16	1,456.03
J-810	1,501.34	8,558.94	J-810	20	426.86	8,559.31
J-811	1,500.81	7,853.74	J-811	20	454.16	7,853.70
J-82	1,503.06	9,350.46	J-584	1.05	492.43	7,909.05
J-83	1,502.17	6,872.76	J-83	20	384.16	6,873.14
J-84	1,504.35	7,585.61	J-84	20	389.16	7,585.62
J-85	1,500.91	9,354.53	J-584	1	492.31	7,909.41
J-86	1,504.59	6,189.65	J-5029	14.6	628.7	4,937.45
J-88	1,503.05	9,364.15	J-584	0.85	491.96	7,908.16
J-89	1,500.13	6,591.28	J-89	20	389.16	6,591.44
J-90	1,505.40	7,244.74	J-90	20	393.16	7,244.74

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-900	1,501.68	1,809.57	J-900	20	505.96	1,809.59
J-9000	1,502.27	5,061.57	J-3070	18.38	519.42	4,960.47
J-9001	1,509.07	5,611.50	J-584	13.79	521.82	5,117.56
J-9002	1,501.60	2,679.26	J-9002	20	494.06	2,679.26
J-9003	1,505.29	6,332.69	J-9003	20	494.16	6,332.71
J-9004	1,507.55	6,946.26	J-9004	20	484.16	6,946.31
J-9005	1,500.01	7,926.12	J-584	8.39	509.37	7,076.30
J-9006	1,503.83	9,461.46	J-584	1.37	493.17	8,028.20
J-9007	1,502.26	1,447.39	J-9007	20	493.16	1,448.25
J-9008	1,500.45	8,996.28	J-584	8.27	509.08	8,049.68
J-9009	1,501.35	7,291.61	J-9007	19.13	491.16	7,236.71
J-9010	1,500.48	8,156.93	J-9010	20	483.16	8,157.20
J-9011	1,503.47	7,635.61	J-9011	20	483.16	7,635.73
J-9012	1,500.00	7,921.40	J-9012	20	486.16	7,921.68
J-9013	1,503.08	7,820.59	J-9013	20	486.16	7,820.66
J-9014	1,500.00	3,585.39	J-9014	20	488.16	3,585.68
J-9015	1,502.31	2,983.29	J-9015	20	470.66	2,983.43
J-9016	1,505.04	4,873.73	J-9015	18.92	468.16	4,831.83
J-9017	1,505.84	3,492.46	J-9017	20	470.16	3,492.71
J-9018	1,501.23	9,390.32	J-584	1.71	493.96	7,997.79
J-9019	1,503.27	9,085.41	J-584	2.34	495.41	7,747.48
J-902	1,504.56	9,000.29	J-3418	19.63	482.3	8,974.98
J-9020	1,503.61	3,852.83	J-9020	20	456.16	3,853.24
J-9021	1,500.01	9,655.04	J-584	-2.75	483.65	7,970.98
J-9022	1,501.61	9,755.59	J-584	-4.34	479.99	7,975.04
J-9023	1,508.90	6,384.17	J-9020	17.4	450.16	6,270.84
J-9024	1,503.55	6,881.15	J-9024	20	461.16	6,881.16
J-9025	1,506.69	2,980.28	J-9025	20	446.66	2,980.40
J-9026	1,502.83	5,523.37	J-9025	19.78	446.16	5,515.31
J-9027	1,503.23	7,083.63	J-9025	17.57	441.05	6,986.98
J-9028	1,504.77	9,785.75	J-584	-5.24	477.9	7,945.82
J-9029	1,507.36	4,409.37	J-9034	18.7	443.16	4,369.62
J-903	1,500.92	6,421.07	J-903	20	431.16	6,421.06
J-9030	1,500.78	10,118.31	J-584	-11.36	463.79	7,913.14
J-9031	1,501.59	9,888.12	J-584	-7.47	472.75	7,913.28
J-9032	1,502.62	2,959.88	J-9032	20	409.16	2,960.01
J-9033	1,502.59	3,746.52	J-9033	20	410.16	3,746.74
J-9034	1,507.55	2,904.58	J-9034	20	446.16	2,904.72
J-9035	1,504.63	2,888.52	J-9035	20	441.16	2,888.62
J-9036	1,502.39	6,077.77	J-9036	20	452.16	6,077.75
J-9037	1,504.44	6,138.53	J-9040	13.5	444.15	5,870.13
J-9038	1,502.31	1,350.18	J-9038	20	451.16	1,350.18

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-9039	1,500.95	2,428.92	J-9040	19.13	457.15	2,413.53
J-904	1,500.72	7,870.45	J-904	20	453.76	7,870.47
J-9040	1,503.84	1,103.34	J-9040	20	459.16	1,103.34
J-9041	1,501.09	7,167.11	J-9041	20	459.66	7,167.13
J-9042	1,500.47	7,127.20	J-9045	16.99	479.2	6,953.13
J-9043	1,503.71	6,429.78	J-9043	20	462.16	6,429.79
J-9044	1,500.00	4,727.95	J-9045	15.67	476.16	4,560.09
J-9045	1,500.00	3,550.95	J-9045	20	486.16	3,551.52
J-9046	1,500.00	2,684.59	J-9046	20	491.16	2,684.69
J-9047	1,501.55	3,760.66	J-9047	20	496.16	3,760.66
J-9048	1,500.01	6,637.39	J-9048	20	488.16	6,637.38
J-9049	1,500.00	7,884.31	J-9049	20	491.16	7,884.35
J-9050	1,505.02	3,063.76	J-9050	20	486.16	3,064.06
J-9051	1,502.81	2,286.00	J-9051	20	471.16	2,286.02
J-9052	1,503.41	5,012.52	J-9050	11.77	467.16	4,683.95
J-9053	1,500.55	7,107.96	J-9050	9.38	461.66	6,539.34
J-9054	1,502.26	6,891.98	J-9058	16.99	473.71	6,727.09
J-9055	1,500.00	5,762.28	J-9055	20	473.16	5,762.05
J-9056	1,502.28	4,880.69	J-9056	20	475.16	4,880.70
J-9057	1,500.00	4,776.23	J-4651	20	472.16	4,776.27
J-9058	1,504.90	3,843.67	J-9058	20	480.66	3,843.69
J-9059	1,501.52	4,656.25	J-9059	20	479.16	4,656.29
J-9060	1,504.33	5,682.95	J-9060	20	478.16	5,682.93
J-9061	1,505.58	5,202.90	J-9079	18.3	492.24	5,120.30
J-9062	1,505.10	3,538.27	J-9062	20	471.16	3,538.99
J-9063	1,501.79	4,336.96	J-9063	20	472.16	4,336.97
J-9064	1,500.49	4,411.00	J-9064	20	483.16	4,411.02
J-9065	1,503.98	4,420.33	J-9065	20	496.16	4,420.33
J-9066	1,504.46	4,847.21	J-9066	20	503.16	4,847.29
J-9067	1,504.64	4,392.04	J-9067	20	506.16	4,392.05
J-9068	1,502.58	2,820.69	J-9068	20	496.16	2,820.90
J-9069	1,501.93	1,671.20	J-9069	20	481.66	1,671.20
J-9070	1,505.78	2,276.08	J-9069	19.78	481.16	2,271.93
J-9072	1,506.04	2,760.63	J-9072	20	489.16	2,760.80
J-9073	1,505.00	5,204.55	J-9073	20	486.16	5,205.13
J-9074	1,503.84	5,353.82	J-9071	15.23	499.14	5,097.13
J-9075	1,502.97	1,866.11	J-9071	18.48	506.65	1,836.70
J-9077	1,504.07	4,954.21	J-9077	20	502.16	4,954.31
J-9078	1,502.57	1,201.53	J-9078	20	501.66	1,201.36
J-9079	1,505.16	3,746.11	J-9079	20	496.16	3,746.11
J-908	1,500.45	8,323.77	J-9145	18.92	525.67	8,235.85
J-9080	1,504.61	7,441.98	J-9080	20	491.66	7,441.99

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-9081	1,504.59	7,362.74	J-9081	20	483.16	7,362.76
J-9082	1,504.58	5,505.16	J-9082	20	479.16	5,505.09
J-9083	1,505.44	2,339.87	J-9083	20	471.66	2,339.90
J-9084	1,505.60	2,946.67	J-9069	20	481.66	2,947.07
J-9085	1,502.74	1,785.19	J-9085	20	468.16	1,785.19
J-9086	1,506.87	5,183.32	J-9087	17.83	466.16	5,096.70
J-9087	1,505.95	3,922.72	J-9087	20	471.16	3,922.72
J-9088	1,507.85	5,965.19	J-9088	20	476.16	5,965.18
J-9089	1,504.84	3,677.32	J-9069	19.78	481.15	3,670.39
J-9090	1,503.06	6,344.01	J-9090	20	471.66	6,344.04
J-9091	1,506.31	6,714.87	J-9091	20	471.16	6,714.96
J-9092	1,504.66	2,172.72	J-9092	20	487.16	2,172.73
J-9093	1,506.71	7,478.32	J-9092	16.1	478.16	7,234.14
J-9094	1,502.79	2,833.71	J-9094	20	490.16	2,833.84
J-9095	1,503.31	7,469.58	J-9095	20	508.16	7,469.59
J-9096	1,501.56	7,391.76	J-9096	20	513.16	7,391.77
J-9097	1,502.35	6,978.59	J-9097	20	518.16	6,978.74
J-9098	1,501.91	6,113.41	J-9100	19.92	510.96	6,107.75
J-9099	1,502.66	6,008.04	J-9100	13.5	496.16	5,615.07
J-91	1,500.18	9,785.97	J-5029	4.09	604.44	7,128.94
J-910	1,502.34	4,643.37	J-910	20	517.66	4,643.32
J-9100	1,503.04	2,805.93	J-9100	20	511.16	2,806.10
J-9101	1,503.64	6,789.27	J-9102	19.57	521.16	6,755.18
J-9102	1,503.62	2,569.85	J-9102	20	522.16	2,569.94
J-9103	1,502.58	2,600.25	J-9103	20	523.66	2,600.35
J-9104	1,504.02	6,929.65	J-9104	20	524.16	6,929.86
J-9105	1,504.67	2,142.47	J-9105	20	523.16	2,142.46
J-9106	1,506.33	3,097.39	J-9106	20	516.16	3,097.68
J-9107	1,503.98	8,379.13	J-9107	20	484.16	8,379.21
J-9108	1,505.68	8,293.94	J-9108	20	475.16	8,294.02
J-9109	1,506.63	7,479.94	J-9109	20	474.66	7,479.96
J-9110	1,507.05	7,997.88	J-9111	13.06	459.15	7,574.77
J-9111	1,508.80	1,674.71	J-9111	20	475.16	1,674.71
J-9112	1,507.55	1,277.64	J-9112	20	483.16	1,277.64
J-9113	1,504.59	5,596.06	J-9113	20	490.16	5,596.08
J-9114	1,506.21	7,789.12	J-9114	20	472.46	7,789.15
J-9115	1,504.08	7,053.88	J-9115	20	470.66	7,054.00
J-9116	1,503.16	7,127.92	J-9116	20	461.16	7,128.04
J-9117	1,508.10	2,352.72	J-9117	20	456.16	2,352.76
J-9118	1,505.34	5,477.82	J-9117	20	456.15	5,477.77
J-9119	1,507.05	6,148.41	J-9119	20	446.16	6,148.41
J-912	1,500.28	12,142.24	J-5029	-3.77	586.3	9,292.84

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-9120	1,510.33	6,105.10	J-9120	20	500.66	6,105.10
J-9121	1,507.70	6,322.89	J-9121	20	519.16	6,323.03
J-9122	1,503.10	7,187.58	J-9122	20	524.16	7,187.95
J-9123	1,507.89	5,256.68	J-9105	19.13	521.16	5,204.10
J-9124	1,502.65	7,399.48	J-9124	20	525.16	7,399.59
J-9125	1,501.57	5,803.28	J-9125	20	526.16	5,803.28
J-9126	1,505.33	5,380.77	J-9127	19.13	526.16	5,324.08
J-9127	1,505.19	3,394.09	J-9127	20	528.16	3,394.72
J-9128	1,502.60	3,756.39	J-9128	20	521.16	3,756.39
J-9129	1,503.63	7,991.31	J-9129	20	523.16	7,991.34
J-9130	1,508.97	4,632.47	J-9130	20	511.16	4,632.48
J-9131	1,504.64	3,266.41	J-9131	20	515.66	3,266.87
J-9132	1,500.01	7,892.61	J-9907	20	511.16	7,892.64
J-9133	1,503.78	3,488.05	J-9232	20	526.16	3,488.54
J-9134	1,500.77	7,317.33	J-584	6.45	504.88	6,189.47
J-9135	1,500.01	7,629.87	J-584	6.36	504.68	6,483.81
J-9136	1,500.00	7,676.17	J-584	6.51	505.02	6,541.38
J-9137	1,500.01	7,820.19	J-584	7.95	508.34	6,793.95
J-9138	1,502.29	4,774.84	J-9138	20	491.16	4,774.94
J-9139	1,502.30	5,418.44	J-9139	20	494.16	5,418.45
J-9140	1,502.30	8,689.19	J-584	10.36	513.92	7,892.15
J-9141	1,500.00	8,987.57	J-584	5.9	503.61	7,840.00
J-9142	1,501.53	9,073.78	J-584	7.17	506.55	8,001.41
J-9143	1,500.01	8,942.98	J-584	18.64	533.03	8,810.28
J-9144	1,500.00	9,069.75	J-584	18.95	533.72	8,965.18
J-9145	1,504.46	4,011.24	J-9145	20	528.16	4,011.25
J-9146	1,505.49	5,264.25	J-9146	20	532.16	5,264.25
J-9147	1,500.53	5,498.06	J-9146	17.62	526.66	5,336.70
J-9148	1,501.67	8,688.36	J-9148	20	528.16	8,688.36
J-9149	1,507.89	4,549.27	J-9149	20	518.16	4,549.27
J-9150	1,503.95	5,676.85	J-9149	19.31	516.56	5,632.61
J-9151	1,502.79	9,471.87	J-9151	20	507.96	9,472.05
J-9152	1,501.73	9,503.78	J-9152	20	508.46	9,503.78
J-9153	1,504.89	10,326.18	J-9153	20	497.56	10,326.20
J-9154	1,505.20	6,266.87	J-9154	20	501.16	6,266.89
J-9155	1,504.14	7,122.99	J-9155	20	499.16	7,123.04
J-9156	1,504.62	6,025.55	J-9156	20	500.16	6,025.52
J-9157	1,502.84	2,907.38	J-9157	20	492.16	2,907.34
J-9158	1,503.89	6,203.34	J-9158	20	475.16	6,203.28
J-9159	1,502.54	8,808.81	J-584	10.98	515.34	8,065.81
J-9160	1,502.74	6,897.17	J-9160	20	494.16	6,897.20
J-9161	1,501.62	11,090.58	J-5029	15.53	630.84	10,578.85

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-9162	1,502.62	8,437.60	J-9162	20	461.16	8,437.62
J-9163	1,505.81	7,199.98	J-9163	20	461.16	7,200.07
J-9164	1,505.29	3,947.97	J-9164	20	461.16	3,947.97
J-9165	1,505.60	4,606.15	J-9164	20	461.16	4,606.15
J-9166	1,504.53	7,116.85	J-9164	17.4	455.16	6,975.05
J-9167	1,503.63	7,894.44	J-9167	20	453.16	7,894.50
J-9168	1,504.04	7,834.08	J-9168	20	447.16	7,834.15
J-9169	1,504.71	4,941.37	J-9169	20	448.16	4,941.33
J-917	1,504.92	2,255.67	J-4671	10.68	514.66	1,954.34
J-9170	1,507.08	5,949.26	J-9170	20	444.16	5,949.26
J-9171	1,505.43	5,650.95	J-9169	20	448.16	5,650.96
J-9172	1,505.14	1,310.92	J-9172	20	471.16	1,310.92
J-9174	1,506.92	2,987.44	J-9174	20	456.16	2,987.74
J-9175	1,502.83	4,672.12	J-9175	20	446.16	4,672.12
J-9176	1,503.85	5,470.60	J-9176	20	453.16	5,470.59
J-9177	1,501.57	6,615.67	J-9176	20	453.16	6,615.67
J-9178	1,501.60	7,406.16	J-9178	20	457.16	7,406.09
J-9179	1,501.55	7,928.16	J-9179	20	458.16	7,928.19
J-9180	1,500.44	10,722.61	J-5029	18.35	637.35	10,516.99
J-9182	1,500.83	9,673.12	J-584	-3.99	480.78	7,908.54
J-9183	1,502.33	9,117.53	J-9183	20	527.66	9,117.54
J-9188	1,501.05	4,166.12	J-9232	20	526.16	4,166.05
J-9189	1,501.82	3,638.68	J-9189	20	526.16	3,639.32
J-92	1,502.35	8,371.64	J-5029	13.14	625.31	7,202.98
J-920	1,502.12	3,993.34	J-4616	16.09	403.13	3,905.52
J-921	1,501.55	4,791.21	J-1469	11.77	413.16	4,556.21
J-922	1,501.78	6,482.77	J-922	20	392.16	6,482.78
J-923	1,501.97	4,917.72	J-923	20	367.16	4,917.73
J-9232	1,506.05	2,363.60	J-9232	20	526.16	2,363.63
J-924	1,502.46	6,321.86	J-924	20	386.16	6,321.86
J-925	1,501.99	4,552.02	J-925	20	345.16	4,552.03
J-926	1,502.27	4,186.95	J-926	20	331.16	4,187.74
J-927	1,502.26	8,352.33	J-927	20	421.56	8,352.70
J-928	1,501.55	3,452.68	J-928	20	414.16	3,453.14
J-929	1,502.13	5,037.43	J-929	20	424.36	5,037.45
J-9299	1,500.00	11,254.32	J-5029	12.83	624.6	10,493.00
J-93	1,500.73	9,595.42	J-5029	4.85	606.19	7,061.31
J-930	1,501.65	4,084.45	J-930	20	425.96	4,085.58
J-9300	1,504.23	6,767.27	J-9301	20	461.16	6,767.27
J-9301	1,503.37	5,064.71	J-9301	20	461.16	5,064.70
J-931	1,501.27	8,799.38	J-931	20	430.36	8,799.38
J-932	1,500.32	3,015.10	J-932	20	436.16	3,015.30

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-933	1,500.61	14,233.84	J-5029	4.96	606.45	11,865.19
J-934	1,503.61	4,973.14	J-934	20	426.16	4,973.15
J-935	1,502.62	1,646.28	J-935	20	361.16	1,646.28
J-936	1,503.44	4,195.61	J-936	20	416.16	4,196.93
J-937	1,501.93	7,766.11	J-937	20	431.66	7,766.44
J-938	1,504.17	3,913.78	J-938	20	428.16	3,914.81
J-939	1,500.80	7,874.01	J-940	16.1	418.86	7,705.58
J-94	1,506.04	3,860.67	J-94	20	401.16	3,861.73
J-940	1,501.19	3,958.92	J-940	20	427.86	3,959.88
J-941	1,500.65	8,297.71	J-941	20	431.86	8,298.09
J-942	1,501.17	1,062.59	J-942	20	431.46	1,062.59
J-943	1,502.86	6,533.96	J-944	11.9	426.16	6,198.32
J-944	1,500.52	1,164.68	J-944	20	444.86	1,164.68
J-945	1,505.37	4,677.67	J-945	20	436.16	4,677.67
J-946	1,500.68	3,351.73	J-946	20	391.16	3,352.25
J-947	1,503.57	1,766.20	J-947	20	358.16	1,766.20
J-948	1,501.99	5,784.55	J-1107	18.13	514.83	5,662.41
J-949	1,500.24	1,179.48	J-949	20	482.86	1,179.49
J-95	1,506.10	3,403.98	J-95	20	400.16	3,401.95
J-950	1,501.73	5,379.83	J-1107	13.72	504.66	5,024.78
J-951	1,501.04	6,312.99	J-1106	13.5	500.86	5,892.58
J-952	1,501.35	6,026.70	J-1105	14.89	502.06	5,710.19
J-953	1,501.14	5,792.34	J-953	20	509.96	5,792.34
J-954	1,502.08	6,351.27	J-956	15.28	477.96	6,093.96
J-955	1,500.61	3,123.14	J-955	20	455.36	3,123.48
J-956	1,502.85	2,096.73	J-956	20	488.86	2,096.76
J-958	1,501.39	2,276.34	J-958	20	436.16	2,276.37
J-96	1,503.38	7,454.81	J-96	20	476.16	7,454.74
J-960	1,501.34	5,544.96	J-959	16.1	423.16	5,410.25
J-961	1,501.33	6,388.45	J-961	20	426.16	6,388.44
J-962	1,500.87	4,334.74	J-963	18.27	439.16	4,284.50
J-963	1,502.42	1,361.68	J-963	20	443.16	1,361.68
J-964	1,502.03	6,618.18	J-964	20	441.16	6,618.18
J-965	1,501.08	5,129.35	J-971	19.57	419.16	5,115.85
J-966	1,502.43	4,152.45	J-971	18.7	417.16	4,120.11
J-967	1,503.19	3,467.16	J-970	17.83	371.16	3,430.82
J-969	1,500.39	2,103.53	J-969	20	353.16	2,103.53
J-97	1,500.00	11,304.42	J-5029	7.05	611.27	9,563.04
J-970	1,500.39	2,682.60	J-970	20	376.16	2,682.72
J-971	1,501.22	2,620.03	J-971	20	420.16	2,620.16
J-972	1,500.72	4,537.41	J-975	15.67	412.16	4,421.21
J-973	1,501.28	2,656.15	J-973	20	390.16	2,656.26

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
J-974	1,500.72	4,553.94	J-975	19.68	421.42	4,545.02
J-975	1,502.30	2,783.65	J-975	20	422.16	2,783.84
J-976	1,500.39	4,943.77	J-983	17.83	428.16	4,875.98
J-977	1,502.15	4,072.78	J-977	20	431.16	4,072.76
J-978	1,500.67	4,534.80	J-981	18.27	432.16	4,484.08
J-979	1,501.25	5,324.86	J-980	16.97	434.16	5,218.84
J-98	1,502.29	4,118.50	J-98	20	474.16	4,118.53
J-980	1,501.75	1,292.70	J-980	20	441.16	1,292.70
J-981	1,501.83	1,253.78	J-981	20	436.16	1,253.78
J-982	1,501.76	1,246.49	J-982	20	430.16	1,246.49
J-983	1,501.32	1,260.10	J-983	20	433.16	1,260.10
J-984	1,500.97	3,557.61	J-984	20	440.16	3,558.24
J-985	1,500.33	3,326.20	J-986	16.97	443.16	3,257.75
J-986	1,501.82	1,158.53	J-986	20	450.16	1,158.53
J-987	1,501.58	1,176.89	J-987	20	451.16	1,176.90
J-988	1,500.42	3,482.21	J-987	13.5	436.16	3,332.30
J-989	1,500.71	3,990.67	J-990	18.7	442.16	3,955.50
J-990	1,502.07	1,077.90	J-990	20	445.16	1,077.90
J-9900	1,503.85	6,196.98	J-9900	20	451.16	6,196.99
J-9903	1,503.02	5,452.92	J-9903	20	497.16	5,453.00
J-9907	1,500.00	5,543.64	J-9907	20	511.16	5,543.61
J-9908	1,500.00	5,398.96	J-9908	20	491.16	5,399.76
J-991	1,501.50	1,552.58	J-991	20	456.16	1,553.29
J-992	1,503.63	8,623.25	J-991	18.7	453.16	8,542.52
J-993	1,501.72	8,037.81	J-993	20	454.16	8,037.84
J-994	1,507.64	3,641.78	J-994	20	441.16	3,642.50
J-995	1,501.10	11,528.71	J-5029	10.14	618.41	10,099.71
J-996	1,500.26	11,974.16	J-5029	4.53	605.45	9,873.48
J-997	1,500.71	8,693.13	J-997	20	429.16	8,693.14
J-998	1,500.64	3,665.01	J-998	20	421.16	3,665.52
J-999	1,502.17	5,497.80	J-999	20	428.16	5,497.80
PRV-3-IN	1,507.12	7,342.22	J-5029	8.61	614.88	5,203.80
PRV-3-OUT	1,512.47	4,499.18	J-6505	19.08	416.03	4,477.03
PRV-3617-OUT	1,505.60	6,837.42	PRV-3617-OUT	20	416.16	6,833.56
PRV-4-IN	1,511.96	6,858.80	PRV-4-IN	20	336.16	6,858.80
PRV-4145-IN	1,500.42	3,525.34	PRV-4145-IN	20	428.16	3,525.34
PRV-4145-OUT	1,501.69	4,110.00	PRV-4145-OUT	20	428.16	4,110.48
PRV-4396-IN	1,502.48	2,461.74	PRV-4396-OUT	20	416.16	1,502.48
PRV-4396-OUT	1,502.30	2,251.38	PRV-4396-OUT	20	416.16	2,251.40
PRV-6-IN	1,504.94	9,512.68	PRV-6-IN	20	346.16	9,512.56
PRV-6-OUT	1,501.20	7,084.96	J-4624	19.6	338.23	7,073.04

ID	Total Demand (gpm)	Available Flow at Hydrant (gpm)	Critical Node ID	Critical Node Pressure (psi)	Critical Node Head (ft)	Design Flow (gpm)
10	1,505.58	4,333.39	J-4614	4.96	464.45	3,733.71
6000	1,507.29	4,725.83	J-5029	17.01	634.25	4,094.61
6001	1,510.07	4,569.63	J-5029	17.76	635.98	4,097.71
6002	1,513.34	4,611.48	J-5029	17.56	635.53	4,097.45
6003	1,502.35	4,828.38	J-5029	16.42	632.89	4,073.90
6004	1,512.26	5,072.86	J-5029	14.79	629.13	4,005.79
6005	1,508.85	4,643.47	J-5029	17.37	635.09	4,090.32
6006	1,505.99	3,519.84	6006	20	461.16	3,519.84
6007	1,504.86	7,697.88	J-5029	-6.79	579.34	3,886.09
6008	1,500.00	7,510.03	J-5029	-6.61	579.75	3,762.32
6009	1,502.15	6,045.04	J-5029	7.32	611.89	3,756.72
6010	1,503.43	4,868.48	J-5029	14.14	627.63	3,755.00
6011	1,503.88	5,608.56	J-5029	10	618.08	3,760.39
6012	1,502.50	5,361.99	J-5029	11.39	621.28	3,761.45
6013	1,505.73	5,496.85	J-5029	10.64	619.56	3,764.44
6014	1,502.42	4,945.50	J-5029	13.77	626.79	3,764.41
6015	1,502.61	4,810.10	J-5029	14.55	628.58	3,766.96
6017	1,502.23	5,043.24	J-5029	13.32	625.73	3,776.11
CMF-1	1,505.75	4,447.65	J-5029	11.87	622.38	3,056.85
CMF-2	1,500.00	4,334.68	J-5029	12.56	623.99	3,051.09
CMF-3	1,500.00	3,980.59	J-5029	14.83	629.22	3,051.10
CMF-6	1,500.00	3,763.77	J-5029	16.15	632.27	3,051.09
CMF-7	1,500.02	3,601.07	J-5029	17.11	634.49	3,051.11
CMF-8	1,500.00	3,487.50	J-5029	17.76	635.98	3,051.09
CMF-9	1,500.00	3,257.76	J-5029	19.01	638.86	3,051.10
J-1	1,500.80	6,244.97	J-5029	-0.61	593.59	3,118.03
J-100	1,502.06	6,930.80	J-5029	-7.92	576.72	3,053.22
J-1000	1,501.07	6,772.78	J-5029	11.2	620.84	5,124.08
J-10000	1,504.04	5,740.69	J-5029	18.03	636.61	5,165.78
J-1001	1,507.42	8,057.12	J-5029	0.72	596.66	5,130.68
J-1002	1,507.52	7,721.65	J-5029	4.48	605.33	5,182.72
J-1003	1,500.86	8,611.99	J-5029	-5.64	581.98	5,086.71
J-1004	1,500.59	9,373.37	J-5029	-14.27	562.06	5,068.02
J-1005	1,500.21	9,438.07	J-5029	-15.11	560.13	5,059.00
J-1006	1,501.06	9,497.24	J-5029	-15.38	559.51	5,098.35
J-1007	1,500.62	9,426.67	J-5029	-14.73	561.01	5,083.36
J-1008	1,501.06	9,509.89	J-5029	-15.83	558.47	5,068.06
J-1009	1,501.39	3,615.13	J-1009	20	436.16	3,615.13
J-101	1,505.33	5,135.23	J-5029	7.31	611.87	3,055.80
J-1010	1,503.25	3,774.54	J-1010	20	444.16	3,774.54
J-1011	1,503.53	3,875.51	J-1011	20	431.16	3,875.51
J-1012	1,501.23	9,551.13	J-5029	-17.09	555.55	4,994.43

J-1013	1,502.13	3,998.60	J-1013	20	431.16	3,998.58
J-1014	1,501.16	10,054.49	J-5029	-23.17	541.52	4,978.65
J-1015	1,508.69	8,359.05	J-5029	-3.63	586.63	5,001.18
J-1016	1,505.61	3,232.72	J-1016	20	377.16	3,232.73
J-1017	1,501.98	9,780.89	J-5029	-20.22	548.33	4,956.55
J-1018	1,502.10	7,294.23	J-5029	6.03	608.92	4,914.73
J-1020	1,502.15	8,324.34	J-5029	-4.07	585.6	4,912.72
J-1021	1,502.16	8,007.98	J-5029	-0.58	593.67	4,914.93
J-1022	1,501.66	3,744.61	J-1022	20	386.16	3,744.61
J-1023	1,502.20	8,358.70	J-5029	-5.38	582.59	4,819.00
J-1024	1,500.78	6,720.56	J-5029	9.52	616.97	4,771.97
J-1025	1,504.41	9,862.40	J-5029	-22.52	543.02	4,851.13
J-1026	1,503.88	7,379.21	J-5029	5.19	606.97	4,891.23
J-1027	1,501.17	8,109.90	J-5029	-1.82	590.8	4,901.08
J-1028	1,505.01	4,041.18	J-1028	20	462.16	4,041.18
J-1029	1,501.34	7,074.08	J-5029	8.33	614.24	5,005.87
J-103	1,500.65	6,417.07	J-5029	-2.47	589.3	3,053.78
J-1030	1,502.51	4,013.10	J-1030	20	449.16	4,013.11
J-1031	1,508.21	4,649.93	J-1031	20	456.16	4,649.93
J-1032	1,503.79	7,273.21	J-5029	7.87	613.16	5,163.58
J-1033	1,508.36	8,551.60	J-5029	-4.37	584.91	5,129.33
J-1034	1,502.14	3,515.15	J-1034	20	466.16	3,515.19
J-1035	1,504.97	8,911.18	J-5029	-8.22	576.03	5,137.53
J-1036	1,503.42	2,816.16	J-1036	20	458.16	2,816.16
J-1037	1,503.79	4,308.80	J-1037	20	441.16	4,308.80
J-1038	1,509.44	9,137.37	J-5029	-10.3	571.23	5,179.03
J-1039	1,506.39	3,968.71	J-1039	20	453.16	3,968.71
J-104	1,504.53	1,851.60	J-104	20	556.16	1,851.60
J-1040	1,505.73	7,301.46	J-5029	7.89	613.21	5,210.55
J-1041	1,508.57	4,328.35	J-1041	20	451.16	4,328.35
J-1042	1,505.07	6,318.01	J-5029	14.9	629.39	5,268.09
J-1043	1,503.44	6,190.56	J-5029	15.78	631.42	5,304.37
J-1044	1,501.99	7,327.77	J-5029	8.61	614.87	5,380.40
J-1045	1,501.16	6,014.30	J-5029	17.14	634.55	5,430.27
J-1046	1,501.47	5,202.20	J-1047	14.36	453.15	4,993.42
J-1047	1,508.00	1,349.98	J-1047	20	466.16	1,349.98
J-1048	1,505.60	1,122.24	J-1048	20	452.16	1,122.24
J-1049	1,502.00	4,395.06	J-1050	19.57	458.16	4,381.42
J-105	1,500.79	6,976.64	J-5029	8.62	614.9	4,864.72
J-1050	1,502.10	1,135.62	J-1050	20	459.16	1,135.62
J-1051	1,502.15	3,747.89	J-1052	18.48	468.16	3,704.96
J-1052	1,501.68	1,060.17	J-1052	20	471.66	1,060.17
J-1053	1,506.24	2,972.78	J-1054	18.35	475.64	2,933.31
J-1055	1,502.88	4,074.37	J-1055	20	468.76	4,074.38
J-1056	1,503.43	3,128.32	J-1056	20	465.46	3,128.31
J-1057	1,504.59	3,679.45	J-1057	20	491.16	3,679.45
J-1059	1,503.76	4,010.97	J-1059	20	491.66	4,010.97

J-106	1,533.51	6,156.28	J-5029	14.71	628.95	4,896.68
J-1061	1,501.05	1,385.43	J-1061	20	492.86	1,385.43
J-1062	1,504.12	8,318.04	J-5029	3.18	602.33	5,633.57
J-1063	1,503.05	8,223.68	J-5029	4.36	605.06	5,651.53
J-1064	1,502.35	1,908.21	J-1064	20	482.56	1,908.76
J-1065	1,505.98	4,278.29	J-1066	16.53	468.65	4,163.94
J-1066	1,509.29	1,677.54	J-1066	20	476.66	1,677.72
J-1067	1,501.53	4,239.20	J-4539	4.26	491.83	3,600.47
J-1068	1,503.03	3,939.95	J-4539	13.47	513.09	3,660.72
J-107	1,500.50	11,982.81	J-5029	-24.75	537.88	6,149.97
J-1078	1,507.57	1,116.47	J-1078	20	501.16	1,116.47
J-1079	1,513.02	6,837.64	J-5029	14.17	627.71	5,702.56
J-108	1,501.28	6,112.76	J-108	20	422.16	6,112.77
J-1080	1,500.92	3,088.63	J-1082	20	496.16	3,088.63
J-1081	1,505.07	2,983.91	J-1081	20	506.66	2,983.91
J-1082	1,502.48	1,805.40	J-1082	20	496.16	1,805.50
J-1083	1,501.43	5,078.50	J-1083	20	481.86	5,078.50
J-1084	1,501.61	5,584.49	J-1084	20	483.76	5,584.49
J-1085	1,500.60	6,306.09	J-5029	17.09	634.44	5,711.42
J-1086	1,501.96	2,757.25	J-1086	20	482.46	2,757.25
J-1087	1,500.72	6,012.40	J-5029	18.7	638.15	5,761.43
J-1088	1,500.69	6,156.98	J-5029	18.02	636.59	5,762.15
J-1089	1,501.08	5,844.08	J-1090	17.27	491.86	5,718.86
J-109	1,502.09	6,551.83	J-5029	0.61	596.41	3,680.52
J-1090	1,501.69	2,357.21	J-1090	20	498.16	2,357.21
J-1091	1,501.01	2,568.09	J-1091	20	486.76	2,568.10
J-1093	1,502.23	5,698.06	J-1092	18.74	488.06	5,644.45
J-1094	1,500.15	6,693.56	J-5029	16.45	632.97	5,937.69
J-1095	1,500.15	5,689.14	J-1096	18.61	495.16	5,627.71
J-1097	1,500.21	5,471.87	J-1098	19.61	494.76	5,455.50
J-1098	1,501.06	3,122.78	J-1098	20	495.66	3,122.78
J-1099	1,500.44	5,403.27	J-1100	18.01	498.86	5,318.33
J-1100	1,500.91	1,854.82	J-1100	20	503.46	1,854.99
J-1101	1,500.78	1,963.87	J-1101	20	506.46	1,964.30
J-1102	1,500.29	5,452.40	J-1101	18.05	501.96	5,366.48
J-1103	1,500.61	5,546.96	J-1104	16.92	505.46	5,404.42
J-1104	1,500.91	1,819.60	J-1104	20	512.56	1,819.77
J-1105	1,502.16	1,761.48	J-1105	20	513.86	1,761.56
J-1106	1,501.68	1,686.69	J-1106	20	515.86	1,686.69
J-1107	1,502.04	2,155.72	J-1107	20	519.16	2,156.80
J-1109	1,503.60	7,349.52	J-5029	14.91	629.41	6,275.38
J-1110	1,501.13	5,438.57	J-1111	15.88	497.66	5,268.62
J-1111	1,502.24	1,536.30	J-1111	20	507.16	1,536.61
J-1114	1,501.86	1,458.07	J-1114	20	506.66	1,458.61
J-1115	1,501.05	3,731.20	J-1114	18.27	502.66	3,671.90
J-112	1,503.93	8,133.10	J-5029	-12.61	565.89	3,982.13
J-1125	1,500.78	9,820.37	J-5029	2.22	600.13	6,634.02

J-1126	1,501.94	616.96	J-1126	20	510.66	616.96
J-1127	1,507.01	497.27	J-1127	20	515.16	497.27
J-1128	1,500.89	2,470.88	J-1128	20	504.66	2,471.03
J-1129	1,504.90	2,418.40	J-1129	20	503.96	2,418.52
J-113	1,510.48	4,622.41	J-5029	10.86	620.07	3,127.72
J-1130	1,501.38	2,437.71	J-1130	20	507.56	2,437.89
J-1131	1,501.81	3,133.32	J-1130	16.97	500.56	3,044.02
J-1132	1,500.65	2,303.78	J-1132	20	511.16	2,303.87
J-1133	1,503.14	2,306.50	J-1133	20	513.16	2,306.64
J-1134	1,506.52	3,331.59	J-1134	20	514.66	3,331.59
J-1135	1,505.19	2,504.55	J-1135	20	458.16	2,504.55
J-1136	1,504.49	5,738.20	J-5029	17.77	636	5,143.88
J-1137	1,505.39	2,496.83	J-1137	20	461.16	2,496.83
J-1138	1,507.69	4,440.61	J-1139	19.13	462.16	4,412.32
J-1139	1,507.84	2,702.40	J-1139	20	464.16	2,702.40
J-114	1,510.37	4,228.82	J-5029	13.48	626.11	3,127.62
J-1140	1,507.62	5,182.17	J-5029	19.84	640.79	5,139.26
J-1141	1,510.05	2,391.14	J-1141	20	466.16	2,391.14
J-1142	1,504.84	4,631.10	J-1142	20	468.16	4,631.09
J-1143	1,505.37	3,360.95	J-1144	19.35	479.66	3,343.38
J-1144	1,501.77	2,388.67	J-1144	20	481.16	2,388.67
J-1145	1,505.39	1,892.04	J-1145	20	471.16	1,892.03
J-1146	1,508.78	3,327.81	J-1146	20	491.16	3,327.70
J-1147	1,508.24	6,272.87	J-5029	13.37	625.86	4,870.52
J-1148	1,505.21	3,350.60	J-1148	20	486.16	3,350.56
J-1149	1,500.87	5,302.04	J-5029	18.34	637.32	4,893.87
J-115	1,506.81	1,987.80	J-584	3	496.93	1,566.72
J-1150	1,500.75	6,682.80	J-5029	10.34	618.87	4,853.28
J-1151	1,501.69	1,236.26	J-1151	20	476.16	1,236.26
J-1152	1,502.86	2,712.32	J-1152	20	464.16	2,712.32
J-1153	1,503.21	1,381.75	J-1153	20	436.16	1,381.75
J-1154	1,500.76	7,342.22	J-5029	4.5	605.37	4,761.43
J-1155	1,502.13	2,567.48	J-1155	20	461.16	2,567.50
J-1156	1,502.85	5,945.30	J-5029	14.41	628.25	4,681.09
J-1157	1,501.02	2,303.39	J-1157	20	481.16	2,303.42
J-1159	1,501.69	1,715.79	J-1159	20	478.16	1,715.78
J-116	1,512.25	4,588.68	J-5029	11.1	620.62	3,129.50
J-1160	1,500.13	3,866.95	J-1161	19.13	476.16	3,840.61
J-1161	1,501.67	1,426.25	J-1161	20	478.16	1,426.25
J-1162	1,501.88	1,675.17	J-1162	20	485.16	1,675.17
J-1163	1,500.66	6,448.12	J-5029	10.65	619.59	4,630.18
J-1164	1,501.65	1,318.82	J-1164	20	481.16	1,318.97
J-1165	1,501.01	1,187.68	J-1165	20	491.16	1,187.68
J-1166	1,501.36	6,264.68	J-5029	12.66	624.23	4,737.60
J-1167	1,501.62	5,335.64	J-5029	17.46	635.3	4,734.27
J-1168	1,503.13	3,206.64	J-1168	20	499.66	3,206.64
J-1169	1,502.46	3,204.98	J-1169	20	507.16	3,204.98

J-117	1,506.18	4,735.84	J-5029	10.1	618.3	3,123.43
J-1170	1,501.08	6,080.40	J-5029	13.93	627.16	4,716.11
J-1171	1,501.48	5,117.27	J-5029	18.3	637.23	4,716.51
J-1172	1,502.15	3,399.24	J-1172	20	481.16	3,399.25
J-1173	1,500.75	8,654.39	J-5029	-10.85	569.97	4,641.44
J-118	1,513.16	3,714.36	J-5029	16.73	633.61	3,130.40
J-1189	1,505.64	3,115.72	J-1189	20	491.16	3,115.71
J-119	1,509.36	4,120.71	J-5029	14.17	627.71	3,126.61
J-121	1,501.63	8,108.47	J-5029	4.42	605.19	5,982.64
J-122	1,507.59	4,461.60	J-123	19.57	402.16	4,451.39
J-123	1,508.52	4,031.02	J-123	20	403.16	4,031.01
J-124	1,505.12	4,142.43	J-124	20	402.16	4,142.42
J-125	1,501.55	3,585.70	J-125	20	401.16	3,585.70
J-126	1,501.60	6,711.85	J-584	8.05	508.57	5,961.81
J-127	1,500.77	9,553.14	J-5029	-13.25	564.42	5,385.54
J-1271	1,501.01	1,902.03	J-1271	20	539.16	1,902.03
J-128	1,507.52	4,076.29	J-3909	20	400.16	4,076.28
J-129	1,506.10	4,538.53	J-129	20	426.16	4,538.53
J-130	1,501.04	9,318.66	J-5029	-11.1	569.39	5,342.37
J-1306	1,501.20	2,035.18	J-1306	20	499.16	2,035.17
J-131	1,503.24	7,044.90	J-5029	10.14	618.41	5,304.75
J-132	1,504.24	5,115.89	J-3910	20	402.16	5,115.88
J-133	1,506.26	7,167.33	J-5029	9.35	616.59	5,322.46
J-1338	1,506.75	1,243.59	J-1342	19.55	528.12	1,235.27
J-134	1,509.78	5,314.08	J-134	20	426.16	5,314.09
J-135	1,502.21	4,416.81	J-136	20	426.16	4,416.81
J-136	1,503.96	3,776.68	J-136	20	426.16	3,776.68
J-137	1,501.87	4,714.15	J-975	19.13	420.15	4,690.04
J-138	1,502.69	3,782.86	J-138	20	381.16	3,782.86
J-139	1,507.17	5,419.22	J-139	20	496.16	5,419.19
J-1393	1,502.11	6,944.24	J-5029	14.63	628.76	5,919.70
J-1396	1,503.79	2,972.02	J-1396	20	512.16	2,972.02
J-1397	1,503.35	2,863.29	J-1397	20	502.16	2,863.29
J-1398	1,505.03	2,033.41	J-1398	20	494.16	2,033.44
J-1400	1,503.28	6,076.13	J-5029	17.77	636.02	5,487.41
J-1402	1,503.79	5,398.05	J-1403	18.05	486.66	5,305.33
J-1404	1,501.46	4,323.68	J-1405	17.62	481.65	4,235.70
J-1406	1,501.90	3,498.91	J-1409	13.71	471.65	3,326.50
J-1408	1,505.07	1,694.53	J-1409	13.5	471.16	1,607.36
J-1409	1,503.13	1,544.90	J-1409	20	486.16	1,545.38
J-1416	1,508.52	1,344.58	J-1416	20	496.66	1,344.58
J-1417	1,506.62	1,800.77	J-1417	20	504.16	1,800.95
J-1418	1,506.82	667.72	J-1418	20	499.66	667.96
J-1422	1,505.77	4,462.15	J-1422	20	456.16	4,462.16
J-1427	1,508.22	4,689.86	J-1427	20	458.16	4,689.77
J-143	1,502.68	8,537.94	J-5029	12.42	623.66	6,875.53
J-1434	1,500.63	3,878.21	J-1434	20	476.16	3,878.19

J-1435	1,502.26	1,325.01	J-1435	20	473.16	1,325.01
J-1436	1,500.93	7,307.17	J-5029	4.76	605.98	4,757.27
J-1437	1,503.68	2,951.84	J-1437	20	461.16	2,951.85
J-1438	1,504.57	6,904.83	J-5029	10.07	618.25	5,077.24
J-1439	1,501.43	4,631.85	J-1439	20	448.16	4,631.83
J-144	1,502.25	7,433.20	J-5029	16.58	633.27	6,647.65
J-1447	1,501.49	4,717.97	J-1447	20	438.16	4,717.97
J-1448	1,501.75	4,613.00	J-1448	20	427.16	4,613.00
J-1449	1,503.74	1,993.66	J-1449	20	430.16	1,993.66
J-145	1,509.37	7,073.72	J-5029	17.88	636.26	6,605.17
J-1450	1,502.07	2,142.16	J-1450	20	434.16	2,142.16
J-1451	1,502.51	5,868.35	J-5029	17.67	635.77	5,395.88
J-1454	1,505.84	1,139.99	J-1454	20	496.16	1,140.17
J-1456	1,502.42	5,764.25	J-5029	18.73	638.23	5,422.12
J-1458	1,503.38	1,402.82	J-1459	16.52	518.13	1,333.01
J-146	1,505.59	7,973.78	J-5029	13.36	625.84	6,557.19
J-1469	1,502.95	3,140.24	J-1469	20	432.16	3,140.24
J-1473	1,500.60	2,591.59	J-944	17.53	439.16	2,550.54
J-1474	1,500.62	3,448.08	J-630	19.57	405.16	3,439.88
J-1475	1,501.67	1,517.61	J-633	17.3	249.93	1,504.35
J-1476	1,501.69	7,358.26	J-5029	8	613.46	5,330.23
J-1477	1,511.94	1,474.04	J-4709	17.17	517.62	1,413.73
J-1478	1,510.17	803.51	J-1478	20	511.16	803.66
J-1479	1,517.59	1,430.45	J-1479	20	516.16	1,430.45
J-1485	1,500.78	2,589.70	J-1485	20	506.46	2,589.70
J-1488	1,502.07	6,792.06	J-5029	11.49	621.51	5,199.60
J-149	1,502.31	6,975.14	J-5029	18.12	636.83	6,565.06
J-1490	1,504.61	3,185.25	J-1490	20	431.16	3,185.26
J-1491	1,503.24	6,709.90	J-5029	12.05	622.8	5,195.89
J-1494	1,502.57	3,790.36	J-1494	20	441.16	3,790.35
J-1495	1,503.19	3,931.43	J-1495	20	399.16	3,931.43
J-1496	1,501.76	8,080.34	J-5029	-1.49	591.55	4,901.27
J-1499	1,501.58	2,250.22	J-42	17.83	455.16	2,215.59
J-150	1,509.91	6,305.44	J-150	20	466.16	6,305.42
J-1500	1,503.36	2,251.90	J-4671	1.99	494.6	1,761.64
J-1505	1,509.32	1,602.54	J-4671	19.36	534.68	1,584.77
J-1506	1,501.48	2,408.45	J-969	20	353.16	2,408.45
J-1508	1,501.71	1,676.68	J-1508	20	504.06	1,676.68
J-1509	1,501.01	9,986.88	J-5029	-19.18	550.74	5,267.51
J-151	1,501.68	6,447.48	J-151	20	481.16	6,447.45
J-1512	1,507.01	6,454.25	J-5029	14.37	628.17	5,346.75
J-152	1,500.86	6,209.50	J-152	20	476.16	6,209.50
J-154	1,501.46	1,382.75	J-154	20	466.16	1,382.75
J-155	1,501.59	5,446.81	J-5029	16.92	634.06	4,728.44
J-156	1,500.12	9,492.18	J-5029	-20.56	547.56	4,669.37
J-157	1,501.59	9,510.04	J-5029	-21.21	546.05	4,637.56
J-158	1,501.83	8,179.89	J-5029	-2.42	589.41	4,918.78

J-159	1,503.38	9,904.30	J-5029	-21.99	544.25	4,928.02
J-1599	1,505.64	4,192.16	J-1599	20	454.16	4,192.16
J-160	1,506.00	3,084.27	J-160	20	426.16	3,084.28
J-1601	1,500.51	5,936.48	J-5029	15.75	631.35	4,852.59
J-1602	1,503.24	4,897.30	J-5029	19.89	640.89	4,870.86
J-161	1,507.70	7,080.20	J-5029	11.48	621.49	5,494.14
J-1615	1,500.01	9,003.22	J-5029	-12.16	566.94	4,867.18
J-162	1,508.73	5,960.42	J-5029	18.24	637.08	5,493.79
J-163	1,519.69	5,254.06	J-163	20	439.16	5,254.05
J-164	1,513.39	6,571.64	J-5029	15.78	631.41	5,500.63
J-165	1,503.61	5,969.12	J-5029	18.17	636.94	5,486.75
J-166	1,512.75	5,643.23	J-5029	19.45	639.88	5,495.01
J-1666	1,507.86	6,438.66	J-5029	12.65	624.21	4,879.23
J-1667	1,503.93	6,088.06	J-5029	14.98	629.58	4,880.58
J-1669	1,505.10	10,124.14	J-5029	-22.61	542.83	5,074.51
J-167	1,525.51	5,842.80	J-5029	18.75	638.27	5,506.99
J-1677	1,500.01	5,572.51	J-5029	17.42	635.2	4,890.48
J-1678	1,500.00	5,946.94	J-5029	15.9	631.7	4,892.67
J-168	1,508.78	5,955.71	J-5029	18.25	637.13	5,493.88
J-169	1,502.02	7,743.19	J-5029	4.94	606.41	5,299.00
J-17	1,508.05	9,370.60	J-5029	-15.57	559.06	4,943.52
J-170	1,523.91	5,811.31	J-5029	18.86	638.53	5,507.64
J-171	1,503.43	2,790.25	J-171	20	454.16	2,790.25
J-172	1,504.96	7,821.77	J-5029	7.13	611.45	5,989.38
J-173	1,515.23	7,996.87	J-5029	5.62	607.98	5,998.50
J-174	1,507.77	8,093.73	J-5029	4.67	605.79	5,994.23
J-177	1,501.43	6,658.07	J-5029	11	620.4	4,942.51
J-178	1,500.79	5,788.06	J-5029	9.59	617.12	3,817.73
J-179	1,506.39	4,197.43	J-4614	6.59	468.21	3,671.96
J-18	1,501.64	8,879.90	J-5029	-9.36	573.4	5,006.58
J-180	1,517.28	3,781.59	J-180	20	446.16	3,781.59
J-182	1,504.22	3,419.88	J-182	20	418.16	3,419.88
J-183	1,504.28	4,097.46	J-4614	7.11	469.4	3,600.49
J-185	1,500.83	4,195.93	J-4901	-6.88	400.12	3,445.83
J-19	1,500.10	9,452.10	J-5029	-14.77	560.91	5,108.24
J-1900	1,506.27	7,121.85	J-5029	19.95	641.05	7,113.34
J-1901	1,502.09	1,876.78	J-1901	20	476.16	1,876.78
J-1902	1,503.95	5,020.11	J-1902	20	518.16	5,020.21
J-1903	1,502.18	707.03	J-1903	20	477.16	707.03
J-1904	1,501.93	4,172.58	J-1907	16.53	516.16	4,026.05
J-1905	1,503.92	3,672.30	J-1905	20	509.16	3,672.31
J-1906	1,500.96	3,125.61	J-1907	16.1	515.16	3,003.07
J-1907	1,503.49	2,291.34	J-1907	20	524.16	2,291.35
J-1930	1,500.68	6,336.36	J-5029	19.56	640.14	6,246.73
J-1942	1,500.78	4,697.06	J-1907	16.53	516.16	4,531.88
J-1943	1,504.19	4,191.67	J-1943	20	516.16	4,192.40
J-1944	1,502.31	4,075.86	J-1944	20	516.16	4,077.49

J-2	1,504.00	5,392.50	J-5029	5.62	607.96	3,121.24
J-20	1,512.73	3,472.98	J-5029	19.88	640.89	3,452.24
J-21	1,503.88	1,520.90	J-5029	15.68	631.19	966.73
J-23	1,507.95	3,368.78	J-23	20	351.16	3,368.78
J-2300	1,501.50	9,836.45	J-5029	-22.62	542.8	4,820.76
J-2301	1,505.91	1,288.04	J-2301	20	466.16	1,288.11
J-24	1,505.77	3,002.38	J-24	20	341.16	3,002.38
J-2400	1,502.50	6,339.19	J-5029	11.37	621.24	4,625.50
J-2401	1,502.67	6,877.98	J-5029	7.09	611.36	4,605.11
J-2402	1,501.40	6,110.06	J-5029	12.9	624.78	4,616.23
J-2403	1,500.44	5,099.95	J-5029	17.84	636.18	4,615.28
J-25	1,506.55	2,895.24	J-25	20	336.16	2,895.24
J-27	1,507.60	2,852.65	J-27	20	336.16	2,852.65
J-28	1,507.38	3,014.12	J-28	20	341.16	3,014.12
J-3	1,506.40	4,637.61	J-5029	10.76	619.83	3,123.64
J-30	1,508.73	3,234.26	J-30	20	351.16	3,234.26
J-3006	1,500.46	7,665.56	J-5029	-7.16	578.48	3,839.75
J-3007	1,500.38	7,453.44	J-5029	-4.72	584.1	3,839.67
J-3008	1,500.52	6,677.99	J-5029	2.8	601.46	3,839.81
J-3009	1,500.81	5,174.86	J-5029	13.11	625.26	3,840.10
J-3011	1,505.99	1,470.65	J-3267	16.23	514.46	1,392.83
J-3012	1,503.54	3,276.08	J-3012	20	496.16	3,276.08
J-3013	1,505.00	2,800.75	J-3013	20	506.16	2,801.40
J-3015	1,501.69	1,408.12	J-3015	20	516.16	1,408.12
J-3016	1,508.38	1,387.03	J-3265	14.23	510.84	1,279.00
J-3020	1,502.45	1,863.96	J-5029	11.18	620.81	959.67
J-3021	1,500.98	1,786.70	J-5029	12.33	623.45	961.7
J-3028	1,502.54	7,374.80	J-5029	-3.43	587.07	3,866.21
J-3029	1,506.59	2,366.18	J-3029	20	471.16	2,366.18
J-3030	1,517.56	6,435.72	J-5029	5.33	607.31	3,866.97
J-3031	1,512.59	6,730.62	J-5029	2.58	600.96	3,858.25
J-3033	1,500.01	6,936.38	J-5029	0.58	596.34	3,849.34
J-3034	1,503.78	7,760.08	J-5029	-7.92	576.72	3,864.78
J-3035	1,508.97	7,813.17	J-5029	-8.56	575.24	3,868.33
J-3036	1,503.10	7,799.85	J-5029	-8.45	575.49	3,863.10
J-3037	1,528.58	7,450.72	J-5029	-4.06	585.62	3,883.78
J-3038	1,513.98	7,107.45	J-5029	-0.83	593.09	3,871.85
J-3039	1,509.84	7,540.24	J-5029	-5.15	583.11	3,869.51
J-3040	1,502.45	7,807.73	J-5029	-8.57	575.21	3,863.19
J-3041	1,500.01	7,992.28	J-5029	-10.91	569.82	3,865.71
J-3042	1,502.07	6,921.24	J-5029	0.83	596.91	3,858.58
J-3043	1,509.51	4,423.49	J-4614	3.49	461.06	3,763.09
J-3044	1,508.82	4,085.60	J-5029	18.71	638.19	3,830.59
J-3045	1,500.00	4,225.45	J-5029	17.95	636.44	3,821.08
J-3046	1,510.34	6,457.57	J-5029	5.12	606.83	3,864.36
J-3047	1,500.00	7,822.27	J-5029	7.03	611.22	5,981.04
J-3048	1,501.64	7,177.79	J-5029	12.84	624.62	5,982.68

J-3049	1,502.41	8,080.37	J-5029	4.68	605.81	5,983.51
J-3050	1,502.47	8,389.32	J-5029	1.81	599.17	5,983.54
J-3051	1,501.64	8,195.14	J-5029	3.62	603.35	5,982.72
J-3052	1,501.63	7,470.54	J-5029	10.23	618.61	5,982.71
J-3053	1,500.81	6,872.31	J-5029	15.52	630.82	5,981.88
J-3054	1,500.00	1,864.21	J-5029	11.17	620.78	958.14
J-3055	1,500.01	1,608.83	J-5029	14.51	628.49	955.6
J-3060	1,500.47	7,350.81	J-5029	12.23	623.22	6,035.93
J-3065	1,502.60	7,514.92	J-5029	10.62	619.51	6,021.95
J-3066	1,500.94	7,398.79	J-5029	12.1	622.94	6,057.56
J-3067	1,505.35	8,237.79	J-5029	3.32	602.65	5,991.25
J-3068	1,503.99	6,954.42	J-5029	14.94	629.48	5,994.46
J-3069	1,513.57	6,565.40	J-5029	17.27	634.86	6,002.81
J-3070	1,506.38	4,594.08	J-3070	20	523.16	4,594.07
J-3071	1,504.17	4,855.22	J-1405	18.26	483.15	4,780.07
J-3072	1,516.22	6,604.86	J-5029	15.62	631.05	5,495.05
J-3073	1,517.58	6,605.30	J-5029	15.63	631.07	5,498.19
J-3074	1,514.46	6,414.65	J-5029	16.37	632.78	5,484.62
J-3075	1,519.69	6,166.29	J-5029	17.42	635.19	5,491.66
J-3076	1,501.81	6,813.91	J-5029	13.96	627.22	5,487.58
J-3077	1,505.01	7,195.25	J-5029	1.59	598.67	4,247.87
J-3078	1,500.00	10,233.80	J-5029	-24.73	537.93	5,043.33
J-3079	1,500.00	9,341.20	J-5029	-20.28	548.19	4,557.36
J-3080	1,500.00	9,337.18	J-5029	-20.25	548.26	4,557.22
J-3081	1,500.00	9,342.22	J-5029	-20.2	548.39	4,565.05
J-3082	1,500.39	8,511.17	J-5029	-9.17	573.83	4,626.15
J-3083	1,504.10	4,524.43	J-5029	18.89	638.6	4,296.00
J-3084	1,513.44	4,408.61	J-5029	19.52	640.05	4,308.46
J-3085	1,508.93	4,365.60	J-5029	19.71	640.48	4,304.42
J-3086	1,520.06	4,091.27	J-3086	20	471.16	4,091.25
J-3087	1,506.13	4,894.11	J-5029	17.13	634.53	4,302.48
J-3088	1,506.09	4,705.80	J-5029	18.03	636.61	4,299.90
J-3089	1,511.89	7,723.07	J-5029	-4.15	585.41	4,177.52
J-3090	1,501.65	5,003.45	J-5029	17	634.24	4,372.86
J-3091	1,502.61	5,972.91	J-5029	12.41	623.64	4,383.12
J-3092	1,500.00	9,330.35	J-5029	-16.74	556.36	4,803.64
J-3096	1,506.66	3,743.92	J-3096	20	466.16	3,743.92
J-32	1,505.54	6,305.63	J-5029	15.19	630.07	5,327.34
J-320	1,503.16	2,560.46	J-320	20	516.16	2,560.70
J-325	1,501.50	8,246.44	J-5029	2.95	601.8	5,563.84
J-326	1,502.47	2,755.50	J-326	20	516.16	2,756.14
J-3262	1,506.30	3,123.21	J-4537	8.73	486.15	2,855.75
J-3263	1,501.25	10,579.55	J-5029	-17.91	553.67	5,740.44
J-3264	1,511.05	1,358.01	J-4709	19.11	522.11	1,340.24
J-3265	1,506.67	1,207.76	J-3265	20	524.16	1,208.18
J-3266	1,503.36	1,384.33	J-4709	19.01	521.87	1,363.74
J-3267	1,504.18	1,363.94	J-3267	20	523.16	1,363.95

J-3268	1,503.40	3,566.06	J-3268	20	497.16	3,566.04
J-327	1,503.63	3,023.08	J-327	20	501.16	3,024.36
J-328	1,502.43	4,702.07	J-328	20	506.16	4,702.07
J-3282	1,507.16	5,151.35	J-5029	7.21	611.65	3,057.11
J-3283	1,514.34	5,662.17	J-5029	3.87	603.94	3,065.31
J-3284	1,502.21	5,016.17	J-5029	8.08	613.65	3,052.75
J-3285	1,502.62	4,910.99	J-5029	8.78	615.27	3,053.14
J-3286	1,501.82	3,140.93	J-5029	19.64	640.32	3,052.35
J-3287	1,508.09	3,250.98	J-104	-1.67	506.16	2,527.60
J-3288	1,506.16	2,671.35	J-104	16.04	547.03	2,525.68
J-3289	1,504.19	3,778.53	J-3291	-1.67	516.16	2,886.11
J-329	1,501.74	6,199.78	J-5029	16.83	633.85	5,568.82
J-3290	1,503.88	3,788.44	J-3291	-1.17	517.31	2,908.97
J-3291	1,503.68	2,029.80	J-3291	20	566.16	2,029.80
J-3292	1,508.70	5,154.51	J-5029	7.2	611.62	3,059.60
J-3293	1,506.67	3,073.35	J-5029	19.93	641	3,054.52
J-3294	1,514.05	4,728.76	J-5029	10.07	618.24	3,065.11
J-3295	1,507.67	2,453.86	J-76	10.03	434.16	2,302.13
J-3296	1,508.96	6,965.04	J-5029	0.39	595.9	3,858.25
J-3297	1,503.61	6,645.48	J-5029	3.4	602.84	3,858.95
J-3298	1,538.63	6,502.61	J-5029	4.92	606.36	3,887.63
J-3299	1,511.03	4,680.86	J-5029	15.77	631.4	3,849.93
J-33	1,503.69	4,627.14	J-35	20	441.16	4,627.14
J-330	1,501.65	6,641.43	J-5029	14.37	628.16	5,564.73
J-3300	1,509.68	4,950.75	J-5029	14.37	628.15	3,848.85
J-3301	1,511.84	4,634.03	J-5029	16	631.93	3,850.49
J-3302	1,511.16	4,472.77	J-5029	16.83	633.85	3,848.88
J-3303	1,517.33	4,223.57	J-5029	18.13	636.84	3,853.73
J-3304	1,519.62	4,254.74	J-5029	17.98	636.5	3,855.73
J-3305	1,517.59	3,662.42	J-3305	20	446.16	3,662.42
J-3306	1,506.19	4,129.48	J-5029	18.56	637.84	3,845.06
J-3307	1,507.05	4,533.01	J-5029	16.5	633.08	3,844.03
J-3308	1,505.89	4,395.20	J-5029	17.2	634.69	3,842.84
J-3309	1,506.32	4,431.16	J-5029	17.01	634.26	3,842.00
J-331	1,502.84	5,342.21	J-331	20	476.16	5,341.88
J-3310	1,507.22	4,127.29	J-5029	18.57	637.87	3,844.82
J-3311	1,505.30	4,174.59	J-5029	18.32	637.29	3,842.76
J-3312	1,513.34	3,112.21	J-3312	20	435.16	3,112.20
J-3313	1,507.39	4,085.23	J-4614	12.93	482.85	3,792.46
J-3314	1,508.30	3,388.38	J-3314	20	477.16	3,388.35
J-3315	1,504.75	3,930.38	J-5029	19.48	639.95	3,826.27
J-3316	1,509.42	4,615.26	J-4614	0.5	454.15	3,822.79
J-3317	1,510.18	4,396.87	J-5029	17.15	634.58	3,834.92
J-3318	1,512.38	4,016.39	J-5029	19.1	639.07	3,837.12
J-3319	1,516.21	3,406.38	J-3319	20	419.16	3,406.38
J-332	1,502.63	7,014.35	J-5029	12.14	623.01	5,582.07
J-3320	1,512.87	4,337.87	J-4614	3.27	460.56	3,683.59

J-3321	1,515.60	4,101.52	J-4614	9.11	474.02	3,670.87
J-3322	1,514.28	4,085.17	J-4614	8.39	472.37	3,632.66
J-3323	1,507.08	4,088.05	J-4614	8.7	473.08	3,644.67
J-3324	1,503.51	4,119.42	J-4614	7.21	469.63	3,622.15
J-3325	1,519.14	3,992.08	J-4614	12.12	480.98	3,677.81
J-3326	1,508.88	4,111.29	J-4614	6.76	468.59	3,601.73
J-3327	1,504.97	5,228.21	J-5029	12.36	623.52	3,786.51
J-3328	1,504.63	4,290.95	J-5029	17.48	635.33	3,792.85
J-3329	1,503.46	4,461.67	J-5029	16.56	633.22	3,789.26
J-3330	1,502.68	5,096.38	J-5029	13.07	625.17	3,783.19
J-3331	1,500.68	8,125.94	J-5029	4.25	604.8	5,981.78
J-3332	1,517.51	8,152.63	J-5029	4.16	604.59	5,998.60
J-3333	1,511.73	8,182.92	J-5029	3.82	603.82	5,992.82
J-3334	1,508.44	7,681.18	J-5029	8.39	614.37	5,989.53
J-3335	1,507.00	7,356.84	J-5029	11.3	621.08	5,988.08
J-3336	1,507.55	7,638.01	J-5029	8.77	615.25	5,988.63
J-3337	1,506.84	7,327.81	J-5029	11.56	621.67	5,987.94
J-3338	1,500.70	8,169.65	J-5029	3.84	603.87	5,981.80
J-3339	1,500.00	8,196.98	J-5029	3.58	603.27	5,981.09
J-3340	1,501.66	8,239.12	J-5029	3.21	602.41	5,982.74
J-3341	1,501.63	3,619.39	J-3341	20	357.16	3,619.39
J-3342	1,501.62	8,482.30	J-5029	0.93	597.14	5,982.69
J-3343	1,511.84	2,201.16	J-4650	10.9	388.15	2,105.11
J-3344	1,519.78	2,037.62	J-3344	20	382.16	2,037.62
J-3345	1,504.09	8,457.86	J-5029	1.18	597.73	5,985.16
J-3346	1,504.90	8,427.18	J-5029	1.48	598.41	5,985.97
J-3347	1,501.64	8,435.80	J-5029	1.37	598.15	5,982.70
J-3348	1,500.81	8,432.39	J-5029	1.39	598.21	5,981.88
J-3349	1,501.63	7,524.62	J-5029	9.74	617.49	5,982.70
J-3350	1,502.47	8,033.12	J-5029	5.12	606.82	5,983.54
J-3351	1,501.61	8,416.36	J-5029	1.55	598.57	5,982.67
J-3352	1,503.26	7,269.09	J-5029	12.04	622.79	5,984.32
J-3353	1,500.00	7,806.63	J-5029	7.17	611.55	5,981.09
J-3354	1,509.60	5,893.21	J-5029	18.49	637.68	5,492.77
J-3355	1,506.71	6,809.38	J-5029	13.7	626.61	5,436.62
J-3356	1,523.97	5,735.56	J-5029	19.11	639.1	5,496.87
J-3357	1,519.32	5,696.75	J-5029	19.27	639.47	5,500.41
J-3358	1,500.81	7,540.40	J-5029	10.41	619.02	6,022.82
J-3359	1,500.00	7,502.03	J-5029	10.7	619.69	6,022.92
J-3360	1,500.82	7,553.14	J-5029	10.3	618.76	6,022.27
J-3361	1,502.41	7,080.19	J-5029	15.63	631.08	6,128.57
J-3362	1,500.00	7,502.14	J-5029	10.74	619.79	6,021.57
J-3363	1,500.00	7,271.57	J-5029	12.18	623.11	5,919.19
J-3364	1,512.37	3,471.46	J-3364	20	526.16	3,471.53
J-3365	1,501.18	5,882.95	J-5029	10.97	620.32	4,086.43
J-3366	1,505.51	2,679.73	J-4527	-41.42	204.42	1,804.65
J-3367	1,511.61	2,472.45	J-4527	-24.64	243.15	1,810.75

J-3368	1,511.73	1,979.82	J-4527	9.68	322.35	1,810.87
J-3369	1,510.62	2,130.84	J-4527	-0.24	299.44	1,809.76
J-3370	1,508.99	1,808.17	J-4527	20	346.15	1,808.13
J-3372	1,501.86	2,632.53	J-4527	-37.9	212.53	1,801.00
J-3373	1,509.95	1,749.29	J-3373	20	281.16	1,749.29
J-3374	1,509.06	2,246.05	J-4527	-8.27	280.91	1,808.20
J-3375	1,508.54	4,853.39	J-5029	9.32	616.51	3,125.80
J-3376	1,509.54	4,310.27	J-5029	12.94	624.87	3,126.80
J-3377	1,500.00	7,561.43	J-5029	-0.99	592.71	4,399.65
J-3398	1,512.26	3,866.04	J-3398	20	324.16	3,866.04
J-3399	1,506.42	9,366.78	J-5029	-15.58	559.03	4,941.08
J-34	1,501.18	3,247.73	J-34	20	441.16	3,247.74
J-3400	1,500.00	5,473.06	J-5029	17.89	636.29	4,915.88
J-3401	1,502.43	7,532.06	J-5029	4.12	604.51	4,865.37
J-3406	1,505.93	1,584.51	J-4671	19.25	534.42	1,563.85
J-3407	1,510.00	2,930.68	J-3407	20	510.16	2,930.69
J-3408	1,507.04	4,908.34	J-3408	20	513.16	4,908.34
J-3409	1,508.55	4,929.04	J-3410	17.4	516.16	4,787.48
J-3410	1,503.95	3,332.30	J-3410	20	522.16	3,332.33
J-3411	1,502.01	5,603.23	J-3411	20	514.16	5,603.20
J-3412	1,502.82	10,261.24	J-5029	-23.38	541.04	5,145.19
J-3413	1,505.61	10,189.83	J-5029	-22.86	542.25	5,117.80
J-3414	1,506.40	5,098.97	J-3414	20	455.16	5,098.95
J-3415	1,510.91	5,291.84	J-5029	19.39	639.74	5,123.09
J-3416	1,501.49	10,356.70	J-5029	-20.44	547.83	5,499.79
J-3417	1,500.00	9,540.00	J-5029	-13.91	562.89	5,282.48
J-3418	1,505.44	7,161.74	J-5029	12.08	622.88	5,689.55
J-3419	1,500.14	10,007.06	J-5029	-12.25	566.72	5,728.98
J-3420	1,514.56	2,472.99	J-3420	20	502.16	2,473.05
J-3421	1,500.71	11,868.36	J-5029	-22.89	542.18	6,192.22
J-3429	1,515.13	3,023.98	J-3429	20	471.16	3,023.99
J-3460	1,500.01	6,316.57	J-5029	-1.34	591.9	3,089.60
J-3461	1,502.47	6,356.76	J-5029	-1.72	591.02	3,092.20
J-3462	1,500.00	6,311.03	J-5029	-1.29	592.03	3,089.50
J-3463	1,500.00	6,184.61	J-5029	-0.07	594.85	3,088.92
J-3464	1,500.00	6,018.92	J-5029	1.32	598.06	3,088.49
J-3465	1,500.00	6,220.13	J-5029	-0.41	594.06	3,087.90
J-3466	1,500.00	6,284.27	J-5029	-1.03	592.63	3,089.00
J-3467	1,500.00	6,332.50	J-5029	-1.5	591.54	3,088.60
J-3468	1,500.00	6,414.58	J-5029	-2.33	589.63	3,088.41
J-3469	1,500.00	6,229.29	J-5029	-0.49	593.86	3,088.21
J-3470	1,500.00	6,179.28	J-5029	-0.02	594.96	3,088.14
J-3471	1,500.00	6,264.13	J-5029	-0.83	593.09	3,088.14
J-3472	1,500.00	5,360.33	J-5029	5.79	608.36	3,087.83
J-3473	1,500.00	4,397.60	J-5029	12.25	623.27	3,087.82
J-3474	1,500.00	5,317.97	J-5029	6.11	609.09	3,087.69
J-3475	1,500.00	4,831.17	J-5029	9.38	616.64	3,087.52

J-3476	1,500.00	4,572.57	J-5029	11.1	620.61	3,087.43
J-3479	1,500.01	4,535.31	J-5029	11.34	621.18	3,087.37
J-3480	1,500.00	5,918.59	J-5029	2.06	599.75	3,087.21
J-3481	1,500.00	5,984.23	J-5029	1.58	598.65	3,087.35
J-3484	1,500.00	6,304.58	J-5029	-1.23	592.17	3,088.06
J-3485	1,500.00	6,482.38	J-5029	-3.01	588.04	3,095.49
J-3486	1,500.00	5,800.85	J-5029	2.88	601.65	3,085.79
J-3487	1,501.64	6,431.25	J-5029	-2.48	589.28	3,093.77
J-3488	1,500.00	3,754.64	J-5029	18.79	638.38	3,528.23
J-3489	1,500.00	4,143.55	J-5029	16.6	633.3	3,528.23
J-3491	1,500.00	4,074.36	J-5029	17	634.22	3,527.94
J-3492	1,500.00	4,020.68	J-5029	17.3	634.93	3,527.70
J-3493	1,500.81	3,678.09	J-5029	19.21	639.33	3,528.51
J-3494	1,500.00	4,086.61	J-5029	16.92	634.05	3,527.55
J-3495	1,501.62	4,001.42	J-5029	17.42	635.2	3,528.81
J-3496	1,500.00	6,646.63	J-5029	-4.77	584	3,092.13
J-3497	1,500.00	6,852.11	J-5029	-7	578.85	3,097.62
J-35	1,503.45	3,573.43	J-35	20	441.16	3,573.43
J-36	1,503.86	8,043.58	J-5029	-1.72	591.04	4,833.47
J-3600	1,504.92	6,233.70	J-5029	15.09	629.83	5,211.20
J-3601	1,507.34	4,561.66	J-3601	20	386.16	4,561.70
J-3602	1,504.86	4,514.72	J-3602	20	344.16	4,514.76
J-3603	1,503.02	4,518.38	J-3606	17.07	359.39	4,370.23
J-3604	1,501.63	6,425.03	J-5029	13.93	627.14	5,211.04
J-3605	1,507.72	4,840.95	J-3605	20	398.16	4,841.08
J-3606	1,505.68	4,044.50	J-3606	20	366.16	4,044.55
J-3607	1,512.43	3,558.51	J-3607	20	310.16	3,558.52
J-3608	1,510.26	3,325.67	J-3615	16.96	299.15	3,287.63
J-3609	1,509.13	3,426.12	J-3609	20	284.16	3,426.11
J-3610	1,502.77	3,233.20	J-3610	20	242.16	3,233.20
J-3611	1,508.97	3,269.33	J-3615	4.47	270.32	3,026.62
J-3612	1,503.94	3,256.29	J-3615	2.53	265.83	2,983.69
J-3613	1,505.15	3,071.79	J-3615	17.04	299.34	3,022.80
J-3614	1,503.02	3,110.62	J-3615	16.1	297.16	3,045.58
J-3615	1,503.94	2,953.09	J-3615	20	306.16	2,953.09
J-3616	1,508.56	3,753.20	J-3616	20	396.16	3,753.20
J-3617	1,502.44	9,804.44	J-5029	-17.56	554.47	5,224.89
J-3618	1,504.30	3,872.88	J-3618	20	336.16	3,872.87
J-3619	1,505.13	3,637.14	J-3619	20	376.16	3,637.15
J-37	1,508.98	3,059.97	J-37	20	396.16	3,059.98
J-38	1,500.94	9,807.78	J-5029	-22.88	542.19	4,776.78
J-39	1,502.26	5,921.99	J-5029	15.04	629.72	4,778.11
J-3902	1,501.61	6,715.10	J-5029	14.01	627.34	5,383.48
J-3908	1,504.20	3,291.78	J-3908	20	396.16	3,291.77
J-3909	1,505.86	3,268.51	J-3909	20	400.16	3,268.52
J-3910	1,506.44	4,256.55	J-3910	20	402.16	4,256.55
J-3915	1,501.88	6,074.65	J-5029	16.57	633.24	5,386.66

J-3924	1,501.51	3,114.34	J-3924	20	496.16	3,114.34
J-40	1,508.31	4,777.85	J-5029	11.68	621.95	3,447.83
J-4000	1,500.01	3,151.48	J-4000	20	536.16	3,151.47
J-4001	1,500.00	3,199.17	J-4001	20	536.16	3,199.13
J-4002	1,501.65	3,185.54	J-4002	20	542.16	3,185.50
J-4003	1,500.00	3,476.33	J-4002	18.93	539.69	3,429.15
J-4004	1,500.00	4,473.74	J-4012	1.86	524.3	3,487.13
J-4005	1,500.00	3,257.76	J-4005	20	534.16	3,257.75
J-4006	1,500.00	3,245.10	J-4006	20	531.16	3,245.10
J-4007	1,500.00	3,907.76	J-4012	12.1	547.92	3,458.79
J-4008	1,500.00	4,592.60	J-4012	-1.04	517.59	3,468.97
J-4009	1,500.00	2,946.05	J-4009	20	498.16	2,945.97
J-4010	1,501.17	4,104.98	J-5029	16.84	633.87	3,532.04
J-4011	1,500.01	3,276.85	J-4011	20	554.16	3,276.82
J-4012	1,502.87	3,049.96	J-4012	20	566.16	3,049.92
J-4013	1,502.50	3,462.58	J-4014	17.83	556.16	3,347.42
J-4014	1,503.28	1,367.52	J-4014	20	561.16	1,367.52
J-4015	1,501.78	4,057.13	J-5029	17.05	634.36	3,521.69
J-4016	1,502.62	4,191.90	J-5029	16.32	632.67	3,529.64
J-4017	1,505.27	4,687.28	J-5029	13.44	626.01	3,542.77
J-4018	1,503.44	5,887.55	J-5029	6.06	608.99	3,564.80
J-4019	1,502.73	4,213.98	J-5029	16.26	632.53	3,540.77
J-4020	1,504.22	1,673.11	J-4020	20	548.16	1,673.11
J-4021	1,501.70	1,794.79	J-4021	20	527.16	1,794.79
J-4022	1,504.37	4,107.16	J-5029	16.7	633.55	3,510.35
J-4023	1,503.28	3,429.87	J-4023	20	560.16	3,429.71
J-4024	1,504.20	3,400.24	J-4024	20	562.16	3,400.09
J-4025	1,501.97	4,510.66	J-5029	14.23	627.84	3,498.00
J-4026	1,502.85	4,035.23	J-5029	17.07	634.39	3,501.56
J-4028	1,504.48	5,344.15	J-5029	9.54	617.01	3,568.85
J-4029	1,502.68	6,668.50	J-5029	-0.25	594.43	3,619.48
J-4030	1,502.19	4,456.97	J-5029	15.37	630.47	3,618.99
J-4031	1,502.01	3,900.61	J-5029	18.52	637.74	3,618.79
J-4032	1,502.29	5,785.43	J-5029	7.35	611.96	3,627.90
J-4033	1,503.52	3,942.56	J-5029	18.36	637.37	3,629.14
J-4034	1,503.93	6,509.92	J-5029	1.67	598.86	3,644.75
J-4035	1,502.41	5,657.23	J-5029	7.69	612.74	3,576.99
J-4036	1,500.91	8,177.48	J-5029	-17.37	554.91	3,650.84
J-4037	1,500.57	7,823.24	J-5029	-13.63	563.55	3,581.72
J-4038	1,500.58	6,700.69	J-5029	-1.62	591.26	3,528.88
J-4039	1,500.01	6,232.73	J-5029	2.62	601.06	3,481.34
J-4040	1,500.98	7,887.41	J-5029	-13.05	564.88	3,670.15
J-4041	1,500.00	7,822.19	J-5029	-12.05	567.19	3,680.64
J-4043	1,501.47	6,391.50	J-5029	2.76	601.36	3,654.10
J-4044	1,502.13	3,551.50	J-4044	20	512.16	3,551.50
J-4045	1,503.61	5,325.89	J-5029	10.23	618.6	3,641.45
J-4046	1,510.20	4,561.85	J-5029	14.87	629.31	3,640.43

J-4047	1,506.14	4,898.95	J-5029	12.84	624.62	3,638.67
J-4048	1,506.73	5,540.67	J-5029	8.69	615.05	3,625.76
J-4049	1,500.51	6,963.04	J-5029	-3.63	586.62	3,608.54
J-4050	1,500.56	8,116.91	J-5029	-17.18	555.36	3,610.77
J-4051	1,501.49	3,123.06	J-4051	20	386.16	3,123.07
J-4052	1,502.81	5,501.09	J-5029	8.89	615.51	3,609.78
J-4053	1,502.95	3,819.86	J-5029	18.9	638.63	3,609.92
J-4054	1,502.45	4,811.61	J-5029	13.13	625.31	3,608.22
J-4055	1,502.08	3,846.83	J-5029	18.74	638.24	3,607.85
J-4056	1,501.57	3,030.78	J-4056	20	496.16	3,030.77
J-4057	1,503.03	4,690.83	J-5029	13.83	626.93	3,607.45
J-4058	1,502.78	3,489.40	J-4058	20	512.16	3,489.40
J-4059	1,500.34	6,698.53	J-5029	-1.15	592.35	3,603.27
J-4060	1,501.31	7,069.19	J-5029	4.51	605.4	4,475.03
J-4061	1,501.88	5,114.74	J-5029	11.07	620.55	3,610.07
J-4062	1,501.87	2,847.59	J-4062	20	513.16	2,847.60
J-4063	1,503.52	3,386.56	J-4134	20	519.16	3,386.50
J-4064	1,501.52	8,548.95	J-5029	-10.34	571.13	4,561.28
J-4065	1,502.19	3,909.82	J-4067	10.47	520.16	3,493.22
J-4066	1,502.17	2,823.74	J-4067	13.93	528.16	2,617.05
J-4067	1,502.32	1,626.80	J-4067	20	542.16	1,626.80
J-4068	1,503.86	6,003.74	J-5029	4.57	605.54	3,487.28
J-4069	1,502.77	3,486.10	J-4069	20	546.16	3,485.93
J-4070	1,502.80	2,133.91	J-4070	20	541.16	2,133.90
J-4071	1,503.79	5,646.58	J-5029	6.89	610.9	3,489.43
J-4072	1,501.66	3,774.07	J-5029	18.36	637.38	3,477.17
J-4073	1,504.46	2,056.34	J-4073	20	563.16	2,056.33
J-4074	1,502.23	3,604.38	J-5029	19.27	639.47	3,470.17
J-4075	1,503.66	2,104.43	J-4075	20	566.16	2,104.43
J-4076	1,500.34	4,091.44	J-5029	16.4	632.84	3,459.02
J-4077	1,501.78	3,376.60	J-4077	20	556.16	3,376.60
J-4078	1,501.58	4,269.68	J-5029	15.19	630.06	3,439.70
J-4079	1,503.45	2,642.19	J-4079	20	551.16	2,642.18
J-4080	1,500.92	8,407.10	J-5029	-8.58	575.19	4,574.15
J-4081	1,500.01	3,835.33	J-5029	17.96	636.44	3,468.99
J-4082	1,500.33	3,644.96	J-5029	19.05	638.97	3,472.63
J-4083	1,500.81	3,340.50	J-4083	20	542.16	3,340.49
J-4084	1,500.72	3,982.37	J-5029	17.16	634.6	3,478.59
J-4085	1,501.19	5,001.55	J-5029	10.95	620.27	3,490.33
J-4086	1,501.45	5,372.10	J-5029	8.62	614.9	3,490.37
J-4087	1,502.71	4,195.54	J-5029	16.04	632.01	3,497.43
J-4088	1,502.81	2,469.57	J-4088	20	543.16	2,469.57
J-4089	1,501.87	3,178.35	J-4089	20	543.16	3,178.34
J-4090	1,502.44	4,962.93	J-5029	11.47	621.47	3,532.83
J-4091	1,501.94	3,865.02	J-4091	20	409.16	3,865.00
J-4092	1,502.86	5,071.39	J-5029	10.49	619.21	3,496.33
J-4093	1,504.03	4,604.81	J-5029	13.34	625.79	3,478.30

J-4094	1,501.37	4,754.52	J-5029	12.16	623.06	3,443.17
J-4095	1,501.30	2,768.57	J-4095	20	515.16	2,768.57
J-4096	1,503.03	4,375.57	J-5029	14.5	628.46	3,435.75
J-4097	1,505.78	6,056.26	J-5029	11.73	622.06	4,371.43
J-4098	1,505.92	1,679.26	J-4098	20	507.16	1,679.26
J-4099	1,501.06	5,984.17	J-5029	3.58	603.25	3,339.72
J-41	1,513.33	5,087.44	J-5029	9.62	617.2	3,452.85
J-4100	1,504.89	2,673.86	J-4100	20	556.16	2,673.86
J-4101	1,503.46	5,777.11	J-5029	7.48	612.27	3,634.20
J-4102	1,503.30	6,296.31	J-5029	-0.05	594.87	3,201.65
J-4103	1,508.71	5,025.80	J-5029	10.24	618.64	3,416.66
J-4104	1,503.73	4,181.43	J-5029	15.65	631.12	3,429.26
J-4105	1,504.54	1,650.88	J-4105	20	481.16	1,650.88
J-4106	1,504.16	1,888.69	J-4106	20	492.16	1,888.67
J-4107	1,503.34	5,193.81	J-5029	9.91	617.87	3,530.27
J-4108	1,501.14	5,698.06	J-5029	6.75	610.58	3,548.25
J-4109	1,502.65	2,653.60	J-4109	20	521.16	2,653.60
J-4110	1,500.32	6,854.11	J-5029	7.02	611.2	4,573.55
J-4111	1,504.50	5,211.87	J-5029	10.11	618.33	3,583.01
J-4112	1,501.13	5,924.21	J-5029	5.28	607.2	3,556.82
J-4113	1,501.23	5,202.19	J-5029	17.16	634.6	4,574.45
J-4114	1,501.74	5,499.50	J-5029	8.25	614.05	3,580.13
J-4115	1,501.65	2,650.91	J-4115	20	514.16	2,650.91
J-4116	1,502.33	2,833.48	J-4116	20	556.16	2,833.09
J-4117	1,503.17	5,265.56	J-5029	9.31	616.48	3,493.85
J-4118	1,500.52	5,234.92	J-5029	9.49	616.9	3,493.49
J-4119	1,503.80	3,202.31	J-4119	20	550.16	3,202.29
J-4120	1,502.36	2,728.12	J-4120	20	436.16	2,728.12
J-4121	1,500.84	1,400.39	J-4121	20	424.16	1,400.38
J-4122	1,501.07	2,714.49	J-4123	12.2	416.16	2,591.16
J-4123	1,501.78	2,124.97	J-4123	20	434.16	2,124.97
J-4124	1,502.38	6,357.07	J-5029	8.12	613.73	4,207.01
J-4125	1,504.70	6,195.46	J-5029	9.51	616.95	4,240.54
J-4126	1,505.42	2,880.74	J-4126	20	439.16	2,880.75
J-4127	1,500.61	1,448.72	J-4127	20	434.16	1,448.72
J-4128	1,500.66	4,400.82	J-5029	14.9	629.4	3,518.35
J-4129	1,502.48	2,741.79	J-4129	20	547.16	2,741.79
J-4130	1,503.86	1,805.05	J-4130	20	549.16	1,805.05
J-4131	1,501.78	5,189.68	J-5029	10.21	618.57	3,563.18
J-4132	1,502.27	2,410.49	J-4132	20	526.16	2,410.49
J-4133	1,500.00	6,287.08	J-5029	2.63	601.08	3,595.93
J-4134	1,502.53	2,028.35	J-4134	20	519.16	2,028.35
J-4135	1,501.05	5,141.11	J-5029	18	636.54	4,683.21
J-4136	1,503.05	6,239.62	J-5029	11.22	620.88	4,500.16
J-4137	1,501.74	3,316.18	J-4137	20	431.16	3,316.18
J-4138	1,501.44	4,925.77	J-5029	15.41	630.56	4,025.50
J-4139	1,504.63	2,524.17	J-4139	20	475.16	2,524.17

J-4140	1,502.94	4,970.01	J-5029	14.93	629.45	3,996.11
J-4141	1,507.23	5,124.75	J-5029	9.59	617.14	3,473.11
J-4142	1,508.68	5,238.86	J-5029	8.77	615.24	3,459.69
J-4143	1,507.27	2,518.06	J-4143	20	426.16	2,518.06
J-4144	1,502.87	3,651.83	J-5029	18.87	638.56	3,453.01
J-4145	1,501.70	3,494.36	J-5029	19.76	640.61	3,451.84
J-4146	1,505.74	4,296.67	J-5029	14.88	629.35	3,454.09
J-4147	1,504.70	4,144.20	J-5029	15.85	631.58	3,452.97
J-4148	1,501.89	3,645.10	J-5029	18.88	638.58	3,450.16
J-4149	1,502.96	4,450.53	J-5029	13.87	627.01	3,451.63
J-4150	1,509.89	2,764.33	J-4150	20	378.16	2,764.34
J-4151	1,505.56	2,508.97	J-4151	20	383.16	2,508.97
J-4152	1,510.90	4,471.26	J-5029	13.78	626.8	3,458.99
J-4153	1,502.42	4,080.27	J-5029	16.24	632.49	3,450.63
J-4154	1,504.63	5,207.63	J-5029	8.76	615.22	3,450.37
J-4155	1,505.54	2,661.15	J-4155	20	386.16	2,661.15
J-4156	1,500.00	40,554.30	J-5029	-1,700.78	-3,330.18	3,439.02
J-4157	1,500.91	5,522.83	J-5029	6.56	610.15	3,440.43
J-4158	1,500.00	4,974.69	J-5029	10.29	618.75	3,438.65
J-4159	1,500.00	6,060.35	J-5029	2.76	601.36	3,435.71
J-4160	1,506.86	5,962.88	J-5029	3.77	603.7	3,456.42
J-4161	1,502.42	5,808.41	J-5029	12.13	623	4,252.88
J-4162	1,503.26	1,167.64	J-4162	20	455.16	1,167.64
J-4163	1,501.44	1,446.43	J-4163	20	457.16	1,446.43
J-4164	1,502.28	3,777.39	J-4163	19.57	456.16	3,766.12
J-4165	1,501.38	7,277.76	J-5029	0.29	595.66	4,277.47
J-4166	1,501.66	6,631.63	J-5029	6.49	609.98	4,320.19
J-4168	1,502.26	6,213.07	J-5029	10.45	619.11	4,380.85
J-4169	1,500.45	8,031.65	J-5029	-8.69	574.93	4,215.21
J-4170	1,502.85	5,798.54	J-5029	12.3	623.39	4,276.54
J-4171	1,501.56	5,990.34	J-5029	12.13	622.98	4,384.15
J-4172	1,501.29	1,180.71	J-4172	20	508.16	1,181.14
J-4173	1,502.73	5,874.96	J-5029	12.92	624.82	4,402.84
J-4174	1,501.53	1,086.47	J-4174	20	508.16	1,086.57
J-4175	1,501.55	3,046.99	J-4189	19.13	516.16	3,019.00
J-4176	1,503.05	5,483.18	J-5029	7.28	611.8	3,492.29
J-4177	1,502.53	3,582.42	J-5029	19.61	640.26	3,514.78
J-4178	1,500.92	7,543.84	J-5029	-12.78	565.5	3,436.63
J-4179	1,500.37	9,587.92	J-5029	-22.39	543.32	4,619.96
J-4180	1,500.78	8,696.41	J-5029	-11.62	568.18	4,620.63
J-4181	1,501.14	6,695.09	J-5029	6.72	610.51	4,402.46
J-4182	1,500.50	7,617.54	J-5029	-1.4	591.76	4,413.03
J-4183	1,500.98	1,346.35	J-4183	20	514.16	1,346.34
J-4184	1,500.92	3,360.60	J-4184	20	516.16	3,360.59
J-4185	1,501.15	5,410.26	J-5029	14.87	629.31	4,362.11
J-4186	1,502.09	2,138.43	J-4186	20	503.16	2,138.43
J-4187	1,501.70	3,038.68	J-4188	20	524.16	3,038.71

J-4191	1,502.70	2,908.78	J-4190	15.66	509.15	2,780.52
J-4192	1,504.11	1,943.72	J-4192	20	527.16	1,943.71
J-4193	1,501.82	2,892.38	J-4192	19.57	526.16	2,877.83
J-4194	1,502.51	2,654.93	J-4194	20	501.16	2,654.94
J-4195	1,508.31	5,722.27	J-5029	7.51	612.32	3,683.50
J-4196	1,501.09	8,640.41	J-5029	-23.67	540.37	3,753.29
J-4198	1,502.28	1,941.02	J-4198	20	447.16	1,941.02
J-4199	1,500.00	9,310.18	J-5029	-20	548.84	4,549.55
J-42	1,504.48	1,806.96	J-42	20	460.16	1,806.98
J-420	1,501.75	9,520.10	J-5029	-15.77	558.61	5,067.11
J-4200	1,500.58	4,471.39	J-5029	19.68	640.43	4,403.74
J-4201	1,500.86	8,315.70	J-5029	-9.06	574.1	4,435.24
J-4202	1,500.14	7,060.92	J-5029	3.95	604.11	4,403.29
J-4203	1,500.30	4,081.57	J-4186	18.27	499.16	4,015.90
J-4204	1,500.29	5,047.87	J-5029	16.63	633.38	4,347.31
J-4205	1,503.61	2,829.57	J-4205	20	511.66	2,829.47
J-4206	1,503.00	2,485.20	J-4206	20	516.16	2,485.21
J-4207	1,502.58	3,423.17	J-4207	20	526.16	3,423.15
J-4208	1,501.16	4,567.94	J-5029	18.77	638.31	4,312.94
J-4209	1,503.09	2,790.25	J-4209	20	520.16	2,790.25
J-4210	1,500.28	4,832.31	J-5029	17.37	635.1	4,293.27
J-4211	1,500.44	5,043.21	J-5029	16.3	632.62	4,285.62
J-4212	1,503.08	2,263.86	J-4212	20	518.16	2,263.86
J-4213	1,501.30	3,383.58	J-4213	20	526.16	3,383.55
J-4214	1,503.80	1,789.38	J-4214	20	531.16	1,789.37
J-4215	1,501.04	3,353.60	J-4214	19.13	529.16	3,319.58
J-4216	1,501.74	1,936.87	J-4216	20	506.16	1,936.87
J-4217	1,505.69	3,194.13	J-4216	17.83	501.16	3,131.39
J-4218	1,511.47	6,633.67	J-5029	-0.18	594.59	3,682.86
J-4219	1,510.22	6,906.79	J-5029	-2.92	588.26	3,686.90
J-4220	1,505.55	7,974.71	J-5029	-15.4	559.46	3,686.48
J-4221	1,503.40	7,836.55	J-5029	-13.7	563.39	3,670.15
J-4222	1,502.45	7,720.59	J-5029	-12.23	566.79	3,660.36
J-4223	1,503.49	5,759.95	J-5029	6.91	610.94	3,631.09
J-4224	1,501.58	5,128.57	J-5029	10.78	619.87	3,620.99
J-4225	1,503.04	6,018.49	J-5029	4.91	606.34	3,622.14
J-4226	1,502.16	6,706.13	J-5029	-1.74	590.99	3,614.62
J-4227	1,500.55	8,334.14	J-5029	-22.04	544.13	3,580.04
J-4228	1,501.69	1,964.05	J-4228	20	458.16	1,964.03
J-4229	1,502.41	3,778.02	J-5029	19.11	639.09	3,619.12
J-4230	1,501.47	6,611.99	J-5029	-1.72	591.04	3,529.12
J-4231	1,501.00	3,671.15	J-5029	19.71	640.48	3,618.21
J-4232	1,500.85	1,630.66	J-4232	20	454.16	1,630.65
J-4233	1,500.00	8,118.10	J-5029	-20.96	546.63	3,402.12
J-4234	1,500.60	2,253.20	J-4234	20	446.16	2,253.20
J-4236	1,502.13	3,582.43	J-4235	15.67	476.15	3,463.37
J-4237	1,500.60	2,473.24	J-4237	20	453.16	2,473.24

J-4238	1,501.24	1,980.06	J-4238	20	446.16	1,980.06
J-4239	1,505.68	8,726.80	J-5029	-31.91	521.36	3,150.52
J-4240	1,501.91	7,002.95	J-5029	-9.1	574	3,068.81
J-4241	1,501.79	8,688.04	J-5029	-31.94	521.28	3,099.04
J-4242	1,502.35	5,616.90	J-5029	3.65	603.42	3,041.28
J-4243	1,503.39	4,355.97	J-5029	15.63	631.08	3,599.15
J-4244	1,502.77	4,546.26	J-5029	14.51	628.49	3,620.25
J-4245	1,504.88	2,566.86	J-4245	20	486.16	2,566.86
J-4246	1,503.36	1,833.28	J-4246	20	481.16	1,833.26
J-4247	1,501.37	5,788.78	J-5029	6.48	609.95	3,599.38
J-4248	1,502.34	2,202.80	J-4248	20	511.16	2,202.80
J-4249	1,500.63	6,728.91	J-5029	-1.68	591.12	3,607.18
J-4250	1,501.40	4,648.39	J-5029	13.97	627.24	3,621.17
J-4251	1,502.02	4,223.76	J-5029	16.56	633.22	3,619.63
J-4252	1,501.04	2,073.59	J-4252	20	524.16	2,073.59
J-4253	1,503.03	3,710.06	J-5029	19.51	640.02	3,619.20
J-4254	1,503.31	1,737.40	J-4254	20	523.16	1,737.40
J-4255	1,503.84	3,687.15	J-5029	19.63	640.31	3,619.24
J-4256	1,502.16	3,674.03	J-4256	20	524.16	3,674.00
J-4257	1,501.06	3,461.62	J-4257	20	526.16	3,461.62
J-4258	1,501.48	4,096.09	J-4259	20	523.16	4,096.04
J-4259	1,504.40	3,405.86	J-4259	20	523.16	3,405.76
J-4260	1,506.53	4,598.73	J-5029	18.27	637.17	4,247.21
J-4261	1,501.21	5,155.80	J-5029	15.61	631.02	4,260.97
J-4262	1,501.77	5,235.22	J-5029	15.29	630.28	4,272.05
J-4263	1,503.61	1,810.69	J-4263	20	519.16	1,810.69
J-4264	1,503.08	4,273.29	J-5029	16.27	632.56	3,615.00
J-4265	1,501.78	1,814.13	J-4265	20	513.16	1,814.11
J-4266	1,500.46	7,290.73	J-5029	-7.57	577.52	3,630.64
J-4267	1,502.00	4,976.51	J-5029	7.96	613.38	3,020.62
J-4268	1,502.64	2,351.67	J-4268	20	471.16	2,351.67
J-4269	1,501.80	4,034.57	J-5029	14.43	628.29	3,068.70
J-4270	1,501.89	2,462.61	J-4270	20	457.16	2,462.61
J-4271	1,502.79	5,665.00	J-5029	3.3	602.62	3,041.59
J-4272	1,501.24	5,532.40	J-5029	4.15	604.57	3,032.39
J-4273	1,500.94	4,111.56	J-5029	13.74	626.71	3,024.52
J-4275	1,502.40	2,999.80	J-4275	20	451.16	2,999.80
J-4276	1,502.65	8,284.43	J-5029	-26.38	534.12	3,039.40
J-4277	1,500.80	5,112.18	J-5029	6.97	611.09	3,011.50
J-4278	1,502.64	2,249.32	J-4278	20	485.16	2,249.32
J-4279	1,502.09	2,986.41	J-4279	20	489.16	2,986.40
J-4280	1,501.53	4,963.07	J-5029	7.27	611.77	2,938.77
J-4281	1,502.02	4,608.51	J-5029	9.53	616.99	2,911.73
J-4282	1,502.85	3,372.83	J-5029	17.62	635.67	2,912.57
J-4283	1,500.72	7,940.28	J-5029	-21.45	545.5	3,016.15
J-4284	1,501.65	3,055.87	J-5029	19.87	640.85	3,025.23
J-4285	1,503.89	6,828.89	J-5029	-7.83	576.94	3,000.18

J-4286	1,501.32	4,917.48	J-5029	8.31	614.19	3,024.90
J-4287	1,500.17	7,254.27	J-5029	-12.86	565.32	2,993.28
J-4288	1,500.69	4,284.25	J-5029	11.43	621.39	2,864.11
J-4289	1,503.12	2,949.78	J-5029	19.62	640.28	2,866.54
J-4290	1,502.27	3,850.22	J-5029	14.01	627.33	2,811.19
J-4291	1,500.71	2,807.29	J-4291	20	531.16	2,809.64
J-4292	1,500.35	6,704.49	J-5029	-6.71	579.52	2,976.88
J-4293	1,500.82	6,206.47	J-5029	-1.73	591.01	2,952.04
J-4294	1,501.91	5,907.93	J-5029	0.14	595.33	2,903.23
J-4295	1,501.97	5,025.98	J-5029	5.5	607.7	2,762.92
J-4296	1,501.63	5,035.79	J-5029	5.15	606.89	2,686.38
J-4297	1,502.15	1,907.48	J-4297	20	526.16	1,907.47
J-4298	1,502.86	3,105.36	J-5029	17.03	634.3	2,527.90
J-4299	1,500.92	3,561.41	J-5029	14.11	627.57	2,557.81
J-43	1,503.11	2,909.06	J-43	20	496.16	2,909.05
J-4300	1,500.73	6,180.20	J-5029	-1.24	592.14	2,951.23
J-4301	1,501.31	2,680.55	J-5029	19.5	640	2,554.97
J-4302	1,502.33	5,138.42	J-5029	4.22	604.74	2,657.90
J-4303	1,501.99	4,822.25	J-5029	6.77	610.62	2,728.09
J-4304	1,501.31	2,790.49	J-5029	19.09	639.07	2,583.30
J-4305	1,500.03	5,390.52	J-5029	5.59	607.89	3,007.09
J-4306	1,507.35	4,337.85	J-5029	19.8	640.69	4,295.53
J-4307	1,500.97	4,173.79	J-4307	20	485.46	4,173.79
J-4308	1,502.75	7,529.42	J-5029	-1.06	592.55	4,299.36
J-4309	1,502.19	5,490.67	J-5029	14.03	627.38	4,264.50
J-4310	1,502.97	4,958.42	J-5029	16.56	633.22	4,258.50
J-4311	1,520.49	3,953.12	J-4311	20	514.16	3,953.08
J-4312	1,515.43	7,758.19	J-5029	-4.13	585.46	4,236.26
J-4313	1,505.06	6,275.05	J-5029	9.4	616.7	4,256.47
J-4314	1,503.78	6,391.07	J-5029	8.46	614.52	4,251.32
J-4315	1,501.78	5,960.69	J-5029	11.65	621.89	4,255.16
J-4316	1,501.53	7,702.96	J-5029	-4.47	584.69	4,108.76
J-4317	1,502.59	7,830.40	J-5029	-9.09	574.01	3,851.55
J-4318	1,500.82	8,056.95	J-5029	-11.56	568.32	3,874.85
J-4319	1,500.00	6,398.89	J-5029	5.34	607.33	3,836.05
J-4321	1,500.00	10,210.02	J-5029	-24.48	538.51	5,041.02
J-4322	1,500.00	8,081.20	J-5029	-0.02	594.95	5,190.62
J-4323	1,500.01	7,499.42	J-5029	6.06	609	5,203.39
J-4324	1,502.75	7,003.73	J-5029	11.93	622.53	5,433.90
J-4325	1,500.01	8,945.28	J-5029	-12.22	566.79	4,800.76
J-4326	1,500.00	8,683.30	J-5029	-9.49	573.11	4,774.55
J-4327	1,500.00	8,549.76	J-5029	-8.28	575.88	4,737.28
J-4328	1,500.02	8,418.15	J-5029	-7.31	578.13	4,693.32
J-4329	1,500.00	4,836.44	J-5029	17.51	635.4	4,269.60
J-4330	1,502.04	5,075.84	J-5029	15.66	631.13	4,132.81
J-4331	1,508.78	3,907.03	J-4331	20	478.16	3,907.02
J-4332	1,503.31	3,517.27	J-4332	20	496.16	3,517.27

J-4333	1,500.58	8,457.33	J-5029	-8.93	574.4	4,605.52
J-4334	1,502.55	1,984.75	J-4334	20	475.16	1,984.75
J-4335	1,503.00	7,494.00	J-5029	-0.1	594.76	4,376.17
J-4336	1,501.85	7,575.49	J-5029	-1.07	592.52	4,348.78
J-4337	1,505.94	4,472.07	J-5029	19.42	639.83	4,352.87
J-4338	1,510.14	3,855.69	J-4338	20	516.16	3,855.66
J-4340	1,507.41	4,117.21	J-5029	11.91	622.49	2,765.94
J-4341	1,501.95	2,438.57	J-4341	20	532.16	2,438.59
J-4342	1,501.94	6,347.94	J-5029	-2.7	588.76	2,993.51
J-4343	1,500.19	4,190.52	J-5029	13.34	625.78	3,008.88
J-4344	1,503.85	6,072.51	J-5029	5.8	608.38	3,661.07
J-4345	1,503.86	3,379.14	J-4345	20	486.16	3,379.15
J-4346	1,505.83	6,410.16	J-5029	3.09	602.13	3,683.95
J-4347	1,504.81	5,674.35	J-5029	8.96	615.68	3,704.89
J-4348	1,502.51	6,027.34	J-5029	6.77	610.62	3,706.04
J-4349	1,505.21	5,730.05	J-5029	8.71	615.11	3,709.27
J-4350	1,506.21	5,818.95	J-5029	8.26	614.07	3,721.89
J-4351	1,507.17	5,470.37	J-5029	10.42	619.05	3,730.21
J-4352	1,502.11	5,896.92	J-5029	7.96	613.37	3,734.90
J-4353	1,501.68	5,894.65	J-5029	8.09	613.67	3,744.13
J-4354	1,503.58	5,490.95	J-5029	10.31	618.79	3,729.02
J-4355	1,501.25	5,670.61	J-5029	9.19	616.22	3,721.79
J-4356	1,501.55	4,673.86	J-5029	13.43	626	3,531.52
J-4357	1,502.42	4,958.71	J-5029	13.31	625.72	3,718.47
J-4358	1,503.45	2,882.14	J-4358	20	502.16	2,882.08
J-4359	1,503.48	6,183.95	J-5029	5.59	607.9	3,712.35
J-4360	1,501.55	6,506.81	J-5029	2.57	600.93	3,705.21
J-4361	1,502.86	6,604.92	J-5029	1.78	599.1	3,715.81
J-4362	1,500.67	7,834.60	J-5029	-11.81	567.75	3,702.72
J-4363	1,500.76	7,500.96	J-5029	-7.09	578.65	3,732.91
J-4364	1,502.33	7,406.91	J-5029	-6.29	580.48	3,720.52
J-4365	1,504.43	5,125.99	J-5029	12.34	623.48	3,722.61
J-4366	1,503.41	3,125.61	J-4366	20	510.16	3,125.60
J-4367	1,502.84	2,368.53	J-4367	20	508.16	2,368.53
J-4387	1,504.52	7,621.02	J-5029	-2.13	590.08	4,285.36
J-4388	1,503.59	4,975.77	J-5029	16.62	633.35	4,283.14
J-4391	1,508.05	3,226.84	J-4391	20	516.16	3,226.93
J-4392	1,505.29	3,489.31	J-4392	20	522.16	3,489.28
J-4395	1,501.23	2,237.71	J-4397	17.71	393.87	2,211.35
J-4396	1,501.58	2,908.30	RV-4396-OU	20	416.15	1,501.58
J-4397	1,502.23	2,212.35	J-4397	20	399.16	2,212.35
J-4398	1,501.77	2,307.99	J-4397	11.53	379.61	2,211.89
J-4399	1,503.38	2,187.00	J-4399	20	335.16	2,187.00
J-44	1,516.15	4,480.57	J-5029	13.69	626.6	3,455.67
J-4400	1,514.12	4,728.08	J-5029	17.58	635.58	4,238.88
J-4410	1,502.49	7,653.89	J-5029	-4.09	585.55	4,076.34
J-4411	1,503.68	6,928.37	J-5029	2.83	601.54	4,088.92

J-4412	1,504.44	6,395.51	J-5029	7.4	612.08	4,098.22
J-4414	1,502.78	6,472.81	J-5029	6.71	610.49	4,088.02
J-4415	1,503.86	3,355.28	J-4415	20	476.16	3,355.28
J-4417	1,503.68	6,272.75	J-5029	8.31	614.18	4,088.91
J-4418	1,503.88	3,628.72	J-4418	20	476.16	3,628.72
J-4455	1,510.25	4,148.69	J-4455	20	504.16	4,148.71
J-45	1,511.59	3,827.26	J-5029	17.8	636.08	3,451.11
J-4500	1,500.00	6,274.45	J-5029	3.29	602.59	3,679.02
J-4501	1,510.96	5,023.21	J-5029	11.99	622.66	3,690.30
J-4502	1,502.46	4,625.92	J-5029	14.42	628.29	3,681.88
J-4503	1,503.24	4,882.08	J-5029	12.83	624.61	3,682.78
J-4504	1,500.00	5,544.22	J-5029	8.62	614.9	3,679.75
J-4505	1,503.70	6,230.57	J-5029	3.73	603.62	3,683.66
J-4508	1,500.62	7,871.63	J-5029	-13.9	562.93	3,691.21
J-4526	1,505.26	2,733.72	J-4527	-45.86	194.15	1,804.40
J-4527	1,511.13	1,376.13	J-4527	20	346.16	1,376.13
J-4528	1,507.22	3,319.17	J-4528	20	452.16	3,319.17
J-4529	1,500.01	9,180.13	J-5029	-18.3	552.77	4,558.85
J-4530	1,503.28	9,001.82	J-5029	-15.95	558.19	4,569.29
J-4531	1,500.00	8,479.78	J-5029	-10.63	570.46	4,497.83
J-4532	1,504.11	8,567.46	J-5029	-10.59	570.56	4,581.27
J-4533	1,502.44	11,849.70	J-5029	-24.29	538.95	6,094.60
J-4535	1,504.70	4,679.85	J-4535	20	408.16	4,679.85
J-4536	1,508.42	2,688.21	J-4537	10.9	491.16	2,498.17
J-4537	1,509.58	2,076.56	J-4537	20	512.16	2,076.59
J-4538	1,502.97	3,619.74	J-4539	11.77	509.16	3,307.13
J-4539	1,510.80	2,523.52	J-4539	20	528.16	2,523.52
J-4540	1,513.59	2,609.43	J-4540	20	502.16	2,609.43
J-4541	1,503.04	3,053.73	J-4541	20	502.16	3,053.74
J-4542	1,506.13	3,333.06	J-4540	20	502.15	3,333.03
J-4543	1,510.60	3,696.14	J-4539	12.93	511.83	3,417.13
J-4544	1,501.95	3,703.58	J-4544	20	486.16	3,703.57
J-4545	1,506.88	4,323.03	J-4539	17.76	522.98	4,209.13
J-4546	1,508.36	4,328.76	J-4539	5.22	494.05	3,708.00
J-4547	1,505.72	3,857.30	J-4539	16.94	521.1	3,722.27
J-4548	1,510.66	4,149.11	J-4539	9.81	504.63	3,713.25
J-4549	1,506.18	3,934.69	J-4539	14.97	516.55	3,714.92
J-4550	1,504.26	1,655.62	J-584	16.39	527.82	1,559.70
J-4551	1,511.23	1,601.74	J-584	18.67	533.09	1,565.39
J-4552	1,509.51	1,599.82	J-584	18.68	533.12	1,563.77
J-4553	1,512.99	1,597.61	J-584	18.89	533.59	1,567.15
J-4554	1,505.89	7,707.85	J-5029	-4.66	584.24	4,085.00
J-4555	1,505.84	3,383.89	J-4555	20	455.16	3,383.80
J-4556	1,507.31	5,150.38	J-5029	14.62	628.74	4,086.42
J-4557	1,501.92	6,342.58	J-5029	6.77	610.61	3,932.91
J-4558	1,503.71	4,833.08	J-5029	15.37	630.48	3,934.70
J-4559	1,504.76	3,536.86	J-4559	20	470.16	3,536.89

J-4560	1,502.40	8,230.65	J-5029	-12.86	565.33	3,927.45
J-4561	1,502.27	7,776.89	J-5029	-7.11	578.58	3,927.32
J-4562	1,504.47	2,896.06	J-4562	20	452.16	2,896.03
J-4563	1,504.47	4,370.68	J-5029	17.75	635.97	3,929.52
J-4564	1,507.80	3,492.50	J-4564	20	460.16	3,492.52
J-4565	1,501.49	7,748.17	J-5029	-7.16	578.48	3,901.23
J-4566	1,500.00	5,444.04	J-5029	12.07	622.86	3,894.51
J-4567	1,507.07	4,817.96	J-5029	15.28	630.27	3,901.57
J-4568	1,500.18	1,285.02	J-4568	20	476.16	1,285.02
J-4569	1,504.88	7,125.20	J-5029	-0.81	593.12	3,884.74
J-4570	1,505.29	6,689.06	J-5029	3.33	602.68	3,890.30
J-4571	1,508.03	6,521.18	J-5029	4.87	606.25	3,895.88
J-4572	1,502.64	5,347.05	J-5029	12.5	623.85	3,887.65
J-4573	1,500.80	6,624.03	J-5029	3.98	604.2	3,895.31
J-4574	1,503.22	5,738.03	J-5029	10.59	619.45	3,901.26
J-4575	1,503.77	5,286.14	J-5029	12.81	624.57	3,890.14
J-4576	1,504.13	2,858.91	J-4576	20	495.16	2,858.88
J-4577	1,509.16	4,767.20	J-5029	15.53	630.83	3,900.40
J-4578	1,502.69	2,509.29	J-4578	20	486.16	2,509.27
J-4579	1,504.01	3,948.71	J-5029	19.73	640.52	3,895.24
J-4580	1,502.20	6,455.19	J-5029	4.86	606.22	3,839.96
J-4581	1,505.20	5,456.98	J-5029	11.76	622.15	3,859.77
J-4582	1,503.62	4,753.56	J-5029	15.39	630.53	3,858.20
J-4583	1,502.17	3,165.47	J-4583	20	506.16	3,165.47
J-4584	1,505.88	5,041.58	J-5029	13.99	627.29	3,876.04
J-4585	1,507.09	3,929.67	J-5029	19.74	640.55	3,877.25
J-4586	1,502.57	2,351.70	J-4586	20	505.16	2,351.70
J-4587	1,503.24	2,623.34	J-4587	20	511.16	2,623.34
J-4588	1,502.93	5,156.59	J-5029	13.45	626.05	3,883.41
J-4589	1,504.46	2,921.57	J-4589	20	506.16	2,921.54
J-4590	1,516.07	3,948.35	J-5029	19.48	639.95	3,844.54
J-4591	1,503.76	2,820.84	J-4591	20	423.16	2,820.84
J-4592	1,503.77	5,394.39	J-5029	11.82	622.27	3,825.15
J-4593	1,506.82	2,380.02	J-4593	20	512.16	2,380.02
J-4594	1,509.01	2,285.41	J-4594	20	499.16	2,285.41
J-4595	1,503.80	5,540.78	J-5029	10.81	619.94	3,802.25
J-4596	1,503.85	3,306.43	J-4596	20	503.16	3,306.40
J-4597	1,502.30	2,797.58	J-4597	20	494.16	2,797.58
J-4598	1,500.00	4,758.53	J-5029	9.8	617.61	3,051.09
J-4599	1,500.00	4,409.10	J-5029	12.08	622.88	3,051.08
J-46	1,503.19	1,429.18	J-5021	16.23	632.45	941.73
J-4600	1,501.48	4,259.14	J-4614	9.15	474.11	3,813.02
J-4601	1,519.86	3,142.10	J-4601	20	478.16	3,142.10
J-4602	1,501.36	5,877.69	J-5029	19.83	640.77	5,832.63
J-4603	1,503.06	7,421.39	J-5029	10.03	618.15	5,798.72
J-4604	1,514.74	6,256.60	J-5029	18.46	637.59	5,832.68
J-4605	1,512.92	5,936.41	J-5029	19.64	640.33	5,837.47

J-4606	1,501.48	3,890.09	J-1907	16.53	516.16	3,753.56
J-4607	1,504.31	2,942.89	J-4608	20	516.16	2,942.90
J-4608	1,502.45	2,192.56	J-4608	20	516.16	2,192.56
J-4610	1,503.85	8,629.98	J-5029	9.96	617.99	6,604.07
J-4611	1,502.34	8,036.75	J-5029	13.36	625.83	6,608.30
J-4612	1,508.96	2,887.29	J-4612	20	518.16	2,887.31
J-4613	1,503.58	3,826.11	J-4614	12.63	482.15	3,542.36
J-4614	1,516.14	3,189.60	J-4614	20	499.16	3,189.59
J-4615	1,514.55	2,806.00	J-4615	20	495.16	2,805.86
J-4616	1,501.02	3,951.16	J-4616	20	412.16	3,951.17
J-4617	1,500.77	3,578.38	J-4617	20	382.16	3,578.38
J-4618	1,503.68	2,233.95	J-4618	20	515.16	2,234.03
J-4619	1,502.67	5,668.50	J-5029	19.46	639.91	5,568.55
J-4620	1,501.97	3,548.88	J-4620	20	496.16	3,548.90
J-4621	1,500.99	7,068.36	J-5029	11.66	621.91	5,562.30
J-4622	1,503.18	3,876.05	J-4622	20	487.16	3,876.05
J-4623	1,501.95	5,940.88	J-5029	15.68	631.18	4,943.28
J-4624	1,506.16	4,621.12	J-4624	20	339.16	4,621.47
J-4625	1,504.86	3,730.26	J-4625	20	331.16	3,730.26
J-4626	1,504.02	5,664.00	J-5029	18.91	638.64	5,329.93
J-4627	1,508.90	3,701.51	J-4627	20	470.16	3,701.51
J-4628	1,513.50	7,173.08	J-5029	8.99	615.76	5,189.84
J-4629	1,510.98	7,504.12	J-5029	6.84	610.79	5,248.10
J-4630	1,504.82	3,011.89	J-4630	20	346.16	3,011.89
J-4631	1,511.45	2,654.08	J-4631	20	343.16	2,654.08
J-4632	1,500.86	2,833.65	J-4632	20	319.16	2,833.65
J-4633	1,502.90	3,070.11	J-27	12.13	318.01	2,847.95
J-4634	1,509.67	3,764.90	J-5029	16.4	632.85	3,126.90
J-4635	1,508.91	2,708.13	J-4635	20	366.16	2,708.13
J-4636	1,506.51	3,526.62	J-5029	17.8	636.09	3,123.74
J-4637	1,512.72	2,455.29	J-4637	20	406.16	2,455.29
J-4638	1,503.23	8,420.10	J-5029	-25.83	535.38	3,329.89
J-4639	1,500.90	8,077.96	J-5029	-16.67	556.52	3,697.19
J-4640	1,501.12	4,219.21	J-5029	17.01	634.25	3,697.40
J-4641	1,512.40	3,509.42	J-4641	20	438.16	3,509.42
J-4642	1,518.48	2,968.40	J-4642	20	475.16	2,968.38
J-4643	1,507.91	3,899.92	J-4614	15.11	487.86	3,700.86
J-4644	1,503.59	3,792.37	J-4614	18.09	494.74	3,713.50
J-4645	1,503.23	4,118.80	J-4614	11.75	480.12	3,778.97
J-4646	1,506.23	3,528.84	J-4646	20	434.16	3,528.84
J-4647	1,509.11	3,533.54	J-4647	20	448.16	3,533.53
J-4648	1,505.81	3,772.78	J-4648	20	454.16	3,772.78
J-4649	1,502.67	2,866.81	J-4649	20	455.16	2,866.80
J-4650	1,524.03	2,068.31	J-4650	20	409.16	2,068.70
J-4651	1,506.03	3,844.44	J-4651	20	472.16	3,844.43
J-4652	1,506.44	4,016.38	J-4651	20	472.16	4,016.38
J-4653	1,502.84	4,528.15	J-4653	20	466.16	4,528.15

J-4654	1,506.33	3,711.66	J-4654	20	464.16	3,711.66
J-4655	1,505.22	3,511.69	J-4732	20	446.16	3,511.67
J-4656	1,501.40	5,028.78	J-5029	16.68	633.5	4,337.72
J-4657	1,506.39	6,691.24	J-5029	6.74	610.55	4,347.34
J-4658	1,507.83	6,837.18	J-5029	5.31	607.25	4,322.06
J-4661	1,509.48	1,775.96	J-584	11.74	517.08	1,563.33
J-4662	1,520.37	1,775.50	J-584	12.19	518.12	1,573.97
J-4663	1,504.24	2,096.98	J-584	4.42	500.2	1,681.92
J-4664	1,504.14	2,138.63	J-584	1.5	493.46	1,660.54
J-4665	1,504.28	2,135.26	J-584	1.27	492.92	1,653.40
J-4666	1,509.45	1,968.47	J-584	3.96	499.13	1,569.31
J-4667	1,513.73	1,991.98	J-584	4.22	499.75	1,594.87
J-4668	1,509.40	2,019.95	J-584	2.98	496.88	1,592.98
J-4669	1,520.59	2,001.83	J-4671	3.72	498.58	1,593.85
J-467	1,501.08	9,579.55	J-5029	-21.4	545.62	4,685.44
J-4670	1,508.61	2,080.20	J-584	1.19	492.75	1,608.10
J-4671	1,505.94	1,553.58	J-4671	20	536.16	1,553.60
J-4673	1,500.79	4,992.24	J-584	-1.35	486.89	3,853.72
J-4674	1,501.85	8,586.17	J-5029	-8.55	575.27	4,755.48
J-4675	1,506.38	4,313.73	J-4676	20	488.16	4,313.75
J-4676	1,504.22	2,580.26	J-4676	20	488.16	2,580.27
J-4679	1,506.42	5,339.65	J-4679	20	481.16	5,339.67
J-468	1,502.84	8,901.98	J-5029	-13.52	563.79	4,662.13
J-4700	1,502.61	5,334.40	J-5029	7.85	613.12	3,442.13
J-4701	1,501.08	5,217.72	J-5029	8.66	614.98	3,440.60
J-4702	1,501.76	4,700.29	J-4702	20	518.16	4,700.29
J-4709	1,505.08	1,322.23	J-4709	20	524.16	1,322.41
J-4716	1,503.11	9,680.90	J-5029	3.59	603.29	6,649.02
J-4717	1,508.59	8,535.70	J-5029	10.64	619.56	6,623.07
J-472	1,502.04	6,393.11	J-5029	12.08	622.87	4,786.79
J-4720	1,500.85	10,776.01	J-5029	-25.42	536.32	5,482.67
J-4726	1,505.01	1,489.77	J-3265	13.24	508.56	1,354.45
J-4728	1,500.00	8,616.16	J-5029	-23.33	541.16	3,752.19
J-473	1,502.73	7,473.17	J-5029	2.97	601.85	4,708.25
J-4732	1,501.79	3,331.68	J-4732	20	446.16	3,331.68
J-4734	1,504.08	5,633.51	J-5029	17.29	634.91	4,913.72
J-474	1,501.02	6,399.16	J-5029	11.19	620.83	4,659.78
J-4742	1,502.17	4,073.32	J-4614	11.05	478.51	3,712.08
J-4743	1,500.62	1,985.48	J-4743	20	522.56	1,985.50
J-4744	1,503.33	5,682.81	J-9034	18.7	443.15	5,641.62
J-4747	1,505.02	907.36	J-4747	20	476.16	907.44
J-4748	1,500.88	6,149.31	J-5029	1.77	599.09	3,282.34
J-4749	1,501.50	4,191.03	J-4901	-6.88	400.12	3,442.07
J-475	1,501.91	3,590.54	J-1158	15.67	466.16	3,474.84
J-4750	1,501.50	3,887.86	J-4901	0.49	417.13	3,352.05
J-4751	1,500.00	3,792.85	J-4901	3.09	423.13	3,329.09
J-4752	1,503.74	3,735.99	J-4901	3.09	423.14	3,280.70

J-4753	1,511.43	3,412.07	J-4901	13.06	446.15	3,224.83
J-4754	1,505.27	3,400.03	J-4901	15.76	452.38	3,282.23
J-4755	1,544.67	3,097.89	J-4755	20	408.16	3,097.89
J-4756	1,514.19	4,435.80	J-5029	18.8	638.38	4,194.68
J-4758	1,509.34	3,849.53	J-4758	20	514.16	3,849.49
J-476	1,501.51	6,801.48	J-5029	8.3	614.15	4,686.51
J-4763	1,500.74	8,552.31	J-5029	-11.52	568.41	4,478.72
J-4764	1,510.26	3,914.44	J-4764	20	514.16	3,914.43
J-4765	1,500.00	6,858.81	J-5029	2.17	600	3,923.45
J-4766	1,509.21	4,613.27	J-5029	18.14	636.87	4,236.68
J-4767	1,500.87	7,206.28	J-5029	3.41	602.87	4,494.17
J-4768	1,503.69	6,514.75	J-5029	5.17	606.94	3,918.86
J-4769	1,500.30	6,538.13	J-5029	8.98	615.73	4,500.90
J-477	1,501.99	7,626.92	J-5029	1.86	599.3	4,732.73
J-4770	1,500.00	5,625.36	J-5029	14.86	629.3	4,500.61
J-4771	1,508.74	5,330.62	J-5029	13.1	625.22	3,981.10
J-4772	1,505.79	6,400.37	J-5029	10.07	618.25	4,506.37
J-4773	1,500.00	6,963.11	J-5029	5.38	607.42	4,494.99
J-4774	1,500.00	8,249.56	J-5029	-8.09	576.33	4,476.52
J-4775	1,500.01	7,313.06	J-5029	-2.98	588.13	3,857.42
J-4776	1,503.27	7,849.71	J-5029	-9.1	574	3,864.29
J-4777	1,504.09	5,401.11	J-5029	12.25	623.27	3,890.68
J-4778	1,503.88	4,326.26	J-5029	19.18	639.27	4,162.99
J-4779	1,513.25	3,953.96	J-4779	20	514.16	3,953.94
J-478	1,504.16	8,299.97	J-5029	-5.04	583.37	4,790.47
J-4780	1,500.00	7,035.21	J-5029	-0.26	594.4	3,859.60
J-4781	1,500.82	7,073.75	J-5029	-0.63	593.54	3,859.79
J-4782	1,504.94	6,628.25	J-5029	3.57	603.24	3,862.02
J-4783	1,500.00	6,781.81	J-5029	2.11	599.88	3,857.36
J-4784	1,500.19	5,463.89	J-5029	11.74	622.08	3,857.47
J-4785	1,503.17	7,770.74	J-5029	-6.73	579.46	3,948.84
J-4786	1,507.66	5,531.45	J-5029	11.42	621.35	3,864.91
J-4789	1,500.00	8,954.23	J-5029	-12.46	566.25	4,789.55
J-479	1,500.88	9,664.03	J-5029	-21.64	545.05	4,740.83
J-4790	1,500.00	9,034.41	J-5029	-13.42	564.04	4,792.87
J-4791	1,500.00	8,516.13	J-5029	-7.45	577.81	4,793.43
J-4792	1,511.84	4,425.29	J-5029	17.68	635.81	3,969.02
J-4793	1,513.94	5,672.80	J-5029	11.29	621.06	3,962.77
J-4794	1,500.00	8,523.53	J-5029	-7.56	577.56	4,793.53
J-4796	1,501.85	6,168.09	J-5029	8.24	614.01	3,942.12
J-4797	1,508.38	5,624.49	J-5029	11.42	621.36	3,943.19
J-4798	1,514.11	3,821.78	J-4798	20	514.16	3,821.75
J-48	1,515.45	1,095.79	J-5029	18.74	638.25	898.62
J-480	1,502.19	9,872.01	J-5029	-23.28	541.26	4,803.34
J-4800	1,500.00	9,789.15	J-5029	-21.36	545.69	4,863.60
J-4801	1,501.63	6,590.64	J-5029	8.03	613.53	4,407.17
J-4802	1,500.02	7,411.73	J-5029	0.68	596.57	4,369.46

J-4803	1,500.00	7,425.57	J-5029	0.43	595.99	4,355.88
J-4804	1,501.69	7,450.61	J-5029	0.17	595.38	4,351.37
J-4805	1,505.50	7,419.81	J-5029	0.35	595.8	4,340.49
J-4806	1,501.64	6,904.81	J-5029	5.42	607.51	4,405.90
J-4807	1,510.21	6,310.78	J-5029	10.27	618.7	4,414.17
J-4808	1,506.64	6,776.72	J-5029	6.83	610.77	4,447.45
J-4809	1,500.00	7,683.36	J-5029	-0.94	592.82	4,492.06
J-481	1,502.90	9,822.25	J-5029	-22.25	543.65	4,835.17
J-4810	1,505.89	7,325.17	J-5029	1.1	597.53	4,329.16
J-4811	1,505.13	7,157.79	J-5029	2.9	601.69	4,365.71
J-4812	1,501.64	6,825.61	J-5029	5.99	608.81	4,392.05
J-4813	1,500.00	7,420.24	J-5029	0.53	596.23	4,361.77
J-4814	1,500.88	6,543.80	J-5029	8.3	614.16	4,393.75
J-4815	1,500.88	5,403.32	J-5029	15.27	630.24	4,393.75
J-4816	1,511.05	3,116.23	J-4901	19.13	460.15	3,093.49
J-4817	1,500.00	3,066.27	J-4901	18.43	458.54	3,025.69
J-4818	1,500.00	2,964.11	J-4818	20	461.16	2,964.11
J-4819	1,500.00	2,959.42	J-4823	19.13	456.16	2,937.98
J-482	1,504.27	9,800.07	J-5029	-21.28	545.89	4,887.13
J-4820	1,500.00	2,914.46	J-4820	20	458.16	2,914.46
J-4821	1,500.00	2,791.73	J-4821	20	458.16	2,791.73
J-4822	1,500.00	3,008.97	J-4901	18.26	458.15	2,964.49
J-4823	1,500.00	2,725.29	J-4823	20	458.16	2,725.29
J-4824	1,506.28	3,125.23	J-4825	20	459.16	3,125.23
J-4825	1,501.65	3,035.32	J-4825	20	459.16	3,035.33
J-483	1,503.41	9,994.24	J-5029	-23.47	540.83	4,898.77
J-4834	1,501.64	4,793.85	J-4834	20	522.16	4,793.86
J-4835	1,500.00	5,188.52	J-4835	20	522.16	5,188.54
J-4836	1,500.00	6,249.24	J-5029	18.72	638.21	5,892.06
J-4837	1,501.35	5,252.11	J-4837	20	523.16	5,252.11
J-4838	1,500.55	5,570.80	J-4838	20	526.16	5,570.81
J-4839	1,503.74	7,294.56	J-5029	12.05	622.82	5,929.40
J-484	1,503.75	10,250.83	J-5029	-26.21	534.51	4,922.97
J-4840	1,500.01	6,374.34	J-5029	18.22	637.05	5,896.62
J-4841	1,503.53	4,968.09	J-4841	20	518.16	4,968.15
J-4842	1,500.00	6,573.99	J-5029	17.26	634.84	5,920.64
J-4843	1,500.00	6,252.23	J-5029	18.78	638.35	5,911.03
J-4844	1,500.00	9,092.73	J-5029	-14.08	562.51	4,793.76
J-4845	1,500.00	9,335.07	J-5029	-16.86	556.09	4,798.94
J-4847	1,500.00	8,414.29	J-5029	-6.32	580.41	4,793.48
J-4848	1,503.66	5,018.33	J-5029	19.09	639.06	4,797.13
J-4849	1,500.00	8,391.67	J-5029	-6.07	581	4,793.36
J-485	1,500.00	8,899.48	J-5029	-11.12	569.33	4,858.61
J-4850	1,500.00	8,402.32	J-5029	-6.19	580.72	4,793.35
J-4851	1,502.31	3,975.35	J-4851	20	480.16	3,975.35
J-4854	1,509.52	4,191.13	J-4614	10.01	476.1	3,782.06
J-4855	1,511.81	4,468.65	J-4614	3.42	460.89	3,797.28

J-4856	1,512.31	2,370.11	J-4856	20	446.16	2,370.11
J-4857	1,510.66	3,159.34	J-4857	20	468.16	3,159.35
J-4858	1,514.57	3,717.85	J-4614	17.31	492.95	3,610.90
J-4859	1,508.32	4,219.84	J-4614	4.1	462.47	3,610.93
J-486	1,502.50	8,531.98	J-5029	-6.64	579.67	4,887.23
J-4860	1,504.67	4,193.85	J-4614	4.96	464.44	3,614.83
J-4861	1,500.49	2,497.40	J-4861	20	416.16	2,497.40
J-4862	1,503.56	2,792.11	J-4862	20	417.16	2,792.02
J-4863	1,509.64	3,585.07	J-4863	20	418.16	3,585.04
J-4864	1,517.13	4,016.95	J-4614	10.02	476.13	3,627.29
J-4865	1,513.23	4,133.98	J-4614	6.49	467.99	3,613.59
J-4866	1,516.49	3,642.99	J-4905	18.69	431.14	3,609.08
J-4868	1,524.42	3,467.10	J-4868	20	452.16	3,467.08
J-4869	1,507.03	3,331.56	J-4869	20	423.16	3,331.56
J-487	1,501.06	8,807.05	J-5029	-9.59	572.86	4,902.87
J-4870	1,502.33	4,104.37	J-4614	6.98	469.12	3,602.23
J-4871	1,514.55	4,065.62	J-4614	8.34	472.25	3,614.14
J-4872	1,523.43	3,885.46	J-4901	10.92	441.2	3,608.56
J-4873	1,518.52	4,089.10	J-4901	3.72	424.59	3,601.40
J-4874	1,515.34	2,463.73	J-4874	20	422.16	2,463.73
J-4875	1,515.15	3,310.78	J-4875	20	449.16	3,310.76
J-4876	1,509.02	3,430.29	J-4876	20	456.16	3,430.29
J-4877	1,516.48	3,503.61	J-4876	18.81	453.42	3,469.71
J-4878	1,504.71	6,885.61	J-5029	1.79	599.12	3,911.63
J-4879	1,507.19	2,565.59	J-4879	20	452.16	2,565.58
J-488	1,501.92	9,280.74	J-5029	-13.57	563.69	5,035.51
J-4880	1,509.21	3,813.20	J-4881	7	426.16	3,453.65
J-4881	1,506.13	2,722.61	J-4881	20	456.16	2,722.61
J-4882	1,507.95	4,144.07	J-4901	-1.65	412.19	3,518.57
J-4883	1,522.32	3,950.71	J-4901	5.36	428.37	3,522.35
J-4884	1,512.83	3,994.16	J-4901	3.47	424	3,512.65
J-4885	1,501.20	7,769.26	J-5029	-7.15	578.49	3,918.24
J-4886	1,506.80	3,776.20	J-4881	9.82	432.67	3,489.02
J-4887	1,506.09	2,717.28	J-4887	20	453.16	2,717.29
J-4888	1,509.87	3,211.64	J-4888	20	401.16	3,211.65
J-4889	1,514.12	4,178.68	J-4901	-3.38	408.21	3,509.41
J-489	1,502.72	6,936.12	J-5029	8.71	615.1	4,895.74
J-4890	1,512.32	4,166.78	J-4901	-3.48	407.97	3,497.23
J-4891	1,506.83	4,052.61	J-4901	0.22	416.51	3,485.06
J-4892	1,529.35	4,208.68	J-4901	-4.73	405.07	3,507.05
J-4893	1,503.86	3,523.00	J-4901	19.21	460.34	3,499.15
J-4894	1,506.97	3,321.88	J-4894	20	396.16	3,321.88
J-4895	1,516.58	3,232.12	J-4895	20	397.16	3,232.12
J-4896	1,524.39	3,299.11	J-4896	20	396.16	3,299.11
J-4897	1,511.29	3,277.76	J-4907	20	396.16	3,277.75
J-4898	1,513.77	2,066.41	J-4898	20	457.16	2,066.41
J-4899	1,510.75	2,773.02	J-4901	20	462.16	2,773.01

J-49	1,509.33	831.43	J-49	20	636.16	831.42
J-490	1,513.39	7,373.75	J-5029	5.58	607.88	4,934.72
J-4900	1,505.12	5,682.61	J-5029	9.67	617.33	3,773.35
J-4901	1,506.14	1,988.00	J-4901	20	462.16	1,988.00
J-4902	1,500.00	6,153.89	J-5029	7.35	611.95	3,828.30
J-4903	1,503.20	5,285.43	J-5029	12.57	624.01	3,843.13
J-4904	1,501.98	4,271.76	J-5029	18.34	637.32	3,936.04
J-4905	1,523.27	2,558.89	J-4905	20	434.16	2,558.88
J-4906	1,509.12	4,159.86	J-4901	-2.55	410.13	3,511.59
J-4907	1,512.26	3,011.91	J-4907	20	396.16	3,011.90
J-491	1,515.09	6,471.33	J-5029	12.95	624.88	5,044.08
J-492	1,505.04	9,264.21	J-5029	-12.83	565.4	5,083.03
J-4923	1,503.15	3,307.98	J-4923	20	462.16	3,307.97
J-4926	1,502.12	3,976.37	J-5029	19.32	639.59	3,841.25
J-4929	1,506.02	4,901.25	J-5029	16.27	632.55	4,108.35
J-493	1,510.02	8,762.79	J-5029	-7.4	577.92	5,071.82
J-4931	1,511.23	5,791.43	J-5029	12.33	623.46	4,225.38
J-4932	1,508.91	4,961.35	J-5029	16.58	633.26	4,262.29
J-494	1,508.40	9,038.52	J-5029	-10.39	571.03	5,076.27
J-4946	1,253.00	2,694.75	J-4946	20	394.16	2,694.76
J-495	1,505.28	9,037.25	J-5029	-10.45	570.89	5,070.80
J-496	1,508.63	9,349.78	J-5029	-13.5	563.84	5,103.43
J-497	1,510.64	5,713.30	J-5029	17.76	635.99	5,119.11
J-498	1,504.87	4,294.50	J-1144	16.97	474.16	4,191.06
J-4982	1,500.52	5,488.40	J-5029	11.87	622.4	3,881.82
J-4983	1,508.46	4,872.43	J-5029	14.93	629.46	3,874.37
J-4984	1,507.86	5,081.56	J-5029	13.81	626.87	3,867.90
J-499	1,508.23	5,289.50	J-5029	19.39	639.75	5,125.63
J-50	1,510.79	1,661.94	J-5021	13.75	626.73	957.52
J-500	1,500.81	7,309.02	J-5029	7.73	612.83	5,156.75
J-5000	1,502.17	2,036.68	J-5029	8.75	615.2	973.74
J-5001	1,501.57	1,958.95	J-5029	10.19	618.51	1,016.53
J-5002	1,503.18	1,607.31	J-5029	14.93	629.45	1,018.14
J-5003	1,503.58	2,049.30	J-5029	9.05	615.88	1,034.23
J-5004	1,503.99	2,147.53	J-5029	10.66	619.61	1,244.56
J-5005	1,501.24	3,116.89	J-5029	1.43	598.29	1,585.50
J-5006	1,501.38	3,021.49	J-5029	2.64	601.1	1,575.44
J-5007	1,501.03	3,038.69	J-5029	2.4	600.55	1,554.48
J-5008	1,502.97	2,833.06	J-5029	5	606.53	1,532.59
J-5010	1,504.50	2,719.09	J-5029	5.24	607.1	1,482.61
J-5011	1,503.13	3,218.21	J-5029	-4.18	585.35	1,412.54
J-5012	1,500.69	2,684.53	J-5029	5.4	607.45	1,465.57
J-5013	1,500.66	2,715.24	J-5029	2.86	601.59	1,282.58
J-5014	1,501.77	1,661.98	J-5029	16.32	632.66	1,283.69
J-5015	1,500.45	2,054.77	J-5029	10.45	619.11	1,123.88
J-5016	1,501.96	1,291.49	J-5029	18.64	638.03	1,125.39
J-5017	1,502.09	1,989.90	J-5029	9.72	617.44	1,022.47

J-5018	1,502.14	1,942.04	J-5029	9.26	616.36	938.76
J-5019	1,505.00	1,310.29	J-5020	15.23	630.16	810.09
J-5022	1,502.08	1,656.79	J-5029	14.28	627.96	1,012.67
J-5023	1,501.74	1,070.38	J-5029	19.68	640.41	1,012.33
J-5024	1,506.03	1,292.56	J-5025	15.23	630.16	801.92
J-5026	1,508.83	1,271.67	J-5025	17.3	634.93	901.06
J-5027	1,502.13	1,334.25	J-5029	14.72	628.97	796.67
J-5031	1,503.94	1,224.60	J-5029	16.08	632.12	798.48
J-5033	1,500.80	1,889.72	J-5029	11.19	620.82	1,021.18
J-5034	1,500.93	1,926.34	J-5029	10.66	619.59	1,021.31
J-5035	1,501.77	1,172.62	J-5029	19.08	639.04	1,022.15
J-5036	1,501.78	1,662.64	J-5029	14.25	627.89	1,022.16
J-5037	1,502.47	1,226.57	J-5029	18.69	638.14	1,022.86
J-5038	1,501.05	1,744.41	J-5029	13.2	625.45	1,021.43
J-5039	1,501.24	1,621.25	J-5029	14.75	629.04	1,021.62
J-5040	1,501.11	1,013.60	J-5040	20	608.16	1,013.59
J-5041	1,501.02	1,498.16	J-5029	16.15	632.28	1,021.40
J-5042	1,501.51	1,115.16	J-5029	19.44	639.87	1,021.89
J-5043	1,501.02	1,197.55	J-5029	19	638.85	1,021.40
J-5044	1,502.51	1,015.28	J-5044	20	622.16	1,015.25
J-5045	1,500.58	1,115.04	J-5029	19.44	639.87	1,020.96
J-5046	1,501.95	1,728.68	J-5029	13.41	625.96	1,022.33
J-5047	1,501.10	1,374.36	J-5029	17.41	635.18	1,021.48
J-5048	1,501.80	1,318.31	J-5029	17.93	636.38	1,022.19
J-5049	1,500.91	1,687.03	J-5029	13.93	627.16	1,021.29
J-5050	1,500.89	1,490.05	J-5029	16.24	632.47	1,021.27
J-5051	1,500.66	1,582.26	J-5029	15.2	630.09	1,021.04
J-5052	1,502.64	1,560.28	J-5029	15.48	630.72	1,023.02
J-5053	1,501.00	1,585.19	J-5029	15.17	630.02	1,021.38
J-5054	1,502.03	1,342.45	J-5029	17.71	635.88	1,022.41
J-5055	1,501.45	3,409.07	J-5029	-2.02	590.34	1,620.21
J-5056	1,503.04	2,641.32	J-5029	8.8	615.31	1,592.81
J-5057	1,501.14	1,805.90	J-5029	18.16	636.9	1,590.91
J-5058	1,503.34	2,593.29	J-5029	9.17	616.15	1,574.28
J-5059	1,501.86	1,651.38	J-5029	19.35	639.67	1,572.80
J-5060	1,500.81	2,828.04	J-5029	8.76	615.21	1,735.24
J-5061	1,502.91	3,066.59	J-5029	6.72	610.52	1,762.84
J-5062	1,507.21	2,899.22	J-5029	9.18	616.2	1,806.74
J-5063	1,506.89	2,705.91	J-5029	10.89	620.13	1,759.97
J-5064	1,504.39	2,152.56	J-5029	16.79	633.75	1,763.32
J-5065	1,503.90	1,702.89	J-5103	20	616.16	1,702.89
J-5099	1,501.84	5,709.62	J-5029	18.64	638.01	5,438.32
J-51	1,505.54	1,765.96	J-5029	12.39	623.6	952.17
J-5100	1,501.30	1,596.58	J-5029	19.66	640.36	1,554.74
J-5101	1,503.38	1,708.32	J-5029	17.77	636.01	1,468.25
J-5102	1,501.98	1,423.38	J-5102	20	606.16	1,423.38
J-5103	1,501.79	1,190.01	J-5103	20	616.16	1,189.97

J-5104	1,502.88	1,496.74	J-5029	17.67	635.77	1,243.45
J-52	1,501.93	1,874.08	J-5029	10.82	619.98	949.14
J-53	1,509.09	1,328.92	J-5029	17.25	634.8	936.47
J-535	1,512.75	987.59	J-535	20	518.16	987.69
J-537	1,505.00	4,720.03	J-537	20	507.16	4,720.03
J-538	1,504.76	4,398.26	J-538	20	514.66	4,398.29
J-539	1,500.00	5,619.26	J-539	20	516.16	5,619.28
J-54	1,500.52	1,096.14	J-5029	19.05	638.97	927.9
J-55	1,504.34	1,764.45	J-5029	12.48	623.81	955.37
J-554	1,502.25	3,284.77	J-1409	10.16	463.45	3,042.14
J-556	1,504.41	2,941.25	J-556	20	496.66	2,941.24
J-56	1,507.00	1,237.67	J-5029	18.27	637.16	958.02
J-563	1,508.48	1,596.02	J-1342	14.29	515.98	1,464.81
J-565	1,502.55	1,425.09	J-1459	19.45	524.9	1,413.12
J-567	1,504.22	1,449.79	J-1342	18.45	525.58	1,414.72
J-568	1,509.31	1,481.31	J-3267	15.63	513.07	1,391.61
J-57	1,505.38	1,890.48	J-5029	10.81	619.95	960.8
J-573	1,510.11	1,508.41	J-4709	15.82	514.5	1,419.29
J-574	1,521.82	1,471.10	J-574	20	501.16	1,471.05
J-575	1,515.97	1,138.44	J-575	20	488.16	1,138.71
J-576	1,511.77	1,540.16	J-3265	10.18	501.5	1,348.36
J-577	1,506.73	1,456.82	J-3265	15.42	513.6	1,363.60
J-578	1,504.24	1,546.37	J-3265	11.3	504.09	1,370.95
J-579	1,505.08	1,644.00	J-3265	7.24	494.7	1,388.47
J-58	1,503.23	1,905.31	J-5029	10.5	619.22	956.14
J-580	1,509.29	1,655.20	J-3265	10.08	501.25	1,445.64
J-581	1,509.37	1,691.60	J-3265	14.28	510.95	1,559.39
J-582	1,505.95	1,597.85	J-4671	19.51	535.02	1,584.09
J-583	1,504.24	1,581.47	J-4671	19.35	534.66	1,563.61
J-584	1,515.53	1,562.13	J-584	20	536.16	1,562.15
J-585	1,508.46	1,928.36	J-4671	12.01	517.71	1,705.37
J-586	1,508.49	2,106.85	J-4671	7.95	508.36	1,766.76
J-587	1,506.83	2,041.91	J-584	10.95	515.26	1,778.47
J-588	1,511.88	4,021.46	J-584	7.91	508.26	3,394.67
J-589	1,514.42	2,749.99	J-589	20	516.66	2,749.99
J-59	1,513.86	6,878.94	J-5029	4.92	606.35	4,314.89
J-592	1,503.01	4,893.39	J-592	20	453.06	4,893.37
J-593	1,505.50	5,864.91	J-4539	3.37	489.77	4,899.42
J-594	1,504.15	6,593.24	J-5029	13.7	626.61	5,312.66
J-595	1,503.27	6,002.01	J-4539	0.34	482.79	4,892.63
J-596	1,509.03	5,238.79	J-596	20	474.66	5,238.79
J-597	1,501.70	5,368.78	J-597	20	460.66	5,373.78
J-598	1,501.57	4,363.89	J-1052	19.78	471.15	4,356.41
J-599	1,505.94	4,274.88	J-599	20	465.66	4,274.88
J-6	1,502.59	1,903.47	J-5029	10.51	619.26	955.51
J-60	1,502.02	6,507.99	J-5029	7.95	613.34	4,309.99
J-601	1,505.24	7,767.43	J-5029	4.61	605.64	5,242.02

J-6018	1,501.99	5,841.92	J-5029	8.59	614.83	3,759.36
J-6019	1,501.62	5,173.80	J-5029	12.55	623.96	3,772.28
J-602	1,502.73	6,803.99	J-5029	12.38	623.58	5,412.82
J-6020	1,502.71	4,841.53	J-5029	14.43	628.29	3,773.63
J-6021	1,504.36	3,211.73	J-6021	20	490.16	3,211.74
J-6022	1,507.95	5,849.33	J-5029	9.61	617.19	3,856.54
J-6023	1,501.85	4,783.47	J-5029	15.56	630.91	3,902.63
J-6024	1,519.21	4,305.26	J-5029	17.79	636.05	3,867.80
J-6025	1,500.20	6,640.64	J-5029	3.63	603.37	3,873.30
J-6026	1,512.48	6,413.32	J-5029	5.46	607.59	3,859.42
J-6027	1,509.37	6,243.78	J-5029	6.85	610.81	3,855.59
J-6028	1,516.49	6,107.83	J-5029	8	613.46	3,860.72
J-6029	1,516.16	5,695.77	J-5029	10.49	619.2	3,862.06
J-603	1,500.00	10,432.54	J-5029	-21.37	545.68	5,495.04
J-6030	1,514.86	5,442.18	J-5029	11.84	622.33	3,860.42
J-6031	1,500.89	6,588.50	J-5029	3.73	603.6	3,842.98
J-6032	1,508.61	5,480.81	J-5029	11.61	621.78	3,854.62
J-6033	1,514.41	5,594.23	J-5029	11.02	620.44	3,860.28
J-6034	1,506.64	6,627.17	J-5029	13.37	625.85	5,291.24
J-6035	1,504.83	5,900.55	J-5029	17.88	636.26	5,326.31
J-6036	1,504.32	4,000.65	J-6036	20	459.16	4,000.65
J-6037	1,504.46	5,012.90	J-5029	19.71	640.49	4,945.79
J-6038	1,503.20	4,356.99	J-4625	19.13	329.16	4,326.41
J-604	1,508.19	4,677.65	J-604	20	475.16	4,677.66
J-6048	1,502.30	4,685.37	J-5029	13.63	626.46	3,616.82
J-6049	1,501.84	2,095.31	J-5029	15.34	630.41	1,591.60
J-605	1,504.11	9,166.83	J-5029	-6.92	579.02	5,538.77
J-6052	1,508.19	7,538.72	J-5029	-14.83	560.78	3,121.45
J-6054	1,501.63	4,595.97	J-5029	12.84	624.64	3,441.14
J-6055	1,500.00	1,945.15	J-5029	9.53	617	965.97
J-6056	1,512.72	5,107.19	J-6056	20	437.16	5,107.20
J-6057	1,502.87	4,569.21	J-6057	20	446.16	4,569.21
J-6058	1,511.05	3,879.37	J-6061	5.19	380.98	3,652.90
J-6059	1,500.00	8,519.25	J-5029	0.57	596.31	5,981.05
J-606	1,501.39	8,480.53	J-5029	0.98	597.27	5,595.35
J-6060	1,503.28	8,443.38	J-5029	1.31	598.02	5,984.34
J-6061	1,519.99	2,554.02	J-6061	20	415.16	2,554.08
J-6062	1,505.85	3,267.41	J-6062	20	381.16	3,267.55
J-6063	1,502.61	4,378.59	J-6061	-4.78	357.97	3,974.70
J-6064	1,500.80	8,078.34	J-5029	4.69	605.82	5,981.91
J-6065	1,501.96	5,932.77	J-5029	19.48	639.95	5,788.99
J-6066	1,504.04	5,357.35	J-9069	17.61	476.15	5,251.97
J-607	1,501.56	8,055.81	J-5029	5.73	608.22	5,659.48
J-6076	1,501.96	6,583.18	J-5029	-4.23	585.23	3,042.40
J-6077	1,509.31	4,712.98	J-5029	10.13	618.39	3,057.16
J-6078	1,508.58	4,172.04	J-5029	13.66	626.54	3,055.86
J-6079	1,505.69	4,868.52	J-5029	9.08	615.95	3,052.75

J-608	1,514.47	3,884.09	J-608	20	475.66	3,884.09
J-6080	1,500.00	6,876.13	J-5029	0.67	596.55	3,820.95
J-6081	1,500.83	4,944.87	J-5029	14.22	627.82	3,821.77
J-6082	1,503.26	4,048.54	J-5029	18.86	638.53	3,824.20
J-6083	1,501.63	7,620.78	J-5029	-6.88	579.13	3,822.58
J-609	1,513.99	3,577.36	J-4537	8.73	486.15	3,271.55
J-61	1,506.29	6,178.04	J-5029	10.55	619.34	4,316.88
J-610	1,509.50	5,044.74	J-1078	17.83	496.14	4,964.58
J-615	1,501.91	6,555.79	J-5029	16.17	632.31	5,765.54
J-616	1,501.98	6,141.73	J-5029	18.02	636.6	5,748.78
J-617	1,501.45	6,576.15	J-5029	15.84	631.55	5,735.70
J-618	1,500.70	5,891.23	J-5029	19.39	639.74	5,773.19
J-619	1,501.77	8,244.13	J-5029	4.23	604.77	5,664.49
J-620	1,502.49	7,042.68	J-5029	12.55	623.95	5,659.62
J-622	1,500.93	5,432.34	J-622	20	433.16	5,432.23
J-623	1,501.40	5,536.98	J-623	20	441.16	5,536.98
J-624	1,500.07	11,042.80	J-5029	-22.83	542.32	5,735.13
J-625	1,502.45	6,789.56	J-5029	14.67	628.85	5,740.00
J-627	1,503.38	8,670.61	J-5029	3.35	602.74	5,883.54
J-628	1,501.89	5,491.83	J-628	20	423.16	5,491.84
J-629	1,506.04	4,461.91	J-630	18.26	402.15	4,420.03
J-630	1,503.47	2,822.39	J-630	20	406.16	2,823.31
J-631	1,503.62	2,490.52	J-969	12.2	335.16	2,410.59
J-632	1,502.25	2,126.16	J-632	20	304.16	2,126.16
J-633	1,501.47	1,504.15	J-633	20	256.16	1,504.15
J-634	1,502.55	5,418.58	J-945	20	436.16	5,418.57
J-635	1,500.56	8,105.12	J-5029	9.61	617.18	6,144.45
J-636	1,502.65	8,283.19	J-5029	8.64	614.94	6,177.17
J-637	1,502.09	8,345.53	J-5029	8.6	614.85	6,216.87
J-639	1,501.58	11,826.40	J-5029	-22.04	544.14	6,219.97
J-640	1,500.51	12,003.60	J-5029	-24.94	537.43	6,150.93
J-641	1,501.01	6,805.02	J-5029	17.15	634.59	6,185.71
J-642	1,504.01	6,687.98	J-5029	17.76	635.98	6,206.64
J-643	1,502.26	6,985.16	J-5029	16.38	632.8	6,192.01
J-644	1,504.06	6,206.48	J-5029	19.91	640.94	6,187.91
J-645	1,501.10	6,512.98	J-5029	14.32	628.05	5,455.63
J-65	1,523.46	3,366.98	J-65	20	490.16	3,366.98
J-6500	1,500.00	8,483.96	J-5029	-28.43	529.39	3,117.24
J-6501	1,508.13	3,849.20	J-5029	15.87	631.64	3,125.35
J-6502	1,508.25	4,079.90	J-5029	14.43	628.29	3,125.48
J-6505	1,510.07	3,640.05	J-5029	17.16	634.59	3,127.30
J-6506	1,511.98	3,706.03	J-5029	16.77	633.71	3,129.22
J-6508	1,516.78	6,549.52	J-5029	-3.54	586.84	3,134.02
J-66	1,509.49	2,734.58	J-66	20	480.16	2,734.58
J-67	1,501.32	1,981.90	J-67	20	470.16	1,983.11
J-68	1,503.29	2,516.27	J-70	20	386.16	2,516.58
J-69	1,501.84	1,830.18	J-69	20	376.16	1,830.18

J-7	1,505.60	4,631.15	J-5029	10.77	619.86	3,122.85
J-70	1,502.46	1,762.65	J-70	20	386.16	1,762.66
J-702	1,502.08	6,905.51	J-5029	15.87	631.62	6,023.76
J-709	1,502.02	3,181.95	J-709	20	514.16	3,181.98
J-71	1,501.03	5,277.40	J-5029	6.33	609.62	3,052.12
J-710	1,501.53	2,637.92	J-710	20	520.76	2,638.30
J-711	1,501.02	1,804.96	J-711	20	503.16	1,804.96
J-712	1,501.57	2,719.71	J-712	20	504.66	2,719.98
J-713	1,501.47	2,192.48	J-1127	16.3	506.62	2,111.87
J-714	1,501.70	3,169.44	J-714	20	526.16	3,171.13
J-715	1,501.72	2,455.81	J-1112	17.62	521.16	2,390.34
J-716	1,501.52	5,286.66	J-716	20	504.66	5,286.67
J-717	1,501.44	5,918.03	J-717	20	505.16	5,918.03
J-719	1,500.98	4,651.55	J-719	20	516.16	4,651.54
J-72	1,503.22	5,116.20	J-5029	7.42	612.14	3,054.28
J-720	1,501.96	2,074.27	J-720	20	509.56	2,074.30
J-721	1,501.62	2,064.77	J-721	20	512.06	2,064.80
J-722	1,500.40	2,166.89	J-722	20	514.86	2,166.94
J-723	1,504.31	1,785.26	J-723	20	518.96	1,785.26
J-724	1,506.14	1,698.58	J-724	20	519.86	1,698.59
J-725	1,504.99	2,792.99	J-725	20	522.56	2,793.17
J-73	1,510.87	4,517.89	J-5029	11.44	621.4	3,061.91
J-74	1,505.43	4,691.74	J-5029	10.26	618.67	3,056.49
J-75	1,505.59	3,817.27	J-5029	15.85	631.58	3,056.65
J-76	1,504.55	2,125.01	J-76	20	457.16	2,125.01
J-77	1,504.86	8,023.02	J-5029	5.27	607.16	5,987.83
J-78	1,500.80	8,475.55	J-5029	0.99	597.28	5,982.02
J-79	1,512.23	8,149.05	J-5029	4.14	604.56	5,993.39
J-8	1,500.00	6,693.84	J-5029	10.74	619.79	4,941.31
J-80	1,506.47	8,112.82	J-5029	4.42	605.21	5,987.62
J-8013	1,509.51	1,401.21	J-8013	20	516.16	1,401.22
J-802	1,503.18	6,810.89	J-5029	11.97	622.63	5,332.35
J-803	1,504.16	6,566.16	J-5029	13.41	625.95	5,287.76
J-804	1,504.59	6,592.51	J-5029	13.48	626.1	5,351.62
J-805	1,501.86	7,323.01	J-5029	9.2	616.22	5,485.54
J-807	1,502.58	7,121.75	J-5029	9.96	617.99	5,337.10
J-808	1,500.76	10,794.39	J-5029	-25.76	535.55	5,475.36
J-809	1,501.57	7,620.50	J-5029	8.91	615.57	5,693.79
J-81	1,505.71	1,454.70	J-81	20	351.16	1,454.70
J-810	1,501.41	7,948.71	J-5029	10.94	620.24	6,188.08
J-811	1,500.85	7,147.37	J-5029	10.28	618.72	5,471.38
J-82	1,503.22	8,092.48	J-5029	4.58	605.57	5,984.32
J-83	1,502.29	6,362.59	J-5029	18.18	636.96	5,983.40
J-84	1,504.59	6,911.76	J-5029	15.21	630.11	5,985.71
J-85	1,500.96	8,083.54	J-5029	4.64	605.71	5,982.01
J-86	1,504.84	4,133.53	J-5029	13.72	626.67	3,013.93
J-88	1,503.21	8,094.52	J-5029	4.56	605.53	5,984.33

J-89	1,500.14	6,131.46	J-5029	19.29	639.51	5,981.25
J-90	1,505.69	6,645.16	J-5029	16.79	633.74	5,986.81
J-900	1,501.76	1,861.48	J-900	20	505.96	1,861.48
J-9000	1,502.39	4,852.38	J-3070	17.67	517.77	4,728.52
J-9001	1,509.56	5,300.05	J-584	12.1	517.92	4,772.31
J-9002	1,501.69	2,658.53	J-9002	20	494.06	2,658.53
J-9003	1,505.57	5,845.29	J-9003	20	494.16	5,845.29
J-9004	1,507.95	6,270.97	J-5029	18.71	638.18	6,001.02
J-9005	1,500.01	6,933.42	J-5029	15.09	629.83	5,990.91
J-9006	1,504.03	7,864.32	J-5029	6.79	610.67	5,993.06
J-9007	1,502.38	1,460.04	J-9007	20	493.16	1,460.54
J-9008	1,500.47	7,533.92	J-5029	9.82	617.67	5,995.78
J-9009	1,501.42	6,541.53	J-5029	17.33	634.99	5,990.43
J-9010	1,500.50	7,130.12	J-5029	13.3	625.7	5,986.65
J-9011	1,503.65	6,811.10	J-5029	15.97	631.85	5,990.75
J-9012	1,500.00	6,984.00	J-5029	14.56	628.61	5,985.31
J-9013	1,503.24	6,933.38	J-5029	15.02	629.67	5,987.50
J-9014	1,500.00	3,508.24	J-9014	20	488.16	3,508.22
J-9015	1,502.44	2,945.10	J-9015	20	470.66	2,945.10
J-9016	1,505.31	4,734.53	J-9015	18.92	468.16	4,695.83
J-9017	1,506.15	3,425.23	J-9017	20	470.16	3,425.22
J-9018	1,501.29	7,861.55	J-5029	6.73	610.53	5,985.56
J-9019	1,503.44	7,745.89	J-5029	7.8	612.99	5,987.56
J-902	1,504.80	7,870.31	J-5029	7.16	611.53	5,673.85
J-9020	1,503.80	3,778.38	J-9020	20	456.16	3,778.38
J-9021	1,500.01	8,045.74	J-5029	4.99	606.51	5,981.19
J-9022	1,501.70	8,133.32	J-5029	4.18	604.64	5,982.73
J-9023	1,509.37	5,973.66	J-9020	17.4	450.16	5,880.73
J-9024	1,503.74	6,294.31	J-5029	18.43	637.53	5,969.10
J-9025	1,507.04	2,942.34	J-9025	20	446.66	2,942.34
J-9026	1,502.98	5,296.12	J-9025	19.78	446.16	5,289.45
J-9027	1,503.40	6,472.63	J-5029	17.59	635.59	5,976.13
J-9028	1,505.02	8,201.07	J-5029	3.57	603.23	5,985.25
J-9029	1,507.75	4,308.92	J-9034	18.7	443.16	4,272.45
J-903	1,500.97	6,167.05	J-5029	17.32	634.98	5,636.20
J-9030	1,500.82	8,486.30	J-5029	0.88	597.04	5,981.26
J-9031	1,501.68	8,361.78	J-5029	2.05	599.74	5,982.64
J-9032	1,502.76	2,920.40	J-9032	20	409.16	2,920.39
J-9033	1,502.73	3,697.71	J-9033	20	410.16	3,697.72
J-9034	1,507.95	2,861.76	J-9034	20	446.16	2,861.76
J-9035	1,504.88	2,863.07	J-9035	20	441.16	2,863.06
J-9036	1,502.52	5,746.50	J-9036	20	452.16	5,746.49
J-9037	1,504.68	5,789.84	J-9040	13.5	444.15	5,568.49
J-9038	1,502.43	1,356.69	J-9038	20	451.16	1,356.70
J-9039	1,501.00	2,425.93	J-9040	19.13	457.15	2,412.73
J-904	1,500.76	7,194.16	J-5029	11.25	620.97	5,617.56
J-9040	1,504.05	1,105.71	J-9040	20	459.16	1,105.71

J-9041	1,501.15	6,510.26	J-5029	17.31	634.96	5,960.44
J-9042	1,500.49	6,482.80	J-5029	17.42	635.2	5,954.75
J-9043	1,503.91	5,983.49	J-5029	19.93	640.98	5,967.65
J-9044	1,500.00	4,603.22	J-9045	15.67	476.16	4,440.57
J-9045	1,500.00	3,469.10	J-9045	20	486.16	3,469.09
J-9046	1,500.00	2,673.53	J-9046	20	491.16	2,673.53
J-9047	1,501.63	3,657.46	J-9047	20	496.16	3,657.46
J-9048	1,500.01	6,165.90	J-5029	19.12	639.14	5,981.74
J-9049	1,500.00	6,953.71	J-5029	14.8	629.15	5,981.74
J-9050	1,505.29	3,020.97	J-9050	20	486.16	3,020.97
J-9051	1,502.96	2,294.17	J-9051	20	471.16	2,294.57
J-9052	1,503.59	4,864.83	J-9050	11.77	467.16	4,553.47
J-9053	1,500.58	6,491.48	J-5029	17.31	634.95	5,943.57
J-9054	1,502.38	6,347.99	J-5029	18.03	636.6	5,942.15
J-9055	1,500.00	5,492.68	J-9055	20	473.16	5,492.68
J-9056	1,502.41	4,741.13	J-9056	20	475.16	4,741.13
J-9057	1,500.00	4,648.27	J-4651	20	472.16	4,648.25
J-9058	1,505.16	3,748.26	J-9058	20	480.66	3,748.27
J-9059	1,501.60	4,533.22	J-9059	20	479.16	4,533.23
J-9060	1,504.56	5,420.98	J-9060	20	478.16	5,420.98
J-9061	1,505.88	5,020.10	J-9079	18.02	491.59	4,931.26
J-9062	1,505.37	3,466.03	J-9062	20	471.16	3,466.03
J-9063	1,501.89	4,236.32	J-9063	20	472.16	4,236.34
J-9064	1,500.52	4,298.76	J-9064	20	483.16	4,298.78
J-9065	1,504.19	4,296.97	J-9065	20	496.16	4,297.00
J-9066	1,504.69	4,682.98	J-9066	20	503.16	4,682.99
J-9067	1,504.89	4,259.09	J-9067	20	506.16	4,259.09
J-9068	1,502.71	2,800.60	J-9068	20	496.16	2,800.60
J-9069	1,502.03	1,686.20	J-9069	20	481.66	1,685.97
J-9070	1,506.09	2,289.02	J-9069	19.78	481.16	2,284.80
J-9072	1,506.36	2,744.74	J-9072	20	489.16	2,744.74
J-9073	1,505.27	5,017.66	J-9073	20	486.16	5,017.66
J-9074	1,504.04	5,126.89	J-9071	15.23	499.14	4,892.23
J-9075	1,503.13	1,883.10	J-9071	18.48	506.65	1,854.11
J-9077	1,504.29	4,780.17	J-9077	20	502.16	4,780.17
J-9078	1,502.70	1,209.06	J-9078	20	501.66	1,209.06
J-9079	1,505.43	3,642.27	J-9079	20	496.16	3,642.27
J-908	1,500.47	7,071.14	J-5029	13.69	626.59	5,951.27
J-9080	1,504.86	6,690.10	J-5029	16.06	632.06	5,879.02
J-9081	1,504.83	6,672.50	J-5029	16.14	632.24	5,870.06
J-9082	1,504.82	5,290.00	J-9082	20	479.16	5,290.00
J-9083	1,505.73	2,350.10	J-9083	20	471.66	2,351.80
J-9084	1,505.90	2,930.77	J-9069	20	481.66	2,930.75
J-9085	1,502.89	1,799.16	J-9085	20	468.16	1,799.16
J-9086	1,507.24	4,982.22	J-9087	17.83	466.16	4,897.13
J-9087	1,506.26	3,829.36	J-9087	20	471.16	3,829.43
J-9088	1,508.27	5,669.04	J-5029	18.97	638.78	5,393.17

J-9089	1,505.10	3,602.93	J-9069	19.78	481.15	3,596.43
J-9090	1,503.22	5,999.67	J-5029	19.19	639.28	5,776.97
J-9091	1,506.65	6,275.84	J-5029	18.1	636.78	5,827.08
J-9092	1,504.91	2,189.56	J-9092	20	487.16	2,189.48
J-9093	1,507.07	6,798.69	J-5029	15.13	629.92	5,761.41
J-9094	1,502.94	2,819.99	J-9094	20	490.16	2,819.99
J-9095	1,503.49	6,645.38	J-5029	16.3	632.61	5,867.11
J-9096	1,501.64	6,578.53	J-5029	16.63	633.37	5,856.42
J-9097	1,502.48	6,308.01	J-5029	18.03	636.62	5,854.81
J-9098	1,502.01	5,756.87	J-9100	19.38	509.73	5,720.56
J-9099	1,502.80	5,683.22	J-9100	13.5	496.16	5,335.50
J-91	1,500.19	7,705.08	J-5029	-7.78	577.05	3,832.85
J-910	1,502.46	4,463.40	J-910	20	517.66	4,463.41
J-9100	1,503.20	2,792.52	J-9100	20	511.16	2,792.52
J-9101	1,503.83	6,184.87	J-5029	18.68	638.1	5,852.96
J-9102	1,503.81	2,572.65	J-9102	20	522.16	2,572.64
J-9103	1,502.72	2,601.34	J-9103	20	523.66	2,601.34
J-9104	1,504.24	6,264.55	J-5029	18.3	637.23	5,851.95
J-9105	1,504.92	2,164.34	J-9105	20	523.16	2,164.86
J-9106	1,506.67	3,057.27	J-9106	20	516.16	3,057.27
J-9107	1,504.20	7,245.32	J-5029	10.64	619.56	5,676.40
J-9108	1,505.98	7,242.30	J-5029	10.6	619.46	5,664.27
J-9109	1,506.98	6,817.29	J-5029	14.36	628.15	5,612.70
J-9110	1,507.43	7,153.99	J-5029	11.07	620.54	5,567.57
J-9111	1,509.27	1,689.38	J-9111	20	475.16	1,689.39
J-9112	1,507.95	1,287.22	J-9112	20	483.16	1,287.22
J-9113	1,504.84	5,352.55	J-9113	20	490.16	5,352.56
J-9114	1,506.54	7,003.68	J-5029	12.47	623.78	5,556.69
J-9115	1,504.30	6,563.16	J-5029	15.73	631.29	5,485.54
J-9116	1,503.33	6,633.81	J-5029	14.88	629.34	5,370.95
J-9117	1,508.53	2,361.38	J-9117	20	456.16	2,361.38
J-9118	1,505.62	5,253.11	J-5029	19.78	640.65	5,195.25
J-9119	1,507.42	5,844.73	J-5029	17.18	634.66	5,125.89
J-912	1,500.30	9,624.05	J-5029	-21.87	544.54	4,689.82
J-9120	1,510.88	5,765.20	J-5029	19.91	640.94	5,738.96
J-9121	1,508.11	5,870.63	J-5029	19.58	640.19	5,754.15
J-9122	1,503.27	6,441.42	J-5029	17.3	634.92	5,787.75
J-9123	1,508.31	5,014.23	J-9105	19.13	521.16	4,964.57
J-9124	1,502.79	6,557.81	J-5029	16.76	633.67	5,813.17
J-9125	1,501.65	5,455.00	J-9125	20	526.16	5,455.00
J-9126	1,505.61	5,112.09	J-9127	19.13	526.16	5,059.36
J-9127	1,505.47	3,321.03	J-9127	20	528.16	3,321.04
J-9128	1,502.74	3,646.06	J-9128	20	521.16	3,646.06
J-9129	1,503.83	6,873.46	J-5029	14.92	629.42	5,857.27
J-9130	1,509.45	4,479.35	J-9130	20	511.16	4,479.39
J-9131	1,504.88	3,208.75	J-9131	20	515.66	3,208.75
J-9132	1,500.01	6,883.81	J-5029	15.37	630.48	5,976.84

J-9133	1,503.98	3,408.95	J-9232	20	526.16	3,408.99
J-9134	1,500.81	6,512.81	J-584	4.58	500.58	5,578.89
J-9135	1,500.01	6,749.06	J-584	4.03	499.31	5,774.79
J-9136	1,500.00	6,783.37	J-584	4.13	499.52	5,809.10
J-9137	1,500.01	6,876.17	J-584	5.44	502.55	5,957.56
J-9138	1,502.41	4,632.24	J-9138	20	491.16	4,632.24
J-9139	1,502.42	5,185.68	J-9139	20	494.16	5,185.68
J-9140	1,502.42	7,376.28	J-5029	11.41	621.33	6,011.86
J-9141	1,500.00	7,521.27	J-5029	10.15	618.42	6,012.97
J-9142	1,501.61	7,573.78	J-5029	9.72	617.44	6,017.18
J-9143	1,500.01	7,358.91	J-5029	11.89	622.45	6,026.21
J-9144	1,500.00	7,417.79	J-5029	11.45	621.42	6,017.86
J-9145	1,504.70	3,861.93	J-9145	20	528.16	3,861.93
J-9146	1,505.78	4,999.64	J-9146	20	532.16	4,999.67
J-9147	1,500.55	5,218.37	J-9146	17.48	526.33	5,060.14
J-9148	1,501.76	7,195.19	J-5029	12.34	623.49	5,840.68
J-9149	1,508.31	4,371.06	J-9149	20	518.16	4,371.06
J-9150	1,504.16	5,395.98	J-9149	19.02	515.89	5,338.49
J-9151	1,502.94	7,679.03	J-5029	7.18	611.57	5,722.88
J-9152	1,501.83	7,688.17	J-5029	7	611.16	5,707.82
J-9153	1,505.15	8,164.24	J-5029	1.57	598.62	5,579.38
J-9154	1,505.48	5,892.46	J-5029	19.35	639.66	5,712.96
J-9155	1,504.36	6,547.84	J-5029	16.55	633.2	5,661.76
J-9156	1,504.86	5,704.17	J-5029	19.8	640.7	5,648.54
J-9157	1,502.99	2,895.83	J-9157	20	492.16	2,895.84
J-9158	1,504.09	5,889.84	J-5029	18.66	638.06	5,530.82
J-9159	1,502.68	7,405.33	J-5029	11	620.4	5,998.95
J-9160	1,502.89	6,243.24	J-5029	18.84	638.47	5,999.97
J-9161	1,501.71	8,792.27	J-5029	-5.86	581.47	5,436.63
J-9162	1,502.76	7,417.22	J-5029	8.11	613.71	5,452.25
J-9163	1,506.11	6,708.86	J-5029	14.85	629.28	5,483.99
J-9164	1,505.57	3,866.95	J-9164	20	461.16	3,867.03
J-9165	1,505.90	4,469.78	J-9164	20	461.16	4,469.78
J-9166	1,504.77	6,662.58	J-5029	15.21	630.11	5,489.30
J-9167	1,503.82	7,124.07	J-5029	11.1	620.63	5,504.28
J-9168	1,504.26	7,103.96	J-5029	11.28	621.04	5,503.66
J-9169	1,504.96	4,797.35	J-9169	20	448.16	4,797.36
J-917	1,505.19	2,246.98	J-4671	10.49	514.22	1,954.76
J-9170	1,507.45	5,717.55	J-5029	19.28	639.5	5,523.90
J-9171	1,505.72	5,448.89	J-9169	20	448.16	5,448.87
J-9172	1,505.41	1,320.08	J-9172	20	471.16	1,320.08
J-9174	1,507.29	2,972.47	J-9174	20	456.16	2,972.48
J-9175	1,502.98	4,478.21	J-5029	19.86	640.84	4,444.86
J-9176	1,504.05	5,267.40	J-5029	19.85	640.81	5,225.26
J-9177	1,501.66	6,269.23	J-5029	15.92	631.74	5,222.86
J-9178	1,501.69	6,837.98	J-5029	12.19	623.14	5,240.51
J-9179	1,501.63	7,162.60	J-5029	9.85	617.74	5,299.07

J-9180	1,500.46	8,357.45	J-5029	-1.93	590.54	5,355.38
J-9182	1,500.87	8,348.33	J-5029	2.19	600.04	5,981.93
J-9183	1,502.45	7,468.23	J-5029	11.2	620.85	6,017.34
J-9188	1,501.11	4,005.99	J-9232	20	526.16	4,005.96
J-9189	1,501.91	3,541.67	J-9189	20	526.16	3,541.73
J-92	1,502.47	6,971.54	J-5029	0.31	595.71	3,856.50
J-920	1,502.23	4,037.21	J-4616	16.15	403.27	3,952.38
J-921	1,501.63	4,839.05	J-1469	11.77	413.16	4,608.96
J-922	1,501.87	6,269.15	J-5029	19.6	640.24	6,188.49
J-923	1,502.07	4,947.02	J-923	20	367.16	4,947.02
J-9232	1,506.37	2,384.22	J-9232	20	526.16	2,384.19
J-924	1,502.60	6,141.78	J-924	20	386.16	6,141.78
J-925	1,502.10	4,588.76	J-925	20	345.16	4,588.77
J-926	1,502.39	4,221.77	J-926	20	331.16	4,221.77
J-927	1,502.38	7,808.02	J-5029	11.85	622.36	6,183.52
J-928	1,501.63	3,498.10	J-928	20	414.16	3,498.07
J-929	1,502.24	5,056.89	J-929	20	424.36	5,056.92
J-9299	1,500.00	8,892.05	J-5029	-7.77	577.07	5,322.40
J-93	1,500.77	7,543.94	J-5029	-6.18	580.74	3,809.08
J-930	1,501.74	4,136.48	J-930	20	425.96	4,136.48
J-9300	1,504.46	6,389.49	J-5029	16.41	632.86	5,467.29
J-9301	1,503.55	4,898.58	J-9301	20	461.16	4,898.59
J-931	1,501.34	8,142.96	J-5029	9.96	617.99	6,205.91
J-932	1,500.34	3,031.50	J-932	20	436.16	3,031.50
J-933	1,500.64	11,862.76	J-5029	-22.11	543.97	6,237.42
J-934	1,503.81	5,004.27	J-934	20	426.16	5,004.27
J-935	1,502.76	1,662.42	J-935	20	361.16	1,662.42
J-936	1,503.62	4,242.80	J-936	20	416.16	4,242.80
J-937	1,502.03	7,300.40	J-5029	14.55	628.57	6,168.06
J-938	1,504.39	3,963.11	J-938	20	428.16	3,963.10
J-939	1,500.85	7,420.44	J-5029	14.1	627.55	6,200.51
J-94	1,506.36	3,770.97	J-5029	18.17	636.93	3,454.79
J-940	1,501.25	4,010.26	J-940	20	427.86	4,010.26
J-941	1,500.69	7,727.55	J-5029	12.12	622.96	6,165.86
J-942	1,501.23	1,078.88	J-942	20	431.46	1,078.88
J-943	1,503.01	6,277.23	J-944	11.9	426.16	5,996.59
J-944	1,500.55	1,184.05	J-944	20	444.86	1,184.05
J-945	1,505.65	4,726.77	J-945	20	436.16	4,726.77
J-946	1,500.72	3,390.15	J-946	20	391.16	3,390.15
J-947	1,503.76	1,784.40	J-947	20	358.16	1,784.40
J-948	1,502.10	5,629.26	J-1107	17.23	512.77	5,491.52
J-949	1,500.25	1,197.85	J-949	20	482.86	1,197.85
J-95	1,506.43	3,351.73	J-95	20	400.16	3,351.88
J-950	1,501.83	5,296.06	J-1107	13.72	504.66	4,998.11
J-951	1,501.09	5,986.67	J-1106	13.5	500.86	5,654.27
J-952	1,501.43	5,772.97	J-1105	14.89	502.06	5,524.29
J-953	1,501.20	5,593.68	J-953	20	509.96	5,593.84

J-954	1,502.19	6,053.14	J-5029	18.23	637.08	5,707.78
J-955	1,500.64	3,153.35	J-955	20	455.36	3,153.35
J-956	1,503.00	2,129.42	J-956	20	488.86	2,130.48
J-958	1,501.46	2,301.36	J-958	20	436.16	2,301.36
J-96	1,503.56	6,516.41	J-5029	6.42	609.82	4,099.23
J-960	1,501.41	5,445.96	J-959	16.1	423.16	5,329.84
J-961	1,501.40	6,145.15	J-5029	17.44	635.24	5,636.32
J-962	1,500.91	4,328.33	J-963	18.27	439.16	4,280.33
J-963	1,502.55	1,376.80	J-963	20	443.16	1,376.79
J-964	1,502.14	6,315.09	J-5029	16.67	633.47	5,645.33
J-965	1,501.13	5,075.47	J-971	19.57	419.16	5,062.57
J-966	1,502.55	4,148.98	J-971	18.7	417.16	4,117.92
J-967	1,503.36	3,480.46	J-970	17.83	371.16	3,444.24
J-969	1,500.41	2,118.23	J-969	20	353.16	2,118.22
J-97	1,500.00	8,802.01	J-5029	-10.73	570.23	4,786.24
J-970	1,500.41	2,701.06	J-970	20	376.16	2,701.06
J-971	1,501.29	2,642.72	J-971	20	420.16	2,642.72
J-972	1,500.76	4,511.04	J-975	15.67	412.16	4,399.66
J-973	1,501.34	2,674.70	J-973	20	390.16	2,674.70
J-974	1,500.76	4,526.29	J-975	19.65	421.34	4,516.82
J-975	1,502.42	2,804.49	J-975	20	422.16	2,804.49
J-976	1,500.42	4,903.46	J-983	17.83	428.16	4,838.69
J-977	1,502.27	4,057.12	J-977	20	431.16	4,057.12
J-978	1,500.71	4,491.34	J-981	18.27	432.16	4,442.99
J-979	1,501.32	5,220.96	J-980	16.97	434.16	5,120.21
J-98	1,502.41	3,861.47	J-5029	19.9	640.92	3,840.84
J-980	1,501.85	1,304.98	J-980	20	441.16	1,304.98
J-981	1,501.93	1,265.47	J-981	20	436.16	1,265.47
J-982	1,501.85	1,257.82	J-982	20	430.16	1,257.82
J-983	1,501.39	1,273.22	J-983	20	433.16	1,273.22
J-984	1,501.02	3,573.18	J-984	20	440.16	3,573.20
J-985	1,500.34	3,344.34	J-986	16.97	443.16	3,277.07
J-986	1,501.91	1,171.01	J-986	20	450.16	1,171.01
J-987	1,501.66	1,189.46	J-987	20	451.16	1,189.46
J-988	1,500.44	3,496.29	J-987	13.5	436.16	3,349.45
J-989	1,500.75	3,983.02	J-990	18.7	442.16	3,949.44
J-990	1,502.18	1,088.89	J-990	20	445.16	1,088.89
J-9900	1,504.06	5,913.89	J-5029	17.4	635.17	5,221.48
J-9903	1,503.18	5,173.73	J-9903	20	497.16	5,173.70
J-9907	1,500.00	5,283.50	J-9907	20	511.16	5,283.50
J-9908	1,500.00	5,192.44	J-9908	20	491.16	5,192.44
J-991	1,501.58	1,569.01	J-991	20	456.16	1,569.55
J-992	1,503.83	7,646.60	J-5029	6.96	611.06	5,495.44
J-993	1,501.81	7,263.23	J-5029	9.38	616.66	5,465.87
J-994	1,508.05	3,638.95	J-994	20	441.16	3,638.95
J-995	1,501.15	9,561.94	J-5029	-13.93	562.86	5,321.84
J-996	1,500.27	9,792.93	J-5029	-18.41	552.52	5,130.27

J-997	1,500.74	7,721.61	J-5029	4.08	604.41	5,127.92
J-998	1,500.67	3,648.42	J-998	20	421.16	3,648.42
J-999	1,502.29	5,337.05	J-5029	19.2	639.32	5,125.31
PRV-3-IN	1,507.50	6,470.02	J-5029	-2.83	588.48	3,124.75
PRV-3-OUT	1,513.14	4,279.71	J-5029	16.07	632.08	3,130.37
PRV-3617-OUT	1,505.90	6,493.80	J-5029	13.49	626.12	5,219.57
PRV-4-IN	1,512.60	6,554.68	J-5029	11.83	622.3	4,953.67
PRV-4145-IN	1,500.45	3,388.03	PRV-4145-IN	20	428.16	3,388.04
PRV-4145-OUT	1,501.78	3,935.91	J-5029	17.14	634.56	3,450.86
PRV-4396-IN	1,502.62	2,446.82	RV-4396-OU	20	416.16	1,502.62
PRV-4396-OUT	1,502.43	2,242.85	RV-4396-OU	20	416.16	2,242.86
PRV-6-IN	1,505.21	8,469.58	J-5029	-5.41	582.51	4,940.69
PRV-6-OUT	1,501.27	6,732.70	J-5029	10.47	619.16	4,942.78

APPENDIX I

CIP ASSUMPTIONS AND COST ESTIMATES

ASSUMPTIONS FOR COST ESTIMATES

Tax rate	9.5	%
Contingency	20	%
Engineering and Administrative Costs	30	%

Mobilization, Cleanup and Demobilization	8%	of subtotal without tax and contingency (round to $1000)
4-inch DI Water Main, Including Fittings	N/A	=UNIT PRICE
6-inch DI Water Main, Including Fittings	$ 80	=UNIT PRICE
8-inch DI Water Main, Including Fittings	$ 100	=UNIT PRICE
12-inch DI Water Main, Including Fittings	$ 120	=UNIT PRICE
16-inch DI Water Main, Including Fittings	$ 150	=UNIT PRICE
Locate Existing Utilities	2%	of subtotal without mobilization, tax and contingency (round to $1000)
Erosion Control	2%	of subtotal without mobilization, tax and contingency (round to $1000)

Additional Fittings (LBS)	4	-inch	0.08	* Pipe Length=LBS (Round to 50 LBS)
Additional Fittings (LBS)	6	-inch	0.12	* Pipe Length=LBS (Round to 50 LBS)
Additional Fittings (LBS)	8	-inch	0.45	* Pipe Length=LBS (Round to 50 LBS)
Additional Fittings (LBS)	12	-inch	0.50	* Pipe Length=LBS (Round to 50 LBS)
Additional Fittings (LBS)	16	-inch	0.60	* Pipe Length=LBS (Round to 50 LBS)
UNIT PRICE	$ 4.00	PER LB		

Trench Safety Systems	$ 2.00	per LF of Pipe Length

4-inch Gate Valves	N/A	EA	2	Every	300	feet
6-inch Gate Valves	$ 1,200	EA	2	Every	300	feet
8-inch Gate Valves	$ 1,800	EA	2	Every	300	feet
12-inch Gate Valves	$ 3,000	EA	2	Every	300	feet
16-inch Butterfly Valves	$ 10,000	EA	2	Every	600	feet
18-inch Butterfly Valves	N/A	EA	2	Every	600	feet
Hydrant Assembly	$ 6,000	EA	Every	400	feet	

TRENCH WIDTH	PIPE SIZE	WIDTH (ft)
	4	2.5
	6	2.5
	8	3.0
	12	3.5
	16	4.0
	18	4.5
LANE WIDTH	WIDTH (ft)	12.0

	MATL DEPTH (feet)	UNT WEIGHT (TN/CY)	EXTRA MATL FACTOR	FRACTION OF LENGTH	PRODUCT
Gravel Backfill	4.00	1.0	1.1	1.00	0.163 * Trench Width = CY/LF
Cost per CY	$ 25.00				
CDF	4.00	1.0	1.1	1.00	0.163 * Trench Width = CY/LF
Cost per CY	$ 220.00				
Foundation Gravel	0.50	1.8	1.1	0.50	0.018 * Trench Width = TN/LF
Cost per TN	$ 35.00				
Asphalt Concrete Pavement Overlay	NA	NA	NA	NA	0.023 * Lane Width = TN/LF
Cost per TN	$ 120.00				
Sawcutting	$ 3.00	= Cost per LF of sawcutting			
Crushed Surfacing, Top Course	0.17	1.8	1.1	1.00	0.012 * Lane Width = TN/LF
Cost per TN	$ 25.00				
Cold Mix Asphalt	0.25	1.800	1.1	0.50	0.009 * Lane Width = TN/LF
Cost per TN	$ 150.00				

Connections to Existing System	$ 3,000	EA				
3/4" Service Connections, complete	$ 1,200	EA				
Traffic Control	$ 120	EA	24	HRS per	300	feet

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT SO-1
Master Meter 11

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 32,000	$ 32,000
2	Project Temporary Traffic Control	LUMP SUM	$ 5,000	$ 5,000
3	Erosion Control	LUMP SUM	$ 3,000	$ 3,000
4	Clearing and Grubbing	LUMP SUM	$ 1,000	$ 1,000
5	Trench Excavation Safety System	LUMP SUM	$ 3,000.00	$ 3,000
6	Locate Existing Utilities	LUMP SUM	$ 1,000	$ 1,000
7	Unsuitable Material Excavation	10	50	$ 500
8	12-Inch DI Water Main and Fittings (Incl. Bedding)	150	120	$ 18,000
9	Additonal Fittings	100	$ 4.00	$ 400
10	12-Inch Gate Valve	4	$ 3,000	$ 12,000
11	8-Inch Gate Valve	0	$ 1,800	$ -
12	Master Meter Vault and Apputenances	LUMP SUM	$ 85,000	$ 85,000
13	Flow Control Vault and Appurtenances	LUMP SUM	$ 50,000	$ 50,000
14	6-Inch Storm Drain	120	$ 50	$ 6,000
15	Storm Cleanout	5	$ 75	$ 375
16	Gravel Borrow	200	$ 20	$ 4,000
17	Crushed Surfacing Base Course	40	$ 25	$ 1,000
18	Concrete Curb	70	$ 25	$ 1,750
19	HMA	60	$ 150	$ 9,000
20	Connection to Existing System	4	$ 3,000	$ 12,000
21	Electrical Rack	LUMP SUM	$ 24,000	$ 24,000
22	Water Quality Analyzer	LUMP SUM	$ 20,000	$ 20,000
23	Electrical Service	LUMP SUM	$ 15,000	$ 15,000

24	Electrical, Telemetry and Instrumentation	LUMP SUM	$ 117,000	$ 117,000
25	Restoration	LUMP SUM	$ 10,000	$ 10,000
	Subtotal..			$ 431,025
	Tax rate (9.5%)…...………...…..…………………………..…………………………			40,947
	Subtotal:..			$ 471,972
	Contingency (20%)………..…...…………………………..…………………………			$ 94,028
	TOTAL ESTIMATED CONSTRUCTION COST:..			$ 566,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):......................................			$ 170,000
	TOTAL ESTIMATED PROJECT COST:..			$ 736,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT S-1
Reservoir 3 Improvements

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT
1.	Mobilization	1	LS	$170,000		$170,000
2.	Utility Locates	1	LS	$3,000		$3,000
3.	Erosion Control	1	LS	$1,500		$1,500
4.	Traffic Control	1	LS	$4,500		$4,500
5.	Exterior Reservoir Prep and Recoating	1	LS	$40,000		$40,000
6.	Interior Reservoir Prep and Recoating	1	LS	$450,000		$450,000
7.	Removal of Mill Scale	4,500	SF	$3		$13,500
8.	Stairs and Security Door	1	LS	$60,000		$60,000
9.	Gutters and Downspouts	1	LS	$100,000		$100,000
10.	Catwalk Access System	1	LS	$300,000		$300,000
11.	Roof Vent	1	EA	$12,000		$12,000
12.	Inlet Mixing System	1	LS	$85,000		$85,000
13.	Demolition	1	LS	$10,000		$10,000
14.	Lifting Hoist	1	LS	$8,000		$8,000
15.	Generator and Sound Attenuating Enclosure	1	LS	$250,000		$250,000
16.	Install Generator Sound Attenuating Enclosure	1	LS	$25,000		$25,000
17.	New Fuel Tank and Pad	1	LS	$35,000		$35,000
18.	Site Security Fencing	1800	LF	$30		$54,000
19.	6-inch CPEP Drain	200	LF	$45		$9,000
20.	8-inch CPEP Drain	110	LF	$55		$6,050
21.	Catch Basin, Type 1	2	EA	$2,500		$5,000
22.	6-inch PVC Side Sewer	70	LF	$60		$4,200
23.	Bank Run Gravel for Trench Backfill	180	TN	$25		$4,500
24.	HMA	60	TN	$150		$9,000
25.	Booster Station Structural Improvements	1	LS	$215,000		$215,000
26.	Pump, Meter and Piping	1	LS	$60,000		$60,000
27.	Electrical	1	LS	$315,000		$315,000
28.	Altitude Valve Vault Lid and Ship Ladder	1	LS	$17,000		$17,000
29.	Bridge Crane	1	LS	$15,000		$15,000
30.	Booster Station HVAC Improvements	1	LS	$35,000		$35,000
31.	Bathroom	1	LS	$8,000		$8,000
32.	General Restoration	1	LS	$20,000		$20,000
	Subtotal...				$	2,344,250
	Tax rate (9.2%)…....………...…..………………………...……………………….					215,671
	Subtotal:...				$	2,559,921
	Contingency (20%)……….…....…………………………..……………………….				$	511,984
	TOTAL ESTIMATED CONSTRUCTION COST:..				$	3,071,905
	Engineering, Permitting, Construction, and Administrative Costs (30%):.....................................				$	485,500
	TOTAL ESTIMATED PROJECT COST:..				$	3,557,405
	EVERETT SHARE OF PROJECT COST (10.37%)				$	368,913
	DISTRICT PROJECT COST				$	3,188,587

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
STORAGE IMPROVEMENT S-2

NO.	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	Mobilization/Demobilization	1	LS	$ 369,000	$ 369,000
2	Excavation Safety Systems	1	LS	$ 10,000	$ 10,000
3	Earthwork	1	LS	$ 100,000	$ 100,000
4	Temporay Erosion Control/Spill Prevention	1	LS	$ 5,000	$ 5,000
5	Site Piping	1	LS	$ 120,000	$ 120,000
6	Additional Pipe Fittings	2,000	LB	$ 5	$ 10,000
7	Surfacing Restoration	1	LS	$ 100,000	$ 100,000
8	Fencing	1	LS	$ 20,000	$ 20,000
9	Landscaping and Irrigation	1	LS	$ 15,000	$ 15,000
10	Booster Station Building	1	LS	$ 450,000	$ 450,000
11	Painting	1	LS	$ 480,000	$ 480,000
12	6.0 Million Gallon Reservoir & Foundation	1	LS	$ 3,000,000	$ 3,000,000
13	Electrical	1	LS	$ 250,000	$ 250,000
14	Instrumentation and Telemetry	1	LS	$ 50,000	$ 50,000
	Subtotal				$ 4,979,000
	Tax rate (8.9%)				443,131
	Subtotal:				$ 5,422,131
	Contingency (20%):				$ 1,084,869
	TOTAL ESTIMATED CONSTRUCTION COST:				$ 6,507,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):				$ 1,953,000
	TOTAL ESTIMATED PROJECT COST:				$ 8,460,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-1
105th Place SE Water Main Replacement

NO.	ITEM	QUANTITY			UNIT PRICE		AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	17,000	$	17,000
2	8-inch DI Water Main, Including Fittings	900	LF	$	100	$	90,000
3	Additional Fittings	1,000	LB	$	4.00	$	4,000
4	Trench Safety Systems	1	LUMP SUM	$	5,000	$	5,000
5	8-inch Gate Valves	2	EA	$	1,800	$	3,600
6	Fire Hydrants	2	EA	$	6,000	$	12,000
7	Gravel Backfill	900	TN	$	25	$	22,500
8	Connections to Existing System	1	EA	$	3,000	$	3,000
9	Traffic Control	72	HRS	$	120	$	8,640
10	HMA Restoration	100	TN	$	120	$	12,000
11	HMA Overlay	130	TN	$	150	$	19,500
12	Water Service Connections	27	EA	$	1,200	$	32,400
	Subtotal..					$	197,240
	Tax rate (9.5%)…....………...….....…………………………..………………………….						18,738
	Subtotal:..					$	215,978
	Contingency (20%)………..…...…..…………………………..………………………….					$	43,022
	TOTAL ESTIMATED CONSTRUCTION COST:..					$	259,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):..................................					$	78,000
	TOTAL ESTIMATED PROJECT COST:..					$	337,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-2
129th Street SE Water Main Replacement

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT	
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	14,000	$	14,000
2	8-inch DI Water Main, Including Fittings	750	LF	$	100	$	75,000
3	Additional Fittings	1,000	LB	$	4.00	$	4,000
4	Trench Safety Systems	LUMP SUM	1	$	5,000	$	5,000
5	8-inch Gate Valves	2	EA	$	1,800	$	3,600
6	Fire Hydrants	2	EA	$	6,000	$	12,000
7	Gravel Backfill	800	TN	$	25	$	20,000
8	Connections to Existing System	1	EA	$	3,000	$	3,000
9	Traffic Control	60	HRS	$	120	$	7,200
10	HMA Restoration	80	TN	$	120	$	9,600
11	HMA Overlay	210	TN	$	150	$	31,500
12	Water Service Connections	6	EA	$	1,200	$	7,200
	Subtotal..					$	192,100
	Tax rate (9.5%)…...………...…...…..………………………..…………………………						18,250
	Subtotal:...					$	210,350
	Contingency (20%)………..…...…..………………………..…………………………					$	41,651
	TOTAL ESTIMATED CONSTRUCTION COST:...					$	252,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):................................					$	76,000
	TOTAL ESTIMATED PROJECT COST:..					$	328,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-3
94 Place SE Water Main Replacement

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT	
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	12,000	$	12,000
2	8-inch DI Water Main, Including Fittings	650	LF	$	100	$	65,000
3	Additional Fittings	1,000	LB	$	4.00	$	4,000
4	Trench Safety Systems	LUMP SUM	1	$	5,000	$	5,000
5	8-inch Gate Valves	2	EA	$	1,800	$	3,600
6	Fire Hydrants	2	EA	$	6,000	$	12,000
7	Gravel Backfill	700	TN	$	25	$	17,500
8	Connections to Existing System	1	EA	$	3,000	$	3,000
9	Traffic Control	52	HRS	$	120	$	6,240
10	HMA Restoration	70	TN	$	120	$	8,400
11	HMA Overlay	90	TN	$	150	$	13,500
12	Water Service Connections	13	EA	$	1,200	$	15,600
	Subtotal..					$	150,240
	Tax rate (9.5%)…....………...…...….………………………..…………………………						14,273
	Subtotal:..					$	164,513
	Contingency (20%)………..…...….………………………..…………………………					$	32,487
	TOTAL ESTIMATED CONSTRUCTION COST:..					$	197,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):................................					$	59,000
	TOTAL ESTIMATED PROJECT COST:..					$	256,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-4
10th Drive SE Water Main

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	15,000	$ 15,000
2	8-inch DI Water Main, Including Fittings	850	LF	$	100	$ 85,000
3	Additional Fittings	1,000	LB	$	4.00	$ 4,000
4	Trench Safety Systems	LUMP SUM	1	$	5,000	$ 5,000
5	8-inch Gate Valves	2	EA	$	1,800	$ 3,600
6	Fire Hydrants	2	EA	$	6,000	$ 12,000
7	Gravel Backfill	900	TN	$	25	$ 22,500
8	Connections to Existing System	1	EA	$	3,000	$ 3,000
9	Traffic Control	68	HRS	$	120	$ 8,160
10	HMA Restoration	90	TN	$	120	$ 10,800
11	HMA Overlay	120	TN	$	150	$ 18,000
12	Water Service Connections	14	EA	$	1,200	$ 16,800
	Subtotal..........					$ 187,060
	Tax rate (9.5%)……….					17,771
	Subtotal:..........					$ 204,831
	Contingency (20%)……….					$ 41,169
	TOTAL ESTIMATED CONSTRUCTION COST:..........					$ 246,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):..........					$ 74,000
	TOTAL ESTIMATED PROJECT COST:..........					$ 320,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-5
156th Street SE Main

NO.	ITEM	QUANTITY			UNIT PRICE		AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	89,000	$	89,000
2	12-inch DI Water Main, Including Fittings	5,400	LF	$	120	$	648,000
3	Additional Fittings	3,000	LB	$	4.00	$	12,000
4	Trench Safety Systems	LUMP SUM	1	$	5,000	$	5,000
5	12-inch Gate Valves	2	EA	$	3,000	$	6,000
6	Fire Hydrants	13	EA	$	6,000	$	78,000
7	Gravel Backfill	5,600	TN	$	25	$	140,000
8	Connections to Existing System	2	EA	$	3,000	$	6,000
9	Traffic Control	432	HRS	$	120	$	51,840
10	Crushed Surface Top Course	210	TN	$	28	$	5,880
11	Crushed Surface Base Course	420	TN	$	28	$	11,760
12	Bankrun Gravel	4,500	TN	$	20	$	90,000
13	HMA	400	TN	$	140	$	56,000
	Subtotal					$	1,199,480
	Tax rate (9.5%)						113,951
	Subtotal:					$	1,313,431
	Contingency (20%)					$	262,569
	TOTAL ESTIMATED CONSTRUCTION COST:					$	1,576,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):					$	473,000
	TOTAL ESTIMATED PROJECT COST:					$	2,049,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-6
725 Zone Extension

NO.	ITEM	QUANTITY			UNIT PRICE		AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	28,000	$	28,000
2	12-inch DI Water Main, Including Fittings	600	LF	$	120	$	72,000
3	8-inch DI Water Main, Including Fittings	700	LF	$	100	$	70,000
4	6-inch DI Water Main, Including Fittings	400	LF	$	80	$	32,000
5	Additional Fittings	1,000	LB	$	4.00	$	4,000
6	Trench Safety Systems	LUMP SUM	1	$	5,000	$	5,000
7	12-inch Gate Valves	1	EA		3000	$	3,000
8	8-inch Gate Valves	2	EA		1800	$	3,600
9	6-inch Gate Valves	4	EA		1200	$	4,800
10	Fire Hydrants	0	EA	$	6,000	$	-
11	Gravel Backfill	1,700	TN	$	25	$	42,500
12	Connections to Existing System	5	EA	$	3,000	$	15,000
13	Traffic Control	136	HRS	$	120	$	16,320
14	HMA Restoration	180	TN	$	120	$	21,600
15	HMA Overlay	240	TN	$	150	$	36,000
16	Water Service Connections	18	EA	$	1,200	$	21,600
	Subtotal..					$	353,820
	Tax rate (9.5%)…....………...…...………………………...……………………….						33,613
	Subtotal:..					$	387,433
	Contingency (20%)………..…....……………………………..………………………….					$	77,567
	TOTAL ESTIMATED CONSTRUCTION COST:..					$	465,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):..............................					$	140,000
	TOTAL ESTIMATED PROJECT COST:..					$	605,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-7
Silver Crest Drive Water Main Replacement

NO.	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$ 59,000	$ 59,000
2	8-inch DI Water Main, Including Fittings	3,200	LF	$ 100	$ 320,000
3	Additional Fittings	2,000	LB	$ 4.00	$ 8,000
4	Trench Safety Systems	LUMP SUM	1	$ 5,000	$ 5,000
5	8-inch Gate Valves	8	EA	$ 1,800	$ 14,400
6	Fire Hydrants	5	EA	$ 6,000	$ 30,000
7	Gravel Backfill	3,300	TN	$ 25	$ 82,500
8	Connections to Existing System	15	EA	$ 3,000	$ 45,000
9	Traffic Control	256	HRS	$ 120	$ 30,720
10	HMA Restoration	330	TN	$ 120	$ 39,600
11	HMA Overlay	880	TN	$ 150	$ 132,000
12	Water Service Connections	25	EA	$ 1,200	$ 30,000
	Subtotal				$ 766,220
	Tax rate (9.5%)				72,791
	Subtotal:				$ 839,011
	Contingency (20%)				$ 167,989
	TOTAL ESTIMATED CONSTRUCTION COST:				$ 1,007,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):				$ 302,000
	TOTAL ESTIMATED PROJECT COST:				$ 1,309,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-8
9th Drive SE Water Main Replacement

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT	
1	Mobilization, Cleanup, and Demobilization	LUMP SUM		$	31,000	$	31,000
2	8-inch DI Water Main, Including Fittings	1,650	LF	$	100	$	165,000
3	Additional Fittings	1,000	LB	$	4.00	$	4,000
4	Trench Safety Systems	LUMP SUM	1	$	5,000	$	5,000
5	8-inch Gate Valves	2	EA	$	1,800	$	3,600
6	Fire Hydrants	2	EA	$	6,000	$	12,000
7	Gravel Backfill	1,700	TN	$	25	$	42,500
8	Connections to Existing System	4	EA	$	3,000	$	12,000
9	Traffic Control	132	HRS	$	120	$	15,840
10	HMA Restoration	170	TN	$	120	$	20,400
11	HMA Overlay	460	TN	$	150	$	69,000
12	Water Service Connections	31	EA	$	1,200	$	37,200
	Subtotal...					$	380,340
	Tax rate (9.5%)…....………...…...….………………………..………………………….						36,132
	Subtotal:...					$	416,472
	Contingency (20%)………..…...….………………………..………………………….					$	83,528
	TOTAL ESTIMATED CONSTRUCTION COST:..					$	500,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):................................					$	150,000
	TOTAL ESTIMATED PROJECT COST:...					$	650,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-9
Seattle Hill Road Valves and Silver Cedars

NO.	ITEM	QUANTITY		UNIT PRICE		AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$	32,000	$	32,000
2	8-inch DI Water Main, Including Fittings	475 LF	$	100	$	47,500
3	12-inch DI Water Main, Including Fittings	1,050 LF	$	120	$	126,000
4	Additional Fittings	1,000 LB	$	4.00	$	4,000
5	Trench Safety Systems	LUMP SUM 1	$	5,000	$	5,000
6	8-inch Gate Valves	4 EA	$	1,800	$	7,200
7	12-inch Gate Valves	9 EA	$	3,000	$	27,000
8	Fire Hydrants	1 EA	$	6,000	$	6,000
9	Gravel Backfill	1,600 TN	$	25	$	40,000
10	Connections to Existing System	10 EA	$	3,000	$	30,000
11	Traffic Control	124 HRS	$	120	$	14,880
12	HMA Restoration	160 TN	$	120	$	19,200
13	HMA Overlay	420 TN	$	150	$	63,000
14	Water Service Connections	10 EA	$	1,200	$	12,000
	Subtotal...				$	421,780
	Tax rate (9.5%)…....………...…...………………………...……………………….					40,069
	Subtotal:...				$	461,849
	Contingency (20%)………..…....……………………………..……………………….				$	92,151
	TOTAL ESTIMATED CONSTRUCTION COST:..				$	554,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):...…...				$	166,000
	TOTAL ESTIMATED PROJECT COST:..				$	720,000

SILVER LAKE WATER & SEWER DISTRICT
PRELIMINARY PROJECT COST ESTIMATE
DISTRIBUTION SYSTEM IMPROVEMENT D-10
485 Zone Seismic

NO.	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization, Cleanup, and Demobilization	LUMP SUM	$ 7,000	$ 7,000
2	Electrical Rack	LUMP SUM	$ 12,500	$ 12,500
3	Electrical, Telemetry and Instrumentation	LUMP SUM	$ 60,000	$ 60,000
4	Control Panel	LUMP SUM	$ 20,000	$ 20,000
	Subtotal..			$ 79,500
	Tax rate (9.5%)…....………...…...….…………………………..…………………………			7,553
	Subtotal:...			$ 87,053
	Contingency (20%)………..…....….………………………..…………………………			$ 16,948
	TOTAL ESTIMATED CONSTRUCTION COST:...			$ 104,000
	Engineering, Permitting, Construction, and Administrative Costs (30%):...			$ 31,000
	TOTAL ESTIMATED PROJECT COST:..			$ 135,000

APPENDIX J

FUNDING SOURCES

FUNDING SOURCE ALTERNATIVES

Several funding source alternatives are available to the District for the financing of projects in the CIP. Such alternative are listed below and followed by a brief description.

Grants: Community Development Block Grant (CDBG)
US Economic Development Administration (US EDA)

Loans: Public Works Trust Fund (PWTF)
Drinking Water State Revolving Fund (DWSRF)
Community Economic Revitalization Board (CERB)

Bonds: Revenue Bonds

Other: Developer Financing
General Facilities Charge
Utility Local Improvement Districts

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant program is a competitive source of federal funding for a broad range of community development projects. A primary requirement of the CDBG program is that the project must principally benefit at least 51 percent of the low-to-moderate income residents of the project area. The State typically receives about $7 million in federal funds per funding cycle. CDBG has two programs including General Purpose and Planning Only. The General Purpose program provides grant funds for the design, construction, or reconstruction of water and sewer systems up to the amount of $750,000. The Planning Only program includes projects such as comprehensive plans, community development plans, capital improvement plans, and other plans such as land use and urban environmental design, economic development, floodplain and wetlands management, transportation, and utilities. Planning only grants are limited to $24,000 for a single applicant or $40,000 for a joint applicant.

Eligible applicants for the CDBG programs include cities and towns with less than 50,000 people or counties with populations less than 200,000. Though port districts and economic development districts are not eligible to apply directly, a city or county can submit a joint application and include these entities as partners.

COMMUNITY ECONOMIC REVITALIZATION BOARD (CERB)

This low interest loan and grant program is manage by the Department of Trade and Economic Development. Funding is available for infrastructure that supports projects, which will result in specific private developments or expansions in manufacturing, and businesses that support the trading of goods and services outside the State's border.

Funding is not available to support retail shopping developments or acquisition of real property. The projects must create or retain jobs. The average is one job per $3,000 or CERB financing. The interest rate fluctuates with the state bond rate. Grant funding is limited to $50,000 per application and requires 25 percent matching funds (9-2016).

US ECONOMIC DEVELOPMENT ADMINISTRATION (US EDA)

US EDA offers competitive grants up to $1 million for projects within Region 10. Projects are selected locally by an economic development district and submitted to Congress for competitive selection among other regions in the US. Similar to CERB, applicants must have an industrial partner ready to proceed or a feasibility study that establishes realistic job creation.

DRINKING WATER STATE REVOLVING FUND (DWSRF)

In 1996, Congress established the Drinking Water State Revolving Fund through the reauthorization of the federal Safe Drinking Water Act. The program is managed by both the Washington State Department of Health and the Washington State Public Works Board. The purpose of the program is to provide low-interest loans to assist publicly- and privately-owed water systems improve drinking water and protect public health.

Eligible publicly-owned water systems include city and county governments, public utility districts, and special purpose districts. Privately-owned systems are eligible as long as they are a Group A system.

Eligible projects include the following:

- Water systems that exceed health standards,
- Replacement of aging infrastructure,
- Acquisition of real property,
- Planning and design costs,
- Water conservation projects,
- Reservoirs (clear wells) that are part of a treatment process,
- Distribution reservoirs (finished water),
- Existing systems who chose to connect to a municipal system
- Upgrade to or creation of a Group A system.

Maximum award per single water system is $3,000,000 and for combining systems an award of $6,000,000 is available. DWSRF requires a 2 percent loan fee, but no local match. A summary of interest rates and loan terms follows:

TABLE 9-12

Drinking Water State Revolving Fund Loan Terms

Applicant's Income Level	Interest Rate	Repayment period
Water system not financial distressed	2.5% Fixed	20 years or life of project, whichever is less
Water system in distressed county	1.5% Fixed	20 years or life of project, whichever is less
Income survey results demonstrates that 51% of the households are at 80% or below the county's median household income.	1.5% Fixed	20 years or life of project, whichever is less
Income survey results demonstrates that 51% of the households are at 50% or below the county's median household income.	0.0% Fixed	30 years or life of project, whichever is less

DEVELOPER FINANCING

Developers may fund the construction of extensions of the water system to property within new plats. The developer extensions are turned over to the wastewater system for operation and maintenance when completed.

It may be necessary, in some cases, to require the developer to construct facilities outside of the plat limits to provide service to the plat and/or larger pipelines for the ultimate development of the water system. The municipality may, by policy, reimburse the developer through direct outlay, latecomer charges, or reimbursement agreements for the additional costs of facilities, including increased size of pipelines over those required to serve the property under development.

Construction of any pipe in commercial or industrial areas that is larger than the size required to service the development may also be considered as an oversized line possibly eligible for compensation. Developer reimbursement (latecomer) agreements provide up to 15 years or more for developers to receive payment from other connections made to the developer-financed improvements.

REVENUE BONDS

A common source of funds for construction of major utility improvements is the sale of revenue bonds. These are tax-free bonds issued by a district. The major source of funds for debt service on revenue bonds is from monthly service charges. In order to make qualify to sell revenue bonds marketable to investors, the bonds typically have contractual provisions for the District to meet debt coverage requirements. The District must show that its annual net operating income (gross income less operation and maintenance expenses) is must be equal to or greater than a factor, typically 1.2 – 1.4 times the annual debt service on all par debt. If a coverage factor has not been specified it will be determined at the time of any future bond issues.

GENERAL FACILITIES CHARGE

In order to finance improvements of general benefit to a water utility, such as the District, a general facilities charge may by adopted. General facilities charges are usually established as one-time charges assessed against new water customers as a way to recover part or all of the cost of additional system capacity constructed for their use.

The general facilities charge or fee is deposited into a construction fund for construction of such facilities. The intent is that all new system customers will pay an equitable share of the cost of the system improvements needed to accommodate growth. Typical types of construction financed by the general facilities charge are general improvements that benefit the entire system, such as reservoirs, pump stations, transmission lines, water filtration plants, new sources of supply, and office and storage space.

UTILITY LOCAL IMPROVEMENT DISTRICT (ULID)

Another potential source of funds for improvements can be obtained through the formation of Utility Local Improvement Districts (ULIDs) involving a special assessment made against properties benefiting by the improvements. ULID bonds are further backed by a legal claim to the revenues generated by the utility, similar to revenue bonds.

ULID financing is frequently applied to system extensions into areas previously not served. Typically, ULIDs are formed by a municipality at the written request (by petition) of the property owner within a specific area of the municipality. Upon receipt of a sufficient number of signatures on petitions, the local improvement area is defined. Each separate property in the ULID is assessed in accordance with the special benefits the property receives from the system improvements.

There are several benefits to a municipality in selecting ULID financing. The assessment places a lien on the property and must be paid in full upon sale of the property. Furthermore, property owners may pay the assessment immediately upon receipt reducing the costs financed by the ULID. The advantages of ULID financing, as opposed to rate financing, to the property owner include:

- The ability to avoid interest costs by early payment of assessments.
- If the ULID assessment is paid in installments, it may be eligible to be deducted from federal income taxes.

- Low-income senior citizens may be able to defer assessment payments until the property is sold.

- Some Community Block Grant funds are available to property owners with incomes near or below poverty level. Funds are available only to reduce assessments.

The major disadvantage to the ULID process is that it may be politically difficult to approve formation. The ULID process may be stopped if 40 percent of the property owners protest its formation. Also, there are significant legal and administrative costs associated with the ULID process, which increases total project costs by approximately 30 percent over other financing options.

APPENDIX K

SEPA CHECKLIST AND DNS

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

Comprehensive Water System Plan

2. Name of applicant: [help]

Silver Lake Water and Sewer District

3. Address and phone number of applicant and contact person: [help]

Patrick Curran, General Manager
15205 41st Ave SE,
Bothell, WA 98012
(425) 337-3647

4. Date checklist prepared: [help]

March 30, 2017

5. Agency requesting checklist: [help]

Silver Lake Water and Sewer District

6. Proposed timing or schedule (including phasing, if applicable): [help]

Each project proposed in the Comprehensive Water System Plan will be completed on a project-specific basis. The recommendations will be proposed on the current ten-year and future 20-year planning periods.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

This proposal is non-project action, therefore the question does not apply.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

Each capital project will be evaluated on a project specific basis.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

None known.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

Washington State Department of Health, Snohomish County, City of Everett, and the City of Mill Creek will provide review, comment, and approval of the Plan.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this

page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The proposed Comprehensive Water System Plan (Plan) is a planning document that meets the requirements of WAC 246-290.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The study area for this Plan covers approximately 8,356 acres, of which approximately 7,952 acres are within the current District boundary. The District's service area consists of portions of the UGAs of Cities of Everett and Mill Creek as well as the city limits of Mill Creek and unincorporated Snohomish County.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, **hilly**, steep slopes, mountainous, other _____________

b. What is the steepest slope on the site (approximate percent slope)? [help]

The northern and eastern portions of the District slopes northeast towards the Snohomish Valley floor, while the southern and western portions slope southwest towards the Alderwood Water & Wastewater District service area. In the northest portion of the District, the terrain slopes sharply from elevations of approximately 400 feet to the valley floor. The majority of the District's service area, which sits on a plateau above the valley floor, is generally rolling terrain. The average slopes are from two to eight percent, except in for the steep areas, that slope downwards toward Lowell-Larimer Road and the Snohomish River Valley floor.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

The classification of soils within the District is provided by the 1983 *Soils Survey for Snohomish County Area,* compiled by the Natural Resource Conservation Service (formerly known as the Soil Conservation Service). The two major classifications of soils within the District are Alderwood gravelly sandy loam and Alderwood urban land complex.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

To be determined on a project specific basis.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

To be determined on a project specific basis.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

To be determined on a project specific basis.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

To be determined on a project specific basis.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

To be determined on a project specific basis.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

To be determined on a project specific basis.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

To be determined on a project specific basis.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

To be determined on a project specific basis.

3. **Water** [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

To be determined on a project specific basis.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

To be determined on a project specific basis.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

To be determined on a project specific basis.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

To be determined on a project specific basis.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

To be determined on a project specific basis.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

To be determined on a project specific basis.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

To be determined on a project specific basis.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

To be determined on a project specific basis.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

To be determined on a project specific basis.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

To be determined on a project specific basis.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

To be determined on a project specific basis.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

To be determined on a project specific basis.

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

To be determined on a project specific basis.

b. What kind and amount of vegetation will be removed or altered? [help]

To be determined on a project specific basis.

c. List threatened and endangered species known to be on or near the site. [help]

To be determined on a project specific basis.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

To be determined on a project specific basis.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

To be determined on a project specific basis.

5. **Animals** [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other ________

b. List any threatened and endangered species known to be on or near the site. [help]

To be determined on a project specific basis.

c. Is the site part of a migration route? If so, explain. [help]

The entire Puget Sound basin is a part of the Pacific Flyway.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

To be determined on a project specific basis.

e. List any invasive animal species known to be on or near the site. [help]

To be determined on a project specific basis.

6. **Energy and Natural Resources** [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

Not applicable.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

To be determined on a project specific basis. The majority of the projects identified are underground utility projects.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

To be determined on a project specific basis.

7. **Environmental Health** [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

To be determined on a project specific basis.

1) Describe any known or possible contamination at the site from present or past uses. [help]

To be determined on a project specific basis.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

To be determined on a project specific basis.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

To be determined on a project specific basis.

4) Describe special emergency services that might be required. [help]

To be determined on a project specific basis.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

None required.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

To be determined on a project specific basis.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

To be determined on a project specific basis.

3) Proposed measures to reduce or control noise impacts, if any: [help]

None required.

8. **Land and Shoreline Use** [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The majority (over 90 percent) of the District's service area consists of single family and multi-family housing.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

No.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No.

c. Describe any structures on the site. [help]

To be determined on a project specific basis.

d. Will any structures be demolished? If so, what? [help]

To be determined on a project specific basis.

e. What is the current zoning classification of the site? [help]

To be determined on a project specific basis.

f. What is the current comprehensive plan designation of the site? [help]

To be determined on a project specific basis.

g. If applicable, what is the current shoreline master program designation of the site? [help]

No shorelines are designated within the service area.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

To be determined on a project specific basis. The District has a number of wetland and steep slope areas identified within the service area.

i. Approximately how many people would reside or work in the completed project? [help]

To be determined on a project specific basis. The District has a current service area population of approximately 54,194.

j. Approximately how many people would the completed project displace? [help]

None. The Plan identifies projects required to accommodate growth.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

Not applicable.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

The Plan must be reviewed and approved by the City of Mill Creek and Snohomish County Planning to ensure consistency with land use plans.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

None.

9. **Housing** [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

The District's Plan will accommodate growth consistent with the current zoning and future land use.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

None.

c. Proposed measures to reduce or control housing impacts, if any: [help]

Not applicable.

10. **Aesthetics** [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

To be determined on a project specific basis.

b. What views in the immediate vicinity would be altered or obstructed? [help]

To be determined on a project specific basis.

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

To be determined on a project specific basis.

11. **Light and Glare** [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

To be determined on a project specific basis.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

To be determined on a project specific basis.

c. What existing off-site sources of light or glare may affect your proposal? [help]

To be determined on a project specific basis.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

None required.

12. **Recreation** [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

To be determined on a project specific basis.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

To be determined on a project specific basis.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

None required.

13. **Historic and cultural preservation** [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

None.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

None.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

To be determined on a project specific basis.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

None required.

14. **Transportation** [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

To be determined on a project specific basis.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

To be determined on a project specific basis.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

To be determined on a project specific basis.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

To be determined on a project specific basis.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

To be determined on a project specific basis.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

To be determined on a project specific basis.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

To be determined on a project specific basis.

h. Proposed measures to reduce or control transportation impacts, if any: [help]

To be determined on a project specific basis.

15. **Public Services** [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

To be determined on a project specific basis.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

To be determined on a project specific basis.

16. **Utilities** [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other ____________

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

To be determined on a project specific basis.

C. Signature [help]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Eric Delfel

Name of signee ERIC DELFEL, P.E.

Position and Agency/Organization Civil Engineer, Gray & Osborne, Inc.

Date Submitted: 3/30/17

D. Supplemental Sheet for Non-Project Actions

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Silver Lake Water and Sewer District's Comprehensive Water System Plan recommends capital improvements such as replacement of existing piping. All proposed projects will be completed in compliance with all state and federal regulations and appropriate City and County ordinances. It is anticipated that these capital improvements will have no discharge to water, emissions to air, or production storage, or release of toxic or hazardous substances, and no production of noise, other than those produced temporarily by normal pipeline construction activities.

Proposed measures to avoid or reduce such increases are:

To be determined on a project specific basis.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

No work will be performed in streams, lakes, or marine waters, therefore, no impacts would result to or marine life. Any urban runoff or erosion would be controlled at project-specific construction sites. The capital improvements recommended in the Comprehensive Water System Plan will be implemented in an existing urban environment, thus producing no impacts to animals whose habitats typically reside in rural settings

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

For any construction project, individual SEPA documents will be prepared for each project. Impacts to plants, animals, fish, or marine life will be determined on a project-specific basis. Trenchless construction methods will also be considered to minimize environmental disturbance. Any rehabilitation plan associated with project-specific construction will take into account the protection or replacement of important plant species.

3. How would the proposal be likely to deplete energy or natural resources?

To be determined on a project specific basis.

Proposed measures to protect or conserve energy and natural resources are:

Specific project designs typically take into account energy-efficient pumps or pump stations, thereby reducing demand for energy resources.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The siting of public facilities such as transmission and distribution piping or reservoirs takes into account environmentally sensitive areas during the planning and design phases. Therefore, environmentally sensitive areas can either be mitigated or avoided all together. A SEPA document will be provided for each specific project.

Proposed measures to protect such resources or to avoid or reduce impacts are:

To be determined on a project specific basis.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Effects to land use will be determined on a project specific basis. However, it is not likely that any proposed projects will take place in and around shorelines. Each proposed project will be completed in compliance with all state, county, city, and federal regulations, including District resolutions.

Proposed measures to avoid or reduce shoreline and land use impacts are:

To be determined on a project specific basis.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

It is anticipated that the proposed projects will have minimal effects on transportation or public services and utilities. However, pipeline construction may have some temporary impacts on traffic flow, as transmission and distribution lines are typically within road rights-of-way.

Proposed measures to reduce or respond to such demand(s) are:

To be determined on a project-specific basis.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

All proposed projects will be completed in compliance with all state and federal regulations and City ordinances.

WAC 197-11-970 Determination of nonsignificance (DNS).

DETERMINATION OF NONSIGNIFICANCE

Description of proposal **Silver Lake Water & Sewer District Comprehensive Water System Plan**

Proponent **Silver Lake Water & Sewer District**

Location of proposal, including street address, if any **The District's service area consists of portions of the Urban Growth Areas of Cities of Everett and Mill Creek as well as areas within the city limits of Mill Creek and unincorporated Snohomish County.**

Lead agency **Silver Lake Water & Sewer District**

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

☑ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by 04/18/2017

Responsible official **Patrick M. Curran**
Position/title **General Manager** ______ Phone. **(425) 337-3647**
Address **15205 41st Ave SE, Bothell, WA 98012**

Date. **03.31.2017** Signature P M Curran

There is no agency appeal.

APPENDIX L

COMMENT LETTERS

Gray & Osborne, Inc.

CONSULTING ENGINEERS

April 5, 2017

Mr. Tom Rogers, Director
Community & Economic Development
City of Mill Creek
15720 Main Street
Mill Creek, Washington 98012

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Rogers:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.

CONSULTING ENGINEERS

April 5, 2017

Dr. Gary Goldbaum
Snohomish County Health District
3020 Rucker Avenue
Everett, Washington 98201-3971

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Goldbaum:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Washington Department of Transportation
District No. 1, Utilities Office
P.O. Box 330310
Seattle, Washington 98133-9710

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH
COUNTY, WASHINGTON
G&O #16447

To Whom It May Concern:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

April 5, 2017

Ms. Ria Burns
Washington Department of Ecology
Environmental Review Section
P.O. Box 47703
Olympia, Washington 98504-7703

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Ms. Burns:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Jeff Clarke, General Manager
Alderwood Water and Wastewater District
3626 156th Street SW
Lynnwood, Washington 98037

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Clarke:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Kamal Mahmoud, P.E., Director
Department of Public Works
City of Mill Creek
15720 Main Street
Mill Creek, Washington 98012

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Mahmoud:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Doug McCormick, Director
Snohomish County
Transportation and Environmental Services
3000 Rockefeller Avenue, M/S #607
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. McCormick:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.

CONSULTING ENGINEERS

April 5, 2017

Mr. Steve Thomsen, Director
Snohomish County
Department of Public Works
3000 Rockefeller Avenue, M/S #607
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH
COUNTY, WASHINGTON
G&O #16447

Dear Mr. Thomsen:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.

CONSULTING ENGINEERS

April 5, 2017

Ms. Barb Mock, Director
Snohomish County
Planning and Development Services
3000 Rockefeller Avenue, M/S #604
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH
COUNTY, WASHINGTON
G&O #16447

Dear Ms. Mock:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

701 Dexter Avenue N., Suite 200 Seattle, Washington 98109 (206) 284-0860 Fax (206) 283-3206

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Curt Brees, General Manager
Cross Valley Water District
8802 180th Street SE
Snohomish, Washington 98296-4804

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH
COUNTY, WASHINGTON
G&O #16447

Dear Mr. Brees:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Dave Davis
Public Works
City of Everett
3200 Cedar Street
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Davis:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

701 Dexter Avenue N., Suite 200 Seattle, Washington 98109 (206) 284-0860 Fax (206) 283-3206

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Mr. Allan Giffen, Director
Department of Planning
City of Everett
2930 Wetmore Avenue, Suite 8A
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Giffen:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.

CONSULTING ENGINEERS

April 5, 2017

Mr. Bob Everitt
Washington Department of Fish & Wildlife
Regional Office
16018 Mill Creek Boulevard
Mill Creek, Washington 98011

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Mr. Everitt:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

Gray & Osborne, Inc.
CONSULTING ENGINEERS

April 5, 2017

Ms. Sharon Fuller, Clerk
City of Everett
2930 Wetmore Avenue, Suite 1-A
Everett, Washington 98201

SUBJECT: COMPREHENSIVE WATER SYSTEM PLAN SEPA CHECKLIST
SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON
G&O #16447

Dear Ms. Fuller:

Please find enclosed the State Environmental Protection Agency (SEPA) Checklist and the Determination of Nonsignificance (DNS) for Silver Lake Water & Sewer District's Comprehensive Water System Plan. The comment period for the DNS and the appeals deadline is April 18, 2017. The Draft Comprehensive Water System Plan can be viewed at the District Headquarters located at 15205 41st Avenue SE, Bothell, WA 98012 and on the District website.

Please contact the undersigned or Mr. Patrick Curran, Silver Lake Water & Sewer District, (425) 337-3647 if you have comments or questions.

Very truly yours,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/bl
Encl.

cc: Mr. Patrick Curran, Silver Lake Water & Sewer District

701 Dexter Avenue N., Suite 200 Seattle, Washington 98109 (206) 284-0860 Fax (206) 283-3206

Snohomish County
Public Works
Transportation & Environmental Services

June 21, 2017

3000 Rockefeller Ave., M/S 607
Everett, WA 98201-4046
(425) 388-3464
www.snoco.org

Dave Somers
County Executive

Silver Lake Water & Sewer District
Patrick Curran
15205 41st Avenue SE
Bothell, WA 98012-6114

RE: **Silver Lake Water & Sewer District Comprehensive Plan**

Dear Mr. Curran:

Snohomish County Public Works has reviewed the Silver Lake Water & Sewer District's 2017 Water System Plan, found no major concerns related to the Plan and does not object to its approval.

The subject water system Plan is a long-range development plan that does not provide project-specific information. As a result, I would like to emphasize the need to work with Snohomish County whenever the District initiates design and construction of a particular improvement.

Prior to any construction activities, required permits shall be obtained from applicable regulatory agencies. When development will occur within or adjacent to a County right-of-way, please contact Snohomish County Public Works' Special Projects Coordinator Randy Blair at 425-388-6650. In addition, please provide a copy of the District's annual facilities improvement plan and program to Mr. Blair. These steps will facilitate the timely coordination of construction activities where road and water or wastewater system improvements are planned in the same time frame for a particular road corridor.

In addition to submitting your water/wastewater district plan to the County Engineer, you are required to submit it to the Snohomish Health District and to the Snohomish County Council. Contact Clerk of the Council, Debbie Eco at 425-388-7038. The County Council is charged with reviewing the Plan under the criteria in RCW 57.02.040(3) (a), (b), and (c). The County Council has 90 days to approve, conditionally approve or disapprove the plan; or, hold a public hearing after which they then have 30 days to render a decision.

In reviewing the Plan, we offer the following observations/recommendations: Plan should acknowledge in either the Relevant Planning Documents section (pgs. 1-16) or the Interlocal Agreements section (pgs. 1-18) the Utility Franchise Agreement (Ordinance 02-003) which expires May 2017.

If you have any questions concerning these comments, please feel free to contact Randy Blair at 425-388-6650. Thank you for the opportunity to comment on your Comprehensive Plan.

Sincerely,

Janice L Fahning for

Steven E. Thomsen, P.E.
Public Works Director & Acting County Engineer

cc: Douglas W. McCormick, P.E., TES Division Director
Randy Sleight, P.E., Chief Engineering Officer, PDS
Terri Strandberg, Principal Planner, PDS
Debbie Eco, Clerk of the Council, Snohomish County Council
Randy Blair, Special Projects Coordinator, PW

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

August 17, 2017

Patrick Curran, General Manager
Silver Lake Water & Sewer District
PO BOX 13888
Mill Creek WA 98082

RE: Silver Lake Water & Sewer District, ID# 79250
Snohomish County
Water System Plan – 2017
Submittal # 17-0509

Dear Mr. Curran:

Thank you for submitting the draft Water System Plan (WSP) for the Silver Lake Water & Sewer District (the District) received in this office on May 23, 2017. We have reviewed the plan and offer the following comments. These comments must be adequately addressed prior to approval of the WSP.

<u>System Description</u>

1) Please provide determinations of local government consistency from Snohomish County Planning & Development Services, City of Everett and City of Mill Creek.

2) Please provide a table showing consumption based on user class. This should include single family, multi family, commercial and industrial usage.

3) Please include a table listing the number and sizes of PRVs and meters in your distribution system.

4) Please clarify how many active connections the District serves. Neither Table 2-4 or 2-6 match the 20,036 number we have listed on our WFI.

<u>Basic Planning Date</u>

5) Any future expansion of your existing service area would trigger a WSP amendment or update.

<u>System Design & Analysis</u>

6) Thank you for providing a full build out analysis for the entire system. Has a similar analysis been done for each pressure zone?

7) Is the storage shortage system wide or only for a specific pressure zone? Is Reservoir #2 sized to provide additional storage to the 640 zone or is it intended to supply storage for just the 725 zone?

8) Figure 5-1 shows a section of your 640 zone with pressure in excess of 100 psi under 2036 PHD conditions. Has consideration been given to reconfiguring the 640 pressure zone to alleviate excessive pressure?

Water Use Efficiency Program (WUE) and Water Rights Assessment

Table 7-2; Annual production for that year is approximately 1277.5 mg. (3.80 mgd x 365 days). The District's annual WUE Report for 2015 shows 1,453.2 mg of total production. Please reconcile.

Source Protection

No issues

Operations & Maintenance

9) Reservoir turnover was mentioned as an area of concern in both previous sanitary surveys (2016 and 2011) and was identified as a potential reason for varying chlorine residuals in the distribution system. How are these concerns addressed?

10) Now that the District's population is above 50,000, it is subject to the large system requirements found in CFR 141.82. Please work with Everett to identify lead and copper sampling locations in addition to optimal water quality monitoring sites within your service area.

11) How are the 811 District customers on Everett's water system represented in your coliform monitoring plan?

12) A Revised Total Coliform Rule Water System Assessment would only be required if more than 5.0% of coliform compliance samples in a single month were total coliform present/*E. coli* absent, or if an *E. coli* MCL Violation occurrence

13) For Boil Water Notice situations, in addition to the methods already discussed in your plan, use of social media platforms is strongly recommended.

14) Consider developing a (non-regulatory / best management practice) quarterly baseline water quality program / profile with the goals of: (i) ensuring stable residual throughout system; (ii) understanding baseline water quality so you are well positioned to capture and respond to water system biofilms, potential backflow events, or unanticipated disturbances; and (iii) connecting low residual areas with operations / capital improvement planning.

15) Provide a status report of your current cross connection control program. When was the plan last evaluated? How many Table 9 hazards are identified in the District's service area? How many are protected? What is the annual compliance percentage of device testing? What additional implementation actions need to be taken during this planning period?

16) Have you adopted the Water Main Break Protocol for Chlorinated Systems? (DOH Publication 331-583 – 1/1/2017)

Standard Plans & Specifications

17) Do you retain Construction Completion Reports for all distribution main replacements and extensions?

18) Consider including details for coliform sample stations in your standard construction detail set.

Capital Improvement Program

19) How does the District currently implement elements of an asset management (AM) program? The CIP- 2018 includes a project to utilize an AM system and software.

20) Describe how water quality data and other criteria are currently used to drive prioritization in the District's asset management plan. How will this be advanced during the next planning period?

21) Consider adding discussion of how the water system plans to incorporate the goals presented in the Governor's Directive 16-06 (see attached). The Governor directed water utilities to locate lead service lines and lead components in the distribution system over the course of the next two years, and replace in the next 15 years. How does this change the capital improvement plan and financial plan?

Financial Program

22) WAC 246-290-100(j)(ii) & (iii) specifically asks for: 'A balanced operational budget for the plan approval period'; and 'A plan for collecting the revenue necessary to maintain cashflow stability and to fund the capital improvement program and emergency improvements'. Your Table9-6 does not demonstrate this. Please clarify the negative Running Balance line on the projected financial budget.

Other Documentation

23) The WSP contains a signed SEPA Checklist. Provide a signed SEPA Threshold Determination with the final WSP.

24) The water system must meet the consumer input process outlined in WAC 246-290-100(8). Please include documentation of a consumer meeting discussing the WSP, prior to DOH approval of the WSP.

25) Prior to DOH approval, the water system's governing body must approve and adopt the WSP. This is a new requirement resulting from the Municipal Water Legislation.

26) Please provide copies of any comments made by adjacent purveyors or other interested parties along with the (water system's) response to those comments.

27) Is the District a member of WAWARN?

We hope that you have found these comments to be clear, constructive and helpful in the development of your final draft WSP. We ask that you submit the revised WSP on or before November 21, 2017. In order to expedite the review of your revised submittal, please include a cover letter summarizing how each of the above comments was addressed in the revised WSP and where each response is located (i.e., page numbers, Appendices, etc.)

Regulations establishing a schedule for fees for review of planning, engineering and construction documents have been adopted (WAC 246-290-990). Please note that we have included an invoice in the amount of $5484.00 for the review of the Water System Plan. This fee covers our cost for review of the initial submittal, plus the review of one revised document. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: DOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099.

Thank you again for submitting your draft WSP for our review. If you have any comments or questions concerning our review, please contact me at (253) 395-6771.

Sincerely,

Richard Rodriguez

Richard Rodriguez
WSDOH Regional Planner
(253) 395-6771

Enclosure (invoice)

cc: Erika Lindsey, PE, DOH
Snohomish County Planning
Snohomish Health District
Ronald Berger, Silver Lake Water & Sewer District
Eric Delfel, P.E., Gray & Osborne, Inc.

SNOHOMISH
HEALTH DISTRICT
WWW.SNOHD.ORG

Environmental Health Division

June 28, 2017

Patrick Curran, General Manager
Silver Lake Water & Sewer District
15205 41st Ave SE
Bothell, WA 98012-6114

Subject: Silver Lake View Water & Sewer District
2017 Comprehensive Water System Plan

Dear Mr. Curran:

The Snohomish Health District has reviewed the Silver Lake View Water & Sewer District 2017 Water System Plan. The updated plan will enhance the District's ability to meet the present and future demands for water service within its service area.

This water system plan amendment has my approval as required by the provisions of Title 57.16.010 RCW.

Sincerely,

CSpitters, MD
Christopher Spitters, MD
Interim Health Officer

CS/BAS/jg

cc: Randy Sleight, Snohomish County Planning & Development Services
~~Eric~~ Delfel, PE, Gray & Osborne Inc., 701 Dexter Avenue N., Suite 200, Seattle WA 98109

Gray & Osborne, Inc.
CONSULTING ENGINEERS

November 2, 2017

Mr. Richard Rodriguez
Regional Planner
Washington State Department of Health
Northwest Drinking Water Operations
20435 72nd Avenue South, Suite 310
Kent, Washington 98032-2388

SUBJECT: RESPONSES TO COMMENTS, WATER SYSTEM PLAN
SILVER LAKE WATER & SEWER DISTRICT,
SNOHOMISH COUNTY, WASHINGTON
G&O #16447.00

Dear Mr. Rodriguez:

Thank you for your comments regarding the Silver Lake Water & Sewer District (District) Water System Plan. In order to more easily respond to the comments, we have placed your original comments in *italics*, followed by our responses.

1. *Please provide determinations of local government consistency from Snohomish County Planning & Development Services, City of Everett and City of Mill Creek.*

   Please see the attached determination of local government consistency received from Snohomish County and the City of Mill Creek. A determination from the City of Everett is not required as the District does not serve within the city limits of Everett.

2. *Please provide a table showing consumption based on user class. This should include single family, multi family, commercial and industrial usage.*

   Consumption by customer class is included in Table 2-8.

3. *Please include a table listing the number and sizes of PRVs and meters in your distribution system.*

   Tables detailing PRVs and master meters are enclosed for your use.

4. *Please clarify how many active connections the District serves. Neither Table 2-4 or 2-6 match the 20,036 number we have listed on our WFI.*

The connections listed on the WFI include individual apartment units. Many of these are not individually metered, and are thus not counted as connections. Itemizing multifamily units is a requirement of the WFI form that is submitted to DOH.

For example, the WFI was entered in February 2016, which is close to the District's end-of-year 2015 connections shown in Table 2-7. Please see the enclosed 2017 WFI which closely resembles Table 2-7.

5. *Any future expansion of your existing service area would trigger a WSP amendment or update.*

Comment noted.

6. *Thank you for providing a full build out analysis for the entire system. Has a similar analysis been done for each pressure zone?*

No. The 725 Zone is already at buildout. The remaining 640 and 485 Zones are served by the same source, storage, and pump stations, so a zone breakdown would not change the evaluation of the capacity of these facilities.

7. *Is the storage shortage system wide or only for a specific pressure zone? Is Reservoir #2 sized to provide additional storage to the 640 zone or is it intended to supply storage for just the 725 zone?*

The deficiency is system-wide but in reality, is limited to the 640 and 485 Zones. The 725 Zone is very small. Reservoir 2 can serve all zones via the Reservoir 2 Booster Station and through PRV West to the 640 Zone.

8. *Figure 5-1 shows a section of your 640 zone with pressure in excess of 100 psi under 2036 PHD conditions. Has consideration been given to reconfiguring the 640 pressure zone to alleviate excessive pressure?*

No, this would significantly restrict hydraulic transmission capacity. Reconfiguring the zones would reduce system reliability by eliminating looping, master meter connectivity, transmission, and water quality.

9. *Table 7-2; Annual production for that year is approximately 1277.5 mg. (3.80 x 365 days). The District's annual WUE Report for 2015 shows 1,453.2 mg of total production. Please reconcile.*

This discrepancy is due to an error in 2015 WUE reporting of Everett and District customer master meter additions and deductions. The correct annual production is 3.94 mgd, 1,438.1 MG.

10. *Reservoir turnover was mentioned as an area of concern in both previous sanitary surveys (2016 and 2011) and was identified as a potential reason for varying chlorine residuals in the distribution system. How are these concerns addressed?*

The District has installed continuous chlorine monitoring at all of its reservoirs and at Clearview and AWWD source meters, and is using the information to better manage turnover at District reservoirs. The District is continually reviewing this information to improve system chlorine residuals while maintaining responsible reservoir levels. The District is also installing a Tide-Flex mixing system at Reservoir 3 to improve mixing in the reservoir. The District is also commissioning a study for 2018 to review available water quality information, to improve operation of District reservoirs for water quality, and to evaluate chlorine residual in the distribution system.

11. *Now that the District's population is above 50,000, it is subject to the large system requirements found in CFR 141.82. Please work with Everett to identify lead and copper sampling locations in addition to optimal water quality monitoring sites within your service area.*

The District has met all of the monitoring requirements of the Lead and Copper Rule and has consistently been well below the MCL requirements. While the District agrees that it now qualifies as a large water system by population, no evidence has been obtained that indicates the District is required to implement corrosion control. Further, the City of Everett has already optimized corrosion control as operator of the Regional Filtration Plant. Therefore, the District does not consider CFR 141.82 to be applicable.

12. *How are the 811 District customers on Everett's water system represented in your coliform monitoring plan?*

Routine Sites 10, 11, and 64 are sampled by the District and are located in the area on Everett's side of the master meter. For clarification, this area is not Everett's water system; it consists of District customers, pipes, and facilities.

13. *A Revised Total Coliform Rule Water System Assessment would only be required if more than 5.0% of coliform compliance samples in a single month were total coliform present/E. coli present, or if an E. coli MCL Violation occurrence.*

Comment noted.

14. *For Boil Water Notice situations, in addition to the methods already discussed in your plan, use of social media platforms is strongly recommended.*

Comment noted.

15. *Consider developing a (non-regulatory/best management practice) quarterly baseline water quality program/profile with the goals of: (i) ensuring stable residual throughout system; (ii) understanding baseline water quality so you are well positioned to capture and respond to water system biofilms, potential backflow events, or unanticipated disturbances; and (iii) connection low residual areas with operations/capital improvement planning.*

The District will take your comments under advisement.

16. *Provide a status report of your current cross connection control program. When was the plan last evaluated? How many Table 9 hazards are identified in the District's service area? How many are protected? What is the annual compliance percentage of device testing? What additional implementation actions need to be taken during this planning period?*

Please see the 2016 A.S.R. submitted by the District on May 8, 2017.

17. *Have you adopted the Water Main Break Protocol for Chlorinated Systems? (DOH Publication 331-583 – 1/1/2017)*

Thank you for alerting us to the new publication. The District has not adopted the new protocol, but will review it for consistency with its own procedures. Once the review is complete, the District will determine if modifying its own procedures to be consistent with the new protocol is necessary.

18. *Do you retain Construction Completion Reports for all distribution main replacements and extensions?*

Yes, they are part of the District's developer extension process. They are on file at the District and can be viewed on request.

19. *Consider including details for coliform sample stations in your standard construction detail set.*

The District prefers to install their own stations to ensure consistency. The District has adopted requirements for developers to purchase and deliver water quality sample stations for District installation.

20. *How does the District currently implement elements of an asset management (AM) program? The CIP- 2018 includes a project to utilize an AM system and software?*

The District already performs a number of asset management tasks that have not been formally adopted as an Asset Management Program. These include development of a GIS inventory of water system facilities, use of web-based document retrieval for record drawings, development of maintenance tracking of work orders, and geocoding of service meters to streamline meter reading.

21. *Describe how water quality data and other criteria are currently used to drive prioritization in the District's asset management plan. How will this be advanced during the next planning period?*

Water quality data is one criteria the District uses to evaluate system needs. The District is currently improving its data accuracy and inventory, and plans to refocus its efforts to the application you describe during the next planning period. This includes better management of storage through use of recently available water quality monitoring at its reservoirs and master meters.

22. *Consider adding discussion of how the water system plans to incorporate the goals presented in the Governor's Directive 16-06 (see attached). The Governor directed water utilities to locate lead service lines and lead components in the distribution system over the course of the next two years, and replace in the next 15 years. How does this change the capital improvement plan and financial plan?*

    This has no impact on the District's Capital Improvement Plan. To the best of its knowledge, the District does not have any lead service lines. The vast majority of the District was constructed after lead was disallowed in the UPC.

23. *WAC 246-290-100 (j)(ii) & (iii) specifically asks for: 'A balanced operational budget for the plan approval period'; and 'A plan for collecting the revenue necessary to maintain cashflow stability and to fund capital improvement program and emergency improvements'. Your Table 9-6 does not demonstrate this. Please clarify the negative Running Balance line on the projected financial budget.*

    Please see the attached revised Table 9-6 for your use.

24. *The WSP contains a signed SEPA Checklist. Provide a signed SEPA Threshold Determination with the final WSP.*

    A signed DNS is located at the end of Appendix K.

25. *The water system must meet the consumer input process outlined in WAC 246-290-100(8). Please include documentation of a consumer meeting discussing the WSP, prior to DOH approval of the WSP.*

    Documentation of a Consumer Meeting held on April 27, 2017, is included (Resolution 736) as well as the hearing advertisement.

26. *Prior to DOH approval, the water system's governing body must approve and adopt the WSP. This is a new requirement resulting from the Municipal Water Legislation.*

    Documentation of approval by the District Board of Commissioners on April 27, 2017, is included (Resolution 736).

27. *Please provide copies of any comments made by adjacent purveyors or other interested parties along with the (water system's) response to those comments.*

    Comments have been included in Appendix L.

28. *Is the District a member of WAWARN?*

    The District is not a member of WAWARN.

It is our understanding that none of these comments change any of the planning considerations approved by Snohomish County on August 9, 2017.

Thank you once again for your review comments. Based on your comments and the comments of other agencies, we have incorporated your comments into the final Plan. Upon your approval of the Plan, we will provide you with a final Plan in hard copy and electronically for your files. Please contact me if you have any additional questions or concerns.

Sincerely,

GRAY & OSBORNE, INC.

Eric Delfel

Eric Delfel, P.E.

ED/hh
Encl.

Washington State Department of Health

Division of Environmental Health
Office of Drinking Water

Local Government Consistency Determination Form

Water System Name: Silver Lake Water & Sewer District PWS ID: 79250 B

Planning/Engineering Document Title: Comprehensive Water System Plan

Plan Date: April 2017

Local Government with Jurisdiction Conducting Review: Snohomish County

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system Identify the page(s) in submittal	For use by local government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Page 2-4 Figure 2-3	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Page 2-9	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	Not Applicable	N/A
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	Page 2-2 Page 6-12	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Page 1-16	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

8/30/2017

Signature Date

CHIEF ENGINEERING OFFICER

SNOHOMISH COUNTY PLANNING AND DEVELOPMENT SERVICES

RANDOLPH R. SLEIGHT
STATE OF WASHINGTON
27683
REGISTERED PROFESSIONAL ENGINEER
8/30/2017

Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Local Government Consistency Determination Form

Water System Name: Silver Lake Water & Sewer District PWS ID: 79250 B

Planning/Engineering Document Title: Comprehensive Water System Plan

Plan Date: April 2017

Local Government with Jurisdiction Conducting Review: City of Mill Creek

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system Identify the page(s) in submittal	For use by local government Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Page 2-4 Figure 2-3	YES.
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Page 2-9	YES.
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	Not Applicable	N/A
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	Page 2-2 Page 6-12	YES.
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	Page 1-16	YES.

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Christi Amrine
Signature
Senior planner

10/5/17
Date

Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

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For **small water system management programs**, a consistency review is only required for areas where a <u>municipal water supplier</u> wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents,** a consistency review is required for areas where a <u>municipal water supplier</u> wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.

b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.

c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*

d) All **service area policies** for how new water service will be provided to new customers.

e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did <u>not</u> provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

Water System Pressure Reducing Valve Normal Settings

Location	Development	Downstream Pressure Zone	Elevation (ft)	Small PRV			Large PRV		
				Size (in)	Setting (psi)	Hydraulic Grade (ft)	Size (in)	Setting (psi)	Hydraulic Grade (ft)
40th Avenue SE within Woodlands North	Woodlands North	485	310	2	76	486	6	71	474
108th Street SE between 42nd SE and 43rd Drive SE	The Point	485	304	2	74	475	6	69	463
116th Street SE at approximately 44th Drive SE	Waldenwood	485	374	2	48	485	6	40	466
116th Street SE and 45th Drive SE	Waldenwood	485	370	2	45	474	6	43	469
51st Avenue SE and 116th Street SE	High Valley Ranch	485	292	3	85	488	8	80	477
58th Drive SE south of 124th Street SE	Creekside	485	358	2	51	476	6	52	478
63rd Avenue SE between 128th Place SE and 64th Street SE	Highlands	485	367	2	51	485	8	46	473
North Snohomish Cascade Drive north of 63rd Avenue SE	Highlands	485	362	3	50	478	10	45	466
69th Drive SE between 137th Street SE and 132nd Place SE	Highlands East	485	377	3	50	493	10	45	481
58th Avenue SE and 125th Street SE	Outlook Vista	485	321	2	67	476	6	57	453
117th Street SE and 51st Avenue SE	Woodridge Heights	485	318	2	73	487	6	68	475

Existing Master Meter Connections

Master Meter	Address	Source (S)/ Recipient (R)	Size	Meter Type	Meter Model	Flow Control	PRV (1)
No. 1	2100 100th Street SE	Everett (S)	10"	Mag Flow	Micrometer	Yes	Yes(3)
No. 2	19th Avnue SE and 131st Street SE	Everett (S)	10"	(2)	(2)	(2)	(2)
No. 3	11700 Interstate 5	Everett (S)	6"	Turbine	Sensus	Yes(3)	Yes
No. 4	7429 Cathcart Way	CWSA (S)	12"	Mag Flow	Foxboro	Yes	No
No. 5	14932 Snohomish Cascade Drive	CWSA (S)	12"	Mag Flow	Foxboro	Yes	No
No. 6	12411 Seattle Hill Road	CVWD (R)	8"	Mag Flow	Foxboro	No	Yes
No. 7	7809 132nd Place SE	CWSA (S)	12"	Mag Flow	Foxboro	Yes(3)	Yes
No. 8(4)	3917 180th Street SE	AWWD (S)	2" 8"	Mag Flow Mag Flow	Foxboro Foxboro	No Yes	No
No. 9	6804 152nd Street SE	CWSA (S)	8"	Mag Flow	Foxboro	Yes	No
No. 10	1300 156th Street SE	AWWD (S)	8"	Mag Flow	Siemens	Yes	No

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 05/31/2017
Printed: 11/6/2017
WFI Printed For: On-Demand
Submission Reason: Owner Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
79250 B	SILVER LAKE WATER & SEWER DISTRICT	SNOHOMISH	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

RONALD "RON" A. BERGER [FIELD SUPERVISOR]
PO BOX 13888
MILL CREEK, WA 98082

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

7. OWNER NAME & MAILING ADDRESS

8. OWNER NUMBER: 005381

SILVER LAKE WATER & SEWER DISTRICT
CURTIS M. BREES GENERAL MANAGER
15205 41ST AVE SE
BOTHELL, WA 98012

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION

Primary Contact Daytime Phone: (425) 337-3647
Primary Contact Mobile/Cell Phone: (425) 750-0935
Primary Contact Evening Phone:
Fax: (425) 337-4399 E-mail: xxxxxxxxxxxxxxxxxxxx

10. OWNER CONTACT INFORMATION

Owner Daytime Phone: (425) 239-9843
Owner Mobile/Cell Phone: (425) 239-1755
Owner Evening Phone:
Fax: (425) 337-4399 E-mail: xxxxxxxxxxxxxxxxxxxx

WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: ____________________ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

- [ ] Agricultural
- [x] Commercial / Business
- [x] Day Care
- [x] Food Service/Food Permit
- [ ] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [ ] Industrial
- [x] Licensed Residential Facility
- [ ] Lodging
- [ ] Recreational / RV Park
- [x] Residential
- [x] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): ____________________

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [ ] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [x] Special District
- [ ] State

14. STORAGE CAPACITY (gallons)

16,400,000

15 Source Number	16 SOURCE NAME	17 INTERTIE	18 SOURCE CATEGORY										19 USE			20	21 TREATMENT						22 DEPTH	23	24 SOURCE LOCATION			
	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	24050L/Everett (1)	24050 L											X			Y	X							1000			00N	00E
S02	01300E/Alderwood (1)	01300 E											X			Y	X							2000			00N	00E
S03	24050L/Everett/CWSA (3)	24050 L											X			Y	X							4299			00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
79250 B	SILVER LAKE WATER & SEWER DISTRICT	SNOHOMISH	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		19330	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	16359		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	373		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	2971		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	706	706	
28. TOTAL SERVICE CONNECTIONS		20036	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 51175

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
* Requirement is exception from WAC 246-290	60	60	60	60	60	60	60	60	60	60	60	60

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other ____________

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: ____________________ DATE: ____________________

PRINT NAME: ____________________ TITLE: ____________________

WS ID	WS Name
79250	SILVER LAKE WATER & SEWER DISTRICT

Total WFI Printed: 1

 145 Submitted 5-8-2017

Washington State Department of Health

Cross-Connection Control Activities (Blue) Annual Summary Report (ASR) for 2016

PWS ID: **79250B** PWS Name: **SILVER LAKE WATER & SEWER DISTRICT** County: **SNOHOMISH**

Part 1: Designated Cross-Connection Control Specialist (CCS) Information

CCS Name	Casey Parks	CCS Phone	425-337-3647 ext- 234	CCS Cert. #	5841	BAT Cert. #	
CCS is: PWS owner or employee							

Part 2: Status of Cross-Connection Control (CCC) Program at End of 2016

Provide information about the status of your CCC Program at the end of the reporting year

PWS has:		
	A written CCC Program Plan[1] ◉Yes ○No	Program Plan Last Updated[3] 01/01/2017
	CCC implementation activities[2] ◉Yes ○No	

[1] Enter "Yes" if PWS has any type of written CCC Program Plan, policies, or procedures. Written CCC Program Plan must be part of a Water System Plan (WSP) or Small Water System Management Program (SWSMP)

[2] Enter "Yes" if PWS implemented any CCC Program activities during the reporting year, such as establishing legal authority, conducting hazard evaluations, requiring installation of backflow assemblies to protect the PWS, requiring assembly testing, maintaining CCC records, or enforcing the PWS's or CCC Program requirements.

[3] PWS can update the CCC Program Plan at any time (independent of WSP or SWSMP update).

Provide information regarding PWS's specific CCC Program Elements

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is: Included in Written Program Plan	Being Implemented or Is Completed
1	Legal Authority Established	◉Yes ○No	◉Yes ○No
2	Hazard Evaluation Procedures and Schedules	◉Yes ○No	◉Yes ○No
3	Procedures/Schedules for Ensuring Installation of Backflow Preventers	◉Yes ○No	◉Yes ○No
4	Certified CCS Provided	◉Yes ○No	◉Yes ○No
5	Backflow Preventer Inspection and Testing	◉Yes ○No	◉Yes ○No
6	Assembly Testing Quality Assurance/Quality Control (QA/QC) Program	◉Yes ○No	◉Yes ○No
7	Backflow Incident Response Procedures	◉Yes ○No	◉Yes ○No
8	Public Education Program	◉Yes ○No	◉Yes ○No
9	CCC Records	◉Yes ○No	◉Yes ○No
10	Reclaimed Water Permit	○Yes ○No ◉N/A	○Yes ○No ◉N/A

Part 3A: PWS Characteristics at End of 2016

Enter the number of connections (new and existing) served by the PWS by type.

Type of Service Connection	Number
Residential (As defined by PWS)	17149
All Other (include dedicated fire lines, dedicated irrigation lines, and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers, and docks)	787
Total Number of Connections	17936

Part 3B: Cross-Connection Control for Severe and High-Hazard Premises and High-Hazard Dedicated Lines Served by the PWS

Answer the following questions carefully. These answers control your access to pages 2 and 3 for data entry.

1. Does your PWS serve any severe or high-hazard premises or any high-hazard dedicated fire or irrigation lines? ◉Yes ○No

2. Does PWS serve any high-hazard medical premises? ◉Yes ○No

- If you answer Yes to both questions, you must enter data in at least one row on page 2 and one row on page 3.
- If you answer Yes to Question 1 and No to Question 2, you must enter data on page 2 only.
- If you answer No to both questions, pages 2 and 3 will be grayed out to prevent data entry.

- Count only premises PWS serves water to.
- Report data as accurately as possible. **DOH currently bases CCC compliance actions on this information.**

Type of Severe or High-Hazard Premises or Dedicated Lines [WAC 246-290-490(4)(b)]	**Number of Connections at end of 2016**			
	A. Being Served Water by PWS[1]	**B. With Premises Isolation by AG/RP[2]**	**C. With Column B AG Inspected or RP Tested[3]**	**D. Granted Exception from Premises Isolation**
Agricultural (farms and dairies)	0	0	0	0
Beverage bottling plants (including breweries)	1	1	1	0
Car washes	2	2	2	0
Chemical plants	0	0	0	0
Commercial laundries and dry cleaners	2	2	2	0
Both reclaimed water and potable water provided	0	0	0	0
Film processing facilities	0	0	0	0
Dedicated fire lines with chemical addition or using unapproved auxiliary supplies	6	1	1	0
Food processing plants (including canneries, slaughter houses, rendering plants)	0	0	0	0
Hospitals, medical centers, medical, dental and veterinary clinics, mortuaries, nursing homes, etc., reported on Part 3C page 3 (totals imported from page 3)	25	21	21	0
Dedicated irrigation systems using purveyor's water supply and chemical addition[4]	0	0	0	0
Laboratories	0	0	0	0
Metal plating industries	0	0	0	0
Petroleum processing or storage plants	0	0	0	0
Piers and docks	0	0	0	0
Radioactive material processing plants or nuclear reactors	0	0	0	
Survey access denied or restricted	0	0	0	0
Wastewater lift/pump stations (non-residential only)	19	19	19	0
Wastewater treatment plants	0	0	0	
Unapproved auxiliary water supply interconnected with potable water supply	2	2	2	0
Totals	57	48	48	0

[1] Count multiple connections or parallel installations to the same premises as **separate** connections.

[2] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises preventers only or connections with DCVAs or DCDAs installed for premises isolation. The number in Column B can't be larger than the number in Column A in the same row.

[3] Count only connections whose premises isolation preventers were inspected (AGs) or tested (RPs) during the reporting year.

[4] For example, dedicated irrigation lines to parks, playgrounds, golf courses, cemeteries, estates, etc.

[5] Premises with hazardous materials or processes (requiring isolation by AG or RP), such as aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, for example:"Other manufacturing" or "Other commercial".

Page 2 PWSID: **79250B** Year: **2016**

Part 3C: Cross-Connection Control for High-Hazard Medical Premises Served by the PWS

- Count only medical premises PWS serves water to.
- Don't count the same premises more than once. If you serve different medical category premises through a single connection, count the connection under the medical category you consider to pose the highest hazard to PWS.
- Report data as accurately as possible. **DOH currently bases CCC compliance actions on this information**

Type of High-Hazard Medical Premises [WAC 246-290-490(4)(b)]	**Number of Connections at end of 2016**			
	A. Being Served Water by PWS[1]	**B. With Premises Isolation by AG/RP[2]**	**C. With Column B AG Inspected or RP Tested[3]**	**D. Granted Exception from Premises Isolation**
Hospitals				
Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)	0	0	0	0
Facilities for Treatment and Care of Patients Not Located in Hospitals Counted Above				
Same day surgery centers	0	0	0	0
Out-patient clinics and offices	3	3	3	0
Alternative health out-patient clinics and offices	2	2	2	0
Psychiatric out-patient clinics and offices	1	1	1	0
Chiropractors with water-connected X-ray equipment	2	2	2	0
Hospice care centers	0	0	0	0
Childbirth centers	0	0	0	0
Kidney dialysis centers	0	0	0	0
Blood centers	0	0	0	0
Dental clinics and offices	12	11	11	0
Facilities for Housing Patients				
Nursing homes	0	0	0	0
Assisted Living Facilities (formerly Boarding Homes)	3	0	0	0
Residential treatment centers	0	0	0	0
Other Medical-Related Facilities				
Mortuaries with embalming equipment	0	0	0	0
Morgues and autopsy facilities (not in hospitals)	0	0	0	0
Veterinarian offices, clinics and hospitals	2	2	2	0
Totals	25	21	21	0

[1] Count multiple connections or parallel installations to the same premises as **separate** connections.
[2] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises preventers only or connections with DCVAs or DCDAs installed for premises isolation. The number in Column B can't be larger than the number in Column A in the same row.
[3] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises backflow preventers only or connections with premises isolation DCVAs or DCDAs isolation.

Part 4A: Backflow Preventor Inventory and Testing Information for 2016

- Complete all fields. Enter **zero (0)**, if no backflow preventers in a specific category.
- Count only backflow preventers relied on to protect the PWS.
- Count AVBs on *irrigation systems only*. Select No to AVB question above Table 2 if PWS doesn't track AVBs.
- Count multiple tests (or failures) for the same backflow preventer as one test (or failure) for that backflow preventer.
- For multiple service connections or parallel installations, count each assembly separately.
- Count RPDAs and DCDAs as ***single*** assemblies. Count the tests of the mainline assembly and bypass assembly as ***one test***. Count the failure of either the mainline or bypass assembly (or the failure of both) as ***one failure***. Count an entire detector assembly taken out of service as ***one assembly removed from service***.
- Count assemblies installed on dedicated fire or irrigation lines as **Premises Isolation Assemblies** in Table 1.

	Backflow Preventer Category and Inspection/Testing Information	Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Table 1: Premises Isolation Preventers (include preventers isolating PWS-owned facilities)									
Existing Premises Isolation Backflow Preventers									
1	In service at beginning of 2016	0	153	29	601	44			
2	Inspected and/or tested in 2016[1]	0	151	29	600	43			
3	Failed inspection or test in 2016	0	0	7	1	15			
New Premises Isolation Backflow Preventers									
4	Installed in 2016[2]	0	6	1	12	0			
5	Inspected and/or tested in 2016[1]	0	6	1	12	0			
6	Failed inspection or test in 2016	0	0	0	1	0			
Premises Isolation Backflow Preventers (existing or new)									
7	Removed from service in 2016[3]	0	1	0	2	0			
Total Premises Isolation Preventers at End of 2016		**0**	**158**	**30**	**611**	**44**	**0**	**0**	**0**
Does PWS track AVBs on irrigation systems? ◉Yes ○No									
Table 2: In-Premises Preventers (include preventers within PWS-owned facilities)									
Existing In-Premises Backflow Preventers									
8	In service at beginning of 2016	1	33	0	1259	0	2	1	91
9	Inspected and/or tested in 2016[1]	0	28	0	1256	0	2	1	4
10	Failed inspection or test in 2016	0	0	0	44	0	0	0	0
New In-Premises Backflow Preventers									
11	Installed in 2016[2]	0	1	0	17	0	0	0	4
12	Inspected and/or tested in 2016[1]	0	1	0	16	0	0	0	4
13	Failed inspection or test in 2016	0	1	0	1	0	0	0	0
In-Premises Backflow Preventers (existing or new)									
14	Removed from service in 2016[3]	0	6	0	5	0	0	0	0
Total In-Premises Preventers at End of 2016[4]		**1**	**28**	**0**	**1271**	**0**	**2**	**1**	**95**
Grand Totals at End of 2016		**1**	**186**	**30**	**1882**	**44**	**2**	**1**	**95**

[1] Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only, using DOH-approved USC field test procedures).

[2] Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at the beginning of the reporting year. Replacement preventers may be of a different type than the originals.

[3] Existing or new preventers taken out of service, whether or not they were replaced by the same or a different type of preventer

Part 4B: Other Implementation Activities in 2016

Complete all cells. Enter zero if not applicable.

Water Use Questionnaires	
Did your PWS send any water use questionnaires to customers during 2016?	○Yes ◉No

On-site Hazard Surveys			
Did your CCS conduct any on-site hazard surveys during 2016?			○Yes ◉No
	Service Connection Type		
	New	Existing	Total
1. Number of connections surveyed for cross-connection hazards to PWS.			0
2. Number of connections requiring backflow prevention to protect PWS.[1,2]			0

New Exceptions to Premises Isolation	
Did your CCS grant any new premises isolation exceptions in 2016 to high-hazard premises?[3]	○Yes ◉No

CCC Enforcement Actions	
Did your PWS take any enforcement actions during 2016?[4]	◉Yes ○No Number 4

[1] Include services where either premises isolation or in-premises preventers were required to protect the PWS

[2] Include existing services that need new, additional or higher level backflow prevention.

[3] Submit a completed DOH Exception Form (green) for each new exception granted in the reporting year.

[4] "Enforcement actions" means actions taken by the PWS (such as water shut-off, PWS installation or testing of backflow preventer, assessment of fines, etc.) when the customer fails to comply with the PWS's CCC requirements.

Part 5: Backflow Incidents and "Off-Normal" Events in 2016

	Backflow Incidents, Risk Factors, and Indicators during 2016	Number
Backflow Incidents during 2016		
1	Backflow incidents that contaminated the PWS[5].	0
2	Backflow incidents that contaminated the customer's drinking water system ***only***[5].	0
Risk Factors for Backflow during 2016		
3	Distribution main breaks per 100 miles of pipe.	0.06
4	Low pressure events (<20 psi in PWS distribution system).	0
5	Water outage events.	0
Indicators of Possible Backflow during 2016		
6	Total health-related complaints received by PWS.[6]	0
7	Received during BWA or PN events.[7]	0
8	Received during low pressure or water outage events.	0
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).	34
10	Received during BWA or PN events.[7]	0
11	Number of these complaints received during low pressure or water outage events.	0

[5] Purveyors must submit a Backflow Incident Report form for each backflow incident known to have contaminated the public water system. DOH is also interested in receiving incident report forms for backflow incidents that contaminated the customer's drinking water system only.

[6] Such as stomach ache, headache, vomiting, diarrhea, skin rashes, etc.

[7] "**BWA**" means **Boil Water Advisory** and "**PN**" means **Public Notification** for water quality reasons.

Part 6: Comments and Clarifications

- Enter comments to:
  - Explain or clarify information in this report.
  - Describe challenges faced or accomplishments made in this reporting year
  - Share your goals and objectives for the coming reporting year.
- Delete comments that are no longer valid.

Part No.	Date Added	Comments
Pt 3C	05-08-2017	Dental Clinics and Offices: 1 facility has "in premises" protection. Upgrade to Premises Isolation via RPBA in progress.

Part 7: Report Certification and Contact Information

I, [Certified by] , certify that the information in this form is true, complete and accurate to the best of my knowledge.

Last Saved	05/08/2017	**All ASR Forms Certified/Submitted**	

Designated CCS/CCC Program Manager[1]					
Name	Casey Parks	**Title**	Water Quality Supervisor	**CCS Cert #**	5841
Email Address	cparks@slwsd.com	**Phone**	425-337-3647	**Phone Ext**	234

PWS Manager[2]					
Name	Ron Berger	**Title**	Field Supervisor	**Operator Cert #**	6183
Email Address	rberger@slwsd.com	**Phone**	425-337-3647	**Phone Ext**	

[1] The CCS responsible for developing and implementing the PWS's CCC program (CCC Program Manager).
[2] The person the designated CCS/CCC Program Manager reports to or other manager having direct oversight of the CCC Program.

Table 9-6

District Projected Water Operating Forecast

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Beginning Cash and Investments	**$ 9,746,871**	**$ 6,160,201**	**$ 5,847,836**	**$ 6,374,977**	**$ 6,504,995**	**$ 2,767,058**	**$ 4,580,581**	**$ 6,591,724**	**$ 8,554,385**	**$ 10,463,184**
Operating Income										
Water Sales	5,486,645	5,596,378	5,708,305	5,822,472	5,938,921	6,057,699	6,178,853	6,302,430	6,428,479	6,557,049
Other Incomes	512,000	522,240	532,685	543,338	554,205	565,289	576,595	588,127	599,890	611,887
New Connection Revenues	2,598,425	2,650,394	2,703,401	2,757,469	2,812,619	2,868,871	2,926,249	2,984,774	3,044,469	3,105,358
Interest Income	112,500	115,875	119,351	122,932	126,620	130,418	134,331	138,361	142,512	146,787
Total Operating Income	**$ 8,709,570**	**$ 8,884,886**	**$ 9,063,743**	**$ 9,246,211**	**$ 9,432,365**	**$ 9,622,278**	**$ 9,816,028**	**$ 10,013,692**	**$ 10,215,349**	**$ 10,421,081**
Expenses										
Labor Expenses	2,085,059	2,147,611	2,212,039	2,278,400	2,346,752	2,417,155	2,489,669	2,564,360	2,641,290	2,720,529
Water Treatment Expenses	1,944,040	2,021,802	2,102,674	2,186,781	2,274,252	2,365,222	2,459,831	2,558,224	2,660,553	2,766,975
Reservoirs	364,500	375,435	386,698	398,299	410,248	422,555	435,232	448,289	461,738	475,590
Vehicles, Equipment, Facilities	198,000	203,940	210,058	216,360	222,851	229,536	236,422	243,515	250,820	258,345
Maintenance and Operations	74,250	76,478	78,772	81,135	83,569	86,076	88,658	91,318	94,058	96,879
Administration	750,000	787,500	826,875	868,219	911,630	957,211	1,005,072	1,055,325	1,108,092	1,163,496
Total Expenses	**$ 5,415,849**	**$ 5,612,765**	**$ 5,817,116**	**$ 6,029,194**	**$ 6,249,302**	**$ 6,477,756**	**$ 6,714,885**	**$ 6,961,031**	**$ 7,216,551**	**$ 7,481,815**
Net Income Before Depreciation	**$ 3,293,721**	**$ 3,272,122**	**$ 3,246,627**	**$ 3,217,018**	**$ 3,183,063**	**$ 3,144,523**	**$ 3,101,143**	**$ 3,052,661**	**$ 2,998,799**	**$ 2,939,267**
Total Depreciation	1,320,089	1,333,290	1,346,623	1,360,089	1,373,690	1,387,427	1,401,301	1,415,314	1,429,467	1,443,762
Net Income After Depreciation	**$ 1,973,632**	**$ 1,938,832**	**$ 1,900,004**	**$ 1,856,929**	**$ 1,809,373**	**$ 1,757,096**	**$ 1,699,842**	**$ 1,637,347**	**$ 1,569,331**	**$ 1,495,505**
Capital Funding Requirements										
Other Source (Use -Bond Principal)	(846,486)	(866,486)	(346,486)	-	-	-	-	-	-	-
Planned Capital Improvements	6,033,905	2,718,000	2,373,000	3,087,000	6,921,000	1,331,000	1,090,000	1,090,000	1,090,000	1,901,000
Ending Cash and Investments	**$ 6,160,201**	**$ 5,847,836**	**$ 6,374,977**	**$ 6,504,995**	**$ 2,767,058**	**$ 4,580,581**	**$ 6,591,724**	**$ 8,554,385**	**$ 10,463,184**	**$ 11,501,450**

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON

RESOLUTION NO. 736

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, ADOPTING THE 2017 COMPREHENSIVE WATER SYSTEM PLAN AND APPROVING THE PLAN FOR PUBLIC DISTRIBUTION IN ACCORDANCE WITH WAC 246-290-100.

WHEREAS, Silver Lake Water & Sewer District ("District") is a municipal corporation providing water and sewer utility services pursuant to Title 57 RCW; and

WHEREAS, RCW 57.16.010(1) authorizes the District to adopt a general comprehensive water system plan and the District has previously done so by the adoption of the 2010 Comprehensive Water System Plan on the 12th day of August 2010, by Resolution No. 655 (the "2010 Plan"); and the 2010 Plan was approved by all public agencies with jurisdiction, including the Washington State Department of Health, Snohomish County and by the cities which are included, all or part, within the District's corporate or service area boundaries; and

WHEREAS, state law and administrative regulation, including WAC 246-290-100, require that the District's comprehensive water plan be updated periodically and the District Board of Commissioners now deems it desirable and appropriate to adopt an updated and revised comprehensive water system plan entitled "2017 Comprehensive Water System Plan" dated March 2017(the "2017 Plan") which was prepared by Gray & Osborne, Inc., the District's consulting engineers and designated as G&O #16447; and

WHEREAS, the 2017 Plan makes no changes in the District boundaries or service areas set forth in the 2010 Plan; and

WHEREAS, all District facilities; storage, pumps, pipes and other improvements to the District Water System contemplated to be added or replaced by the 2017 Plan will be sized to serve the District customer base and to meet the maximum daily water demand at buildout; and

WHEREAS, the level of service provided by the District as set forth in the 2017 Plan is in accordance with planning completed for the Urban Growth Area Plans of Everett, Mill Creek and Snohomish County; and

WHEREAS, the 2017 Plan is incorporated herein in full by this reference; and

WHEREAS, based on a SEPA checklist prepared regarding the proposed adoption of the 2017 Plan as a non-project action, a SEPA Determination of Non-Significance ("DNS") was issued by Patrick M. Curran, District General Manager and the District's Responsible SEPA Official ("District Responsible SEPA Official"), on March 31, 2017, and public notice of such action and the opportunity to comment on the SEPA checklist and DNS was published in accordance with state law; and

WHEREAS, notice of a public hearing at the Administration Building of the Silver Lake Water & Sewer District at 15205 41st Ave. SE Bothell, Washington 98012 at 5:30 p.m. or as soon thereafter as can be heard, on Thursday April 27, 2017 for the purpose of accepting public testimony on the adoption of the District 2017 Plan was published in the Herald newspaper on April 14, 2017; and

WHEREAS, the District held a public hearing on the 2017 Plan on April 27, 2017 at 5:30 pm at the District administrative office at 15205 41st Ave. SE, Bothell WA, and the District Board of Commissioners considered public input and testimony from the public on the 2017 Plan;

NOW THEREFORE, BE IT RESOLVED, by the Board of Commissioners of Silver Lake Water & Sewer District, Snohomish County, Washington, as follows:

1. The Commissioners adopt as findings the preceding recitals to this Resolution.

2. The 2017 Plan is hereby approved and adopted as the District's comprehensive water system plan effective the date set forth below, and is further approved for public distribution in accordance with WAC 246-290-100.

3. Pursuant to RCW 57.16.010(7), the 2017 Plan shall be submitted to all required jurisdictions and agencies, including the legislative authority of Snohomish County, the legislative authority of all cities which are included, all or in part, within the District's corporate or service area boundaries, and to all state agencies with jurisdiction, including the Washington State Department of Health, for approval by those jurisdictions and agencies as provided and required by law.

4. The District's Water Use Efficiency Plan (WUE) has been updated and adopted by the Board in Resolution No.734. This updated WUE Plan is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies. The District's Developer Standards for water and sewer systems has been updated and adopted by the Board of Commissioners in Resolution No.735. This updated District Developer Standards for water and sewer systems is included in its entirety in the 2017 Plan for administrative convenience and improved availability to the general public and other public agencies.

ADOPTED by the Board of Commissioners at a regular open public meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

President and Commissioner

Rod Keppler

Secretary and Commissioner

Bill Anderson

Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No. 736 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27 day of April 2017 as said Resolution appears in the records of the Silver Lake Water & Sewer District.

Rod Keppler

Secretary of the Silver Lake Water & Sewer District

SILVER LAKE WATER-SEWER DISTRICT
SNOHOMISH COUNTY, WASHINGTON
RESOLUTION NO. 734

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE SILVER LAKE WATER & SEWER DISTRICT, SNOHOMISH COUNTY, WASHINGTON, UPDATING THE WATER USE EFFICIENCY PROGRAM (DATED JULY 2010) AND WATER USE EFFICIENCY GOALS INCLUDED IN SUCH PROGRAM.

WHEREAS, State law requires the District to adopt a Water Use Efficiency Program and water use efficiency goals; and

WHEREAS, after due notice the Commissioners held a public hearing on January 10, 2008 and took testimony on the Water Use Efficiency Program dated December 2007 and the water use efficiency goals set forth therein; and last updated in 2010 and

WHEREAS, District staff in conjunction with District consultants from Gray & Osborne reviewed and developed updates to the 2010 Water Use Efficiency Program adopted by Resolution No. 653; and

WHEREAS, such updates and improvements were presented to the Commissioners and the Commissioners have reviewed these updates and have determined to implement these new provisions and updates to the District Water Use Efficiency Program.

NOW THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Silver Lake Water & Sewer District, Snohomish County, Washington as follows:

1. The Water Use Efficiency Program of the Silver Lake Water & Sewer District as included in the draft Comprehensive Water System Plan update March 2017 and the water use efficiency goals set forth therein and attached to this resolution are hereby approved and adopted. Such Program shall be set forth in the 2017 Final District Comprehensive Water System Plan.

2. District staff are hereby authorized and directed to implement the Water Use Efficiency Program and water use efficiency goals as adopted.

ADOPTED by the Board of Commissioners at a regular meeting of the Silver Lake Water & Sewer District, Snohomish County, Washington this 27th day of April, 2017.

President and Commissioner

Rod Keppler

Secretary and Commissioner

Bill Anderson

Commissioner

I CERTIFY the above to be a true and correct copy of Resolution No.734 adopted by the Board of Commissioners of the Silver Lake Water & Sewer District this 27th day of April, 2017 as said Resolution appears in the records of the Silver Lake Water-Sewer District.

Rod Keppler

Secretary of the Silver Lake Water-Sewer District

The District Water Use Efficiency Program Goals:

- Cooperate with the regional plan presented by EWUC to promote conservation by its customers and reduce overall water demand and to save approximately 0.24 mgd per year through 2019, with a total savings of approximately 1.44 mgd at the end of the 6-year planning period.

- Save approximately 22 MG per year within the District as part of the EWUC and City of Everett programs. This goal will be achieved through the continuation of the District's existing conservation measures.

- Identify and reduce distribution system leakage by 3 MG per year through the District's leak detection program. This is done by performing leak detection surveys in the distribution system and rotating through the full system on a 5-year cycle.

The District employs multiple measures to successfully accomplish these goals, including:

- Customer Bills Showing Consumption History
- Customer Education, newsletters and billing inserts
- Customer Leak Detection
- Provisions of Conservation Kits
- Peak Season Rate Structure to Encourage Conservation
- Demonstration Garden
- Irrigation Management
- Leak Detection Surveys
- Pipe Replacement
- Program Promotion
- Cooperation with the Regional Program established by the City of Everett
- Participate in City of Everett "high water use customer" water audit program.

Silver Lake Water and Sewer District
15205-41st Avenue SE
Bothell, WA 98012
Phone: 425 337-3647/Fax: 425 337-4399

April 11, 2017

The Herald
Legal Dept.

NOTICE OF HEARING

To Whom It May Concern:

SILVER LAKE WATER AND SEWER DISTRICT
NOTICE OF HEARING

NOTICE IS HEREBY GIVEN that the Board of Commissioners of the Silver Lake Water and Sewer District will hold a Public Hearing in the Administration Building of the Silver Lake Water and Sewer District, 15205-41st Avenue SE, Bothell, WA, at 5:30 p.m., or as soon thereafter as can be heard, on Thursday April 27, 2017 for the purpose of accepting public testimony on the adoption of:

2017 COMPREHENSIVE WATER SYSTEM PLAN

Rod Keppler, Secretary
Board of Commissioners

June 28, 2017

Patrick Curran, General Manager
Silver Lake Water & Sewer District
15205 41st Ave SE
Bothell, WA 98012-6114

Subject: Silver Lake View Water & Sewer District
2017 Comprehensive Water System Plan

Dear Mr. Curran:

The Snohomish Health District has reviewed the Silver Lake View Water & Sewer District 2017 Water System Plan. The updated plan will enhance the District's ability to meet the present and future demands for water service within its service area.

This water system plan amendment has my approval as required by the provisions of Title 57.16.010 RCW.

Sincerely,

CSpitters, MD
Christopher Spitters, MD
Interim Health Officer

CS/BAS/jg

cc: Randy Sleight, Snohomish County Planning & Development Services
~~Eric~~ Delfel, PE, Gray & Osborne Inc., 701 Dexter Avenue N., Suite 200, Seattle WA 98109

Ryan Hale

From: Strandberg, Terri <terri.strandberg@co.snohomish.wa.us>
Sent: Friday, June 30, 2017 11:53 AM
To: 'Ryan Hale'
Subject: RE: Silver Lake Water & Sewer District Comp Plan Changes
Attachments: image001.png

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Ryan - Our Principal Demographer has completed his review. His comments are below:

Table 2-2, page 2-6:

- columns on the right side have the header "UGA Undeveloped Units," which should read "~~UGA~~ Undeveloped Units" since the columns below it include potential units outside the UGA.
- the 2nd column from the right is labeled "Outside GMA," which should read "Outside ~~GMA~~ UGA." Same with footnote (4), which should read "...outside the Snohomish County ~~Growth Management Area (GMA)~~ urban growth area (UGA) will ultimately be included in the UGA".
- footnote (3) says "Assumes former Cathcart property will not be developed as presented in *A New Vision for Green Communities*, Snohomish County and will be maintained as open for public use." *This statement is incorrect. The county intends to sell this property for future development consistent with the existing comp plan designations and zoning.*

Otherwise, the population projections used in the plan appear to be consistent with the county's population growth projections.

Terri

From: Ryan Hale [mailto:rhale@g-o.com]
Sent: Tuesday, June 27, 2017 3:12 PM
To: Strandberg, Terri <terri.strandberg@co.snohomish.wa.us>
Subject: RE: Silver Lake Water & Sewer District Comp Plan Changes

Terri,

Please find attached the updated text and figures with the revisions made as a result of your comments. Thanks for working with me on this and my apologies that it took a few attempts. I completely understand the need to get the finer details consistent and am sorry they weren't consistent to begin with!

Is there anything else I can provide to help facilitate your process?

All the best,
Ryan

From: Strandberg, Terri [mailto:terri.strandberg@co.snohomish.wa.us]
Sent: Wednesday, June 21, 2017 10:18 AM
To: 'Ryan Hale' <rhale@g-o.com>
Subject: RE: Silver Lake Water & Sewer District Comp Plan Changes

Hi Ryan -

One more change to the map – the county doesn't have an "Urban Low Density Residential (6 DU/Acre)" designation anymore. The area near 35th and Seattle Hill Rd. should be shown as "Urban Low Density Residential (4 - 6 DU/Acre)"

Your data file is out-of-date. If you recently acquired this data file from us please let me know so I can make sure that only the latest version of the comp plan gets released. Map 6 (where this designation originated) was deleted last fall.

Otherwise, your maps look really good! Much better than we typically see in a water/sewer plan.

There is a typo in the Land Use text on page 2-4 ("lane" instead of 'land") 1st paragraph, 3rd line, otherwise the text is accurate.

Thanks for your patience and perseverance on this. Given the recent court case, these details matter as they become unintentional de facto updates to our comp plan. Sorry if it seems so nitpicky but there are potential legal consequences to the county for inadvertent land use changes made outside of the normal GMA process.

Terri

From: Ryan Hale [mailto:rhale@g-o.com]
Sent: Friday, June 16, 2017 1:56 PM
To: Strandberg, Terri <terri.strandberg@co.snohomish.wa.us>
Cc: Sleight, Randy <Randolph.Sleight@co.snohomish.wa.us>
Subject: RE: Silver Lake Water & Sewer District Comp Plan Changes

Terri,

My apologies for my misunderstanding on Fig 2-3 and page 2-4. I have attached the updated figure and text including the changes along 35th Ave SE and to McCollum Park. I believe I have picked up your comments properly buy please let me know if I haven't.

Thanks for your time,
Ryan

From: Strandberg, Terri [mailto:terri.strandberg@co.snohomish.wa.us]
Sent: Thursday, June 15, 2017 3:07 PM
To: 'Ryan Hale' <rhale@g-o.com>
Cc: Sleight, Randy <randolph.sleight@co.snohomish.wa.us>
Subject: RE: Silver Lake Water & Sewer District Comp Plan Changes

Hi Ryan –

Fig 1-7 and Fig 2-1 look good. I like how Fig 2-1 turned out.

Fig 2-3 still needs some work.

- Looks like the map now shows zoning for unincorporated county areas instead of the future land use designations from our comp plan. We should use the comp plan designations, not zoning. The data source in the original version of this map was correct except that data from Mill Creek's comp plan was applied outside of their city limits. MUGAs, UGAs and other unincorporated areas should be shown with county future land use designation.
- The areas inside Mill Creek appear to be comp plan designations except that there is a mismatch along 35th Ave SE in the northeast corner of the city – there is some medium density residential that does not show up on Fig 2-3.
- Also, McCollum Park is shown with a Mill Creek designation – should be county.

Text on page 2-4 should talk about future land use from the comp plans and not about the zoning.

Terri

From: Ryan Hale [mailto:rhale@g-o.com]
Sent: Monday, June 12, 2017 12:02 PM
To: Strandberg, Terri <terri.strandberg@co.snohomish.wa.us>
Subject: Silver Lake Water & Sewer District Comp Plan Changes

Terri,

I have been making revisions to the Silver Lake Water & Sewer District Comprehensive Water System Plan and I have made the following changes and attached the updated pages:

Figure 1-7 has been updated with the Mill Creek MUGA boundary.
Figure 2-1 has been updated with Mill Creek and Everett incorporated areas.
Figure 2-3 has been updated with Snohomish County Future Land Use outside of the incorporated areas of Mill Creek and Everett.
Page 2-4 text has been revised to reflect changes to Figure 2-3.

Regarding Figure 2-2, the 40-acre area near 164th and BEH that is not shown in the District service area has not been claimed by either the District or AWWD.

Are these revisions in line with your comments? Please feel free to provide any further comments and once you feel the revisions are satisfactory I will finalize the changes in the Plan.

Thanks for your time. All the best,
Ryan

***Ryan Hale, EIT, NACE Coating Inspector – Level 1** | 206.284.0860 p | 206.283.3206 f*
***Gray & Osborne, Inc.** | 701 Dexter Ave. N., Suite 200, Seattle, WA, 98109*

Electronic File Transfer-

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

MOTION NO. 17-268

CONCERNING APPROVAL OF THE SILVER LAKE WATER AND SEWER DISTRICT 2017 COMPREHENSIVE WATER SYSTEM PLAN

WHEREAS, the Silver Lake Water and Sewer District prepared and submitted the 2017 Comprehensive Water System Plan on May 25, 2017, to the Snohomish County Council; and

WHEREAS, RCW 57.16.010 requires that water and sewer districts adopt a comprehensive plan prior to incurring indebtedness or ordering improvements, and that the comprehensive plan be approved by the county legislative authority before becoming effective; and

WHEREAS, the specific criteria for review of water system comprehensive plans are outlined in RCW 57.02.040 and WAC 246-290-100; and

WHEREAS, the Snohomish Health District and the County Engineer have reviewed the plan amendment and given approval as required by Title 57 RCW; and

WHEREAS, the District's 2017 Comprehensive Water System Plan has been reviewed by Planning and Development Services and comments were submitted to the District; and

WHEREAS, the District responded to the County's comments and submitted revised maps and text attached hereto as Exhibit B; and

WHEREAS, the District's 2017 Comprehensive Water System Plan, together with the contents of Exhibit B, is found to be consistent with the County's adopted GMA Comprehensive Plan;

NOW, THEREFORE, ON MOTION:

A. The Snohomish County Council finds that the proposed Silver Lake Water and Sewer District 2017 Comprehensive Water System Plan, together with the contents of Exhibit B, is in compliance with the applicable criteria for approval prescribed in RCW 57.02.040, as outlined below.

    1) The proposed action is consistent with the county comprehensive plan.

    2) There is no separate state-approved basin-wide water system plan for this area.

3) There is no separate county general plan for water systems covering the Silver Lake Water and Sewer District's service area.

4) The County Engineer and Snohomish Health District Officer have each given their approval to the Plan. Therefore, Planning and Development Services recommends the Silver Lake Water and Sewer District 2017 Comprehensive Water System Plan, be approved.

B. Based on the foregoing, the Snohomish County Council approves the Silver Lake Water and Sewer District 2017 Comprehensive Water System Plan.

PASSED this 9th day of August, 2017.

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

S Wright

Council Vice-Chair

ATTEST:

Clerk of the Council

[Clerk Note: There is not an Exhibit A, Exhibit B only]

D-6

EXECUTIVE SUMMARY

The Silver Lake Water & Sewer District Comprehensive Water System Plan (Plan) provides a long-term planning strategy for the District's water utility over the 6-, 10- and 20-year planning periods. The Plan has been prepared consistent with Department of Health requirements as specified in the Washington Administrative Code (WAC) Chapter 246-290. The Plan represents a commitment by the District to pursue and implement the Plan's recommendations and capital improvements.

PLAN SUMMARY

Chapters 1 and 2 of the Plan provide background data, including a description of existing facilities, service area, service area policies, and projections of population and water use through 2036. Chapter 3 presents existing and future water quality standards, and summarizes the District's water quality testing results. Chapter 4 provides a summary of the District's design standards and provides an analysis of the District's source of supply, storage, and booster stations. Chapter 5 describes the District's hydraulic model and provides an analysis of the distribution system to identify distribution system improvements. Chapter 6 presents a brief summary of the District's operation and maintenance program. Chapter 7 describes the District's water use efficiency program. Chapter 8 presents the planned capital improvements, and Chapter 9 presents financing for the planned improvements. The nine chapters of this report are followed by appendices that contain supplemental documentation.

STUDY AREA

The study area for this plan covers approximately 8,356 acres, of which approximately 7,952 acres are within the current District boundary. The District has identified an area that is currently unclaimed by any water district and outside of any UGA. The District would be the logical service provider for this area if it is incorporated into a UGA at a future date. Population and water demand projections for this area have been included to identify any capital improvements required to serve this area.

POPULATION AND WATER USE PROJECTIONS

The District's water service population for 2016 is approximately 54,194 people served by approximately 17,936 connections. Based on population growth rates established by the Puget Sound Regional Council, the District's water service population is expected to grow to approximately 62,471 people by 2036.

Table E-1 presents the projected population and water use for the District for the 20-year planning period.

TABLE E-1

Population and Water Use Projections

Year	Projected Connections	Projected Population[1]	Demand Projections: Average Day[2] (mgd)	Peak Day[3] (mgd)	Peak Hour[4] (gpm)
2016	17,936	54,194	4.88	10.24	11,523
2017	18,208	55,016	4.95	10.40	11,698
2018	18,484	55,850	5.03	10.56	11,875
2019	18,765	56,698	5.10	10.72	12,055
2020	19,049	57,557	5.18	10.88	12,238
2021	19,338	58,430	5.26	11.04	12,424
2022	19,632	59,317	5.34	11.21	12,612
2023	19,929	60,216	5.42	11.38	12,804
2024	20,232	61,130	5.50	11.55	12,998
2025	20,271	61,248	5.51	11.58	13,023
2026	20,310	61,367	5.52	11.60	13,048
2036	20,676	62,471	5.62	11.81	13,283
Buildout[5]	24,011	72,548	6.53	13.71	15,426

(1) Includes Study Area 1.
(2) Based on 90 gallons per capita per day.
(3) Based on a peak day factor of 2.1.
(4) Based on a peak hour factor of 1.62.
(5) Based on District holding capacity from Table 2-5.

SYSTEM ANALYSIS

SOURCE

The District's sources of supply are direct purchase of water from the City of Everett, or indirect purchase of water from Everett through the Clearview Water Supply Agency (CWSA) and Alderwood Water and Wastewater District (AWWD). The City of Everett has sufficient water rights and treatment capacity to meet all of its customers' demands, including wholesale customers like the District, beyond the 20-year planning period. By agreement, the District has supply of up to 9 mgd through the CWSA source and 5 mgd from AWWD.

STORAGE

The District owns and operates three storage reservoirs with a total nominal capacity of 16.4 million gallons (MG). The District's current reservoir capacity is projected to be deficient starting in 2018. Reservoir 3 is located within the City of Everett UGA and

OTHER AREAS SERVED BY THE DISTRICT

There are approximately 587 City of Everett customers located downstream of District master meters. The District does not have an agreement with Everett or any obligation to provide service to these areas, although under the current system configuration the District does provide storage for these Everett connections.

SATELLITE SYSTEM MANAGEMENT

The District is not prepared at this time to provide and/or contract for satellite system management or ownership services within or adjacent to the District's service area.

LAND USE

The future land use for the District's service area is established in the planning sections of the GMA Comprehensive Plans of Everett, Mill Creek, and Snohomish County. Though the majority of the service area future land use is residential, the allowable density in terms of dwelling units per acre varies according to UGA jurisdiction. Within the UGAs of Snohomish County, Everett, and Mill Creek, respective future land use has been used. The future land use within the District's service area is presented on Figure 2-3.

To assess the growth potential of the District, undeveloped areas are identified within the study area. Undeveloped areas are defined as areas that have not been platted, or do not have preliminary plats submitted to Snohomish County and are not within identified site-sensitive areas. Though there may be existing housing on some sites, the sites are not developed to the highest potential. The portion of the District's study area within each UGA is categorized as developed, site-sensitive, and undeveloped areas in Table 2-1.

TABLE 2-1

Summary of Existing Urban Growth Areas within District

UGA	Developed Area (acres)	Site-Sensitive Area (acres)	Undeveloped Area (acres)	Roads and Public ROW (acres)	Total Area (acres)
Everett	1,727	376	127	334	2,564
Mill Creek	1,620	430	295	250	2,595
Snohomish County	1,330	702	274	282	2,588
Outside GMA	0	4	180	21	205
District Area Total	**4,677**	**1,512**	**876**	**887**	**7,952**
Study Area 1	0	0	404	0	404
Study Area Total	**4,677**	**1,512**	**1,280**	**887**	**8,356**

The holding capacity of the 1,280 acres of undeveloped area within the study area is determined by applying the zoning and land use for each undeveloped area. The acreage of the undeveloped area is combined with the applicable zoning and land use in dwelling units per acre to determine the number of undeveloped dwelling units. The generation of the holding capacity of undeveloped areas within the study area based on zoning and land use is presented in Table 2-2. For zoning and land use that is specified as a range, such as four to six dwelling units per acre, the mean value of five dwelling units per acre is applied.

TABLE 2-2

Zoning and Land Use for Undeveloped Areas

Zoning and Land Use (units/acre)(1)	Undeveloped Areas (acres)					Undeveloped Units(2)				
	Everett	Mill Creek	Snohomish County(3)	Outside UGA(4)	Study Area 1	Everett	Mill Creek	Snohomish County(3)	Outside UGA(4)	Study Area 1
3 to 5	52	145	30		404	208	578	119		1616
4 to 6				180					900	
5 to 10	64					480				
6 to 12			41					366		
10 to 12	11	0.2	49			121	2	539		
15 to 20										
12 to 24			40					718		
24		2					59			
30		25					755			
Public Use/Commercial(5)		122	114							
Total	**127**	**295**	**274**	**180**	**404**	**809**	**1,395**	**1,742**	**900**	**1,616**

(1) Zoning and Land Use taken from the applicable GMA Comprehensive Plan for the UGA Undeveloped Area, as shown on Figure 2-3.
(2) Potential Dwelling Units are calculated by multiplying the Undeveloped Area by the mean zoning and land use for the area.
(3) Assumes former Cathcart property will be developed – consistent with the existing designations and zoning.
(4) Assumes that zoning for the area currently outside the Snohomish County Urban Growth Area (UGA) will ultimately be included in the GMA and will be developed at four to six dwelling units/acre.
(5) Undeveloped land with a commercial/public use zoning that will not support a residential population.

TABLE 2-4 – (continued)

Historical and Projected Populations(1)

Year	Connections(2)	Population(3)	Growth Rate(4)
2032	20,499	61,938	0.11%
2033	20,523	62,009	0.11%
2034	20,546	62,080	0.11%
2035	20,611	62,275	0.31%
2036	20,676	62,471	0.31%
Buildout	24,011	72,548	-

(1) Based on the current District service area and Study Area 1.
(2) Based on District records of total service connections.
(3) Calculated assuming 3.02 ppc.
(4) Based on connections from the previous year.

POPULATION HOLDING CAPACITY

The population holding capacity of the District is presented in Table 2-5. The developed population is added to the undeveloped population to get the holding capacity in the District based on zoning and land use. The population holding capacity of the District, including Study Area 1, is calculated to be 72,548.

TABLE 2-5

Population Holding Capacity

UGA	Developed Population(1)	Undeveloped		Population Holding Capacity(4)
		Units(2)	Population(3)	
Everett	17,172	809	2,444	19,616
Mill Creek	17,146	1,742	5,264	21,360
Snohomish County	17,333	545	1,647	22,597
Snohomish County (Outside GMA)	1,373	900	2,719	4,092
Study Area 1	0	1,616	4,883	4,883
District Total	**53,024**	**4,846**	**19,524**	**72,548**

(1) Developed population in 2015 based on Table 2-4.
(2) Undeveloped units as calculated in Table 2-2.
(3) Undeveloped population based on undeveloped units and population density of 3.02 pph.
(4) Sum of developed population and undeveloped population.

POPULATION PROJECTION EVALUATION

Based on current land use for the Cities of Everett and Mill Creek and the Snohomish County UGA, the expected buildout population of the District's retail service area is 67,665. The expected buildout population of the District's retail service area and Study Area 1 is 72,548. District's 2009 *Water System Comprehensive Plan* projected an ultimate population of 77,013 based on the Snohomish County land use zoning at the time and assumed the former Cathcart property would be developed as presented in *A New Vision for Green Communities,* Snohomish County. This buildout projection does not include any reductions in population that may result from future annexations.

SERVICE CONNECTIONS

HISTORICAL GROWTH IN SERVICE CONNECTIONS

The number of water connections for each year from 2009 through 2016 is presented in Table 2-6. Based on the increase in water connections, the District's average annual growth rate from 2009 to 2016 was 1.87 percent, down from the growth rate identified in the 2009 Plan (3.17 percent).

The year-end total number of service connections served by the District in 2016 was 17,936. Over the past 8 years (2009–2016), total growth in service connections was approximately 15 percent.

TABLE 2-6

Historical Growth Based on Water Service Connections

Year	Connections per Year	Total Connections	Percent Annual Growth(1)
2009	168	15,643	1.09%
2010	264	15,907	1.69%
2011	203	16,110	1.28%
2012	287	16,397	1.78%
2013	343	16,740	2.09%
2014	440	17,180	2.63%
2015	369	17,549	2.15%
2016	387	17,936	2.21%
Average Annual Growth			1.87%

(1) Based on connections from the previous year.

TABLE 2-18

Water Demand Projections

Year	Projected Populations(1)	Demand Projections			
		Average Day(2) (mgd)	Peak Day(3) (mgd)	Peak Hour(4) (gpm)	ERU
2016	54,194	4.88	10.24	11,523	27,556
2017	55,016	4.95	10.40	11,698	27,974
2018	55,850	5.03	10.56	11,875	28,399
2019	56,698	5.10	10.72	12,055	28,829
2020	57,557	5.18	10.88	12,238	29,267
2021	58,430	5.26	11.04	12,424	29,710
2022	59,317	5.34	11.21	12,612	30,161
2023	60,216	5.42	11.38	12,804	30,619
2024	61,130	5.50	11.55	12,998	31,083
2025	61,248	5.51	11.58	13,023	31,143
2026	61,367	5.52	11.60	13,048	31,204
2027	61,487	5.53	11.62	13,074	31,264
2028	61,606	5.54	11.64	13,099	31,325
2029	61,726	5.56	11.67	13,124	31,386
2030	61,796	5.56	11.68	13,139	31,422
2031	61,867	5.57	11.69	13,154	31,458
2032	61,938	5.57	11.71	13,170	31,494
2033	62,009	5.58	11.72	13,185	31,530
2034	62,080	5.59	11.73	13,200	31,566
2035	62,275	5.60	11.77	13,241	31,665
2036	62,471	5.62	11.81	13,283	31,765
Buildout	**72,548**	**6.53**	**13.71**	**15,426**	**36,889**

(1) Includes Study Area 1.
(2) Based on 90 gallons per capita per day.
(3) Based on a Peak Day to Average Day factor of 2.1.
(4) Based on a Peak Hour to Peak Day factor of 1.62.
(5) Based on District holding capacity from Table 2-5.

CWSA. The District has purchased a 9.0 mgd share in the CWSA supply and has a wholesale water supply agreement with AWWD for the supply of up to 5 mgd. The District's supply of 14 mgd is sufficient to meet the projected buildout peak day demand of 13.71 mgd.

STORAGE

The District owns and operates three reservoirs with a total nominal volume of 16.4 MG. Each reservoir supplies the distribution system via pump station, therefore the total volume of each reservoir is usable storage and no dead storage needs to be subtracted from the total storage. The District's 2.4 MG share in the Clearview Reservoir is not available for use and will not be included in the analysis.

In order to determine whether or not the existing storage facilities owned by the District are adequate to meet existing and future demands on the system, the required volumes of the following five storage components need to be calculated.

Storage components are as follows:

- Operational Storage (OS)
- Equalizing Storage (ES)
- Standby Storage (SB)
- Fire Suppression Storage (FSS)
- Demand Management Storage (DM)

Formulas for calculating many of these components of the storage requirements are provided in the DOH Design Manual. For all applicable cases, the storage requirements meet or exceed the DOH Design Manual.

Operational Storage (OS)

Operational storage is typically defined as the storage used to control the system. For example, in a gravity system, source pumps are called on and off by the level in the reservoir. Since the District's system is a closed system, this is not the case for the operation of the system. For this reason, operational storage cannot be viewed in this way.

In the past, the District has defined operational storage as the 10 percent volume required to ensure proper water quality. However, depending on the time of year, this volume could vary, depending on the operating levels of Reservoir 4. For example, during winter demands, the District may elect to operate Reservoir 4 at a lower operating level to make it easier to maintain good water quality. Also, in the summer, normal diurnal demands provide the District with the ability to meet water quality requirements with equalizing storage.

TABLE 4-3

Storage Analysis

Year	Required Storage						Available Storage MG(7)	Surplus (+) or Deficit (-)
	OS(1) MG	ES(2) MG	SB(3) MG	FS(4) MG	DM(5) MG	Total(6) MG		
2016	1.59	0.66	9.75	0.54	3.19	15.73	15.97	0.23
2017	1.59	0.67	9.90	0.54	3.19	15.89	15.97	0.07
2018	1.59	0.68	10.05	0.54	3.21	16.07	15.97	-0.11
2019	1.59	0.69	10.21	0.54	3.26	16.29	15.97	-0.32
2020	1.59	0.70	10.36	0.54	3.30	16.49	15.97	-0.52
2021	1.59	0.71	10.52	0.54	3.34	16.70	15.97	-0.73
2022	1.59	0.72	10.68	0.54	3.38	16.91	15.97	-0.95
2026	1.59	0.75	11.05	0.54	3.48	17.41	15.97	-1.45
2036	1.59	0.76	11.24	0.54	3.53	17.66	15.97	-1.70
Buildout	1.59	0.89	13.06	0.54	3.85	19.93	15.97	-3.96

(1) Operational Storage.
(2) Equalizing Storage = (PHD - PDD)*150.
(3) Stand-by Storage = 2*ADD.
(4) Fire Suppression Storage = 3,000 gpm * 180 min.
(5) Demand Management Storage = 20 percent of 15.97 MG, or 20 percent of required storage, whichever is greater.
(6) Total storage is the sum of OS, ES, SB, FS, and DM. No storage components have been nested.
(7) Approximately 0.43 MG of Reservoir No. 3 is reserved for Everett customers based on the Everett Transfer of Service Agreement.

TABLE 4-4

Storage Analysis with Transfers to Everett

Buildout Scenario	Transferred Areas	OS[1] (MG)	ES[2] (MG)	SB[3] (MG)	FS[4] (MG)	DM[5] (MG)	Total[6] (MG)	Available Storage[7] (MG)	Surplus (+) or Deficit (-) (MG)
1	1	1.59	0.70	10.32	0.54	3.29	16.44	14.69	-1.75
2	1,5	1.59	0.68	9.96	0.54	3.19	15.96	14.69	-1.27
3	1,2	1.59	0.66	9.71	0.54	3.12	15.62	14.08	-1.55
4	1,2,5	1.59	0.63	9.34	0.54	3.02	15.12	14.08	-1.05
5	1,2,3	1.59	0.63	9.32	0.54	3.02	15.10	13.69	-1.41
6	1,2,3,5	1.12	0.61	8.95	0.54	2.81	14.03	13.69	-0.34
7	1,2,3,4	1.12	0.53	7.82	0.54	2.50	12.52	12.20	-0.32
8	1,2,3,4,5	1.59	0.51	7.45	0.54	2.52	12.61	12.20	-0.41
9	1,3	1.59	0.67	9.93	0.54	3.18	15.91	14.30	-1.61
10	1,3,5	1.59	0.65	9.57	0.54	3.09	15.44	14.30	-1.13
11	1,3,4	1.59	0.57	8.43	0.54	2.78	13.91	12.81	-1.10
12	1,3,4,5	1.59	0.55	8.07	0.54	2.69	13.44	12.81	-0.62
13	2	1.59	0.75	10.99	0.54	3.47	17.34	15.35	-1.99
14	2,5	1.59	0.72	10.63	0.54	3.37	16.85	15.35	-1.50
15	2,4	1.59	0.64	9.49	0.54	3.06	15.32	13.86	-1.46
16	2,4,5	1.59	0.62	9.13	0.54	2.97	14.85	13.86	-0.99
17	2,3,4	1.59	0.62	9.10	0.54	2.96	14.81	13.48	-1.34
18	2,3,4,5	1.59	0.59	8.74	0.54	2.86	14.32	13.48	-0.85
W/O Transfer	-	1.59	0.89	13.06	0.54	4.02	20.10	15.97	-4.13

(1) Operational Storage.
(2) Equalizing Storage = (PHD - PDD)*150.
(3) Stand-by Storage = 2*ADD.
(4) Fire Suppression Storage = 3,000 gpm * 180 min.
(5) Demand Management Storage = 20 percent of 15.97 MG, or 20 percent of required storage, whichever is greater.
(6) Total storage is the sum of OS, ES, SB, FS, and DM. No storage components have been nested.
(7) Approximately 0.43 MG of Reservoir 3 is reserved for Everett customers based on the Everett Transfer of Service Agreement.

TABLE 4-6

640/485 Zones Booster Station Analysis, Peak Hour

Year	Peak Day Demand (gpm)	Peak Hour Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow[1] (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	6,722	10,889	8,333	2,556	10,500	7,944
2022	7,357	11,918	8,333	3,585	10,500	6,915
2026	7,611	12,330	8,333	3,997	10,500	6,503
2036	7,748	12,552	8,333	4,219	10,500	6,281
Buildout	8,998	14,578	8,333	6,245	10,500	4,255

(1) Total zone booster pump capacity with largest pump out of service.

TABLE 4-7

725 Zone Booster Station Analysis, Peak Hour

Year	Peak Day Demand (gpm)	Peak Hour Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow[1] (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	391	634	0	634	1,950	1,316
2022	428	694	0	694	1,950	1,256
2026	443	718	0	718	1,950	1,232
2036	451	731	0	731	1,950	1,219
Buildout	524	848	0	848	1,950	1,102

(1) Total zone booster pump capacity with largest pump out of service.

TABLE 4-8

640/485 Zones Booster Station Analysis, Peak Day Fire Flow

Year	Peak Day Demand (gpm)	Fire Flow Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	6,722	3,000	8,333	1,389	10,500	9,111
2022	7,357	3,000	8,333	2,024	10,500	8,476
2026	7,611	3,000	8,333	2,278	10,500	8,222
2036	7,748	3,000	8,333	2,415	10,500	8,085
Buildout	8,998	3,000	8,333	3,665	10,500	6,835

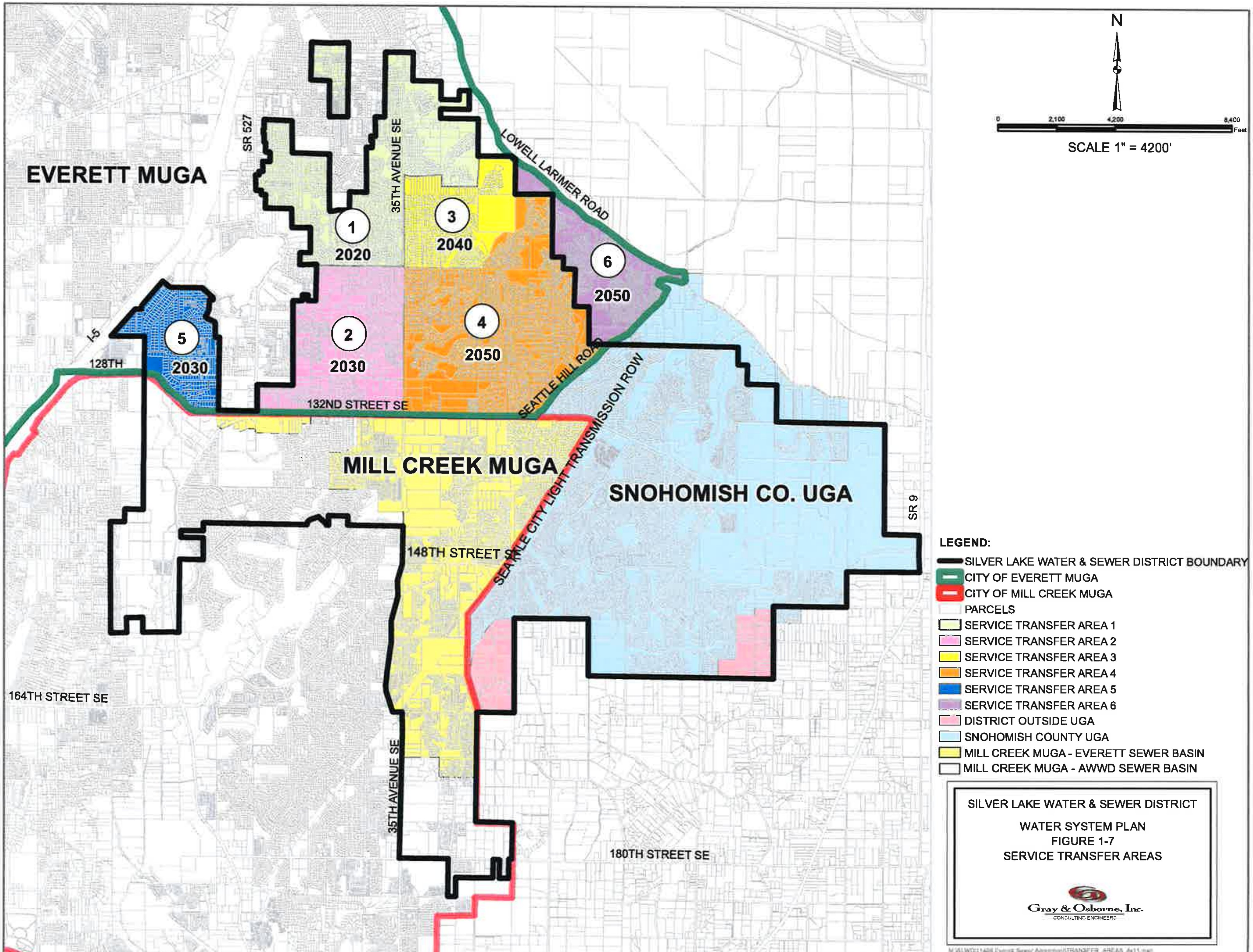
(1) Total zone booster pump capacity with largest pump out of service.

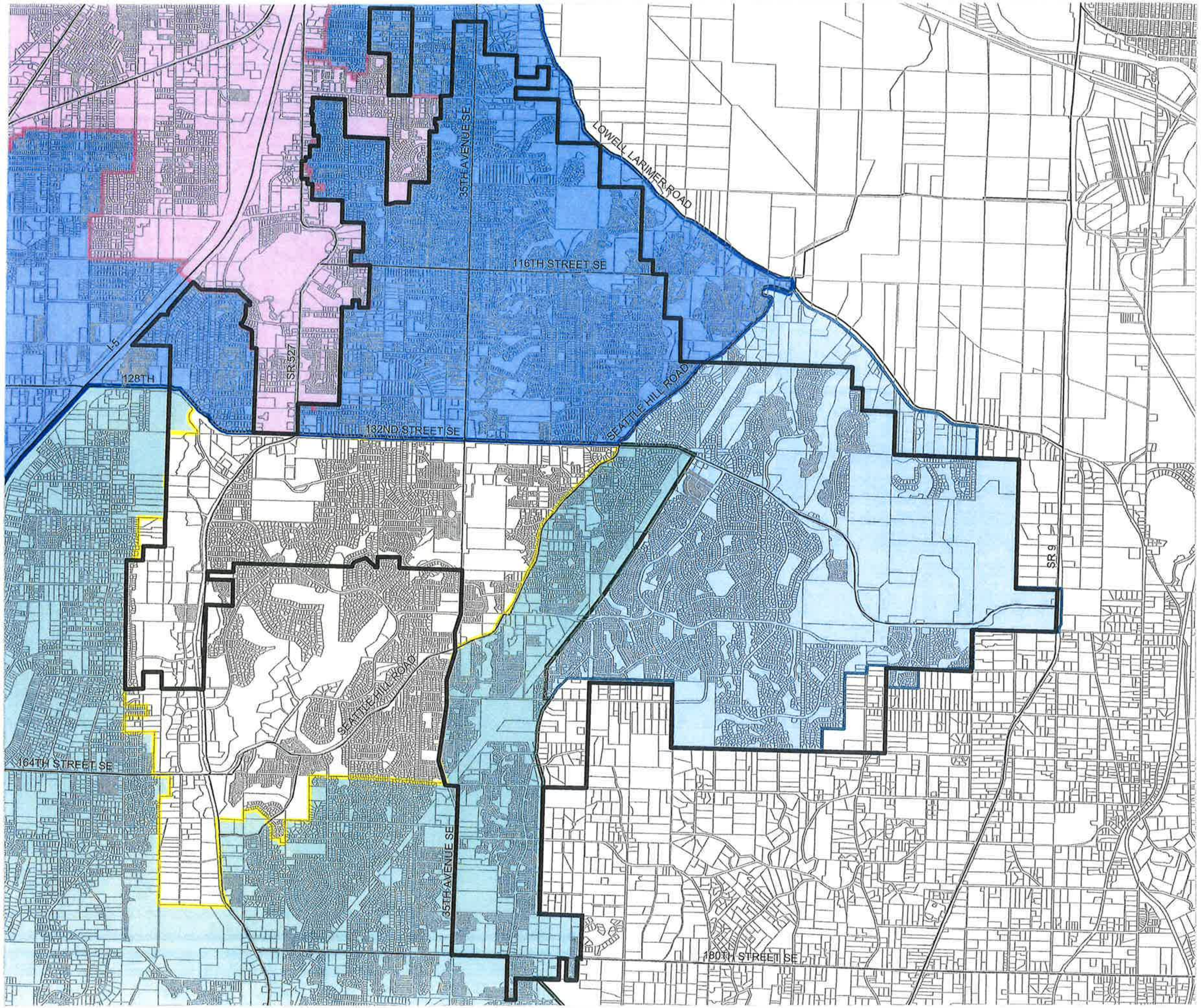
TABLE 4-9

725 Zone Booster Station Analysis, Peak Day Fire Flow

Year	Peak Day Demand (gpm)	Fire Flow Demand (gpm)	Maximum Master Meter Flow (gpm)	Required Booster Station Flow (gpm)	Available Booster Station Flow(1) (gpm)	Surplus (+) of Deficit (-) (gpm)
2016	391	1,000	0	1,391	1,950	559
2022	428	1,000	0	1,428	1,950	522
2026	443	1,000	0	1,443	1,950	507
2036	451	1,000	0	1,451	1,950	499
Buildout	524	1,000	0	1,524	1,950	426

(1) Total zone booster pump capacity with largest pump out of service.


EVERETT MUGA
MILL CREEK MUGA
SNOHOMISH CO. UGA
1
2020
2
2030
3
2040
4
2050
5
2030
6
2050
SR 527
35TH AVENUE SE
LOWELL LARIMER ROAD
I-5
128TH
132ND STREET SE
SEATTLE HILL ROAD
SEATTLE CITY LIGHT TRANSMISSION ROW
148TH STREET SE
164TH STREET SE
180TH STREET SE
SR 9
N
0
2,100
4,200
8,400
Feet
SCALE 1" = 4200'
LEGEND:
SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
CITY OF EVERETT MUGA
CITY OF MILL CREEK MUGA
PARCELS
SERVICE TRANSFER AREA 1
SERVICE TRANSFER AREA 2
SERVICE TRANSFER AREA 3
SERVICE TRANSFER AREA 4
SERVICE TRANSFER AREA 5
SERVICE TRANSFER AREA 6
DISTRICT OUTSIDE UGA
SNOHOMISH COUNTY UGA
MILL CREEK MUGA - EVERETT SEWER BASIN
MILL CREEK MUGA - AWWD SEWER BASIN
SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN
FIGURE 1-7
SERVICE TRANSFER AREAS
Gray & Osborne, Inc.
CONSULTING ENGINEERS



N

0 1,500 3,000 6,000 Feet

SCALE 1" = 3000'

LEGEND

- SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
- CITY OF EVERETT
- CITY OF EVERETT MUGA
- CITY OF MILL CREEK
- CITY OF MILL CREEK MUGA
- SNOHOMISH COUNTY UGA

SILVER LAKE WATER
& SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-1
UGA BOUNDARIES

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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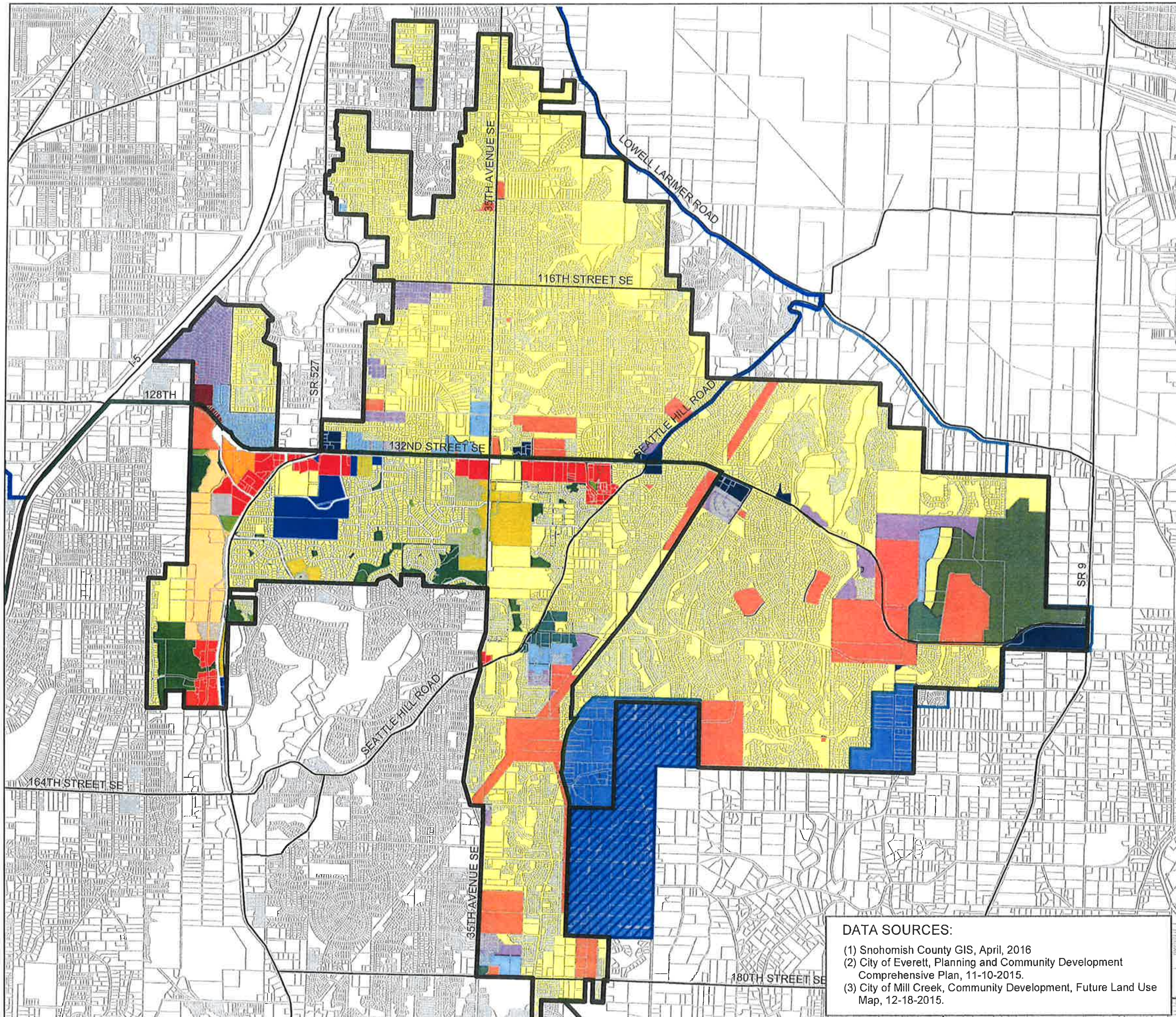

SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
City of Mill Creek MUGA
City of Everett MUGA
SNOHOMISH COUNTY UGA
Potential Future Service Area - Outside UGA

MILL CREEK
LAND USE
- Business Park
- Community Business
- High Density Residential
- Low Density Residential
- Medium Density Residential
- Mixed Use / High Density Residential
- Open Space - Private
- Open Space - Public
- Public and Quasi Public
- Town Center

SNOHOMISH COUNTY LAND USE
- Incorporated City
- Public/Institutional Use
- Rural Residential (1 DU/5 Acres Basic)
- Urban Center
- Urban Commercial
- Urban High Density Residential
- Urban High Density Residential/Urban Industrial (overlapping designations)
- Urban Industrial
- Urban Low Density Residential (4 - 6 DU/Acre)
- Urban Medium Density Residential
- Urban Village

DATA SOURCES:
(1) Snohomish County GIS, April, 2016
(2) City of Everett, Planning and Community Development Comprehensive Plan, 11-10-2015.
(3) City of Mill Creek, Community Development, Future Land Use Map, 12-18-2015.

SILVER LAKE WATER & SEWER DISTRICT

WATER SYSTEM PLAN
FIGURE 2-3
FUTURE LAND USE

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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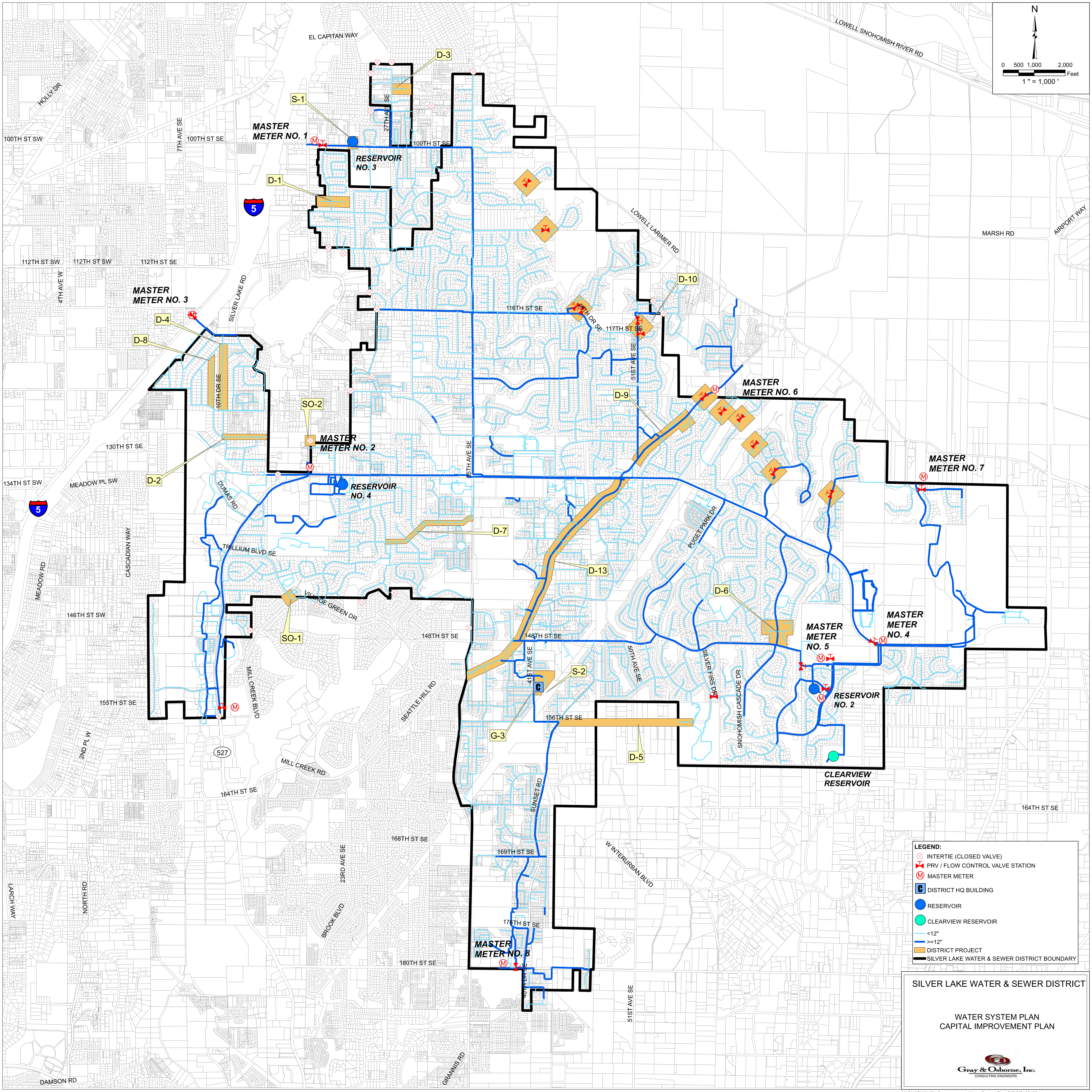
N
0 500 1,000 2,000
Feet
1 " = 1,000 '
MASTER METER NO. 1
RESERVOIR NO. 3
MASTER METER NO. 3
MASTER METER NO. 2
RESERVOIR NO. 4
MASTER METER NO. 6
MASTER METER NO. 7
MASTER METER NO. 4
MASTER METER NO. 5
RESERVOIR NO. 2
CLEARVIEW RESERVOIR
MASTER METER NO. 8
D-1
D-2
D-3
D-4
D-5
D-6
D-7
D-8
D-9
D-10
D-13
S-1
S-2
SO-1
SO-2
G-3
EL CAPITAN WAY
LOWELL SNOHOMISH RIVER RD
HOLLY DR
100TH ST SW
7TH AVE SE
100TH ST SE
27TH AVE SE
LOWELL LARIMER RD
MARSH RD
AIRPORT WAY
112TH ST SW
112TH ST SE
4TH AVE W
SILVER LAKE RD
116TH ST SE
117TH ST SE
51ST AVE SE
10TH DR SE
130TH ST SE
134TH ST SW
MEADOW PL SW
35TH AVE SE
DUMAS RD
TRILLIUM BLVD SE
CASCADIAN WAY
MEADOW RD
PUGET PARK DR
VILLAGE GREEN DR
146TH ST SW
148TH ST SE
MILL CREEK BLVD
50TH AVE SE
SILVER FIRS DR
SNOHOMISH CASCADE DR
41ST AVE SE
SEATTLE HILL RD
155TH ST SE
156TH ST SE
527
2ND PL W
MILL CREEK RD
164TH ST SE
SUNSET RD
168TH ST SE
169TH ST SE
W INTERURBAN BLVD
23RD AVE SE
NORTH RD
LARCH WAY
BROOK BLVD
176TH ST SE
180TH ST SE
GRANNIS RD
DAMSON RD
LEGEND:
INTERTIE (CLOSED VALVE)
PRV / FLOW CONTROL VALVE STATION
MASTER METER
DISTRICT HQ BUILDING
RESERVOIR
CLEARVIEW RESERVOIR
<12"
>=12"
DISTRICT PROJECT
SILVER LAKE WATER & SEWER DISTRICT BOUNDARY
SILVER LAKE WATER & SEWER DISTRICT
WATER SYSTEM PLAN
CAPITAL IMPROVEMENT PLAN
Gray & Osborne, Inc.
CONSULTING ENGINEERS
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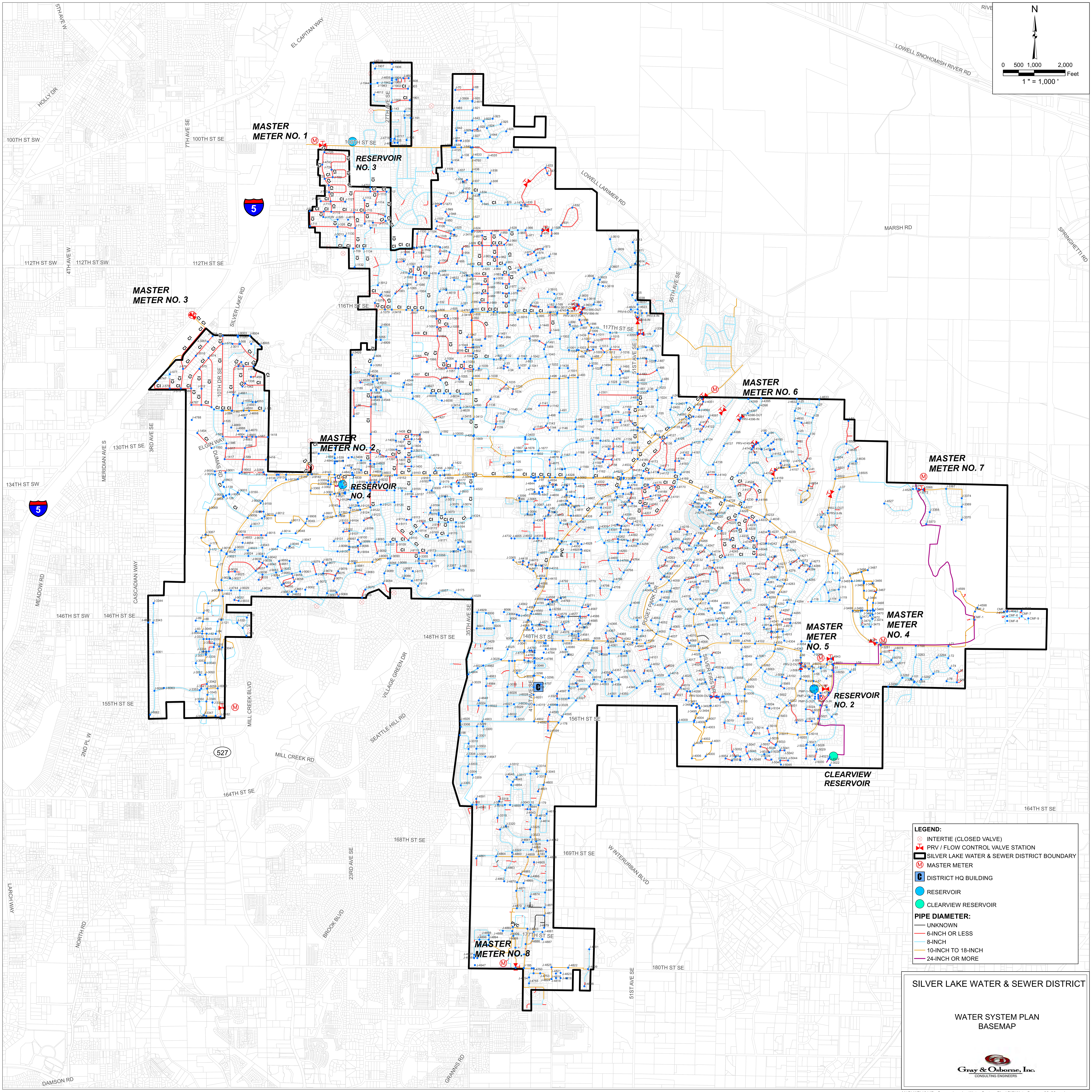

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